AirTAC INTERNATIONAL GROUP

www.airtac.com

Global Automation Equipment Manufacturer's Long-term Strategic Partnership

AirTAC PRODUCTS CATALOG-2023

AirTAC

PRODUCTS CATALOG-2023



Europe

AirTAC Pneumatic Equipment

Products Catalog-2023

Corporate Profile

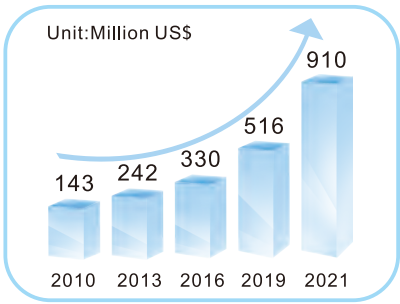


2019:
AirTAC Ningbo the second Production base established

2015:
AirTAC USAestablished



Annual revenue over the years





2016-2018:
AirTAC(Guangdong/Tianjin /Fujian) Intelligent Company established



2012-2015:
AirTAC Singapore, AirTAC Japan, AirTAC Malaysia, AirTAC Thailand established



2015:
AirTAC (Jiangsu) established



2016:
New production base of AirTAC Tainan established



2010:
AirTAC IPO In Taiwan (Stock code:1590.TW)

2011:
Expanded China Sales and R&D center





2008:
AirTAC Italy established



2002:
AirTAC Ningbo established

1988:
AirTAC Taiwan established



1998:
AirTAC Guangdong established



Corporate Profile



2019
AirTAC Ningbo the second Production base established

AirTAC Ningbo the second Production base
Land area: 266,667m²
Add: No.89, Nandu Rd., Fenghua District, Ningbo, Zhejiang, China



2016
New production base of AirTAC Tainan established

Taiwan Tainan Production base
Land area: 71,333m²
Add: No.28, Kanxi Rd., Xinshi District, Tainan, Taiwan



2002
AirTAC Ningbo established

AirTAC Ningbo the first Production base
Land area: 240,000m²
Add: No.88, Siming E. Rd., Fenghua District, Ningbo, Zhejiang, China



1998
AirTAC Guangdong established

AirTAC Guangdong
Land area: 26,667m²
Add: No.7, Kaixuan Rd., Nanhai District, Foshan, Guangdong, China

Global Network of Marketing&Service

AirTAC International Group has more than 100 direct sales branches/sales sections in Chinese mainland, and thousands of distributors around the world, mainly located in Europe, the United States and Asia, etc., forming a perfect sales network and after-sales service system, which can provide customers with convenient services at any time.



Overseas Market

- USA
- Japan
- UK
- France
- Finland
- Germany
- Thailand
- Korea
- Australia
- Mexico
- Argentina
- South Africa
- Italy
- Singapore
- Malaysia
- Greece
- Sweden
- Denmark
- India
- Brazil
- Netherlands
- Sri Lanka
- Colombia
- Jordan
- VietNam
- Indonesia
- Israel
- Turkey
- Kuwait
- Austria
- Saudi Arabia
- Peru
- Canada
- Iran
- Syria
- ...

Control components

Solenoid valve

P17



CPV10 Series....18
CPV15 Series....24
3V1 Series....32
3V2 Series....34
3V2M Series....36
3V3 Series....38
6TV Series....40
3V100~300 Series....43
6D0500~200 Series....New....49
6V0500~300 Series....60
6HV Series....66
7V0500~300 Series....72
4V100~400 Series....78
4M100~300 Series....86
Manifold....88
ESV Series(ISO Standard)....90

Air valve

P105



6TA Series....106
3A100~300 Series....109
6A0500~300 Series....112
4A100~400 Series....116
Manifold....125
EAV Series(ISO Standard)....126

Manual control valve、Mechanical control valve and other valves

P134



4H Series Hand lever valve....135
3L,4L Series Push-pull valve....137
HSV Series Hand slide valve....139
4HV, 4HVL Series Hand lever valve....140
S3 Series Control valve....142
M3 Series Control valve....145
M5 Series Control valve....148
CM3 Series Control valve....151
ZM3 Series Control valve....156
3F,3FM, 4F Series Foot pedal valve....158
ASC Series Flow control valve....160
NRV Series Non-return valve....161
PCV Series Pilot non-return valve....162

Fluid control valve

P164



2WA Series Solenoid valve....New....165
2KWA Series Solenoid valve....New....169
2SA Series Solenoid valve....New....173
2KSA Series Solenoid valve....New....177
2S Series Solenoid valve....182
2KS Series Solenoid valve....186
2W Series Solenoid valve....190
2KW Series Solenoid valve....194
2L Series Solenoid valve....198
2KL Series Solenoid valve....202
2V Series Solenoid valve....207
2J Series Angle seat valve....209

Preparation unit

GA Series

P215



GAC100~600 Series F.R.L combination.... 216
GAFC100~600 Series FR.L combination....219
GAFR100~600 Series Filter & regulator....222
GAF100~600 Series Filter.... 225
GAR100~600 Series Regulator....228
GAL100~600 Series Lubricator....231
GT Series preparation unit.... 235
GA Series Gas distribution block....237

GP Series

P239



GPF200~400 Series Oil mist fister.... 240
GPR200~400 Series precision regulator.... 242
GPFR Series precision Filter-Regulator.... 246

Others

P249



SDR Series Regulator.... 250
DPS Series Digital Display Pressure Sensor....252
New DPH Series digital display pressure sensor(Analog output)...256
GS, GF, GU, GP, GV Series Pressure gauge....263
GVF Series Vacuum Filter....264
GVR Series Vacuum Regulator....266

Actuator

Standard cylinder (ISO standard) P272



SAI Series..... 272
TSAI Series..... 283
SGC Series..... 286

Roundline cylinder P292



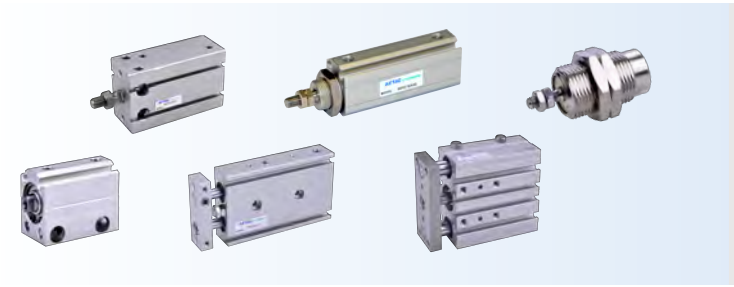
MI Series..... 292
TMIC Series..... 298
PB, PBR Series..... 301
MF Series..... 309
MG Series..... 315
MBL Series..... 321

Compact and Ultra-Compact cylinder P327



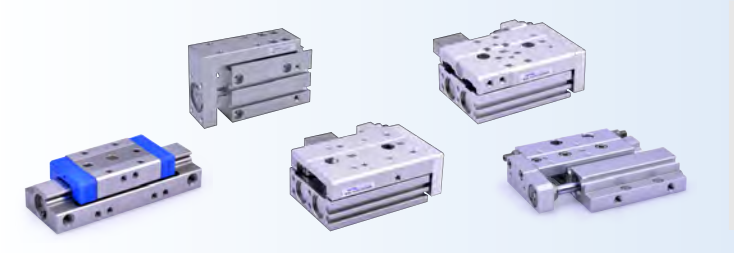
ACE Series..... 327
ACQ, TACQ Series..... 335
ACF Series..... 349

Multi-mounting cylinder, twin rod and tri-rod cylinder P357



MU Series..... 357
MD\MK Series..... 361
MPG Series..... 367
MPE Series..... 371
TR Series..... 375
TCL\TCM Series..... 379

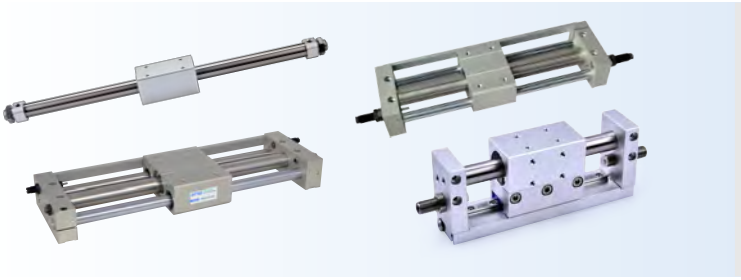
Slide table cylinder P385



HGS Series..... 385
HLF Series..... 398
HLH Series..... 404
HLQ Series..... 410
HLS Series..... 428

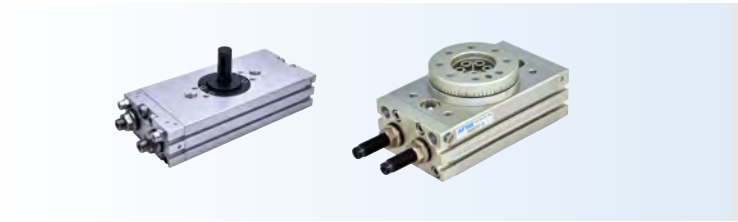
Actuator

Magnetic Coupled Rodless cylinder P448



RMS Series..... 448
RMT Series(ball bearing)..... 452
RMTL Series(exactitude guide)..... 457
RMH Series(Linear guide)..... 461

Rotary table cylinder P464



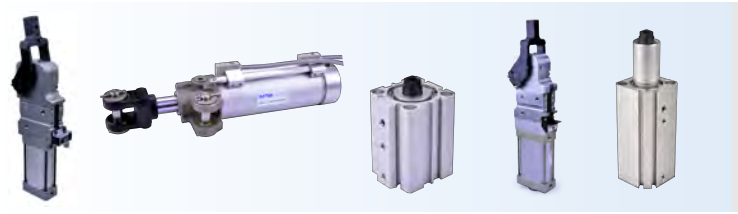
HRQ Series..... 464
HRS Series..... 472

Air gripper P475



HFD Series..... 475
HFCQ Series..... 485
HFKL Series..... 493
HFK, HFZ Series..... 501
HFKP Series..... New 511
HFP Series..... 517
HFY Series..... 521
HFR Series..... 526
HFC Series..... 529
HFT Series..... 536

Clamp cylinder P542



QDK Series..... 542
QCK Series..... 545
MCK Series..... 550
JCK Series..... 555
JSK Series..... 569

Cylinder joint accessory\Sensor switch and shock absorber P572



Cylinder joint accessory..... 572
CMS, DMS, EMS series sensor switch..... 575
ACA, ACJ series shock absorber..... 586

Accessories

Fitting, Speed controllers, Finger valve, Silencer(G Thread) P596



One—Touch fittings: tube_thread type..... 596
Metal one—Touch fittings.....603
One—Touch fittings: tube_tube type..... 606
Speed controllers..... 610
Finger valve..... 617
Silencers.....618

Polyurethane tubing P621



US98A, UE95A Series PU tubing.....621
UCS Series PU tubing..... 622
UN54D Series flame resistant tubing.....623

Fitting, Silencer, Speed controllers(PT Thread) P624



One—Touch fittings: tube_thread type..... 624
Metal one—Touch fittings.....630
Silencers.....634
Speed controllers..... 636

When designing, producing and using pneumatic system devices, one must be familiar with the requests and attentions of pneumatic components and pneumatic system. Use and operate system devices under the situation that necessary examinations have been conducted and the machinery framework, pneumatic control loop and the electrical control system of pneumatic system are ensured to be in safe condition.

For using our AirTAC products safely, the selection, operation and proper maintenance and management of the products are very important!

To guarantee to use safely, please make sure to operate according to this instruction completely!

Requests of Pneumatic System on Design-Selector and User

- Confirmation of product models and specifications prior to use The designer of pneumatic system and selector of pneumatic components shall consider the security and faults that may occur according to the requests on performance of pneumatic system and decide the specification of pneumatic components according to the latest product catalog and data. If it is necessary, they shall make relevant analysis and experiment. When the system is used in some newly developed industries or special industries, they should cooperate with the manufacturer of pneumatic components to carry out the selection.

Attention

- Special attention to the following conditions
  - Once the compressed air is wrongly used, it is dangerous. Thus the assembly, operation and maintenance of the pneumatic equipment shall be done by welltrained person with certain practical experience.
  - Before making sure that it is safe, prohibit to use pneumatic equipment or to disassemble pneumatic components from the equipment.

Danger

- After confirming that the above safe treatment has been conducted, cut off the power and air source, release the remaining air, and conduct maintenance or disassembly on the equipment.
- Before starting the equipment, make sure that the piston rod will not stick out rapidly.

Warning

Requests of Pneumatic System at Application Environment

- It is not allowed to use the system in the environment that includes corrosive gas, chemicals (such as organic solvent), seawater, water and steam or the place with the above substances.
- It is not allowed to use it in the place with explosive gas. (If necessary, consider adopting explosion-proof measure).
- It is not allowed to use it in the situation with oscillation and impact, or the component capacity to resist to oscillation and impact shall accord with the specification in this catalog.
- It is not allowed to use it in the place that has heat source around or is influenced by radiant heat. Otherwise, it is better to adopt measures to interdict the radiant heat.

Attention

- Add shields in the place with direct sunshine.
- In case the system is used in the place with large humidity and much dust or the place with water drop, oil drop, cutting oil and dispersing cooling fluid, proper protective measures shall be taken.
- The cylinder with magnet can not be used in the environment with strong magnetic field.

Danger

- In special temperature environment:
  High temperature environment: please use seals resisting high temperature Low temperature environment: moisture in loop may freeze and affect the action, at this moment, the moisture shall be eliminated to avoid freeze.

Warning

Attentions on the Design and Selection of Pneumatic System

- Use the product under the stipulated application condition and scope
  This catalogue stipulates the operation scope and condition. Please operate according to it. Any operation beyond the scope and condition may cause fault of and damage to the components, even result in danger and harm. Therefore, please contact our company in case that the products are used under the condition be yond the specified application condition and range, or any other fluid except the compressed air is used.

Attention

- Please design and install protective devices in the device part which may cause personal injury. The drive part of the cylinder may cause personal injury, please design and install protective devices to make sure people cannot directly contact the drive part when it works.
- Please effectively fasten the drive part of the cylinder to avoid the looseness of connective part. Especially under the circumstance with high action frequency or larger oscillation, effective fastness must be strengthened.
- Design necessary buffer loop or buffer devices
  When drive objects have higher speed or heavier weight, it is difficult to absorb impact solely by cylinder cushion. Therefore, buffer loop or external buffer must be designed or used to absorb the impact. Moreover, the rigidity of the machinery devices must be considered.

- When designing the system, the devices and personal safety shall be considered under the situation of power failure or air failure. For the clamping framework, if the pressure of system loop declines due to power failure and air failure, it will result in falling off of the components and further the harm on machinery devices and people, therefore, it is necessary to consider designing antifalling loop or devices.
- When designing the system, please consider the possibility that power source may produce faults Please adopt relevant measures to make sure that the drive devices such as air pressure and electrical power will not result in personal injury or damages of devices when the power source has faults.
- Please make a loop that can prevent it from flying out when designing system. When pneumatic system is debugged or overhauled after releasing the remaining pressure, the system starts to pressurize the piston at one side, and the driven object may be pushed in high speed. In this situation, please design loop or device which can prevent cylinder from rapidly flying out to avoid personal injury or machinery damage.

Danger

- When designing the system, please consider the action status in emergency stop situation.
  The design shall make sure that the action of cylinder will not cause personal injury or component and device damage under the situation that the system is in abnormal status such as emergency stop or power failure and that the safety devices and the machinery stop.

Warning

- When designing the system, please consider the actions during restarting after emergency stop and abnormal stop.
  The design shall make sure that the system will not cause personal injury or component damage when it restarts. In addition, for safely operation, please design return device.
- Intermediate stop
  When the cylinder stop in the middle position controlled by three-position closed center type valve, due to the compressibility of the air, it is hard to control the precise position of the cylinder. In addition, it can not avoid the air leakage of valve or cylinder absolutely, so the stop position is difficult to keep on for a long time. Therefore, please design necessary devices when a long-term stay in stop position is required.
- Synchronization of several cylinders in the system
  Due to the compressibility of the air, it is difficult to control several cylinders precisely by the same direction control valve. In this situation, special devices or loop shall be taken into consideration when designing.
- Please use the purified dry air in the air loop.
  Do not use the air with synthetic oil (including chemicals and organic solvent), salinity and corrosive gas to avoid component damage or poor action.

Attention for the Use of Lubricant for Pneumatic System

- Generally, the pneumatic components have been lubricated by grease when producing. Therefore, they can be used without additional lubrication for a long time.

Attention

- In case of using additional lubrication, please use turbine oil (without additive) ISO-VG32. Engine oil, spindle oil or other oils are not allowed to avoid soaking and expanding of the seals like NBR.
- If lubrication is stopped in the midway, the original lubricated grease in side may have been flushed off, then the lack of lubrication will cause poor action of elements and accelerate the abrasion of relevant parts. Therefore, please make sure to supply oil con stantly and an oil misting device with proper flow shall be equipped.

- When lubricating the compressed air, the oil mist quantity can not surpass 25mg/m .
- When the system runs normally, the oil mist quantity is set as 0.2-1 drop or 0.5-5 drops/1000L.

Warning

- The simple method for testing the oil mist quantity is: put one piece of white paper at the port of cylinder control valve which is the most far from lubricator, after a while, the white paper takes on lemon yellow. If there are oil drops falling down from the white paper, it indicates the excessive lubrication.

Requests of Pneumatic System to Compressed Air

- The compressed air ejected by air compressor can not be directly used in the air loop, since it has certain moisture, oil content and dust, which should be gaseous in the high temperature of about 140-170℃ through the compressor.
- Make sure to use compressed air that has been purified
  - ◆The filtration precision of common machinery and common pneumatic loop is ＜40μm;
  - ◆The filtration precision of logic elements, jet elements and air motors is ＜10μm;
  - ◆The filtration precision of food, medicine, electron, tobacco and liquor and pneumatic bearing is ＜5μm;

Attention

- The oil mist in compressed air may gather in the container of gas tank, pipeline and pneumatic system and forms combustibles which may cause harm to pneumatic system.
- The degenerative lubricant will make rubber, plastic and seals materials go bad and block the port, which may cause action failure of valve.
- Moisture and dust will cause erosion and rustiness of metal parts, abrade and trap the action parts, block the ports and lead to transmission abnormity of air pressure signal. In cold area, the freezing of moisture will cause freeze and frost-crack of pipeline and the failure of elements and components.
- It is not allowed to use the compressed air with harmful gas (such as acid and alkali).Acid and alkali will cause damage to internal parts of pneumatic components.

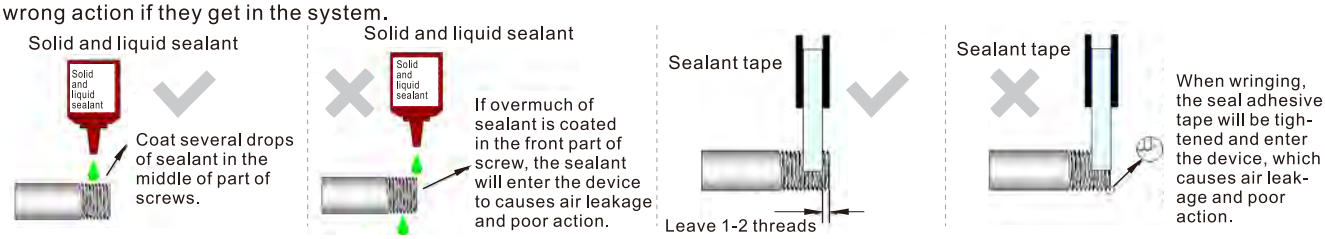
Danger

- The compressed air without the content of oxygenated oil of air compressor, tar and carbon shall be used.
- If the oxygenated oil, tar and carbon get into air pressure elements and become additive to them, the resistance of slipping parts will be increased and poor action will be caused. The mixture of oxy genated oil, tar and carbon with lubricant will abrade the slipping parts of air pressure elements.
- It is not suitable to use dry air in air pressure elements. Please use the elements corresponding to ultra-dry air. The ultra-dry compressed air will shorten the service life of air pressure elements.

Warning

Tubing and Installation Pneumatic System

- Please obey the following stipulations on the entwining method of sealant tape when connecting fitting and tube. Please start to entwine sealant tape from 1st-2nd screw thread at the front part of tube thread and on both of positive direction and inverse direction of the thread. If the sealant tape entwines out of the front part of the tubing thread, it will be torn into fragments which will cause faults and wrong action if they get in the system.



- When connecting the tubing, please fasten with proper torque to prevent air leakage and thread damage.

Table one：Reference value of Fasten torque　　Unit：N.m

Connective thread	M3	M5	1/8"	1/4"	3/8"	1/2"	3/4"	1"
Fasten torque	0.3~0.6	1.0~1.5	5.0~7.0	6~8	8~10	12~15	28~30	36~40

Attention

- Pay attention to the following matters when using nylon tube or polyurethane tube materials:
  - Please use flame retardant tube or metal tubing in the environment with high temperature spark;

Warning

The proof pressure is different according to the bore size of tube and the working temperature

Table two：Reference data of maximum proof pressure　　(Unit：kgf/cm^2)

OD/ID(mm)		4/2.5	5/3	6/4	8/6	10/7.5	12/9	14/11	16/12	22/17	28/22
Maximum pressure(−40℃~20℃)	Nylon tube	28	31	25	19	24	18	15	18	15	15
	PU tube	10	11	9	9	9	9	-	-	-	-
Minimum bending radius (mm)	Nylon tube	25	2	30	50	60	75	90	95	125	160
	PU tube	6	7	9	16	17	25	-	-	-	-
Using in different working temperatures,the maximum proof pressure shall multiply the following coefficient.		+30℃		+40℃		+50℃		+60℃		+70℃	
		0.83		0.72		0.64		0.57		0.47	

- The pipeline shall be cleaned with compressed air prior to connecting the tubing and fittings to the pneumatic components.

Convert American system and British system unit to international (SI) unit

Length unit

American and british system		Conversion rates	International
1 in	=	25.4	mm
1 ft	=	0.3048	m
1 mile	=	1609.3	m
1 micron	=	10^{-6}	m

Quality unit

American and british system		Conversion rates	International
1 lb	=	453.6	g
1 cwt	=	50.8	kg
1 ton(imp)	=	1016	kg
1 ton(us)	=	907.2	kg
1 tonne	=	1000	kg

Moment unit

American and british system		Conversion rates	International
1 inlb	=	0.113	Nm
1 ft lb	=	1.356	Nm
1 kgm	=	9.807	Nm
1 ft poundal	=	0.0421	Nm

Temperature unit

American and british system		International
(°F-32) × 5/9	=	℃
K-273.15	=	℃

Area unit

American and british system		Conversion rates	International
1 in^2	=	6.45	cm^2
1 ft^2	=	0.093	m^2

Pressure unit

American and british system		Conversion rates	International
1 psi	=	6.89	kPa
1 kgf/cm^2	=	98.07	kPa
1 bar	=	100	kPa
1 bar	=	14.5	psi
1 atmosphere	=	98.1	kPa
1" (STANDARD)	=	101.33	kPa
1 cm water	=	97.89	Pa
1 in water	=	248.64	Pa
1 mm mercury	=	133.3	Pa
1 in mercury	=	3.39	kPa
1 Torr	=	133.3	Pa
1 ft water	=	0.0298	bar
1 bar	=	33.33	ft water

Unit of work and energy

American and british system		Conversion rates	International
1 lbft	=	1.356	J
1 Nm	=	1	J
1 kgm	=	9.807	J
1 kW/hr	=	3.6	MJ

Volume unit

American and british system		Conversion rates	International
1 litre	=	0.001	m^3
1 cu.ft.	=	0.0283	m^3
1 cu.in.	=	16.39	cm^3
1 gal(imp)	=	4.546	L
1 gal(us)	=	3.79	L
1 fluid oz.(imp)	=	28.41	mL
1 fluid oz.(us)	=	29.57	mL

Force unit

American and british system		Conversion rates	International
1 lbf	=	4.45	N
1 kgf	=	9.81	N
1 kp(kilopond)	=	9.81	N
1 poundal	=	138.3	mN
1 ton force	=	9.964	kM

Power unit

American and british system		Conversion rates	International
1 lbft/sec	=	1.356	W
1 kgm/sec	=	9.807	W
1 Nm/sec	=	1	W
1 Joule/sec	=	1	W
1 H.P.(imp)	=	745.7	W

Flow unit

Cv value	=	It's the constant value of flow, when the water flow(US gal/min)is under 60°F, the D–value of pressure between intake and outlet is 1psi (Cv × 1000 ≈ L/min)
kv value	=	It's the constant value of flow, when the water flow(L/min)is under 20℃, the D–value of pressure between intake and outlet is $1kgf/cm^2$
KV value	=	It's the constant value of flow, when the water flow(m^3/min)is under 20℃, the D–value of pressure between intake and outlet is $1kgf/cm^2$
S.T.P	=	Standard temperature and pressure (0℃ and 101.3kPa absolute pressure)
N.T.P	=	Normal temperature and pressure (20℃ and 101.3kPa absolute pressure)
M.S.C	=	Standard of metric syctem (15℃ and 101.3kPa absolute pressure)
ANR	=	Temperature: 20℃ and relative humidity: 65%

Unit compilation

Unit full name	Abbreviation
Pascal	Pa
Newton	N
metre	m
litre	L
Watt	W
Newton metre	Nm
Jonle	J
Megajoule	MJ
Kelvin	K

Equivalence conversion

1 psi	=6.895	kPa	=0.07	kg/cm^2	=0.06895	bar	=0.0703	atm
1 standard atmosphere	=14.7	psi	=101.3	kPa	=1.01325	bar		
1 kg/cm^2	=98.07	kPa	=14.22	psi	=28.96	ins mercury		
1 ft lb	=0.13826	kgm	=1.356	Nm				
1 L	=1000	cm^3	=1.7598	pint	$=10^6$	mm^3		
1 tonne	=1000	kg	=0.984	ton	=2205	lb		
1 m^3	$=10^6$	cm^3						
1 cu ft/min.	=28.3	l/min	=0.0283	m^3/min				
1 Pa	=1	N/m^2						

Control components

To make system realize the best performance, the control components must be precise and accurate. Component with good performance is the precondition to realize precise and exact action. AirTAC has many types of control components for your choice:
1. Direction control valve—Solenoid valve. 2. Direction control valve—Air valve. 3. Direction control valve—manual control, mechanical control and other valves. 4. Fluid control valve—two way solenoid valve, angle seat valve.

Solenoid valve

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The selection of valves

1. Form selection
   According to application requests and conditions, choose the form of valves: direct acting or pilot.
2. Selection of control mode
   According to the control requests upon application, choose the control mode: air, electrical, manual or mechanical control.
3. Selection of function of valves
   The function of valves is selected upon the working requirements: two-position two-way, two-position three-way, two-position five-way and three-position five-way; or middle-sealed, middle leakage and midway pressurizing type, etc.
4. Selection of model and specification
   Select the model and specification of valves upon the flow requirements of application.
5. Selection of installation way
   The installation way is selected upon the installation requirement of valves: pipe-joint type or containerized type.
6. Selection of electric parameters
   Select the electric model of valves upon actual application requirement: voltage, power and grommet type.

Attentions on Design and Selection

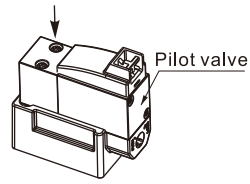
1. Correctly understand and apply midway stop function of reversing valve In the place with three-position middle-sealed or middle-pressure reversing valves to carry out the midway stop of piston in cylinder (double axes or adjustable double axes), as the air has compressibility, it is difficult to have correct and precise position stop. In addition, it is not available to make sure that leakage will not occur in the valves and cylinders, thus it cannot stay in the position of midway stop for a long time. Other ways shall be taken to maintain a long-term stop.
2. Pay attention to the influences of back pressure caused by the consolidation of valves on the system; In the place with consolidation of valves, pay attention to the wrong action of actuators caused by back pressure; especially pay attention to the place using three-position midway leakage reversing valves and the place driving single acting cylinder. Individual intake and exhaust must be carried out in the place that-ay have wrong action.
3. Fully consider the release of remaining pressure between reversing valves and cylinders; Considering the system examination need, the function of releasing remaining pressure shall be set up. Especially in the place using three-position midway leakage reversing valves, the remaining pressure between reversing valves and cylinders must be eliminated.
4. The temporary power supply and air supply of dual controlled valves. Routine dual electric (air) control valves have memory function (except for three-position valves), in the place with temporary power supply, the duration of power supply shall be above 0.1s to make sure that the valve has changed its direction.
5. Application of lowest pressure for air supply. The requirement of lowest application pressure shall be considered for the internal pilot-oriented valves, while direct drive valves or external pilot-oriented valves are not limited by lowest application pressure.

Attention

6. Use in vacuum condition
   If the valves are used in the place with vacuum switching, measures to prevent the inhalation of dust from suction cup shall be adopted. Moreover, direct drive or external pilot-oriented reversing valves shall be selected in vacuum condition.

Warning

To maintain normal and good working state of pneumatic system, the following maintenance work is necessary in actual use:
1. Examine application pressure: regularly examine whether the pressure is normal in work;
2. Examine the filter situation of the compressed air: regularly examine whether filters and oil misting device work normally and whether their pollution situation is normal;
3. Examine whether system pipeline leaks;
4. Examine whether solenoid valves act slowly and whether the exhaust-situation is normal;
5. Examine whether the adjustment of oil quantity of oil misting device is normal;
6. Please read relative content in this manual about the requirements of solenoid valves to air quality and application environment, the pipeline connection of solenoid valves and the lubrication of solenoid valves;
7. The switching action of valves shall be guaranteed regularly under low-frequency application, at least once switching shall be conducted for each month.
8. About manual operation:
   8.1) Ensure no danger, prior to activating manual override;
   8.2) For push button option: Activate by push the button in the direction shown(Right drawing);
   8.3) For slotted option:
   Activate by push the button in the direction shown.
   With correct size screw driver: Please turn to lock gently(Torque: 0.1N.m).



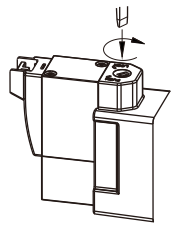
Attention



Normal position



Lucked position




Vertical plug wire


Parallel plug wire

8.4) Vertical plug type and parallel plug type are the same as plug, please insert wire line as up drawing by practicality.

The Application of Fluid Control Valves

Attention

Pipeline:

1. Completely clean pipeline to eliminate miscellaneous chip, oil pollution and dust.
2. Miscellaneous chip of whorl and sealed materials shall be prevented from entering the pipeline when installing pipeline connection (when adopting whorl sealant tape, at least one section of thread shall be preserved).
3. Pay attention to connective pipe direction (IN, OUT), IN (entrance) or other marks in each interface.
4. Never make the coils bear outside force, and only use spanner to clinch the installation position in pipeline when revolving into pipeline.
5. The pipeline shall not connect the ground; otherwise galvanic corrosion will be caused.
6. Install overflow valves in circuit to prevent the fluid accumulation in pipeline.

Wiring:

1. The minimum area of section of the wire is 0.5mm^2.
2. Electrical circuit shall be adopted to prevent the vibration in connective points.
3. Associate overvoltage suppressor and overvoltage suppressor in coils when electrical components are easily damaged by overvoltage.
4. The allowable voltage scope is within -10% ~ +10% of the rated voltage. If a better response of DC power is required, the voltage scope shall be within ±5% of the rated voltage and voltage drop can be measured at the connective points between the leading wires and coils.
5. When it is AC power, the backswing voltage is 20% or above of the rated voltage. When it is DC power, it is 2% or above of the rated voltage.

Installation:

1. When installing, the coils shall be made upward. The inlet port and outlet port should be kept horizontal.
2. Never heat coils and insulation components, otherwise they will burn the coils. Anti-freezing heater can only be used in pipeline and valves body.
3. Never install in the place with violent vibration. If it cannot be avoided, the arm length shall be regulated to the minimum to avoid resonance.

Storage:

1. If the water fluid will be kept for a long time after using, the moisture shall be completely eliminated to avoid corrosion in rubber part.

Long-term open or stop of the valves:

1. The frequency of switching valves depends on the type and performance of the fluid. When using purified water as standard, the valves shall be switched at least once every ten days. If the period is longer than ten days, system test devices shall be installed. Valves shall not be used in the following working environment such as emergent circuit breaker.

Temperature of the fluid:

1. Refer to temperature scope of each type and the influences of the factors such as sealed materials, coil insulation, power and air supply. For application in special circumstance, please contact the supplier.

Applied fluid:

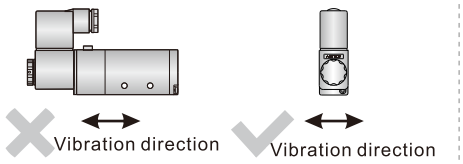
1. Fluid grade
   When selecting the valves type, make sure that the fluid is adapted to the materials of valves. Generally speaking, the maximum viscosity of fluid is 50cst. Please contact the supplier for specific data. <Reference> Standard materials Valve body: brass or BC6, seal: NBR, coil: insulated B step
   The above valves are used in water, air and oil medium. If they are used in other materials, please refer to “option list” and “adaptable fluid sheet”. There will be a small difference in types.
2. Fluid quality
   The impurity in fluid will accelerate the abrasion of valve cup and iron core. Granule that adheres to the iron core and slipping plane will decrease the function of valves and cause invalidity of seal function. Filter shall be installed in the front of the entrance of valves to avoid the above problems. Net limit of 80-100 is normally recommended.
3. Lubrication
   Lubrication is not necessary for this valve, but lubricated air will extend its life.
4. If the valves are used in inflammable oil and air, the leakage at the entrance and exit shall be prevented.
5. If impurity or oil is not allowed in the fluid, the valves without theneed of lubrication shall be applied.
6. In case the application condition approaches the limit of valves, the parameter of the option and fluid may be different from that of routine application. Make proper choice according to actual use situation.

Installation of Direction Control Valve

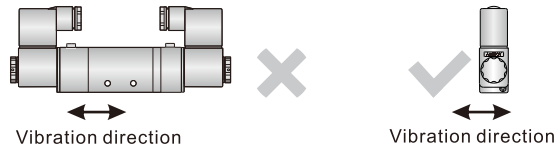
Although direction valves can be installed in any direction, due to the vibration of devices or flowing of liquids such as condensate and oil to the coil part of solenoid valve, poor action of direction valve will be caused.
Please take care during installation.

1. The influence of vibration on sliding column in solenoid valve shall be avoided. During installation, the vibration direction may form a right angle to the action direction (axial direction) of sliding column in solenoid valve to avoid the influence of vibration to sliding column in solenoid valve.

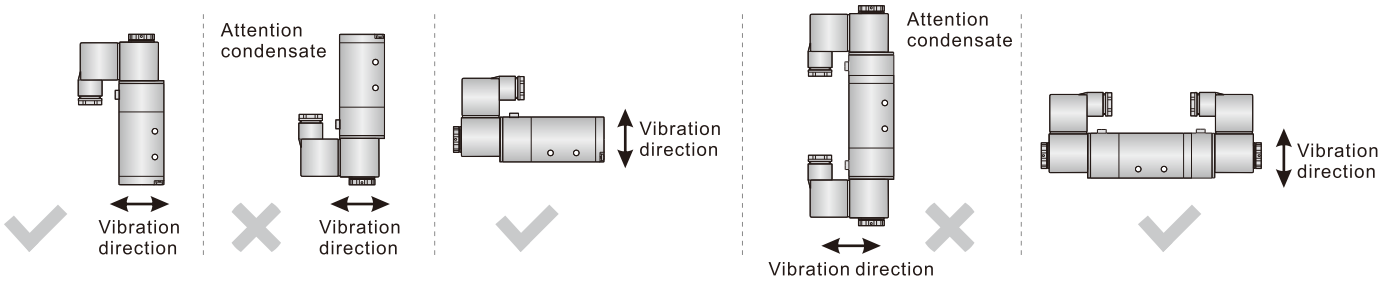
☆Single electric control solenoid valve
○The coil shall be installed upward or horizontally.



☆Dual electric control solenoid valve
○The coil shall be installed horizontally



2. To prevent condensate and oil from flowing into coil in solenoid valve, you'd better install the coil upward or horizontally. Installation legend:



3. Blow away the miscellanies such as dust, oil pollution and chips in the pipeline to avoid influencing the action and damage of valves.
4. The intake of internal pilot-oriented solenoid valve cannot throttle to prevent wrong action caused by too large pressure drop when switching the direction.
5. Install reversing valves closely to cylinder as possible as you can to reduce air consumption and achieve a quick response.
6. Please make sure completely insert the tubing and use it after confirming that the tubing cannot be pulled out.
7. Although our product coils are set as 100% ED, if the product is energized for a long time, overheating will be caused, insulation will be deteriorated and energy will be lost. Solenoid valve with memory function shall be considered to shorten power supply time and extend the service life of coils and save energy consumption under the situation of long-timeconstant power supply.
8. Manual button is not allowed to be used when solenoid valve is energized.

9. The application voltage of solenoid valve shall be kept within the specified voltage range to avoid causing poor action of valves or burning coils.
10. As the solenoid valve is installed in the control tank, pay attention to the ventilation and heat dispersing when it is energized for a long time to guarantee that the temperature inside of the tank is within the temperature range for the safe application of solenoid valve;
11. Interlock protection control circuit shall be designed to pre vent the two coils of the dual electrical control solenoid valve from being energized at the same time.
12. The blowhole in internal control piston of main valve and exhaust outlet in pilot-oriented valve cannot be jammed or un smooth.
13. As solenoid valve in DC specification has polar indicator lights, pay attention to the positive and negative poles when wiring. Connect "1" to the positive pole, and "2" to the negative pole. If connection is inversed, the indicator lights will not shine but valves can still work.

In addition: refer to page 8 in this manual for the content on the lubrication, tubing and application environment of solenoid valve. **Danger**

Compendium of Solenoid valve

P18	Product feature	Photo	P24	Product feature	Photo
CPV10 Series Solenoid valve	•Can be used monomer or in series •Plug electrical connector •Manifold is optional •3/2 Way		CPV15 Series Solenoid valve	•Can be used monomer or in series •Plug electrical connector •Manifold is optional •3/2 Way	
P32	Product feature	Photo	**P34**	Product feature	Photo
3V1 Series Solenoid valve	•Coaxial blanking structure and direct acting(NC) •Can be used in series •Affiliated manual devices •3/2 Way		3V2 Series Solenoid valve	•Coaxial blanking structure and direct acting •NC, NO are optional •Affiliated manual devices •3/2 Way •Can be used under vacuum condition	
P36	Product feature	Photo	**P38**	Product feature	Photo
3V2M Series Solenoid valve	•Coaxial blanking structure and direct acting •NC, NO are optional •Affiliated manual devices •3/2 Way •Be used with manifold •Centralized exhaust and separated exhaust are optional		3V3 Series Solenoid valve	•Coaxial blanking structure and direct acting •NC, NO are optional •Affiliated manual devices •3/2 Way •Can be used under vacuum condition	
P40	Product feature	Photo	**P43**	Product feature	Photo
6TV0500~300 Series Solenoid valve	•Sliding column structure •Double control and single control are optional •NO and NC are optional for single control •Manifold is optional •3/2 Way		3V100~300 Series Solenoid valve	•Sliding column structure •Double control and single control are optional •NO and NC are optional for single control •Manifold is optional •3/2 Way	
P49	Product feature	Photo	**P60**	Product feature	Photo
6D0500~200 Series Solenoid valve	•Sliding column structure •Horizontal and vertical insertion can freely switch •Push-in fittings options •Manifold is optional •5/2 Way, 5/3 Way		6V0500~300 Series Solenoid valve	•Sliding column structure •Horizontal and vertical insertion can freely switch •Port threads and push-in fittings options •Manifold is optional •5/2 Way, 5/3 Way	
P66	Product feature	Photo	**P72**	Product feature	Photo
6HV0500~300 Series Solenoid valve	•Sliding column structure •Horizontal and vertical insertion can freely switch •Port threads options •DIN guide is optional •5/2 Way, 5/3 Way		7V0500~300 Series Solenoid valve	•Sliding column structure •Horizontal and vertical insertion can freely switch •Port threads and push-in fittings options •Manifold is optional •5/2 Way, 5/3 Way	
P78	Product feature	Photo	**P86**	Product feature	Photo
4V100~400 Series Solenoid valve	•Sliding column structure •Double control and single control are optional •Closed center, exhaust center and pressure center are available for 5/3 Way •Manifold is optional •5/2 Way, 5/3 Way		4M100~300 Series Solenoid valve	•Coaxial blanking structure •5/2 Way •Double control and single control are optional •Closed center, exhaust center and pressure center are available for 5/3 Way	
P88	Product feature	Photo	**P90**	Product feature	Photo
Manifold	•Can integrate valves of the same series to form valve group •Unified air intake and exhaust and unified wiring •Flexible combination and strong expansion capability		ESV Series Solenoid valve (ISO Standard)	•Sliding column structure •Double control and single control are optional •5/2 Way, 5/3 Way •Closed center, exhaust center and pressure center are available for 5/3 Way •The installation size conforms to ISO5599/1 standard	

Installation and Application

1. Before installing, be sure the valve hasn't been damaged via transportation.
2. It's suggested to use the medium lubricated by 40μm filter element. Be aware of the flow direction and port size.
3. Please notice whether the installation condition accords with technical requirements (such as "voltage", "actuation frequency", "working pressure" and " scope of application temperature"), then the equipment can be installed and used.
4. Notice the flow direction of air during installation, P is the air intake, A (B) is the work port and R (S) is the exhaust outlet.
5. Take measure to avoid vibration and frozen.
6. Before using the fittings and tubes make sure they are clean. When connecting to fittings, be sure the PTFE Thread Seal Tape is used correctly.
7. To keep the dust away, please use the silencer for the exhaust ports. Never forget to install dirt-proof boot in air intake and outlet during dismounting.
8. After installing, please use the manual override to test valve first.

Integrated solenoid valve (3/2 way)

CPV10S Series



Specification

Model		CPV10SB	CPV10SF
Integrated solenoid valve	Fluid	Air(to be filtered by 40μm filter element)	
	Acting	Direct acting	
	Number of stations	4~24 stations	
	Electrical entry	Terminal, 25pin D-Sub	
	Port size	P/R: M5 A: Φ3.2/ Φ4(Push in fittings)	
	The type of Inlet and exhaust	Centralized inlet and exhaust	
	Operating pressure	0~0.8MPa(0~114psi)	
	Proof pressure	1.2MPa(175psi)	
	Temperature	-20~70℃	
Coil	Protection	Dustproof	
	Standard voltage	DC24V	DC12V
	Scope of voltage	DC±10%	
	Temperature classification	F Class	
	Power consumption	DC: 0.9W	

Product feature

1. Integrated installation of air inlet/exhaust and power socket(25pin D-Sub) to save space and reduce additional accessories.
2. Equipped with manual override for adjustment and troubleshooting.
3. Low starting voltage and long service life.

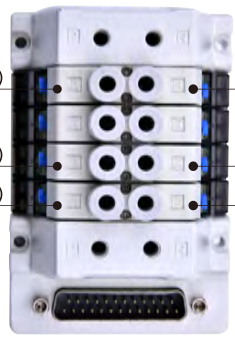
Ordering code

CPV10S J04 B 12F

① ② ③ ④

①Model	②Port size	③Voltage	④Number of stations [Note]
CPV10S: CPV10S series integrated solenoid valve	J03: Φ3.2mm J04: Φ4.0mm	B: DC24V F: DC12V	4F: 4 stations 6F: 6 stations 8F: 8 stations ..... 24F: 24 stations

[Note] About stations as follow:



23F: The 12th mini solenoid valve on the left(12A)

.....

3F: The second mini solenoid valve on the left(2A)

1F: The first mini solenoid valve on the left(1A)

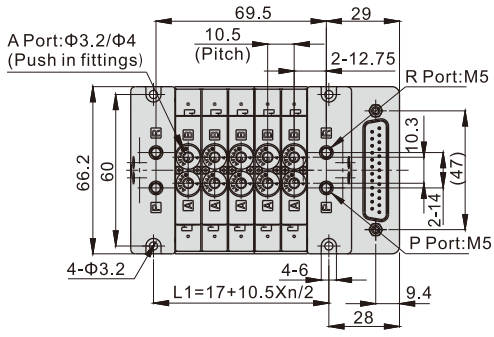
24F: The 12th mini solenoid valve on the right(12B)

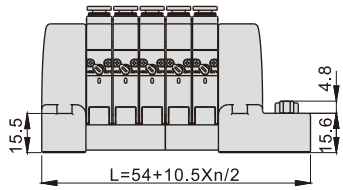
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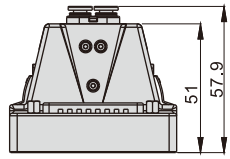
4F: The second mini solenoid valve on the right(2B)

2F: The first mini solenoid valve on the right(1B)

Dimensions





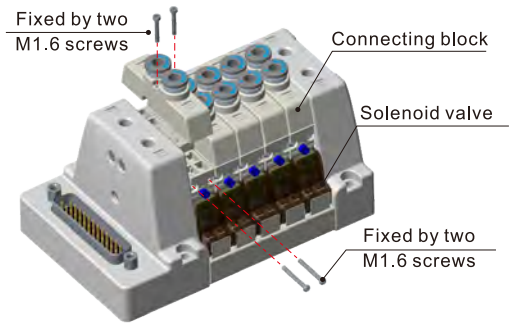


Item\Number of stations	4F	6F	8F	10F	12F	14F	16F	18F	20F	22F	24F
L	75	85.5	96	106.5	117	127.5	138	148.5	159	169.5	180
L1	38	48.5	59	69.5	80	90.5	101	111.5	122	132.5	143

Installation and Application

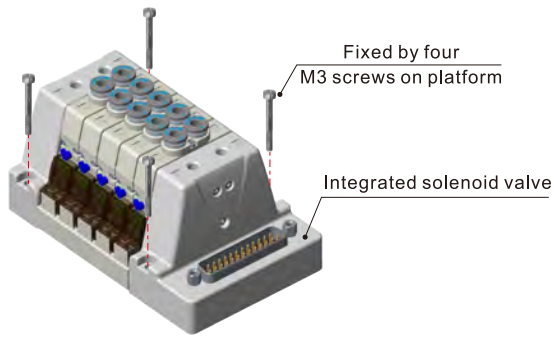
Assembly of connecting block and micro-solenoid valve

Mount micro-solenoid valve and connecting block with torque of 0.1~0.15N.m by two M1.6 screws as following.

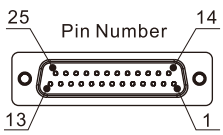


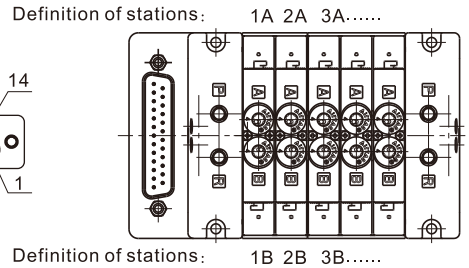
Mounting of integrated solenoid valve

Mount integrated solenoid valve by four M3 screws on platform as following.



Pin Assignment





Note: Gauge number of cable connecting to D-Sub pin No.13(COM) must be≤22AWG

Pin NO.	Polarity -COM	Polarity +COM	Control target	Pin NO.	Polarity -COM	Polarity +COM	Control target
1	(+)	(-)	1A	14	(+)	(-)	1B
2	(+)	(-)	2A	15	(+)	(-)	2B
3	(+)	(-)	3A	16	(+)	(-)	3B
4	(+)	(-)	4A	17	(+)	(-)	4B
5	(+)	(-)	5A	18	(+)	(-)	5B
6	(+)	(-)	6A	19	(+)	(-)	6B
7	(+)	(-)	7A	20	(+)	(-)	7B
8	(+)	(-)	8A	21	(+)	(-)	8B
9	(+)	(-)	9A	22	(+)	(-)	9B
10	(+)	(-)	10A	23	(+)	(-)	10B
11	(+)	(-)	11A	24	(+)	(-)	11B
12	(+)	(-)	12A	25	(+)	(-)	12B
13	(-)	(+)	COM				

Micro-solenoid valve(3/2 way)

CPV10 Series



Specification

Model		CPV10
Fluid		Air(to be filtered by 40 μ m filter element)
Acting		Direct acting
Nominal diameter		Φ0.55mm
Effective area		P to A:0.25mm²(Cv=0.014)； A to R:0.35mm²(Cv=0.02)
Valve type		3 /2 way
Weight	micro-solenoid valve	15g
	Terminal wire	050: 4.6g 200: 21.4g
	Screw(2pcs)	0.46g
Operating pressure		0~0.8MPa(0~114psi)
Proof pressure		1.2MPa(175psi)
Temperature		-20~70℃
Standard voltage		AC220V AC110V DC24V DC12V
Scope of voltage		DC±10%; AC+15%~-10%
Protection		Dustproof
Temperature classification		F Class
Power consumption		DC: 0.9W; AC: 1.5VA
Electrical entry		Terminal
Activating time		on<7ms; off<7ms

Symbol



Product feature

1. With anti-surge component can avoid the damage of solenoid valve.
2. Multi-direction installation and polarless circuit design.
3. AC voltage models possess a built-in full wave rectifier circuit to reduce the noise effectively.
4. Various of standard voltages: AC220V, AC110V, DC24V, DC12V.
5. Low starting voltage and long service life.
6. Equipped with a push-turn locking manual override for adjustment and troubleshooting.

Ordering code

Ordering code of valve

CPV 10 B P-050

1 2 3 4 5

① Model	② Width of body	③Voltage	④Code of manual override	⑤Wire length [Note1]
CPV: CPV series Micro-solenoid valve	10: 10mm	A: AC220V B: DC24V C: AC110V F: DC12V	P: With manual override	050: 0.5m 200: 2.0m

[Note1] Contain two M1.6 screws.

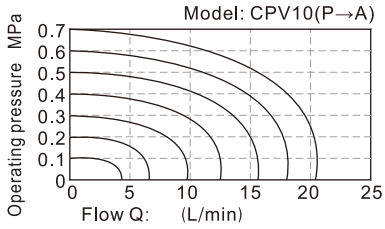
Ordering code of terminal wire

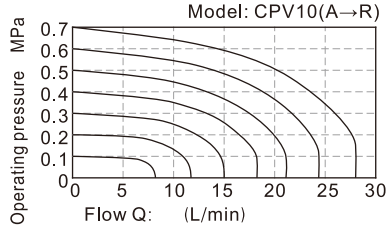
CPV T 050

1 2 3

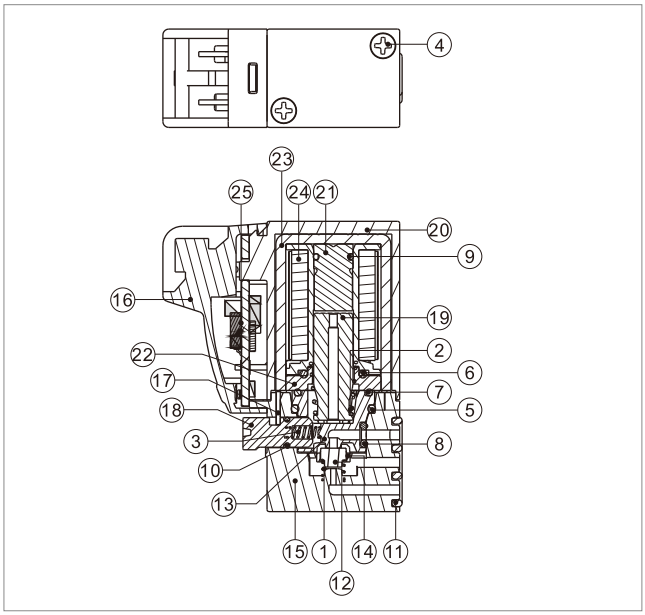
① Model	②Terminal wire	③Wire length
CPV: CPV series Micro-solenoid valve	T: Terminal wire	050: 0.5m 200: 2.0m

Flow chart



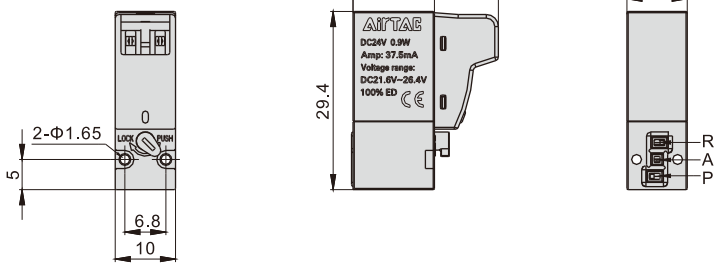


Inner structure



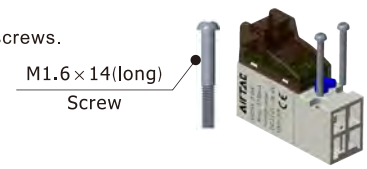
No.	Item	Material	No.	Item	Material
1	Spring	Stainless steel	14	Mandril	Resin
2	Spring	Stainless steel	15	Body	Resin
3	Spring	Stainless steel	16	Connector shell	Resin
4	Screw	Carbon steel	17	Manual pin plate	Stainless steel
5	O-ring	NBR	18	Manual pin	Brass
6	O-ring	NBR	19	Armature	Stainless steel
7	O-ring	NBR	20	Cover	Resin
8	O-ring	Gasket	21	Electromagnet	Stainless steel
9	O-ring	NBR	22	Plate	Carbon steel
10	O-ring	NBR	23	U shape bracket	Carbon steel
11	Gasket	NBR	24	Coil	
12	Gasket	NBR	25	PCB assembly	
13	Crater	Resin			

Dimensions



Installation and Application

1. Micro-solenoid valve assembly:
   Fastened with torque of 0.1~0.15N.m by two M1.6X14L screws.
2. Wiring instruction:
   Multi-direction installation and polar less circuit design.
   Note: The terminal wire is non-polarity.
3. Prevent to connect AC coils in series with other devices.





Vertically insert
(Wire is vertical to valve)



Horizontally insert
(Wire is parallel to valve)



Specification

Model	CPV10MJ□□2F	CPV10MJ□□3F	.....	CPV10MJ□□20F
Fluid	Air(to be filtered by 40 μ m filter element)			
Temperature	-20~70℃			
Port size	P/R: M5 A: Φ3.2 / Φ4(Push in fittings)			
Applicable valves	CPV10 series micro-solenoid valve			

Product feature

1. Integrated installation saves space and reduces additional accessories.
2. Centralized air intake, exhaust, and wiring for quick air circuit checking.
3. Fixible combination and expandability for various applications. Blank plates are optional.

Ordering code

Ordering code of manifold

CPV10M J03 – 20F

① ② ③

① Model	② Port size	③Number of stations
CPV10M: CPV10 series Manifold	J03: Φ3.2 J04: Φ4	2F: 2 stations 4F: 4 stations 6F: 6 stations ..... 20F: 20 stations

Ordering code of blank plate

P–CPV10M–R2

① ②

①Model	②Code
CPV10M: CPV10 series Manifold	R2: Blank plate for manifold

[Note] Blank plate kits contains blank plate, gasket and screws.

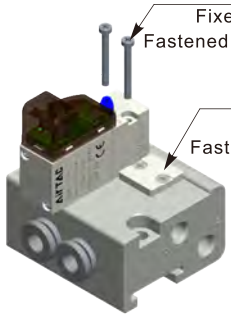


Installation and Application

Assembly of micro-solenoid valve (blank plate) and manifold

Solenoid valve:
Fixed by two M1.6 screws
Fastened with torque of 0.1~0.15N.m

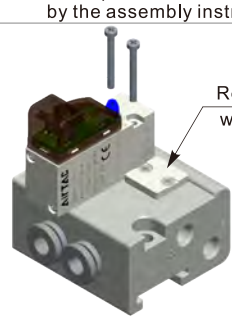
Blank plate:
Fixed by two M1.6 screws
Fastened with torque of 0.1~0.15N.m



Expansion of micro-solenoid valve

Remove blank plate and install solenoid valve by the assembly instruction.

Replace blank plate with solenoid valve



A port tubing

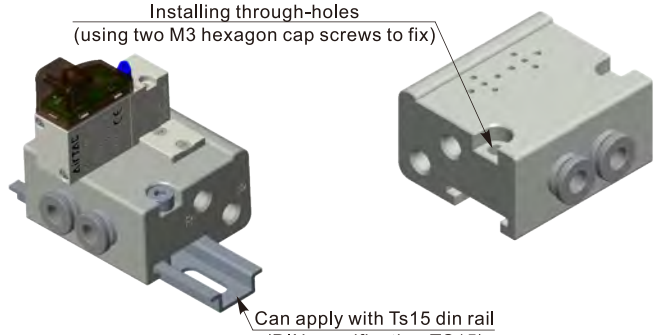
A port is at the side of manifold, port size is "Φ3.2 / Φ4"



A(with push in fittings)
(Φ1/8" / Φ5/32" tube)

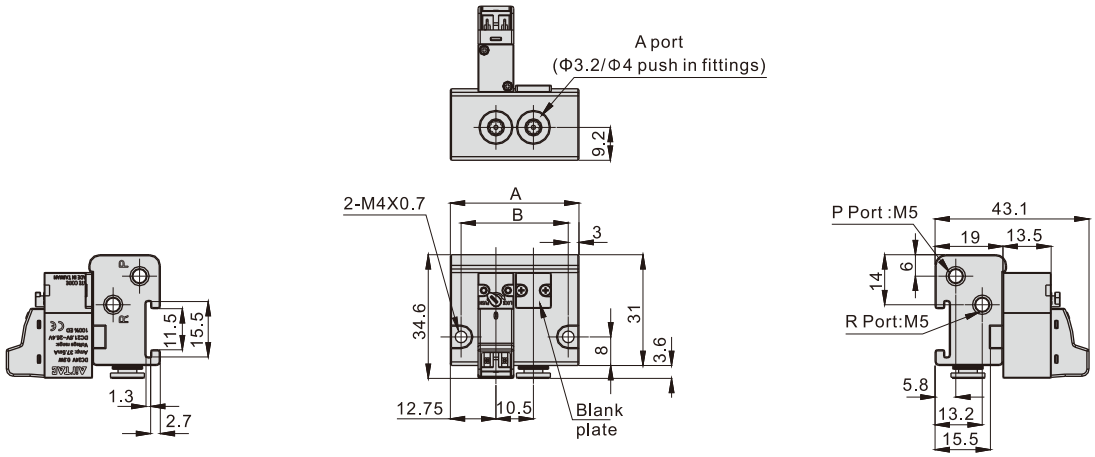
Manifold mounting

Installing through-holes
(using two M3 hexagon cap screws to fix)



Can apply with Ts15 din rail
(DIN specification:TS15)

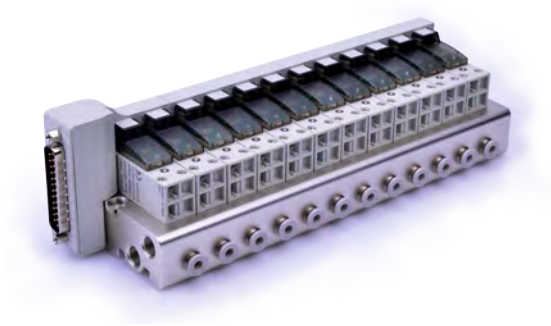
Dimensions



Item\Number of stations	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
A	36	46.5	57	67.5	78	88.5	99	109.5	120	130.5	141	151.5	162	172.5	183	193.5	204	214.5	225
B	30	40.5	51	61.5	72	82.5	93	103.5	114	124.5	135	145.5	156	166.5	177	187.5	198	208.5	219

Integrated solenoid valve (3/2 way)

CPV15S Series



Specification

Model			CPV15SB	CPV15SF
Integrated solenoid valve	Fluid		Air(to be filtered by 40μm filter element)	
	Acting		Direct acting	
	Number of stations		2 stations ~20 stations, only available in even stations	
	Electrical entry		Terminal, 25pin D-Sub	
	Port size	P/R ports	1/8" [Note1]	
		A Port	Φ4mm(Push in fittings)	
	The type of Inlet and exhaust		Centralized inlet and exhaust	
	Operating pressure		0.15~0.8MPa(21~114psi)	
	Proof pressure		1.2MPa(175psi)	
	Temperature		-20~70℃	
Coil	Protection		Dustproof	
	Standard voltage		DC24V	DC12V
	Scope of voltage		DC±10%	
	Temperature classification		F Class	
	Power consumption		DC: 1.6W	

[Note1] G thread is available.

Product feature

1. Integrated installation centralizes air intake, exhaust and power(25pin D-Sub)to save space and reduce additional accessories.
2. Flexible combination and expandability for various applications. Blank plates are optional.
3. Equipped with manual override for quick air circuit checking.
4. Low starting voltage and long service life.

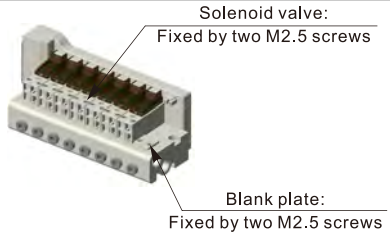
Ordering code

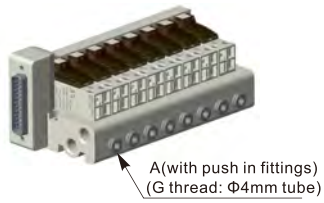
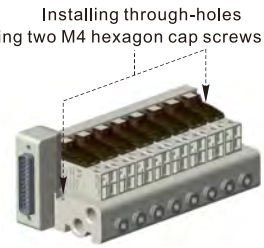
CPV15S B 20F G

(1) (2) (3) (4)

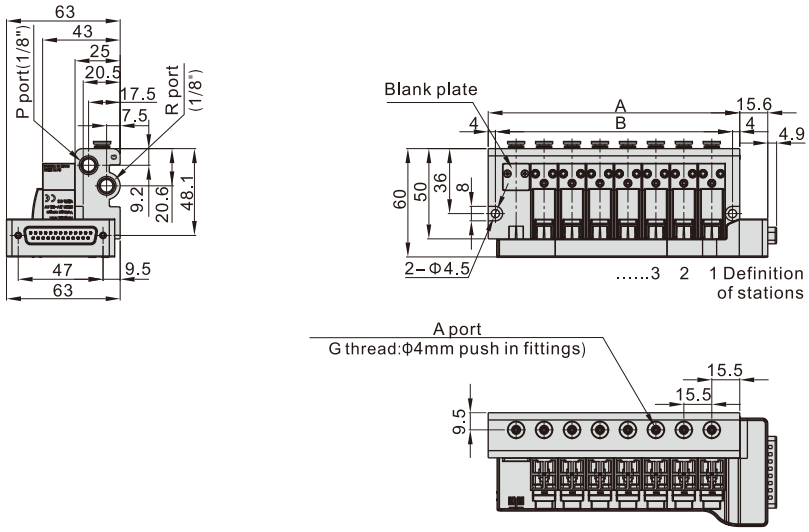
①Model	②Voltage	③Number of stations	④Thread type
CPV15S: CPV15S series integrated solenoid valve	B: DC24V F: DC12V	2F: 2 stations 3F: 3stations 4F: 4stations 20F: 20stations	G: G Thread

Installation and Application

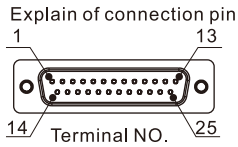
Assembly of micro-solenoid valve (blank plate) and manifold	Expansion of micro-solenoid valve
Mount micro-solenoid valve and manifold by two M2.5 screws as following . Mount blank plate and manifold by two M2.5 countersunk screws as following .	Remove blank plate and install solenoid valve by the assembly instruction.
	

A port tubing	Manifold mounting
A port is at the side of manifold with push in fittings.	Both sides of manifold attach two installing through-holes, using two M4 hexagon cap screws to fix.
	

Dimensions



Item\Number of stations	2F	4F	6F	8F	10F	12F	14F	16F	18F	20F
A	46.5	77.5	108.5	139.5	170.5	201.5	232.5	263.5	294.5	325.5
B	38.5	69.5	100.5	131.5	162.5	193.5	224.5	255.5	286.5	317.5



Terminal no.	Polarity		Control object	Terminal no.	Polarity		Control object
	-COM	+COM			-COM	+COM	
1	(+)	(-)	13 station	14	(+)	(-)	1 station
2	(+)	(-)	14 station	15	(+)	(-)	2 station
3	(+)	(-)	15 station	16	(+)	(-)	3 station
4	(+)	(-)	16 station	17	(+)	(-)	4 station
5	(+)	(-)	17 station	18	(+)	(-)	5 station
6	(+)	(-)	18 station	19	(+)	(-)	6 station
7	(+)	(-)	19 station	20	(+)	(-)	7 station
8	(+)	(-)	20 station	21	(+)	(-)	8 station
9	Void			22	(+)	(-)	9 station
10	Void			23	(+)	(-)	10 station
11	Void			24	(+)	(-)	11 station
12	Void			25	(+)	(-)	12 station
13	(-)	(+)	COM				

[Note] The D-sub cable of the corresponding Pin no. 13 (COM) must be≤22AWG.

Integrated solenoid valve (3/2 way)

CPV15S Series——Manifold, solenoid valve and blank plate



Specification

Model		CPV15S
Fluid		Air(to be filtered by 40μm filter element)
Number of stations		2 stations ~20 stations, only available in even stations
Electrical entry		Terminal, 25pin D-Sub
Port size	P/R ports	1/8" [Note1]
	A Port	Φ4mm(Push in fittings)
The type of Inlet and exhaust		Centralized inlet and exhaust
Operating pressure		0.15~0.8MPa(21~114psi)
Proof pressure		1.2MPa(175psi)
Temperature		-20~70℃
Weight	Integrated valve of 2 stations	158.5g(not include CPV15 valve)
	Increase when add 2 satations	+97.65g
	Blank plate kits	0.65g

[Note1] G thread is available.

Product feature

1. Integrated installation centralizes air inlet, exhaust and power (25pin D-Sub)to save space and reduce additional accessories.
2. Flexible combination and expandability for various applications. Blank plates are optional.

Ordering code

Ordering code for manifold

CPV15S 20F G

① ② ③

①Model	②Number of stations	③Thread type
CPV15S: CPV15S series integrated solenoid valve	2F: 2 stations 4F: 4 stations 6F: 6 stations ..... 20F: 20 stations	G: G Thread

[Note] 1. Ordering code contains solenoid valve, manifold, and blank plate.
2. Maximum station up to 20 stations.

Ordering code for valve

CPV15 B P

① ② ③

①Model	②Voltage	③Code of manual override
CPV: CPV series micro-solenoid valve	B: DC24V F: DC12V	P: With manual override

Ordering code for blank plate

P-CPV15S-R2

① ②



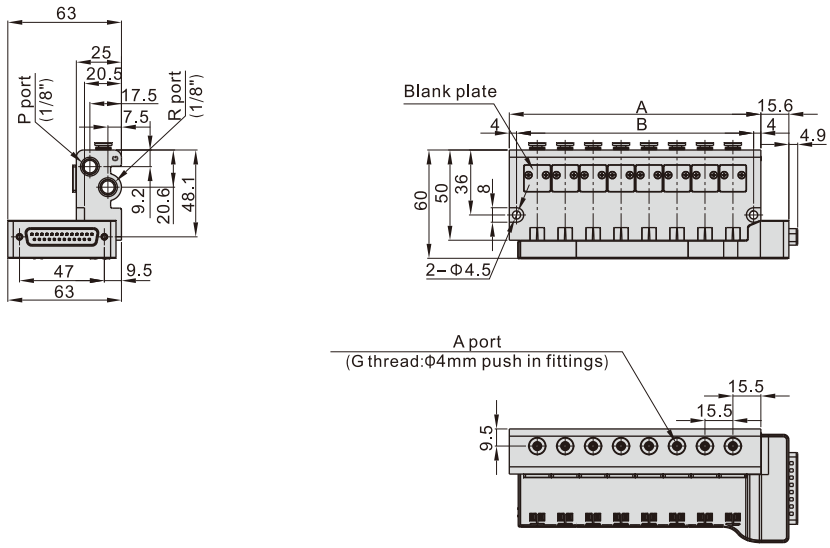
①Model	②Code
CPV15S: CPV15S series integrated solenoid valve	R2: Blank plate for manifold

[Note] Blank plate kits contains blank plate, gasket and screw.

Installation and Application

Please refer to the "Installation and Application " instruction of Integrated solenoid valve.

Dimensions



Item\Number of stations	2F	4F	6F	8F	10F	12F	14F	16F	18F	20F
A	46.5	77.5	108.5	139.5	170.5	201.5	232.5	263.5	294.5	325.5
B	38.5	69.5	100.5	131.5	162.5	193.5	224.5	255.5	286.5	317.5

Micro-solenoid valve(3/2 way)

CPV15 Series



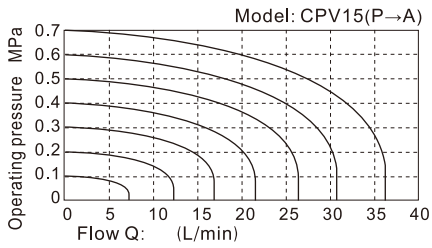
Symbol

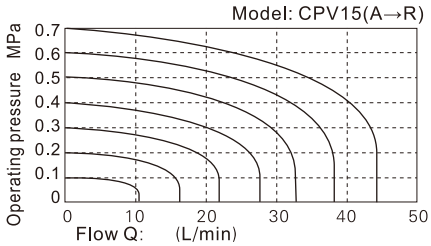


Product feature

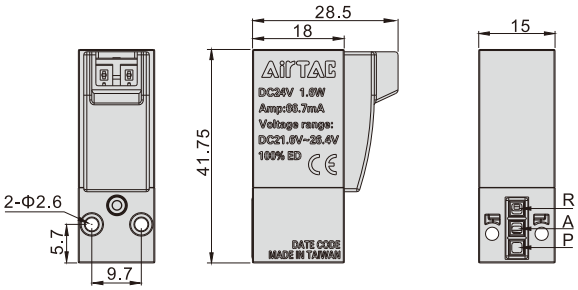
1. None polarity design of DC circuit, the direction(vertical or horizontal) of wiring can be adjusted freely according to the installation demand.
2. Low starting voltage and long service life.
3. There is no buzzing by the usage of AC power supply .
4. With surge device can avoid the damage of solenoid valve by surge voltage.

Flow chart





Dimensions



Specification

Model		CPV15
Fluid		Air(to be filtered by 40 μ m filter element)
Acting		Direct acting
Orifice size		Φ0.8mm
Valid area or section		P→A: 0.44mm²(Cv=0.024); A→P: 0.55mm²(Cv=0.03)
Valve type		3 port 2 position
Weight	micro-solenoid valve	33.2g
	Wire	050: 4.6g 200: 21.4g
	Screw(2pcs)	1.45g
Operating pressure		0.15~0.8MPa(21~114psi)
Proof pressure		1.2MPa(175psi)
Temperature		-20~70℃
Standard voltage		AC220V AC110V AC24V DC24V DC12V
Scope of voltage		DC±10%: AC+15%~-10%
Protection		Dustproof
Temperature classification		F Class
Power consumption		DC: 1.6W; AC: 2.0VA
Electrical entry		Terminal
Activating time		on<10ms ; off<10ms

Ordering code

Ordering code of valve's body

CPV 15 B P–050

① ② ③ ④ ⑤

① Model	② Width of body	③Voltage	④Code of manual override	⑤Wire length [Note1]
CPV: CPV series micro-solenoid valve	15: 15mm	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	P: With manual override	050: 0.5m 200: 2.0m

[Note1] Attach the two M2.5 screws.

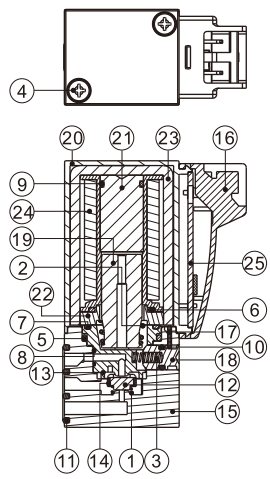
Ordering code of wire

CPV T 050

① ② ③

① Model	②Wire	③Wire length
CPV: CPV series micro-solenoid valve	T: Wire	050: 0.5m 200: 2.0m

Inner structure



No.	Item	Material	No.	Item	Material
1	Spring	Stainless steel	14	Mandril	Resin
2	Spring	Stainless steel	15	Body	Resin
3	Spring	Stainless steel	16	Connector shell	Resin
4	Screw	Carbon steel	17	Manual pin plate	Stainless steel
5	O–ring	NBR	18	Manual pin	Brass
6	O–ring	NBR	19	Armature	Stainless steel
7	O–ring	NBR	20	Cover	Resin
8	O–ring	NBR	21	Electromagnet	Stainless steel
9	O–ring	NBR	22	Plate	Carbon steel
10	O–ring	NBR	23	U shape bracket	Carbon steel
11	Gasket	NBR	24	Coil	
12	Gasket	NBR	25	PCB assembly	
13	Crater	Resin			

Installation and Application

1. Valve body installation:
   Use two M2.5 X 19 screws to mount the valve by 0.4~0.45N.m.
2. Wiring instruction:
   Vertical and horizontal insertion share the same terminal port for different practical applications.
   Note: There is no polarity for terminal wire.
3. AC coil is forbidden to connect with other devices.

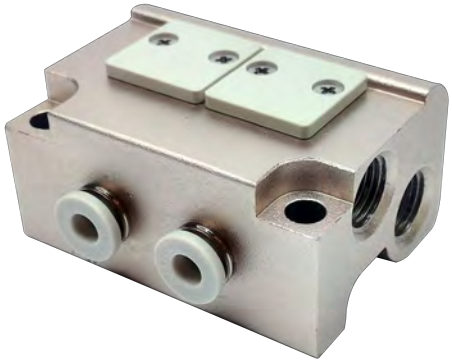




Vertically insert (Wire and body is vertical)



Horizontally insert (Wire and body is horizontal)



Specification

Model		CPV15M2F	CPV15M3F	CPV15M4F	.....	CPV15M20F
Fluid		Air(to be filtered by 40 μ m filter element)				
Temperature		-20~70℃				
Port size	P/R ports	1/8"[Note1]				
	A port	Φ4mm(Push in fittings)				
Applicable valves		CPV15 series micro-solenoid valve				

[Note1] G thread is available.

Product feature

1. Integrated installation saves space and reduces additional accessories.
2. Centralized air intake, exhaust, and wiring for quick air circuit checking.
3. Flexible combination and expandability for various applications. Blank plates are optional.

Ordering code

Ordering code for manifold

CPV15M 20F G

① ② ③

① Model	② Number of stations	③Thread type
CPV15M: CPV15 series manifold	2F: 2 stations 3F: 3 stations 4F: 4 stations ..... 20F: 20 stations	G: G Thread

Ordering code for blank plate

P-CPV15S-R2

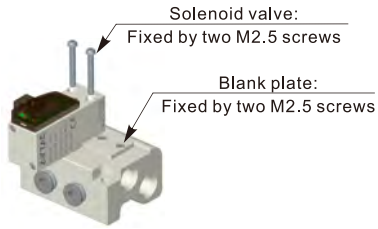
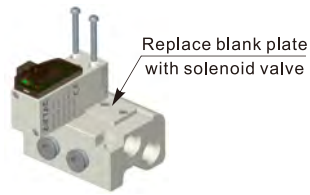
① ②

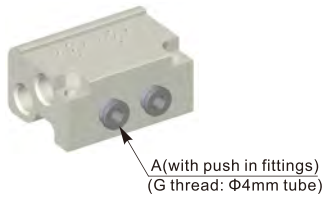
①Model	②Code
CPV15S: CPV15S series integrated solenoid valve	R2: Blank plate for manifold

[Note] 1. Ordering code contains manifold and blank plate.
2. Maximum station up to 20 stations.
3. Blank plate kits contain blank plate, gasket and screw.

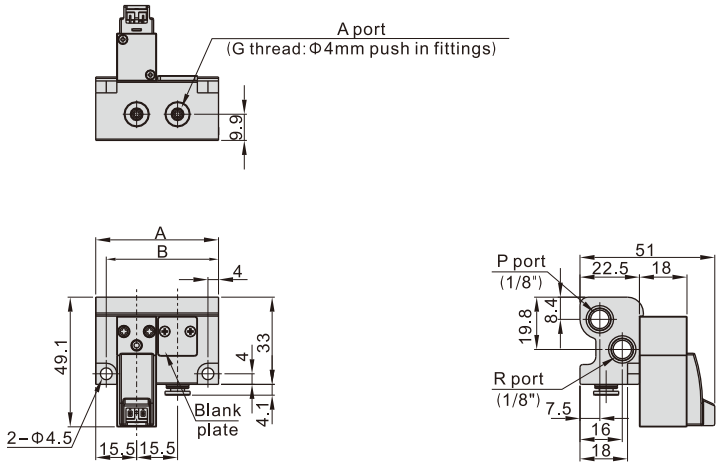


Installation and Application

Assembly of micro-solenoid valve (blank plate) and manifold	Expansion of micro-solenoid valve
Mount micro-solenoid valve and manifold by two M2.5 screws as following . Mount blank plate and manifold by two M2.5 countersunk screws as following .	Remove blank plate and install solenoid valve by the assembly instruction.
	

A port tubing	Manifold mounting
A port is at the side of manifold with push in fittings	Both sides of manifold attach two installing through-holes, using two M4 hexagon cap screws to fix.
	

Dimensions



Item\Number of stations	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
A	46.5	62	77.5	93	108.5	124	139.5	155	170.5	186	201.5	217	232.5	248	263.5	279	294.5	310	325.5
B	38.5	54	69.5	85	100.5	116	131.5	147	162.5	178	193.5	209	224.5	240	255.5	271	286.5	302	317.5

Integrated solenoid valve's cable

F-DSUB25



Specification

1. Flame resistant grade: UL94 VW-1.
2. Rated temperature: 80℃.
3. Rated voltage: 300V.

How to select cable

Cable type\Valve type	CPV10S	CPV15S
F-DSUB25	●	●

Cable ordering code

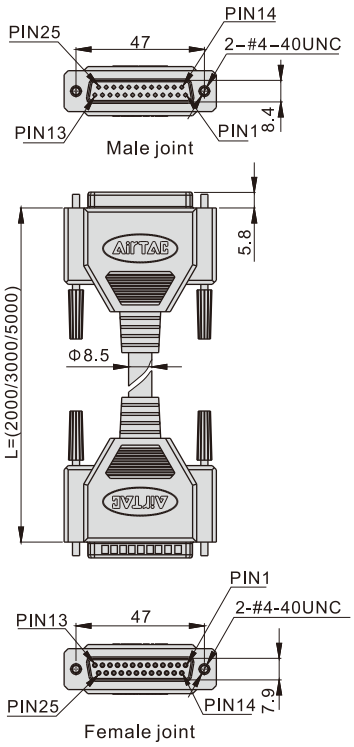
F – DSUB 25 F 200

1 2 3 4

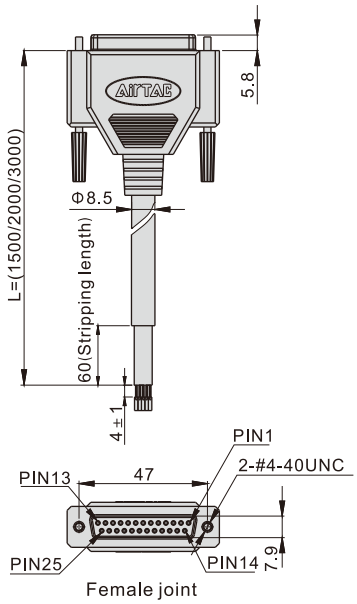
①Model	DSUB: D-SUB Cable		
②Pin Number	25: 25PIN 		
③Terminal type	F: Two Females 	M: One Female+another male 	S: One Female+another wire 
④Wire length	200: 2m 300: 3m 500: 5m		150: 1.5m 200: 2m 300: 3m

Dimensions and wire's assignment

F-DSUB25F(M)



F-DSUB25S



Wire's assignment	
PIN	Color
1	Black
2	Tawny
3	Red
4	Orange
5	Yellow
6	Pink
7	Blue
8	Violet+White
9	Gray+Black
10	White+Black
11	White+Red
12	Yellow+Red
13	Orange+Red
14	Yellow+Black
15	Pink+Black
16	Blue+White
17	Violet
18	Gray
19	Orange+Black
20	Red+White
21	Tawny+White
22	Pink+Red
23	Gray+Red
24	Black+White
25	White

Solenoid valve(3/2 way)

3V1 Series



Specification

Model	3V1-M5	3V1-06
Fluid	Air(to be filtered by 40 μ m filter element)	
Acting	Direct acting	
Port size [Note1]	M5	1/8"
Valve type	3 port 2 position	
Lubrication	Not required	
Operating pressure	0~0.8MPa(0~114psi)	
Proof pressure	1.2MPa(175psi)	
Temperature	-20~70℃	
Orifice size	Φ1.2mm	
Material of body	Aluminum alloy	

[Note1] G thread is available.

Symbol



Product feature

1. Direct acting type and normally closed mode, flexible in direction change.
2. No need to add oil for lubrication.
3. Several valves can be installed integrately to save installation space.
4. Affiliated manual devices are equipped to facilitate installation and debugging.
5. Several standard voltage grades are optional.

Coil specification

Item	Specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	4.5VA	4.5VA	5.0VA	3.0W	2.5W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				
Max. frequency [Note 1]	10 cycle/sec				

[Note 1] The maximum actuation frequency is in the no-load state.

Ordering code

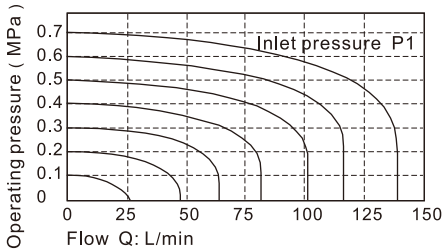
3V 1 06 A □ G

1 2 3 4 5 6

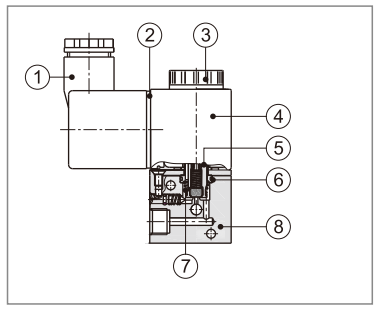
①Model	②Code	③Port size	④Standard voltage	⑤Electrical entry	⑥Thread type
3V: Solenoid valve (3/2 way)	1: 1 Series	M5: M5 06: 1/8"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	No this code G: G Thread

[Note] The wire length is 0.5m.

Flow chart



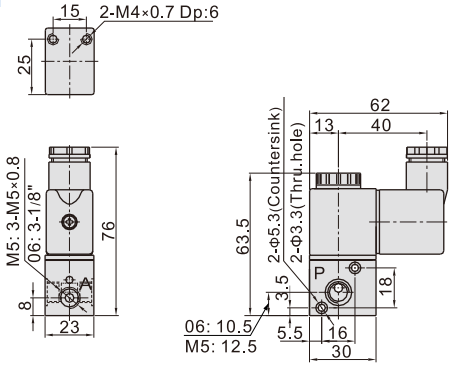
Inner structure



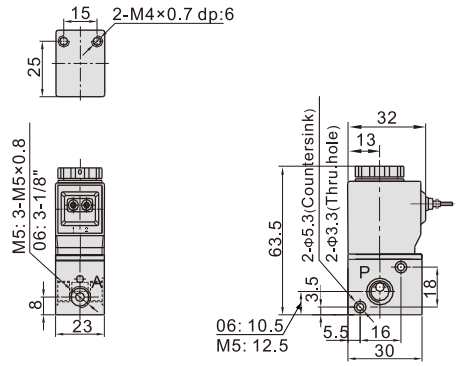
No.	Item	No.	Item
1	Connector	5	Armature
2	Gasket	6	O-ring
3	Coil nut	7	Return spring
4	Coil	8	Body

Dimensions

Terminal

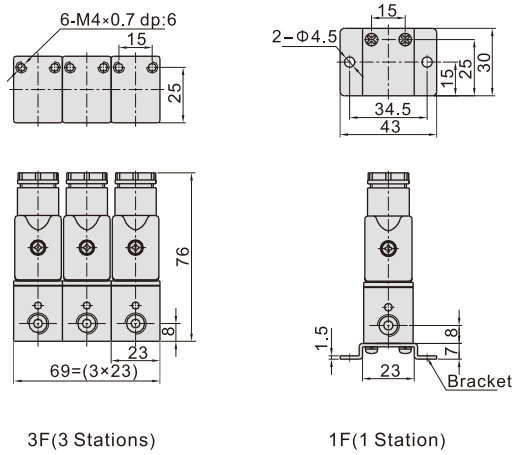


Grommet



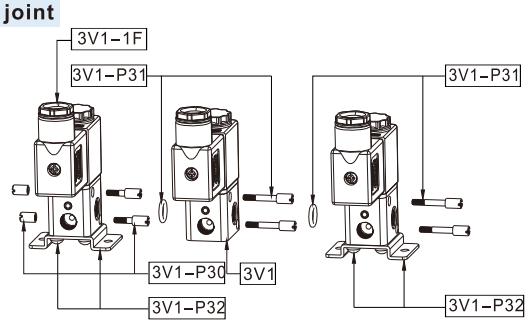
Series connection

Dimensions



3F(3 Stations)　　1F(1 Station)

How to joint



Product structure

Connection Amount\Q.TY	3V1	3V1-P30	3V1-P31	3V1-P32
3V1-□-□-1F	1	0	0	1
3V1-□-□-2F	2	1	1	1
……	……	……	……	……
3V1-□-□-nF	n	1	n-1	2

Note: "n" is the number of junction valve, and n≥3.

Ordering code for series

3V 1 06 A □ 3F G

1 2 3 4 5 6 7

①Model	②Code	③Port size	④Standard voltage	⑤Electrical entry	⑥Number of stations	⑦Thread type
3V: Solenoid valve (3/2 way)	1: 1 Series	M5: M5	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	1F: 1 Station 2F: 2 Stations 3F: 3 Stations …… 20F: 20 Stations	Not this code
		06: 1/8"				G: G Thread

[Note] The wire length is 0.5m.

The above codes have included the series accessories, so it is unnecessary to order the accessories specially. But if you like, you could order as follows.

Code of accessories	Accessory name	Part code	Part name	Quantity
3V1-P30	Coupling screw assembly	F-3V1002B	Coupling screw(S)	2
		F-3V1003B	Coupling screw(M)	2
3V1-P31	Coupling screw assembly	GOR20008N75	O-Ring	1
		F-3V1004B	Coupling screw(L)	2
3V1-P32	Bracket assembly	F-3V1001B	Fixed mounting	1
		GSDA04008ZA	Cross round head screw	2

Solenoid valve(3/2 way)

3V2 Series



Specification

Model		3V206	3V208
Fluid		Air(to be filtered by 40 μ m filter element)	
Acting		Direct acting	
Port size [Note1]		1/8"	1/4"
Valve type		3 port 2 position	
Orifice size		3.2mm²(Cv=0.18)	3.4mm²(Cv=0.19)
Lubrication		Not required	
Operating pressure	Common	0~0.8MPa(0~114psi)	
	vacuum	-102.2kPa~0.1MPa(-1.45~14.2psi)	
Proof pressure		1.2MPa(175psi)	
Temperature		-20~70℃	
Material of body		Aluminum alloy	

[Note1] G thread is available.

Symbol



Coil specification

Item	Specification
Standard voltage	AC220V、AC110V、AC24V、DC24V、DC12V
Scope of voltage	AC: ±15% DC: ±10%
Power consumption	AC: 7VA DC: 7.0W
Protection	IP65(DIN40050)
Temperature classification	B Class
Electrical entry	Terminal, Grommet
Activating time	0.05 sec and below
Max. frequency [Note1]	10 cycle/sec

[Note1] The maximum actuation frequency is in the no-load state.

Product feature

1. Direct acting type and normally closed mode, flexible in direction change.
2. Normally closed and normally open types are optional.
3. Structure in coaxial blanking mode: leakage proof and large air flow.
4. No need to add oil for lubrication.
5. Affiliated manual devices are equipped to facilitate installation and debugging.
6. Several standard voltage grades are optional.
7. Can be used under vacuum condition.

Ordering code

Ordering code of solenoid valve

3V 2 08 NC A □ G

1 2 3 4 5 6 7

①Model	②Code	③Port size	④Acting type	⑤Standard voltage	⑥Electrical entry	⑦Thread type
3V: Solenoid valve(3/2 way)	2: 2 Series	06: 1/8" 08: 1/4"	NC: Normally closed NO: Normally opened	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet [Note]	G: G Thread

[Note] The wire length is 0.5m.

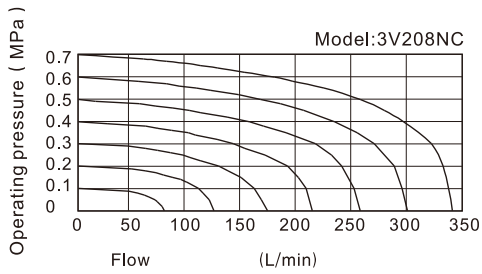
Ordering code of accessories

F-3V2 FA

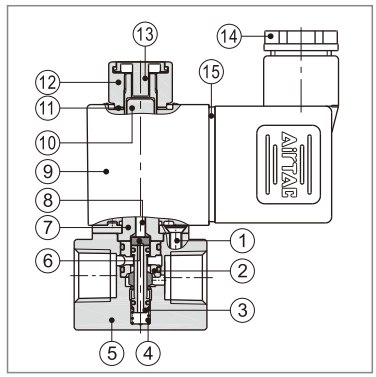
1 2 3

①Accessories code	②Valve type	③Accessories type
F: Mounting accessories	3V2: Solenoid valve(3/2 way)	FA: FA Bracket

Flow chart



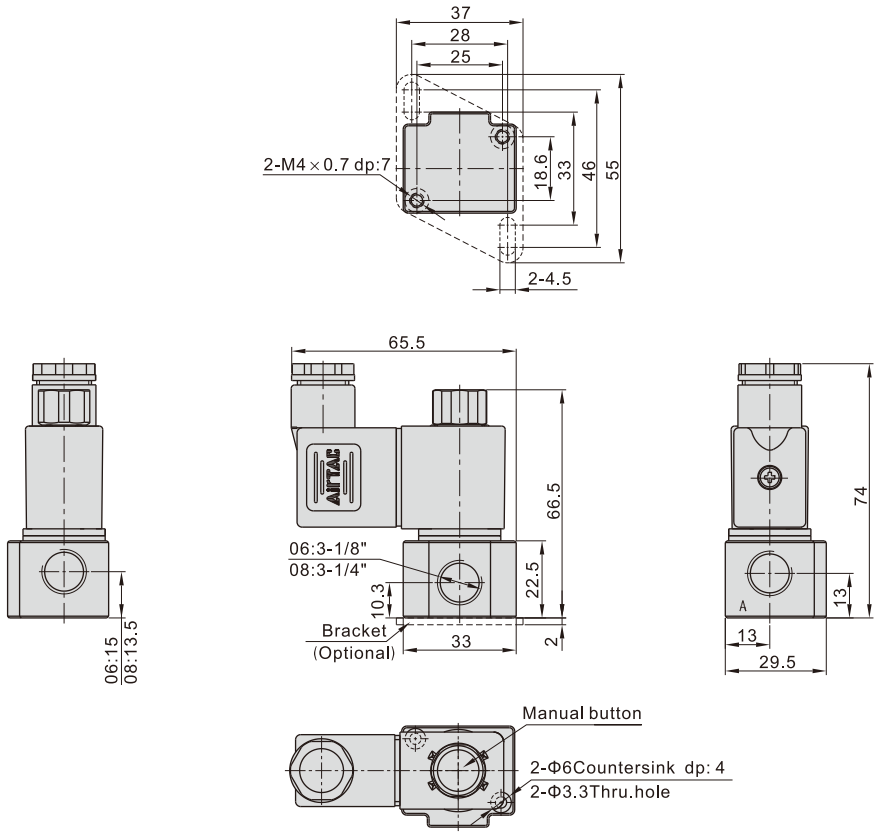
Inner structure



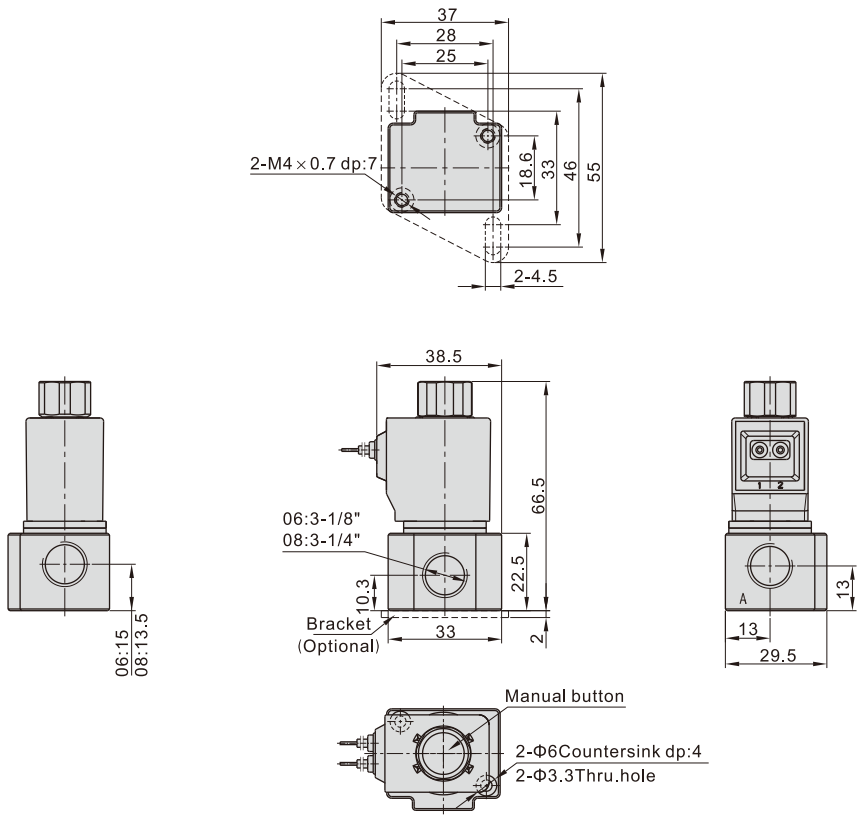
No.	Item	No.	Item
1	Pilot screw	9	Coil
2	Spacer	10	Armature
3	Spool	11	Washer
4	Spring	12	Coil nut
5	Body	13	Manual button
6	Washer	14	Connector
7	Electromagnet set	15	Gasket
8	Mandril		

Dimensions

Terminal



Grommet



Solenoid valve(3/2 way)

3V2M Series



Specification

Model	3V2M
Fluid	Air(to be filtered by 40μm filter element)
Acting	Direct acting
Port size [Note1]	1/8"
Valve type	3 port 2 position
Orifice size	1.7mm²(Cv=0.1)
Exhaust type	Centralized exhaust , Separated exhaust
Operating pressure	0~0.8MPa(0~114psi)
Proof pressure	1.2MPa(175psi)
Temperature	-20~70℃
Material of body	Aluminum alloy

[Note1] G thread is available.

Symbol



Coil specification

Item	Specification
Standard voltage	AC220V、AC110V、AC24V、DC24V、DC12V
Scope of voltage	AC: ±15% DC: ±10%
Power consumption	AC: 7VA DC: 7.0W
Protection	IP65(DIN40050)
Temperature classification	B Class
Electrical entry	Terminal, Grommet
Activating time	0.05 sec and below
Max. frequency [Note1]	10 cycle/sec

[Note1] The maximum actuation frequency is in the no-load state.

Product feature

1. Direct acting type and normally closed mode, flexible in direction change.
2. Normally closed and normally open types are optional.
3. Structure in coaxial blanking mode: leakage proof and large air flow.
4. No need to add oil for lubrication.
5. Affiliated manual devices are equipped to facilitate installation and debugging.
6. Valve needs to be used with the sub-base and allows various connection combinations to save space.
7. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring.
8. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.
9. Can adjust the installation direction of special sub-base seal for NO or NC functions.

Ordering code

Ordering code for valve

3V2M NC A □

①Model	②Acting type	③Standard voltage	④Electrical entry
3V2M: Solenoid valve(3/2 way, with manifold)	NC: Normally closed NO: Normally opened	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]

[Note] The wire length is 0.5m.

Ordering code for manifold

3V2M 5F D G

①Model	②Number of stations	③Exhaust type	④Thread type
3V2M: Solenoid valve(3/2 way, with manifold)	1F: 1 Stations 2F: 2 Stations ..... 20F: 20 Stations	Blank: Centralized exhaust D: Separated exhaust	G: G Thread

[Note]: Manifold kits contains manifold, seal and screw. The port size is only 1/8".

Ordering code for valve's group(valve+manifold)

3V2M NC A □ – 5F D G

①Model	②Acting type	③Standard voltage	④Electrical entry	⑤Number of stations	⑥Exhaust type	⑦Thread type
3V2M: Solenoid valve (3/2 way, with manifold)	NC: Normally closed NO: Normally opened	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet	1F: 1 Station 2F: 2 Stations 3F: 3 Stations ..... 20F: 20 Stations	Blank:Centralized exhaust D: Separated exhaust	G: G Thread

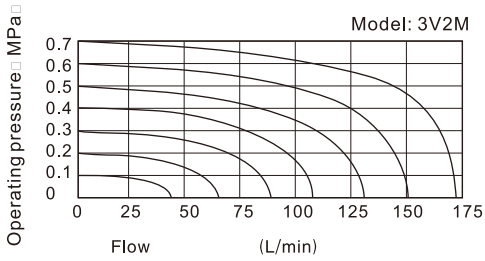
Ordering code for blank plate

P–3V2M–R2

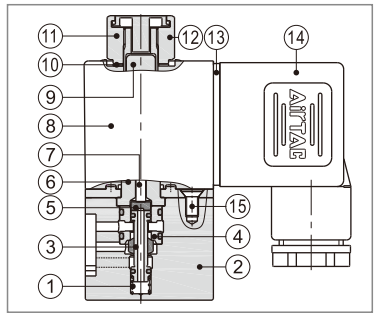
①Subassembly type	②Valve type	③Accessories type
P: subassembly	3V2M: Solenoid valve(3/2 way, with manifold)	R2: Blank plate for manifold

[Note]: Blank plate kits contains blank plate and screw.

Flow chart



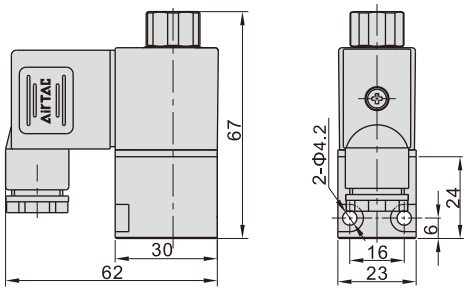
Inner structure



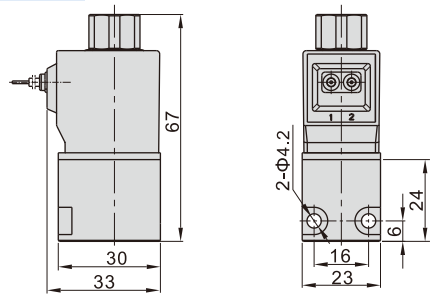
No.	Item	No.	Item
1	Spring	9	Armature
2	Body	10	Washer
3	Spool	11	Coil nut
4	Spacer	12	Manual button
5	Washer	13	Gasket
6	Electromagnet set	14	Connector
7	Mandril	15	Pilot screw
8	Coil		

Dimensions

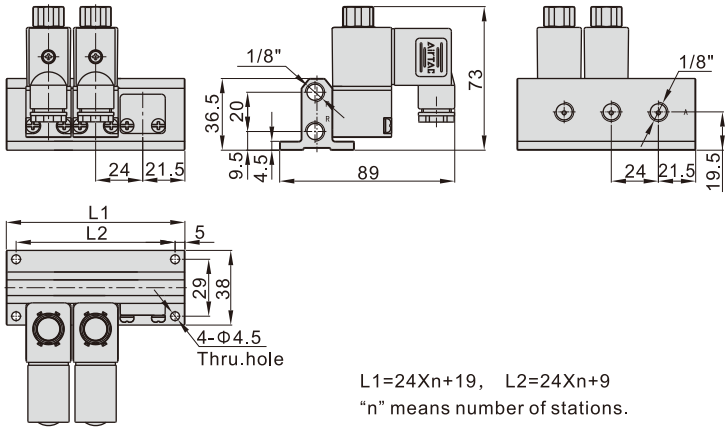
Valve(Terminal)



Valve(Grommet)

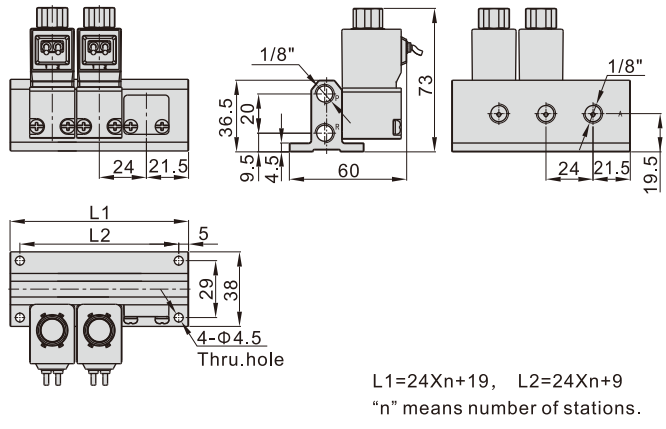


Valve's group(Terminal, Centralized exhaust)



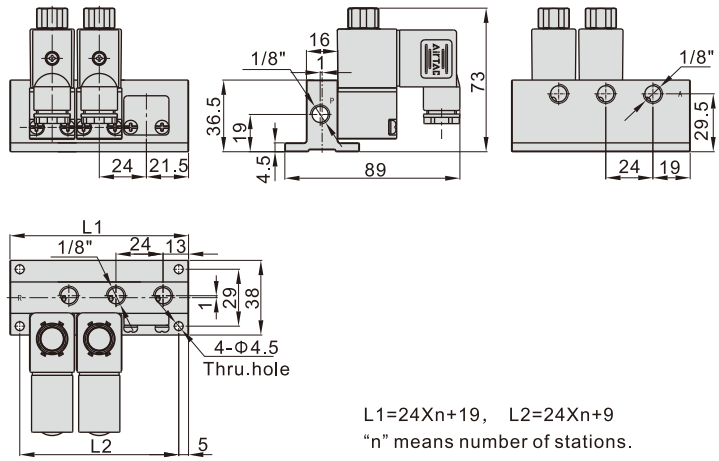
L1=24Xn+19, L2=24Xn+9
"n" means number of stations.

Valve's group(Grommet, Centralized exhaust)



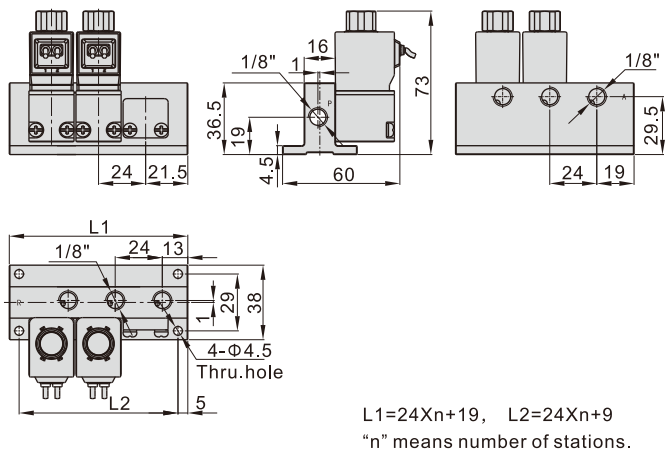
L1=24Xn+19, L2=24Xn+9
"n" means number of stations.

Valve's group(Terminal, Separated exhaust)



L1=24Xn+19, L2=24Xn+9
"n" means number of stations.

Valve's group(Grommet, Separated exhaust)



L1=24Xn+19, L2=24Xn+9
"n" means number of stations.

Solenoid valve(3/2 way)

3V3 Series



Specification

Model		3V308
Fluid		Air(to be filtered by 40 μ m filter element)
Acting		Direct acting
Port size [Note1]		1/4"
Valve type		3 port 2 position
Orifice size		11mm²(Cv=0.62)
Lubrication		Not required
Operating pressure	Common	0~0.8MPa(0~114psi)
	vacuum	-102.2kPa~0.1MPa(-1.45~14.2psi)
Proof pressure		1.2MPa(175psi)
Temperature		-20~70℃
Material of body		Aluminum alloy

[Note1] G thread is available.

Symbol



Coil specification

Item	Specification
Standard voltage	AC220V、AC110V、AC24V、DC24V、DC12V
Scope of voltage	AC: ±15%　DC: ±10%
Power consumption	AC: 10VA　DC: 6.5W
Protection	IP65(DIN40050)
Temperature classification	B Class
Electrical entry	Terminal, Grommet
Activating time	0.05 sec and below
Max. frequency [Note1]	10 cycle/sec

[Note1] The maximum actuation frequency is in the no-load state.

Product feature

1. Direct acting type and normally closed mode, flexible in direction change.
2. Normally closed and normally open types are optional.
3. Structure in coaxial blanking mode: leakage proof and large air flow.
4. No need to add oil for lubrication.
5. Affiliated manual devices are equipped to facilitate installation and debugging.
6. Several standard voltage grades are optional.
7. Can be used under vacuum condition.

Ordering code

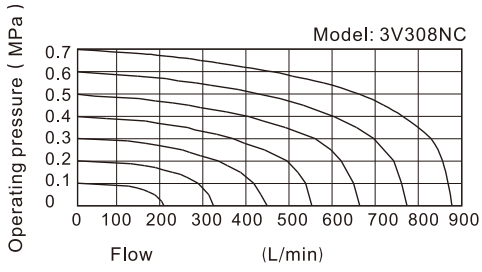
3V 3 08 NC A □ G

1 2 3 4 5 6 7

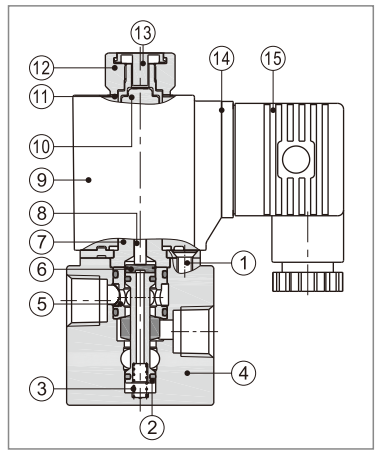
①Model	②Code	③Port size	④Acting type	⑤Standard voltage	⑥Electrical entry	⑦Thread type
3V: Solenoid valve (3/2 way)	3: 3 Series	08: 1/4"	NC: Normally closed NO: Normally opened	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread

[Note] The wire length is 0.5m.

Flow chart



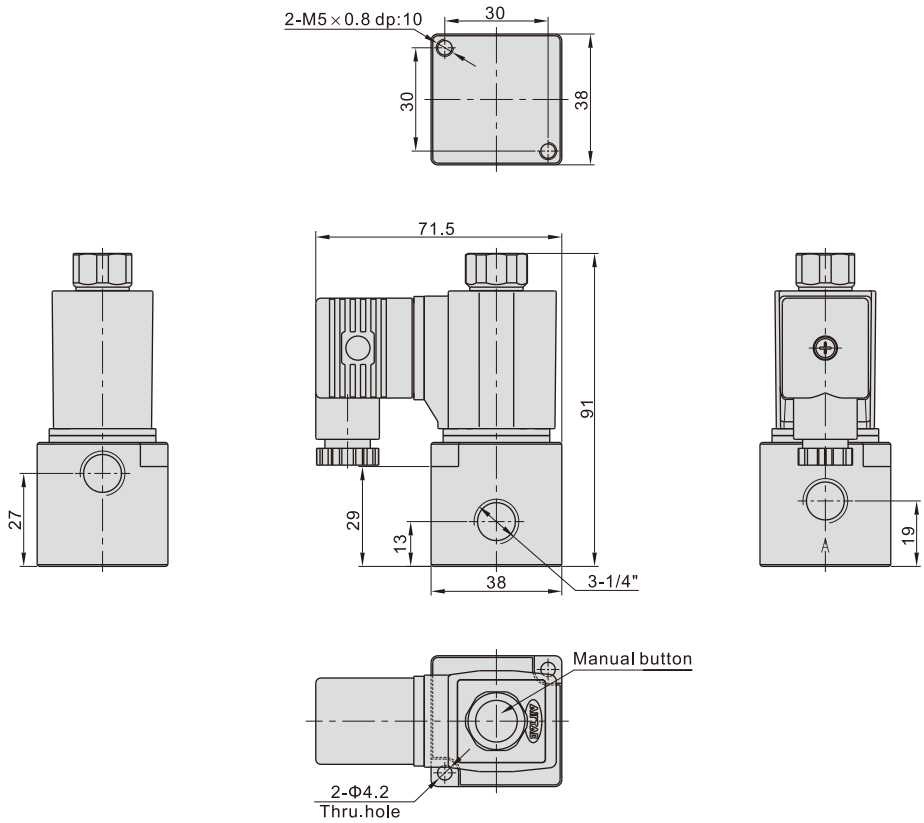
Inner structure



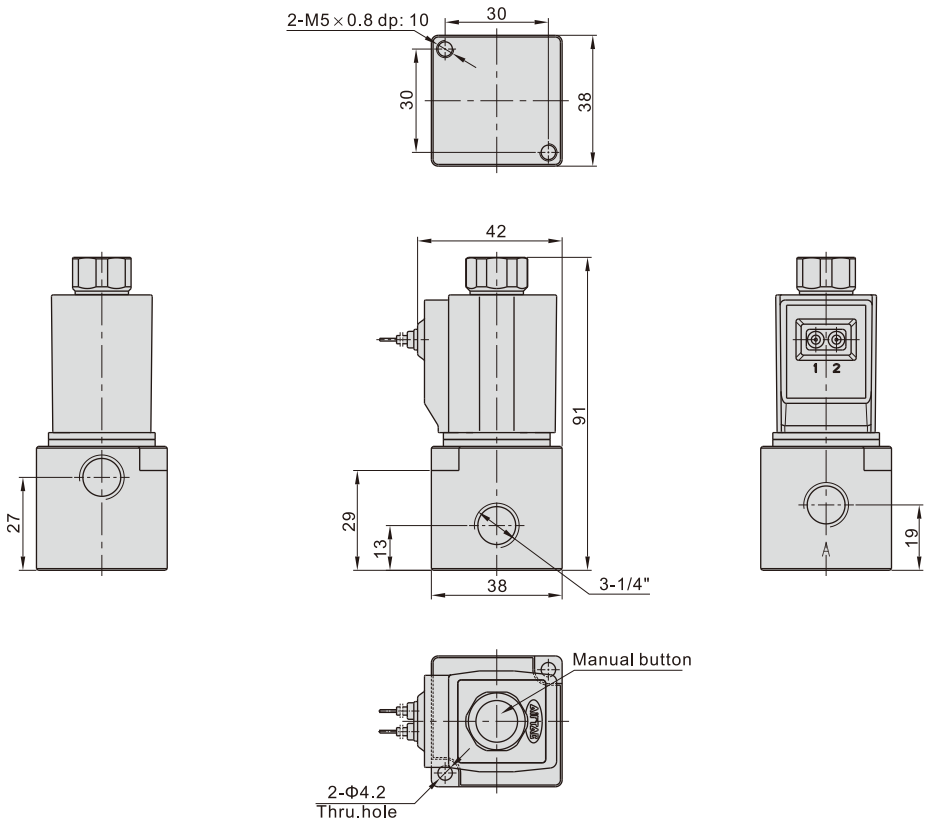
No.	Item	No.	Item
1	Pilot screw	9	Coil
2	Spool	10	Armature
3	Spring	11	Washer
4	Body	12	Coil nut
5	Spacer	13	Manual button
6	Washer	14	Gasket
7	Electromagnet set	15	Connector
8	Mandril		

Dimensions

Terminal



Grommet



6TV Series

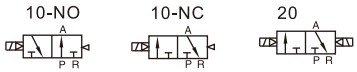


Specification

Model	6TV0510	6TV0520	6TV110	6TV120
Port size [Note1]	In=Out=Exh=M5		In=Out=Exh=M5(or=1/8")	
Orifice size(Cv)[Note4]	M5:3.4mm²(0.2)		06：8.9mm²(0.52)	
Weight (g)	28	43	52	67
Model	**6TV210**	**6TV220**	**6TV310**	**6TV320**
Port size [Note1]	06：In=Out=Exh=1/8" 08：In=Out=1/4" Exh=1/8"		In=Out=3/8" Exh=1/4"	
Orifice size(Cv)[Note4]	08：15.4mm²(0.91)		10:38.4mm²(2.26)	
Weight (g)	90	105	180	215
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	Internal pilot			
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Lubrication [Note2]	Not required			
Exhaust type of pilot valve	Main valve and pilot valve concentrated exhaust			
Max.frequency [Note3]	5 cycle/sec			

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimize valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

1. Electrical entry is terminal, horizontal and vertical insertion can freely switch.
2. Inner exhaust structure to collect pilot airflow, and then exhaust intensively from R port.
3. The body is extruded by aluminum alloy, and the inner hole is specially processed to increase the flow rate.
4. Threaded type and quick connector type are optional, and can integrate manifold to form valve group to save space.

Coil specification

Item	Specification			
Standard voltage	AC220V	AC110V	DC24V	DC12V
Scope of voltage	AC: +15% ~-10%		DC: ±10%	
Power consumption	1.1VA		0.9W	
Protection	Dust-proof			
Temperature classification	F Class			
Electrical entry	Terminal			
Activating time	0.05 sec and below			

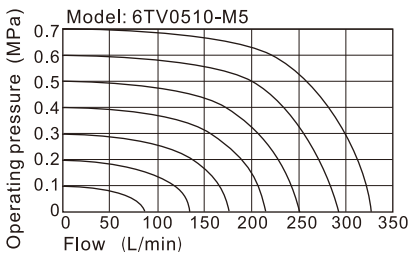
Ordering code

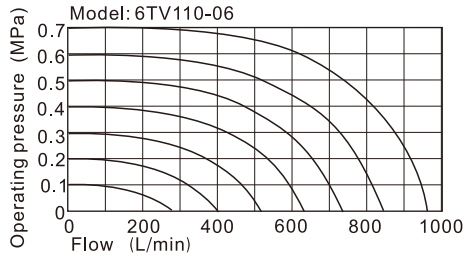
6TV 1 10 06 NC B 050 G

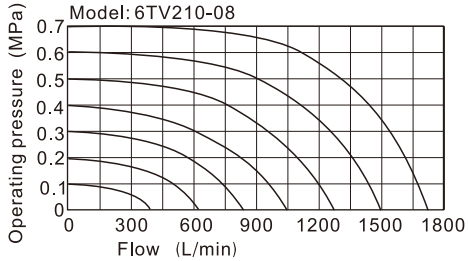
1 2 3 4 5 6 7 8

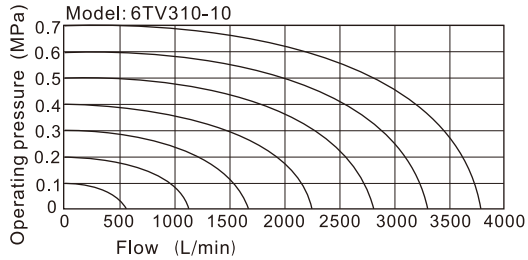
①Model	6TV：Solenoid valve (3/2 way)						
②Code	05: 0500 Series	1: 100 Series		2: 200 Series		3: 300 Series	
③Valve type	10: Single solenoid 20：Double solenoid						
④Port size	M5: M5	M5: M5	06: 1/8"	06: 1/8"	08: 1/4"	10: 3/8"	
⑤Acting type	NC: Normally closed NO: Normally opened [Note：Double solenoid no this code]						
⑥Voltage	A: AC220V B: DC24V C: AC110V F: DC12V						
⑦Wire length	050: 0.5m 200: 2.0m						
⑧Thread type	–	G: G Thread					

Flow chart







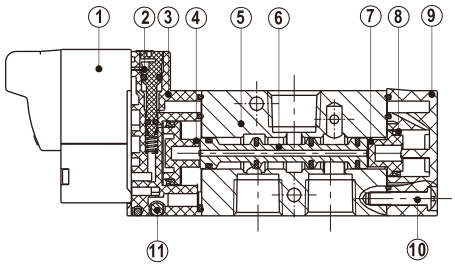


The data in flow rate chart are obtained from AirTAC lab.

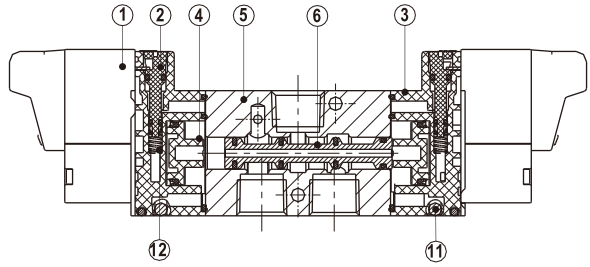
6TV Series

Inner structure

6TV110



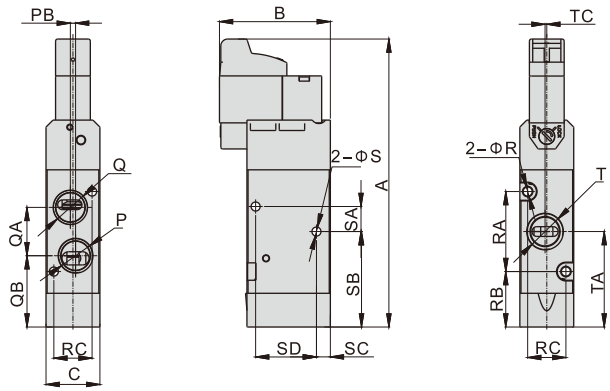
6TV120NC



No.	Item
1	Pilot valve
2	Manual override
3	Pilot kit
4	Big piston
5	Body
6	Spool
7	Small piston
8	Gasket
9	Bottom cover
10	Bolt
11	Steel ball
12	Spring

Dimensions

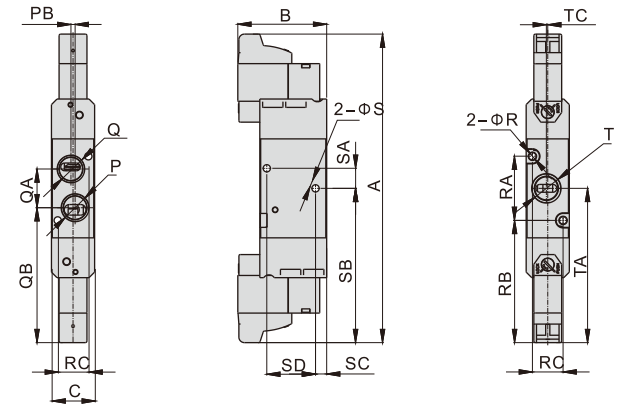
6TV0510
6TV110
6TV210
6TV310



Model\Item	A	B	C	P	PB	Q	QA	QB	R	RA	RB	RC	S	SA	SB	SC	SD	T	TA	TC
6TV0510M5	64.5	30.5	10.6	M5X0.8	1	M5X0.8	9.5	13.5	2.1	14	11.5	7.5	-	-	-	-	-	M5X0.8	18.5	0.5
6TV110M5	83	32	15.5	M5X0.8	–	M5X0.8	14	20.5	2.6	23	16	11	Φ2.6	7.2	27.5	4	17.5	M5X0.8	27.5	–
6TV11006	83	32	15.5	1/8"	1.5	1/8"	14	20.5	2.6	23	16	11	Φ2.6	7.2	27.5	4	17.5	1/8"	27.5	0.5
6TV21006	97	33.5	18.5	1/8"	-	1/8"	18	25.5	3.2	33	18	13.5	Φ3.2	12	34.5	7	21	1/8"	34.5	–
6TV21008	97	33.5	18.5	1/4"	-	1/8"	18	25.5	3.2	33	18	13.5	Φ3.2	12	34.5	7	21	1/4"	34.5	1
6TV31010	116.5	46	23.5	3/8"	-	1/4"	28	29.5	3.2	43	22	18.4	Φ4.3	15	58.5	8	31	3/8"	43.5	-

[Note]: 6TV0510 type no through hole "S" on the side.

6TV0520
6TV120
6TV220
6TV320



Model\Item	A	B	C	P	PB	Q	QA	QB	R	RA	RB	RC	S	SA	SB	SC	SD	T	TA	TC
6TV0520M5	93	30.5	10.6	M5X0.8	1	M5X0.8	9.5	41.5	2.1	14	39.5	7.5	-	-	-	-	-	M5X0.8	18.5	0.5
6TV120M5	110.5	32	15.5	M5X0.8	–	M5X0.8	14	48.5	2.6	23	44	11	Φ2.6	7.2	55.5	4	17.5	M5X0.8	27.5	–
6TV12006	110.5	32	15.5	1/8"	1.5	1/8"	14	48.5	2.6	23	44	11	Φ2.6	7.2	55.5	4	17.5	1/8"	27.5	0.5
6TV22006	125	33.5	18.5	1/8"	-	1/8"	18	53.5	3.2	33	46	13.5	Φ3.2	12	62.5	7	21	1/8"	34.5	–
6TV22008	125	33.5	18.5	1/4"	-	1/8"	18	53.5	3.2	33	46	13.5	Φ3.2	12	62.5	7	21	1/4"	34.5	1
6TV32010	146	46	23.5	3/8"	-	1/4"	28	59	3.2	43	51.5	18.4	Φ4.3	15	73	8	31	3/8"	43.5	-

[Note]: 6TV0520 type no through hole "S" on the side.

Manifold for 6TV Series



Specification

Item\Manifold Model	6TV0500M	6TV100M	6TV200M	6TV300M
Fluid	Air(to be filtered by 40 μ m filter element)			
Temperature ℃	-20~70			
Adaptable valve's series	6TV0500 Series	6TV100 Series	6TV200 Series	6TV300 Series

Product feature

1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost.
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring.
3. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

Ordering code

6TV100M 5F G Ordering code for manifold

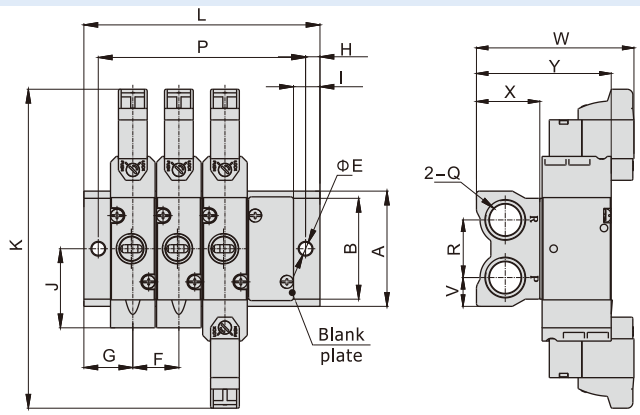
①Model	6TV0500M: 6TV0500 Series manifold	6TV100M: 6TV100 Series manifold	6TV200M: 6TV200 Series manifold	6TV300M: 6TV300 Series manifold
②Number of stations	1F: 1 Station 2F: 2 Station 3F: 3 Station ..... 20F: 20 Station			
③Thread type	G: G Thread			

P–6TV100M–R2 Ordering code for blank plate

①Model	6TV0500M: 6TV0500 Series manifold	6TV100M: 6TV100 Series manifold	6TV200M: 6TV200 Series manifold	6TV300M: 6TV300 Series manifold
②Code	R2: Blank plate for manifold			

[Note] 1.Manifold kits contains manifold, seal and screw; 2. Blank plate kits contains blank plate and screw.

Dimensions



Model\Item	A	B	E	F	G	H	I	J	K	Q	R	V	W	X	Y
6TV0500M	33	26	4.5	11	15	5	9.5	18.5	93	1/8"	16.5	8.5	48.5	17	36
6TV100M	40	35	4.5	16	17	5	9	27.5	110.5	1/4"	20	10	54.5	22	47
6TV200M	48	44	4.5	19	18.5	5	9	34.5	125	1/4"	24	12	58	23.5	57
6TV300M	60	54	4.5	24	24	5	12.5	43.5	146	3/8"	32	14	74	27	-

Model\Item	L																			
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
6TV0500M	30	41	52	63	74	85	96	107	118	129	140	151	162	173	184	195	206	217	228	239
6TV100M	34	50	66	82	98	114	130	146	162	178	194	210	226	242	258	274	290	306	322	338
6TV200M	37	56	75	94	113	132	151	170	189	208	227	246	265	284	303	322	341	360	379	398
6TV300M	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384	408	432	456	480	504

Model\Item	P																			
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
6TV0500M	20	31	42	53	64	75	86	97	108	119	120	141	152	163	174	185	196	207	218	229
6TV100M	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296	312	328
6TV200M	27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388
6TV300M	38	62	86	110	134	158	182	206	230	254	278	302	326	350	374	398	422	446	470	494

Solenoid valve(3/2 way)

3V100 Series



Specification

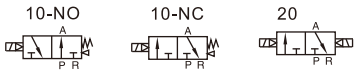
Model	3V110-M5	3V120-M5	3V110-06	3V120-06
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	Internal pilot or external pilot			
Port size [Note1]	M5		1/8"	
Orifice size(Cv)[Note3]	3V110-06,3V120-06:10.2mm^2(Cv=0.6)			
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			

[Note 1] G thread is available.

[Note 2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

[Note3] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

1. Pilot-oriented mode: Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Double control solenoid valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Affiliated manual devices are equipped to facilitate installation and debugging.
7. Several standard voltage grades are optional.
8. Integrate with the manifold to save installation space.

Coil specification

Item	Specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	3.5VA	3.5VA	4.0VA	2.8W	2.5W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				
Max. frequency [Note 1]	5 cycle/sec				

[Note 1] The maximum actuation frequency is in the no-load state.

Ordering code

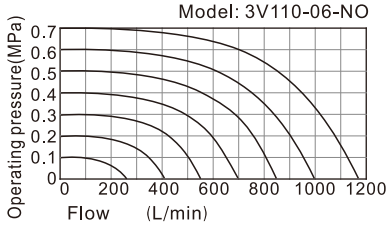
3V 1 10 06 NO A □ G

1 2 3 4 5 6 7 8

①Model	②Code	③Valve type	④Port size	⑤Acting type	⑥Standard voltage	⑦Electrical entry	⑧Thread type	
							M5	1/8"
3V:Solenoid valve (3/2 way)	1: 100 Series	10: Single solenoid	M5: M5 06: 1/8"	NC: Normally closed NO: Normally opened	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet [Note]	No this code	G: G Thread
		20: Double solenoid		No this code				

[Note] The wire length is 0.5m. Please refer to P88 for manifold specification and the order way.

Flow chart

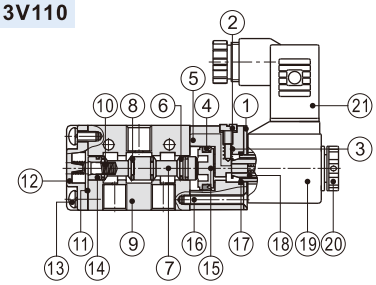


The data in flow rate chart are obtained from AirTAC lab.

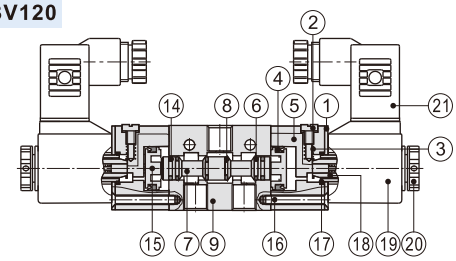
3V100 Series

Inner structure

3V110



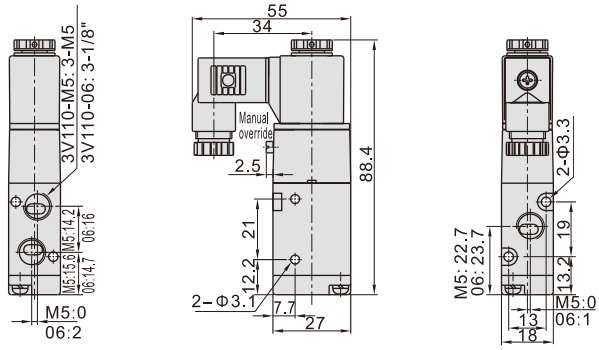
3V120



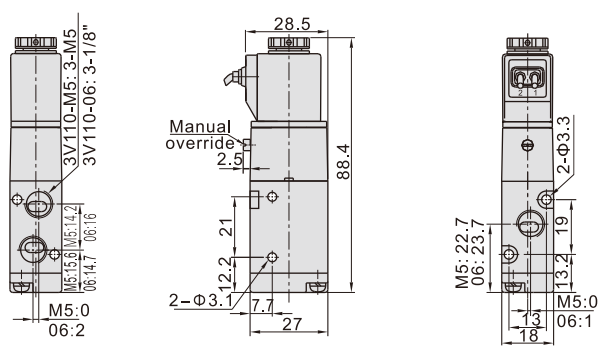
No.	Item	No.	Item	No.	Item
1	Fixed plate	8	O-ring	15	Piston
2	Manual override	9	Body	16	Pilot screw
3	Override spring	10	Spool spring	17	O-ring
4	Piston O-ring	11	Bottom cover gasket	18	Armature
5	Pilot body	12	Bottom cover	19	Coil
6	Spool packing	13	Screw	20	Coil nut
7	Spool	14	Wear ring	21	Connector

Dimensions

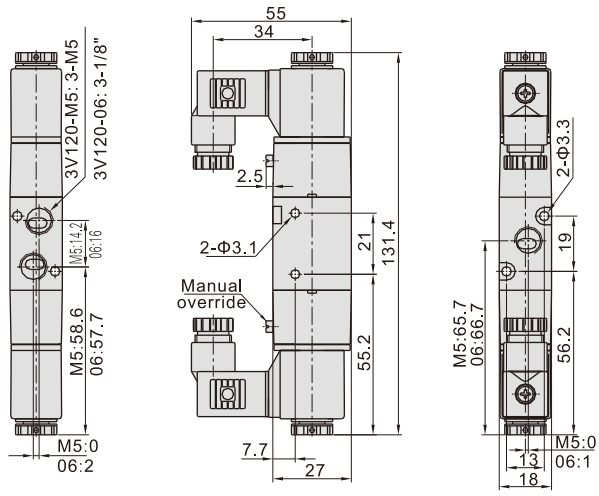
3V110(Terminal)



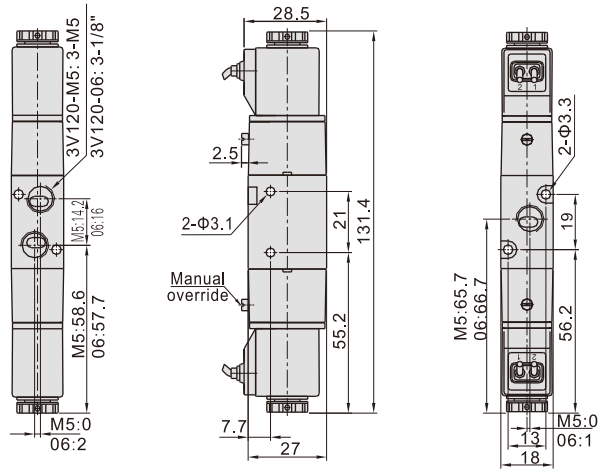
3V110(Grommet)



3V120(Terminal)



3V120(Grommet)



Solenoid valve(3/2 way)

3V200 Series

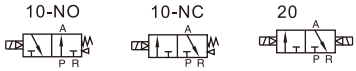


Specification

Model	3V210-06	3V220-06	3V210-08	3V220-08
Fluid	Air(to be filtered by 40μm filter element)			
Acting	Internal pilot or external pilot			
Port size [Note 1]	In=Out=1/8"		In=Out=1/4"	
Orifice size(Cv)[Note3]	3V210-08,3V220-08:17.0mm^2(Cv=1.0)			
Valve type	3 port 2 position			
Lubrication [Note 2]	Not required			
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			

[Note 1] G thread is available.
[Note 2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

1. Pilot-oriented mode:Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Double control solenoid valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Affiliated manual devices are equipped to facilitate installation and debugging.
7. Several standard voltage grades are optional.
8. Integrate with the manifold to save installation space.

Coil specification

Item	Specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	4.5VA	4.5VA	5.0VA	3.0W	2.5W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				
Max. frequency [Note1]	5 cycle/sec				

[Note 1] The maximum actuation frequency is in the no-load state.

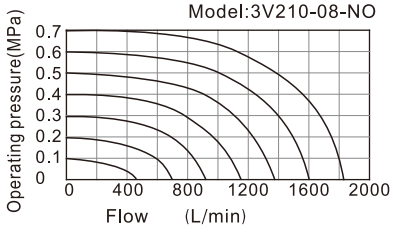
Ordering code

3V 2 10 08 NO A □ G
1 2 3 4 5 6 7 8

①Model	②Code	③Valve type	④Port size	⑤Acting type	⑥Standard voltage	⑦Electrical entry	⑧Thread type
3V:Solenoid valve (3/2 way)	2: 200 Series	10: Single solenoid	06: 1/8" 08: 1/4"	NC: Normally closed NO: Normally opened	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
		20: Double solenoid		No this code			

[Note] The wire length is 0.5m. Please refer to P88 for manifold specification and the order way.

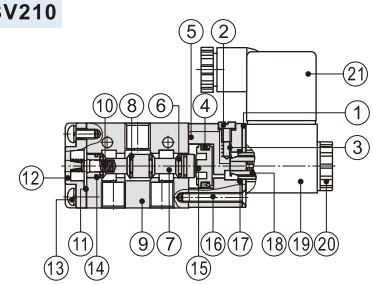
Flow chart



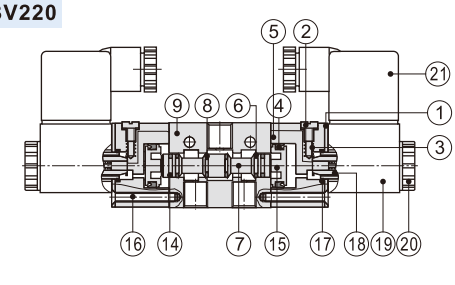
The data in flow rate chart are obtained from AirTAC lab.

Inner structure

3V210



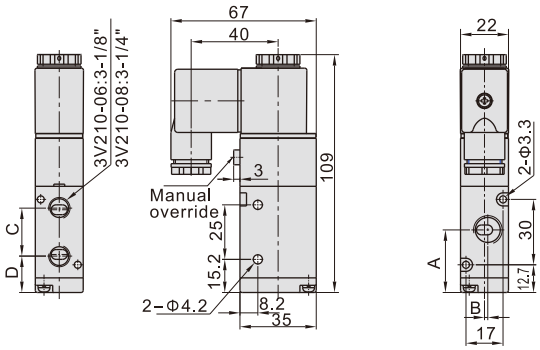
3V220



No.	Item	No.	Item	No.	Item
1	Fixed plate	8	O-ring	15	Piston
2	Manual override	9	Body	16	Pilot screw
3	Override spring	10	Spool spring	17	O-ring
4	Piston O-ring	11	Bottom cover gasket	18	Armature
5	Pilot body	12	Bottom cover	19	Coil
6	Spool packing	13	Screw	20	Coil nut
7	Spool	14	Wear ring	21	Connector

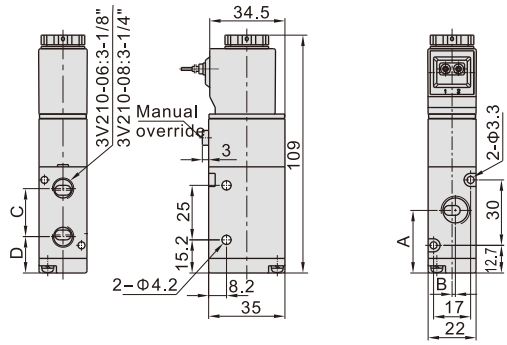
Dimensions

3V210(Terminal)



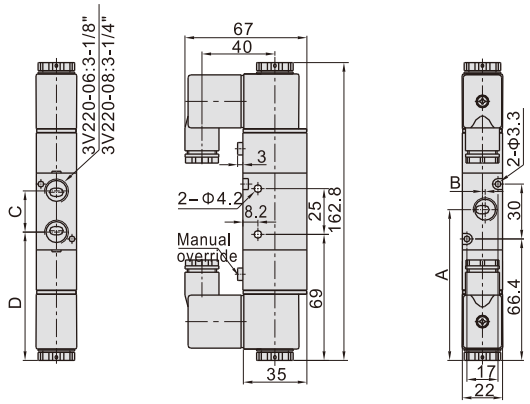
Item\Model	3V210-06	3V210-08
A	27.7	28.7
B	0	1.5
C	22	22.5
D	16.7	16.5

3V210(Grommet)



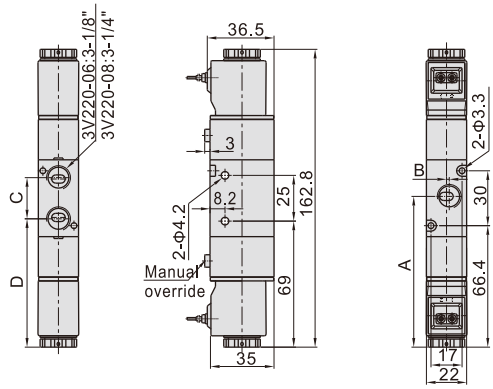
Item\Model	3V210-06	3V210-08
A	27.7	28.7
B	0	1.5
C	22	22.5
D	16.7	16.5

3V220(Terminal)



Item\Model	3V220-06	3V220-08
A	81.4	82.4
B	0	1.5
C	22	22.5
D	70.4	70.2

3V220(Grommet)



Item\Model	3V220-06	3V220-08
A	81.4	82.4
B	0	1.5
C	22	22.5
D	70.4	70.2

Solenoid valve(3/2 way)

3V300 Series

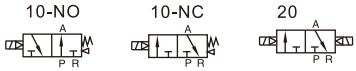


Specification

Model	3V310-08	3V320-08	3V310-10	3V320-10
Fluid	Air(to be filtered by 40μm filter element)			
Acting	Internal pilot or external pilot			
Port size [Note 1]	In=Out=1/4"		In=Out=3/8"	
Orifice size(Cv)[Note3]	3V310-10,3V320-10:28.0mm^2(Cv=1.65)			
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

1. Pilot-oriented mode: Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Double control solenoid valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Affiliated manual devices are equipped to facilitate installation and debugging.
7. Several standard voltage grades are optional.
8. Integrate with the manifold to save installation space.

Coil specification

Item	Specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	4.5VA	4.5VA	5.0VA	3.0W	2.5W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				
Max. frequency [Note1]	5 cycle/sec				

[Note1] The maximum actuation frequency is in the no-load state.

Ordering code

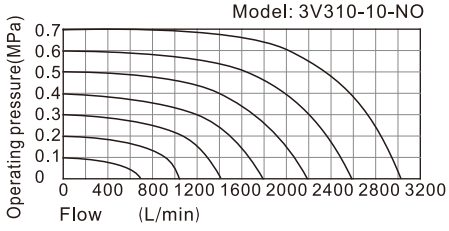
3V 3 10 10 NO A □ G

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①Model	②Code	③Valve type	④Port size	⑤Acting type	⑥Standard voltage	⑦Electrical entry	⑧Thread type
3V:Solenoid valve (3/2 way)	3: 300 Series	10: Single solenoid	08: 1/4" 10: 3/8"	NC: Normally closed NO: Normally opened	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
		20: Double solenoid		No this code			

[Note] The wire length is 0.5m. Please refer to P88 for manifold specification and the order way.

Flow chart

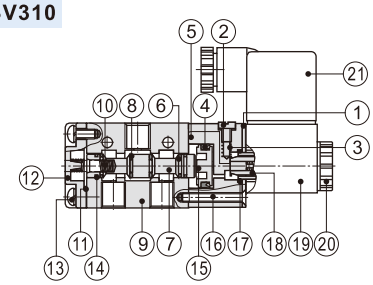


The data in flow rate chart are obtained from AirTAC lab.

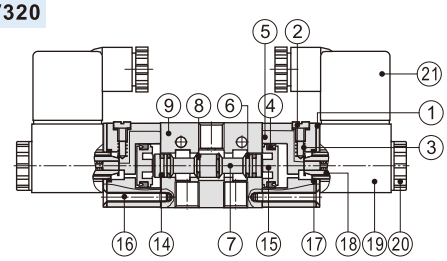
3V300 Series

Inner structure

3V310



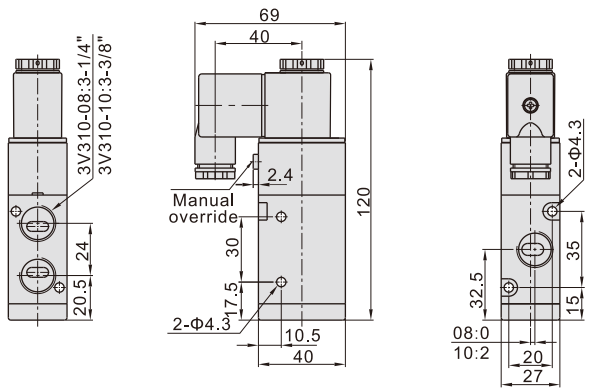
3V320



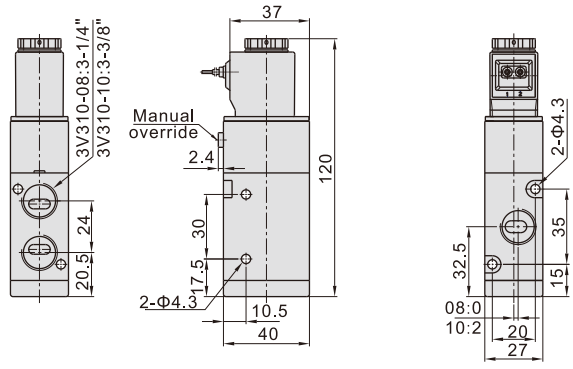
No.	Item	No.	Item	No.	Item
1	Fixed plate	8	O-ring	15	Piston
2	Manual override	9	Body	16	Pilot screw
3	Override spring	10	Spool spring	17	O-ring
4	Piston O-ring	11	Bottom cover gasket	18	Armature
5	Pilot body	12	Bottom cover	19	Coil
6	Spool packing	13	Screw	20	Coil nut
7	Spool	14	Wear ring	21	Connector

Dimensions

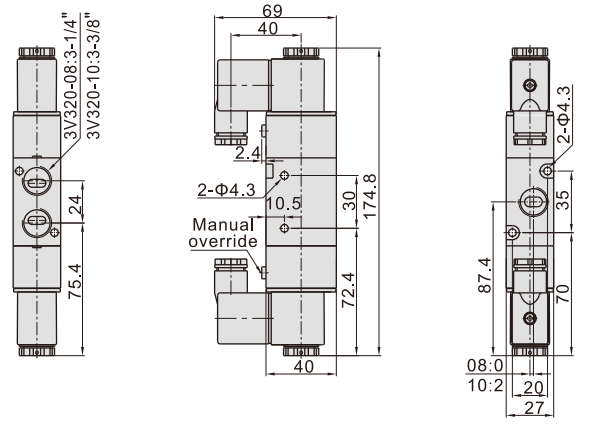
3V310(Terminal)



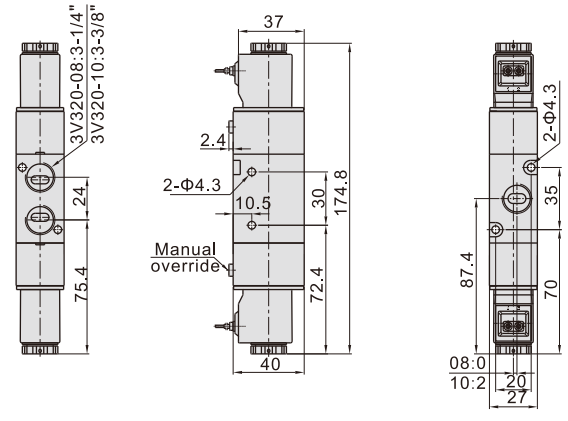
3V310(Grommet)



3V320(Terminal)



3V320(Grommet)



Compendium of 6D Series

Manual Lock Design

1.Manual push does not automatically lock, used for valve installation and debugging.
2.Use caution, prior to activating manual override.
3.With the correct size screw driver: gently press and turn to lock (Torque: 0.1N.m)



Normal Position　　Lock Position

Adaptor design of pilot valve

Easy to install with stable signaling, decreases risk during manual wiring

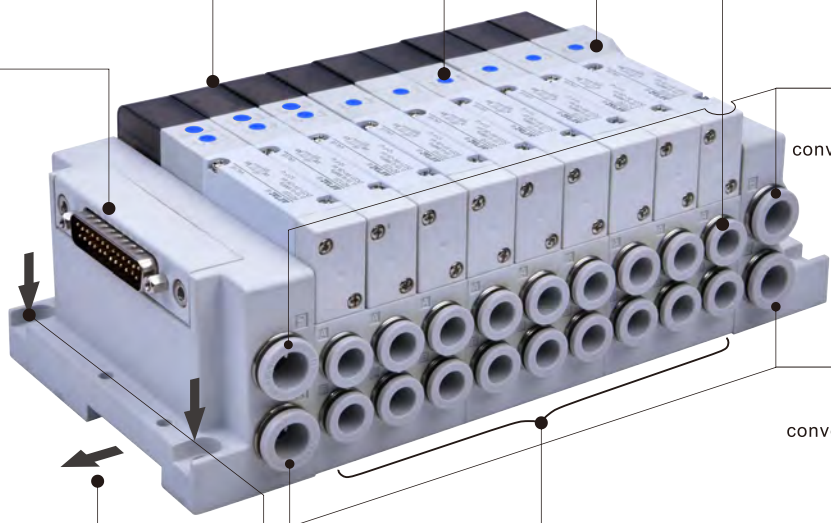
Consolidate Input

The D-SUB25PIN cable, simplifies wiring process and enhances risk-resisting function.

Multi-series and Multi-port types are optional

6D0500, 6D100, 6D200 series ;
Φ4、Φ6、Φ8、Φ10ports for options.

Series/Ports(A\B ports)	Φ4	Φ6	Φ8	Φ10
6D0500	•	•		
6D100	•	•	•	
6D200			•	•



Dual Centralized inlet ports

Centralized inlet, convenient piping, saving installation space.

Series	6D0500	6D100	6D200
Ports(P)	Φ8	Φ10	Φ12

Dual Centralized outlet ports

Centralized exhaust, convenient piping, saving installation space.

Series	6D0500	6D100	6D200
Ports(R)	Φ8	Φ10	Φ12

Manifold design

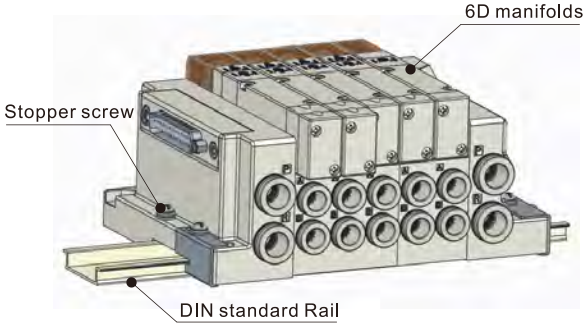
It is convenient and flexible to disassemble and replace.

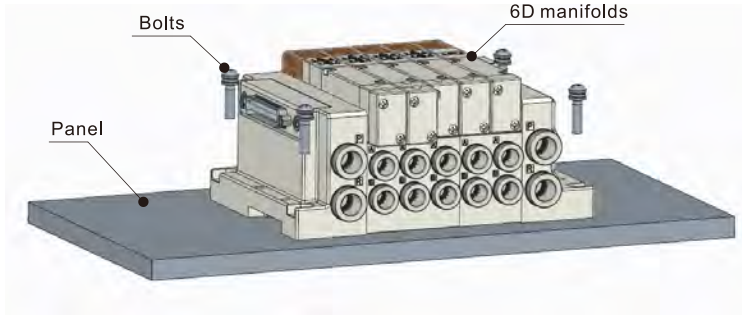
DIN rail compatibility

Manifold is compatible with DIN standard rail.
6D integrated valve can be fixed at any position of rail by stop screw.

Diverse installation

With four bolts, it can be fixed anywhere on panel.





Integrated solenoid valve (5/2, 5/3 way)

6D Series

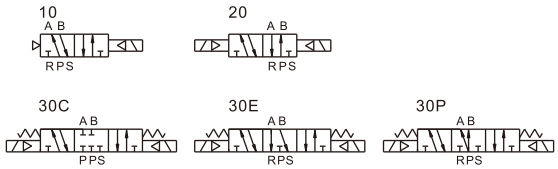


Specification

Model		6D0500	6D100	6D200
Fluid		Air(to be filtered by 40μm filter element)		
Acting		Pilot		
Operating pressure	5/3 way	0.2~0.8MPa(29~114psi)		
	Others	0.15~0.8MPa(21~114psi)		
Proof pressure		1.2MPa(175psi)		
Temperature		-20~70℃		
Type of inlet and exhaust		Centralized inlet and exhaust		
Numbers of station	Single solenoid valves	3-21 stations		
	Dual solenoid valves	3-21 stations [Note1]		
Port size	A、B ports	Φ4/Φ6 tube fitting	Φ4/Φ6/Φ8 tube fitting	Φ8/Φ10 tube fitting
	P、R ports	Φ8 tube fitting	Φ10 tube fitting	Φ12 tube fitting
Electrical entry		Terminal , 25pinD-SUB		

Note1: On 3 to 18 station valve banks, only the first 6 positions can have double solenoid valves(2 or 3 positions)
On 19 to 21 station valve banks, only the first 3 positions can have double solenoid valves(2 or 3 positions)

Symbol



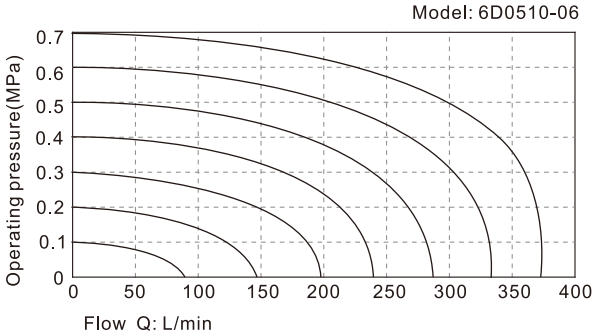
Coil specification

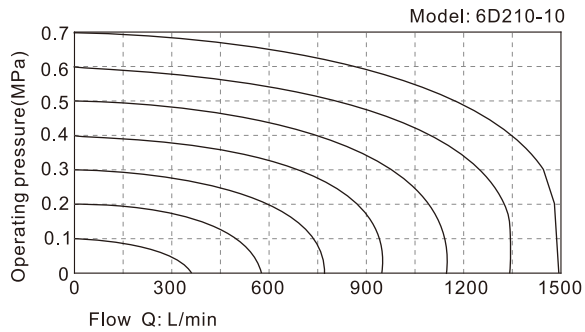
Item	Specification	
Standard voltage	DC24V	DC12V
Scope of voltage	DC： ±10%	
Power of consumption	DC：0.9W	
Protection	Dustproof	
Temperature classification	F Class	
Electrical entry	Terminal	
Activating time	0.05 sec and below	

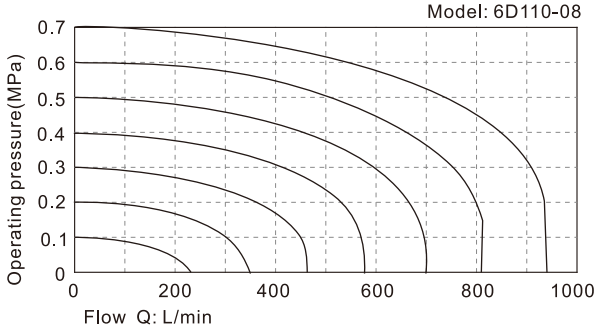
Product feature

1. Centralized inlets, outlets and signal input(25pin D-SUB) make it highly simplifies installation and reduces risk during mounting.
2. Flexible combination for various applications.
3. Convenient installation, can be fixed on panel or DIN rail without other accessory.
4. 2 position and 3 position valves can be installed on the same manifold without further accessories.
5. Affiliated manual devices are equipped to facilitate installation and debugging.
6. Low starting voltage and long service life.

Flow chart







Flow rate data obtained from the AirTAC R&D Lab.

Manifold ports Ordering Code (With Valves)

6D W 1H 8F-J06 B S1 D2 C2 E2 P1 □

1 2 3 4 5 6 7 8 9 10 11


Without communication module


Without communication module


With communication module

①Valve type	Blank: Standard type	W: Valve with double solenoid manifold(7~12 stations)	
②Model	05H: 6D0500 Series integrated Solenoid valve	1H: 6D100 Series integrated Solenoid valve	2H: 6D200 Series integrated Solenoid valve
③Number of stations	3F: 3 stations 4F: 4 stations 21F: 21stations		
④Port size(A/B Port)	J04: Φ4 tube fitting J06: Φ6 tube fitting	J04: Φ4 tube fitting J06: Φ6 tube fitting J08: Φ8 tube fitting	J08: Φ8 tube fitting J10: Φ10 tube fitting
⑤Standard voltage	B:DC24V F:DC12V		
⑥Single solenoid 5/2 way	Blank: No S1: 1 piece S2: 2 pieces ..... S21: 21 pieces		
⑦Double solenoid 5/2 way	Blank: No D1: 1 piece D2: 2 pieces ..... D6: 6 pieces		
⑧Double solenoid 5/3 way closed center	Blank: No C1: 1 piece C2: 2 pieces ..... C6: 6 pieces		
⑨Double solenoid 5/3 way exhaust center	Blank: No E1: 1 piece E2: 2 pieces ..... E6: 6 pieces		
⑩Double solenoid 5/3 way pressure center	Blank: No P1: 1 piece P2: 2 pieces ..... P6: 6 pieces		
⑪Type of communication module	Blank: Without communication module CPN1: Profinet+PNP CPN2: Profinet+NPN CEN1: EtherNet/IP+PNP CEN2: EtherNet/IP+NPN		

Ordering code instruction:
1. Fill in spec, number of stations, port size, voltage in order code accordingly.
2. Valve installation sequence : start from D-SUB side.
3. Valve installation sequence : (1) Double solenoid 5/3 way(C→E→P). (2) Double solenoid 5/3 way. (3)Single solenoid.
4. For empty position, please install provisional block.
5. 0500 series in/outlet ports (P/R) is Ø8, 100 series in/outlet ports (P/R) is Ø10, 200 series in/outlet ports (P/R) is Ø12
6. Less than 8 stations(inclusive):come with 1 plug type silencer and 2 plugs; More than 8 stations: come with 2 plug type silencers and 1 plug.
7. Total numbers of valves must be ≤21
8. For station 3-18 of standard type, total numbers of ⑥+⑦+⑧+⑨ must be ≤6 ; station 19-21 of standard type, total numbers of ⑥+⑦+⑧+⑨ must be ≤3.
9.When total number of double solenoid valves ≥7 is required, only 6DW series is optional;
10.For 6DW series: total number of double solenoids+single solenoids must be ≤12;
11.When only 3/4/5/6 stations of double solenoids are required, it is sufficient to select a standard type valve.
12.Other protocols: EtherCAT, IO-Link are estimated to be released in Jan.2023.

Manifold ports Ordering Code (Without Valves)

6D W 1H 8F J06

1 2 3 4





①Manifold type	Blank: Standard type	W: Double solenoid manifold(7~12 stations)	
①Model	05H: 6D0500 Series manifold	1H: 6D100 Series manifold	2H: 6D200 Series manifold
②Number of stations	3F: 3 stations 4F: 4 stations 21F: 21stations		
④Port size(A/B Port)	J04: Φ4 tube fitting J06: Φ6 tube fitting	J04: Φ4 tube fitting J06: Φ6 tube fitting J08: Φ8 tube fitting	J08: Φ8 tube fitting J10: Φ10 tube fitting

Note:
1. On 3 to 18 station valve banks of standard type only the first 6 positions can have double solenoid valves(2 or 3 positions)
On 19 to 21 station valve banks of standard type only the first 3 positions can have double solenoid valves(2 or 3 positions)
2.Valve installation sequence: start from D-SUB side.
3.0500 series in/outlet ports (P/R) is Ø8, 100 series in/outlet ports (P/R) is Ø10, 200 series in/outlet ports (P/R) is Ø12
4.Less than 8 stations(inclusive): come with 1 plug type silencer and 2 plugs; More than 8 stations: come with 2 plug type silencers and 1 plug.
5.When total number of double solenoid valves ≥7 is mounted, only 6DW series is optional;
6.For 6DW series: total number of double solenoids+single solenoids can be mounted must be ≤12;
7.When only 3/4/5/6 stations of double solenoids are mounted, it is sufficient to select a standard type manifold.

6D Series

Solenoid Valve Ordering Code

6D 1 20 B

① ② ③ ④



①Model	6D: 5-port, 2/3-position solenoid valve		
②Code	05: 0500 Series	1: 100 Series	2: 200 Series
③Valve type	10 : Single solenoid(5/2 Way) 20 : Double solenoid(5/2 Way) 30C : Double solenoid(5/3 way closed center)		
	30E : Double solenoid(5/3 way exhaust center) 30P : Double solenoid(5/3 way pressure center)		
④Standard Voltage	B: DC24V F: DC12V		

Provisional Block Ordering Code

P - 6D100M - R2

① ② ③



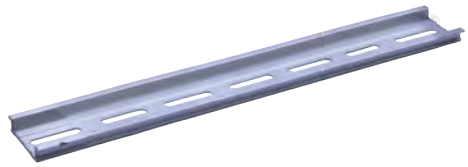
①Accessories	P : Accessories		
②Model	6D0500M: 0500 Series	6D100M: 100 Series	6D200M: 200 Series
③Provisional block code	R2: 6D series Provisional block		

Note:Orders come with screw bolts.

DIN Rail Ordering Code

F – DINX140

① ②

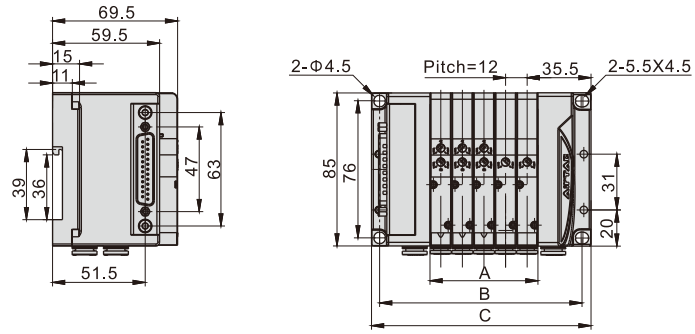


①Accessories	F–DIN: DIN Rail
②Length of DIN rail	140 : 140mm 175 : 175mm 210 : 210mm .....1000 : 1000mm

Note: DIN rail add length is 35mm each step.

Dimensions

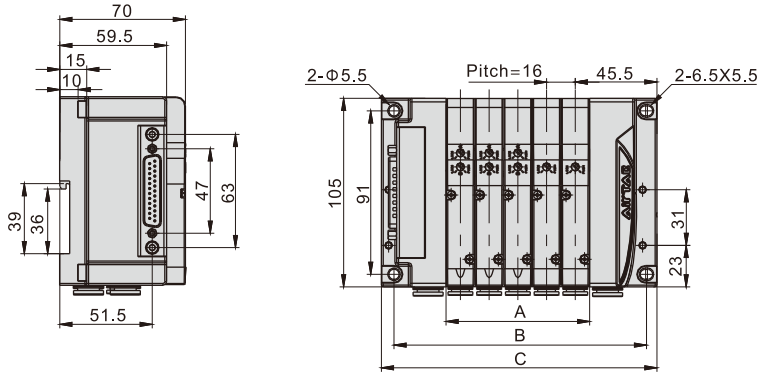
6D0500



Item\Stations	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F
A	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252
B	88.5	100.5	112.5	124.5	136.5	148.5	160.5	172.5	184.5	196.5	208.5	220.5	232.5	244.5	256.5	268.5	280.5	292.5	304.5
C	98	110	122	134	146	158	170	182	194	206	218	230	242	254	266	278	290	302	314

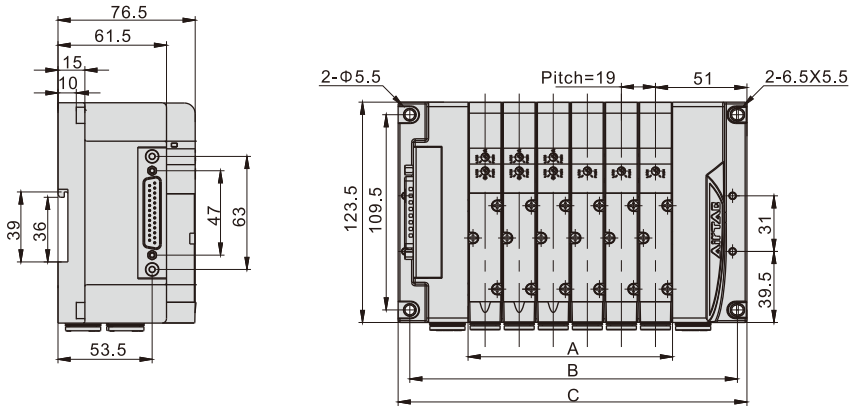
6D Series

6D100



Item\Stations	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F
A	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320	336
B	108.5	124.5	140.5	156.5	172.5	188.5	204.5	220.5	236.5	252.5	268.5	284.5	300.5	316.5	332.5	348.5	364.5	380.5	396.5
C	121.5	137.5	153.5	169.5	185.5	201.5	217.5	233.5	249.5	265.5	281.5	297.5	313.5	329.5	345.5	361.5	377.5	393.5	409.5

6D200

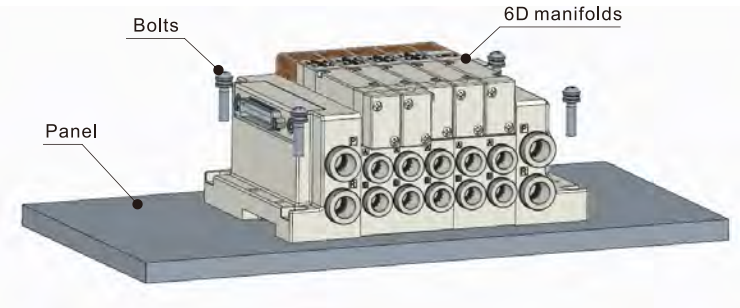


Item\Stations	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F
A	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380	399
B	125.5	144.5	163.5	182.5	201.5	220.5	239.5	258.5	277.5	296.5	315.5	334.5	353.5	372.5	391.5	410.5	429.5	448.5	467.5
C	137.5	156.5	175.5	194.5	213.5	232.5	251.5	270.5	289.5	308.5	327.5	346.5	365.5	384.5	403.5	422.5	441.5	460.5	479.5

Installtion and application

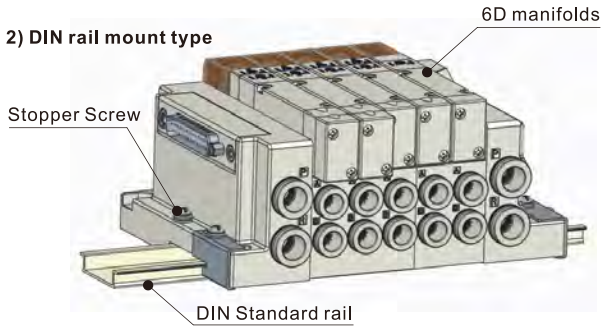
1. Two types of installation are available, choose appropriate type based on working environment.

1) Panel mount type



Four counterbore holes for screw bolts, suitable for panel installation.

2) DIN rail mount type



Compatible with standard DIN rail.
6D manifolds can be fixed at any position of rail by stop screw.

2. P\R ports connection: Please select the appropriate tube diameter according to the following specification table.

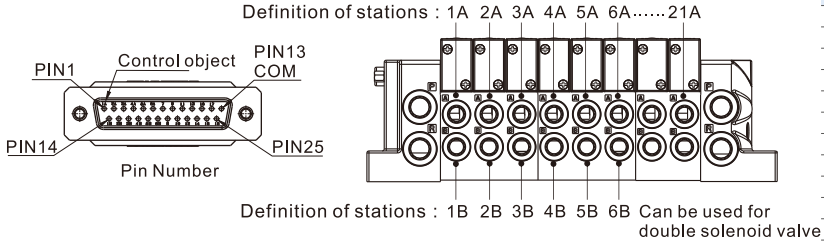
Series	Port (P)	Port (R)
6D0500	Φ8	Φ8
6D100	Φ10	Φ10
6D200	Φ12	Φ12

3. A\B ports connection: Please select the appropriate tube diameter according to the following specification table.

Series\Ports(A\B ports)	Φ4	Φ6	Φ8	Φ10
6D0500	•	•		
6D100	•	•	•	
6D200			•	•

4. Pin Assignment :

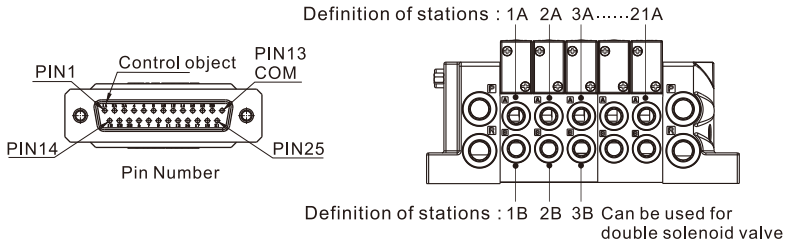
Explanation of 3-18 stations connection pin.



Pin NO.	Polarity		Control object	Pin NO.	Polarity		Control object
	-COM	+COM			-COM	+COM	
1	(+)	(-)	1A	14	(+)	(-)	1B
2	(+)	(-)	2A	15	(+)	(-)	2B
3	(+)	(-)	3A	16	(+)	(-)	3B
4	(+)	(-)	4A	17	(+)	(-)	4B
5	(+)	(-)	5A	18	(+)	(-)	5B
6	(+)	(-)	6A	19	(+)	(-)	6B
7	(+)	(-)	7A	20	(+)	(-)	8A
8	(+)	(-)	9A	21	(+)	(-)	10A
9	(+)	(-)	11A	22	(+)	(-)	12A
10	(+)	(-)	13A	23	(+)	(-)	14A
11	(+)	(-)	15A	24	(+)	(-)	16A
12	(+)	(-)	17A	25	(+)	(-)	18A
13	(-)	(+)	COM				

Note: Gauge number of cable connecting to D-Sub pin No.13(COM) must be≤22AWG

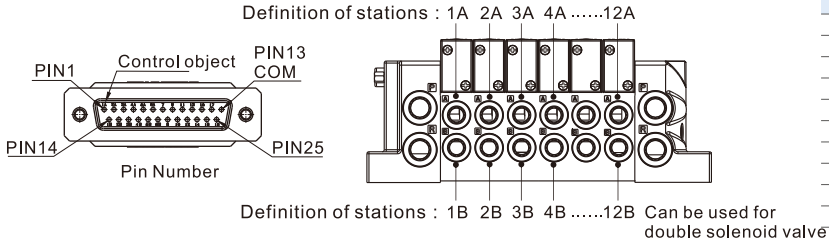
Explanation of 19-21 stations connection pin.



Pin NO.	Polarity		Control object	Pin NO.	Polarity		Control object
	-COM	+COM			-COM	+COM	
1	(+)	(-)	1A	14	(+)	(-)	1B
2	(+)	(-)	2A	15	(+)	(-)	2B
3	(+)	(-)	3A	16	(+)	(-)	3B
4	(+)	(-)	4A	17	(+)	(-)	5A
5	(+)	(-)	6A	18	(+)	(-)	7A
6	(+)	(-)	8A	19	(+)	(-)	9A
7	(+)	(-)	10A	20	(+)	(-)	11A
8	(+)	(-)	12A	21	(+)	(-)	13A
9	(+)	(-)	14A	22	(+)	(-)	15A
10	(+)	(-)	16A	23	(+)	(-)	17A
11	(+)	(-)	18A	24	(+)	(-)	19A
12	(+)	(-)	20A	25	(+)	(-)	21A
13	(-)	(+)	COM				

Note: Gauge number of cable connecting to D-Sub pin No.13(COM) must be≤22AWG

Explanation of 6DW series connection pin

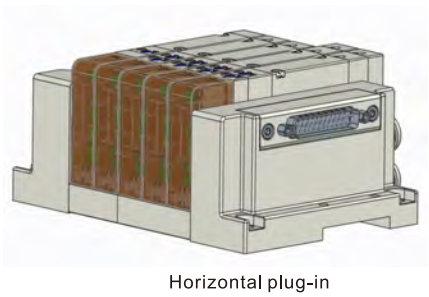


Note: When mounted with single solenoid valves, B signal is empty.

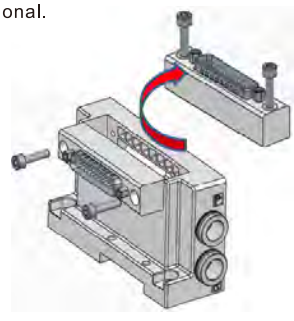
Pin NO.	Polarity		Control object	Pin NO.	Polarity		Control object
	-COM	+COM			-COM	+COM	
1	(+)	(-)	1A	14	(+)	(-)	1B
2	(+)	(-)	2A	15	(+)	(-)	2B
3	(+)	(-)	3A	16	(+)	(-)	3B
4	(+)	(-)	4A	17	(+)	(-)	4B
5	(+)	(-)	5A	18	(+)	(-)	5B
6	(+)	(-)	6A	19	(+)	(-)	6B
7	(+)	(-)	7A	20	(+)	(-)	7B
8	(+)	(-)	8A	21	(+)	(-)	8B
9	(+)	(-)	9A	22	(+)	(-)	9B
10	(+)	(-)	10A	23	(+)	(-)	10B
11	(+)	(-)	11A	24	(+)	(-)	11B
12	(+)	(-)	12A	25	(+)	(-)	12B
13	(-)	(+)	COM				

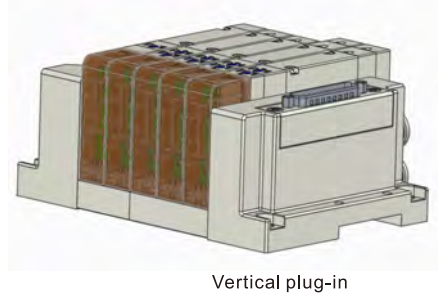
Note: Gauge number of cable connecting to D-Sub pin No.13(COM) must be≤22AWG

5. Flip-able D-SUB portZ: horizontal and vertical side are optional.



Horizontal plug-in





Vertical plug-in

Compendium of 6D Series(with communication module)

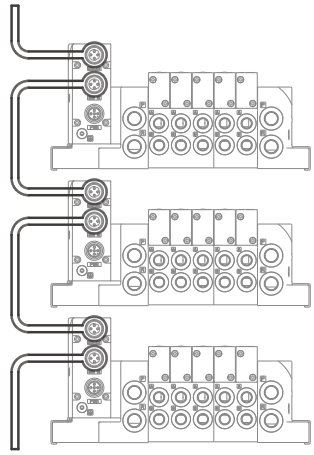
Multiple communication modules and protocols are optional

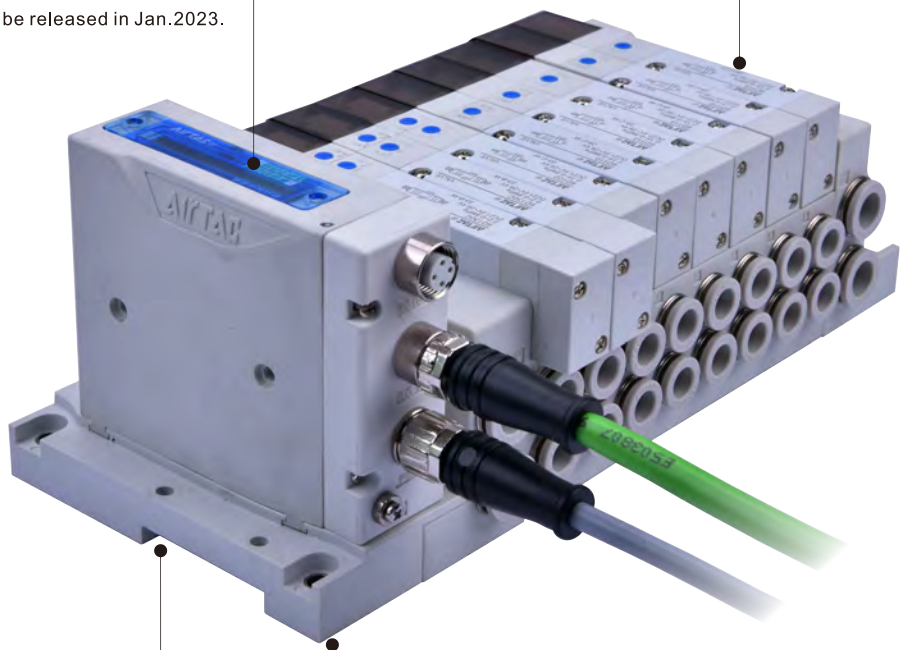
Communication module		Applicable model
No.	Protocols	
1	PROFINET	6D0500 6D100 6D200
2	EtherNet/IP	
3	EtherCAT	
4	IO-Link	

Note: EtherCAT, IO-Link are estimated to be released in Jan.2023.

Network Topology

Daisy-chain wiring

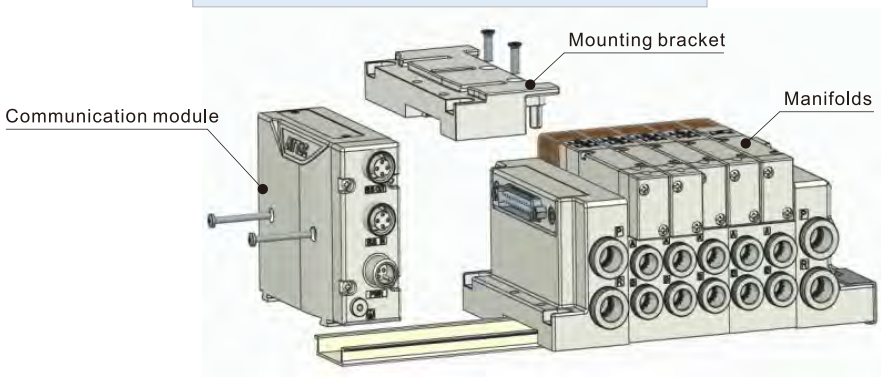




Mounting accessory

No.	Ordering code
1	F–6D0500PN–R2
2	F–6D100PN–R2
3	F–6D200PN–R2

Integration design of communication module



Communication module

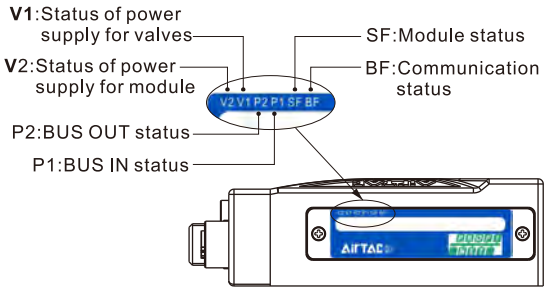


Specification

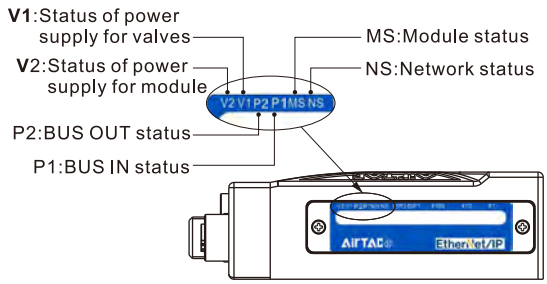
Protocol		PROFINET	EtherNet/IP
Number of outputs		24 outputs	
Communication speed		100Mbps	
Configuration file		GSDML file	EDS file
Input power	Voltage	DC24V ± 10%	
	Current consumption	<100mA	
Voltage output		DC24V ± 10%	
Output type		PNP or NPN	
Power connector		M12 plug 5 pins A-coded	
Bus connector		2XM12 socket 4 pins D-coded	
Protection		Dust proof	
Working temperature		-10~60℃	
Working humidity		35~85% RH	
Withstand voltage		AC500V 1min Between terminals and housing	
Insulation resistance		>10MΩ (DC500V), Between terminals and housing	
Communication connection		Daisy-chain wiring	

LED indicator

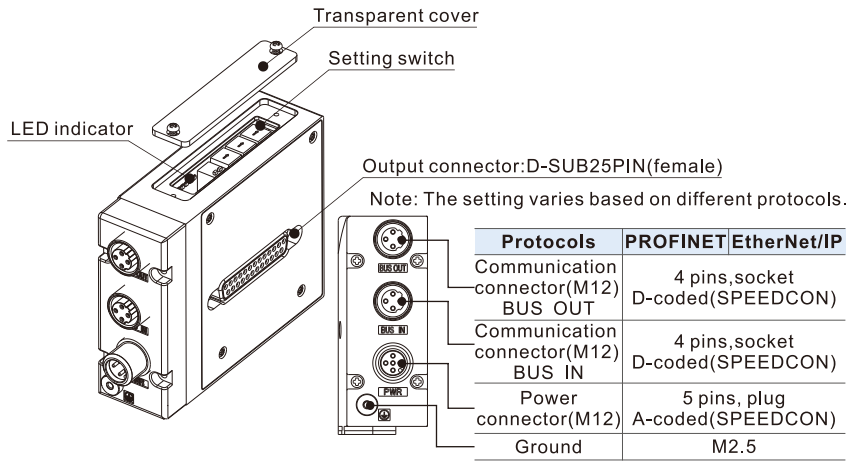
Profinet(C-6DPN□)



EtherNet/IP(C-6DEN□)



Construction and function



Note: The setting varies based on different protocols.

Protocols	PROFINET	EtherNet/IP
Communication connector(M12) BUS OUT	4 pins,socket D-coded(SPEEDCON)	
Communication connector(M12) BUS IN	4 pins,socket D-coded(SPEEDCON)	
Power connector(M12)	5 pins, plug A-coded(SPEEDCON)	
Ground	M2.5	

Ordering Code of communication module

C -6D PN 1

① ② ③



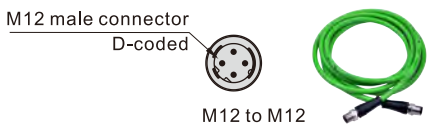
①Model	6D : 6D series communication module
②Protocol type	PN : Profinet EN : EtherNet/IP
③Output type	1 : PNP+24 outputs 2 : NPN+24 outputs

Note: 1.EtherCAT, IO-Link are estimated to be released in Jan.2023. 2.Product comes with mounting screws.

Ordering Code of communication cable

C -M12 RJ PN □ 050

① ② ③ ④ ⑤





①Model	C-M12 : Communication cable (M12male connector)
②Connector type	Blank : M12 male connectors on both end RJ : M12 male connector+RJ45 terminal
③Protocol type	PN : Applicable to Profinet, EtherNet/IP
④Cable type	Blank: Cable
⑤Cable length	050 : 0.5m 100 : 1m 200 : 2m 300 : 3m 500 : 5m

Note: EtherCAT, IO-Link are estimated to be released in Jan.2023.

Communication module

Ordering Code of power supply cable

F –M12 PN □ 150

1 2 3 4



①Model	F-M12：Power supply cable (M12 female connector)
②Protocol type	PN：Applicable to Profinet, EtherNet/IP
③Cable type	Blank：Cable
④Cable length	150：1.5m　300：3m　500：5m

Note: EtherCAT, IO-Link are estimated to be released in Jan.2023.

Ordering Code of mounting bracket

F –6D0500 PN – R2

1 2 3 4

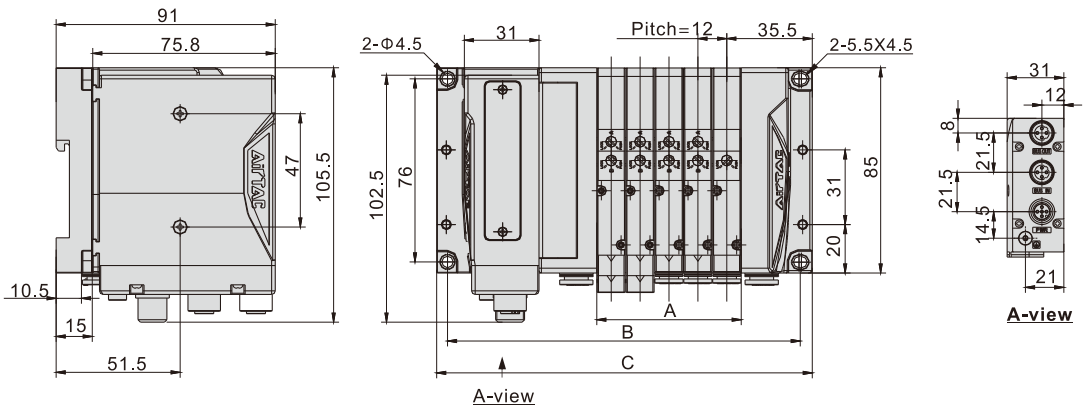


①Model	F：Mounting accessory
②Code	6D0500：6D0500 Series　6D100：6D100 Serie　6D200：6D200 Serie
③Protocol type	PN：For 6D module installation
④Output type	R2：Mounting bracket for communication module

Note: Product comes with mounting screws.

Dimensions

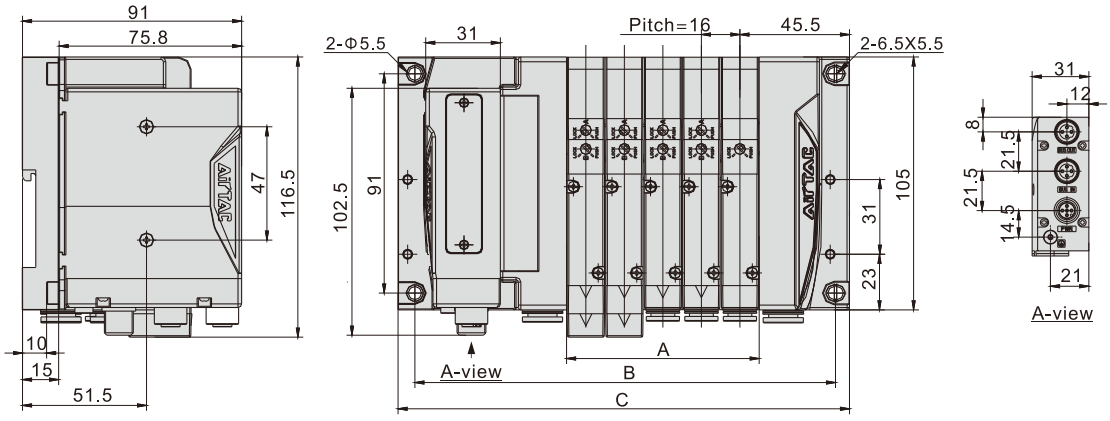
6D0500 series with communication module



Item\Stations	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F
A	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252
B	122.5	134.5	146.5	158.5	170.5	182.5	194.5	206.5	218.5	230.5	242.5	254.5	266.5	278.5	290.5	302.5	314.5	326.5	338.5
C	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312	324	336	348

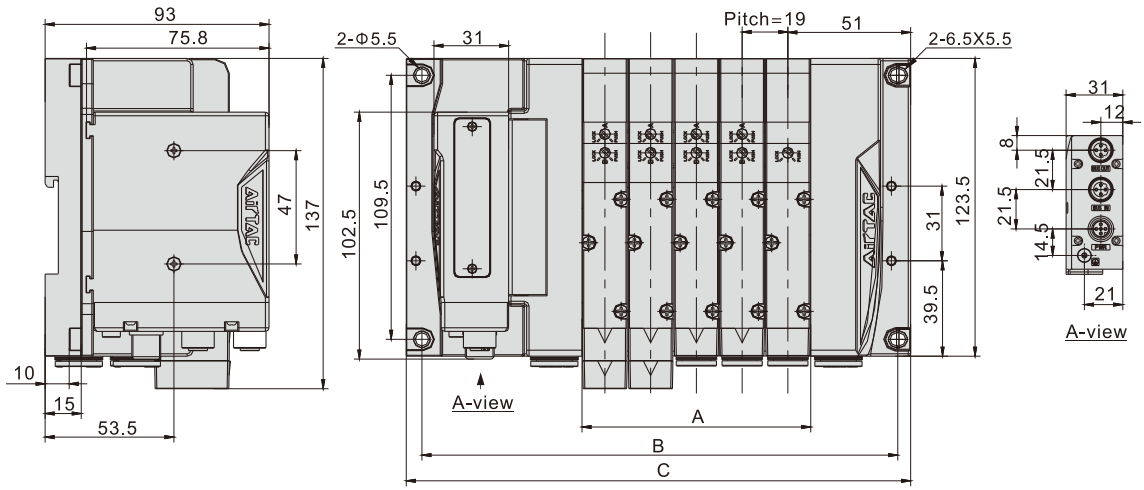
Communication module

6D100 series with communication module



Item\Stations	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F
A	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320	336
B	142.5	158.5	174.5	190.5	206.5	222.5	238.5	254.5	270.5	286.5	302.5	318.5	334.5	350.5	366.5	382.5	398.5	414.5	430.5
C	155.5	171.5	187.5	203.5	219.5	235.5	251.5	267.5	283.5	299.5	315.5	331.5	347.5	363.5	379.5	395.5	411.5	427.5	443.5

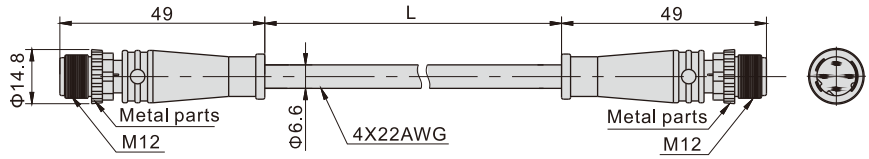
6D200 series with communication module

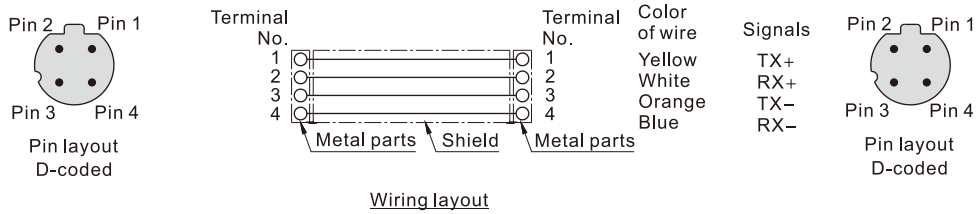


Item\Stations	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F
A	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380	399
B	159.5	178.5	197.5	216.5	235.5	254.5	273.5	292.5	311.5	330.5	349.5	368.5	387.5	406.5	425.5	444.5	463.5	482.5	501.5
C	171.5	190.5	209.5	228.5	247.5	266.5	285.5	304.5	323.5	342.5	361.5	380.5	399.5	418.5	437.5	456.5	475.5	494.5	513.5

Communication module

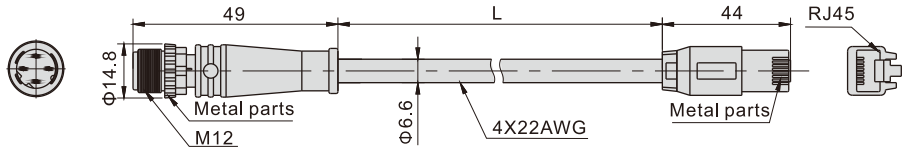
Communication cable M12 to M12

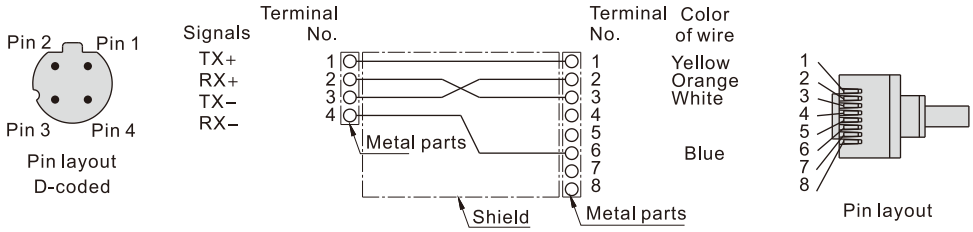




Wiring layout

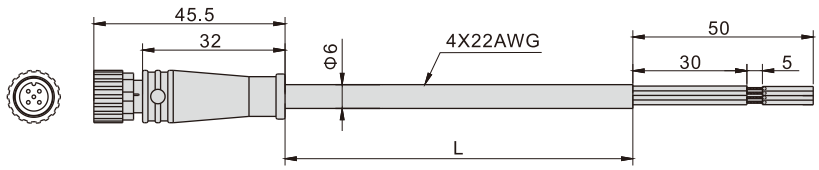
Communication cable M12 to RJ45

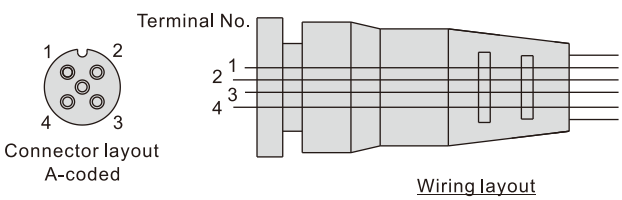




Wiring layout

Power supply cable M12 to wires





Wiring layout

Wire layout instruction			
Terminal No.	Gauge(AWG)	Description	Color
1	22	DC24V±10%(Power supply for solenoid valve)	Brown
2	22	0V(Power supply for solenoid valve)	White
3	22	DC24V ± 10%(Power supply)	Blue
4	22	0V(Power supply)	Black

Compendium of 6V Series

Multi-port types are optional

Threaded type and quick connector type are optional, and can integrate mainfold to form valve group to save space.

Terminal

Special design for terminal, horizontal and vertical insertion can freely switch.

Inner exhaust structure

Pilot airflow exhaust intensively from R, S port.



Multi-series and type

6V0500, 6V100, 6V200, 6V300 series are optional.

Extruded molding with aluminum alloy for body

Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.

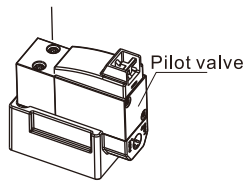
Installation and Application

1. Don't throw or drop the solenoid valve when take it, to avoid breaking valve;
2. Because solenoid pilot valve is sophisticated component, can't crash pilot valve by outside force, otherwise solenoid valve break possibly;
3. Don't dismantle solenoid valve freely, if the screw(M1.6X14) becomes loose, please tighten it by torque 0.1~0.12N.m;
4. About manual operation:

4.1. Ensure no danger, prior to activating manual override;

4.2. For push button option:

Activate by push the button in the direction shown



4.3. For slotted option:

Activate by push the button in the direction shown.
With correct size screw driver:please turn to lock gently(Torque： 0.1N.m).

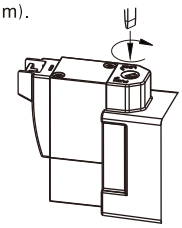
Attention



Normal position



Locked position



4.4. Wiring instruction： Vertical plug type and parallel plug type are the same as plug, please insert wire line as up drawing by practicality.



Vertical plug wire



Parallel plug wire

Solenoid valve (5/2 way,5/3 way)

6V Series

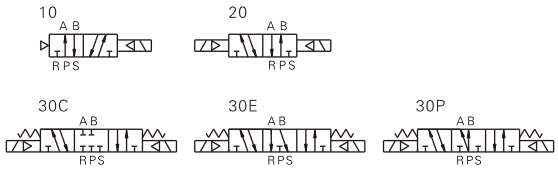


Specification

Model		6V0510	6V0520	6V0530	6V110	6V120	6V130
Port size [Note1]	Thread type	In=Out=Exh=M5			In=Out=Exh=M5(or=1/8")		
	Tube type	A port=B port=Φ4			A port=B port=Φ4 (or=Φ6) (or=Φ8)		
Orifice size(Cv) [Note4]		M5:3.4mm² (0.2)		6V0530CM5: 2.2mm²(0.13)	06:8.9mm² (0.52)		6V130C06: 8.0mm² (0.47)
Weight		35g	50g	65g	60g	75g	90g
Model		**6V210**	**6V220**	**6V230**	**6V310**	**6V320**	**6V330**
Port size [Note1]	Thread type	In=Out=1/8"(or=1/4")Exh=1/8"			In=Out=3/8" Exh=1/4"		
	Tube type	A port=B port=Φ6(or=Φ8) (or=Φ10)			-		
Orifice size(Cv) [Note4]		08:15.4mm² (0.91)		6V230C08: 14.2mm²(0.84)	10:38.4mm²(2.26)		6V330C10: 30.5mm² (1.8)
Weight		100g	115g	130g	230g	265g	305g
Fluid		Air(to be filtered by 40μm filter element)					
Acting		Internal pilot					
Operating pressure	5/3 way	0.2~0.8MPa(29~114psi)					
	5/2 way	0.15~0.8MPa(21~114psi)					
Proof pressure		1.2MPa(175psi)					
Temperature		-20~70℃					
Material of body		Aluminum alloy					
Lubrication [Note3]		Not required					
Pilot valve's Exhaust type		Centralized exhaust type					
Max.frequency [Note2]		5 cycle/sec		3 cycle/sec	5 cycle/sec		3 cycle/sec

[Note1] G thread is available.
[Note2] The maximum actuation frequency is in the no-load state.
[Note3] Once lubricated air is used, continue with same medium to optimize valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

1. Electrical entry is terminal, horizontal and vertical insertion can freely switch.
2. Inner exhaust structure to collect pilot airflow, and then exhaust intensively from R, S port.
3. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
4. Threaded type and quick connector type are optional, and can integrate manifold to form valve group to save space.

Coil specification

Item	Specification			
Standard voltage	AC220V	AC110V	DC24V	DC12V
Scope of voltage	AC：+15% ~−10%		DC：±10%	
Power consumption	1.1VA		0.9W	
Protection	Dustproof			
Temperature classification	F Class			
Electrical entry	Terminal			
Activating time	0.05 sec and below			

Ordering code

6V 2 10 J 08 B 050 G

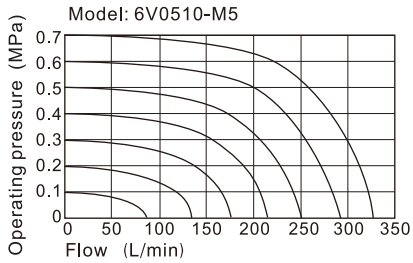
1 2 3 4 5 6 7 8

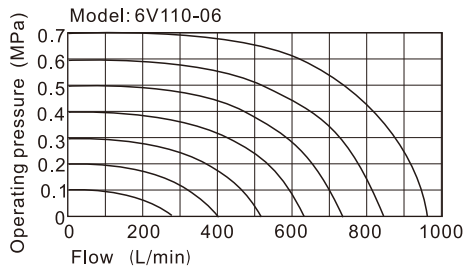
①**Model**	6V: Solenoid valve (5/2, 5/3 way)					
②**Code**	05: 0500 Series	1: 100 Series	2: 200 Series	3: 300 Series		
③**Valve type**	10: Single solenoid 5/2 way　20: Double solenoid 5/2 way 30C：Double solenoid 5/3 way closed center　30E：Double solenoid 5/3 way exhaust center 30P：Double solenoid 5/3 way pressure center					
④**Port type**	Blank: Thread type　J: Tube type					
⑤**Port size** **Thread**	M5: M5	M5: M5	06: 1/8"	06: 1/8"	08: 1/4"	10: 3/8"
⑤**Port size** **Tube**	04: Φ4mm	04: Φ4mm/06: Φ6mm/08: Φ8mm		06: Φ6mm/08: Φ8mm/10: Φ10mm		-
⑥**Voltage**	A: AC220V　B: DC24V　C: AC110V　F: DC12V					
⑦**Wire length**	050: 0.5m　200: 2.0m					
⑧**Thread type** [Note1]	–	G: G Thread				

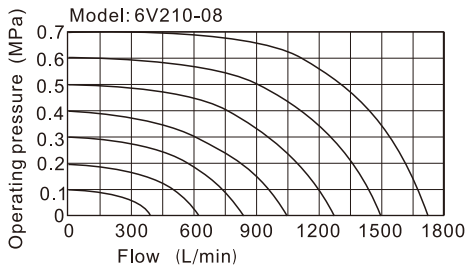
[Note]: The base of the tube type solenoid valve is only used with the manifold.

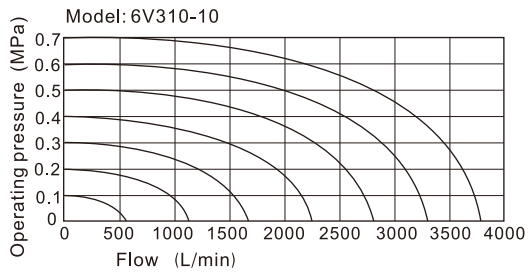
6V Series

Flow chart





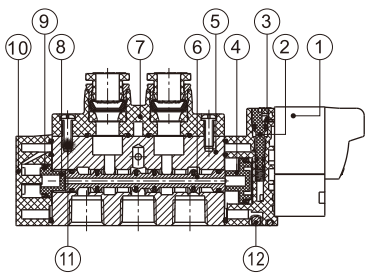




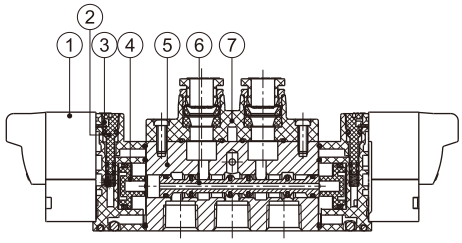
The data in flow rate chart are obtained from AirTAC lab.

Inner structure

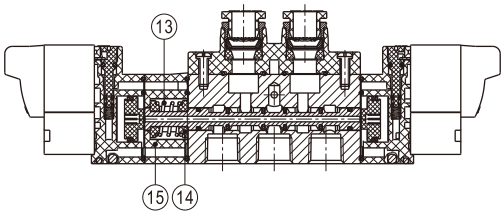
6V110



6V120



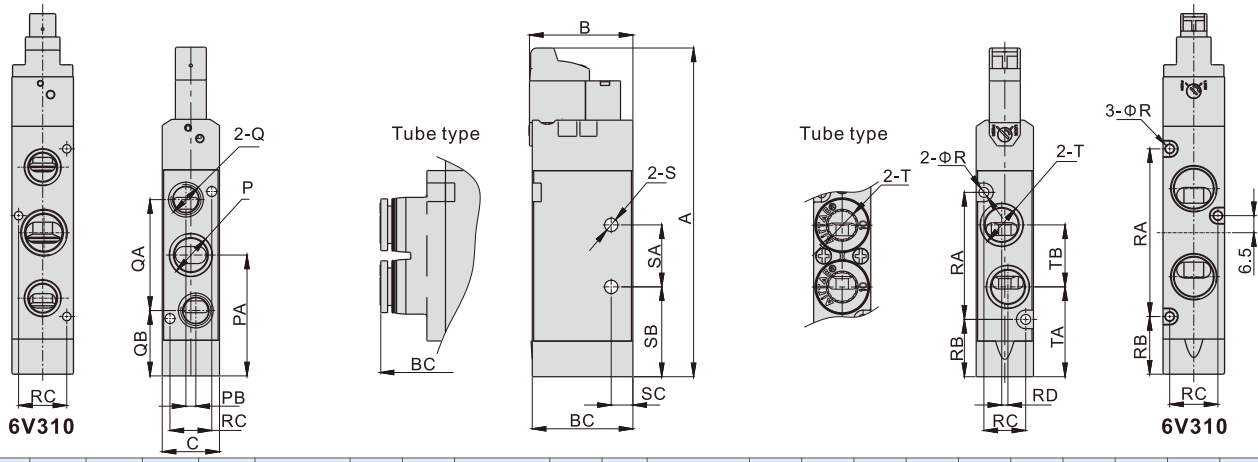
6V130C



No.	Item	No.	Item	No.	Item
1	Pilot valve	6	Spool	11	Bolt
2	Manual override	7	Connecting block	12	Steel ball
3	Pilot kit	8	Little piston	13	Spring
4	Big piston	9	Gasket	14	Return holder
5	Body	10	Bottom cover	15	Side cover

Dimensions

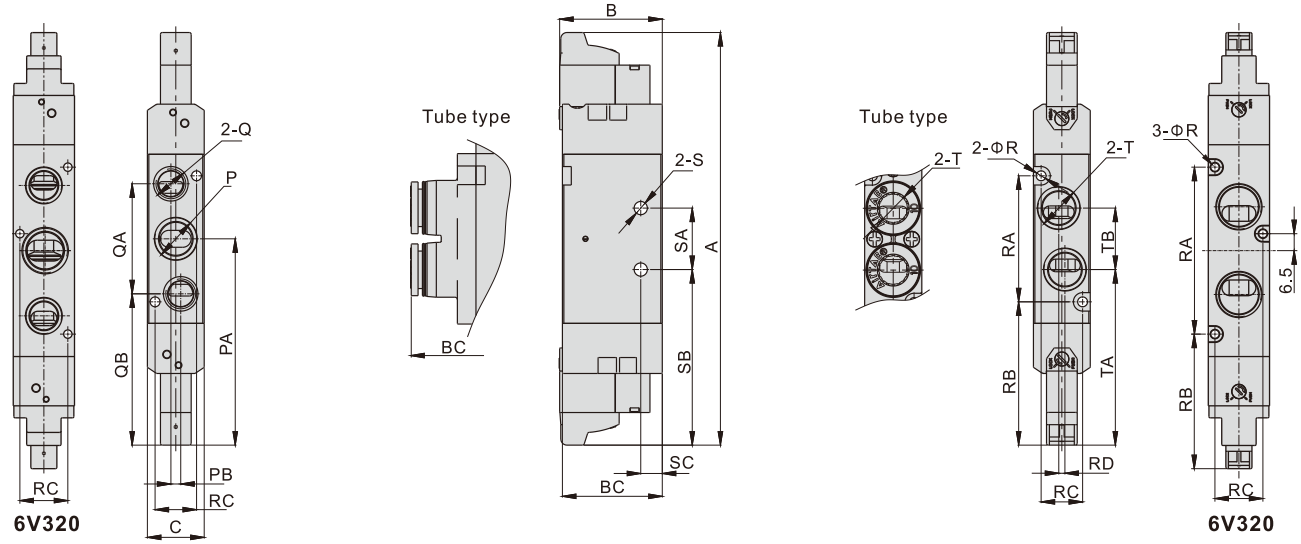
6V0510
6V110
6V210
6V310



Model\Item	A	B	BC	C	P	PA	PB	Q	QA	QB	T	TA	TB	R	RA	RB	RC	RD	S	SA	SB	SC
6V0510M5	73	31	21	10.6	M5X0.8	22.5	1	M5X0.8	19	13	M5X0.8	17.5	10	2.1	22.5	11	7.5	0	Φ2.6	10	17.5	4
6V0510J04			32.5								Φ4(Tube)								–	–	–	–
6V110M5	93.5	32	24	15.5	M5X0.8	33	-	M5X0.8	29.8	18	M5X0.8	25.2	15.4	2.6	34	16	11	-	Φ3.2	14	26	4
6V11006					1/8"		2.6	1/8"	28	19	1/8"	24.5	16.5					0	–	–	–	–
6V110J04			39.5								Φ4(Tube)											
6V110J06			41								Φ6(Tube)											
6V110J08			42.5								Φ8(Tube)											
6V21006	106	33.5	32.5	18.5	1/8"	39	3.2	1/8"	36	21	1/8"	30	18	3.2	41	18.5	13.5	-	Φ4.3	20	29	7
6V21008					1/4"						1/4"	29	20					2	–	–	–	–
6V210J06			50.6								Φ6(Tube)											
6V210J08											Φ8(Tube)											
6V210J10			53.5								Φ10(Tube)											
6V31010	137.5	46	46	23.5	3/8"	54	0.5	1/4"	50	29	3/8"	37	33.5	3.2	64	22	18.4	0	Φ4.3	25	41.5	8

[Note]: The tube type solenoid valve is only used with the manifold. No through hole "S" on the side.

6V0520
6V120
6V220
6V320

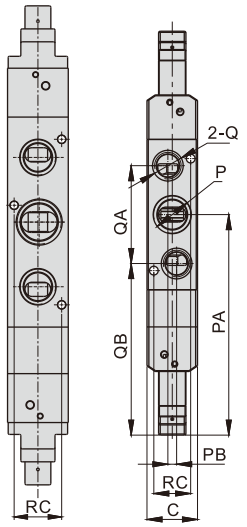


Model\Item	A	B	BC	C	P	PA	PB	Q	QA	QB	T	TA	TB	R	RA	RB	RC	RD	S	SA	SB	SC
6V0520M5	101.5	31	21	10.6	M5X0.8	51	1	M5X0.8	19	41	M5X0.8	45.5	10	2.1	22.5	39.5	7.5	0	Φ2.6	10	45.5	4
6V0520J04			32.5								Φ4(Tube)								–	–	–	–
6V120M5	121.5	32	24	15.5	M5X0.8	61	-	M5X0.8	29.8	46	M5X0.8	53.7	15.4	2.6	34	44	11	-	Φ3.2	14	54	4
6V12006					1/8"		2.6	1/8"	28	47	1/8"	52.5	16.5					0	–	–	–	–
6V120J04			39.5								Φ4(Tube)											
6V120J06			41								Φ6(Tube)											
6V120J08			42.5								Φ8(Tube)											
6V22006	134	33.5	32.5	18.5	1/8"	67	3.2	1/8"	36	49	1/8"	58	18	3.2	41	46.5	13.5	-	Φ4.3	20	57	7
6V22008					1/4"						1/4"	57	20					2	–	–	–	–
6V220J06			50.6								Φ6(Tube)											
6V220J08											Φ8(Tube)											
6V220J10			53.5								Φ10(Tube)											
6V32010	167	46	46	23.5	3/8"	83.5	0.5	1/4"	50	58.5	3/8"	67	33.5	3.2	64	51.5	18.4	0	Φ4.3	25	71	8

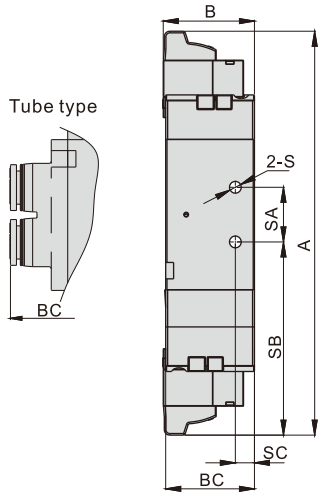
[Note]: The tube type solenoid valve is only used with the manifold. No through hole "S" on the side.

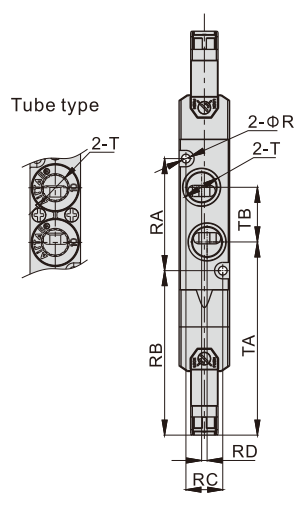
6V Series

6V0530
6V130
6V230
6V330



6V330





6V330

Model\Item	A	B	BC	C	P	PA	PB	Q	QA	QB	T	TA	TB	R	RA	RB	RC	RD	S	SA	SB	SC
6V0530M5	110	31	21	10.6	M5X0.8	59	1	M5X0.8	19	50	M5X0.8	54	10	2.1	22.5	48	7.5	0	Φ2.6	10	54	4
6V0530J04			32.5								Φ4(Tube)								–	–	–	–
6V130M5	133	32	24	15.5	M5X0.8	72.5	-	M5X0.8	29.8	58	M5X0.8	64.7	15.4	2.6	34	55.5	11	-	Φ3.2	14	65.5	4
6V13006					1/8"		2.6	1/8"	28	59	1/8"	64	16.5					0	–	–	–	–
6V130J04			39.5								Φ4(Tube)											
6V130J06			41								Φ6(Tube)											
6V130J08			42.5								Φ8(Tube)											
6V23006	148	33.5	32.5	18.5	1/8"	81	3.2	1/8"	36	63	1/8"	72	18	3.2	41	60.2	13.5	-	Φ4.3	20	70.7	7
6V23008					1/4"						1/4"	71	20					2	–	–	–	–
6V230J06			50.6								Φ6(Tube)											
6V230J08											Φ8(Tube)											
6V230J10			53.5								Φ10(Tube)											
6V33010	185	46	46	23.5	3/8"	101.5	0.5	1/4"	50	76.5	3/8"	85	33.5	3.2	64	69.5	18.4	0	Φ4.3	25	89	8

[Note]: The tube type solenoid valve is only used with the manifold. No through hole "S" on the side.

Manifold for 6V Series



Specification

Item\Manifold Model	6V0500M	6V100M	6V200M	6V300M
Fluid	Air(to be filtered by 40 μ m filter element)			
Temperature ℃	-20~70			
Adaptable valve's series	6V0500 Series	6V100 Series	6V200 Series	6V300 Series

Product feature

1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost.
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring.
3. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

Ordering code

6V100M 5F G — Ordering code for manifold

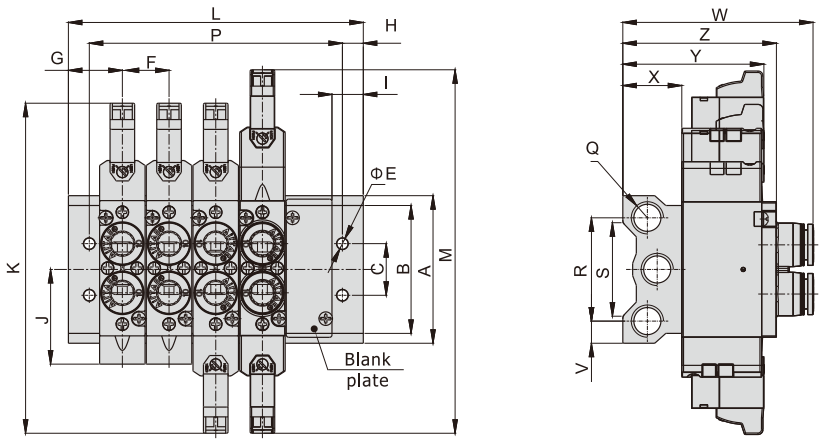
①Model	6V0500M: 6V0500 Series manifold	6V100M: 6V100 Series manifold	6V200M: 6V200 Series manifold	6V300M: 6V300 Series manifold
②Number of stations	1F: 1 Station 2F: 2 Station 3F: 3 Station ..... 20F: 20 Station			
③Thread type	G: G Thread			

P–6V100M–R2 — Ordering code for blank plate

①Model	6V0500M: 6V0500 Series manifold	6V100M: 6V100 Series manifold	6V200M: 6V200 Series manifold	6V300M: 6V300 Series manifold
②Code	R2: Blank plate for manifold			

[Note] 1.Manifold kits contains manifold, seal and screw; 2. Blank plate kits contains blank plate and screw.

Dimensions



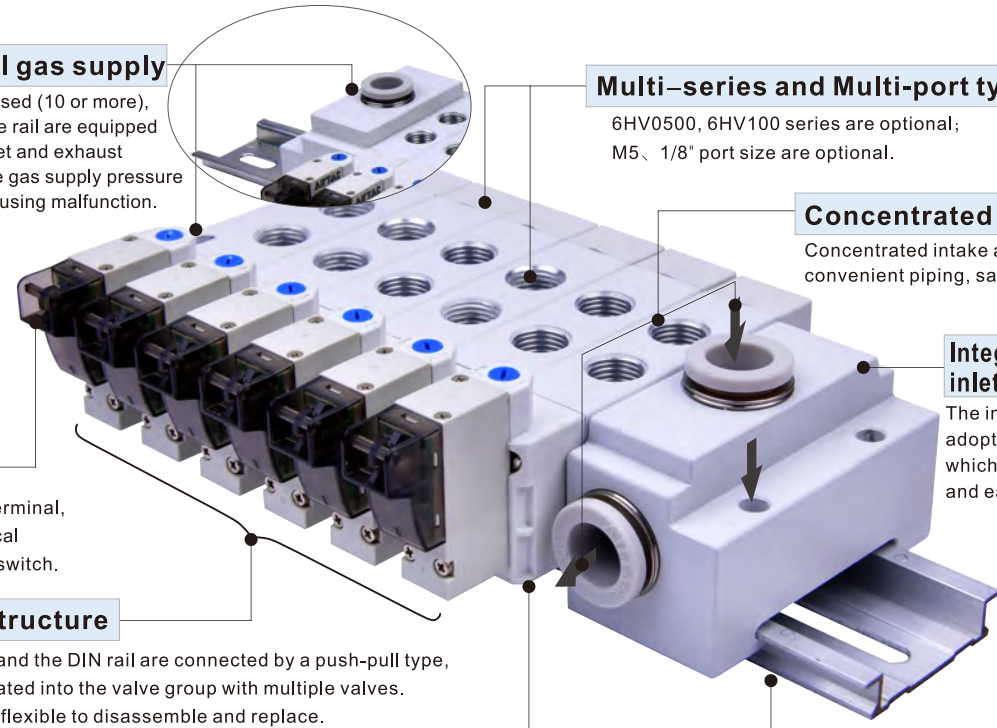
Model\Item	A	B	C	E	F	G	H	I	J	K	M	Q	R	S	V	W			X	Y	Z
6V0500M	46	32	16	4.5	11	15	5	9.5	22.5	102	110	1/8"	32	26	7	36.2(M5)	50.5(J04)		17	35.5	47.5
6V100M	57.5	43	20	4.5	16	17	5	9.5	33	121.5	133.5	1/4"	40	36	9	55(M5/06)	62.5(J04)/64(J06)	65.5(J08)	22	46	54
6V200M	60	52	21	4.5	19	18.5	5	9.5	38.5	134.5	148	1/4"	42	38	9	58.5(06/08)	75.2(J06)/76.5(J08)	78.5(J10)	24	57.5	62.5
6V300M	85	75	26	4.5	23.5	24	5	12	54	167	185	3/8"	57	58	14	–	–	–	27	74	–

Model\Item	L																			
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
6V0500M	30	41	52	63	74	85	96	107	118	129	140	151	162	173	184	195	206	217	228	239
6V100M	34	50	66	82	98	114	130	146	162	178	194	210	226	242	258	274	290	306	322	338
6V200M	37	56	75	94	113	132	151	170	189	208	227	246	265	284	303	322	341	360	379	398
6V300M	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384	408	432	456	480	504

Model\Item	P																			
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
6V0500M	20	31	42	53	64	75	86	97	108	119	130	141	152	163	174	185	196	207	218	229
6V100M	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296	312	328
6V200M	27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388
6V300M	38	62	86	110	134	158	182	206	230	254	278	302	326	350	374	398	422	446	470	494

6HV Series Integrated solenoid valve (5/2, 5/3 way)

Compendium of 6HV Series



Multi-channel gas supply

When multi-valve is used (10 or more), both ends of the guide rail are equipped with an integrated inlet and exhaust module to prevent the gas supply pressure from dropping and causing malfunction.

Multi–series and Multi-port types are optional

6HV0500, 6HV100 series are optional;
M5、1/8" port size are optional.

Concentrated inlet and exhaust

Concentrated intake and exhaust, convenient piping, saving installation space.

Integrated inlet and exhaust module

The inlet and exhaust module adopts integrated aluminum alloy, which is beautiful and durable, and easy to disassemble.

Terminal

Special design for terminal, horizontal and vertical insertion can freely switch.

Integrated structure

The solenoid valve and the DIN rail are connected by a push-pull type, which can be integrated into the valve group with multiple valves. It is convenient and flexible to disassemble and replace.

Inner exhaust structure

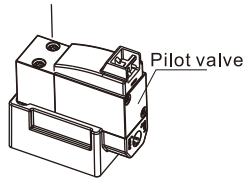
Special structure in the valve body, which can collect pilot airflow, and then exhaust intensively from R, S port.

DIN standard rail

The guide rails conform to the DIN standard and are highly versatile.
The relevant function module can be fixed to any position of the guide rail by stop screw.

Installation and Application(Solenoid valve)

1. Don't throw or drop the solenoid valve when take it, to avoid breaking valve;
2. Because solenoid pilot valve is sophisticated component, can't crash pilot valve by outside force, otherwise solenoid valve break possibly;
3. Don't dismantle solenoid valve freely, if the screw(M1.6X14) becomes loose, please tighten it by torque 0.1~0.12N.m;
4. About manual operation:
   - 4.1. Ensure no danger, prior to activating manual override;
   - 4.2. For push button option:
     Activate by push the button in the direction shown



   - 4.3. For slotted option:
     Activate by push the button in the direction shown.
     With correct size screw driver:please turn to lock gently(Torque： 0.1N.m).

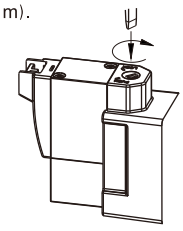
Attention



Normal position



Locked position



   - 4.4. Wiring instruction： Vertical plug type and parallel plug type are the same as plug, please insert wire line as up drawing by practicality.



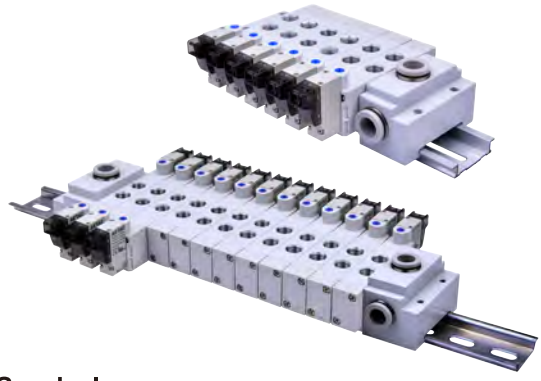
Vertical plug wire



Parallel plug wire

Integrated solenoid valve (5/2, 5/3 way)

6HV Series

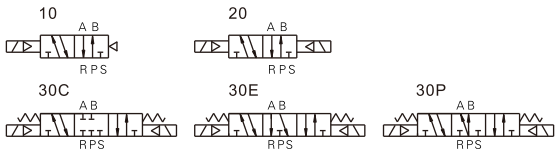


Specification

Model		6HV0510	6HV0520	6HV0530	6HV110	6HV120	6HV130
Port size [Note1]		In=Out=M5			In=Out=M5(or=1/8")		
Orifice size(Cv)[Note4]		M5:3.4mm² (0.2)		6HV0530CM5: 2.2mm² (0.13)	06:8.9mm² (0.52)		6HV130C06: 8.0mm² (0.47)
Max. frequency [Note2]		5 cycle/sec		3 cycle/sec	5 cycle/sec		3cycle/sec
Fluid		Air(to be filtered by 40μm filter element)					
Acting		Pilot					
Operating pressure	6HV0530/6HV130	0.2~0.8MPa(29~114psi)					
	Othres	0.15~0.8MPa(21~114psi)					
Proof pressure		1.2MPa(175psi)					
Temperature		-20~70℃					
Material of body		Aluminum alloy					
Lubrication [Note3]		Not required					
Exhaust type of pilot valve		Main valve and pilot valve is centralized exhaust					

[Note1] G thread is available.
[Note2] The maximum actuation frequency is in the no-load state.
[Note3] Once lubricated air is used, continue with same medium to optimize valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

1. Electrical entry is terminal, horizontal and vertical insertion can freely switch.
2. Inner exhaust structure, which can collect pilot airflow, and then exhaust intensively from R, S port.
3. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
4. The solenoid valve and the DIN rail are connected by a push-pull type, which can be integrated into the valve group with multiple valves.
   It is convenient and flexible to disassemble and replace.

Coil specification

Item	Specification			
Standard voltage	AC220V	AC110V	DC24V	DC12V
Scrop of voltage	AC：+15% ~−10%		DC：±10%	
Power of consumption	1.1VA		0.9W	
Protection	Dustproof			
Temperature classification	F Class			
Electrical entry	Terminal			
Activating time	0.05 sec and below			

Ordering code(Solenoid valve)

6HV 1 10 06 B 050 G

1 2 3 4 5 6 7

①Model	6HV: 5 port 2(3) position solenoid valve		
②Code	05：0500 Series	1：100 Series	
③Valve type	10：Single solenoid(5/2 Way) 20：Double solenoid(5/2 Way) 30C：Double solenoid(5/3 way closed center)		
	30E：Double solenoid(5/3 way Exhaust center) 30P：Double solenoid(5/3 way pressure center)		
④Port size	M5: M5	M5: M5	06: 1/8"
⑤Voltage	A: AC220V B：DC24V C：AC110V F：DC12V		
⑥Wire length	050: 0.5m 200：2.0m		
⑦Thread type	No this code	No this code	G：G Thread

Ordering code(DIN guide rail)

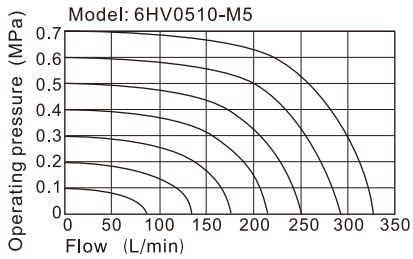
6HV 100M 6F

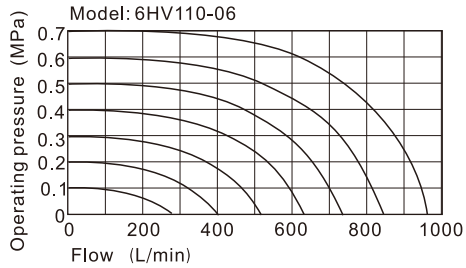
1 2 3

①Model	6HV: 5 port 2(3) position solenoid valve	
②Code	0500M: DIN guide rail for 0500 Series	100M: DIN guide rail for 100 Series
③Number of stations	4F: Manifold for 2、3、4 stations	4F:Manifold for 2、3、4 stations 20F:Manifold for 19、20 stations
	7F: Manifold for 5、6、7 stations	6F:Manifold for 5、6 stations 22F:Manifold for 21、22 stations
	10F: Manifold for 8、9、10 stations	8F:Manifold for 7、8 stations 24F:Manifold for 23、24 stations
	12F: Manifold for 11、12 stations	10F:Manifold for 9、10 stations
	15F: Manifold for 13、14、15 stations	12F:Manifold for 11、12 stations
	18F: Manifold for 16、17、18 stations	14F:Manifold for 13、14 stations
	21F: Manifold for 19、20、21 stations	16F:Manifold for 15、16 stations
	24F: Manifold for 22、23、24 stations	18F:Manifold for 17、18 stations

[Note] DIN guide rail contents inlet and outlet module or end cover. The detail configuration is: ten and less stations config one inlet and outlet module and one end cover, ten over stations config two inlet and outlet modules.

Flow chart

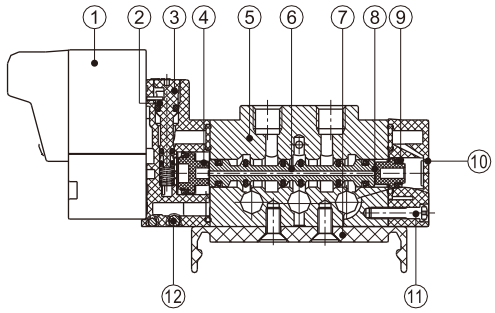




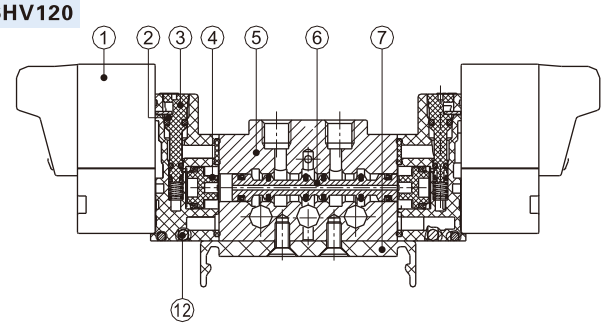
The data in flow rate chart are obtained from AirTAC lab.

Inner structure

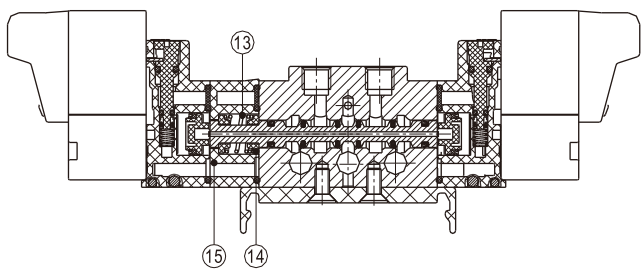
6HV110



6HV120



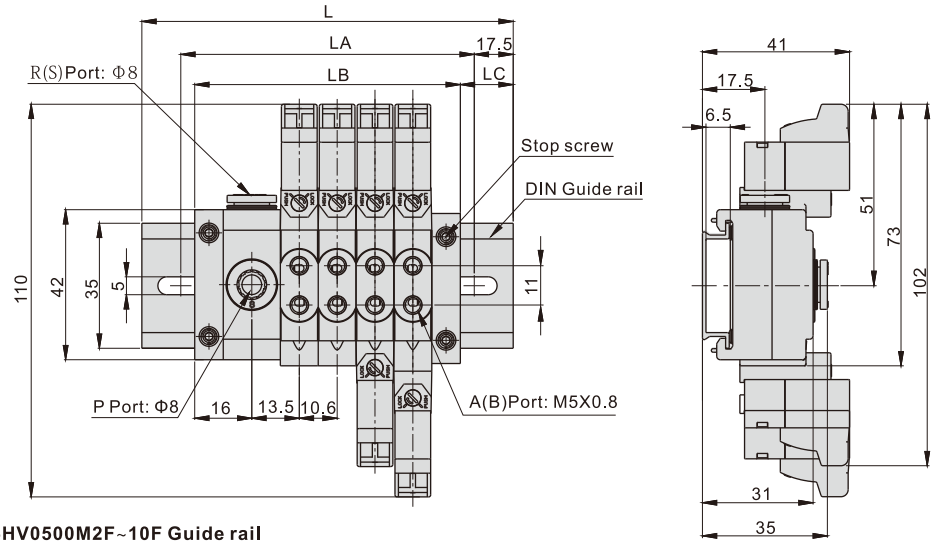
6HV130C



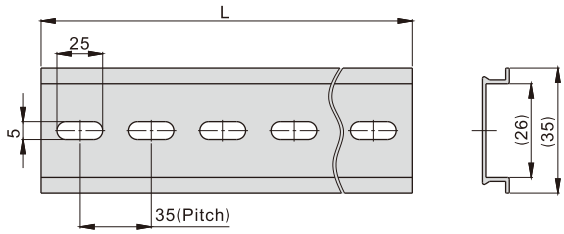
No.	Item	No.	Item	No.	Item
1	Pilot valve	6	Spool	11	Bolt
2	Manual override	7	Bracket	12	Steel ball
3	Pilot kit	8	Little piston	13	Spring
4	Big piston	9	Gasket	14	Return holder
5	Body	10	Bottom cover	15	Side cover

Dimensions

6HV0500+6HV0500M2F~10F



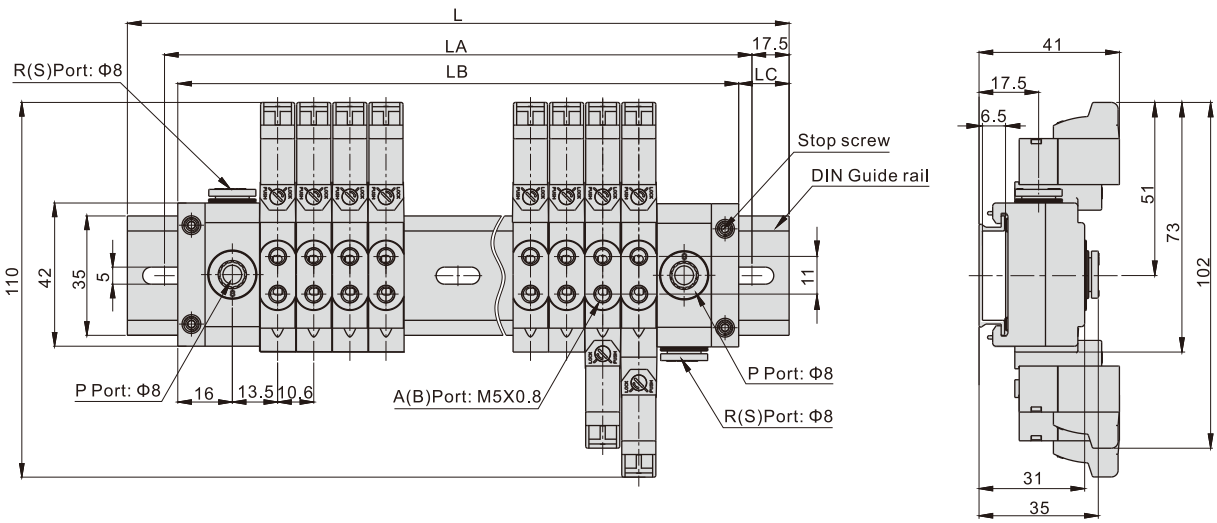
6HV0500M2F~10F Guide rail



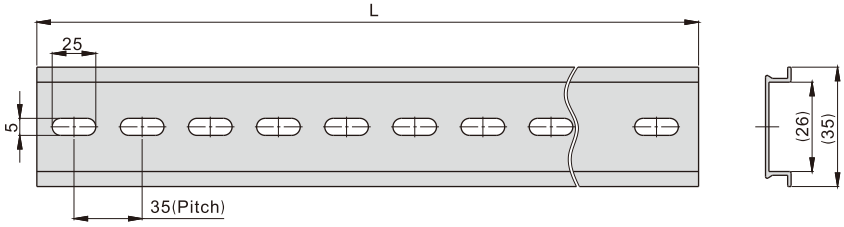
Item\Stations	2F	3F	4F	5F	6F
L	105	105	105	140	140
LA	70	70	70	105	105
LB	53	64	74.5	85	95.5
LC	26	20.5	15	27.5	22

Item\Stations	7F	8F	9F	10F
L	140	175	175	175
LA	105	140	140	140
LB	106	116	127.5	138
LC	17	29.5	23.8	18.5

6HV0500+6HV0500M11F~24F



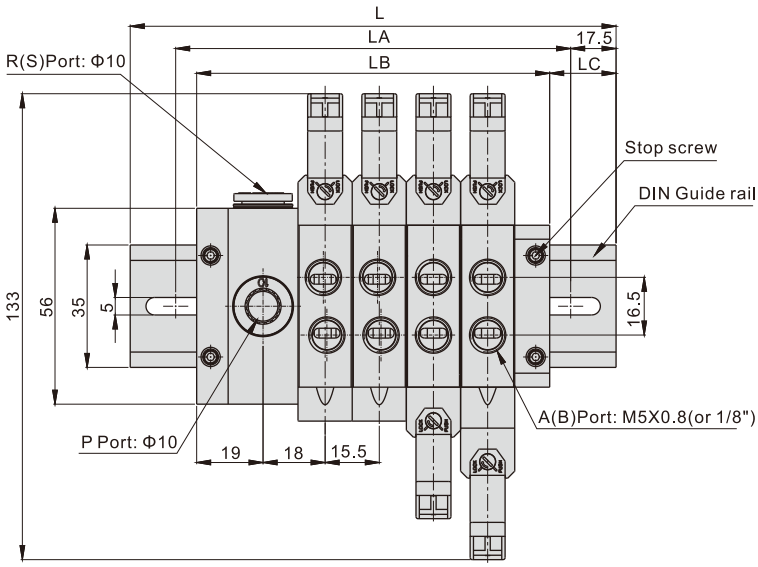
6HV0500M11F~24F Guide rail

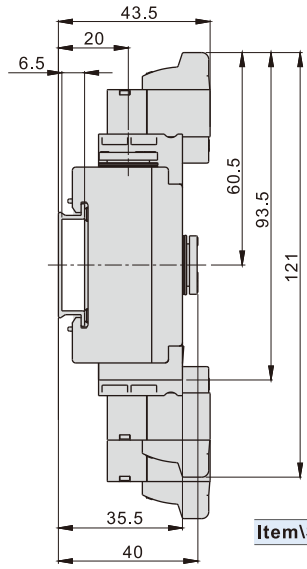


Item\Stations	11F	12F	13F	14F	15F	16F	17F
L	210	210	245	245	245	280	280
LA	175	175	210	210	210	245	245
LB	164.5	175	185.5	196.5	207	217.5	228
LC	23	17.5	30	24	19	31	26

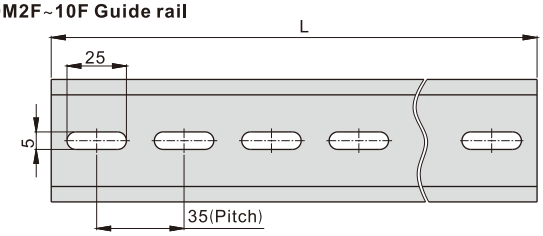
Item\Stations	18F	19F	20F	21F	22F	23F	24F
L	280	315	315	315	350	350	350
LA	245	280	280	280	315	315	315
LB	238.5	249.5	260	270.5	281	292	302.5
LC	21	33	27.5	22	34.5	29	24

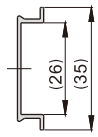
6HV100+6HV100M2F~10F





6HV100M2F~10F Guide rail

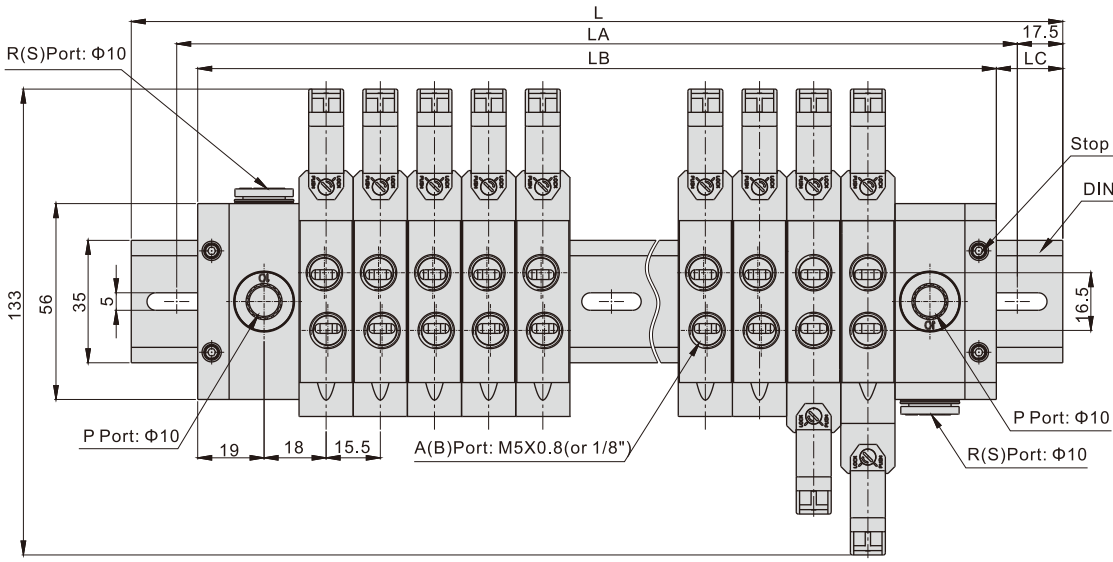


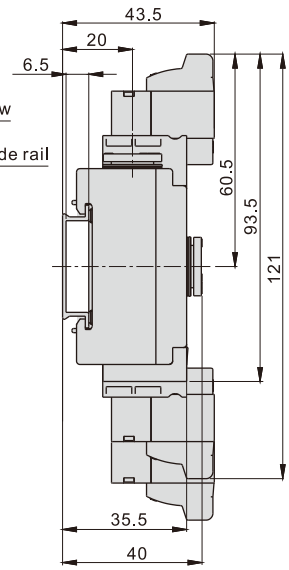


Item\Stations	2F	3F	4F	5F	6F
L	140	140	140	175	175
LA	105	105	105	140	140
LB	70	85.5	101	116.5	132
LC	35	27	19.5	29	21.5

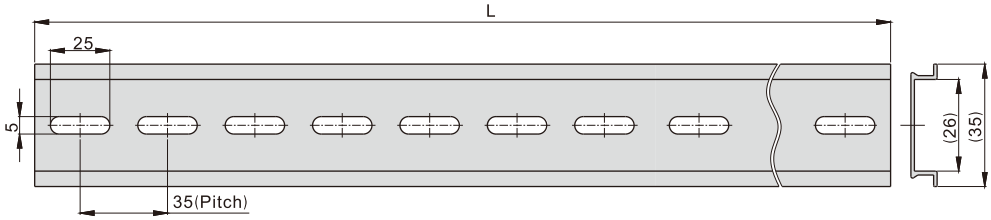
Item\Stations	7F	8F	9F	10F
L	210	210	245	245
LA	175	175	210	210
LB	147.5	163	178.5	194
LC	31	23.5	33	25.5

6HV100+6HV100M11F~24F





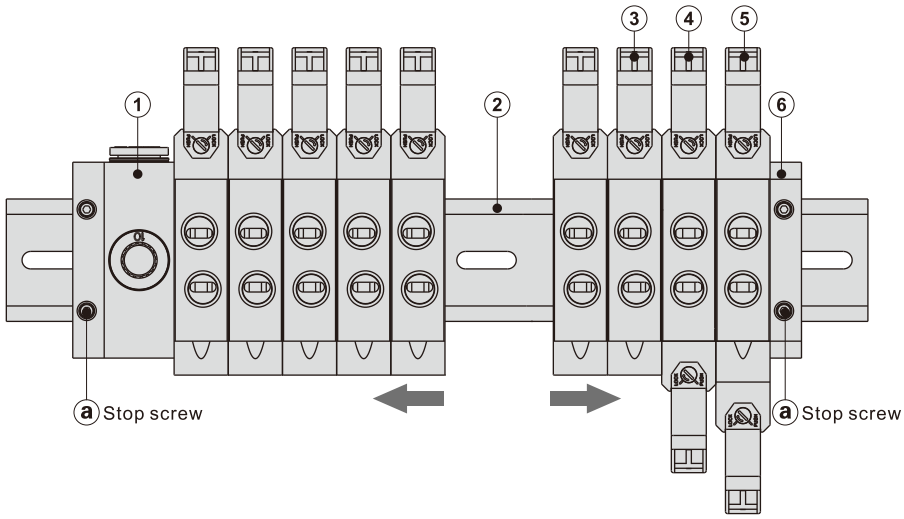
6HV100M11F~24F Guide rail



Item\Stations	11F	12F	13F	14F	15F	16F	17F
L	280	280	315	315	350	350	385
LA	245	245	280	280	315	315	350
LB	228.5	244	259.5	275	290.5	306	321.5
LC	28	18	28	20	30	22	32

Item\Stations	18F	19F	20F	21F	22F	23F	24F
L	385	420	420	455	455	490	490
LA	350	385	385	420	420	455	455
LB	337	352.5	368	383.5	399	414.5	430
LC	24	34	26	36	28	38	30

Installation and Application(Integrated Solenoid valve)



Configurations of integrated solenoid valve:

NO.	Name of module	How to order	Note
①	Inlet and outlet module	Contains in the DIN guide rail, can't be ordered independently	Left and right positions are interchangeable
②	DIN Guide rail	Refer to ordering code for detail	
③	Solenoid valve(Single solenoid(5/2 Way))	Refer to ordering code for detail	It can be installed at any position and can be added or removed at will.
④	Solenoid valve(Double solenoid(5/2 Way))	Refer to ordering code for detail	
⑤	Solenoid valve(5/3 Way)	Refer to ordering code for detail	
⑥	End cover	Contains in the DIN guide rail, can't be ordered independently	Left and right positions are interchangeable

1. The integrated solenoid valve group is a highly integrated valve block consisting of a solenoid valve, an inlet and outlet module, a end cover, and a DIN guide rail.
2. Each functional module in the integrated solenoid valve group can be freely replaced, the number of stations can be increased or decreased according to demand.
3. The method of increasing stations:
   1 Loosen the stop screw.ⓐ
   2 Separate the original solenoid valves that you wish to add.
   3 The newly added solenoid valve is mounted on the DIN rail according to the "**Fig. 1**" method.
   4 Push the other functional modules to make them tightly connected, then tighten the stop screwsⓐto complete the increasing stations.
4. Notice:
   4.1) Stop screw tightening torque: 6HV0500: 1N.m/6HV100: 1.4N.m.
   4.2) Fastening method: first fix one end cover, then push each function module hard so that there is no gap between the valves, then tighten the stop screw at the other end.
   4.3) When reassembling: If the connection between the valves and the tightening torque of the stop screw are insufficient, air leakage may occur. Before ventilating, please make sure there is no gap between the valves, and firmly fix it on the guide rail before venting.
5. The method of removing the solenoid valve from the DIN rail: Refer to the requirements of "**Fig. 2**" for details.

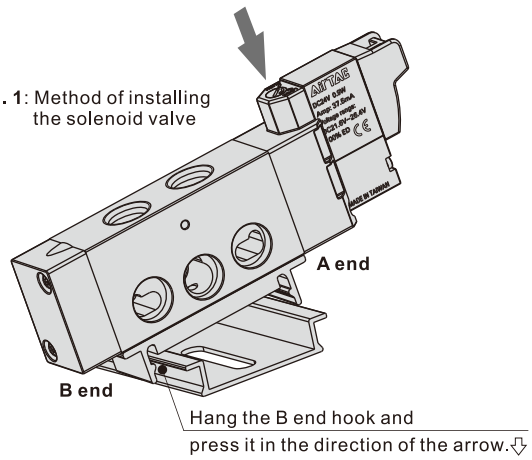


Fig. 1: Method of installing the solenoid valve

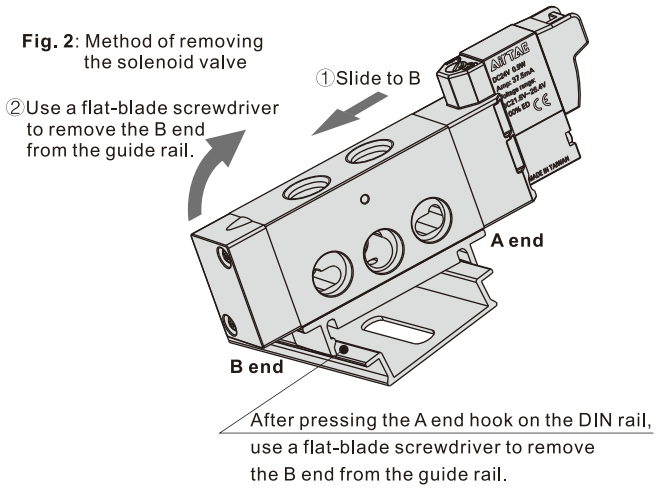


Fig. 2: Method of removing the solenoid valve

Compendium of 7V Series

Inner exhaust structure

Special structure in the valve body, which can collect pilot airflow, and then exhaust intensively from R, S port.

Terminal

Special design for terminal, horizontal and vertical insertion can freely switch.



Multi-port types are optional

Threaded type and quick connector type are optional, and can integrate mainfold to form valve group to save space.

Multi-series and type

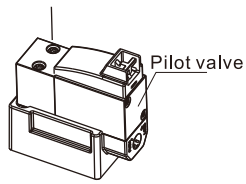
7V0500, 7V100, 7V200, 7V300 series are optional.

Die-cast molding with aluminum alloy for body

The shape of cavity is reasonable, which can increase flowing area and valve's flow.

Installation and Application

1. Don't throw or drop the solenoid valve when take it, to avoid breaking valve;
2. Because solenoid pilot valve is sophisticated component, can't crash pilot valve by outside force, otherwise solenoid valve break possibly;
3. Don't dismantle solenoid valve freely, if the screw(M1.6X14) becomes loose, please tighten it by torque 0.1~0.12N.m;
4. About manual operation:
   - 4.1. Ensure no danger, prior to activating manual override;
   - 4.2. For push button option:
     Activate by push the button in the direction shown



   - 4.3. For slotted option:
     Activate by push the button in the direction shown.
     With correct size screw driver:please turn to lock gently(Torque： 0.1N.m).

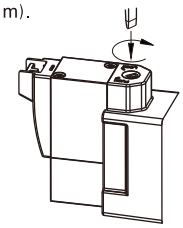
Attention



Normal position



Lucked position



   - 4.4. Wiring instruction： Vertical plug type and parallel plug type are the same as plug, please insert wire line as up drawing by practicality.



Vertical plug wire



Parallel plug wire

Solenoid valve(5/2 way,5/3 way)

7V Series

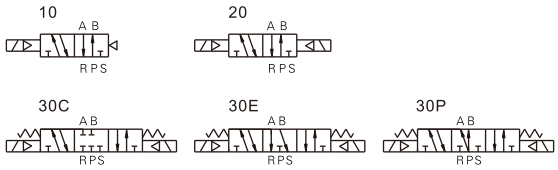


Specification

Model		7V0510	7V0520	7V0530	7V110	7V120	7V130
Port size [Note1]	Thread type	In=Out=Exhaust=M5			In=Out=Exhaust=1/8"		
	Tube type	Port A=Port B=Φ4			Port A=Port B=Φ4(or Φ6or Φ8)		
Orifice size (Cv) [Note4]		M5:3.4mm² (0.2)		7V0530CM5: 2.2mm² (0.13)	06:8.0mm²(0.47)		7V130C06: 7.0mm² (0.41)
Weight		30g	45g	50g	80g	90g	100g
Model		**7V210**	**7V220**	**7V230**	**7V310**	**7V320**	**7V330**
Port size [Note1]	Thread type	In=Out=1/4" Exhaust=1/8"			In=Out=3/8" Exhaust=1/4"		
	Tube type	Port A=Port B=Φ8(or Φ10)			-		
Orifice size (Cv) [Note4]		08:14.7mm² (0.87)		7V230C08: 10.8mm² (0.64)	10:38.4mm² (2.26)		7V330C10: 30.5mm² (1.8)
Weight		120g	135g	145g	230g	265g	305g
Fluid		Air(to be filtered by 40μm filter element)					
Acting		Pilot					
Operating pressure	7V0530/7V130 7V230/7V330	0.2~0.8MPa(29~114psi)					
	Others	0.15~0.8MPa(21~114psi)					
Proof pressure		1.2MPa(175psi)					
Temperature		-20~70℃					
Material of body		Aluminum alloy					
Lubrication [Note2]		Not required					
Exhaust type of pilot valve		Main valve and pilot valve is centralized exhaust					
Max. frequency[Note3]		5 cycle/sec		3 cycle/sec	5 cycle/sec		3 cycle/sec

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimize valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

1. Electrical entry is terminal, horizontal and vertical insertion can freely switch.
2. Inner exhaust structure, which can collect pilot airflow, and then exhaust intensively from R, S port.
3. Die–cast molding with aluminum alloy for body. The shape of cavity is reasonable, which can increase valve's flow.
4. Threaded type and quick connector type are optional, and can integrate manifold to form valve group to save space.

Coil specification

Item	Specification			
Standard voltage	AC220V	AC110V	DC24V	DC12V
Scrop of voltage	AC: +15% ~-10%		DC: ±10%	
Power of consumption	1.1VA		0.9W	
Protection	Dustproof			
Temperature classification	F Class			
Electrical entry	Terminal			
Activating time	0.05 sec and below			

Ordering code

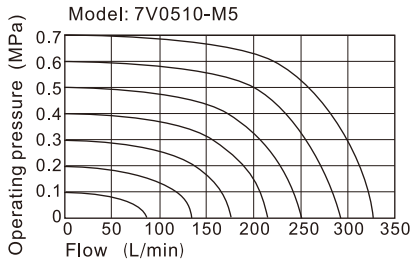
7V 2 10 J 08 B 050 G

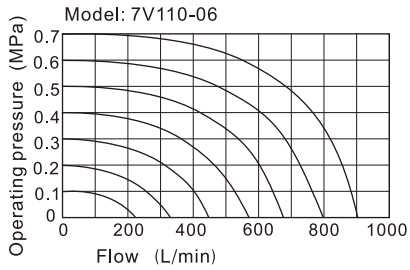
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

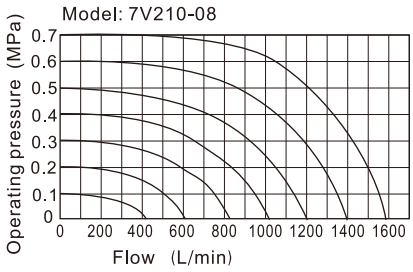
①Model	7V: 5 port 2(3) position solenoid valve				
②Code	05: 0500 Series	1: 100 Series		2: 200 Series	3: 300 Series
③Valve type	10: Single solenoid(5/2 Way)	20: Double solenoid(5/2 Way)	30C: Double solenoid(5/3 way closed center)		
	30E: Double solenoid(5/3 way Exhaust center)	30P: Double solenoid(5/3 way pressure center)			
④Port type	Blank: Thread type J: Tube type				
⑤Port size Thread type	M5: M5	06: 1/8"		08: 1/4"	10: 3/8"
⑤Port size Tube type	04: Φ4mm	04: Φ4mm/06: Φ6mm/08: Φ8mm		08: Φ8mm/10: Φ10mm	-
⑥Voltage	A: AC220V B: DC24V C: AC110V F: DC12V				
⑦Wire length	050: 0.5m 200: 2.0m				
⑧Thread type	No this code	G: G Thread			

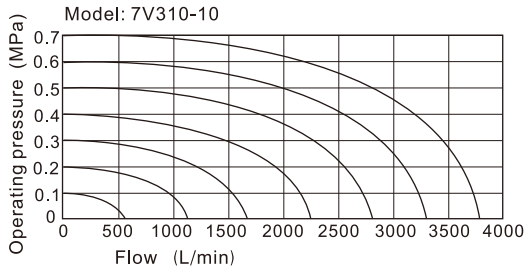
[Note 1]: The bottom ports of solenoid valve with tube type are oval, without thread type options and can only install with a manifold.

Flow chart





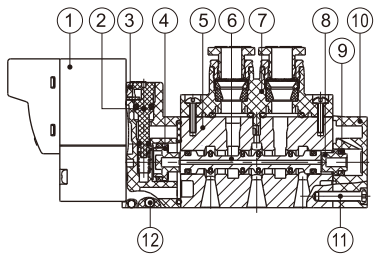




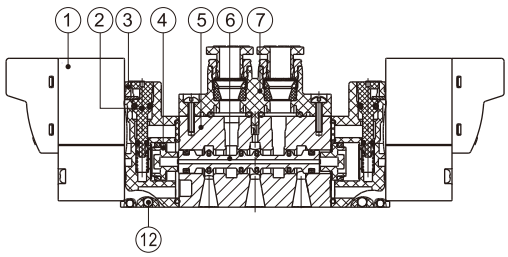
The data in flow rate chart are obtained from AirTAC lab.

Inner structure

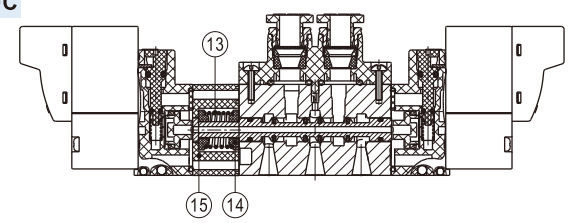
7V110



7V120



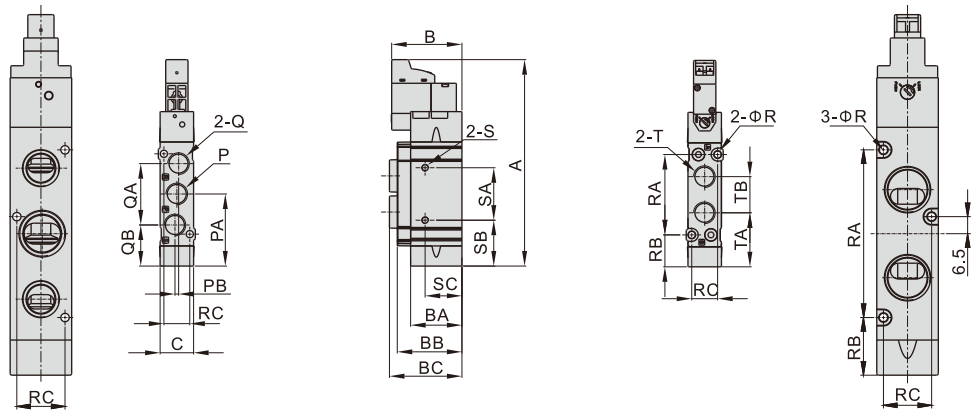
7V130C



No.	Item	No.	Item	No.	Item
1	Pilot valve	6	Spool	11	Bolt
2	Manual override	7	Connecting block	12	Steel ball
3	Pilot kit	8	Little piston	13	Spring
4	Big piston	9	Gasket	14	Return holder
5	Body	10	Bottom cover	15	Side cover

Dimensions

7V0510
7V110
7V210
7V310

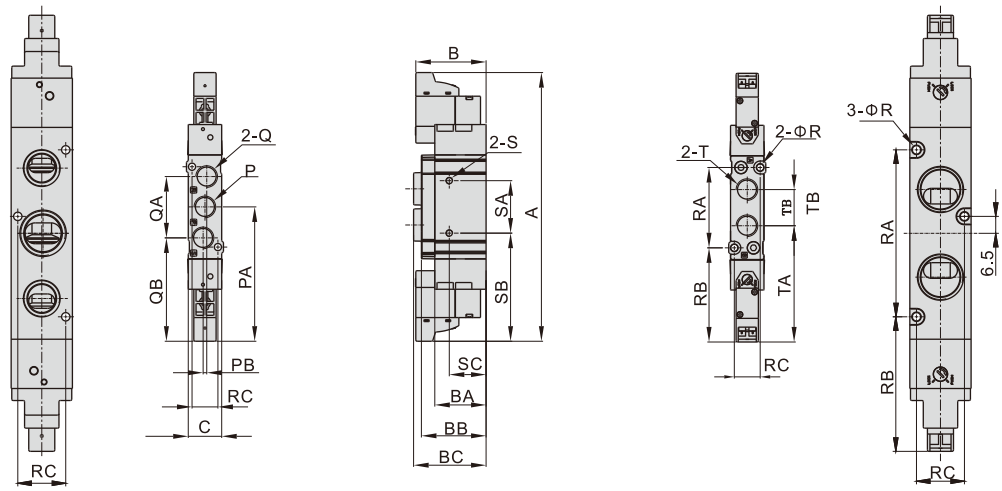


7V310 7V310

Model\Item	A	B	BA	BB	BC	C	P	PA	PB	Q	QA	QB	T	TA	TB	R	RA	RB	RC	S	SA	SB	SC
7V0510M5	73	30.5	18.5	23	23.5	10	M5X0.8	22.5	1	M5X0.8	19	13	M5X0.8	17.5	10.5	2.1	21.4	12	8.6	M3X0.5dp3	9.5	17.8	4
7V0510J04					32.5		Oval			Oval			Φ4(tube)							–	–	–	–
7V11006	92.5	32	23	29	32.5	15	1/8"	32.5	1.6	1/8"	27.2	18.5	1/8"	24	16.2	3.2	36	14.5	11.6	M3X0.5dp3	23.5	20.5	16.5
7V110J04					38.2		Oval			Oval			Φ4(tube)							–	–	–	–
7V110J06					40								Φ6(tube)										
7V110J08					41.5								Φ8(tube)										
7V21008	106	33.5	28	34	40.5	18	1/4"	39	3	1/8"	36	21	1/4"	29	20	4.3	42	18	13.6	M4X0.7dp5	20	29	7
7V210J08					46.5		Oval			Oval			Φ8(tube)							–	–	–	–
7V210J10					49								Φ10(tube)										
7V31010	137.5	46	–	–	46	23.5	3/8"	54	0.5	1/4"	50	29	3/8"	37	33.5	3.2	64	22	18.4	Φ4.3	25	41.5	8

[Note]: The bottom ports of solenoid valve with tube type are oval and can only install with manifold (no side installation hole"S").

7V0520
7V120
7V220
7V320



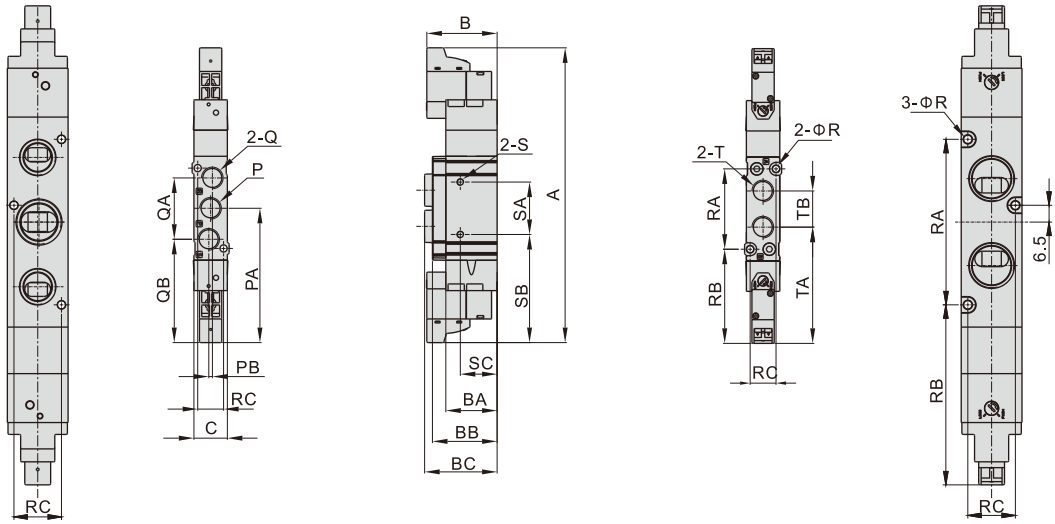
7V320 7V320

Model\Item	A	B	BA	BB	BC	C	P	PA	PB	Q	QA	QB	T	TA	TB	R	RA	RB	RC	S	SA	SB	SC
7V0520M5	101.5	30.5	18.5	23	23.5	10	M5X0.8	50.5	1	M5X0.8	19	41	M5X0.8	45.5	10.5	2.1	21.4	12	8.6	M3X0.5dp3	9.5	17.8	4
7V0520J04					32.5		Oval			Oval			Φ4(tube)							–	–	–	–
7V12006	120.5	32	23	29	32.5	15	1/8"	60.5	1.6	1/8"	27.2	46.5	1/8"	52	16.2	3.2	36	14.5	11.6	M3X0.5dp3	23.5	48.5	16.5
7V120J04					38.2		Oval			Oval			Φ4(tube)							–	–	–	–
7V120J06					40								Φ6(tube)										
7V120J08					41.5								Φ8(tube)										
7V22008	134	33.5	28	34	40.5	18	1/4"	67	3	1/8"	36	49	1/4"	57	20	4.3	42	18	13.6	M4X0.7dp5	20	57	7
7V220J08					46.5		Oval			Oval			Φ8(tube)							–	–	–	–
7V22008J10					49								Φ10(tube)										
7V32010	167	46	–	–	46	23.5	3/8"	83.5	0.5	1/4"	50	58.5	3/8"	67	33.5	3.2	64	51.5	18.4	Φ4.3	25	71	8

[Note]: The bottom ports of solenoid valve with tube type are oval and can only install with manifold (no side installation hole"S").

7V Series

7V0530
7V130
7V230
7V330



7V330 7V330

Model\Item	A	B	BA	BB	BC	C	P	PA	PB	Q	QA	QB	T	TA	TB	R	RA	RB	RC	S	SA	SB	SC
7V0530M5	110	30.5	18.5	23	23.5	10	M5X0.8	50.5	1	M5X0.8	19	41	M5X0.8	45.5	10.5	2.1	21.4	12	8.6	M3X0.5dp3	9.5	45.8	4
7V0530J04					32.5		Oval			Oval			Φ4(tube)							–	–	–	–
7V13006	132	32	23	29	32.5	15	1/8"	60.5	1.6	1/8"	27.2	46.5	1/8"	52	16.2	3.2	36	14.5	11.6	M3X0.5dp3	23.5	48.5	16.5
7V130J04					38.2		Oval			Oval			Φ4(tube)							–	–	–	–
7V130J06					40								Φ6(tube)										
7V130J08					41.5								Φ8(tube)										
7V23008	147	33.5	28	34	40.5	18	1/4"	67	3	1/8"	36	49	1/4"	57	20	4.3	42	18	13.6	M4X0.7dp5	20	57	7
7V230J08					46.5		Oval			Oval			Φ8(tube)							–	–	–	–
7V230J10					49								Φ10(tube)										
7V33010	185	46	–	–	46	23.5	3/8"	101.5	0.5	1/4"	50	76.5	3/8"	85	33.5	3.2	64	69.5	18.4	Φ4.3	25	89	8

[Note]: The bottom ports of solenoid valve with tube type are oval and can only install with manifold (no side installation hole"S").

Accessories——Mounting bracket

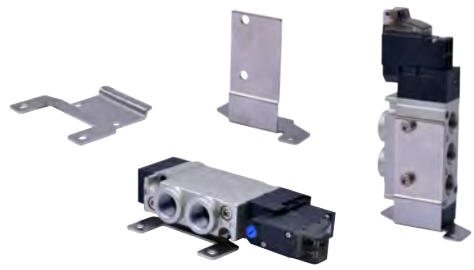
1、Ordering code

F-7V100 LB

① ② ③

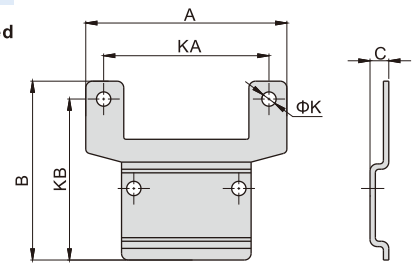
①Accessories code	F: Mounting accessories	
②Valve type	7V0500: 0500 Series	7V100: 100 Series 7V200: 200 Series
③Accessories type	LB: LB Type(Side mounted)	LBD: LB Type(Bottom mounted)

Note：1、Each mounting bracket with 4pcs mounting screws.
2、Packed in PE bags with blank labels.



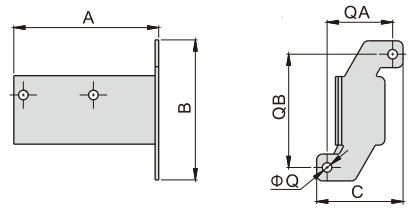
2、Dimensions

Side mounted



Model\Item	A	B	C	K	KA	KB
F-7V0500LB	35	35	4.2	3.2	27	31.5
F-7V100LB	45	40	4.2	3.2	37	36
F-7V200LB	66	49	4.2	4.2	52	42

Bottom mounted



Model\Item	A	B	C	Q	QA	QB
F-7V0500LBD	32.5	38	24	3.2	17	31
F-7V100LBD	48.5	47	29	3.2	22	38
F-7V200LBD	57	57	38	4.2	28	46

7V Series manifold



Specification

Item\Manifold Model	7V0500M	7V100M	7V200M	7V300M
Fluid	Air(to be filtered by 40μm filter element)			
Temperature	-20~70℃			
Adaptable valve's series	7V0500 Series	7V100 Series	7V200 Series	7V300 Series

Product feature

1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost.
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring.
3. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

Ordering code

7V100M 5F G Ordering code for manifold

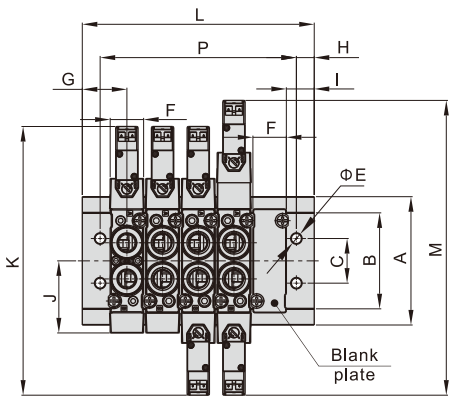
①Model	7V0500M：7V0500 Series manifold	7V100M：7V100 Series manifold	7V200M：7V200 Series manifold	7V300M：7V300 Series manifold
②Number of stations	1F: 1 Station 2F: 2 Station 3F: 3 Station ..... 20F: 20 Station			
③Thread type	G：G Thread			

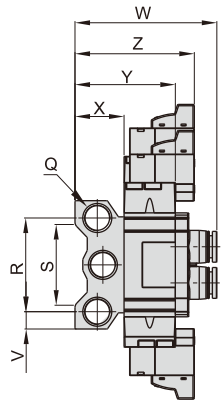
P–7V100M–R2 Ordering code for blank plate

①Model	7V0500M：7V0500 Series manifold	7V100M：7V100 Series manifold	7V200M：7V200 Series manifold	7V300M：7V300 Series manifold
②Code	R2: Blank plate for manifold			

[Note] 1.Manifold kits contains manifold, seal and screw. 2. Blank plate kits contains blank plate and screw.

Dimensions





Model\Item	A	B	C	E	F	G	H	I	J	K	M	Q	R	S	V	W			X	Y	Z
7V0500M	46	32	16	4.5	10	17.5	5	12.5	22.5	102	110	1/8"	32	26	7	36.2(M5)	50.5(J04)		17	35.5	47.5
7V100M	57.5	43	20	4.5	15	20	5	12.5	32	121	132	1/4"	40	36	9	55(06)	62.5(J04)/64(J06)	65.5(J08)	22	45	53.5
7V200M	60	52	21	4.5	18	22	5	13	39	134	147	1/4"	42	38	9	58.5(08)	76.5(J08)	78.5(J10)	24	52	57
7V300M	85	75	26	4.5	23.5	24	5	12	54	167	185	3/8"	57	58	14	–	–	–	27	74	–

Model\Item	L																			
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
7V0500M	30	40.5	51	61.5	72	82.5	93	103.5	114	124.5	135	145.5	156	166.5	177	187.5	198	208.5	219	229.5
7V100M	34	50	66	82	98	114	130	146	162	178	194	210	226	242	258	247	290	306	322	338
7V200M	37	56	75	94	113	132	151	170	189	208	227	246	265	284	303	322	341	360	379	398
7V300M	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384	408	432	456	480	504

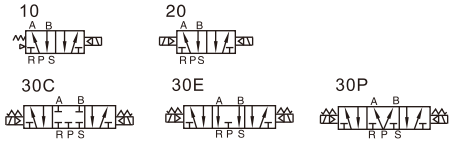
Model\Item	P																			
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
7V0500M	20	30.5	41	51.5	62	72.5	83	93.5	104	114.5	125	135.5	146	156.5	167	177.5	188	198.5	209	219.5
7V100M	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296	312	328
7V200M	27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388
7V300M	38	62	86	110	134	158	182	206	230	254	278	302	326	350	374	398	422	446	470	494

Solenoid valve(5/2 way,5/3 way)

4V100 Series



Symbol



Product feature

1. Pilot-oriented mode: Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction .
3. Three position solenoid valves have three kinds of central function for your choice.
4. Double control solenoid valves have memory function.
5. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
6. No need to add oil for lubrication.
7. It is available to form integrated valve group with the base to save installation space.
8. Affiliated manual devices are equipped to facilitate installation and debugging.
9. Several standard voltage grades are optional.

Specification

Model	4V110-M5 4V120-M5	4V130C-M5 4V130E-M5 4V130P-M5	4V110-06 4V120-06	4V130C-06 4V130E-06 4V130P-06
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	Internal pilot or external pilot			
Port size [Note1]	In=Out=M5		In=Out=1/8"	
Orifice size(Cv) [Note4]	4V110-06,4V120-06:10.2mm²(Cv=0.6) 4V130C-06:8.6mm²(Cv=0.51)			
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Lubrication [Note2]	Not required			
Max.frequency [Note3]	5 cycle/sec	3cycle/sec	5 cycle/sec	3 cycle/sec
Weight (g)	4V110-M5:120 4V120-M5:175	200	4V110-06:120 4V120-06:175	200

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Coil specification

Item	Specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	3.5VA	3.5VA	4.0VA	2.8W	2.5W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				

Ordering code

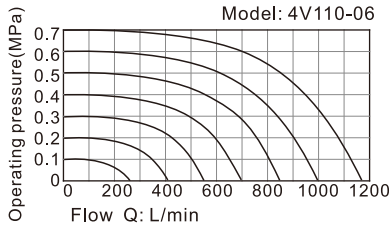
4V 1 10 06 A □ G

① ② ③ ④ ⑤ ⑥ ⑦

①Model	②Code	③Valve type	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
4V: Solenoid valve (5/2, 5/3 way)	1: 100 Series	10: Single solenoid 5/2 way 20: Double solenoid 5/2 way 30C: Double solenoid 5/3 way closed center 30E: Double solenoid 5/3 way exhaust center 30P: Double solenoid 5/3 way pressure center	M5: M5 06: 1/8"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	No this code G: G Thread

[Note] The wire length is 0.5m. Please refer to P89 for manifold specification and the order way.

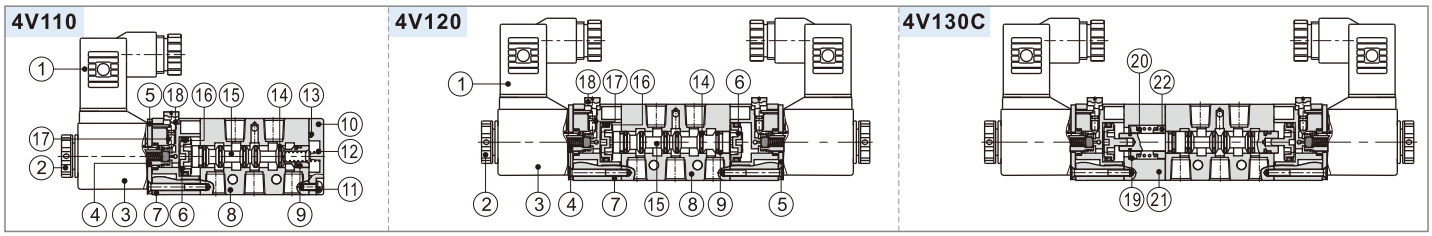
Flow chart



The data in flow rate chart are obtained from AirTAC lab.

4V100 Series

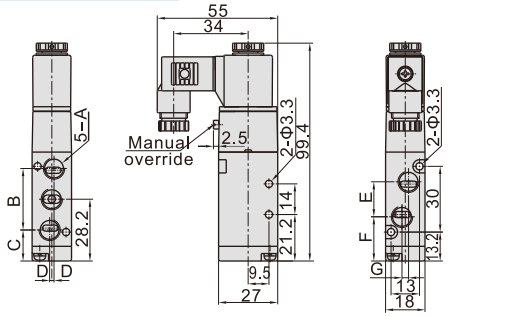
Inner structure



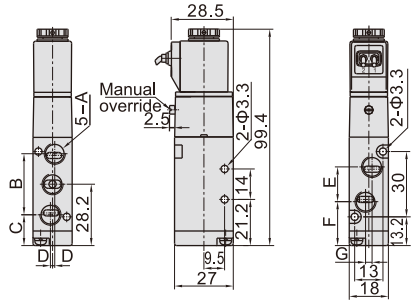
No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Connector	3	Coil	5	Fixed plate	7	Pilot kit	9	Wear ring	11	Fixed screw	13	Bottom cover gasket	15	Spool	17	Override spring	19	Spring holder	21	Side cover
2	Coil nut	4	Armature	6	Piston	8	Body	10	Bottom cover	12	Spool spring	14	Spool O-ring	16	Piston O-ring	18	Manual override	20	Return spring	22	Spring holder

Dimensions

4V110(Terminal)

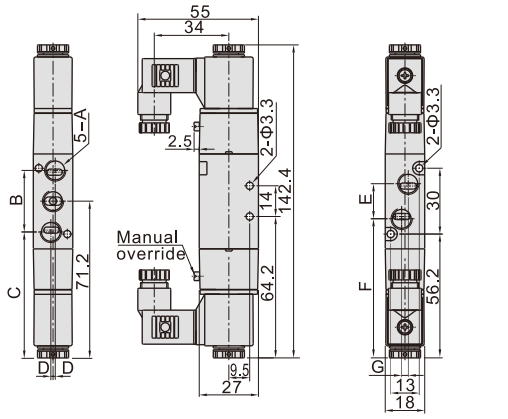


4V110(Grommet)

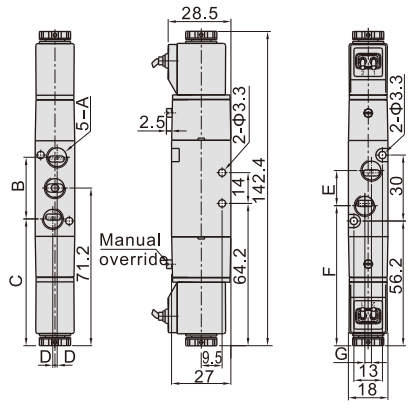


Model\Item	A	B	C	D	E	F	G
4V110-M5	M5x0.8	27	14.7	0	14	21.2	0
4V110-06	1/8"	28	14.2	1	16	20.2	3

4V120(Terminal)

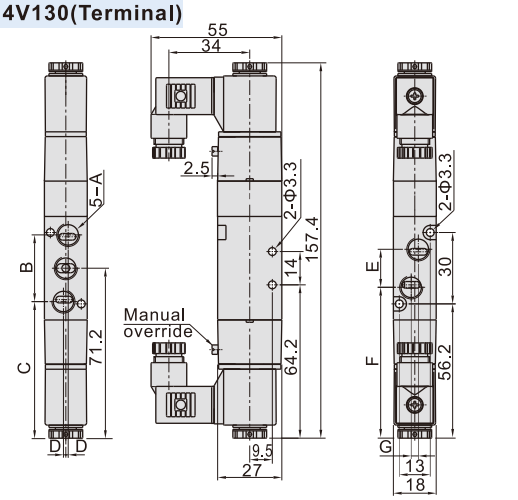


4V120(Grommet)

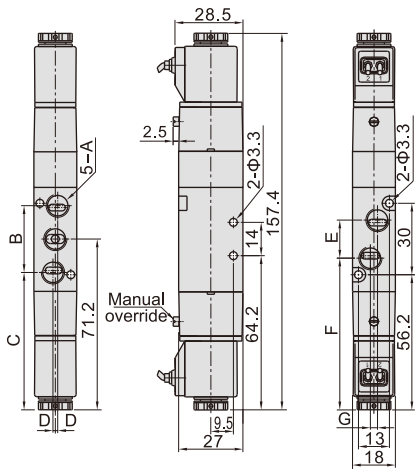


Model\Item	A	B	C	D	E	F	G
4V120-M5	M5x0.8	27	57.7	0	14	64.3	0
4V120-06	1/8"	28	57.2	1	16	63.2	3

4V130(Terminal)



4V130(Grommet)



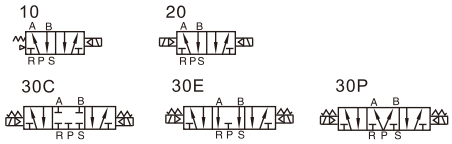
Model\Item	A	B	C	D	E	F	G
4V130-M5	M5x0.8	27	57.7	0	14	64.3	0
4V130-06	1/8"	28	57.2	1	16	63.2	3

Solenoid valve(5/2 way,5/3 way)

4V200 Series



Symbol



Product feature

1. Pilot-oriented mode:Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Three position solenoid valves have three kinds of central function for your choice.
4. Double control solenoid valves have memory function.
5. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
6. No need to add oil for lubrication.
7. It is available to form integrated valve group with the base to save installation space.
8. Affiliated manual devices are equipped to facilitate installation and debugging.
9. Several standard voltage grades are optional.

specification

Model	4V210-06 4V220-06	4V230C-06 4V230E-06 4V230P-06	4V210-08 4V220-08	4V230C-08 4V230E-08 4V230P-08
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	Internal pilot or external pilot			
Port size [Note1]	In=Out=Exhaust=1/8"		In=Out=1/4" Exhaust=1/8"	
Orifice size(Cv) [Note4]	4V210-08,4V220-08:17.0mm²(Cv=1.0) 4V230C-08:13.6mm²(Cv=0.8)			
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	0.15~0.8MPa(21~114psi)			
Operating pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Lubrication [Note2]	Not required			
Max. frequency [Note3]	5 cycle/sec	3 cycle/sec	5 cycle/sec	3 cycle/sec
Weight (g)	4V210-06:220 4V220-06:320	360	4V210-08:220 4V220-08:320	360

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Coil specification

Item	Specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	4.5VA	4.5VA	5.0VA	3.0W	2.5W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				

Ordering code

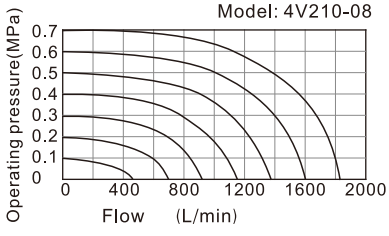
4V 2 10 08 A □ G

(1) (2) (3) (4) (5) (6) (7)

①Model	②Code	③Valve type	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
4V: Solenoid valve (5/2, 5/3 way)	2: 200 Series	10: Single solenoid 5/2 way 20: Double solenoid 5/2 way 30C: Double solenoid 5/3 way closed center 30E: Double solenoid 5/3 way exhaust center 30P: Double solenoid 5/3 way pressure center	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread

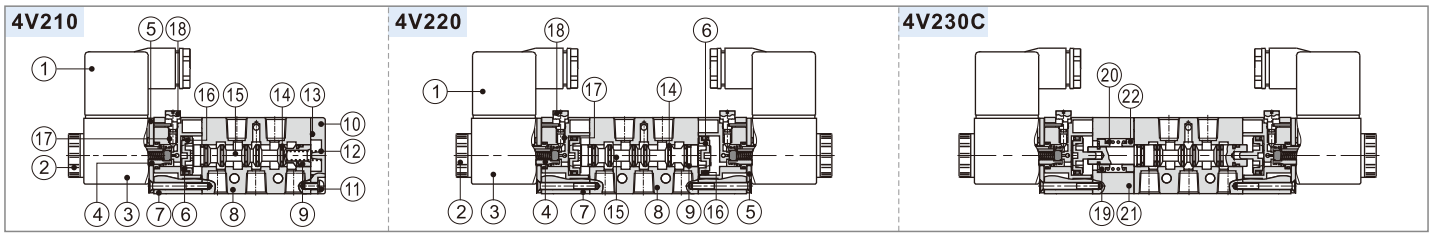
[Note] The wire length is 0.5m. Please refer to P89 for manifold specification and the order way.

Flow chart



The data in flow rate chart are obtained from AirTAC lab.

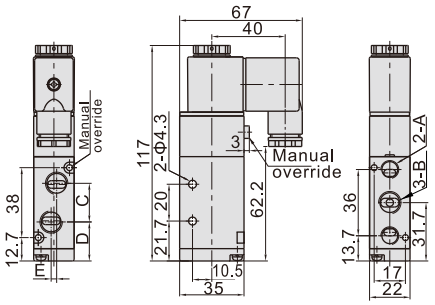
Inner structure



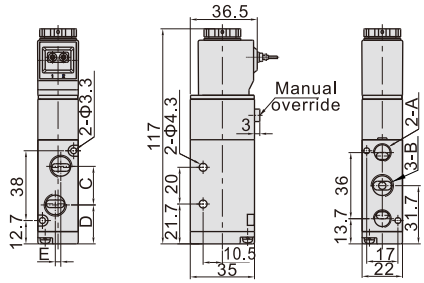
No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Connector	3	Coil	5	Fixed plate	7	Pilot kit	9	Wear ring	11	Fixed screw	13	Bottom cover gasket	15	Spool	17	Override spring	19	Spring holder	21	Side cover
2	Coil nut	4	Armature	6	Piston	8	Body	10	Bottom cover	12	Spool spring	14	Spool O-ring	16	Piston O-ring	18	Manual override	20	Return spring	22	Spring holder

Dimensions

4V210(Terminal)

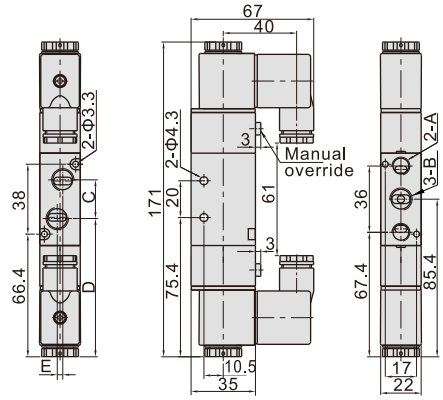


4V210(Grommet)

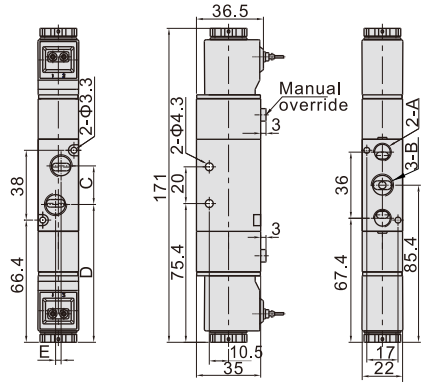


Model\Item	A	B	C	D	E
4V210-06	1/8"	1/8"	18	22.7	0
4V210-08	1/8"	1/4"	21	21.2	3

4V220(Terminal)

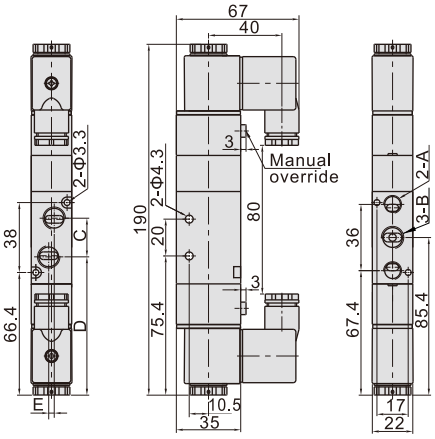


4V220(Grommet)

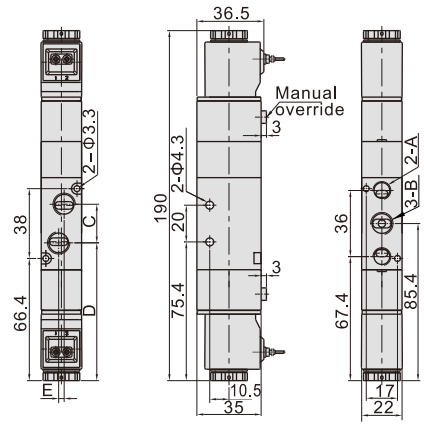


Model\Item	A	B	C	D	E
4V220-06	1/8"	1/8"	18	76.4	0
4V220-08	1/8"	1/4"	21	74.9	3

4V230(Terminal)



4V230(Grommet)



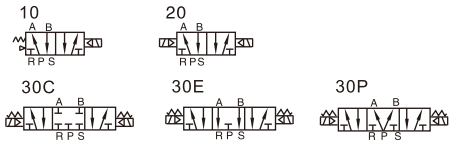
Model\Item	A	B	C	D	E
4V230-06	1/8"	1/8"	18	76.4	0
4V230-08	1/8"	1/4"	21	74.9	3

Solenoid valve(5/2 way,5/3 way)

4V300 Series



Symbol



Product feature

1. Pilot-oriented mode:Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Three position solenoid valves have three kinds of central function for your choice.
4. Double control solenoid valves have memory function.
5. Internal hole adopts special processing technology which has littleattrition friction, low start pressure and long service life.
6. No need to add oil for lubrication.
7. It is available to form integrated valve group with the base to save installation space.
8. Affiliated manual devices are equipped to facilitate installation and debugging.
9. Several standard voltage grades are optional.

Specification

Model	4V310-08 4V320-08	4V330C-08 4V330E-08 4V330P-08	4V310-10 4V320-10	4V330C-10 4V330E-10 4V330P-10
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	Internal pilot or external pilot			
Port size [Note1]	In=Out=Exhaust=1/4"		In=Out=3/8" Exhaust=1/4"	
Orifice size(Cv) [Note4]	4V310-10,4V320-10:28.0mm²(Cv=1.65) 4V330C-10:21.3mm²(Cv=1.25)			
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Lubrication [Note2]	Not required			
Max.frequency [Note3]	4 cycle/sec	3 cycle/sec	4 cycle/sec	3 cycle/sec
Weight (g)	4V310-08:310 4V320-08:400	450	4V310-10:310 4V320-10:400	450

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Coil specification

Item	Specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	4.5VA	4.5VA	5.0VA	3.0W	2.5W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				

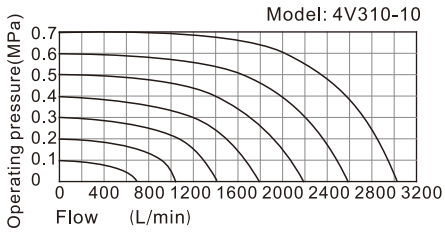
Ordering code

4V 3 10 10 A □ G
1 2 3 4 5 6 7

①Model	②Code	③Valve type	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
4V: Solenoid valve (5/2, 5/3 way)	3: 300 Series	10: Single solenoid 5/2 way 20: Double solenoid 5/2 way 30C: Double solenoid 5/3 way closed center 30E: Double solenoid 5/3 way exhaust center 30P: Double solenoid 5/3 way pressure center	08: 1/4" 10: 3/8"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread

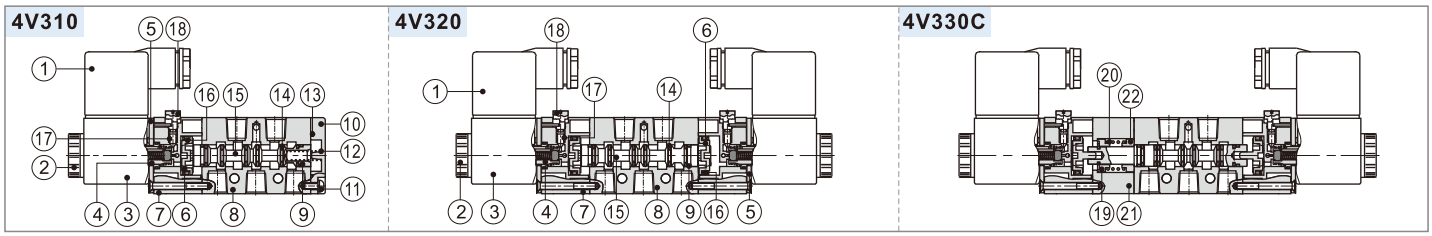
[Note] The wire length is 0.5m. Please refer to P89 for manifold specification and the order way.

Flow chart



The data in flow rate chart are obtained from AirTAC lab.

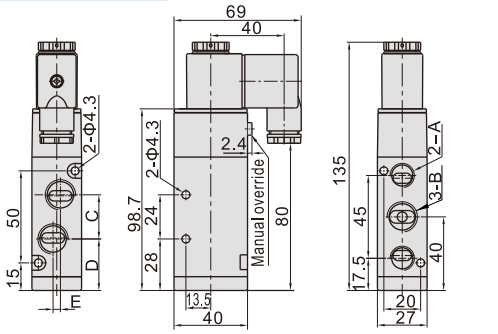
Inner structure



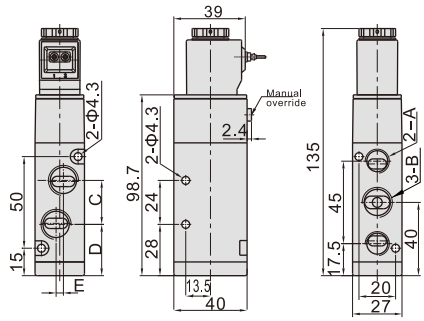
No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Connector	3	Coil	5	Fixed plate	7	Pilot kit	9	Wear ring	11	Fixed screw	13	Bottom cover gasket	15	Spool	17	Override spring	19	Spring holder	21	Side cover
2	Coil nut	4	Armature	6	Piston	8	Body	10	Bottom cover	12	Spool spring	14	Spool O-ring	16	Piston O-ring	18	Manual override	20	Return spring	22	Spring holder

Dimensions

4V310(Terminal)

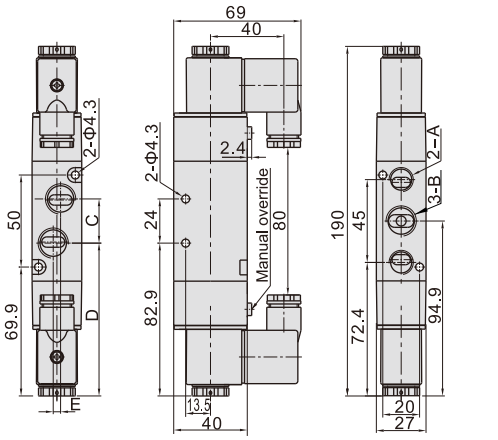


4V310(Grommet)

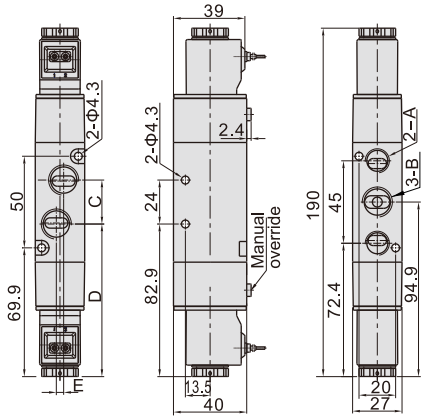


Model\Item	A	B	C	D	E
4V310-08	1/4"	1/4"	22	29	0
4V310-10	1/4"	3/8"	24	28	4

4V320(Terminal)

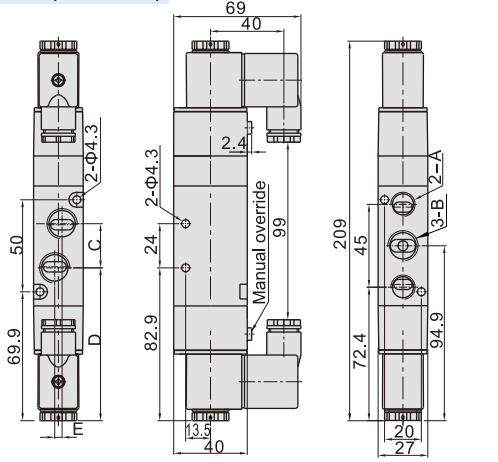


4V320(Grommet)

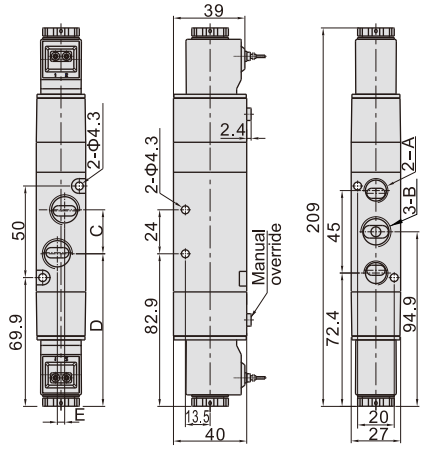


Model\Item	A	B	C	D	E
4V320-08	1/4"	1/4"	22	83.9	0
4V320-10	1/4"	3/8"	24	82.9	4

4V330(Terminal)



4V330(Grommet)



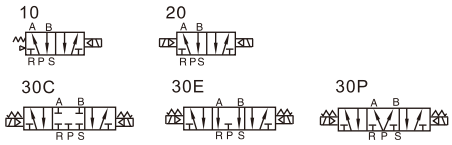
Model\Item	A	B	C	D	E
4V330-08	1/4"	1/4"	22	83.9	0
4V330-10	1/4"	3/8"	24	82.9	4

Solenoid valve(5/2 way,5/3 way)

4V400 Series



Symbol



Product feature

1. Pilot-oriented mode:Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Three position solenoid valves have three kinds of central function for your choice.
4. Double control solenoid valves have memory function.
5. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
6. No need to add oil for lubrication.
7. It is available to form integrated valve group with the base to save installation space.
8. Affiliated manual devices are equipped to facilitate installation and debugging.
9. Several standard voltage grades are optional.

Specification

Model	4V410-15	4V420-15	4V430C-15	4V430E-15	4V430P-15
Fluid	Air(to be filtered by 40μm filter element)				
Acting	Internal pilot or external pilot				
Port size [Note1]	In=Out=Exhaust=1/2"				
Orifice size(Cv) [Note4]	4V410-15,4V420-15:48.0mm²(Cv=2.82) 4V430C-15:40.0mm²(Cv=2.35)				
Valve type	5 port 2 position		5 port 3 position		
Operating pressure	0.15~0.8MPa(21~114psi)				
Proof pressure	1.2MPa(175psi)				
Temperature	-20~70℃				
Material of body	Aluminum alloy				
Lubrication [Note2]	Not required				
Max. frequency [Note3]	3 cycle/sec				
Weight (g)	590	720	770		

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Coil specification

Item	Specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	4.5VA	4.5VA	5.0VA	3.0W	2.5W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				

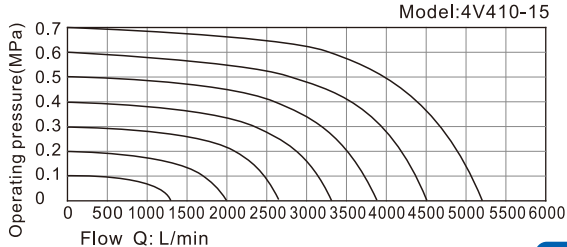
Ordering code

4V 4 10 15 A □ G
1 2 3 4 5 6 7

①Model	②Code	③Valve type	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
4V: Solenoid valve (5/2, 5/3 way)	4: 400 Series	10: Single solenoid 5/2 way 20: Double solenoid 5/2 way 30C: Double solenoid 5/3 way closed center 30E: Double solenoid 5/3 way exhaust center 30P: Double solenoid 5/3 way pressure center	15: 1/2"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread

[Note] The wire length is 0.5m. Please refer to P89 for manifold specification and the order way.

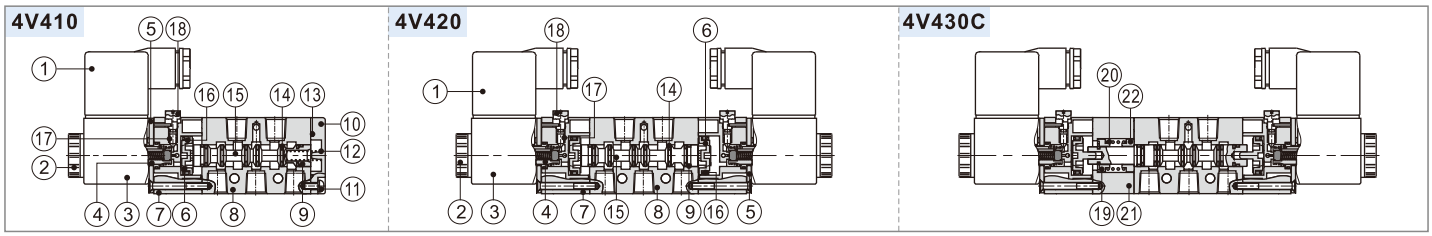
Flow chart



The data in flow rate chart are obtained from AirTAC lab.

4V400 Series

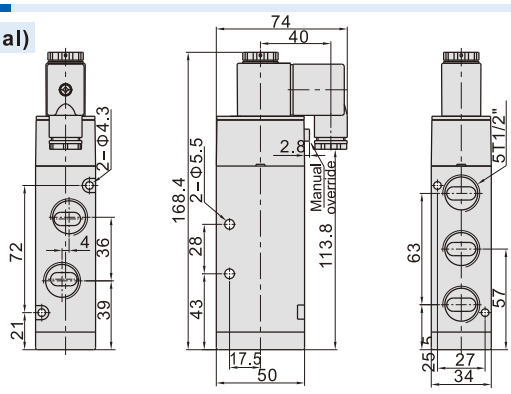
Inner structure



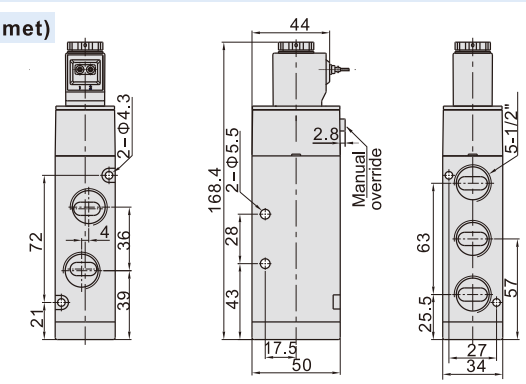
No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Connector	3	Coil	5	Fixed plate	7	Pilot kit	9	Wear ring	11	Fixed screw	13	Bottom cover gasket	15	Spool	17	Override spring	19	Spring holder	21	Side cover
2	Coil nut	4	Armature	6	Piston	8	Body	10	Bottom cover	12	Spool spring	14	Spool O-ring	16	Piston O-ring	18	Manual override	20	Return spring	22	Spring holder

Dimensions

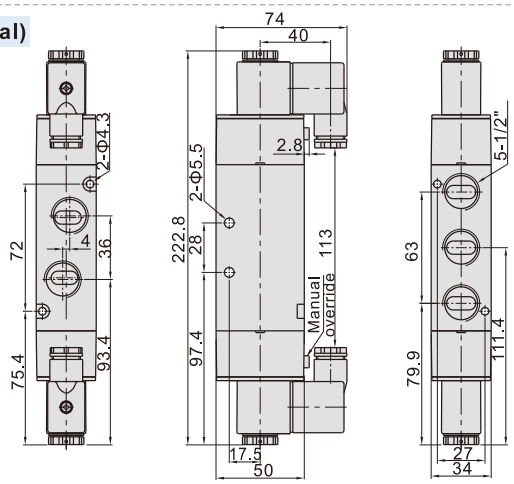
4V410(Terminal)



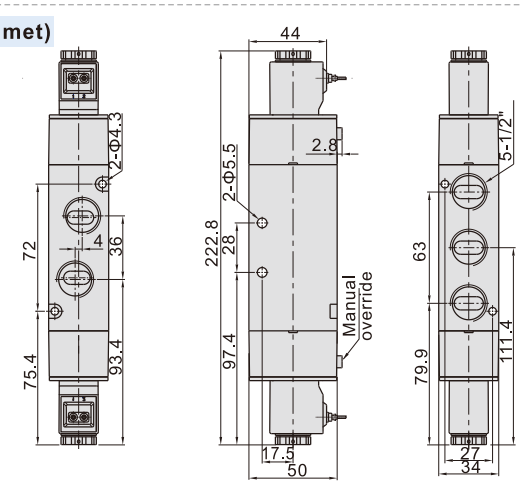
4V410(Grommet)



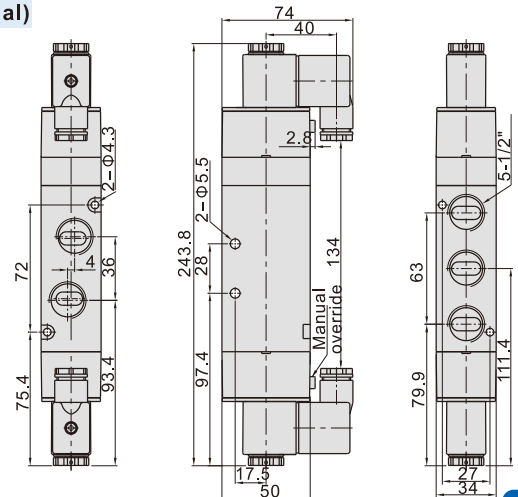
4V420(Terminal)



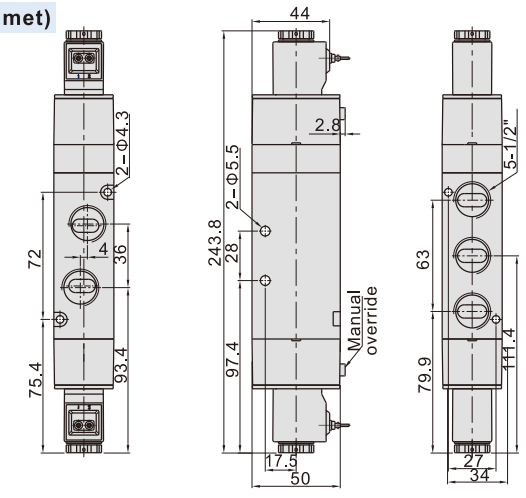
4V420(Grommet)



4V430(Terminal)



4V430(Grommet)



Solenoid valve(5/2 way)

4M(NAMUR) Series



Symbol



Product feature

1. Internally piloted structure.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Double control solenoid valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Install in the side plate with the surface upward, which can be used by directly connecting with the actuators.
7. Affiliated manual devices are equipped to facilitate installation and debugging.
8. Several standard voltage grades are optional.

Flow chart

Please refer to the same types of 4V series solenoid valves.

Specification

Model	4M110–M5 4M120-M5	4M110-06 4M120-06	4M210-06 4M220-06	4M210-08 4M220-08	4M310-08 4M320-08	4M310-10 4M320-10
Fluid	Air(to be filtered by 40 μ m filter element)					
Acting	Internal pilot					
Port size [Note1]	In=Out=M5	In=Out =1/8"	In=Out =1/8"	In=1/4" Out=1/8"	In=Out =1/4"	In=3/8" Out=1/4"
Orifice size(Cv) [Note4]	4M110-06,4M120-06: 10.2mm²(Cv=0.6)		4M210-08,4M220-08: 17.0mm²(Cv=1.0)		4M310-10,4M320-10: 28.0mm²(Cv=1.65)	
Valve type	5 port 2 position					
Operating pressure	0.15~0.8MPa(21~114psi)					
Proof pressure	1.2MPa(175psi)					
Temperature	-20~70℃					
Material of body	Aluminum alloy					
Lubrication [Note2]	Not required					
Max.frequency[Note3]	5 cycle/sec				4 cycle/sec	
Weight (g)	4M110:120 4M120:175		4M210:220 4M220:320		4M310:310 4M320:400	

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Coil specification

Item	4M110 4M120					4M210 4M220 4M310 4M320				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%									
Power consumption	3.5VA	3.5VA	4.0VA	2.8W	2.5W	4.5VA	4.5VA	5.0VA	3.0W	2.5W
Protection	IP65(DIN40050)									
Temperature classification	B Class									
Electrical entry	Terminal, Grommet									
Activating time	0.05 sec and below									

Ordering code

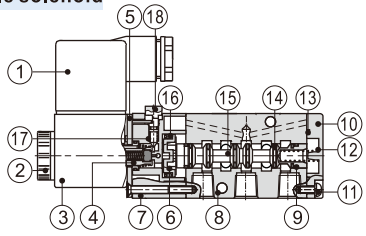
4M 3 10 10 A □ G
1 2 3 4 5 6 7

①Model	②Code	③Valve type	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
4M: Solenoid valve (5/2 way NAMUR type)	1: 100 Series	10: Single solenoid 20: Double solenoid	M5: M5	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	No this code
			06: 1/8"			G: G Thread
	2: 200 Series		06: 1/8" 08: 1/4"			
	3: 300 Series		08: 1/4" 10: 3/8"			

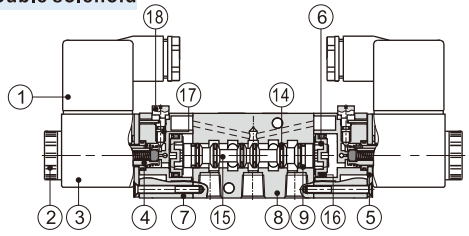
[Note] The wire length is 0.5m.

Inner structure

Single solenoid



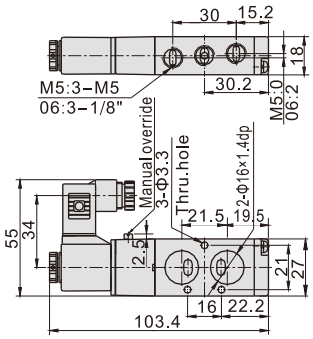
Double solenoid



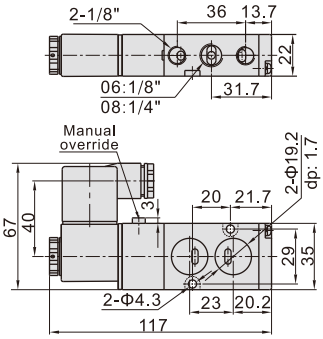
No.	Item	No.	Item
1	Connector	10	Bottom cover
2	Coil nut	11	Fixed screw
3	Coil	12	Spool spring
4	Armature	13	Bottom cover gasket
5	Fixed plate	14	Spool O-ring
6	Piston	15	Spool
7	Pilot kit	16	Piston O-ring
8	Body	17	Override spring
9	Wear ring	18	Manual override

Dimensions

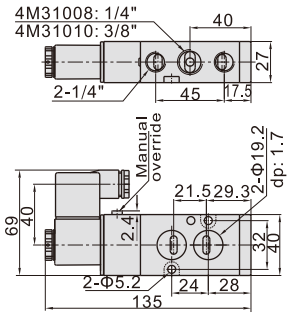
4M110(Terminal)



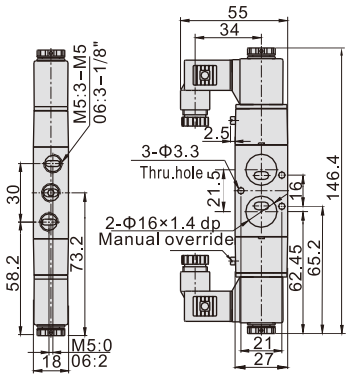
4M210(Terminal)



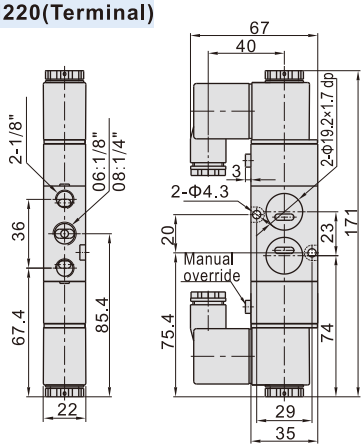
4M310(Terminal)



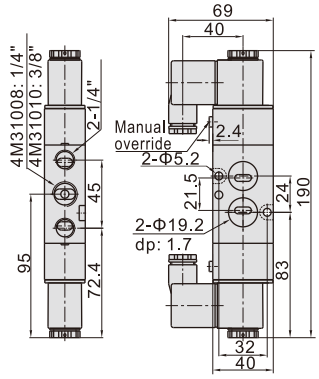
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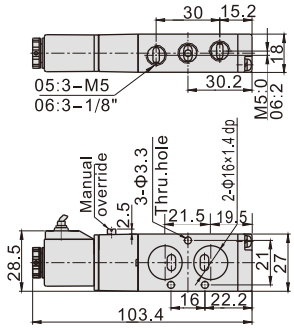
4M220(Terminal)



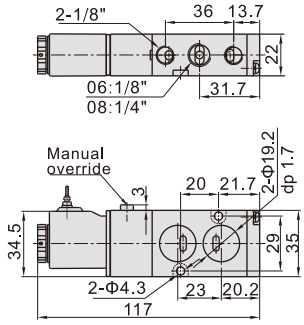
4M320(Terminal)



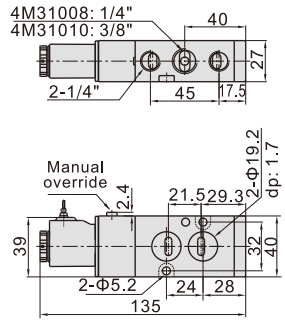
4M110(Grommet)



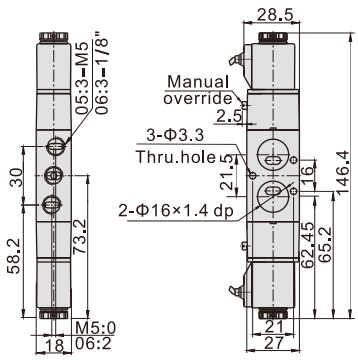
4M210(Grommet)



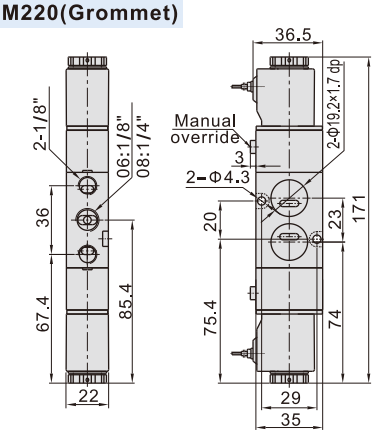
4M310(Grommet)



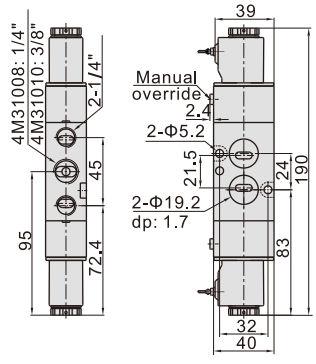
4M120(Grommet)



4M220(Grommet)



4M320(Grommet)



Manifold



Specification

Item\Manifold Model	100M	200M	300M
Fluid	Air(to be filtered by 40 μ m filter element)		
Temperature	-20~70℃		
Adaptable valve's series	3V100 Series	3V200 Series	3V300 Series

Product feature

1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost.
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring.
3. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

Ordering code

Ordering code for manifold

3V100M 5F G

① ② ③

①Model	②Number of stations	③Thread type
3V100M: 100 Series manifold 3V200M: 200 Series manifold 3V300M: 300 Series manifold	1F: 1 station 2F: 2 station 3F: 3 station ..... 16F: 16 station	G: G Thread

Ordering code for blank plate

P-3V100M-R2

① ② ③

①Kits	②Model	③Code
P: Kits	3V100M: 100Series manifold 3V200M: 200Series manifold 3V300M: 300Series manifold	R2: Blank plate for manifold

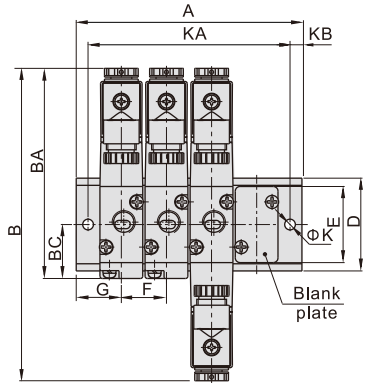
[Note] 1. Ordering code contains manifold and blank plate;

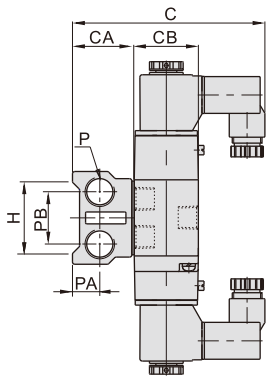
2. Manifold kits contains manifold, seal and screw.

3. Blank plate kits contains blank plate and screw.

Dimensions

With 3V solenoid valve





Model\Item	B	BA	BC	C	CA	CB	D	E	F	G	H	K	KB	P	PA	PB
3V100M	131.5	88.5	22.7	81	26	27	39	32	19	19	30	4.5	5	1/4"	11.5	22
3V200M	162.5	109	27.7	92.5	26	35	45	40	23	23	35	4.5	6	1/4"	11.5	25
3V300M	175	120	32.5	99	30	40	52	47	28	27	42	4.5	6	3/8"	13.5	28

Model\Item	A															
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
3V100M	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323
3V200M	46	69	92	115	138	161	184	207	230	253	276	299	322	345	368	391
3V300M	54	82	110	138	166	194	222	250	278	306	334	362	390	418	446	474

Model\Item	KA															
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
3V100M	28	47	66	85	104	123	142	161	180	199	218	237	256	275	294	313
3V200M	34	57	80	103	126	149	172	195	218	241	264	287	310	333	356	379
3V300M	42	70	98	126	154	182	210	238	266	294	322	350	378	406	434	462

Manifold



Specification

Item\Manifold Model	100M	200M	300M	400M
Fluid	Air(to be filtered by 40 μ m filter element)			
Temperature	-20~70℃			
Adaptable valve's series	4V100 Series	4V200 Series	4V300 Series	4V400 Series
	5V100 Series	5V200 Series	5V300 Series	5V400 Series

Product feature

1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost.
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring.
3. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

Ordering code

Ordering code for manifold

100M 5F G

① ② ③

①Model	②Number of stations [Note1]	③Thread type
100M:100 Series manifold 200M:200 Series manifold 300M:300 Series manifold 400M:400 Series manifold	1F: 1 Station 2F: 2 Station 3F: 3 Station ..... 16F: 16 Station	G: G Thread

Ordering code for blank plate

P–100M–R2

① ② ③

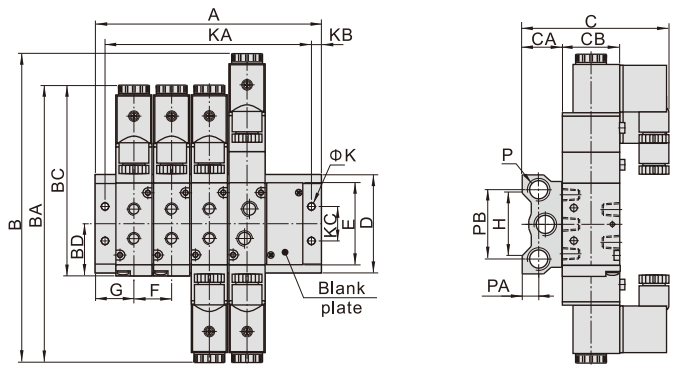
①Kits model	②Model	③Code
P: Kits	100M: 100 Series manifold 200M: 200 Series manifold 300M: 300 Series manifold 400M: 400 Series manifold	R2: Blank plate for manifold

[Note1] 100M, 200M series have a maximum of 16 stations ; 300M series have a maximum of 12 stations; 400M series have a maximum of 8 stations.

[Note] 1. Ordering code contains manifold and blank plate. 2. Manifold kits contains manifold, seal and screw.
3. Blank plate kits contains blank plate and screw.

Dimensions

With 4V solenoid valve



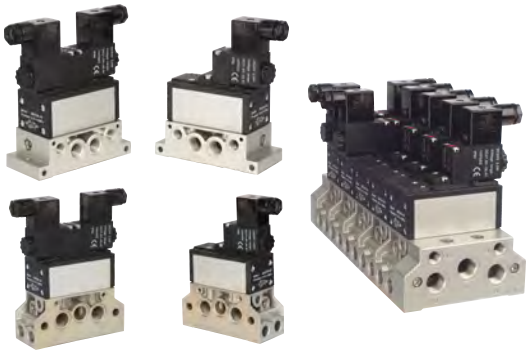
Model\Item	B	BA	BC	BD	C	CA	CB	D	E	F	G	H	K	KB	KC	P	PA	PB
100M□F	154.5	142.5	99.5	28	77	22	27	57.5	43	19	19	36	4.5	5	20	1/4"	10	40
200M□F	189	171	117	31.7	91	24	35	60	52	23	22	38	4.5	5	21	1/4"	10	42
300M□F	208	190	135	40	97	28	40	75	64	28	26	54	4.5	5	26	3/8"	13.5	53
400M□F	243	223	168.5	57	107	33	50	100	94	35	30.5	75	5.5	6	32	1/2"	15	68

Model\Item	A															
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
100M□F	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323
200M□F	44	67	90	113	136	159	182	205	228	251	274	297	320	343	366	389
300M□F	52	80	108	136	164	192	220	248	276	304	332	360	-	-	-	-
400M□F	61	96	131	166	201	236	271	306	-	-	-	-	-	-	-	-

Model\Item	KA															
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
100M□F	28	47	66	85	104	123	142	161	180	199	218	237	256	275	294	313
200M□F	34	57	80	103	126	149	172	195	218	241	264	287	310	333	356	379
300M□F	42	70	98	126	154	182	210	238	266	294	322	350	-	-	-	-
400M□F	49	84	119	154	189	224	259	294	-	-	-	-	-	-	-	-

ISO Standard solenoid valve(5/2 way, 5/3 way)

ESV200, 300, 400, 600 Series



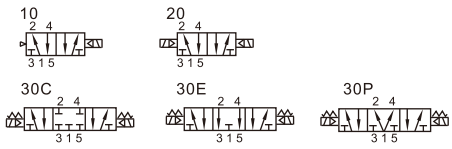
Specification

Model		200 Series	300 Series	400 Series	600 Series
Orifice size(Cv) mm²		32(Cv=1.8)	42(Cv=2.32)	69(Cv=3.85)	108(Cv=6.0)
Fluid		Air(to be filtered by 40μm filter element			
Acting		Internal pilot or external pilot			
Lubrication [Note1]		Not required			
Operating Pressure	Internal pilot	0.2~1.0MPa(2~10bar)(29~145psi)			
	External pilot	0~1.0MPa(0~10bar)(0~145psi)			0.2~1.0MPa(2~10bar)(29~145psi)
Control pressure(External pilot)		0.2~1.0MPa(2~10bar)(29~145psi)			
Proof pressure		1.5MPa(15bar)(215psi)			
Temperature ℃		-20~70			
Port size(manifold) [Note2]		1/4"	3/8"	1/2"	3/4"
Port size(end plate)		3/8"	1/2"	3/4"	1"
Voltage range		AC: ±15% DC: ±10%			
Power consumption		AC220V/AC110V: 4.5VA AC24V: 5.0VA DC24V: 3.0W DC12V: 2.5W			
Activating time (0.5MPa)Open\close	10\20 Series	33\41ms	42\55ms	50\68ms	55\85ms
	30 C\E\P Series	38\50ms	50\62ms	50\68ms	55\85ms
Insulation		B Class			
Protection		IP65			
Installation size		ISO5599-1 standard			

[Note1] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended;

[Note2] G thread is available.

Symbol



Product feature

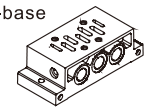
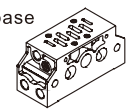
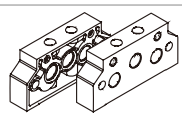
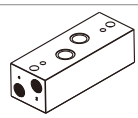
1. Succinct appearance and compact conformation.
2. The installation size conforms to ISO 5599/1 standard.
3. Because of the special seals, the feature are large flow rate and long lifetime.
4. For 200\300\400 series you can adjust the installation direction of the gasket to change the acting type: internal pilot, external pilot, or air control.
5. You need install the valve together with the sub-base. There are individual and parallel type for manifold sub-base.
6. There are various connection and installation method for manifold. It is easy to use.
7. The manifold of 200\300\400 series have the function of exhaust throttling, so not need to connect another throttle valve.

Ordering code

Ordering code of manifold

ESV 20 1M G □ □

① ② ③ ④ ⑤ ⑥

①Model	②Code	③Manifold type	④Thread type	⑤External pilot port type	⑥Port position type
ESV: ISO standard solenoid valve	20: 200 Series 30: 300 Series 40: 400 Series 60: 600 Series	1M: Individual sub-base 	G: G Thread	Blank: Individual pilot port	Blank: Side port B: Bottom port
		2M: Manifold sub-base 		Blank: Individual pilot port W: Centralized pilot port	Blank: Left side port R: Right side port B: Bottom port
		3M: End plate kit 		No this code	No this code
	60: 600 Series	4M: Side port block 		No this code	Blank: Left side port R: Right side port

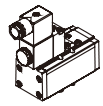
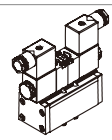
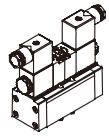
[Note] 1. For the same model, the port size of the end-plate is bigger than the sub-base (For example ESV202M, the port size of sub-base is 1/4", and the port size of end plate is 3/8").

2. Only individual pilot port is available for individual sub-base.
3. The manifold sub-base must be used with end plate kit, individual pilot port and centralized pilot port can be mixed.
4. 600 series individual sub-base only has side port, 600 series manifold sub-base only has individual pilot port and bottom port.
5. Only 600 series have side port block.

Ordering code

Ordering code of valve ESV 2 10 A □ □

① ② ③ ④ ⑤ ⑥

①Model	②Code	③Valve type	④Voltage	⑤Electrial entry	⑥Pilot type [Note1]
ESV: ISO standard solenoid valve	2: 200 Series 3: 300 Series 4: 400 Series 6: 600 Series	10: Single solenoid 5/2 way  20: Double solenoid 5/2 way  30C: Double solenoid 5/3 way closed center 30E: Double solenoid 5/3 way exhaust center 30P: Double solenoid 5/3 way pressure center 	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note2]	Blank: Internal pilot W: External pilot

[Note1] Internal pilot can be changed to external pilot mode(except 600 series), please adjust the installation of the gasket refering to article 1.2 in the "installation and operation".
[Note2] The wire length is 0.5m.

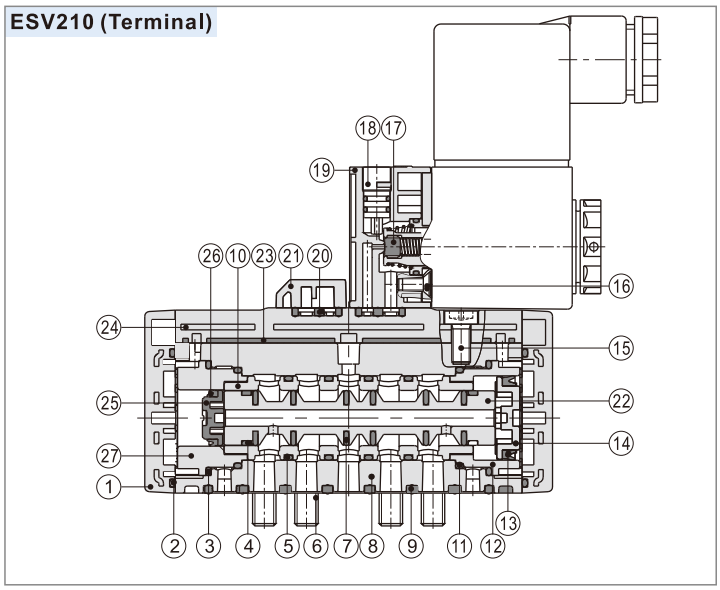
Ordering code of accessories P–ESV200M R2

① ② ③

①Accessories code	②Code	③Accessories type
P: Unit accessories	ESV200M: 200 Series manifold ESV300M: 300 Series manifold ESV400M: 400 Series manifold ESV600M: 600 Series manifold	R2: Blank plate for manifold

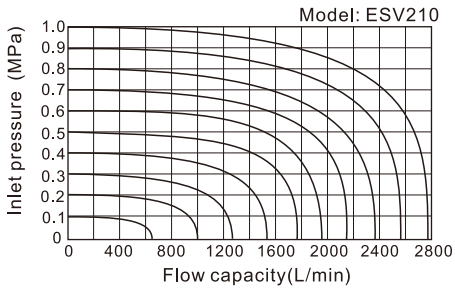
Inner structure

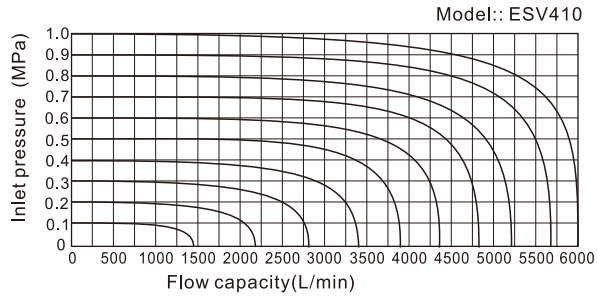
ESV210 (Terminal)

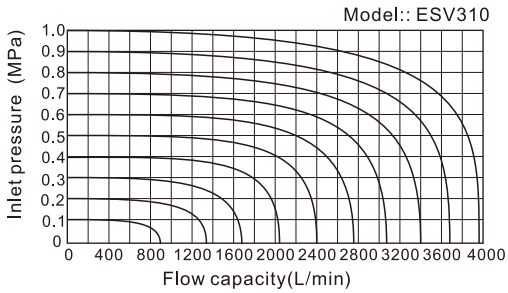


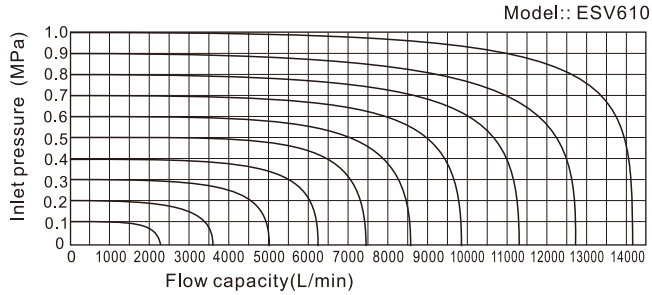
NO.	Item	NO.	Item	NO.	Item
1	Bottom cover	10	Spacer	19	Pilot kit
2	O-ring	11	O-ring	20	Gasket
3	O-ring	12	Big piston sheath	21	Cover plate
4	Wear ring	13	Big piston O-ring	22	Spool
5	O-ring	14	Big piston	23	Upper cover gasket
6	Screw	15	Screw	24	Upper cover
7	O-ring	16	Screw	25	Small piston
8	Body	17	Gasket	26	Small piston O-ring
9	Gasket	18	Manual override	27	Small piston sheath

Flow chart









Installation and operation(For 200, 300, 400 series)

1. The classification and selection for the pilot type of valve

1.1. According to the source of pilot air, we can divide the valve into two types: the internal pilot and external pilot. The standard type is internal pilot.

1.2. You can convert from internal pilot to external pilot by the following methods.

2. The classification and selection for the parallel manifold sub-base

2.1. According to the direction of pilot air supply, we can divide the manifold sub-base into two types: the individual pilot and centralized pilot.

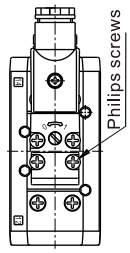
2.2. If you select the individual pilot, the fitting must be connected to the individual pilot ports.If you select the centralized pilot type, the fitting must be connected to the centralized pilot ports.

2.3. If you use parallel manifold, all of the manifold must be used the same pilot type: such as, all of them are the individual pilot type, or all of them are the centralized pilot type.

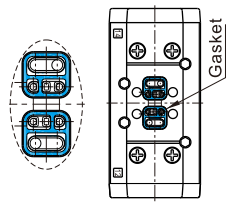
* Note: Only when you use the external pilot type, you can select the individual pilot or centralized pilot. When you use the internal pilot type, the pilot ports on the manifold are ineffective.

3. The position and specification of the manifold sub-base ports:

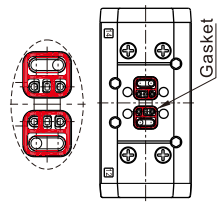
1 Remove the 4 philips head screws, and then remove the coil, pilot body and cover.



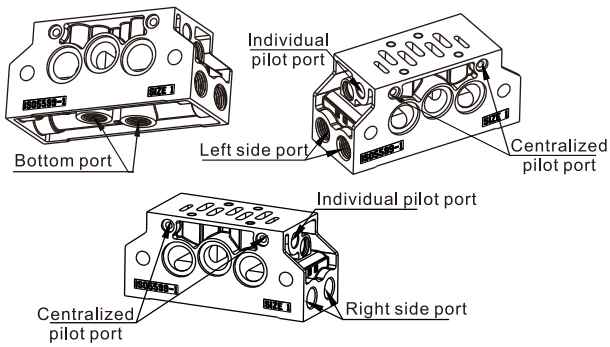
2 Assemble the gasket according to the picture, and then assemble the cover, pilot body and coil- Internal pilot



3 Assemble the pilot O-ring according to the picture, and then, assemble the cover, pilot body and coil-External pilot.



The diagram of manifold sub-base	Port status of manifold sub-base					
	Port name Ordering code	Left side port	Right side port	Bottom port	Centralized pilot port	Individual pilot port
	ESV202MG	Use	Unused	Unused	Unused	Use
	ESV202MGR	Unused	Use	Unused	Unused	Use
	ESV202MGB	Unused	Unused	Use	Unused	Use
	ESV202MGW	Use	Unused	Unused	Use	Unused
	ESV202MGWR	Unused	Use	Unused	Use	Unused
	ESV202MGWB	Unused	Unused	Use	Use	Unused



Note: Please seal the bottom port by plug, when it is unused.
The above list is an example of 200M series' ordering code, the other series is follow the same pattern, only need to change the series code.

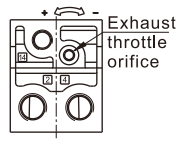
4. Exhaust throttle function

4.1. The manifold has exhaust throttle function, the below picture shows the position of the exhaust throttle orifices on each side.

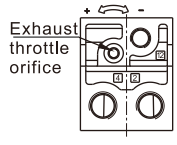
4.2. Use allen key to adjust the screw.

4.3. Rotate the screw clockwise to reduce the exhaust orifice, rotate the screw counter-clockwise to enlarge the exhaust orifice.

Manifold right side

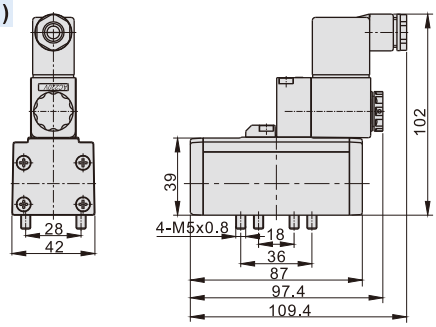


Manifold left side

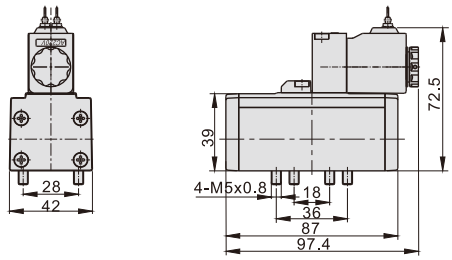


Dimensions(ESV200 Series)

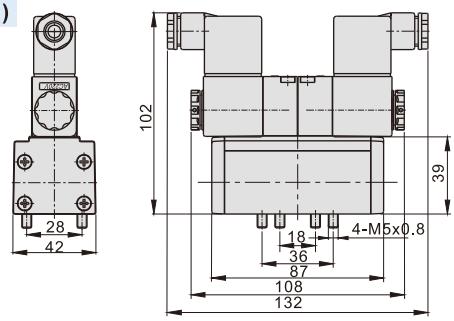
ESV210 (Terminal)



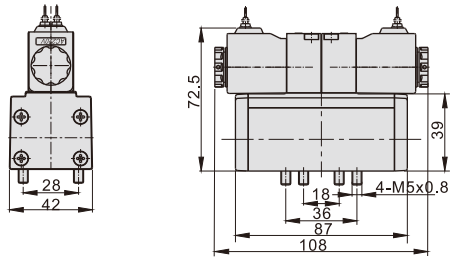
ESV210 (Grommet)



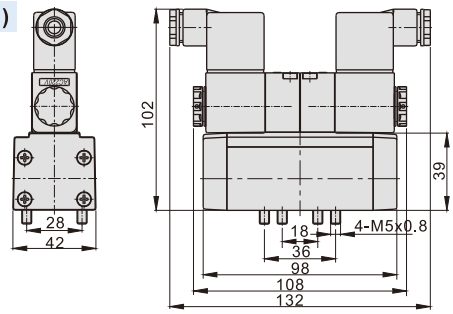
ESV220(Terminal)



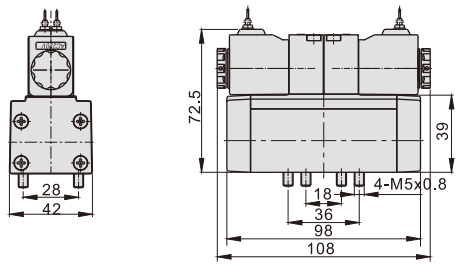
ESV220(Grommet)



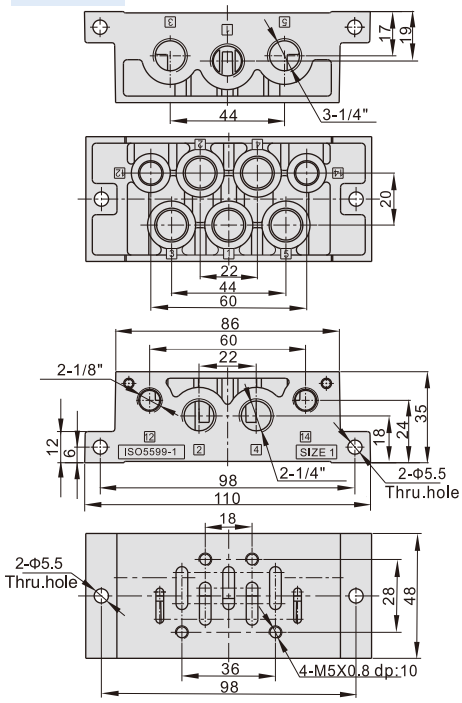
ESV230(Terminal)



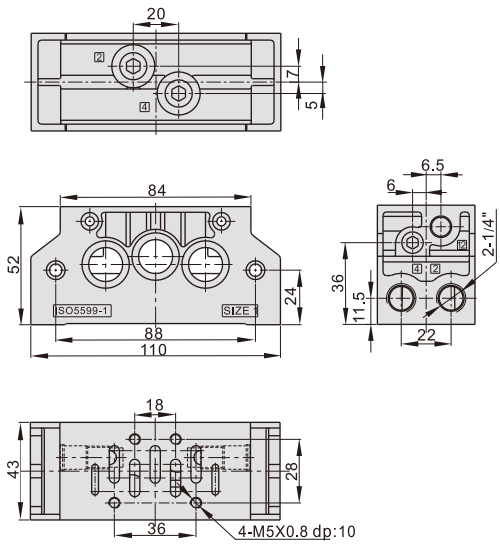
ESV230(Grommet)



ESV201M

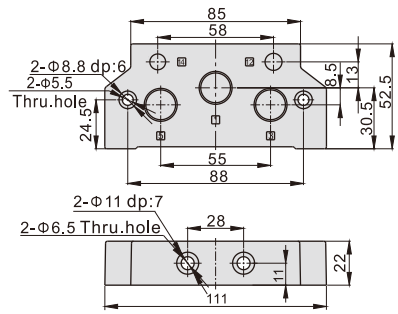


ESV202M

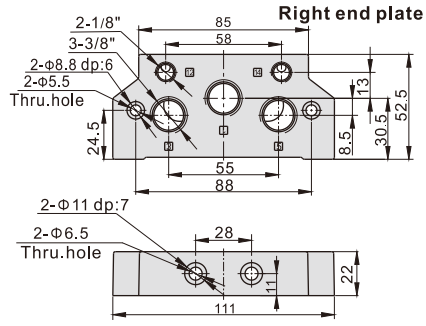


ESV203M

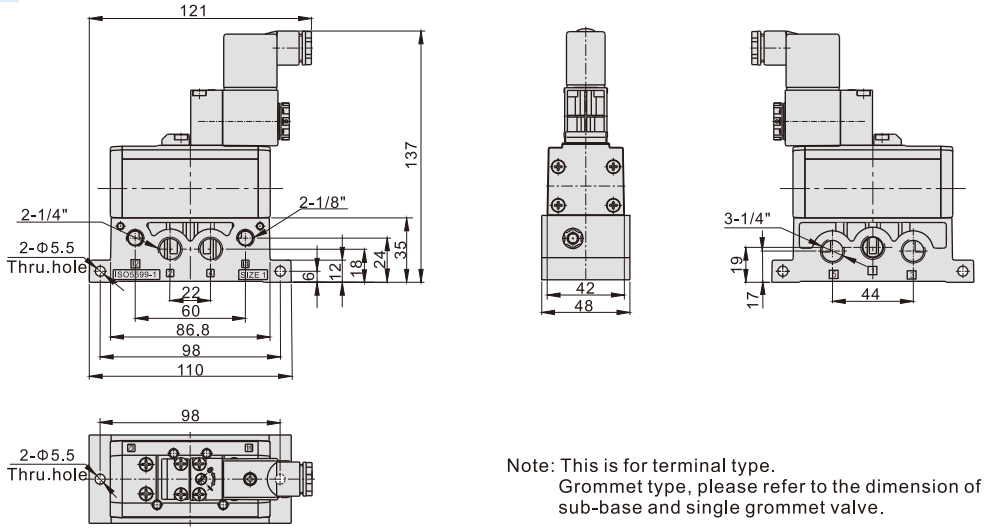
Left end plate



Right end plate

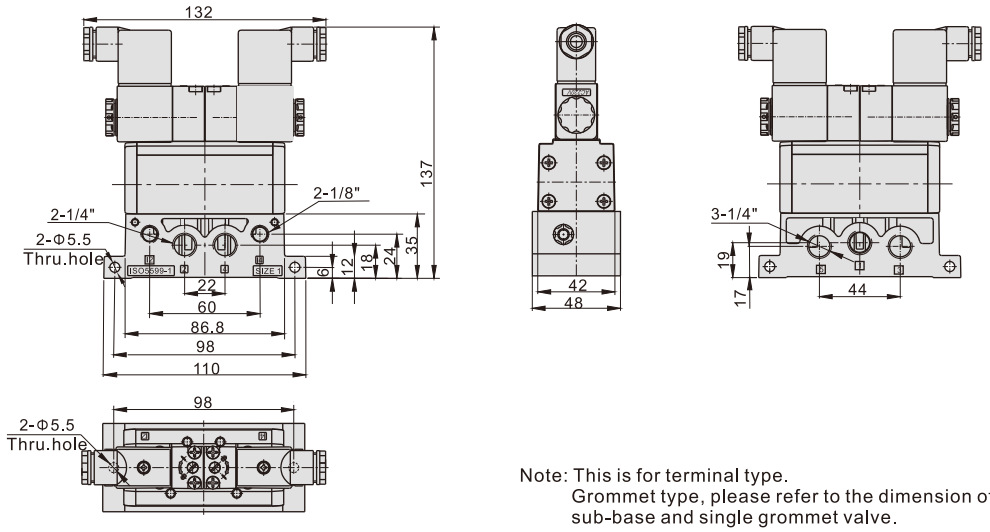


ESV210+ESV201M



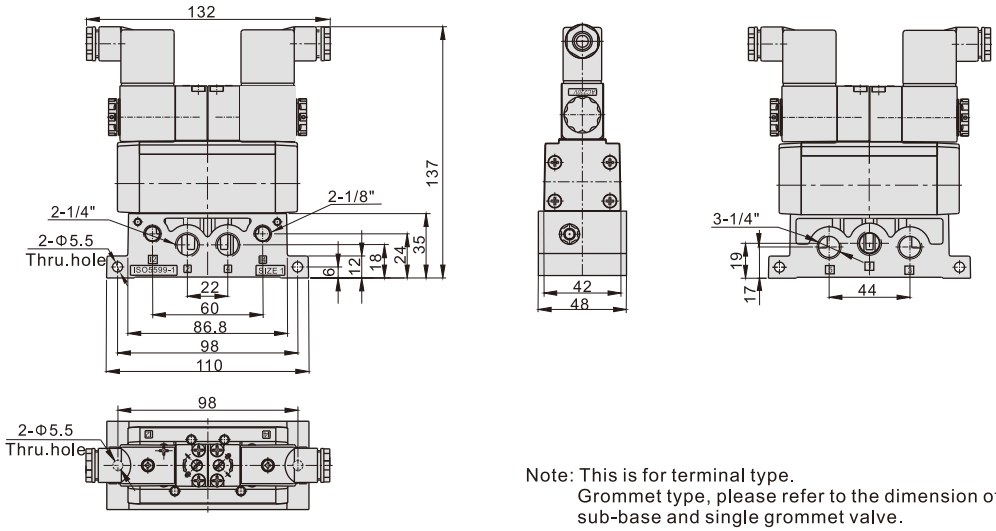
Note: This is for terminal type.
Grommet type, please refer to the dimension of sub-base and single grommet valve.

ESV220+ESV201M



Note: This is for terminal type.
Grommet type, please refer to the dimension of sub-base and single grommet valve.

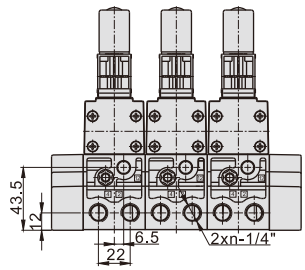
ESV230+ESV201M

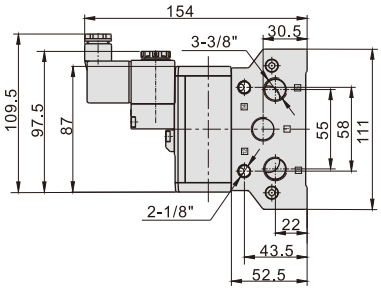


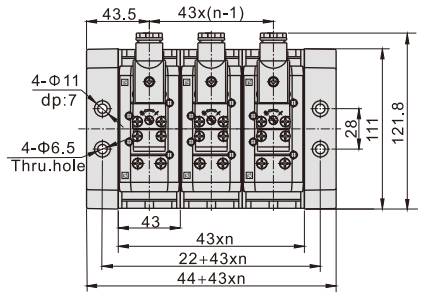
Note: This is for terminal type.
Grommet type, please refer to the dimension of sub-base and single grommet valve.

ESV210+ESV202M+ESV203M

Note: “n” means the number of stations.
The dimension of the grommet type (more than 3 stations), please refer to this drawing and the single grommet valve drawing.

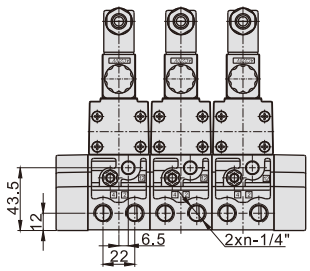


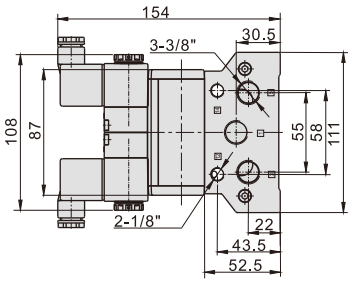


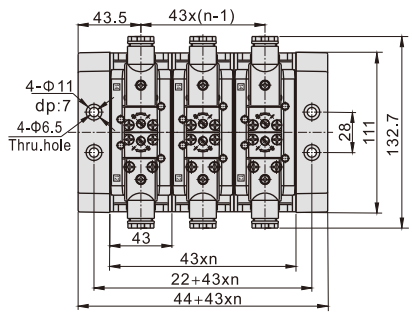


ESV220+ESV202M+ESV203M

Note: “n” means the number of stations.
The dimension of the grommet type (more than 3 stations), please refer to this drawing and the single grommet valve drawing.

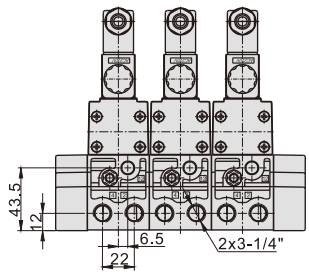


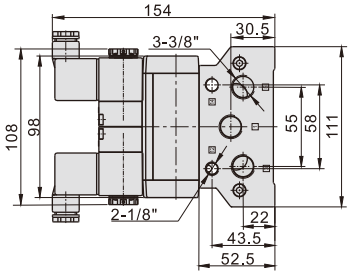


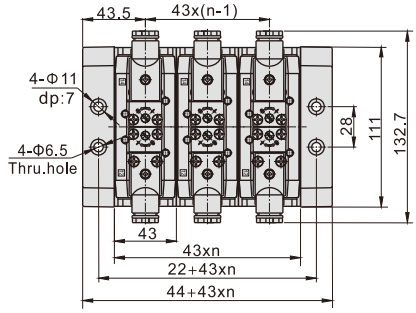


ESV230+ESV202M+ESV203M

Note: “n” means the number of stations.
The dimension of the grommet type (more than 3 stations), please refer to this drawing and the single grommet valve drawing.

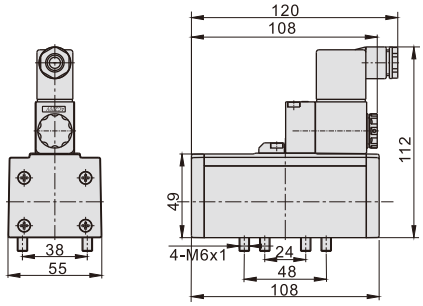




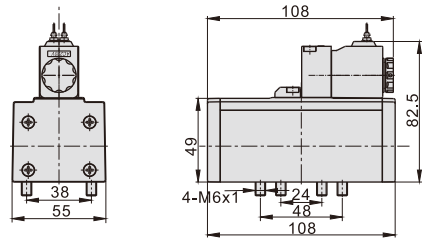


Dimensions(ESV300 Series)

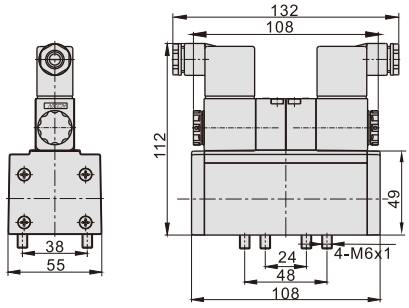
ESV310(Terminal)



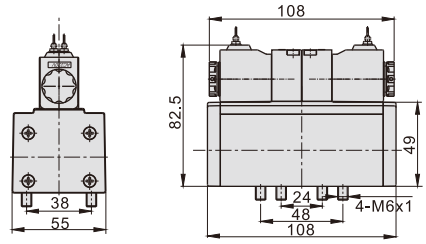
ESV310 (Grommet)



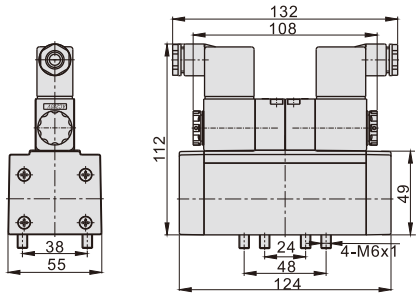
ESV320(Terminal)



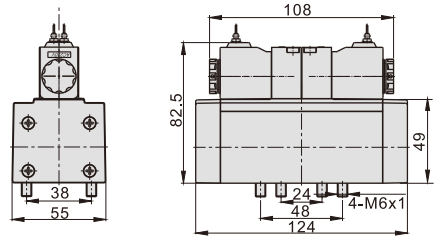
ESV320 (Grommet)



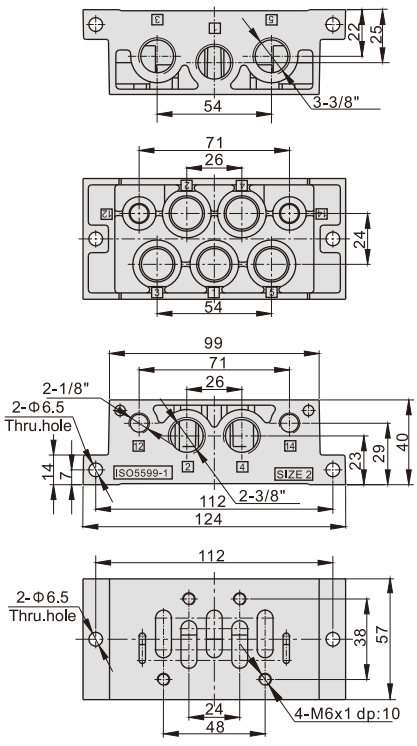
ESV330(Terminal)



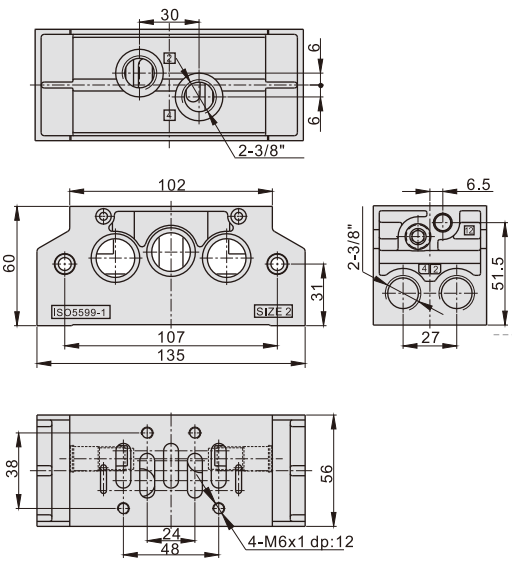
ESV330 (Grommet)



ESV301M

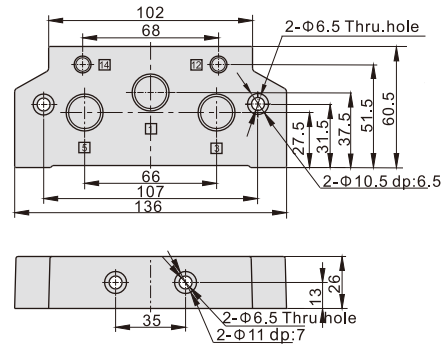


ESV302M

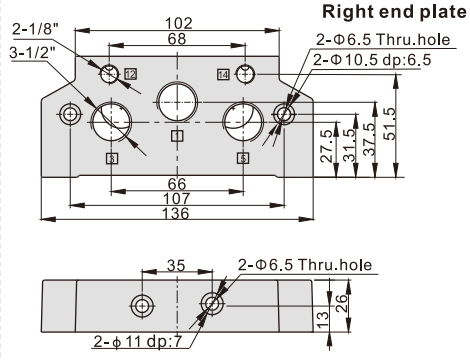


ESV303M

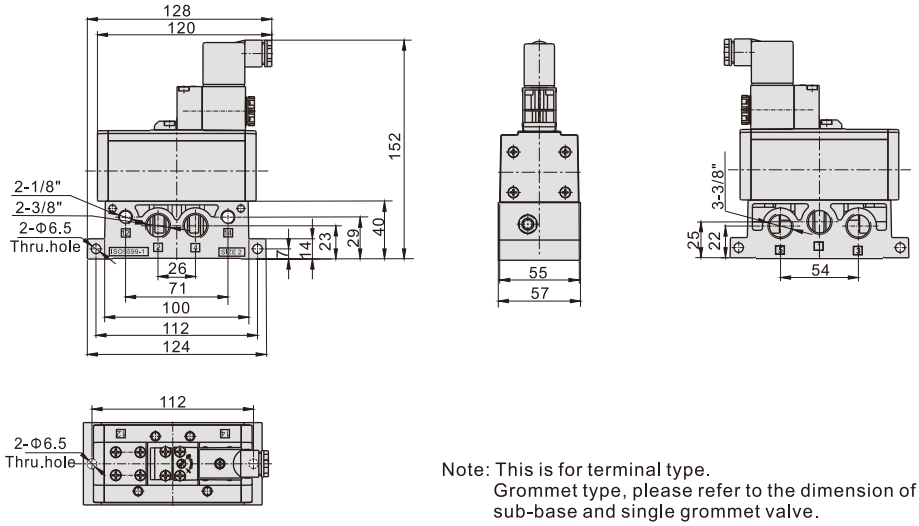
Left end plate



Right end plate

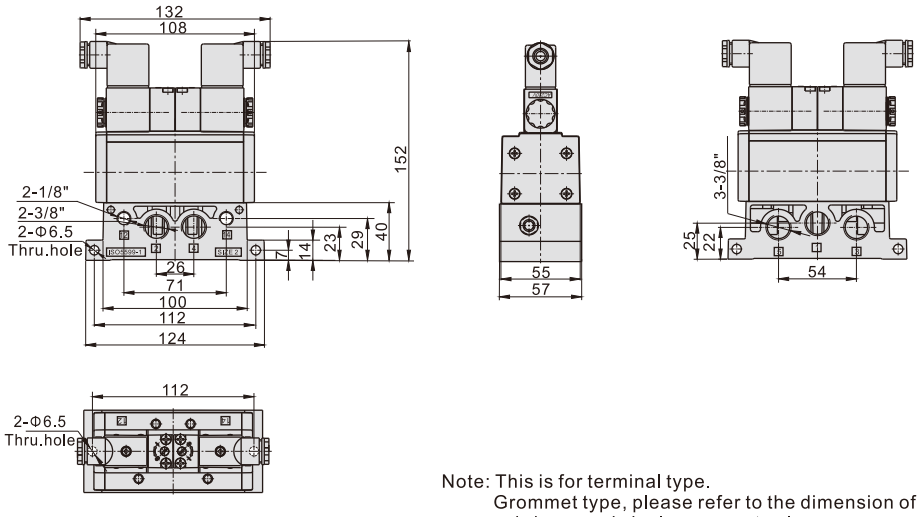


ESV310+ESV301M



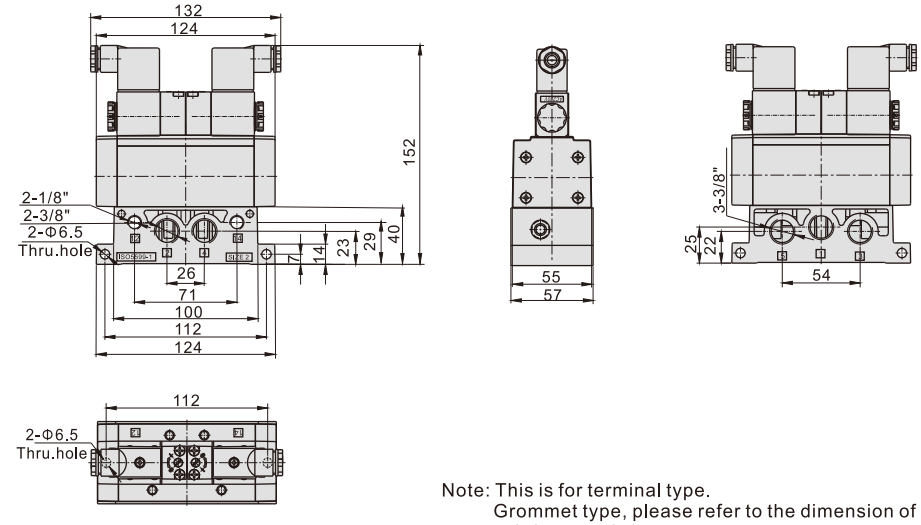
Note: This is for terminal type.
Grommet type, please refer to the dimension of sub-base and single grommet valve.

ESV320+ESV301M



Note: This is for terminal type.
Grommet type, please refer to the dimension of sub-base and single grommet valve.

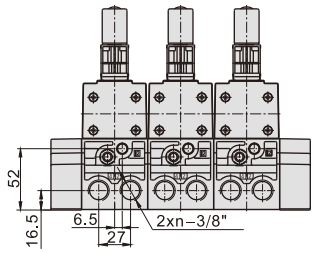
ESV330+ESV301M

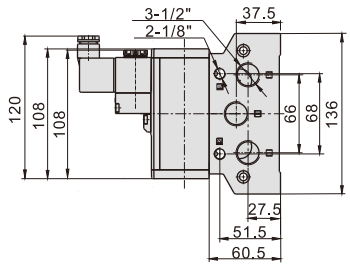


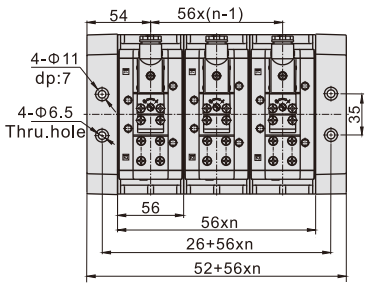
Note: This is for terminal type.
Grommet type, please refer to the dimension of sub-base and single grommet valve.

ESV310+ESV302M+ESV303M

Note: “n” means the number of stations.
The dimension of the grommet type (more than 3 stations), please refer to this drawing and the single grommet valve drawing.

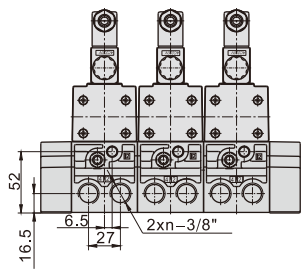


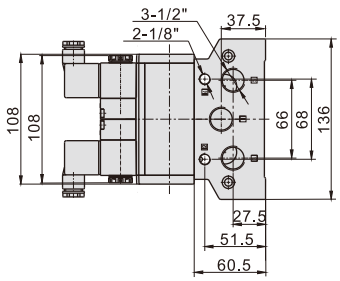


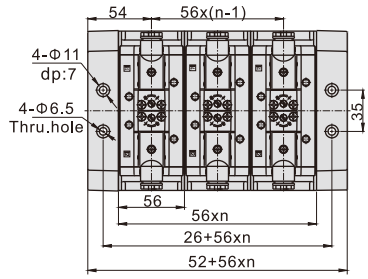


ESV320+ESV302M+ESV303M

Note: “n” means the number of stations.
The dimension of the grommet type (more than 3 stations), please refer to this drawing and the single grommet valve drawing.

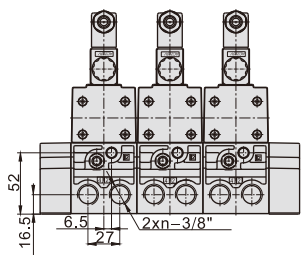


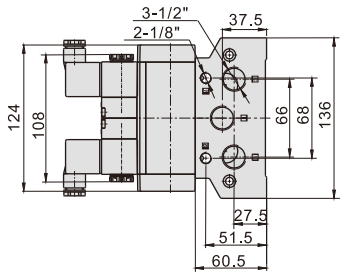


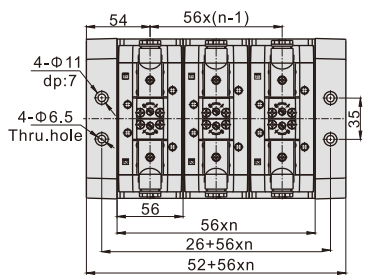


ESV330+ESV302M+ESV303M

Note: “n” means the number of stations.
The dimension of the grommet type (more than 3 stations), please refer to this drawing and the single grommet valve drawing.

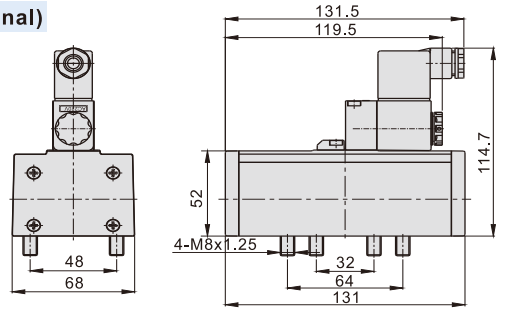




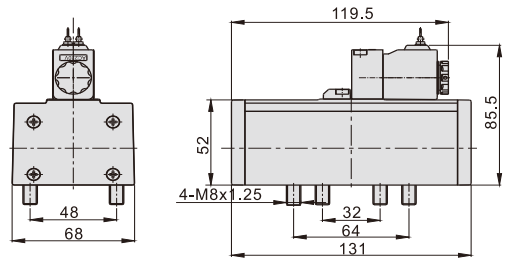


Dimensions(ESV400 Series)

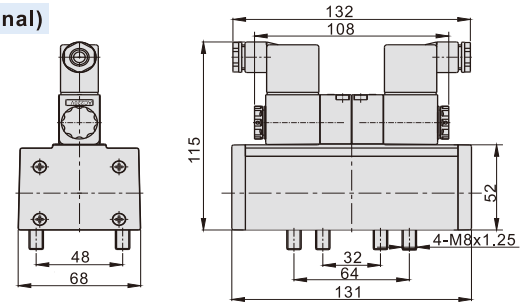
ESV410 (Terminal)



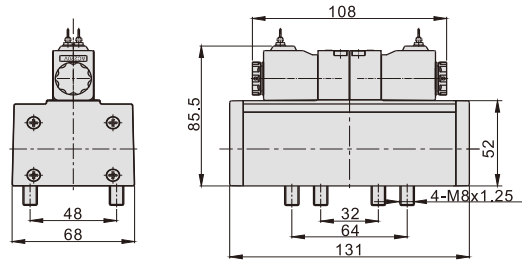
ESV410 (Grommet)



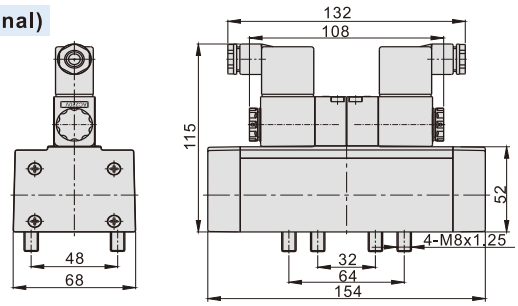
ESV420 (Terminal)



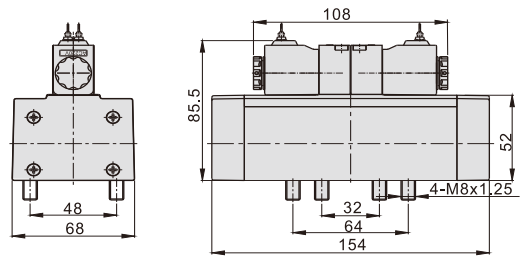
ESV420 (Grommet)



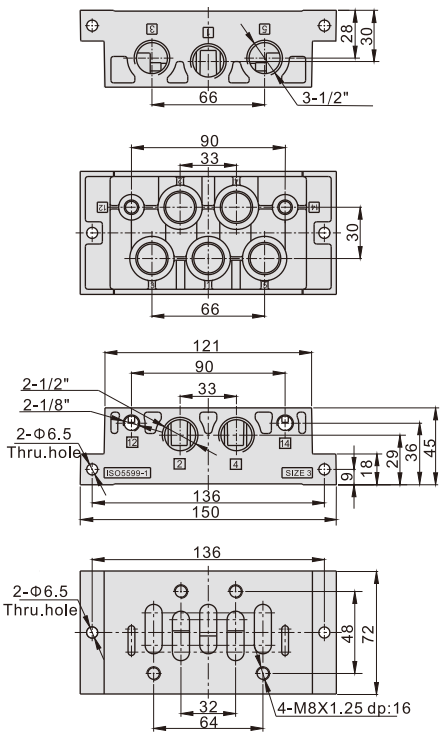
ESV430 (Terminal)



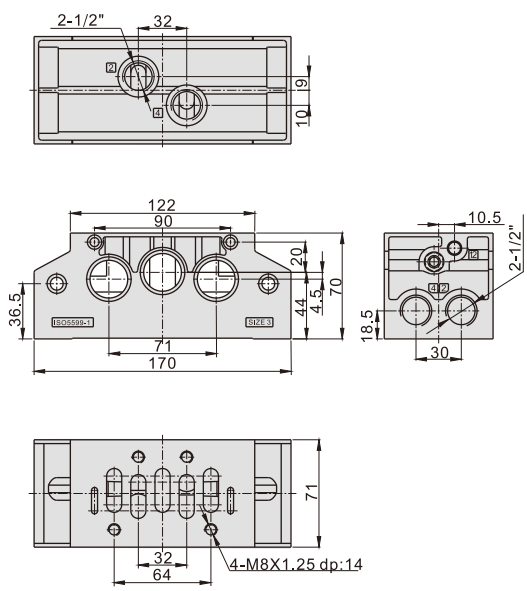
ESV430 (Grommet)



ESV401M

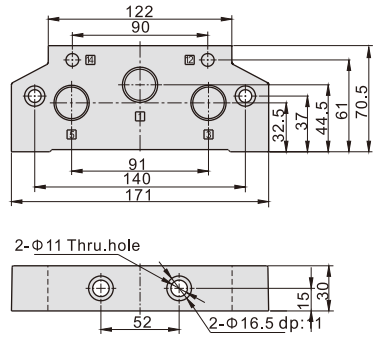


ESV402M

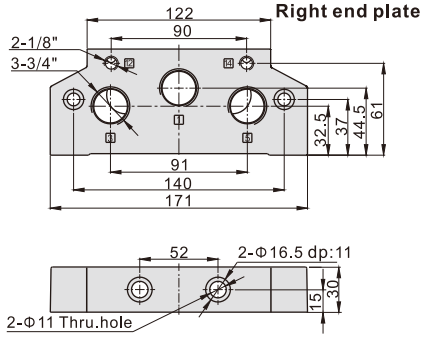


ESV403M

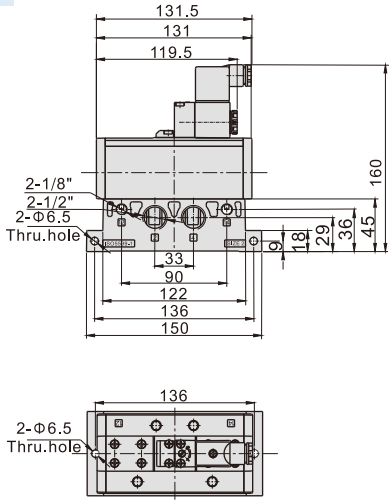
Left end plate

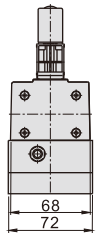


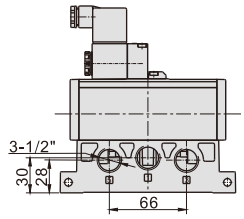
Right end plate



ESV410+ESV401M

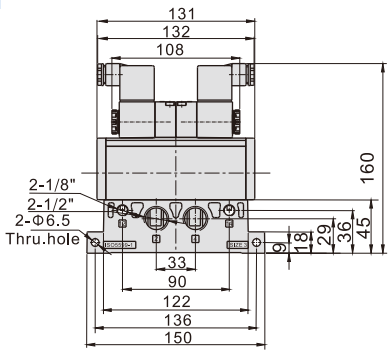


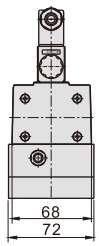


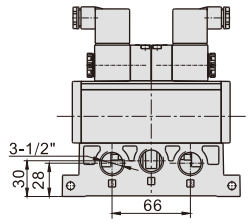


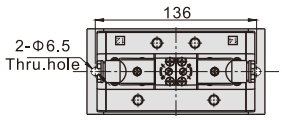
Note: This is for terminal type.
Grommet type, please refer to the dimension of sub-base and single grommet valve.

ESV420+ESV401M



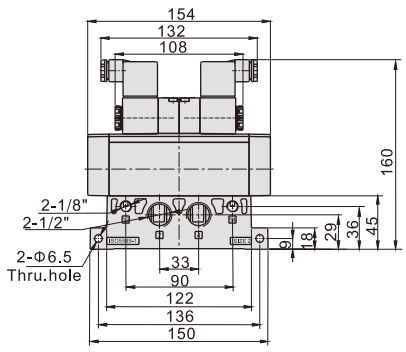


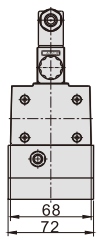


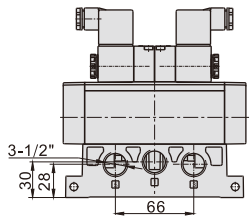


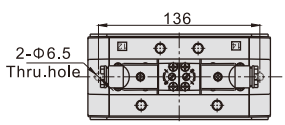
Note: This is for terminal type.
Grommet type, please refer to the dimension of sub-base and single grommet valve.

ESV430+ESV401M





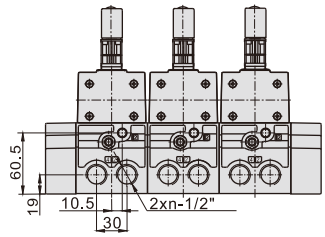


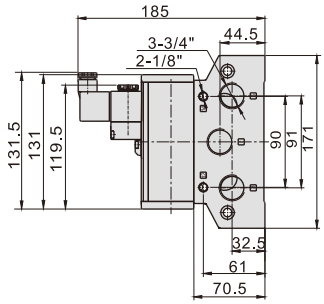


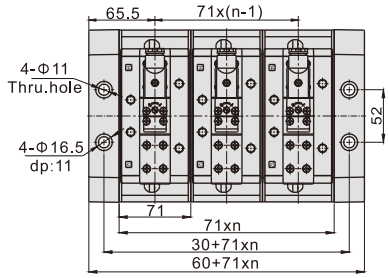
Note: This is for terminal type.
Grommet type, please refer to the dimension of sub-base and single grommet valve.

ESV410+ESV402M+ESV403M

Note: “n” means the number of stations.
The dimension of the grommet type (more than 3 stations), please refer to this drawing and the single grommet valve drawing.

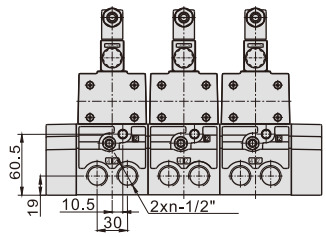


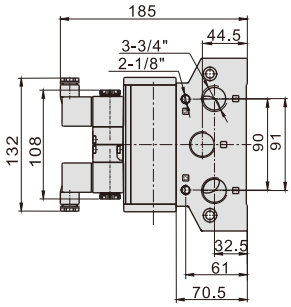


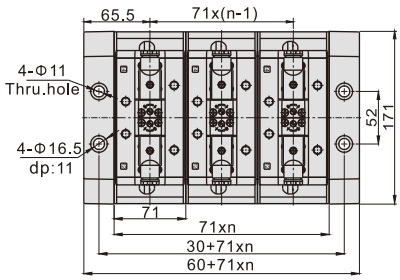


ESV420+ESV402M+ESV403M

Note: “n” means the number of stations.
The dimension of the grommet type (more than 3 stations), please refer to this drawing and the single grommet valve drawing.

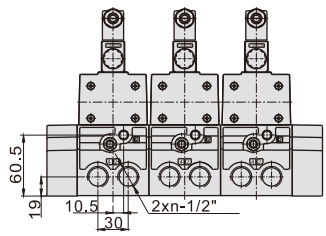


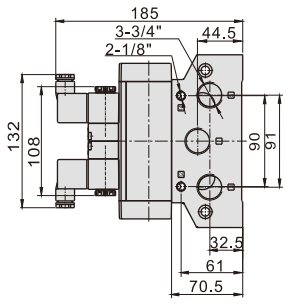


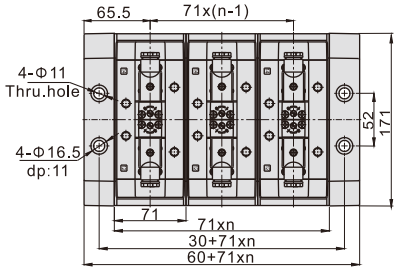


ESV430+ESV402M+ESV403M

Note: “n” means the number of stations.
The dimension of the grommet type (more than 3 stations), please refer to this drawing and the single grommet valve drawing.

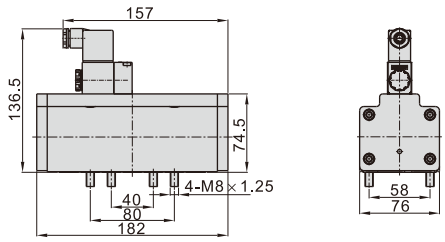




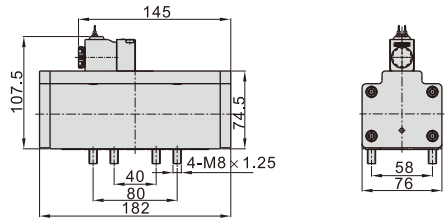


Dimensions(ESV600 Series)

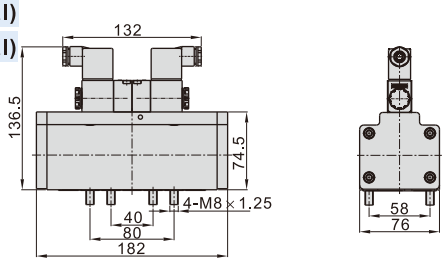
ESV610 (Terminal)



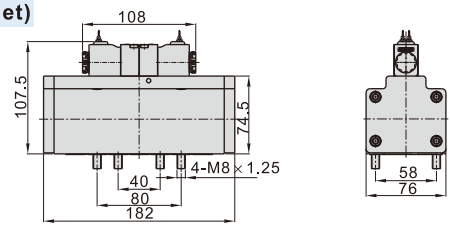
ESV610 (Grommet)



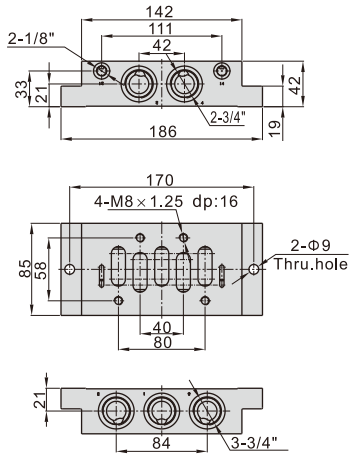
ESV620 (Terminal)
ESV630 (Terminal)



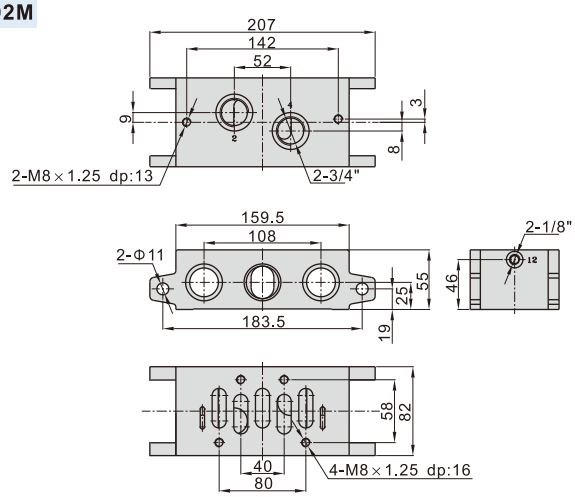
ESV620(Grommet)
ESV630(Grommet)



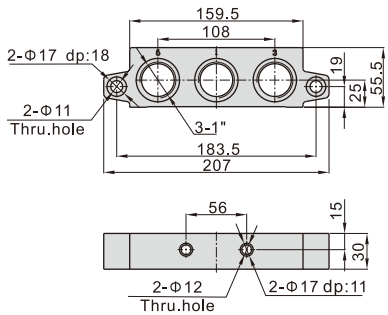
ESV601M



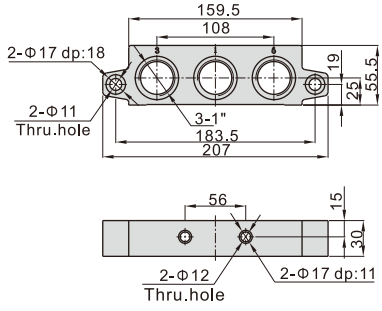
ESV602M



ESV603M

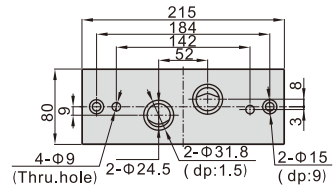


Left end plate

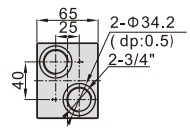


Right end plate

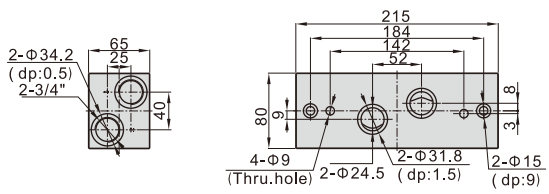
ESV604M



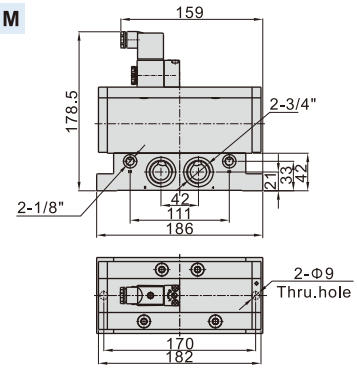
Left port

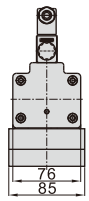


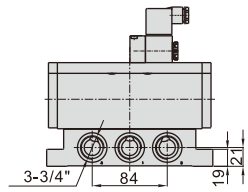
Right port



ESV610+ESV601M

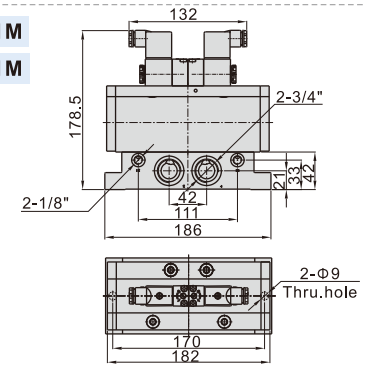


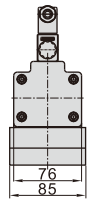


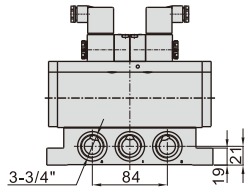


Note: This is for terminal type.
Grommet type, please refer to the dimension of sub-base and single grommet valve.

ESV620+ESV601M
ESV630+ESV601M



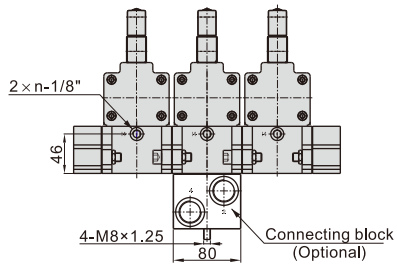


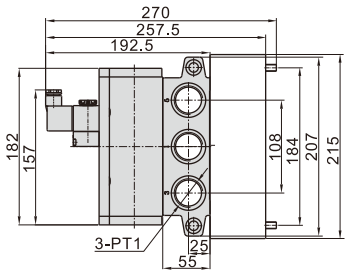


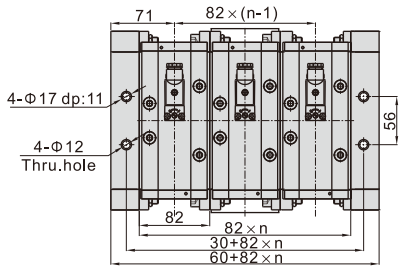
Note: This is for terminal type.
Grommet type, please refer to the dimension of sub-base and single grommet valve.

ESV610+ESV602M+ESV603M+ESV604M

Note: "n" means the number of stations.
The dimension of the grommet type (more than 3 stations), please refer to this drawing and the single grommet valve drawing.

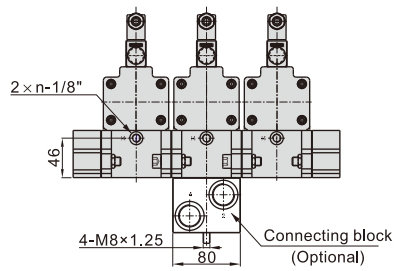


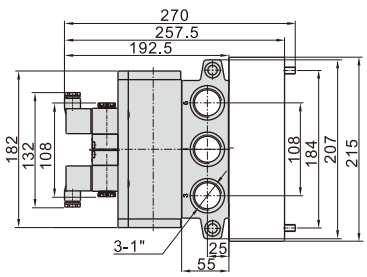


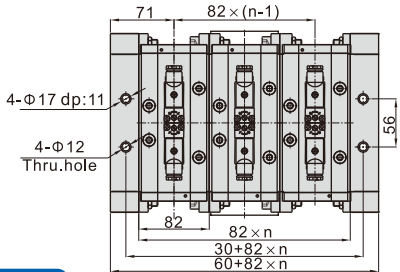


ESV620+ESV602M+ESV603M+ESV604M
ESV630+ESV602M+ESV603M+ESV604M

Note: "n" means the number of stations.
The dimension of the grommet type (more than 3 stations), please refer to this drawing and the single grommet valve drawing.





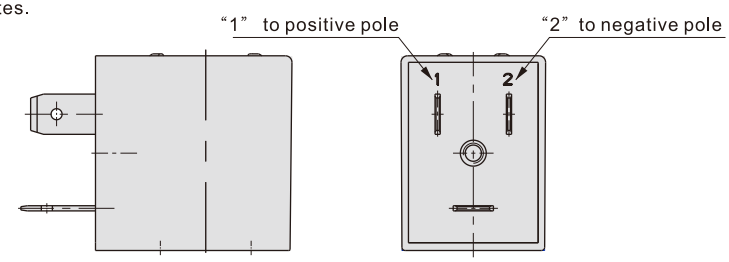


080, 092 Series



Attentions for block wiring

Coil terminal with DC specification has polar indicator lights, thus when wiring, notice positive and negative poles, "1" shall be connected to positive pole, "2" to negative pole. If the poles are connected inversely, the indicator lights will not shine but valve still actuates.



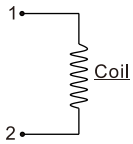
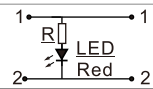
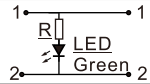
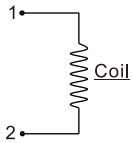
Ordering code

CD A080 A

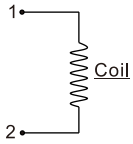
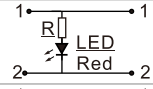
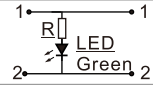
① ② ③

①Coil type	②Coil's bore	③Voltage
CD: Terminal CL: Grommet	A080: Coil specification (Bore size: Φ8.0mm) A092: Coil specification (Bore size: Φ9.0mm)	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V

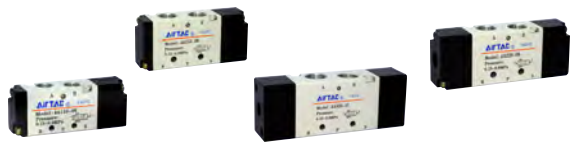
080 Series

Production series	Coil type	Voltage	Coil inside connection diagram	Connector type	Connector inside connection diagram	Memo
3V100 Series 4V100 Series 4M100 Series	CDA080 Terminal	AC		PL1515T-P1	-	Applied to CDA080 AC, DC type coil
				PL1515T-P2		Applied to CDA080 AC type coil
	CDA080 Terminal	DC		PL1515T-P3		Applied to CDA080 DC type coil
	CLA080 Grommet	AC		–	–	–
	CLA080 Grommet	DC		–	–	–

092 Series

Production series	Coil type	Voltage	Coil inside connection diagram	Connector type	Connector inside connection diagram	Memo
3V1 Series 3V200 Series 3V300 Series 4V200 Series 4V300 Series 4V400 Series 4M200 Series 4M300 Series ESV200 Series ESV300 Series ESV400 Series ESV600 Series	CDA092 Terminal	AC		4V210-005-P1	-	Applied to CDA092 AC,DC type coil
				4V210-005-P2		Applied to CDA092 AC type coil
	CDA092 Terminal	DC		4V210-005-P3		Applied to CDA092 DC type coil
	CLA092 Grommet	AC		–	–	–
	CLA092 Grommet	DC		–	–	–

Compendium of Air valve

3 port 2 position			
P106	Product feature	Photo	Manifold
6TA0500~6TA300 Series	●Sliding column structure ●Single air control and double air control are optional ●NO and NC are available for single air control ●Manifold is available		
P109	Product feature	Photo	Manifold
3A100~3A300 Series	●Sliding column structure ●Single air control and double air control are optional ●NO and NC are available for single air control ●Manifold is available		
5 port 2 position, 5 port 3 position			
P112	Product feature	Photo	Manifold
6A0500~6A300 Series	●Sliding column structure ●Single air control and double air control are optional ●5/2 Way and 5/3 Way are available ●Closed center, exhaust center and pressure center are available for 5/3 Way ●Manifold is available		
P116	Product feature	Photo	Manifold
4A100~4A400 Series	●Sliding column structure ●Single air control and double air control are optional ●5/2 Way and 5/3 Way are available ●Closed center, exhaust center and pressure center are available for 5/3 Way ●Manifold is available		
P126	Product feature	Photo	
EAV Series (ISO Standard)	●Sliding column structure ●Single air control and double air control are optional ●5/2 Way and 5/3 Way are available ●Closed center, exhaust center and pressure center are available for 5/3 Way ●The installation size conforms to ISO5599/1 standard		

Installation and Application

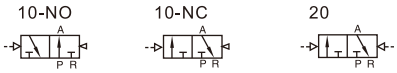
1. Before installing, be sure the valve hasn't been damaged during transportation.
2. It's suggested to use the medium lubricated by 40μm filter element. Be aware of the flow direction and port size.
3. Please notice whether the installation condition accords with technical requirements (such as “working pressure” and “scope of application temperature”), then the equipment can be installed and used.
4. Notice the flow direction of air during installation, P is the air intake, A (B) is the work port and R (S) is the exhaust outlet.
5. Take measure to avoid vibration and frozen.
6. Firstly press the base gasket into the base, and then connect the base with the valve body by the affiliated screws. The base gasket can be pressed into the installation places that are not used temporarily, and then seal them with affiliated blank cap. When the system expands, take the blank cap off and install relative air valves;
7. To keep the dust away, please use the silencer for the exhaust ports. Never forget to install dirt-proof boot in air intake and outlet during dismounting.

Air valve(3/2 way)

6TA Series



Symbol



Product feature

1. The body is extruded by aluminum alloy, and the inner hole is specially processed to increase the flow rate.
2. Can integrate manifold to form valve group to save space.

Specification

Model	6TA0510	6TA0520	6TA110	6TA120
Port size [Note1]	In=Out=Exh=M5		In=Out=Exh=M5(or=1/8")	
Orifice size(Cv)[Note4]	M5:3.4mm²(0.2)		06：8.9mm²(0.52)	
Weight (g)	18.5	28.5	46.5	56.5
Model	**6TA210**	**6TA220**	**6TA310**	**6TA320**
Port size [Note1]	06：In=Out=Exh=1/8"		In=Out=3/8" Exh=1/4"	
	08：In=Out=1/4" Exh=1/8"			
Orifice size(Cv)[Note4]	08：15.4mm²(0.91)		10:38.4mm²(2.26)	
Weight (g)	96	121	200	240
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	External air control			
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Lubrication [Note2]	Not required			
Max.frequency [Note3]	5 cycle/sec			

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

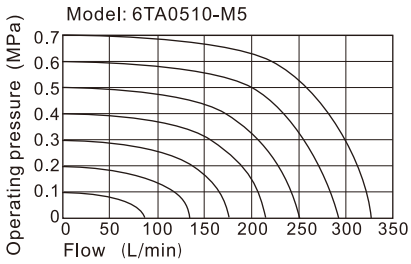
Ordering code

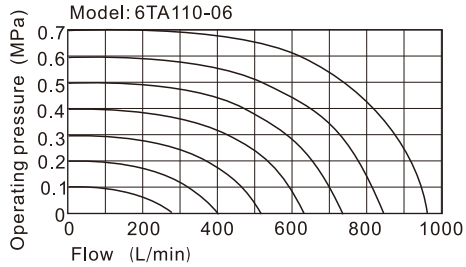
6TA 2 10 08 NC G

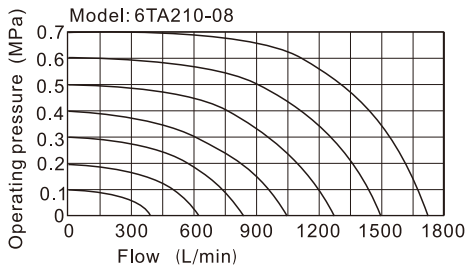
1 2 3 4 5 6

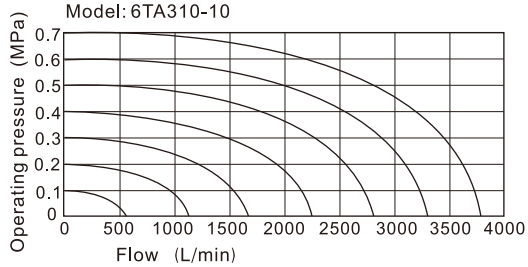
①Model	6TV：Air valve (3/2 way)					
②Code	05: 0500 Series	1: 100 Series		2: 200 Series		3: 300 Series
③Valve type	10: Single air control 20：Double air control					
④Port size	M5: M5	M5: M5	06: 1/8"	06: 1/8"	08: 1/4"	10: 3/8"
⑤Acting type	NC: Normally closed NO: Normally opened [Note：Double air control no this code]					
⑥Thread type	–		G: G Thread			

Flow chart





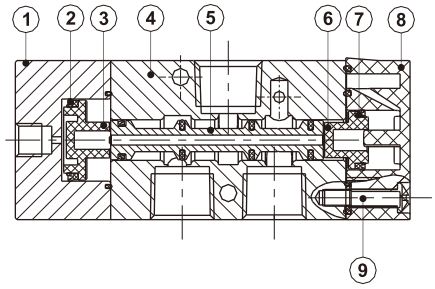




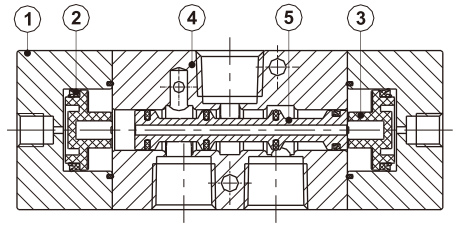
The data in flow rate chart are obtained from AirTAC lab.

Inner structure

6TA110



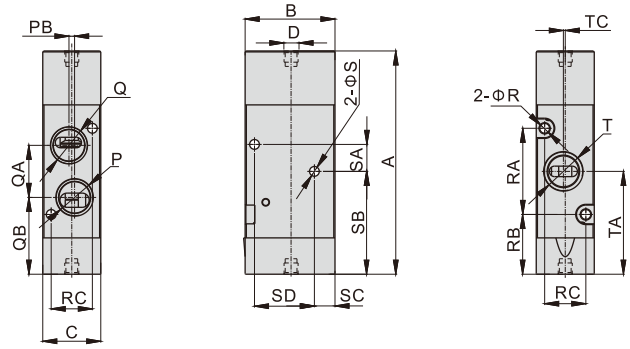
6TA120NC



No.	Item
1	Pilot valve
2	Gasket
3	Big piston
4	Body
5	Spool
6	Small piston
7	Gasket
8	Bottom cover
9	Bolt

Dimensions

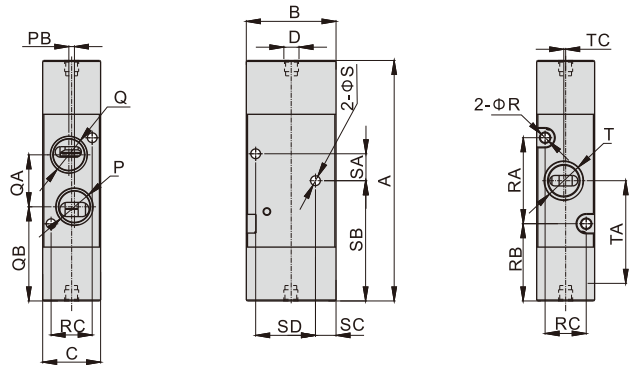
6TA0510
6TA110
6TA210
6TA310



Model\Item	A	B	C	D	P	PB	Q	QA	QB	R	RA	RB	RC	S	SA	SB	SC	SD	T	TA	TC
6TA0510M5	41.5	21	10.6	M5X0.8	M5X0.8	1	M5X0.8	9.5	13.5	2.1	14	11.3	7.5	-	-	-	-	-	M5X0.8	18.3	0.5
6TA110M5	59.5	24	15.5	M5X0.8	M5X0.8	–	M5X0.8	14	20.5	2.6	23	16	11	Φ2.6	7.2	34.5	4	17.5	M5X0.8	27.5	–
6TA11006	59.5	24	15.5	M5X0.8	1/8"	1.5	1/8"	14	20.5	2.6	23	16	11	Φ2.6	7.2	34.5	4	17.5	1/8"	27.5	0.5
6TA21006	77.5	32.5	18.5	1/8"	1/8"	-	1/8"	18	25.5	3.2	33	18	13.5	Φ3.2	12	46.5	7	21	1/8"	34.5	–
6TA21008	77.5	32.5	18.5	1/8"	1/4"	-	1/8"	18	25.5	3.2	33	18	13.5	Φ3.2	12	46.5	7	21	1/4"	34.5	1
6TA31010	95	46	23.5	1/8"	3/8"	-	1/4"	28	29.5	3.2	43	22	18.4	Φ4.3	15	58.5	8	31	3/8"	43.5	-

[Note]: 6TA0510 type no through hole "S" on the side.

6TA0520
6TA120
6TA220
6TA320



Model\Item	A	B	C	D	P	PB	Q	QA	QB	R	RA	RB	RC	S	SA	SB	SC	SD	T	TA	TC
6TA0520M5	47	21	10.6	M5X0.8	M5X0.8	1	M5X0.8	9.5	18.7	2.1	14	16.5	7.5	-	-	-	-	-	M5X0.8	23.5	0.5
6TA120M5	64.5	24	15.5	M5X0.8	M5X0.8	–	M5X0.8	14	25.2	2.6	23	20.7	11	Φ2.6	7.2	39.5	4	17.5	M5X0.8	32.2	–
6TA12006	64.5	24	15.5	M5X0.8	1/8"	1.5	1/8"	14	25.2	2.6	23	20.7	11	Φ2.6	7.2	39.5	4	17.5	1/8"	32.2	0.5
6TA22006	85.5	32.5	18.5	1/8"	1/8"	-	1/8"	18	33.9	3.2	33	26.3	13.5	Φ3.2	12	54.8	7	21	1/8"	42.8	–
6TA22008	85.5	32.5	18.5	1/8"	1/4"	-	1/8"	18	33.9	3.2	33	26.3	13.5	Φ3.2	12	54.8	7	21	1/4"	42.8	1
6TA32010	103	46	23.5	1/8"	3/8"	-	1/4"	28	37.5	3.2	43	30	18.4	Φ4.3	15	66.5	8	31	3/8"	51.5	-

[Note]: 6TA0520 type no through hole "S" on the side.

Manifold for 6TA Series



Specification

Item\Manifold Model	6TA0500M	6TA100M	6TA200M	6TA300M
Fluid	Air(to be filtered by 40 μ m filter element)			
Temperature ℃	-20~70			
Adaptable valve's series	6TA0500 Series	6TA100 Series	6TA200 Series	6TA300 Series

Product feature

1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost.
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring.
3. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

Ordering code

6TV100M 5F G Ordering code for manifold

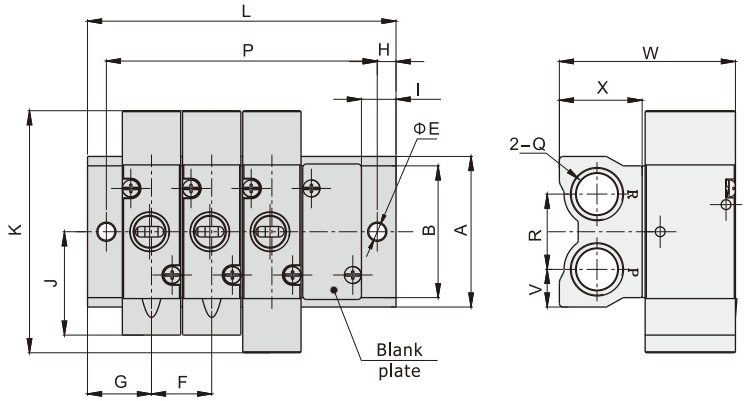
①Model	6TV0500M: 6TV0500 Series manifold	6TV100M: 6TV100 Series manifold	6TV200M: 6TV200 Series manifold	6TV300M: 6TV300 Series manifold
②Number of stations	1F: 1 Station 2F: 2 Station 3F: 3 Station ..... 20F: 20 Station			
③Thread type	G: G Thread			

P–6TV100M–R2 Ordering code for blank plate

①Model	6TV0500M: 6TV0500 Series manifold	6TV100M: 6TV100 Series manifold	6TV200M: 6TV200 Series manifold	6TV300M: 6TV300 Series manifold
②Code	R2: Blank plate for manifold			

[Note] 1.Manifold kits contains manifold, seal and screw; 2. Blank plate kits contains blank plate and screw.

Dimensions



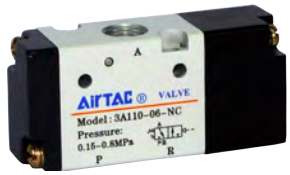
Model\Item	A	B	E	F	G	H	I	J	K	Q	R	V	W	X
6TV0500M	33	26	4.5	11	15	5	9.5	18.5	47	1/8"	16.5	8.5	38.5	17
6TV100M	40	35	4.5	16	17	5	9	27.5	64.5	1/4"	20	10	47	22
6TV200M	48	44	4.5	19	18.5	5	9	34.5	85.5	1/4"	24	12	57	23.5
6TV300M	60	54	4.5	24	24	5	12.5	43.5	103	3/8"	32	14	74	27

Model\Item	L																			
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
6TV0500M	30	41	52	63	74	85	96	107	118	129	140	151	162	173	184	195	206	217	228	239
6TV100M	34	50	66	82	98	114	130	146	162	178	194	210	226	242	258	274	290	306	322	338
6TV200M	37	56	75	94	113	132	151	170	189	208	227	246	265	284	303	322	341	360	379	398
6TV300M	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384	408	432	456	480	504

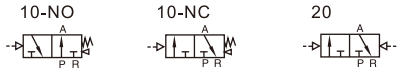
Model\Item	P																			
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
6TV0500M	20	31	42	53	64	75	86	97	108	119	120	141	152	163	174	185	196	207	218	229
6TV100M	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296	312	328
6TV200M	27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388
6TV300M	38	62	86	110	134	158	182	206	230	254	278	302	326	350	374	398	422	446	470	494

Air valve(3/2 way)

3A100 Series



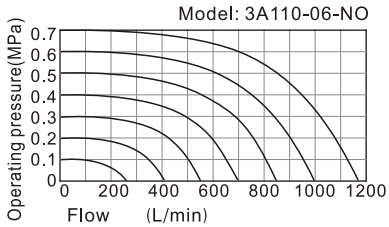
Symbol



Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Double air control valves have memory function.
3. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
4. No need to add oil for lubrication.
5. Multi-mounting helps to install and apply.
6. Integrate with the manifold to save installation space.

Flow chart



The data in flow rate chart are obtained from AirTAC lab.

Specification

Model	3A110-M5	3A120-M5	3A110-06	3A120-06
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	Exterior control			
Port size [Note1]	M5		1/8"	
Orifice size(Cv)[Note4]	3A110-06,3A120-06:10.2mm^2(Cv=0.6)			
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Max. frequency [Note3]	5 cycle/sec			

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span.Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Ordering code

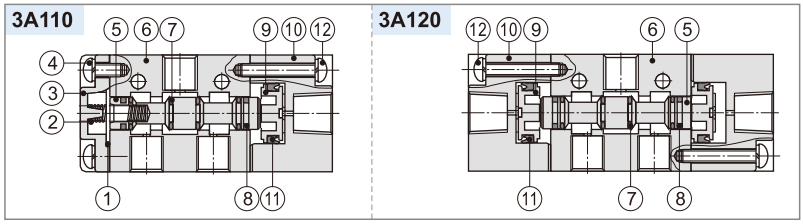
3A 1 10 06 NO G

(1) (2) (3) (4) (5) (6)

①Model	②Code	③Valve type	④Port size	⑤Acting type	⑥Thread type	
3A: Air Valve (3/2 way)	1: 100 Series	10: Single air control	M5: M5 06: 1/8"	NC: Normally close NO: Normally open	M5	1/8"
		20: Double air control		No this code	No this code	G: G Thread

Please refer to P124 for manifold specification and the order way.

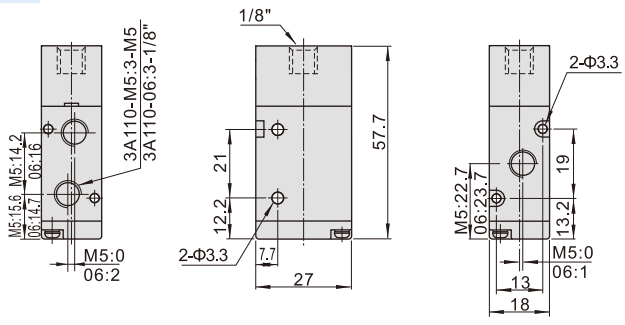
Inner structure



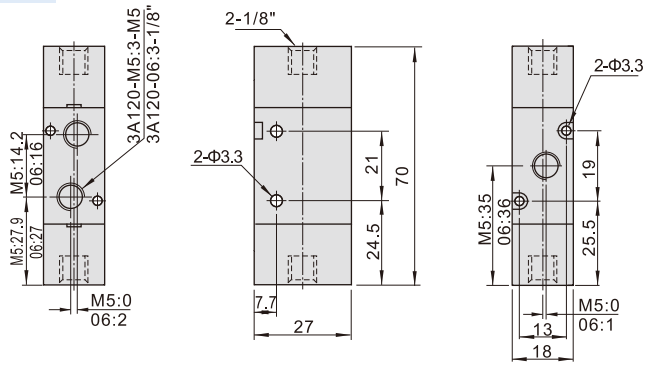
No.	Item	No.	Item	No.	Item
1	Bottom cover gasket	5	Spool	9	Piston
2	Spring	6	Body	10	Pilot body
3	Bottom cover	7	O-ring	11	Piston O-ring
4	Bottom cover screw	8	Wear ring	12	Screw

Dimension

3A110



3A120

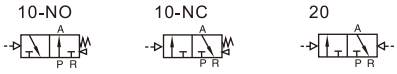


Air valve(3/2 way)

3A200 Series



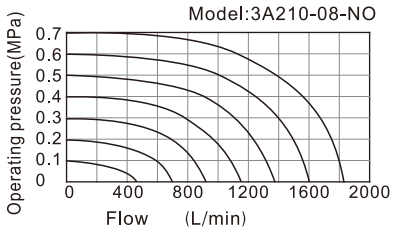
Symbol



Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Double air control valves have memory function.
3. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
4. No need to add oil for lubrication.
5. Multi-mounting helps to install and apply.
6. Integrate with the manifold to save installation space.

Flow chart



The data in flow rate chart are obtained from AirTAC lab.

Specification

Model	3A210-06	3A220-06	3A210-08	3A220-08
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=1/8"		In=Out=1/4"	
Orifice size(Cv)[Note4]	3A210-08,3A220-08:17.0mm^2(Cv=1.0)			
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Max. frequency [Note3]	5 cycle/sec			

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span.Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Ordering code

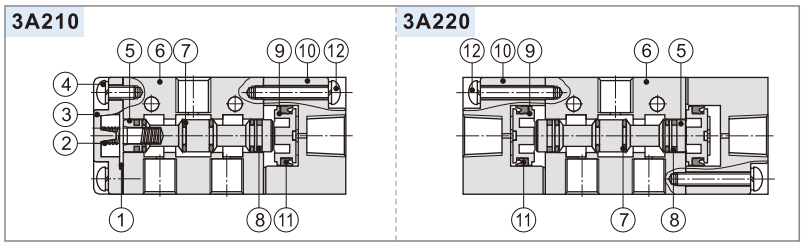
3A 2 10 08 NO G

1 2 3 4 5 6

①Model	②Code	③Valve type	④Port size	⑤Acting type	⑥Thread type
3A: Air Valve (3/2 way)	2: 200 Series	10: Single air control	06: 1/8" 08: 1/4"	NC: Normally close NO: Normally open	G: G Thread
		20: Double air control		No this code	

Please refer to P124 for manifold specification and the order way.

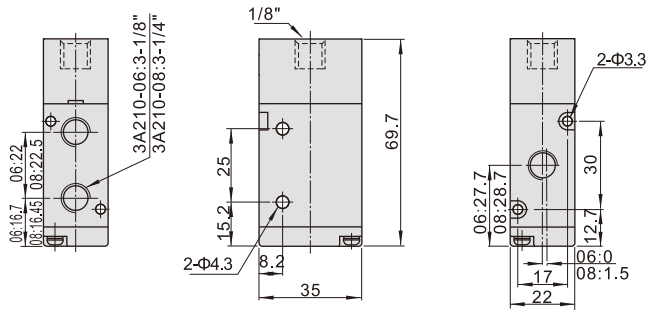
Inner structure



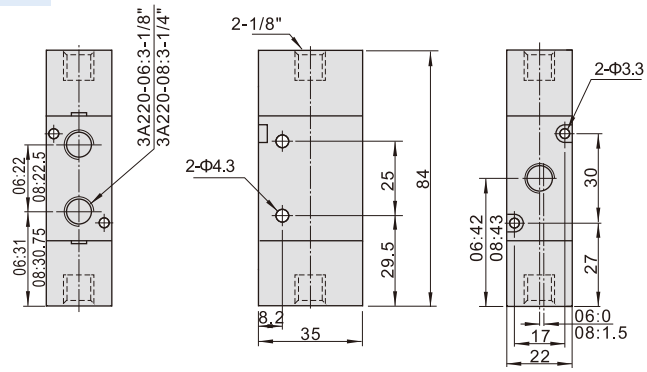
No.	Item	No.	Item	No.	Item
1	Bottom cover gasket	5	Spool	9	Piston
2	Spring	6	Body	10	Pilot body
3	Bottom cover	7	O-ring	11	Piston O-ring
4	Bottom cover screw	8	Wear ring	12	Screw

Dimension

3A210



3A220

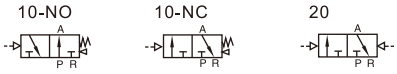


Air valve(3/2 way)

3A300 Series



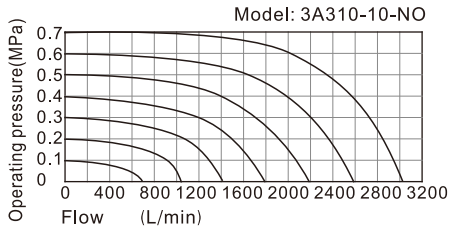
Symbol



Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Double air control valves have memory function.
3. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
4. No need to add oil for lubrication.
5. Multi-mounting helps to install and apply.
6. Integrate with the manifold to save installation space.

Flow chart



The data in flow rate chart are obtained from AirTAC lab.

Specification

Model	3A310-08	3A320-08	3A310-10	3A320-10
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=1/4"		In=Out=3/8"	
Orifice size(Cv)[Note4]	3A310-10,3A320-10:28.0mm^2(Cv=1.65)			
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Max. frequency [Note3]	5 cycle/sec			

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span.Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Ordering code

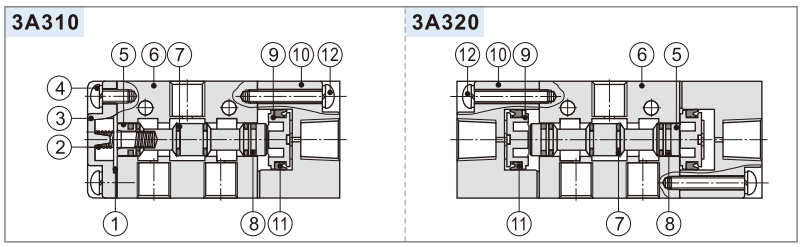
3A 3 10 10 NO G

1 2 3 4 5 6

①Model	②Code	③Valve type	④Port size	⑤Acting type	⑥Thread type
3A: Air Valve (3/2 way)	3: 300 Series	10: Single air control	08: 1/4" 10: 3/8"	NC: Normally close NO: Normally open	G: G Thread
		20: Double air control		No this code	

Please refer to P124 for manifold specification and the order way.

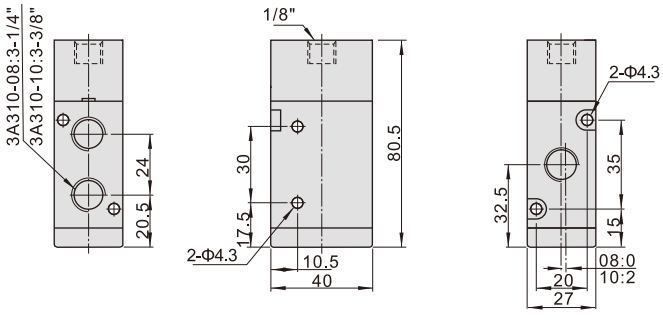
Inner structure



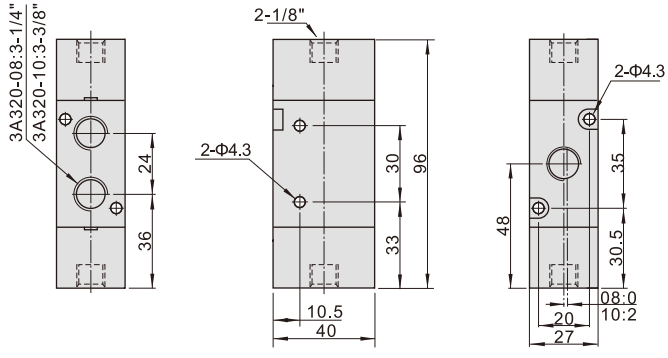
No.	Item	No.	Item	No.	Item
1	Bottom cover gasket	5	Spool	9	Piston
2	Spring	6	Body	10	Pilot body
3	Bottom cover	7	O-ring	11	Piston O-ring
4	Bottom cover screw	8	Wear ring	12	Screw

Dimension

3A310



3A320



Air valve (5/2 way,5/3 way)

6A Series

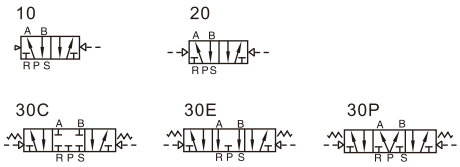


Specification

Model	6A0510	6A0520	6A0530	6A110	6A120	6A130
Port size [Note1]	In=Out=Exh=M5			In=Out=Exh=M5(or=1/8")		
Orifice size(Cv) [Note4]	M5:3.4mm^2 (0.2)		6A0530CM5: 2.2mm^2 (0.13)	06:8.9mm^2(0.52)		6A130C06: 8.0mm^2 (0.47)
Weight	20g	25g	30g	50g	60g	65g
Model	**6A210**	**6A220**	**6A230**	**6A310**	**6A320**	**6A330**
Port size [Note1]	In=Out=1/8"(or=1/4") Exh=1/8"			In=Out=3/8" Exh=1/4"		
Orifice size(Cv) [Note4]	08:15.4mm^2(0.91)		6A230C08: 14.2mm^2 (0.84)	10:38.4mm^2(2.26)		6A330C10: 30.5mm^2 (1.8)
Weight	120g	125g	135g	250g	290g	320g
Fluid	Air(to be filtered by 40 μ m filter element)					
Acting	External air control					
Operating pressure 5/3 way	0.2~0.8MPa(29~114psi)					
Operating pressure 5/2 way	0.15~0.8MPa(21~114psi)					
Proof pressure	1.2MPa(175psi)					
Temperature	-20~70℃					
Material of body	Aluminum alloy					
Lubrication [Note3]	Not required					
Max.frequency[Note2]	5 cycle/sec		3 cycle/sec	5 cycle/sec		3 cycle/sec

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

1. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
2. Can integrate manifold to form valve group to save space.

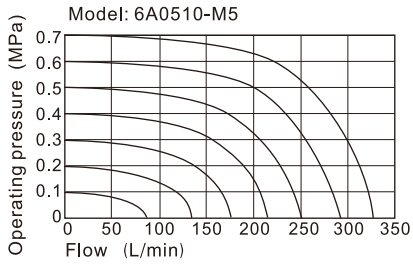
Ordering code

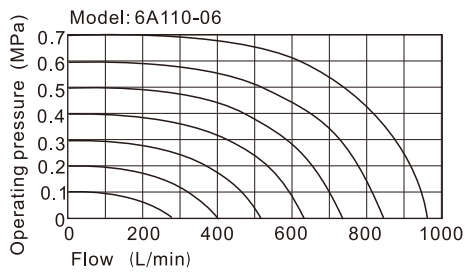
6A 2 10 08 G

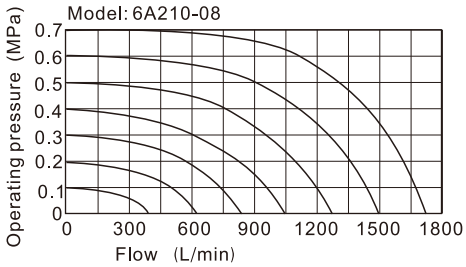
1 2 3 4 5

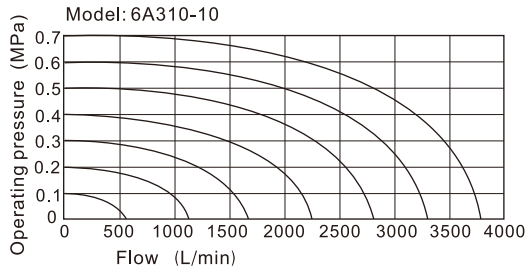
①Model	6A: Air valve (5/2, 5/3 way)					
②Code	05: 0500 Series	1: 100 Series		2: 200 Series		3: 300 Series
③alve type	10: Single air control 5/2 way			20: Double air control 5/2 way		
	30C：Double air control 5/3 way closed center			30E：Double air control 5/3 way exhaust center		
	30P：Double air control 5/3 way pressure center					
④Port size	M5: M5	M5: M5	06: 1/8"	06: 1/8"	08: 1/4"	10: 3/8"
⑤Thread type	–		G: G Thread			

Flow chart





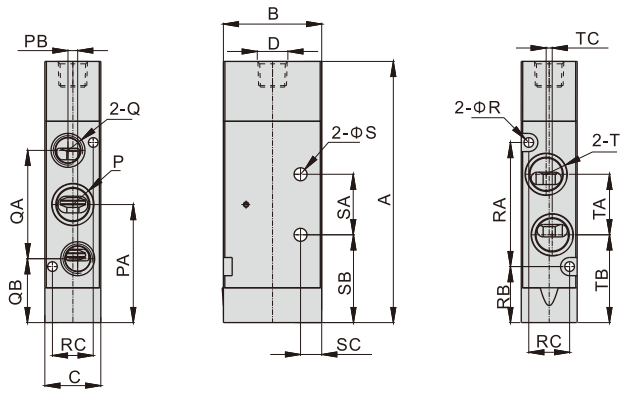




The data in flow rate chart are obtained from AirTAC lab.

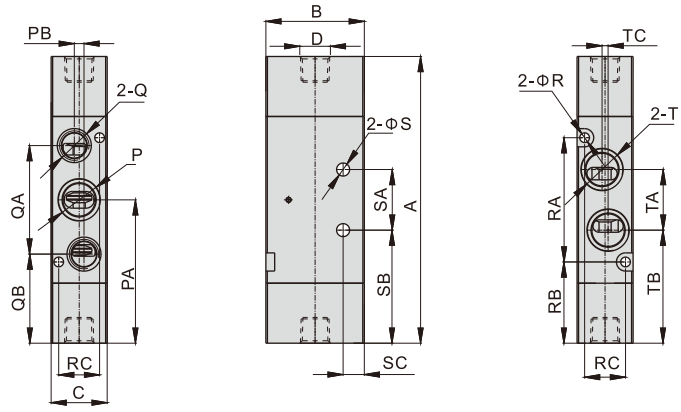
Dimensions

6A0510
6A110
6A210
6A310



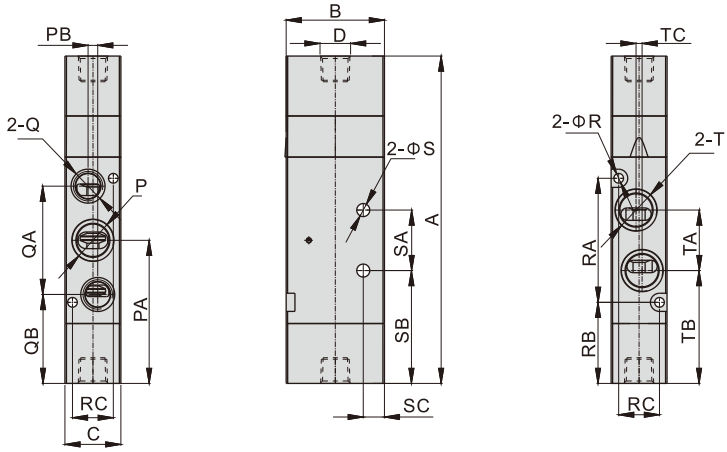
Model\Item	A	B	C	D	P	PA	PB	Q	QA	QB	R	RA	RB	RC	S	SA	SB	SC	T	TA	TB	TC
6A0510M5	50.5	21	10.6	M5x0.8	M5x0.8	22.5	1	M5x0.8	19	13	2.1	22.5	11.5	7.5	Φ2.6	10	17.5	4	M5x0.8	10.5	17.5	-
6A110M5	70.5	24	15.5	M5x0.8	M5x0.8	33	2.6	M5x0.8	28	19	2.6	34	16	11	Φ3.2	14	26	4	M5x0.8	16.5	24.5	-
6A11006	70.5	24	15.5	M5x0.8	1/8"	33	2.6	1/8"	28	19	2.6	34	16	11	Φ3.2	14	26	4	1/8"	16.5	24.5	-
6A21006	86.5	32.5	18.5	1/8"	1/8"	39	3.2	1/8"	36	21	3.2	41	18.5	13.5	Φ4.3	20	29	7	1/8"	20	29	2
6A21008	86.5	32.5	18.5	1/8"	1/4"	39	3.2	1/8"	36	21	3.2	41	18.5	13.5	Φ4.3	20	29	7	1/4"	20	29	2
6A31010	116	46	23.5	1/4"	3/8"	54	0	1/4"	50	29	3.2	64	22	18.5	Φ4.3	25	41.5	8	3/8"	33.5	37	0

6A0520
6A120
6A220
6A320



Model\Item	A	B	C	D	P	PA	PB	Q	QA	QB	R	RA	RB	RC	S	SA	SB	SC	T	TA	TB	TC
6A0520M5	55.5	21	10.6	M5x0.8	M5x0.8	28	1	M5x0.8	19	18	2.1	22.5	16.5	7.5	Φ2.6	10	22.5	4	M5x0.8	10.5	22.5	-
6A120M5	75	24	15.5	M5x0.8	M5x0.8	37.5	2.6	M5x0.8	28	24	2.6	34	20.5	11	Φ3.2	14	30.5	4	M5x0.8	16.5	29.5	-
6A12006	75	24	15.5	M5x0.8	1/8"	37.5	2.6	1/8"	28	24	2.6	34	20.5	11	Φ3.2	14	30.5	4	1/8"	16.5	29.5	-
6A22006	94.5	32.5	18.5	1/8"	1/8"	47.5	3.2	1/8"	36	29.5	3.2	41	27	13.5	Φ4.3	20	37.5	7	1/8"	20	37.5	2
6A22008	94.5	32.5	18.5	1/8"	1/4"	47.5	3.2	1/8"	36	29.5	3.2	41	27	13.5	Φ4.3	20	37.5	7	1/4"	20	37.5	2
6A32010	124	46	23.5	1/4"	3/8"	62	0	1/4"	50	37	3.2	64	30	18.5	Φ4.3	25	41.5	8	3/8"	33.5	45.5	0

6A0530
6A130
6A230
6A330



Model\Item	A	B	C	D	P	PA	PB	Q	QA	QB	R	RA	RB	RC	S	SA	SB	SC	T	TA	TB	TC
6A0530M5	64	21	10.6	M5x0.8	M5x0.8	28	1	M5x0.8	19	18	2.1	22.5	16.5	7.5	Φ2.6	10	22.5	4	M5x0.8	10.5	22.5	-
6A130M5	87	24	15.5	M5x0.8	M5x0.8	37.5	2.6	M5x0.8	28	24	2.6	34	20.5	11	Φ3.2	14	30.5	4	M5x0.8	16.5	29.5	-
6A13006	87	24	15.5	M5x0.8	1/8"	37.5	2.6	1/8"	28	24	2.6	34	20.5	11	Φ3.2	14	30.5	4	1/8"	16.5	29.5	-
6A23006	108	32.5	18.5	1/8"	1/8"	47.5	3.2	1/8"	36	29.5	3.2	41	27	13.5	Φ4.3	20	37.5	7	1/8"	20	37.5	2
6A23008	108	32.5	18.5	1/8"	1/4"	47.5	3.2	1/8"	36	29.5	3.2	41	27	13.5	Φ4.3	20	37.5	7	1/4"	20	37.5	2
6A33010	142	46	23.5	1/4"	3/8"	62	0	1/4"	50	37	3.2	64	30	18.5	Φ4.3	25	41.5	8	3/8"	33.5	45.5	0

Manifold for 6A Series



Specification

Item\Manifold Model	6V0500M	6V100M	6V200M	6V300M
Fluid	Air(to be filtered by 40 μ m filter element)			
Temperature ℃	-20~70			
Adaptable valve's series	6A0500 Series	6A100 Series	6A200 Series	6A300 Series

Product feature

1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost.
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring.
3. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

Ordering code

6V100M 5F G — Ordering code for manifold

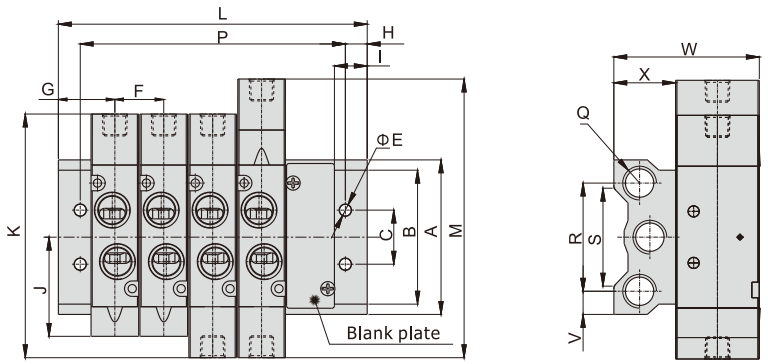
①Model	6V0500M: 6V0500 Series manifold	6V100M: 6V100 Series manifold	6V200M: 6V200 Series manifold	6V300M: 6V300 Series manifold
②Number of stations	1F: 1 Station 2F: 2 Station 3F: 3 Station ..... 20F: 20 Station			
③Thread type	G: G Thread			

P–6V100M–R2 — Ordering code for blank plate

①Model	6V0500M: 6V0500 Series manifold	6V100M: 6V100 Series manifold	6V200M: 6V200 Series manifold	6V300M: 6V300 Series manifold
②Code	R2: Blank plate for manifold			

[Note] 1.Manifold kits contains manifold, seal and screw; 2. Blank plate kits contains blank plate and screw.

Dimensions



Model\Item	A	B	C	E	F	G	H	I	J	K	M	Q	R	S	V	W	X
6V0500M	46	32	16	4.5	11	15	5	9.5	22.5	55.5	64	1/8"	32	26	7	38	17
6V100M	57.5	43	20	4.5	16	17	5	9.5	33	75	87	1/4"	40	36	9	46	22
6V200M	60	52	21	4.5	19	18.5	5	9.5	38.5	94.5	108	1/4"	42	38	9	56.5	24
6V300M	85	75	26	4.5	23.5	24	5	12	54	124	142	3/8"	57	58	14	74	27

Model\Item	L																			
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
6V0500M	30	41	52	63	74	85	96	107	118	129	140	151	162	173	184	195	206	217	228	239
6V100M	34	50	66	82	98	114	130	146	162	178	194	210	226	242	258	274	290	306	322	338
6V200M	37	56	75	94	113	132	151	170	189	208	227	246	265	284	303	322	341	360	379	398
6V300M	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384	408	432	456	480	504

Model\Item	P																			
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
6V0500M	20	31	42	53	64	75	86	97	108	119	130	141	152	163	174	185	196	207	218	229
6V100M	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296	312	328
6V200M	27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388
6V300M	38	62	86	110	134	158	182	206	230	254	278	302	326	350	374	398	422	446	470	494

Air valve(5/2 way, 5/3 way)

4A100 Series



Specification

Model	4A110-M5 4A120-M5	4A130C-M5 4A130E-M5 4A130P-M5	4A110-06 4A120-06	4A130C-06 4A130E-06 4A130P-06
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=M5		In=Out=1/8"	
Orifice size(Cv) [Note4]	4A110-06,4A120-06:10.2mm²(Cv=0.6) 4A130C-06:8.6mm²(Cv=0.51)			
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Lubrication [Note2]	Not required			
Max. frequency [Note3]	5 cycle/sec	3 cycle/sec	5 cycle/sec	3 cycle/sec
Weight (g)	4A110-M5:85 4A120-M5:140	165	4A110-06:85 4A120-06:140	165

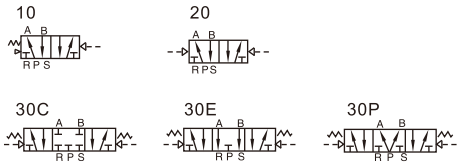
[Note1] G thread is available.

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

[Note3] The maximum actuation frequency of no-load state.

[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Three position air valves have three kinds of central function for your choice.
3. Double air control valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Integrate with the manifold to save installation space.

Ordering code

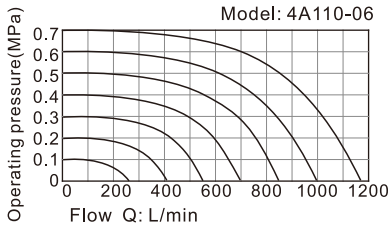
4A 1 10 06 G

1 2 3 4 5

①Model	②Code	③Valve type	④Port size	⑤Thread type
4A: Air Valve(5/2, 5/3 way)	1: 100 Series	10: Single air control 5/2 way 20: Double air control 5/2 way 30C: Double air control 5/3 way closed center 30E: Double air control 5/3 way exhaust center 30P: Double air control 5/3 way pressure center	M5: M5	No this code
			06: 1/8"	G: G Thread

Please refer to P125 for manifold specification and the order way.

Flow chart

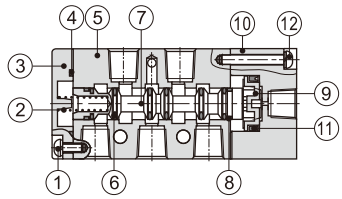


The data in flow rate chart are obtained from AirTAC lab.

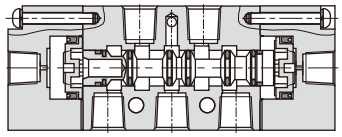
4A100 Series

Inner structure

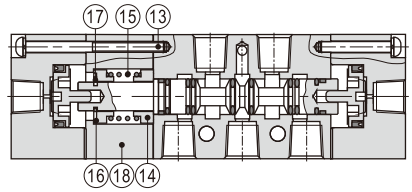
4A110



4A120



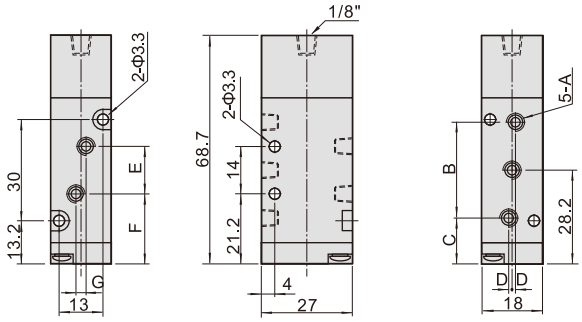
4A130C



No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Screw	3	Bottom cover	5	Body	7	Spool	9	Piston	11	O-ring	13	Screw	15	Return Spring	17	E Clip
2	Spring	4	Bottom cover gasket	6	O-ring	8	Wear ring	10	Pilot body	12	Screw	14	Spring holder	16	Spring holder	18	Side cover

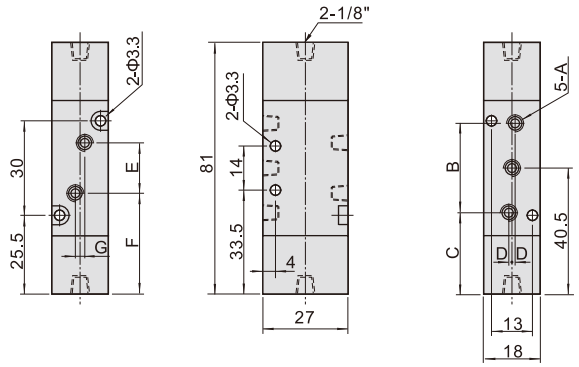
Dimension

4A110



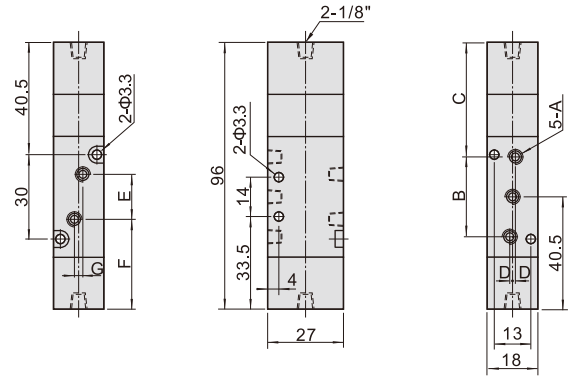
Model\Item	A	B	C	D	E	F	G
4A110-M5	M5x0.8	27	14.7	0	14	21.2	0
4A110-06	1/8"	28	14.2	1	16	20.2	3

4A120



Model\Item	A	B	C	D	E	F	G
4A120-M5	M5x0.8	27	27	0	14	33.5	0
4A120-06	1/8"	28	26.5	1	16	32.5	3

4A130



Model\Item	A	B	C	D	E	F	G
4A130-M5	M5x0.8	27	42	0	14	33.5	0
4A130-06	1/8"	28	41.5	1	16	32.5	3

Air valve(5/2 way, 5/3 way)

4A200 Series

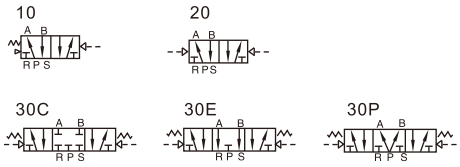


Specification

Model	4A210-06 4A220-06	4A230C-06 4A230E-06 4A230P-06	4A210-08 4A220-08	4A230C-08 4A230E-08 4A230P-08
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=Exhaust=1/8"		In=Out=1/4" Exhaust=1/8"	
Orifice size(Cv) [Note4]	4A210-08,4A220-08:17.0mm^2(Cv=1.0) 4A230C-08:13.6mm^2(Cv=0.8)			
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Lubrication [Note2]	Not required			
Max. frequency [Note3]	5 cycle/sec	3 cycle/sec	5 cycle/sec	3 cycle/sec
Weight (g)	4A210-06:185 4A220-06:285	365	4A210-08:185 4A220-08:285	365

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency of no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Three position air valves have three kinds of central function for your choice.
3. Double air control valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Integrate with the manifold to save installation space.

Ordering code

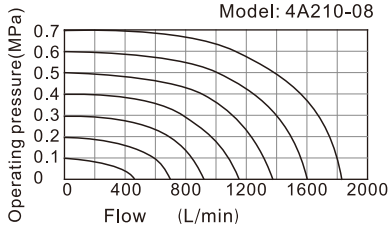
4A 2 10 08 G

① ② ③ ④ ⑤

①Model	②Code	③Valve type	④Port size	⑤Thread type
4A: Air Valve(5/2, 5/3 way)	2: 200 Series	10: Single air control 5/2 way 20: Double air control 5/2 way 30C: Double air control 5/3 way closed center 30E: Double air control 5/3 way exhaust center 30P: Double air control 5/3 way pressure center	06: 1/8" 08: 1/4"	G: G Thread

Please refer to P125 for manifold specification and the order way.

Flow chart

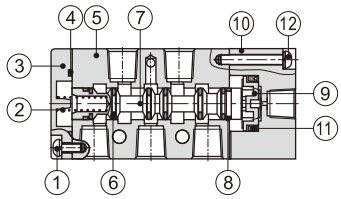


The data in flow rate chart are obtained from AirTAC lab.

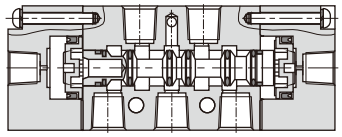
4A200 Series

Inner structure

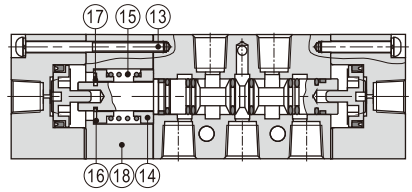
4A210



4A220



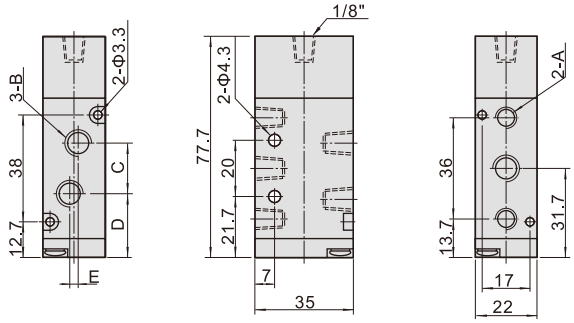
4A230C



No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Screw	3	Bottom cover	5	Body	7	Spool	9	Piston	11	O-ring	13	Screw	15	Return Spring	17	E Clip
2	Spring	4	Bottom cover gasket	6	O-ring	8	Wear ring	10	Pilot body	12	Screw	14	Spring holder	16	Spring holder	18	Side cover

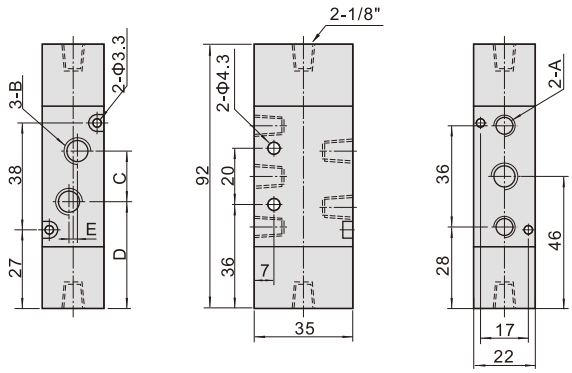
Dimension

4A210



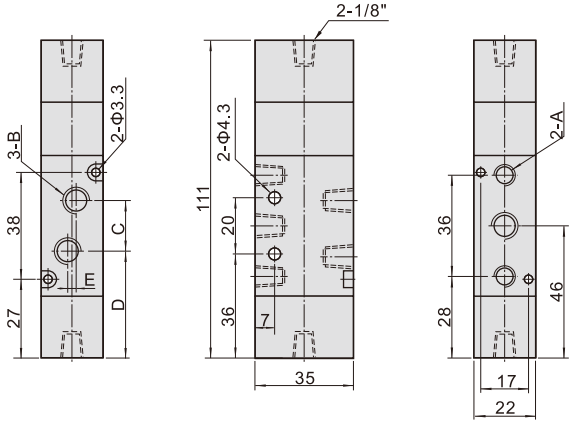
Model\Item	A	B	C	D	E
4A210-06	1/8"	1/8"	18	22.7	0
4A210-08	1/8"	1/4"	21	21.2	3

4A220



Model\Item	A	B	C	D	E
4A220-06	1/8"	1/8"	18	37	0
4A220-08	1/8"	1/4"	21	35.5	3

4A230



Model\Item	A	B	C	D	E
4A230-06	1/8"	1/8"	18	37	0
4A230-08	1/8"	1/4"	21	35.5	3

Air valve(5/2 way, 5/3 way)

4A300 Series

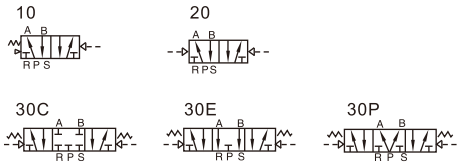


Specification

Model	4A310-08 4A320-08	4A330C-08 4A330E-08 4A330P-08	4A310-10 4A320-10	4A330C-10 4A330E-10 4A330P-10
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=Exhaust=1/4"		In=Out=3/8" Exhaust=1/4"	
Orifice size(Cv) [Note4]	4A310-10,4A320-10:28.0mm²(Cv=1.65) 4A330C-10:21.3mm²(Cv=1.25)			
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Lubrication [Note2]	Not required			
Max. frequency [Note3]	4 cycle/sec	3 cycle/sec	4 cycle/sec	3 cycle/sec
Weight (g)	4A310-08:275 4A320-08:365	505	4A310-10:275 4A320-10:365	505

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency of no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Three position air valves have three kinds of central function for your choice.
3. Double air control valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Integrate with the manifold to save installation space.

Ordering code

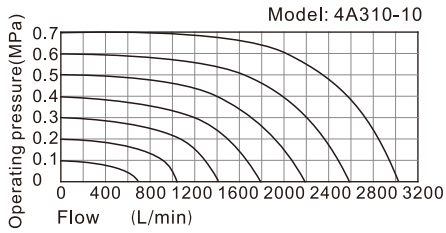
4A 3 10 10 G

① ② ③ ④ ⑤

①Model	②Code	③Valve type	④Port size	⑤Thread type
4A: Air Valve(5/2, 5/3 way)	3: 300 Series	10: Single air control 5/2 way 20: Double air control 5/2 way 30C: Double air control 5/3 way closed center 30E: Double air control 5/3 way exhaust center 30P: Double air control 5/3 way pressure center	08: 1/4" 10: 3/8"	G: G Thread

Please refer to P125 for manifold specification and the order way.

Flow chart

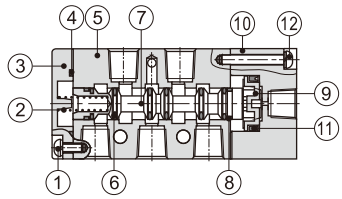


The data in flow rate chart are obtained from AirTAC lab.

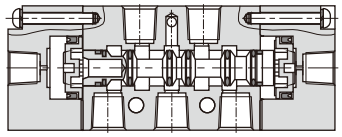
4A300 Series

Inner structure

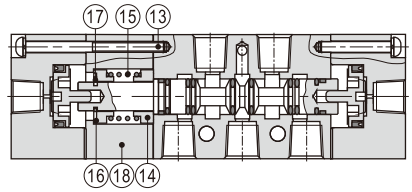
4A310



4A320



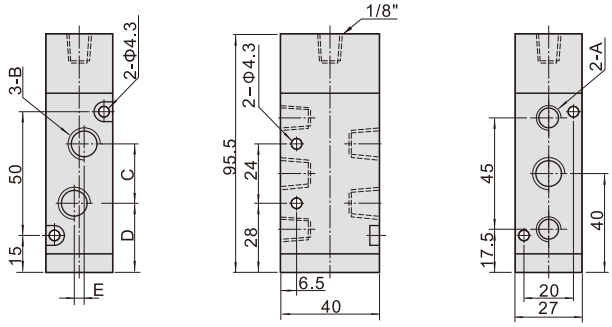
4A330C



No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Screw	3	Bottom cover	5	Body	7	Spool	9	Piston	11	O-ring	13	Screw	15	Return Spring	17	E Clip
2	Spring	4	Bottom cover gasket	6	O-ring	8	Wear ring	10	Pilot body	12	Screw	14	Spring holder	16	Spring holder	18	Side cover

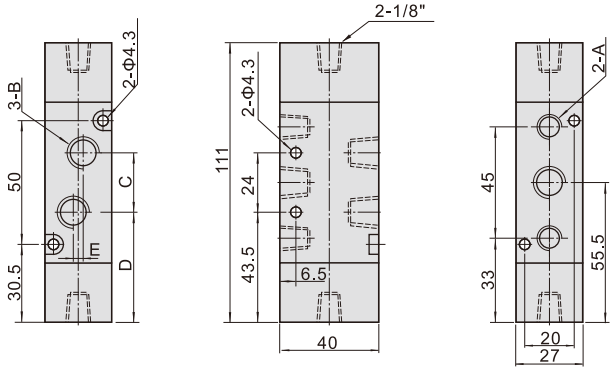
Dimension

4A310



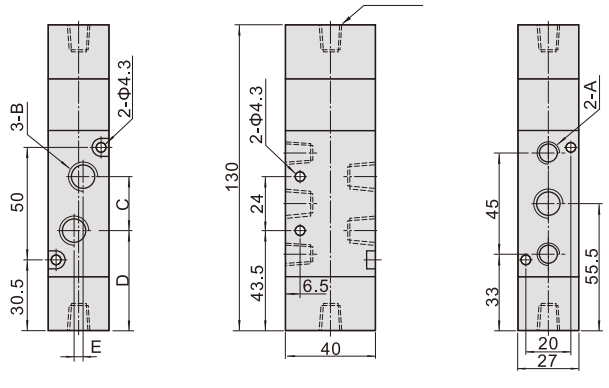
Model\Item	A	B	C	D	E
4A310-08	1/4"	1/4"	22	29	0
4A310-10	1/4"	3/8"	24	28	4

4A320



Model\Item	A	B	C	D	E
4A320-08	1/4"	1/4"	22	44.5	0
4A320-10	1/4"	3/8"	24	43.5	4

4A330



Model\Item	A	B	C	D	E
4A330-08	1/4"	1/4"	22	44.5	0
4A330-10	1/4"	3/8"	24	43.5	4

Air valve(5/2 way, 5/3 way)

4A400 Series

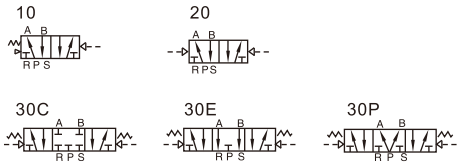


Specification

Model	4A410-15	4A420-15	4A430C-15	4A430E-15	4A430P-15
Fluid	Air(to be filtered by 40 μ m filter element)				
Acting	Exterior control				
Port size [Note1]	In=Out=Exhaust=1/2"				
Orifice size(Cv) [Note4]	4A410-15,4A420-15:48.0mm²(Cv=2.82) 4A430C-15:40.0mm²(Cv=2.35)				
Valve type	5 port 2 position		5 port 3 position		
Operating pressure	0.15~0.8MPa(21~114psi)				
Proof pressure	1.2MPa(175psi)				
Temperature	-20~70 ℃				
Material of body	Aluminum alloy				
Lubrication [Note2]	Not required				
Max. frequency [Note3]	3 cycle/sec				
Weight (g)	555	685	735		

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency of no-load state.
[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Three position air valves have three kinds of central function for your choice.
3. Double air control valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Integrate with the manifold to save installation space.

Ordering code

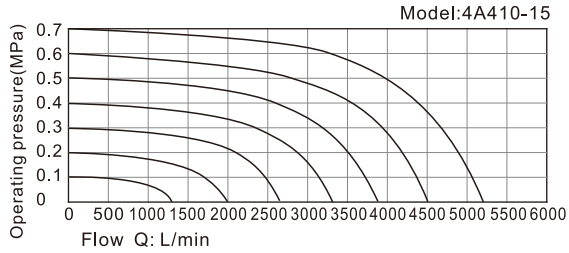
4A 4 10 15 G

1 2 3 4 5

①Model	②Code	③Valve type	④Port size	⑤Thread type
4A: Air Valve(5/2, 5/3 way)	4: 400 Series	10: Single air control 5/2 way 20: Double air control 5/2 way 30C: Double air control 5/3 way closed center 30E: Double air control 5/3 way exhaust center 30P: Double air control 5/3 way pressure center	15: 1/2"	G: G Thread

Please refer to P125 for manifold specification and the order way.

Flow chart

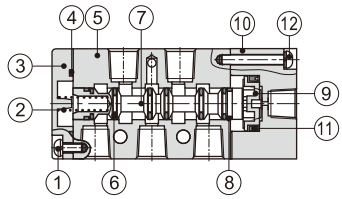


The data in flow rate chart are obtained from AirTAC lab.

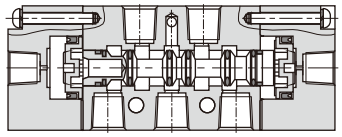
4A400 Series

Inner structure

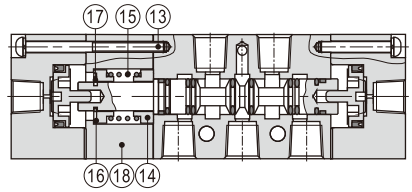
4A410



4A420



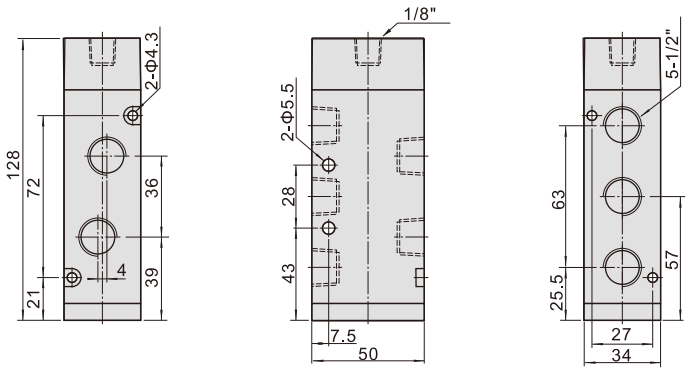
4A430C



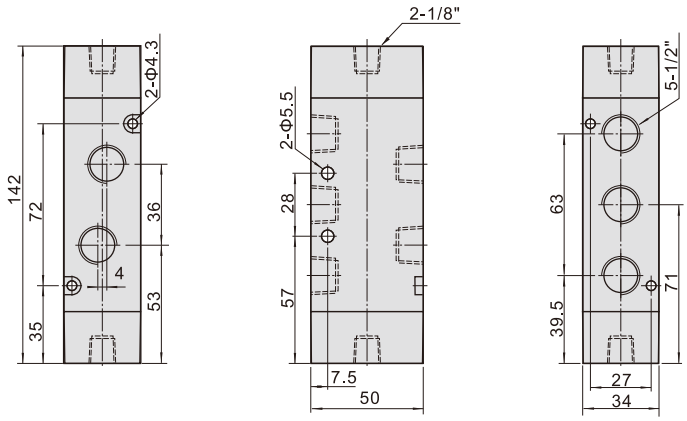
No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Screw	3	Bottom cover	5	Body	7	Spool	9	Piston	11	O-ring	13	Screw	15	Return Spring	17	E Clip
2	Spring	4	Bottom cover gasket	6	O-ring	8	Wear ring	10	Pilot body	12	Screw	14	Spring holder	16	Spring holder	18	Side cover

Dimension

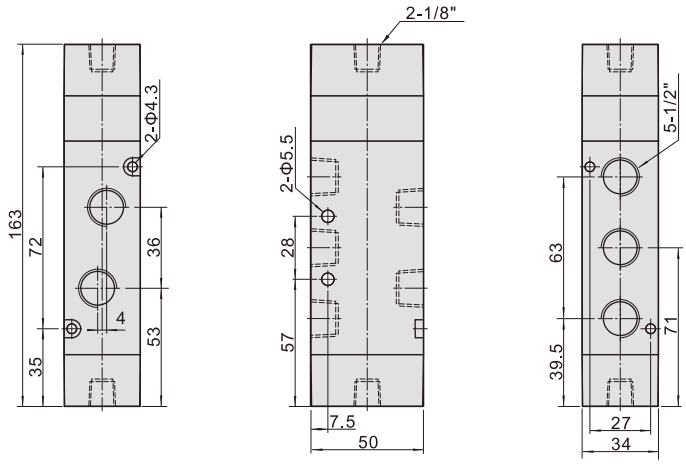
4A410



4A420



4A430



Manifold



Specification

Item\Manifold Model	100M	200M	300M
Fluid	Air(to be filtered by 40 μ m filter element)		
Temperature	-20~70℃		
Adoptable valve's series	3A100 Series	3A200 Series	3A300 Series

Product feature

1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost;
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring;
3. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

Ordering code

Ordering code for manifold

3V100M 5F G

1 2 3

①Model	②Number of stations	③Thread type
3V100M: 100 Series Manifold 3V200M: 200 Series Manifold 3V300M: 300 Series Manifold	1F: 1 Station 2F: 2 Station 3F: 3 Station ..... 16F: 16 Station	G: G Thread

Ordering code for blank plate

P-3V100M-R2

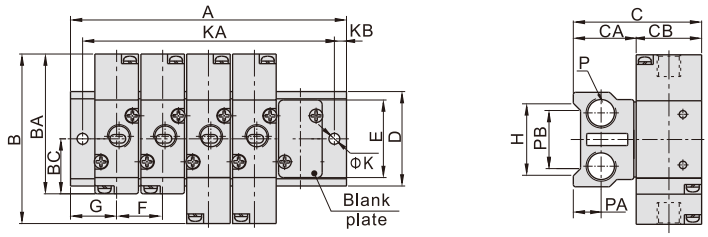
1 2 3

①Kits code	②Model	③Code
P: Kits	3V100M: 100 Series Manifold 3V200M: 200 Series Manifold 3V300M: 300 Series Manifold	R2: Blank plate for manifold

[Note] 1.Ordering code contains manifold and blank plate.
2. Manifold kits contains manifold, seal and screw.
3. Blank plate kits contains blank plate, and screw.

Dimensions

With 3A air valve



Model\Item	B	BA	BC	C	CA	CB	D	E	F	G	H	K	KB	P	PA	PB
3V100M	70	57.7	22.7	53	26	27	39	32	19	19	30	4.5	5	1/4"	11.5	22
3V200M	84	69.7	27.7	61	26	35	45	40	23	23	35	4.5	6	1/4"	11.5	25
3V300M	96	80.5	32.5	70	30	40	52	47	28	27	42	4.5	6	3/8"	13.5	28

Model\Item	A															
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
3V100M	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323
3V200M	46	69	92	115	138	161	184	207	230	253	276	299	322	345	368	391
3V300M	54	82	110	138	166	194	222	250	278	306	334	362	390	418	446	474

Model\Item	KA															
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
3V100M	28	47	66	85	104	123	142	161	180	199	218	237	256	275	294	313
3V200M	34	57	80	103	126	149	172	195	218	241	264	287	310	333	356	379
3V300M	42	70	98	126	154	182	210	238	266	294	322	350	378	406	434	462

Manifold



Specification

Item\Manifold Model	100M	200M	300M	400M
Fluid	Air(to be filtered by 40μm filter element)			
Temperature	-20~70℃			
Adoptable valve's series	4A100 Series	4A200 Series	4A300 Series	4A400 Series

Product feature

1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost;
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring;
3. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

Ordering code

Ordering code for manifold

100M 5F G

① ② ③

①Model	②Number of stations [Note1]	③Thread type
100M: 100 Series Manifold 200M: 200 Series Manifold 300M: 300 Series Manifold 400M: 400 Series Manifold	1F: 1 Station 2F: 2 Station 3F: 3 Station ..... 16F: 16 Station	G: G Thread

[Note1] 100M, 200M series have a maximum of 16 stations ; 300M series have a maximum of 12 stations; 400M series have a maximum of 8 stations.

Ordering code for blank plate

P–100M–R2

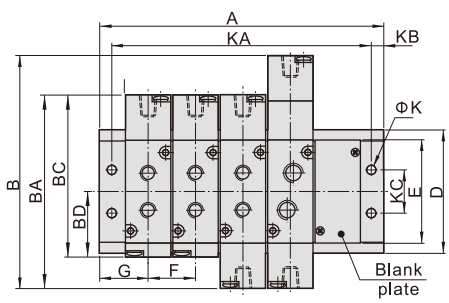
① ② ③

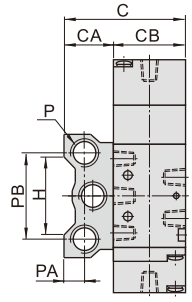
①Kits code	②Model	③Code
P: Kits	100M: 100 Series Manifold 200M: 200 Series Manifold 300M: 300 Series Manifold 400M: 400 Series Manifold	R2: Blank plate for manifold

[Note] 1.Ordering code contains manifold and blank plate.
2. Manifold kits contains manifold, seal and screw.
3. Blank plate kits contains blank plate, and screw.

Dimension

With 4A air valve





Model\Item	B	BA	BC	BD	C	CA	CB	D	E	F	G	H	K	KB	KC	P	PA	PB
100M□F	96	81	68.7	28	49	22	27	57.5	43	19	19	36	4.5	5	20	1/4"	10	40
200M□F	111	92	77.7	31.7	59	24	35	60	52	23	22	38	4.5	5	21	1/4"	10	42
300M□F	130	111	95.5	40	68	28	40	75	64	28	26	54	4.5	5	26	3/8"	13.5	53
400M□F	163	142	128	57	83	33	50	100	94	35	30.5	75	5.5	6	32	1/2"	15	68

Model\Item	A															
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
100M□F	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323
200M□F	44	67	90	113	136	159	182	205	228	251	274	297	320	343	366	389
300M□F	52	80	108	136	164	192	220	248	276	304	332	360	-	-	-	-
400M□F	61	96	131	166	201	236	271	306	-	-	-	-	-	-	-	-

Model\Item	KA															
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
100M□F	28	47	66	85	104	123	142	161	180	199	218	237	256	275	294	313
200M□F	34	57	80	103	126	149	172	195	218	241	264	287	310	333	356	379
300M□F	42	70	98	126	154	182	210	238	266	294	322	350	-	-	-	-
400M□F	49	84	119	154	189	224	259	294	-	-	-	-	-	-	-	-

ISO Standard air valve(5/2 way, 5/3 way)

EAV200, 300, 400, 600 Series



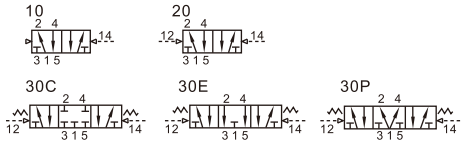
Specification

Model		200 Series	300 Series	400 Series	600 Series
Orifice size(Cv) mm²		32(Cv=1.8)	42(Cv=2.32)	69(Cv=3.85)	108(Cv=6.0)
Fluid		Air(to be filtered by 40 μm filter element)			
Acting		Extend pilot			
Lubrication [Note1]		Not required			
Operating Pressure	Single air control	0.2~1.0MPa(2~10bar)(29~145psi)			
	Double air control	-0.09~1.0MPa(-0.9~10bar)(-13~145psi)			
Control pressure(extermal pilot)		0.2~1.0MPa(2~10bar)(29~145psi)			
Proof pressure		1.5MPa(15bar)(215psi)			
Temperature		-20~70℃			
Port size(manifold) [Note2]		1/4"	3/8"	1/2"	3/4"
Port size(end plate)		3/8"	1/2"	3/4"	1"
Installation size		ISO 5599-1 standard			

[Note1] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

[Note2] G thread is available.

Symbol



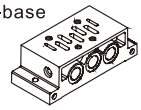
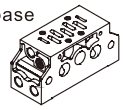
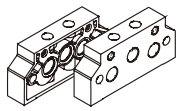
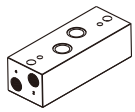
Product feature

1. Succinct appearance and compact conformation.
2. The installation size conforms to ISO 5599/1 standard.
3. Because of the special seals, the feature are large flow rate and long lifetime.
4. External pilot, can be used without electrical.
5. You need install the valve together with the sub-base. There are individual and manifold sub-base.
6. There are various connection and installation method for manifold. It is easy to use.
7. The manifold of 200\300\400 series have the function of exhaust throttling, so no need to connect another throttle valve.
8. Because of be used external pilot, the working pressure of double air control valve can be zero or vacuum.

Ordering code

Ordering code of manifold ESV 20 1M G □ □

① ② ③ ④ ⑤ ⑥

①Model	②Code	③Manifold type	④Thread type	⑤External pilot port type	⑥Port position type
ESV: ISO standard solenoid valve	20: 200 Series 30: 300 Series 40: 400 Series 60: 600 Series	1M: Individual sub-base 	G: G Thread	Blank: Individual pilot port	Blank: Side port B: Bottom Port
		2M: Manifold sub-base 		Blank: Individual pilot port W: Centralized pilot port	Blank: Left side port R: Right side port B: Bottom Port
		3M: End plate kit 		No this code	No this code
	60: 600 Series	4M: Side port block 		No this code	Blank: Left side port R: Right side port

Note:1. For the same model, the port size of the end-plate is bigger than the sub-base (For example ESV202M, the port size of sub-base is 1/4″ , and the port size of end plate is 3/8").

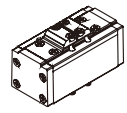
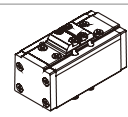
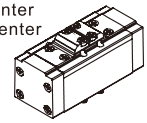
2. Only individual pilot port is available for individual sub-base.
3. The manifold sub-base must be used with end plate kit, individual pilot port and centralized pilot port can be mixed.
4. 600 series individual sub-base only has side port, 600 series manifold sub-base only has individual pilot port and bottom port.
5. Only 600 series have side port block.

EAV200, 300, 400, 600 Series

Ordering code

Ordering code of valve **EAV 2 10**

① ② ③

①Model	②Code	③Valve type
EAV: ISO standard air valve	2: 200 Series 3: 300 Series 4: 400 Series 6: 600 Series	10: Single air control 5/2 way 
		20: Double air control 5/2 way 
		30C: Double air control 5/3 way closed center 30E: Double air control 5/3 way exhaust center 30P: Double air control 5/3 way pressure center 

Ordering code of accessories

P–ESV200M–R2

① ② ③

①Accessories code	②Code	③Accessories type
P: Unit accessories	ESV200M: 200 Series manifold ESV300M: 300 Series manifold ESV400M: 400 Series manifold ESV600M: 600 Series manifold	R2: Blank plate

Ordering code of cover plate

P–EAV210–R1

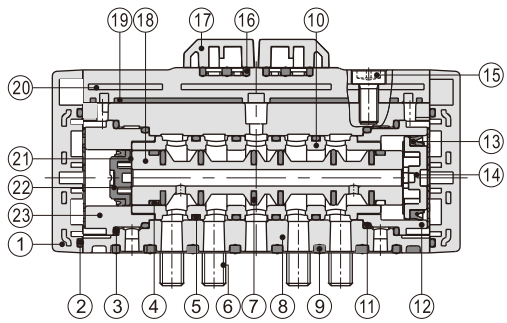
① ② ③

①Accessories code	②Adapt production	③Accessories type
P:Unit accessories		R1: Cover plate  With screw

Note: 600 series don't have cover plate.

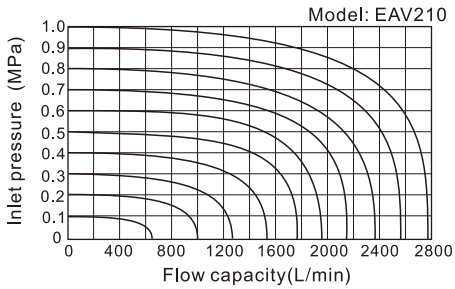
Inner structure

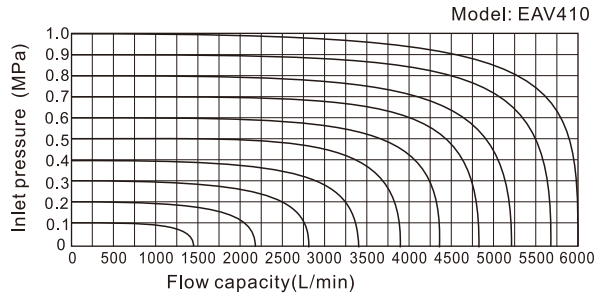
EAV210

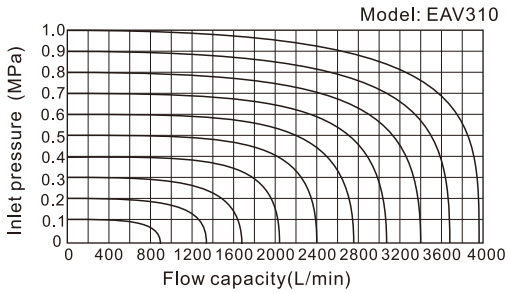


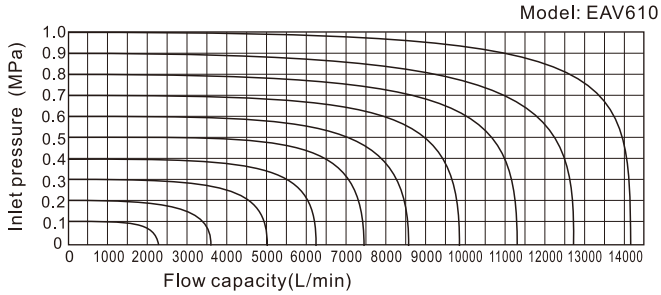
NO.	Item	NO.	Item	NO.	Item
1	Bottom cover	9	Gasket	17	Cover plate
2	O-ring	10	Spacer	18	Spool
3	O-ring	11	O-ring	19	Upper cover gasket
4	Wear ring	12	Big piston sheath	20	Upper cover
5	O-ring	13	Big piston O-ring	21	Small piston
6	Screw	14	Big piston	22	Small piston O-ring
7	O-ring	15	Screw	23	Small piston sheath
8	Body	16	Gasket		

Flow chart







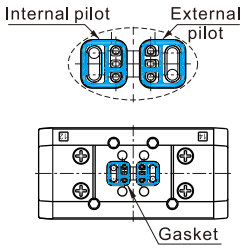


Installation and operation(For 200, 300, 400 series)

1.How to turn ESV series solenoid valve to EAV series air control valve

1.1.To turn ESV series solenoid valve (except 600 series) to EAV seires air control valve, you must order cover plate first(the ordering code is P-EAV210-R1),then replace the coil unit and the pilot body with cover plate. the different gasket mounting can create different EAV air valve type as shown below.

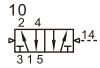
1.2.Single solenoid valve turn to single air control valve:



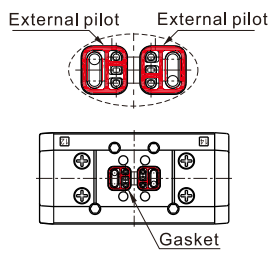
A)Unload the cover plate of "12" end, mounted the gasket as internal pilot, then mounted the cover plate and screw.

B)Unload the pilot valve of "14" end, mounted the gasket as external pilot, and replace the pilot valve with the cover plate, then mounted screw.

C)After above two steps finished, single solenoid valve has been turned to single air control valve.

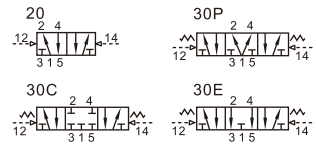


1.3、 Double solenoid valve turn to double air control valve:



A) Unload the two pilot valves of "12". "14" ends, mounted the two gaskets as external pilot and replace the pilot valve with the cover plate, then mounted screw.

B) After above step finished, double solenoid valve has been turned to single air control valve.



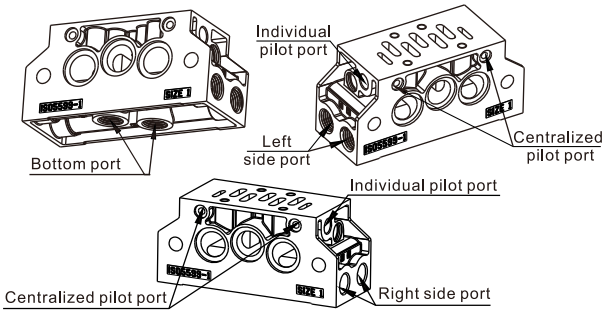
2. The classification and selection of the parallel manifold sub-base

2.1. According to the direction of pilot air supply, we can divide the sub-base manifold into two types: the individual pilot and centralized pilot.

2.2. If you select the individual pilot, the fitting must be connected to the individual pilot ports.
If you select the centralized pilot type, the fitting must be connected to the centralized pilot ports.

2.3. If you use parallel manifold, all of the manifold must be used the same pilot type: such as, all of them are the individual pilot type, or all of them are the centralized pilot type.
*Note: Only when you use the external pilot type, you can select the individual pilot or centralized pilot.
When you use the internal pilot type, the pilot ports on the manifold are ineffective.

3.The position and specification of the parallel manifold sub-base:

The diagram of manifold sub-base	Port status of different manifold sub-base					
	Ordering code / Port name	Left side port	Right side port	Bottom port	Centralized pilot port	Individual pilot port
	ESV202MG	Use	Unused	Unused	Unused	Use
	ESV202MGR	Unused	Use	Unused	Unused	Use
	ESV202MGB	Unused	Unused	Use	Unused	Use
	ESV202MGW	Use	Unused	Unused	Use	Unused
	ESV202MGWR	Unused	Use	Unused	Use	Unused
	ESV202MGWB	Unused	Unused	Use	Use	Unused

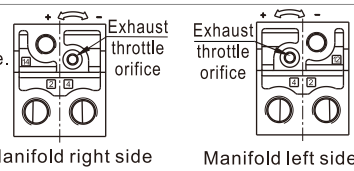
Note: Please seal the bottom port by plug, when it is unused.
The above list is an example of 200M series' ordering code, the other series is follow the same pattern, only need to change the series code.

4 .Exhaust throttle function

4.1. The manifold has exhaust throttle function, the below picture shows the position of the exhaust throttle orifices on each side.

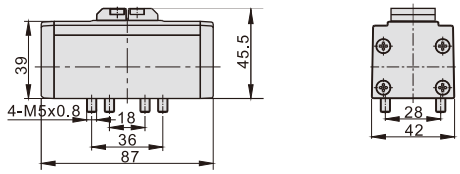
4.2. Use allen key to adjust the screw.

4.3. Rotate the screw clockwise to reduce the exhaust orifice, rotate the screw counter-clockwise to enlarge the exhaust orifice.

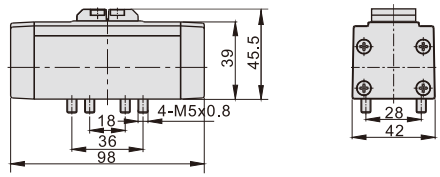


Dimensions of valves

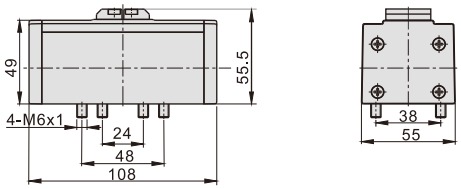
EAV210\EAV220



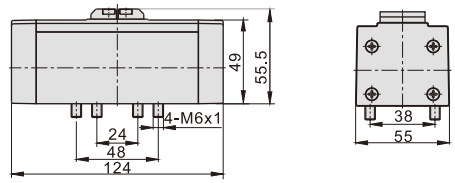
EAV230



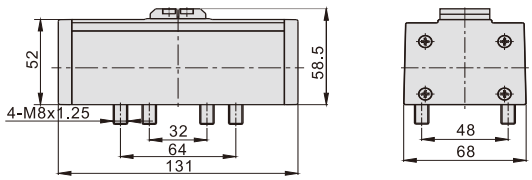
EAV310\EAV320



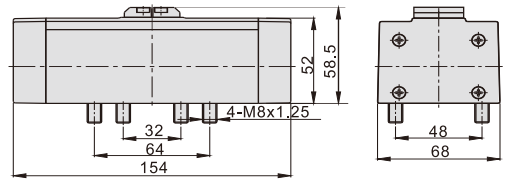
EAV330



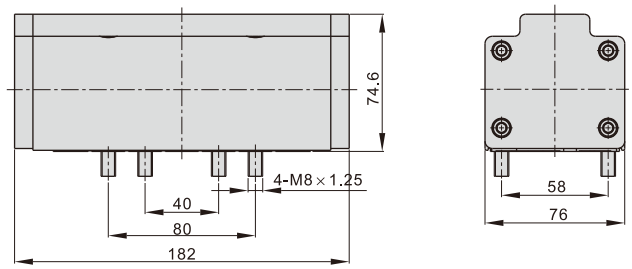
EAV410\EAV420



EAV430



EAV610\EAV620\EAV630

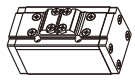
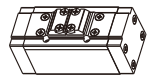
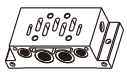
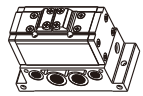
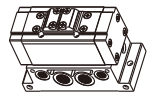
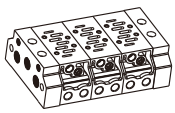
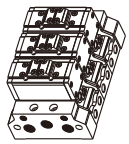
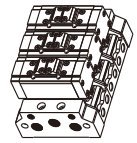
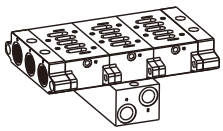
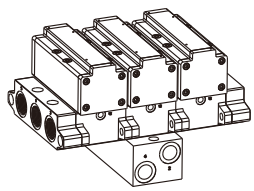
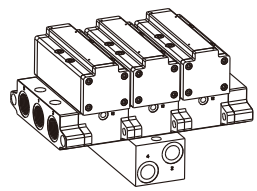


Dimensions of manifold

The dimensions of manifold are the same as ESV series's, please refer to ESV series's dimensions for details.

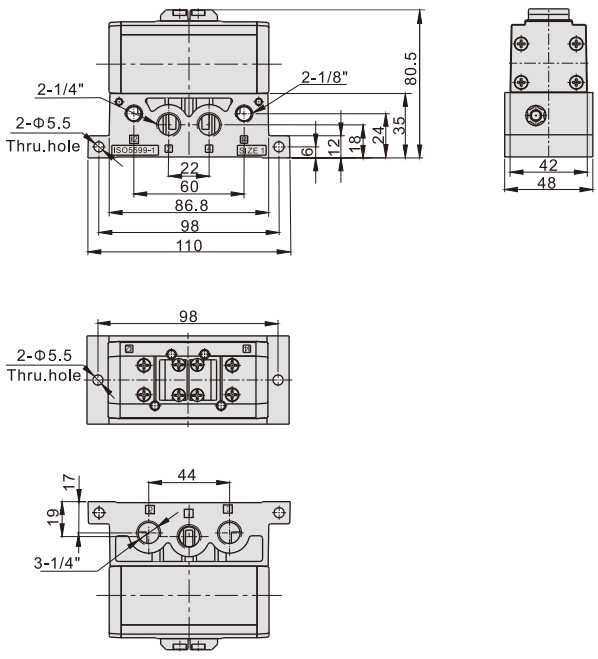
Valves used with manifolds and their dimensions

1.EAV series valve must be used with the manifolds, the details are below:

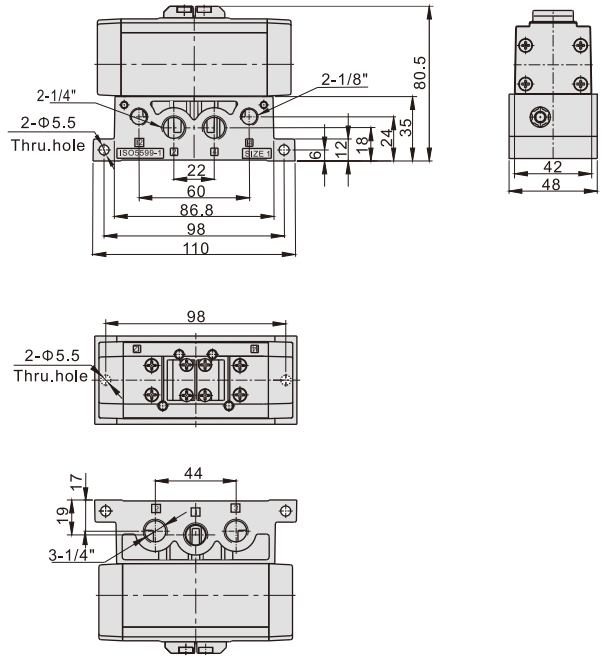
Manifolds	Valves	
	EAV210\EAV220 EAV310\EAV320 EAV410\EAV420 EAV610\EAV620 	EAV230 EAV330 EAV430 EAV630 
ESV201M	EAV210\EAV220+ESV201M	EAV230+ESV201M
ESV301M	EAV310\EAV320+ESV301M	EAV330+ESV301M
ESV401M	EAV410\EAV420+ESV401M	EAV430+ESV401M
ESV601M	EAV610\EAV620+ESV601M	EAV630+ESV601M
		
ESV202M+ESV203M	EAV210\EAV220+ESV202M+ESV203M	EAV230+ESV202M+ESV203M
ESV302M+ESV303M	EAV310\EAV320+ESV302M+ESV303M	EAV330+ESV302M+ESV303M
ESV402M+ESV403M	EAV410\EAV420+ESV402M+ESV403M	EAV430+ESV402M+ESV403M
		
ESV602M+ESV603M+ESV604M	EAV610\EAV620+ESV602M+ESV603M+ESV604M	EAV630+ESV602M+ESV603M+ESV604M
		

2.The dimensions of valve with manifolds

EAV210/EAV220+ESV201M

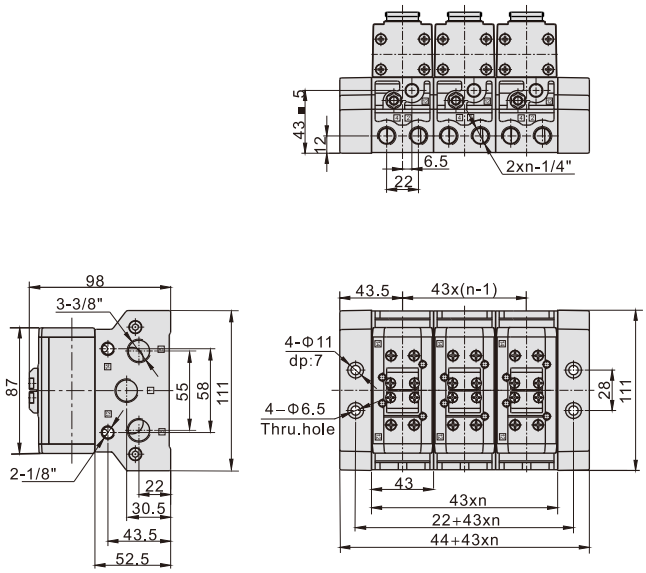


EAV230+ESV201M



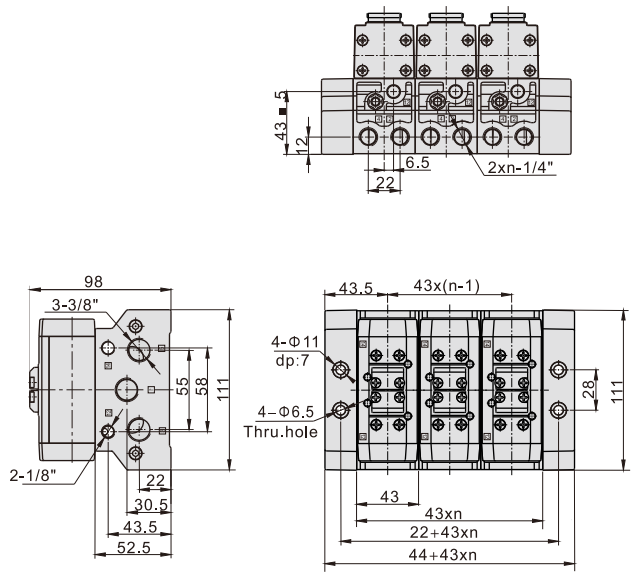
EAV210/EAV220+ESV202M+ESV203M

Note: “n” means the number of stations.

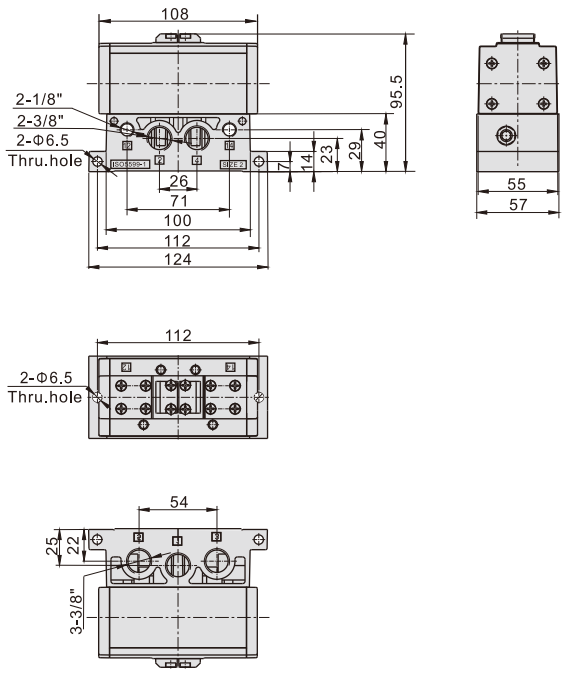


EAV230+ESV202M+ESV203M

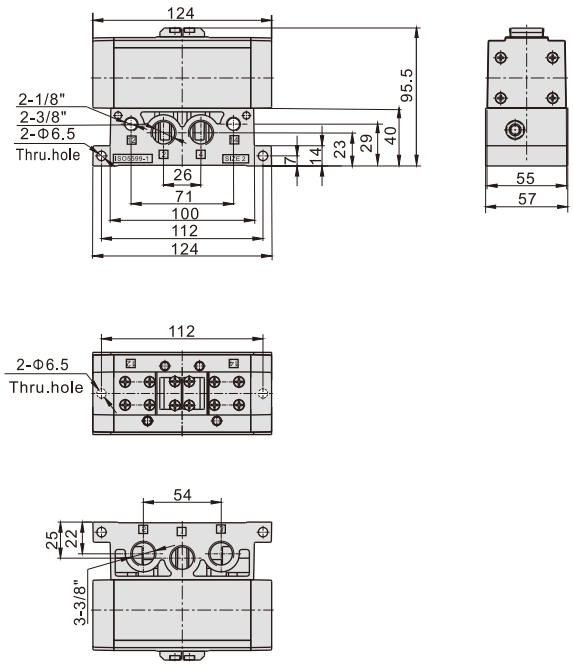
Note: “n” means the number of stations.



EAV310/EAV320+ESV301M

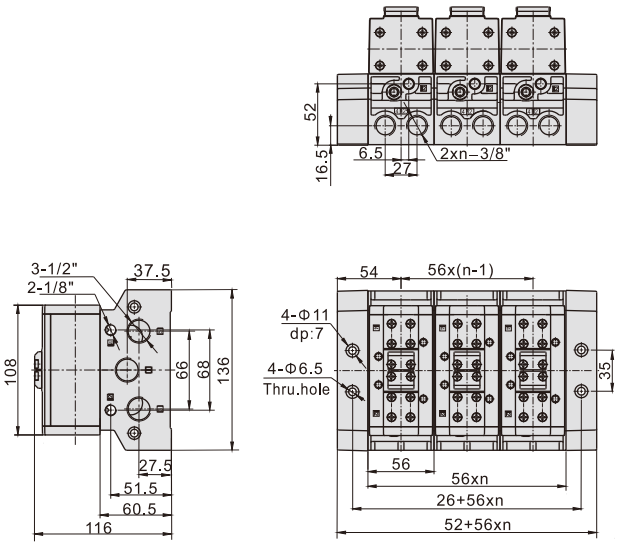


EAV330+ESV301M



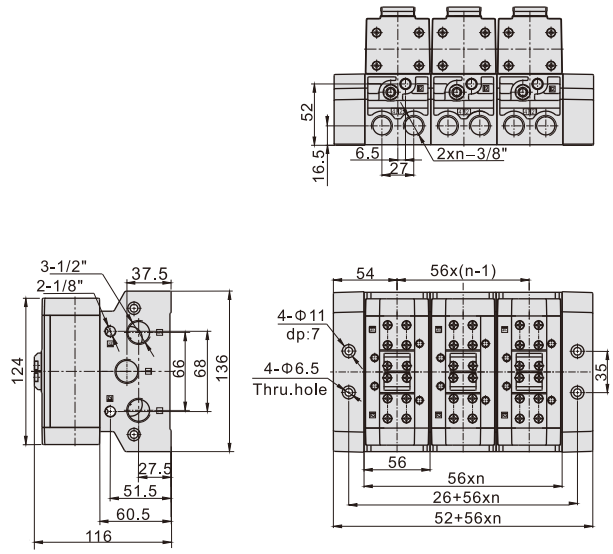
EAV310/EAV320+ESV302M+ESV303M

Note: “n” means the number of stations.

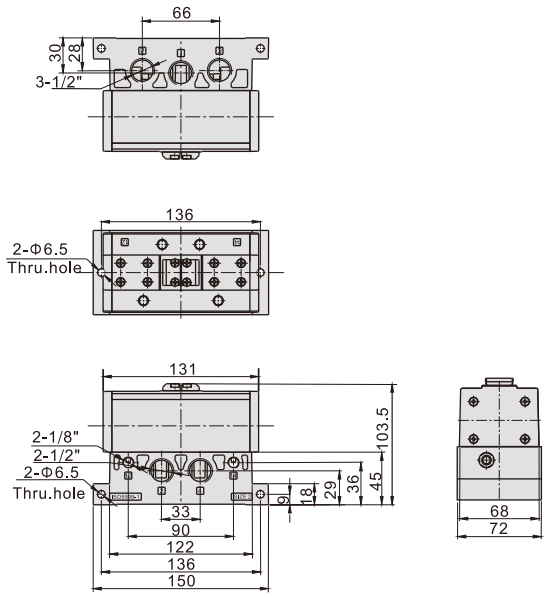


EAV330+ESV302M+ESV303M

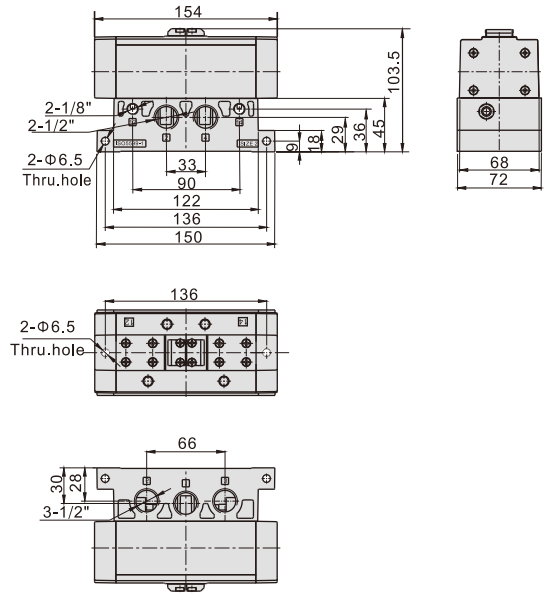
Note: “n” means the number of stations.



EAV410/EAV420+ESV401M

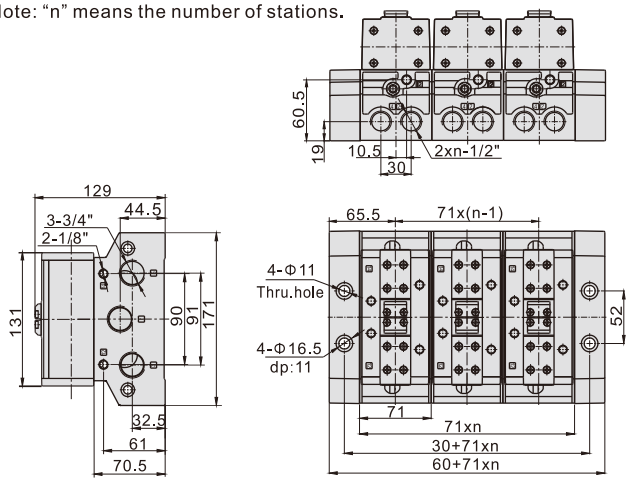


EAV430+ESV401M



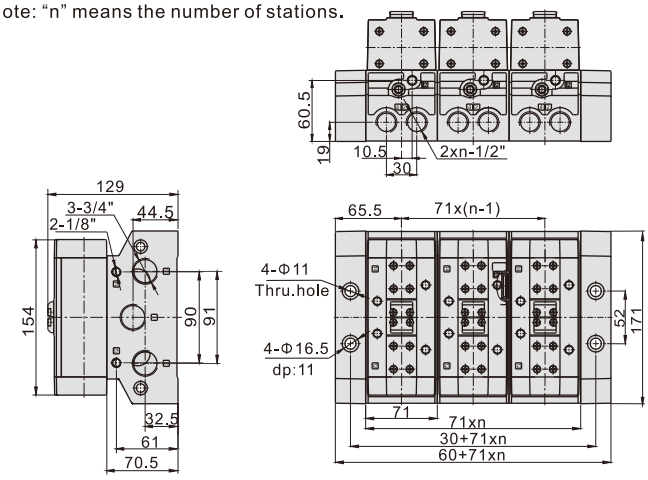
EAV410/EAV420+ESV402M+ESV403M

Note: “n” means the number of stations.

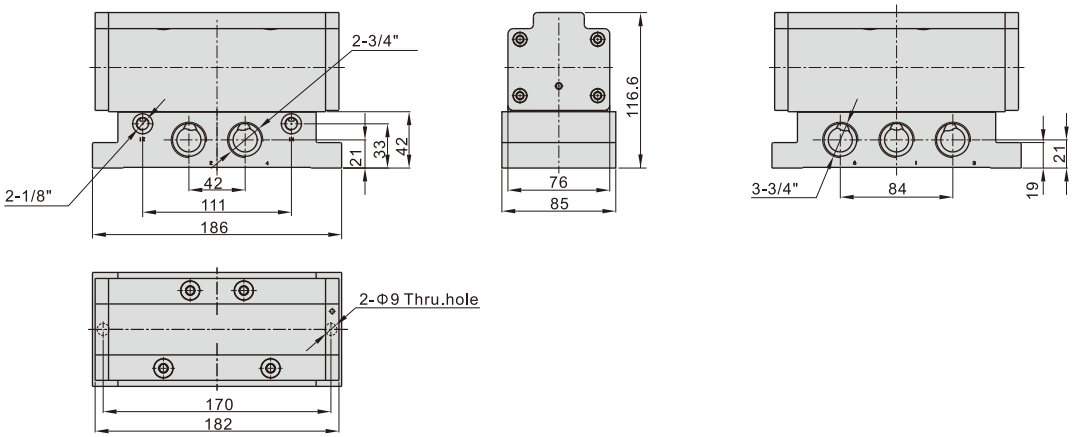


EAV430+ESV402M+ESV403M

Note: “n” means the number of stations.

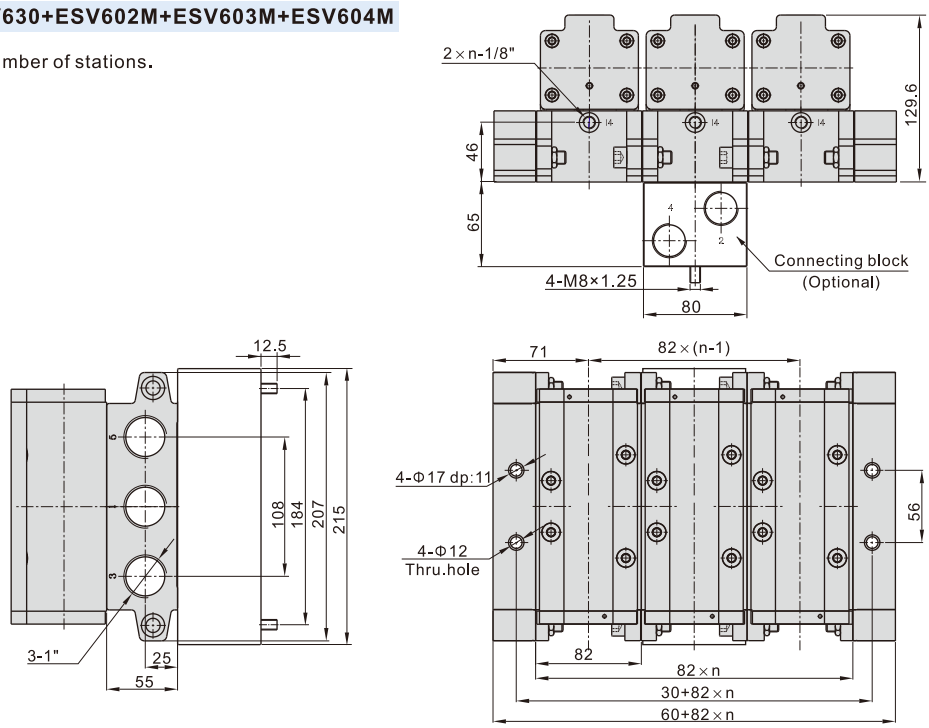


EAV610/EAV620/EAV630+ESV601M

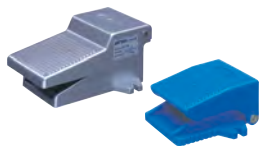


EAV610/EAV620/EAV630+ESV602M+ESV603M+ESV604M

Note: “n” means the number of stations.



Compendium of Manual, mechanical and other valve

P135	Product feature	Photo	137	Product feature	Photo
4H Series Hand lever valve	●Sliding column structure ●Manual operation ●Panel-mounting ●5/2way、5/3 way		3L Series Push–pull valve	●Sliding column structure ●Manual operation ●Panel-mounting ●3/2 way	
P138	Product feature	Photo	**P139**	Product feature	Photo
4L Series Push–pull valve	●Sliding column structure ●Manual operation ●Panel-mounting ●5/2 way		HSV Series Hand slide valve	●There are several ways of internal and external thread connection ●Hand slide operation ●3/2 way	
P140	Product feature	Photo	**P142**	Product feature	Photo
4HV Series Hand lever valve	●Body installation and Panel installation ●Manual operation ●With lock and without lock are optional ●4/2 way、4/3 way		S3 Series Control valve	●Shut-off structure ●Manual control or mechanical control ●Several control set are optional ●Multi-mounting ●3/2 way	
P145	Product feature	Photo	**P148**	Product feature	Photo
M3 Series Control valve	●Sliding column structure ●Manual control or mechanical control ●Several control set are optional ●Multi-mounting ●3/2 way		M5 Series Control valve	●Sliding column structure ●Manual control or mechanical control ●Several control set are optional ●Multi-mounting ●5/2 way	
P151	Product feature	Photo	**P156**	Product feature	Photo
CM3 Series Control valve	●Shut-off structure ●Manual control or mechanical control ●Several control set are optional ●Multi-mounting ●3/2 way、5/3 way		ZM3 Series Control valve	●Sliding column structure ●Mechanical control ●Several control set are optional ●Multi-mounting ●3/2 way	
P158	Product feature	Photo	**P160**	Product feature	Photo
3F Series 3FM Series 4F Series Foot pedal valve	●3F,3FM:Direct acting(NC) ●4F: Direct acting ●Foot pedal control ●With lock and without lock are optional ●3F、3FM: 3/2 way ●4F: 5/2way		ASC Series Flow control valve	●Allows air to exhaust and cut off air flow ●Multi-mounting ●100、200、300 Series	
P161	Product feature	Photo	**P162**	Product feature	Photo
NRV Series Non–return valve	●Large valid area of section ●Compact structure ●Excellence hermetical capability		PCV Series Pilot non–return valve	●Fitting joint and thread are optional for pilot port	

Installation and Application

1. Before installing, be sure the valve hasn't been damaged via transportation.
2. It's suggested to use the medium lubricated by 40 μ m filter element. Be aware of the flow direction and port size.
3. Please notice whether the installation condition accords with technical requirements (such as “working pressure” and “scope of application temperature”), then the equipment can be installed and used.
4. Take measure to avoid vibration and frozen.
5. Before using the fittings and tubes make sure they are clean. When connecting to fittings, be sure the PTFE Thread seal tape is used correctly.
6. To keep the dust away, Never forget to install dirt-proof boot in air intake and outlet during dismounting.

Hand lever valve (5/2 way, 5/3 way)

4H Series

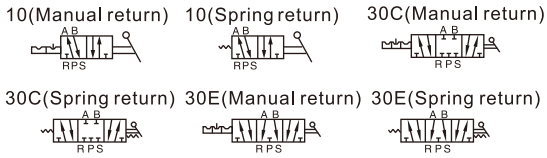


Specification

Model	210–06	230–06	210–08	230–08	310–08	330–08	310–10	330–10
Fluid	Air (to be filtered by 40 μm filter element)							
Operating	Manual control direct acting type							
Port size[Note1]	In=Out =Exhaust=1/8"		In=Out=1/4"; Exhaust=1/8"		In=Out =Exhaust=1/4"		In=Out=3/8"; Exhaust=1/4"	
Orifice size(Cv) [Note3]	4H210-08:17.0mm²(Cv=1.0) 4H230C-08:13.6mm²(Cv=0.8)				4H310-10:28.0mm²(Cv=1.65) 4H330C-10:21.3mm²(Cv=1.25)			
Valve type	5/2 way	5/3 way	5/2 way	5/3 way	5/2 way	5/3 way	5/2 way	5/3 way
Lubrication [Note2]	Not required							
Pressure range	0~1.0MPa(0~145psi)							
Proof pressure	1.5MPa(215psi)							
Temperature	-20~70℃							
Material of body	Aluminum alloy							
Operating angle	±15°	±8.5°	±15°	±8.5°	±18°	±10°	±18°	±10°

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. It is suggested to use ISO VG32 lubricant or the oil with the same grade.
[Note3] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Product feature

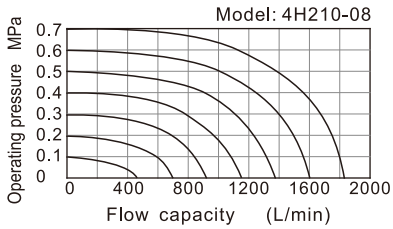
1. Manual operation, smooth actuation, and exact and reliable orientation.
2. Sliding column structure has good tightness and light weight and is easy to install and dismount.
3. Internal hole adopts special processing technology which has little attrition friction, long service life.
4. No need to add oil for lubrication.
5. Panel-mounting makes it convenient to install and apply.

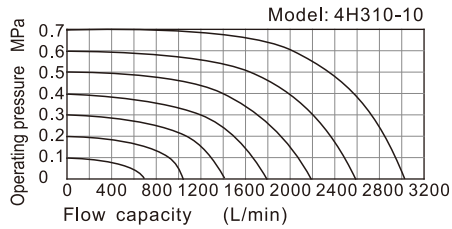
Ordering code

4H 2 30C 08 G
① ② ③ ④ ⑤

①Model	②Code	③Valve type	④Port size	⑤Thread type
4H: Manual return 4HA: Spring return	2: 200 Series	10: 5/2 Way 30C: 5/3 Way closed center 30E: 5/3 Way exhaust center	06: 1/8" 08: 1/4"	G: G Thread
	3: 300 Series		08: 1/4" 10: 3/8"	

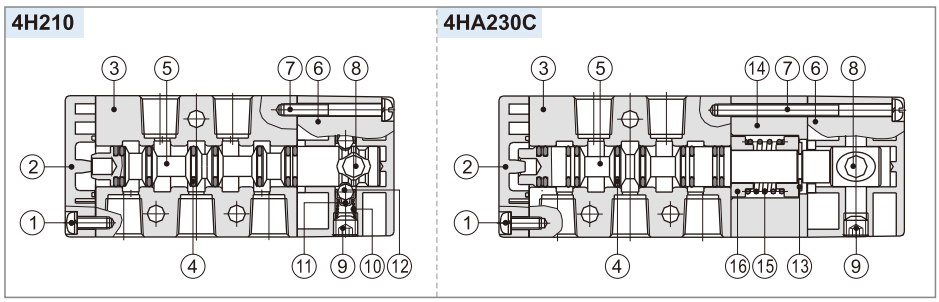
Flow chart





The data in flow rate chart are obtained from AirTAC lab.

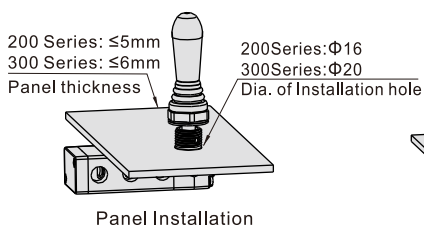
Inner structure



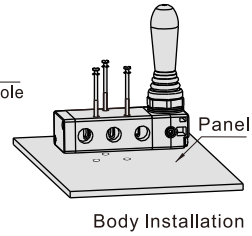
No.	Item	No.	Item
1	Round head screw	9	Stop screw
2	Bottom cover	10	Spring
3	Body	11	Steel ball jacket
4	O-ring	12	Steel ball
5	Spool	13	E clip
6	Top cover	14	Side cover
7	Round head cover	15	Spring
8	Axle	16	Spring holder

Installation

1. 5/3 way manual return hand lever valve is positioned by steel ball, which is convenient to switch. Please apply the proper force to avoid the position mismatch and misoperation.
2. When installed by panel, disassemble the gasket according to the practical requirement.
3. Below is the installation method for reference.
   Note: Please give your attention on the panel thickness and hole dimension when installed by panel.



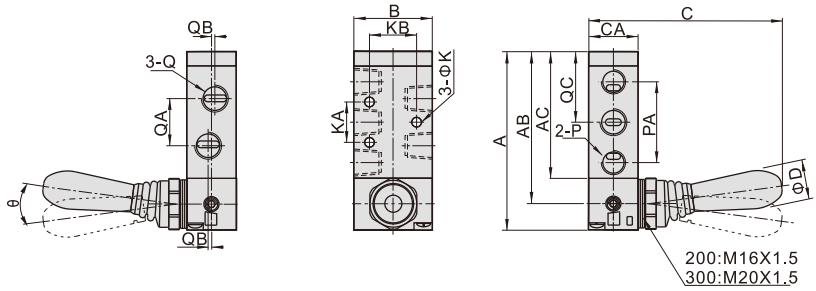
Panel Installation



Body Installation

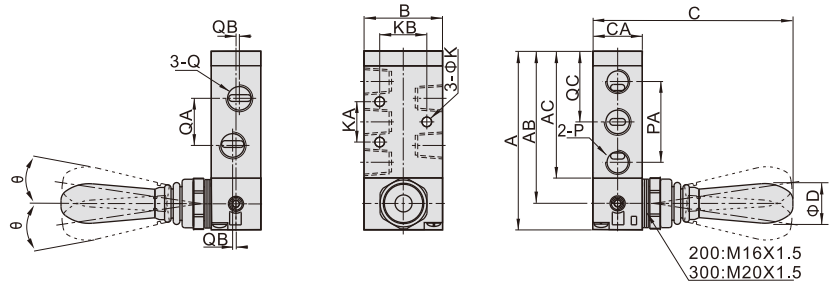
Dimensions

4H210\310、4HA210\310



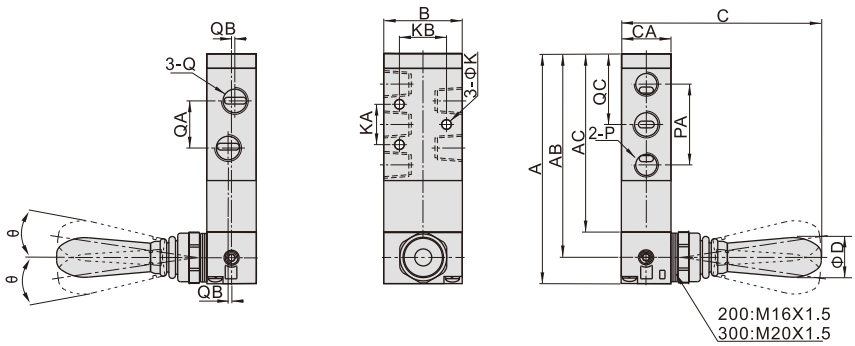
Model\Item	A	AB	AC	B	C	CA	D	K	KA	KB	P	PA	Q	QA	QB	QC	Θ
4H210-06 4HA210-06	81.5	69.5	57.5	35	90	22	18	4.3	20	23.5	1/8"	36	1/8"	18	-	32.5	15
4H210-08 4HA210-08	81.5	69.5	57.5	35	90	22	18	4.3	20	23.5	1/8"	36	1/4"	21	1.5	32.5	15
4H310-08 4HA310-08	101	87	73	40	93.5	27	18	4.3	24	27.5	1/4"	45	1/4"	22	-	40.5	18
4H310-10 4HA310-10	101	87	73	40	93.5	27	18	4.3	24	27.5	1/4"	45	3/8"	24	2	40.5	18

4H230、4H330



Model\Item	A	AB	AC	B	C	CA	D	K	KA	KB	P	PA	Q	QA	QB	QC	Θ
4H230C-06 4H230E-06	81.5	69.5	57.5	35	90.5	22	18	4.3	20	23.5	1/8"	36	1/8"	18	-	32.5	8.5
4H230C-08 4H230E-08	81.5	69.5	57.5	35	90.5	22	18	4.3	20	23.5	1/8"	36	1/4"	21	1.5	32.5	8.5
4H330C-08 4H330E-08	101	87	73	40	94	27	18	4.3	24	27.5	1/4"	45	1/4"	22	-	40.5	10
4H330C-10 4H330E-10	101	87	73	40	94	27	18	4.3	24	27.5	1/4"	45	3/8"	24	2	40.5	10

4HA230、4HA330



Model\Item	A	AB	AC	B	C	CA	D	K	KA	KB	P	PA	Q	QA	QB	QC	Θ
4HA230C-06 4HA230E-06	100.5	88.5	76.5	35	90.5	22	18	4.3	20	23.5	1/8"	36	1/8"	18	-	32.5	8.5
4HA230C-08 4HA230E-08	100.5	88.5	76.5	35	90.5	22	18	4.3	20	23.5	1/8"	36	1/4"	21	1.5	32.5	8.5
4HA330C-08 4HA330E-08	120	106	92	40	94	27	18	4.3	24	27.5	1/4"	45	1/4"	22	-	40.5	10
4HA330C-10 4HA330E-10	120	106	92	40	94	27	18	4.3	24	27.5	1/4"	45	3/8"	24	2	40.5	10

Push-pull valve(3/2way)

3L Series



Specification

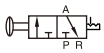
Model	3L110-06	3L210-06	3L210-08	3L310-08	3L310-10
Fluid	Air (to be filtered by 40 μm filter element)				
Operating	Manual control direct acting type)				
Port size[Note1]	1/8"		1/4"		3/8"
Orifice size(Cv) [Note3]	10.2mm² (Cv=0.6)	3L210-08:17.0mm² (Cv=1.0)		3L310-10:28.0mm² (Cv=1.65)	
Valve type	3/2 Way				
Lubrication [Note2]	Not required				
Pressure range	0~1.0MPa(0~145psi)				
Proof pressure	1.5MPa(215psi)				
Temperature	-20~70℃				
Material of body	Aluminum alloy				

[Note1] G thread is available.

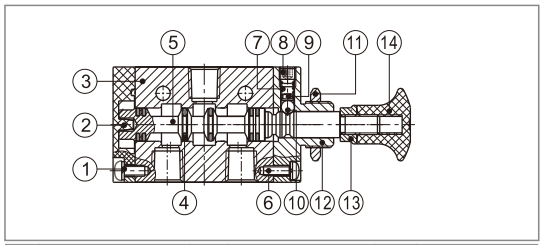
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. It is suggested to use ISO VG32 lubricant or the oil with the same grade.

[Note3] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Inner structure



No.	Item	No.	Item	No.	Item
1	Round head screw	6	Round head screw	11	Hexagon nut
2	Bottom cover	7	Spring	12	Top cover
3	Body	8	Stop screw	13	Safety nut
4	O-ring	9	Spring holder	14	Hand grip
5	Spool	10	Steel ball		

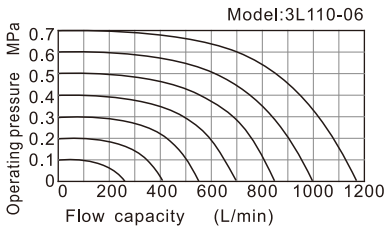
Ordering code

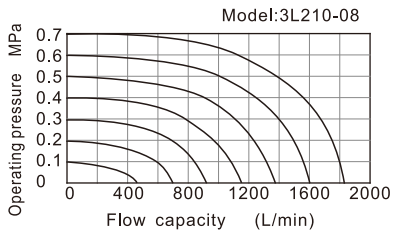
3L 2 10 08 G

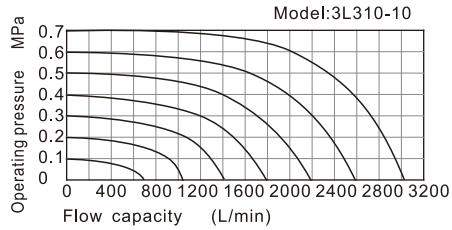
1 2 3 4 5

①Model	②Code	③Valve type	④Port size	⑤Thread type
3L: 3 port 2 position push-pull valve	1: 100 Series	10: 2 position	06: 1/8"	G: G Thread
	2: 200 Series		06: 1/8" 08: 1/4"	
	3: 300 Series		08: 1/4" 10: 3/8"	

Flow chart

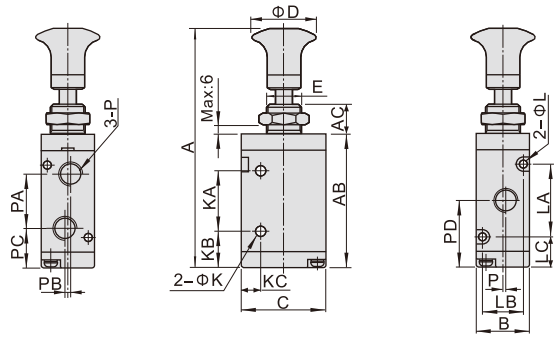






The data in flow rate chart are obtained from AirTAC lab.

Dimensions



Item\Model	3L11006	3L21006	3L21008	3L31008	3L31010
A	87	98	98	106.5	106.5
AB	47.8	57.8	57.8	66.5	66.5
AC	10	10	10	10	10
B	18	22	22	27	27
C	27	35	35	40	40
D	25	25	25	25	25
E	M12×0.75	M14×1.0	M14×1.0	M16×1.0	M16×1.0
K	3.1	4.3	4.3	4.3	4.3
KA	21	25	25	30	30
KB	13	16	16	18	18
KC	7.7	8	8	10	10
L	3.3	3.3	3.3	4.3	4.3
LA	19	30	30	35	35
LB	13	17	17	20	20
LC	14	13.5	13.5	15.5	15.5
P	1/8"	1/8"	1/4"	1/4"	3/8"
PA	16	22.5	22.5	24	24
PB	2	0	0	0	0
PC	15.5	17.5	17.5	21	21
PD	24.5	28.5	28.5	33	33
PE	1	0	1.5	0	2

Push-pull valve(5/2way)

4L Series



Specification

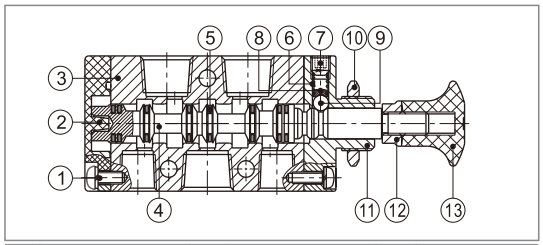
Model	4L110-06	4L210-06	4L210-08	4L310-08	4L310-10
Fluid	Air (to be filtered by 40 μm filter element)				
Operating	Manual control direct acting type)				
Port size[Note1]	1/8"		1/4"		3/8"
Orifice size(Cv) [Note3]	10.2mm² (Cv=0.6)	4L210-08:17.0mm² (Cv=1.0)		4L310-10:28.0mm² (Cv=1.65)	
Valve type	5/2 Way				
Lubrication [Note2]	Not required				
Pressure range	0~1.0MPa(0~145psi)				
Proof pressure	1.5MPa(215psi)				
Temperature	-20~70℃				
Material of body	Aluminum alloy				

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. It is suggested to use ISO VG32 lubricant or the oil with the same grade..
[Note3] Equivalent orifice S and Cv are all calculated from the flow rate data.

Symbol



Inner structure



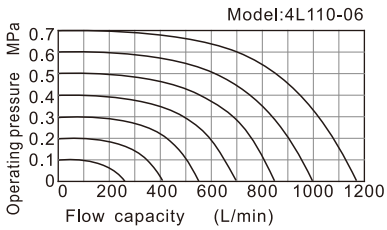
No.	Item	No.	Item	No.	Item
1	Round head screw	6	Spring	11	Top cover
2	Bottom cover	7	Stop screw	12	Safety nut
3	Body	8	Spring holder	13	Hand grip
4	Spool	9	Steel ball		
5	O-ring	10	Hexagon nut		

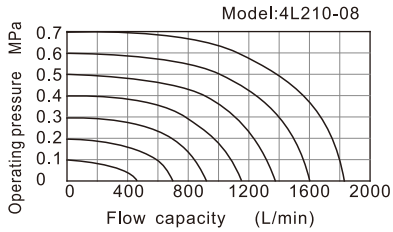
Ordering code

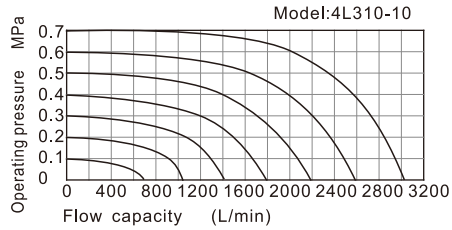
4L 2 10 08 G
1 2 3 4 5

①Model	②Code	③Valve type	④Port size	⑤Thread type
4L: 5 port 2 position push-pull valve	1: 100 Series	10: 2 position	06: 1/8"	G: G Thread
	2: 200 Series		06: 1/8" 08: 1/4"	
	3: 300 Series		08: 1/4" 10: 3/8"	

Flow chart

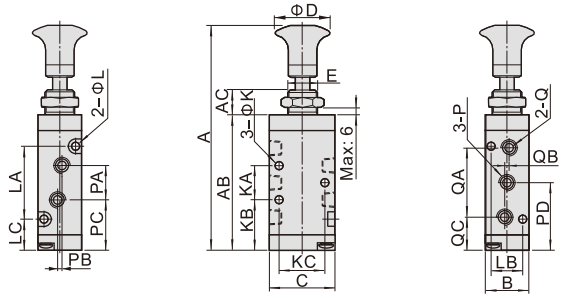






The data in flow rate chart are obtained from AirTAC lab.

Dimensions



Item\Model	4L11006	4L21006	4L21008	4L31008	4L31010
A	98	106	106	121.5	121.5
AB	58.8	65.8	65.8	81	81
AC	10	10	10	10	10
B	18	22	22	27	27
C	27	35	35	40	40
D	25	25	25	25	25
E	M12×0.75	M14×1.0	M14×1.0	M16×1.0	M16×1.0
K	3.3	4.3	4.3	4.3	4.3
KA	14	20	20	24	24
KB	22	22.5	22.5	28.5	28.5
KC	19	23.5	23.5	27.5	27.5
L	3.3	3.3	3.3	4.3	4.3
LA	30	38	38	50	50
LB	13	17	17	20	20
LC	14	13.5	13.5	15.5	15.5
P	1/8"	1/8"	1/4"	1/4"	3/8"
PA	16	18	21	22	24
PB	3	0	3	0	4
PC	21	23.5	22	29.5	28.5
PD	29	32.5	32.5	40.5	40.5
Q	1/8"	1/8"	1/8"	1/4"	1/4"
QA	28	36	36	45	45
QB	2	0	0	0	0
QC	15	14.5	14.5	18	18

Hand slide valve(3/2 way)

HSV Series



Specification

Model	HSV06	HSV08	HSV10	HSV15	HSV20	HSV25
Fluid	Air (to be filtered by 40 μm filter element)					
Operating	Manual control direct acting type					
Port size [Note1]	1/8"	1/4"	3/8"	1/2"	3/4"	1"
Orifice size	23.0mm² (Cv=1.28)	40.0mm² (Cv=2.20)	62.0mm² (Cv=3.50)	140.0mm² (Cv=7.80)	250.0mm² (Cv=13.80)	392.0mm² (Cv=21.78)
Valve type	3/2 Way					
Lubrication	Not required					
Pressure range	0~1.0MPa(0~145psi)					
Proof pressure	1.5MPa(215psi)					
Temperature	-20~70℃					
Material of body	Aluminum alloy					

[Note1] G thread is available.

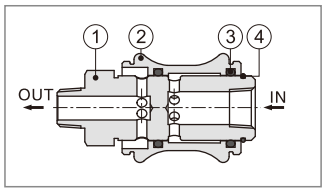
Symbol



Product feature

1. There are several ways of internal and external thread connection, suitable for the application in different pipeline systems.
2. The direction-change slides smoothly and has good hand feeling.
3. There is large effective circulating area.
4. The valve plug surface is treated with hard anodizing, and the surface of valve body is oxidized to keep the color for a long time.

Inner structure



No.	Item
1	Valve plug
2	Body
3	O -ring
4	Clip

Ordering code

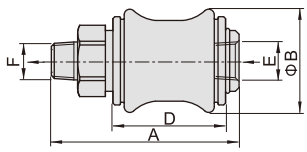
HSV 08 SS G

(1) (2) (3) (4)

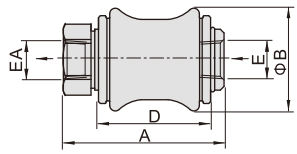
①Model	②Port size	③Mounting type	④Thread type
HSV: Hand slide valve	06: 1/8" 08: 1/4" 10: 3/8" 15: 1/2" 20: 3/4" 25: 1"	Blank: Standard SS: Double male thread FF: Double female thread SF: Male and female thread	G: G Thread

Dimensions

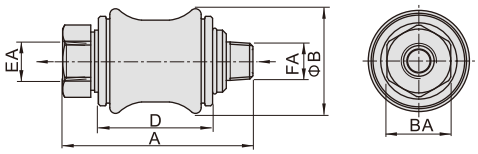
Standard



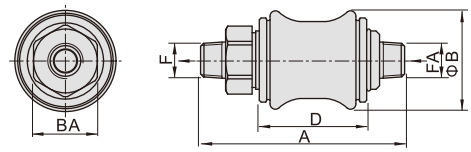
Double female thread(FF)



Male and female thread(SF)



Double male thread (SS)



Model\Item	A				B	BA	D	E	EA	F	FA
	Standard	Double female thread	Male and female thread	Double male thread							
HSV06	50	43	50	57	27.5	17	30	1/8"	1/8"	1/8"	1/8"
HSV08	58	47	58	69	30	19	32.5	1/4"	1/4"	1/4"	1/4"
HSV10	68.5	55.5	68.5	81.5	35.5	22	39	3/8"	3/8"	3/8"	3/8"
HSV15	85.5	70.5	85.5	100.5	44	30	50	1/2"	1/2"	1/2"	1/2"
HSV20	96.5	79.5	96.5	113.5	53.5	36	58	3/4"	3/4"	3/4"	3/4"
HSV25	114.5	96.5	114.5	132.5	65.5	44	70	1"	1"	1"	1"

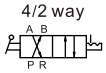
Hand lever valve (4/2 way, 4/3 way)

4HV, 4HVL Series

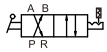


Symbol

4/2 way



4/2 way with lock



4/3 way closed center



4/3 way closed center type with lock



Specification

Model	4HV2□□ -06(L)	4HV2□□ -08(L)	4HV3□□ -08(L)	4HV3□□ -10(L)	4HV4□□ -15(L)	4HV4□□ -20(L)
Fluid	Air (to be filtered by 40 μm filter element)					
Operating	Manual control direct acting type					
Port size [Note1]	1/8"	1/4"	1/4"	3/8"	1/2"	3/4"
Orifice size	14.0mm² (Cv=0.78)	16.0mm² (Cv=0.89)	30.0mm² (Cv=1.67)	33.0mm² (Cv=1.83)	88.0mm² (Cv=4.89)	95.0mm² (Cv=5.27)
Valve type	4/2 Way、4/3 Way					
Lubrication	Not required					
Pressure range	0~1.0MPa(0~145psi)					
Proof pressure	1.5MPa(215psi)					
Temperature	-20~70℃					
Operating angle	90°(4/3 Way: 45°)					

[Note1] G thread is available.

Product feature

1. The direction-change turns lightly with good hand feeling and exact orientation.
2. Large effective circulating area leads to little pressure loss.
3. Panel and body installation are optional. The panel installation can be attached with installing nut.

Ordering code

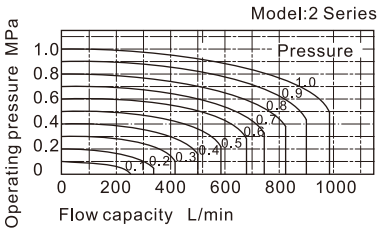
4HV 2 30 06 S L G

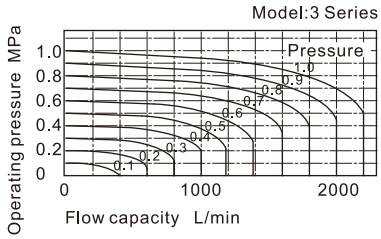
1 2 3 4 5 6 7

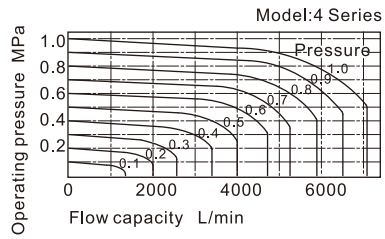
①Model	②Code	③Valve type	④Port size	⑤Installation	⑥Note	⑦Thread type
4HV: Hand lever valve	2: 2 Series	10: 4 port 2 position 30: 4 port 3 position [Note1]	06: 1/8" 08: 1/4"	Blank: Body installation S: Panel installation [Note2]	Blank: Without lock L: With lock	G: G Thread
	3: 3 Series		08: 1/4" 10: 3/8"			
	4: 4 Series		15: 1/2" 20: 3/4"			

[Note1] 4 port 3 position only has closed center type. [Note2] The panel installation can be attached with installing nut.

Flow chart

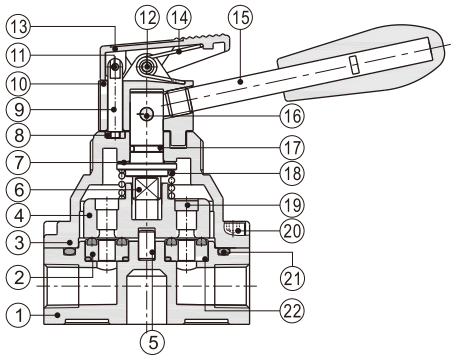






Inner structure

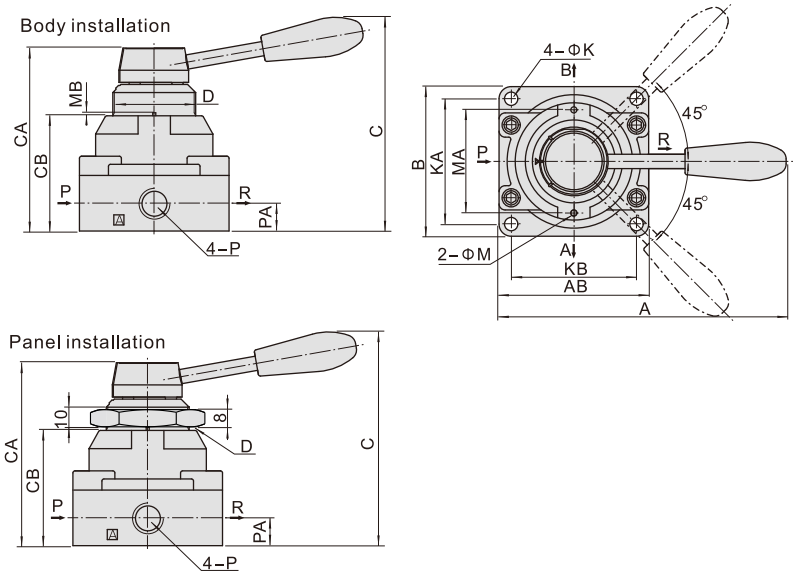
4HVL



No.	Item	No.	Item
1	Body	12	Pin one
2	Seal base	13	Front cover
3	Valve cover	14	Spring
4	Valve plug	15	Handle
5	Column pin	16	Pin two
6	Shaft	17	Shaft O-ring
7	Washer	18	Spring
8	Fixing plate	19	Iron plate
9	Lock pin	20	Fixing screw
10	Valve cap	21	Body O-ring
11	Spring pin	22	Seal base O-ring

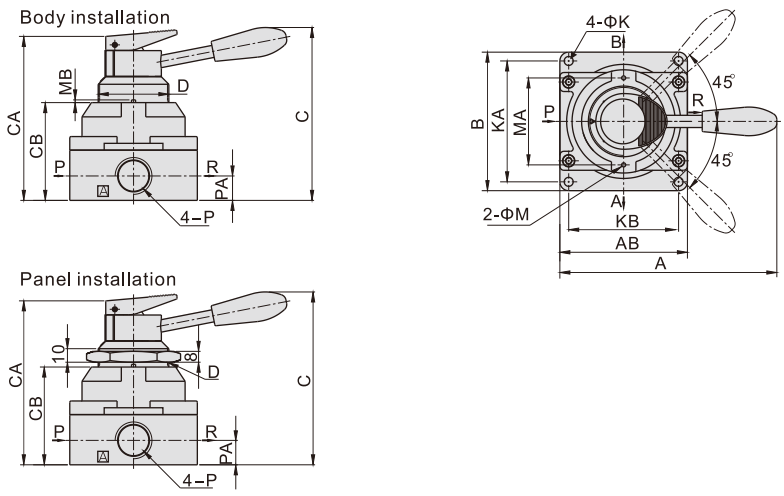
Dimensions

4HV



Model\Item	A	AB	B	C	CA	CB	D	K	KA	KB	M	MA	MB	P	PA
4HV2□□-06	120	62	62	92.5	73	45	M34×1.5	5.5	49	49	3	40	1.5	1/8"	11.5
4HV2□□-08	120	62	62	92.5	73	45	M34×1.5	5.5	49	49	3	40	1.5	1/4"	11.5
4HV3□□-08	140	74	74	104	88.5	56	M40×1.5	6.5	62	62	3	51	1.5	1/4"	13.5
4HV3□□-10	140	74	74	104	88.5	56	M40×1.5	6.5	62	62	3	51	1.5	3/8"	13.5
4HV4□□-15	160	94	102	128	110	72	M52×1.5	6.5	89	81	3	64	2	1/2"	18
4HV4□□-20	160	94	102	128	110	72	M52×1.5	6.5	89	81	3	64	2	3/4"	18

4HVL



Model\Item	A	AB	B	C	CA	CB	D	K	KA	KB	M	MA	MB	P	PA
4HV2□□-06L	120	62	62	92.5	84	45	M34×1.5	5.5	49	49	3	40	1.5	1/8"	11.5
4HV2□□-08L	120	62	62	92.5	84	45	M34×1.5	5.5	49	49	3	40	1.5	1/4"	11.5
4HV3□□-08L	140	74	74	104	99	56	M40×1.5	6.5	62	62	3	51	1.5	1/4"	13.5
4HV3□□-10L	140	74	74	104	99	56	M40×1.5	6.5	62	62	3	51	1.5	3/8"	13.5
4HV4□□-15L	160	94	102	128	121	72	M52×1.5	6.5	89	81	3	64	2	1/2"	18
4HV4□□-20L	160	94	102	128	121	72	M52×1.5	6.5	89	81	3	64	2	3/4"	18

S3 Series



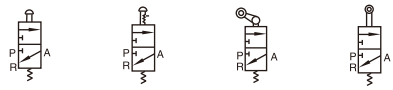
Specification

Model	S3B	S3C	S3D	S3V	S3R	S3L	S3Y	S3PM	S3PP	S3PF	S3PL	S3HS
Fluid	Air (to be filtered by 40 μm filter element)											
Operating	External control direct acting type											
Port size [Note1]	M5:M5 06:1/8" 08:1/4"											
Orifice size	M5:2.5 mm^2 (Cv=0.14) 06:8.0mm^2 (Cv=0.45) 08:12.0mm^2 (Cv=0.67)											
Valve type	3/2 Way											
Lubrication [Note2]	Not required											
Pressure range	0~1.0MPa(0~145psi)											
Proof pressure	1.5MPa(215psi)											
Temperature ℃	-20~70											
Material of body	Aluminum alloy											

[Note1] G thread is available.

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. It is suggested to use ISO VG32 lubricant or the oil with the same grade.

Symbol



Product feature

1. The external force required by changing the direction of the series of S3B, S3R, S3L and S3V is provided by external mechanism, which can be used for position test or stroke switch.
2. The series of S3PF, S3PM, S3PP, S3PL, S3Y, S3HS, S3C and S3D are operated manually, owning control joints with several structure forms and suitable for application under different conditions.
3. Shut-off structure has good tightness and is sensitive in direction changing and lubricant is not necessary.
4. Multi-mounting makes it convenient to install and apply.
5. The control joints of series of S3C, S3D, S3Y, S3R and S3L are made of metal which has long service life and more reliable and steady performance.

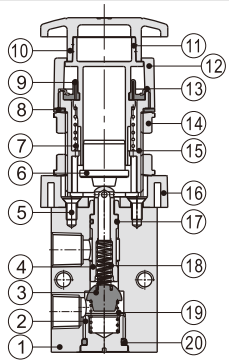
Reversal stroke

Unit: mm

Type	Spool stroke	Button stroke	Type	Spool stroke	Roller(handle) stroke
S3B	2.4~4.0	–	S3R	2.4~3.4	5.5~7.8
S3PF	2.4~4.0	3.8~5.4	S3L	2.4~3.4	6.0~8.6
S3PP	2.4~4.0	3.8~5.4	S3V	2.4~3.8	3.4~4.8
S3PM	2.4~4.0	3.8~5.4	S3C	2.4~3.8	14.4~18.4
S3PL	2.4~4.0	5.9~7.5	S3D	2.4~3.8	7.4~9.4
S3HS	2.4~4.0	5.1~6.7			

Inner structure

S3PM



No.	Item	No.	Item	No.	Item
1	Body	8	Clamping gasket	15	Button body
2	Bottom cover	9	Dust cover	16	Connector
3	Stopper plug	10	Button cap	17	O-ring
4	Valve core	11	Main body of button	18	Spring
5	Screw	12	Top cover	19	Spring
6	Button pressing buckle	13	Button ring	20	O-ring
7	Spring	14	Clamping nut		

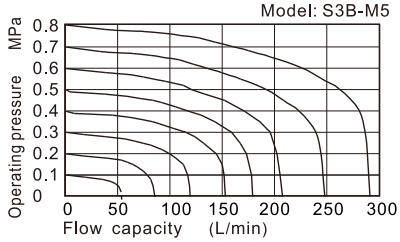
Ordering code

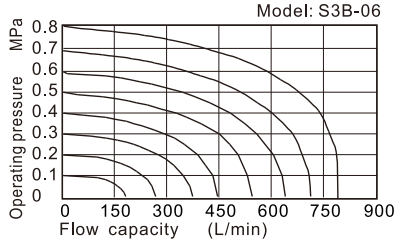
S3 PM 06 R G

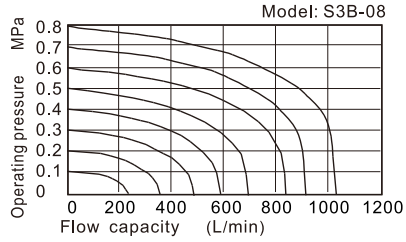
1 2 3 4 5

①Valve's type	②Model	③Port size	④Button color	⑤Thread type	
S3: S type 3/2 Way	B:Basic type	M5:M5 06:1/8" 08:1/4"	No this code	M5	1/8" 1/4"
	C:Long handle type			No this code	G: G Thread
	D:Short handle type				
	Y:Lever type				
	R:Roller type				
	L:Roller with free return type				
	V:Vertical type		Blank:Red		
	PL:Latching type				
	PP:Protruding type		R:Red G:Green B:Black		
	PF:Flat type				
	PM:Mushroom type				
	HS:Selector type				

Flow chart



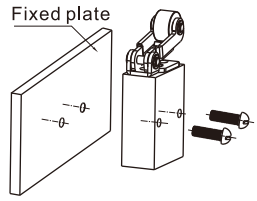




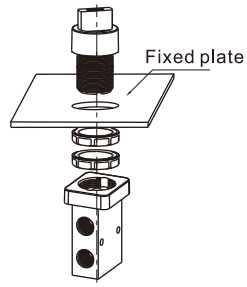
Installation and Application

1) The control set is made of engineering plastic which only allows manual operation and switching valves through metal impact is forbidden.
2) The series of S3B, S3C, S3D, S3PM, S3PF and S3PP get the function of automatic restoration. The hand valves of S3Y, S3HS and S3PL are in the type of manual restoration. S3PL will be restored by turning the revolve button after being pressed into orientation.
3) Pay attention to the reversing stroke. The reversing stroke can not surpass its stoke stipulated in stroke control table when the direction-change of the valve is forced by any external forces, otherwise it will cause the damage of the valve.
4) The S3L can only switch the valve in single direction (impact from right to left). The impact from the other direction is invalid (from left to right).
5) Control joint combination can be ordered individually. Please refer to the following tables for order details.

Fixation way of body

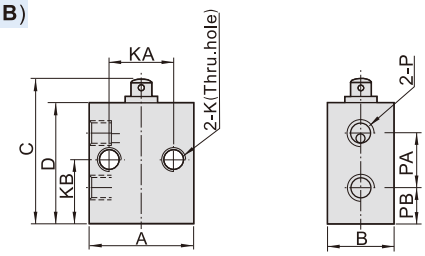


Fixation way of panel



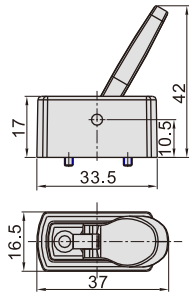
Dimension

Body(S3B)



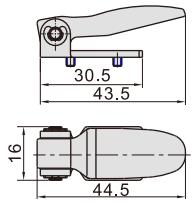
Model\Item	A	B	C	D	K	KA	KB	P	PA	PB
M5	26	16.5	36	30	M5x0.8	16	15	M5x0.8	13	9
06	30	16.5	47	41	M5x0.8	23	20.5	1/8"	17.5	11.5
08	34	17.5	52	46	M5x0.8	24	22.5	1/4"	21	12

Lever type(Y)



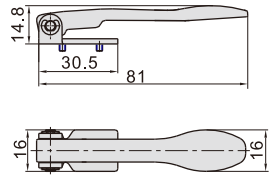
Model		Lever type(Y)
How to order	Ordering code	M3Y210-P13A
	Type	M3Y210Lever type control set
Applicable products		S3YM5,S3Y06,S3Y08

Short handle type(D)



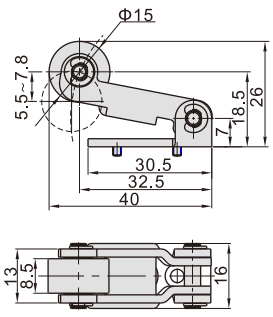
Model		Short handle type(D)
How to order	Ordering code	M3D210-P13A
	Type	M3D210 Short handle type control set
Applicable products		S3DM5,S3D06,S3D08

Long handle type(C)



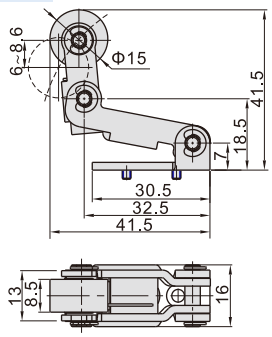
Model		Long handle type(C)
How to order	Ordering code	M3C210-P13A
	Type	M3C210 Long handle type control set
Applicable products		S3CM5,S3C06,S3C08

Roller type(R)



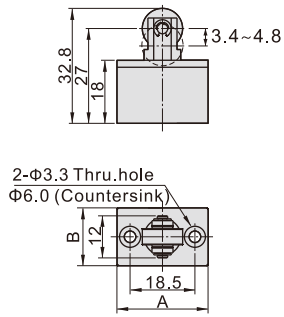
Model		Roller type(R)
How to order	Ordering code	M3R210-P14A
	Type	M3R210 Roller type control set
Applicable products		S3RM5,S3R06,S3R08

Roller with free return type(L)



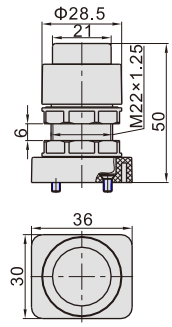
Model		Roller with free return type(L)
How to order	Ordering code	M3L210-P14A
	Type	M3L210 Roller with free return type control set
Applicable products		S3LM5,S3L06,S3L08

Vertical type(V)



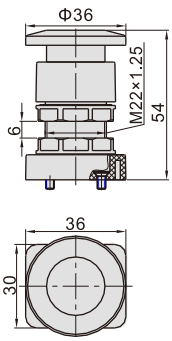
Model		Vertical type (V)	
How to order	Ordering code	S3V05(06/08)-P14A	
	Type	S3VM5(06. 08) Vertical type control set	
Applicable products		S3VM5,S3V06,S3V08	
Model\Item		A	B
M5		26	16.5
06		30	16.5
08		34	17.5

Protruding type(PP)



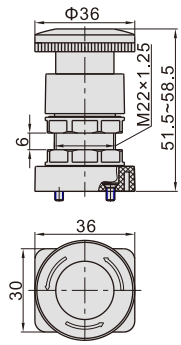
Model		Protruding type(PP)
How to order	Ordering code	S3PP05-P11A
	Type	S3PP protruding type control set (Green)
	Ordering code	S3PP05-P12A
	Type	S3PP protruding type control set (Red)
	Ordering code	S3PP05-P13A
	Type	S3PP protruding type control set (Black)
Applicable products		S3PPM5,S3PP06,S3PP08

Mushroom type(PM)



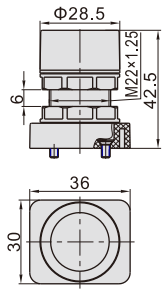
Model		Mushroom type(PM)
How to order	Ordering code	S3PM05-P11A
	Type	S3PM mushroom type control set (Green)
	Ordering code	S3PM05-P12A
	Type	S3PM mushroom type control set (Red)
	Ordering code	S3PM05-P13A
	Type	S3PM mushroom type control set (Black)
Applicable products		S3PMM5,S3PM06,S3PM08

Latching type(PL)



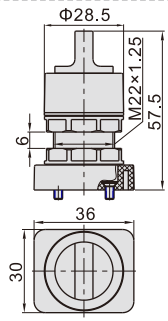
Model		Latching type (only red)(PL)
How to order	Ordering code	S3PL05-P12A
	Type	S3PL Latching type control set (Red)
Applicable products		S3PLM5,S3PL06,S3PL08

Flat type(PF)



Model		Flat type(PF)
How to order	Ordering code	S3PF05-P11A
	Type	S3PF flat type control set (Green)
	Ordering code	S3PF05-P12A
	Type	S3PF flat type control set (Red)
	Ordering code	S3PF05-P13A
	Type	S3PF flat type control set (Black)
Applicable products		S3PFM5,S3PF06,S3PF08

Selector type(HS)



Model		Selector type(HS)
How to order	Ordering code	S3HS05-P11A
	Type	S3HS selector type control set (Green)
	Ordering code	S3HS05-P12A
	Type	S3HS selector type control set (Red)
	Ordering code	S3HS05-P13A
	Type	S3HS selector type control set (Black)
Applicable products		S3HSM5,S3HS06,S3HS08

M3 Series

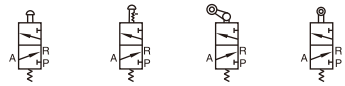


Specification

Model		M3B	M3C	M3D	M3R	M3L	M3Y	M3PM	M3PP	M3PF	M3PL	M3HS
Fluid		Air (to be filtered by 40 μm filter element)										
Operating		External control direct acting type										
Port size [Note1]		05: M5 06: 1/8" 08: 1/4"										
Orifice size	Mini type	05: 2.5mm²(Cv=0.14)										
	110	06: 8.0mm² (Cv=0.45)										
	210	06: 9.0mm² (Cv=0.50) 08: 12.0mm² (Cv=0.67)										
Valve type		3/2 Way										
Lubrication [Note2]		Not required										
Pressure range		0~1.0MPa(0~145psi)										
Proof pressure		1.5MPa(215psi)										
Temperature ℃		-20~70										
Material of body		Aluminum alloy										

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. It is suggested to use ISO VG32 lubricant or the oil with the same grade.

Symbol



Product feature

1. Exhaust outlet locates over the body, which is convenient to install muffler to decrease noise and pollution.
2. The external force required by direction-change of series of M3B,M3R and M3L is provided by external mechanism, which can be used for position test or stroke switch.
3. M3C, M3D, M3Y, M3PF, M3PM, M3PP, M3PL and M3HS are operated manually, owning control joints with several structure forms and suitable for application under different conditions.
4. It is in sliding column structure that the control force is not influenced by working pressure (that is, there is no back pressure effect); internal circle is sealed with good tightness and the direction-change is sensitive.
5. No need to add oil for lubrication.
6. Multi-mounting makes it convenient to install and apply;
7. The control joints of series of M3C, M3D, M3Y, M3R, and M3L are made of metal which has long service life and more reliable and steady performance.

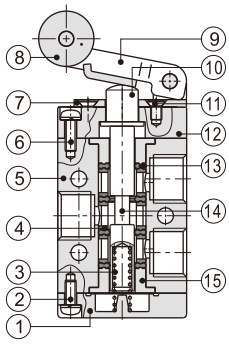
Reversal stroke

Unit:mm

Common type						Mini type		
Type	Spool stroke	Button stroke	Type	Spool stroke	Roller(handle) stroke	Type	Spool stroke	Roller stroke
M3B	2.0~3.3	–	M3R	2.0~3.0	4.6~6.8	M3B05	2.0~3.3	–
M3PF	2.0~3.3	3.8~5.1	M3L	2.0~3.0	5.0~7.8	M3R05	2.0~3.0	6.0~8.5
M3PP	2.0~3.3	3.8~5.1	M3C	2.0~3.0	11.0~16.0	M3L05	2.0~3.0	7.0~10.0
M3PM	2.0~3.3	3.8~5.1	M3D	2.0~3.0	5.5~8.0			
M3PL	2.0~3.3	5.9~7.2						
M3HS	2.0~3.3	5.1~6.4						

Inner structure

M3R210



No.	Item	No.	Item	No.	Item
1	Botton cover	6	Screw	11	Screw
2	Screw	7	Roller holder	12	Front cover
3	Spring	8	Roller	13	Piston O-ring
4	Spacer	9	Rotating block	14	Spool
5	Body	10	Axle	15	Positioning block

Ordering code

Common type M3 PM 210 06 R G

(1) (2) (3) (4) (5) (6)

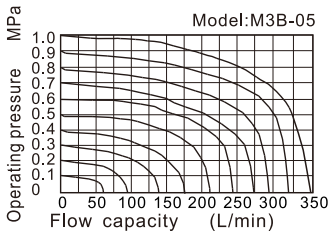
①Valve's type	②Model	③Code	④Port size	⑤Button color	⑥Thread type
M3: M type 3/2 Way	B: Basic type	110: 100 Series single control	06: 1/8"	No this code	G: G Thread
	C: Long handle type				
	D: Short handle type				
	Y: Lever type				
	R: Roller type				
	L: Roller with free return type	210: 200 Series single control	06: 1/8" 08: 1/4"	Blank:Red	
	PL: Latching type				
	PP: Protruding type			R: Red G: Green B: Black	
	PF: Flat type				
	PM: Mushroom type				
	HS: Selector type				

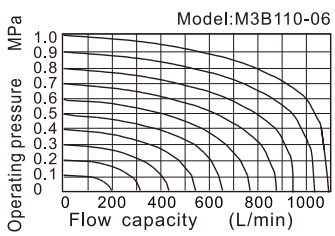
Mini type M3 R 05

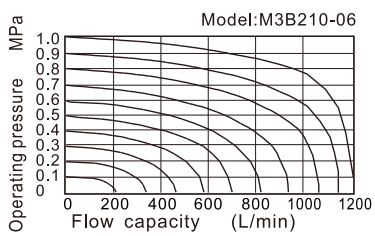
(1) (2) (3)

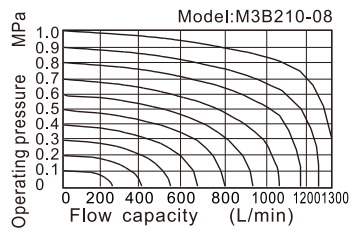
①Valve's type	②Model	③Port size
M3: M type 3/2 Way	B: Basic type R: Roller type L: Roller with free return type	05: M5

Flow chart





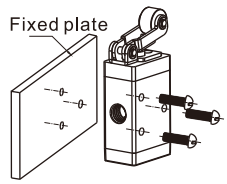




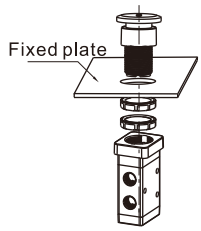
Installation and Application

1) Body and panel installation（picture at right）:
2)The control set is made of engineering plastic which only allows manual operation and switching valves through metal impact is forbidden.
3)The series of M3B, M3C, M3D, M3PM, M3PF and M3PP get the function of automatic restoration. The hand valves of M3Y, M3HS and M3PL are in the type of manual restoration.M3PL will be restored by turning the revolve button after being pressed into orientation.
4) Pay attention to the reversing stroke. The reversing stroke can not surpass its stroke stipulated in stroke control table when the direction-change of the valve is forced by any external forces, otherwise it will cause the damage of the valve.
5) The M3L can only switch the valve in single direction (impact from right to left). The impact from the other direction is invalid (from left to right).
6) Control joint combination can be ordered individually. Please refer to the following tables for order details.

Fixation way of body

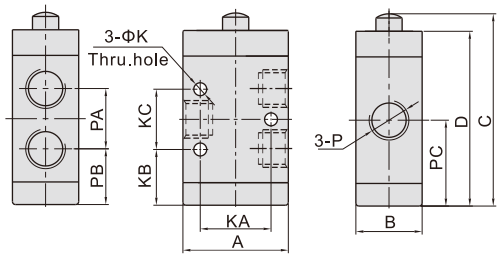


Fixation way of panel



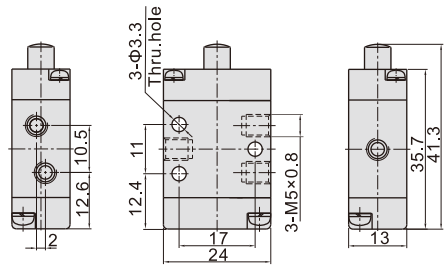
Dimensions

Common type



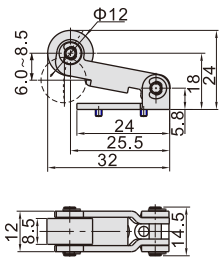
Model\Item	A	B	C	D	K	KA	KB	KC	P	PA	PB	PC
M3B11006	27	18	52	46.5	3.3	18	15.5	16	1/8"	16	15.5	23.5
M3B21006	35	22	64	58	4.3	23.5	18.5	20	1/8"	20	18.5	28.5
M3B21008									1/4"			

Mini type

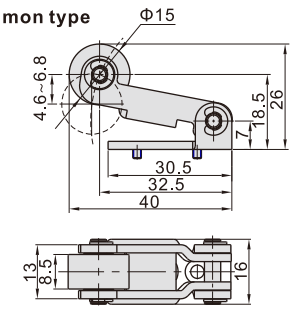


Roller type(R)

Mini type



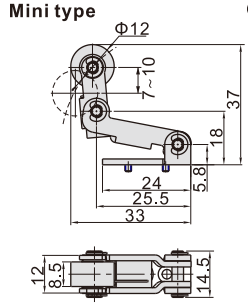
Common type



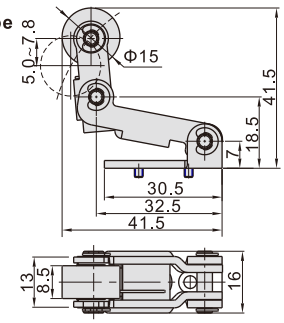
Model		Roller type(R)	
How to order	Ordering code	M3R05-P14A	M3R210-P14A
	Type	M3R05 Roller type control set	M3R210 Roller type control set
Applicable products		M3R05	M3R110, M3R210

Roller with free return type(L)

Mini type

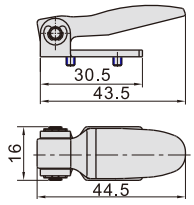


Common type



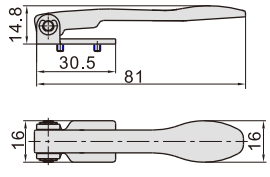
Model		Roller with free return type(L)	
How to order	Ordering code	M3L05-P14A	M3L210-P14A
	Type	M3L05 Roller with free return type control set	M3L210 Roller with free return type control set
Applicable products		M3L05	M3L110,M3L210

Short handle type(D)



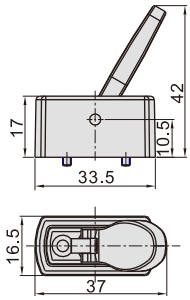
Model		Short handle type(D)
How to order	Ordering code	M3D210-P13A
	Type	M3D210 Short handle type control set
Applicable products		M3D110, M3D210

Long handle type(C)



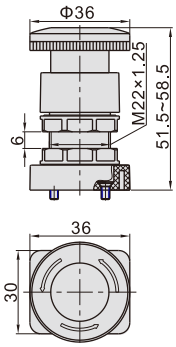
Model		Long handle type(C)
How to order	Ordering code	M3C210-P13A
	Type	M3C210 Long handle type control set
Applicable products		M3C110, M3C210

Lever type(Y)



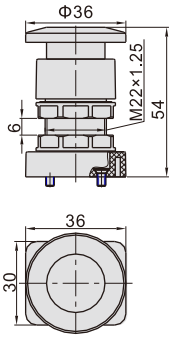
Model		Lever type(Y)
How to order	Ordering code	M3Y210-P13A
	Type	M3Y210 Lever type control set
Applicable products		M3Y110, M3Y210

Latching type(PL)



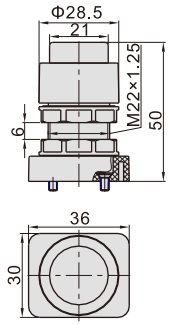
Model		Latching type (only red)(PL)
How to order	Ordering code	S3PL05-P12A
	Type	S3PL Latching type control set (Red)
Applicable products		M3PL110, M3PL210

Mushroom type(PM)



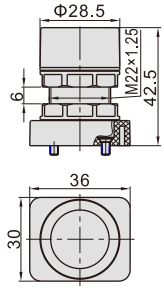
Model		Mushroom type(PM)
How to order	Ordering code	S3PM05-P11A
	Type	S3PM mushroom type control set (Green)
	Ordering code	S3PM05-P12A
	Type	S3PM mushroom type control set (Red)
	Ordering code	S3PM05-P13A
	Type	S3PM mushroom type control set (Black)
Applicable products		M3PM110, M3PM210

Protruding type(PP)



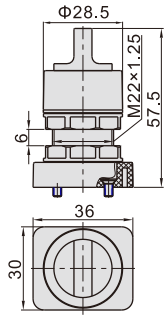
Model		Protruding type(PP)
How to order	Ordering code	S3PP05-P11A
	Type	S3PP protruding type control set (Green)
	Ordering code	S3PP05-P12A
	Type	S3PP protruding type control set (Red)
	Ordering code	S3PP05-P13A
	Type	S3PP protruding type control set (Black)
Applicable products		M3PP110, M3PP210

Flat type(PF)



Model		Flat type(PF)
How to order	Ordering code	S3PF05-P11A
	Type	S3PF flat type control set (Green)
	Ordering code	S3PF05-P12A
	Type	S3PF flat type control set (Red)
	Ordering code	S3PF05-P13A
	Type	S3PF flat type control set (Black)
Applicable products		M3PF110, M3PF210

Selector type(HS)

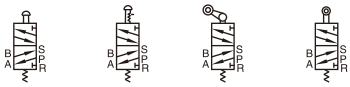


Model		Selector type(HS)
How to order	Ordering code	S3HS05-P11A
	Type	S3HS selector type control set (Green)
	Ordering code	S3HS05-P12A
	Type	S3HS selector type control set (Red)
	Ordering code	S3HS05-P13A
	Type	S3HS selector type control set (Black)
Applicable products		M3HS110, M3HS210

M5 Series



Symbol

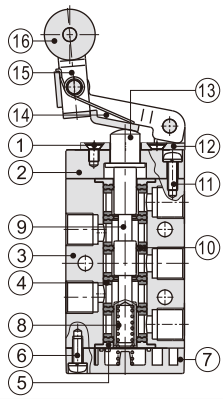


Product feature

1. Exhaust outlet locates over the body, which is convenient to install muffler to decrease noise and pollution.
2. The external force required by direction-change of series of M5B, M5R and M5L is provided by external mechanism, which can be used for position test or stroke switch.
3. M5C,M5D,M5Y,M5PF,M5PM,M5PP,M5PL and M5HS are operated manually, owning control joints with several structure forms and suitable for application under different conditions.
4. It is in sliding column structure that the control force is not influenced by working pressure (that is, there is no back pressure effect); internal circle is sealed with good tightness and the direction-change is sensitive.
5. Lubricant is not necessary.
6. Multi-mounting makes it convenient to install and apply.
7. The control joints of series of M5C,M5D,M5Y,M5R and M5L are made of metal which has longer service life and more reliable and steady performance.

Inner structure

M5L210



No.	Item	No.	Item	No.	Item
1	Screw	7	Botton cover	13	Axle
2	Fore cover	8	Spring	14	Rotating block
3	Body	9	Spool	15	Rocker
4	Spacer	10	Piston O-ring	16	Roller
5	Positioning block	11	Screw		
6	Screw	12	Roller holder		

Specification

Model		M5B	M5C	M5D	M5R	M5L	M5Y	M5PM	M5PP	M5PF	M5PL	M5HS
Fluid		Air (to be filtered by 40 μm filter element)										
Operating		External control direct acting type										
Port size [Note1]		05: M5 06: 1/8" 08: 1/4"										
Orifice size	Mini type	05: 2.5mm²(Cv=0.14)										
	110	06: 8.0mm² (Cv=0.45)										
	210	06: 9.0mm² (Cv=0.50) 08: 12.0mm² (Cv=0.67)										
Valve type		5/2 Way										
Lubrication [Note2]		Not required										
Pressure range		0~1.0MPa(0~145psi)										
Proof pressure		1.5MPa(215psi)										
Temperature ℃		-20~70										
Material of body		Aluminum alloy										

[Note1] G thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span.
It is suggested to use ISO VG32 lubricant or the oil with the same grade.

Reversal stroke

Unit:mm

Common type						Mini type		
Type	Spool stroke	Button stroke	Type	Spool stroke	Roller(handle) stroke	Type	Spool stroke	Roller stroke
M5B	2.0~3.3	–	M5R	2.0~3.0	4.6~6.8	M5B05	2.0~3.3	–
M5PF	2.0~3.3	3.8~5.1	M5L	2.0~3.0	5.0~7.8	M5R05	2.0~3.0	6.0~8.5
M5PP	2.0~3.3	3.8~5.1	M5C	2.0~3.0	11.0~16.0	M5L05	2.0~3.0	7.0~10.0
M5PM	2.0~3.3	3.8~5.1	M5D	2.0~3.0	5.5~8.0			
M5PL	2.0~3.3	5.9~7.2						
M5HS	2.0~3.3	5.1~6.4						

Ordering code

Common type

M5 PM 210 06 R G
1 2 3 4 5 6

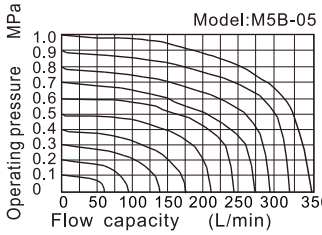
①Valve's type	②Model	③Code	④Port size	⑤Button color	⑥Thread type
M5: M type 5/2 Way	B:Basic type	110: 100 Series single control	06: 1/8"	No this code	G: G Thread
	C:Long handle type				
	D:Short handle type				
	Y:Lever typer				
	R:Roller type				
	L:Roller with free return type	210: 200 Series single control	06: 1/8" 08: 1/4"	Blank:Red	
	PL:Latching type			R: Red G: Green B: Black	
	PP: Protruding type				
	PF:Flat type				
	PM:Mushroom type				
	HS:Selector type				

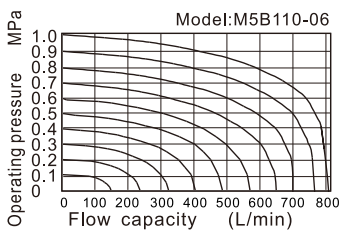
Mini type

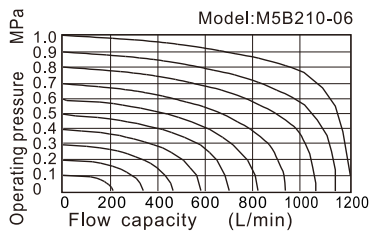
M5 R 05
1 2 3

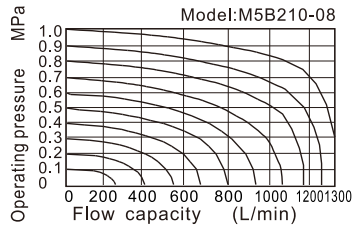
①Valve's type	②Model	③Port size
M5: M type 5/2 Way	B: Basic type R: Roller type L: Roller with free return type	05: M5

Flow chart





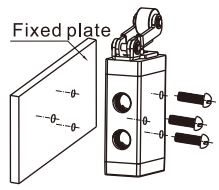




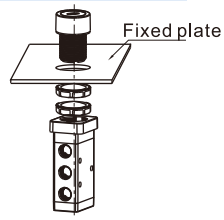
Installation and Application

1) Body and panel installation（picture at right）:
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3) The series of M5B, M5C, M5D, M5PM, M5PF and M5PP get the function of automatic restoration. The hand valves of M5Y, M5HS and M5PL are in the type of manual restoration. M5PL will be restored by turning the revolve button after being pressed into orientation.
4) Pay attention to the reversing stroke. The reversing stroke can not surpass its stroke stipulated in stroke control table when the direction-change of the valve is forced by any external forces, otherwise it will cause the damage of the valve.
5)The M5L can only switch the valve in single direction (impact from right to left). The impact from the other direction is invalid (from left to right).
6) Control joint combination can be ordered individually. Please refer to the following tables for order details.

Fixation way of body

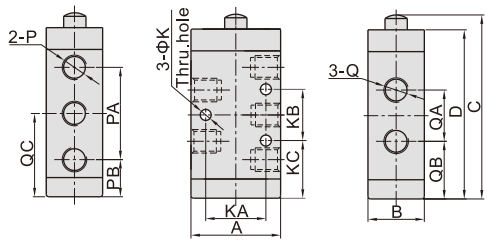


Fixation way of panel



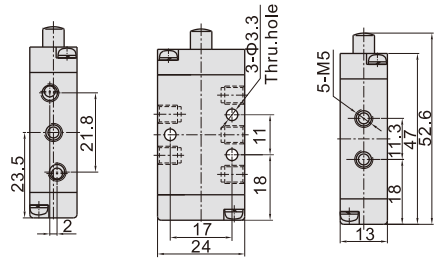
Dimensions

Common type



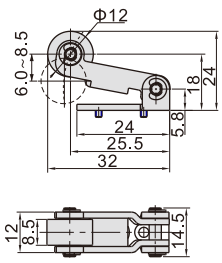
Model\Item	A	B	C	D	K	KA	KB	KC	P	PA	PB	Q	QA	QB	QC
M5B11006	27	18	63	57.5	3.3	18	14	22	1/8"	28	15	1/8"	16	21	29
M5B21006	35	22	72	66	4.3	23.5	20	22.5	1/8"	36	14.5	1/8"	20	22.5	32.5
M5B21008									1/8"			1/4"			

Mini type

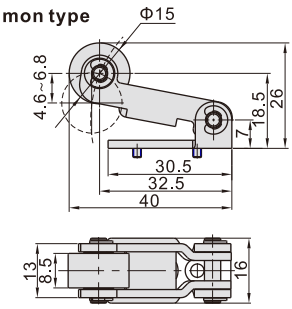


Roller type(R)

Mini type



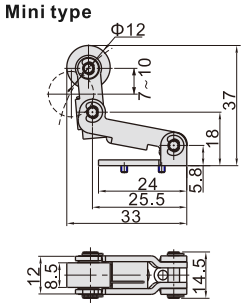
Common type



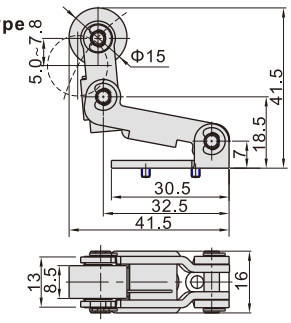
Model		Roller type(R)	
How to order	Ordering code	M3R05-P14A	M3R210-P14A
	Type	M3R05 Roller type control set	M3R210 Roller type control set
Applicable products		M5R05	M5R110, M5R210

Roller with free return type(L)

Mini type

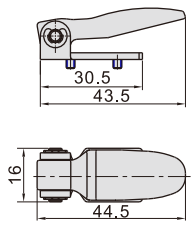


Common type



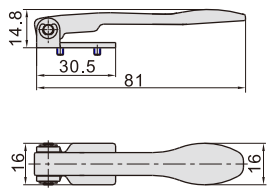
Model		Roller with free return type(L)	
How to order	Ordering code	M3L05-P14A	M3L210-P14A
	Type	M3L05 Roller with free return type control set	M3L210 Roller with free return type control set
Applicable products		M5L05	M5L110, M5L210

Short handle type(D)



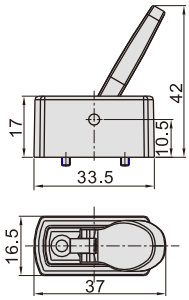
Model		Short handle type(D)
How to order	Ordering code	M3D210-P13A
	Type	M3D210 Short handle type control set
Applicable products		M5D110, M5D210

Long handle type(C)



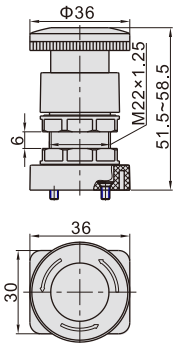
Model		Long handle type(C)
How to order	Ordering code	M3C210-P13A
	Type	M3C210 Long handle type control set
Applicable products		M5C110, M5C210

Lever type(Y)



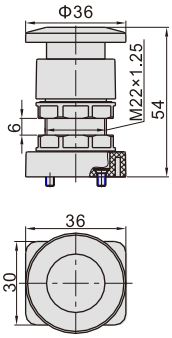
Model		Lever type(Y)
How to order	Ordering code	M3Y210-P13A
	Type	M3Y210 Lever type control set
Applicable products		M5Y110, M5Y210

Latching type(PL)



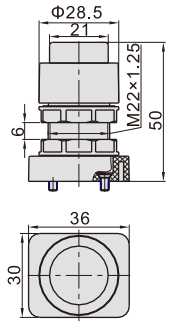
Model		Latching type (only red)(PL)
How to order	Ordering code	S3PL05-P12A
	Type	S3PL Latching type control set (Red)
Applicable products		M5PL110, M5PL210

Mushroom type(PM)



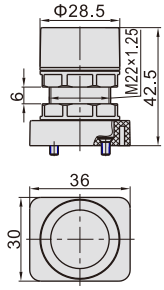
Model		Mushroom type(PM)
How to order	Ordering code	S3PM05-P11A
	Type	S3PM mushroom type control set (Green)
	Ordering code	S3PM05-P12A
	Type	S3PM mushroom type control set (Red)
	Ordering code	S3PM05-P13A
	Type	S3PM mushroom type control set (Black)
Applicable products		M5PM110, M5PM210

Protruding type(PP)



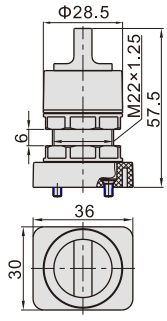
Model		Protruding type(PP)
How to order	Ordering code	S3PP05-P11A
	Type	S3PP protruding type control set (Green)
	Ordering code	S3PP05-P12A
	Type	S3PP protruding type control set (Red)
	Ordering code	S3PP05-P13A
	Type	S3PP protruding type control set (Black)
Applicable products		M5PP110, M5PP210

Flat type(PF)



Model		Flat type(PF)
How to order	Ordering code	S3PF05-P11A
	Type	S3PF flat type control set (Green)
	Ordering code	S3PF05-P12A
	Type	S3PF flat type control set (Red)
	Ordering code	S3PF05-P13A
	Type	S3PF flat type control set (Black)
Applicable products		M5PF110, M5PF210

Selector type(HS)



Model		Selector type(HS)
How to order	Ordering code	S3HS05-P11A
	Type	S3HS selector type control set (Green)
	Ordering code	S3HS05-P12A
	Type	S3HS selector type control set (Red)
	Ordering code	S3HS05-P13A
	Type	S3HS selector type control set (Black)
Applicable products		M5HS110, M5HS210

Control valve(3/2 way, 5/3 way)

CM3 Series



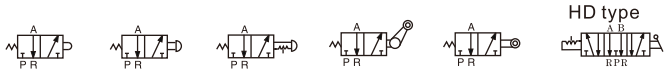
Specification

Model	CM3□-05	CM3□-06	CM3□-08
Operating	External control		
Fluid	Air (to be filtered by 40 μm filter element)		
Pressure range	0~1.0MPa(0~10bar)(0~145psi)		
Proof pressure	1.5MPa(15bar)(215psi)		
Temperature	-20~70℃		
Valve type [Note1]	3 port 2 position		
Orifice size	2.0mm²	2.5mm²	15.0mm²
Cv	0.11	0.14	0.84
Port size [Note2]	M5×0.8	1/8"	1/4"
Material of body	Aluminum alloy		

[Note1] HD series are 5/3 way.

[Note2] G thread is available.

Symbol



Product feature

1. The external force required by changing the direction of the series of CM3B, CM3V, CM3L and CM3R is provided by external mechanism, which can be used for position test or limit switch.
2. The series of CM3PF, CM3PM, CM3PMS, CM3PMX, CM3PL, CM3PP, CM3HS, CM3HD and CM3Y are operated manually, owning control joints with several structure forms and suitable for application under different conditions.
3. Shut-off structure has good tightness and is sensitive in direction changing and lubricant is not necessary.
4. Multi-mounting makes it convenient to install and apply.
5. The control joints of series of CM3L, CM3V, CM3R and CM3Y are made of metal which has long service life and more reliable and steady performance.
6. CM3PMS. CM3PMX Series have metallic guard, it can protect the push cup, to avoid misact due to outside force touching the push cup. So they can be used more reliably.

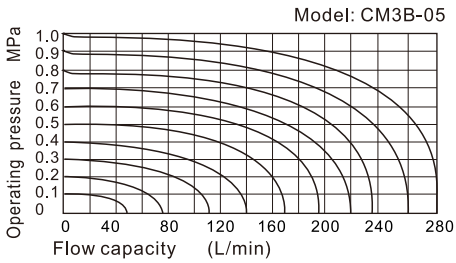
Ordering code

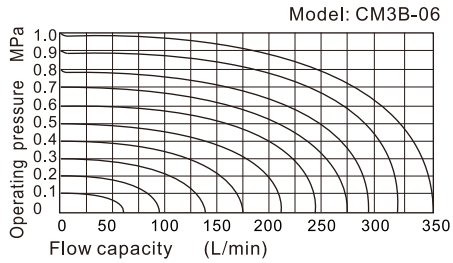
CM3 PP 06 B G

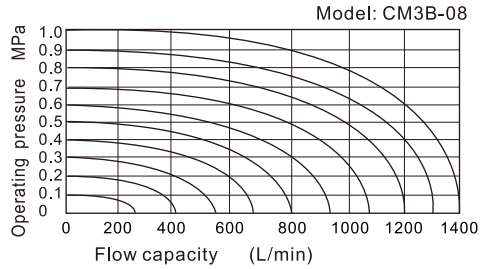
1 2 3 4 5

①Valve's type	②Model	③Port size	④Button color	⑤Thread type	
CM3: CM type 3/2 5/3 way	B: Basic type	05: M5 06: 1/8" 08: 1/4"	No this code	M5	1/8" 1/4"
	R: Roller type			No this code	G: G Thread
	L: Roller with free return type				
	V: Vertical type				
	Y: Lever typer				
	PL: Latching type		Blank:Red		
	PP: Protruding type		R: Red G: Green B: Black Y: Yellow		
	PF: Flat type				
	PM: Mushroom type				
	PMS: Mushroom type(with guard)				
	PMX: Big mushroom type(with guard)				
	HS: Selector type				
	HD: Double-selector type				

Flow chart

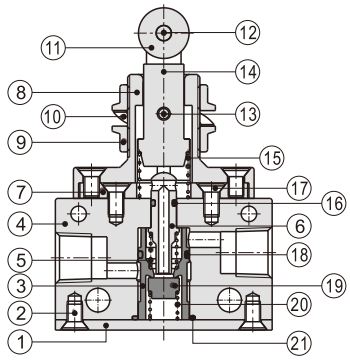






Inner structure

CM3V

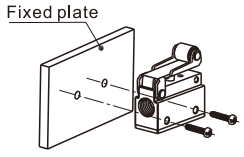


No.	Item	No.	Item	No.	Item
1	Fixing plate	8	Connecting holder	15	Spring
2	Screw	9	Clamping nut	16	O-ring
3	Spacer	10	Spring gasket	17	Screw
4	Body	11	Roller	18	O-ring
5	Spring	12	Shaft	19	Bottom cover gasket
6	Spool	13	Lock pin	20	Spring
7	Connecting gasket	14	Roller bracket	21	O-ring

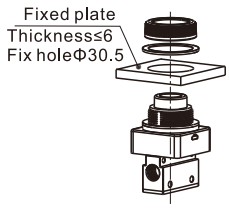
Installation and operation

1. Mounting way: by body, by panel I, by panel II, latching type, mushroom type. Please refer to the following picture:

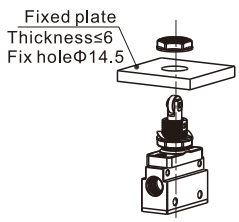
Fixation way of body



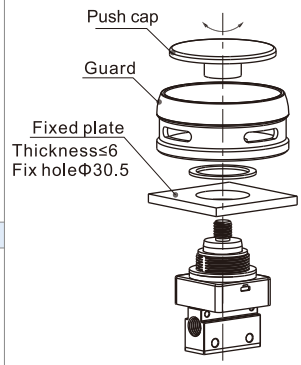
Fixation way of panel I



Fixation way of panel II

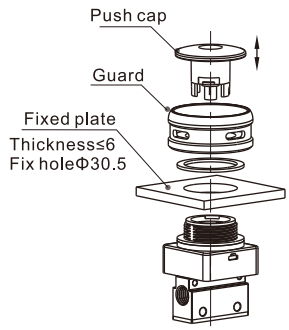


Big mushroom type(With guard)



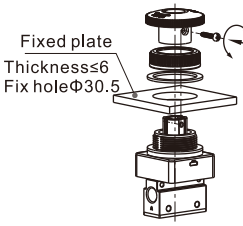
Disassembly: Remove the push cap, then remove the guard.
Assembly: Install the guard, then to tighten the push cap.

Mushroom type(With guard)



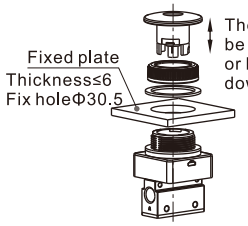
Disassembly: Untighten the guard first, then remove the push cap with the guard.
Assembly: Install the guard, then to tighten the push cap.

Latching type



Disassembly: Remove the screw, then to draw the button.
Assembly: Install the button, then to tighten the screw.

Mushroom type



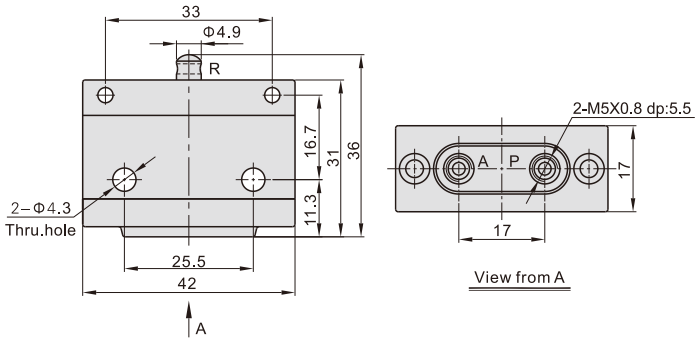
2. The control set is made of engineering plastic which only allows manual operation and switching valves through metal impact is forbidden.
3. The series of CM3B, CM3L, CM3V, CM3R, CM3PM, CM3PMS, CM3PMX, CM3PF, CM3PP get the function of automatic restoration. The hand valves of CM3Y, CM3HS, CM3HD, CM3PL are in type of manual restoration. CM3PL will be restored by turning the revolve button after being pressed into orientation.
4. Pay attention to the reversing stroke. The reversing stroke can not surpass its stroke stipulated in stroke control table when the direction-change of the valve is forced by any external forces, otherwise it will cause the damage of the valve.

Model	Spool stroke	Button(Roller\Handle) stroke	Model	Spool stroke	Button(Roller\Handle) stroke
CM3B05(06)	1.5~3.0	-	CM3B08	2.4~4.0	–
CM3R05(06)	1.5~2.5	3.0~4.8	CM3R08	2.4~3.2	6.8~9.0
CM3L05(06)	1.5~2.3	3.0~4.8	CM3L08	2.4~3.2	7.2~9.7
CM3V05(06)	1.5~3.0	2.7~4.2	CM3V08	2.4~4.0	2.6~4.2
CM3Y05(06)	1.5~2.5	3.0~4.8	CM3Y08	2.4~3.2	6.8~9.0
CM3PL05(06)	1.5~2.5	4.0~5.0	CM3PL08	2.4~3.5	4.0~5.0
CM3PP05(06)	1.5~3.0	4.0~5.5	CM3PP08	2.4~4.0	4.0~5.5
CM3PF05(06)	1.5~3.0	4.0~5.5	CM3PF08	2.4~4.0	4.0~5.5
CM3HS05(06)	1.5~3.0	4.0~5.5	CM3HS08	2.4~4.0	4.0~5.5
CM3HD05(06)	1.5~3.0	4.0~5.5	CM3HD08	2.4~4.0	4.0~5.5
CM3PM05(06)	1.5~3.0	4.0~5.5	CM3PM08	2.4~4.0	4.0~5.5
CM3PMS05(06)	1.5~3.0	4.0~5.5	CM3PMX08	2.4~4.0	4.0~5.5
CM3PMX05(06)	1.5~3.0	4.0~5.5	CM3PMX08	2.4~4.0	4.0~5.5

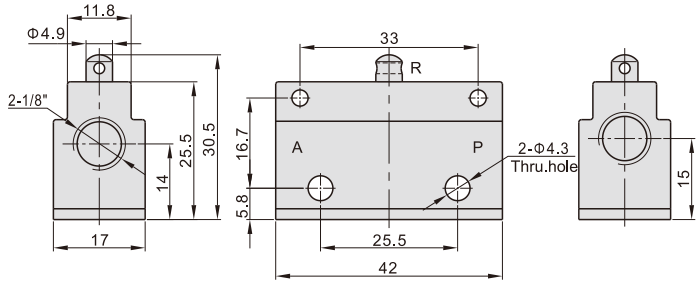
5. The CM3L can only switch the valve in single direction(impact from left to right). The impact from the other direction (from right to left) is invalid .
6. Control joint combination can be ordered individually. Please refer to external specification.

Dimension (Basic type)

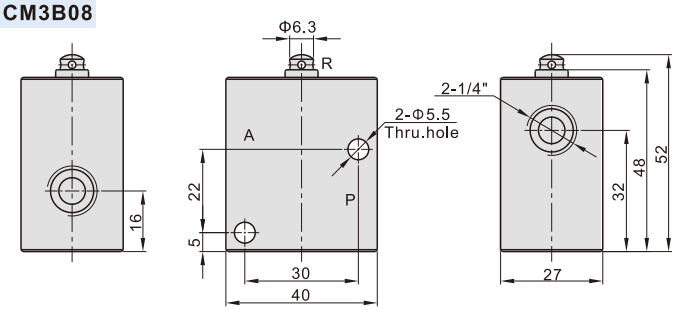
CM3B05



CM3B06



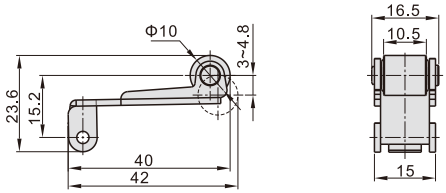
CM3B08



Control set dimension

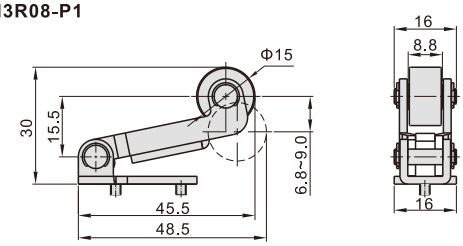
Roller type(R)

CM3R06-P1



Note: CM3R06 control joint, which used in CM3R05 and CM3R06, can not be ordered individually. It should be matched with basic type.

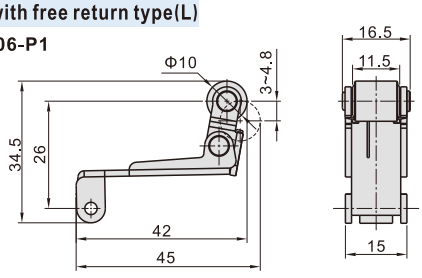
CM3R08-P1



Model		Roller type(R)
How to order	Ordering code	CM3R08-P1
	Type	CM3R08 roller type control set
Applicable products		CM3R08

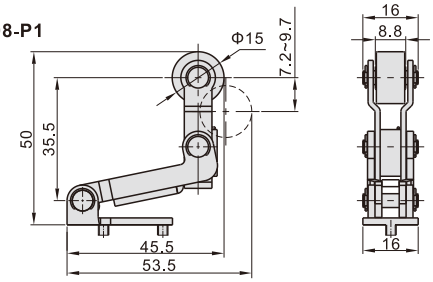
Roller with free return type(L)

CM3L06-P1



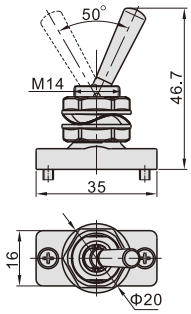
Note: CM3L06 control joint, which used in CM3L05 and CM3L06, can not be ordered individually. It should be matched with basic type.

CM3L08-P1



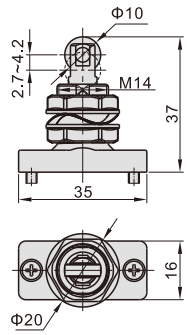
Model		Roller with free return type(L)
How to order	Ordering code	CM3L08-P1
	Type	CM3L08Roller with free return type control set
Applicable products		CM3L08

Lever type(Y)



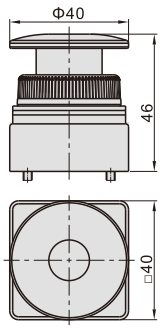
Model		Lever type(Y)
How to order	Ordering code	CM3Y06-P1
	Type	CM3Y lever type control set
Applicable products		CM3Y05 CM3Y06 CM3Y08

Vertical type(V)



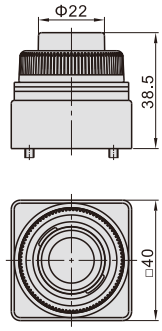
Model		Vertical type（V）
How to order	Ordering code	CM3V06-P1
	Type	CM3V vertical type control set
Applicable products		CM3V05 CM3V06 CM3V08

Mushroom type(PM)



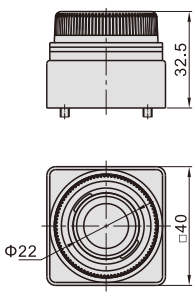
Model		Mushroom type（PM）
How to order	Ordering code	CM3PM06-P1
	Type	CM3PM mushroom type control set(green)
	Ordering code	CM3PM06-P2
	Type	CM3PM mushroom type control set(red)
	Ordering code	CM3PM06-P3
	Type	CM3PM mushroom type control set(black)
	Ordering code	CM3PM06-P4
	Type	CM3PM mushroom type control set(yellow)
Applicable products		CM3PM05 CM3PM06 CM3PM08

Protruding type(PP)



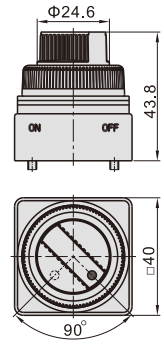
Model		Protruding type（PP）
How to order	Ordering code	CM3PP06-P1
	Type	CM3PP protruding type control set(green)
	Ordering code	CM3PP06-P2
	Type	CM3PP protruding type control set(red)
	Ordering code	CM3PP06-P3
	Type	CM3PP protruding type control set(black)
	Ordering code	CM3PP06-P4
	Type	CM3PP protruding type control set(yellow)
Applicable products		CM3PP05 CM3PP06 CM3PP08

Flat type(PF)



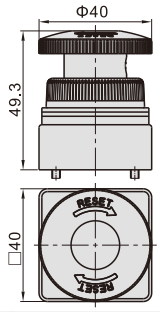
Model		Flat type（PF）
How to order	Ordering code	CM3PF06-P1
	Type	CM3PF flat type control set(green)
	Ordering code	CM3PF06-P2
	Type	CM3PF flat type control set(red)
	Ordering code	CM3PF06-P3
	Type	CM3PF flat type control set(black)
	Ordering code	CM3PF06-P4
	Type	CM3PF flat type control set(yellow)
Applicable products		CM3PF05 CM3PF06 CM3PF08

Selector type(HS)



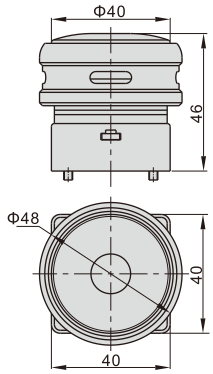
Model		Selector type（HS）
How to order	Ordering code	CM3HS06-P1
	Type	CM3HS selector type control set(green)
	Ordering code	CM3HS06-P2
	Type	CM3HS selector type control set(red)
	Ordering code	CM3HS06-P3
	Type	CM3HS selector type control set(black)
	Ordering code	CM3HS06-P4
	Type	CM3HS selector type control set(yellow)
Applicable products		CM3HS05 CM3HS06 CM3HS08

Latching type(PL)



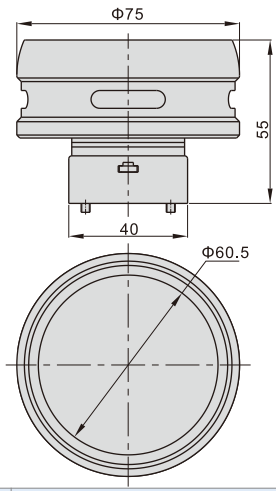
Model		Latching type(PL)
How to order	Ordering code	CM3PL06-P2
	Type	CM3PL latching type control set(red)
Applicable products		CM3PL05 CM3PL06 CM3PL08

Mushroom type(with guard)(PMS)



Model		Mushroom type(with guard)（PMS）
How to order	Ordering code	CM3PMS06-P1
	Type	CM3PMS mushroom type control set(green with guard)
	Ordering code	CM3PMS06-P2
	Type	CM3PMS mushroom type control set(red with guard)
	Ordering code	CM3PMS06-P3
	Type	CM3PMS mushroom type control set(black with guard)
	Ordering code	CM3PMS06-P4
	Type	CM3PMS mushroom type control set(yellow with guard)
Applicable products		CM3PMS05 CM3PMS06 CM3PMS08

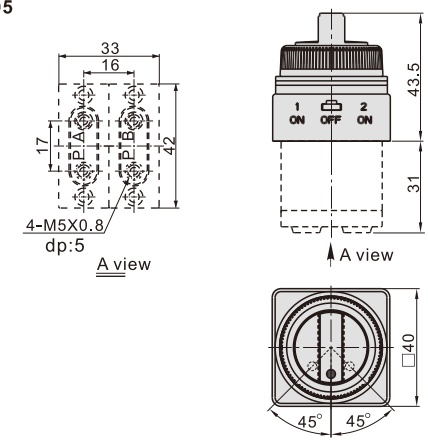
Big mushroom type(with guard)(PMX)



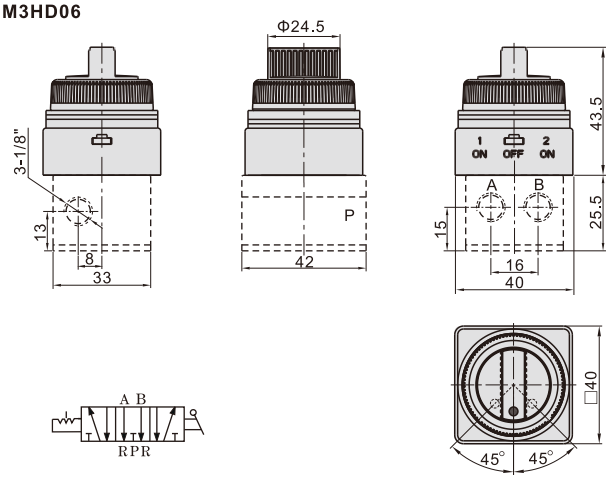
Model		Big mushroom type(with guard)(PMX)
How to order	Ordering code	CM3PMX06-P1
	Type	CM3PMX big mushroom type control set(green with guard)
	Ordering code	CM3PMX06-P2
	Type	CM3PMX big mushroom type control set(red with guard)
	Ordering code	CM3PMX06-P3
	Type	CM3PMX big mushroom type control set(black with guard)
	Ordering code	CM3PMX06-P4
	Type	CM3PMX big mushroom type control set(yellow with guard)
Applicable products		CM3PMX05 CM3PMX06 CM3PMX08

Double-selector type(HD)

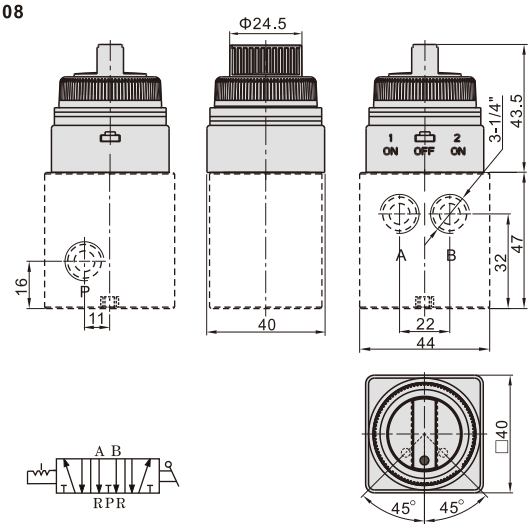
CM3HD05



CM3HD06



CM3HD08



Model		Double-selector type（HD）
How to order	Ordering code	CM3HD06-P1
	Type	CM3HD double-selector type control set(green)
	Ordering code	CM3HD06-P2
	Type	CM3HD double-selector type control set(red)
	Ordering code	CM3HD06-P3
	Type	CM3HD double-selector type control set(black)
	Ordering code	CM3HD06-P4
	Type	CM3HD double-selector type control set(yellow)
Applicable products		CM3HD05 CM3HD06 CM3HD08

Note: CM3HD control joint can be ordered individually, but should be matched with the body of CM3HD.



Specification

Model	ZM3R	ZM3J	ZM3P
Operating	External control direct acting type		
Fluid	Air (to be filtered by 40 μm filter element)		
Pressure range	-0.1~1.0MPa(-1~10bar)(-15~145psi)		
Proof pressure	1.5MPa(15bar)(215psi)		
Temperature	-20~70℃		
Valve type	3/2 Way		
Orifice size	6.0mm²(Cv=0.34)		
Port size [Note1]	1/8"		
Lubrication [Note2]	Not required		
Material of body	Aluminum alloy		

[Note1] G thread is available.

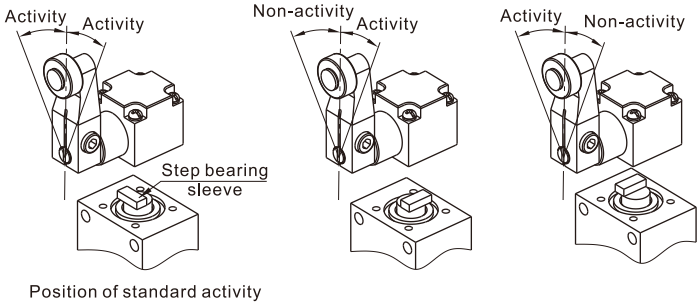
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. It is suggested to use ISO VG32 lubricant or the oil with the same grade.

Symbol

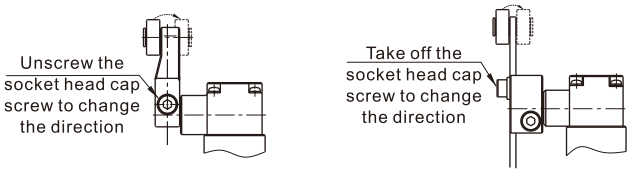


Product feature

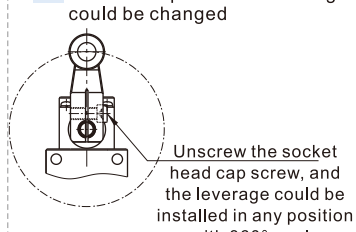
1. The activity direction could be changed(Only adapt to standard type, large angle type unavailable)



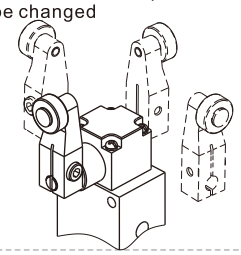
2. The rolling wheel could be installed at the inside of leverage



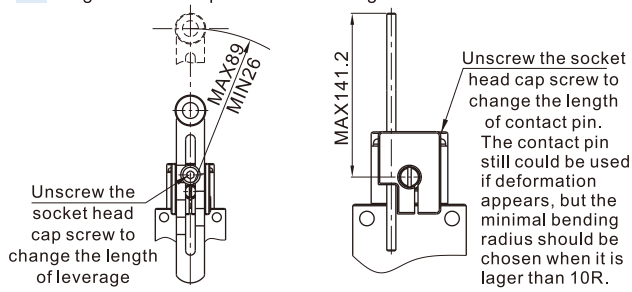
3. Installation position of leverage could be changed



4. Direction of head part could be changed



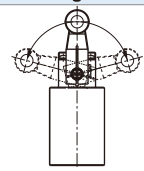
5. Length of contact pin could be changed



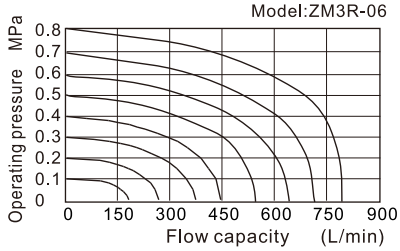
Ordering code

ZM3 R 06 W G

(1) (2) (3) (4) (5)

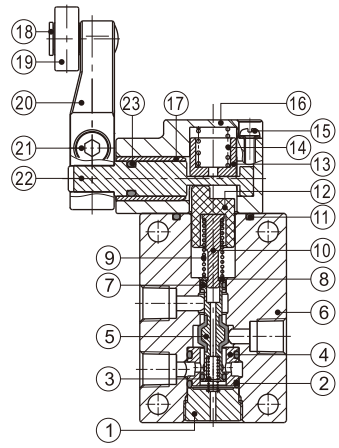
①Valve's type	②Model	③Port size	④Extreme angle of opening and closing of control head	⑤Thread type
ZM3: ZM type 3/2 Way	R: Roller type J: Adjustable roller type P: Contact pin adjustable roller type	06: 1/8"	Blank: Standard type W: Large angle type 	G: G Thread

Flow chart



Inner structure

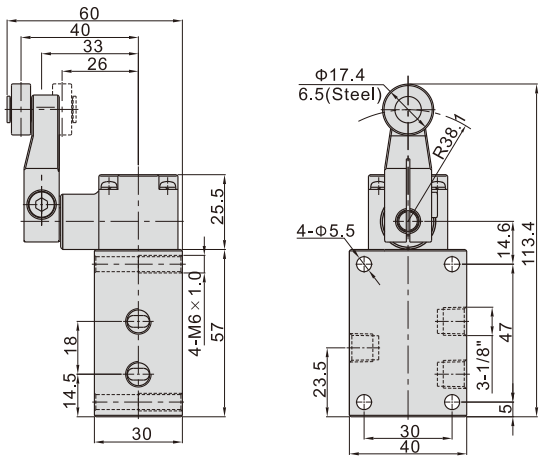
ZM3R



No.	Item	No.	Item
1	Bottom cover	13	Spring holder
2	O-ring	14	Spring
3	Spring	15	Screw
4	Spacer	16	Front cover
5	Spool	17	Bushing
6	Body	18	Shaft
7	O-ring	19	Roller
8	Spring washer	20	Rocker arm
9	Spring	21	Screw
10	Mandril	22	Rotation axis
11	O-ring	23	O-ring
12	Bushing		

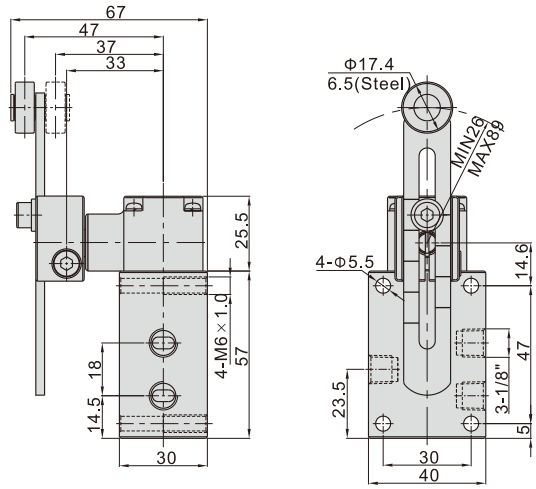
Dimensions

ZM3R



Model\Item	F.O.F	P.T.	O.T.	T.T.
ZM3R06	20N	20°	30°	50°
ZM3R06-W	20N	25°	50°	75°

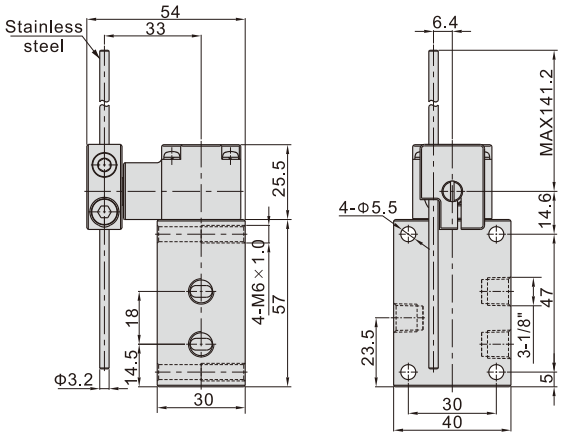
ZM3J



Model\Item	F.O.F [Note1]	P.T.	O.T.	T.T.
ZM3J06	20N	20°	30°	50°
ZM3J06-W	20N	25°	50°	75°

[Note1] When the length of leverage is 38.1mm

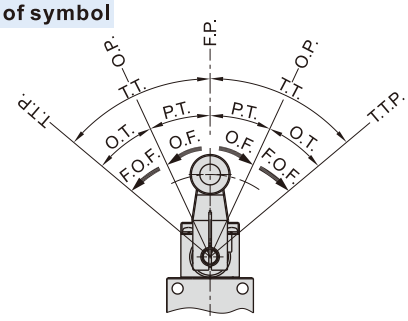
ZM3P



Model\Item	F.O.F [Note1]	P.T.	O.T.	T.T.
ZM3P06	2.3N	20°	30°	50°
ZM3P06-W	2.3N	25°	50°	75°

[Note1] When the length of leverage is 141.2mm

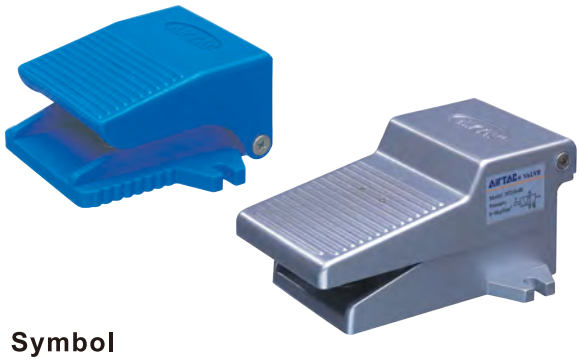
Description of symbol



F.P. Free position: the position of control head when no external force applied;
O.P. Activity position: the position when the control head is applied with external force and the valve is switched;
T.T.P. Extreme position of actuation: position of control head when it is pushed until end position;
O.F. Actuation power: when driving from free position to actuation position, the operation power applied on control head;
F.O.F. Extreme actuation power: when driving from free position to extreme actuation position, the operation power applied on control head;
P.T. Free route: movement distance or rotation angle from free position of control head to actuation position;
O.T. Actuation route: movement distance or rotation angle from actuation position of control head to extreme actuation position;
T.T. Total route: movement distance or rotation angle from free position of control head to extreme actuation position;

Foot pedal valve(3/2way)

3F, 3FM Series



Specification

Model	3FM210-M5	3F210-06	3FM210-06	3F210-08	3FM210-08
Fluid	Air (to be filtered by 40 μm filter element)				
Operating	Acting type controlled by foot normally closed				
Port size[Note1]	M5	1/8"	1/8"	1/4"	1/4"
Valve type	3/2 Way				
Pressure range	0~1.0MPa(0~145psi)				
Proof pressure	1.5MPa(215psi)				
Temperature	-20~70℃				
Material of body	3FM:Plastic; 3F:Aluminum alloy				
Lubrication	Not required				

[Note1] G thread is available.

Symbol

Without lock



With lock



Product feature

1. Direct acting and normally closed type.
2. The 3F series has aluminum foot pedal and 3FM series has plastic foot pedal, in direct acting type, horizontal and compact structure.
3. If the duration of direction-change is long, the valves with lock may be selected.
4. The clamping framework is steady and reliable that it is easy and quick to unlock. However, with the limitation of the dimension of structure, it can not bear frequent strong impact.

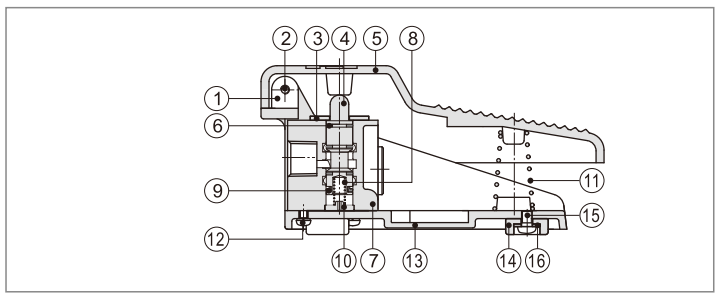
Ordering code

3F210 08 L G

① ② ③ ④

①Model	②Port size	③Note	④Thread type	
3FM210: 3/2 way foot pedal valve (mini type)	M5: M5 06: 1/8" 08: 1/4"	No this code	M5	1/8" 1/4"
			No this code	G: G Thread
3F210: 3/2 way foot pedal valve	06: 1/8" 08: 1/4"	Blank: Without lock L: With lock		

Inner structure

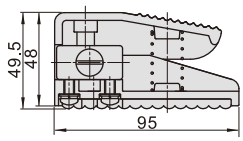


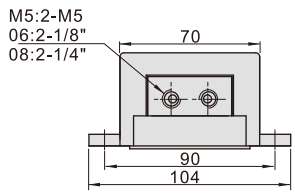
No.	Item	No.	Item	No.	Item
1	Pin	7	Body	13	Base
2	Fixed screw	8	Spring	14	Base pad
3	Fixed plate	9	E clip	15	Fixed screw
4	Spool	10	Spring holder	16	Clip
5	Pedal	11	Override spring		
6	O-ring	12	Fixed screw		

Note Lockable type should be added grease periodically to ensure the lock mechanism can work regularly

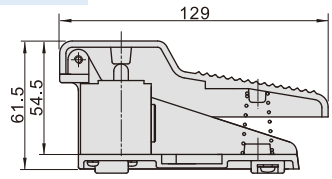
Dimensions

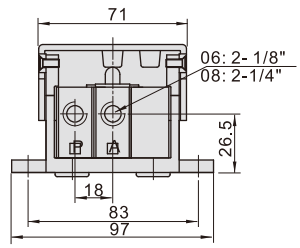
3FM210



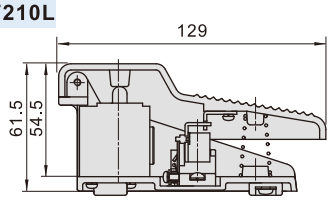


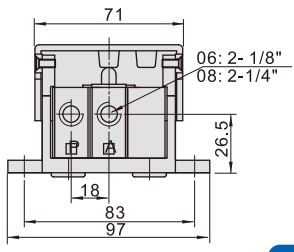
3F210





3F210L





Foot pedal valve(5/2way)

4F Series

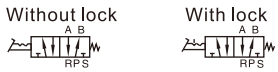


Specification

Model	4F210-08	4F210-08L	4F210-08F	4F210-08LF
Fluid	Air (to be filtered by 40 μm filter element)			
Operating	Acting type controlled by foot			
Port size [Note1]	1/4"			
Valve type	5/2 Way			
Pressure range	0~1.0MPa(0~145psi)			
Proof pressure	1.5MPa(215psi)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Lubrication	Not required			

[Note1] G thread is available.

Symbol



Product feature

1. The aluminum foot pedal is designed with direct acting, which is steady and reliable.
2. If the duration of direction-change is long, the valves with lock may be selected.
3. The clamping framework is steady and reliable that it is easy and quick to unlock. However, with the limitation of the dimension of structure, it can not bear frequent strong impact.
4. Plastic guard with high strength may be selected.

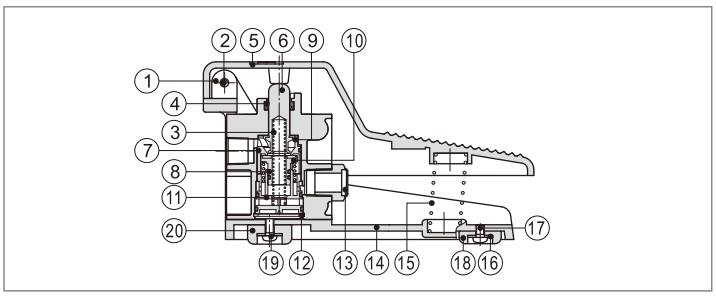
Ordering code

4F210 08 L G

1 2 3 4

①Model	②Port size	③Note	④Thread type
4F210: 5/2 way foot pedal valve	08: 1/4"	Blank: Without lock L: With lock F: With guard LF: With lock and guard	G: G Thread

Inner structure

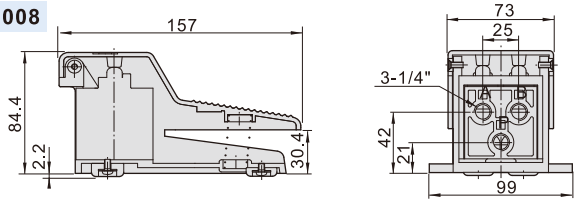


No.	Item	No.	Item	No.	Item	No.	Item
1	Pin	6	Spool	11	Bottom cover	16	Washer
2	Screw	7	O-ring	12	C clip	17	Screw
3	Spring	8	O-ring	13	Silencer	18	Base pad
4	E clip	9	Front cover	14	Base	19	Screw
5	Pedal	10	Piston	15	Pedal spring	20	Base pad

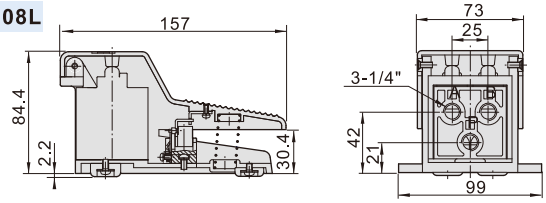
Note! Lockable type should be added grease periodically to ensure the lock mechanism can work regularly.

Dimensions

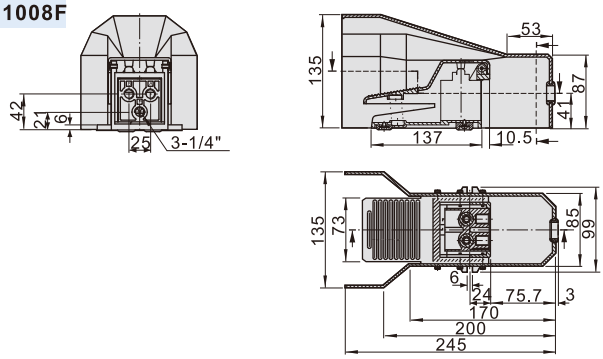
4F21008



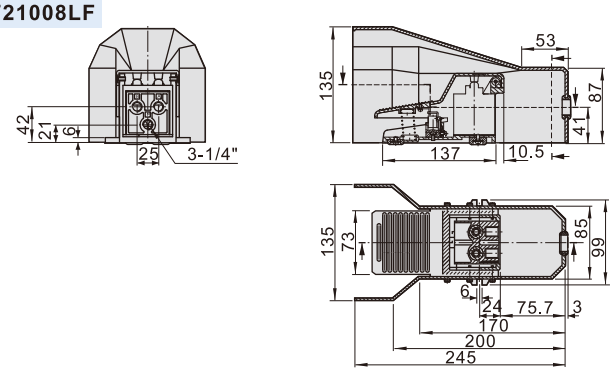
4F21008L



4F21008F



4F21008LF



Flow control valve

ASC Series



Specification

Model		ASC100-06	ASC200-08	ASC300-10	ASC300-15
Fluid		Air (to be filtered by 40 μm filter element)			
Port size [Note1]		1/8"	1/4"	3/8"	1/2"
Pressure range		0.05~0.95MPa(7~135psi)			
Proof pressure		1.5MPa(215psi)			
Temperature		-20~70℃			
Material of body		Aluminum alloy			
Flow (L/min)	Control flow	200	450	1250	1650
	Free flow	400	800	1500	2500

[Note1] G thread is available.

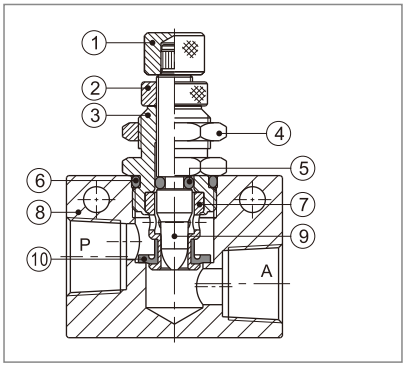
Symbol



Product feature

1. Small and compact structure.
2. Allows air to exhaust and cut off air flow. The adjustment screw is both sensitive and precise.
3. Can be mounted in various position to facilitate installation and application.

Inner structure



No.	Item
1	Adjustment cap
2	Clamping cap
3	Throttle body
4	Hexagon nut
5	O-ring
6	O-ring
7	Throttle sheath
8	Body
9	Throttle column
10	Spool O-ring

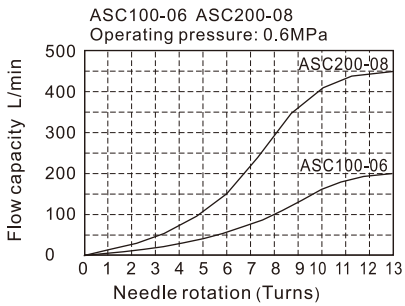
Ordering code

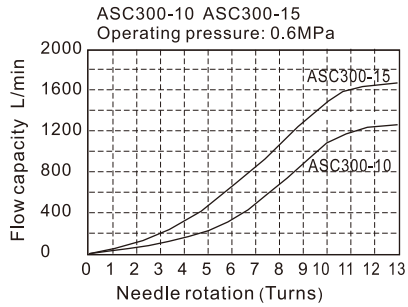
ASC 300 10 G

1 2 3 4

①Model	②Code	③Port size	④Thread type
ASC: Flow control valve	100: 100 series	06: 1/8"	G: G Thread
	200: 200 series	08: 1/4"	
	300: 300 series	10: 3/8"	
		15: 1/2"	

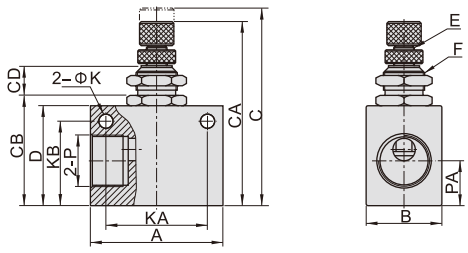
Flow chart



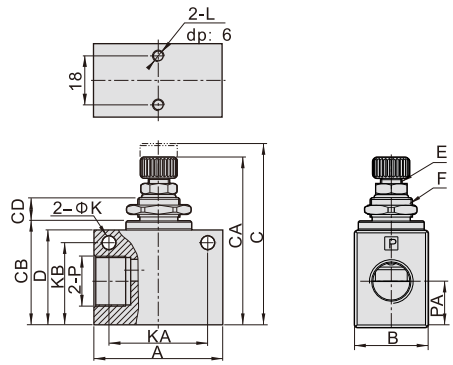


Dimensions

ASC100\ASC200



ASC300



Model\Item	A	B	C	CA	CB	CD	D	E	F	K	KA	KB	L	P	PA
ASC10006	32	18	52.5	47	26	8.6	23	M6×0.5	M12×0.75	4.3	22	18	M4×0.7	1/8"	10
ASC20008	36	18	56.5	51	30	8.6	27	M6×0.5	M12×0.75	4.3	26	23	M4×0.7	1/4"	13.5
ASC30010	50	28	74	65	40.5	10	37	M8×0.75	M16×1.0	5.3	35	32	M4×0.7	3/8"	17.5
ASC30015	50	28	74	65	40.5	10	37	M8×0.75	M16×1.0	5.3	35	32	M4×0.7	1/2"	17.5

Non-return valve

NRV Series

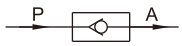


Specification

Model	NRV06	NRV08	NRV10	NRV15	NRV20	NRV25
Fluid	Air (to be filtered by 40 μm filter element)					
Port size [Note1]	1/8"	1/4"	3/8"	1/2"	3/4"	1"
Orifice size mm^2(Cv valve)	18(1.0)	27(1.5)	60(3.33)	73(4.06)	230(12.78)	260(14.44)
Pressure range	0.02~1.0MPa(2.9~145psi)					
Proof pressure	1.5MPa(215psi)					
Temperature	-20~70℃					
Material of body	Aluminum alloy					

[Note1] G thread is available.

Symbol

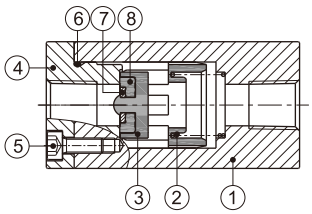


Product feature

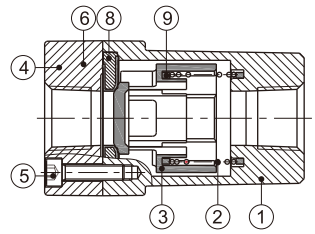
1. There are many port sizes: 1/8", 1/4", 3/8", 1/2", 3/4", 1".
2. It allows the fluid to flow in one direction **ONLY**.
3. It is prevent backflow due to sudden drop in pressure or decrease in air consumption .
4. There is large valid area of section.
5. The spool is made of POM, valve's core sealed with rubber, and it has a compact structure.

Inner structure

NRV06\NRV08



NRV10~25



No.	Item
1	Body
2	Spring
3	Spool
4	End cover
5	Screw
6	O-ring
7	Washer
8	Gasker washer
9	Bumper

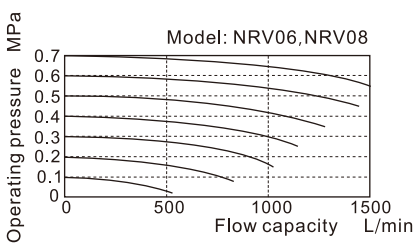
Ordering code

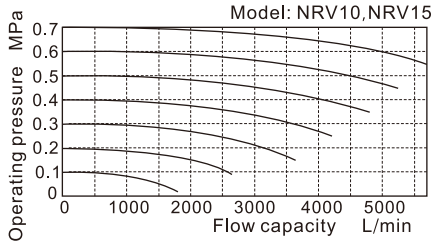
NRV 08 G

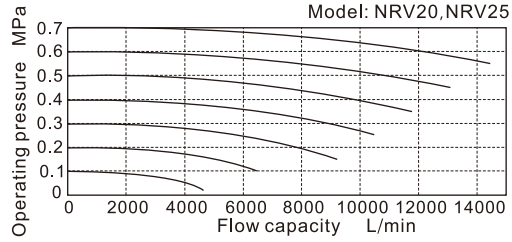
1 2 3

①Model	②Port size	③Thread type
NRV: Non-return valve	06: 1/8" 08: 1/4" 10: 3/8" 15: 1/2" 20: 3/4" 25: 1"	G: G Thread

Flow chart

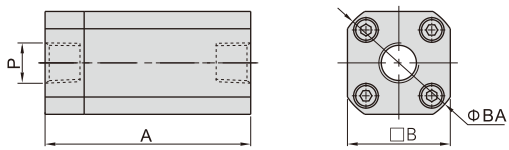






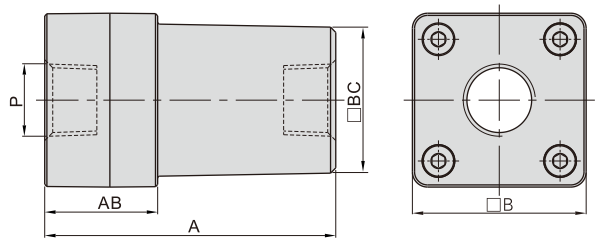
Dimensions

NRV06\NRV08



Model\Item	A	AB	B	BA	BC	P
NRV06	50	-	25	30	-	1/8"
NRV08	50	-	25	30	-	1/4"
NRV10	67	26	40	-	33.6	3/8"
NRV15	67	26	40	-	33.6	1/2"
NRV20	95	31.5	52	-	46.7	3/4"
NRV25	95	31.5	52	-	46.7	1"

NRV10~25



Pilot no-return valve

PCV series



Specification

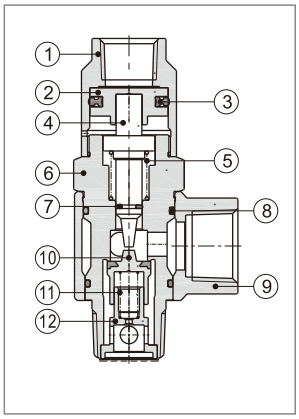
Model	PCV06	PCV08	PCV10	PCV15	PCV06F	PCV08F	PCV10F	PCV15F
Fluid	Air(to be filtered by 40μm filter element)							
Operating pressure range	0.15~1.0MPa							
Proof pressure	1.5MPa							
Temperature	-20~70(℃)							
Operating frequency	6(Cycle/minute)		40(Cycle/minute)		60(Cycle/minute)		40(Cycle/minute)	
Port size [Note1]	1/8"	1/4"	3/8"	1/2"	1/8"	1/4"	3/8"	1/2"
Pilot port size	M5X0.8	1/8"	1/4"	1/4"	Φ6	Φ6	Φ8	Φ8
Weight (g)	54.6	94.8	145	189	54.2	90.6	143.4	187.6

[Note1] G thread is available.

Symbol



Inner structure



No.	Item	Material
1	Pilot body	Aluminum alloy
2	Piston	Aluminum alloy
3	Gasket	NBR
4	Spool	Brass or carbon steel
5	Spring	SUS304
6	Body	Brass
7	Spool O-ring	NBR
8	O-ring	NBR
9	Conversion fitting	Aluminum alloy
10	Plunger	Aluminum alloy+NBR
11	Spring	SUS304
12	Base	Aluminum alloy

Product feature

1. Can be used for safety loop of pressure holding.
2. Can make cylinder momentary stop, accurate orientation.
3. Can be used special loop.
4. Fitting joint type is used for pilot port, which saved space and improve efficiency of installation.

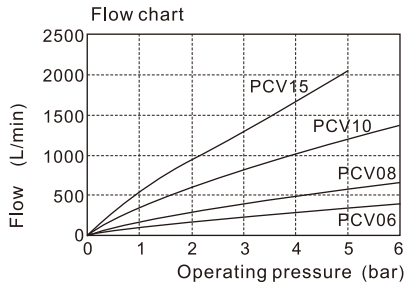
Ordering code

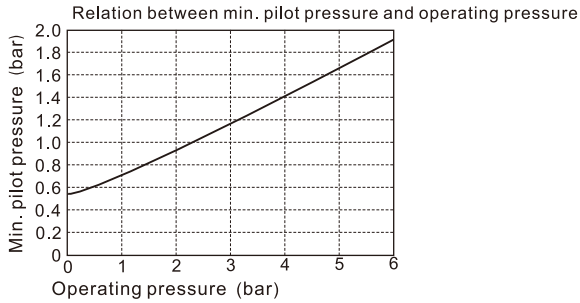
PCV 06 □ G

1 2 3 4

①Model	②Port size	③Pilot port type			④Thread type
		Pilot port type	Pilot port size	Inlet/outlet port size	
PCV: Pilot no-return valve	06: 1/8" 08: 1/4" 10: 3/8" 15: 1/2"	Blank: Female thread	M5X0.8	1/8"	G: G Thread
			1/8"	1/4"	
			1/4"	3/8", 1/2"	
		F: Fitting	Φ6	1/8", 1/4"	
			Φ8	3/8", 1/2"	

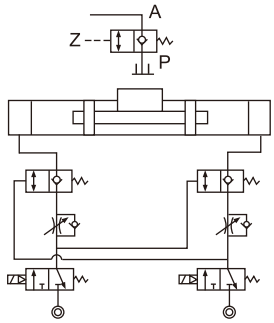
Flow chart, Relation between min. pilot pressure and operating pressure



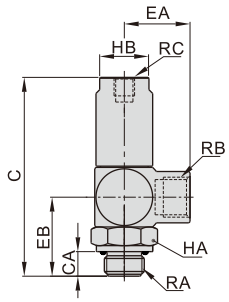


Typical application

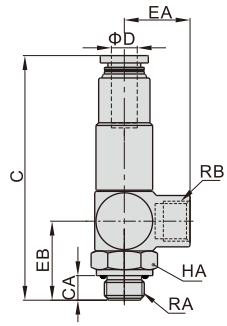
Accurate orientation



Dimensions



Female thread



Fitting

Model\Item	C	CA	D	EA	EB	HA	HB	RA	RB	RC
PCV06G	48.5	5.5	-	16	19	14	12	G1/8	G1/8	M5X0.8
PCV08G	59	6.5	-	20.3	24	17	14	G1/4	G1/4	G1/8
PCV10G	74.5	7.5	-	25	30.5	22	17	G3/8	G3/8	G1/4
PCV15G	79.5	9	-	28	34.5	24	19	G1/2	G1/2	G1/4
PCV06FG	58.5	5.5	6	16	19	14	-	G1/8	G1/8	-
PCV08FG	67	6.5	6	20.3	24	17	-	G1/4	G1/4	-
PCV10FG	82	7.5	8	25	30.5	22	-	G3/8	G3/8	-
PCV15FG	87	9	8	28	34.5	24	-	G1/2	G1/2	-

Compendium of Fluid control valve

P165	Product feature	Photo	P169	Product feature	Photo
2WA Series direct-acting or internally piloted and normally closed	●Shut-off structure or piston piloted structure ●Wide operating pressure range ●Body material: Brass ●Apply to various fluids ●Terminal and Grommet ●2/2 way		2KWA Series direct-acting or internally piloted and normally opened	●Shut-off structure or piston piloted structure ●Wide operating pressure range ●Body material: Brass ●Apply to various fluids ●Terminal and Grommet ●2/2 way	
P173	Product feature	Photo	**P177**	Product feature	Photo
2SA Series direct-acting or internally piloted and normally closed	●Shut-off structure or piston piloted structure ●Wide operating pressure range ●Body material: SUS304 ●Apply to various fluids ●Terminal and Grommet ●2/2 way		2KSA Series direct-acting or internally piloted and normally opened	●Shut-off structure or piston piloted structure ●Wide operating pressure range ●Body material: SUS304 ●Apply to various fluids ●Terminal and Grommet ●2/2 way	
P182	Product feature	Photo	**P186**	Product feature	Photo
2S Series direct-acting or internally piloted and normally closed	●Shut-off structure or piston piloted structure ●Wide operating pressure range ●Body material: SUS304 ●Apply to various fluids ●Terminal and Grommet ●2/2 way		2KS Series direct-acting or internally piloted and normally opened	●Shut-off structure or piston piloted structure ●Wide operating pressure range ●Body material: SUS304 ●Apply to various fluids ●Terminal and Grommet ●2/2 way	
P190	Product feature	Photo	**P194**	Product feature	Photo
2W Series direct-acting or internally piloted and normally closed	●Shut-off structure or piston piloted structure ●Wide operating pressure range ●Body material: Brass ●Apply to various fluids ●Terminal and Grommet ●2/2 way		2KW Series direct-acting or internally piloted and normally opened	●Shut-off structure or piston piloted structure ●Wide operating pressure range ●Body material: Brass ●Apply to various fluids ●Terminal and Grommet ●2/2 way	
P198	Product feature	Photo	**P202**	Product feature	Photo
2L Series direct-acting or internally piloted and normally closed	●Shut-off structure or piston piloted structure ●Wide operating pressure range ●Body material: SUS304 ●Apply to various fluids and high temp. ●Terminal and Grommet ●2/2 way		2KL Series direct-acting or internally piloted and normally opened	●Shut-off structure or piston piloted structure ●Wide operating pressure range ●Body material: SUS304 ●Apply to various fluids and high temp. ●Terminal and Grommet ●2/2 way	
P207	Product feature	Photo	**P209**	Product feature	Photo
2V Series	●Direct-acting and diaphragm piloted optional ●Body material: Stainless steel or brass ●Apply to various fluids ●Terminal and Grommet ●2/2 way		2J Series angle seat valve	●Air piloted structure ●Body and pitman material: Stainless steel ●The structure of valve is angles at 45° degrees with streamline inner chamber design ●Apply to various fluids and high temp.	

Installation and Application

1. Before installing, be sure the valve hasn't been damaged via transportation.
2. The coil must be pure vertical, the inlet and outlet on body must be horizontal. it's suggested to use the medium lubricated by 40μm filter element. Be aware of the flow direction and port size.
3. Please notice whether the installation condition accords with technical requirements (such as “voltage”,“actuation frequency”, “working pressure” and “scope of application temperature”), then the equipment can be installed and used.
4. Take measure to avoid vibration and frozen.
5. Before using the fittings and tubes make sure they are clean. When connecting tofittings, be sure the PTFE Thread Seal Tape is used correctly.
6. To keep the dust away, Default paragraph font;Never forget to install dirt-proof boot in air intake and outlet during dismounting.

Fluid control valve(2/2way)

2WA Series (Direct-acting and normally closed)



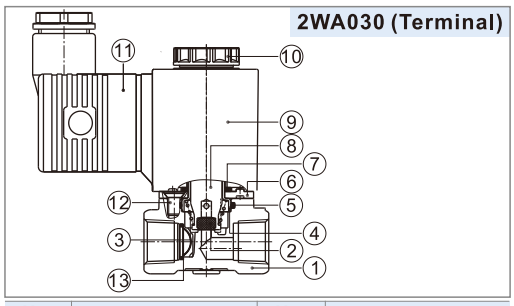
Symbol



Product feature

1. Direct acting and normally closed type 2/2 way fluid valve. Its high sensibility allows it to change direction quickly;
2. It has wide pressure range, including extra high pressure (X), high pressure (H), standard , large volume(L) and extra large volume (T);
3. It is compact, small size and light weight. Easy to install and dismantle.
4. The valve body is made of brass . Its coil has a Heat resistance classification of Class F. The standard seal material is FPM-F. Please contact us if other seal material are required.
5. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Inner structure



No.	Item	No.	Item
1	Body	8	Movable core
2	Airtight ring	9	Coil assembly
3	Spring	10	Coil nut
4	Steel bushing	11	Connecter
5	O-ring	12	Screw
6	Fixed plate	13	Filter [Note]
7	O-ring		

[Note] Extra large volume type has no filter element.

Specification

Model\Item		Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Max.operating pressure differentia		Proof pressure	
							MPa	psi	MPa	psi
2WAX030	-06	1/8"	1.5	0.10	1.8	245	3.0	450	5.0	750
	-08	1/4"				235				
2WAH030	-06	1/8"	2.0	0.18	3.0	245	2.0	300		
	-08	1/4"				235				
2WA030	-06	1/8"	3.0	0.33	6.0	245	1.0	150		
	-08	1/4"				235				
2WAL030	-06	1/8"	4.0	0.55	10.0	245	0.5	75		
	-08	1/4"				235				
2WAT030	-06	1/8"	6.0	1.10	12.0	245	0.1	15		
	-08	1/4"				235				
2WAX050	-10	3/8"	3.0	0.34	6.1	530	3.0	450		
	-15	1/2"				510				
2WAH050	-10	3/8"	4.0	0.55	10.0	530	2.0	300		
	-15	1/2"				510				
2WA050	-10	3/8"	5.0	0.83	15.0	530	1.0	150		
	-15	1/2"				510				
2WAL050	-10	3/8"	7.0	1.40	25.0	530	0.5	75		
	-15	1/2"				510				
2WAT050	-10	3/8"	10.0	2.20	40.0	530	0.1	15		
	-15	1/2"				510				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, 2WA030 series grommet valve's weight is 10g less than terminal's. 2WA050series grommet valve's weight is 20g less than terminal's.

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2WA□030	CDA110 CLA110	AC	50	±15%	Terminal (CDA)	10.0VA	Class F	35
			60			8.0VA		30
		DC	–	±10%		6.5W		30
2WA□050	CDA160 CLA160	AC	50	±15%	Grommet (CLA)	25.0VA		60
			60			22.0VA		55
		DC	–	±10%		12.0W		40

Valve's specification

Acting	Direct acting				
Initial state	Normally closed				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less ; [Note2] 50CST or less.

Ordering code

Ordering code of valves

2WA L 030 08 A □ G

① ② ③ ④ ⑤ ⑥ ⑦

①Model	②Pressure condition	③Size series	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
2WA: 2/2 way direct-acting and normally closed	X: Extra high pressure H: High pressure Blank: Standard L: Large volume T: Extra large volume	030: 030 Series	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G
		050: 050 Series	10: 3/8" 15: 1/2"			

[Note] The wire length is 0.5m.

Ordering code of accessories

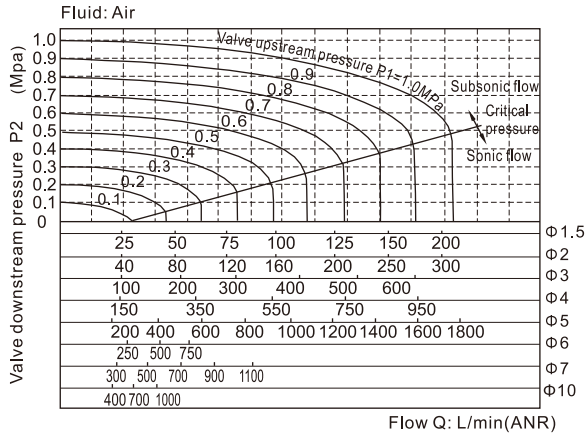
F-2WA030 LB

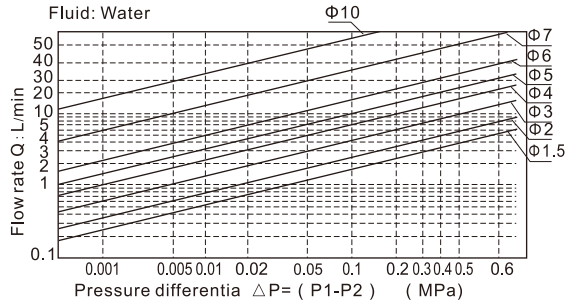
① ② ③

①Accessories code	②Valve type	③Accessories type
F: Mounting accessories	2WA030: 030 Series valve 2WA050: 050 Series valve	LB: LB Type

2WA Series (Direct-acting and normally closed)

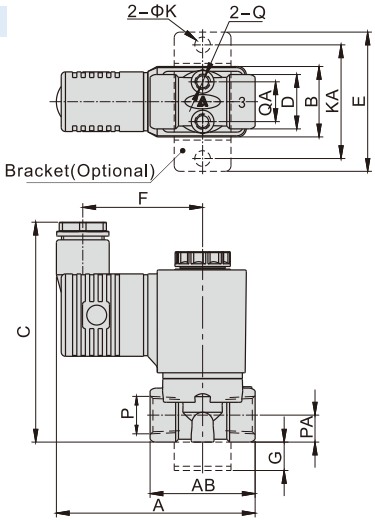
Flow chart



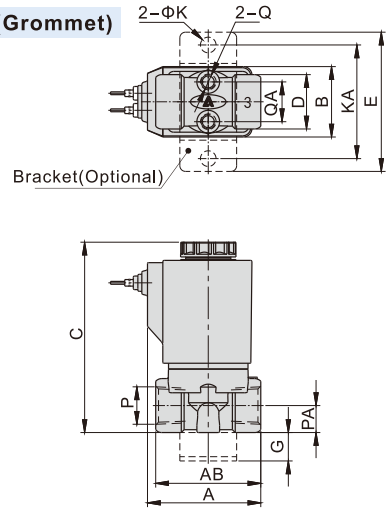


Dimensions

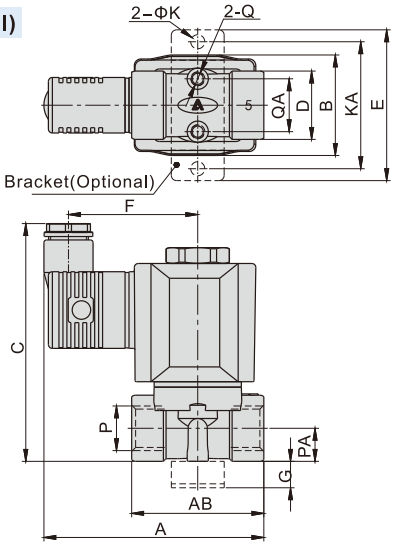
2WA□030 (Terminal)



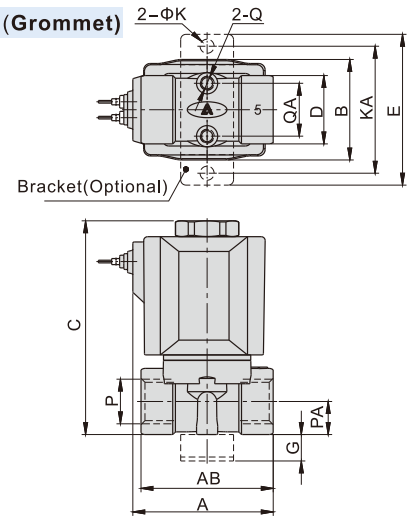
2WA□030 (Grommet)



2WA□050 (Terminal)



2WA□050 (Grommet)



Model\Item	A	AB	B	C	D	E	F	G	K	KA	P	PA	Q	QA
2WA□030-06	70	37	25	77.5	19	49	42	10	5.5	40	1/8"	9.5	M5	13.5
2WAT□030-06	71.5	39.5	25	77.5	19	49	42	10	5.5	40	1/8"	9.5	M5	13.5
2WA□030-08	70	37	25	77.5	19	49	42	10	5.5	40	1/4"	9.5	M5	13.5
2WAT□030-08	71.5	39.5	25	77.5	19	49	42	10	5.5	40	1/4"	9.5	M5	13.5
2WA□050-10	83	50	38	90	26	57	49	10	5.5	48	3/8"	12.5	M5	19.5
2WAT□050-10	84	51	38	93	26	57	49	10	5.5	48	3/8"	12.5	M5	19.5
2WA□050-15	83	50	38	90	26	57	49	10	5.5	48	1/2"	12.5	M5	19.5
2WAT□050-15	84	51	38	93	26	57	49	10	5.5	48	1/2"	12.5	M5	19.5

Model\Item	A	AB	B	C	D	E	G	K	KA	P	PA	Q	QA
2WA□030-06	40	37	25	67	19	49	10	5.5	40	1/8"	9.5	M5	13.5
2WAT□030-06	41.5	39.5	25	67	19	49	10	5.5	40	1/8"	9.5	M5	13.5
2WA□030-08	40	37	25	67	19	49	10	5.5	40	1/4"	9.5	M5	13.5
2WAT□030-08	41.5	39.5	25	67	19	49	10	5.5	40	1/4"	9.5	M5	13.5
2WA□050-10	53	50	38	81	26	57	10	5.5	48	3/8"	12.5	M5	19.5
2WAT□050-10	54	51	38	84	26	57	10	5.5	48	3/8"	12.5	M5	19.5
2WA□050-15	53	50	38	81	26	57	10	5.5	48	1/2"	12.5	M5	19.5
2WAT□050-15	54	51	38	84	26	57	10	5.5	48	1/2"	12.5	M5	19.5

Fluid control valve(2/2way)

2WA Series (Internally piloted and normally closed)



Specification

Model\Item	Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Operating pressure differentia		Proof pressure	
						MPa	psi	MPa	psi
2WA150-15	1/2"	15.0	5.50	100.0	575	Max: 1.0 Min: 0.05	Max: 150 Min: 10	1.5	220
2WA200-20	3/4"	20.0	9.50	170.0	735				
2WA250-25	1"	25.0	12.5	220.0	1035				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, grommet valve's weight is 10g less than terminal's.

Symbol



Product feature

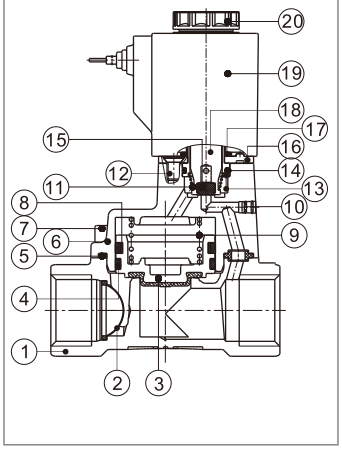
1. Indirect acting(Internal pilot) and normally closed type 2/2 way fluid valve. Its can change direction quickly and has large flow.
2. It is compact, small and light weight. Easy to install and dismantle;
3. The valve body is made of brass . The coil has a Heat resistance classification of Class F. The standard seal material is FPM-F. Please contact us if other seal material are required.
4. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2WA150 2WA200 2WA250	CDA110 CLA110	AC	50	±15%	Terminal (CDA) Grommet (CLA)	10.0VA	Class F	35
			60			8.0VA		30
		DC	-	±10%		6.5W		30

Inner structure

2WA150 (Grommet)



No.	Item
1	Body
2	Filter
3	Piston
4	Wear ring
5	O-ring
6	Cover
7	Screw
8	Spring
9	Spring
10	Spacer
11	Spring
12	Screw
13	Steel bushing
14	O-ring
15	Airtight ring
16	Fixed plate
17	O-ring
18	Movable core
19	Coil assembly
20	Coil nut

Valve's specification

Acting	Internally piloted				
Initial state	Normally closed				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less ; [Note2] 50CST or less.

Ordering code

Ordering code of valves

2WA 150 15 A □ G

1 2 3 4 5 6

①Model	②Orifice size	③Port size	④Voltage	⑤Electrical entry	⑥Thread type
2WA: 2/2 way internally piloted and normally closed	150: Φ15mm	15: 1/2"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet [Note]	G: G
	200: Φ20mm	20: 3/4"			
	250: Φ25mm	25: 1"			

[Note] The wire length is 0.5m.

Ordering code of accessories

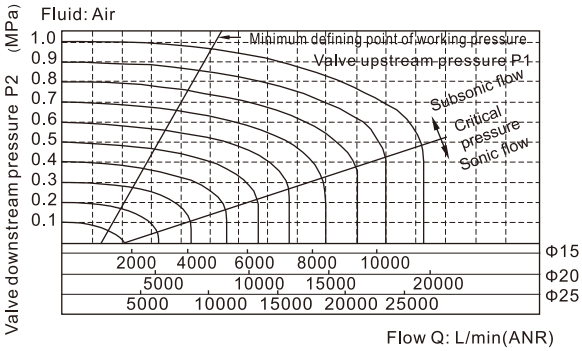
F–2WA150 LB

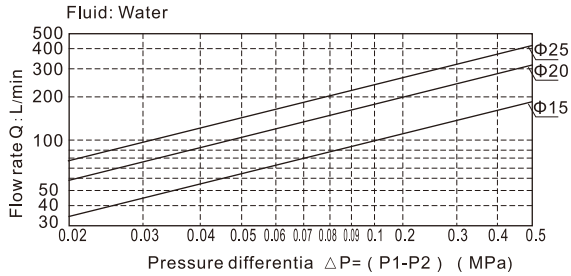
1 2 3

①Accessories code	②Valve type	③Accessories type
F: Mounting accessories	2WA150: 150 Series valve 2WA200: 200 Series valve 2WA250: 250 Series valve	LB: LB Type

2WA Series (Internally piloted and normally closed)

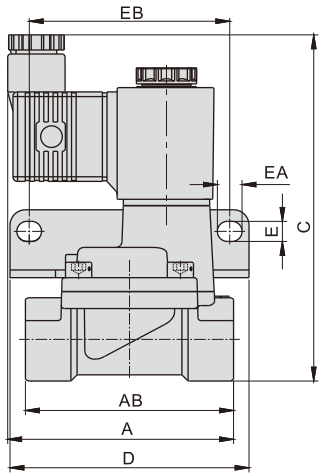
Flow chart

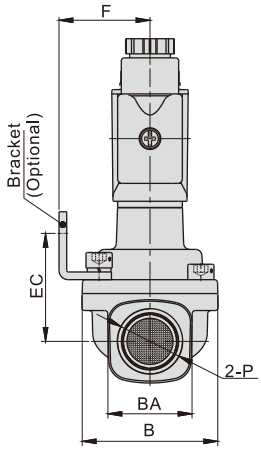




Dimensions

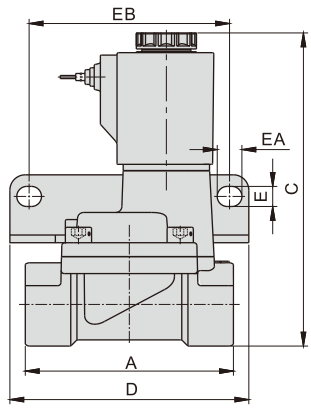
Terminal

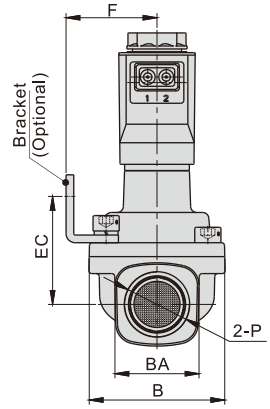




Model\Item	A	AB	B	BA	C	D	E	EA	EB	EC	F	P
2WA150-15	73.5	67.5	44	27.5	112	77.5	6.5	8	65	35	29.5	1/2"
2WA200-20	75.5	79.5	51	33	119	87.5	6.5	8	75	38	33	3/4"
2WA250-25	77.5	90	57	40	126	93	6.5	8	80	42	35	1"

Grommet





Model\Item	A	B	BA	C	D	E	EA	EB	EC	F	P
2WA150-15	67.5	44	27.5	102	77.5	6.5	8	65	35	29.5	1/2"
2WA200-20	79.5	51	33.5	109	87.5	6.5	8	75	38	33	3/4"
2WA250-25	90	57	40.5	116	93	6.5	8	80	42	35	1"

2KWA Series (Direct-acting and normally opened)



Symbol



Product feature

1. Direct acting and normally opened type 2/2 way fluid valve. Its high sensibility allows it to change direction quickly;
2. It has wide pressure range, including extra high pressure (X), high pressure (H), standard and large volume(L) to choose from;
3. It is compact, small size and light weight. Easy to install and dismantle.
4. The valve body is made of brass . Its coil has a Heat resistance classification of Class F. The standard seal material is FPM-F. Please contact us if other seal material are required.
5. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification

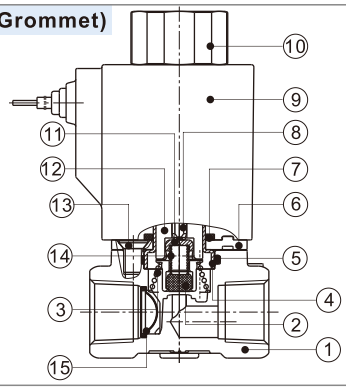
Model\Item		Port size [Note1]	Cv	Orifice size (Φmm)	Valid area or section (mm^2)	Weight [Note2](g)	Max.operating pressure differentia		Proof pressure	
							MPa	psi	Mpa	psi
2KWAX030	-06	1/8"	0.10	1.5	1.8	245	2.0	300	3.0	450
	-08	1/4"				235				
2KWAH030	-06	1/8"	0.18	2.0	3.0	245	1.5	220		
	-08	1/4"				235				
2KWA030	-06	1/8"	0.33	3.0	6.0	245	0.7	100		
	-08	1/4"				235				
2KWAL030	-06	1/8"	0.55	4.0	10.0	245	0.4	60		
	-08	1/4"				235				
2KWAX050	-10	3/8"	0.34	3.0	6.1	530	2.0	300		
	-15	1/2"				510				
2KWAH050	-10	3/8"	0.55	4.0	10.0	530	1.5	220		
	-15	1/2"				510				
2KWA050	-10	3/8"	0.83	5.0	15.0	530	0.7	100		
	-15	1/2"				510				
2KWAL050	-10	3/8"	1.40	7.0	25.0	530	0.4	60		
	-15	1/2"				510				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, 2KWA030 series grommet valve's weight is 10g less than terminal's. 2KWA050series grommet valve's weight is 20g less than terminal's.

Inner structure

2KWA030(Grommet)



No.	Item	No.	Item	No.	Item
1	Body	6	Fixed plate	11	Airtight bush
2	Airtight ring	7	O-ring	12	Electromagnet
3	Spring	8	Mandril	13	Screw
4	Coil axis	9	Coil assembly	14	Spring
5	O-ring	10	Coil nut	15	Filter

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2KWA□030	CDA110 CLA110	AC	50	±15%	Terminal (CDA) Grommet (CLA)	15.0VA	Class F	50
			60			11.0VA		40
		DC	-	±10%		6.5W		30
2KWA□050	CDA160 CLA160	AC	50	±15%		35.0VA		65
			60			30.0VA		60
		DC	-	±10%		12.0W		40

Valve's specification

Acting	Direct acting				
Initial state	Normally opened				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less ; [Note2] 50CST or less.

Ordering code

Ordering code of valves

2KWA H 030 08 A □ G

① ② ③ ④ ⑤ ⑥ ⑦

①Model	②Pressure condition	③Size series	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
2KWA: 2/2 way direct-acting and normally opened	X: Extra high pressure H: High pressure Blank: Standard L: Large volume	030: 030 Series	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G
		050: 050 Series	10: 3/8" 15: 1/2"			

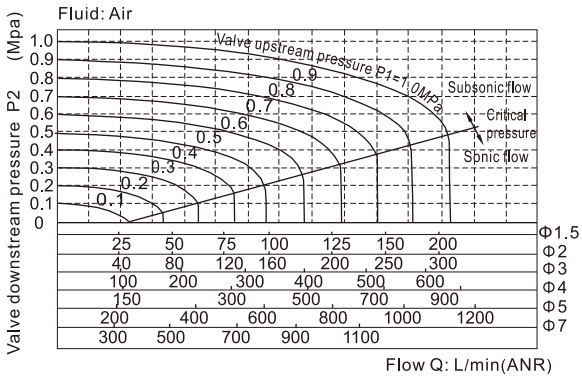
[Note] The wire length is 0.5m.

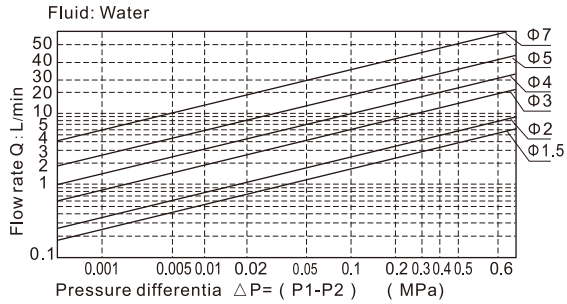
Ordering code of accessories

Ordering code of accessories is the same as 2WA series valve's,Please refer to P165 for details of ordering code.

2KWA Series (Direct-acting and normally opened)

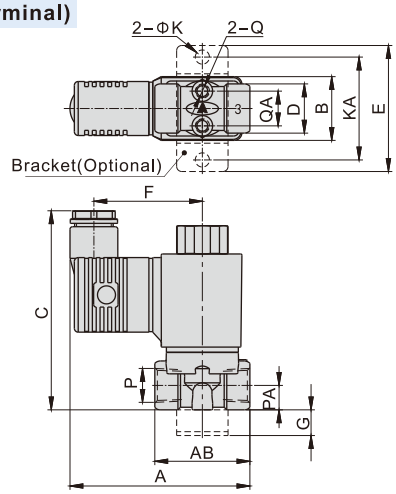
Flow chart



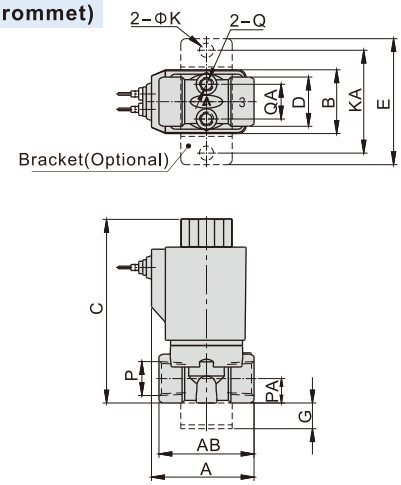


Dimensions

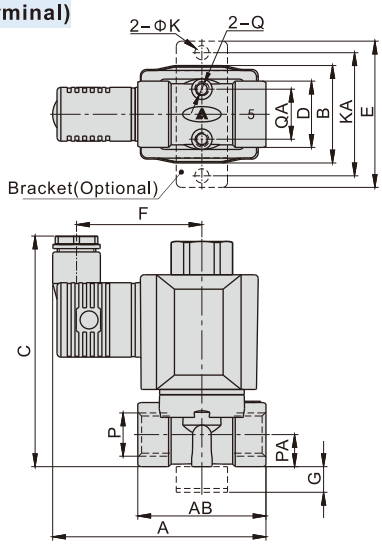
2KWA□030 (Terminal)



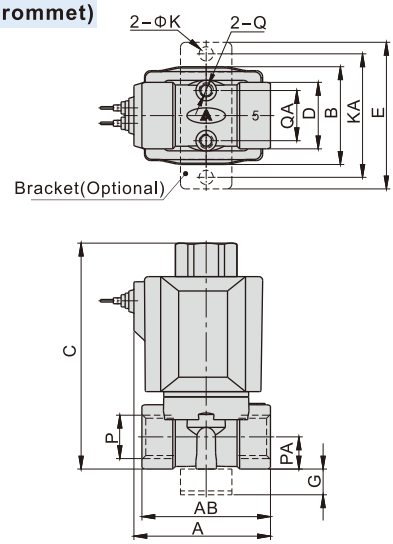
2KWA□030(Grommet)



2KWA□050(Terminal)



2KWA□050(Grommet)



Model\Item	A	AB	B	C	D	E	F	G	K	KA	P	PA	Q	QA
2KWA□030-06	70	37	25	77.5	19	49	42	10	5.5	40	1/8"	9.5	M5	13.5
2KWA□030-08	70	37	25	77.5	19	49	42	10	5.5	40	1/4"	9.5	M5	13.5
2KWA□050-10	83	50	38	90	26	57	49	10	5.5	48	3/8"	12.5	M5	19.5
2KWA□050-15	83	50	38	90	26	57	49	10	5.5	48	1/2"	12.5	M5	19.5

Model\Item	A	AB	B	C	D	E	G	K	KA	P	PA	Q	QA
2KWA□030-06	40	37	25	74	19	49	10	5.5	40	1/8"	9.5	M5	13.5
2KWA□030-08	40	37	25	74	19	49	10	5.5	40	1/4"	9.5	M5	13.5
2KWA□050-10	53	50	38	90	26	57	10	5.5	48	3/8"	12.5	M5	19.5
2KWA□050-15	53	50	38	90	26	57	10	5.5	48	1/2"	12.5	M5	19.5

Fluid control valve(2/2 way)

2KWA Series (Internally piloted and normally opened)



Specification

Model\Item	Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Operating pressure differentia		Proof pressure	
						MPa	psi	MPa	psi
2KWA150-15	1/2"	15.0	5.50	100.0	575	Max: 0.7 Min: 0.05	Max: 100 Min: 10	1.5	220
2KWA200-20	3/4"	20.0	9.50	170.0	735				
2KWA250-25	1"	25.0	12.5	220.0	1035				

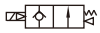
[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, grommet valve's weight is 10g less than terminal's.

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2KWA150 2KWA200 2KWA250	CDA110 CLA110	AC	50	±15%	Terminal (CDA) Grommet (CLA)	15.0VA	Class F	50
			60			11.0VA		40
		DC	-	±10%		6.5W		30

Symbol



Valve's specification

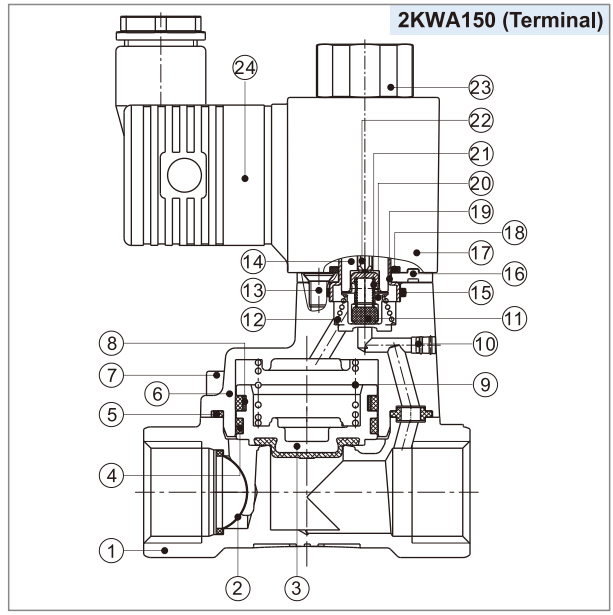
Acting	Internally piloted				
Initial state	Normally opened				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less ; [Note2] 50CST or less.

Product feature

1. Indirect acting(Internal pilot) and normally opened type 2/2 way fluid valve. Its can change direction quickly and has large flow.
2. It is compact, small and light weight. Easy to install and dismantle;
3. The valve body is made of brass . The coil has a Heat resistance classification of Class F. The standard seal material is FPM-F. Please contact us if other seal material are required.
4. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Inner structure



No.	Item
1	Body
2	Filter
3	Piston
4	Wear ring
5	O-ring
6	Cover
7	Screw
8	Bonnet spring
9	Spring
10	Bushing
11	Airtight ring
12	Spring
13	Screw
14	Electromagnet
15	O-ring
16	Fixed plate
17	Coil assembly
18	O-ring
19	Coil axis
20	Airtight ring
21	Spring
22	Mandril
23	Coil nut
24	Connector

Ordering code

Ordering code of valves

2KWA 150 15 A □ G

1 2 3 4 5 6

①Model	②Orifice size	③Port size	④Voltage	⑤Electrical entry	⑥Thread type
2KWA: 2/2 way internally piloted and normally opened	150: Φ15mm	15: 1/2"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet [Note]	G: G
	200: Φ20mm	20: 3/4"			
	250: Φ25mm	25: 1"			

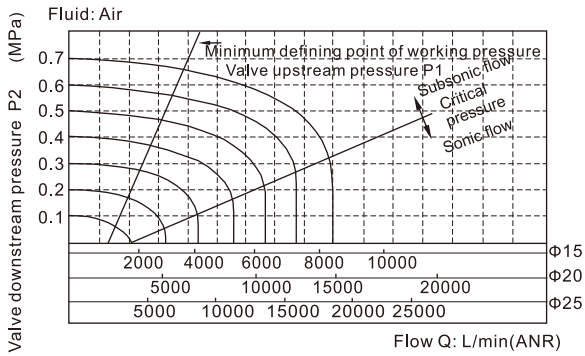
[Note] The wire length is 0.5m.

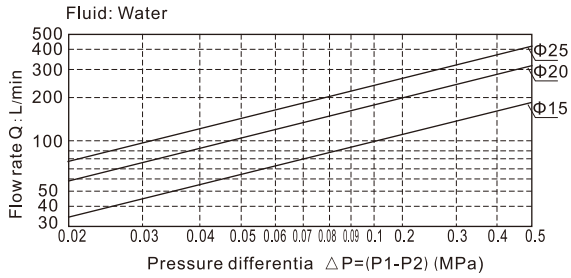
Ordering code of accessories

Ordering code of accessories is the same as 2WA series valve's, Please refer to P167 for details of ordering code.

2KWA Series (Internally piloted and normally opened)

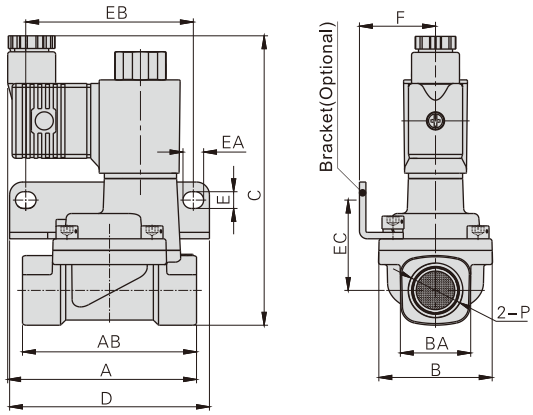
Flow chart





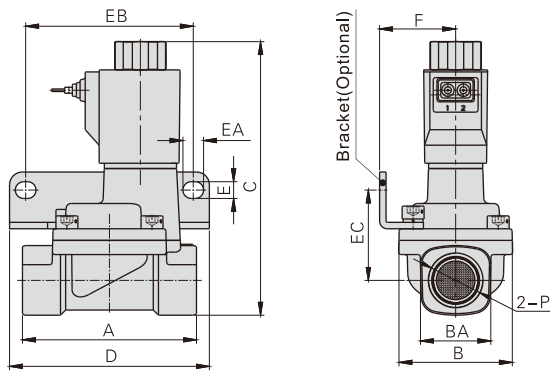
Dimensions

Terminal



Model\Item	A	AB	B	BA	C	D	E	EA	EB	EC	F	P
2KWA150-15	73.5	67.5	44	27.5	112	77.5	6.5	8	65	35	29.5	1/2"
2KWA200-20	75.5	79.5	51	33.5	119	87.5	6.5	8	75	38	33	3/4"
2KWA250-25	77.5	90	57	40.5	126	93	6.5	8	80	42	35	1"

Grommet



Model\Item	A	B	BA	C	D	E	EA	EB	EC	F	P
2KWA150-15	67.5	44	27.5	109	77.5	6.5	8	65	35	29.5	1/2"
2KWA200-20	79.5	51	33.5	116	87.5	6.5	8	75	38	33	3/4"
2KWA250-25	90	57	40.5	123	93	6.5	8	80	42	35	1"

Fluid control valve(2/2way)

2SA Series (Direct-acting and normally closed)



Symbol



Product feature

1. Direct acting and normally closed type 2/2 way fluid valve. Its high sensibilily allows it to change direction quickly;
2. It has wide pressure range, including extra high pressure (X), high pressure (H), standard , large volume(L) and extra large volume (T);
3. It is compact, small size and light weight. Easy to install and dismantle.
4. The valve body is made of SUS304 . Its coil has a Heat resistance classification of Class F. The standard seal material is FPM-F. Please contact us if other seal material are required.
5. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification

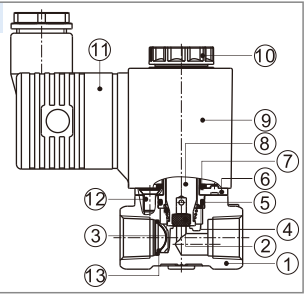
Model\Item		Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Max.operating pressure differentia		Proof pressure	
							MPa	psi	MPa	psi
2SAX030	-06	1/8"	1.5	0.10	1.8	245	3.0	450	5.0	750
	-08	1/4"				235				
2SAH030	-06	1/8"	2.0	0.18	3.0	245	2.0	300		
	-08	1/4"				235				
2SA030	-06	1/8"	3.0	0.33	6.0	245	1.0	150		
	-08	1/4"				235				
2SAL030	-06	1/8"	4.0	0.55	10.0	245	0.5	75		
	-08	1/4"				235				
2SAT030	-06	1/8"	6.0	1.10	12.0	245	0.1	15		
	-08	1/4"				235				
2SAX050	-10	3/8"	3.0	0.34	6.1	530	3.0	450		
	-15	1/2"				510				
2SAH050	-10	3/8"	4.0	0.55	10.0	530	2.0	300		
	-15	1/2"				510				
2SA050	-10	3/8"	5.0	0.83	15.0	530	1.0	150		
	-15	1/2"				510				
2SAL050	-10	3/8"	7.0	1.40	25.0	530	0.5	75		
	-15	1/2"				510				
2SAT050	-10	3/8"	10.0	2.20	40.0	530	0.1	15		
	-15	1/2"				510				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, 2SA030 series grommet valve's weight is 10g less than terminal's. 2SA050series grommet valve's weight is 20g less than terminal's.

Inner structure

2SA030(Terminal)



No.	Item	No.	Item	No.	Item
1	Body	6	Fixed plate	11	Connecter
2	Airtight ring	7	O-ring	12	Screw
3	Spring	8	Movable core	13	Filter [Note]
4	Steel bushing	9	Coil assembly		
5	O-ring	10	Coil nut		

[Note] Extra large volume type has no filter element.

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2SA□030	CDA110 CLA110	AC	50	±15%	Terminal (CDA) Grommet (CLA)	10.0VA	Class F	35
			60			8.0VA		30
		DC	-	±10%		6.5W		30
2SA□050	CDA160 CLA160	AC	50	±15%		25.0VA		60
			60			22.0VA		55
		DC	-	±10%		12.0W		40

Valve's specification

Acting	Direct acting				
Initial state	Normally closed				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less ; [Note2] 50CST or less.

Ordering code

Ordering code of valves

2SA L 030 08 A □ G

1 2 3 4 5 6 7

①Model	②Pressure condition	③Size series	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
2SA: 2/2 way direct-acting and normally closed	X: Extra high pressure H: High pressure Blank: Standard L: Large volume T: Extra large volume	030: 030 Series	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G
		050: 050 Series	10: 3/8" 15: 1/2"			

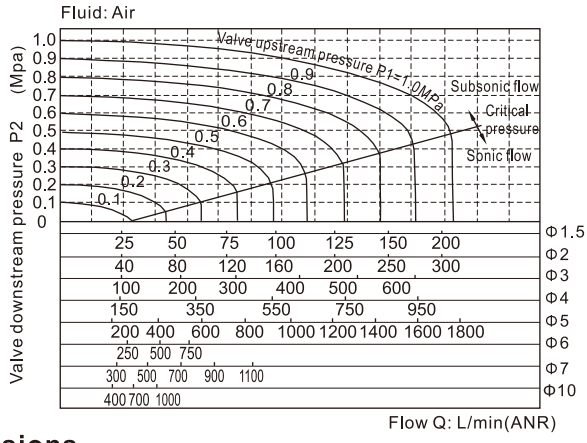
[Note] The wire length is 0.5m.

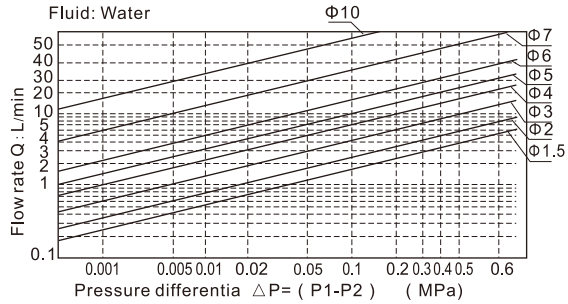
Ordering code of accessories

Ordering code of accessories is the same as 2WA series valve's,Please refer to P165 for details of ordering code.

2SA Series (Direct-acting and normally closed)

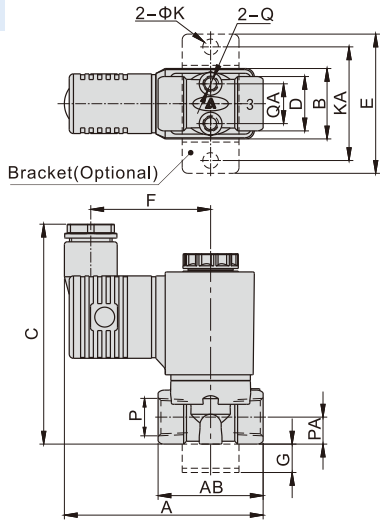
Flow chart



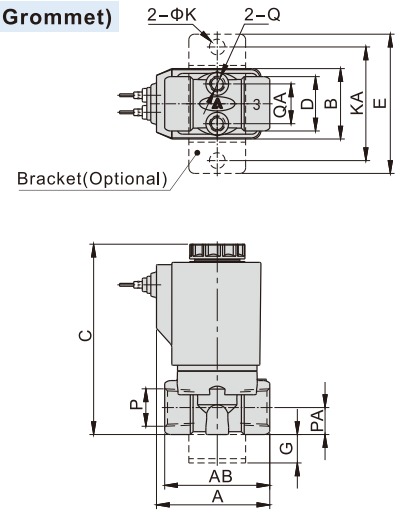


Dimensions

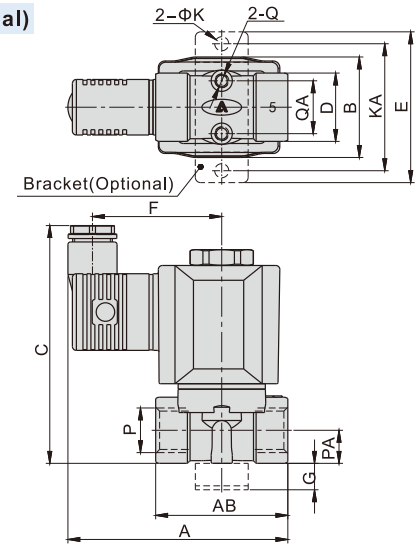
2SA□030 (Terminal)



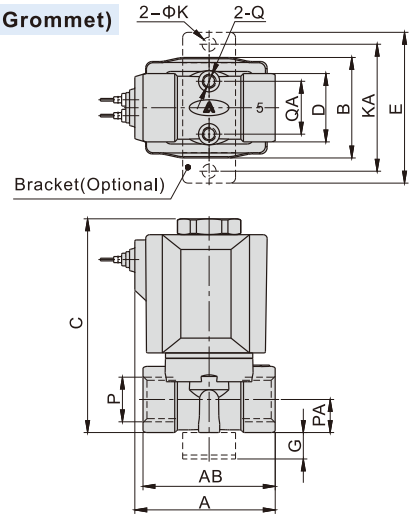
2SA□030(Grommet)



2SA□050 (Terminal)



2SA□050(Grommet)



Model\Item	A	AB	B	C	D	E	F	G	K	KA	P	PA	Q	QA
2SA□030-06	70	37	25	77.5	19	49	42	10	5.5	40	1/8"	9.5	M5	13.5
2SAT□030-06	71.5	39.5	25	77.5	19	49	42	10	5.5	40	1/8"	9.5	M5	13.5
2SA□030-08	70	37	25	77.5	19	49	42	10	5.5	40	1/4"	9.5	M5	13.5
2SAT□030-08	71.5	39.5	25	77.5	19	49	42	10	5.5	40	1/4"	9.5	M5	13.5
2SA□050-10	83	50	38	90	26	57	49	10	5.5	48	3/8"	12.5	M5	19.5
2SAT□050-10	84	51	38	90	26	57	49	10	5.5	48	3/8"	12.5	M5	19.5
2SA□050-15	83	50	38	90	26	57	49	10	5.5	48	1/2"	12.5	M5	19.5
2SAT□050-15	84	51	38	90	26	57	49	10	5.5	48	1/2"	12.5	M5	19.5

Model\Item	A	AB	B	C	D	E	G	K	KA	P	PA	Q	QA
2SA□030-06	40	37	25	67	19	49	10	5.5	40	1/8"	9.5	M5	13.5
2SAT□030-06	41.5	39.5	25	67	19	49	10	5.5	40	1/8"	9.5	M5	13.5
2SA□030-08	40	37	25	67	19	49	10	5.5	40	1/4"	9.5	M5	13.5
2SAT□030-08	41.5	39.5	25	67	19	49	10	5.5	40	1/4"	9.5	M5	13.5
2SA□050-10	53	50	38	81	26	57	10	5.5	48	3/8"	12.5	M5	19.5
2SAT□050-10	54	51	38	81	26	57	10	5.5	48	3/8"	12.5	M5	19.5
2SA□050-15	53	50	38	81	26	57	10	5.5	48	1/2"	12.5	M5	19.5
2SAT□050-15	54	51	38	81	26	57	10	5.5	48	1/2"	12.5	M5	19.5

Fluid control valve(2/2way)

2SA Series (Internally piloted and normally closed)



Specification

Model\Item	Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Operating pressure differentia		Proof pressure	
						MPa	psi	MPa	psi
2SA150-15	1/2"	15.0	5.50	100.0	575	Max: 1.0 Min: 0.05	Max: 150 Min: 10	1.5	220
2SA200-20	3/4"	20.0	9.50	170.0	735				
2SA250-25	1"	25.0	12.50	220.0	1035				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, Grommet valve's weight is 10g less than terminal's.

Symbol



Product feature

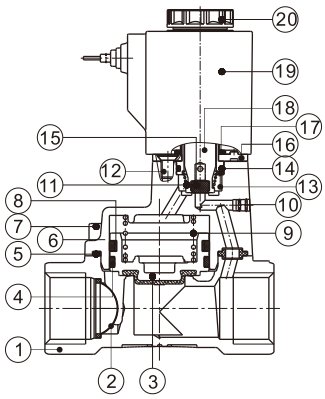
1. Indirect acting(Internal pilot) and normally closed type 2/2 way fluid valve. Its can change direction quickly and has large flow.
2. It is compact, small and light weight. Easy to install and dismantle;
3. The valve body is made of SUS304 . The coil has a Heat resistance classification of Class F. The standard seal material is FPM-F. Please contact us if other seal material are required.
4. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2SA150 2SA200 2SA250	CDA110 CLA110	AC	50	±15%	Terminal (CDA) Grommet (CLA)	10.0VA	Class F	35
			60			8.0VA		30
		DC	-	±10%		6.5W		30

Inner structure

2SA150(Grommet)



No.	Item
1	Body
2	Filter
3	Piston
4	Wear ring
5	O-ring
6	Cover
7	Screw
8	Spring
9	Spring
10	Spacer
11	Spring
12	Screw
13	Steel bushing
14	O-ring
15	Airtight ring
16	Fixed plate
17	O-ring
18	Movable core
19	Coil assembly
20	Coil nut

Valve's specification

Acting	Internally piloted				
Initial state	Normally closed				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less ; [Note2] 50CST or less.

Ordering code

Ordering code of valves

2SA 150 15 A □ G

1 2 3 4 5 6

①Model	②Orifice size	③Port size	④Voltage	⑤Electrical entry	⑥Thread type
2SA: 2/2 way internally piloted and normally closed	150: Φ15mm	15: 1/2"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet [Note]	G: G
	200: Φ20mm	20: 3/4"			
	250: Φ25mm	25: 1"			

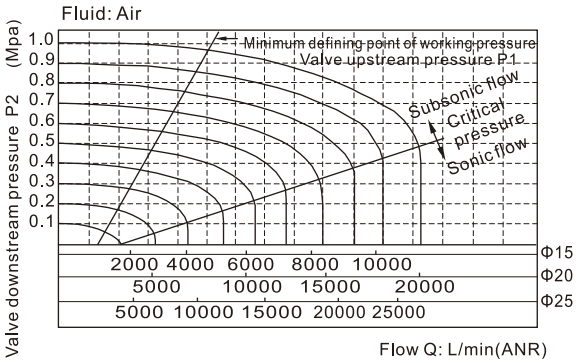
[Note] The wire length is 0.5m.

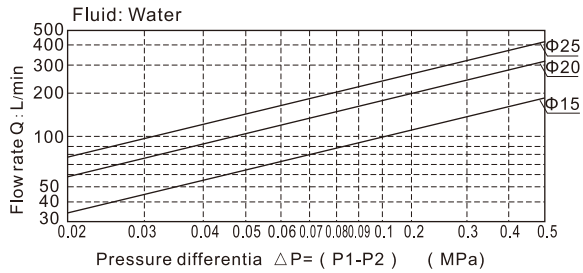
Ordering code of accessories

Ordering code of accessories is the same as 2WA series valve's, Please refer to P167 for details of ordering code.

2SA Series (Internally piloted and normally closed)

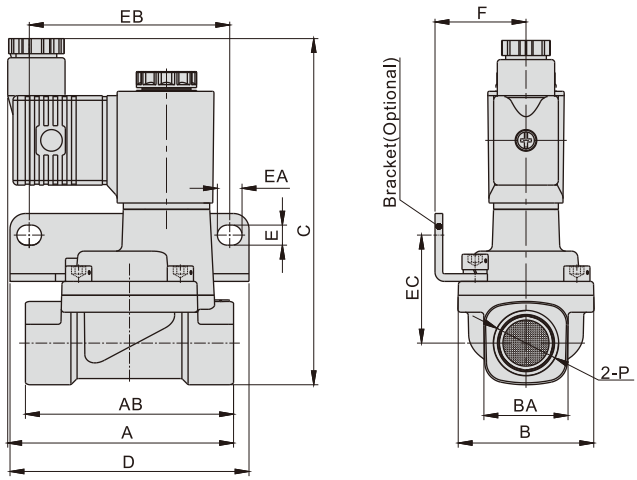
Flow chart





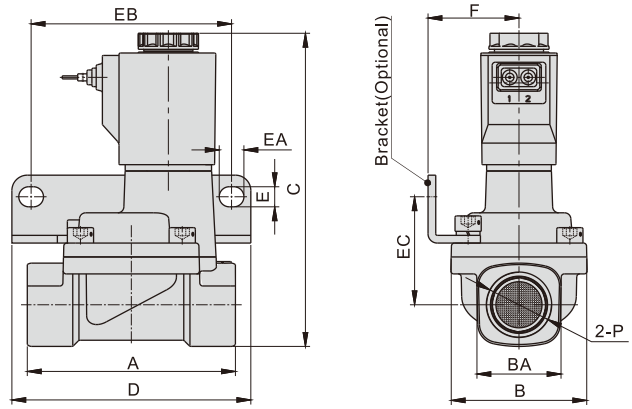
Dimensions

Terminal



Model\Item	A	AB	B	BA	C	D	E	EA	EB	EC	F	P
2SA150-15	73.5	67.5	44	27.5	112	77.5	6.5	8	65	35	29.5	1/2"
2SA200-20	75.5	79.5	51	33.5	119	87.5	6.5	8	75	38	33	3/4"
2SA250-25	77.5	90	57	40.5	126	93	6.5	8	80	42	35	1"

Grommet



Model\Item	A	B	BA	C	D	E	EA	EB	EC	F	P
2SA150-15	67.5	44	27.5	102	77.5	6.5	8	65	35	29.5	1/2"
2SA200-20	79.5	51	33.5	109	87.5	6.5	8	75	38	33	3/4"
2SA250-25	90	57	40.5	116	93	6.5	8	80	42	35	1"

Fluid control valve(2/2 way)

2KSA Series (Direct-acting and normally opened)



Symbol



Product feature

1. Direct acting and normally opened type 2/2 way fluid valve. Its high sensibilily allows it to change direction quickly;
2. It has wide pressure range, including extra high pressure (X), high pressure (H), standard and large volume(L);
3. It is compact, small size and light weight. Easy to install and dismantle.
4. The valve body is made of SUS304 . Its coil has a Heat resistance classification of Class F. The standard seal material is FPM-F. Please contact us if other seal material are required.
5. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification

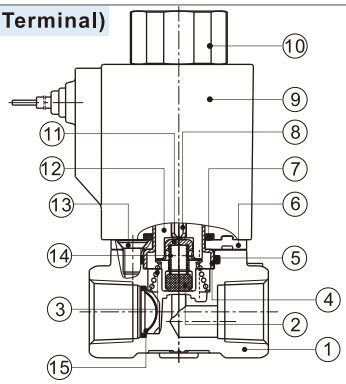
Model\Item		Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section(mm^2)	Weight [Note2](g)	Max.operating pressure differentia		Proof pressure	
							MPa	psi	MPa	psi
2KSAX030	-06	1/8"	1.5	0.10	1.8	245	2.0	300	3.0	450
	-08	1/4"				235				
2KSAH030	-06	1/8"	2.0	0.18	3.0	245	1.5	220		
	-08	1/4"				235				
2KSA030	-06	1/8"	3.0	0.33	6.0	245	0.7	100		
	-08	1/4"				235				
2KSAL030	-06	1/8"	4.0	0.55	10.0	245	0.4	60		
	-08	1/4"				235				
2KSAX050	-10	3/8"	3.0	0.34	6.1	530	2.0	300		
	-15	1/2"				510				
2KSAH050	-10	3/8"	4.0	0.55	10.0	530	1.5	220		
	-15	1/2"				510				
2KSA050	-10	3/8"	5.0	0.83	15.0	530	0.7	100		
	-15	1/2"				510				
2KSAL050	-10	3/8"	7.0	1.40	25.0	530	0.4	60		
	-15	1/2"				510				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, 2KSA030 series grommet valve's weight is 10g less than terminal's. 2KSA050series grommet valve's weight is 20g less than terminal's.

Inner structure

2KSA030(Terminal)



No.	Item	No.	Item	No.	Item
1	Body	6	Fixed plate	11	Airtight bush
2	Airtight ring	7	O-ring	12	Electromagnet
3	Spring	8	Mandril	13	Screw
4	Coil axis	9	Coil assembly	14	Spring
5	O-ring	10	Coil nut	15	Filter

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2KSA□030	CDA110 CLA110	AC	50	±15%	Terminal (CDA)	15.0VA	Class F	50
			60			11.0VA		40
		DC	-	±10%		6.5W		30
2KSA□050	CDA160 CLA160	AC	50	±15%	Grommet (CLA)	35.0VA		65
			60			30.0VA		60
		DC	-	±10%		12.0W		40

Valve's specification

Acting	Direct acting				
Initial state	Normally opened				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less ; [Note2] 50CST or less.

Ordering code

Ordering code of valves

2KSA H 030 08 A □ G

1 2 3 4 5 6 7

①Model	②Pressure condition	③Size series	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
2KSA: 2/2 way direct-acting and normally opened	X: Extra high pressure H: High pressure Blank: Standard L: Large volume	030: 030 Series	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G
		050: 050 Series	10: 3/8" 15: 1/2"			

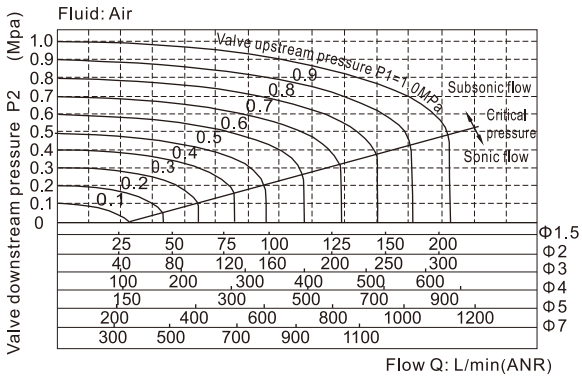
[Note] The wire length is 0.5m.

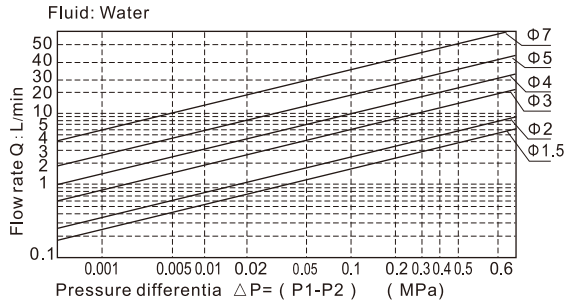
Ordering code of accessories

Ordering code of accessories is the same as 2WA series valve's,Please refer to P165 for details of ordering code.

2KSA Series (Direct-acting and normally opened)

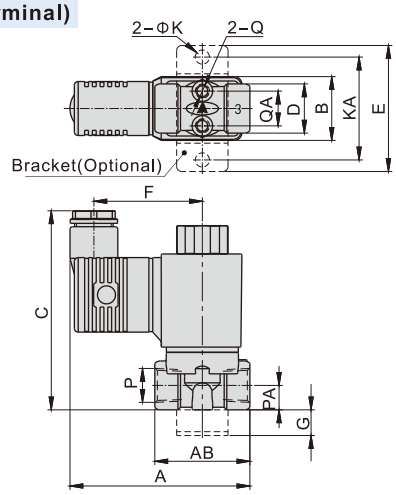
Flow chart



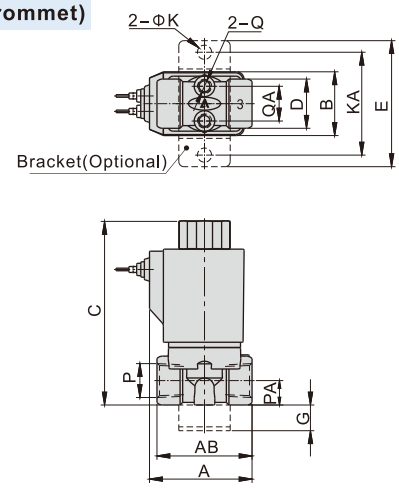


Dimensions

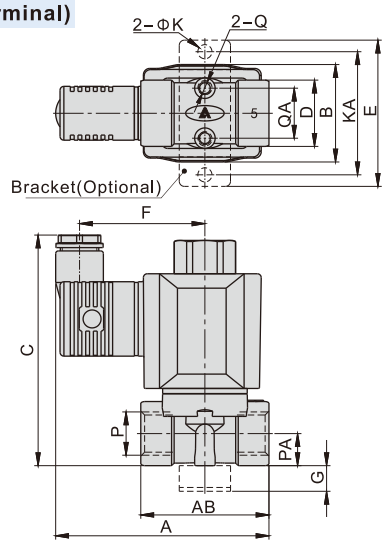
2KSA□030 (Terminal)



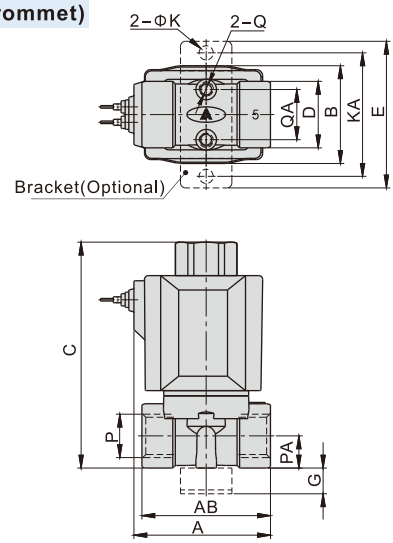
2KSA□030(Grommet)



2KSA□050 (Terminal)



2KSA□050(Grommet)



Model\Item	A	AB	B	C	D	E	F	G	K	KA	P	PA	Q	QA
2KSA□030-06	70	37	25	77.5	19	49	42	10	5.5	40	1/8"	9.5	M5	13.5
2KSA□030-08	70	37	25	77.5	19	49	42	10	5.5	40	1/4"	9.5	M5	13.5
2KSA□050-10	83	50	38	90	26	57	49	10	5.5	48	3/8"	12.5	M5	19.5
2KSA□050-15	83	50	38	90	26	57	49	10	5.5	48	1/2"	12.5	M5	19.5

Model\Item	A	AB	B	C	D	E	G	K	KA	P	PA	Q	QA
2KSA□030-06	40	37	25	74	19	49	10	5.5	40	1/8"	9.5	M5	13.5
2KSA□030-08	40	37	25	74	19	49	10	5.5	40	1/4"	9.5	M5	13.5
2KSA□050-10	53	50	38	90	26	57	10	5.5	48	3/8"	12.5	M5	19.5
2KSA□050-15	53	50	38	90	26	57	10	5.5	48	1/2"	12.5	M5	19.5

Fluid control valve(2/2 way)

2KSA Series (Internally piloted and normally opened)



Specification

Model\Item	Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Operating pressure differentia		Proof pressure	
						MPa	psi	MPa	psi
2KSA150-15	1/2"	15.0	5.50	100.0	575	Max: 0.7 Min: 0.05	Max: 100 Min: 10	1.5	220
2KSA200-20	3/4"	20.0	9.50	170.0	735				
2KSA250-25	1"	25.0	12.50	220.0	1035				

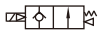
[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, Grommet valve's weight is 10g less than terminal's.

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2KSA150 2KSA200 2KSA250	CDA110 CLA110	AC	50	±15%	Terminal (CDA) Grommet (CLA)	15.0VA	Class F	50
			60			11.0VA		40
		DC	–	±10%		6.5W		30

Symbol



Valve's specification

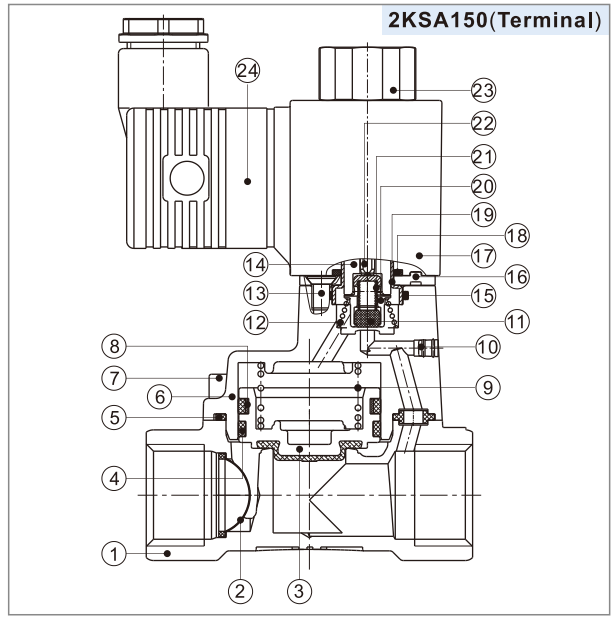
Acting	Internally piloted				
Initial state	Normally opened				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less ; [Note2] 50CST or less.

Product feature

1. Indirect acting(Internal pilot) and normally opened type 2/2 way fluid valve. Its can change direction quickly and has large flow.
2. It is compact, small and light weight. Easy to install and dismantle;
3. The valve body is made of SUS304 . The coil has a Heat resistance classification of Class F. The standard seal material is FPM-F. Please contact us if other seal material are required.
4. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Inner structure



No.	Item
1	Body
2	Filter
3	Piston
4	Wear ring
5	O-ring
6	Cover
7	Screw
8	Spring
9	Spring
10	Spacer
11	Airtight ring
12	Spring
13	Screw
14	Movable core
15	O-ring
16	Fixed plate
17	Coil assembly
18	O-ring
19	Coil axis
20	Airtight ring
21	Spring
22	Mandril
23	Coil nut
24	Connector

Ordering code

Ordering code of valves

2KSA 150 15 A □ G

(1) (2) (3) (4) (5) (6)

①Model	②Orifice size	③Port size	④Voltage	⑤Electrical entry	⑥Thread type
2KSA: 2/2 way internally piloted and normally opened	150: Φ15mm	15: 1/2"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet [Note]	G: G
	200: Φ20mm	20: 3/4"			
	250: Φ25mm	25: 1"			

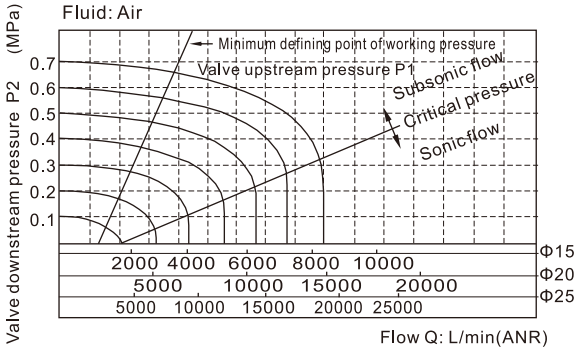
[Note] The wire length is 0.5m.

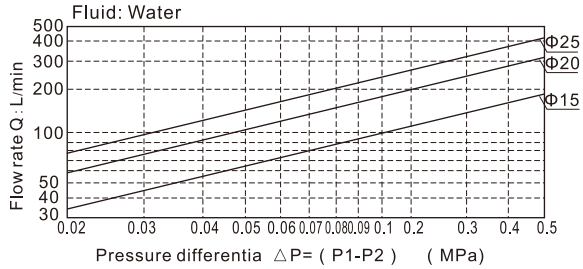
Ordering code of accessories

Ordering code of accessories is the same as 2WA series valve's, Please refer to P167 for details of ordering code.

2KSA Series (Internally piloted and normally opened)

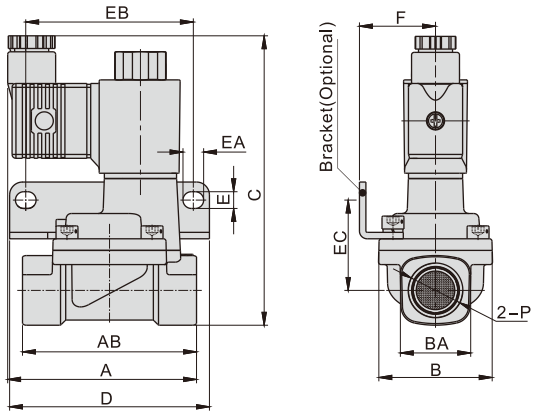
Flow chart





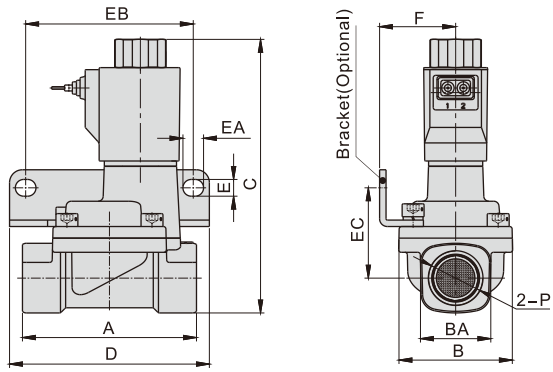
Dimensions

Terminal



Model\Item	A	AB	B	BA	C	D	E	EA	EB	EC	F	P
2KSA150-15	73.5	67.5	44	27.5	112	77.5	6.5	8	65	35	29.5	1/2"
2KSA200-20	75.5	79.5	51	33.5	119	87.5	6.5	8	75	38	33	3/4"
2KSA250-25	77.5	90	57	40.5	126	93	6.5	8	80	42	35	1"

Grommet



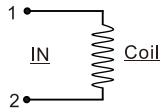
Model\Item	A	B	BA	C	D	E	EA	EB	EC	F	P
2KSA150-15	67.5	44	27.5	109	77.5	6.5	8	65	35	29.5	1/2"
2KSA200-20	79.5	51	33.5	116	87.5	6.5	8	75	38	33	3/4"
2KSA250-25	90	57	40.5	123	93	6.5	8	80	42	35	1"



Specification

Model\Item	Power type	Voltage (V)	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W) For NC	Power Consumption (VA/W) For NO	Insulation	Temp.rise (℃) NC	Temp.rise (℃) NO
110 Series	AC	220	50	±15%	DIN Terminal Grommet	10.0VA	15.0VA	Class F	35	50
			60			8.0VA	11.0VA		30	40
		110	50			10.0VA	15.0VA		35	50
			60			8.0VA	11.0VA		30	40
		24	50			10.0VA	15.0VA		35	50
			60			8.0VA	11.0VA		30	40
	DC	24	–	±10%		6.5W			30	30
		12								
160 Series	AC	220	50	±15%	DIN Terminal Grommet	25.0VA	35.0VA		60	65
			60			22.0VA	30.0VA		55	60
		110	50			25.0VA	35.0VA		60	65
			60			22.0VA	30.0VA		55	60
		24	50			25.0VA	35.0VA		60	65
			60			22.0VA	30.0VA		55	60
	DC	24	–	±10%		12.0W			40	40
		12								

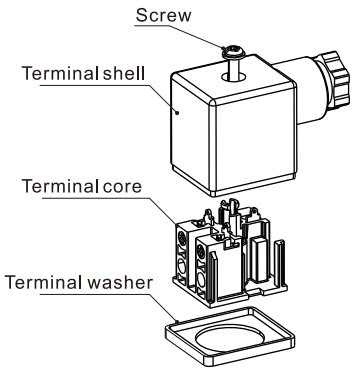
Hookup

Coil's type			Hookup
110 Series	CDA110 (Terminal)	AC	
		DC	
	CLA110 (Grommet)	AC	
		DC	
160 Series	CDA160 (Terminal)	AC	
		DC	
	CLA160 (Grommet)	AC	
		DC	

How to select coil

Valve type\Coil type		110Series Class F	110Series Class H	160 Series Class F	160 Series Class H
2SA□030	2KSA□030	●	×	×	×
2SA□050	2KSA□050	×	×	●	×
2SA150~250	2KSA150~250	●	×	×	×
2WA□030	2KWA□030	●	×	×	×
2WA□050	2KWA□050	×	×	●	×
2WA150~250	2KWA150~250	●	×	×	×

How to use connector



How to select accessories

Valve type\ Accessories type		F-2WA030LB	F-2WA050LB	F-2WA150LB	F-2WA200LB	F-2WA250LB
2SA□030	2KSA□030	●	×	×	×	×
2SA□050	2KSA□050	×	●	×	×	×
2SA150	2KSA150	×	×	●	×	×
2SA200	2KSA200	×	×	×	●	×
2SA250	2KSA250	×	×	×	×	●
2WA□030	2KWA□030	●	×	×	×	×
2WA□050	2KWA□050	×	●	×	×	×
2WA150	2KWA150	×	×	●	×	×
2WA200	2KWA200	×	×	×	●	×
2WA250	2KWA250	×	×	×	×	●

Ordering code of coil

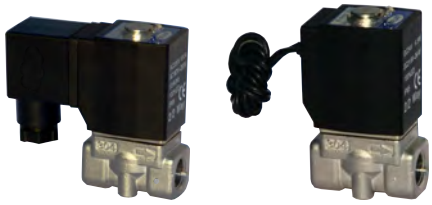
CD A110 A □

① ② ③ ④

①Coil type	②Coil's bore	③Voltage	④Temperature resistance class
CD: Terminal CL: Grommet	A110: Coil Specification (Bore sizeΦ10.0mm) A160: Coil Specification (Bore sizeΦ16.0mm)	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: F Class H: H Class

Fluid control valve(2/2way)

2S Series (Direct-acting and normally closed)



Symbol

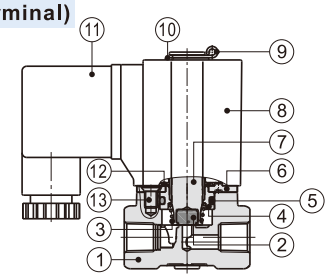


Product feature

1. Direct acting and normally closed type 2/2 way solenoid valve. Its high sensibilily allows it to change direction quickly;
2. It has wide pressure range, including extra high pressure (X), high pressure (H), standard , large volume(L) and extra large volume (T) to choose from;
3. It is compact, small size and light weight. It is easy to install and dismantle.
4. The valve body is made of SUS304 . Its coil has a Heat resistance classification of Class B. The standard seal material is FPM-F. Please contact us if other material are required.
5. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Inner structure

2S030(Terminal)



No.	Item	No.	Item
1	Body	8	Coil assembly
2	Airtight ring	9	E Clip
3	Spring	10	Gasket
4	Fixed cap	11	Connecter
5	O-ring	12	Washer
6	Fixed plate	13	Screw
7	Movable core		

Specification

Model\Item		Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Max.operating pressure differentia		Proof pressure	
							MPa	psi	MPa	psi
2SX030	-06	1/8"	1.5	0.10	1.8	300	3.0	450	5.0	750
	-08	1/4"				295				
2SH030	-06	1/8"	2.0	0.18	3.0	300	2.0	300		
	-08	1/4"				290				
2S030	-06	1/8"	3.0	0.33	6.0	300	1.0	150		
	-08	1/4"				290				
2SL030	-06	1/8"	4.0	0.55	10.0	300	0.5	75		
	-08	1/4"				290				
2ST030	-06	1/8"	6.0	1.10	12.0	300	0.1	15		
	-08	1/4"				290				
2SX050	-10	3/8"	3.0	0.34	6.1	600	3.0	450		
	-15	1/2"				590				
2SH050	-10	3/8"	4.0	0.55	10.0	600	2.0	300		
	-15	1/2"				590				
2S050	-10	3/8"	5.0	0.83	15.0	600	1.0	150		
	-15	1/2"				590				
2SL050	-10	3/8"	7.0	1.40	25.0	600	0.5	75		
	-15	1/2"				590				
2ST050	-10	3/8"	10.0	2.20	40.0	600	0.1	15		
	-15	1/2"				590				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, 2S030 series grommet valve's weight is 10g less than terminal's. 2S050series grommet valve's weight is 20g less than terminal's.

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2S□030	CDA116 CLA116	AC	50	±15%	Terminal (CDA)	10.0VA	Class B	35
			60			8.0VA		30
		DC	–	±10%		6.5W		30
2S□050	CDA170 CLA170	AC	50	±15%	Grommet (CLA)	25.0VA		60
			60			22.0VA		55
		DC	–	±10%		12.0W		40

Valve's specification

Acting	Direct acting				
Initial state	Normally closed				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less; [Note2] 50CST or less.

Ordering code

Ordering code of valves

2S L 030 08 A □ G

1 2 3 4 5 6 7

①Model	②Pressure condition	③Size series	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
2S: 2/2 way direct-acting and normally closed	X: Extra high pressure H: High pressure Blank: Standard L: Large volume T: Extra large volume	030: 030 Series	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
		050: 050 Series	10: 3/8" 15: 1/2"			

[Note] The wire length is 0.5m.

Ordering code of accessories

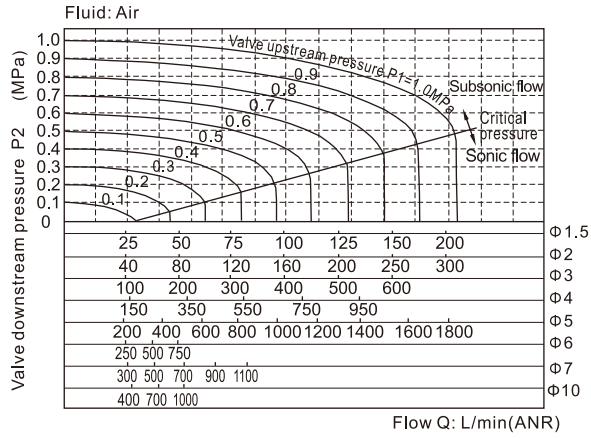
F–2S030 LB

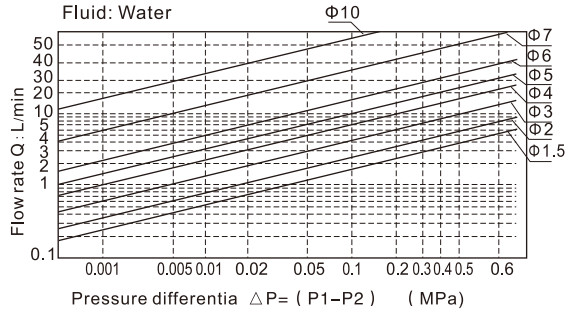
1 2 3

①Accessories code	②Valve type	③Accessories type
F: Mounting accessories	2S030: 030 Series valve 2S050: 050 Series valve	LB: LB Type

2S Series (Direct-acting and normally closed)

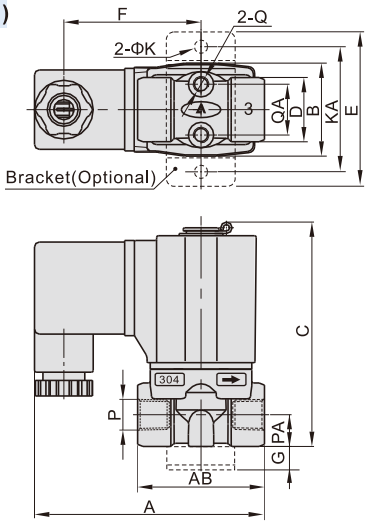
Flow chart



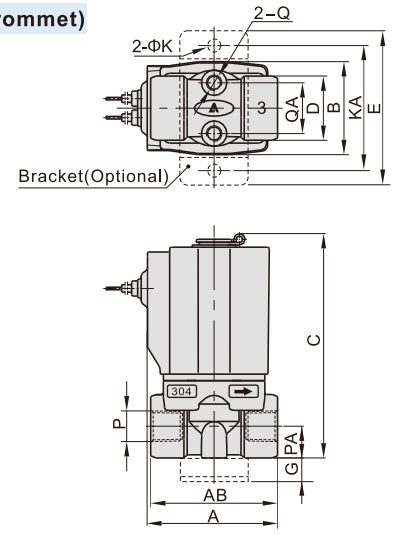


Dimensions

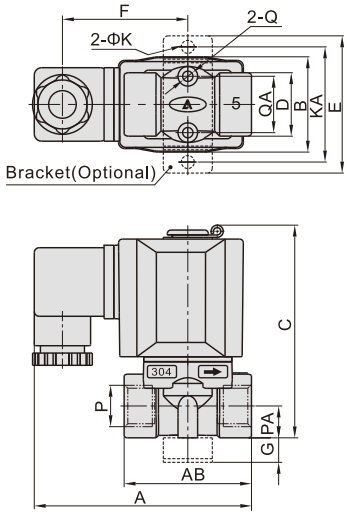
2S□030 (Terminal)



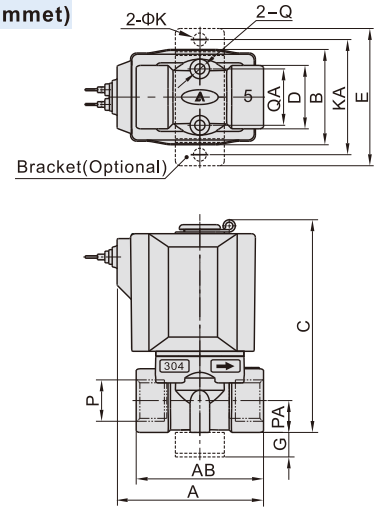
2S□030(Grommet)



2S□050 (Terminal)



2S□050(Grommet)



Model\Item	A	AB	B	C	D	E	F	G	K	KA	P	PA	Q	QA
2S□030-06	72.5	40	29.5	71	20	49	43.5	10	5.3	40	1/8"	10	M5	16
2S□030-08	72.5	40	29.5	71	20	49	43.5	10	5.3	40	1/4"	10	M5	16
2S□050-10	89.5	52	39	87	26	56	51	10	5.3	48	3/8"	13	M5	23
2S□050-15	89.5	52	39	87	26	56	51	10	5.3	48	1/2"	13	M5	23

Model\Item	A	AB	B	C	D	E	G	K	KA	P	PA	Q	QA
2S□030-06	41	40	29.5	71	20	49	10	5.3	40	1/8"	10	M5	16
2S□030-08	41	40	29.5	71	20	49	10	5.3	40	1/4"	10	M5	16
2S□050-10	60	52	39	87	26	56	10	5.3	48	3/8"	13	M5	23
2S□050-15	60	52	39	87	26	56	10	5.3	48	1/2"	13	M5	23

Fluid control valve(2/2way)

2S Series (Internally piloted and normally closed)



Specification

Model\Item	Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Operating pressure differentia		Proof pressure	
						MPa	psi	MPa	psi
2S150-15	1/2"	15.0	5.50	100.0	675	Max: 1.0 Min: 0.05	Max: 150 Min: 10	1.5	220
2S200-20	3/4"	20.0	9.50	170.0	875				
2S250-25	1	25.0	12.50	220.0	1120				
2S320-32	1 1/4"	35.0	23.00	420.0	2700				
2S400-40	1 1/2"	40.0	31.00	560.0	3250				
2S500-50	2"	50.0	49.00	880.0	4300				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, 2S150~250 series grommet valve's weight is 10g less than terminal's. 2S320~500 series grommet valve's weight is 20g less than terminal's.

Symbol



Product feature

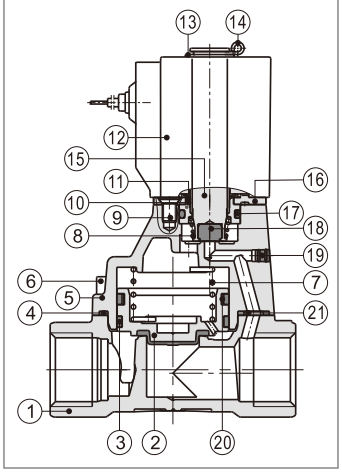
1. Indirect acting(Internal pilot) and normally closed type 2/2 way solenoid valve. Its can change direction quickly and has large flow.
2. It is compact, small and light weight. It is easy to install and dismantle;
3. The valve body is made of SUS304 . The coil has a Heat resistance classification of Class B. The standard seal material is FPM-F. Please contact us if other material are required.
4. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2S150 2S200 2S250	CDA116 CLA116	AC	50	±15%	Terminal (CDA) Grommet (CLA)	10.0VA	Class B	35
			60			8.0VA		30
		DC	–	±10%		6.5W		30
2S320 2S400 2S500	CDA170 CLA170	AC	50	±15%		25.0VA		60
			60			22.0VA		55
		DC	–	±10%		12.0W		40

Inner structure

2S150(Grommet)



No.	Item
1	Body
2	Piston
3	Wear ring
4	O-ring
5	Cover
6	Screw
7	Spring
8	Spring
9	Screw
10	Fixed cap
11	Washer
12	Coil assembly
13	Washer
14	E Clip
15	Movable core
16	Fixed plate
17	O-ring
18	Airtight ring
19	Plug
20	Spring
21	Spacer

Valve's specification

Acting	Internally piloted				
Initial state	Normally closed				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less; [Note2] 50CST or less.

Ordering code

Ordering code of valves

2S 150 15 A □ G

1 2 3 4 5 6

①Model	②Orifice size	③Port size	④Voltage	⑤Electrical entry	⑥Thread type
2S: 2/2 way internally piloted and normally closed	150: Φ15mm	15: 1/2"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet [Note]	G: G Thread
	200: Φ20mm	20: 3/4"			
	250: Φ25mm	25: 1"			
	320: Φ35mm	32: 1 1/4"			
	400: Φ40mm	40: 1 1/2"			
	500: Φ50mm	50: 2"			

[Note] The wire length is 0.5m.

Ordering code of accessories

F–2S150 LB

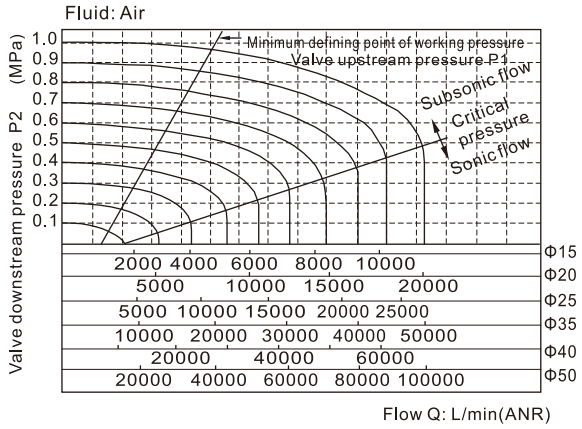
1 2 3

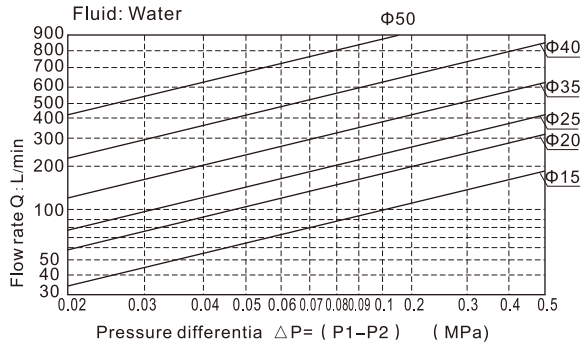
①Accessories code	②Valve type	③Accessories type
F: Mounting accessories	2S150: 150 Series valve 2S200: 200 Series valve 2S250: 250 Series valve	LB: LB Type

[[Note] 320\400\500 series valves do not have mounting accessories.

2S Series (Internally piloted and normally closed)

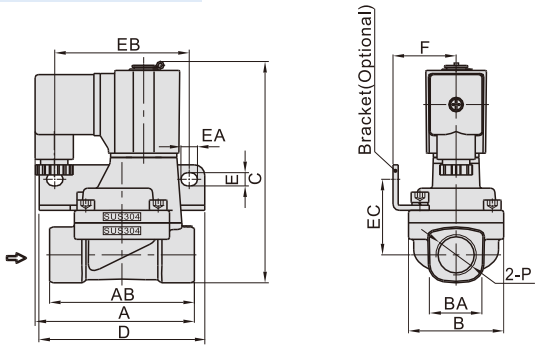
Flow chart



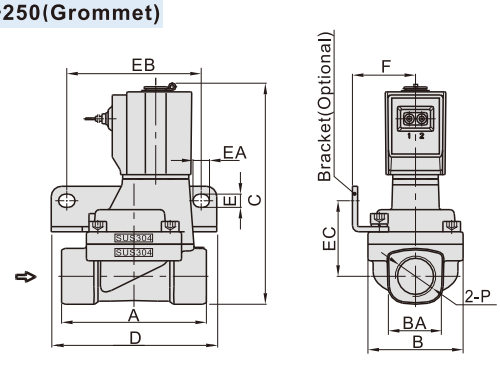


Dimensions

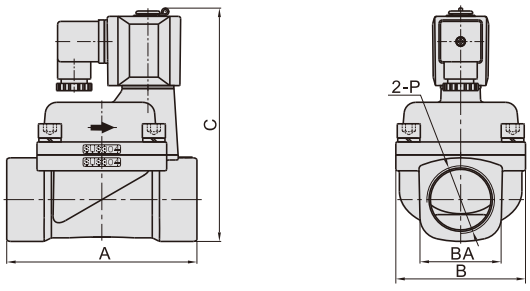
2S150~250 (Terminal)



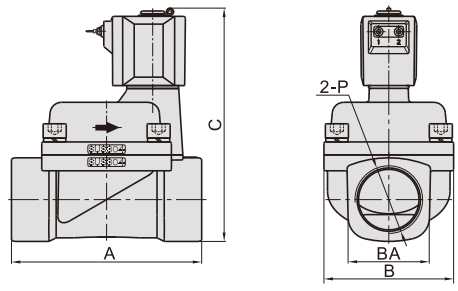
2S150~250(Grommet)



2S320~500 (Terminal)



2S320~500(Grommet)



Model\Item	A	AB	B	BA	C	D	E	EA	EB	EC	F	P
2S150-15	77	70	46	27.5	107	80	6.4	8	65	36.5	30.5	1/2"
2S200-20	78.5	82	53	33.5	115.5	90	6.4	8	75	40	34	3/4"
2S250-25	81	92	59	40.5	124	95	6.4	8	80	44.5	36	1
2S320-32	125	-	80	52	154.5	–	–	–	–	–	–	1 1/4"
2S400-40	132	-	90	58	162	–	–	–	–	–	–	1 1/2"
2S500-50	150	-	100	70	177	–	–	–	–	–	–	2"

Model\Item	A	B	BA	C	D	E	EA	EB	EC	F	P
2S150-15	70	46	27.5	107	80	6.4	8	65	36.5	30.5	1/2"
2S200-20	82	53	33.5	115.5	90	6.4	8	75	40	34	3/4"
2S250-25	92	59	40.5	124	95	6.4	8	80	44.5	36	1
2S320-32	125	80	52	154.5	-	–	–	–	–	–	1 1/4"
2S400-40	132	90	58	162	–	–	–	–	–	–	1 1/2"
2S500-50	150	100	70	177	–	–	–	–	–	–	2"

Fluid control valve(2/2 way)

2KS Series (Direct-acting and normally opened)



Symbol



Product feature

1. Direct acting and normally opened type 2/2 way solenoid valve. Its high sensibilily allows it to change direction quickly;
2. It has wide pressure range, including extra high pressure (X), high pressure (H), standard and large volume(L) to choose from;
3. It is compact, small size and light weight. It is easy to install and dismantle.
4. The valve body is made of SUS304 . Its coil has a Heat resistance classification of Class B. The standard seal material is FPM-F. Please contact us if other material are required.
5. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification

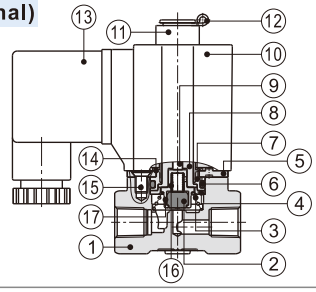
Model\Item		Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g	Max.operating pressure differentia		Proof pressure	
							MPa	psi	MPa	psi
2KSX030	-06	1/8"	1.5	0.10	1.8	305	2.0	300	3.0	450
	-08	1/4"				295				
2KSH030	-06	1/8"	2.0	0.18	3.0	305	1.5	220		
	-08	1/4"				295				
2KS030	-06	1/8"	3.0	0.33	6.0	305	0.7	100		
	-08	1/4"				295				
2KSL030	-06	1/8"	4.0	0.55	10.0	305	0.4	60		
	-08	1/4"				295				
2KSX050	-10	3/8"	3.0	0.34	6.1	610	2.0	300		
	-15	1/2"				600				
2KSH050	-10	3/8"	4.0	0.55	10.0	610	1.5	220		
	-15	1/2"				600				
2KS050	-10	3/8"	5.0	0.83	15.0	610	0.7	100		
	-15	1/2"				600				
2KSL050	-10	3/8"	7.0	1.40	25.0	610	0.4	60		
	-15	1/2"				600				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, 2KS030 series grommet valve's weight is 10g less than terminal's. 2KS050series grommet valve's weight is 20g less than terminal's.

Inner structure

2KS030(Terminal)



No.	Item	No.	Item
1	Body	10	Coil assembly
2	Airtight ring	11	Position ring
3	Spring	12	E Clip
4	Bead flange	13	Connector
5	Fixed plate	14	Washer
6	O-ring	15	Screw
7	Fixed cap	16	Spring
8	Electromagnet	17	Airtight bush
9	Mandril		

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2KS□030	CDA116 CLA116	AC	50	±15%	Terminal (CDA) Grommet (CLA)	15.0VA	Class B	50
			60			11.0VA		40
		DC	–	±10%		6.5W		30
2KS□050	CDA170 CLA170	AC	50	±15%		35.0VA		65
			60			30.0VA		60
		DC	–	±10%		12.0W		40

Valve's specification

Acting	Direct acting				
Initial state	Normally opened				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less; [Note2] 50CST or less.

Ordering code

Ordering code of valves

2KS H 030 08 A □ G

1 2 3 4 5 6 7

①Model	②Pressure condition	③Size series	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
2KS: 2/2 way direct-acting and normally opened	X: Extra high pressure H: High pressure Blank: Standard L: Large volume	030: 030 Series	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
		050: 050 Series	10: 3/8" 15: 1/2"			

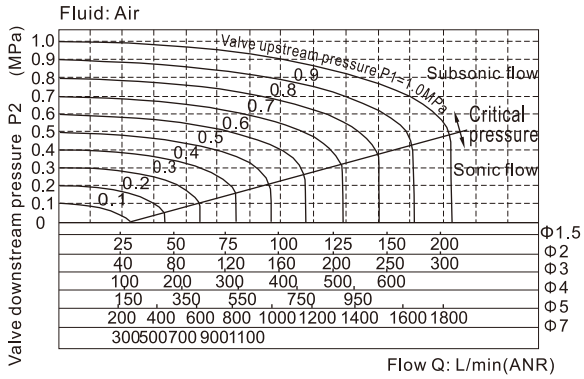
[Note] The wire length is 0.5m.

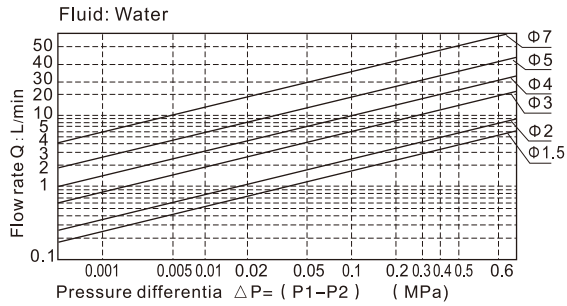
Ordering code of accessories

Ordering code of accessories is the same as 2S series valve's,Please refer to P182 for details of ordering code.

2KS Series (Direct-acting and normally opened)

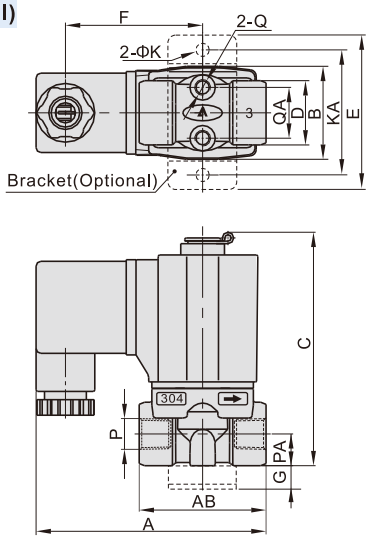
Flow chart



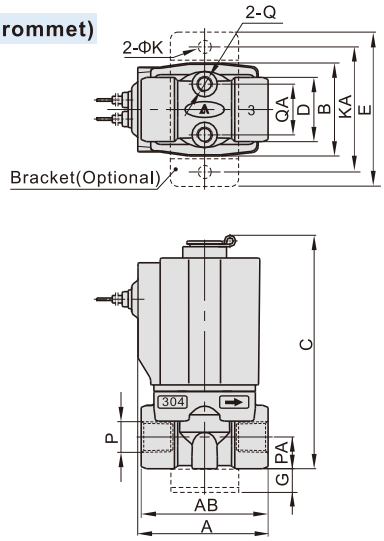


Dimensions

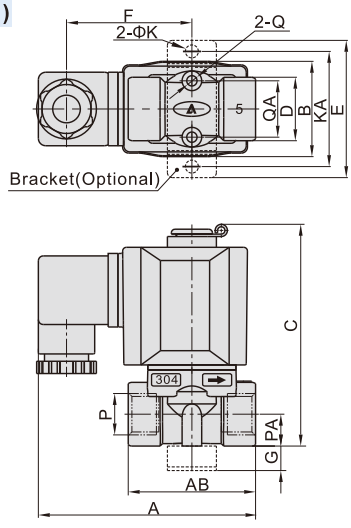
2KS□030 (Terminal)



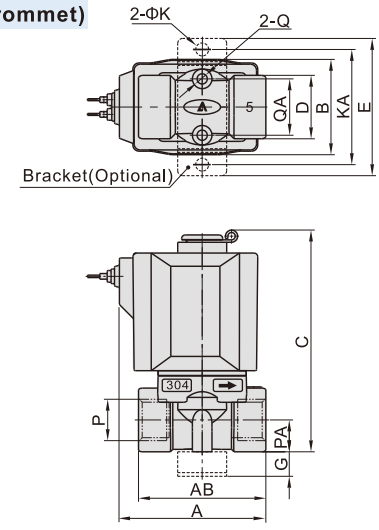
2KS□030(Grommet)



2KS□050 (Terminal)



2KS□050(Grommet)

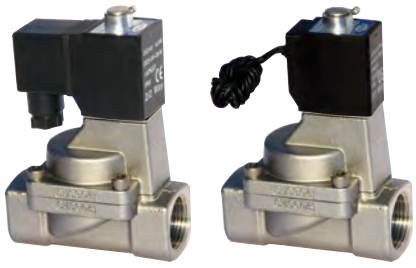


Model\Item	A	AB	B	C	D	E	F	G	K	KA	P	PA	Q	QA
2KS□030-06	72.5	40	29.5	76	20	49	43.5	10	5.3	40	1/8"	10	M5	16
2KS□030-08	72.5	40	29.5	76	20	49	43.5	10	5.3	40	1/4"	10	M5	16
2KS□050-10	89.5	52	39	92	26	56	51	10	5.3	48	3/8"	13	M5	23
2KS□050-15	89.5	52	39	92	26	56	51	10	5.3	48	1/2"	13	M5	23

Model\Item	A	AB	B	C	D	E	G	K	KA	P	PA	Q	QA
2KS□030-06	41	40	29.5	76	20	49	10	5.3	40	1/8"	10	M5	16
2KS□030-08	41	40	29.5	76	20	49	10	5.3	40	1/4"	10	M5	16
2KS□050-10	60	52	39	92	26	56	10	5.3	48	3/8"	13	M5	23
2KS□050-15	60	52	39	92	26	56	10	5.3	48	1/2"	13	M5	23

Fluid control valve(2/2 way)

2KS Series (Internally piloted and normally opened)



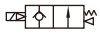
Specification

Model\Item	Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Operating pressure differentia		Proof pressure	
						MPa	psi	MPa	psi
2KS150-15	1/2"	15.0	5.50	100.0	680	Max: 0.7 Min: 0.05	Max: 100 Min: 10	1.5	220
2KS200-20	3/4"	20.0	9.50	170.0	880				
2KS250-25	1	25.0	12.50	220.0	1125				
2KS320-32	1 1/4"	35.0	23.00	420.0	2710				
2KS400-40	1 1/2"	40.0	31.00	560.0	3260				
2KS500-50	2"	50.0	49.00	880.0	4310				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, 2KS150~250 series grommet valve's weight is 10g less than terminal's. 2KS320~500 series grommet valve's weight is 20g less than terminal's.

Symbol



Product feature

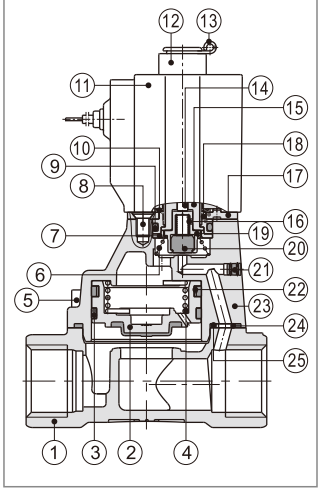
1. Indirect acting(Internal pilot) and normally opened type 2/2 way solenoid valve. Its can change direction quickly and has large flow.
2. It is compact, small and light weight. It is easy to install and dismantle;
3. The valve body is made of SUS304 . The coil has a Heat resistance classification of Class B. The standard seal material is FPM-F. Please contact us if other material are required.
4. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2KS150 2KS200 2KS250	CDA116 CLA116	AC	50	±15%	Terminal (CDA) Grommet (CLA)	15.0VA	Class B	50
			60			11.0VA		40
		DC	–	±10%		6.5W		30
2KS320 2KS400 2KS500	CDA170 CLA170	AC	50	±15%		35.0VA		65
			60			30.0VA		60
		DC	–	±10%		12.0W		40

Inner structure

2KS150(Grommet)



No.	Item
1	Body
2	Piston
3	Wear ring
4	Spring
5	Screw
6	Spring
7	Fixed ring
8	Screw
9	O-ring
10	Washer
11	Coil assembly
12	Position ring
13	E Clip
14	Mandril
15	Movable core
16	Spring
17	Fixed plate
18	Fixed cap
19	Airtight bushing
20	Airtight ring
21	Plug
22	Spring
23	Cover
24	Spacer
25	O-ring

Valve's specification

Acting	Internally piloted				
Initial state	Normally opened				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less; [Note2] 50CST or less.

Ordering code

Ordering code of valves

2KS 150 15 A □ G

1 2 3 4 5 6

①Model	②Orifice size	③Port size	④Voltage	⑤Electrical entry	⑥Thread type
2KS: 2/2 way internally piloted and normally opened	150: Φ15mm	15: 1/2"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
	200: Φ20mm	20: 3/4"			
	250: Φ25mm	25: 1"			
	320: Φ35mm	32: 1 1/4"			
	400: Φ40mm	40: 1 1/2"			
	500: Φ50mm	50: 2"			

[Note] The wire length is 0.5m.

Ordering code of accessories

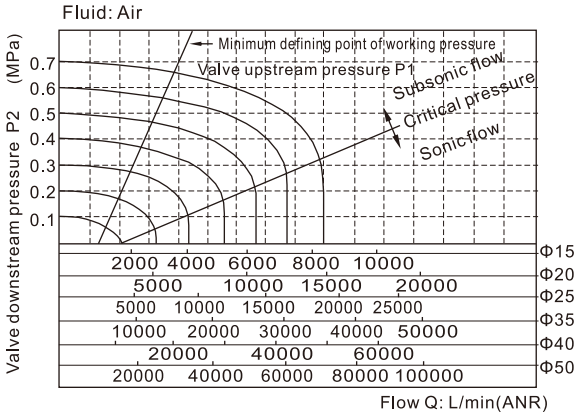
Ordering code of accessories is the same as 2S series valve's, please refer to P184 for details of ordering code.

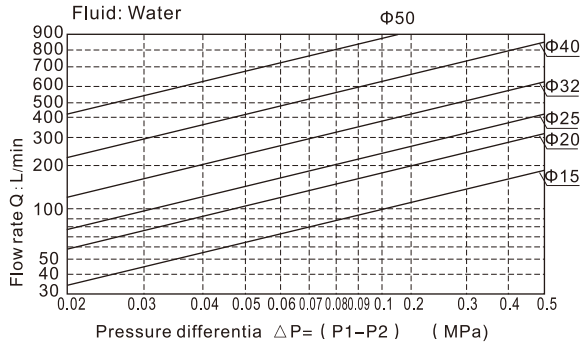
[Note] 320\400\500 series valves do not have mounting accessories.

Fluid control valve(2/2 way)

2KS Series (Internally piloted and normally opened)

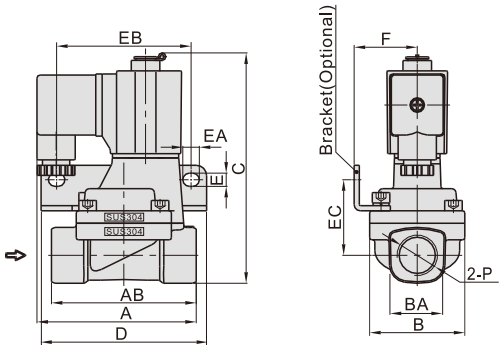
Flow chart



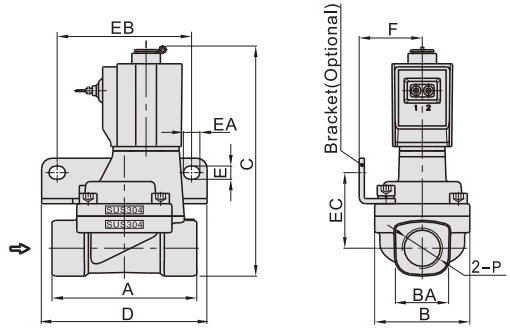


Dimensions

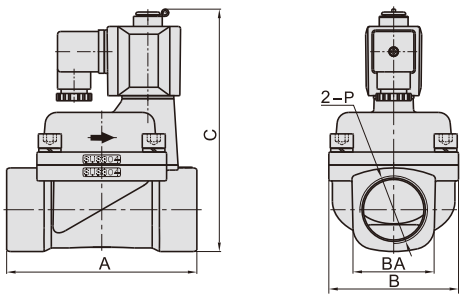
2KS150~250 (Terminal)



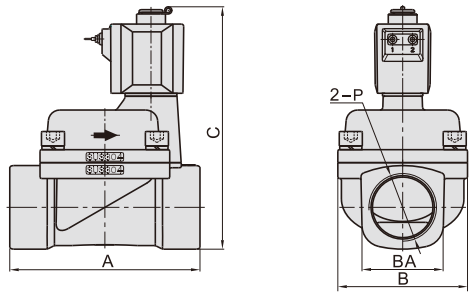
2KS150~250(Grommet)



2KS320~500 (Terminal)



2KS320~500(Grommet)



Model\Item	A	AB	B	BA	C	D	E	EA	EB	EC	F	P
2KS150-15	77	70	46	27.5	112.5	80	6.4	8	65	36.5	30.5	1/2"
2KS200-20	78.5	82	53	33.5	121	90	6.4	8	75	40	34	3/4"
2KS250-25	81	92	59	40.5	129.5	95	6.4	8	80	44.5	36	1
2KS320-32	125	-	80	52	160	–	–	–	–	–	–	1 1/4"
2KS400-40	132	-	90	58	167	–	–	–	–	–	–	1 1/2"
2KS500-50	150	-	100	70	182	–	–	–	–	–	–	2"

Model\Item	A	B	BA	C	D	E	EA	EB	EC	F	P
2KS150-15	70	46	27.5	112.5	80	6.4	8	65	36.5	30.5	1/2"
2KS200-20	82	53	33.5	121	90	6.4	8	75	40	34	3/4"
2KS250-25	92	59	40.5	129.5	95	6.4	8	80	44.5	36	1
2KS320-32	125	80	52	160	-	–	–	–	–	–	1 1/4"
2KS400-40	132	90	58	167	–	–	–	–	–	–	1 1/2"
2KS500-50	150	100	70	182	–	–	–	–	–	–	2"

2W Series (Direct-acting and normally closed)



Symbol

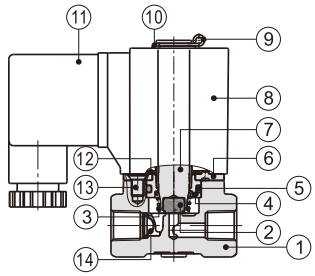


Product feature

1. Direct acting and normally closed type 2/2 way solenoid valve. Its high sensibility allows it to change direction quickly;
2. It has wide pressure range, including extra high pressure (X), high pressure (H), standard , large volume(L) and extra large volume (T) to choose from;
3. It is compact, small size and light weight. It is easy to install and dismantle.
4. The valve body is made of brass . Its coil has a Heat resistance classification of Class B. The standard seal material is FPM-F. Please contact us if other material are required.
5. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Inner structure

2W030 (Terminal)



No.	Item	No.	Item
1	Body	8	Coil assembly
2	Airtight ring	9	E Clip
3	Spring	10	Gasket
4	Fixed cap	11	Connecter
5	O-ring	12	Washer
6	Fixed plate	13	Screw
7	Movable core	14	Filter [Note]

[Note] Extra large volume type has no filter element.

Specification

Model\Item		Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Max.operating pressure differentia		Proof pressure	
							MPa	psi	MPa	psi
2WX030	-06	1/8"	1.5	0.10	1.8	305	3.0	450	5.0	750
	-08	1/4"				295				
2WH030	-06	1/8"	2.0	0.18	3.0	305	2.0	300		
	-08	1/4"				295				
2W030	-06	1/8"	3.0	0.33	6.0	305	1.0	150		
	-08	1/4"				295				
2WL030	-06	1/8"	4.0	0.55	10.0	305	0.5	75		
	-08	1/4"				295				
2WT030	-06	1/8"	6.0	1.10	12.0	305	0.1	15		
	-08	1/4"				295				
2WX050	-10	3/8"	3.0	0.34	6.1	620	3.0	450		
	-15	1/2"				600				
2WH050	-10	3/8"	4.0	0.55	10.0	620	2.0	300		
	-15	1/2"				600				
2W050	-10	3/8"	5.0	0.83	15.0	620	1.0	150		
	-15	1/2"				600				
2WL050	-10	3/8"	7.0	1.40	25.0	620	0.5	75		
	-15	1/2"				600				
2WT050	-10	3/8"	10.0	2.20	40.0	620	0.1	15		
	-15	1/2"				600				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, 2W030 series grommet valve's weight is 10g less than terminal's. 2W050series grommet valve's weight is 20g less than terminal's.

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2W□030	CDA116 CLA116	AC	50	±15%	Terminal (CDA)	10.0VA	Class B	35
			60			8.0VA		30
		DC	–	±10%		6.5W		30
2W□050	CDA170 CLA170	AC	50	±15%	Grommet (CLA)	25.0VA		60
			60			22.0VA		55
		DC	–	±10%		12.0W		40

Valve's specification

Acting	Direct acting				
Initial state	Normally closed				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less; [Note2] 50CST or less.

Ordering code

Ordering code of valves

2W L 030 08 A □ G

1 2 3 4 5 6 7

①Model	②Pressure condition	③Size series	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
2W: 2/2 way direct-acting and normally closed	X: Extra high pressure H: High pressure Blank: Standard L: Large volume T: Extra large volume	030: 030 Series	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
		050: 050 Series	10: 3/8" 15: 1/2"			

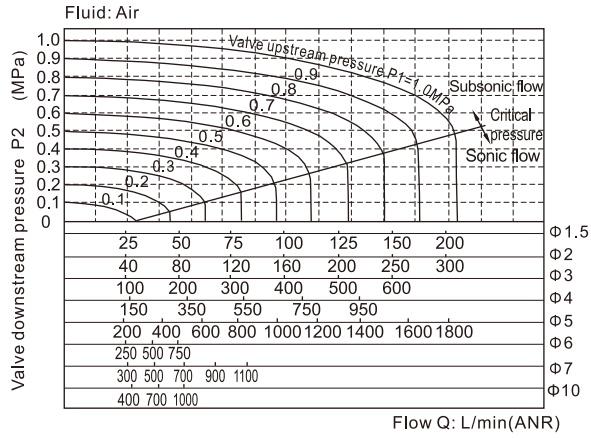
[Note] The wire length is 0.5m.

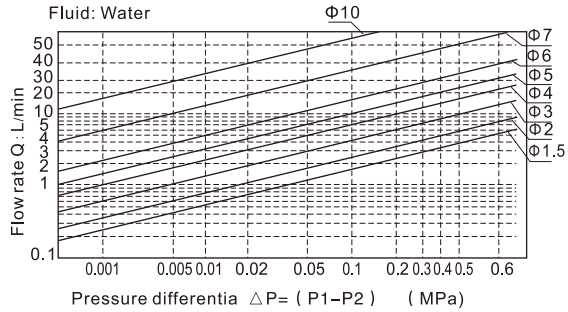
Ordering code of accessories

Ordering code of accessories is the same as 2S series valve's,Please refer to P182 for details of ordering code.

2W Series (Direct-acting and normally closed)

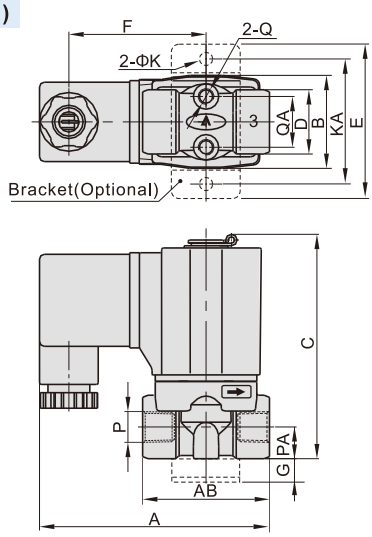
Flow chart



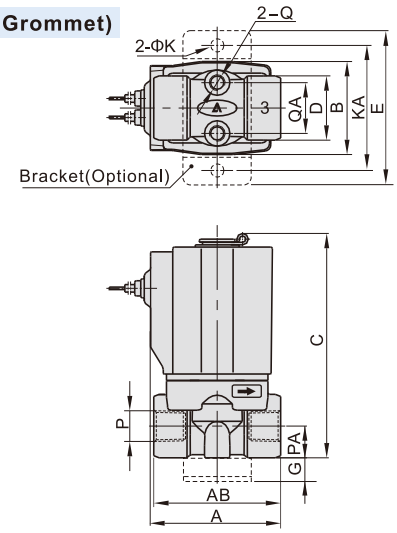


Dimensions

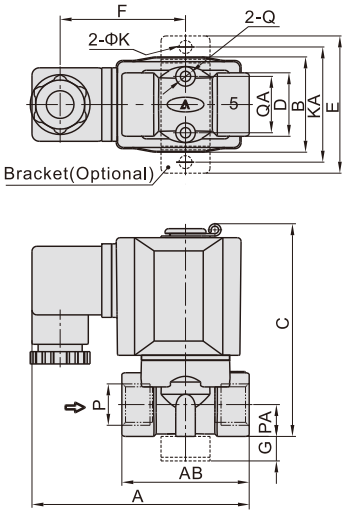
2W□030 (Terminal)



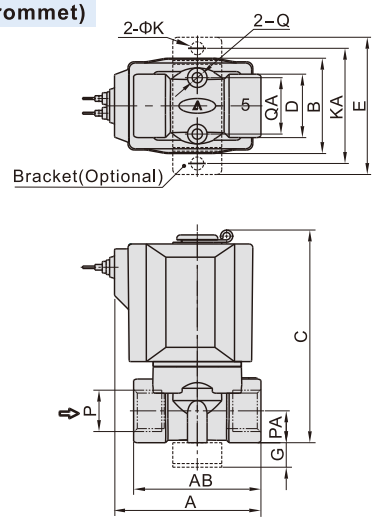
2W□030 (Grommet)



2W□050 (Terminal)



2W□050 (Grommet)



Model\Item	A	AB	B	C	D	E	F	G	K	KA	P	PA	Q	QA
2W□030-06	72.5	40	29.5	71	20	49	43.5	10	5.3	40	1/8"	10	M5	16
2W□030-08	72.5	40	29.5	71	20	49	43.5	10	5.3	40	1/4"	10	M5	16
2W□050-10	89.5	52	39	87	26	56	51	10	5.3	48	3/8"	13	M5	23
2W□050-15	89.5	52	39	87	26	56	51	10	5.3	48	1/2"	13	M5	23

Model\Item	A	AB	B	C	D	E	G	K	KA	P	PA	Q	QA
2W□030-06	41	40	29.5	71	20	49	10	5.3	40	1/8"	10	M5	16
2W□030-08	41	40	29.5	71	20	49	10	5.3	40	1/4"	10	M5	16
2W□050-10	60	52	39	87	26	56	10	5.3	48	3/8"	13	M5	23
2W□050-15	60	52	39	87	26	56	10	5.3	48	1/2"	13	M5	23

Fluid control valve(2/2way)

2W Series (Internally piloted and normally closed)



Symbol



Product feature

1. Indirect acting(Internal pilot) and normally closed type 2/2 way solenoid valve. Its can change direction quickly and has large flow.
2. It is compact, small and light weight. It is easy to install and dismantle;
3. The valve body is made of brass . The coil has a Heat resistance classification of Class B. The standard seal material is FPM-F. Please contact us if other material are required.
4. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification

Model\Item	Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Operating pressure differentia		Proof pressure	
						MPa	psi	MPa	psi
2W150-15	1/2"	15.0	5.50	100.0	720	Max: 1.0 Min: 0.05	Max: 150 Min: 10	1.5	220
2W200-20	3/4"	20.0	9.50	170.0	950				
2W250-25	1"	25.0	12.5	220.0	1200				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, grommet valve's weight is 10g less than terminal's.

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2W150 2W200 2W250	CDA116 CLA116	AC	50	±15%	Terminal (CDA) Grommet (CLA)	10.0VA	Class B	35
			60			8.0VA		30
		DC	–	±10%		6.5W		30

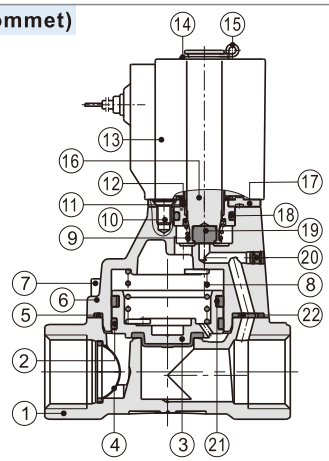
Valve's specification

Acting	Internally piloted				
Initial state	Normally closed				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less; [Note2] 50CST or less.

Inner structure

2W150 (Grommet)



No.	Item	No.	Item	No.	Item
1	Body	9	Spring	16	Movable core
2	Filter	10	Screw	17	Fixed plate
3	Piston	11	Fixed cap	18	O-ring
4	Wear ring	12	Washer	19	Airtight ring
5	O-ring	13	Coil assembly	20	Plug
6	Cover	14	Washer	21	Spring
7	Screw	15	E Clip	22	Spacer
8	Spring				

Ordering code

Ordering code of valves

2W 150 15 A □ G

1 2 3 4 5 6

①Model	②Orifice size	③Port size	④Voltage	⑤Electrical entry	⑥Thread type
2W: 2/2 way internally piloted and normally closed	150: Φ15mm	15: 1/2"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
	200: Φ20mm	20: 3/4"			
	250: Φ25mm	25: 1"			

[Note] The wire length is 0.5m.

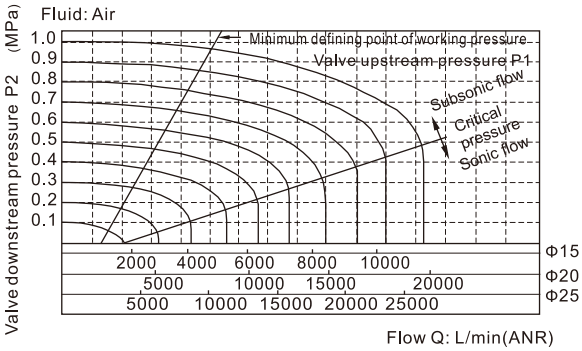
Ordering code of accessories

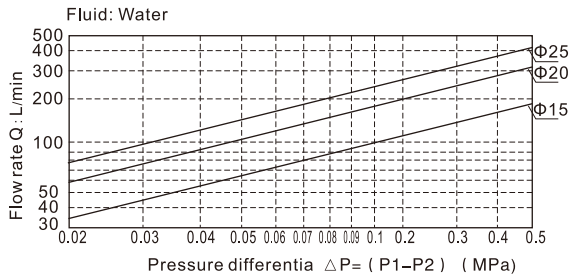
Ordering code of accessories is the same as 2S series valve's, Please refer to P184 for details of ordering code.

[Note] 320\400\500 series valves do not have mounting accessories.

2W Series (Internally piloted and normally closed)

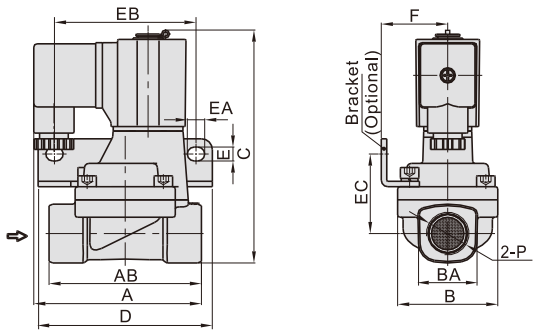
Flow chart





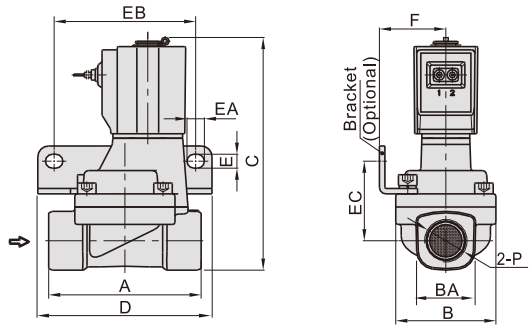
Dimensions

Terminal



Model\Item	A	AB	B	BA	C	D	E	EA	EB	EC	F	P
2W150-15	77	70	46	27.5	107	80	6.4	8	65	36.5	30.5	1/2"
2W200-20	78.5	82	53	33.5	115.5	90	6.4	8	75	40	34	3/4"
2W250-25	81	92	59	40.5	124	95	6.4	8	80	44.5	36	1"

Grommet



Model\Item	A	B	BA	C	D	E	EA	EB	EC	F	P
2W150-15	70	46	27.5	107	80	6.4	8	65	36.5	30.5	1/2"
2W200-20	82	53	33.5	115.5	90	6.4	8	75	40	34	3/4"
2W250-25	92	59	40.5	124	95	6.4	8	80	44.5	36	1"

Fluid control valve(2/2 way)

2KW Series (Direct-acting and normally opened)



Symbol



Product feature

1. Direct acting and normally opened type 2/2 way solenoid valve. Its high sensibility allows it to change direction quickly;
2. It has wide pressure range, including extra high pressure (X), high pressure (H), standard and large volume(L) to choose from;
3. It is compact, small size and light weight. It is easy to install and dismantle.
4. The valve body is made of brass . Its coil has a Heat resistance classification of Class B. The standard seal material is FPM-F. Please contact us if other material are required.
5. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification

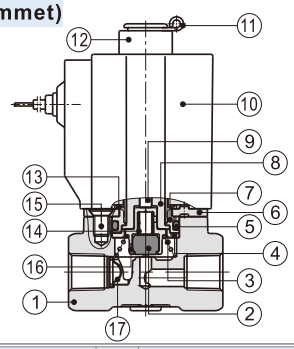
Model\Item		Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Max.operating pressure differentia		Proof pressure	
							MPa	psi	MPa	psi
2KWX030	-06	1/8"	1.5	0.10	1.8	315	2.0	300	3.0	450
	-08	1/4"				305				
2KWH030	-06	1/8"	2.0	0.18	3.0	315	1.5	220		
	-08	1/4"				305				
2KW030	-06	1/8"	3.0	0.33	6.0	315	0.7	100		
	-08	1/4"				305				
2KWL030	-06	1/8"	4.0	0.55	10.0	315	0.4	60		
	-08	1/4"				305				
2KWX050	-10	3/8"	3.0	0.34	6.1	635	2.0	300		
	-15	1/2"				615				
2KWH050	-10	3/8"	4.0	0.55	10.0	635	1.5	220		
	-15	1/2"				615				
2KW050	-10	3/8"	5.0	0.83	15.0	635	0.7	100		
	-15	1/2"				615				
2KWL050	-10	3/8"	7.0	1.40	25.0	635	0.4	60		
	-15	1/2"				615				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, 2KW030 series grommet valve's weight is 10g less than terminal's. 2KW050series grommet valve's weight is 20g less than terminal's.

Inner structure

2KW030(Grommet)



No.	Item	No.	Item
1	Body	10	Coil assembly
2	Airtight ring	11	E Clip
3	Spring	12	Position ring
4	Bead flange	13	Washer
5	O-ring	14	Spring
6	Fixed plate	15	Screw
7	Fixed cap	16	Airtight bush
8	Electromagnet	17	Filter
9	Mandril		

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2KW□030	CDA116 CLA116	AC	50	±15%	Terminal (CDA) Grommet (CLA)	15.0VA	Class B	50
			60			11.0VA		40
		DC	–	±10%		6.5W		30
2KW□050	CDA170 CLA170	AC	50	±15%		35.0VA		65
			60			30.0VA		60
		DC	–	±10%		12.0W		40

Valve's specification

Acting	Direct acting				
Initial state	Normally opened				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less; [Note2] 50CST or less.

Ordering code

Ordering code of valves

2KW H 030 08 A □ G

1 2 3 4 5 6 7

①Model	②Pressure condition	③Size series	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
2KW: 2/2 way direct-acting and normally opened	X: Extra high pressure H: High pressure Blank: Standard L: Large volume	030: 030 Series	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
		050: 050 Series	10: 3/8" 15: 1/2"			

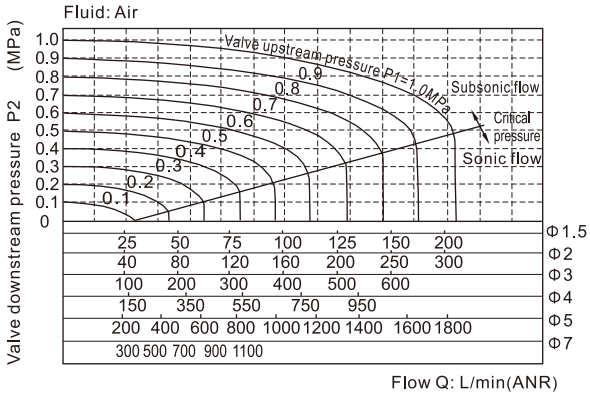
Ordering code of accessories

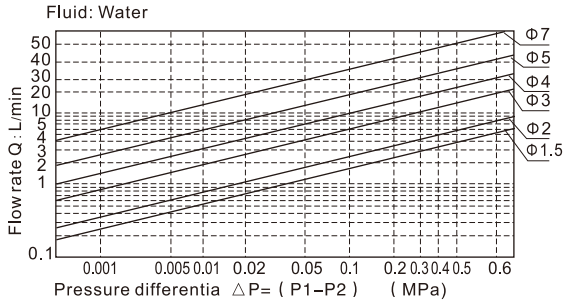
Ordering code of accessories is the same as 2S series valve's,Please refer to P182 for details of ordering code.

[Note] The wire length is 0.5m.

2KW Series (Direct-acting and normally opened)

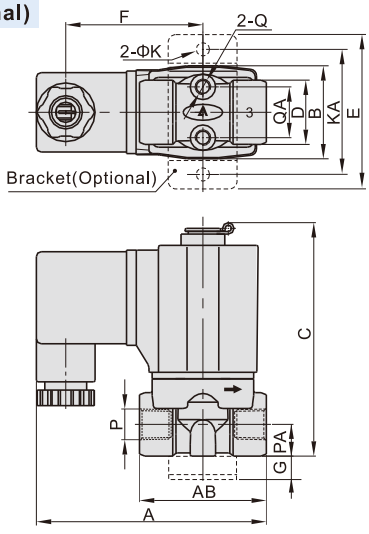
Flow chart



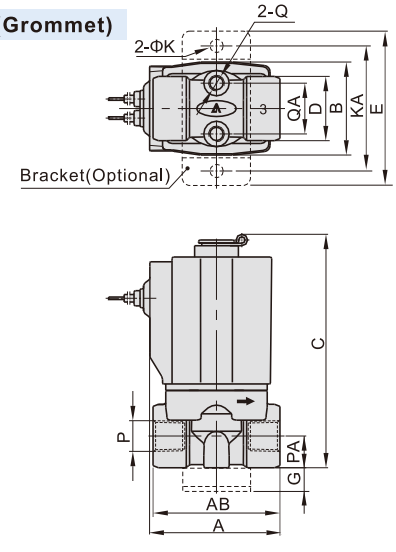


Dimensions

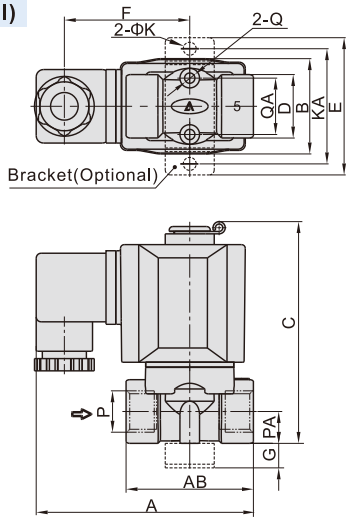
2KW□030 (Terminal)



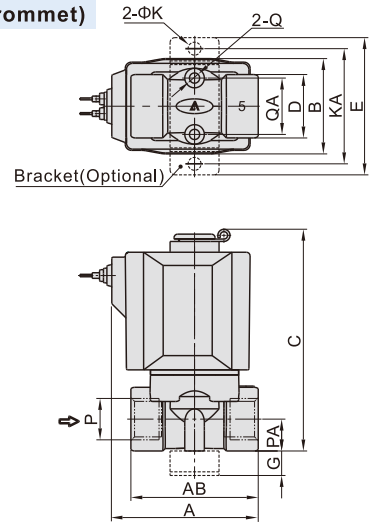
2KW□030(Grommet)



2KW□050(Terminal)



2KW□050(Grommet)



Model\Item	A	AB	B	C	D	E	F	G	K	KA	P	PA	Q	QA
2KW□030-06	72.5	40	29.5	76	20	49	43.5	10	5.3	40	1/8"	10	M5	16
2KW□030-08	72.5	40	29.5	76	20	49	43.5	10	5.3	40	1/4"	10	M5	16
2KW□050-10	89.5	52	39	92	26	56	51	10	5.3	48	3/8"	13	M5	23
2KW□050-15	89.5	52	39	92	26	56	51	10	5.3	48	1/2"	13	M5	23

Model\Item	A	AB	B	C	D	E	G	K	KA	P	PA	Q	QA
2KW□030-06	41	40	29.5	76	20	49	10	5.3	40	1/8"	10	M5	16
2KW□030-08	41	40	29.5	76	20	49	10	5.3	40	1/4"	10	M5	16
2KW□050-10	60	52	39	92	26	56	10	5.3	48	3/8"	13	M5	23
2KW□050-15	60	52	39	92	26	56	10	5.3	48	1/2"	13	M5	23

2KW Series (Internally piloted and normally opened)



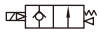
Specification

Model\Item	Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Operating pressure differentia		Proof pressure	
						MPa	psi	MPa	psi
2KW150-15	1/2"	15.0	5.50	100.0	730	Max: 0.7 Min: 0.05	Max: 100 Min: 10	1.5	220
2KW200-20	3/4"	20.0	9.50	170.0	960				
2KW250-25	1"	25.0	12.5	220.0	1210				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, grommet valve's weight is 10g less than terminal's.

Symbol



Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2KW150 2KW200 2KW250	CDA116 CLA116	AC	50	±15%	Terminal (CDA) Grommet (CLA)	15.0VA	Class B	50
			60			11.0VA		40
		DC	–	±10%		6.5W		30

Product feature

1. Indirect acting(Internal pilot) and normally opened type 2/2 way solenoid valve. Its can change direction quickly and has large flow.
2. It is compact, small and light weight. It is easy to install and dismantle;
3. The valve body is made of brass . The coil has a Heat resistance classification of Class B. The standard seal material is FPM-F. Please contact us if other material are required.
4. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

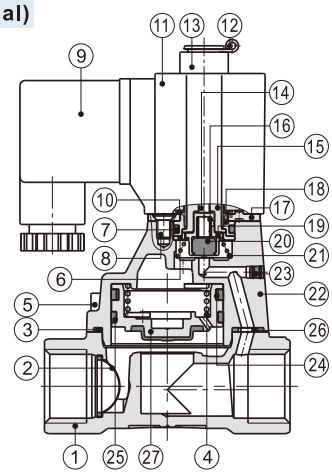
Valve's specification

Acting	Internally piloted				
Initial state	Normally opened				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less; [Note2] 50CST or less.

Inner structure

2KW150 (Terminal)



No.	Item	No.	Item	No.	Item
1	Body	10	Washer	19	Airtight bushing
2	Filter	11	Coil assembly	20	Airtight ring
3	O-ring	12	E Clip	21	Spring
4	Spring	13	Position ring	22	Cover
5	Screw	14	Mandril	23	Plug
6	Bead flange	15	Movable core	24	Bonnet spring
7	O-ring	16	Spring	25	Wear ring
8	Screw	17	Fixed plate	26	Spacer
9	Connector	18	Fixed cap	27	Piston

Ordering code

Ordering code of valves

2KW 150 15 A □ G

1 2 3 4 5 6

①Model	②Orifice size	③Port size	④Voltage	⑤Electrical entry	⑥Thread type
2KW: 2/2 way internally piloted and normally opened	150: Φ15mm	15: 1/2"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
	200: Φ20mm	20: 3/4"			
	250: Φ25mm	25: 1"			

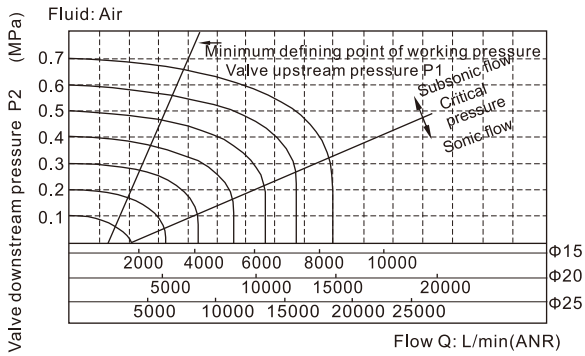
[Note] The wire length is 0.5m.

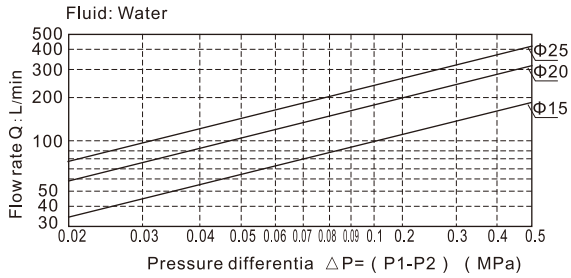
Ordering code of accessories

Ordering code of accessories is the same as 2S series valve's, Please refer to P184 for details of ordering code.

2KW Series (Internally piloted and normally opened)

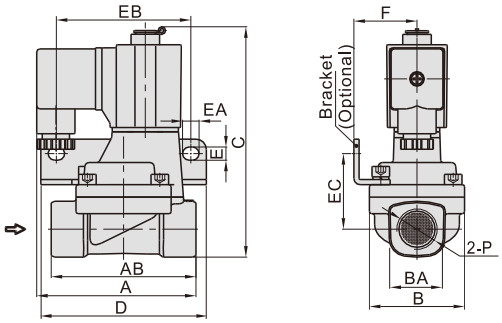
Flow chart





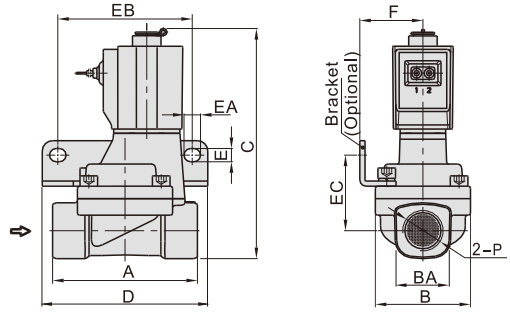
Dimensions

Terminal



Model\Item	A	AB	B	BA	C	D	E	EA	EB	EC	F	P
2KW150-15	77	70	46	27.5	112.5	80	6.4	8	65	36.5	30.5	1/2"
2KW200-20	78.5	82	53	33.5	121	90	6.4	8	75	40	34	3/4"
2KW250-25	81	92	59	40.5	129.5	95	6.4	8	80	44.5	36	1"

Grommet



Model\Item	A	B	BA	C	D	E	EA	EB	EC	F	P
2KW150-15	70	46	27.5	112.5	80	6.4	8	65	36.5	30.5	1/2"
2KW200-20	82	53	33.5	121	90	6.4	8	75	40	34	3/4"
2KW250-25	92	59	40.5	129.5	95	6.4	8	80	44.5	36	1"

Fluid control valve(2/2 way)

2L Series (Direct-acting and normally closed)



Symbol



Product feature

1. Direct acting and normally closed type 2/2 way solenoid valve. Its high sensibility allows it to change direction quickly;
2. It has wide pressure range, including standard high pressure (H) to choose from;
3. It is compact, small size and light weight. It is easy to install and dismantle.
4. The valve body is made of SUS304 . Its coil has a Heat resistance classification of Class H. The standard seal material is PTFE(Teflon) whichis suitable for a variety of working medium such as water with high temperature and vapour.
5. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification

Model\Item		Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Max.operating pressure differentia		Proof pressure	
							MPa	psi	MPa	psi
2LH030	-06	1/8"	2.0	0.18	3.0	300	2.0	300	3.0	450
	-08	1/4"				290				
2L030	-06	1/8"	3.0	0.33	6.0	300	1.0	150		
	-08	1/4"				290				
2LH050	-10	3/8"	4.0	0.55	10.0	600	2.0	300		
	-15	1/2"				590				
2L050	-10	3/8"	5.0	0.83	15.0	600	1.0	150		
	-15	1/2"				590				

[Note1] G thread is available.

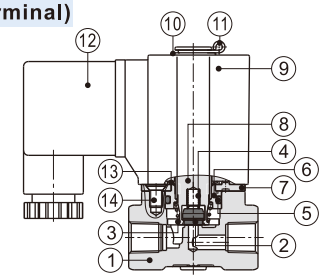
[Note2] The weight in the table is the terminal valve's weight, 2L030 series grommet valve's weight is 10g less than terminal's. 2L050series grommet valve's weight is 20g less than terminal's.

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2L□030	CDA116 CLA116	AC	50	±15%	Terminal (CDA) Grommet (CLA)	10.0VA	Class H	35
			60			8.0VA		30
		DC	–	±10%		6.5W		30
2L□050	CDA170 CLA170	AC	50	±15%		25.0VA		60
			60			22.0VA		55
		DC	–	±10%		12.0W		40

Inner structure

2L030 (Terminal)



No.	Item	No.	Item	No.	Item
1	Body	6	Fixed cap	11	E Clip
2	Airtight ring	7	Fixed plate	12	Connector
3	Spring	8	Movable core	13	Washer
4	Spring	9	Coil assembly	14	Screw
5	O-ring	10	Washer		

Valve's specification

Acting	Direct acting				
Initial state	Normally closed				
Adaptable fluid	Steam, High temperature Water,Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Oil	Water	Steam	Ambient
	Max.	150	150	183	100
	Min.	-10 [Note1]	1	–	-20

[Note1] 50CST or less.

Ordering code

Ordering code of valves

2L H 030 08 A □ G

1 2 3 4 5 6 7

①Model	②Pressure condition	③Size series	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
2L: 2/2 way direct-acting and normally closed	H: High pressure Blank: Standard	030: 030 Series	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
		050: 050 Series	10: 3/8" 15: 1/2"			

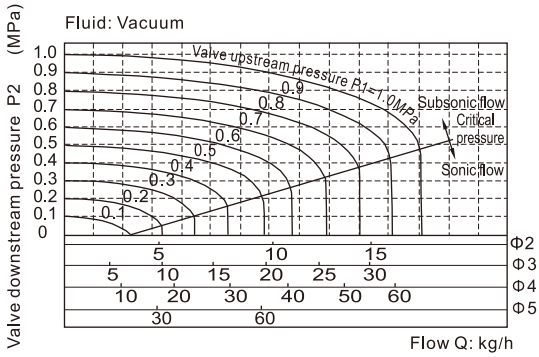
[Note] The wire length is 0.5m.

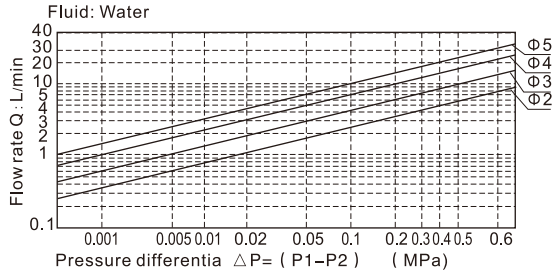
Ordering code of accessories

Ordering code of accessories is the same as 2S series valve's,Please refer to P182 for details of ordering code.

2L Series (Direct-acting and normally closed)

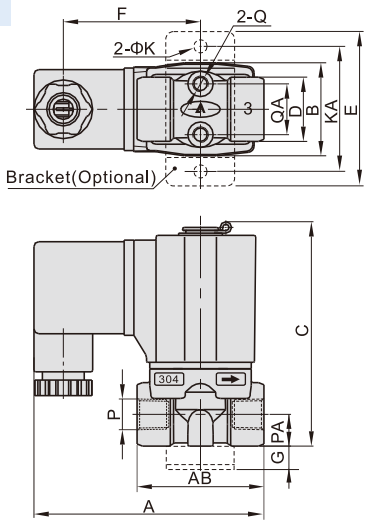
Flow chart



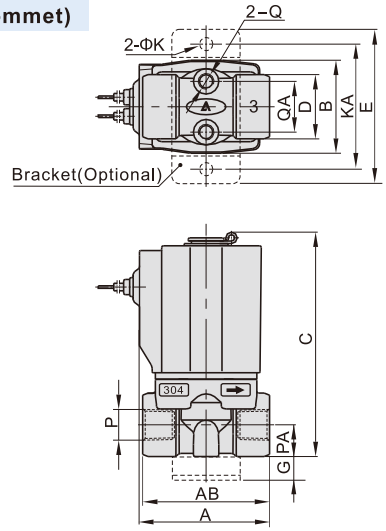


Dimensions

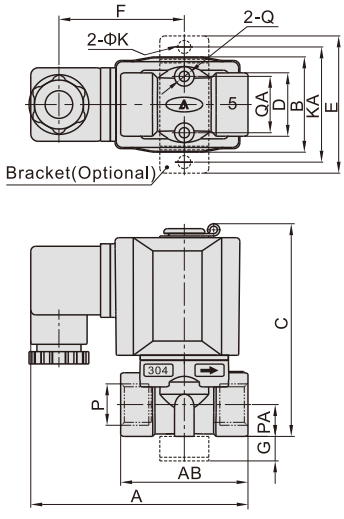
2L□030(Terminal)



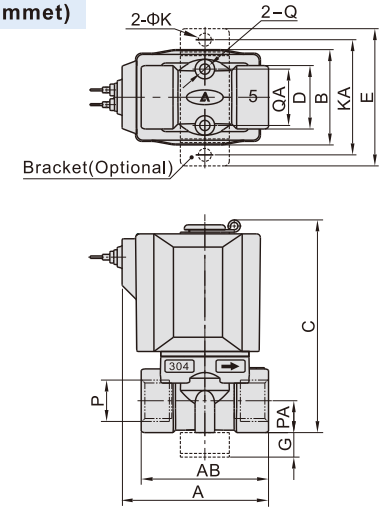
2L□030(Grommet)



2L□050(Terminal)



2L□050(Grommet)

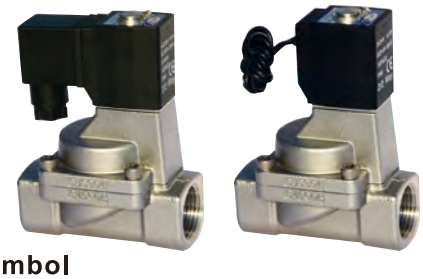


Model\Item	A	AB	B	C	D	E	F	G	K	KA	P	PA	Q	QA
2L□030-06	72.5	40	29.5	71	20	49	43.5	10	5.3	40	1/8"	10	M5	16
2L□030-08	72.5	40	29.5	71	20	49	43.5	10	5.3	40	1/4"	10	M5	16
2L□050-10	89.5	52	39	87	26	56	51	10	5.3	48	3/8"	13	M5	23
2L□050-15	89.5	52	39	87	26	56	51	10	5.3	48	1/2"	13	M5	23

Model\Item	A	AB	B	C	D	E	G	K	KA	P	PA	Q	QA
2L□030-06	41	40	29.5	71	20	49	10	5.3	40	1/8"	10	M5	16
2L□030-08	41	40	29.5	71	20	49	10	5.3	40	1/4"	10	M5	16
2L□050-10	60	52	39	87	26	56	10	5.3	48	3/8"	13	M5	23
2L□050-15	60	52	39	87	26	56	10	5.3	48	1/2"	13	M5	23

Fluid control valve(2/2 way)

2L Series (Internally piloted and normally closed)



Symbol



Product feature

1. Indirect acting(Internal pilot) and normally closed type 2/2 way solenoid valve. Its high sensibility allows it to change direction quickly.
2. It is compact, small size and light weight. It is easy to install and dismantle.
3. The valve body is made of SUS304 . Its coil has a Heat resistance classification of Class H. The standard seal material is PTFE(Teflon) whichis suitable for a variety of working medium such as water with high temperature and vapour.
4. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification

Model\Item	Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Operating pressure differentia		Proof pressure	
						MPa	psi	MPa	psi
2L150-15	1/2"	15.0	5.50	100.0	675	Max: 1.0 Min: 0.05	Max: 150 Min: 10	1.5	220
2L200-20	3/4"	20.0	9.50	170.0	875				
2L250-25	1"	25.0	12.50	220.0	1120				
2L320-32	1 1/4"	35.0	23.00	420.0	2700				
2L400-40	1 1/2"	40.0	31.00	560.0	3250				
2L500-50	2"	50.0	49.00	880.0	4300				

[Note1] G thread is available.

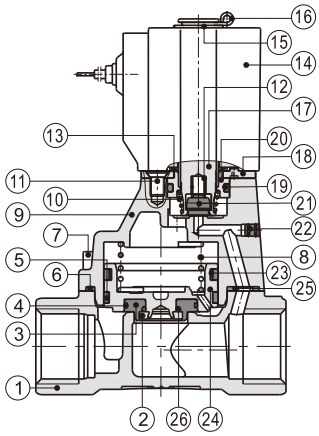
[Note2] The weight in the table is the terminal valve's weight, 2L150~250series grommet valve's weight is 10g less than terminal's. 2L320~500series grommet valve's weight is 20g less than terminal's.

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2L150 2L200 2L250	CDA116 CLA116	AC	50	±15%	Terminal (CDA) Grommet (CLA)	10.0VA	Class H	35
			60			8.0VA		30
		DC	–	±10%		6.5W		30
2L320 2L400 2L500	CDA170 CLA170	AC	50	±15%		25.0VA		60
			60			22.0VA		55
		DC	–	±10%		12.0W		40

Inner structure

2L150(Grommet)



No.	Item
1	Body
2	Fixed ring
3	Airtight gasket
4	O-ring
5	Wear ring
6	Gasket
7	Screw
8	Spring
9	Cover
10	Spring
11	Screw
12	Spring
13	Spring washer
14	Coil assembly
15	Washer
16	E Clip
17	Movable core
18	Fixed plate
19	O-ring
20	Fixed cap
21	Airtight ring
22	Plug
23	Spring
24	Piston
25	Spacer
26	O-ring

Valve's specification

Acting	Internally piloted				
Initial state	Normally closed				
Adaptable fluid	Steam,High temperature Water,Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Oil	Water	Steam	Ambient
	Max.	150	150	183	100
	Min.	-10 [Note1]	1	–	-20

[Note1] 50CST or less.

Ordering code

Ordering code of valves

2L 150 15 A □ G

(1) (2) (3) (4) (5) (6)

①Model	②Orifice size	③Port size	④Voltage	⑤Electrical entry	⑥Thread type
2L : 2/2 way internally piloted and normally closed	150: Φ15mm	15: 1/2"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
	200: Φ20mm	20: 3/4"			
	250: Φ25mm	25: 1"			
	320: Φ35mm	32: 1 1/4"			
	400: Φ40mm	40: 1 1/2"			
	500: Φ50mm	50: 2"			

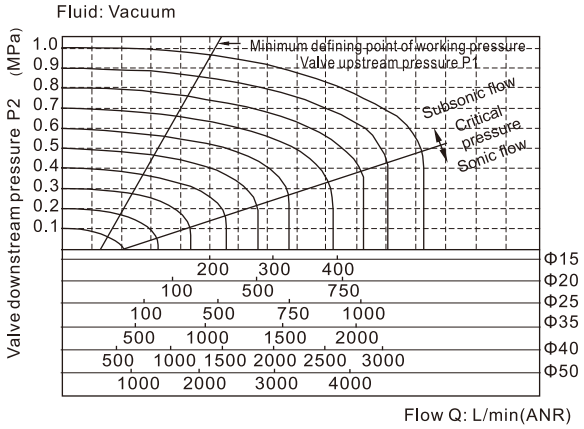
[Note] The wire length is 0.5m.

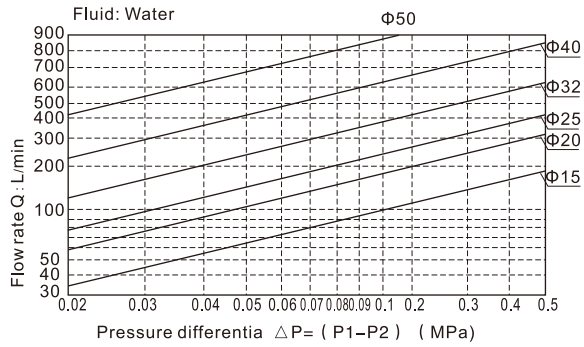
Ordering code of accessories

Ordering code of accessories is the same as 2S series valve's, please refer to P184 for details of ordering code.

[Note] 320\400\500 series valves do not have mounting accessories.

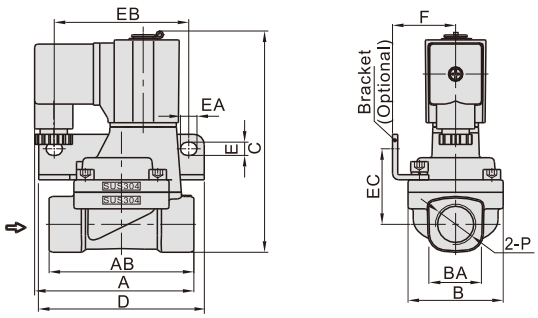
Flow chart



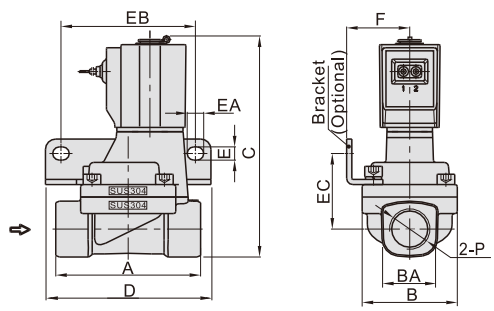


Dimensions

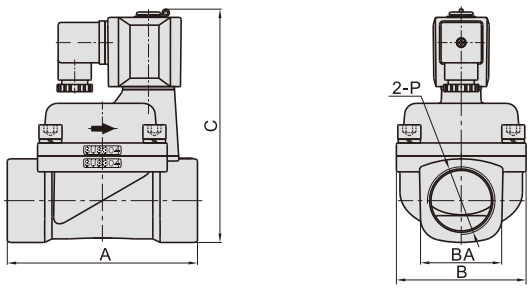
2L150~250(Terminal)



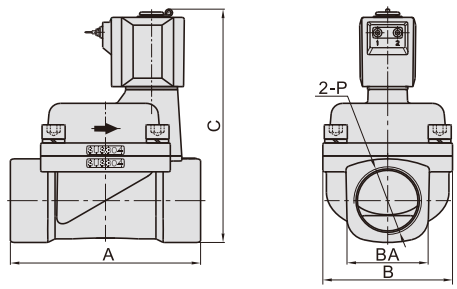
2L150~250(Grommet)



2L320~500(Terminal)



2L320~500(Grommet)

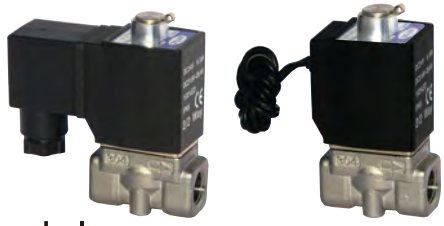


Model\Item	A	AB	B	BA	C	D	E	EA	EB	EC	F	P
2L150-15	77	70	46	27.5	107	80	6.4	8	65	36.5	30.5	1/2"
2L200-20	78.5	82	53	33.5	115.5	90	6.4	8	75	40	34	3/4"
2L250-25	81	92	59	40.5	124	95	6.4	8	80	44.5	36	1"
2L320-32	125	-	80	52	154.5	–	–	–	–	–	–	1 1/4"
2L400-40	132	-	90	58	162	–	–	–	–	–	–	1 1/2"
2L500-50	150	-	100	70	177	–	–	–	–	–	–	2"

Model\Item	A	B	BA	C	D	E	EA	EB	EC	F	P
2L150-15	70	46	27.5	107	80	6.4	8	65	36.5	30.5	1/2"
2L200-20	82	53	33.5	115.5	90	6.4	8	75	40	34	3/4"
2L250-25	92	59	40.5	124	95	6.4	8	80	44.5	36	1"
2L320-32	125	80	52	154.5	-	–	–	–	–	–	1 1/4"
2L400-40	132	90	58	162	–	–	–	–	–	–	1 1/2"
2L500-50	150	100	70	177	–	–	–	–	–	–	2"

Fluid control valve(2/2 way)

2KL Series (Direct-acting and normally opened)



Symbol



Product feature

1. Direct acting and normally opened type 2/2 way solenoid valve. Its high sensibility allows it to change direction quickly;
2. It has wide pressure range, including standard high pressure (H) to choose from;
3. It is compact, small size and light weight. It is easy to install and dismantle.
4. The valve body is made of SUS304 . Its coil has a Heat resistance classification of Class H. The standard seal material is PTFE(Teflon) which is suitable for a variety of working medium such as water with high temperature and vapour.
5. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Specification

Model\Item		Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Max.operating pressure differentia		Proof pressure	
							MPa	psi	MPa	psi
2KLH030	-06	1/8"	2.0	0.18	3.0	305	1.5	220	3.0	450
	-08	1/4"				295				
2KL030	-06	1/8"	3.0	0.33	6.0	305	0.7	100		
	-08	1/4"				295				
2KLH050	-10	3/8"	4.0	0.55	10.0	610	1.5	220		
	-15	1/2"				600				
2KL050	-10	3/8"	5.0	0.83	15.0	610	0.7	100		
	-15	1/2"				600				

[Note1] G thread is available.

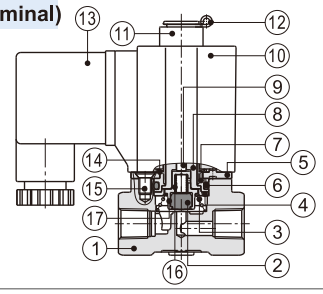
[Note2] The weight in the table is the terminal valve's weight, 2KL030 series grommet valve's weight is 10g less than terminal's. 2KL050series grommet valve's weight is 20g less than terminal's.

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2KL□030	CDA116 CLA116	AC	50	±15%	Terminal (CDA) Grommet (CLA)	15.0VA	Class H	50
			60			11.0VA		40
		DC	–	±10%		6.5W		30
2KL□050	CDA170 CLA170	AC	50	±15%		35.0VA		65
			60			30.0VA		60
		DC	–	±10%		12.0W		40

Inner structure

2KL030 (Terminal)



No.	Item	No.	Item	No.	Item
1	Body	7	Fixed cap	13	Connector
2	Airtight ring	8	Electromagnet	14	Spring washer
3	Spring	9	Mandril	15	Screw
4	Fixed ring	10	Coil assembly	16	Spring
5	Fixed plate	11	Position ring	17	Airtight bush
6	O-ring	12	E Clip		

Valve's specification

Acting	Direct acting				
Initial state	Normally opened				
Adaptable fluid	Steam,High temperature Water,Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Oil	Water	Steam	Ambient
	Max.	150	150	183	100
	Min.	-10 [Note1]	1	–	-20

[Note1] 50CST or less.

Ordering code

Ordering code of valves

2KL H 030 08 A □ G

1 2 3 4 5 6 7

①Model	②Pressure condition	③Size series	④Port size	⑤Voltage	⑥Electrical entry	⑦Thread type
2KL: 2/2 way direct-acting and normally opened	H: High pressure Blank: Standard	030: 030 Series	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
		050: 050 Series	10: 3/8" 15: 1/2"			

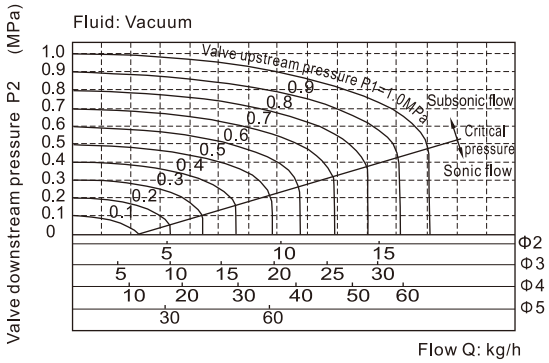
[Note] The wire length is 0.5m.

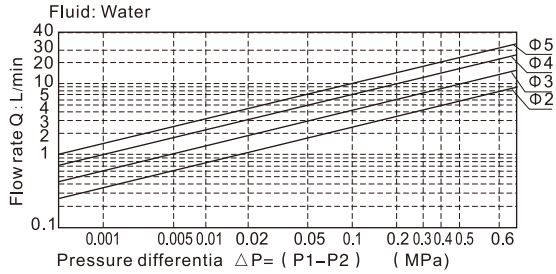
Ordering code of accessories

Ordering code of accessories is the same as 2S series valve's,Please refer to P182 for details of ordering code.

2KL Series (Direct-acting and normally opened)

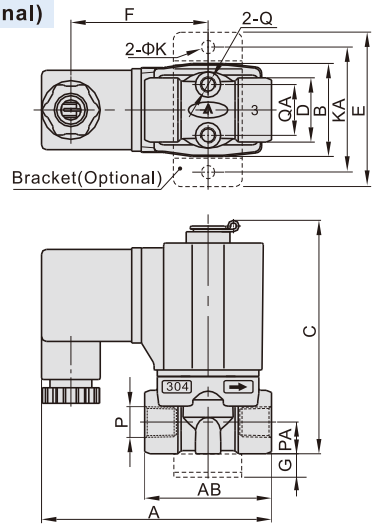
Flow chart



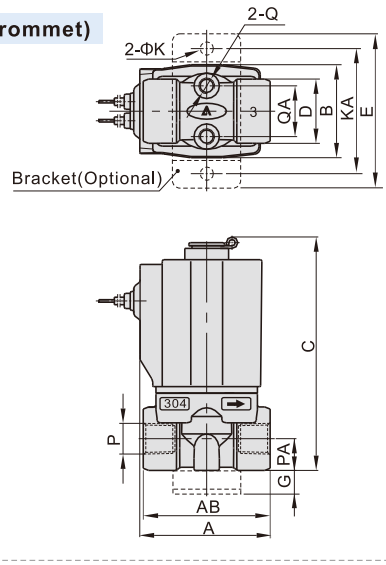


Dimensions

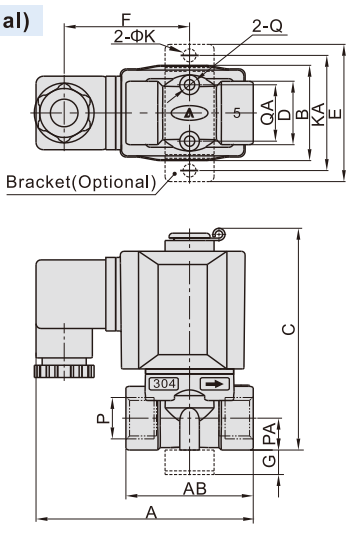
2KL□030(Terminal)



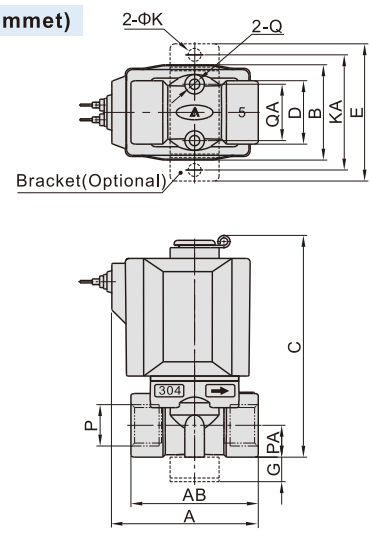
2KL□030(Grommet)



2KL□050(Terminal)



2KL□050(Grommet)



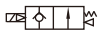
Model\Item	A	AB	B	C	D	E	F	G	K	KA	P	PA	Q	QA
2KL□030-06	72.5	40	29.5	76	20	49	43.5	10	5.3	40	1/8"	10	M5	16
2KL□030-08	72.5	40	29.5	76	20	49	43.5	10	5.3	40	1/4"	10	M5	16
2KL□050-10	89.5	52	39	92	26	56	51	10	5.3	48	3/8"	13	M5	23
2KL□050-15	89.5	52	39	92	26	56	51	10	5.3	48	1/2"	13	M5	23

Model\Item	A	AB	B	C	D	E	G	K	KA	P	PA	Q	QA
2KL□030-06	41	40	29.5	76	20	49	10	5.3	40	1/8"	10	M5	16
2KL□030-08	41	40	29.5	76	20	49	10	5.3	40	1/4"	10	M5	16
2KL□050-10	60	52	39	92	26	56	10	5.3	48	3/8"	13	M5	23
2KL□050-15	60	52	39	92	26	56	10	5.3	48	1/2"	13	M5	23

2KL Series (Internally piloted and normally opened)



Symbol

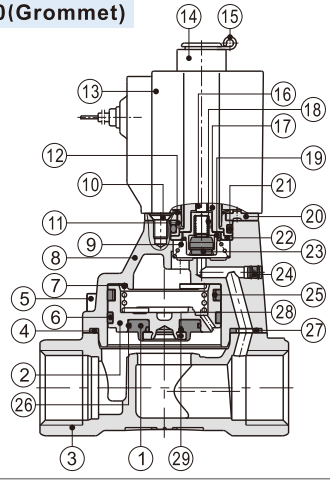


Product feature

1. Indirect acting(Internal pilot) and normally opened type 2/2 way solenoid valve. Its high sensibility allows it to change direction quickly.
2. It is compact, small size and light weight. It is easy to install and dismantle.
3. The valve body is made of SUS304 . Its coil has a Heat resistance classification of Class H. The standard seal material is PTFE(Teflon) which is suitable for a variety of working medium such as water with high temperature and vapour.
4. The protection class of the coil is IP65 and there is a choice for grommet or terminal electrical entry .

Inner structure

2KL150(Grommet)



No.	Item	No.	Item
1	Gasket	16	Mandril
2	Piston	17	Electromagnet
3	Body	18	Spring
4	Gasket	19	Airtight bush
5	Screw	20	Fixed plate
6	Wear ring	21	O-ring
7	Spring	22	Fixed ring
8	Cover	23	Airtight ring
9	Spring	24	Plug
10	Screw	25	Spring
11	Fixed cap	26	O-ring
12	Spring washer	27	Spacer
13	Coil assembly	28	O-ring
14	Position ring	29	Fixed ring
15	E Clip		

Specification

Model\Item	Port size [Note1]	Orifice size (Φmm)	Cv	Valid area or section (mm^2)	Weight [Note2](g)	Operating pressure differentia		Proof pressure	
						MPa	psi	MPa	psi
2KL150-15	1/2"	15.0	5.50	100.0	675	Max: 0.7 Min: 0.05	Max: 100 Min: 10	1.5	220
2KL200-20	3/4"	20.0	9.50	170.0	880				
2KL250-25	1"	25.0	12.50	220.0	1125				
2KL320-32	1 1/4"	35.0	23.00	420.0	2710				
2KL400-40	1 1/2"	40.0	31.00	560.0	3260				
2KL500-50	2"	50.0	49.00	880.0	4310				

[Note1] G thread is available.

[Note2] The weight in the table is the terminal valve's weight, 2KL150~250 series grommet valve's weight is10g less than terminal's. 2KL320~500series grommet valve's weight is 20g less than terminal's.

Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp. rise(℃)
2KL150 2KL200 2KL250	CDA116 CLA116	AC	50	±15%	Terminal (CDA) Grommet (CLA)	15.0VA	Class H	50
			60			11.0VA		40
		DC	–	±10%		6.5W		30
2KL320 2KL400 2KL500	CDA170 CLA170	AC	50	±15%		35.0VA		65
			60			30.0VA		60
		DC	–	±10%		12.0W		40

Valve's specification

Acting	Internally piloted				
Initial state	Normally opened				
Adaptable fluid	Steam,High temperature Water,Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Oil	Water	Steam	Ambient
	Max.	150	150	183	100
	Min.	-10 [Note1]	1	–	-20

[Note1] 50CST or less.

Ordering code

Ordering code of valves

2KL 150 15 A □ G

1 2 3 4 5 6

①Model	②Orifice size	③Port size	④Voltage	⑤Electrical entry	⑥Thread type
2KL: 2/2 way internally piloted and normally opened	150: Φ15mm	15: 1/2"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet [Note]	G: G Thread
	200: Φ20mm	20: 3/4"			
	250: Φ25mm	25: 1"			
	320: Φ35mm	32: 1 1/4"			
	400: Φ40mm	40: 1 1/2"			
	500: Φ50mm	50: 2"			

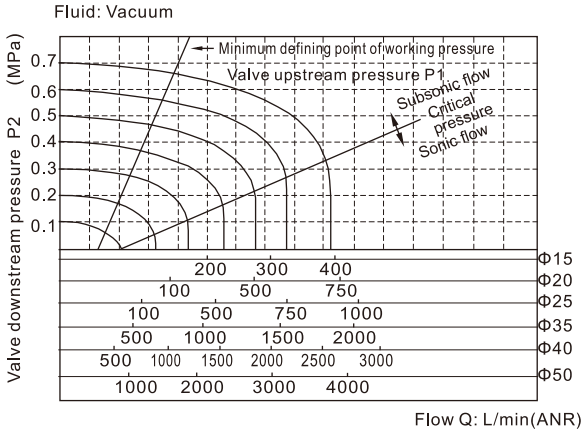
[Note] The wire length is 0.5m.

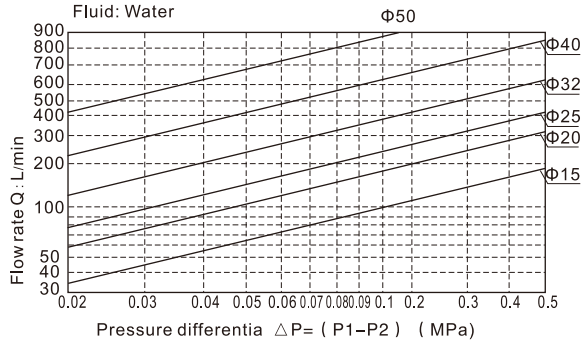
Ordering code of accessories

Ordering code of accessories is the same as 2S series valve's,
Please refer to P184 for details of ordering code.
[Note] 320\400\500 series valves do not have mounting accessories.

2KL Series (Internally piloted and normally opened)

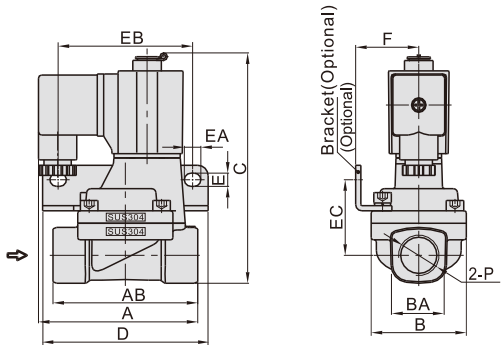
Flow chart



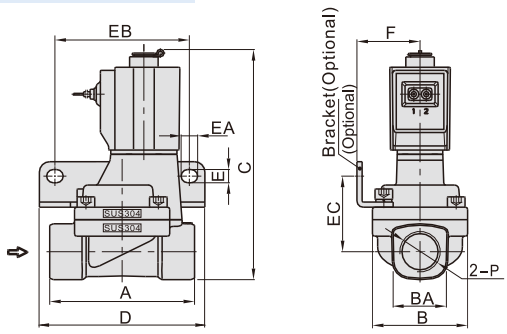


Dimensions

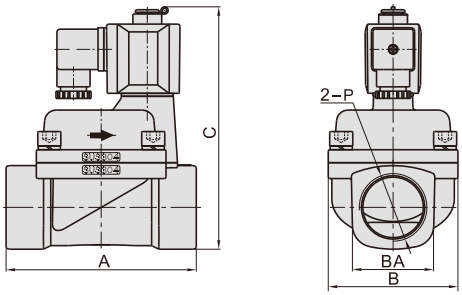
2KL150~250(Terminal)



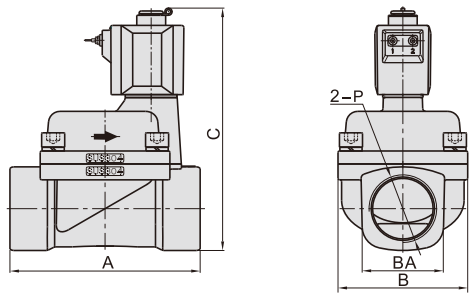
2KL150~250(Grommet)



2KL320~500(Terminal)



2KL320~500(Grommet)



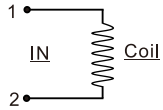
Model\Item	A	AB	B	BA	C	D	E	EA	EB	EC	F	P
2KL150-15	77	70	46	27.5	112.5	80	6.4	8	65	36.5	30.5	1/2"
2KL200-20	78.5	82	53	33.5	121	90	6.4	8	75	40	34	3/4"
2KL250-25	81	92	59	40.5	129.5	95	6.4	8	80	44.5	36	1"
2KL320-32	125	-	80	52	160	–	–	–	–	–	–	1 1/4"
2KL400-40	132	-	90	58	167	–	–	–	–	–	–	1 1/2"
2KL500-50	150	-	100	70	182	–	–	–	–	–	–	2"

Model\Item	A	B	BA	C	D	E	EA	EB	EC	F	P
2KL150-15	70	46	27.5	112.5	80	6.4	8	65	36.5	30.5	1/2"
2KL200-20	82	53	33.5	121	90	6.4	8	75	40	34	3/4"
2KL250-25	92	59	40.5	129.5	95	6.4	8	80	44.5	36	1"
2KL320-32	125	80	52	160	-	–	–	–	–	–	1 1/4"
2KL400-40	132	90	58	167	–	–	–	–	–	–	1 1/2"
2KL500-50	150	100	70	182	–	–	–	–	–	–	2"

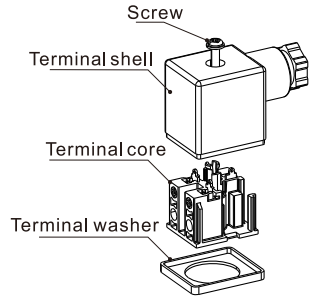
Coil and accessories



Hookup

Coil's type			Hookup	Connector's type
116 Series	CDA116 (Terminal)	AC		PL2925
		DC		
	CLA116 (Grommet)	AC		-
		DC		
170 Series	CDA170 (Terminal)	AC		PL3030
		DC		
	CLA170 (Grommet)	AC		-
		DC		

How to use connector



Specification

Model\Item	Power type	Voltage (V)	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W) For NC	Power Consumption (VA/W) For NO	Insulation	Temp.rise(℃) NC	Temp.rise(℃) NO
116 Series	AC	220	50	±15%	DIN Terminal	10.0VA	15.0VA	Class B	35	50
			60			8.0VA	11.0VA		30	40
		110	50			10.0VA	15.0VA		35	50
			60			8.0VA	11.0VA		30	40
		24	50		Grommet	10.0VA	15.0VA		35	50
			60			8.0VA	11.0VA		30	40
	DC	24	–	±10%		6.5W			30	30
		12								
170 Series	AC	220	50	±15%	DIN Terminal	25.0VA	35.0VA	Class H	60	65
			60			22.0VA	30.0VA		55	60
		110	50			25.0VA	35.0VA		60	65
			60			22.0VA	30.0VA		55	60
		24	50		Grommet	25.0VA	35.0VA		60	65
			60			22.0VA	30.0VA		55	60
	DC	24	–	±10%		12.0W			40	40
		12								

How to select coil

Valve type\Coil type		116 Series Class B	116 Series Class H	170 Series Class B	170 Series Class H
2W□030\2KW□030	2S□030\2KS□030	●	×	×	×
2L□030	2KL□030	×	●	×	×
2W□050\2KW□050	2S□050\2KS□050	×	×	●	×
2L□050	2KL□050	×	×	×	●
2W150~250\2KW150~250	2S150~250\2KS150~250	●	×	×	×
2L150~250	2KL150~250	×	●	×	×
2S320~500	2KS320~500	×	×	●	×
2L320~500	2KL320~500	×	×	×	●

How to select accessories

Valve type\ Accessories type			F-2S030LB	F-2S050LB	F-2S150LB	F-2S200LB	F-2S250LB
2W□030\2KW□030	2S□030\2KS□030	2L□030\2KL□030	●	×	×	×	×
2W□050\2KW□050	2S□050\2KS□050	2L□050\2KL□050	×	●	×	×	×
2W150\2KW150	2S150\2KS150	2L150\2KL150	×	×	●	×	×
2W200\2KW200	2S200\2KS200	2L200\2KL200	×	×	×	●	×
2W250\2KW250	2S250\2KS250	2L250\2KL250	×	×	×	×	●
2S320~500\2KS320~500	2L320~500\2KL320~500		×	×	×	×	×

Ordering code of coil

CD A116 A □

① ② ③ ④

①Coil type	②Coil's bore	③Voltage	④Temperature resistance class of coil
CD: Terminal CL: Grommet	A116: Coil Specification(Bore sizeΦ11.6mm) A170: Coil Specification(Bore sizeΦ17.0mm)	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: B Class H: H Class

2V Series

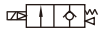


Symbol

2V025



2V130、250



Product feature

2V025 series

1. Direct acting and normally closed type 2/2 way solenoid valve. Its high sensitivity allows it to change direction quickly.
2. The structure is small and compact.
3. The valve body is made of brass which is heat resistance and the coil conforms to Class B classification. The seals are made of fluorine rubber (VITON) which is suitable for several types of working medium.

2V130 and 250 series

1. This 2/2 way diaphragm piloted solenoid valve has low energy consumption and large air flow .
2. The starting pressure is low and the min. operational differential pressure is 0.05MPa.
3. The valve body is made of brass which is heat resistance and the coil conforms to Class B classification . The seals are made of NBR.

Specification

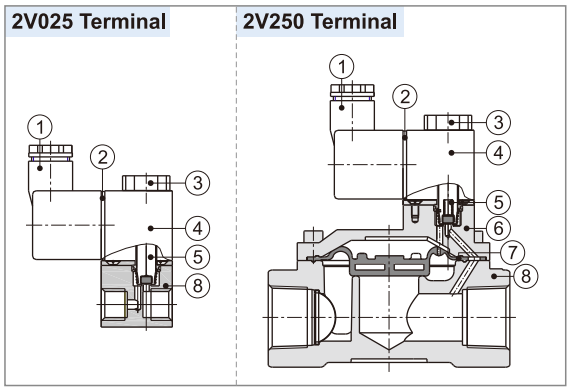
Model	2V025-06	2V025-08	2V130-10	2V130-15	2V250-20	2V250-25
Fluid	Air. Water. Oil					
Acting	Direct acting		Internally piloted acting			
Initial state	Normally closed					
Orifice size	2.5	2.5	13.0	13.0	25.0	25.0
Cv	0.23	0.25	6.20	6.20	13.00	13.00
Port size [Note]	1/8"	1/4"	3/8"	1/2"	3/4"	1"
Viscosity limit	Under 20CST					
Pressure range	0~1.0MPa(0~145psi)		0.05~1.0MPa(7~145psi)			
Proof pressure	1.5MPa(215psi)					
Material body	Brass with nickel plated		Brass			
Seal material	VITON		NBR			
Activating time	0.05 sec and below					

[Note1] G thread is available.

Specification of coil

Valve type	Power type	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)	Insulation	Temp.rise (℃)
2V025 2V130 2V250	AC	50	±15%	Terminal Grommet	7.0VA	Class B	35
		60					
	DC	–	±10%		7.0W		45

Inner structure



No.	Item	No.	Item	No.	Item
1	Connector	4	Coil	7	Diaphragm
2	Connector gasket	5	Armature assembly	8	Body
3	Coil nut	6	Body cover		

Usable fluid

Seal material\Fluid	Water	Dry air	Acetone*	ISOVG32 oil	Glycol*	Nitrogen	Heavy oil
NBR	○	◎	△	◎	○	◎	○

Seal material\Fluid	JIS# oil	JIS#3 oil	Vegetable Oil	Inorganic Oil	Start Oil	Silicagel Oil	CO_2	Argon
NBR	◎	○	◎	◎	○	◎	◎	◎

Note 1: ◎= Excellent(nearly without affect). ○= Good(workable though some affect). △= Poor(large affect).

Note 2: "*"means inflammable and explosive dangerous fluid. Please use the relative explosion proof coil.

Note 3: Please consult the technical department before using fluid that has not been shown in the above table.

Ordering code

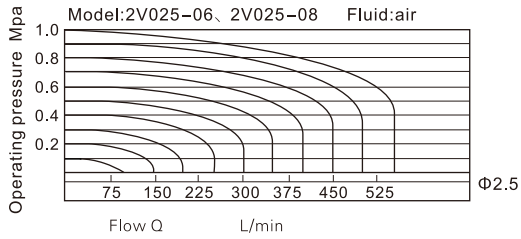
2V 025 08 A □ G

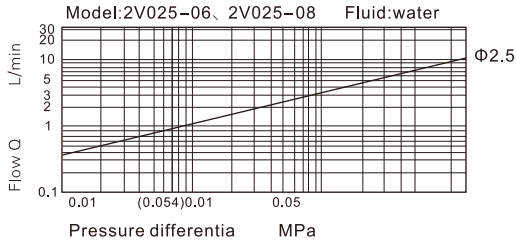
1 2 3 4 5 6

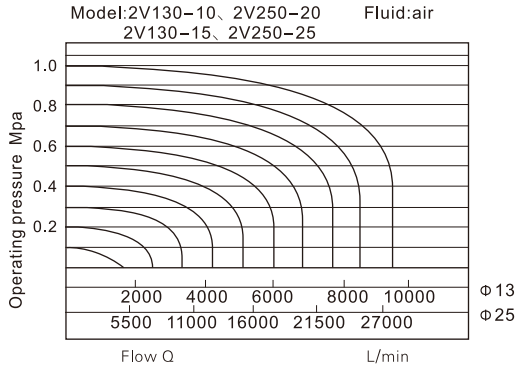
①Model	②Orifice size	③Port size	④Voltage	⑤Electrical entry	⑥Thread type
2V: 2 port 2 position valve	025: Φ2.5mm	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet[Note]	G: G Thread
	130: Φ13mm	10: 3/8" 15: 1/2"			
	250: Φ25mm	20: 3/4" 25: 1"			

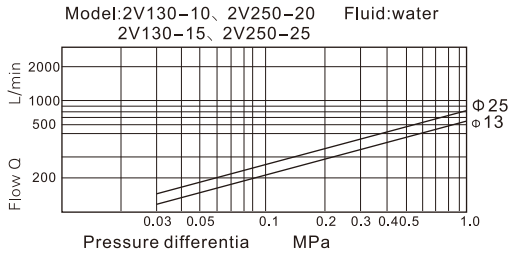
[Note] The wire length is 0.5m.

Flow chart



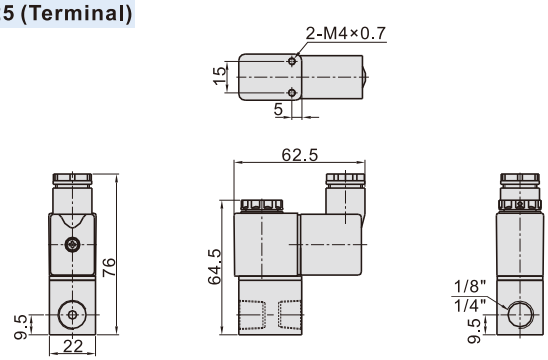




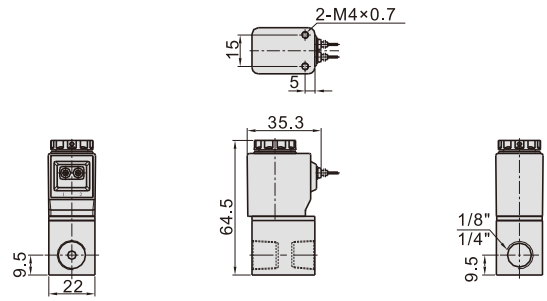


Dimensions

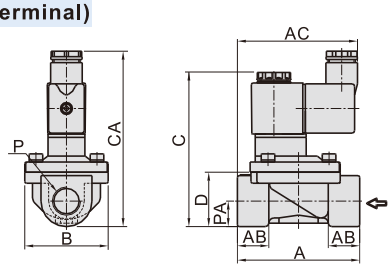
2V025 (Terminal)



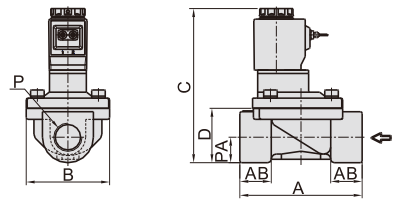
2V025 (Grommet)



2V130\250(Terminal)



2V130\250 (Grommet)



Model\Item	A	AB	AC	B	C	CA	D	P	PA
2V130-10	72	18.5	71	49	91	103	32	3/8"	15
2V130-15	72	18.5	71	49	91	103	32	1/2"	15
2V250-20	102	23	74	77.5	107.5	120	45	3/4"	21
2V250-25	102	23	74	77.5	107.5	120	45	1"	21

Angle seat valve(2/2 way)

2J Series



Symbol



(NC) (NO)

Product feature

1. Air piloted and can be used non electric, inflammable and explosive environment. The start-up pressure is low; and the high pressure could be controlled by the low pressure.
2. The accessories such as the noumenon and slide bar are made of stainless steel, which are of excellent rustproof quality. The seals are made of Teflon and can be applied extensively in areas with high temperature and strong corrosive liquids.
3. The structure of valve is angles at 45° degrees with streamline inner chamber design . The reduced tunnel resistance allows liquid to run more smoothly thus achieving high flow. Filtration core are added at inlet port to prevent the entrance of impurities and extend life span of the seals.
4. Actuator is fitted with visual position indicator. This allows for visual checking and adjustment of flowrate.
5. Control point is made of metal insert. Mounting plate can be used to for NAMUR value.
6. The actuator part can be rotated at 360° degrees and is easily installed.

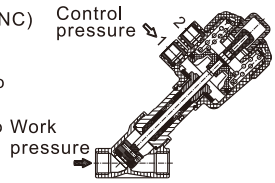
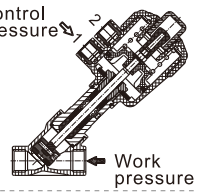
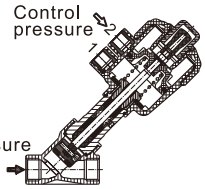
Specification

Model\Item		Port	Actuator size(mm)	Orifice size(mm)	Kv	Min.pilot pressure(bar)	Max.differentia pressure(bar)	Weight (kg)
2JS150 2JW150	-10	G3/8	40	15	4.4	4.8	13	0.8
	-15	G1/2						0.7
	-10	G3/8	50		4.8	4.3	16	0.8
	-15	G1/2						0.7
2JS200 2JW200	-20	G3/4	40	20	7.9	4.8	6.5	0.9
			50		8	4.3	11	0.95
			63		10	4.2	16	1.6
2JS250 2JW250	-25	G1	63	25	19	4.2	11	1.9
			80		20	5.0	16	2.5
2JS320 2JW320	-32	G1 1/4	63	32	27	4.2	6	2.5
			80		28	5.0	15	3.0
2JSK150 2JWK150	-10	G3/8	40	15	4.4	For details, please refer to normally-opened-type fluid pressure – control pressure curve	16	0.8
	-15	G1/2						0.7
	-10	G3/8	50		4.8		16	0.8
	-15	G1/2						0.7
2JSK200 2JWK200	-20	G3/4	40	20	7.9		16	0.9
			50		8		16	0.9
2JSK250 2JWK250	-25	G1	50	25	14.5		16	1.2
			63		19		16	1.6
2JSK320 2JWK320	-32	G1 1/4	63	32	27		16	2.2
			80		28		16	2.4
2JSY150 2JWY150	-10	G3/8	40	15	4.4	For details, please refer to normally-closed-water-hammer-type fluid pressure – control pressure curve	16	0.8
	-15	G1/2						0.7
	-10	G3/8	50		4.8		16	0.8
	-15	G1/2						0.7
2JSY200 2JWY200	-20	G3/4	40	20	7.9		16	0.9
			50		8		16	0.9
2JSY250 2JWY250	-25	G1	50	25	14.5		16	1.3
			63		19		16	1.7
2JSY320 2JWY320	-32	G1 1/4	63	32	27		16	2.3

Ordering code

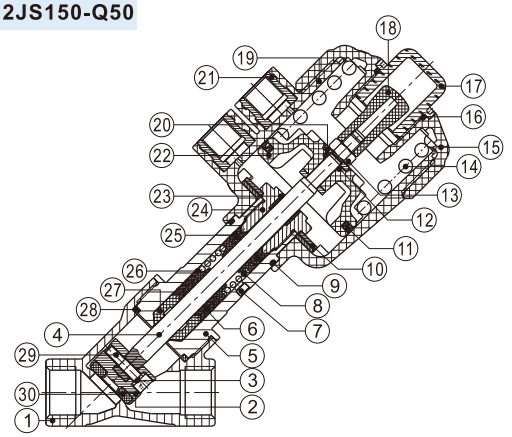
2J S K 150 15 Q50 G

① ② ③ ④ ⑤ ⑥ ⑦

①Model	②Valve body meterial	③Acting type	④Orifice size	⑤Port size	⑥Size of actuator	⑦Thread type
2J: Angle seat valve(2/2 way)	S: SUS316L W: SUS304	Blank: No water-hammer(NC) The working medium flows to the down side of valve inlet (Flow from the bottom part to upper part of piston) 	150: Φ15mm	10: 3/8" 15: 1/2"	Q40: Φ40mm Q50: Φ50mm Q63: Φ63mm Q80: Φ80mm	G: G Thread
		Y: Water-hammer(NC) The working medium flows to the upper side of valve inlet (Flow from the upper part to bottom part of piston) 	200: Φ20mm	20: 3/4"		
		K: Normal opened The working medium flows to the down side of valve inlet (Flow from the bottom part to upper part of piston) 	250: Φ25mm	25: 1"		
			320: Φ32mm	32: 1 1/4"		

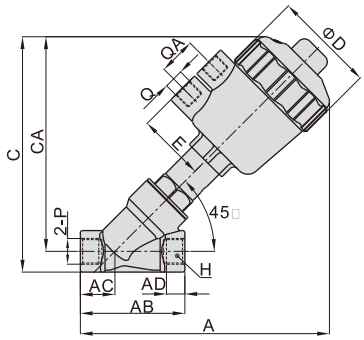
Inner structure

2JS150-Q50



No.	Item	Material	No.	Item	Material
1	Body	Stainless steel	16	O-ring	NBR
2	Piston	Stainless steel	17	Transparent cap	Plastic
3	Spring washer	Spring steel	18	Indicate rod	Plastic
4	Piston rod	Stainless steel	19	Cylinder body	PA6
5	Pitman	Stainless steel	20	Washer	SPCC
6	V-seals	PTFE	21	Built-in nut	Brass nickel-plate
7	Filter core	Bronze	22	Piston	PA6
8	Spring	Spring steel	23	DU dry bearing	Wear resistant material
9	O-ring	NBR	24	Connect nut	Brass
10	Bellville spring	Spring steel	25	O-ring	Viton
11	O-ring	NBR	26	Spring holder	PTFE
12	O-ring	NBR	27	Guide sleeve	PTFE
13	Hexagon nut	Steel	28	Seal washer	PTFE
14	Spring	Spring steel	29	Screw	Stainless steel
15	Top cover	PA6	30	Seal washer	PTFE

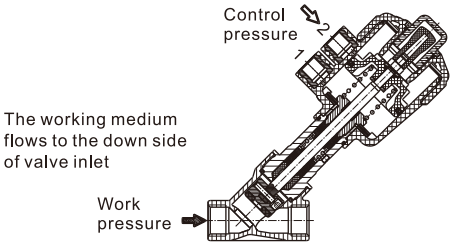
Dimensions

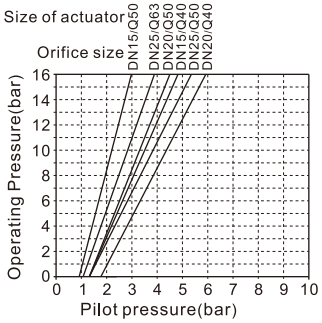


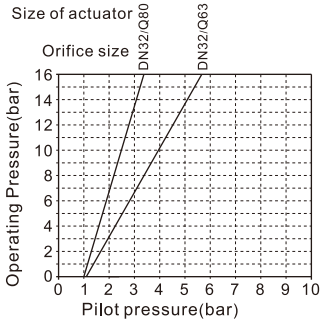
Orifice size(DN)	Size of actuator	A	AB	AC	AD	C	CA	ΦD	E	H	Port size(P)	Q	QA
15	Φ40	153	68	22.5	12	144	130	56	33	27	G3/8	G1/8	24
	Φ50	162				153	140	66	44		G1/2	G1/4	
20	Φ40	161	78	27	14	150	134	56	33	33	G3/4	G1/8	
	Φ50	170				160	143	66	44			G1/4	
	Φ63	200				189	172	82	51			G1/4	
25	Φ50	176	90	28		168	147	66	44	40	G1	G1/4	
	Φ63	205				197	176	82	51			G1/4	
	Φ80	221				213	193	102	60			G1/4	
32	Φ63	220	110	35	18	210	185	82	51	50	$G1^1/_4$	G1/4	
	Φ80	237				227	202	102	60			G1/4	

Fluid pressure — control pressure curve

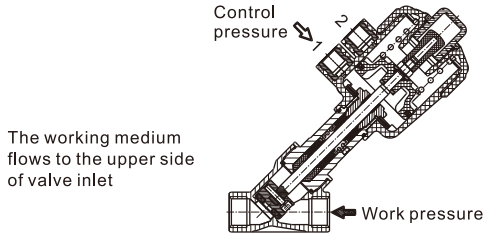
Normal opened

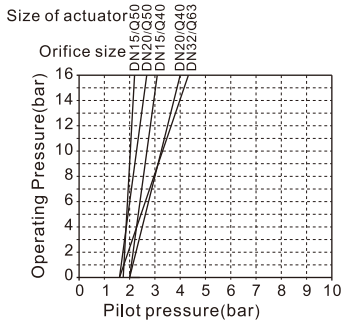


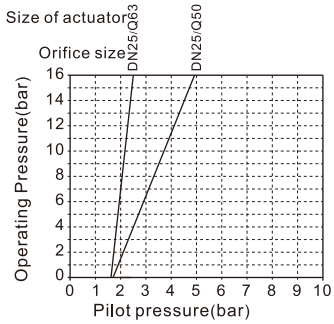




Water-hammer(NC)







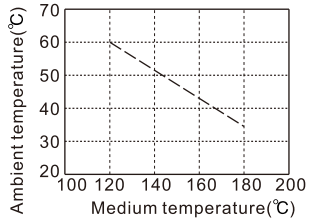
Ambient and medium temperature

Control medium	Air, neutral air(to be filtered by 40 μ m filter element)
Max. control pressure	Size of actuatorΦ40/50/63 : 10bar
	Size of actuatorΦ80 : 7bar
Medium [Note1]	air, liquid, vacuum, steam
Viscosity limit	600mm²/s below
Temperature [Note2]	-20~+180℃
Ambient temp [Note3]	-10~+60℃

[Note1]: The water-hammer-type can be used for air, or steam only, and can not be used for liquid.

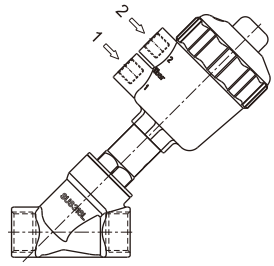
Note 2]: Dew point: -20℃ or less.

[Note3]: Relationship of working medium temperature and ambient temperature is shown in following figure.



Operation and maintenance

1. Before using, please verify that if the working status of product is identical with data in catalogue, and it should not exceed the limits.
2. Before the pressure releasing and cooling of system, no maintenance, examination and installation of product should be conducted.
3. For the normally-closed-type , when its valve is disassembled, due to the pre-pressure of the relatively large spring power in controller, the “1” hole should be opened for ventilation in advance so to make sure the piston could be completely moved to the position, then rotate the screw thread between the valve and the connection bar, direct rotation is forbidden, otherwise the disassembling would not be conducted in result of the scuffing of screw thread.
4. If maintenance of actuator part is needed, special tools should be used for disassembling and installation, while disassembling, the loading spring could cause damage. If the customer can not conduct the maintenance, please return the valve to manufacturer for maintenance.



To achieve the optimization of system performance, the first thing is to get the gas source which accords with the specifications. Preparation unit with good performance are the precondition to make sure the gas source. AirTAC has many kinds of preparation unit for your choice:
1. GA series; 2. GP series; 3. Vacuum series; 4. Other accessory series.

GA Series

P215



GAC100~600 Series F.R.L combination.....216
GAFC100~600 Series FR.L combination.....219
GAFR100~600 Series Filter & regulator.....222
GAF100~600 Series Filter.....225
GAR100~600 Series Regulator.....228
GAL100~600 Series Lubricator.....231
GT Series preparation unit.....235
GA Series Gas distribution block.....237

GP Series

P239



GPF200~400 Series Oil mist fister.....240
GPR200~400 Series precision regulator.....242
GPFR Series precision Filter-Regulator.....246

Others

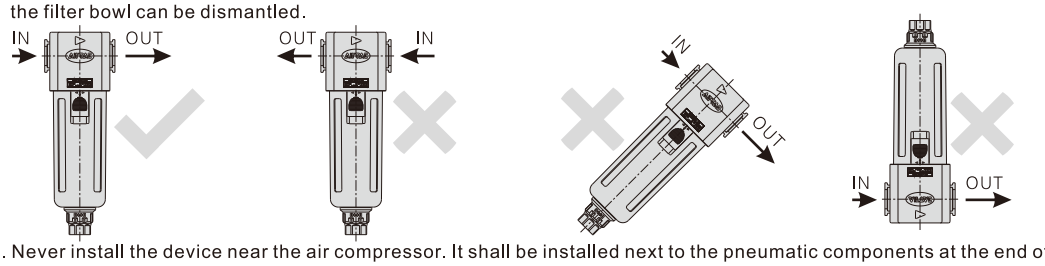
P249

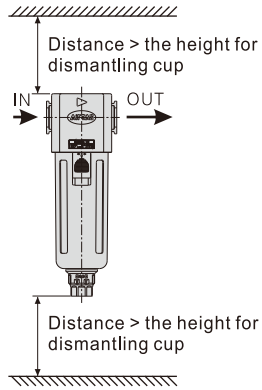


SDR Series Regulator.....250
DPS Series Digital Display Pressure Sensor.....252
DPH Series digital display pressure sensor(Analog output)....256
GS, GF, GU, GP, GV Series Pressure gauge.....263
GVF Series Vacuum Filter.....264
GVR Series Vacuum Regulator.....266

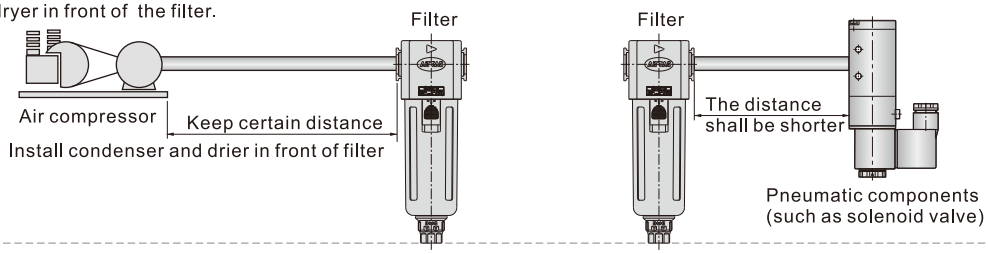
The installation and application of the filter

1. Before installation, the sundry granule such as dust, oil pollution and chipping in pipeline shall be cleaned up to prevent the mixture of fragments of seal materials.
2. Never install reversingly the direction of intake and outlet. It shall be installed vertically and the bowl is downward.
   For the convenient of maintenance, proper space around the device shall be left. The installation height of filter shall accord with the elevation that the filter bowl can be dismantled.





3. Never install the device near the air compressor. It shall be installed next to the pneumatic components at the end of pipeline, since the water and oil in the compressed air with high temperature from air compressor take on gaseous state which will not only influence the filter effect, but are easy to damage the seals. Please install condenser and dryer in front of the filter.



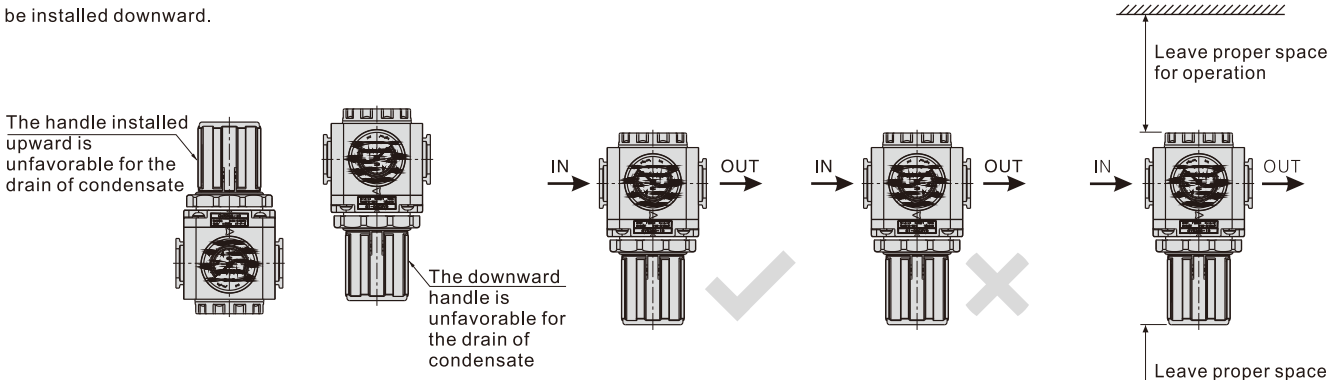
Attention

1. To prevent the external force to damage the filter bowl, never install it in the side of access of delivery vehicles or a protection barrier may be built.
2. The drain bowl is made of polycarbonate which can not be used in the environment with synthetic oil, organic solvent, chemicals, cooling fluid, alkali and acidic matter, gluewater; and the site additive with the above matters. Meanwhile, the direct sunshine shall be avoided.
3. Regular draining of bowl shall be conducted. Once water level surpasses the breakwater, the sewage filtered will be carried to the output compressed air again, causing secondary pollution.
4. To guarantee the filter effect, the filter core shall be cleaned or changed regularly.
5. Please regularly examine whether the plastic drain bowl has crack, damage or other aging.

Warning

Installation and application of regulator

1. Before installation, the sundry granule such as dust, oil pollution and chipping in pipeline shall be cleaned up to prevent the mixture of fragments of seal materials.
2. When there is more condensate, and if the condensate stays in the valve, poor action of Regulator will be easily caused. Therefore, the handle shall be installed downward.

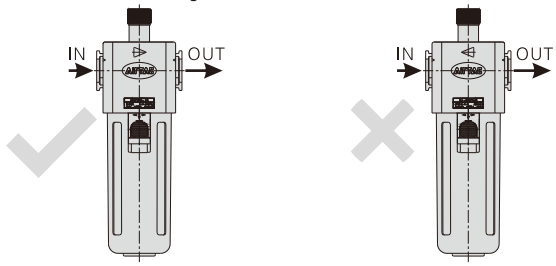


3. The direction of intake and outlet shall not be installed reversingly, otherwise the Regulator will leak for a long time and lose pressure- adjustment function.
4. The set pressure at the outlet sides of Regulator shall be less than 85% of the pressure of intake side, which is to avoid overlarge pressure drop and failing in meeting the application requirement.
5. Two Regulator act as the loop for the intake by turns of high and low pressure. Please use free flow valve to prevent reflux.
6. If there are condensate, oil pollution and dust in pressure pipe at intake side, the jam in discharge orifice and restriction orifice and poor action of valve will be caused. Therefore, filter shall be installed additionally in front of Regulator.
7. It shall be applied in the stipulated temperature range and direct sunshine shall be avoided.
8. Proper space around the device shall be left for pressure-adjustment operation and maintenance.
9. After the pressure-adjustment operation is finished, the adjustment button of Regulator shall be locked.

Attention

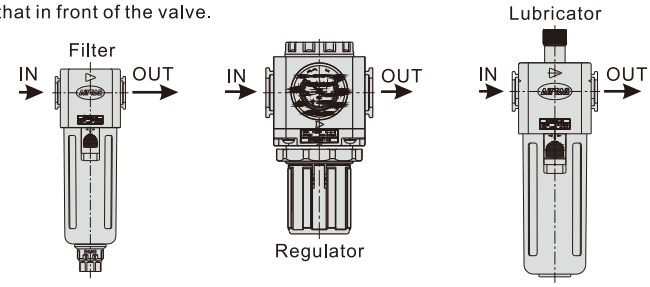
The installation and application of oil feeder

1. The direction of intake and outlet shall not be installed reversingly. Before installation, the sundry granule such as dust, oil pollution and chipping in pipeline shall be cleaned up to prevent the mixture of fragments of sealmaterial.



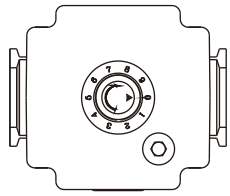
Attention

2. It will be difficult to supply oil and conduct maintenance if the Lubricator is set too high.
3. Lubricator shall be installed after the air filter and Regulator to prevent moisture entering the oil bowl and avoid oil emulsification. The throttle orifice in Regulator shall not be polluted by oil and the rubber parts shall not be influenced by oil mist. It is good for the atomization of oil that the velocity of low after Regulator is higher than that in front of the valve.



The correct installation sequence of Filter Regulator and Lubricator

4. The number in dial in adjustment ring of Lubricator shows the position of oil quantity adjustment. The larger the number is, the more the oil dripping is. It is not for oil drops.
5. When Lubricator works, if there is a part in the pipeline loop that can not be supplied with oil, this part shall be set with one-way valve to prevent reflux.
6. The air flow that is used by Lubricator must meet the requirement of necessary quantity of oil dripping (minimal flow for mist). The insufficient air flow will cause the failure of oil dripping.



The bigger the number in dial is,the higher the quantity of oil dripping is

7. The Lubricator can be added oil under pressure. When oil is added, the oil-fill plug shall be slowly opened and dismantled after the pressure in oil bowl has been completely eliminated to prevent oil-fill plug flying off or oil spraying.
8. The oil level in oil bowl shall stay between the up limit and down limit, and please supplement oil on a timely basis.

◆Method for supplementing oil

When Lubricator is supplemented with oil, the oil-fill plug shall be turned off. Turbine oil poured into the oil bowl shall reach 80% of its volume. Oil shall be regularly examined and supplemented to allow the device to work under the situation that oil is sufficient. (As when the oil level is under the oil suction pipe, it can not supply oil for the system. Therefore, the oil shall be supplemented before the bottom of oil suction pipe is exposed).

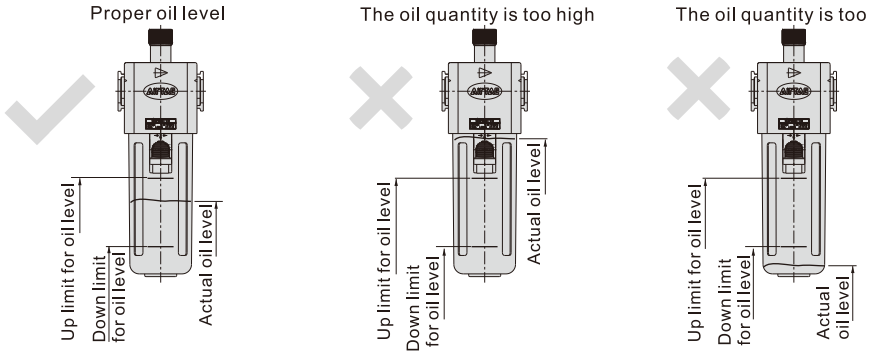
◆Oil quantity and its adjustment

Generally speaking, the free air of each $10m^3$ uses $1cm^3$ as the benchmark oil supply quantity.

◆Lubricant

The lubricant that is recommended for pneumatic components is one kind (ISO VG32) of turbine oil. Especially when pneumatic components are lubricated, its particularity shall be considered. Lubricant shall be anti-rust and avoid swelling, shrink and deterioration of seal materials (pneumatic components mostly adopt NBR as the seal's material).In addition, the performance of oil dripping of lubricant shall be considered. The viscosity that is too high or too low is not proper.

9. Please regularly examine whether the plastics bowl and inspection window of Lubricator have crack, damage or other aging situation.



Compendium of GA Series preparation unit

P216	Product feature	Photo	P219	Product feature	Photo
GAC Series F.R.L Unit	•The efficiency of eliminating moisture and solid grain is high. •Adjusting pressure steadily •The flow of miststart is low. Filling oil under pressure is possible. •100/200/300/400/500/600 Series •Port size: M5 1/8" 1/4" 3/8" 1/2" 3/4" 1"		GAFC Series FR.L Unit	•The efficiency of eliminating moisture and solid grain is high. •Adjusting pressure steadily •The flow of miststart is low. Filling oil under pressure is possible. •100/200/300/400/500/600 Series •Port size: M5 1/8" 1/4" 3/8" 1/2" 3/4" 1"	
P222	**Product feature**	**Photo**	**P225**	**Product feature**	**Photo**
GAFR Series Filter-Regulator	•The efficiency of eliminating moisture and solid grain is high. •Adjusting pressure steadily •With fixing bracket •100/200/300/400/500/600 Series •Port size: M5 1/8" 1/4" 3/8" 1/2" 3/4" 1"		GAF Series Filter	•Low pressure loss ,high efficiency in separating water •5μm and 40μm filtering grade(Optional) •Manual drain, semi-auto drain and automatic drain •With fixing bracket •100/200/300/400/500/600 Series •Port size: M5 1/8" 1/4" 3/8" 1/2" 3/4" 1"	
P228	**Product feature**	**Photo**	**P231**	**Product feature**	**Photo**
GAR Series Regulator	•Adjusting pressure steadily •Faceplate fixing and bracket fixing is optional •Standard type, lower pressure type is optional •100/200/300/400/500/600 Series •Port size: M5 1/8" 1/4" 3/8" 1/2" 3/4" 1"		GAL Series Lubricator	•The flow of miststart is low. Filling oil under pressure is possible. •With fixing bracket. •The adjustment of oil supply more reliable. •100/200/300/400/500/600 Series •Port size: M5 1/8" 1/4" 3/8" 1/2" 3/4" 1"	
P235	**Product feature**	**Photo**	**P237**	**Product feature**	**Photo**
GT Series preparation unit	•Short PC bowl type •GTC/GTFC/GTFR/GTF/GTL •Port size: 1/8" 1/4"		GA Series Gas distribution block	•Be used with GA series •The air flow can be divided by the device •200/300/400/500/600 Series •Port size: 1/8" 1/4" 3/8" 1/2" 3/4" 1"	

Installation and application

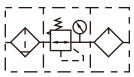
1. Check whether the components have been damaged during transportation before installing and using.
2. Pay attention to whether the flow direction of air (notice "→" direction) and thread type are correct.
3. Please notice whether installation condition accords with technical requirements (such as "working pressure" and "applied temperature range").
4. The medium used or installation environment shall be noticed. The matters with chlorine, carbon compound, aromatic compound and oxidizing acid and alkali shall be avoided to prevent the damage of bowl and oil bowl.
5. Regularly clean or change filter core. Lubricators and regulators shall be in descending order.
6. Keep dust away. The dust cover shall be installed in intake and outlet when the device is dismantled and stored.

GAC100 Series F.R.L. combination



Symbol

Reflux valve option is not available



Specification

Model		GAC100M5	GAC10006
Fluid		Air	
Port size [Note1]		M5	1/8"
Filtering grade		40μm or 5μm	
Pressure range		0.15~0.9MPa(20~130psi)	
Max. pressure		1.0MPa(145psi)	
Proof pressure		1.5MPa(215psi)	
Temperature range		-5~70°C(Unfreeze)	
Capacity of drain bowl		6CC	
Capacity of oil bowl		9CC	
Recommended lubricant		ISO VG 32 or equivalent	
Weight		216g	
Constitute	Filter	GAF100M5	GAF10006
	Regulator	GAR100M5	GAR10006
	Lubricator	GAL100M5	GAL10006

[Note1] G thread is available.

Ordering code

GAC100 □ 06 □ S □ W G □

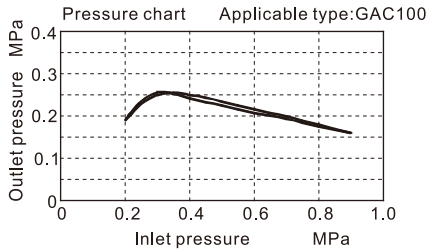
1 2 3 4 5 6 7 8 9

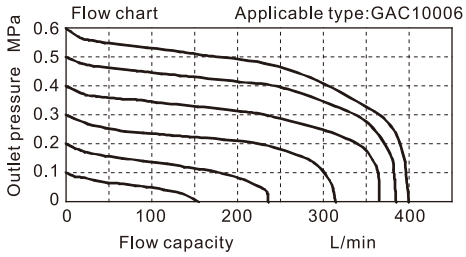
①Model	②Bowl material	③Port size	④Drain type	⑤Type code	⑥Pressure gauge	⑦Filtering grade	⑧Thread type[Note2]	⑨Code of reflux valve
GAC100:GA100 Series F.R.L unit	Blank : PC	M5: M5 06: 1/8"	Blank: Semi-auto drain+Manual drain	S: Standard L: Lower pressure [Note1]	Blank: Circular N: No gauge	Blank: 40μm W: 5μm	G: G (bar/MPa)	Blank: Reflux valve is not available

[Note1] The working pressure range of lower pressure type is 0.15~0.4MPa(20~58psi) ;

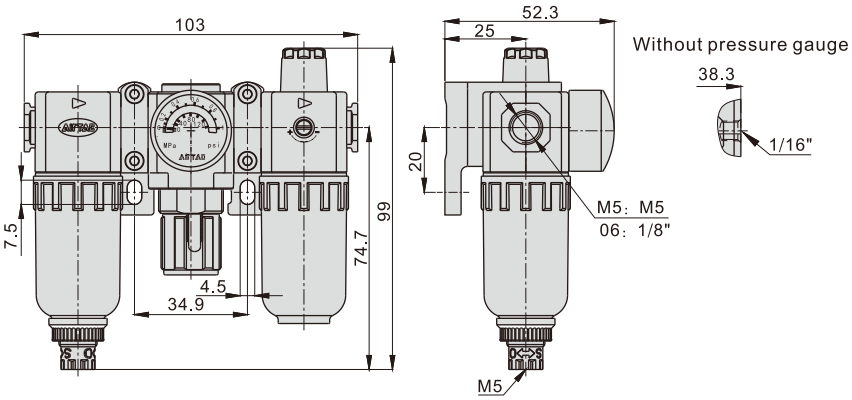
[Note 2] Thread type means connecting thread and scales of pressure gauge while port size is M5.

Pressure and Flow chart

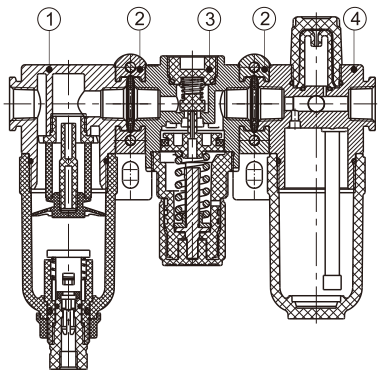




Dimensions



Inner structure



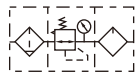
No.	Item
1	GAF100 series filter
2	Bracket
3	GAR100 series regulator
4	GAL100 series lubricator

GAC Series F.R.L. combination

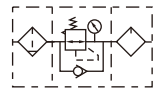


Symbol

No reflux valve is attached



Reflux valve is attached



Product feature

1. Quick and reliable mounting clamps makes it convenient to install and use.
2. The performance of pressure adjustment is reliable with high precision.
3. The efficiency of eliminating moisture and solid grain is high.
4. Two drain types are available: manual drain+semi-auto drain and automatic drain.
5. Three bowl materials are available: PC, Metal and Nylon.

Specification

Model		GAC200-06	GAC200-08	GAC300-08	GAC300-10	GAC300-15	GAC400-10	GAC400-15	GAC500-20	GAC600-20	GAC600-25
Fluid		Air									
Port size [Note1]		1/8"	1/4"	1/4"	3/8"	1/2"	3/8"	1/2"	3/4"	3/4"	1"
Filtering grade		40μm or 5μm									
Pressure range		0.15~0.9MPa(20~130psi)									
Max. pressure		1.0MPa(145psi)									
Proof pressure		1.5MPa(215psi)									
Temperature range		-5~70°C(Unfreeze)									
Capacity of drain bowl		25CC		60CC			100CC		108CC	205CC	
Capacity of oil bowl		36CC		98CC			185CC		225CC	410CC	
Recommended lubricant		ISO VG 32 or equivalent									
Weight		750g		1300g			2390g		2460g	4600g	
Constitute	Filter	GAF200-06	GAF200-08	GAF300-08	GAF300-10	GAF300-15	GAF400-10	GAF400-15	GAF500-20	GAF600-20	GAF600-25
	Regulator	GAR200-06	GAR200-08	GAR300-08	GAR300-10	GAR300-15	GAR400-10	GAR400-15	GAR500-20	GAR600-20	GAR600-25
	Lubricator	GAL200-06	GAL200-08	GAL300-08	GAL300-10	GAL300-15	GAL400-10	GAL400-15	GAL500-20	GAL600-20	GAL600-25

[Note1] G thread is available.

Ordering code

GAC300 □ 10 □ S □ W G K

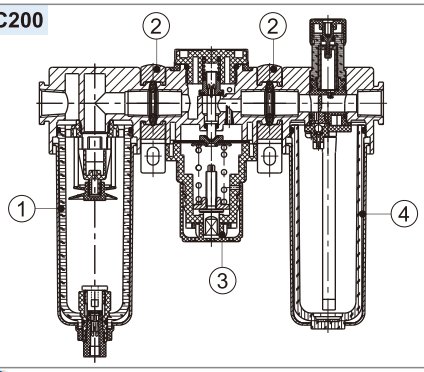
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①Model	②Bowl material	③Port size	④Drain type	⑤Type code	⑥Pressure gauge	⑦Filtering grade	⑧Thread type	⑨Code of reflux valve
GAC200:GA200 Series F.R.L unit	Blank: PC bowl C: Metal bowl N: Nylon bowl	06: 1/8" 08: 1/4"	Blank: Semi-auto drain +Manual drain A: Automatic drain	S: Standard L: Lower pressure [Note1]	Blank: Circular N: No gauge [Note2]	Blank: 40μm W: 5μm	G: G Thread (bar/MPa)	Blank: No reverse flow valve is attached K: Reverse flow valve is attached [Note2]
GAC300:GA300 Series F.R.L unit		08: 1/4" 10: 3/8" 15: 1/2"						
GAC400:GA400 Series F.R.L unit		10: 3/8" 15: 1/2"						
GAC500:GA500 Series F.R.L unit		20: 3/4"						
GAC600:GA600 Series F.R.L unit	C: Metal bowl	20: 3/4" 25: 1"		S: Standard				

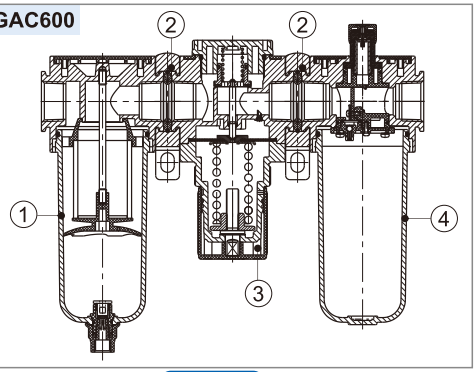
[Note1]The work pressure of lower pressure type is 0.15~0.4MPa(20~58psi) ; [Note2] Please refer to page 234 for details of sealing plate Installation and reflux valve.

Inner structure

GAC200



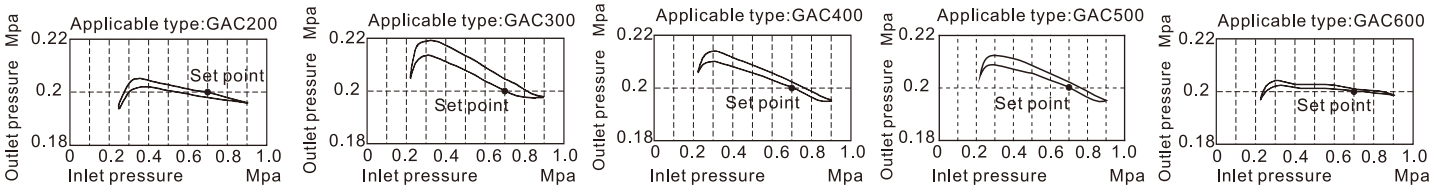
GAC600



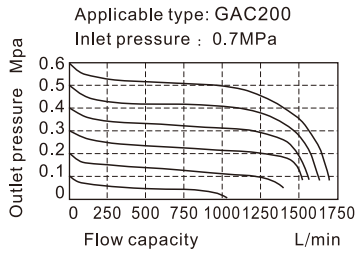
No.	Item	No.	Item
1	GA series filter	3	GA series regulator
2	Bracket	4	GA series lubricator

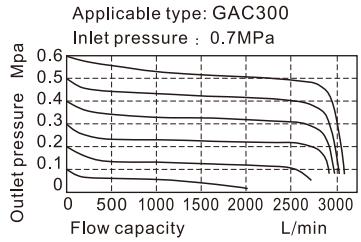
GAC Series F.R.L. combination

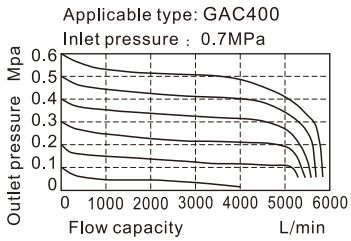
Pressure chart

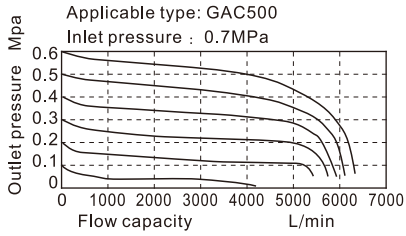


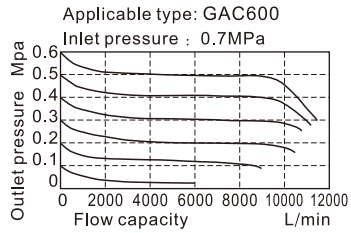
Flow chart



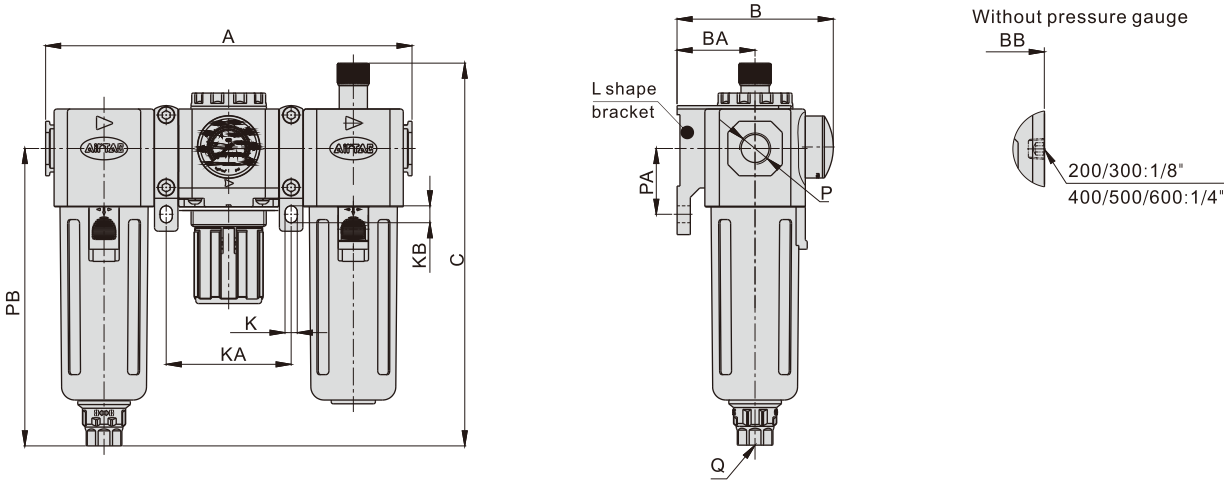








Dimensions



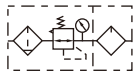
Model\Item	A	B	BA	BB	C	K	KA	KB	P	PA	PB	Q
GAC200-06	163.5	69	30	51.5	160	5.5	55.5	8.5	1/8"	25	120	M5X0.8
GAC200-08	163.5	69	30	51.5	160	5.5	55.5	8.5	1/4"	25	120	M5X0.8
GAC300-08	195	83	41.5	67.5	203.5	6.5	66.5	9	1/4"	35	158	G1/4
GAC300-10	195	83	41.5	67.5	203.5	6.5	66.5	9	3/8"	35	158	G1/4
GAC300-15	195	83	41.5	67.5	203.5	6.5	66.5	9	1/2"	35	158	G1/4
GAC400-10	248	99	50	84	227	8.6	84	12	3/8"	40	177.5	G1/4
GAC400-15	248	99	50	84	227	8.6	84	12	1/2"	40	177.5	G1/4
GAC500-20	254	100	50	85	241	8.6	86	12	3/4"	40	191.5	G1/4
GAC600-20	312	128	70	113	267.5	11	106	16	3/4"	50	205	G1/4
GAC600-25	312	128	70	113	267.5	11	106	16	1"	50	205	G1/4

GAFC100 Series FR.L. combination



Symbol

Reflux valve option is not available



Specification

Model		GAFC100M5	GAFC10006
Fluid		Air	
Port size [Note1]		M5	1/8"
Filtering grade		40μm or 5μm	
Pressure range		0.15~0.9MPa(20~130psi)	
Max. pressure		1.0MPa(145psi)	
Proof pressure		1.5MPa(215psi)	
Temperature range		-5~70°C(Unfreeze)	
Capacity of drain bowl		6CC	
Capacity of oil bowl		9CC	
Recommended lubricant		ISO VG 32 or equivalent	
Weight		158g	
Constitute	Filter & Regulator	GAFR100M5	GAFR10006
	Lubricator	GAL100M5	GAL10006

[Note1] G thread is available.

Ordering code

GAFC100 □ 06 □ S □ W G □

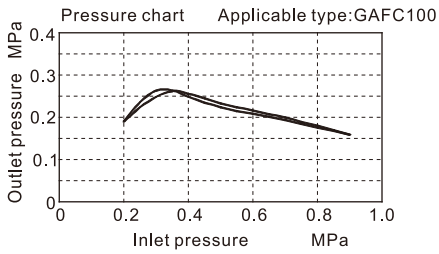
1 2 3 4 5 6 7 8 9

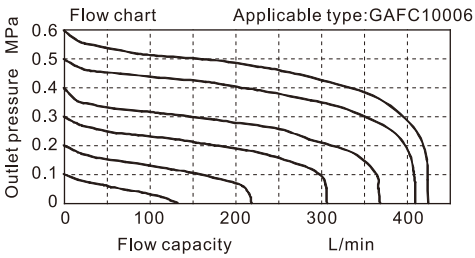
①Model	②Bowl material	③Port size	④Drain type	⑤Type code	⑥Pressure gauge	⑦Filtering grade	⑧Thread type[Note2]	⑨Code of reflux valve
GAFC100:GA100 Series FR.L unit	Blank : PC	M5: M5 06: 1/8"	Blank: Semi-auto drain+Manual drain	S: Standard L: Lower pressure [Note1]	Blank: Circular N: No gauge	Blank: 40μm W: 5μm	G: G (bar/MPa)	Blank: Reflux valve is not available

[Note1] The working pressure range of lower pressure type is 0.15~0.4MPa(20~58psi) ;

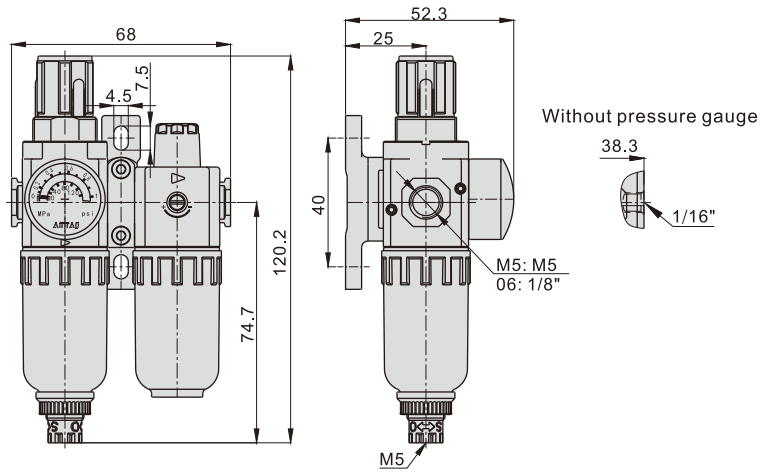
[Note 2] Thread type means connecting thread and scales of pressure gauge while port size is M5.

Pressure and Flow chart

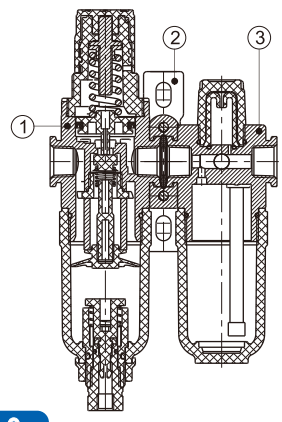




Dimensions



Inner structure



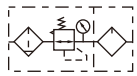
No.	Item
1	GAFR100 series filter & regulator
2	Bracket
3	GAL100 series lubricator

GAFC Series FR.L. combination

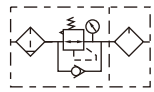


Symbol

No reflux valve is attached



Reflux valve is attached



Product feature

1. Quick and reliable mounting clamps makes it convenient to install and use.
2. The performance of pressure adjustment is reliable with high precision.
3. The efficiency of eliminating moisture and solid grain is high.
4. Two drain types are available: manual drain+semi-auto drain and automatic drain.
5. Three bowl materials are available: PC, Metal and Nylon.

Specification

Model		GAFC200-06	GAFC200-08	GAFC300-08	GAFC300-10	GAFC300-15	GAFC400-10	GAFC400-15	GAFC500-20	GAFC600-20	GAFC600-25
Fluid		Air									
Port size [Note1]		1/8"	1/4"	1/4"	3/8"	1/2"	3/8"	1/2"	3/4"	3/4"	1"
Filtering grade		40 μ m or 5 μ m									
Pressure range		0.15~0.9MPa(20~130psi)									
Max. pressure		1.0MPa(145psi)									
Proof pressure		1.5MPa(215psi)									
Temperature range		–5~70°C(Unfreeze)									
Capacity of drain bowl		25CC		60CC			100CC		108CC	205CC	
Capacity of oil bowl		36CC		98CC			185CC		225CC	410CC	
Recommended lubricant		ISO VG 32 or equivalent									
Weight		590g		1020g			1810g		1910g	3430g	
Constitute	Filter & Regulator	GAFR200-06	GAFR200-08	GAFR300-08	GAFR300-10	GAFR300-15	GAFR400-10	GAFR400-15	GAFR500-20	GAFR600-20	GAFR600-25
	Lubricator	GAL200-06	GAL200-08	GAL300-08	GAL300-10	GAL300-15	GAL400-10	GAL400-15	GAL500-20	GAL600-20	GAL600-25

[Note1] G thread is available.

Ordering code

GAFC300 □ 10 □ S □ W G K

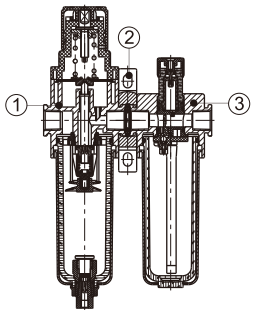
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①Model	②Bowl material	③Port size	④Drain type	⑤Type code	⑥Pressure gauge	⑦Filtering grade	⑧Thread type	⑨Code of reflux valve
GAFC200:GA200 Series FR.L unit	Blank: PC bowl C: Metal bowl N: Nylon bowl	06: 1/8" 08: 1/4"	Blank: Semi-auto drain +Manual drain A: Automatic drain	S: Standard L: Lower pressure [Note1]	Blank: Circular N: No gauge [Note2]	Blank: 40μm W: 5μm	G: G Thread (bar/MPa)	Blank: No reverse flow valve is attached K: Reverse flow valve is attached [Note2]
GAFC300:GA300 Series FR.L unit		08: 1/4" 10: 3/8" 15: 1/2"						
GAFC400:GA400 Series FR.L unit		10: 3/8" 15: 1/2"						
GAFC500:GA500 Series FR.L unit		20: 3/4"						
GAFC600:GA600 Series FR.L unit	C: Metal bowl	20: 3/4" 25: 1"		S: Standard				

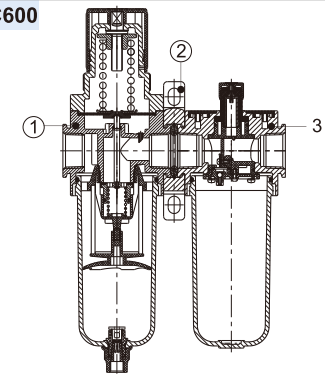
[Note1]The work pressure of lower pressure type is 0.15~0.4MPa(20~58psi) ; [Note2] Please refer to page 234 for details of sealing plate Installation and reflux valve.

Inner structure

GAFC200



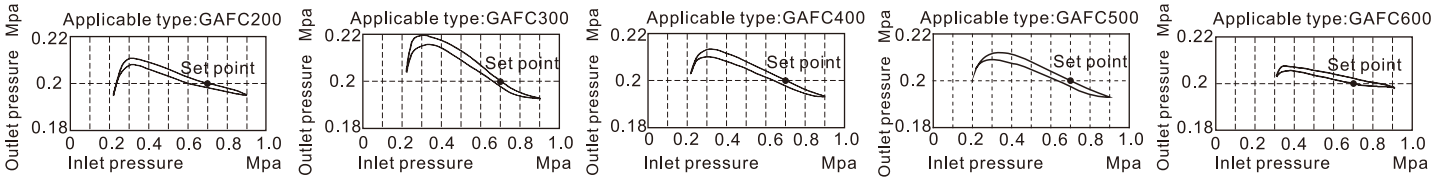
GAFC600



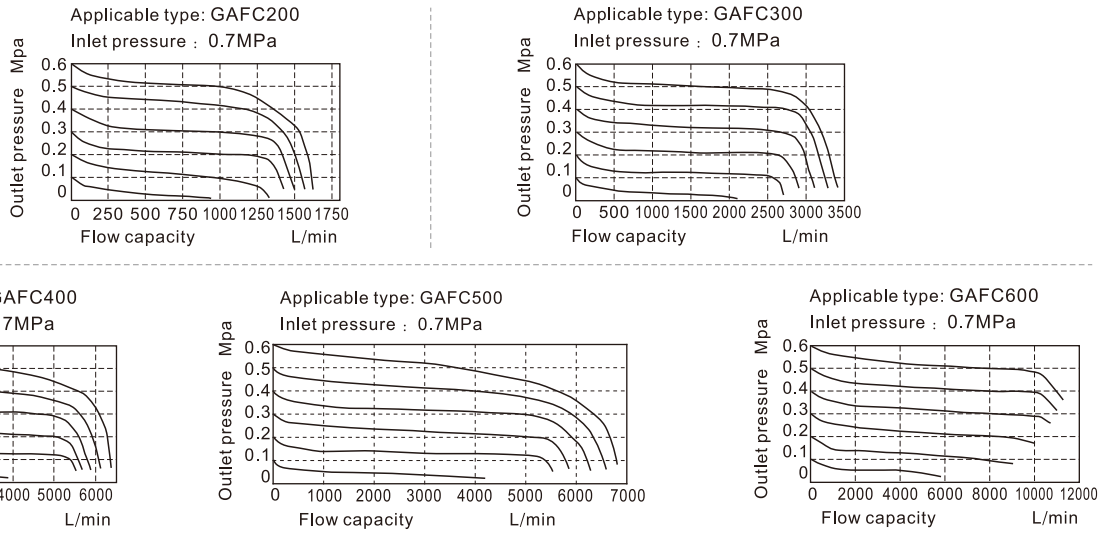
No.	Item
1	GA series filter & regulator
2	Bracket
3	GA series lubricator

GAFC Series FR.L. combination

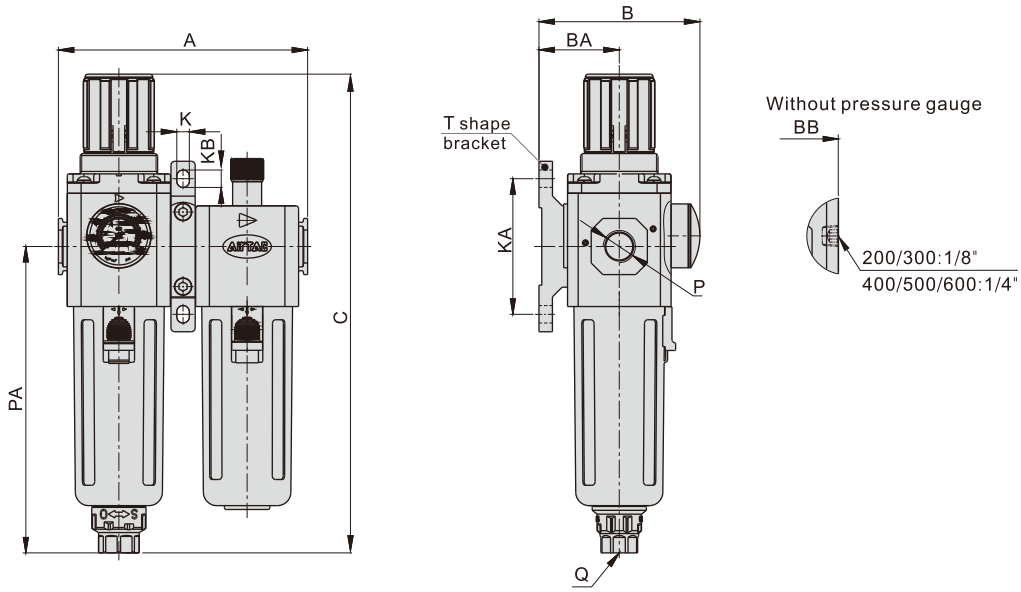
Pressure chart



Flow chart



Dimensions



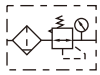
Model\Item	A	B	BA	BB	C	K	KA	KB	P	PA	Q
GAFC200-06	107.5	69	30	51.5	192.5	5.5	50	8.5	1/8"	120	M5X0.8
GAFC200-08	107.5	69	30	51.5	192.5	5.5	50	8.5	1/4"	120	M5X0.8
GAFC300-08	128.5	83	41.5	67.5	247	6.5	70	9	1/4"	158	G1/4
GAFC300-10	128.5	83	41.5	67.5	247	6.5	70	9	3/8"	158	G1/4
GAFC300-15	128.5	83	41.5	67.5	247	6.5	70	9	1/2"	158	G1/4
GAFC400-10	164	99	50	84	285.5	8.6	80	12	3/8"	177.5	G1/4
GAFC400-15	164	99	50	84	285.5	8.6	80	12	1/2"	177.5	G1/4
GAFC500-20	168	100	50	85	299.5	8.6	80	12	3/4"	191.5	G1/4
GAFC600-20	206	128	70	113	336.5	11	100	16	3/4"	205	G1/4
GAFC600-25	206	128	70	113	336.5	11	100	16	1"	205	G1/4

GAFR100 Series filter & regulator



Symbol

Reflux valve option is not available



Specification

Model	GAFR100M5	GAFR10006
Fluid	Air	
Port size [Note1]	M5	1/8"
Filtering grade	40μm or 5μm	
Pressure range	0.15~0.9MPa(20~130psi)	
Max. pressure	1.0MPa(145psi)	
Proof pressure	1.5MPa(215psi)	
Temperature range	-5~70°C(Unfreeze)	
Capacity of drain bowl	6CC	
Weight	80g	

[Note1] G thread is available.

Ordering code

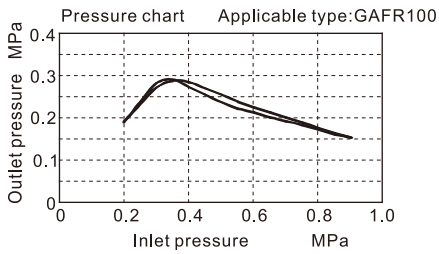
GAFR100 □ 06 □ S □ □ W G □

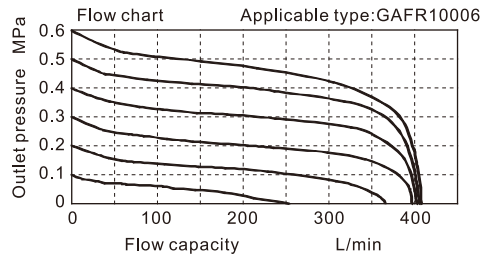
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①Model	②Bowl material	③Port size	④Drain type	⑤Type code	⑥Accessories	⑦Pressure gauge	⑧Filtering grade	⑨Thread type [Note2]	⑩Code of reflux valve
GAFR100:GA100 Series Filter & regulator	Blank : PC	M5: M5 06: 1/8"	Blank: Semi-auto drain +Manual drain	S: Standard L: Lower pressure [Note1]	Blank: Bracket J: No bracket	Blank: Circular N: No gauge	Blank: 40μm W: 5μm	G: G (bar/MPa)	Blank: Reflux valve is not available

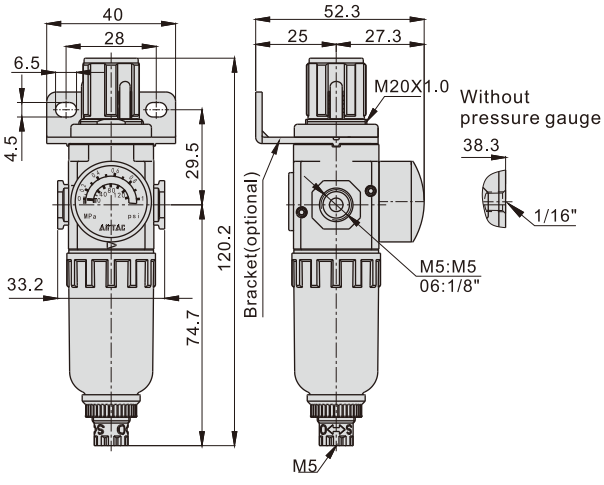
[Note1] The working pressure range of lower pressure type is 0.15~0.4MPa(20~58psi) ;
[Note 2] Thread type means connecting thread and scales of pressure gauge while port size is M5.

Pressure and Flow chart

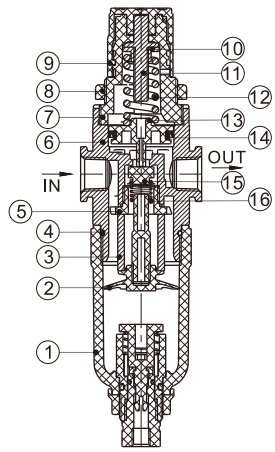




Dimensions



Inner structure



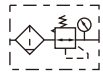
No.	Item	Material
1	Drain bowl	PC
2	Umbrella baffle	POM
3	Filter core	HDPE
4	O-ring	NBR
5	Air guider	POM
6	Body	Aluminum alloy
7	Adjusting seat	POM
8	Fixation ring cap	POM
9	Pressure knob	POM
10	Spindle nut	Steel
11	Adjusting spindle	Steel
12	Spring	Spring Steel
13	Piston	POM
14	Piston O-ring	NBR
15	Adjusting plug	NBR
16	Spring	Stainless steel

GAFR Series filter & regulator

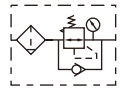


Symbol

No reflux valve is attached



Reflux valve is attached



Product feature

1. Circular square pressure gauge which with clip and magnifier is used to save installation space.
2. The pressed-in self-locking mechanism can prevent the abnormal movement of the set pressure caused by external interfere.
3. Balanced design is adopted for the pressure adjustment mechanism.
4. Unique diversion structure spins the air flowing through to effectively separate the liquid from the air and reliably filter the solid grain.
5. The filtering grade includes 5 μ m and 40 μ m (optional).
6. Two drain types are available: semi-auto drain and automatic drain.
7. Three material of bowl are available: PC, Nylon and metal.
8. The bracket can be selected for installation.

Specification

Model	GAFR200-06	GAFR200-08	GAFR300-08	GAFR300-10	GAFR300-15	GAFR400-10	GAFR400-15	GAFR500-20	GAFR600-20	GAFR600-25
Fluid	Air									
Port size [Note1]	1/8"	1/4"	1/4"	3/8"	1/2"	3/8"	1/2"	3/4"	3/4"	1"
Filtering grade	40 μ m or 5 μ m									
Pressure range	0.15~0.9MPa(20~130psi)									
Max. pressure	1.0MPa(145psi)									
Proof pressure	1.5MPa(215psi)									
Temperature range	−5~70°C(Unfreeze)									
Capacity of drain bowl	25CC		60CC			100CC		108CC	205CC	
Weight	290g		500g			880g		950g	1880g	

[Note1] G thread is available.

Ordering code

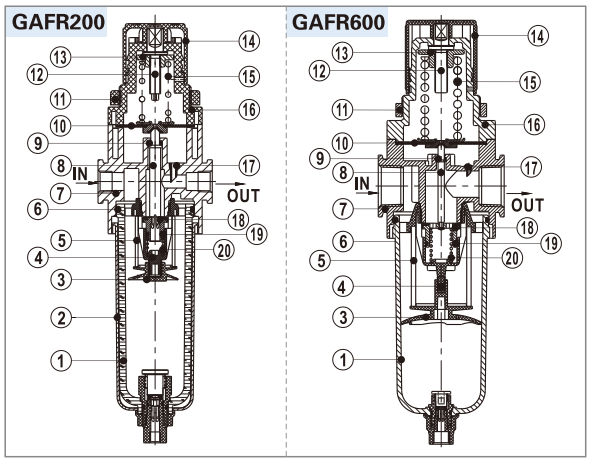
GAFR300 □ 10 □ S □ □ W G K

1 2 3 4 5 6 7 8 9 10

①Model	②Bowl material	③Port size	④Drain type	⑤Type code	⑥Accessories	⑦Pressure gauge	⑧Filtering grade	⑨Thread type	⑩Code of reflux valve
GAFR200:GA200 Series Filter & regulator	Blank: PC bowl C: Metal bowl N: Nylon bowl	06: 1/8" 08: 1/4"	Blank: Semi-auto drain +Manual drain A: Automatic drain	S: Standard L: Lower pressure [Note1]	Blank: Bracket J: No bracket	Blank: Circular N: No gauge [Note2]	Blank: 40μm W: 5μm	G: G Thread (bar/MPa)	Blank: No reverse flow valve is attached K: Reverse flow valve is attached [Note2]
GAFR300:GA300 Series Filter & regulator		08: 1/4" 10: 3/8" 15: 1/2"							
GAFR400:GA400 Series Filter & regulator		10: 3/8" 15: 1/2"							
GAFR500:GA500 Series Filter & regulator		20: 3/4"							
GAFR600:GA600 Series Filter & regulator	C: Metal bowl	20: 3/4" 25: 1"		S: Standard					

[Note1] The work pressure of lower pressure type is 0.15~0.4MPa(20~58psi) ; [Note2] Please refer to page 234 for details of sealing plate Installation and reflux valve.

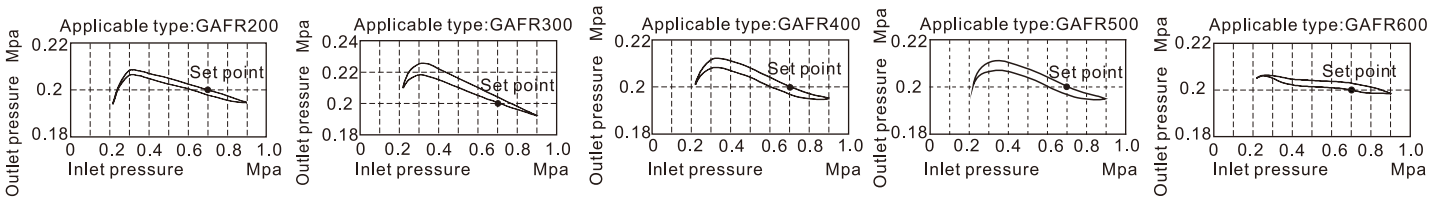
Inner structure



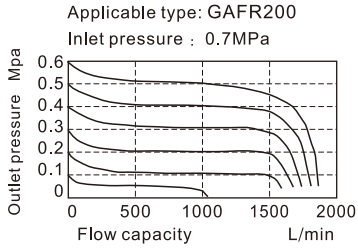
No.	Item	Material
1	Drain bowl	Aluminum alloy \ PC \ Nylon
2	Meter cover	SPCC
3	Umbrella baffle	High viscosity POM
4	Air guider	High viscosity POM
5	Filter core	HDPE
6	O-ring	NBR
7	Body of filter-regulator	Aluminum alloy
8	Adjusting spool	Brass(GAFR600)\POM(others)
9	O-ring	NBR
10	Diaphragm	NBR
11	Fixation ring cap	Aluminum alloy (GAFR600)\POM(others)
12	Adjusting spindle	Steel
13	Regulator nut	Steel
14	Pressure knob	POM
15	Spring	SWPB
16	Adjusting seat	Aluminum alloy (GAFR600)\POM(others)
17	Feedback tube	POM
18	Adjusting plug	Brass & Rubber
19	O-ring	NBR
20	Spring	SWPB

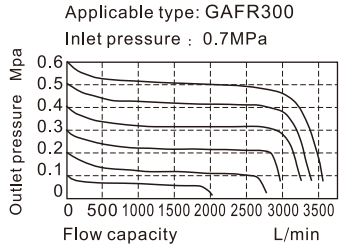
GAFR Series filter & regulator

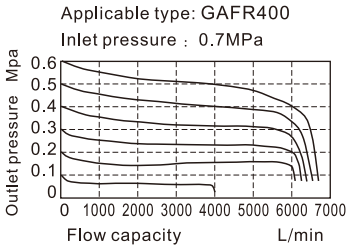
Pressure chart

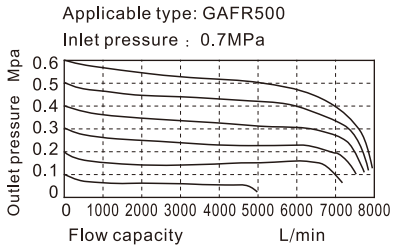


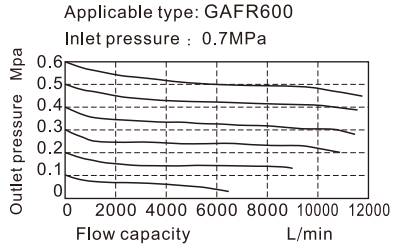
Flow chart



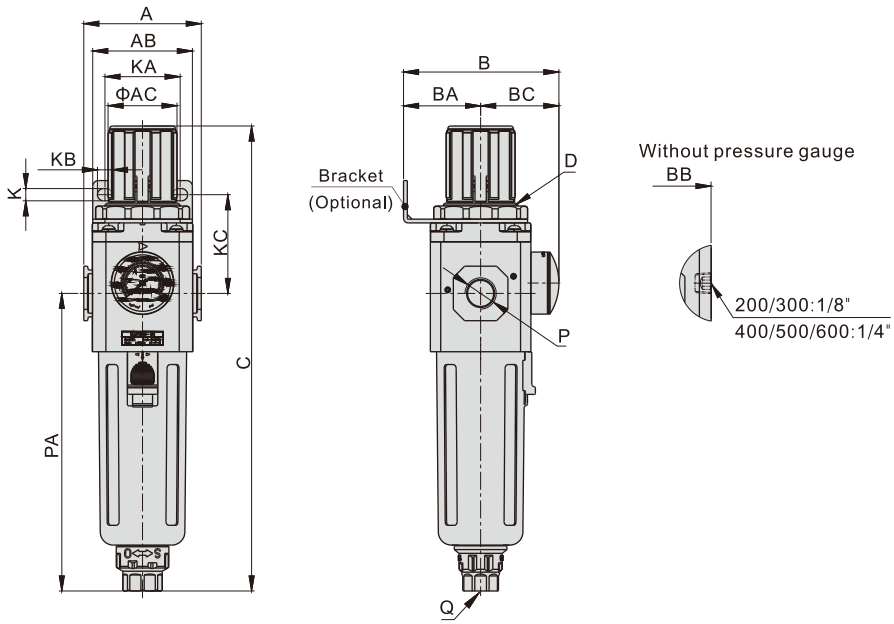








Dimensions



Model\Item	A	AB	AC	B	BA	BB	BC	C	D	K	KA	KB	KC	P	PA	Q
GAFR200-06	52.5	55	31	69	30	51.5	39	192.5	M33x1.5	5.4	34	15.4	52	1/8"	120	M5X0.8
GAFR200-08	52.5	55	31	69	30	51.5	39	192.5	M33x1.5	5.4	34	15.4	52	1/4"	120	M5X0.8
GAFR300-08	62.5	53	38	82.5	41	67.5	41.5	247	M40x1.5	6.5	40	8	52.5	1/4"	158	G1/4
GAFR300-10	62.5	53	38	82.5	41	67.5	41.5	247	M40x1.5	6.5	40	8	52.5	3/8"	158	G1/4
GAFR300-15	62.5	53	38	82.5	41	67.5	41.5	247	M40x1.5	6.5	40	8	52.5	1/2"	158	G1/4
GAFR400-10	80	72	52	99	50	84	49	285.5	M55x2.0	8.5	55	11	57	3/8"	177.5	G1/4
GAFR400-15	80	72	52	99	50	84	49	285.5	M55x2.0	8.5	55	11	57	1/2"	177.5	G1/4
GAFR500-20	82	72	52	100	50	85	50	299.5	M55x2.0	8.5	55	11	57	3/4"	191.5	G1/4
GAFR600-20	100	90	59	128	70	113	58	336.5	M62x1.5	11	66	13	76	3/4"	205	G1/4
GAFR600-25	100	90	59	128	70	113	58	336.5	M62x1.5	11	66	13	76	1"	205	G1/4

GAF100 Series Filter



Symbol



Specification

Model	GAF100M5	GAF10006
Fluid	Air	
Port size [Note1]	M5	1/8"
Filtering grade	40μm or 5μm	
Pressure range	0.15~0.9MPa(20~130psi)	
Max. pressure	1.0MPa(145psi)	
Proof pressure	1.5MPa(215psi)	
Temperature range	-5~70°C(Unfreeze)	
Capacity of drain bowl	6CC	
Weight	55g	

[Note1] G thread is available.

Ordering code

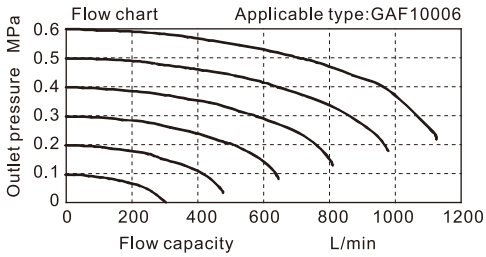
GAF100 □ 06 □ J W G

(1) (2) (3) (4) (5) (6) (7)

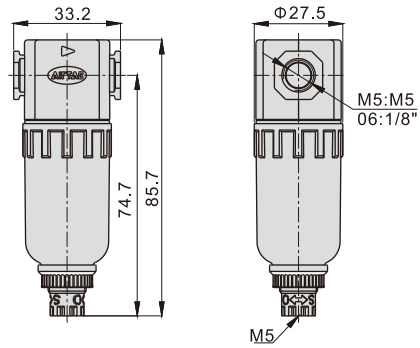
①Model	②Bowl material	③Port size	④Drain type	⑤Accessories	⑥Filtering grade	⑦Thread type[Note1]
GAF100:GA100 Series Filter	Blank : PC	M5: M5 06: 1/8	Blank: Semi-auto drain +Manual drain	J: No bracket	Blank: 40μm W: 5μm	G: G

[Note 1] Standard M5 thread is blank here.

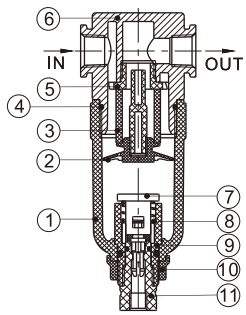
Flow chart



Dimensions



Inner structure

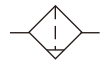


No.	Item	Material
1	Drain bowl	PC
2	Umbrella baffle	POM
3	Filter core	HDPE
4	O-ring	NBR
5	Air guider	POM
6	Body	Aluminum alloy
7	Piston	POM
8	Spring	Stainless steel
9	Fixed baffle	POM
10	Fixing nut	POM
11	Drain cock	POM

GAF Series Filter



Symbol



Product feature

1. Unique diversion structure spins the air flowing through to effectively separate the liquid from the air and reliably filter the solid grain.
2. It has low pressure loss, high efficiency in separating water and large drain bowl capacity.
3. Filtering grade includes 5μm and 40μm (Optional).
4. Three drain types are available: manual drain, semi-auto drain and automatic drain.
5. Two drain types are available: semi-auto drain and automatic drain.
6. Three material of bowl are available: PC, Nylon and metal.
7. The bracket can be selected for installation.

Specification

Model	GAF200-06	GAF200-08	GAF300-08	GAF300-10	GAF300-15	GAF400-10	GAF400-15	GAF500-20	GAF600-20	GAF600-25
Fluid	Air									
Port size [Note1]	1/8"	1/4"	1/4"	3/8"	1/2"	3/8"	1/2"	3/4"	3/4"	1"
Filtering grade	40μm or 5μm									
Pressure range	0.15~0.9MPa(20~130psi)									
Proof pressure	1.5MPa(215psi)									
Temperature range	–5~70°C(Unfreeze)									
Capacity of drain bowl	25CC		60CC			100CC		108CC	205CC	
Weight	200g		360g			640g		680g	1040g	

[Note1] G thread is available.

Ordering code

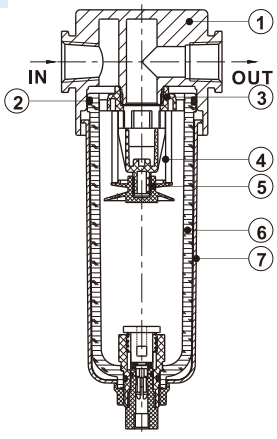
GAF 300 □ 10 □ □ W G

(1) (2) (3) (4) (5) (6) (7)

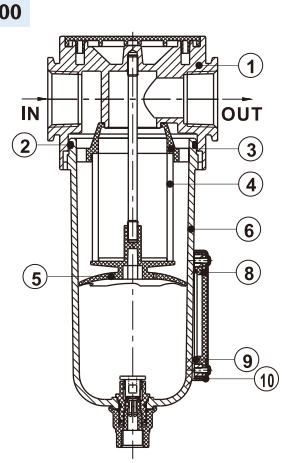
①Model	②Bowl material	③Port size	④Drain type	⑤Accessories	⑥Filtering grade	⑦Thread type
GAF200:GA200 Series Filter	Blank: PC bowl C: Metal bowl N: Nylon bowl	06: 1/8" 08: 1/4"	Blank: Semi-auto drain +Manual drain A: Automatic drain	Blank: Bracket J: No bracket	Blank: 40μm W: 5μm	G: G Thread
GAF300:GA300 Series Filter		08: 1/4" 10: 3/8" 15: 1/2"				
GAF400:GA400 Series Filter		10: 3/8" 15: 1/2"				
GAF500:GA500 Series Filter		20: 3/4"				
GAF600:GA600 Series Filter	C: Metal bowl	20: 3/4" 25: 1"				

Inner structure

GAF200



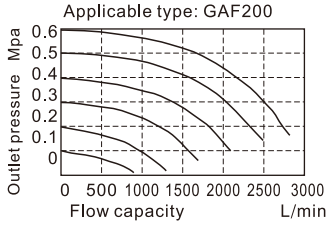
GAF600

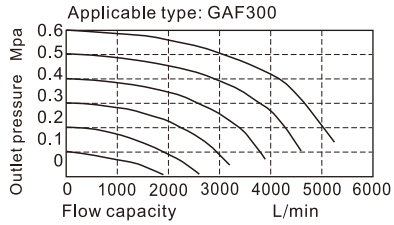


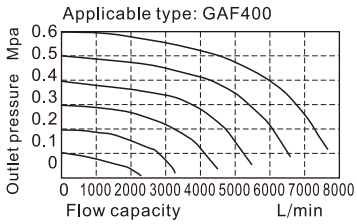
No.	Item	Material
1	Body	Aluminum alloy
2	O-ring	NBR
3	Air guide	High viscosity POM
4	Filter core	HDPE
5	Umbrella baffle	High viscosity POM
6	Drain bowl	Aluminum alloy\PC\Nylon
7	Meter cover	SPCC
8	Liquid meter inside cover	PC
9	Liquid meter seal	NBR
10	Liquid meter cover	SPCC

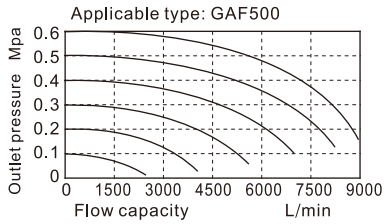
GAF Series Filter

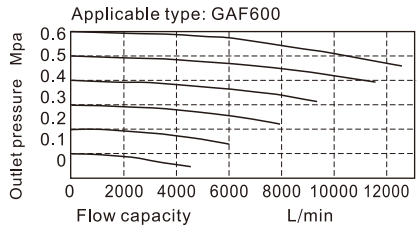
Flow chart



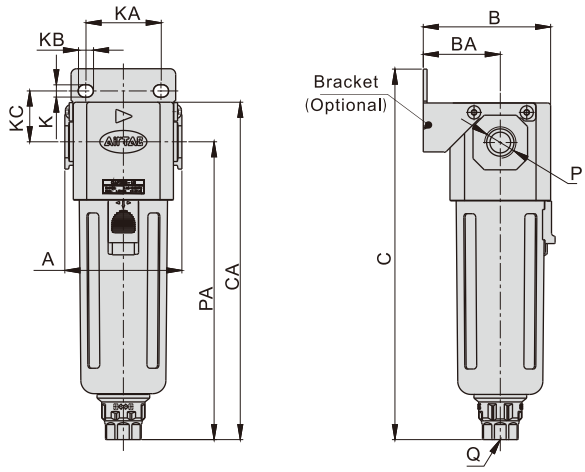








Dimensions



Model\Item	A	B	BA	C	CA	K	KA	KB	KC	P	PA	Q
GAF200-06	52.5	54.5	33	150	137	5.4	27	8.4	23	1/8"	120	M5X0.8
GAF200-08	52.5	54.5	33	150	137	5.4	27	8.4	23	1/4"	120	M5X0.8
GAF300-08	62.5	67.5	41	197	179	6.5	40	8	27	1/4"	158	G1/4
GAF300-10	62.5	67.5	41	197	179	6.5	40	8	27	3/8"	158	G1/4
GAF300-15	62.5	67.5	41	197	179	6.5	40	8	27	1/2"	158	G1/4
GAF400-10	80	84	50	220	202.5	8.5	55	11	33.5	3/8"	177.5	G1/4
GAF400-15	80	84	50	220	202.5	8.5	55	11	33.5	1/2"	177.5	G1/4
GAF500-20	82	85	50	234	216.5	8.5	55	11	33.5	3/4"	191.5	G1/4
GAF600-20	100	113	70	266	242	11	66	13	50	3/4"	205	G1/4
GAF600-25	100	113	70	266	242	11	66	13	50	1"	205	G1/4

GAR100 Series Regulator



Symbol

Reflux valve option is not available



Specification

Model	GAR100M5	GAR10006
Fluid	Air	
Port size [Note1]	M5	1/8"
Pressure range	0.05~0.9MPa(7~130psi)	
Max. pressure	1.0MPa(145psi)	
Proof pressure	1.5MPa(215psi)	
Temperature range	-5~70°C(Unfreeze)	
Weight	59g	

[Note1] G thread is available.

Ordering code

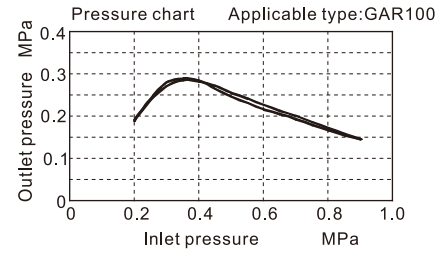
GAR100 06 S □ □ G □

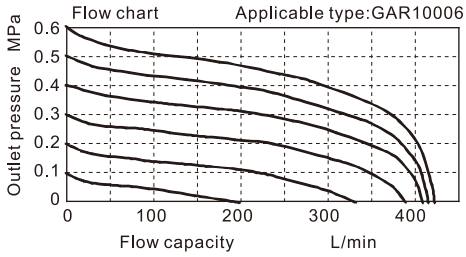
① ② ③ ④ ⑤ ⑥ ⑦

①Model	②Port size	③Type code	④ Accessories	⑤Pressure gauge	⑥Thread type[Note2]	⑦Code of reflux valve
GAR100:GA100 Series regulator	M5: M5 06: 1/8	S: Standard L: Lower pressure [Note1]	Blank: Bracket J: No bracket	Blank: Circular N: No gauge	G: G (bar/MPa)	Blank: Reflux valve is not available

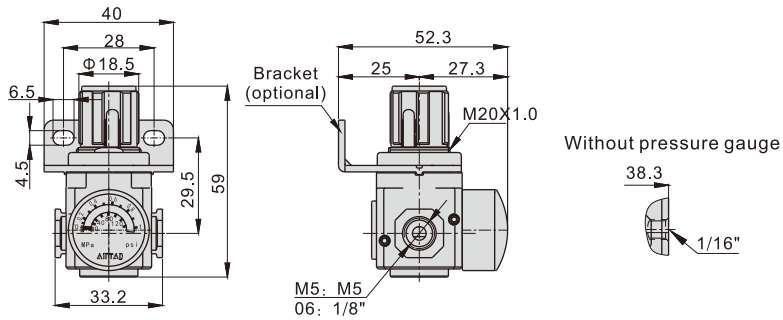
[Note1] The working pressure range of lower pressure type is 0.15~0.4MPa(20~58psi) ;
[Note 2] Thread type means connecting thread and scales of pressure gauge while port size is M5.

Pressure and Flow chart

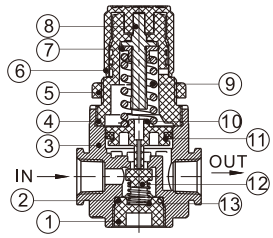




Dimensions



Inner structure



No.	Item	Material
1	Valve cap	POM
2	O-ring	NBR
3	Body	Aluminum alloy
4	Adjusting seat	POM
5	Fixed ring	POM
6	Pressure knob	POM
7	Spindle nut	Steel
8	Adjusting spindle	Steel
9	Spring	Spring Steel
10	Piston	POM
11	Piston O-ring	NBR
12	Pressure plug	NBR
13	Spring	Stainless steel

GAR Series Regulator



Symbol

No reflux valve is attached



Reflux valve is attached



Product feature

1. Circular square pressure gauge which with clip and magnifier is used to save installation space.
2. The pressed-in self-locking mechanism can prevent the abnormal movement of the set pressure caused by external interfere.
3. Balanced design is adopted for the pressure adjustment mechanism.
4. In addition to panel installation, the bracket is optional for installation.

Specification

Model	GAR200-06	GAR200-08	GAR300-08	GAR300-10	GAR300-15	GAR400-10	GAR400-15	GAR500-20	GAR600-20	GAR600-25
Fluid	Air									
Port size [Note1]	1/8"	1/4"	1/4"	3/8"	1/2"	3/8"	1/2"	3/4"	3/4"	1"
Pressure range	0.05~0.9MPa(7~130psi)									
Max. pressure	1.0MPa(145psi)									
Proof pressure	1.5MPa(215psi)									
Temperature range	−20~70°C									
Weight	170g		300g			570g		580g	1390g	

[Note1] G thread is available.

Ordering code

GAR300 10 S □ □ G K

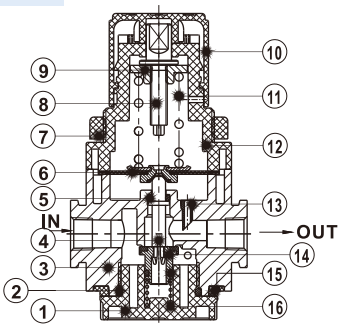
1 2 3 4 5 6 7

①Model	②Port size	③Type code	④ Accessories	⑤Pressure gauge	⑥Thread type	⑦Code of reflux valve
GAR200:GA200 Series regulator	06: 1/8" 08: 1/4"	S: Standard L: Lower pressure [Note1]	Blank: Bracket J: No bracket	Blank: Circular N: No gauge [Note2]	G: G Thread (bar/MPa)	Blank: No reverse flow valve is attached K: Reverse flow valve is attached [Note2]
GAR300:GA300 Series regulator	08: 1/4" 10: 3/8" 15: 1/2"					
GAR400:GA400 Series regulator	10: 3/8" 15: 1/2"					
GAR500:GA500 Series regulator	20: 3/4"					
GAR600:GA600 Series regulator	20: 3/4" 25: 1"	S: Standard				

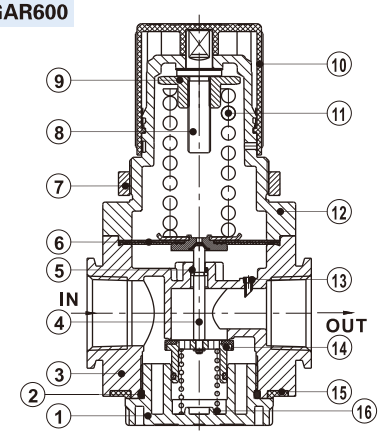
[Note1]The work pressure of lower pressure type is 0.05~0.4MPa(7~58psi) ; [Note2] Please refer to page 234 for details of sealing plate Installation and reflux valve.

Inner structure

GAR200



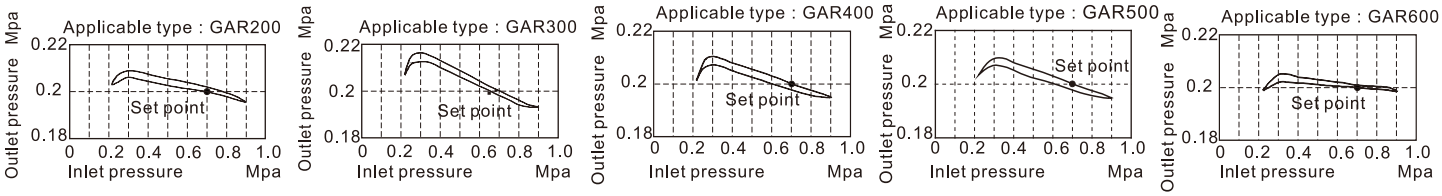
GAR600



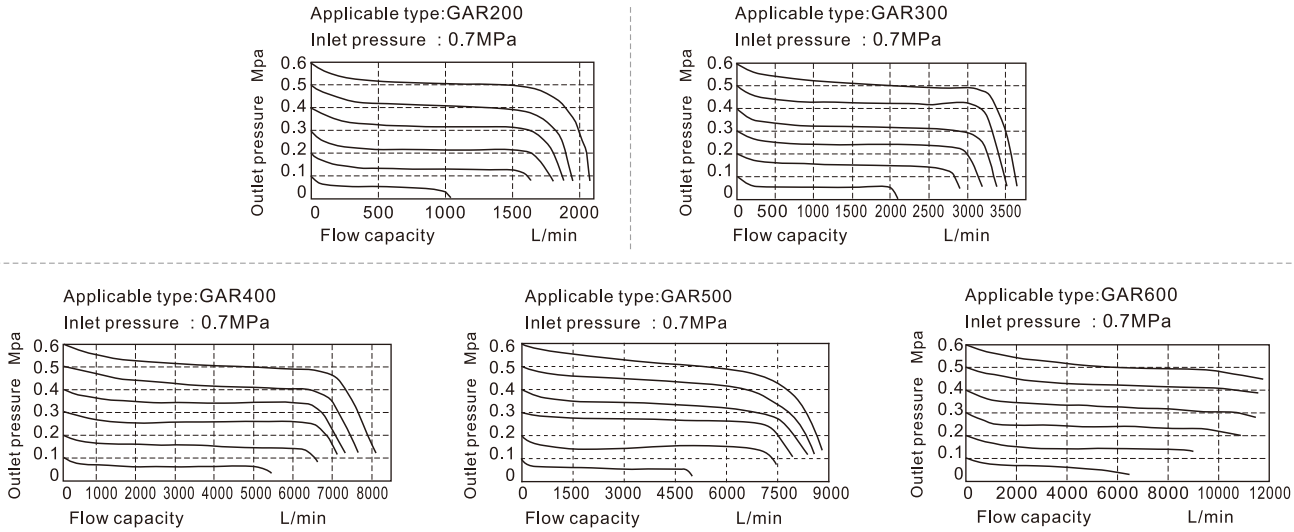
No.	Item	Material
1	Valve cap	Aluminum alloy(GR600)\POM(others)
2	O-ring	NBR
3	Body	Aluminum alloy
4	Spool	Brass(GR600)\POM(others)
5	O-ring	NBR
6	Diaphragm	NBR
7	Fixed ring	Aluminum alloy (GR600)\POM(others)
8	Adjusting spindle	Steel
9	Regulator nut	Steel
10	Pressure knob	POM
11	Pressure spring	SWPB
12	Adjusting seat	Aluminum alloy (GR600)\POM(others)
13	Feed back tuble	POM
14	Pressure plug	Aluminum alloy & steel
15	Bottom cover	POM
16	Spring	SWPB

GAR Series Regulator

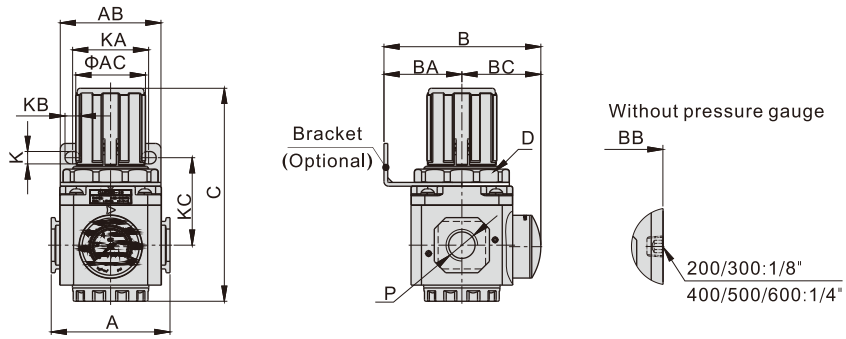
Pressure chart



Flow chart



Dimensions

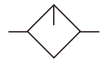


Model\Item	A	AB	AC	B	BA	BB	BC	C	D	K	KA	KB	KC	P
GAR200-06	52.5	55	31	69	30	51.5	39	91	M33x1.5	5.4	34	15.4	45	1/8"
GAR200-08	52.5	55	31	69	30	51.5	39	91	M33x1.5	5.4	34	15.4	45	1/4"
GAR300-08	62.5	53	38	82.5	41	67.5	41.5	112	M40x1.5	6.5	40	8	46	1/4"
GAR300-10	62.5	53	38	82.5	41	67.5	41.5	112	M40x1.5	6.5	40	8	46	3/8"
GAR300-15	62.5	53	38	82.5	41	67.5	41.5	112	M40x1.5	6.5	40	8	46	1/2"
GAR400-10	80	72	52	99	50	84	49	140.5	M55x2.0	8.5	55	11	53	3/8"
GAR400-15	80	72	52	99	50	84	49	140.5	M55x2.0	8.5	55	11	53	1/2"
GAR500-20	82	72	52	100	50	85	50	140.5	M55x2.0	8.5	55	11	53	3/4"
GAR600-20	100	90	59	128	70	113	58	179.5	M62x1.5	11	66	13	73.5	3/4"
GAR600-25	100	90	59	128	70	113	58	179.5	M62x1.5	11	66	13	73.5	1"

GAL100 Series Lubricator



Symbol



Specification

Model	GAL100M5	GAL10006
Fluid	Air	
Port size [Note1]	M5	1/8"
Pressure range	0.05~0.9MPa(7~130psi)	
Proof pressure	1.5MPa(215psi)	
Temperature range	-5~70°C(Unfreeze)	
Recommended lubricant	ISO VG 32 or equivalent	
Capacity of oil bowl	9CC	
Weight	59g	

[Note1] G thread is available.

Ordering code

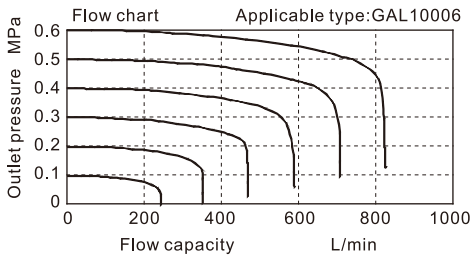
GAL100 □ 06 J G

① ② ③ ④ ⑤

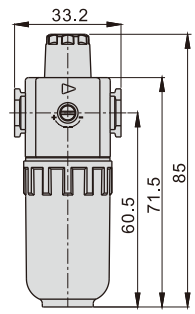
①Model	②Bowl material	③Port size	④Accessories	⑤Thread type[Note1]
GAL100: GA100 Lubricator	Blank：PC	M5: M5 06: 1/8	J：No bracket	G: G

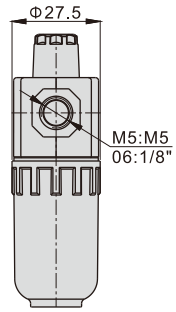
[Note 1] Standard M5 thread is blank here.

Flow chart

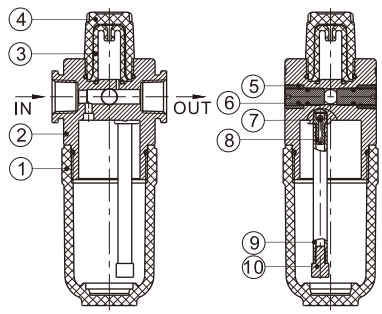


Dimensions





Inner structure

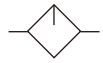


No.	Item	Material
1	Oil bowl	PC
2	Body	Aluminum alloy
3	Drip pipe	PC
4	Sight window	PC
5	Adjusting screw	Brass
6	Fixing nut	Aluminum alloy
7	Steel ball	Stainless steel
8	Tube nozzle	Aluminum alloy
9	Tube	PU
10	Lubricant filter	Sintered bronze

GAL Series Lubricator



Symbol



Product feature

1. The structure of oil dripping adopts gap seal type, which makes the adjustment of oil supply more reliable.
2. Oil feed ring can only make one full turn. The quantity of oil supply basically takes on linear distribution. The quantity of oil supply can be generally calculated according to the position of graduation ring.
3. Special drip nozzle structure will produce negative pressure in oil dripping outlet and the mist flow is minimal.
4. Three material of bowl are available: PC, Nylon and metal.
5. Filling of oil while the lubricator is under pressure is made possible, and the oil bowl is large.
6. The bracket can be selected for installation.

Specification

Model	GAL200-06	GAL200-08	GAL300-08	GAL300-10	GAL300-15	GAL400-10	GAL400-15	GAL500-20	GAL600-20	GAL600-25
Fluid	Air									
Port size [Note1]	1/8"	1/4"	1/4"	3/8"	1/2"	3/8"	1/2"	3/4"	3/4"	1"
Pressure range	0.05~0.9MPa(7~130psi)									
Proof pressure	1.5MPa(215psi)									
Temperature range	–5~70°C(Unfreeze)									
Recommended lubricant	ISO VG 32 or equivalent									
Capacity of oil bowl	36CC		98CC			185CC		225CC	410CC	
Weight	200g		370g			660g		700g	1040g	

[Note1] G thread is available.

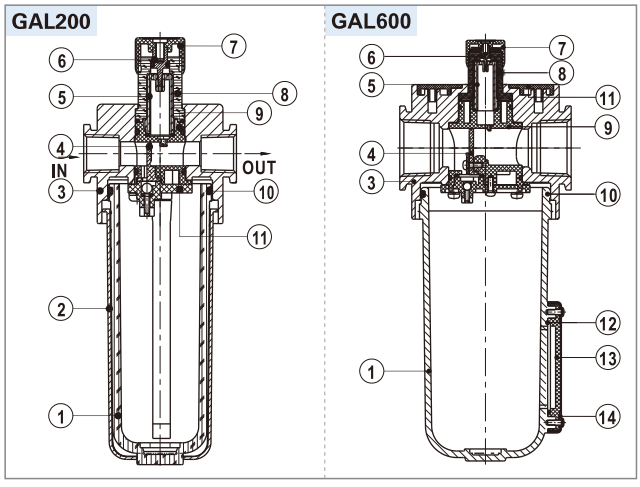
Ordering code

GAL300 □ 10 □ G

① ② ③ ④ ⑤

①Model	②Bowl material	③Port size	④Accessories	⑤Thread type
GAL200: GA200 series Lubricator	Blank：PC bowl C: Metal bowl N: Nylon bowl	06: 1/8" 08: 1/4"	Blank：Bracket J：No bracket	G: G Thread
GAL300: GA300 series Lubricator		08: 1/4" 10: 3/8" 15: 1/2"		
GAL400: GA400 series Lubricator		10: 3/8" 15: 1/2"		
GAL500: GA500 series Lubricator		20: 3/4"		
GAL600: GA600 series Lubricator	C: Metal bowl	20: 3/4" 25: 1"		

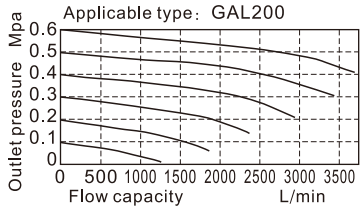
Inner structure

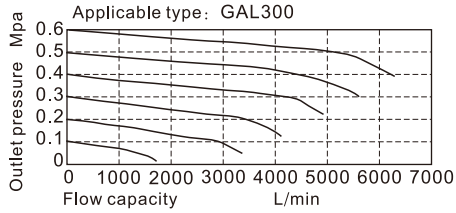


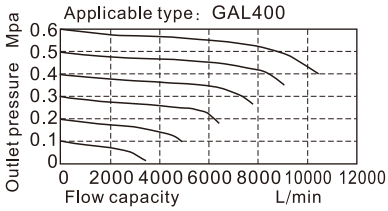
No.	Item	Material
1	Oil bowl	Aluminum alloy\PC\Nylon
2	Meter cover	SPCC
3	Body of lubricator	Aluminum alloy
4	Distance block	PU
5	Drip pipe	PC
6	Ejector pin	Brass
7	Adjusting ring	POM
8	Adjusting looker	PC
9	Sprayer body	POM
10	O-ring	NBR
11	Sprayer bottom cap	POM
12	Liquid meter seal	NBR
13	Liquid meter inside cover	PC
14	Liquid meter cover	SPCC

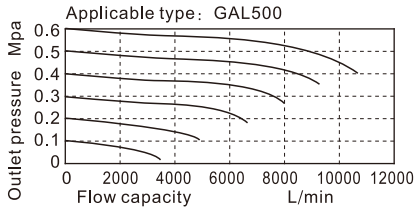
GAL Series Lubricator

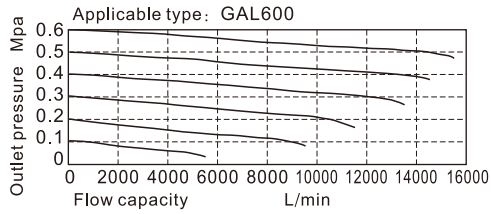
Flow chart



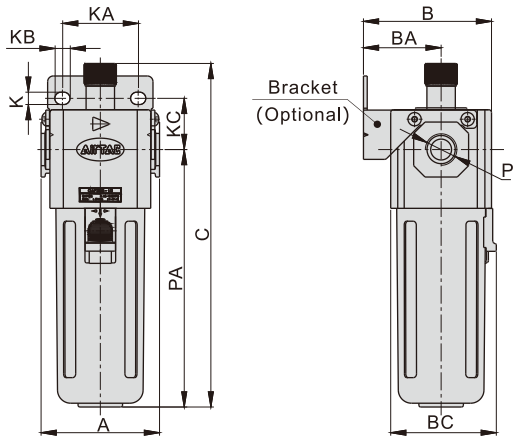






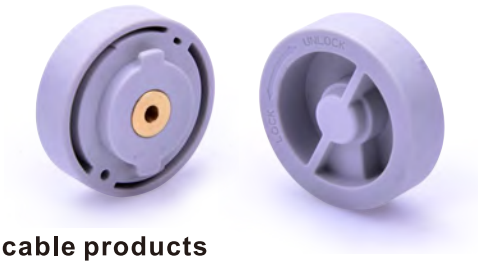


Dimensions



Model\Item	A	B	BA	C	K	KA	KB	KC	P	PA
GAL200-06	52.5	54.5	33	146.5	5.4	27	8.4	23	1/8"	107
GAL200-08	52.5	54.5	33	146.5	5.4	27	8.4	23	1/4"	107
GAL300-08	62.5	67.5	41	181	6.5	40	8	27	1/4"	136
GAL300-10	62.5	67.5	41	181	6.5	40	8	27	3/8"	136
GAL300-15	62.5	67.5	41	181	6.5	40	8	27	1/2"	136
GAL400-10	80	84	50	204.5	8.5	55	11	33.5	3/8"	155
GAL400-15	80	84	50	204.5	8.5	55	11	33.5	1/2"	155
GAL500-20	82	85	50	218.5	8.5	55	11	33.5	3/4"	169
GAL600-20	100	113	70	246	11	66	13	50	3/4"	182.5
GAL600-25	100	113	70	246	11	66	13	50	1"	182.5

GA Series Reverse Flow valve



Product feature

1. This reverse flow valve can not be used individually, only can be used with GA series regulator.
2. When it is used with GA series regulator, one only needs to change the seal board in the back of regulator for the reverse flow valve. It is convenient to install and won't change the external dimension of regulator.

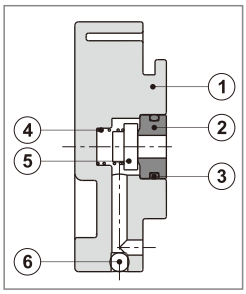
Applicable products

Reflux valve type\Applicable products's type	GA F.R.L Comtination	GA FR.L Comtination	GA Filter & regulator	GA Regulator
GAR200-P1	GAC200	GAFC200	GAFR200	GAR200
GAR300-P1	GAC300,400,500,600	GAFC300,400,500,600	GAFR300,400,500,600	GAR300,400,500,600

Ordering code

When GA series regulator is assembled with the reverse flow valve, the valve can be ordered together with the standard product. What needs to do is to add "-K" to the end of the ordering code of the standard product. Please refer to relevant content for more detailed order method.

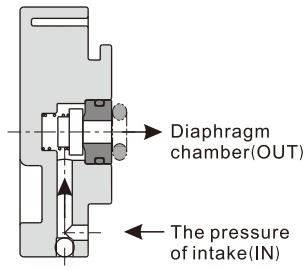
Inner structure



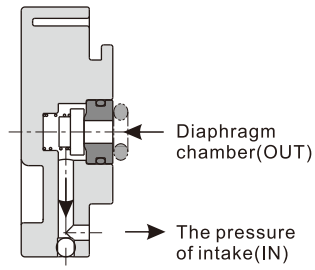
No.	Item	Material
1	Reverse flow valve's body	PBT
2	Plug	Brass
3	O–ring	NBR
4	Spring	SUS304
5	Gasket	NBR
6	Steel ball	SUS304

Working principle

Normally



Exhaust

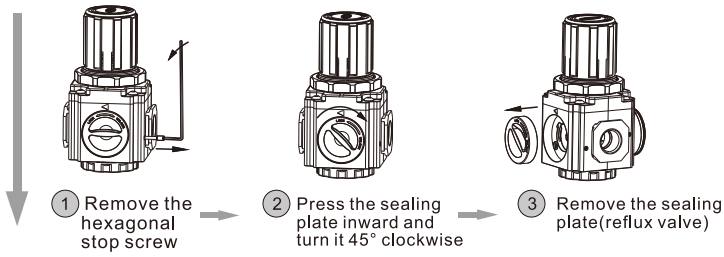


Normally, as the pressure of intake (IN) is higher than the set valve(pressure of outlet), the reverse flow valve closed; if the pressure of intake(IN) is cut off and starts exhaust, reverse flow valve opens. The pressure of diaphragm chamber is exhausted from IN orifice. At this moment, the pressure of diaphragm chamber decreases and the diaphragm is pressed down by the force from adjusting spring to open valve.
The pressure from outlet is exhausted from IN port.

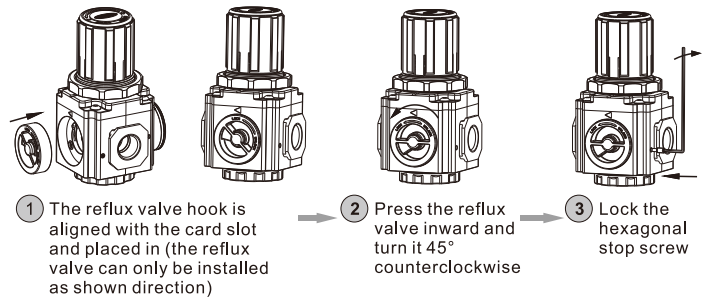
Example for assemble the reflux valve

1. Reflux valve installation steps:

a Disassembly sealing plate

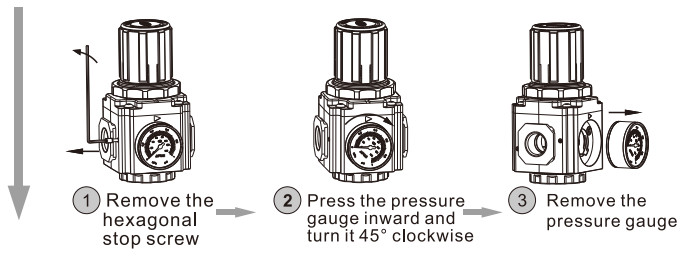


b Reflux valve installation

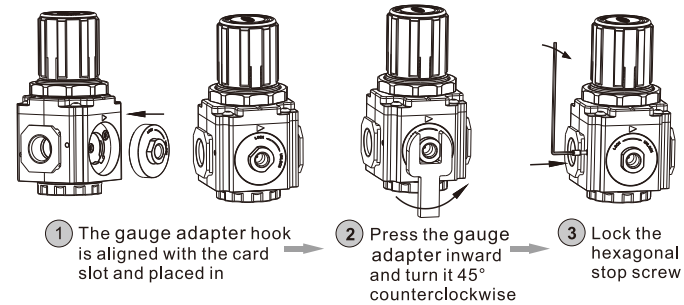


2. Gauge adapter (used when no pressure gauge is attached) Installation steps:

a Disassembly pressure gauge



b Gauge adapter installation



Preparation unit——GT Series(Short PC bowl type)

GTC, GTFC, GTFR, GTF, GTL Series



Product feature

1. GT series is the shorter PC bowl version of GA200 series. Besides from the feature of GA200, GT series also has the below features.
2. drain bowl and oil bowl are shorter than GA200, which is suitable for restricted space installation.
3. No Auto drain available. Drain type is semi-auto drain+manual drain.

Ordering code

GTC200 08 S □ W G K
GTFC200 08 S □ W G K
GTFR200 08 S □ □ W G K
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①Model	②Port size	③Type code	④Accessories	⑤Pressure gauge	⑥Filtering grade	⑦Thread type	⑧Code of reflux valve
GTC200: GT200 Series F.R.L unit (Short PC bowl)	06: 1/8" 08: 1/4"	S: Standard L: Lower pressure [Note1]	No this code	Blank: Circular N: No gauge [Note2]	Blank: 40 μ m W: 5 μ m	G: G Thread (bar/MPa)	Blank: No reverse flow valve is attached K: Reverse flow valve is attached [Note2]
GTFC200: GT200 Series FR.L unit (Short PC bowl)							
GTFR200: GT200 Series Filter & regulator (Short PC bowl)			Blank: Bracket J: No bracket				

[Note1] The work pressure of lower pressure type is 0.15~0.4MPa(20~58psi) ; [Note2] Please refer to page 234 for details of sealing plate Installation and reflux valve.

GTF200 08 □ W G
① ② ③ ④ ⑤

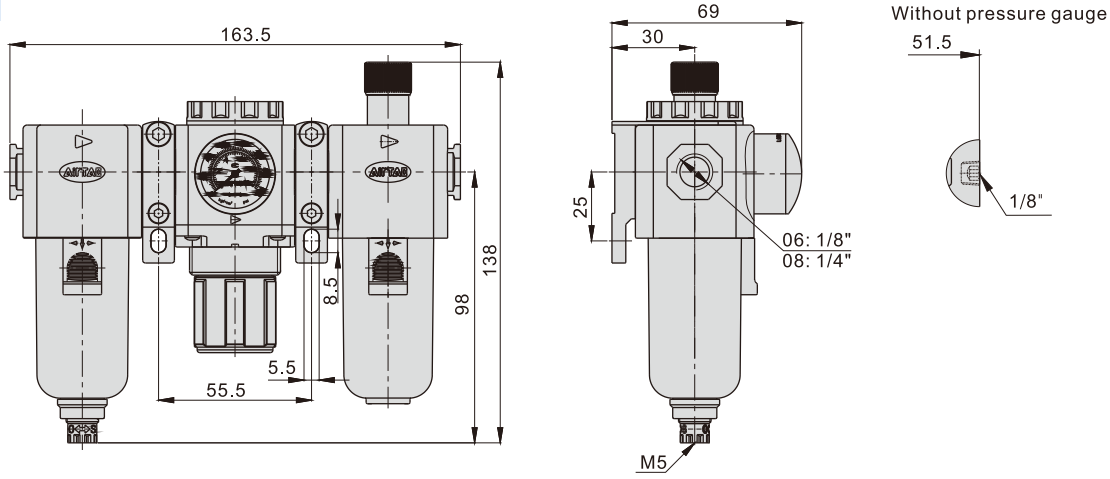
①Model	②Port size	③Accessories	④Filtering grade	⑤Thread type
GTF200: GT200 Series Filter (Short PC bowl)	06: 1/8" 08: 1/4"	Blank: Bracket J: No bracket	Blank: 40 μ m W: 5 μ m	G: G Thread

GTL200 08 □ G
① ② ③ ④

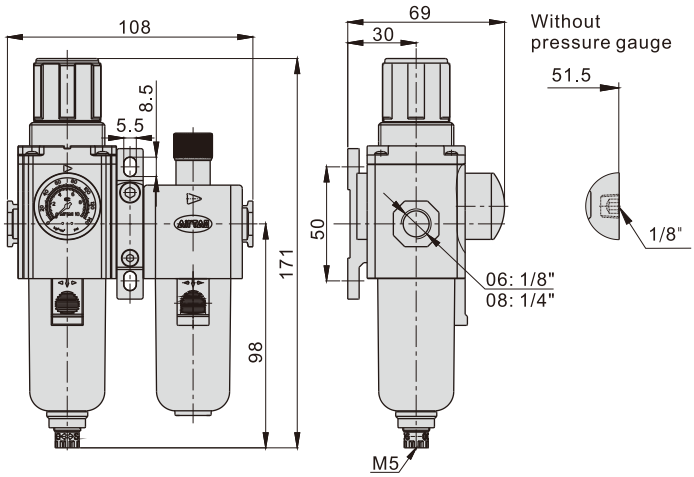
①Model	②Port size	③Accessories	④Thread type
GTL200: GT200GA200 Series Lubricator (Short PC bowl)	06: 1/8" 08: 1/4"	Blank: Bracket J: No bracket	G: G Thread

Dimensions

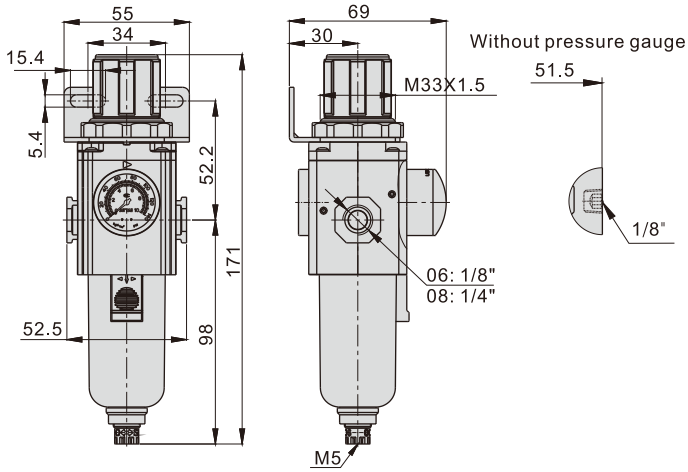
GTC200



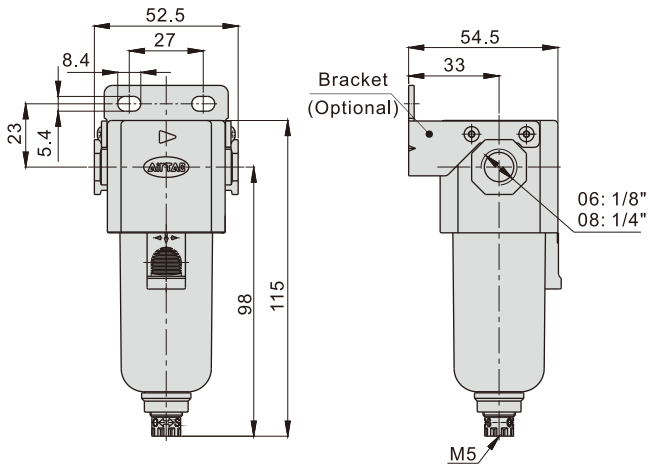
GTFC200



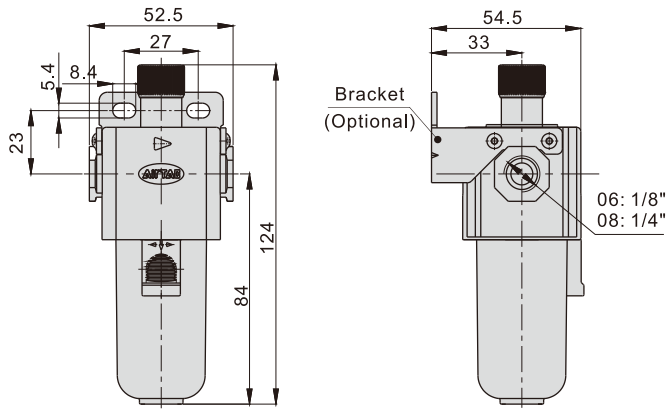
GTFR200



GTF200



GTL200



GA series of gas-distribution block



Product feature

1. It is installed between GA series regulator (or filter & regulator) and G series Lubricator. The air flow is divided by the device that one enters Lubricator to supply oil for lubrication and the other (the second way) directly enters the equipment.
2. Several kinds of bracket can be selected to connect regulator and lubricator. Optional brackets are type T, type L and type U.

Specification

Model	GA200-06	GA200-08	GA300-08	GA300-10	GA400-10	GA400-15	GA600-20	GA600-25
Fluid	Air							
Port size [Note1]	1/8"	1/4"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Way number	Four							
Pressure range	0~1.0MPa(0~145psi)							
Proof pressure	1.5MPa(215psi)							
Temperature range	−20~70°C							

[Note1] G thread is available.

Ordering code

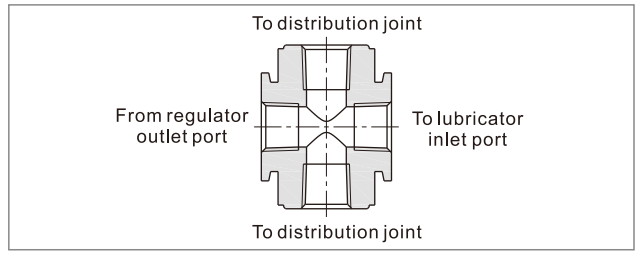
GA200 08 G

1 2 3

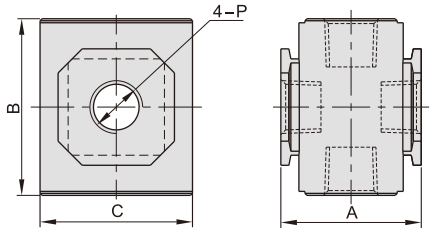
①Model	②Port size	③Thread type
GA200: 200 Series gas-distribution block	06: 1/8" 08: 1/4"	G: G Thread
GA300: 300 Series gas-distribution block	08: 1/4" 10: 3/8"	
GA400: 400/500 Series gas-distribution block	10: 3/8" 15: 1/2"	
GA600: 600 Series gas-distribution block	20: 3/4" 25: 1"	

Note : When it is used with F.R.L. combination, extra mounting bracket needed. Please refer to P238 for order detail.

Inner structure



Dimensions



Model\Item		A	B	C	P
GA200	06	28.5	36	30	1/8"
	08	28.5	36	30	1/4"
GA300	08	35	44	38	1/4"
	10	35	44	38	3/8"
GA400	10	42	52	52	3/8"
	15	42	52	52	1/2"
GA600	20	60	76	68	3/4"
	25	60	76	68	1"

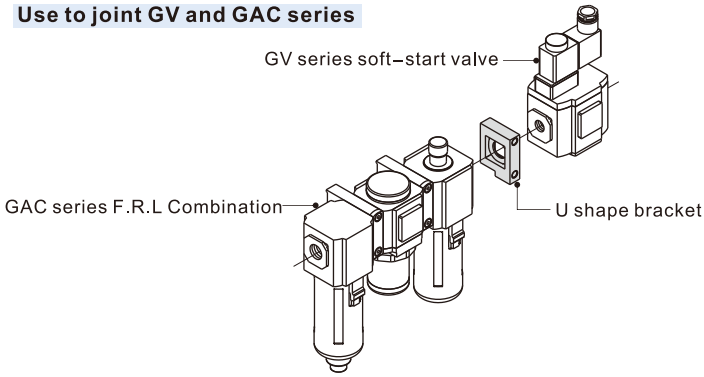
Joint accessories——Bracket

How to select the bracket

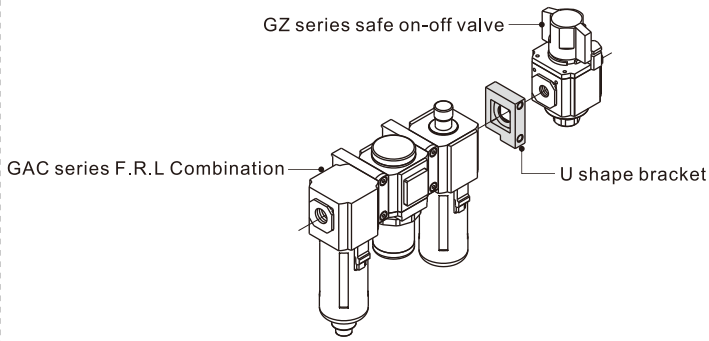
Bracket name	Code	Photo	Adapt accessories model		
T shape bracket	GA200T-P1		GV200	GZ200	GA200\GT200
	GA300T-P1		GV300	GZ300	GA300
	GA400T-P1		GV400	GZ400	GA400\GA500
	GA600T-P1		-	–	GA600
L shape bracket	GA200L-P1		GV200	GZ200	GA200\GT200
	GA300L-P1		GV300	GZ300	GA300
	GA400L-P1		GV400	GZ400	GA400\GA500
	GA600L-P1		–	–	GA600
U shape bracket	GA200U-P1		GV200	GZ200	GA200\GT200
	GA300U-P1		GV300	GZ300	GA300
	GA400U-P1		GV400	GZ400	GA400\GA500
	GA600U-P1		–	–	GA600

How to use the bracket

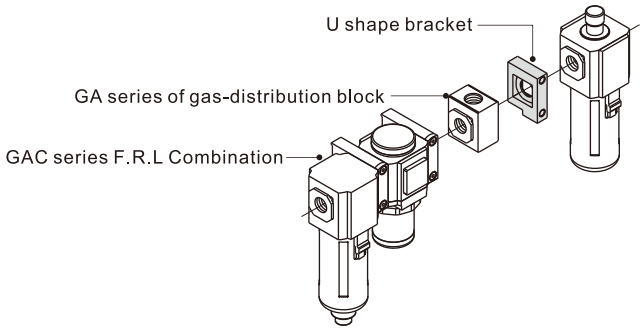
Use to joint GV and GAC series



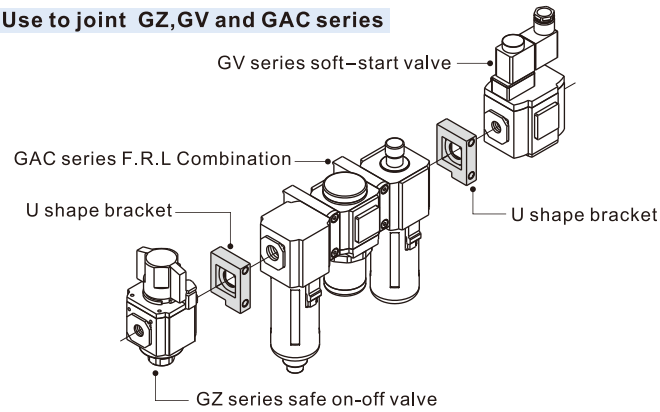
Use to joint GZ and GAC series



Use to joint GA and GAC series



Use to joint GZ,GV and GAC series



Compendium of GP Series preparation unit

P240	Product feature	Photo	P242	Product feature	Photo
GPF Series Oil mist filter	●The pressure loss is low ●Filter efficiency more then 99% ●0.3μm and 0.01μm filtering grade(Optional) ●With fixing bracket ●200/300/400 Series ●Port size: 1/8" 1/4" 3/8" 1/2"		GPR Series Precision regulator	●Higher precision adjustment pressure, sensitive to reaction ●Excellence pressure characteristics and flow characteristics ●Lower, Middle and high pressure are optional ●With fixing bracket ●200/300/400 Series ●Port size: 1/8" 1/4" 3/8" 1/2"	
P246	**Product feature**	**Photo**			
GPFR Series precision Filter-Regulator	●The pressure loss is low ●Filter efficiency more then 99% ●0.3μm and 0.01μm filtering grade(Optional) ●With fixing bracket ●200/300/400 Series ●Port size: 1/8" 1/4" 3/8" 1/2"				

Installation and application

1. Check whether the components have been damaged during transportation before installing and using.
2. Pay attention to whether the flow direction of air (notice "→" direction) and thread type are correct.
3. Please notice whether installation condition accords with technical requirements (such as "working pressure" and "applied temperature range").
4. The medium used or installation environment shall be noticed. The matters with chlorine, carbon compound, aromatic compound and oxidizing acid and alkali shall be avoided to prevent the damage of bowl and oil bowl.
5. Regularly clean or change filter core. Lubricators and regulators shall be in descending order.
6. Keep dust away. The dust cover shall be installed in intake and outlet when the device is dismantled and stored.

GPF Series Oil mist filter



Specification

Model		GPF20006	GPF20008	GPF30008	GPF30010	GPF40010	GPF40015
Fluid		Air					
Port size [Note1]		1/8"	1/4"	1/4"	3/8"	3/8"	1/2"
Filtering grade	M	0.3μm(Capture efficiency 99.9%)					
	D	0.01μm(Capture efficiency 99.9%)					
Pressure range		0.15~1.0MPa(20~145psi)					
Proof pressure		1.5MPa(215psi)					
Temperature range		-5~70°C(Unfreeze)					
Rated flow capacity [2]	M	200L/min		450L/min		1100L/min	
	D	120L/min		240L/min		600L/min	
Bowl Material		Polycarbonate, Nylon, Metal					
Capacity of drain bowl		19CC		54.5CC		89CC	
Weight	PC bowl	207g		356g		620g	
	Metallic bowl	238g		397g		627g	

[Note1] G thread is available.
[Note2]Conditions: inlet pressure 0.7MPa, outlet pressure 0.5MPa. The rated flow varies with the inlet pressure. If the flow exceeds the rated flow, oil will flow to the secondary side. Please note.

Symbol



Product feature

1. Low pressure drop, high oil mist remove efficiency up to 99% and large drain bowl.
2. 0.3μm and 0.01μm filtering grade are available.
3. Two drain types are available: manual and semi-auto drain, and automatic drain.
4. To meet the needs of different environment the bowl material has Poly Carbonate, nylon and metal can be selected.
5. Monomeric products can select the bracket for installation, others can be used with F.R.L Combination.

Ordering code

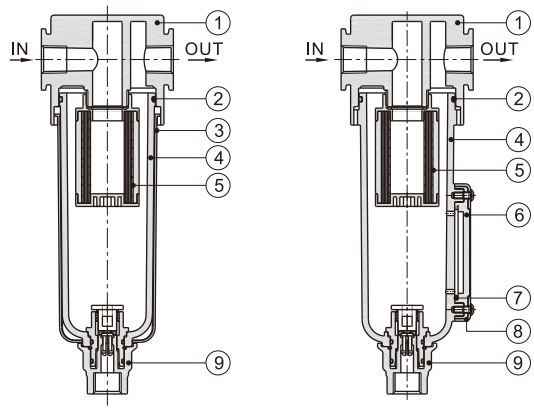
GPF300 □ 08 □ □ M G

1 2 3 4 5 6 7

①Model	②Bowl Material	③Port size	④Drain type	⑤Accessories	⑥Filtering grade	⑦Thread type
GPF200: 200 Series Oil mist filter	Blank: PC bowl+Metallic bowl guard C: Metallic bowl N: Nylon bowl+Metallic bowl guard	06: 1/8" 08: 1/4"	Blank: Manual and Semi-auto drain A: Automatic drain	Blank: Bracket J: No bracket	M: 0.3μm D: 0.01μm	G: G Thread
GPF300: 300 Series Oil mist filter		08: 1/4" 10: 3/8"				
GPF400: 400 Series Oil mist filter		10: 3/8" 15: 1/2"				

Inner structure

GPF300

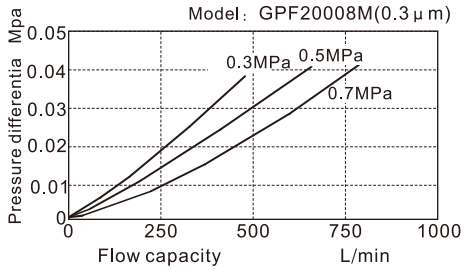


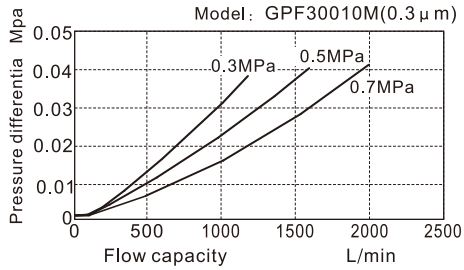
PC bowl+Metallic bowl guard　　Metallic bowl

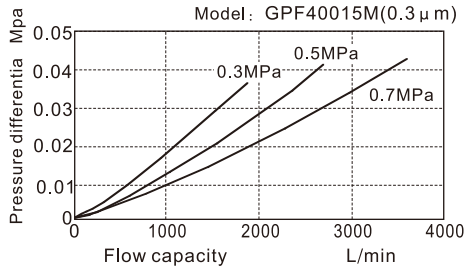
No.	Item	Material
1	Body	Aluminium alloy
2	O-ring	NBR
3	Meter cover	SPCC
4	Drain bowl	PC\nylon\aluminium alloy
5	Filter core	Polymer materials
6	Liquid meter inside cover	PC
7	Liquid meter seal	NBR
8	Liquid meter cover	SPCC
9	Drain connection	Plastic

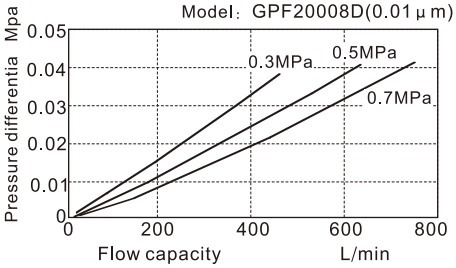
GPF Series Oil mist filter

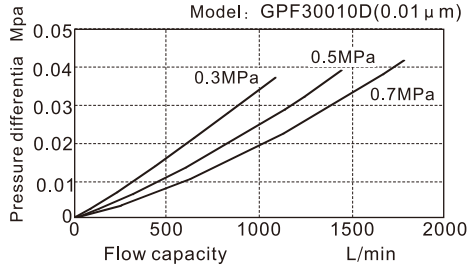
Flow chart

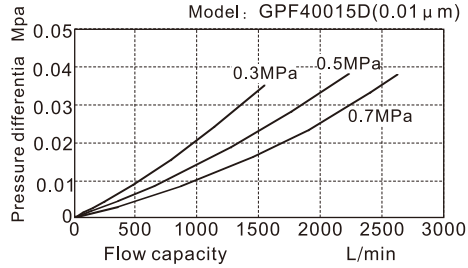






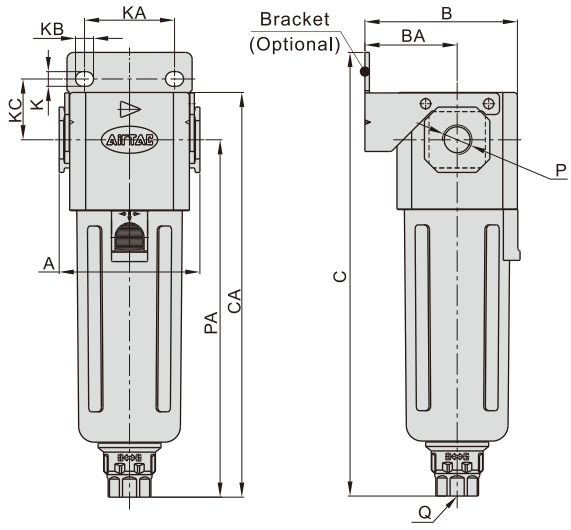




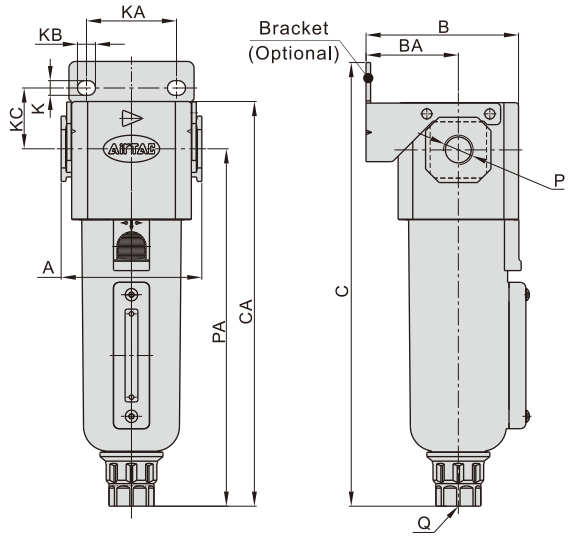


Dimensions

PC bowl+Metallic bowl guard



Metallic bowl



Model\Item	A	B	BA	C	CA	K	KA	KB	KC	P	PA	Q
GPF200(C/N)06	52.5	54.5	33	150	137	5.4	27	8.4	23	1/8"	120	M5X0.8
GPF200(C/N)08	52.5	54.5	33	150	137	5.4	27	8.4	23	1/4"	120	M5X0.8
GPF300(C/N)08	62.5	67.5	41	197	179	6.5	40	8	27	1/4"	158	G1/4
GPF300(C/N)10	62.5	67.5	41	197	179	6.5	40	8	27	3/8"	158	G1/4
GPF400(C/N)10	80	84	50	220	202.5	8.5	55	11	33.5	3/8"	177.5	G1/4
GPF400(C/N)15	80	84	50	220	202.5	8.5	55	11	33.5	1/2"	177.5	G1/4

GPR Series Precision Regulator



Specification

Model		GPR20006	GPR30008	GPR40008	GPR40010	GPR40015
Fluid		Air				
Port size [Note1]		1/8"	1/4"	1/4"	3/8"	1/2"
Max.supply pressure		1.0MPa(145psi)				
Operating pressure	Lower pressure	0.005~0.2MPa(0.7~29psi)		0.01~0.2MPa(1.5~29psi)		
	Medium pressure	0.01~0.4MPa(1.5~58psi)				
	High pressure	0.01~0.8MPa(1.5~116psi)				
Sensitivity		Within 0.2%F.S.				
Repeatability		Within ±0.5%F.S.				
Air consumption (ANR)		≤4L/min	≤4L/min	≤9.5L/min		≤11.5L/min
Temperature range		-20~70°C(Unfreeze)				
Weight		144g	336g	717g		

[Note1] G thread is available.

Symbol



Product feature

1. High pressure regulating accuracy and rapid-response.
2. Good pressure and flow chart.
3. Easy installation, it can be installed independently by bracket or directly with existing filter combination components of module type.
4. In addition to high pressure type, the type of medium pressure and lower pressure can be selected.

Ordering code

GPR300 08 H □ □ G

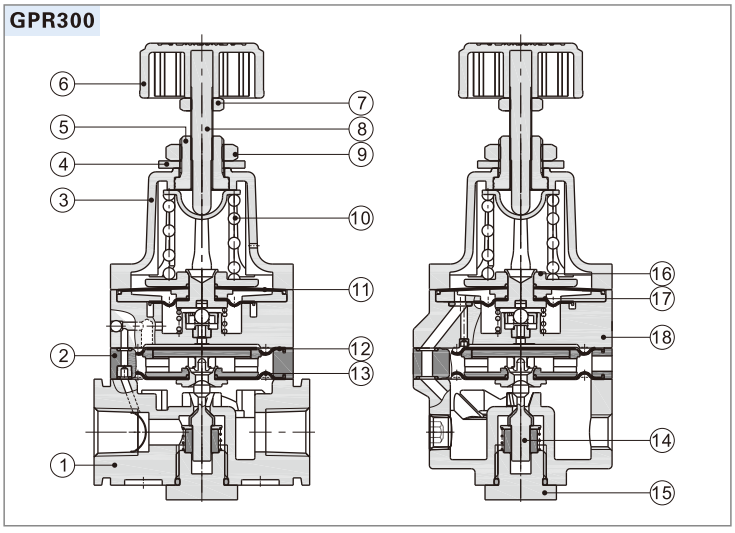
① ② ③ ④ ⑤ ⑥

①Model	②Port size	③Regulating pressure range	④Accessories	⑤Pressure gauge	⑥Thread type [Note1]
GPR200: 200 Series Precision Regulator	06: 1/8"	L: 0.005~0.2MPa(0.73~29psi) M: 0.01~0.4MPa(1.45~58psi) H: 0.01~0.8MPa(1.45~116psi)	Blank: Bracket J: No bracket	Blank: With pressure gauge N: Without pressure gauge	G: G Thread (Scale:MPa&bar)
GPR300: 300 Series Precision Regulator	08: 1/4"				
GPR400: 400 Series Precision Regulator	08: 1/4" 10: 3/8" 15: 1/2"	L: 0.01~0.2MPa(1.45~29psi) M: 0.01~0.4MPa(1.45~58psi) H: 0.01~0.8MPa(1.45~116psi)			

[Note1] Please consult us for special requirements.

Inner structure

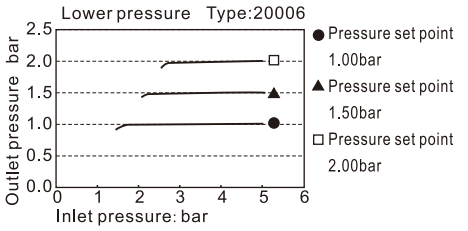
GPR300

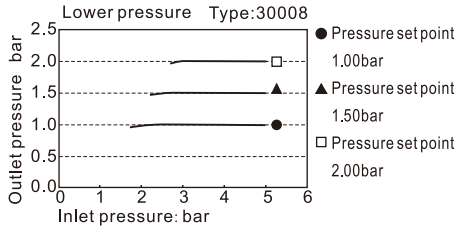


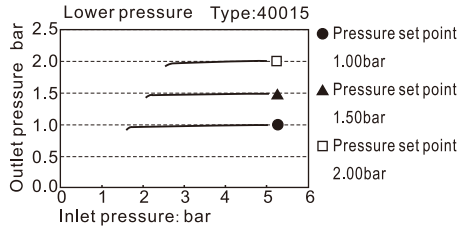
No.	Item	Material
1	Regulator body	Aluminum alloy
2	Pilot body	Plastic
3	Regulator seat	Aluminum alloy
4	Bracket gasket	SPCC
5	Adjusting nut	Carbon steel
6	Regulator knob	Plastic
7	Nut	Carbon steel
8	Regulator spindle	Carbon steel
9	Nut	Carbon steel
10	Spring	Spring steel
11	Pilot upper diaphragm	NBR
12	Regulator upper diaphragm	NBR
13	Regulator lower diaphragm	NBR
14	Spool	Stainless steel+NBR
15	Bonnet	Carbon steel
16	Pilot diaphragm upper hard core	Aluminum alloy
17	Pilot lower diaphragm	NBR
18	Nozzle body	Aluminum alloy

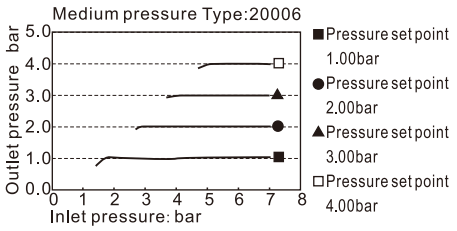
GPR Series Precision Regulator

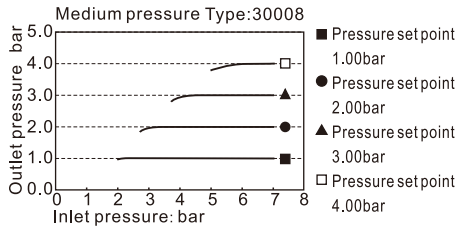
Pressure chart

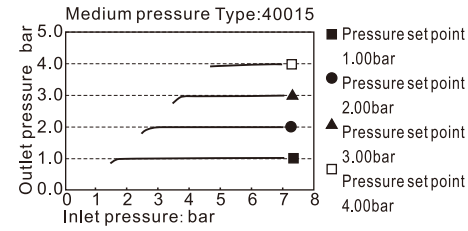


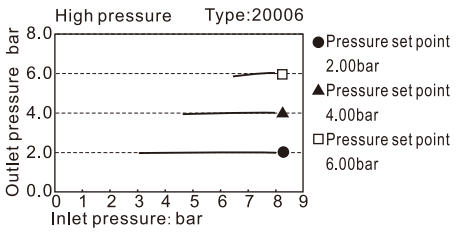


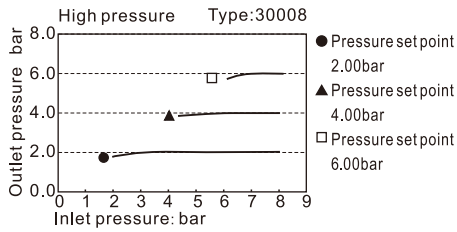


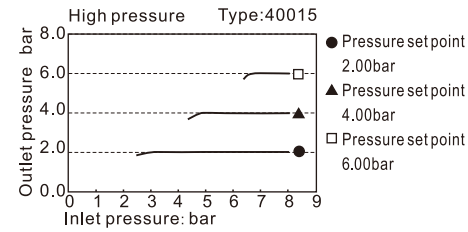




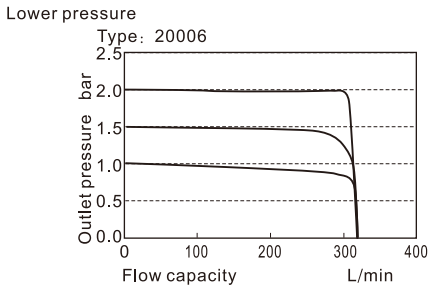


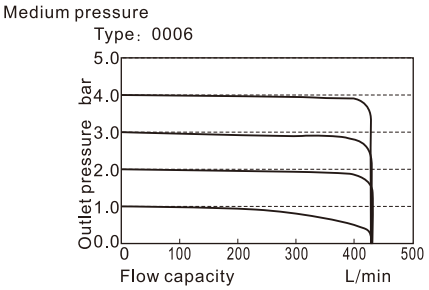


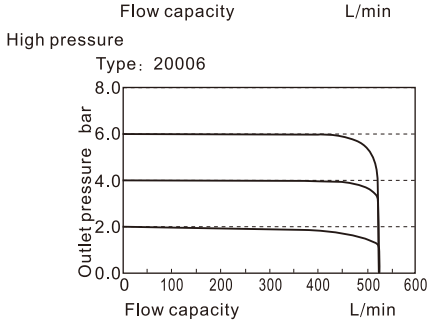


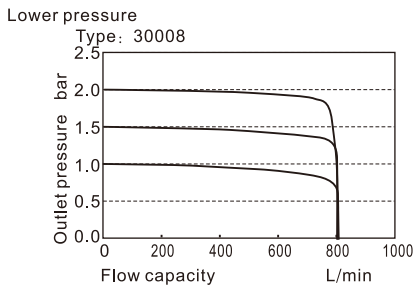


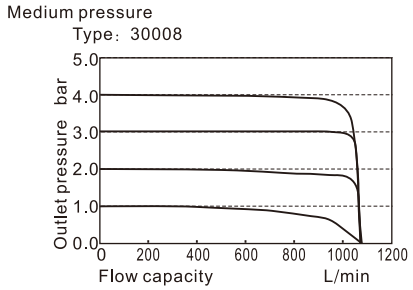
Flow chart

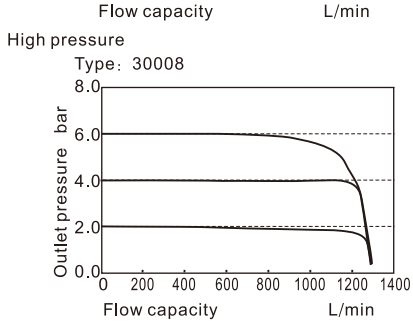


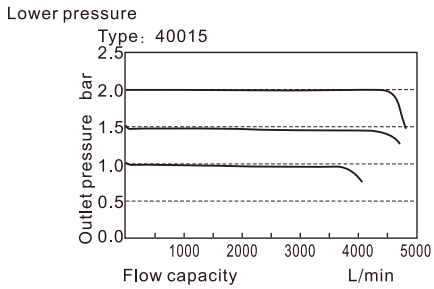


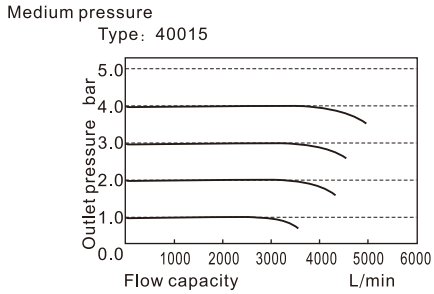


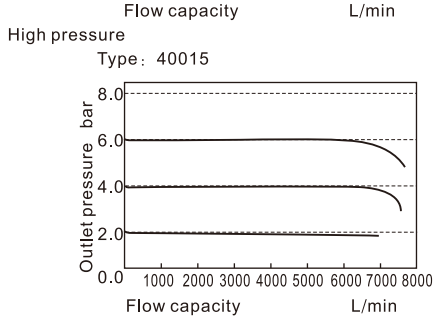








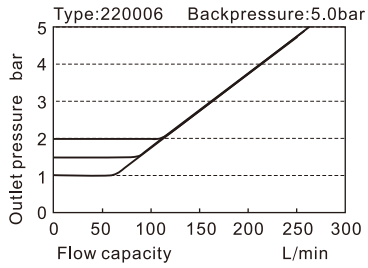




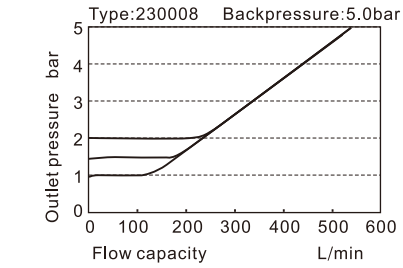
GPR Series Precision Regulator

Overflow chart

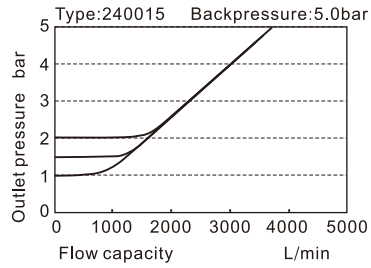
Lower pressure



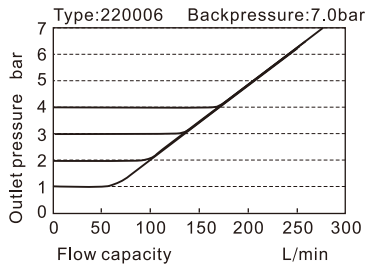
Lower pressure



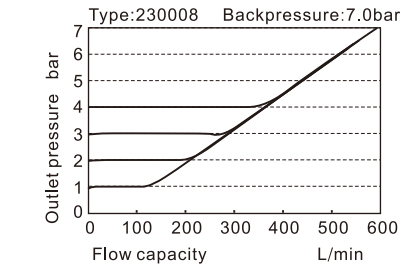
Lower pressure



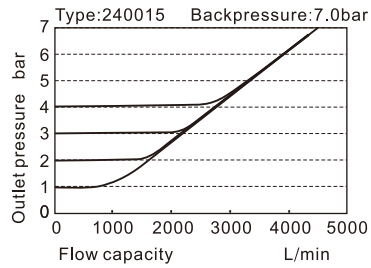
Medium pressure



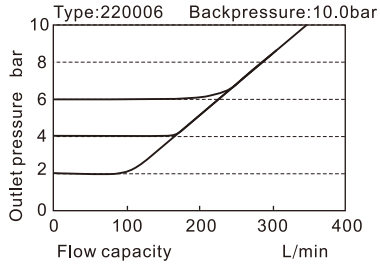
Medium pressure



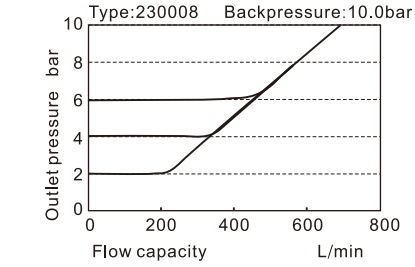
Medium pressure



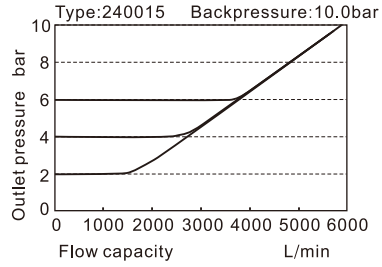
High pressure



High pressure



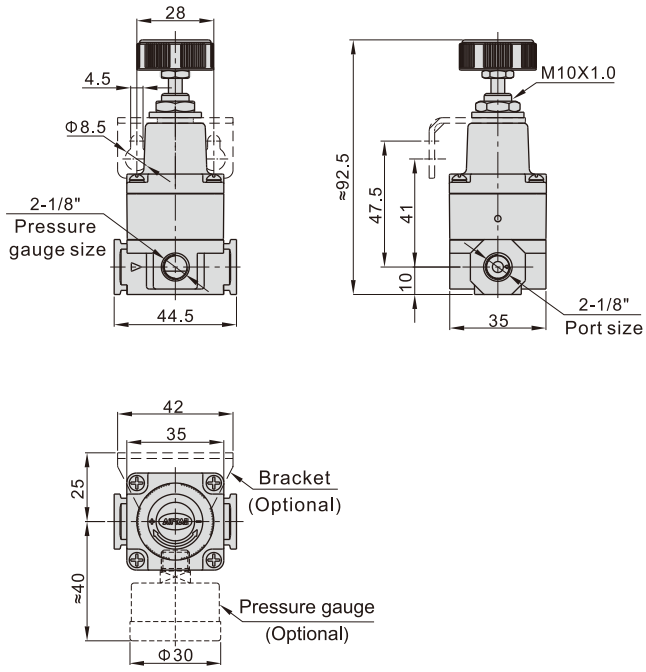
High pressure



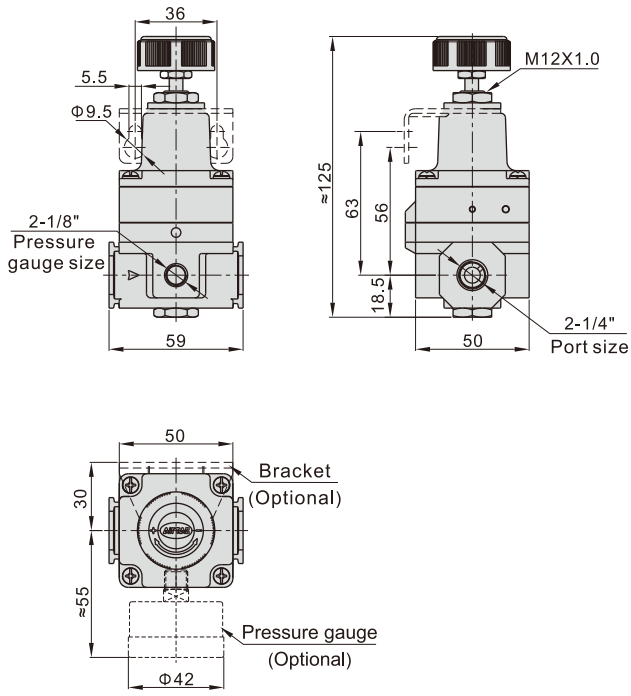
GPR Series Precision Regulator

Dimensions

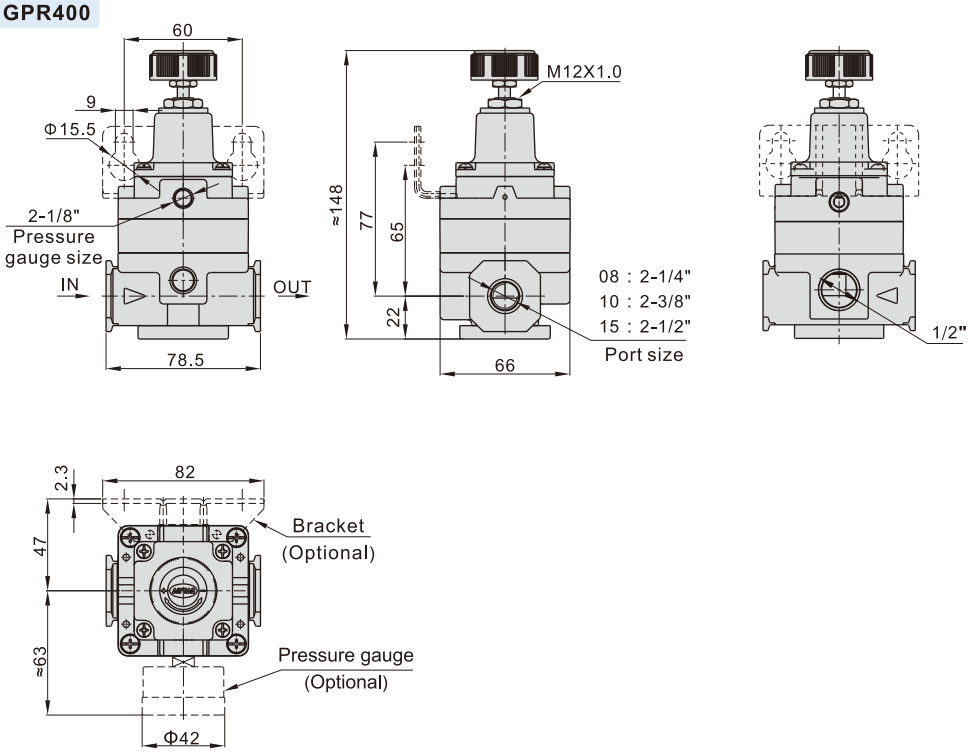
GPR200



GPR300



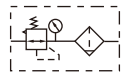
GPR400



GPFR Series Precision Filter & Regulator



Symbol



Product feature

1. Circular square pressure gauge which with clip and magnifier is used to save installation space.
2. The pressed-in self-locking mechanism can prevent the abnormal movement of the set pressure caused by external interfere.
3. Balanced design is adopted for the pressure adjustment mechanism.
4. Unique diversion structure spins the air flowing through to effectively separate the liquid from the air and reliably filter the solid grain.
5. The filtering grade includes 0.3 μ m and 0.01 μ m (optional).
6. Two drain types are available: semi-auto drain and automatic drain.
7. Three material of bowl are available: PC, Nylon and metal.
8. The bracket can be selected for installation.

Specification

Model		GPFR200–06	GPFR200–08	GPFR300–08	GPFR300–10	GPFR400–10	GPFR400–15
Fluid		Air					
Port size [Note1]		1/8"	1/4"	1/4"	3/8"	3/8"	1/2"
Filtering grade		0.3 μ m or 0.01 μ m					
Pressure range		0.15~0.9MPa(20~130psi)					
Max. pressure		1.0MPa(145psi)					
Proof pressure		1.5MPa(215psi)					
Temperature range		–5~70°C(Unfreeze)					
Rated flow capacity [Note 2]	M	150L/min		330L/min		820L/min	
	D	90L/min		180L/min		450L/min	
Capacity of drain bowl		25CC		60CC		100CC	
Weight		310g		500g		910g	

[Note1] G thread is available.
[Note2]Conditions: inlet pressure 0.7MPa, outlet pressure 0.5MPa. The rated flow varies with the inlet pressure. If the flow exceeds the rated flow, oil will flow to the secondary side. Please note.

Ordering code

GPFR300 □ 10 □ S □ □ M G

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

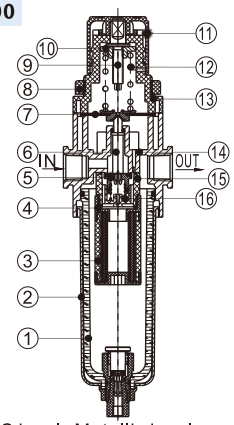
①Model	②Material of bowl	③Port size	④Drain type	⑤Type code	⑥Accessories	⑦Pressure gauge	⑧Filtering grade	⑨Thread type
GPFR200:GP200 Series Precision filter-regulator	Blank: PC N: Nylon C: Metal	06: 1/8" 08: 1/4"	Blank: Semi-auto drain +Manual drain A: Automatic drain	S: Standard L: Lower pressure [Note1]	Blank: Bracket J: No bracket	Blank: Circular with clip N: No pressure gauge [Note2]	M: 0.3μm D: 0.01μm	G: G Thread (bar/MPa)
GPFR300:GP300 Series Precision filter-regulator		08: 1/4" 10: 3/8"						
GPFR400:GP400 Series Precision filter-regulator		10: 3/8" 15: 1/2"						

[Note1] The maximum work pressure of lower pressure type is 58psi(0.4MPa). [Note2] Please refer to page 234 for details of sealing plate Installation.

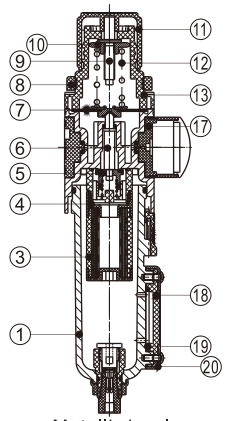
GPFR Series Precision Filter & Regulator

Inner structure

GPFR200



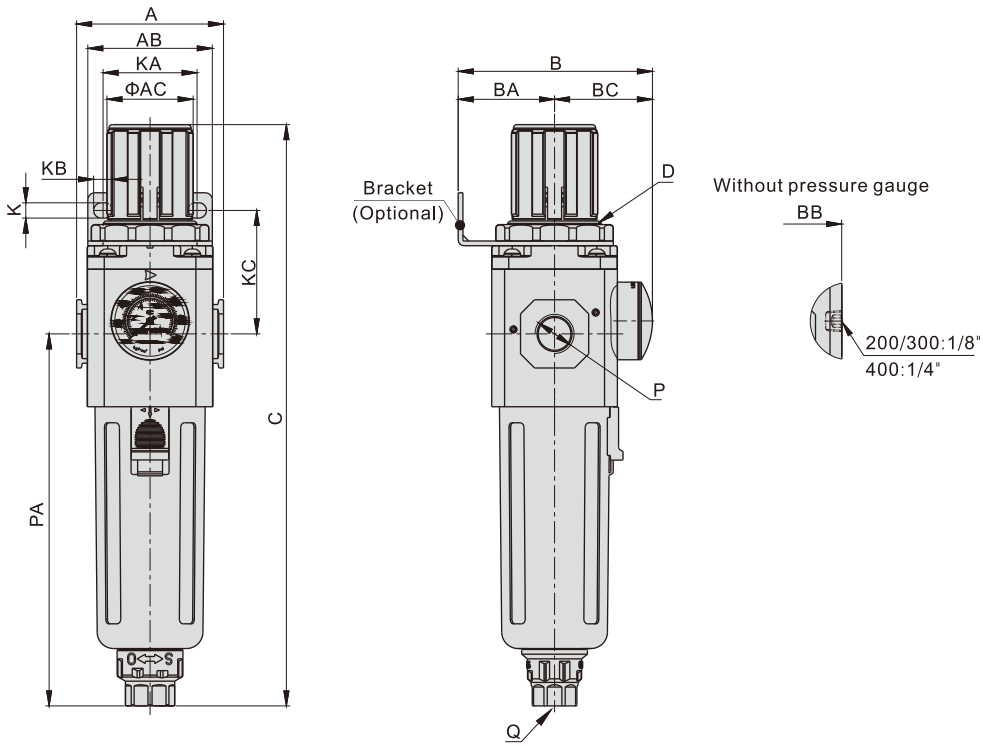
PC bowl+Metallic bowl guard



Metallic bowl

No.	Item	Material
1	Drain bowl	PC\nylon\aluminium alloy
2	Meter cover	SPCC
3	Filter core	Polymer materials
4	Gasket	NBR
5	Adjusting plug	Aluminum alloy & Rubber
6	Adjusting spool	POM
7	Diaphragm	NBR
8	Fixation ring cap	POM
9	Adjusting spindle	Steel
10	Regulator nut	Steel
11	Pressure knob	POM
12	Spring	SWPB
13	Adjusting seat	POM
14	Body of filter-regulator	Aluminium alloy
15	Gas distribution	POM
16	Spring	SWPB
17	Gauge	–
18	Liquid meter inside cover	PC
19	Liquid meter seal	NBR
20	Liquid meter cover	SPCC

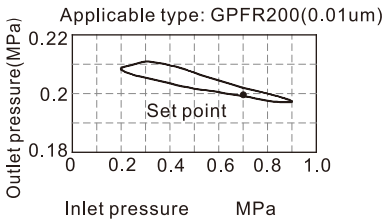
Dimensions

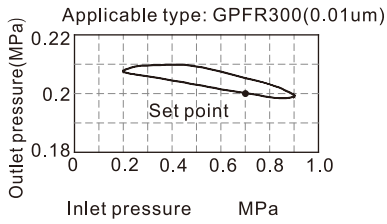


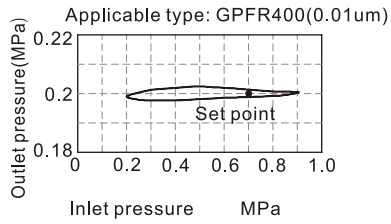
Model\Item	A	AB	AC	B	BA	BB	BC	C	D	K	KA	KB	KC	P	PA	Q
GPFR200-06	52.5	55	31	69	30	51.5	39	192.5	M33x1.5	5.4	34	15.4	52	1/8"	120	M5X0.8
GPFR200-08	52.5	55	31	69	30	51.5	39	192.5	M33x1.5	5.4	34	15.4	52	1/4"	120	M5X0.8
GPFR300-08	62.5	53	38	82.5	41	67.5	41.5	247	M40x1.5	6.5	40	8	52.5	1/4"	158	G1/4
GPFR300-10	62.5	53	38	82.5	41	67.5	41.5	247	M40x1.5	6.5	40	8	52.5	3/8"	158	G1/4
GPFR400-10	80	72	52	99	50	84	49	285.5	M55x2.0	8.5	55	11	57	3/8"	177.5	G1/4
GPFR400-15	80	72	52	99	50	84	49	285.5	M55x2.0	8.5	55	11	57	1/2"	177.5	G1/4

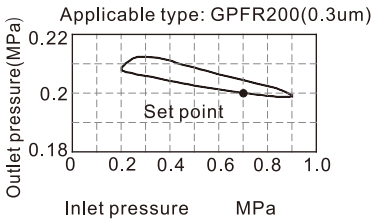
GPFR Series Precision Filter & Regulator

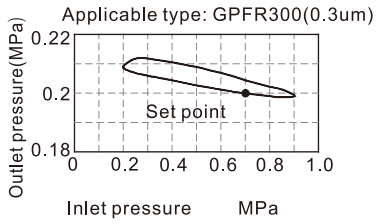
Pressure chart

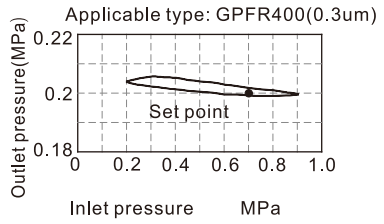




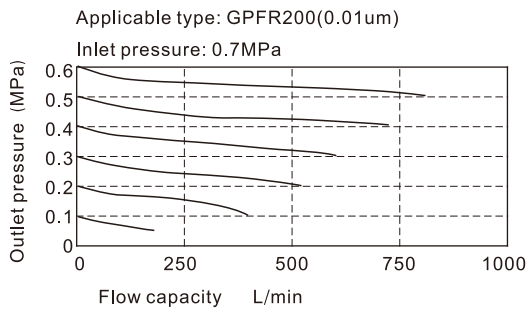


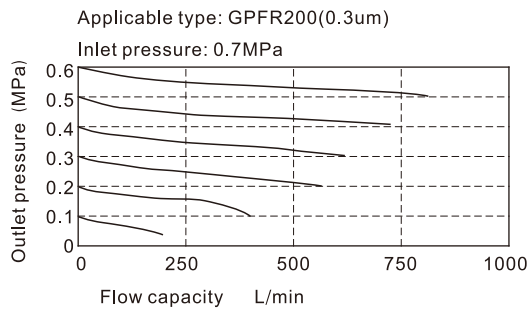


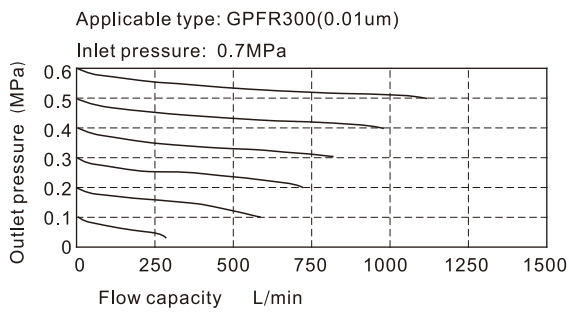


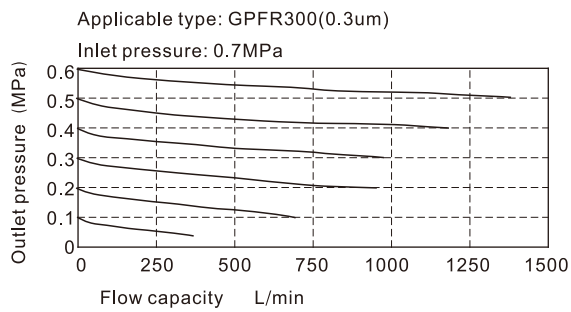


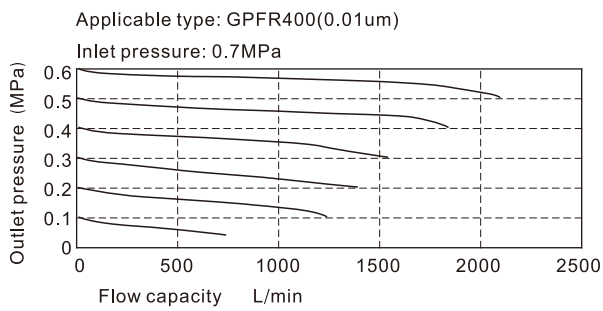
Flow chart

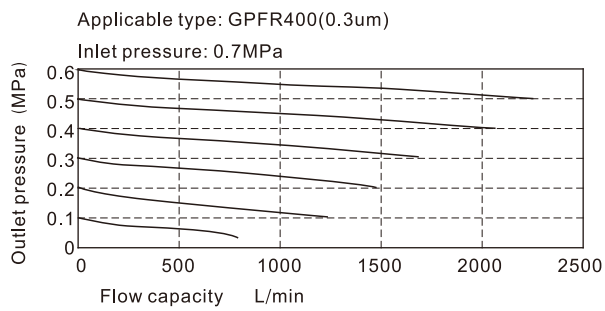












Compendium of Other Series preparation unit

P250	Product feature	Photo	P252	Product feature	Photo
SDR Series Regulator	●Back pressure structure ●Compact type, cost-effective ●Broad regulating range ●Standard and lower pressure type are available ●Single unit installation ●Port size: M5 1/8" 1/4"		DPS Series Digital Display Pressure Sensor	●PNP、NPN Output type ●Terminal and grommet to be choused ●Wide measurement range ●Higher precision ●Digital Display type Precision and intuitionistic	
P256	Product feature	Photo	**P263**	Product feature	Photo
DPH Series Digital Display Pressure Sensor (Analog Output)	●PNP、NPN Output type ●Terminal and grommet to be choused ●Wide measurement range ●Higher precision ●Digital Display type Precision and intuitionistic		GS, GF, GU GP, GV Series Pressure Gauge	●Sensitive reaction Can work under low pressure ●Several pressure units to be selected ●Several installation ways ●Several installation accessories to be selected ●Various dimensions of screw thread are available	
P264	Product feature	Photo	**P266**	Product feature	Photo
GVF Series Vacuum Filter	●Low pressure loss ,high efficiency in separating water ●5μm and 40μm filtering grade(Optional) ●With fixing bracket ●200/300 Series ●Port size: 1/8" 1/4" 3/8" 1/2"		GVR Series Vacuum Regulator	●In addition to panel installation, the bracket is optional for installation. ●Suitable to adjust the vacuum pressure. ●The pressure regulation is stable, the drift is small and the pressure characteristic is good. ●Port size: 1/8" 1/4" 3/8"	

Installation and application

1. Check whether the components have been damaged during transportation before installing and using.
2. Pay attention to whether the flow direction of air (notice "→" direction) and thread type are correct.
3. Please notice whether installation condition accords with technical requirements (such as "working pressure" and "applied temperature range").
4. The medium used or installation environment shall be noticed. The matters with chlorine, carbon compound, aromatic compound and oxidizing acid and alkali shall be avoided to prevent the damage of bowl and oil bowl.
5. Regularly clean or change filter core. Lubricators and regulators shall be in descending order.
6. Keep dust away. The dust cover shall be installed in intake and outlet when the device is dismantled and stored.

SDR Series regulator



Symbol



Product feature

1. Back pressure structure, compact type, cost-effective, installation time saving.
2. Broad regulating range; low-pressure type is optional other than the standard type; stable output pressure; applicable to situation which has low expectation on output pressure but high expectation on performance and cost-effectiveness.
3. Single unit installation; easy to mount

Specification

Model	SDR100M5	SDR10006	SDR20006	SDR20008	SDR100M5L	SDR10006L	SDR20006L	SDR20008L
Fluid	Air							
Pressure range	0.05~0.9MPa(7~130psi)				0.03~0.4MPa(4~57psi)			
Max. pressure	1.0MPa(145psi)							
Proof pressure	1.5MPa(215psi)							
Temperature range	-20~70℃							
Port size [Note1]	M5	1/8"		1/4"	M5	1/8"		1/4"

[Note1] G thread is available.

Ordering code

SDR 200 08 L □ □ 1 □

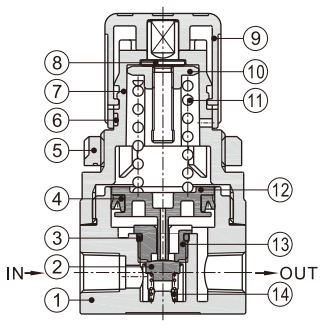
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①Model	②Series code	③Port size	④Type code	⑤Accessories	⑥Pressure gauge	⑦Scale[Note]	⑧Thread type
SDR: SDR series regulator	100: 100 series	M5: M5 06: 1/8"	Blank: Standard L: Lower pressure	Blank: Bracket J: No bracket	Blank: Pressure gauge N: No pressure gauge	1: MPa 2: psi 3: bar	G:G Thread
	200: 200 series	06: 1/8" 08: 1/4"					

[Note] When select no pressure gauge, this code is blank.

Inner structure and material of major parts

SDR Series

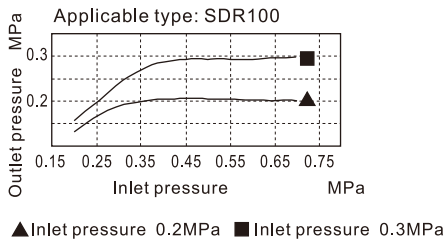


No.	Item	Material
1	Body	Aluminum alloy
2	Needle gasket	NBR
3	O-ring	NBR
4	O-ring	NBR
5	Fixed ring	POM
6	Identification ring	POM
7	Adjusting seat	POM
8	Adjusting pillar	Steel
9	Adjusting button	POM
10	Adjusting nut	Steel
11	Adjusting spring	SWC
12	Piston rode	POM
13	Adjusting seat	POM
14	Return spring	SUS304

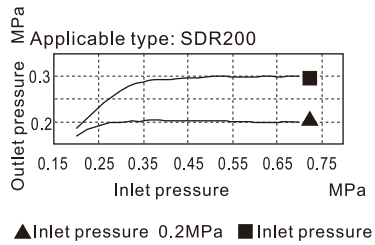
SDR Series regulator

Pressure and feature of flow

Pressure chart

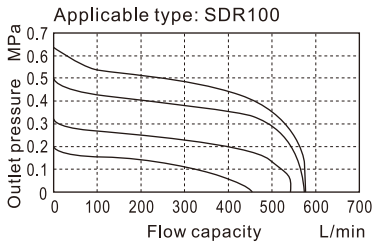


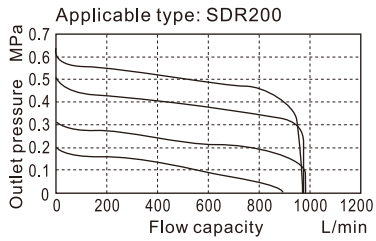
▲Inlet pressure 0.2MPa ■Inlet pressure 0.3MPa



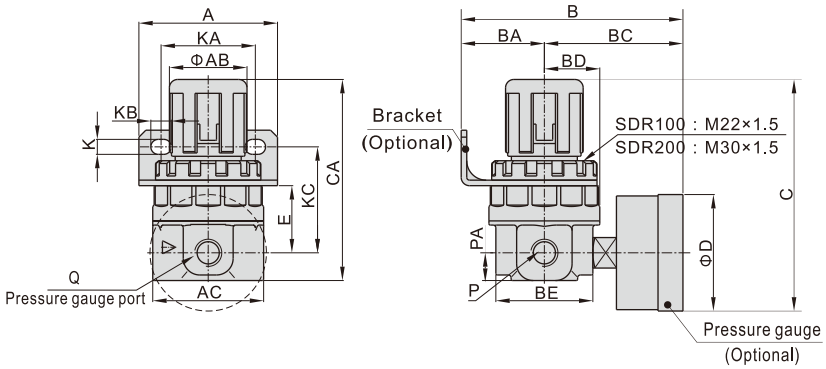
▲Inlet pressure 0.2MPa ■Inlet pressure 0.3MPa

Flow chart





Dimensions



Model\Item	A	AB	AC	B	BA	BC	BD	BE	C	CA	D	E	K	KA	KB	KC	P	PA	Q
SDR100□M5	35	20	32	65.5	26	39.5	14.5	29	62.5	54.5	33	17	5.5	22	7	29	M5	7.5	1/16"
SDR100□06	35	20	32	65.5	26	39.5	14.5	29	62.5	54.5	33	17	5.5	22	7	29	1/8"	7.5	1/16"
SDR200□06	50	28	40	80	30	50	20	35	83.5	72.5	42	24	5.5	34	7.5	38	1/8"	10	1/8"
SDR200□08	50	28	40	80	30	50	20	35	83.5	72.5	42	24	5.5	34	7.5	38	1/4"	10	1/8"

Note: Bracket and pressure gauge are optional.

Attentions of application

Unlock the regulating knob before pressure adjustment, then lock it after the adjustment. Otherwise, may cause the regulating knob damage or the outlet pressure change.

1. Pull the regulating knob to unlock, when the orange marking ring below the regulating knob appears, indicating that the regulating knob is unlocked.
2. Push the regulating knob to lock, when the orange marking ring below the regulating knob disappears completely, indicating that the regulating knob is locked.



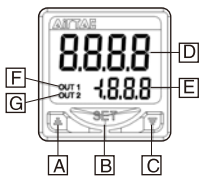
DPS Series digital display pressure sensor



Symbol

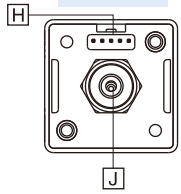


User interface Instruction

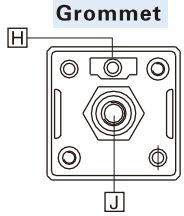


No.	Item
A	Value up button
B	Setting button
C	Value Down button
D	Pressure display area
E	Set pressure display area
F	Output 1 indicator light
G	Output 2 indicator light
H	Power and signal connector
J	Pressure input

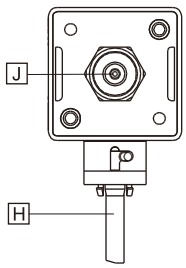
Terminal



Grommet



Bottom ported



Specification

Input power	Voltage	12~24 VDC ± 10% Ripple(p-p)＜10%
Pressure range	Fluid	Non-corrosive gas
	Measurement range	DPSN1(P1)-01：−100kPa~100kPa
		DPSN1(P1)-10：−100kPa~1,000kPa
	Withstand pressure	DPSN1(P1)-01：200kPa
		DPSN1(P1)-10：1500kPa
	Measurement error	±2%F.S.，±1digit(Temperature:25±3℃)
	Repetitive accuracy	±0.2%F.S.
	Temperature error	±3%F.S.(Base 25℃，Range 0 to 50℃)
Display	Type	Double row LCD display,4-digit measurement, 3.5-digit setting
	Color	2-color LCD (Red/Green)
	Display period	100ms、250ms、500ms、1,000ms
Output	Output group	DPSN1:Built-in two sets of NPN output
		DPSP1:Built-in two sets of PNP output
	Transistor output	NPN:Maximum applied voltage 30V/100mA,Retained voltage <1.5V
		PNP:Maximum applied voltage 30V/100mA,Retained voltage <1.5V
	Output delay time	2ms、20ms、50ms、100ms、250ms、500ms 1,000ms、2,500ms、5,000ms
	Hysteresis	DPSN1(P1)-01：0.1、0.2、0.3..... 0.8(kPa)
		DPSN1(P1)-10：1、2、3..... 8(kPa)
	Output mode	Basic mode, Hysteresis mode, Window comparator mode
Pressure Unit	DPSN1(P1)-01	kPa、kgf/cm^2、bar、psi、mmHg、inHg
	DPSN1(P1)-10	MPa、kPa、kgf/cm^2、bar、psi、cmHg、inHg
Vibration resistance		10 to 500Hz with 10mm Amplitude in X, Y, Z directions for 2hrs
Impact resistance		Maximum 100m/s^2 , X, Y, Z directions 3 times each
Operating Temp. range		0~50℃
Stored Temp. range		-20~65℃
Humidity range		35%~80% RH(No condensation)

Ordering code

DPS N1 □−01 020 G

① ② ③ ④ ⑤ ⑥

①Model	②Output type	③Electrical entry	④Measurement range	⑤Lead wire length	⑥Piping specifications
DPS: Digital Display Pressure Sensor	N1: NPN P1: PNP	Space: Plug-in connector B: Pre-wired type [Note1] D: Bottom plug-in connector	01: -100kPa~100kPa 10: -100kPa~1,000kPa	020: Length 2m 030: Length 3m 050: Length 5m M08:300mm with M8 plug connector[Note2]	G: Male thread G1/8; female thread: M5

[Note1] The safety grade of pre-wired type is IP63.
[Note2] There is no plug-in connector type for M08. The sockets of M08 need additional order. Please check on the right.

Ordering code of Socket F − EC M08 D 020

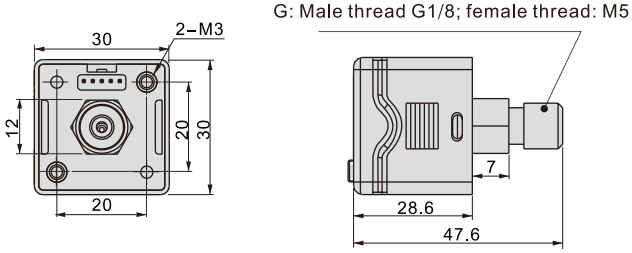


Catagory code	F： Accessory
Type code	EC: Connecting wire
Socket type	M08:M8 socket
Wire type	D: 4-wire type
Wire length	020: 2 meters 030:3meters 050:5meters 100:10meters

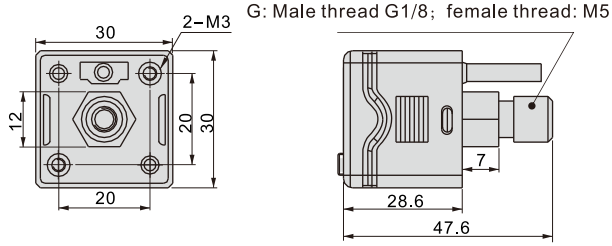
DPS Series digital display pressure sensor

Dimensions

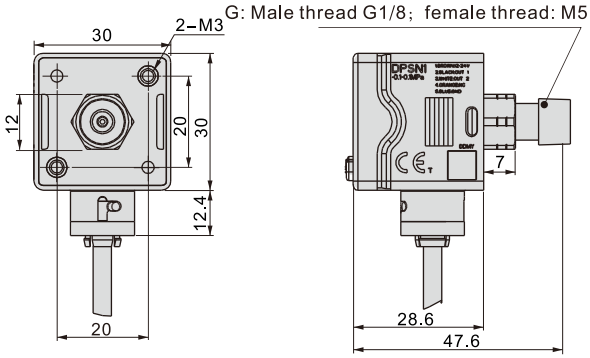
Plug-in connector



Pre-wired type



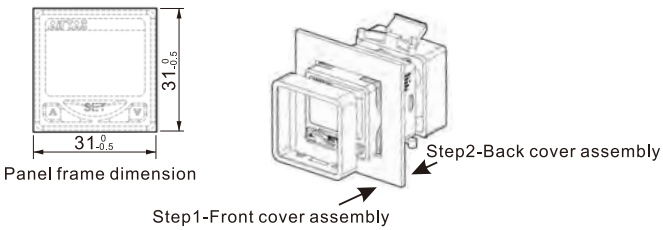
Bottom ported



Dimensions/Assembly Instruction

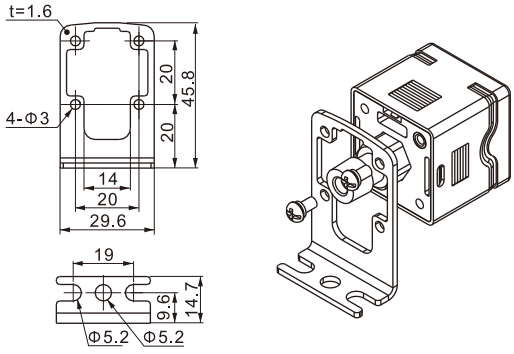
Panel mount adapter + Front protective cover

Order the Installation accessories
(Ordering code: F-DPSEB, applicable to terminal and grommet type)

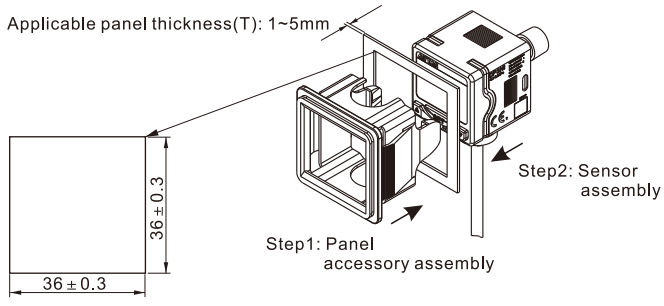


Bracket

Order the Installation accessories (Ordering code: F-DPSLB)



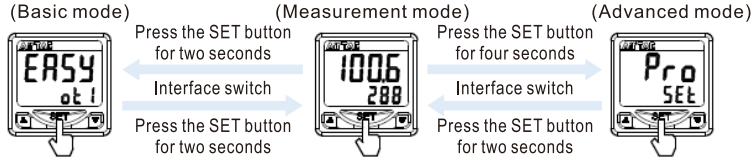
Order the installation accessories
(Ordering code:F-DPSDEB, applicable to bottom ported type)



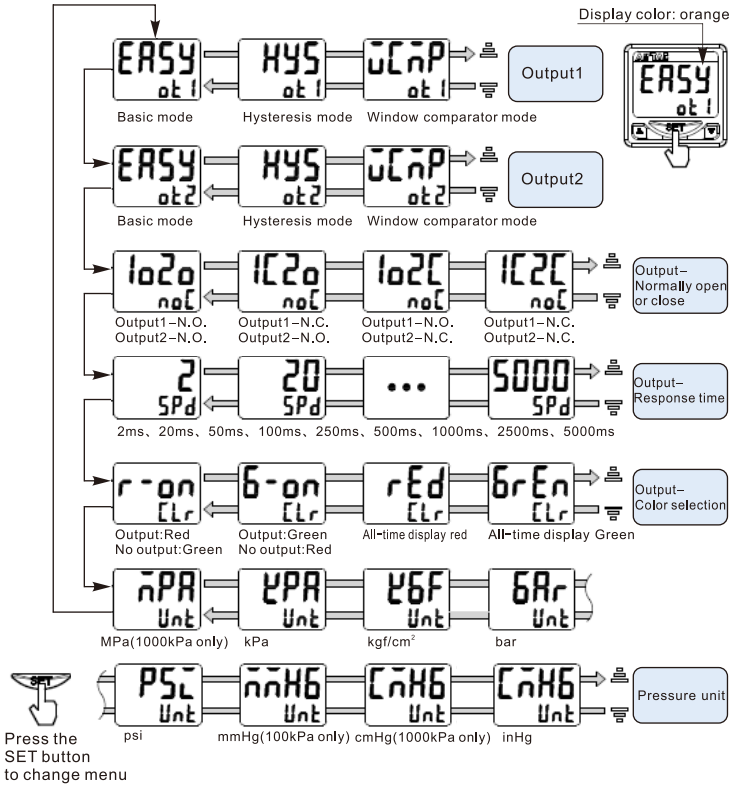
DPS Series digital display pressure sensor

User Interface Instructions

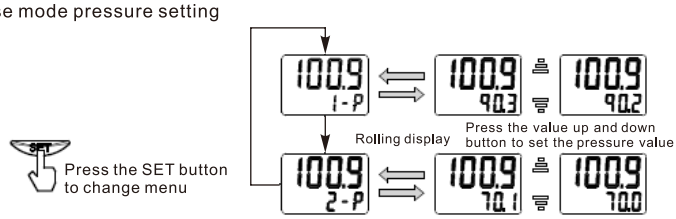
1. Mode switch



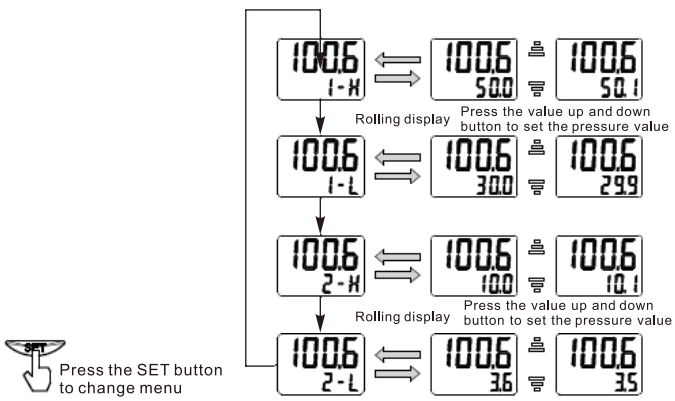
2. Basic mode



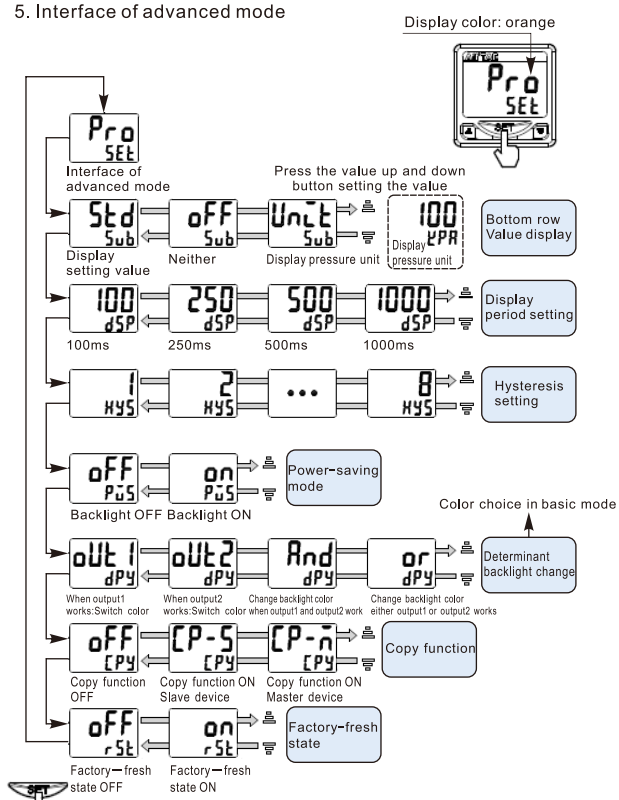
3. Base mode pressure setting



4. Hysteresis /window comparator mode



5. Interface of advanced mode



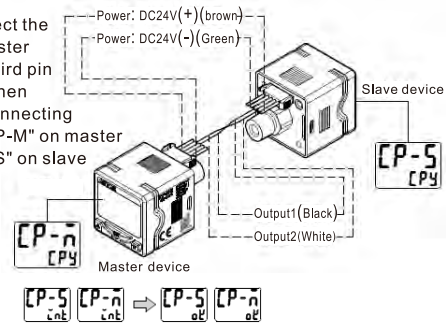
6. Copy function

6.1. Hardware:Connect the second pin of master device with the third pin of slave device, then power on after connecting

6.2. Software:Set "CP-M" on master device. Set "CP-S" on slave device.

6.3. Icon of copy completed Repeat step 1 and 2 if copy failed.

6.4.Turn off the power, disconnected devices and restart it after setting



7. Zero-Clear Function

Press up and down simultaneously to reset the display value to zero.



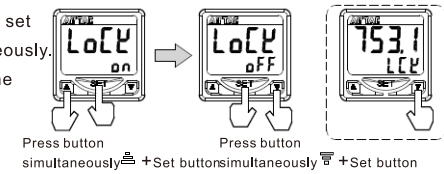
Press button simultaneously

8. Key lock Function

8.1. Press up and the set button simultaneously. Release it when the display turns to "LoCK on".

8.2. Press down and the set button simultaneously. Release it when the display turns to "LoCK oFF".

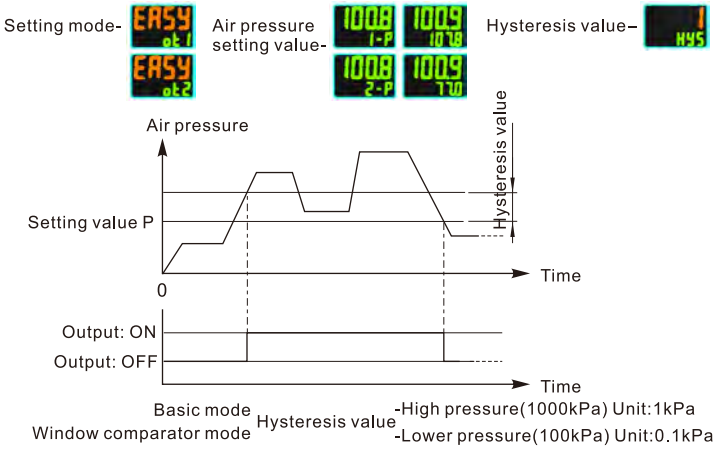
8.3. Press any button will display "LCK" in lock on mode.



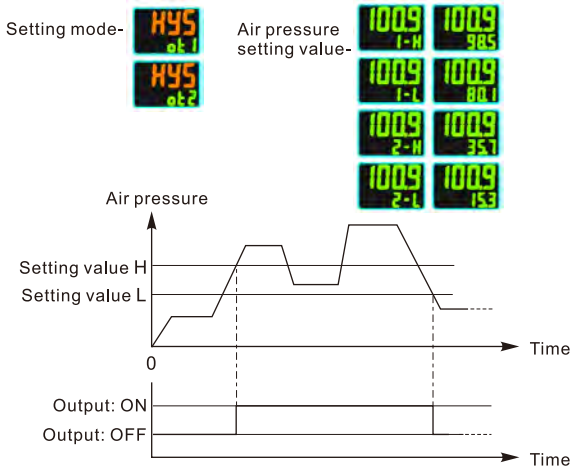
DPS Series digital display pressure sensor

Output mode

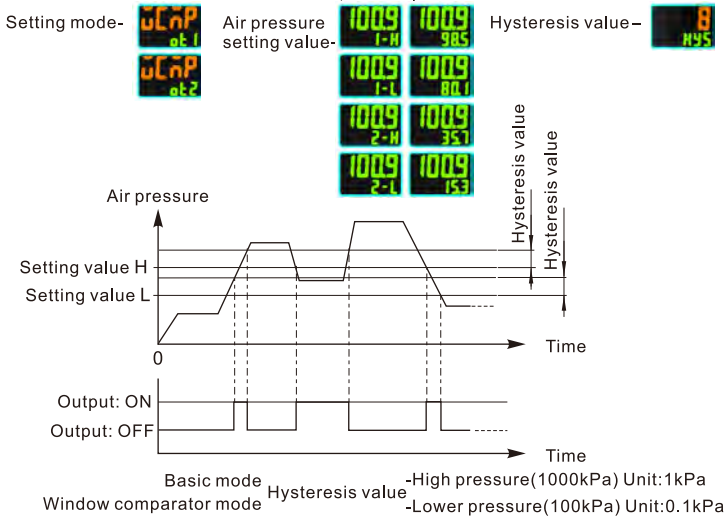
1. **Basic mode:** Air pressure setting value 'P'. When air pressure large then (Setting value P+Hysteresis value), the output is 'NO'; When air pressure less than setting value 'P', the output is 'OFF'.



2. **Hysteresis mode:** Air pressure setting value 'H/L'. When air pressure large then setting value 'H', the output is 'NO'; When air pressure less than setting value 'L', the output is 'OFF'.

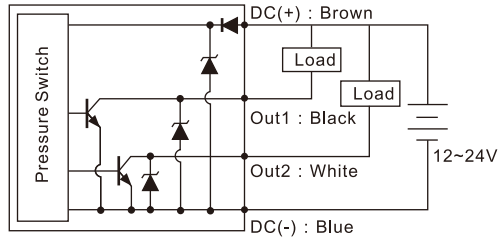


3. **Window comparator mode:** Air pressure setting value 'H/L'. When air pressure large then value 'H' or less then value 'L', the output is 'OFF'; When air pressure large then value 'L' and less than value 'H', the output is 'ON'.

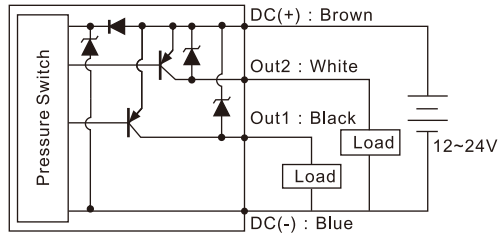


Connection Example

NPN Output



PNP Output



Notes

1. Do not drop、knock or apply excessive impact while handling. Otherwise could cause damage and a malfunction.
2. The tensile strength of the cord is 60N. Applying a greater pulling force on it can cause a malfunction.
3. Do not exceed the screw-in torque of 7N.m when installing piping. Exceeding this value may cause malfunctioning of the sensor.
4. Do not use it with corrosive and/or flammable gases or liquids.
5. Please use it within rated pressure range.
6. Turn off the power before connecting the wires.
7. Don't use in an environment with spattering liquid of oil or solvent.
8. Separate power lines from high voltage lines, avoiding wiring in the same conduit with these lines.
9. When output current exceeds 100mA, circuit protection will be activated. System will resume once reboot.
10. Adjust output-response response time can avoid errors caused by sudden change of working pressure.
11. There is no copy function for PNP type.

DPH Series digital display pressure sensor(Analog output)



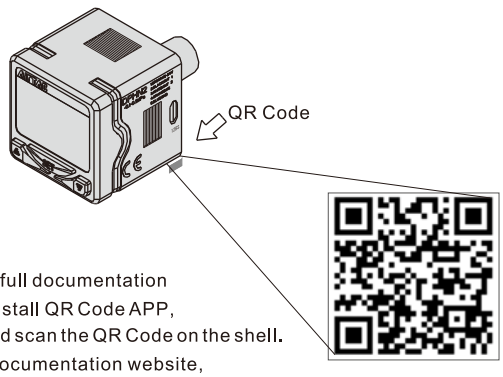
Specification

Model	DPHN2(3)(B)-01 / DPHP2(3)(B)-01 / DPHN2(3)(B)-10 / DPHP2(3)(B)-10	
Input power	Voltage	12~24 VDC ± 10% Ripple(p-p) < 10%
	Current Consumption	40mA or less
Pressure range	Fluid	Non-corrosive gas
	Measurement range	DPHN2(3)(B)-01/DPHP2(3)(B)-01 : -15psi~15psi
		DPHN2(3)(B)-01/DPHP2(3)(B)-10 : -15psi~150psi
	Withstand pressure	DPHN2(3)(B)-01/DPHP2(3)(B)-01 : -15psi~22psi
		DPHN2(3)(B)-01/DPHP2(3)(B)-10 : -15psi~175psi
	Measurement error	±2%F.S. , ±1digit(Temperature:25±3℃)
	Repetitive accuracy	±0.2%F.S.
	Temperature error	±3%F.S.(Base 25℃ , Range 0 to 50℃)
Display	Type	4-digit measurement, 3.5-digit setting
	Output	LCD Analog and Double row LCD display
	Color	2-color LCD (Red/Green)
Switch Output	Output model	Basic mode, Hysteresis mode, Window comparator mode Suction check mode, Leakage mode
	Transistor output	NPN:Maximum applied voltage 30V/100mA,Retained voltage <2V
		PNP:Maximum applied voltage 30V/100mA,Retained voltage <2V
	Analog Voltage Output	1 to 5V±3% F.S. (Minimum load impedance 1kΩ)
	Analog Current Output	4 to 20mA±3% F.S.(Range of Load impedance is 50 ~ 260Ω)
	Output-delay time	2ms, 20ms, 100ms, 500ms, 1000ms, 2000ms
Pressure Unit	DPHN2(3)(B)-01 DPHP2(3)(B)-01	kPa、kgf/cm^2、bar、psi、mmHg、inHg
	DPHN2(3)(B)-10 DPHP2(3)(B)-10	MPa、kPa、kgf/cm^2、bar、psi、cmHg、inHg
Vibration resistance		10 to 500Hz with 10mm Amplitude in X, Y, Z directions for 2hrs
Impact resistance		Maximum 100m/s^2 , X, Y, Z directions 3 times each
Operating Temp. range		0~50℃
Stored Temp. range		-20~65℃
Humidity range		35%~80% RH(No condensation)

Symbol



On-line Manual



Get full documentation
1. Install QR Code APP, and scan the QR Code on the shell.
2. Documentation website, http://www.airtac.net/OM/main.htm.

Ordering code

DPH N2 □ - 01 020 G

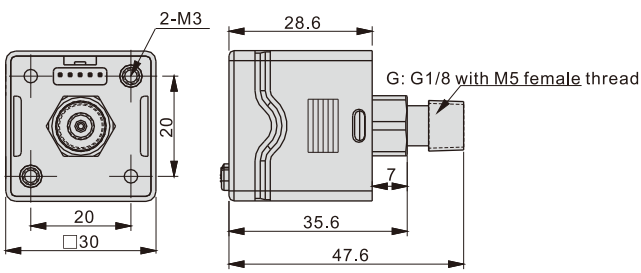
① ② ③ ④ ⑤ ⑥

①Model	②Output type	③Electrical entry	④Measurement range	⑤Lead wire length	⑥Piping specifications
DPH: Digital Display Pressure Sensor (Analog output)	N2: NPN+Analog voltage output(1-5V) P2: PNP+Analog voltage output(1-5V) N3: NPN+Analog current output(4-20mA) P3: PNP+Analog current output(4-20mA)	Space: Terminal B: Grommet [Note]	01: -100kPa~100kPa 10: -100kPa~1,000kPa	020: Length 2m 030: Length 3m 050: Length 5m	G: G1/8 with M5 female thread

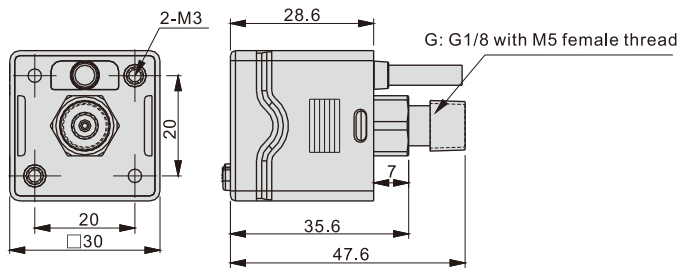
[Note] The safety grade of grommet type is IP63.

Dimensions

Terminal

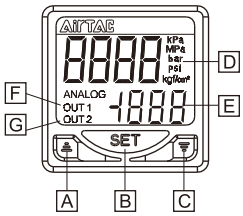


Grommet

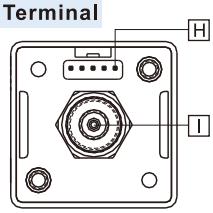


DPH Series digital display pressure sensor(Analog output)

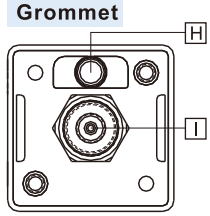
User interface Instruction

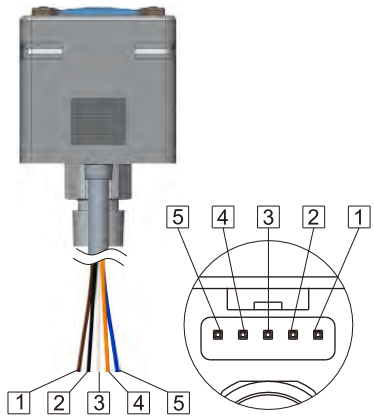


Terminal



Grommet

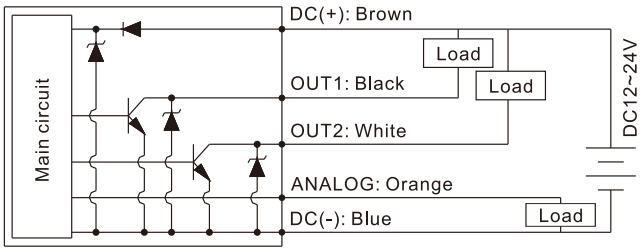




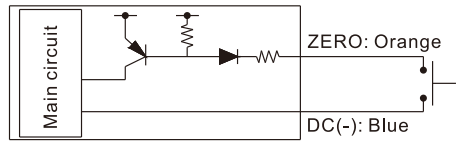
No.	Item
A	Value up button
B	Setting button
C	Value Down button
D	Pressure display area
E	Set pressure display area
F	Output 1 indicator light
G	Output 2 indicator light
H	Power and signal connector
I	Pressure input
1	DC(+) input (Brown)
2	OUT1 (Black)
3	OUT2 (White)
4	Analog/Zero (Orange)
5	DC(-) input (Blue)

Connection Example

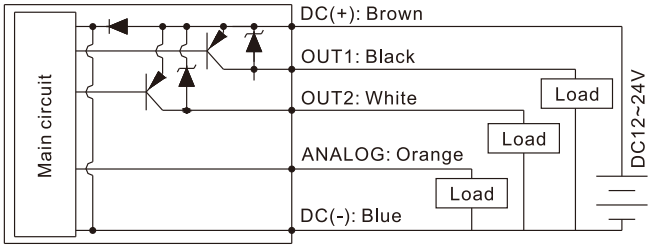
NPN Output



Zero-shift Input



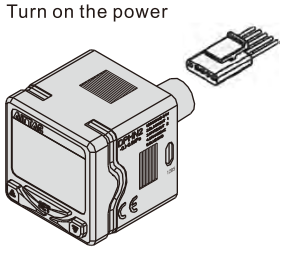
PNP Output

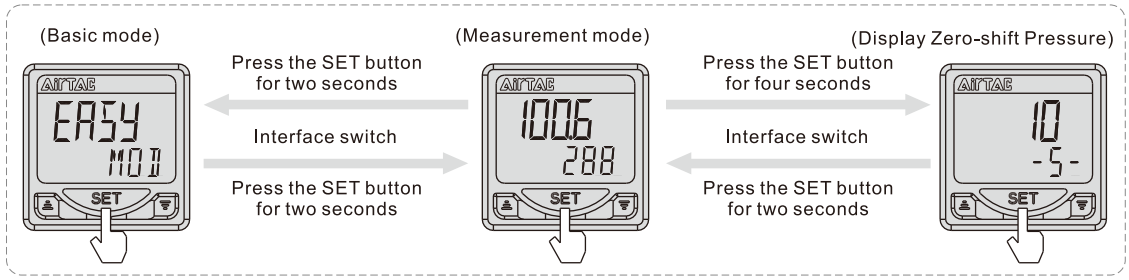


User Interface Instructions

1. Mode switch

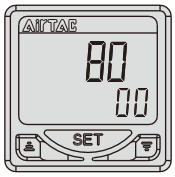
Install the connector
Turn on the power





DPH Series digital display pressure sensor(Analog output)

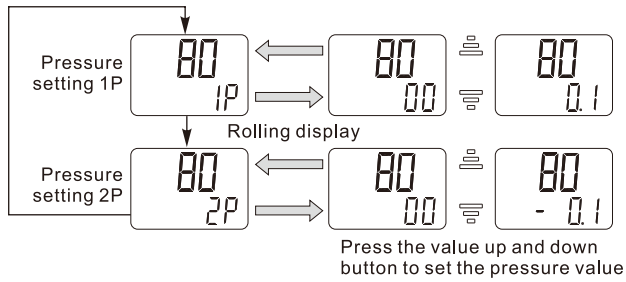
2. Measurement mode



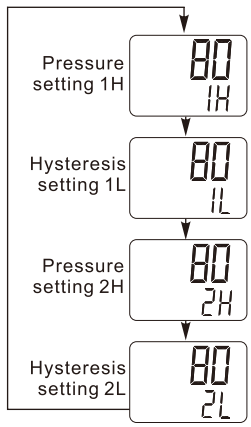
Interface of Basic mode



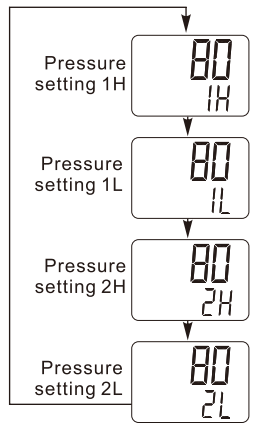
Press the SET button to change menu



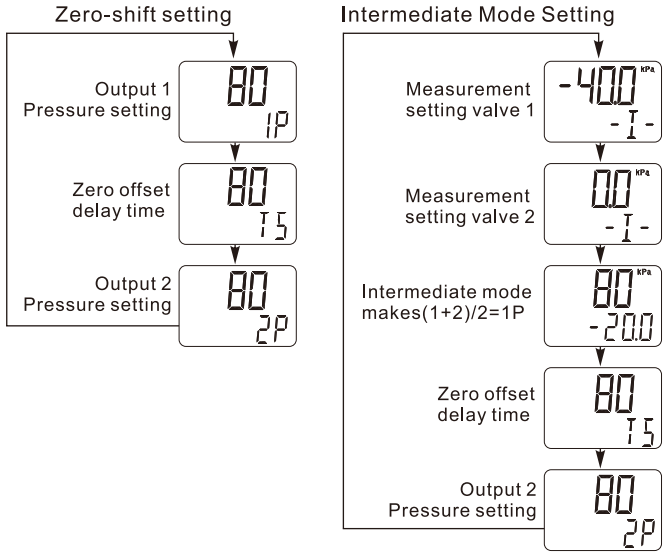
Interface of Hysteresis mode



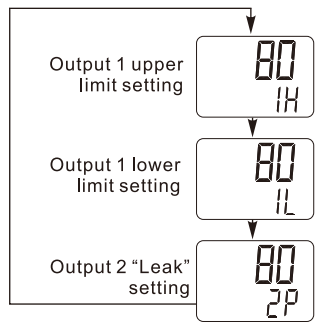
Interface of Window mode



Interface of Suction check mode

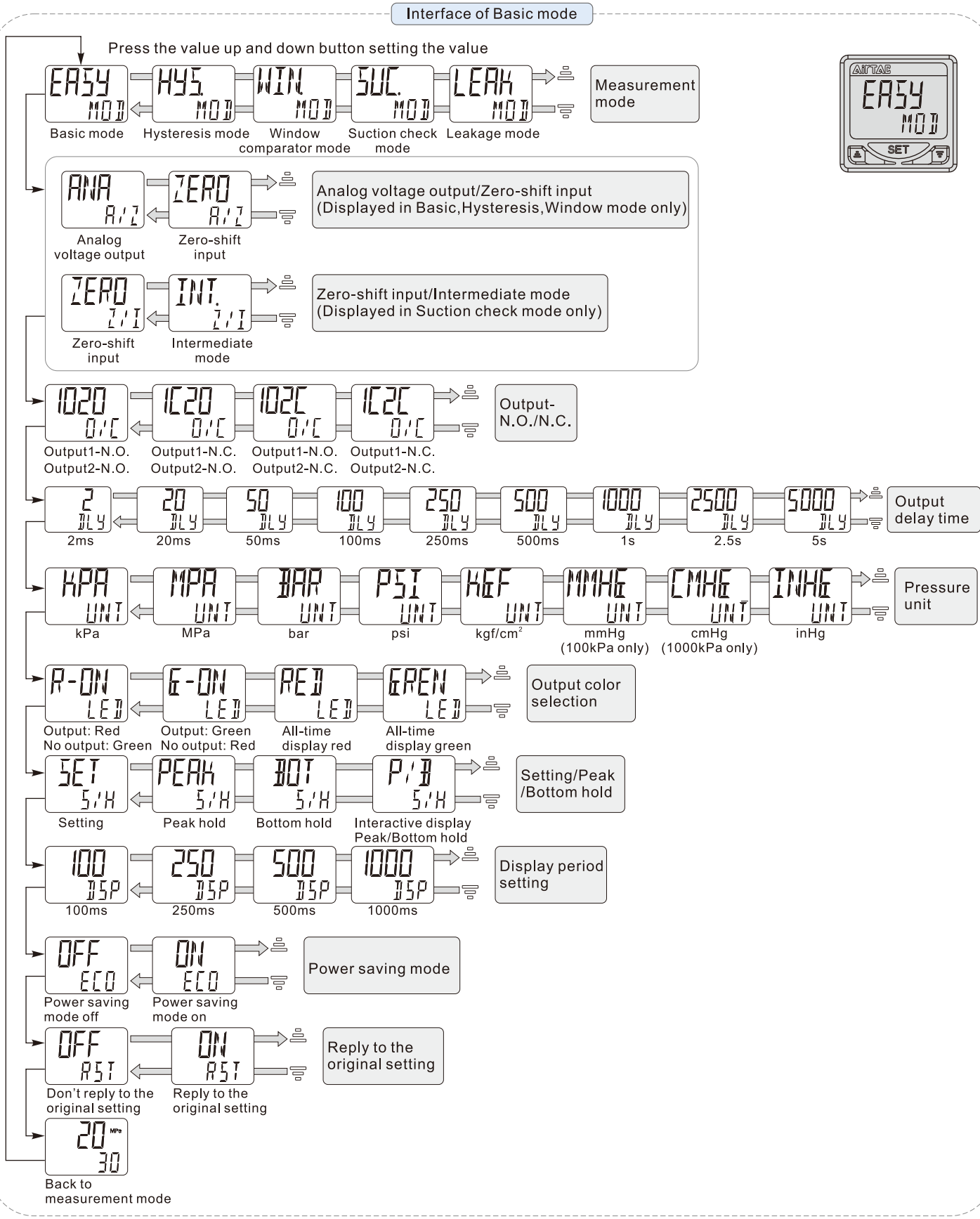


Interface of Leak mode



DPH Series digital display pressure sensor(Analog output)

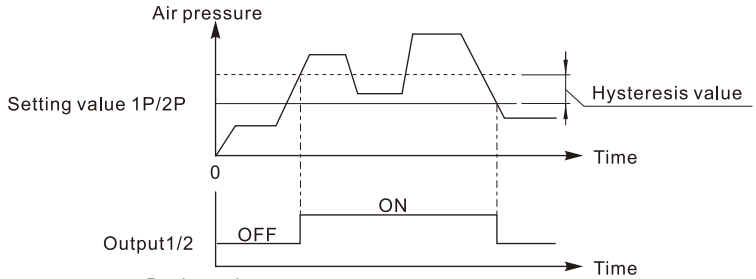
3. Basic mode



DPH Series digital display pressure sensor(Analog output)

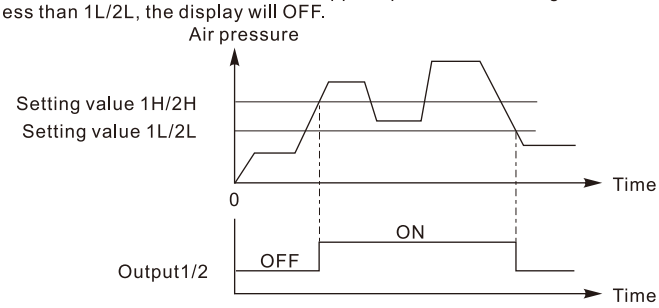
Output mode description

1. Basic mode: Set the pressure value 1P/2P. When the applied pressure value is greater than 1P/2P + hysteresis value, the display will ON.
When the applied pressure value is less than P + hysteresis value, the display will OFF.

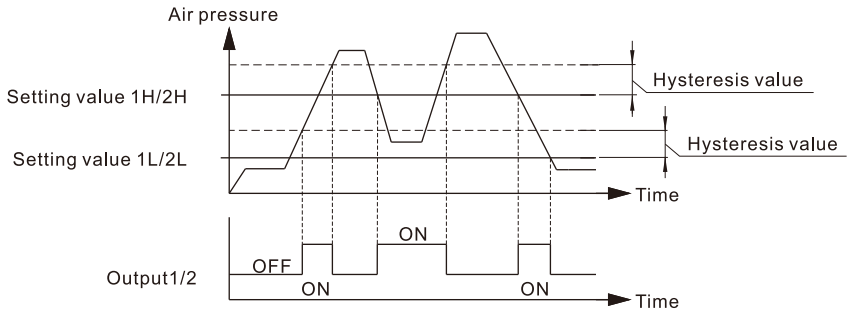


Basic mode
Window comparator mode
Hysteresis value
-High pressure(1000kPa) Unit:2kPa
-Lower pressure(100kPa) Unit:0.5kPa

2. Hysteresis mode: Set the pressure value 1H/2H/1L/2L. When the applied pressure value is greater than 1H/2H, the display will ON.
When the applied pressure is less than 1L/2L, the display will OFF.



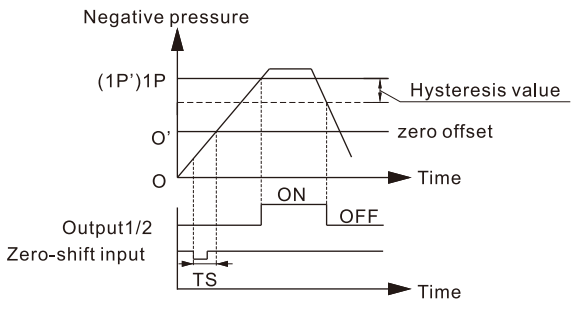
3. Window comparator mode: Set the pressure value H/L. When the pressure is greater than the H value or less than the L value, the output is OFF; when the air pressure is greater than the L value and less than the H value, the output is ON.

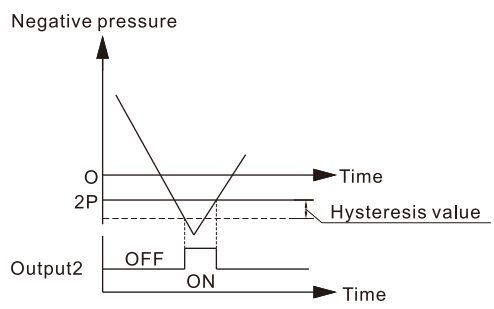


4. Suction check mode: Generally used for suction check detection applications. After the zero-shift signal is triggered, the zero-shift is completed after the TS time.

- TS: Zero-shift delay time.
- 1P: "Pressure" setting value of output 1 before zero-shift (or without zero-shift).
- 1P': Output 1 after zero-shift. Relative to the reference value of the suction starting point pressure (zero offset point).
- 2P: Pressure setting of output 2.

◇Output 1: Suction pressure detection,
In (N.O.) mode, the output 1 is ON when the measured pressure value is less than the setting value 1P (1P');
Without zero-shift input, output 1 ON/OFF judgment based on 1P, which is the suction pressure setting value relative to atmospheric pressure.
With a zero-shift input, output 1 ON/OFF judgment based on 1P', which is the reference setting value with relative to the zero-shift point.
◇Output 2: Vacuum plate break detection. In (N.O.) mode, output 2 turns ON when the air pressure is greater than the setting value 2P.

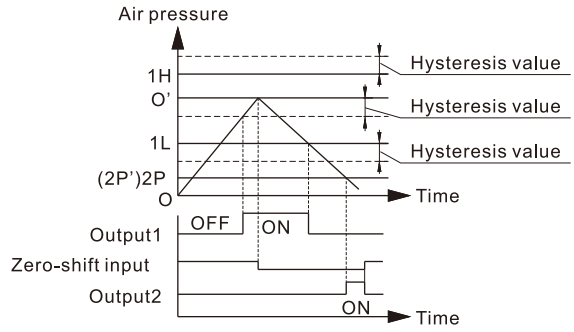




DPH Series digital display pressure sensor(Analog output)

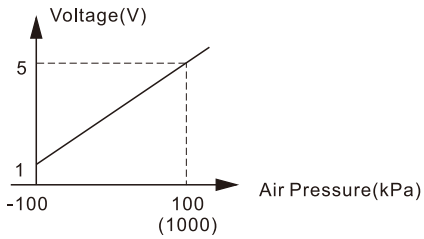
5. Leakage Mode: Generally used for leak detection applications.
The zero-shitf is completed after the zero-shift signal is triggered

◇1H: Output 1 upper limit setting value; 1L: Output 1 lower limit setting value.
◇2P(2P'): Output 2's "Leak" setting (Negative value).
◆Output 1: Fill pressure detection. In the normally mode, output 1 is ON when the pressure is between 1H and 1L
◆Output 2: Leakage detection. when only the zero-shift input, it will make output 2 ON/OFF judgment; In the normal mode, Output 2 is ON. when the leakage is greater than the setting value 2P (2P ').



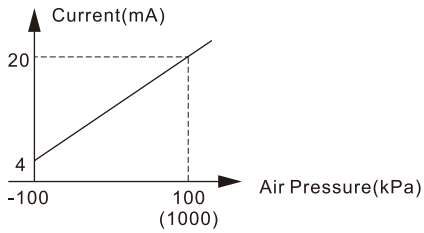
6. Analog output

6.1) Analog Voltage Output (1-5V)



◆In the analog voltage output mode, the orange line should pay attention to the following wiring:
1.Don't directly connect 0V or any bias voltage under no load to avoid internal circuit damage.
2.The minimum load impedance needs to be >1kΩ (Don't float) to avoid distortion of the output voltage.

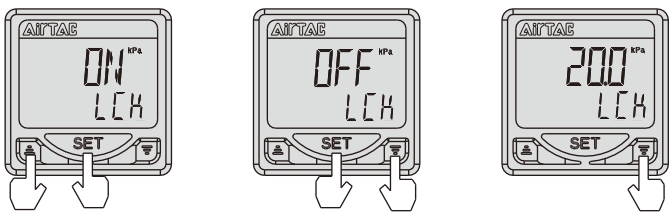
6.2) Analog Current Output (4-20mA)



◆In the analog current output mode, the orange line should pay attention to the following wiring:
1.Don't directly connect 0V or any bias voltage under no load to avoid internal circuit damage.
2.The range of load impedance is 50Ω to 260Ω. (Don't float) to avoid distortion of the output current.

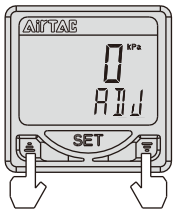
7. Key lock Function

Lock: Press and the SET button simultaneously. Release it when the display turns to "LCK on".
Unlock: Press and the SET button simultaneously. Release it when the display turns to "LCK OFF".
Press any button will display “LCK” in lock on mode.



8. Zero-Clear Function

Press and simultaneously to reset the display value to zero.



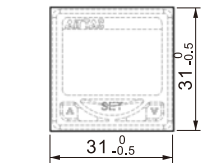
Press and simultaneously.

DPH Series digital display pressure sensor(Analog output)

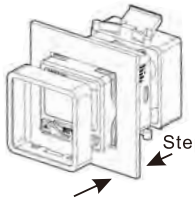
Dimensions/Assembly Instruction

Panel mount adapter + Front protective cover

Order the Install accessories (Ordering code: F-DPSEB)



Panel frame dimension

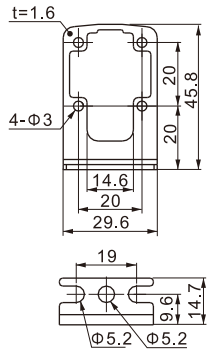


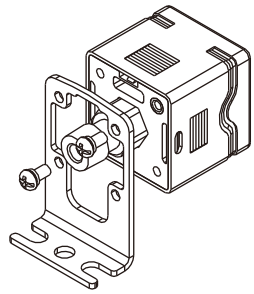
Step2-Back cover assembly

Step1-Front cover assembly

Bracket

Order the Install accessories (Ordering code: F-DPSLB)





Notes

1. Do not drop, knock or apply excessive impact while handling. Otherwise could cause damage and a malfunction.
2. The tensile strength of the cord is 60N. Applying a greater pulling force on it can cause a malfunction.
3. Do not exceed the screw-in torque of 7N.m when installing piping. Exceeding this value may cause malfunctioning of the sensor.
4. Do not use it with corrosive and/or flammable gases or liquids.
5. Please use it within rated pressure range.
6. Turn off the power before connecting the wires.
7. Don't use in an environment with spattering liquid of oil or solvent.
8. Separate power lines from high voltage lines, avoiding wiring in the same conduit with these lines.

GS、GF、GU、GP、GV Series pressure gauge



Symbol



Product feature

1. It has sensitive reaction and can work under low pressure.
2. The displayed words in the dial are clear and there are several pressure units to be selected.
3. There are several installation ways and installing accessories to be selected.
4. Various dimensions of screw thread are available.

Specification

Model		GS-30	GS-40, GF-40, GU-40	GS-50, GF-50, GU-50	GF-60, GU-60
Fluid		Air			
Port size		1/16"	1/8"	1/4"	1/4"
Temperature range		-40~70℃			
Accuracy grade		2.5			
The pressure range of units and instructions	M	0~1.0MPa(Standard type); 0~0.4MPa(Lower pressure type)			
	B	0~10 bar (Standard type); 0~4 bar (Lower pressure type)			
	P	0~140psi(Standard type); 0~60psi(Lower pressure type)			
	Z	0~10kgf/cm² and 0~140psi(Dual-scale display, Standard type)			
		0~4kgf/cm² and 0~60psi(Dual-scale display, Lower pressure type)			
Material of major parts		Shell: SPCC ; Core: Brass			

Model		GP-30	GP-40	GV-40
Fluid		Air		
Port size		1/8"	1/8"	1/8"
Temperature range		-40~70℃		-20~70℃
Accuracy grade		2.5		
The pressure range of units and instructions	P	0~1.0MPa&0~140psi(Standard type) 0~0.4MPa&0~60psi(Middle pressure type) 0~0.2MPa&0~30psi(Lower pressure type)		-100~0kPa & -14~0psi
	G	0~1.0MPa&0~10bar(Standard type) 0~0.4MPa&0~4bar(Middle pressure type) 0~0.2MPa&0~2bar(Lower pressure type)		-100~0kPa & -14~0psi
	T	0~10bar&0~140psi(Standard type) 0~4bar&0~60psi(Middle pressure type) 0~2bar&0~30psi(Lower pressure type)		-100~0kPa & -14~0psi
Material of major parts		Shell: Stainless steel ; Core: Brass		

Ordering code

F–G S 40 10 M

1 2 3 4 5 6

① Accessories code	② Model	③Mount Type Code	④Dial diameter	⑤Max. pressure scale	⑥Scale and thread type
F: Accessories	G: Pressure gause	S: Standard Mount F: Flange Mount U: Pannel Mount	30: OD 30 40: OD 40 50: OD 50 60: OD 60	04: 0.4MPa 10: 1.0MPa	M: MPa(PT) P: psi(NPT) B: bar(G) Z: kgf/cm² & psi(PT)

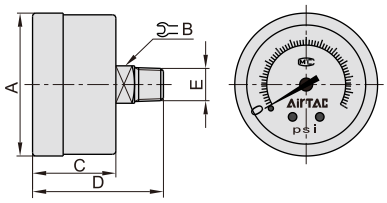
F–G P 40 10 P

1 2 3 4 5 6

① Accessories code	② Model	③Mount Type Code	④Dial diameter	⑤Max. pressure scale	⑥Scale and thread type
F: Accessories	G: Pressure gause	P:Stainless steel shell	30: OD 30 40: OD 40	02:0.2MPa 04:0.4MPa 10:1.0MPa	G:MPa&bar(G) P:MPa&psi(PT) T:bar&psi(NPT)
		V: Vacuum type	40: OD 40	10:-100kPa	G:kPa&psi(G) P:kPa&psi(PT) T:kPa&psi(NPT)

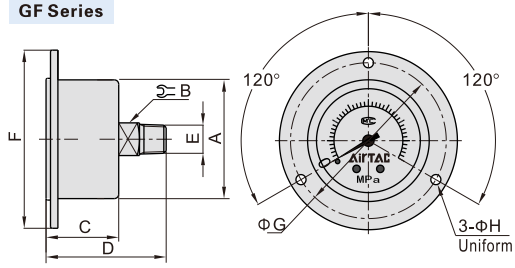
Dimensions

GS Series



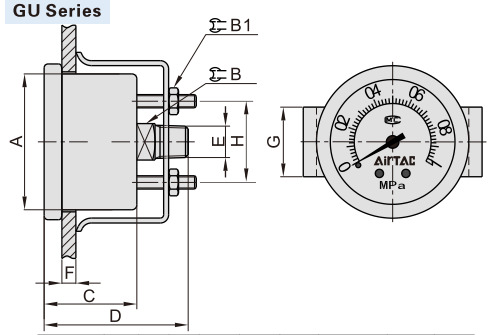
Model	A	B	C	D	E
GS-30	33	11	21	31	1/16"
GS-40	42	11	24.5	37.5	1/8"
GS-50	52	14	26.5	44.5	1/4"

GF Series



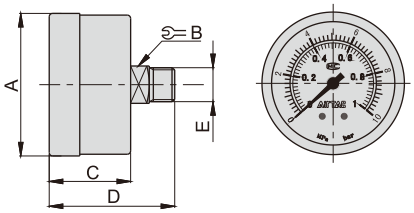
Model	A	B	C	D	E	F	G	H
GF-40	42	11	21	37	1/8"	60	52.5	3.4
GF-50	52	14	26	47	1/4"	71	62	4.4
GF-60	62	14	25	46	1/4"	82	71.5	4.4

GU Series



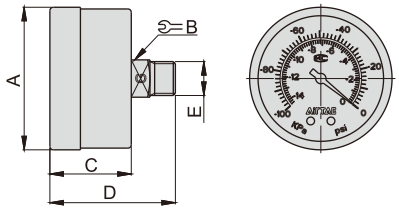
Model	A	B	B1	C	D	E	F(max)	G	H
GU-40	42	11	7	26	41	1/8"	5	21	24.5
GU-50	52	14	8	29.5	46	1/4"	7	24	35
GU-60	62	14	8	30	46.5	1/4"	7	25	35

GP Series



Model	GP-30	GP-40
A	30	42
B	11	11
C	17.5	24
D	30.5	37
E	1/8"	1/8"

GV Series



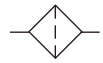
Model	GV-40
A	42
B	11
C	24
D	37
E	1/8"

Vacuum Filter

GVF Series



Symbol



Product feature

1. Unique diversion structure spins the air flowing through to effectively separate the liquid from the air and reliably filter the solid grain.
2. It has low pressure loss, high efficiency in separating water and large drain bowl capacity.
3. Filtering grade includes 5μm and 40μm (Optional).
4. Three material of bowl are available: PC, Nylon and metal.
5. The bracket can be selected for installation.

Specification

Model		GVF200-06	GVF200-08	GVF300-08	GVF300-10	GVF300-15
Fluid		Air				
Port size [Note1]		1/8"	1/4"	1/4"	3/8"	1/2"
Filtering grade		40μm or 5μm				
Pressure range		−100~0KPa				
Proof pressure		0.5MPa				
Temperature range		−5~70°C(Unfreeze)				
Capacity of drain bowl		25CC		45CC		
Material of bowl		PC bowl、Nylon bowl、Metal bowl				
Weight(Plastic bowl/Metal bowl)		220g/225g	210g/215g	370g/380g	360g/375g	350g/360g
Flow capacity [Note2] (L/min ANR)	5μm	80	100	150	200	
	40μm	100	160	200	280	

[Note1] G thread is available. [Note2] The flow capacity at the inlet pressure loss of 4 Kpa.

Ordering code

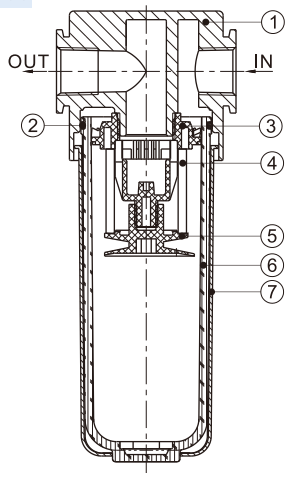
GVF 300 □ 10 □ W G

1 2 3 4 5 6

①Model	②Bowl material	③Port size	④Accessories	⑤Filtering grade	⑥Thread type
GVF200：GVF200 Series Vacuum Filter	Blank：PC bowl C：Metal bowl N：Nylon bowl	06: 1/8" 08: 1/4"	Blank: Bracket J: No bracket	Blank: 40μm W: 5μm	G: G Thread
GVF300：GVF300 Series Vacuum Filter		08: 1/4" 10: 3/8" 15: 1/2"			

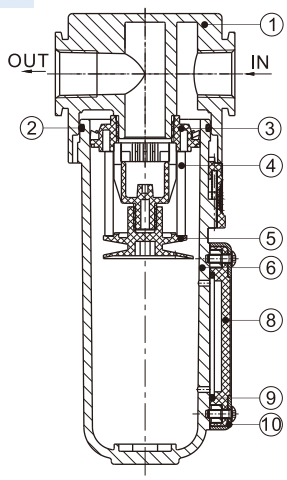
Inner structure

GVF300



PC bowl(Nylon bowl)+Metal cover

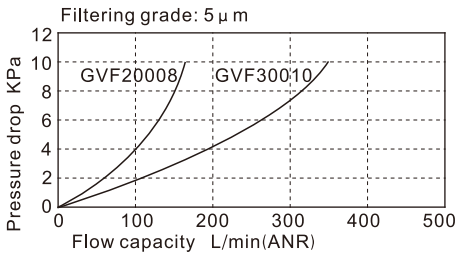
GVF300

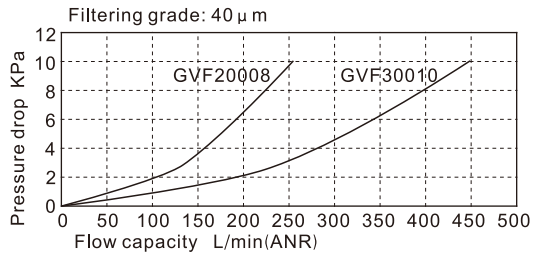


Metal bowl

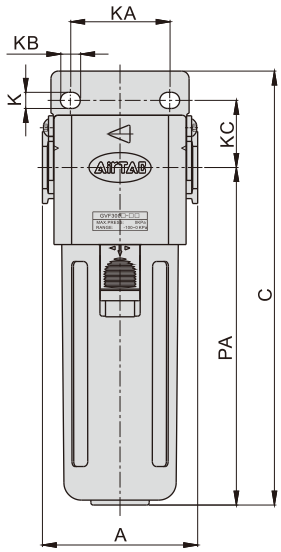
No.	Item	Material
1	Body	Aluminum alloy
2	O-ring	NBR
3	Air guide	High viscosity POM
4	Filter core	HDPE
5	Umbrella baffle	High viscosity POM
6	Drain bowl	Aluminum alloy\PC\Nylon
7	Meter cover	SPCC
8	Liquid meter inside cover	PC
9	Liquid meter seal	NBR
10	Liquid meter cover	SPCC

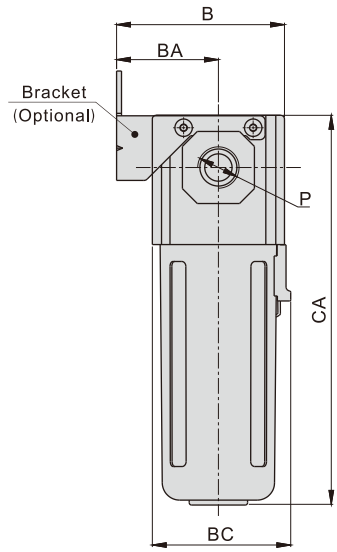
Flow chart





Dimensions





Model\Item	A	B	BA	C	CA	K	KA	KB	KC	P	PA
GVF200-06	52.5	54.5	33	136.5	123.5	5.4	27	8.4	23	1/8"	106.5
GVF200-08	52.5	54.5	33	136.5	123.5	5.4	27	8.4	23	1/4"	106.5
GVF300-08	62.5	67.5	41	174.5	156.5	6.5	40	8	27	1/4"	135.5
GVF300-10	62.5	67.5	41	174.5	156.5	6.5	40	8	27	3/8"	135.5
GVF300-15	62.5	67.5	41	174.5	156.5	6.5	40	8	27	1/2"	135.5

Compendium of GVR Series

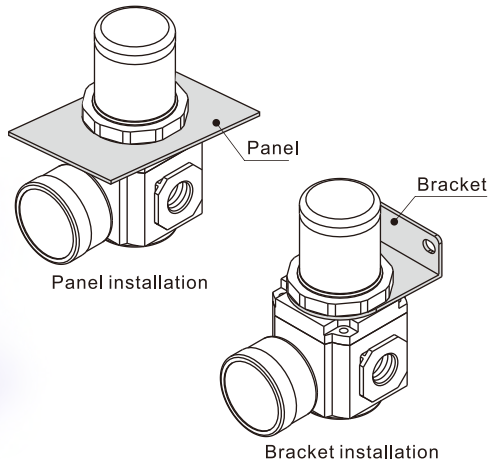
Pressed-in self-locking mechanism

The pressed-in self-locking mechanism can prevent the abnormal movement of the set pressure caused by external interfere.

Suitable to adjust the vacuum pressure

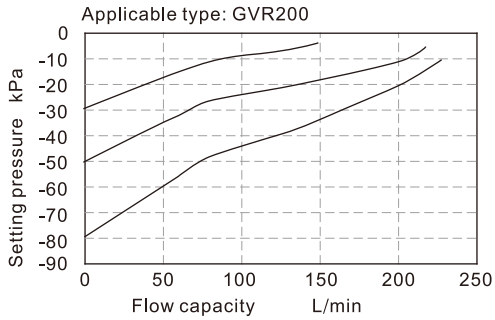


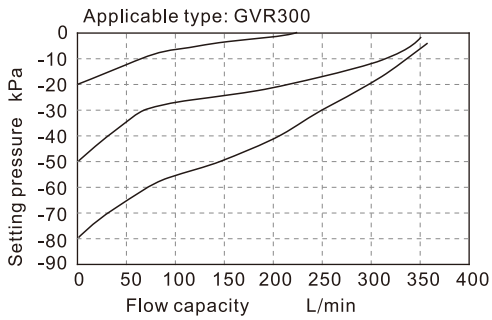
Panel installation and bracket installation are optional



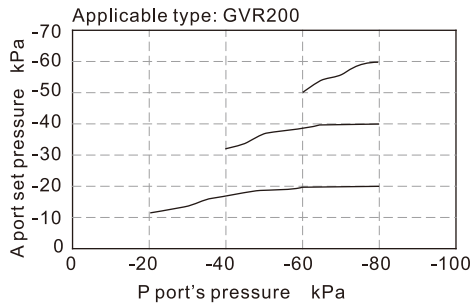
Flow chart and Pressure chart

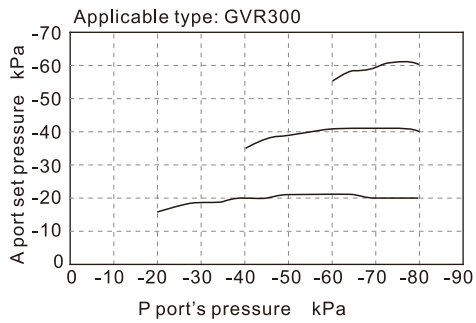
Flow chart





Pressure chart





Installation and Application

1. Please be used with safety circuit to avoid accidents when power failure, vacuum pump and vacuum regulator fail.
2. When checking, please set the pressure to 0 (atmospheric pressure) and completely cut off the pressure of the vacuum pump before pulling down the tube of the regulator.
3. The vacuum regulator can not be used to regulate the pressure of the vacuum pump, if the flow capacity of the vacuum generator is less than the flow capacity of the vacuum regulator, it is not suitable as a vacuum source.
4. The regulating knob rotates clockwise, the atmospheric pressure changes to the vacuum pressure, turns counterclockwise, the vacuum pressure changes to atmospheric pressure.
5. After setting the pressure, press the button on the pressure adjusting button until you hear the click.
6. The vacuum regulator is used for negative pressure, and no positive pressure should be applied.

Vacuum regulator

GVR Series



Specification

Model	GVR200-06	GVR200-08	GVR300-08	GVR300-10
Fluid	Air			
Port size [Note1]	1/8"	1/4"	1/4"	3/8"
Pressure range	-100~-1.3kPa			
Max. pressure	-1.0kPa			
Air inhalation consumption	0.6 L/min(ANR) and below			
Temperature range	-20~70℃			
Weight g	204	198	342	336

[Note1] G thread is available.

Symbol



Product feature

1. The pressed-in self-locking mechanism can prevent the abnormal movement of the set pressure caused by external interfere.
2. The pressure regulation is stable, the drift is small and the pressure characteristic is good.
3. In addition to panel installation, the bracket is optional for installation.

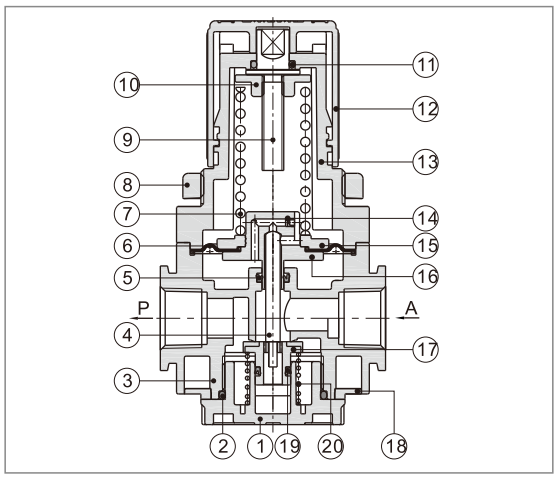
Ordering code

GVR300 10 □ □ G

(1) (2) (3) (4) (5)

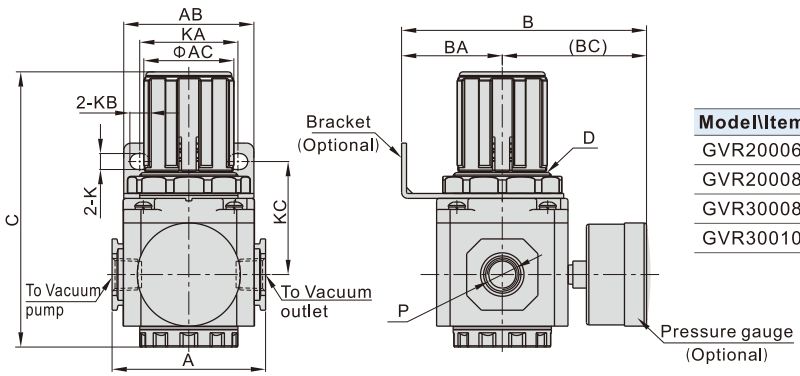
①Model	GVR200: 200 series vacuum regulator	GVR300: 300 series vacuum regulator
②Port size	06: 1/8" 08: 1/4"	08: 1/4" 10: 3/8"
③Accessories	Blank: Bracket J: No bracket	
④Pressure gauge	Blank: Pressure gauge N: No pressure gauge	
⑤Thread type	G: G Thread(kPa & psi)	

Inner structure



No.	Item	Material	No.	Item	Material
1	Valve cap	POM	11	O-ring	NBR
2	O-ring	NBR	12	Pressure knob	POM
3	Body	Aluminum alloy	13	Adjusting seat	POM
4	Spool	Aluminum alloy	14	Gas resistance	Aluminum alloy
5	O-ring	NBR	15	Diaphragm up core	Aluminum alloy
6	Diaphragm	NBR	16	Diaphragm down core	Aluminum alloy
7	Spring	SWC	17	Pressure plug	Aluminum alloy
8	Fixed ring	PA66+Glass fibre	18	Bottom cover	POM
9	Adjusting spindle	Steel	19	O-ring	NBR
10	Regulator nut	Steel	20	Spring	Stainless steel

Dimensions



Model\Item	A	AB	AC	B	BA	BC	C	D	K	KA	KB	KC	P
GVR20006	52.5	55	31	83	30	53	89	M33X1.5	5.4	34	15.4	43	1/8"
GVR20008	52.5	55	31	83	30	53	89	M33X1.5	5.4	34	15.4	43	1/4"
GVR30008	62.5	53	38	99.5	41	58.5	112	M40X1.5	6.5	40	8	46	1/4"
GVR30010	62.5	53	38	99.5	41	58.5	112	M40X1.5	6.5	40	8	46	3/8"

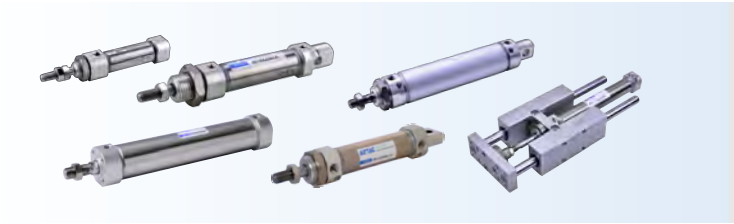
To make system realize the best performance, advanced actuator components are necessary. AirTAC has many types of actuator components for your choice:
1. Standard cylinder series 2. Mini cylinder series 3. Tight cylinder series 4. Compact cylinder series
5. Twin-rod cylinder, multi-rod cylinder, and other series of the cylinder;

Standard cylinder (ISO standard) P272



SAI Series..... 272
TSAI Series..... 283
SGC Series..... 286

Roundline cylinder P292



MI Series..... 292
TMIC Series..... 298
PB, PBR Series..... 301
MF Series..... 309
MG Series..... 315
MBL Series..... 321

Compact and Ultra-Compact cylinder P327



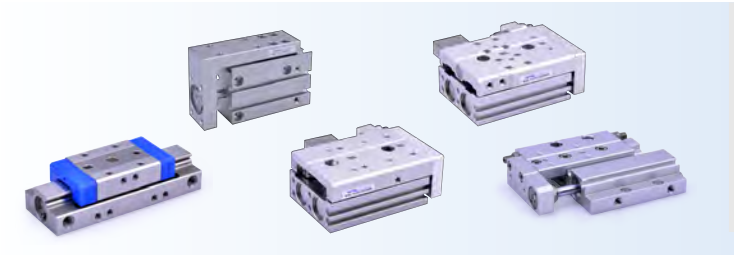
ACE Series..... 327
ACQ, TACQ Series..... 335
ACF Series..... 349

Multi-mounting cylinder, twin rod and tri-rod cylinder P357



MU Series..... 357
MD\MK Series..... 361
MPG Series..... 367
MPE Series..... 371
TR Series..... 375
TCL\TCM Series..... 379

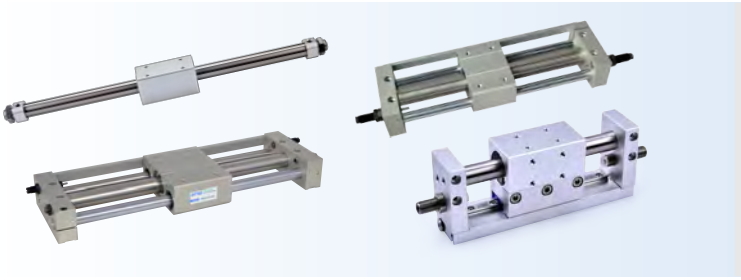
Slide table cylinder P385



HGS Series..... 385
HLF Series..... 398
HLH Series..... 404
HLQ Series..... 410
HLS Series..... 428

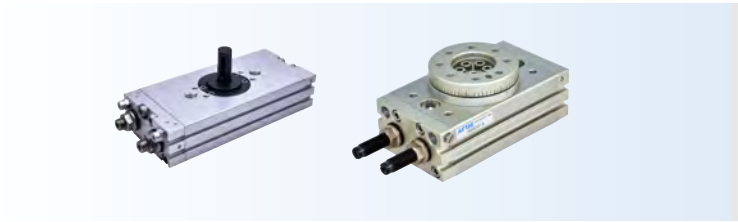
Actuator

Magnetic Coupled Rodless cylinder P448



RMS Series..... 448
RMT Series(ball bearing)..... 452
RMTL Series(exactitude guide)..... 457
RMH Series(Linear guide)..... 461

Rotary table cylinder P464



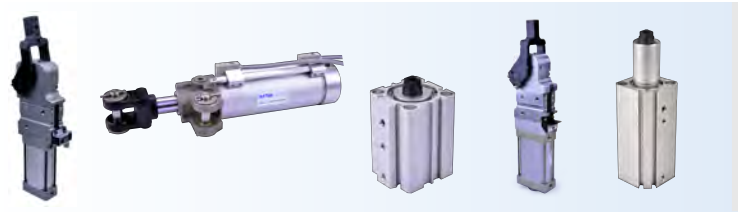
HRQ Series..... 464
HRS Series..... 472

Air gripper P475



HFD Series..... 475
HFCQ Series..... 485
HFKL Series..... 493
HFK, HFZ Series..... 501
HFKP Series..... 511
HFP Series..... 517
HFY Series..... 521
HFR Series..... 526
HFC Series..... 529
HFT Series..... 536

Clamp cylinder P542



QDK Series..... 542
QCK Series..... 545
MCK Series..... 550
JCK Series..... 555
JSK Series..... 569

Cylinder joint accessory\Sensor switch and shock absorber P572



Cylinder joint accessory..... 572
CMS, DMS, EMS series sensor switch..... 575
ACA, ACJ series shock absorber..... 586

Product selection

①Confirm the internal diameter of the cylinder

A) Axial load thrust of the cylinder shall be confirmed according to the actual load situation of the required cylinder.
B) Load rate η of the cylinder shall be confirmed according to the action situation of the load.
Load rate has relationship with action speed of the cylinder, which is generally recommended as:
Under static load or low speed: η≤0.7
Speed 50~500mm /s: η≤0.5
When speed ＞500mm /s: η≤0.3
C) Working pressure of the cylinder shall be confirmed according to the condition of air supply.

②Confirm the cylinder stroke

The stroke of the cylinder is pre-selected upon the operation distance of the cylinder and the stroke ratio of transmission mechanism. To facilitate installing and debugging, the calculated stroke shall be with a proper margin. Standard strokes which can guarantee quick supply and low cost shall be selected as possible as you can.

③Confirm the cylinder type

The variety of the cylinder shall be selected according to the specific requirements of application and installation of the cylinder.

④Selection of buffer way of the cylinder

There are different buffer devices equipped to the cylinders made by our company. Customer shall choose them according to the action situation of actual load. If both of the load and speed are higher, it is difficult to absorb the impact only by the buffer of the cylinder. Therefore, buffer circuit must be designed or use external buffer to release the impact.

⑤Confirm whether the cylinder has magnet

Whether the cylinder has sensor switch shall be confirmed according to the actual situationand relative inducting switch shall be selected.

⑥Selection of installation mode of the cylinder

Installation mode of the cylinder shall be selected according to the application and installation requirements of the cylinder.

⑦Selection of connecting mode of piston rod of the cylinder

After the cylinder is pre-selected, it is necessary to check the stability of piston rod (especially the piston rod is thinner, longer and larger) of the cylinder according to different installation modes and the air consumption under actual application condition shall be checked.

Maintenance and Service

Attention

1. There should be no damage in the sliding parts of the cylinder and piston rod to prevent the air leakage caused by poor action of the cylinder and damage of seal parts of piston rod;
2. If the cylinder is not used for a long time, it shall be regularly actuated and shall be coated with oil to prevent rusting;
3. Please read the relevant content in this manual for the requirement of the cylinder to air quality and application condition, pipeline connection and lubrication.

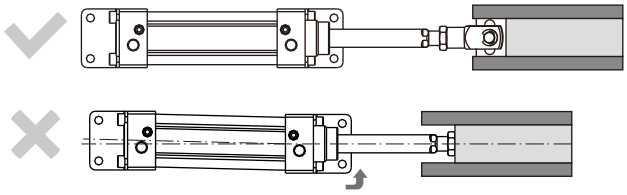
Debugging

Attention

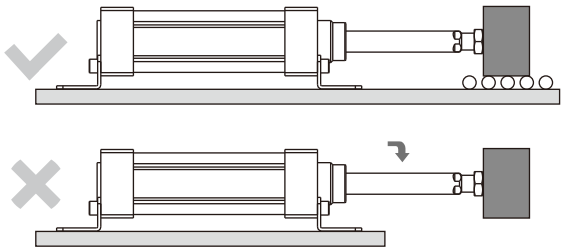
1. Speed control valve shall be installed at the two sides of the cylinder.
   - ◆Check valve shall be opened gradually from completely closed state when the cylinder is debugged and the drive speed of the cylinder shall be gradually and slowly adjusted to the required value.
   - ◆There are two ways for installing check valve, including exhaust throttle and inlet throttle. Exhaust throttle is mostly adopted in pneumatic system since cylinder will produce back pressure during work through exhaust throttle and make the moving speed or the adjustment of the speed steady and will avoid impact on cylinder cover caused by sudden and quick propulsion of piston rod when starting.
2. When the cylinder with buffer function is debugged, the cushion valve on the cylinder cover shall be adjusted to the state that the cylinder has no rebound from low to high level according to load and speed. What shall be noticed is not to adjust the buffer to dead state in debugging the stroke, otherwise there will be poor buffer or damage of seals caused by piston under high-speed situation.

Installation and Use

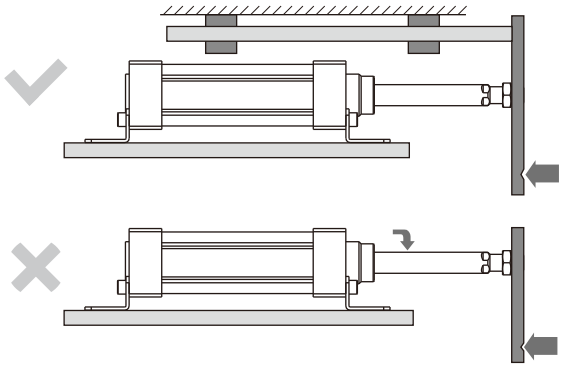
① The axes of piston rod shall accord with the moving direction of load (coaxial). Piston rod and cylinder will produce opposite force which can easily damage the internal surface of the cylinder, guide sleeve, the surface of piston rod and seals.



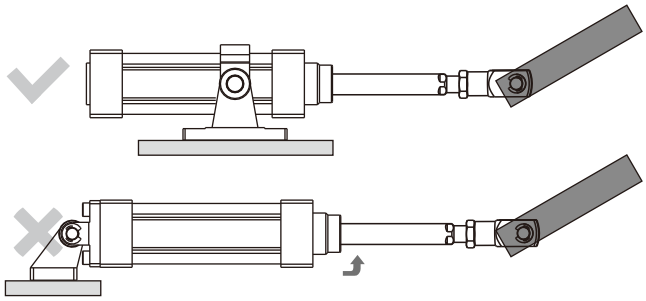
② Avoid direct connection of piston rod and vertical gravity: add idler wheel to support the rail. Piston rod and cylinder will produce opposite force which can easily bend piston rod and damage the internal surface of the cylinder, guide sleeve, the surface of piston rod and seals.



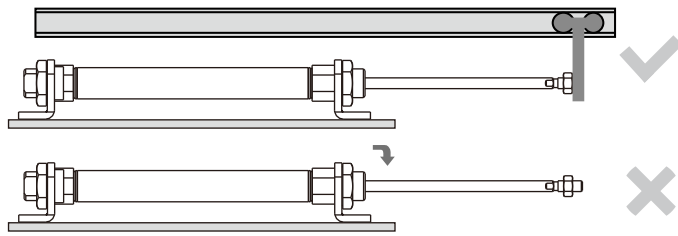
③ If back activity hinge is far from force supply point, piston rod will be influenced by torque force. To prevent that, middle action support shall be used to shorten the distance between support point and force supply point.



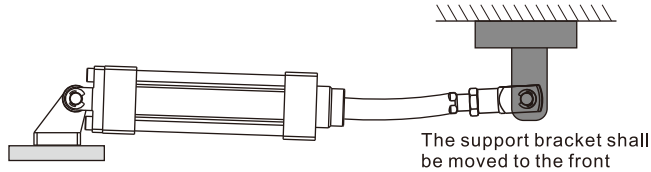
④ To prevent that back activity hinge is far from force supply point, thus the piston rod will be influenced by torque force and change to use middle action support to shorten the long distance between support point and force supply point.



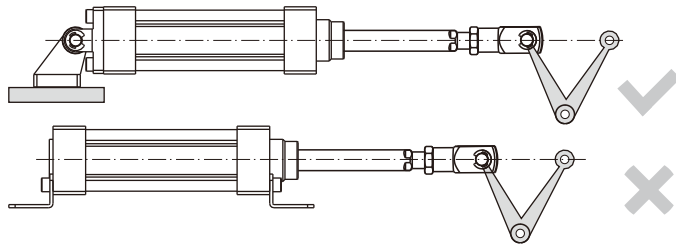
⑤ Long-stroke cylinder shall set middle guide support to prevent natural droop of piston rod and to prevent the damage on piston rod caused by the droop of piston rod, bend of the cylinder, vibration and external load.



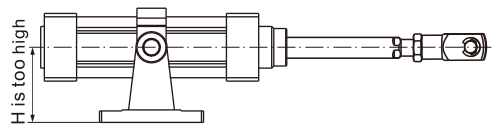
⑥ It tends to bend in long stroke, thus the installation bracket shall be moved to the front cover



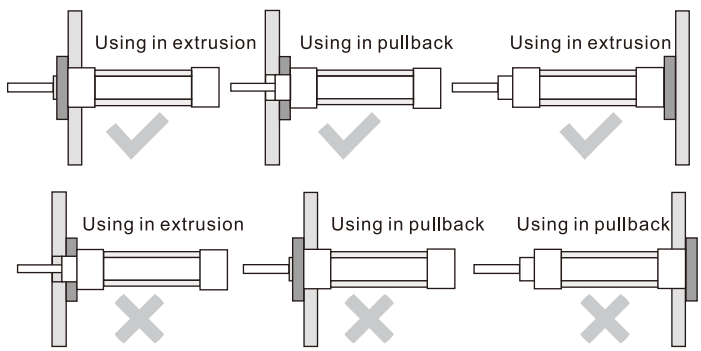
⑦ The fixed cylinder shall not be connected with the rocker carrying out circular action (LB fixation). At this time, it shall be connected with swing cylinder (CA\CB\TC fixation)



⑧ If the height (H) between installation surface of bearing bracket and the position of bearing is too great, when cylinder works, the installation part of the support will produce great torque force, which may cause damage to installing bolt and other parts



⑨ Proper installation shall be adopted considering the direction of load (flange type installation)



Compendium of SAI Series

ISO15552 Standard cylinder

Bore size: 32, 40, 50, 63, 80
100, 125, 160, 200

Adjustable air buffer

With adjustable air buffer on the front and back cover



Extruded body with switch groove

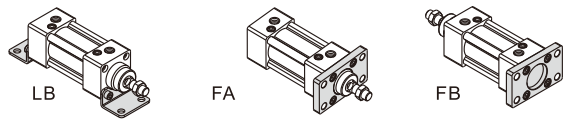
With switch groove on the two sides of body,
the counterpart sensor switch type is: CMSE \ DMSE.

Four kinds of cylinder joints

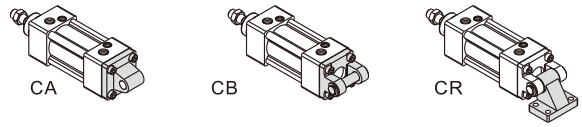


I Knuckle Y Knuckle Floating Joint Universal Joint

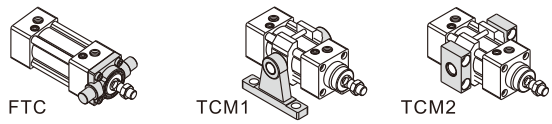
Multi-mounting accessories



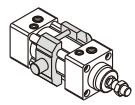
LB FA FB



CA CB CR



FTC TCM1 TCM2



TC

Multi-type cylinder



SAI: Double acting type SAID: Double rod type SAIJ: Adjustable stroke type



SAIL: Double acting with locker type

Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)								
					0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
32	12	Double acting	Push side	804	80.4	160.8	241.2	321.6	402.0	482.4	562.8	643.2	723.6
			Pull side	690	69.0	138.0	207.0	276.0	345.0	414.0	483.0	552.0	621.0
40	16	Double acting	Push side	1256	125.6	251.2	376.8	502.4	628.0	753.6	879.2	1002.4	1130.4
			Pull side	1055	105.5	211.0	316.5	422.0	527.5	633.0	738.5	844.0	949.5
50	20	Double acting	Push side	1963	196.3	392.6	588.9	785.2	981.5	1177.8	1374.1	1570.4	1766.7
			Pull side	1649	164.9	329.8	494.7	659.6	824.5	989.4	1154.3	1399.2	1484.1
63	20	Double acting	Push side	3117	311.7	623.4	935.1	1246.8	1558.5	1870.2	2181.9	2493.6	2805.3
			Pull side	2803	280.3	560.6	840.9	1121.2	1401.5	1681.8	1962.1	2242.4	2522.7
80	25	Double acting	Push side	5026	502.6	1005.2	1507.8	2010.4	2513.0	3015.6	3518.2	4020.8	4523.4
			Pull side	4536	453.6	907.2	1360.8	1814.4	2268.0	2721.6	3175.2	3628.8	4082.4
100	25	Double acting	Push side	7853	785.3	1570.6	2355.9	3141.2	3926.5	4711.8	5497.1	6282.4	7067.7
			Pull side	7362	736.2	1472.4	2208.6	2948.6	3681.0	4417.2	5153.4	5889.6	6625.8
125	32	Double acting	Push side	12272	1227.2	2454.4	3681.6	4908.8	6136.0	7363.2	8590.4	9817.6	11044.8
			Pull side	11468	1146.8	2293.6	3440.4	4587.2	5734.0	6880.8	8027.6	9174.4	10321.2
160	40	Double acting	Push side	20106	2010.6	4021.2	6031.8	8042.4	10053.0	12063.6	14074.2	16084.8	18095.4
			Pull side	18849	1884.9	3769.8	5654.7	7539.6	9424.5	11309.4	13194.3	15079.2	16964.1
200	40	Double acting	Push side	31416	3141.6	6283.2	9424.8	12566.4	15708.0	18849.6	21991.2	25132.8	28274.4
			Pull side	30157	3015.7	6031.4	9047.1	12062.8	15078.5	18094.2	21109.9	24125.6	27141.3

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
7. The cylinder shall be carried out test run without load before application. Prior to run, buffer shall be turned to the minimum and gradually released to avoid the damage on cylinder caused by excessive impact.
8. The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
9. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

ISO15552 Standard cylinder

SAI Series

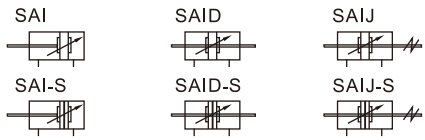


Specification

Bore size(mm)		32	40	50	63	80	100	125	160	200
Acting type		Double acting								
Fluid		Air(to be filtered by 40μm filter element)								
Mounting type	SAI	Basic FA FB CA CB CR LB TC FTC TCM1 TCM2								
	SAID、SAIJ	Basic FA LB TC FTC TCM1 TCM2								
Operating pressure		0.15~1.0MPa(22~145psi)(1.5~10.0bar)								
Proof pressure		1.5MPa(215psi)(15bar)								
Temperature ℃		-20~70								
Speed range mm/s		30~800						30~500		
Stroke tolerance		0~250 $^{+1.0}_{0}$		251~1000 $^{+1.5}_{0}$			1001~1500 $^{+2.0}_{0}$			
Cushion type		Variable cushion								
Adjustable cushion stroke		27		30		36		40	50	
Port size [Note1]		1/8"	1/4"		3/8"		1/2"		3/4"	

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. ISO15552 (original ISO6431) standard cylinder;
2. The piston seal adopts heterogeneous two way seal structure, with tight dimension and oil reservation function;
3. The aluminum profile without tie rod has good corrosion resistance. With sensor switch groove on the two sides of body;
4. The buffer adjustment of cylinder is smooth and steady;
5. Cylinders and accessories for installation with several specifications are optional;
6. The seal material with high temperature resistance is adopted, operating temperature range is 0~150℃.

Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke	Max. stroke
32	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500	1000	1800
40	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800	1200	1800
50	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1200	1800
63	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	1800
80	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	1800
100	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	1800
125	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	1800
160	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	2000
200	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	2000

[Note] Consult us for non-standard stroke.

Ordering code

SAI 160 □ × 50 S □ □ G
SAID160 □ × 50 S □ □ G
SAIJ 160 □ × 50–20 S □ □ G

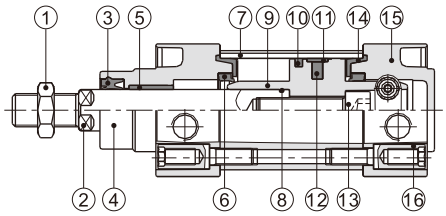
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① Model	② Bore size	③ Rod Material	④ Stroke	⑤ Adjustable stroke	⑥ Magnet	⑦ Mounting type[Note1]	⑧ Seals Material	⑨ Thread type
SAI: Double acting type	32 40 50 63 80 100 125 160 200	Blank: Medium carbon steel A: SUS420J2 B: SUS304	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	Blank LB FA FB CA CB CR FTC TC	Blank: TPU H: Viton N: NBR	G: G Thread
SAID: Double rod type						Blank LB FA FTC TC		
SAIJ: Adjustable stroke type				10 20 30 40 50 75 100				

[Note1] CR is used with CB ; FTC、TC are used with TCM1、TCM2, please refer to page 280~282 for details.

Inner structure and material of major parts

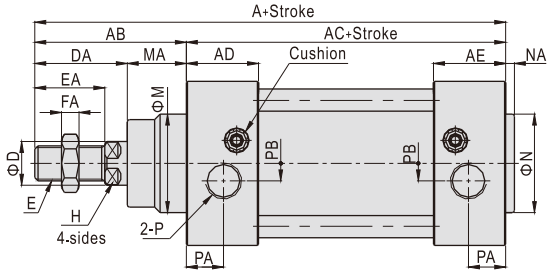
SAI

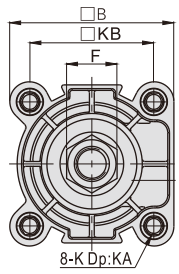


NO.	Item	Material
1	Rod nut	Carbon steel\Stainless steel
2	Piston rod	Carbon steel with 20μm chrome plated or Stainless steel
3	Front cover packing	TPU
4	Front cover	Aluminum alloy
5	Bushing	Wear resistant material
6	Cushing O-ring	TPU
7	Barrel	Aluminum alloy
8	O-ring	NBR
9	Piston	Aluminum alloy
10	Piston Seal	NBR
11	Wear ring	Wear resistant material
12	Magnet	Plastic(Φ100 and below)\Rubber(Others)
13	Bolt	Carbon steel
14	Buffer gasket	TPU
15	Back cover	Aluminum alloy
16	Screw	Carbon steel\Stainless steel

Dimensions

SAI

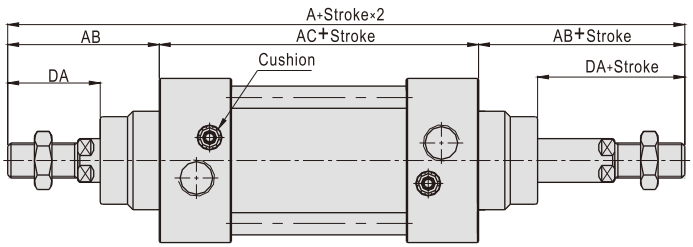




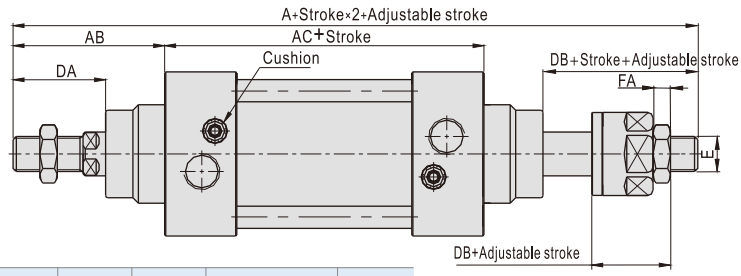
Bore size\Item	A	AB	AC	AD	AE	B	D	DA	E	EA	F	FA	M	MA	H	K	KA	KB	N	NA	P	PA	PB
32	142	48	94	27.5	27.5	47	12	29	M10×1.25	22	17	6	30	19	10	M6	16	32.5	30	3	1/8"	13	5.5
40	159	54	105	32	32	53	16	33	M12×1.25	24	17	7	35	21	13	M6	17	38	35	3.5	1/4"	17	6
50	175	69	106	31	31	65	20	42	M16×1.5	32	23	8	40	27	17	M8	17	46.5	40	3.5	1/4"	15.5	7.5
63	190	69	121	33	33	75	20	42	M16×1.5	32	23	8	45	27	17	M8	17	56.5	45	4	3/8"	16.5	7.5
80	214	86	128	33	33	95	25	53	M20×1.5	40	26	10	45	33	22	M10	19	72	45	4	3/8"	16.5	9
100	229	91	138	37	37	115	25	55	M20×1.5	40	26	10	55	36	22	M10	19	89	55	4	1/2"	18.5	9.5
125	279	119	160	46	46	140	32	74	M27×2.0	54	41	13.5	60	45	27	M12	22	110	60	4	1/2"	23	14
160	332	152	180	50	50	180	40	94	M36×2.0	72	55	18	65	58	36	M16	30	140	65	4	3/4"	25	15
200	347	167	180	50	50	220	40	100	M36×2.0	72	55	18	75	67	36	M16	30	175	75	5	3/4"	25	15

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

SAID



SAIJ



Bore size\Item	A		AB	AC	DA	DB	E	FA
Model	SAID	SAIJ						
32	190	188	48	94	29	27	M10X1.25	6
40	213	208	54	105	33	28	M12X1.25	7
50	244	231	69	106	42	29	M16X1.5	8
63	259	246	69	121	42	29	M16X1.5	8
80	300	282.5	86	128	53	35.5	M20X1.5	10
100	320	300.5	91	138	55	35.5	M20X1.5	10
125	398	366.5	119	160	74	42.5	M27X2.0	13.5
160	484	458	152	180	94	68	M36X2.0	18
200	514	482	167	180	100	68	M36X2.0	18

Remark:
1. The dimensions of magnet type cylinder are the same as non-magnet type cylinder.
2. The unmarked dimension is the same as SAI standard type.

ISO15552 Standard cylinder

SAIL Series——With locker type



Specification

Bore size(mm)		40	50	63	80	100	125	160	200
Acting type		Double acting							
Fluid		Air(to be filtered by 40 μ m filter element)							
Mounting type		Basic FA FB CA CB CR LB TC FTC TCM1 TCM2							
Operating pressure		0.15~1.0MPa(22~145psi)(1.5~10.0bar)							
Proof pressure		1.5MPa(215psi)(15bar)							
Temperature ℃		-20~70							
Speed range mm/s		30~800					30~500		
Stroke tolerance		0~250 $^{+1.0}_{0}$ 251~1000 $^{+1.5}_{0}$ 1001~1500 $^{+2.0}_{0}$							
Cushion type		Variable cushion							
Adjustable cushion stroke	No locker end	27	30		36		40	50	
	With locker end	20	20	21	22.5	24	24	28	
Port size [Note1]		1/4"		3/8"		1/2"		3/4"	

[Note1] G thread is available.

Add) Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. With lock cylinder: front cover with lock type and rear cover lock type;
2. The way of unlocking: automatic and manual.

Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke	Max. stroke
40	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800	1200	1800
50	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1200	1800
63	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	1800
80	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	1800
100	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	1800
125	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	1800
160	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	2000
200	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	2000

[Note] Consult us for non-standard stroke.

Ordering code

SAIL B 160 x 50 S □ G

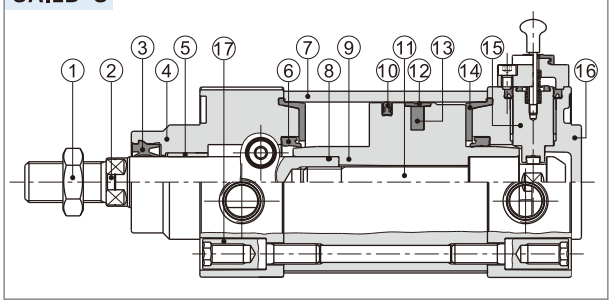
1 2 3 4 5 6 7

①Model	②Locker position	③Bore size	④Stroke	⑤Magnet	⑥Mounting type[Note1]		⑦Thread type
SAIL: Double acting type (with locker)	B: Back cover with locker F: Front cover with locker	40 50 63 80 100 125 160 200	Refer to stroke table for details	Blank: Without magnet S: With magnet	Blank		G: G Thread
					LB		
					FA		
					FB		
					CA		
					CB		
					CR		
					FTC		
					TC		

[Note1] CR is used with CB； FTC、TC are used with TCM1、TCM2, please refer to page 280~282 for details.

Inner structure and material of major parts

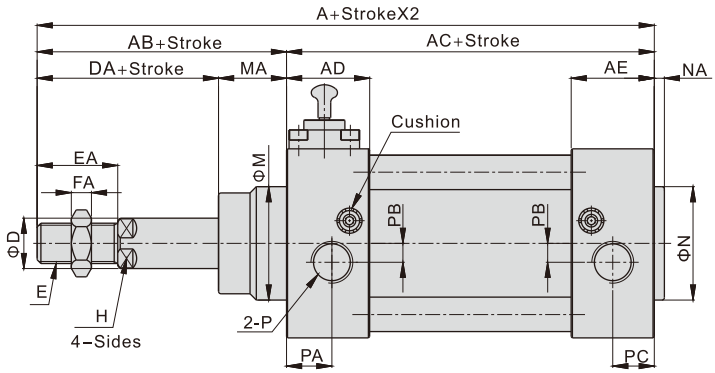
SAILB-S

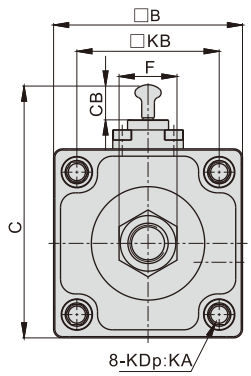


NO.	Item	Material	NO.	Item	Material
1	Rod nut	Carbon steel	9	Piston	Aluminum alloy
2	Piston rod	Carbon steel with 20μm chrome plated	10	Piston Seal	NBR
			11	Pluger	S45C
3	Front cover packing	TPU	12	Wear ring	Wear resistant material
4	Front cover	Aluminum alloy	13	Magnet	Plastic(≤100)/Rubber(Others)
5	Bushing	Wear resistant material	14	Buffer gasket	TPU
6	Cushing O-ring	TPU	15	Locker	
7	Barrel	Aluminum alloy	16	Back cover	Aluminum alloy
8	O-ring	NBR	17	Screw	Carbon steel

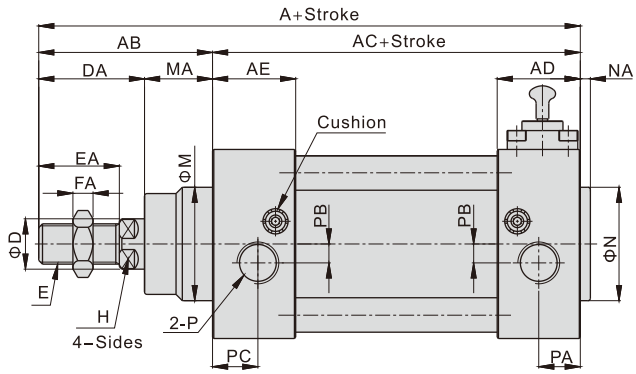
Dimensions

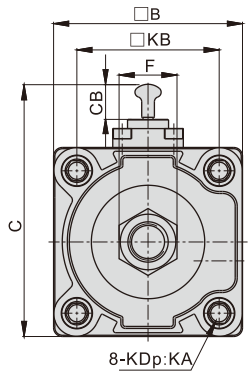
SAILF





SAILB



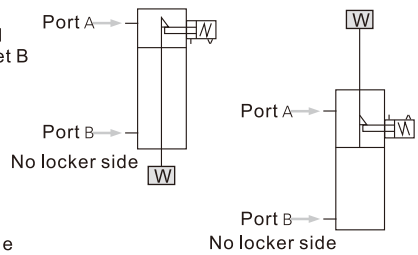


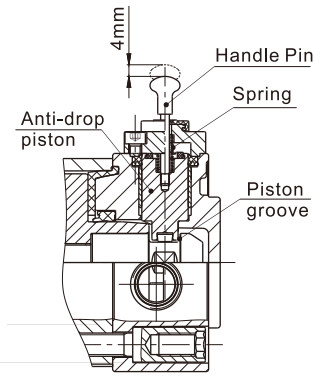
Bore size\Item	A	AB	AC	AD	AE	B	C	CB	D	DA	E	EA	F	FA	H	M	MA	K	KA	KB	N	NA	P	PA	PB	PC
40	159	54	105	32	32	53	78	13.5	16	32	M12×1.25	24	17	7	13	35	22	M6	17	38	35	3.5	1/4"	17	6	17
50	175	69	106	31	31	65	90	13.5	20	42	M16×1.5	32	23	8	17	40	27	M8	17	46.5	40	3.5	1/4"	19.5	7.5	15.5
63	190	69	121	33	33	75	100.5	14	20	40	M16×1.5	32	23	8	17	45	29	M8	17	56.5	45	4	3/8"	18	7.5	16.5
80	220	86	134	39	33	95	123	14.5	25	53	M20×1.5	40	26	10	22	45	33	M10	19	72	45	4	3/8"	22.5	9	16.5
100	231	91	140	39	37	115	142	13.5	25	55	M20×1.5	40	26	10	22	55	36	M10	19	89	55	4	1/2"	20.5	13.5	18.5
125	279	119	160	46	46	140	170.5	14.5	32	74	M27×2.0	54	41	13.5	27	60	45	M12	20	110	60	4	1/2"	23	14	23
160	332	152	180	50	50	180	210.5	14.5	40	94	M36×2.0	72	55	18	36	65	58	M16	30	140	65	4	3/4"	25	15	25
200	347	167	180	50	50	220	250.5	14.5	40	100	M36×2.0	72	55	18	36	75	67	M16	30	175	75	5	3/4"	25	15	25

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

Use and maintenance

1. Under the condition of locking, there is a great danger to the gas port A when there is no pressure on both sides of the air port. There is a great danger similar to the release of locking, or the sudden release of lock and the piston rod flying. When the locking mechanism is lifted, it is necessary to supply the pressure of the air inlet B and remove the lock mechanism without load.
2. If the fast exhaust valve is used to speed down the drop speed, the cylinder noumenon is sometimes started than the lock pin first and can not be removed normally. Therefore, please do not use the fast exhaust valve with the lock cylinder.
3. Please do not use three solenoid valves: please do not combine with three (especially the seal type metal seal) solenoid valve. If pressure is sealed in the air inlet with the locking mechanism side, the lock will not work. In addition, even if it is temporarily locked, the air leaked from the solenoid valve will enter the cylinder, and the lock will be lifted after a period of time.
4. If the locking mechanism side bears the back pressure, sometimes the lock will be lifted, so please use a single or integrated individual exhaust type solenoid valve.
5. If the cylinder with adjustable cushioning is excessive, if the air cushion valve needle on the locking mechanism side is screwed too much, the piston will sometimes cause restraint at the stroke terminal, causing the damage of the locking mechanism. Therefore, the needle valve should be adjusted to make the piston not be restrained.
6. When the manual operation of the locking mechanism is completed, it is necessary to reset the manual device to the in situ. In addition, please do not do manual operation outside the adjustment, otherwise it will be more dangerous.
7. When the cylinder is installed and adjusted, please dissolve the lock: in the lock state of the installation and other perations, sometimes it causes the lock-in parts to be damaged.
8. Please do not use multiple cylinders at the same time: please do not use more than 2 locking cylinders at the same time to drive a workpiece. Sometimes one of the cylinders will not be locked out.
9. Please use the speed control valve in the exhaust throttle control state: in the intake throttling control, it is sometimes impossible to release the lock.
10. In the lock side, please be sure to use the terminal of the cylinder stroke: if the piston of the cylinder does not reach the terminal, locking will fail or lock.
11. Manual operation is a non locking way to release: pull the lever into the anti falling piston, and pull the bolt out of the 4mm with the force of more than 20N. After the piston is moved away, it can release the lock. (no load level installation or opposite side port pressurization), or after loosened, the anti falling piston returns to the original position through the action of the stop spring and enters the piston rod groove, and the piston becomes locked.

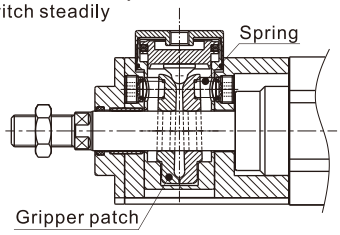




Compendium of BSAI Series

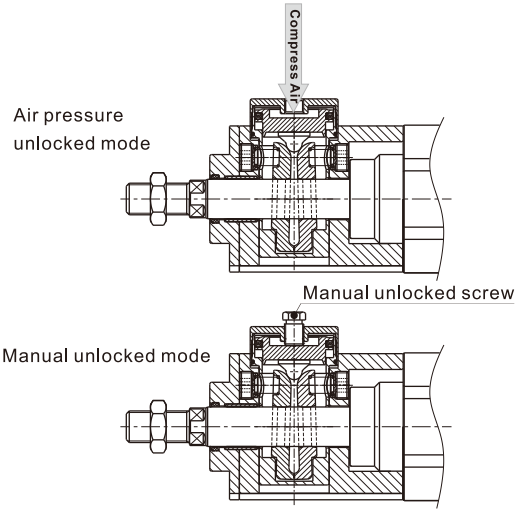
Spring and gripper patch enclasp equipment

Simplicity structure
Celerity and availability locked or unlocked
State switch steadily



Multi-kinds unlocked mode

Air pressure unlocked mode and manual unlocked mode are available



Multi-type cylinder and bore size

BSAI, BSAID type available
Bore size: 32, 40, 50, 63, 80, 100, 125



Bidirectional lock

Can be locked no matter piston shoot out or draw back

Compact enclasp equipment

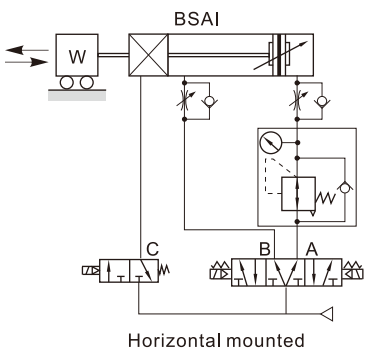
Compact enclasp equipment to save space

The body is the same as SAI series

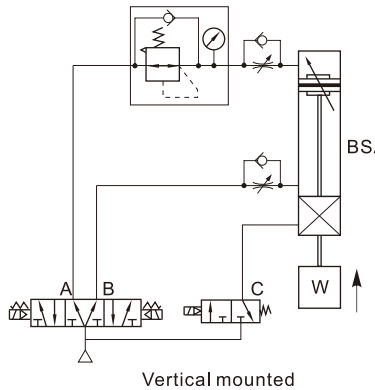
The body is SAI series standard cylinder's body for mounting expediently.
The mounting accessories(Besides FTC) and the sensor switch are the same as SAI series cylinder.

How to mount and use

1. The locker equipment only be locked after cylinder stopped, can't brake the piston rod while it is moving. If the lock cylinder be used for control system with safety demand, other safety measure is required.
2. The locker equipment only be unlocked when the air pressure on both sides of piston rod are equation or the cylinder stopped, otherwise piston rod movies abruptly might produce accident.
3. Typical applications



Horizontal mounted



Vertical mounted

Acting type

Air inlet			State of acting	
A Port	B Port	C Port		
Yes	No	Yes	Advance	
Yes	Yes	No	Locked	
Yes	Yes	Yes	unlocked	Over 0.5S
Yes	No	Yes	Advance to rod protruded completely	0~0.5S
No	Yes	Yes	Back	
Yes	Yes	No	Locked	
Yes	Yes	Yes	unlocked	Over 0.5S
No	Yes	Yes	back to rod retracted completely	0~0.5S

Circle

ISO15552 Standard cylinder

BSAI Series——Enclasp type



Specification

Bore size(mm)		32	40	50	63	80	100	125
Acting type		Double acting						
Fluid		Air(to be filtered by 40μm filter element)						
Mounting type	BSAI	Basic FA FB CA CB CR LB TC TCM1 TCM2						
	BSAID	Basic FA LB TC TCM1 TCM2						
Operating pressure		0.15~0.7MPa(22~100psi)(1.5~7.0bar)						
Proof pressure		1.5MPa(215psi)(15bar)						
Temperature ℃		-20~70						
Speed range mm/s		30~800						30~500
Stroke tolerance		0~250 $^{+1.0}_{0}$ 251~1000 $^{+1.5}_{0}$ 1001~1500 $^{+2.0}_{0}$						
Cushion type		Variable cushion						
Adjustable cushion stroke		27		30		36		40
Port size [Note1]	Cylinder	1/8"	1/4"		3/8"		1/2"	
	Enclasp equipment	G1/8						
Unlocked Pressure		0.3~0.7MPa(45~100psi)(3~7bar)						
Static holding force (N)		600	900	1400	2200	3600	5500	8600

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol

BSAI　BSAI-S　BSAID　BSAID-S



Product feature

1. Belong to SAI series standard cylinder add lock structure.
2. Can be locked at random positions in stroke scope.
3. Reasonable lock structure, the lock state no relation with the direction of piston moving.

Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke
32	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500	700
40	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800	800
50	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1000
63	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1000
80	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1000
100	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1000
125	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1000

[Note] Consult us for non-standard stroke.

Ordering code

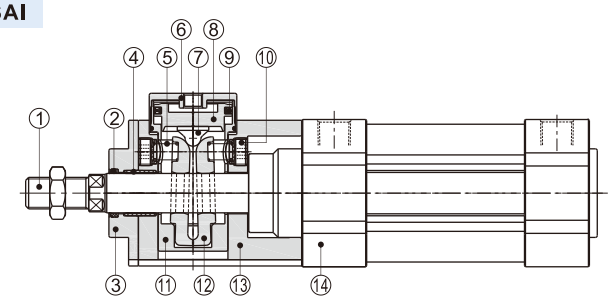
B SAI 80X50 S □ G
B SAID 80X50 S □ G
1 2 3 4 5 6 7

①Type	B: Enclasp cylinder			
②Model	SAI: Double acting type		SAID: Double rod type	
③Bore size	32 40 50 63 80 100 125			
④Stroke	Refer to stroke table for details			
⑤Magnet	Blank: Without magnet		S: With magnet	
⑥Mounting type [Note1]	Blank	LB	Blank	LB
	FA	FB	FA	TC
	CA	CB		
	CR	TC		
⑦Thread type	G: G Thread			

[Note1] CR is used with CB; TC are used with TCM1、TCM2, please refer to page 280~282 for details.

Inner structure and material of major parts

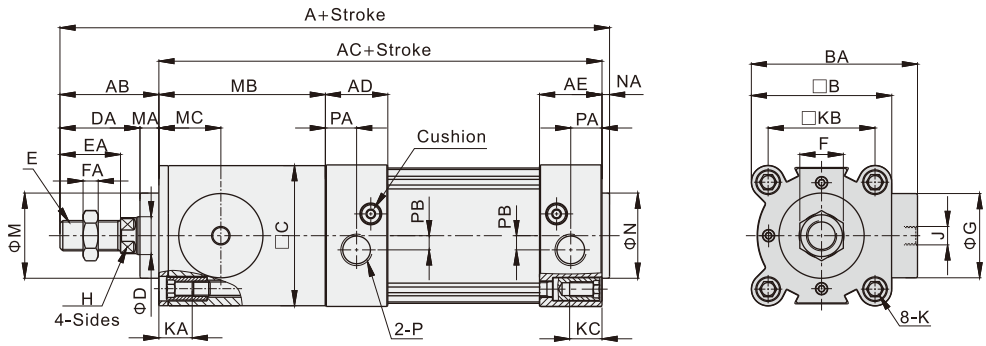
BSAI



NO.	Item	Material
1	Piston rod	Carbon steel with 20 μ m chrome plated
2	Packing	Plastic
3	Packing holder	Aluminum alloy
4	Bearing	Carbon steel+Bronze sinter
5	Spring	Spring steel
6	Cover	Aluminum alloy
7	Unlocked header	Wear resistant material
8	Unlocked piston	Aluminum alloy
9	Piston O-ring	NBR
10	Screw	Carbon steel
11	Sleeve	Aluminum alloy
12	Clamp head	Aluminium bronze
13	Fixed holder	Aluminum alloy
14	SAI series cylinder	–

Dimensions

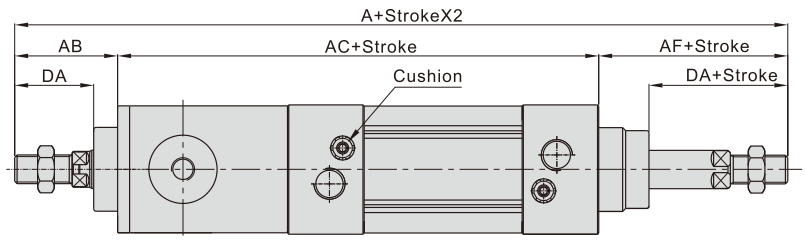
BSAI



Bore size\Item	A	AB	AC	AD	AE	B	BA	C	D	DA	E	EA	F	FA	G	H	J	K	KA	KB	KC	M	MA	MB	MC	P	PA	PB	N	NA
32	201	39	159	27.5	27.5	47	65	46.5	12	29	M10×1.25	22	17	6	30	10	G1/8	M6X1.0	14.5	32.5	16	20	10	65	25	1/8"	13.5	6	30	3
40	222.5	43	176	32	32	53	73	52.5	16	33	M12×1.25	24	17	7	36.5	13	G1/8	M6X1.0	14.5	38	17	35	10	71	27.5	1/4"	17.5	6	35	3.5
50	249.5	52	194	31	31	65	83	64	20	42	M16×1.5	32	23	8	44.5	17	G1/8	M8X1.25	17.5	46.5	17	40	10	88	33	1/4"	14	8	40	3.5
63	265	52	209	33	33	75	88	74	20	42	M16×1.5	32	23	8	44.5	17	G1/8	M8X1.25	17.5	56.5	17	45	10	88	33	3/8"	17	8	45	4
80	321	68	249	33	33	95	107.5	94	25	53	M20×1.5	40	26	10	55.5	22	G1/8	M10X1.5	17	72	19	45	15	121	47	3/8"	16.5	8	45	4
100	336	70	262	37	37	115	117.5	113.5	25	55	M20×1.5	40	26	10	55.5	22	G1/8	M10X1.5	17	89	19	55	15	124	47	1/2"	19.5	10	55	4
125	401	92	305	46	46	140	152	138	32	74	M27×2	54	41	13.5	70	27	G1/8	M12X1.75	21.5	110	22	60	18	145	63	1/2"	23	11	60	4

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

BSAID



Bore size\Item	A	AB	AC	AF	DA	E	FA
32	246	39	159	48	29	M10×1.25	6
40	273	43	176	54	33	M12×1.25	7
50	315	52	194	69	42	M16×1.5	8
63	330	52	209	69	42	M16×1.5	8
80	403	68	249	86	53	M20×1.5	10
100	423	70	262	91	55	M20×1.5	10
125	516	92	305	119	74	M27×2	13.5

Remark:
1. The dimensions of magnet type cylinder are the same as non-magnet type cylinder.
2. The unmarked dimension is the same as BSAI standard type.

List for ordering code of accessories

Accessories / Bore size	Mounting accessories								
	LB	FA/FB	CA	CB	CR	TC	FTC	TCM1	TCM2
32	F-SI32LB	F-SI32FA	F-SE32CA	F-SE32CB	F-SI32CR	F-SAI32TC	F-SI32FTC	F-SI32TCM1	F-SI32TCM2
40	F-SI40LB	F-SI40FA	F-SE40CA	F-SE40CB	F-SI40CR	F-SAI40TC	F-SI40FTC	F-SI40TCM1	F-SI40TCM2
50	F-SI50LB	F-SI50FA	F-SE50CA	F-SE50CB	F-SI50CR	F-SAI50TC	F-SI50FTC	F-SI40TCM1	F-SI40TCM2
63	F-SI63LB	F-SI63FA	F-SE63CA	F-SE63CB	F-SI63CR	F-SAI63TC	F-SI63FTC	F-SI63TCM1	F-SI63TCM2
80	F-SI80LB	F-SI80FA	F-SE80CA	F-SE80CB	F-SI80CR	F-SAI80TC	F-SI80FTC	F-SI63TCM1	F-SI63TCM2
100	F-SI100LB	F-SI100FA	F-SE100CA	F-SE100CB	F-SI100CR	F-SAI100TC	F-SI100FTC	F-SI125TCM1	F-SI125TCM2
125	F-SI125LB	F-SI125FA	F-SE125CA	F-SE125CB	F-SI125CR	F-SAI125TC	F-SI125FTC	F-SI125TCM1	F-SI125TCM2
160	F-SI160LB	F-SI160FA	F-SI160CA	F-SI160CB	F-SI160CR	F-SI160TC	F-SI160FTC	F-SI160TCM1	F-SI160TCM2
200	F-SI200LB	F-SI200FA	F-SI200CA	F-SI200CB	F-SI200CR	F-SI200TC	F-SI200FTC	F-SI200TCM1	F-SI160TCM2

Accessories / Bore size	Knuckle				Sensor switch	
	I	Y	F	U	CMSE	DMSE
32	F-M10X125I	F-M10X125Y	F-M10X125F	F-M10X125U	CMSE	DMSE
40	F-M12X125I	F-M12X125Y	F-M12X125F	F-M12X125U		
50	F-M16X150I	F-M16X150Y	F-M16X150F	F-M16X150U		
63	F-M16X150I	F-M16X150Y	F-M16X150F	F-M16X150U		
80	F-M20X150I	F-M20X150Y	F-M20X150F	F-M20X150U		
100	F-M20X150I	F-M20X150Y	F-M20X150F	F-M20X150U		
125	F-M27X200I	F-M27X200Y	F-M27X200F	F-M27X200U		
160	F-M36X200I	F-M36X200Y	F-M36X200F	F-M36X200U		
200	F-M36X200I	F-M36X200Y	F-M36X200F	F-M36X200U		

Accessory selection

Accessories / Cylinder model		Mounting accessories										Knuckle [Note1]				Sensor switch	
		LB	FA	FB	CA	CB	CR	TC	FTC	TCM1	TCM2	I	Y	U	F	CMSE	DMSE
SAI	Standard	●	●	●	●	●	●	●	●	●	●	●	●	●	●	×	×
	With magnet	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SAIL	Standard	●	●	●	●	●	●	●	●	●	●	●	●	●	●	×	×
	With magnet	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
BSAI	Standard	●	●	●	●	●	●	●	×	●	●	●	●	●	●	×	×
	With magnet	●	●	●	●	●	●	●	×	●	●	●	●	●	●	●	●
SAID	Standard	●	●	×	×	×	×	●	●	●	●	●	●	●	●	×	×
	With magnet	●	●	×	×	×	×	●	●	●	●	●	●	●	●	●	●
BSAID	Standard	●	●	×	×	×	×	●	×	●	●	●	●	●	●	×	×
	With magnet	●	●	×	×	×	×	●	×	●	●	●	●	●	●	●	●
SAIJ	Standard	●	●	×	×	×	×	●	●	●	●	●	●	●	●	×	×
	With magnet	●	●	×	×	×	×	●	●	●	●	●	●	●	●	●	●

[Note1] Please refer to P572~575 for knuckle detail.

Material of accessories

Accessories / Bore size	Mounting accessories										Knuckle			
	LB	FA	FB	CA	CB	CR	TC	FTC	TCM1	TCM2	I	Y	F	U
32~100	○	●	●	◇	◇	◇	◇	◇	◇	●	□	□	□	□
125~200	◇	◇	◇	◇	◇	◇	◇	◇	◇	●	□	□	□	□

●—Aluminum alloy, ○—Low carbon steel, ◇—Nodular cast iron,□—Carbon steel.

Installation of TC bracket

Follow below steps to install TC brackets:
1.Assemble TC bracket onto barrel and move it to the desired position.
2.Slightly tighten screws and make sure the surface of groove of bracket is closely attached to protruded parts on the barrel.
3.Bore 32~40: Tightening up 8 black stop screws (Light torque - Middle torque - Fastened). See below table for recommended tightening torque.
Bore 50~125: Tightening up 8 black stop screws first (Light torque - Middle torque - Fastened), then the 8 white stop screws. See below table for recommended tightening torque.

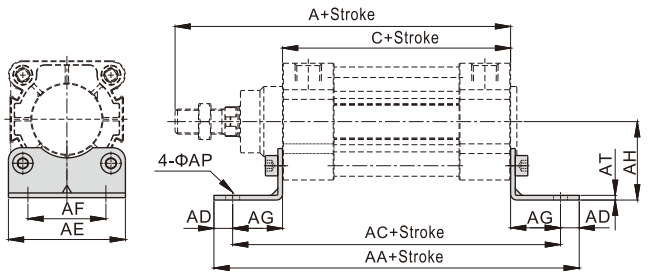
Bore size	32	40	50	63	80	100	125
Max locking moment M(N.m)	2~3	4~6	4~6	4~6	8~10	8~10	10~12
Static holding force F(N)	800	1200	2000	3000	5000	8000	12000

Note: If customer needs holding force larger than the figures stated in above table, please contact us for customization of fixed TC design (Non-movable TC bracket).



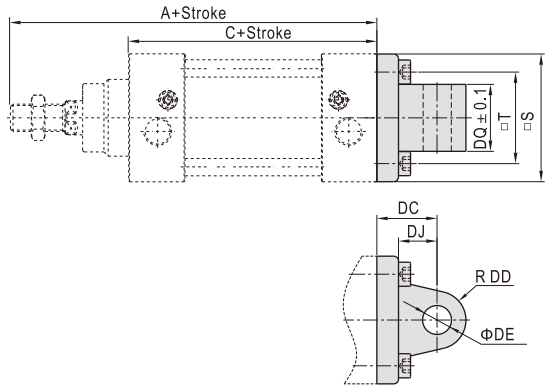
Dimensions

LB



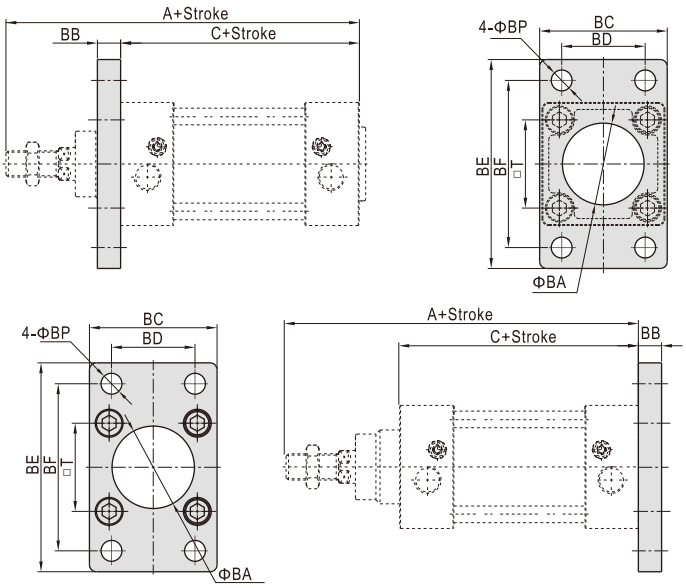
Bore size\Item	A	C	AA	AC	AD	AE	AF	AG	AH	AP	AT
32	142	94	158	142	8	47	32	24	32	7	3
40	159	105	179	161	9	53	36	28	36	9	3
50	175	106	190	170	10	65	45	32	45	9	3
63	190	121	209	185	12	75	50	32	50	9	3
80	214	128	248	210	19	95	63	41	63	12.5	4
100	229	138	266	220	23	115	75	41	71	14.5	4
125	279	160	290	250	20	140	90	45	90	16.5	8
160	332	180	340	300	20	180	115	60	115	18.5	10.5
200	347	180	380	320	30	220	135	70	135	24	9

CA



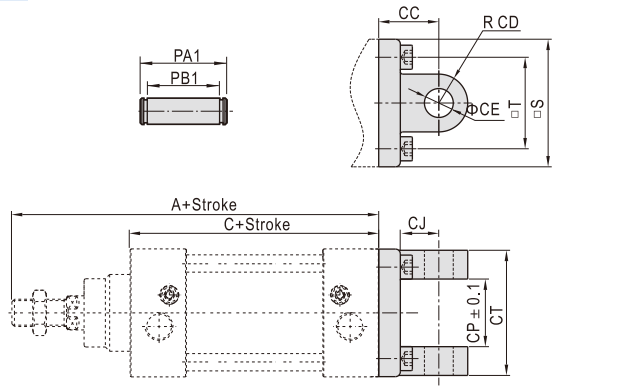
Bore size\Item	A	C	S	T	DC	DD	DE	DJ	DQ
32	142	94	46.5	32.5	22	10.5	10	13	25.8
40	159	105	54	38	25	12	12	16	27.8
50	175	106	64	46.5	27	12	12	17	31.7
63	190	121	75	56.5	32	15	16	22	39.7
80	214	128	93	72	36	15.5	16	22	49.7
100	229	138	110	89	41	20	20	27	59.7
125	279	160	134	110	50	24	25	33	69.7
160	332	180	180	140	55	30	30	35.5	89.7
200	347	180	220	175	60	30	30	37	89.7

FA/FB



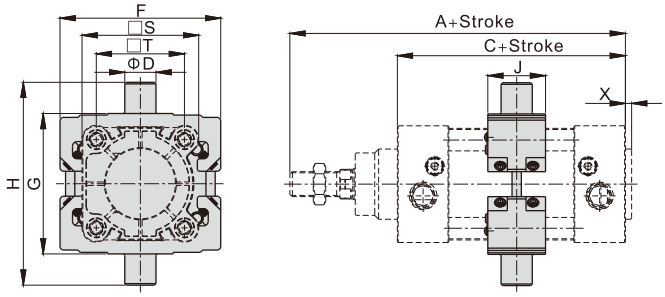
Bore size\Item	A	C	BA	BB	BC	BD	BE	BF	BP	T
32	142	94	30.5	10	47	32	80	64	7	32.5
40	159	105	35.5	10	53	36	90	72	9	38
50	175	106	40.5	12	65	45	108	90	9	46.5
63	190	121	45.5	12	75	50	118	100	9	56.5
80	214	128	45.5	16	95	63	150	126	12.5	72
100	229	138	55.5	16	115	75	176	150	14.5	89
125	279	160	60.5	20	139	90	218	180	16.5	110
160	332	180	65.5	20	180	115	280	230	18.5	140
200	347	180	75.5	25	220	135	320	270	24	175

CB



Bore size\Item	A	C	CC	CD	CE	CJ	CP	CT	PA1	PB1	S	T
32	142	94	22	10.5	10	13	26	45	51	45.5	46.5	32.5
40	159	105	25	12	12	16	28	52	59	52.5	54	38
50	175	106	27	12	12	17	32	60	67	60.5	64	46.5
63	190	121	32	15	16	22	40	70	77	70.5	75	56.5
80	214	128	36	15	16	22	50	90	97	90.5	93	72
100	229	138	41	20	20	27	60	110	119	110.5	110	89
125	279	160	50	24	25	33	70	130	139	130.5	134	110
160	332	180	55	30	30	35.5	90	170	181	170.5	180	140
200	347	180	60	30	30	36	90	170	181	170.5	220	175

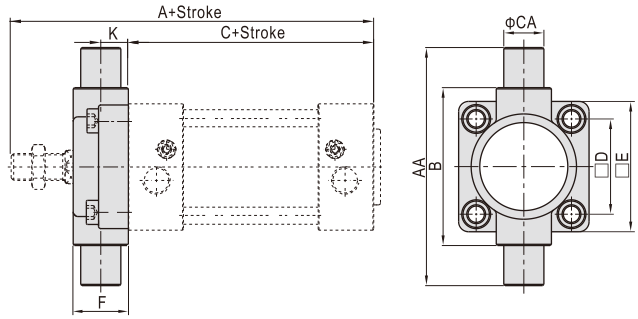
TC



Bore size\Item	A	C	D	F	G	H	J	S	X	T
32	142	94	12	68.5	52	76	31	47	3	32.5
40	159	105	16	75	63	95	31	53	3.5	38
50	175	106	16	91	75	107	35	65	3.5	46.5
63	190	121	20	103	90	130	35	75	4	56.5
80	214	128	20	126	110	150	45	95	4	72
100	229	138	25	145	132	182	45	115	4	89
125	279	160	25	175	160	210	51	140	4	110
160	332	180	32	210	200	264	50	180	4	140
200	347	180	32	255	250	314	50	220	5	175

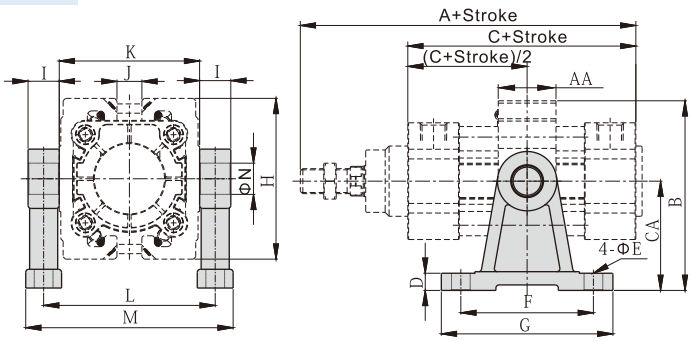
[Note] 160 and 200 TC accessory has been installed on the barrel of cylinder before it worked off, and the position of the accessories can not be adjusted arbitrarily. If consumer orders the TC solely, he will not install it on the barrel of standard cylinder directly.

FTC



Bore size\Item	A	C	AA	B	CA	D	E	F	K
32	142	94	74	50	12	32.5	46	19	10
40	159	105	95	63	16	38	52	21	10
50	175	106	107	75	16	46.5	64	26	12
63	190	121	130	90	20	56.5	74	28	12
80	214	128	150	110	20	72	94	31	16
100	229	138	182	132	25	89	114	35	16
125	279	160	210	160	25	110	139	43	20
160	332	180	264	200	32	140	179	56	20
200	347	180	314	250	32	175	218	64	20

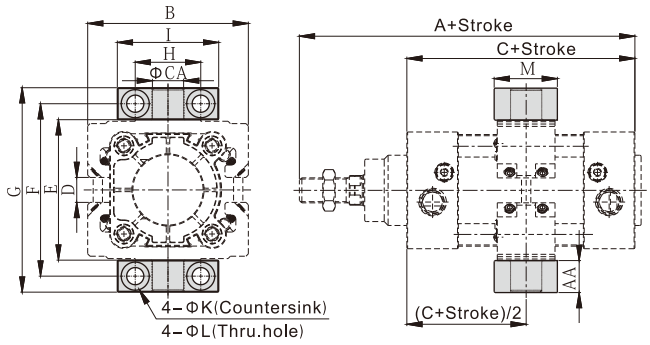
TCM1



Bore size\Item	A	C	AA	B	CA	D	E	F	G	H	I	J	K	L	M	N
32	142	94	31	72.5	40	11	9	60	80	65	12	5	52	64	79	12
40	159	105	31	91.5	54	11	12	75	100	75	16	8	63	79	98	16
50	175	106	35	99.5	54	11	12	75	100	91	16	10	75	91	110	16
63	190	121	35	121.5	70	11	12	85	110	103	20	16	90	110	133	20
80	214	128	45	133	70	11	12	85	110	126	20	20	110	130	153	20
100	229	138	45	162.5	90	19	18	115	155	145	25	28	132	157	185	25
125	279	160	51	177.5	90	19	18	115	155	175	25	40	160	185	213	25
160	332	180	50	215	110	24	22	140	190	210	32	100	200	232	267	32
200	347	180	50	262.5	135	27	22	150	200	255	32	125	250	282	317	32

[Note] 160/200 installation position of the accessories can not be adjusted arbitrarily.

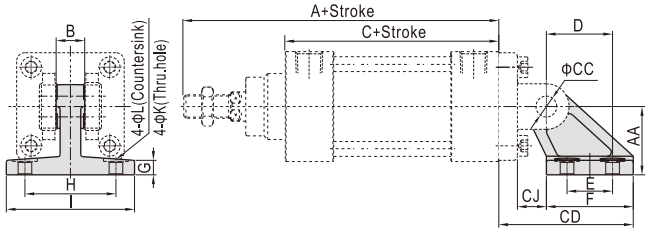
TCM2



Bore size\Item	A	AA	B	C	CA	D	E	F	G	H	I	K	L	M
32	142	14	65	94	12	5	52	68	82	32	46	11	7	30
40	159	17	75	105	16	8	63	82	99	36	55	15	9	36
50	175	17	91	106	16	10	75	94	111	36	55	15	9	36
63	190	20.5	103	121	20	16	90	113.5	134	42	65	18	11	40
80	214	20.5	126	128	20	20	110	133.5	154	42	65	18	11	40
100	229	24.5	145	138	25	28	132	159.5	184	50	75	20	14	50
125	279	24.5	175	160	25	40	160	187.5	212	50	75	20	14	50
160	332	30	210	180	32	100	200	234	264	60	92	26	18	60
200	347	30	255	180	32	125	250	284	314	60	92	26	18	60

[Note] 160/200 installation position of the accessories can not be adjusted arbitrarily.

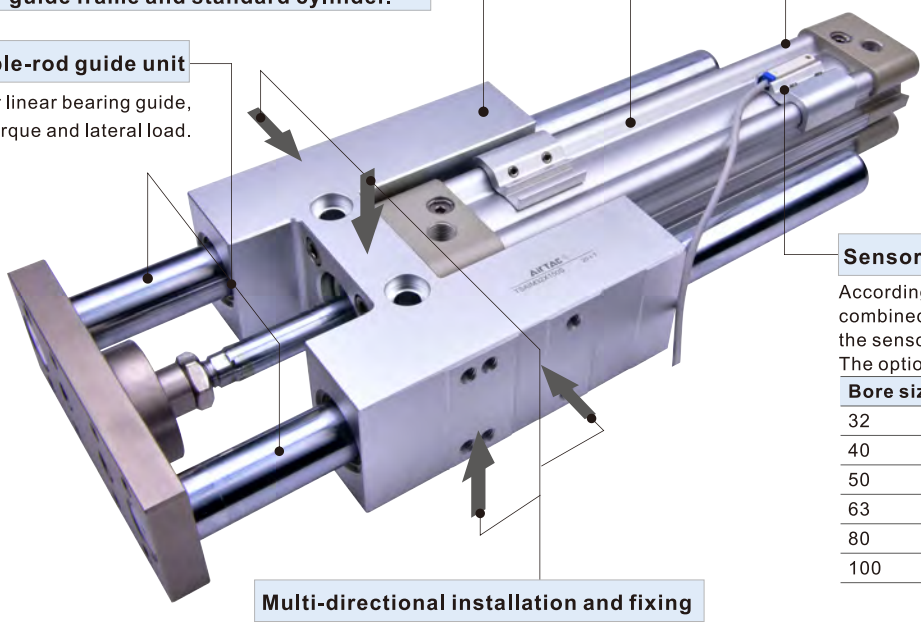
CR



Bore size\Item	A	AA	B	C	CC	CD	CJ	D	E	F	G	H	I	K	L
32	142	32	26	94	10	49	10	21	18	30	8	38	50	6.5	10.5
40	159	36	28	105	12	55	12	24	22	34	10	41	53	6.5	10.5
50	175	45	32	106	12	67	13	33	30	44	12	50	64	9	14
63	190	50	40	121	16	76	17	37	35	49	12	52	66	9	14
80	214	63	50	128	16	92.5	19.5	47	40	59	14	66	85	11	17
100	229	71	60	138	20	105.5	22.5	55	50	69	15	76	95	11	17
125	279	90	70	160	25	134	29	70	60	88	20	94	122	13.5	20
160	332	115	90	180	30	171	25.5	97	88	126	25	118	156	13.5	20
200	347	135	90	180	30	185	31	105	90	130	30	122	162	18	26

[Note] CR can't be used alone, it must be used with CB.

Compendium of TSAI series



A new type of cylinder combined with guide frame and standard cylinder.

Double-rod guide unit

Brass bearing or linear bearing guide, which can bear high torque and lateral load.

Can be matched with multi bore sizes cylinder

Bore size:
32、40、50、63、80、100

Sensor holder optional

According to the actual use requirements, combined with sensor holder can to change the sensor installation location.
The options are as follows:

Bore size	Sensor holder	Sensor
32	F-TSAI32E	CMSE DMSE
40		
50	F-TSAI50E	
63		
80	F-TSAI80E	
100		

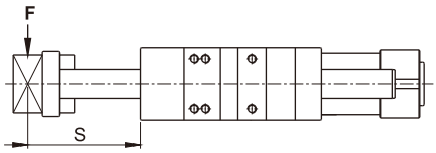
Multi-directional installation and fixing

Criteria for selection: Cylinder thrust

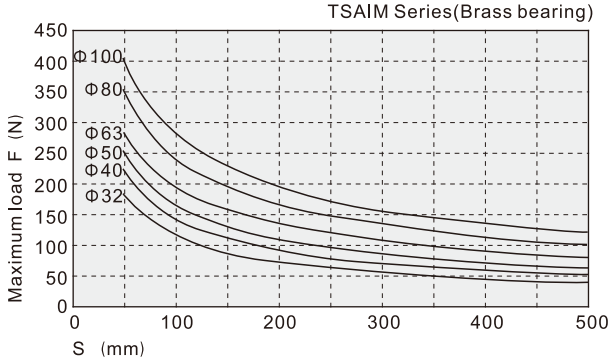
Unit: Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)								
					0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
32	12	Double acting	Push side	804	80.4	160.8	241.2	321.6	402.0	482.4	562.8	643.2	723.6
			Pull side	690	69.0	138.0	207.0	276.0	345.0	414.0	483.0	552.0	621.0
40	16	Double acting	Push side	1256	125.6	251.2	376.8	502.4	628.0	753.6	879.2	1002.4	1130.4
			Pull side	1055	105.5	211.0	316.5	422.0	527.5	633.0	738.5	844.0	949.5
50	20	Double acting	Push side	1963	196.3	392.6	588.9	785.2	981.5	1177.8	1374.1	1570.4	1766.7
			Pull side	1649	164.9	329.8	494.7	659.6	824.5	989.4	1154.3	1399.2	1484.1
63	20	Double acting	Push side	3117	311.7	623.4	935.1	1246.8	1558.5	1870.2	2181.9	2493.6	2805.3
			Pull side	2803	280.3	560.6	840.9	1121.2	1401.5	1681.8	1962.1	2242.4	2522.7
80	25	Double acting	Push side	5026	502.6	1005.2	1507.8	2010.4	2513.0	3015.6	3518.2	4020.8	4523.4
			Pull side	4536	453.6	907.2	1360.8	1814.4	2268.0	2721.6	3175.2	3628.8	4082.4
100	25	Double acting	Push side	7853	785.3	1570.6	2355.9	3141.2	3926.5	4711.8	4288.2	6282.4	7067.7
			Pull side	7362	736.2	1472.4	2208.6	2948.6	3681.0	4417.2	5153.4	5889.6	6625.8

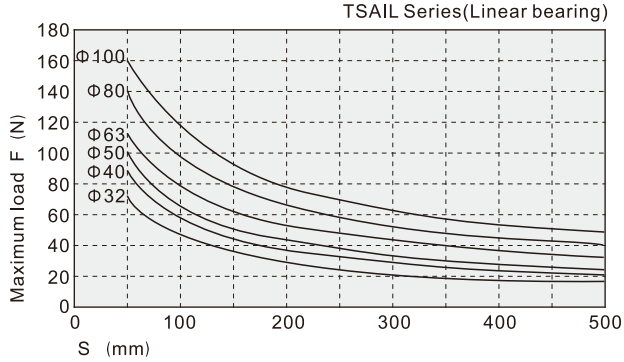
Maximum load relationship curve



TSAIM Series(Brass bearing)



TSAIL Series(Linear bearing)



With guide frame cylinder

TSAI Series

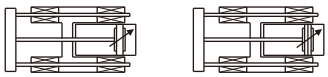


Specification

Bore size(mm)	32	40	50	63	80	100
Acting type	Double acting					
Fluid	Air(to be filtered by 40 μ m filter element)					
Operating pressure	0.15~1.0MPa(22~145psi)(1.5~10.0bar)					
Proof pressure	1.5MPa(215psi)(15bar)					
Temperature ℃	-20~70					
Speed range mm/s	30~500					
Stroke tolerance	$0\sim250^{+1.0}_{0}$ $>250^{+1.5}_{0}$					
Cushion type	Variable cushion					
Port size [Note]	1/8"	1/4"		3/8"		1/2"

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol



TSAI TSAI-S

Product feature

1. A new type of cylinder combined with guide frame and standard cylinder.
2. Brass bearing: It is suitable for the action that has radial load resistance. with greater torsion stiffness.
   Linear bearing: It is suitable for push-up action, or where high precision and high load capacity are required, especially for occasions requiring low friction.
3. The special design of the guide frame body provides a multi-directional mounting.
4. The buffer adjustment of cylinder is smooth and steady.
5. According to the actual use requirements, combined with sensor holder can to change the sensor installation location.

Stroke

Bore size(mm)	Standard stroke (mm)	Max.std stroke(mm)
32	50 100 150 200 250 300 350 400 450 500	500
40	50 100 150 200 250 300 350 400 450 500	500
50	50 100 150 200 250 300 350 400 450 500	500
63	50 100 150 200 250 300 350 400 450 500	500
80	50 100 150 200 250 300 350 400 450 500	500
100	50 100 150 200 250 300 350 400 450 500	500

[Note] Consult us for non-standard stroke.

Ordering code

TSAI M 40 X 100 S G

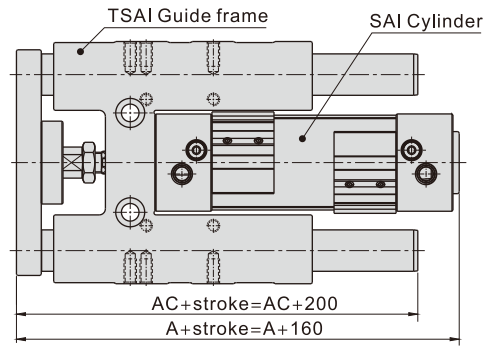
1 2 3 4 5 6

①Model	TSAI: With guide frame cylinder
②Bearing type	M: Brass bearing L: Linear bearing
③Bore size	32 40 50 63 80 100
④Stroke	Refer to stroke table for details
⑤Magnet[Note1]	Blank: Without magnet S: With magnet
⑥Thread type	G: G Thread

[Note1] With magnet cylinders are equipped with 2 pcs sensor holders.

Ordering instructions:

1. When ordering guide frame separately, only standard strokes from the stroke list can be ordered. (Other stroke can only be ordered by non-standard)
2. To order non-standard stroke cylinders with guide frame, the combination is as follows:
   Non-standard stroke cylinder
   + guide frame of the upper standard stroke.
   Example: SAI32X160 (non-standard stroke cylinder)
   +F-TSAIM32X200(Standard stroke guide frame).
   The dimension is as follows:



Ordering code(for guide frame)

F – TSAI M 40 X 100

1 2 3 4 5

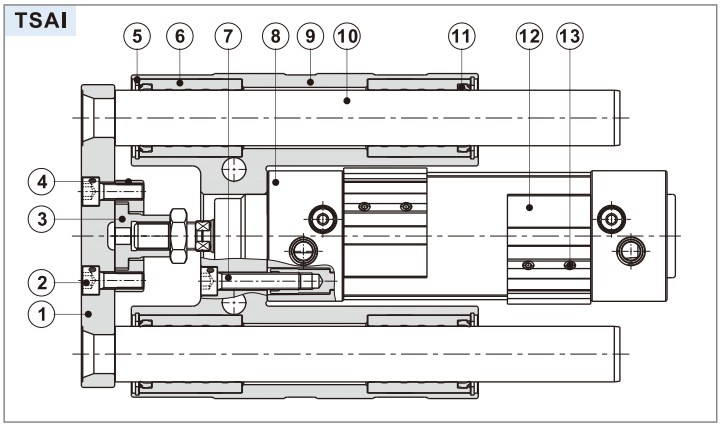
①Accessory code	F: Accessory
②Model	TSAI: With guide frame cylinder
③Bearing type	M: Brass bearing L: Linear bearing
④Bore size	32 40 50 63 80 100
⑤Stroke	Refer to stroke table for details

【Note】 When ordering the guide frames separately, 2 pcs sensor holders are equipped. The matching relationship between the sensor holder and the bore size is shown in the following table.

Sensor holder type\Bore size	32	40	50	63	80	100
F-TSAI32E	●	●				
F-TSAI50E			●	●		
F-TSAI80E					●	●

Inner structure and material of major parts

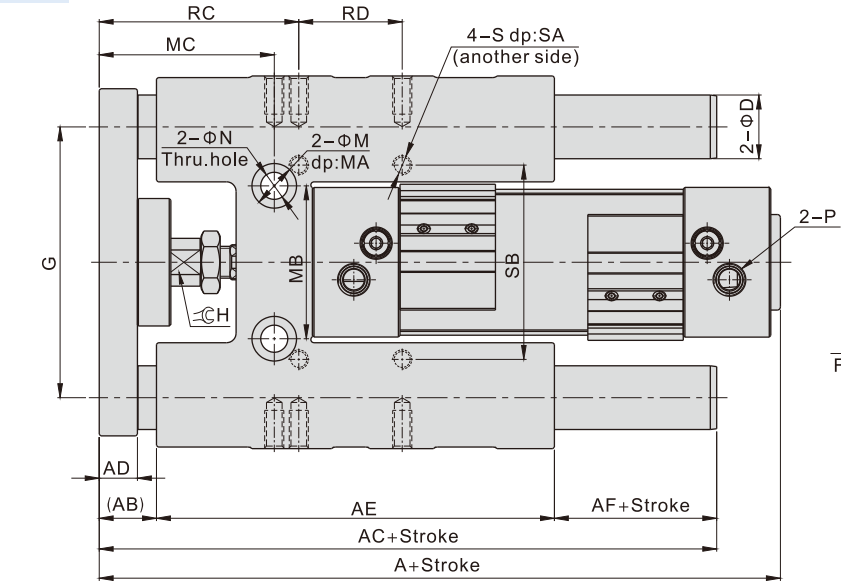
TSAI

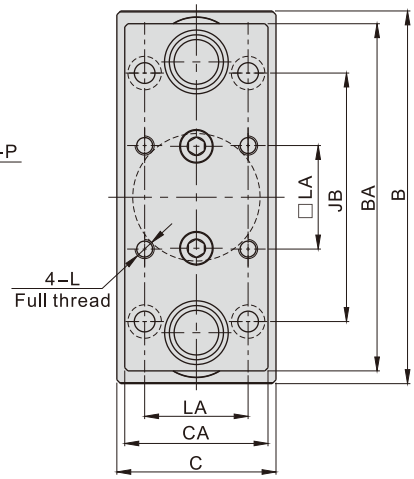


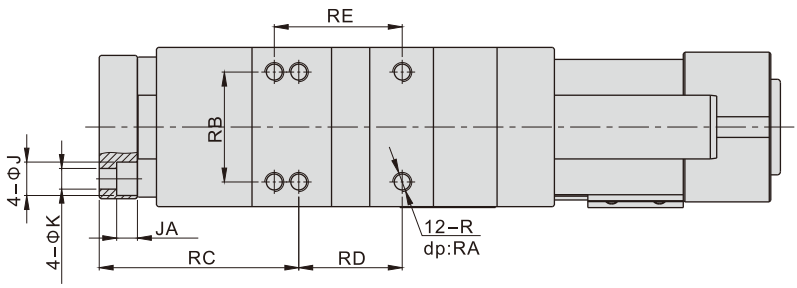
NO.	Item	Material
1	Fixed plate	Ductile iron
2	Bolt	Carbon steel
3	Floating nut	Carbon steel
4	Floating baffle	Carbon steel
5	C clip	Spring steel
6	Linear bearing	–
	Brass bearing	Brass
7	Bolt	Carbon steel
8	SAI Cylinder	Unit
9	Guide frame	Aluminum alloy
10	Guider(Linear)	Alloy steel
	Guider(Brass)	Carbon steel
11	Dust ring	Plastic
12	Sensor holder	Aluminum alloy
13	Screw	Alloy steel

Dimensions

TSAIM/TSAIL







Bore size\Item	A	AB	AC	AD	AE	AF	B	BA	C	CA
32	164	18	144	12	125	1	117	109	50	45
40	183.5	16	157	12	140	1	123	115	58	54
50	198.5	18	169	15	150	1	145	135	70	63
63	214	18	201	15	182	1	160	150	85	80
80	243	24	240	20	215	1	198	189	105	100
100	258	24	245	20	220	1	221	210	130	120

Bore size\Item	D	G	H	J	JA	JB	K	L	LA	M	MA	MB	MC	N	P	R	RA	RB	RC	RD	RE	S	SA	SB
32	20(16)	85	15	10.5	6.5	78	6.5	M6X1.0	32.5	14	4.5	48	55	8.5	1/8"	M6X1.0	12	34.5	62.7	32.5	40.2	M6X1.0	12	61
40	20(16)	91	15	10.5	6.5	84	6.5	M6X1.0	38	14	6	54	61	8.5	1/4"	M6X1.0	14	38	64	38	51	M6X1.0	14	69
50	20	108	19	14	8.5	100	8.5	M8X1.25	46.5	17	7	66	72	10.5	1/4"	M8X1.25	16	46.5	70.2	46.5	64.7	M8X1.25	16	85
63	20	123	19	14	8.5	105	8.5	M8X1.25	56.5	17	10	79	72	10.5	3/8"	M8X1.25	16	56.5	73.7	56.5	76.5	M8X1.25	16	100
80	30(25)	150	27	17	10.5	130	10.5	M10X1.5	72	–	–	–	–	–	3/8"	M10X1.5	20	72	90	72	90	M10X1.5	20	130
100	30(25)	172	27	17	10.5	150	10.5	M10X1.5	89	–	–	–	–	–	1/2"	M10X1.5	20	89	91.5	89	113	M10X1.5	20	150

[Note]The values in "()" in the above table are TSAIL series sizes.

In accordance with ISO15552 standard

Compendium of SGC Series

ISO15552(Original ISO6431) Standard cylinder

Bore size:125, 160, 200, 250

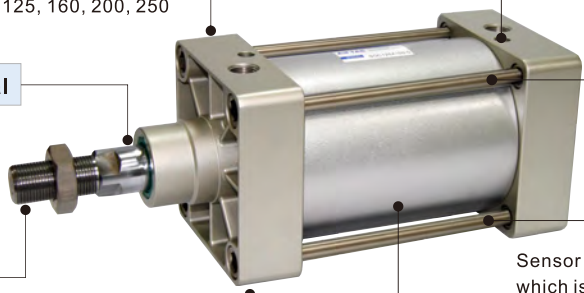
Adjustable air buffer

With adjustable air buffer on the front and back cover

Multi-kinds of Seals Material

Tie rod cylinder

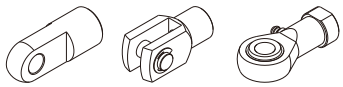
The cylinder barrel and front/rear cap are jointed by tie rods with high reliability.



Convenient and fast fix sensor switch

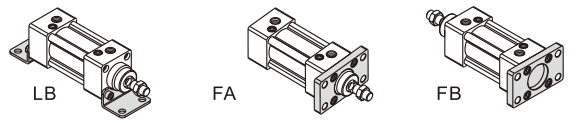
Sensor switch can be directly fixed onto the cylinder, which is convenient and fast.
the counterpart sensor switch type is: CMSG、DMSG、EMSG

Three kinds of cylinder joints

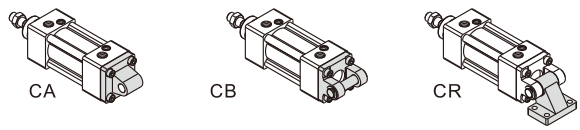


I Knuckle Y Knuckle Universal Joint

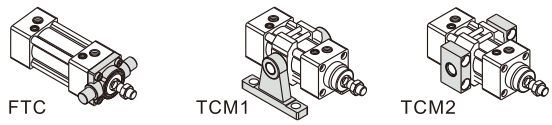
Multi-mounting accessories



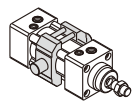
LB FA FB



CA CB CR



FTC TCM1 TCM2



TC

Multi-type cylinder



SGC: Double acting type



SGCD: Double rod type



SGCJ: Adjustable stroke type

Criteria for selection: Cylinder thrust

Unit：Newton(N)

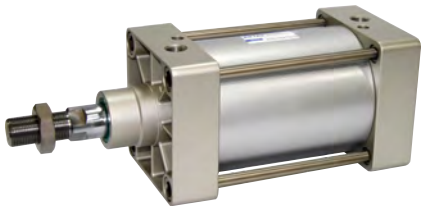
Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)								
					0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
125	32	Double acting	Push side	12272	1227.2	2454.4	3681.6	4908.8	6136.0	7363.2	8590.4	9817.6	11044.8
			Pull side	11468	1146.8	2293.6	3440.4	4587.2	5734.0	6880.8	8027.6	9174.4	10321.2
160	40	Double acting	Push side	20106	2010.6	4021.2	6031.8	8042.4	10053.0	12063.6	14074.2	16084.8	18095.4
			Pull side	18849	1884.9	3769.8	5654.7	7539.6	9424.5	11309.4	13194.3	15079.2	16964.1
200	40	Double acting	Push side	31416	3141.6	6283.2	9424.8	12566.4	15708.0	18849.6	21991.2	25132.8	28274.4
			Pull side	30157	3015.7	6031.4	9047.1	12062.8	15078.5	18094.2	21109.9	24125.6	27141.3
250	50	Double acting	Push side	49086	4908.6	9817.2	14725.8	19634.4	24543.0	29451.6	34360.2	39268.8	44177.4
			Pull side	47123	4712.3	9620.9	14333.2	19045.5	23757.8	28470.1	33182.4	37894.7	42607.0

Installation and application

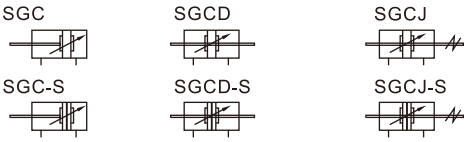
1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
7. The cylinder shall be carried out test run without load before application. Prior to run, buffer shall be turned to the minimum and gradually released to avoid the damage on cylinder caused by excessive impact.
8. The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
9. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

ISO15552 Standard cylinder

SGC Series



Symbol



Product feature

1. ISO15552 (original ISO6431) standard cylinder.
2. The seal of piston adopts heterogeneous two way seal structure. It's dimension is tight and it has the function of oil reservation.
3. SGC series cylinders are made of aluminum pipe.
4. The buffer adjustment of cylinder is smooth and steady.
5. Cylinders and accessories for installation with several specifications are optional.
6. The seal material with high temperature resistance is adopted, operating temperature range is 0~150℃.

Specification

Bore size(mm)		125	160	200	250
Acting type		Double acting			
Fluid		Air(to be filtered by 40μm filter element)			
Mounting type	SGC	Basic FA FB CA CB CR LB TC FTC TCM1 TCM2			
	SGCD、SGCJ	Basic FA LB TC FTC TCM1 TCM2			
Operating pressure		0.15~1.0MPa(22~145psi)(1.5~10.0bar)			
Proof pressure		1.5MPa(215psi)(15bar)			
Temperature ℃		-20~70			
Speed range mm/s		30~500			
Stroke tolerance		0~250 $^{+1.0}_{0}$	251~1000 $^{+1.5}_{0}$	1001~1500 $^{+2.0}_{0}$	
Cushion type		Variable cushion			
Adjustable cushion stroke		40	50		60
Port size [Note1]		1/2"	3/4"		1"

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke	Max. stroke
125	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	1800
160	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	2000
200	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	2000
250	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	2000

[Note] Consult us for non-standard stroke.

Ordering code

SGC 125 × 50 S □ □ G
SGCD 125 × 50 S □ □ G
SGCJ 125 × 50–20 S □ □ G

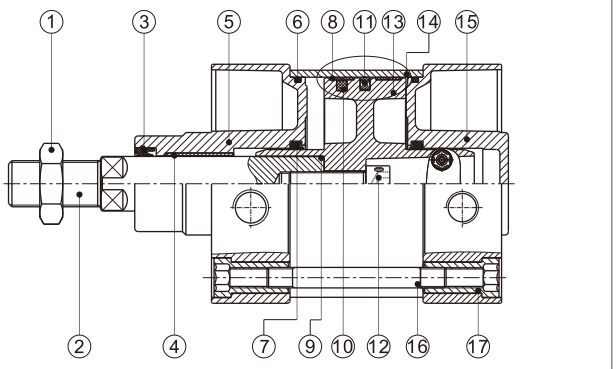
1 2 3 4 5 6 7 8

① Model	② Bore size	③ Stroke	④ Adjustable stroke	⑤ Magnet	⑥ Mounting type[Note1]	⑦ Seals Material	⑧ Thread type
SGC: Double acting type (Aluminum barrel)	125 160 200 250	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	Blank LB FA FB CA CB CR FTC TC	Blank: TPU [Note2] H: Viton N: NBR	G: G Thread
SGCD: Double rod type (Aluminum barrel)					Blank LB FA FTC TC		
SGCJ: Adjustable stroke type (Aluminum barrel)			10 20 30 40 50 75 100				

[Note1] CR is used with CB. FTC, TC are used with TCM1, TCM2. Please refer to page 289~291 for details. [Note2] TPU seals are not available for SGC250.

Inner structure and material of major parts

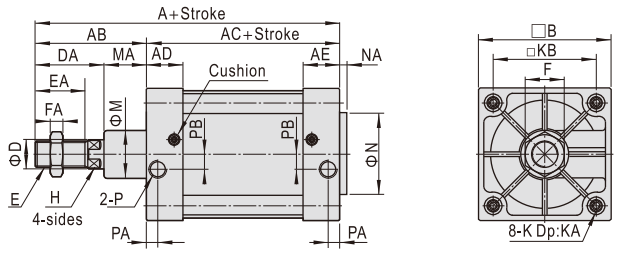
SGC



NO.	Item	Material
1	Rod nut	Carbon steel
2	Piston rod	Carbon steel with 20μm chrome plated
3	Front cover packing	NBR(SGC250)\TPU(Other)
4	Bushing	Wear resistant material
5	Front cover	Aluminum alloy
6	O-ring	NBR
7	Buffer gasket	NBR(SGC250)\TPU(Other)
8	Wear ring	Wear resistant material
9	O-ring	NBR
10	Magnet	Rubber
11	Piston Seal	NBR
12	Screw	Carbon steel
13	Piston	Aluminum alloy
14	Barrel	Aluminum alloy
15	Back cover	Aluminum alloy
16	Tie-rod	Carbon steel
17	Tie-rod nut	Carbon steel

Dimensions

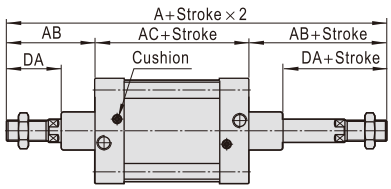
SGC



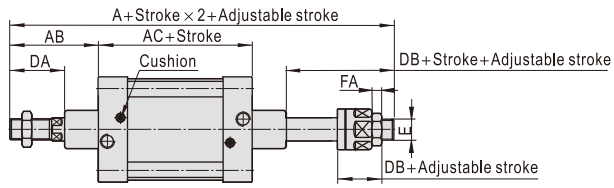
Bore size\Item	A	AB	AC	AD	AE	B	D	DA	E	EA	F	FA	H	K	KA	KB	M	MA	N	NA	P	PA	PB
125	279	119	160	46	46	140	32	74	M27×2.0	54	41	13.5	27	M12	31	110	60	45	60	4	1/2"	23	14
160	332	152	180	50	50	180	40	94	M36×2.0	72	55	18	36	M16	30	140	65	58	65	4	3/4"	25	15
200	347	167	180	50	50	220	40	100	M36×2.0	72	55	18	36	M16	30	175	75	67	75	5	3/4"	25	15
250	389	189	200	58	58	282	50	111	M42×2.0	84	65	21	46	M20	35	220	90	78	90	8	1"	31	22

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

SGCD



SGCJ



Bore size\Item	A		AB	AC	DA	DB	E	FA
Model	SGCD	SGCJ						
125	398	366.5	119	160	74	42.5	M27X2.0	13.5
160	484	458	152	180	94	68	M36X2.0	18
200	514	482	167	180	100	68	M36X2.0	18
250	578	547	189	200	111	80	M42X2.0	21

Remark:
1. The dimensions of magnet type cylinder are the same as non-magnet type cylinder.
2. The unmarked dimension is the same as SGC standard type.

List for ordering code of accessories

Accessories / Bore size	Mounting accessories								
	LB	FA/FB	CA	CB	CR	TC	FTC	TCM1	TCM2
125	F-SI125LB	F-SI125FA	F-SE125CA	F-SE125CB	F-SI125CR	F-SG125TC	F-SI125FTC	F-SI125TCM1	F-SI125TCM2
160	F-SI160LB	F-SI160FA	F-SI160CA	F-SI160CB	F-SI160CR	F-SG160TC	F-SI160FTC	F-SI160TCM1	F-SI160TCM2
200	F-SI200LB	F-SI200FA	F-SI200CA	F-SI200CB	F-SI200CR	F-SG200TC	F-SI200FTC	F-SI200TCM1	F-SI160TCM2
250	F-SG250LB	F-SG250FA	F-SG250CA	F-SG250CB	-	F-SG250TC	-	F-SG250TCM1	F-SG250TCM2

Accessories / Bore size	Knuckle				Sensor switch		
	I：I Knuckle	Y：Y Knuckle	F：F Knuckle	U：U Knuckle	CMSG	DMSG	EMSG
125	F-M27X200I	F-M27X200Y	F-M27X200F	F-M27X200U	CMSG	DMSG	EMSG
160	F-M36X200I	F-M36X200Y	F-M36X200F	F-M36X200U			
200	F-M36X200I	F-M36X200Y	F-M36X200F	F-M36X200U			
250	F-M42X200I	F-M42X200Y	-	-			

Accessory selection

Accessories / Cylinder model		Mounting accessories										Knuckle [Note1]			Sensor switch		
		LB	FA	FB	CA	CB	CR	TC	FTC	TCM1	TCM2	I	Y	U	CMSG	DMSG	EMSG
SGC	Standard	●	●	●	●	●	●	●	●	●	●	●	●	●	×	×	×
	With magnet	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SGCD	Standard	●	●	×	×	×	×	●	●	●	●	●	●	●	×	×	×
	With magnet	●	●	×	×	×	×	●	●	●	●	●	●	●	●	●	●
SGCJ	Standard	●	●	×	×	×	×	●	●	●	●	●	●	●	×	×	×
	With magnet	●	●	×	×	×	×	●	●	●	●	●	●	●	●	●	●

[Note1] Please refer to P572~575 for knuckle detail.

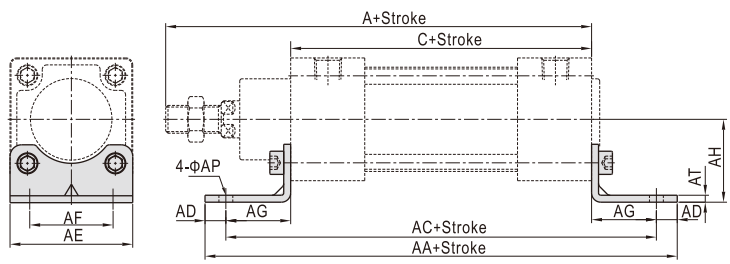
Material of accessories

Accessories / Bore size	Mounting accessories										Knuckle		
	LB	FA	FB	CA	CB	CR	TC	FTC	TCM1	TCM2	I	Y	U
125~200	■	■	■	■	■	■	■	■	■	●	□	□	□
250	■	■	■	■	■	×	■	×	■	■	■	■	×

●——Aluminum alloy, ■——Cast steel,□——Carbon steel, ×——No this type.

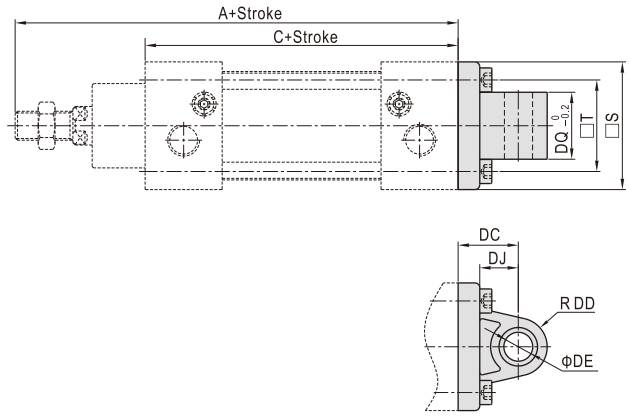
Dimensions

LB



Bore size\Item	A	C	AA	AC	AD	AE	AF	AG	AH	AP	AT
125	279	160	290	250	20	140	90	45	90	16.5	8
160	332	180	340	300	20	180	115	60	115	18.5	8
200	347	180	380	320	30	220	135	70	135	24	9
250	389	200	410	350	30	275	165	75	165	28	19

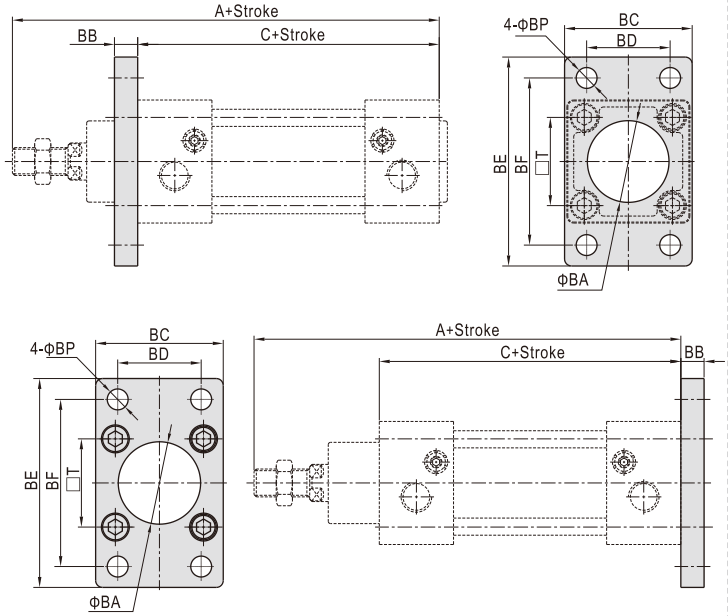
CA



Bore size\Item	A	C	S	T	DC	DD	DE	DJ	DQ
125	279	160	139	110	50	22	25	33	69.7
160	332	180	180	140	55	30	30	35.5	89.7
200	347	180	220	175	60	30	30	37	89.7
250	389	200	270	220	70	35	40	46	109.5

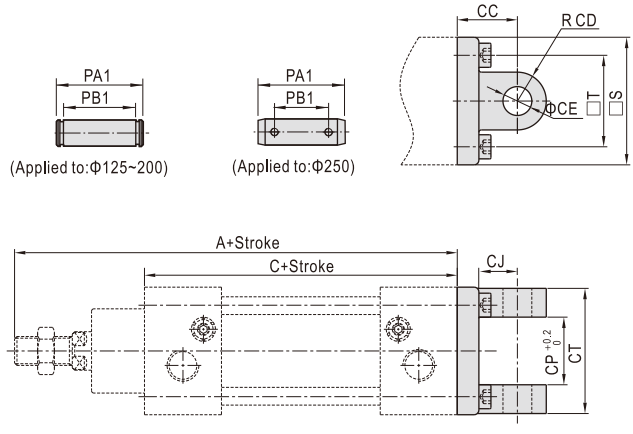
Dimensions

FA/FB



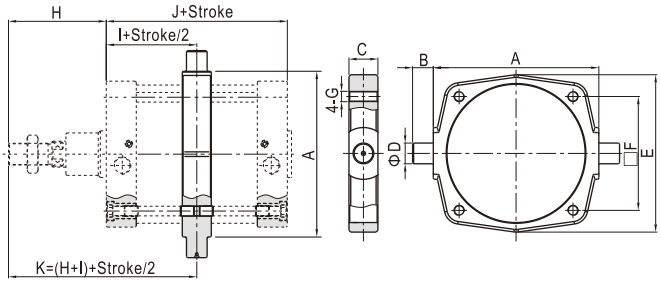
Bore size\Item	A	C	BA	BB	BC	BD	BE	BF	BP	T
125	279	160	60.5	20	139	90	218	180	16.5	110
160	332	180	65.5	20	180	115	280	230	18.5	140
200	347	180	75.5	25	220	135	320	270	24	175
250	389	200	90.5	25	267	165	376	330	26	220

CB



Bore size\Item	A	C	CC	CD	CE	CJ	CP	CT	PA1	PB1	S	T
125	279	160	50	21.5	25	31	70	130	139	130.5	139	110
160	332	180	55	30	30	35.5	90	170	181	170.5	180	140
200	347	180	60	30	30	36	90	170	181	170.5	220	175
250	389	200	70	35	40	46	110.3	200	230	208	270	220

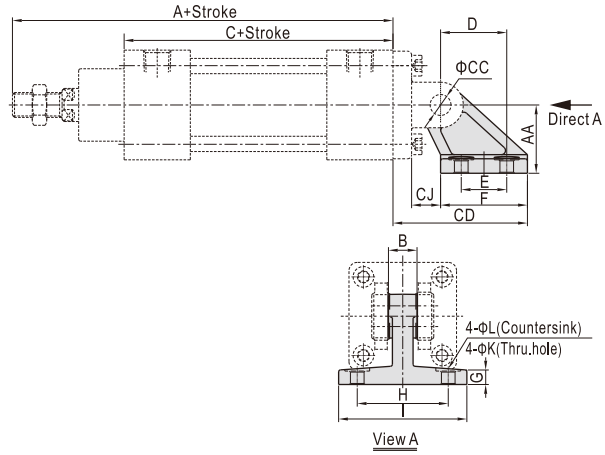
TC



Bore size\Item	A	B	C	D	E	F	G	H	I	J	K
125	160	25	40	25	158.5	110	M12	119	80	160	199
160	200	32	46	32	197.5	140	M16	152	90	180	242
200	250	32	46	32	245	175	M16	167	90	180	257
250	320	40	56	40	304	220	M20	189	100	200	289

[Note] The installation position of the accessories can not be adjusted arbitrarily.

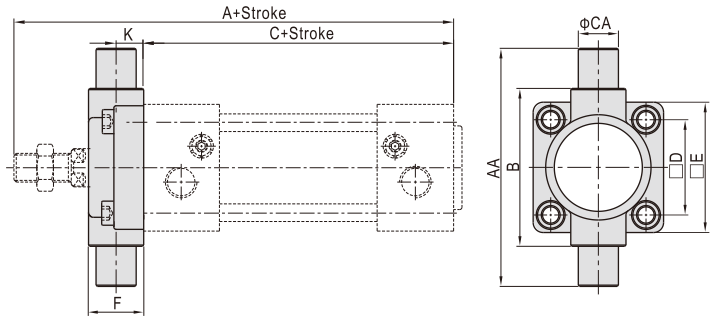
CR



Bore size\Item	A	AA	B	C	CC	CD	CJ	D	E	F	G	H	I	K	L
125	279	90	70	160	25	134	29	70	60	88	20	94	122	14	20
160	332	115	90	180	30	171	25.5	97	88	126	25	118	156	14	20
200	347	135	90	180	30	185	31	105	90	130	30	122	162	18	26

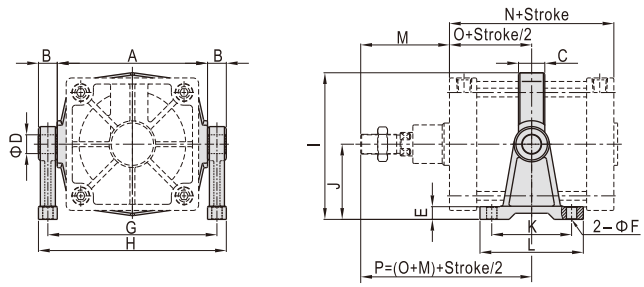
[Note] CR can't be used alone, it must be used with CB.

FTC



Bore size\Item	A	C	AA	B	CA	D	E	F	K
125	279	160	210	160	25	110	139	43	20
160	332	180	264	200	32	140	179	56	20
200	347	180	314	250	32	175	218	64	20

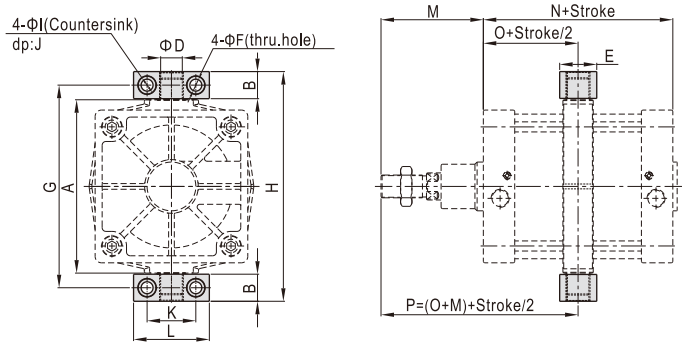
TCM1



Bore size\Item	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
125	160	25	40	25	19	18	185	213	169.3	90	115	155	119	160	80	199
160	200	32	46	32	24	22	232	267	208.8	110	140	190	152	180	90	242
200	250	32	46	32	27	22	282	317	257.5	135	150	200	167	180	90	257
250	320	40	56	40	28	22	360	400	312	160	170	220	189	200	100	289

[Note] The installation position of the accessories can not be adjusted arbitrarily.

TCM2

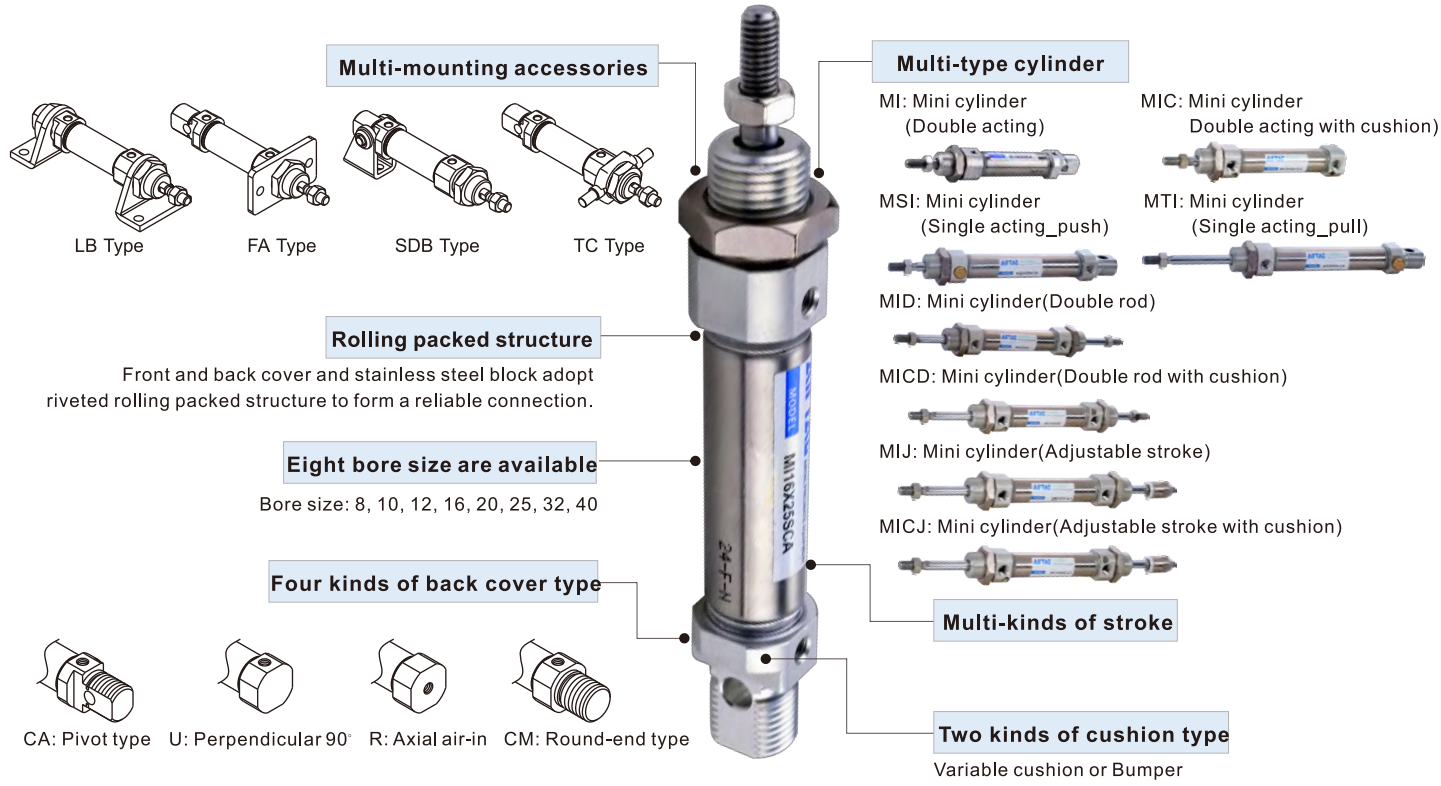


Bore size\Item	A	B	D	E	F	G	H	I	J	K	L	M	N	O	P
125	160	24.5	25	50	14	187.5	212	20	14	50	75	119	160	80	199
160	200	30	32	60	18	234	264	26	17.5	60	92	152	180	90	242
200	250	30	32	60	18	284	314	26	17.5	60	92	167	180	90	257
250	320	50	40	70	22	374	424	33	22	90	140	189	200	100	289

[Note] The installation position of the accessories can not be adjusted arbitrarily.

In accordance with ISO6432 standard

Compendium of MI Series



Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm²)	Operating pressure(MPa) 0.1	0.2	0.3	0.4	0.5	0.6	0.7
8	4	Single acting	Push side	50.2	-	3.6	8.6	13.6	18.6	23.6	28.7
			Pull side	37.7	-	1.0	4.8	8.6	12.3	16.1	19.9
		Double acting	Push side	50.2	5.0	10.1	15.1	20.1	25.1	30.1	35.2
			Pull side	37.7	3.7	7.5	11.3	15.1	18.8	22.6	26.4
10	4	Single acting	Push side	78.5	-	5.9	13.8	21.6	29.5	37.3	45.2
			Pull side	65.9	-	3.4	10.0	16.6	23.2	29.8	36.4
		Double acting	Push side	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
			Pull side	65.9	6.6	13.2	19.8	26.4	33.0	39.5	46.1
12	6	Single acting	Push side	113.0	-	10.1	21.4	32.7	44.0	55.3	66.6
			Pull side	84.8	-	4.5	12.9	21.4	29.9	38.4	46.9
		Double acting	Push side	113.0	11.3	22.6	33.9	45.2	56.5	67.8	79.1
			Pull side	84.8	8.5	17.0	25.4	33.9	42.4	50.9	59.4
16	6	Single acting	Push side	201.0	-	14.6	34.7	54.8	74.9	95.0	115.1
			Pull side	172.7	-	8.9	26.2	43.5	60.8	78.0	95.3
		Double acting	Push side	201.0	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull side	172.7	17.3	34.5	51.8	69.1	86.4	103.6	120.9
20	8	Single acting	Push side	314.0	-	25.3	56.7	88.1	119.5	150.9	182.3
			Pull side	263.8	-	15.3	41.6	68.0	94.4	120.8	147.1
		Double acting	Push side	314.0	31.4	62.8	94.2	125.6	157.0	188.4	219.8
			Pull side	263.8	26.4	52.8	79.1	105.5	131.9	158.3	184.7
25	10	Single acting	Push side	490.6	-	43.1	92.2	141.3	190.3	239.3	288.4
			Pull side	412.1	-	27.4	68.6	109.8	151.1	192.3	233.5
		Double acting	Push side	490.6	49.1	98.1	147.2	196.2	245.3	294.4	343.4
			Pull side	412.1	41.2	82.4	123.6	164.8	206.1	247.3	288.5
32	12	Single acting	Push side	804.3	30.2	110.9	191.3	277.1	352.1	432.6	513.0
			Pull side	691.2	19.1	88.2	157.4	226.5	295.6	364.7	388.8
		Double acting	Push side	804.3	80.4	160.9	241.3	321.7	402.2	482.6	563.0
			Pull side	691.2	69.1	138.2	207.4	276.5	345.6	414.7	483.8
40	16	Single acting	Push side	1256.6	64.7	190.3	316.0	441.7	567.3	693.0	818.7
			Pull side	1055.6	44.6	150.1	255.7	361.2	466.8	572.4	677.9
		Double acting	Push side	1256.6	125.7	251.3	377.0	502.6	628.3	754.0	879.6
			Pull side	1055.6	105.6	211.1	316.7	422.2	527.8	633.4	738.9

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
7. The cylinder shall be carried out test run without load before application. Prior to run, buffer shall be turned to the minimum and gradually released to avoid the damage on cylinder caused by excessive impact.
8. The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
9. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

MI Series

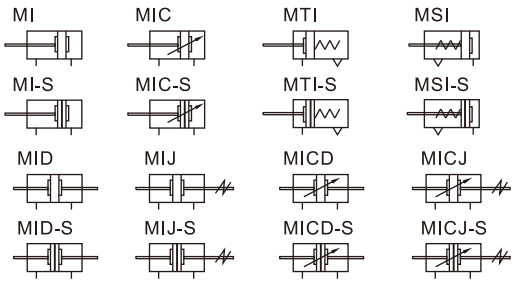


Specification

Bore size(mm)		8	10	12	16	20	25	32	40
Acting type		Double acting、Single acting_Push、Single acting_Pull							
		–			Double acting with cushion				
Fluid		Air(to be filtered by 40μm filter element)							
Operating pressure	Double acting	0.15~1.0MPa(22~145psi)(1.5~10.0bar)							
	Single acting	0.2~1.0MPa(28~145psi)(2.0~10.0bar)							
Proof pressure		1.5MPa(215psi)(15bar)							
Temperature ℃		-20~70							
Speed range mm/s		Double acting: 30~800 Single acting: 50~800							
Stroke tolerance		$0\sim150^{+1.0}_{0}$ $>150^{+1.5}_{0}$							
Cushion type		MIC Series: Variable cushion Other series: Bumper							
Port size [Note1]		M5×0.8				1/8"			1/4"

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol



Stroke

Bore size (mm)		Standard stroke (mm)	Max.std stroke	Max. stroke
MI	8	10 15 20 25 30 40 50 60 75 80 100 125 150	150	200
	10	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200	200	200
	12	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250	250	500
MI MIC	16	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300	500	600
	20 25 32 40	350 400 450 500	500	800
MID MIJ	8	10 15 20 25 30 40 50 60 75 80 100	100	–
	10	10 15 20 25 30 40 50 60 75 80 100	100	–
	12	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200	200	–
MID MIJ MICD MICJ	16 20	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300	300	–
	25	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300	300	–
	32	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300	500	–
	40	350 400 450 500	500	–
MSI MTI	8 10 12	10 15 20 25 30 40 50	–	–
	16	10 15 20 25 30 40 50 60 75 80 100	–	–
	20 25 32 40	10 15 20 25 30 40 50 60 75 80 100 125 150	–	–

[Note] Consult us for non-standard stroke.

Product feature

1. In accordance with ISO6432 standard(Φ8~Φ25).
2. Front and back cover owns fixed bumper pad which can reduce the impact of direction-change of the cylinder.
3. There are several mode of back cover, which makes the installation of cylinder more convenient.
4. Front and back cover and stainless steel block adopt riveted rolling packed structure to form a reliable connection.
5. Piston rod and cylinder body with the material of stainless steel make the cylinder adapt general working environment with corrosivity.
6. There are cylinders and accessories with several specifications for installation for your choice.

Ordering code

MI 10×40 S CA □ G
MID 10×40 S □ G
MIJ 10×40–30 S □ G
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

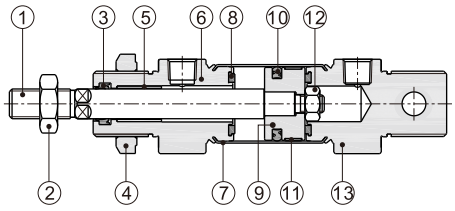
①Model	②Bore size	③Stroke	④Adjustable stroke	⑤Magnet	⑥Back cover	⑦Mounting type[Note1]	⑧Thread type
MI: Mini cylinder(Double acting)	8 10 12 16 20 25 32 40	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	Refer below table for details	Blank: No accessories FA: FA type SDB: SDB type LB: LB type TC: TC type	G: G Thread
MIC: Mini cylinder (Double acting with cushion)	16 20 25 32 40						
MSI: Mini cylinder(Single acting_push)	8 10 12 16 20 25 32 40						
MTI: Mini cylinder(Single acting_pull)							
MID: Mini cylinder(Double rod)							
MICD: Mini cylinder (Double rod with cushion)	16 20 25 32 40				No this code	Blank: No accessories FA: FA type LB: LB type TC: TC type	
MIJ: Mini cylinder(Adjustable stroke)	8 10 12 16 20 25 32 40		10 20 30 40 50 75 100				
MICJ: Mini cylinder(Adjustable stroke with cushion)	16 20 25 32 40						

[Note1] Please refer to page 296~297 for accessory parts.

Model	Back cover	Bore size
MI MSI MTI	CA: Pivot type	Φ8~Φ25
	U: Perpendicular 90°	Φ8~Φ40
	R: Axial air-in	Φ16~Φ40
	CM: Round-end type	Φ16~Φ40
MIC	CA: Pivot type	Φ16~Φ25
	U: Perpendicular 90°	Φ16~Φ40
	CM: Round-end type	Φ16~Φ40
Others	No this code	

Inner structure and material of major parts

MI-CA

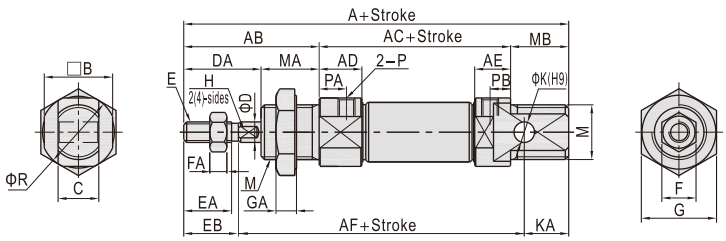


NO.	Item	Material
1	Rod	SUS304
2	Rod nut	Carbon steel
3	Front cover packing	NBR
4	Front cover nut	Carbon steel
5	Bushing	Wear resistant material
6	Front cover	Aluminum alloy
7	Barrel	SUS304(Φ8~Φ12)\SUS316L(Others)
8	Bumper	TPU
9	Piston	SUS303(Φ8~Φ12)\Aluminum alloy(Others)
10	Piston seal	NBR
11	Wear ring	Wear resistant material
12	Nut	Carbon steel
13	Back cover	Aluminum alloy

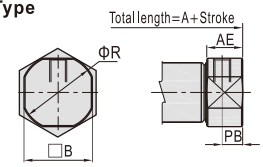
Dimensions

MI

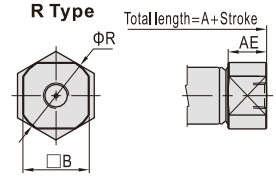
CA Type



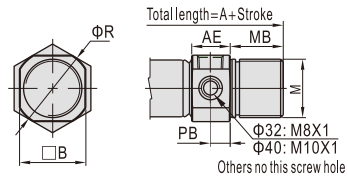
U Type



R Type



CM Type

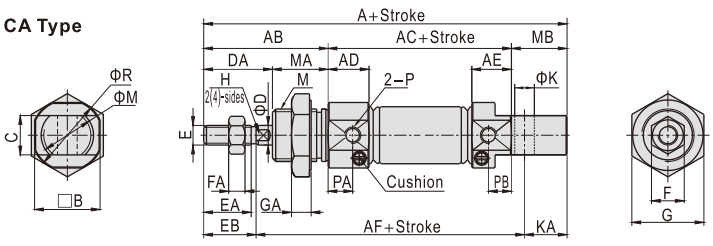


Bore size\Item	A				AB	AC	AD	AE		AF	B	C	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	M	MA	MB	P	PA	PB		R
Back cover	CA	U	R	CM				CA	U/R/CM																					CA	U/CM	
8	86	74	-	-	28	46	11.5	9.5	9.5	64	15	8	4	16	M4×0.7	10.5	12	7	3	17	6	-	4	10	M12×1.25	12	12	M5×0.8	7	5	5	17
10	86	74	-	-	28	46	11.5	9.5	9.5	64	15	8	4	16	M4×0.7	10.5	12	7	3	17	6	-	4	10	M12×1.25	12	12	M5×0.8	7	5	5	17
12	105	88	-	-	38	50	12.5	10.5	10.5	75	18	12	6	21	M6×1.0	14.5	16	10	5	22	6	5(2-Sides)	6	14	M16×1.5	17	17	M5×0.8	8	6	6	20
16	111	94	94	111	38	56	12.5	10.5	10.5	82	20	12	6	21	M6×1.0	14.5	16	10	5	22	6	5(2-Sides)	6	13	M16×1.5	17	17	M5×0.8	8	6	6	22
20	126	106	106	126	44	62	14.5	14.5	14.5	95.5	25	16	8	24	M8×1.25	18	19.5	12	6	29	7	6(2-Sides)	8	11	M22×1.5	20	20	1/8"	7.5	7.5	7.5	29
25	137	114.5	115	137	50	65	16	16	16	104.5	30	16	10	28	M10×1.25	20	21.5	17	6	29	7	8(4-Sides)	8	11	M22×1.5	22	22	1/8"	8	8	8	33.5
32	-	125	126	140	58	-	16.5	-	16.5	-	34.5	-	12	28	M10×1.25	18.5	20	17	6	36	7	10(4-Sides)	-	-	M30×1.5	30	14	1/8"	9	-	8/9	37.5
40	-	158	158	174	69	-	22	-	22	-	42.5	-	16	34	M12×1.25	22.5	24	17	7	46	8	14(4-Sides)	-	-	M38×1.5	35	16	1/4"	12	-	11.5/12	46.5

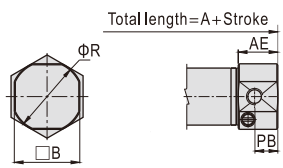
Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MIC Φ16~Φ25

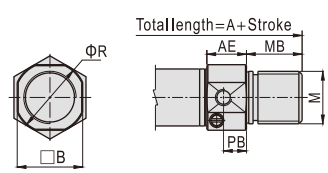
CA Type



U Type



CM Type

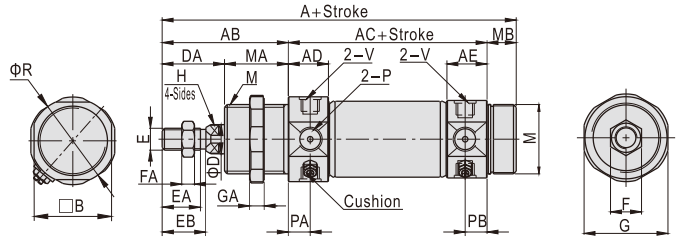


Bore size\Item	A		AB	AC	AD	AE		AF	B	C	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	M	MA	MB	P	PA	PB	R
Back cover	CA/CM	U				CA/CM	U																						
16	111	94	38	56	12.5	12	12	82	20	12	6	21	M6×1.0	14.5	16	10	5	22	6	5(2-Sides)	6	13	M16×1.5	17	17	M5×0.8	7.5	7	22
20	126	106	44	62	14.5	14.5	14.5	95.5	25	16	8	24	M8×1.25	18	19.5	12	6	29	7	6(2-Sides)	8	11	M22×1.5	20	20	1/8"	7.5	7.5	29
25	137	113.5	50	65	16	16	14.5	104.5	30	16	10	28	M10×1.25	20	21.5	17	6	29	7	8(4-Sides)	8	11	M22×1.5	22	22	1/8"	8	8	33.5

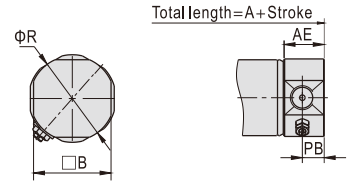
Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MIC Φ32/Φ40

CM Type



U Type

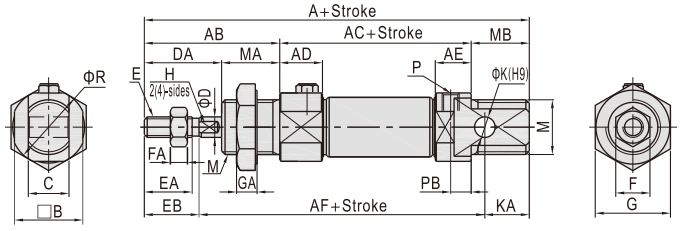


Bore size\Item	A		AB	AC	AD	AE		B	D	DA	E	EA	EB	F	FA	G	GA	H	M	MA	MB	P	PA	PB		R	V
Back cover	U	CM				U	CM																	U	CM		
32	124	140	58	68	16.5	14.5	16.5	34.5	12	28	M10×1.25	18.5	20	17	6	36	7	10(4-Sides)	M30×1.5	30	14	1/8"	9	7.5	9	37.5	M8X1
40	157.5	174	69	89	22	21.5	22	42.5	16	34	M12×1.25	22.5	24	17	7	46	8	14(4-Sides)	M38×1.5	35	16	1/4"	12	11.5	12	46.5	M10X1

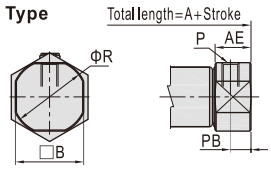
Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MSI

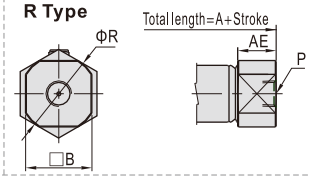
CA Type



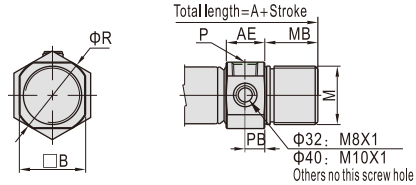
U Type



R Type

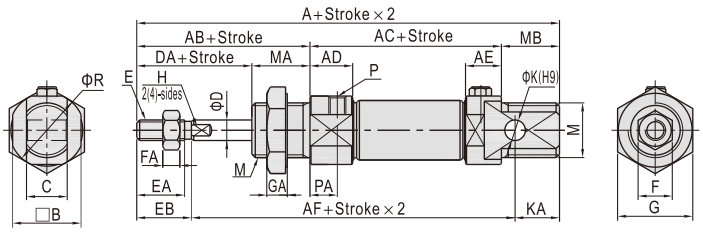


CM Type

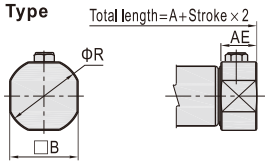


MTI

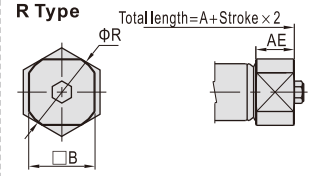
CA Type



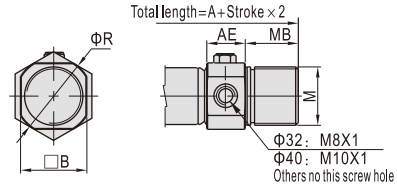
U Type



R Type



CM Type

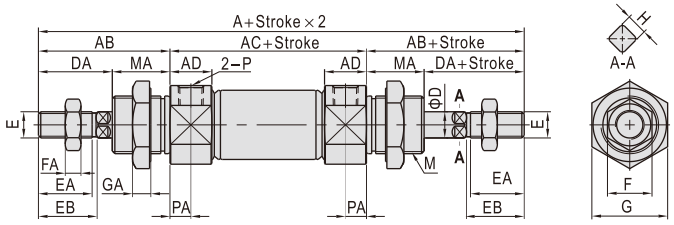


Item	A												AB	AC			AD	AF		
Back cover	CA			U			R			CM			-	-			-	-		
Bore size\Stroke	0~50	51~100	101~150	0~50	51~100	101~150	0~50	51~100	101~150	0~50	51~100	101~150	-	0~50	51~100	101~150	-	0~50	51~100	101~150
8	111	-	-	99	-	-	-	-	-	-	-	-	28	71	-	-	11.5	89	-	-
10	111	-	-	99	-	-	-	-	-	-	-	-	28	71	-	-	11.5	89	-	-
12	130	-	-	113	-	-	-	-	-	-	-	-	38	75	-	-	12.5	100	-	-
16	136	161	-	119	144	-	119	144	-	136	161	-	38	81	106	-	12.5	107	132	-
20	151	176	201	131	156	181	131	156	181	151	176	201	44	87	112	137	14.5	120.5	145.5	170.5
25	162	187	212	139.5	164.5	189.5	140	165	190	162	187	212	50	90	115	140	16	129.5	154.5	179.5
32	-	-	-	150	175	200	151	176	201	165	190	215	58	-	-	-	16.5	-	-	-
40	-	-	-	183	208	233	183	208	233	199	224	249	69	-	-	-	22	-	-	-

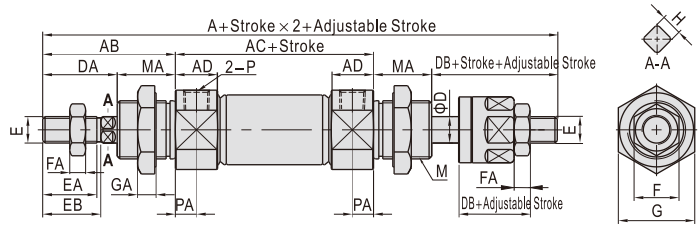
Bore size\Item	AE		B	C	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	M	MA	MB	P	PA	PB		R
Back cover	CA	U/R/CM																				CA	U/CM	
8	9.5	9.5	15	8	4	16	M4×0.7	10.5	12	7	3	17	6	-	4	10	M12×1.25	12	12	M5×0.8	7	5	5	17
10	9.5	9.5	15	8	4	16	M4×0.7	10.5	12	7	3	17	6	-	4	10	M12×1.25	12	12	M5×0.8	7	5	5	17
12	10.5	10.5	18	12	6	21	M6×1.0	14.5	16	10	5	22	6	5(2-Sides)	6	14	M16×1.5	17	17	M5×0.8	8	6	6	20
16	10.5	10.5	20	12	6	21	M6×1.0	14.5	16	10	5	22	6	5(2-Sides)	6	13	M16×1.5	17	17	M5×0.8	8	6	6	22
20	14.5	14.5	25	16	8	24	M8×1.25	18	19.5	12	6	29	7	6(2-Sides)	8	11	M22×1.5	20	20	1/8"	7.5	7.5	7.5	29
25	16	16	30	16	10	28	M10×1.25	20	21.5	17	6	29	7	8(4-Sides)	8	11	M22×1.5	22	22	1/8"	8	8	8	33.5
32	-	16.5	34.5	-	12	28	M10×1.25	18.5	20	17	6	36	7	10(4-Sides)	-	-	M30×1.5	30	14	1/8"	9	-	8/9	37.5
40	-	22	42.5	-	16	34	M12×1.25	22.5	24	17	7	46	8	14(4-Sides)	-	-	M38×1.5	35	16	1/4"	12	-	11.5/12	46.5

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MID



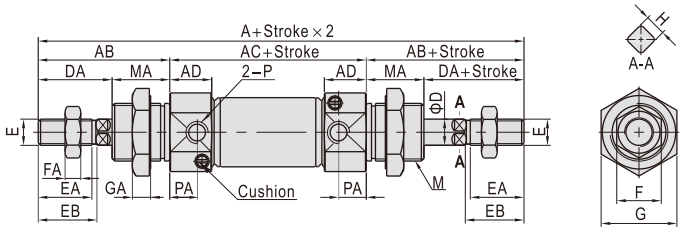
MIJ



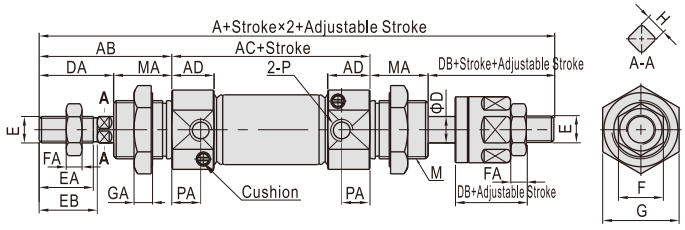
Bore size\Item	A(MID)	A(MIJ)	AB	AC	AD	D	DA	DB	E	EA	EB	F	FA	G	GA	H	M	MA	P	PA
8	104	103	28	48	11.5	4	16	15	M4×0.7	10.5	12	7	3	17	6	-	M12×1.25	12	M5×0.8	7
10	104	103	28	48	11.5	4	16	15	M4×0.7	10.5	12	7	3	17	6	-	M12×1.25	12	M5×0.8	7
12	128	128	38	52	12.5	6	21	21	M6×1.0	14.5	16	10	5	22	6	5(2-Sides)	M16×1.5	17	M5×0.8	8
16	134	134	38	58	12.5	6	21	21	M6×1.0	14.5	16	10	5	22	6	5(2-Sides)	M16×1.5	17	M5×0.8	8
20	150	151	44	62	14.5	8	24	25	M8×1.25	18	19.5	12	6	29	7	6(2-Sides)	M22×1.5	20	1/8"	7.5
25	165	164	50	65	16	10	28	27	M10×1.25	20	21.5	17	6	29	7	8(4-Sides)	M22×1.5	22	1/8"	8
32	184	183	58	68	16.5	12	28	27	M10×1.25	18.5	20	17	6	36	7	10(4-Sides)	M30×1.5	30	1/8"	9
40	227	222	69	89	22	16	34	29	M12×1.25	22.5	24	17	7	46	8	14(4-Sides)	M38×1.5	35	1/4"	12

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MICD Φ16~Φ40



MICJ Φ16~Φ40



Bore size\Item	A(MICD)	A(MICJ)	AB	AC	AD	D	DA	DB	E	EA	EB	F	FA	G	GA	H	M	MA	P	PA
16	132.5	132.5	38	56.5	12.5	6	21	21	M6×1.0	14.5	16	10	5	22	6	5(2-Sides)	M16×1.5	17	M5×0.8	7.5
20	150	151	44	62	14.5	8	24	25	M8×1.25	18	19.5	12	6	29	7	6(2-Sides)	M22×1.5	20	1/8"	7.5
25	165	164	50	65	16	10	28	27	M10×1.25	20	21.5	17	6	29	7	8(4-Sides)	M22×1.5	22	1/8"	8
32	184	183	58	68	16.5	12	28	27	M10×1.25	18.5	20	17	6	36	7	10(4-Sides)	M30×1.5	30	1/8"	9
40	227	222	69	89	22	16	34	29	M12×1.25	22.5	24	17	7	46	8	14(4-Sides)	M38×1.5	35	1/4"	12

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

List for ordering code of accessories

Accessories / Bore size	Mounting accessories				Knuckle				Sensor switch		
	LB	FA	SDB	TC	I	Y	F	U	CMSG	DMSG	EMSG
8	F-MI10LB	F-MI8FA	F-MI8SDB	F-MI10TC	F-M4X070I	F-M4X070Y	F-M4X070F	F-M4X070U	CMSG	DMSG	EMSG
10											
12	F-MI12LB	F-MI12FA	F-MI12SDB	F-MI12TC	F-M6X100I	F-M6X100Y	F-M6X100F	F-M6X100U			
16											
20	F-MI20LB	F-MI20FA	F-MI20SDB	F-MI20TC	F-M8X125I	F-M8X125Y	F-M8X125F	F-M8X125U			
25					F-M10X125I	F-M10X125Y	F-M10X125F	F-M10X125U			
32	F-MI32LB	-	F-MI32SDB	F-MI32TC							
40	F-MI40LB	-	F-MI40SDB	F-MI40TC	F-M12X125I	F-M12X125Y	F-M12X125F	F-M12X125U			

Accessory selection

Accessories / Cylinder model		Mounting accessories				Knuckle [Note1]				Sensor switch		
		LB	FA	SDB	TC	I	Y	U	F	CMSG	DMSG	EMSG
MI MIC	Standard	●	●	●	●	●	●	●	●	×	×	×
	With magnet	●	●	●	●	●	●	●	●	●	●	●
MSI MTI	Standard	●	●	●	●	●	●	●	●	×	×	×
	With magnet	●	●	●	●	●	●	●	●	●	●	●
MID MICD	Standard	●	●	×	●	●	●	●	●	×	×	×
	With magnet	●	●	×	●	●	●	●	●	●	●	●
MIJ MICJ	Standard	●	●	×	●	●	●	●	●	×	×	×
	With magnet	●	●	×	●	●	●	●	●	●	●	●

Material of accessories

Accessories / Bore size	Mounting accessories				Knuckle			
	LB	FA	SDB	TC	I	Y	F	U
8~40	△	△	△	▲	□	□	□	□

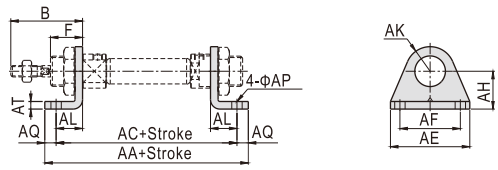
▲——SUS304; △——SPCC; □—Carbon steel;

[Note1] Please refer to P572~575 for knuckle detail.

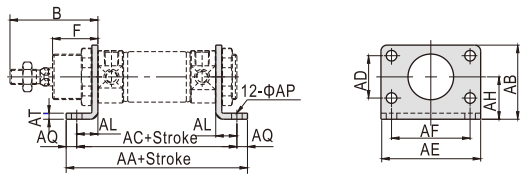
Dimensions

LB

Φ8~Φ25



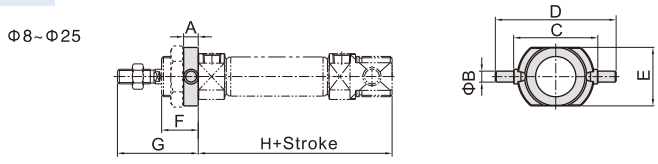
Φ32、Φ40



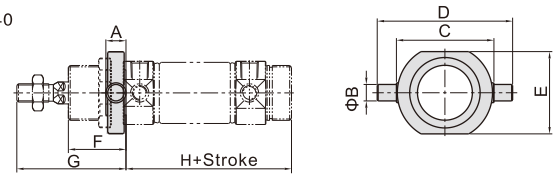
Bore size\Item	AA	AB	AC	AD	AE	AF	AH	AK	AL	AP	AQ	AT	B	F
8	78	-	68	-	35	25	16	10	11	4.5	5	2	28	12
10	78	-	68	-	35	25	16	10	11	4.5	5	2	28	12
12	90	-	78	-	42	32	20	13	14	5.5	6	2.5	38	17
16	96	-	84	-	42	32	20	13	14	5.5	6	2.5	38	17
20	112	-	96	-	54	40	25	20	17	7	8	3	44	20
25	115	-	99	-	54	40	25	20	17	7	8	3	50	22
32	110	49	96	28	66	52	28	-	14	7	7	3.5	58	30
40	149	58	129	30	80	60	33	-	20	9	10	3.5	69	35

TC

Φ8~Φ25



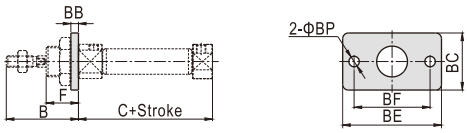
Φ32、Φ40



Bore size\Item	A	B	C	D	E	F	G	H
8	6	4	26	38	20	12	28	58
10	6	4	26	38	20	12	28	58
12	8	6	38	58	25	17	38	67
16	8	6	38	58	25	17	38	73
20	8	6	46	66	32	20	44	82
25	8	6	46	66	32	22	50	87
32	11	9	54	74	45	31.5	59.5	80.5
40	12	10	64	84	55	36.5	70.5	103.5

FA

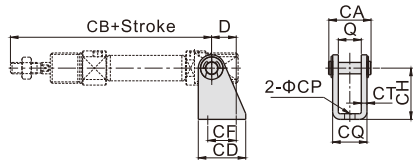
Φ8~Φ25



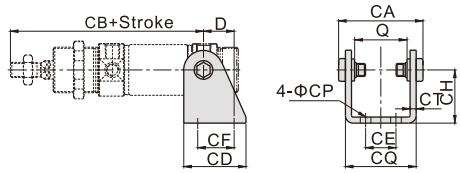
Bore size\Item	B	C	BB	BC	BE	BF	BP	F
8	28	46	2	22	40	30	4.5	12
10	28	46	2	22	40	30	4.5	12
12	38	50	3	26	52	40	5.5	17
16	38	56	3	26	52	40	5.5	17
20	44	62	3.5	38	64	50	7	20
25	50	65	3.5	38	64	50	7	22

SDB

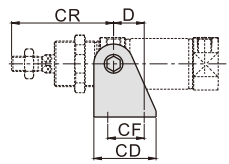
Φ8~Φ25



Φ32、Φ40



Φ32、Φ40



Bore size\Item	D	Q	CA	CB	CD	CE	CF	CH	CP	CQ	CT	CR
8	11	8.1	16.4	76	20	-	12.5	24	4.5	12.1	2	-
10	11	8.1	16.4	76	20	-	12.5	24	4.5	12.1	2	-
12	13	12.1	21.2	91	25	-	15	27	5.5	16.1	2	-
16	13	12.1	21.2	98	25	-	15	27	5.5	16.1	2	-
20	16	16.1	26.6	115	32	-	20	30	7	21.1	2.5	-
25	16	16.1	26.6	126	32	-	20	30	7	21.1	2.5	-
32	20	34.6	53.6	117	41	20	24	35	7	44.6	3	67
40	27	42.6	65.6	146	52	28	30	40	9	54.6	3	81

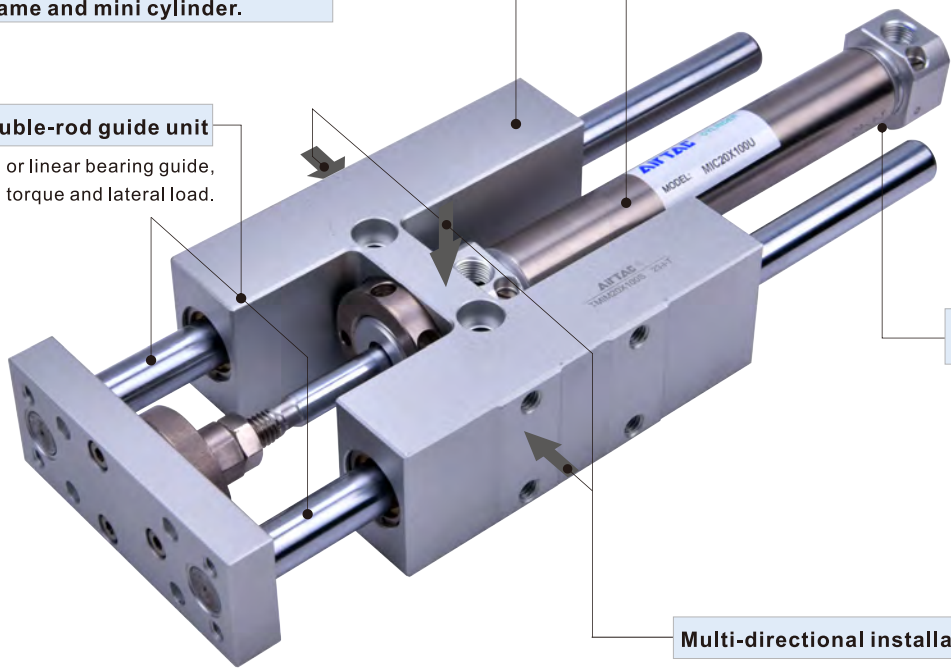
[Note] SDB is attached with relevant PIN.

Compendium of TMI/TMIC series

A new type of cylinder combined with guide frame and mini cylinder.

Double-rod guide unit

Brass bearing or linear bearing guide, which can bear high torque and lateral load.



Can be matched with multi bore sizes cylinder

Bore size：12、16、20、25

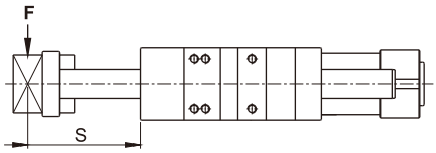
Multi-directional installation and fixing

Criteria for selection: Cylinder thrust

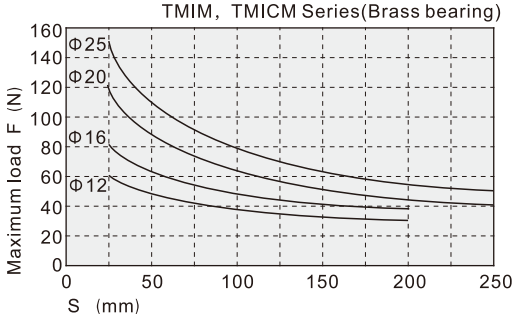
Unit：Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)						
					0.1	0.2	0.3	0.4	0.5	0.6	0.7
12	6	Double acting	Push side	113.0	11.3	22.6	33.9	45.2	56.5	67.8	79.1
			Pull side	84.8	8.5	17.0	25.4	33.9	42.4	50.9	59.4
16	6	Double acting	Push side	201.0	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull side	172.7	17.3	34.5	51.8	69.1	86.4	103.6	120.9
20	8	Double acting	Push side	314.0	31.4	62.8	94.2	125.6	157.0	188.4	219.8
			Pull side	263.8	26.4	52.8	79.1	105.5	131.9	158.3	184.7
25	10	Double acting	Push side	490.6	49.1	98.1	147.2	196.2	245.3	294.4	343.4
			Pull side	412.1	41.2	82.4	123.6	164.8	206.1	247.3	288.5

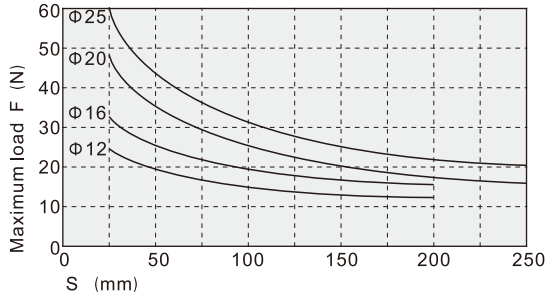
Maximum load relationship curve



TMIM，TMICM Series(Brass bearing)



TMIL，TMICL Series(Linear bearing)



With guide frame cylinder

TMI, TMIC Series

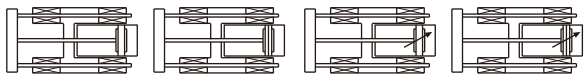


Specification

Bore size(mm)	12	16	20	25
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	0.15~1.0MPa(22~145psi)(1.5~10.0bar)			
Proof pressure	1.5MPa(215psi)(15bar)			
Temperature ℃	-20~70			
Speed range mm/s	30~500			
Stroke tolerance	$0\sim150^{+1.0}_{0}$ $>150^{+1.5}_{0}$			
Cushion type	Bumper	Variable cushion		
Port size [Note1]	M5×0.8		1/8"	

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol



TMI TMI–S TMIC TMIC–S

Stroke

Bore size(mm)	Standard stroke (mm)	Max.std stroke(mm)
12	25 50 75 100 125 150 200	200
16	25 50 75 100 125 150 200	200
20	25 50 75 100 125 150 200 250	250
25	25 50 75 100 125 150 200 250	250

[Note] Consult us for non–standard stroke.

Product feature

1. A new type of cylinder combined with guide frame and standard cylinder.
2. Brass bearing: It is suitable for the action that has radial load resistance. with greater torsion stiffness.
   Linear bearing: It is suitable for push-up action, or where high precision and high load capacity are required, especially for occasions requiring low friction.
3. The special design of the guide frame body provides a multi-directional mounting.

Ordering code

TMIC M 20 X 50 S G

① ② ③ ④ ⑤ ⑥

①Model	TMI: With guide frame cylinder	TMIC: With guide frame cylinder(with cushion)
②Bearing type	M: Brass bearing	L: Linear bearing
③Bore size	12	16 20 25
④Stroke	Refer to stroke table for details	
⑤Magnet	Blank: Without magnet	S: With magnet
⑥Thread type [Note2]	G: G thread	

[Note1] TMI, TMIC matching cylinder is Perpendicular 90° back cover.
[Note2] Standard thread is blank here.

Ordering code(for guide frame)

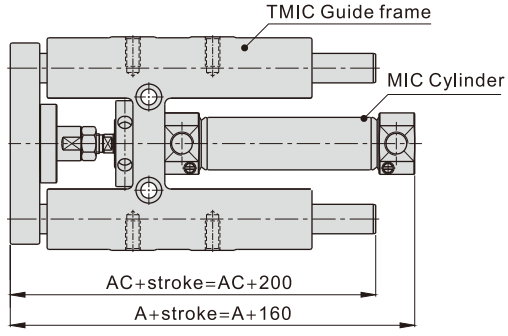
F – TMIC M 20 X 50

① ② ③ ④ ⑤

①Accessory code	F: Accessory	
②Model	TMI: With guide frame cylinder	TMIC: With guide frame cylinder(with cushion)
③Bearing type	M: Brass bearing	L: Linear bearing
④Bore size	12	16 20 25
⑤Stroke	Refer to stroke table for details	

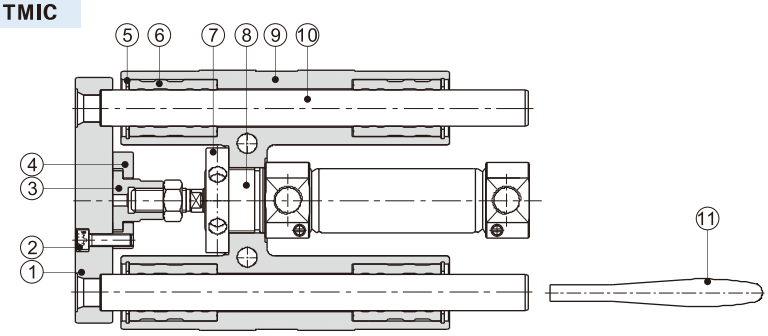
Ordering instructions:

1. When ordering guide frame separately, only standard strokes from the stroke list can be ordered.
   (Other stroke can only be ordered by non-standard)
2. To order non-standard stroke cylinders with guide frame, the combination is as follows:
   Non-standard stroke cylinder + guide frame of the upper standard stroke.
   Example: MIC20X160 (non-standard stroke cylinder)
   +F-TMICM20X200(Standard stroke guide frame).
   The dimension is as follows:



Inner structure and material of major parts

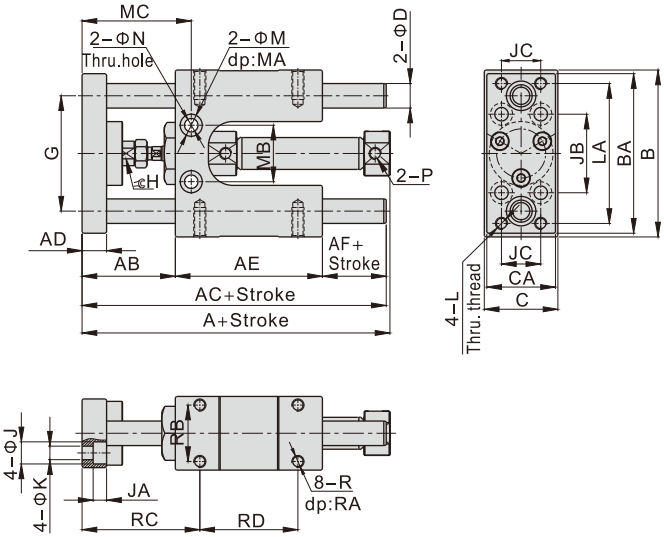
TMIC



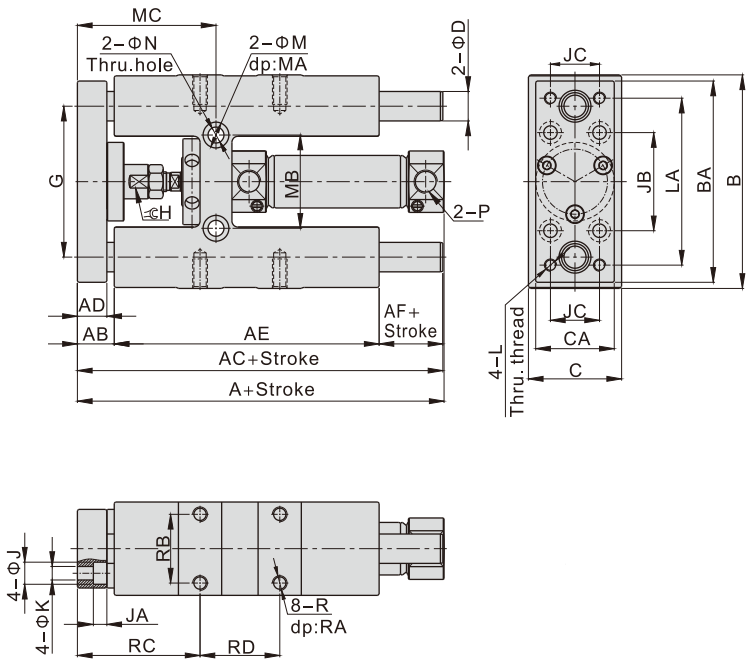
NO.	Item	Material
1	Fixed plate	Aluminum alloy
2	Bolt	Carbon steel
3	Floating nut	Carbon steel
4	Floating baffle	Carbon steel
5	C clip	Spring steel
6	Linear bearing	–
	Brass bearing	Brass
7	Nut	Carbon steel
8	MI、MIC Cylinder	Unit
9	Guide frame	Aluminum alloy
10	Guider(Linear)	Alloy steel
	Guider(Brass)	Carbon steel
11	Wrench	Carbon steel

Dimensions

TMI12/TMIC16



TMIC20/TMIC25

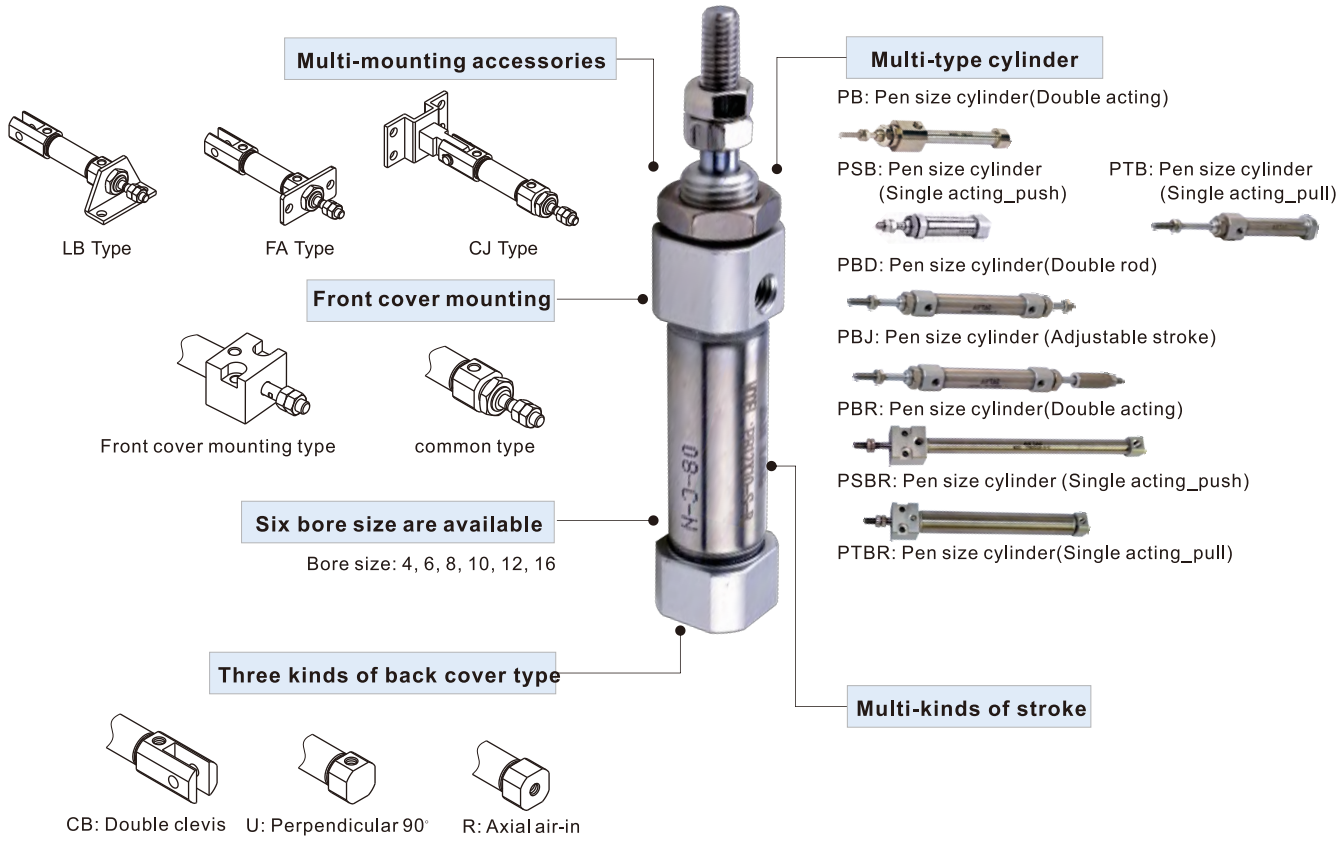


Bore size\Item	A	AB	AC	AD	AE	AF	B	BA	C	CA	D	G	H	J	JA	JB	JC	K
12	100.5	38	99	10	60	1	68	65	30	28	10(8)	47	9	9	5.5	32	16	5.5
16	106.5	38	99	10	60	1	68	65	30	28	10(8)	47	9	9	5.5	32	16	5.5
20	124	15	124	12	108	1	87	82	38	32	12(10)	61.5	13	9	5.5	40	20	5.5
25	125.5	15	124	12	108	1	87	82	38	32	16(12)	61.5	13	9	5.5	40	20	5.5

Bore size\Item	L	LA	M	MA	MB	MC	N	P	R	RA	RB	RC	RD
12	M5×0.8	57	9	4	23	44.5	5.5	M5×0.8	M5×0.8	12	23	48	40
16	M5×0.8	57	9	4	23	44.5	5.5	M5×0.8	M5×0.8	12	23	48	40
20	M5×0.8	68	10.5	6.5	38	56.5	6.5	1/8"	M6×1.0	12	28	50	32.5
25	M5×0.8	68	10.5	6.5	38	56.5	6.5	1/8"	M6×1.0	12	28	50	32.5

[Note]The values in "()" in the above table are TMIL, TMICL series sizes.

Compendium of PB Series



Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa) 0.1	0.2	0.3	0.4	0.5	0.6	0.7
4	2	Single acting_Push side		12.6	-	0.3	1.6	2.8	4.1	5.3	6.6
		Double acting	Push side	12.6	1.3	2.5	3.8	5.0	6.3	7.6	8.8
			Pull side	9.4	0.9	1.9	2.8	3.8	4.7	5.6	6.6
6	3	Single acting	Push side	28.3	-	2.2	5.0	7.8	10.6	13.5	16.3
			Pull side	21.2	-	0.7	2.9	5.0	7.1	9.2	11.3
		Double acting	Push side	28.3	2.8	5.7	8.5	11.3	14.2	17.0	19.8
			Pull side	21.2	2.1	4.2	6.4	8.5	10.6	12.7	14.8
8	4	Single acting	Push side	50.3	-	3.6	8.6	13.6	18.7	23.7	28.7
			Pull side	37.7	-	1.0	4.8	8.6	12.4	16.1	19.9
		Double acting	Push side	50.3	5.0	10.1	15.1	20.1	25.2	30.2	35.2
			Pull side	37.7	3.8	7.5	11.3	15.1	18.9	22.6	26.4
10	4	Single acting	Push side	78.5	-	6.2	14.1	21.9	29.8	37.6	45.5
			Pull side	65.9	-	3.7	10.3	16.9	23.5	30.1	36.7
		Double acting	Push side	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
			Pull side	65.9	6.6	13.2	19.8	26.4	33.0	39.5	46.2
12	5	Single acting	Push side	113.0	-	9.0	20.3	31.6	42.9	54.2	65.5
			Pull side	93.4	-	5.1	14.4	23.8	33.1	42.4	51.8
		Double acting	Push side	113.0	11.3	22.6	33.9	45.2	56.5	67.8	79.1
			Pull side	93.4	9.3	18.7	28.0	37.4	46.7	56.0	65.4
16	5	Single acting	Push side	201.0	-	14.5	34.6	54.7	74.8	94.9	115.0
			Pull side	181.3	-	10.6	28.7	46.8	65.0	83.1	101.2
		Double acting	Push side	201.0	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull side	181.3	18.1	36.3	54.4	72.5	90.7	108.8	126.9

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
7. The load of the cylinder with the diameter of Φ4 needs to be coaxial with the cylinder to avoid side load, otherwise, piston rod will be bent and deformed and damage the thread at the end of the rod. Single-acting type can not be added in return.
8. If the cylinder is dismantled and stored for a long time, Please to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

Pen size cylinder

PB Series

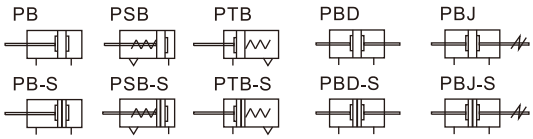


Specification

Bore size(mm)		4	6	10	12	16
Acting type		Double acting、Single acting_Push	Double acting、Single acting			
Fluid		Air(to be filtered by 40μm filter element)				
Operating pressure	Double acting	0.2~0.7MPa(28~100psi)(2.0~7.0bar)	0.15~0.7MPa(22~100psi)(1.5~7.0bar)			
	Single acting	0.3~0.7MPa(45~100psi)(3.0~7.0bar)	0.2~0.7MPa(28~100psi)(2.0~7.0bar)			
Proof pressure		1.2MPa(175psi)(12bar)				
Temperature ℃		-20~70				
Speed range mm/s		50~500	50~800			
Stroke tolerance		$^{+0.5}_{0}$	0~150 $^{+1.0}_{0}$ >150 $^{+1.5}_{0}$			
Cushion type		No cushion	Bumper			
Port size		Tube	M5×0.8			

Add) Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. JIS standard is implemented.
2. It belongs to mini cylinder that has compact structure, small volume and light weight.
3. The guide precision of piston rod is high and no additional lubricant is needed.
4. PB4 and PB6 can only be front mounted. PB10, PB12 and PB16 has the flexibility of both front and rear mount.
5. Piston rod and cylinder body with the material of stainless steel make the cylinder adapt general working environment with corrosivity.
6. There are cylinders and accessories with several specifications for installation for your choice.
7. It has small cylinder diameter and quick reaction, suitable for the working environment with higher frequency.

Stroke

Bore size (mm)		Standard stroke (mm)	Max.std stroke	Max. stroke
PB	4	5 10 15 20	20	20
	6	10 15 20 25 30 40 50 60	60	60
	10	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200	200	200
	12	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200	200	300
	16	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300	300	300
PBD	6	5 10 15 20 25 30 40 50	50	–
PBD PBJ	10	10 15 20 25 30 40 50 60 75 80 100	100	–
	12	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200	200	–
	16	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200	200	–
PSB	4	5 10 15 20	–	–
PSB PTB	6	5 10 15 20 25 30 40 50 60	–	–
	10	5 10 15 20 25 30 40 50 60	–	–
	12	5 10 15 20 25 30 40 50 60	–	–
	16	5 10 15 20 25 30 40 50 60	–	–

[Note] Consult us for non-standard stroke.

Ordering code

PB 10×30 S CB □

PBD10×30 S □

PBJ 10×30–10 S □

① ② ③ ④ ⑤ ⑥ ⑦

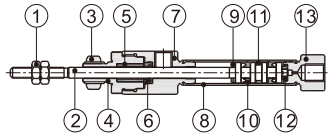
①Model	②Bore size	③Stroke	④Adjustable stroke	⑤Magnet	⑥Back cover			⑦Mounting type[Note1]	
				Blank: Without magnet	Model	Back cover	Bore size	Model	Mounting type
PB: Pen size cylinder (Double acting) PSB: Pen size cylinder (Single acting_push)	4 6 10 12 16	Refer to stroke table for details	No this code	Blank: Without magnet S: With magne	PB PSB	CB: Double clevis	Φ10~Φ16	PB PSB PTB	Blank: No accessories FA: FA type LB: LB type CJ: CJ type
						U: Perpendicular 90°	Φ10~Φ16		
						R: Axial air-in	Φ6~Φ16		
PTB: Pen size cylinder (Single acting_pull) PBD: Pen size cylinder (Double rod)	6 10 12 16				PTB	CB: Double clevis	Φ10~Φ16		
						R: Axial air-in	Φ6~Φ16		
PBJ: Pen size cylinder (Adjustable stroke)	10 12 16		10 20 30 40 50 75 100		PBD PBJ	No this code	–	PBD PBJ	Blank: No accessories FA: FA type LB: LB type

[Note1] Please refer to page 308 for accessory parts.

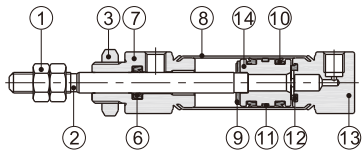
Inner structure and material of major parts

Double acting without magnet

Φ6



Φ10~Φ16

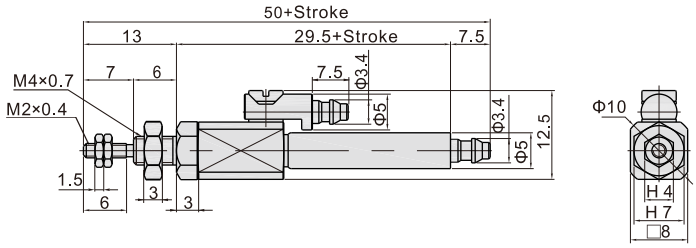


NO.	Item	Material
1	Rod nut	Carbon steel
2	Piston rod	SUS304
3	Front cover nut	Carbon steel
4	Packing retainer	Brass(Φ4)\Aluminum alloy(Others)
5	Bushing	Wear resistant material
6	Front cover O-ring	NBR
7	Front cover	Brass(Φ4)\Aluminum alloy(Others)
8	Barrel	Bronze(Φ4)\SUS304(Others)
9	Bumper	TPU
10	Piston seal	NBR
11	Wear ring	Wear resistant material
12	Bumper	TPU
13	Back cover	Brass(Φ4)\Aluminum alloy(Others)
14	Piston	Aluminum alloy(Φ16)\Stainless steel(Others)

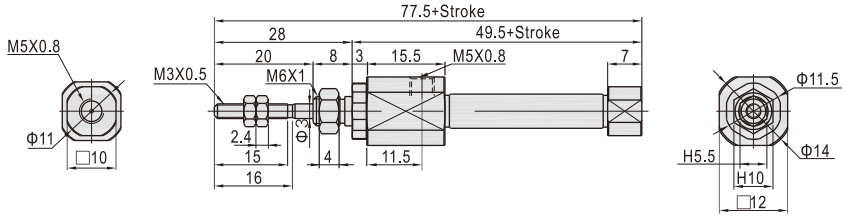
Dimensions

PB

Φ4(Without magnet)(R Type)



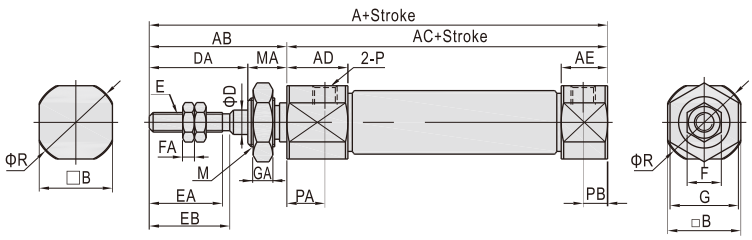
Φ6(R Type)



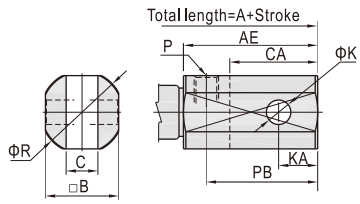
Note) Only axial air intake type of back cover is available for Φ4, Φ6mm bore size.

Φ10~Φ16

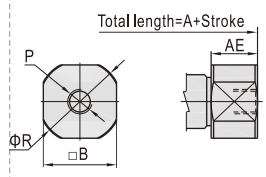
U Type(Perpendicular 90°)



CB Type(Double clevis)



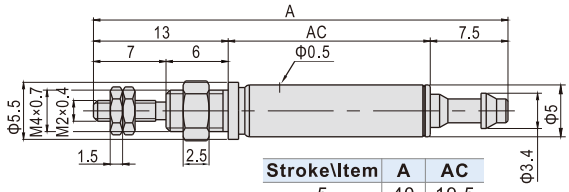
R Type(Axial air-in)



Bore size\Item	A			AB	AC	AD	AE		B	C	CA	D	DA	E	EA	EB	F	FA	G	GA	K	KA	M	MA	P	PA	PB		R
Back cover	U	CB	R				U/R	CB																			U	CB	
10	74	87	74	28	46	11.5	9.5	22.5	12	3.3	13	4	20	M4×0.7	15	16.5	7	3	11	4	3.3	5	M8×1.0	8	M5×0.8	7.5	5	18	14
12	74	92	74	28	46	11.5	9.5	27.5	15	6.6	18	5	20	M5×0.8	15	16.5	8	4	14	4	5	8	M10×1.0	8	M5×0.8	7.5	5	23	17
16	76	94	76	28	48	12	9.5	27.5	18	6.6	18	5	20	M5×0.8	15	16.5	8	4	14	4	5	8	M10×1.0	8	M5×0.8	7.5	5	23	20

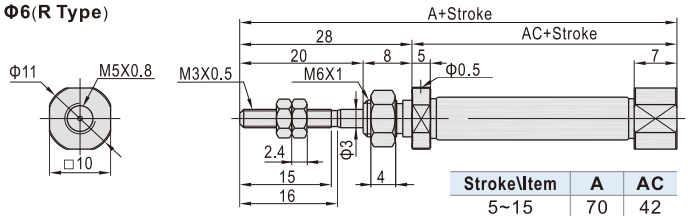
Remark:The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

PSB Φ4(Without magnet)(R Type)



Stroke\Item	A	AC
5	40	19.5
10	49	28.5
15	58	37.5
20	67	46.5

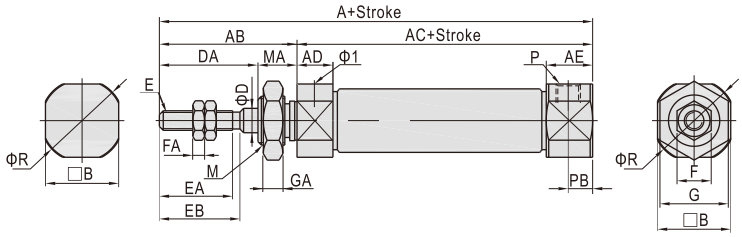
Φ6(R Type)



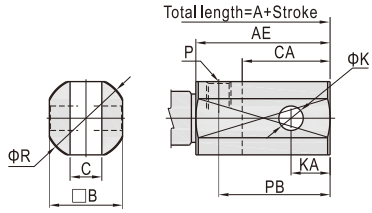
Stroke\Item	A	AC
5~15	70	42
16~30	79	51
31~45	83	55
46~60	97	69

Note) Only axial air intake type of back cover is available for Φ4, Φ6mm bore size.

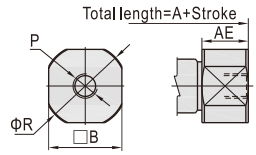
Φ10~Φ16
U Type(Perpendicular 90°)



CB Type(Double clevis)



R Type(Axial air-in)

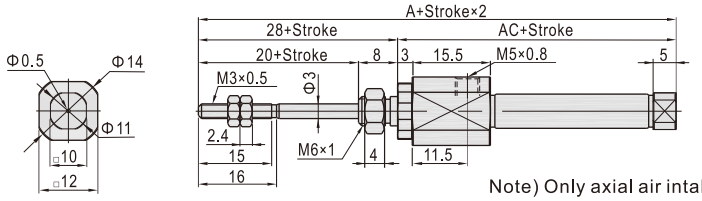


Bore size\Item	A												AB	AC				AD	AE		B	C
Back cover	U				CB				R					–					U/R	CB		
Stroke	5~15	16~30	31~45	46~60	5~15	16~30	31~45	46~60	5~15	16~30	31~45	46~60		5~15	16~30	31~45	46~60		-	-		
10	73.5	81	93	105	86.5	94	106	118	73.5	81	93	105	28	45.5	53	65	77	5	9.5	22.5	12	3.3
12	73.5	81	93	105	91.5	99	111	123	73.5	81	93	105	28	45.5	53	65	77	5	9.5	27.5	15	6.6
16	74.5	83	95	107	92.5	101	113	125	74.5	83	95	107	28	46.5	55	67	79	5	9.5	27.5	18	6.6

Bore size\Item	CA	D	DA	E	EA	EB	F	FA	G	GA	K	KA	M	MA	P	PB		R
Back cover																U	CB	
10	13	4	20	M4×0.7	15	16.5	7	3	11	4	3.3	5	M8×1.0	8	M5×0.8	5	18	14
12	18	5	20	M5×0.8	15	16.5	8	4	14	4	5	8	M10×1.0	8	M5×0.8	5	23	17
16	18	5	20	M5×0.8	15	16.5	8	4	14	4	5	8	M10×1.0	8	M5×0.8	5	23	20

Remark：The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

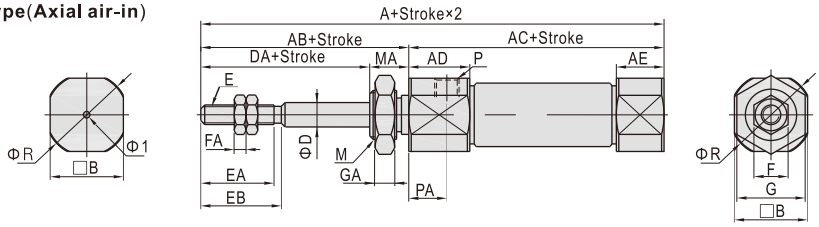
PTB Φ6(R Type)



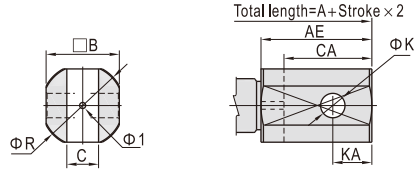
Stroke\Item	A	AC
5~15	82	54
16~30	91	63
31~45	95	67
46~60	109	81

Note) Only axial air intake type of back cover is available for Φ6mm bore size.

Φ10~Φ16
R Type(Axial air-in)



CB Type(Double clevis)



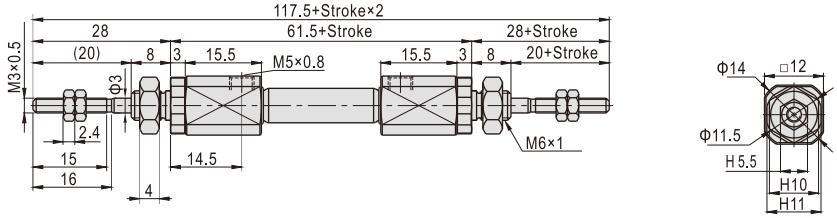
Bore size\Item	A								AB	AC				AD
Back cover	R				CB					–				
Stroke	5~15	16~30	31~45	46~60	5~15	16~30	31~45	46~60		5~15	16~30	31~45	46~60	
10	76.5	84	96	108	89.5	97	109	121	28	48.5	56	68	80	11.5
12	76.5	84	96	108	94.5	102	114	126	28	48.5	56	68	80	11.5
16	77.5	86	98	110	95.5	104	116	128	28	49.5	58	70	82	12

Bore size\Item	AE		B	C	CA	D	DA	E	EA	EB	F	FA	G	GA	K	KA	M	MA	P	PA	R
Back cover	R	CB																			
10	5	18	12	3.3	13	4	20	M4×0.7	15	16.5	7	3	11	4	3.3	5	M8×1.0	8	M5×0.8	7.5	14
12	5	23	15	6.6	18	5	20	M5×0.8	15	16.5	8	4	14	4	5	8	M10×1.0	8	M5×0.8	7.5	17
16	5	23	18	6.6	18	5	20	M5×0.8	15	16.5	8	4	14	4	5	8	M10×1.0	8	M5×0.8	7.5	20

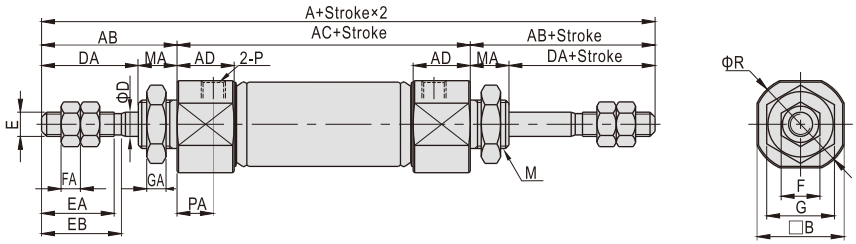
Note)Φ10~Φ16 bore sizes don't have perpendicular(90°) air-in.
Remark：The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

PBD

Φ6

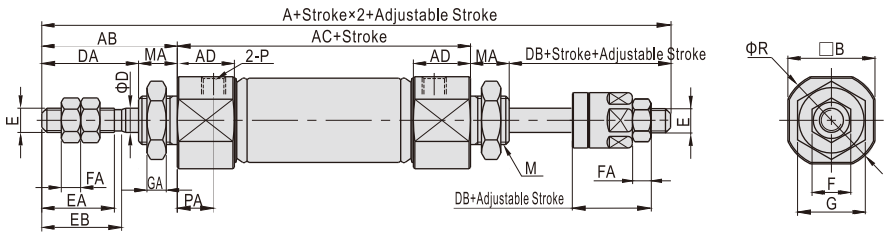


Φ10~Φ16



PBJ

Φ10~Φ16



Bore size\Item	A		AB	AC	AD	B	D	DA	DB	E	EA	EB	F	FA	G	GA	M	MA	P	PA
Model	PBD	PBJ																		
10	104	99	28	48	11.5	12	4	20	15	M4×0.7	15	16.5	7	3	11	4	M8×1.0	8	M5×0.8	7.5
12	104	101	28	48	11.5	15	5	20	17	M5×0.8	15	16.5	8	4	14	4	M10×1.0	8	M5×0.8	7.5
16	107	104	28	51	12	18	5	20	17	M5×0.8	15	16.5	8	4	14	4	M10×1.0	8	M5×0.8	7.5

Remark：The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

Pen size cylinder

PBR Series

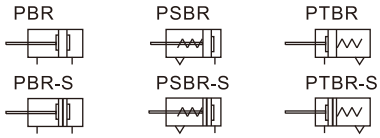


Specification

Bore size(mm)		6	8	10	12	16
Acting type		Double acting、Single acting				
Fluid		Air(to be filtered by 40μm filter element)				
Operating pressure	Double acting	0.15~0.7MPa(22~100psi)(1.5~7.0bar)				
	Single acting	0.2~0.7MPa(28~100psi)(2.0~7.0bar)				
Proof pressure		1.2MPa(175psi)(12bar)				
Temperature ℃		-20~70				
Speed range mm/s		50~800				
Stroke tolerance		$0\sim150^{+1.0}_{0}$ $>150^{+1.5}_{0}$				
Cushion type		Bumper				
Port size		M5×0.8				

Add) Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. JIS standard is implemented.
2. It belongs to mini cylinder that has compact structure, small volume and light weight.
3. The guide precision of piston rod is high and no additional lubricant is needed.
4. Screw holes are designed for mounting directly at the front cover without any accessories.
5. Piston rod stainless steel barrel make the cylinder adapt general corrosive working environment.
6. It has small cylinder diameter and quick reaction, suitable for the working environment with higher frequency.

Stroke

Bore size (mm)		Standard stroke (mm)	Max.std stroke	Max. stroke
PBR	6	10 15 20 25 30 40 50 60	60	60
	8	10 15 20 25 30 40 50 60 75 80 100 125 150	150	200
	10	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200	200	200
	12	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200	200	300
	16	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300	300	300
PSBR PTBR	6	5 10 15 20 25 30 40 50 60	-	–
	8	5 10 15 20 25 30 40 50 60	–	–
	10	5 10 15 20 25 30 40 50 60	–	–
	12	5 10 15 20 25 30 40 50 60 75	–	–
	16	5 10 15 20 25 30 40 50 60 75 100	–	–

[Note] Consult us for non-standard stroke.

Ordering code

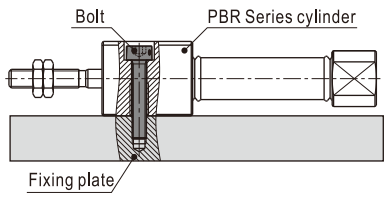
PBR 16×30 S U

① ② ③ ④ ⑤

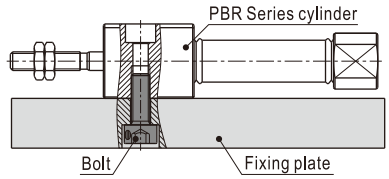
①Model	②Bore size	③Stroke	④Magnet	⑤Back cover		
				Model	Back cover	Bore size
PBR: Pen size cylinder(Double acting) PSBR: Pen size cylinder (Single acting_push) PTBR: Pen size cylinder(Single acting_pull)	6 8 10 12 16	Refer to stroke table for details	Blank: Without magnet S: With magnet	PBR PSBR	U: Perpendicular 90° R: Axial air-in	Φ8~Φ16 Φ6~Φ16
				PTBR	R: Axial air-in	Φ6~Φ16

Mounting type

Top bolt mounting



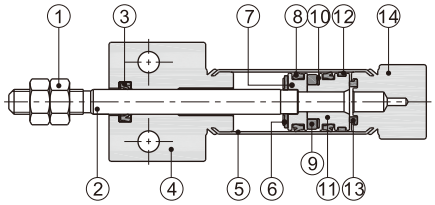
Bottom bolt mounting



Note: Select appropriate bolt based on actual working conditions when mounting from the bottom.

Inner structure and material of major parts

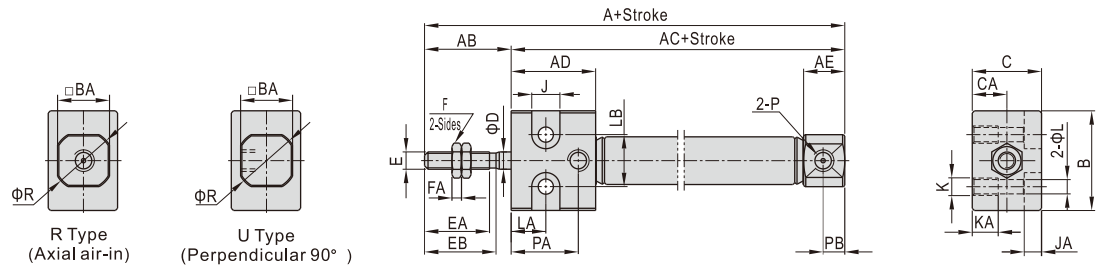
Double acting with magnet



NO.	Item	Material	NO.	Item	Material
1	Rod nut	Carbon steel	8	Piston seal	NBR
2	Piston rod	SUS304	9	Magnet	Sintered metal(Neodymium-iron-boron)
3	Front cover O-ring	NBR	10	Magnet washer	NBR
4	Front cover	Aluminum alloy	11	Magnet holder	SUS303\Aluminum alloy
5	Barrel	SUS316L	12	Wear ring	Wear resistant material
6	Bumper	TPU	13	Bumper	TPU
7	Piston	SUS303\Aluminum alloy	14	Back cover	Aluminum alloy

Dimensions

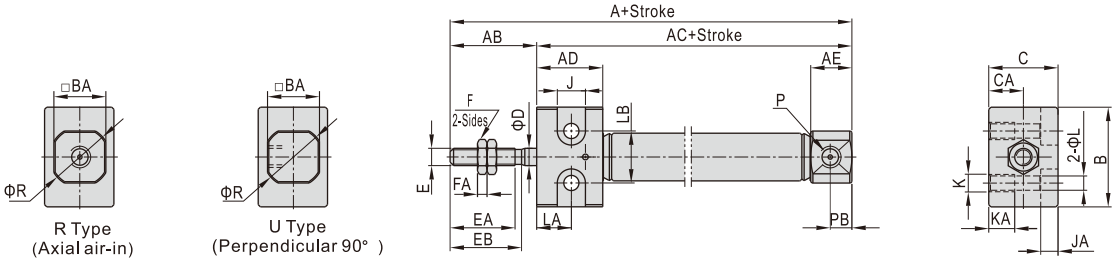
PBR



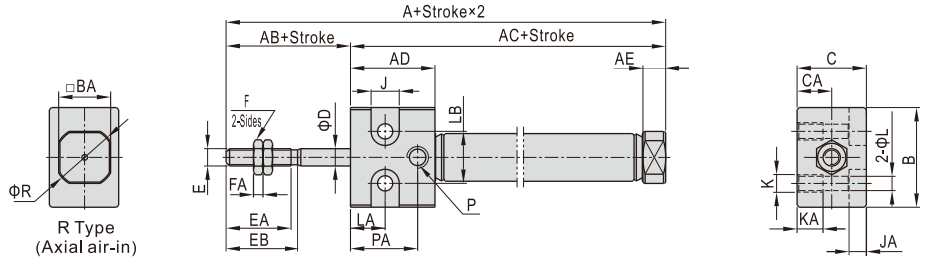
Bore size\Item	A	AB	AC	AD	AE	B	BA	C	CA	D	E	EA	EB	F	FA	J	JA	K	KA	L	LA	LB	P	PA	PB	R
6	70	20	50	19	7	17	10	14	7	3	M3×0.5	15	16	5.5	2.4	6.5	4	M4×0.7	7	3.3	8	10	M5×0.8	14	-	11
8	74	20	54	19.5	9.5	19	12	16	8	4	M4×0.7	15	16.5	7	3	6.5	4	M4×0.7	7	3.3	8	12	M5×0.8	15	5	14
10	74	20	54	19.5	9.5	19	12	16	8	4	M4×0.7	15	16.5	7	3	6.5	4	M4×0.7	7	3.3	8	12	M5×0.8	15.5	5	14
12	74	20	54	19.5	9.5	24	15	20	10	5	M5×0.8	15	16.5	8	4	8	5	M5×0.8	8	4.3	8	16	M5×0.8	15.5	5	17
16	76	20	56	20	9.5	24	18	20	10	6	M5×0.8	15	16.5	8	4	8	5	M5×0.8	8	4.3	8	16	M5×0.8	15.5	5	20

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder. Only axial air intake type of back cover is available for Φ6mm bore size.

PSBR



PTBR



Bore size\Item	A												AC											
Model	PSBR						PTBR						PSBR						PTBR					
Stroke	5~15	16~30	31~45	46~60	61~75	76~100	5~15	16~30	31~45	46~60	61~75	76~100	5~15	16~30	31~45	46~60	61~75	76~100	5~15	16~30	31~45	46~60	61~75	76~100
6	70	79	83	97	-	-	74.5	83.5	87.5	101.5	-	-	50	59	63	77	-	-	54.5	63.5	67.5	81.5	-	-
8	76.5	82.5	93.5	101.5	-	-	78.5	84.5	95.5	103.5	-	-	56.5	62.5	73.5	81.5	-	-	58.5	64.5	75.5	83.5	-	-
10	73.5	81	93	105	-	-	76.5	84	96	108	-	-	53.5	61	73	85	-	-	56.5	64	76	88	-	-
12	73.5	81	93	105	111.5	-	76.5	84	96	108	114.5	-	53.5	61	73	85	91.5	-	56.5	64	76	88	94.5	-
16	74.5	83	95	107	113	119	77.5	86	98	110	116	122	54.5	63	75	87	93	99	57.5	66	78	90	96	102

Bore size\Item	AD		AB	AE		B	BA	C	CA	D	E	EA	EB	F	FA	J	JA	K	KA	L	LA	LB	P	PA	PB	R
Model	PSBR	PTBR		PSBR	PTBR																					
6	13	19	20	7	5	17	10	14	7	3	M3×0.5	15	16	5.5	2.4	6.5	4	M4×0.7	7	3.3	8	10	M5×0.8	14	-	11
8	13	19.5	20	9.5	5	19	12	16	8	4	M4×0.7	15	16.5	7	3	6.5	4	M4×0.7	7	3.3	8	12	M5×0.8	15	5	14
10	13	19.5	20	9.5	5	19	12	16	8	4	M4×0.7	15	16.5	7	3	6.5	4	M4×0.7	7	3.3	8	12	M5×0.8	15.5	5	14
12	13	19.5	20	9.5	5	24	15	20	10	5	M5×0.8	15	16.5	8	4	8	5	M5×0.8	8	4.3	8	16	M5×0.8	15.5	5	17
16	13	20	20	9.5	5	24	18	20	10	6	M5×0.8	15	16.5	8	4	8	5	M5×0.8	8	4.3	8	16	M5×0.8	15.5	5	20

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder. Only axial air intake type of back cover is available for Φ6mm bore size.

List for ordering code of accessories

Accessories / Bore size	Mounting accessories			Knuckle				Sensor switch		
	LB	FA	CJ	I	Y	F	U	CMSG	DMSG	EMSG
4	-	-	-	-	-	-	-	-	-	-
6	F-PB6LB	F-PB6FA	-	F-PB6I	F-PB6Y	F-M3X040F	-	CMSG	DMSG	EMSG
10	F-PB10LB	F-PB10FA	F-PB10CJ	F-PB10I	F-PB10Y	F-M4X070F	F-M4X070U			
12	F-PB12LB	F-PB12FA	F-PB12CJ	F-PB12I	F-PB12Y	F-M5X080F	F-M5X080U			
16			F-PB16CJ							

Accessory selection

Accessories / Cylinder model		Mounting accessories			Knuckle				Sensor switch		
		LB	FA	CJ	I	Y	U [1]	F	CMSG	DMSG	EMSG
PB	Standard	●	●	●	●	●	●	●	×	×	×
	With magnet	●	●	●	●	●	●	●	●	●	●
PSB PTB	Standard	●	●	●	●	●	●	●	×	×	×
	With magnet	●	●	●	●	●	●	●	●	●	●
PBD PBJ	Standard	●	●	×	●	●	●	●	×	×	×
	With magnet	●	●	×	●	●	●	●	●	●	●

Material of accessories

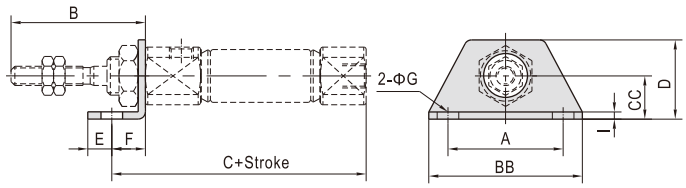
Accessories / Bore size	Mounting accessories			Knuckle			
	LB	FA	CJ	I	Y	F	U
4~16	△	△	△	□	□	□	□

△——SPCC；□—Carbon stee；

[Note1] Please refer to P572~575 for knuckle detail.

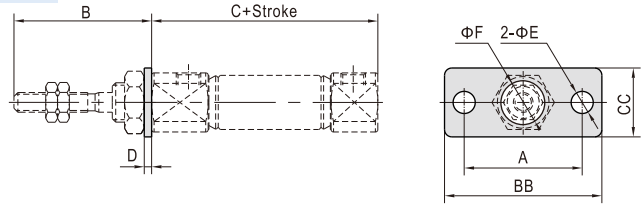
Dimensions

LB



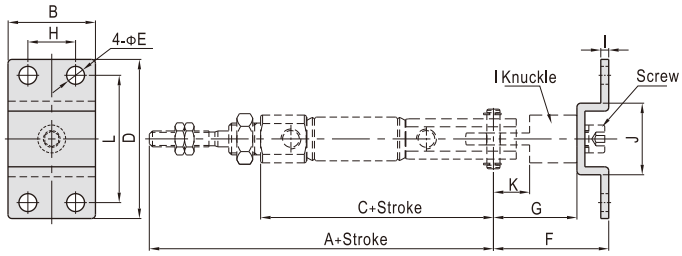
Bore size\Item	A	B	BB	C	CC	D	E	F	G	I
6	24	28	32	56.5	9	16.5	5	7	4.5	1.5
10	24	28	32	53	9	16.5	5	7	4.5	2
12	33	28	42	55	14	25	6	9	5.5	2.5
16	33	28	42	57	14	25	6	9	5.5	2.5

FA



Bore size\Item	A	B	BB	C	CC	D	E	F
6	24	28	32	49.5	14	1.5	4.5	6.3
10	24	28	32	46	14	2	4.5	8.2
12	33	28	42	46	20	3	5.5	10.2
16	33	28	42	48	20	3	5.5	10.2

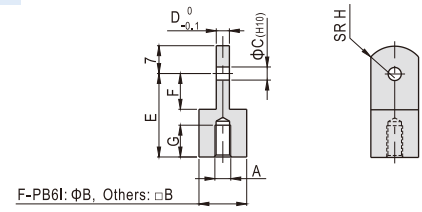
CJ



Bore size\Item	A	B	C	D	E	F	G	H	I	J	K	L
10	82	22	54	40	4.5	29	21	12	2	18	9.1	32
12	84	28	56	48	5.5	35	25	16	2.5	20.4	14.1	38
16	86	28	58	48	5.5	35	25	16	2.5	20.4	14.1	38

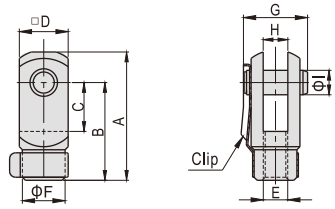
[Note] CJ type accessory includes I knuckle and PIN. It need to be matched with I knuckle and with relevant PIN.

I Knuckle



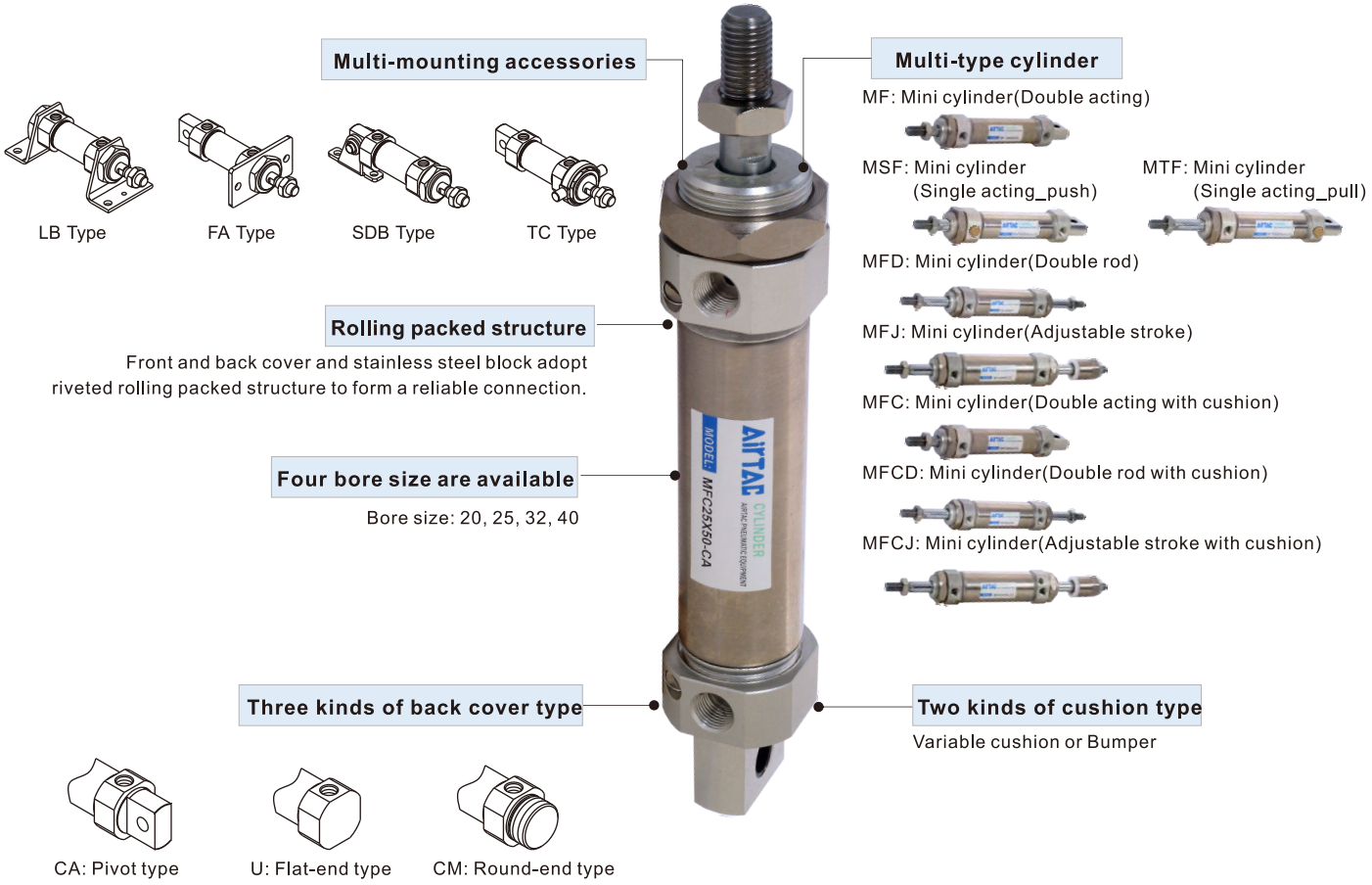
Bore size\Item	A	B	C	D	E	F	G	H
F-PB6I	M3×0.5	6	3	3	12	5	5	5
F-PB10I	M4×0.7	12	3.3	3	21	9.1	7.5	8
F-PB12I	M5×0.8	12	5	6.3	25	14.1	7.5	12

Y Knuckle



Bore size\Item	A	B	C	D	E	F	G	H	I
F-PB6Y	15.5	12	5	6	M3×0.5	6	9	3	3
F-PB10Y	28	21	10.2	12	M4×0.7	10	15.5	3.2	3.3
F-PB12Y	28	21	10.2	12	M5×0.8	10	15.5	6.5	5

Compendium of MF Series



Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)						
					0.1	0.2	0.3	0.4	0.5	0.6	0.7
20	8	Single acting	Push side	314.0	-	24.3	55.7	87.1	117.5	149.9	181.3
			Pull side	263.8	-	14.3	40.6	67.0	93.4	119.8	146.1
		Double acting	Push side	314.0	31.4	62.8	94.2	125.6	157.0	188.4	219.8
			Pull side	263.8	26.4	52.8	79.1	105.5	131.9	158.3	184.7
25	10	Single acting	Push side	490.6	-	45.6	94.7	143.8	192.8	241.9	290.9
			Pull side	412.1	-	29.9	71.1	112.4	153.6	194.8	236.0
		Double acting	Push side	490.6	49.1	98.1	147.2	196.2	245.3	294.4	343.4
			Pull side	412.1	41.2	82.4	123.6	164.8	206.1	247.3	288.5
32	12	Single acting	Push side	804.3	-	82.2	162.6	242.9	323.3	403.7	484.1
			Pull side	691.2	-	59.6	128.6	197.7	266.8	335.9	405.0
		Double acting	Push side	804.3	80.4	160.9	241.3	321.7	402.2	482.6	563.0
			Pull side	691.2	69.1	138.2	207.4	276.5	345.6	414.7	483.8
40	16	Single acting	Push side	1256.6	-	158.5	284.1	409.7	535.3	660.9	786.5
			Pull side	1055.6	-	118.3	223.8	329.3	434.8	540.3	645.8
		Double acting	Push side	1256.6	125.7	251.3	377.0	502.6	628.3	754.0	879.6
			Pull side	1055.6	105.6	211.1	316.7	422.2	527.8	633.4	738.9

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
7. The cylinder shall be carried out test run without load before application. Prior to run, buffer shall be turned to the minimum and gradually released to avoid the damage on cylinder caused by excessive impact.
8. To avoid side load, otherwise, piston rod will be bent and deformed and damage the thread at the end of the rod. Single-acting type can not be added in return.
9. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

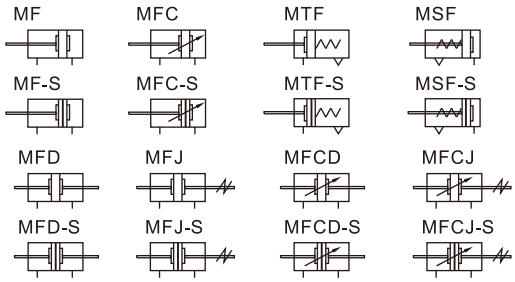


Specification

Bore size(mm)		20	25	32	40
Acting type		Double acting、Double acting with cushion、Single acting			
Fluid		Air(to be filtered by 40μm filter element)			
Operating pressure	Double acting	0.15~1.0MPa(22~145psi)(1.5~10.0bar)			
	Single acting	0.2~1.0MPa(28~145psi)(2.0~10.0bar)			
Proof pressure		1.5MPa(215psi)(15bar)			
Temperature ℃		-20~70			
Speed range mm/s		Double acting: 30~800 Single acting: 50~800			
Stroke tolerance		0~150 $^{+1.0}_{0}$ >150 $^{+1.5}_{0}$			
Cushion type		MFC/MFCD/MFCJ Series: Variable cushion; Other series: Bumper			
Port size [Note1]		1/8"			1/4"

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol



Stroke

Bore size (mm)		Standard stroke (mm)	Max.std stroke	Max. stroke
MF MFC	20	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500	500	800
	25	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500	500	800
	32	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500	500	800
	40	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500	500	800
MFD MFCD	20	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300	300	-
	25	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300	300	–
MFJ MFCJ	32	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500	500	–
	40	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500	500	–
MSF MTF	20	10 15 20 25 30 40 50 60 75 80 100 125 150	-	–
	25	10 15 20 25 30 40 50 60 75 80 100 125 150	–	–
	32	10 15 20 25 30 40 50 60 75 80 100 125 150	–	–
	40	10 15 20 25 30 40 50 60 75 80 100 125 150	–	–

[Note] Consult us for non-standard stroke.

Product feature

1. JIS standard is implemented.
2. Piston adopts heterogeneous two way seal structure. It has compact size and has the function of oil reservation.
3. Front cover owns fixed anti-impact pad which can reduce the impact of direction-change of the cylinder.
4. There are several modes of back cover, which makes the installation of cylinder more convenient.
5. Front and back cover and stainless steel block adopt riveted rolling packed structure to form a reliable connection.
6. The cylinder body has stainless steel pipes with high precision to produce high strength and corrosion resistance.
7. With the same bore size and stroke, cylinders of MF series are shorter than ISO6432 standard cylinders.
8. There are cylinders and mounting accessories with several specifications for your choice.

Ordering code

MF 32×50 S CM □ G
MFD 32×50 S □ G
MFJ 32×50–20 S □ G

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

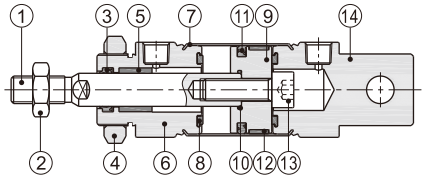
①Model	②Bore size	③Stroke	④Adjustable stroke	⑤Magnet	⑥Back cover	⑦Mounting type[Note1]	⑧Thread type
MF: Mini cylinder(Double acting) MFC: Mini cylinder (Double acting with cushion) MSF: Mini cylinder (Single acting_push) MTF: Mini cylinder (Single acting_pull)	20 25 32 40	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	CA: Pivot type U: Flat-end type CM: Round-end type	Blank: No accessories FA: FA type SDB: SDB type LB: LB type TC: TC type	G: G Thread
MFD: Mini cylinder(Double rod) MFCD: Mini cylinder (Double rod with cushion)					No this code	Blank: No accessories FA: FA type LB: LB type TC: TC type	
MFJ: Mini cylinder (Adjustable stroke) MFCJ: Mini cylinder (Adjustable stroke with cushion)			10 20 30 40 50 75 100				

[Note1] Please refer to page 315~316 for accessory parts.

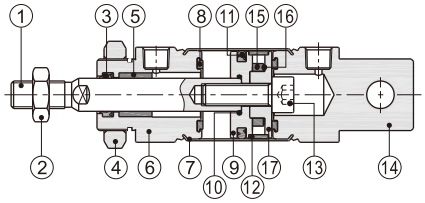
Inner structure and material of major parts

MF

Double acting without magnet type



Double acting with magnet

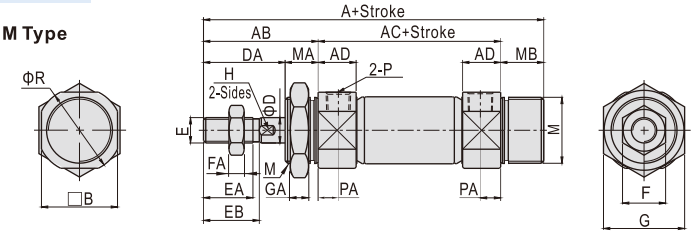


NO.	Item	Material
1	Piston rod	Carbon steel with 20 μ m chrome plated
2	Rod nut	Carbon steel
3	Front cover packing	NBR
4	Front cover nut	Carbon steel
5	Bushing	Wear resistant material
6	Front cover	Aluminum alloy
7	Barrel	SUS304
8	Bumper	TPU
9	Piston	Aluminum alloy
10	O-ring	NBR
11	Piston seal	NBR
12	Wear ring	Wear resistant material
13	Screw	Carbon steel
14	Back cover	Aluminum alloy
15	Magnet	Sintered metal (Neodymium-iron-boron)
16	Magnet washer	NBR
17	Magnet holder	Aluminum alloy

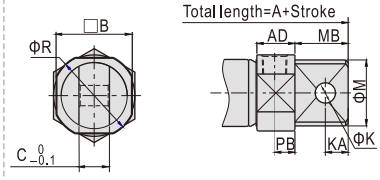
Dimensions

MF\MFC

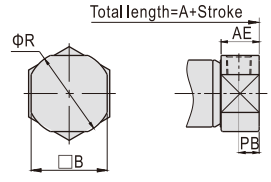
CM Type



CA Type



U Type

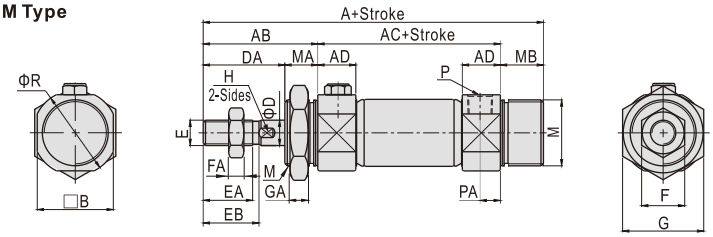


Bore size\Item	A			AB	AC	AD	AE	B	C	M		MA	MB		D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	P	PA	PB	R
Back cover	CM	CA	U							CM	CA		CA	CM																
20	116	124	103	41	62	14.5	14.5	25	12	M20×1.5	20	14	21	13	8	27	M8×1.25	16.5	18	12	6	26	8	6	8	9	1/8"	7.5	7.5	29
25	120	128	108	45	62	14.5	15.5	30	12	M26×1.5	26	14	21	13	10	31	M10×1.25	20.5	22	17	6	32	8	8	8	9	1/8"	7.5	8	33.5
32	122	136	110	45	64	14.5	15.5	34.5	20	M26×1.5	26	14	27	13	12	31	M10×1.25	20.5	22	17	6	32	8	10	10	12	1/8"	7.5	8	37.5
40	154	165	138.5	50	88	21.5	22	42.5	20	M32×2.0	32	16	27	16	16	34	M14×1.5	22.5	24	19	8	41	10	14	10	12	1/4"	11	11.5	46.5

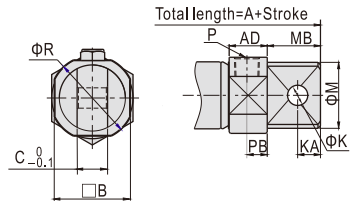
Remark:
1. The dimensions of magnet type cylinder are the same as non-magnet type cylinder.
2. The dimensions of MFC series are the same as MF series.

MSF

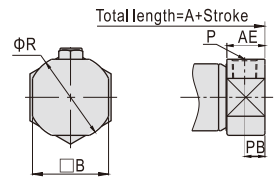
CM Type



CA Type



U Type



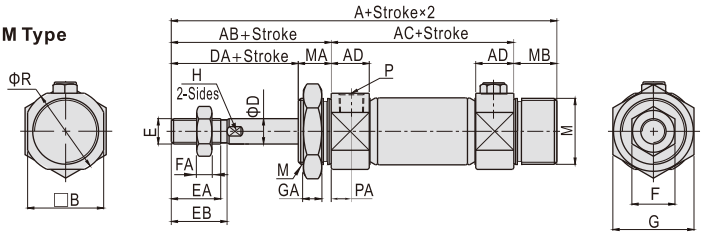
Bore size\Item	A									AC		
Back cover	CM			CA			U			-		
Stroke	1~50	51~10	101~150	1~50	51~100	101~150	1~50	51~100	101~150	1~50	51~100	101~150
20	141	166	191	149	174	199	128	153	178	87	112	137
25	145	170	195	153	178	203	133	158	183	87	112	137
32	147	172	197	161	186	211	135	160	185	89	114	139
40	179	204	229	190	215	240	163.5	188.5	213.5	113	138	163

Bore size\Item	AB	AD	AE	B	C	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	M		MA	MB		P	PA	PB	R
Back cover																		CM	CA		CA	CM				
20	41	14.5	14.5	25	12	8	27	M8×1.25	16.5	18	12	6	26	8	6	8	9	M20×1.5	20	14	21	13	1/8"	7.5	7.5	29
25	45	14.5	15.5	30	12	10	31	M10×1.25	20.5	22	17	6	32	8	8	8	9	M26×1.5	26	14	21	13	1/8"	7.5	8	33.5
32	45	14.5	15.5	34.5	20	12	31	M10×1.25	20.5	22	17	6	32	8	10	10	12	M26×1.5	26	14	27	13	1/8"	7.5	8	37.5
40	50	21.5	22	42.5	20	16	34	M14×1.5	22.5	24	19	8	41	10	14	10	12	M32×2.0	32	16	27	16	1/4"	11	11.5	46.5

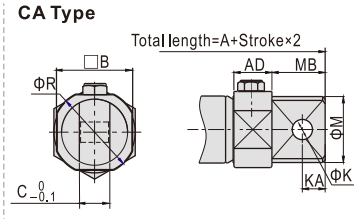
Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MTF

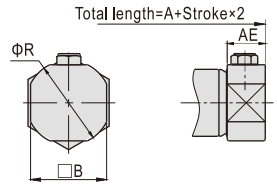
CM Type



CA Type



U Type

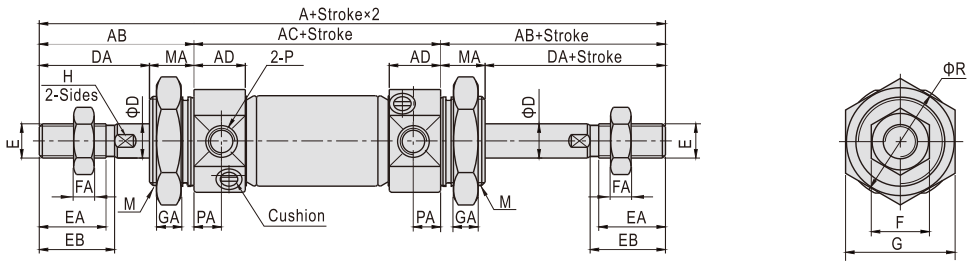


Bore size\Item	A									AC			M		MA	MB	
Back cover	CM			CA			U			-			CM	CA	–	CA	CM
Stroke	1~50	51~100	101~15	1~50	51~100	101~15	1~50	51~100	101~15	1~50	51~100	101~15	–	–	–	–	–
20	141	166	191	149	174	199	128	153	178	87	112	137	M20×1.5	20	14	21	13
25	145	170	195	153	178	203	133	158	183	87	112	137	M26×1.5	26	14	21	13
32	147	172	197	161	186	211	135	160	185	89	114	139	M26×1.5	26	14	27	13
40	179	204	229	190	215	240	163.5	188.5	213.5	113	138	163	M32×2.0	32	16	27	16

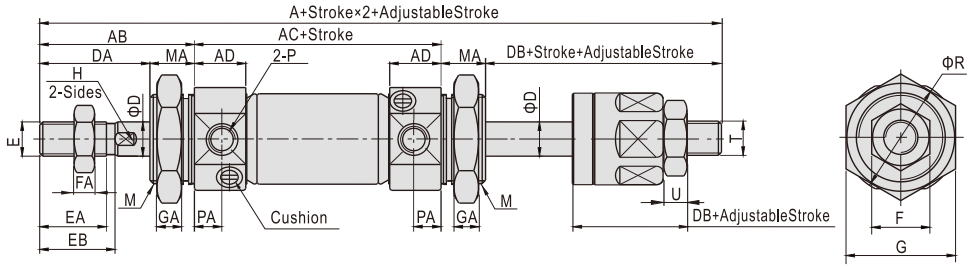
Bore size\Item	AB	AD	AE	B	C	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	P	PA	R
20	41	14.5	14.5	25	12	8	27	M8×1.25	16.5	18	12	6	26	8	6	8	9	1/8"	7.5	29
25	45	14.5	15.5	30	12	10	31	M10×1.25	20.5	22	17	6	32	8	8	8	9	1/8"	7.5	33.5
32	45	14.5	15.5	34.5	20	12	31	M10×1.25	20.5	22	17	6	32	8	10	10	12	1/8"	7.5	37.5
40	50	21.5	22	42.5	20	16	34	M14×1.5	22.5	24	19	8	41	10	14	10	12	1/4"	11	46.5

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MFD/MFCD



MFJ/MFCJ



Bore size\Item	A		AB	AC	AD	D	DA	DB	E	EA	EB	F	FA	G	GA	H	M	MA	P	PA	R	T	U
Back cover	MFD\MFCD	MFJ\MFCJ																					
20	144	141	41	62	14.5	8	27	24	M8×1.25	16.5	18	12	6	26	8	6	M20×1.5	14	1/8"	7.5	29	M8×1.25	5
25	152	148	45	62	14.5	10	31	27	M10×1.25	20.5	22	17	6	32	8	8	M26×1.5	14	1/8"	7.5	33.5	M10×1.25	6
32	154	150	45	64	14.5	12	31	27	M10×1.25	20.5	22	17	6	32	8	10	M26×1.5	14	1/8"	7.5	37.5	M10×1.25	6
40	188	182	50	88	21.5	16	34	28	M14×1.5	22.5	24	19	8	41	10	14	M32×2.0	16	1/4"	11	46.5	M12×1.25	7

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

List for ordering code of accessories

Accessories / Bore size	Mounting accessories				Knuckle				Sensor switch		
	LB	FA	TC	SDB	I	Y	F	U	CMSG	DMSG	EMSG
20	F-MF20LB	F-MF20FA	F-MF20TC	F-MF20SDB	F-MF20I	F-MF20Y	F-M8X125F	F-M8X125U	CMSG	DMSG	EMSG
25	F-MF32LB	F-MF32FA	F-MF32TC	F-MF32SDB	F-MF25I	F-MF25Y	F-M10X125F	F-M10X125U			
32											
40	F-MF40LB	F-MF40FA	F-MF40TC		F-MF40I	F-MF40Y	F-M14X150F	F-M14X150U			

Accessory selection

Accessories / Cylinder model		Mounting accessories				Knuckle				Sensor switch		
		LB	FA	SDB	TC	I	Y	U [1]	F	CMSG	DMSG	EMSG
MF MFC	Standard	●	●	●	●	●	●	●	●	×	×	×
	With magnet	●	●	●	●	●	●	●	●	●	●	●
MSF MTF	Standard	●	●	●	●	●	●	●	●	×	×	×
	With magnet	●	●	●	●	●	●	●	●	●	●	●
MFD MFCD	Standard	●	●	×	●	●	●	●	●	×	×	×
	With magnet	●	●	×	●	●	●	●	●	●	●	●
MFJ MFCJ	Standard	●	●	×	●	●	●	●	●	×	×	×
	With magnet	●	●	×	●	●	●	●	●	●	●	●

Material of accessories

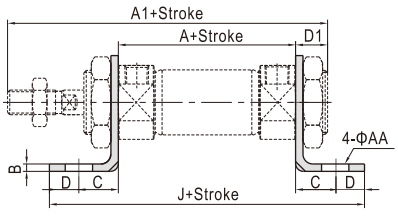
Accessories / Bore size	Mounting accessories				Knuckle			
	LB	FA	SDB	TC	I	Y	F	U
20~40	△	△	△	■	□	□	□	□

■——Cast steel; △——SPCC; □——Carbon steel

[Note1] Please refer to P572~575 for knuckle detail.

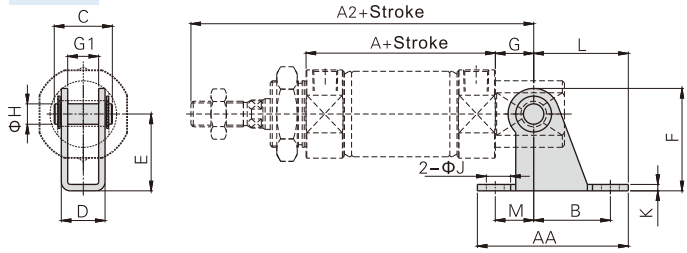
Dimensions

LB



Bore size\Item	A	A1	AA	B	C	D	D1	E	F	G	H	J
20	62	116	7	3	20	8	13	55	40	25	40	118
25	62	120	7	3.5	20	8	13	55	40	28	47	118
32	64	122	7	3.5	20	8	13	55	40	28	47	120
40	88	154	7	3.5	23	10	16	75	55	30	54	154

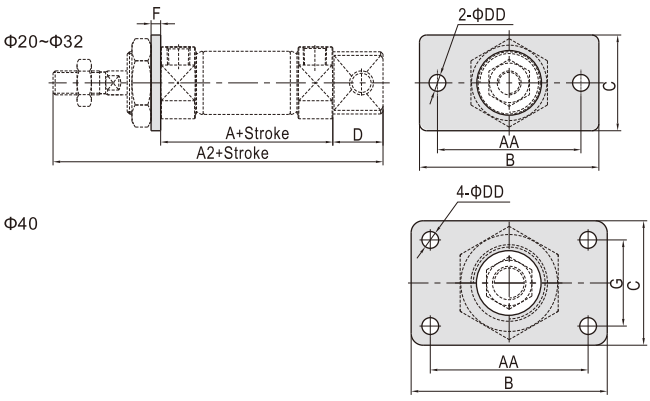
SDB



Bore size\Item	A	A2	AA	B	C	D	E	F	G	G1	H	K	J	L	M
20	62	115	59	30	22.7	17.1	30	40	12	12.1	8	2.5	7	37	15
25	62	119	59	30	22.7	17.1	30	40	12	12.1	8	2.5	7	37	15
32	64	124	75	40	32.7	26.1	40	53	15	20.1	10	3	9	50	15
40	88	153	75	40	32.7	26.1	40	53	15	20.1	10	3	9	50	15

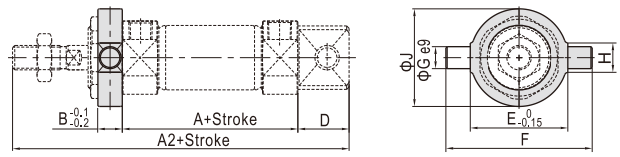
[Note] SDB is attached with relevant PIN.

FA



Bore size\Item	A	A2	AA	B	C	D	DD	F	G
20	62	124	60	75	34	21	7	3.5	-
25	62	128	60	75	40	21	7	4	-
32	64	136	60	75	40	27	7	4	-
40	88	165	66	82	52	27	7	4	36

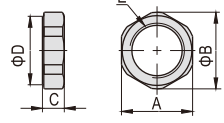
TC



Bore size\Item	A	A2	B	D	E	F	G	H	J
20	62	124	10	21	32	52	8	12	32
25	62	128	10	21	40	60	9	12	40
32	64	136	10	27	40	60	9	12	40
40	88	165	11	27	53	77	10	14	53

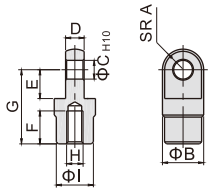
Special nut for TC

Bore size\Item	A	B	C	D	E
20	26	28	8	25	M20×1.5
25	32	34	8	31	M26×1.5
32	32	34	8	31	M26×1.5
40	41	45	10	40	M32×2.0

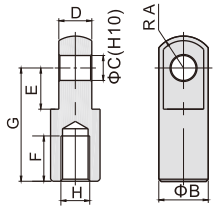


I Knuckle

F-MF20I、F-MF25I



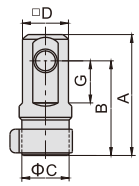
F-MF40I

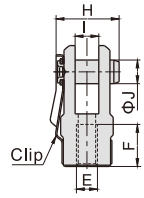


Type\Item	A	B	C	D	E	F	G	H	I
F-MF20I	9.5	20	9	9	14	16	36	M8×1.25	18
F-MF25I	9.5	20	9	9	14	18	38	M10×1.25	18
F-MF40I	15	24	12	16	20	22	55	M14×1.5	-

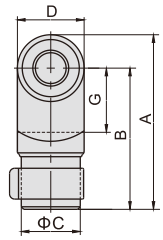
Y Knuckle

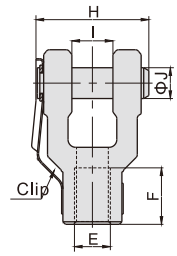
F-MF20Y
F-MF25Y





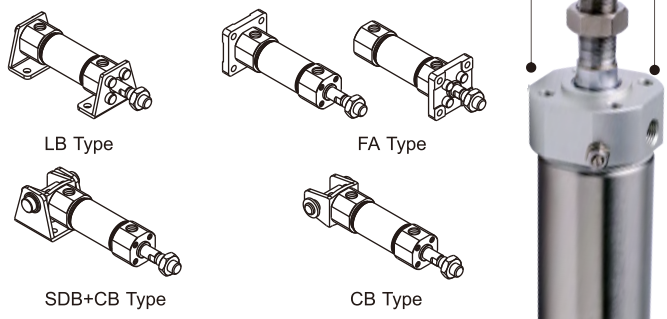
F-MF40Y





Type\Item	A	B	C	D	E	F	G	H	I	J
F-MF20Y	46	36	18	17.5	M8×1.25	16	16	24	9	9
F-MF25Y	48	38	18	17.5	M10×1.25	18	16	24	9	9
F-MF40Y	68	55	23	26	M14×1.5	22	25	44	16	12

Compendium of MG Series



Multi-mounting accessories

Multi-type cylinder

MG: Mini cylinder(Double acting)



MSG: Mini cylinder (Single acting_push)



MTG: Mini cylinder(Single acting_pull)



MGD: Mini cylinder(Double rod)



MGC: Mini cylinder(Double acting with cushion)



MGCD: Mini cylinder(Double rod with cushion)





Six bore size are available

Bore size: 20, 25, 32, 40, 50, 63

Rolling packed structure

Front and back cover and stainless steel block adopt riveted rolling packed structure to form a reliable connection.

Two kinds of cushion type

Variable cushion or Bumper

Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)						
					0.1	0.2	0.3	0.4	0.5	0.6	0.7
20	8	Single acting	Push side	314.0	-	15.7	47.1	78.5	109.9	141.3	172.7
			Pull side	263.8	-	5.7	32.0	58.4	84.8	111.2	137.5
		Double acting	Push side	314.0	31.4	62.8	94.2	125.6	157.0	188.4	219.8
			Pull side	263.8	26.4	52.8	79.1	105.5	131.9	158.3	184.7
25	10	Single acting	Push side	490.6	-	24.6	73.7	122.8	171.8	220.9	269.9
			Pull side	412.1	-	8.9	50.1	91.4	132.6	173.8	215.0
		Double acting	Push side	490.6	49.1	98.1	147.2	196.2	245.3	294.4	343.4
			Pull side	412.1	41.2	82.4	123.6	164.8	206.1	247.3	288.5
32	12	Single acting	Push side	804.3	-	40.2	120.6	200.9	281.3	361.7	442.1
			Pull side	691.2	-	17.6	86.6	155.7	224.8	293.9	363.0
		Double acting	Push side	804.3	80.4	160.9	241.3	321.7	402.2	482.6	563.0
			Pull side	691.2	69.1	138.2	207.4	276.5	345.6	414.7	483.8
40	16	Single acting	Push side	1256.6	-	62.8	188.4	314.0	439.6	565.2	690.8
			Pull side	1055.6	-	22.6	128.1	233.6	339.1	444.6	550.1
		Double acting	Push side	1256.6	125.7	251.3	377.0	502.6	628.3	754.0	879.6
			Pull side	1055.6	105.6	211.1	316.7	422.2	527.8	633.4	738.9
50	20	Double acting	Push side	1962.5	196.3	392.5	588.8	785.0	981.3	1177.5	1373.8
			Pull side	1648.5	164.9	329.7	494.6	659.4	824.3	989.1	1154.0
63	20	Double acting	Push side	3115.7	311.6	623.1	934.7	1246.3	1557.9	1869.4	2181.0
			Pull side	2801.7	280.2	560.3	840.5	1120.7	1400.9	1681.0	1961.2

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
7. The cylinder shall be carried out test run without load before application. Prior to run, buffer shall be turned to the minimum and gradually released to avoid the damage on cylinder caused by excessive impact.
8. To avoid side load, otherwise, piston rod will be bent and deformed and damage the thread at the end of the rod. Single-acting type can not be added in return.
9. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

Mini cylinder

MG Series

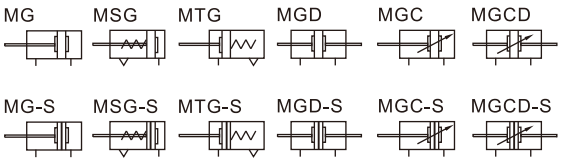


Specification

Bore size(mm)		20	25	32	40	50	63
Acting type	MSG/MTG	Single acting				–	
	MG/MGD	Double acting				–	
	MGC/MGCD	Double acting with cushion					
Fluid		Air(to be filtered by 40μm filter element)					
Operating pressure	Double acting	0.15~1.0MPa(22~145psi)(1.5~10.0bar)					
	Single acting	0.2~1.0MPa(28~145psi)(2.0~10.0bar)					
Proof pressure		1.5MPa(215psi)(15bar)					
Temperature ℃		-20~70					
Speed range mm/s		Double acting：30~800 Single acting：50~800					
Stroke tolerance		0~150 $^{+1.0}_{0}$ >150 $^{+1.5}_{0}$					
Cushion type		Variable cushion、Bumper				Variable cushion	
Port size [Note1]	Variable cushion	M5×0.8	1/8"			1/4"	
	Bumper	1/8"				-	

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. JIS standard is implemented.
2. Piston adopts heterogeneous two way seal structure.
   It has compact size and has the function of oil reservation.
3. Front cover owns fixed anti-impact pad which can reduce the impact of direction-change of the cylinder.
4. Front and back cover and stainless steel block adopt riveted rolling packed structure to form a reliable connection.
5. The cylinder body has stainless steel pipes with high precision to produce high strength and corrosion resistance.
6. There are cylinders and mounting accessories with several specifications for your choice.

Stroke

Bore size (mm)		stroke (mm) Standard stroke	Longer stroke	Max.std stroke	Max. stroke
MG MGC	20	10 15 20 25 30 40 50 60 75 80 100 125 150 175 200	201~500	500	800
	25	10 15 20 25 30 40 50 60 75 80 100 125 150 175 200 250 300	301~500	500	800
	32	10 15 20 25 30 40 50 60 75 80 100 125 150 175 200 250 300	301~500	500	800
	40	10 15 20 25 30 40 50 60 75 80 100 125 150 175 200 250 300	301~500	500	800
	50	10 15 20 25 30 40 50 60 75 80 100 125 150 175 200 250 300	301~500	500	800
	63	10 15 20 25 30 40 50 60 75 80 100 125 150 175 200 250 300	301~500	500	800
MGD MGCD	20	10 15 20 25 30 40 50 60 75 80 100 125 150 175 200 250 300	-	300	-
	25	10 15 20 25 30 40 50 60 75 80 100 125 150 175 200 250 300	-	300	-
	32	10 15 20 25 30 40 50 60 75 80 100 125 150 175 200 250 300	-	500	-
	40	10 15 20 25 30 40 50 60 75 80 100 125 150 175 200 250 300	-	500	-
	50	10 15 20 25 30 40 50 60 75 80 100 125 150 175 200 250 300	-	500	-
	63	10 15 20 25 30 40 50 60 75 80 100 125 150 175 200 250 300	-	500	-
MSG MTG	20	10 15 20 25 30 40 50 60 75 80 100 125 150	-	-	-
	25	10 15 20 25 30 40 50 60 75 80 100 125 150	-	-	-
	32	10 15 20 25 30 40 50 60 75 80 100 125 150	-	-	-
	40	10 15 20 25 30 40 50 60 75 80 100 125 150	-	-	-

[Note] Consult us for non-standard stroke.

Ordering code

MG 20 × 100 S FA G

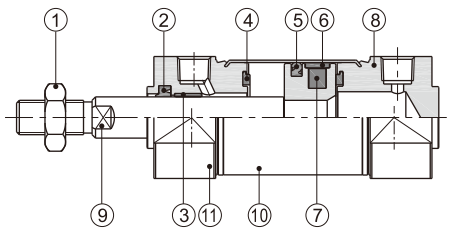
① ② ③ ④ ⑤ ⑥

①Model	②Bore size		③Stroke	④Magnet	⑤Mounting type[Note1]	⑥Thread type [Note2]
MG: Mini cylinder(Double acting) MGC: Mini cylinder (Double acting with cushion) MSG: Mini cylinder (Single acting_push) MTG: Mini cylinder (Single acting_pull)	Model MG MSG MTG MGD	Bore size 20 25 32 40	Refer to stroke table for details	Blank: Without magnet S: With magnet	Blank: No accessories FA: FA type LB: LB type CB: CB type SDB: SDB type	G: G Thread
MGD: Mini cylinder(Double rod) MGCD: Mini cylinder (Double rod with cushion)	MGC MGCD	20 25 32 40 50 63			Blank: No accessories FA: FA type LB: LB type	

[Note1] Please refer to page 319~320 for accessory parts. SDB must be used with CB.
[Note2] Standard thread is blank here.

Inner structure and material of major parts

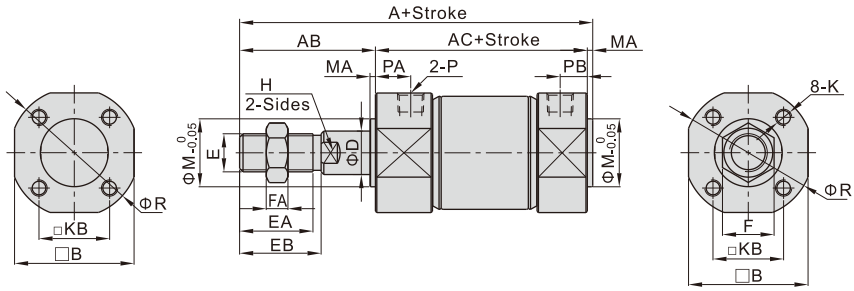
MG



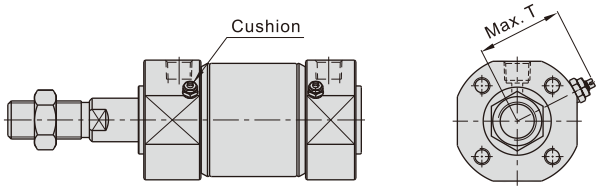
NO.	Item	Material
1	Rod nut	Carbon steel
2	Front cover packing	NBR
3	Bushing	Wear resistant material
4	Bumper	TPU
5	Piston seal	NBR
6	Wear ring	Wear resistant material
7	Magnet	Rubber
8	Back cover	Aluminum alloy
9	Piston rod	Carbon steel with 20 μ m chrome plated
10	Barrel	SUS304
11	Front cover	Aluminum alloy

Dimensions

MG Φ20~Φ40



MGC Φ20~Φ63

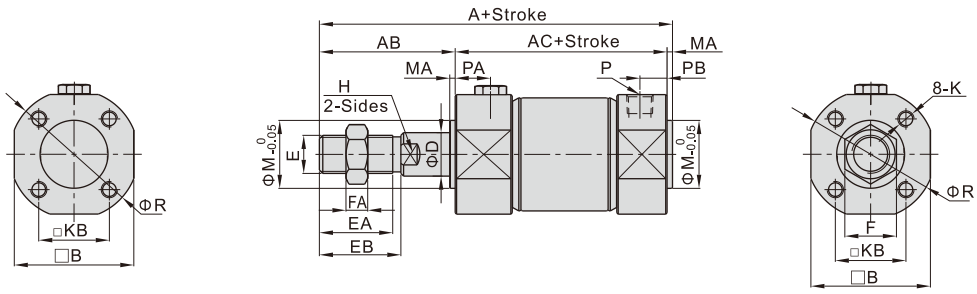


Bore size\Item	Standard stroke	Longer stroke	A	AB	AC	B	D	E	EA	EB	F	FA
20	≤200	201~500	106(114)	35	69(77)	24	8	M8×1.25	16.5	18	12	6
25	≤300	301~500	111(119)	40	69(77)	29	10	M10×1.25	20.5	22	17	6
32	≤300	301~500	113(121)	40	71(79)	35.5	12	M10×1.25	20.5	22	17	6
40	≤300	301~500	130(139)	50	78(87)	44	16	M14×1.5	28.5	30	19	8
50	≤300	301~500	150(162)	58	90(102)	55	20	M18×1.5	33.5	35	27	11
63	≤300	301~500	150(162)	58	90(102)	69	20	M18×1.5	33.5	35	27	11

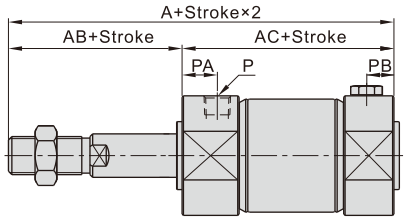
Bore size\Item	H	K	KB	M	MA	P		PA		PB		R	T
						MG	MGC	MG	MGC	MG	MGC		
20	6	M4×0.7 dp:7	14	12	2	1/8"	M5×0.8	11.5(14)	14(16.5)	8	10	26.5	22.5
25	8	M5×0.8 dp:7.5	16.5	14	2	1/8"	PT1/8	11.5(14.5)	11.5(14.5)	8.5	8.5	31.5	24.5
32	10	M5×0.8 dp:7.5	20	18	2	1/8"	PT1/8	12(14.5)	12(14.5)	9.5	9.5	38.5	30.5
40	14	M6×1.0 dp:12	26	25	2	1/8"	PT1/8	13(13.5)	13(13.5)	12	12	47.5	35
50	18	M8×1.25 dp:16	32	30	2	-	PT1/4	-	15.5(22.5)	-	13	58.5	40.5
63	18	M10×1.5 dp:16	38	32	2	-	PT1/4	-	15.5(22.5)	-	13	72	47.5

Remark：The dimensions of magnet type cylinder are the same as non-magnet type cylinder. The values in the "()" are for longer strokes.

MSG Φ20~Φ40



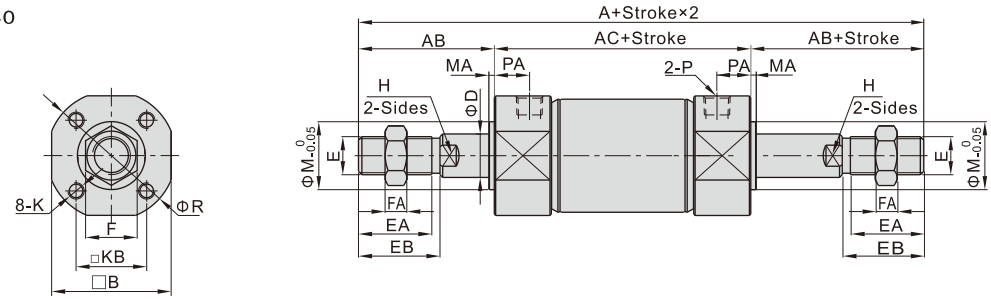
MTG Φ20~Φ40



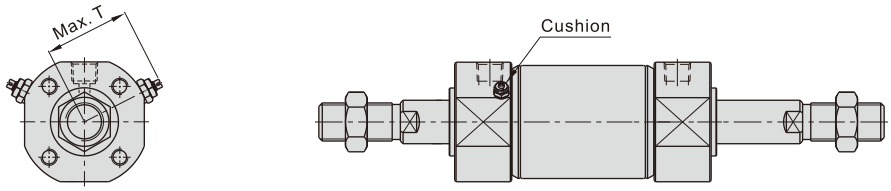
Bore size\Item	A			AB	AC			B	D	E	EA	EB	F	FA	H	K	KB	M	MA	P	PA	PB	R
	1~50	51~100	101~150		1~50	51~100	101~150																
20	131	156	181	35	94	119	144	24	8	M8×1.25	16.5	18	12	6	6	M4×0.7 Dp:7	14	12	2	1/8"	11.5	8	26.5
25	136	161	186	40	94	119	144	29	10	M10×1.25	20.5	22	17	6	8	M5×0.8 Dp:7.5	16.5	14	2	1/8"	11.5	8.5	31.5
32	138	163	188	40	96	121	146	35.5	12	M10×1.25	20.5	22	17	6	10	M5×0.8 Dp:7.5	20	18	2	1/8"	12	9.5	38.5
40	155	180	205	50	103	128	153	44	16	M14×1.5	28.5	30	19	8	14	M6×1.0 Dp:12	26	25	2	1/8"	13	12	47.5

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MGD Φ20~Φ40



MGCD Φ20~Φ63



Bore size\Item	A	AC	AB	B	D	E	EA	EB	F	FA	H	K	KB	M	MA	P		PA		R	T
																MGD	MGCD	MGD	MGCD		
20	147	77	35	24	8	M8×1.25	16.5	18	12	6	6	M4×0.7 Dp:7	14	12	2	1/8"	M5×0.8	11.5	14	26.5	22.5
25	157	77	40	29	10	M10×1.25	20.5	22	17	6	8	M5×0.8 Dp:7.5	16.5	14	2	1/8"	1/8"	11.5	11.5	31.5	24.5
32	159	79	40	35.5	12	M10×1.25	20.5	22	17	6	10	M5×0.8 Dp:7.5	20	18	2	1/8"	1/8"	12	12	38.5	30.5
40	187	87	50	44	16	M14×1.5	28.5	30	19	8	14	M6×1.0 Dp:12	26	25	2	1/8"	1/8"	13	13	47.5	35
50	218	102	58	55	20	M18×1.5	33.5	35	27	11	18	M8×1.25 Dp:16	32	30	2	-	1/4"	-	15.5	58.5	40.5
63	218	102	58	69	20	M18×1.5	33.5	35	27	11	18	M10×1.5 Dp:16	38	32	2	-	1/4"	-	15.5	72	47.5

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

List for ordering code of accessories

Accessories / Bore size	Mounting accessories				Knuckle		Sensor switch		
	LB	FA	SDB	CB	I	Y	CMSG	DMSG	EMSG
20	F-MG20LB	F-MG20FA	F-MG20SDB	F-MG20CB	F-ACQ20I	F-ACQ20Y	CMSG	DMSG	EMSG
25	F-MG25LB	F-MG25FA	F-MG25SDB	F-MG25CB	F-ACQ25I	F-ACQ25Y			
32	F-MG32LB	F-MG32FA	F-MG32SDB	F-MG32CB					
40	F-MG40LB	F-MG40FA	F-MG40SDB	F-MG40CB	F-ACQ32I	F-ACQ32Y			
50	F-MG50LB	F-MG50FA	F-MG50SDB	F-MG50CB	F-ACQ50I	F-ACQ50Y			
63	F-MG63LB	F-MG63FA	F-MG63SDB	F-MG63CB					

Accessory selection

Accessories / Cylinder model		Mounting accessories				Knuckle		Sensor switch		
		LB	FA	SDB	CB	I	Y	CMSG	DMSG	EMSG
MG MGC	Standard	●	●	●	●	●	●	×	×	×
	With magnet	●	●	●	●	●	●	●	●	●
MSG MTG	Standard	●	●	●	●	●	●	×	×	×
	With magnet	●	●	●	●	●	●	●	●	●
MGD MGCD	Standard	●	●	×	×	●	●	×	×	×
	With magnet	●	●	×	×	●	●	●	●	●

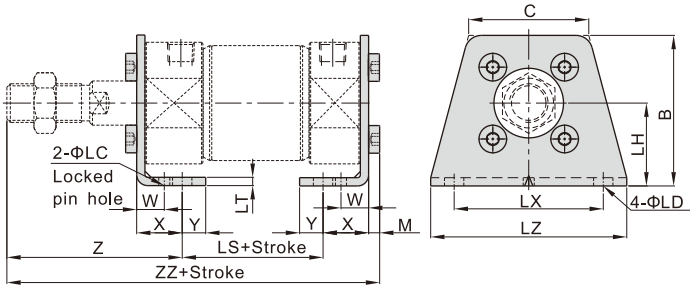
Material of accessories

Accessories / Bore size	Mounting accessories				Knuckle	
	LB	FA	SDB	CB	I	Y
20 25	△	○	△	△	□	□
32~63	△	○	△	△	□	◇

△——SPCC ; ○——cast iron ; □——S45C ; ◇——cast steel

Dimensions

LB

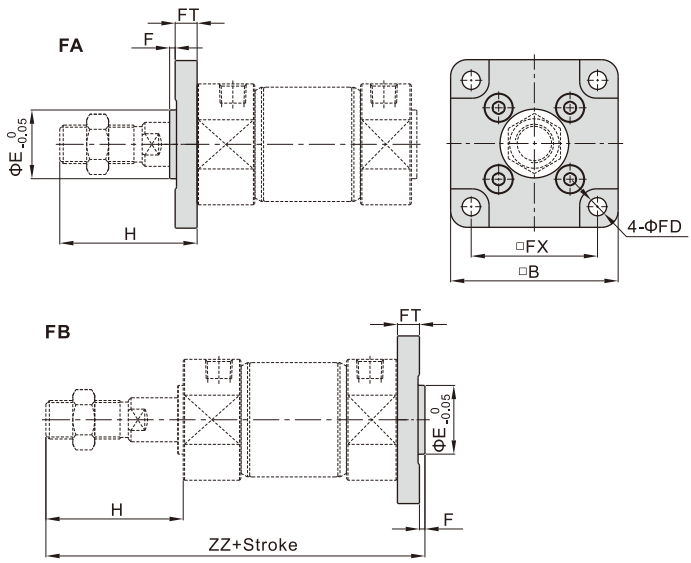


Bore size\Item	Standard stroke	Longer stroke	B	C	LC	LD	LH	LS
20	≤200	201~500	34	27.5	4	6	20	45(53)
25	≤300	301~500	38.5	30	4	6	22	45(53)
32	≤300	301~500	45	35.5	4	7	25	46(54)
40	≤300	301~500	54.5	43.5	4	7	30	52(61)
50	≤300	301~500	70.5	50.5	5	10	40	55(67)
63	≤300	301~500	82.5	64	5	12	45	55(67)

Bore size\Item	LT	LX	LZ	M	W	X	Y	Z	ZZ
20	3	32	44	2.8	10	15	7	47	110(118)
25	3	36	49	3.5	10	15	7	52	115.5(123.5)
32	3.5	44	58	3.5	10	16	8	52.5	117.5(125.5)
40	3.5	54	71	4	10	16.5	8.5	63	135(144)
50	4.5	66	86	5	17.5	22	11	75.5	157.5(169.5)
63	4.5	82	106	6	17.5	22	13	75.5	158.5(170.5)

Remark : The values in the "()" are for longer strokes.

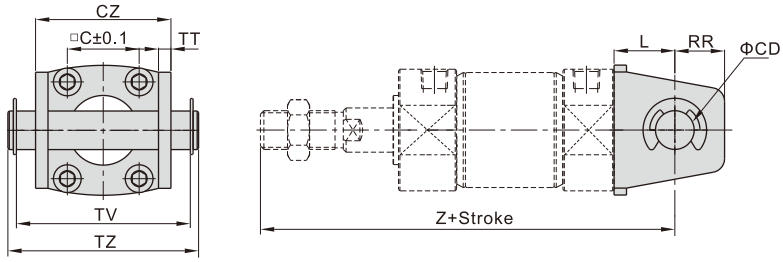
FA\FB



Bore size\Item	Standard stroke	Longer stroke	B	E	F	FD	FX	FT	H	ZZ
20	≤200	201~500	40	12	2	5.5	28	6	35	112(120)
25	≤300	301~500	44	14	2	5.5	32	7	40	118(126)
32	≤300	301~500	53	18	2	6.5	38	7	40	120(128)
40	≤300	301~500	61	25	2	6.5	46	8	50	138(147)
50	≤300	301~500	76	30	2	9	58	9	58	159(171)
63	≤300	301~500	92	32	2	11	70	9.5	58	159.5(171.5)

Remark : The values in the "()" are for longer strokes.

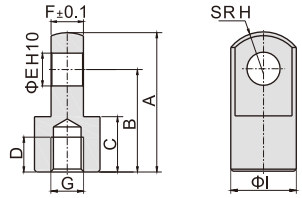
CB



Bore size\Item	Standard stroke	Longer stroke	C	CD	CZ	L	RR	TT	TV	TZ	Z
20	≤200	201~500	14	8	29	14	11	2.5	41	46	118(126)
25	≤300	301~500	16.5	10	33	16	13	2.5	44	50	125(133)
32	≤300	301~500	20	12	40	20	15	3	54	60.5	131(139)
40	≤300	301~500	26	14	49	22	18	3	63	69.5	150(159)
50	≤300	301~500	32	16	60	25	20	4	77	83	173(185)
63	≤300	301~500	38	18	74	30	22	4	95	103	178(190)

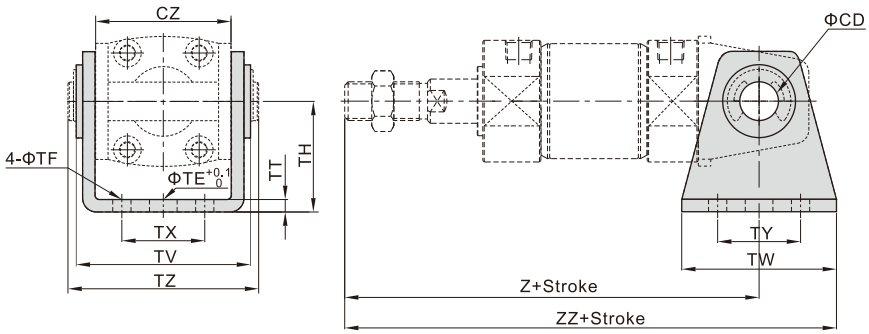
Remark：The values in the "()" are for longer strokes.

I Knuckle



Type\Item	A	B	C	D	E	F	G	H	I
F-ACQ20I	34	25	13.5	8.5	8	7.7	M8×1.25	10.3	16
F-ACQ25I	41	30	16	11	10	9.7	M10×1.25	12.8	20
F-ACQ32I	42	30	16	14	10	17.6	M14×1.5	12	22
F-ACQ50I	56	40	20	18	14	21.6	M18×1.5	16	28

SDB(+CB)

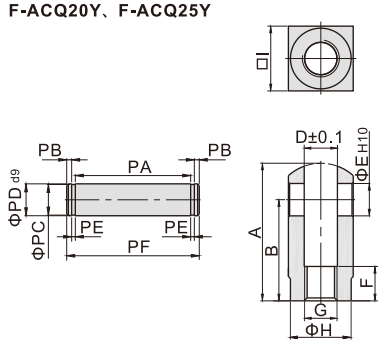


Bore size\Item	Standard stroke	Longer stroke	CD	CZ	TE	TF	TH	TT	TV	TW	TX	TY	TZ	Z	ZZ
20	≤200	201~500	8	29	10	5.5	25	2.5	40.5	42	16	28	46	118(126)	139(147)
25	≤300	301~500	10	33	10	5.5	30	2.5	43.5	42	20	28	50	125(133)	146(154)
32	≤300	301~500	12	40	10	6.5	35	3	53.5	48	22	28	60.5	131(139)	155(163)
40	≤300	301~500	14	49	10	6.5	40	3	62.5	56	30	30	69.5	150(159)	178(187)
50	≤300	301~500	16	60	20	9	50	4	76	64	36	36	83	173(185)	205(217)
63	≤300	301~500	18	74	20	11	60	4	94	74	46	46	103	178(190)	215(227)

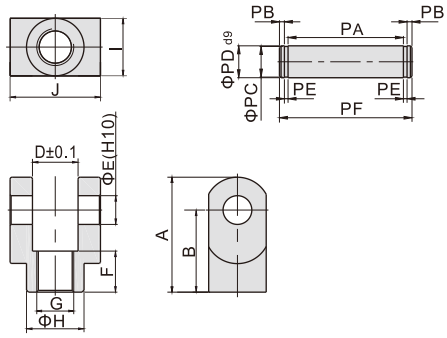
Remark：SDB is attached with relevant PIN.
The values in the "()" are for longer strokes.

Y Knuckle

F-ACQ20Y、F-ACQ25Y



F-ACQ32Y、F-ACQ50Y

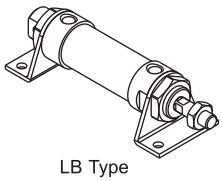


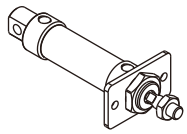
Type\Item	A	B	D	E	F	G
F-ACQ20Y	34	25	8.3	8	8.5	M8×1.25
F-ACQ25Y	41	30	10.3	10	10.5	M10×1.25
F-ACQ32Y	42	30	18.4	10	16	M14×1.5
F-ACQ50Y	56	40	22.4	14	20	M18×1.5

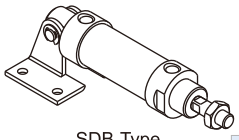
Type\Item	H	I	J	PA	PB	PC	PD	PE	PF
F-ACQ20Y	15	16	-	16.3	1.5	7	8	0.9	21
F-ACQ25Y	19	20	-	20.3	2	8	10	1.1	26.4
F-ACQ32Y	22	22	36	36.3	2	8	10	1.1	42.4
F-ACQ50Y	28	28	44	44.3	2	12	14	1.1	50.4

Compendium of MBL Series

Multi-mounting accessories


LB Type


FA Type


SDB Type

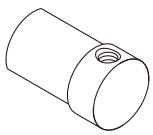
Rolling packed structure

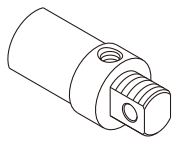
Front and back cover and stainless steel block adopt riveted rolling packed structure to form a reliable connection.

Six bore size are available

Bore size: 20, 25, 32, 40, 50, 63

Two kinds of back cover type


U: Flat-end type


CA: Pivot type



Multi-type cylinder

MBL: Mini cylinder(Double acting)


MBLC: Mini cylinder(Double acting with cushion)


MSBL: Mini cylinder(Single acting_push)


MTBL: Mini cylinder(Single acting_pull)


MBLD: Mini cylinder(Double rod)


MBLCD: Mini cylinder(Double rod with cushion)


MBLJ: Mini cylinder(Adjustable stroke)


MBLCJ: Mini cylinder(Adjustable stroke with cushion)



Multi-kinds of stroke

Two kinds of cushion type

Variable cushion or Bumper

Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)						
					0.1	0.2	0.3	0.4	0.5	0.6	0.7
20	8	Single acting	Push side	314.0	-	15.7	47.1	78.5	109.9	141.3	172.7
			Pull side	263.8	-	5.7	32.0	58.4	84.8	111.2	137.5
		Double acting	Push side	314.0	31.4	62.8	94.2	125.6	157.0	188.4	219.8
			Pull side	263.8	26.4	52.8	79.1	105.5	131.9	158.3	184.7
25	10	Single acting	Push side	490.6	-	24.6	73.7	122.8	171.8	220.9	269.9
			Pull side	412.1	-	8.9	50.1	91.4	132.6	173.8	215.0
		Double acting	Push side	490.6	49.1	98.1	147.2	196.2	245.3	294.4	343.4
			Pull side	412.1	41.2	82.4	123.6	164.8	206.1	247.3	288.5
32	12	Single acting	Push side	804.3	-	40.2	120.6	200.9	281.3	361.7	442.1
			Pull side	691.2	-	17.6	86.6	155.7	224.8	293.9	363.0
		Double acting	Push side	804.3	80.4	160.9	241.3	321.7	402.2	482.6	563.0
			Pull side	691.2	69.1	138.2	207.4	276.5	345.6	414.7	483.8
40	16	Single acting	Push side	1256.6	-	62.8	188.4	314.0	439.6	565.2	690.8
			Pull side	1055.6	-	22.6	128.1	233.6	339.1	444.6	550.1
		Double acting	Push side	1256.6	125.7	251.3	377.0	502.6	628.3	754.0	879.6
			Pull side	1055.6	105.6	211.1	316.7	422.2	527.8	633.4	738.9
50	16	Double acting	Push side	1962.5	196.3	392.5	588.8	785.0	981.3	1177.5	1373.8
			Pull side	1761.5	176.2	352.3	528.5	704.6	880.8	1056.9	1233.1
63	16	Double acting	Push side	3115.7	311.6	623.1	934.7	1246.3	1557.9	1869.4	2181.0
			Pull side	2914.7	291.5	582.9	874.4	1165.9	1457.4	1748.8	2040.3

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
7. To avoid side load, otherwise, piston rod will be bent and deformed and damage the thread at the end of the rod. Single-acting type can not be added in return;
8. If the cylinder is dismantled and stored for a long time, please to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

Mini cylinder(Aluminum barrel)

MBL Series

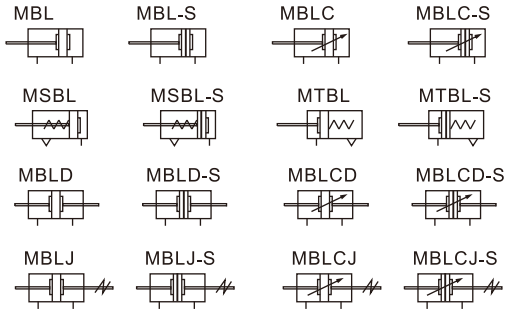


Specification

Bore size(mm)		20	25	32	40	50	63
Acting type	MSBL/MTBL	Single acting				–	
	MBL/MBLD/MBLJ	Double acting					
	MBLC/MBLCD/MBLCJ	Double acting with cushion					
Fluid		Air(to be filtered by 40μm filter element)					
Operating pressure	Double acting	0.15~1.0MPa(22~145psi)(1.5~10.0bar)					
	Single acting	0.2~1.0MPa(28~145psi)(2.0~10.0bar)				–	
Proof pressure		1.5MPa(215psi)(15bar)					
Temperature ℃		-20~70					
Speed range mm/s		Double acting：30~800 Single acting：50~800					
Stroke tolerance		0~150 $^{+1.0}_{0}$ >150 $^{+1.5}_{0}$					
Cushion type		MBLC, MBLCD, MBLCJ: Adjustable cushion; Others: Bumper					
Port size [Note1]		1/8"			1/4"		

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol



Stroke

Bore size (mm)		Standard stroke (mm)	Max.std stroke	Max. stroke
MBL MBLC	20/25	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500	500	800
	32/40	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500	500	800
	50/63	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500	500	800
MBLD MBLJ MBLCD MBLCJ	20/25	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300	300	-
	32/40	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500	500	-
	50/63	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500	500	-
MSBL	20/25	10 15 20 25 30 40 50 60 75 80 100 125 150	-	-
	32/40	10 15 20 25 30 40 50 60 75 80 100 125 150	-	-
MTBL	20/25	10 15 20 25 30 40 50 60 75 80 100	-	-
	32/40	10 15 20 25 30 40 50 60 75 80 100	-	-

[Note] Consult us for non-standard stroke.

Product feature

1. Manufactured by our enterprise.
2. Riveted structure is adopted to connect front and bak cover and cylinder tube to make it credibility.
3. Piston adopts heterogeneous two-way seal structure. It has compact size and has the function of grease reservation.
4. There are several modes of back cover, which makes the installation of cylinder more convenient.
5. There are cylinders and mounting accessories with several specifications for your choice.

Ordering code

MBL 20×50 S CA □ G
MBLD 20×50 S □ G
MBLJ 20×50–20 S □ G

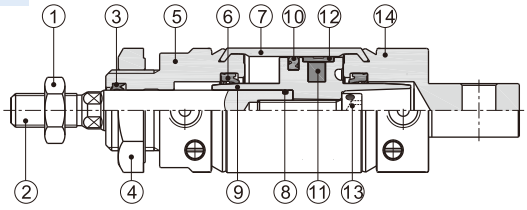
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①Model	②Bore size	③Stroke	④Adjustable Stroke	⑤Magnet	⑥Back cover	⑦Mounting type [Note1]	⑧Thread type
MBL: Mini cylinder(Double acting)	20 25 32 40 50 63	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	CA: Pivot type U: Flat-end type	Blank: No accessories FA: FA type SDB: SDB type LB: LB type	G: G Thread
MBLC: Mini cylinder(Double acting with cushion)							
MSBL: Mini cylinder(Single acting_push)	20 25 32 40						
MTBL: Mini cylinder(Single acting_pull)							
MBLD: Mini cylinder(Double rod)	20 25 32 40 50 63				No this code	Blank: No accessories FA: FA type LB: LB type	
MBLCD: Mini cylinder(Double rod with cushion)							
MBLJ: Mini cylinder(Adjustable stroke)			10 20 30 40 50 75 100				
MBLCJ: Mini cylinder(Adjustable stroke with cushion)							

[Note1] Please refer to page 325~326 for accessory parts.

Inner structure and material of major parts

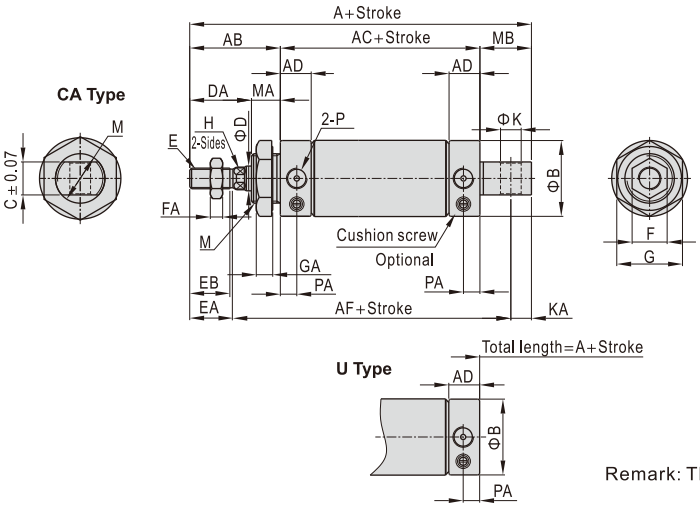
MBLC-CA



NO.	Item	Material
1	Rod nut	Carbon steel
2	Piston rod	Carbon steel with 20 μ m chrome plated
3	Front cover packing	NBR
4	Front cover nut	Carbon steel
5	Front cover	Aluminum alloy
6	Bumper	TPU
7	Barrel	Aluminum alloy
8	O- ring	NBR
9	Piston	Aluminum alloy
10	Piston seal	NBR
11	Magnet	Plastic
12	Wear ring	Wear resistant material
13	Bolt	Carbon steel
14	Back cover	Aluminum alloy

Dimensions

MBL/MBLC

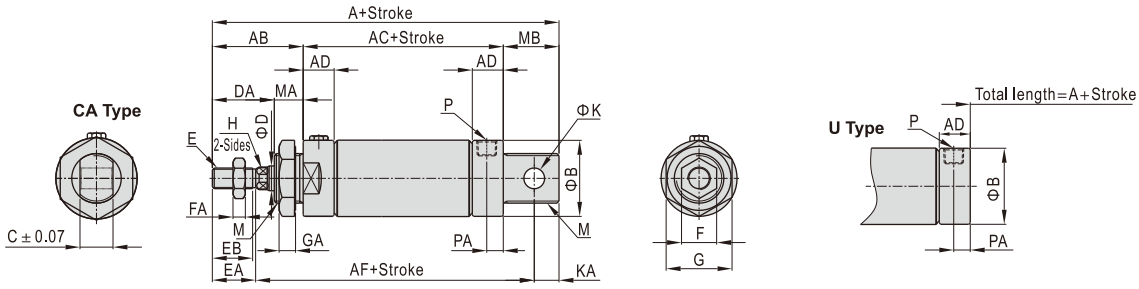


Bore size\Item	A		AB	AC	AD	AF	B	C	D	DA	M	MA	MB
Back cover	CA	U											
20	131	110	40	70	15.5	102	27	16	8	26	M22×1.5	14	21
25	135	114	44	70	15.5	105	30	16	10	30	M22×1.5	14	21
32	141	114	44	70	15.5	108	37	16	12	28	M24×2.0	16	27
40	165	138	46	92	22	130.5	45	20	16	30	M30×2.0	16	27
50	173	146	54	92	22	138	55	20	16	32	M36×2.0	22	27
63	173	146	54	92	22	138	68	20	16	32	M36×2.0	22	27

Bore size\Item	E	EA	EB	F	FA	G	GA	H	P	K	KA	PA
20	M8×1.25	20	18.5	12	6	29	7	6	1/8"	8	9	7.5
25	M10×1.25	21	19.5	17	6	29	7	8	1/8"	8	9	7.5
32	M10×1.25	21	19.5	17	6	32	8	10	1/8"	10	12	7.5
40	M12×1.25	22.5	21	17	7	41	8	14	1/4"	12	12	11
50	M14×1.5	24	22.5	19	8	46	11	14	1/4"	12	11	11
63	M14×1.5	24	22.5	19	8	46	11	14	1/4"	12	11	11

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MSBL

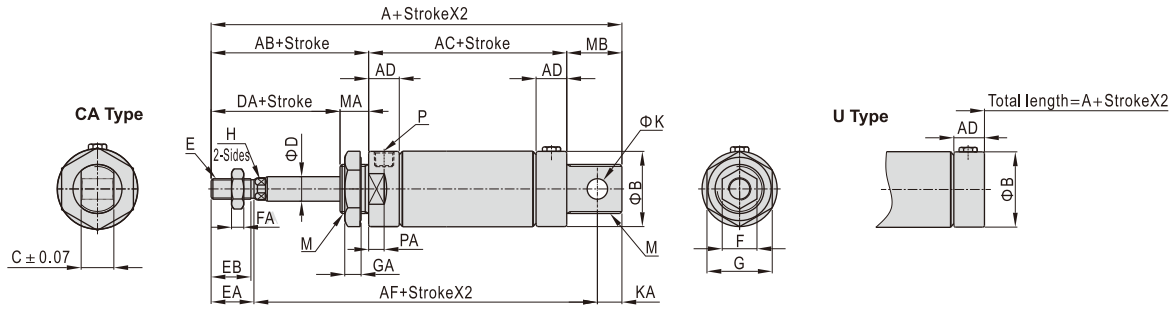


Item	A						AB	AC			AD	AF			B	C
Back cover	CA			U												
Bore size\Stroke	≤50	51~100	≥101	≤50	51~100	≥101		≤50	51~100	≥101		≤50	51~100	≥101		
20	156	181	206	135	160	185	40	95	120	145	15.5	127	152	177	27	16
25	160	185	210	139	164	189	44	95	120	145	15.5	130	155	180	30	16
32	166	191	216	139	164	189	44	95	120	145	15.5	133	158	183	37	16
40	190	215	240	163	188	213	46	117	142	167	22	155.5	180.5	205.5	45	20

Bore size\Item	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	M	MA	MB	P	PA
20	8	26	M8×1.25	20	18.5	12	6	29	7	6	8	9	M22×1.5	14	21	1/8"	7.5
25	10	30	M10×1.25	21	19.5	17	6	29	7	8	8	9	M22×1.5	14	21	1/8"	7.5
32	12	28	M10×1.25	21	19.5	17	6	32	8	10	10	12	M24×2.0	16	27	1/8"	7.5
40	16	30	M12×1.25	22.5	21	17	7	41	8	14	12	12	M30×2.0	16	27	1/4"	11

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MTBL

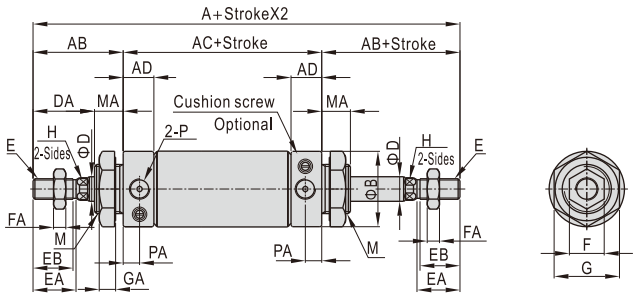


Item	A				AB	AC		AD	AF		B	C	D	DA
Back cover	CA		U											
Bore size\Stroke	⩽50	51~100	⩽50	51~100		⩽50	51~100		⩽50	51~100				
20	156	181	135	160	40	95	120	15.5	127	152	27	16	8	26
25	160	185	139	164	44	95	120	15.5	130	155	30	16	10	30
32	166	191	139	164	44	95	120	15.5	133	158	37	16	12	28
40	190	215	163	188	46	117	142	22	155.5	180.5	45	20	16	30

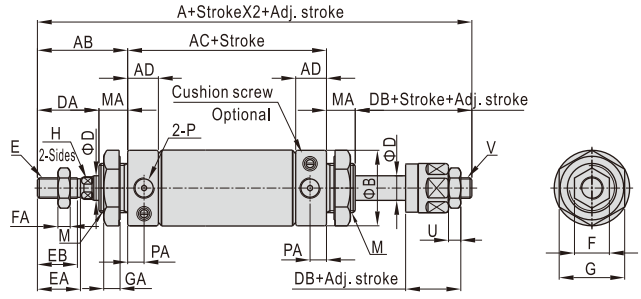
Bore size\Item	E	EA	EB	F	FA	G	GA	H	K	KA	M	MA	MB	P	PA
20	M8×1.25	20	18.5	12	6	29	7	6	8	9	M22×1.5	14	21	1/8"	7.5
25	M10×1.25	21	19.5	17	6	29	7	8	8	9	M22×1.5	14	21	1/8"	7.5
32	M10×1.25	21	19.5	17	6	32	8	10	10	12	M24×2.0	16	27	1/8"	7.5
40	M12×1.25	22.5	21	17	7	41	8	14	12	12	M30×2.0	16	27	1/4"	11

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MBLD/MBLCD



MBLJ/MBLCJ



Bore size\Item	A				AB	AC	AD	B	D	DA	DB	E
Model	MBLD	MBLCD	MBLJ	MBLCJ								
20	150		149		40	70	15.5	27	8	26	25	M8×1.25
25	158		155		44	70	15.5	30	10	30	27	M10×1.25
32	158		157		44	70	15.5	37	12	28	27	M10×1.25
40	184		182		46	92	22	45	16	30	28	M12×1.25
50	200		196		54	92	22	55	16	32	28	M14×1.5
63	200		196		54	92	22	68	16	32	28	M14×1.5

Bore size\Item	EA	EB	F	FA	G	GA	H	M	MA	P	PA	U	V
20	20	18.5	12	6	29	7	6	M22×1.5	14	1/8"	7.5	6	M8×1.25
25	21	19.5	17	6	29	7	8	M22×1.5	14	1/8"	7.5	6	M10×1.25
32	21	19.5	17	6	32	8	10	M24×2.0	16	1/8"	7.5	6	M10×1.25
40	22.5	21	17	7	41	8	14	M30×2.0	16	1/4"	11	7	M12×1.25
50	24	22.5	19	8	46	11	14	M36×2.0	22	1/4"	11	7	M12×1.25
63	24	22.5	19	8	46	11	14	M36×2.0	22	1/4"	11	7	M12×1.25

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

List for ordering code of accessories

Accessories / Bore size	Mounting accessories			Knuckle				Sensor switch		
	LB	FA	SDB	I	Y	F	U	CMSG	DMSG	EMSG
20	F-MA20LB	F-MA20FA	F-MA20SDB	F-MA20I	F-MA20Y	F-M8X125F	F-M8X125U	CMSG	DMSG	EMSG
25				F-MA25I	F-MA25Y	F-M10X125F	F-M10X125U			
32	F-MA32LB	F-MA32FA	F-MA32SDB							
40	F-MA40LB	F-MA40FA	F-MA40SDB	F-MA40I	F-MA40Y	F-M12X125F	F-M12X125U			
50	F-MA50LB	F-MA50FA		F-MAC50I	F-MAC50Y	F-M14X150F	F-M14X150U			
63	F-MA63LB									

Accessory selection

Accessories / Cylinder model		Mounting accessories			Knuckle[Note1]				Sensor switch		
		LB	FA	SDB	I	Y	U	F	CMSG	DMSG	EMSG
MBL MBLC	Standard	•	•	•	•	•	•	•	×	×	×
	With magnet	•	•	•	•	•	•	•	•	•	•
MSBL MTBL	Standard	•	•	•	•	•	•	•	×	×	×
	With magnet	•	•	•	•	•	•	•	•	•	•
MBLD MBLCD	Standard	•	•	×	•	•	•	•	×	×	×
	With magnet	•	•	×	•	•	•	•	•	•	•
MBLJ MBLCJ	Standard	•	•	×	•	•	•	•	×	×	×
	With magnet	•	•	×	•	•	•	•	•	•	•

Material of accessories

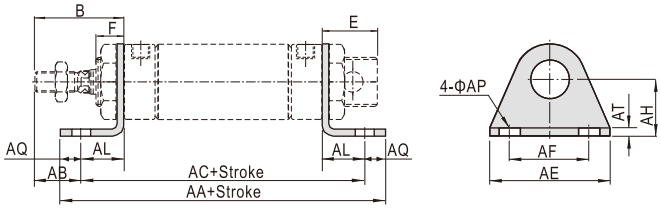
Accessories / Bore size	Mounting accessories			Knuckle			
	LB	FA	SDB	I	Y	F	U
20~63	○	○	○	□	□	□	□

○——Lower carbon steel；□——Carbon steel.

[Note1] Please refer to P572~575 for knuckle detail.

Dimensions

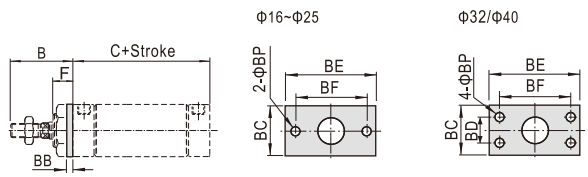
LB



Bore size\Item / Stroke	AA (MBL)	AA(MSBL) 0~50	AA(MSBL) 51~100	AA(MSBL) 101~150	AC (MBL)	AC(MSBL) 0~50	AC(MSBL) 51~100	AC(MSBL) 101~150
20	116	141	166	191	100	125	150	175
25	116	141	166	191	100	125	150	175
32	136	161	186	211	120	145	170	195
40	158	183	208	233	142	167	192	217
50	172	-	-	-	148	-	-	-
63	180	-	-	-	154	-	-	-

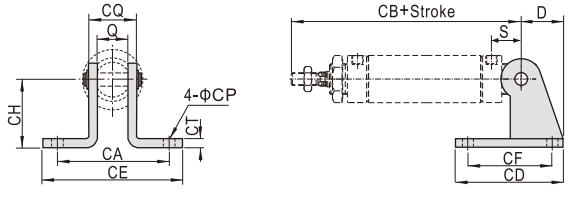
Bore size\Item	B	E	F	AB	AE	AF	AL	AQ	AP	AT	AH
20	40	21	14	25	54	40	15	8	6.5	3	25
25	44	21	14	29	54	40	15	8	6.5	3	25
32	44	27	16	19	59	45	25	8	7	3.5	32
40	46	27	16	21	64	50	25	8	7	3.5	36
50	54	27	22	26	86	66	28	12	11	4.5	40
63	54	27	22	23	106	82	31	13	11	4.5	45

FA



Bore size\Item / Stroke	B	C (MBL)	C(MSBL) 0~50	C(MSBL) 51~100	C(MSBL) 101~150	BB	BC	BD	BE	BF	BP	F
20	40	70	95	120	145	3.5	38	-	64	50	7	14
25	44	70	95	120	145	3.5	38	-	64	50	7	14
32	44	70	95	120	145	4	47	33	72	58	6.5	16
40	46	92	117	142	167	4	50	36	84	70	6.5	16
50	54	92	-	-	-	4.5	65	47	104	86	9	22
63	54	92	-	-	-	4.5	65	47	104	86	9	22

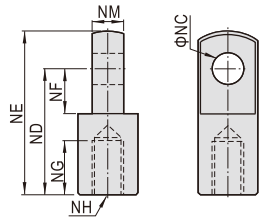
SDB



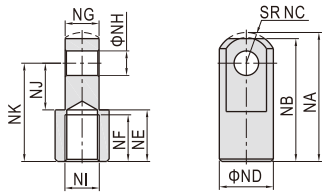
Bore size\Item / Stroke	D	S	Q	CA	CB (MBL)	CB(MSBL) 0~50	CB(MSBL) 51~100	CB(MSBL) 101~150	CD	CE	CF	CH	CT	CP	CQ
20	21	12	16	51	122	147	172	197	48	67	32	32	2.5	7	22
25	21	12	16	51	126	151	176	201	48	67	32	32	2.5	7	22
32	27	15	16	51	129	154	179	204	52	67	36	36	3	7	24
40	27	15	20	55	153	178	203	228	56	71	40	40	3	7	28

[Note] SDB is attached with relevant PIN.

I Knuckle

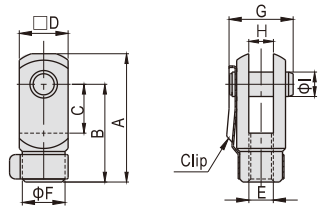


Type\Item	NC	ND	NE	NF	NH	NG	NM
F-MA20I	8	30	40	11	M8×1.25	15	8
F-MA25I	10	40	50	15	M10×1.25	20	10
F-MA40I	10	45	57	16	M12×1.25	23	14

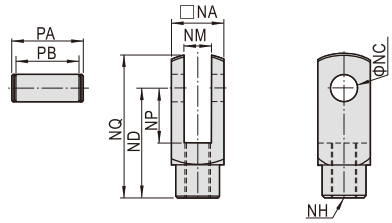


Type\Item	NA	NB	NC	ND	NE	NF	NG	NH	NJ	NK	NI
F-MAC50I	52.5	50	12.5	22	21	19	13.8	10	19	40	M14×1.5

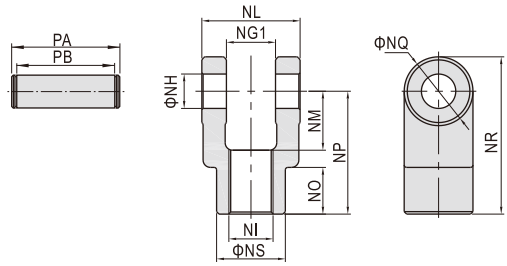
Y Knuckle



Type\Item	A	B	C	D	E	F	G	H	I
F-MA20Y	42	32	16	16	M8×1.25	14	21	8	8
F-MA25Y	52	40	20	19	M10×1.25	18	25	10	10



Type\Item	NA	NC	ND	NP	NQ	NM	NH	PA	PB
F-MA40Y	25.4	10	45	20	57	14	M12×1.25	32	26.2



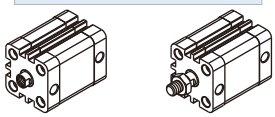
Type\Item	Ng1	NH	NI	NL	NM	NO	NP	NQ	NR	NS	PA	PB
F-MAC50Y	14.2	10	M14×1.5	27.8	19	17	40	22	51	22	34.6	28.8

Compendium of ACE Series

In accordance with ISO21287 standard
In accordance with ISO21287 standard, the mounting size is vogue.

Magnetic switch slots around the cylinder body
There are magnetic switch slots around the cylinder body convenient to install inducting switch.

Two kinds of rod type

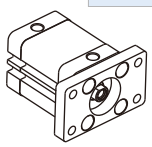

Female thread Male thread

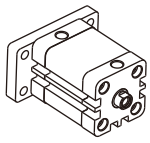


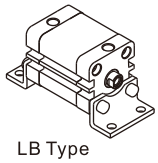
Multi-type cylinder

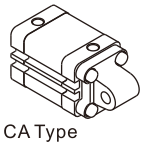
ACE: Compact cylinder (Double acting)	
ASE: Compact cylinder (Single acting-push)	
ATE: Compact cylinder (Single acting-pull)	
ACED: Compact cylinder (Double rod)	
ACEJ: Compact cylinder (Adjustable stroke)	
TACE: Compact cylinder (Double acting non-rotating with yoke)	
TACED: Compact cylinder (Double rod non-rotating with yoke)	

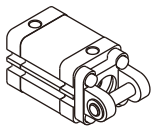
Multi-mounting accessories

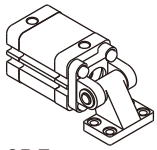

FA Type

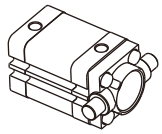

FB Type

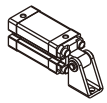

LB Type


CA Type


CB Type


CR Type


FTC Type


SDB Type

Compact structure
Compact structure can effectively save fifty percent installation space with ISO15552 standard cylinder.

Eleven bore size are available
Bore size: 12, 16, 20, 25, 32, 40, 50, 63, 80, 100, 125

Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa) 0.1	0.2	0.3	0.4	0.5	0.6	0.7
12	6	Single acting	Push side	113.1	-	6.1	17.4	28.7	40.0	51.4	62.7
			Pull side	84.8	-	0.5	8.9	17.4	25.9	34.4	42.9
		Double acting	Push side	113.1	11.3	22.6	33.9	45.2	56.5	67.9	79.2
			Pull side	84.8	8.5	17.0	25.4	33.9	42.4	50.9	59.4
16	8	Single acting	Push side	201.1	-	18.1	38.2	58.3	78.4	98.5	118.6
			Pull side	150.8	-	8.1	23.1	38.2	53.3	68.4	83.5
		Double acting	Push side	201.1	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull side	150.8	15.1	30.2	45.2	60.3	75.4	90.5	105.6
20	10	Single acting	Push side	314.2	-	33.1	64.5	96.0	127.4	158.8	190.2
			Pull side	235.6	-	17.4	41.0	64.5	88.1	111.7	135.2
		Double acting	Push side	314.2	31.4	62.8	94.2	125.7	157.1	188.5	219.9
			Pull side	235.6	23.6	47.1	70.7	94.2	117.8	141.4	164.9
25	10	Single acting	Push side	490.9	13.8	62.9	112.0	161.0	210.1	259.2	308.3
			Pull side	412.3	5.9	47.2	88.4	129.6	170.9	212.1	253.3
		Double acting	Push side	490.9	49.1	98.2	147.3	196.3	245.4	294.5	343.6
			Pull side	412.3	41.2	82.5	123.7	164.9	206.2	247.4	288.6
32	12	Single acting	Push side	804.2	30.8	111.2	191.7	272.1	352.5	432.9	513.4
			Pull side	691.2	19.5	88.6	157.7	226.9	296.0	365.1	434.2
		Double acting	Push side	804.2	80.4	160.8	241.3	321.7	402.1	482.5	563.0
			Pull side	691.2	69.1	138.2	207.3	276.5	345.6	414.7	483.8

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa) 0.1	0.2	0.3	0.4	0.5	0.6	0.7
40	12	Single acting	Push side	1256.6	54.2	179.8	305.5	431.2	556.8	682.5	808.1
			Pull side	1143.5	42.9	157.2	271.6	385.9	500.3	614.6	729.0
		Double acting	Push side	1256.6	125.7	251.3	377.0	502.7	628.3	754.0	879.6
			Pull side	1143.5	114.4	228.7	343.1	457.4	571.8	686.1	800.5
50	16	Single acting	Push side	1963.5	90.1	286.5	482.8	679.2	875.5	1071.9	1268.2
			Pull side	1762.4	70.0	246.3	422.5	598.8	775.0	951.3	1127.5
		Double acting	Push side	1963.5	196.3	392.7	589.0	785.4	981.7	1178.1	1374.4
			Pull side	1762.4	176.2	352.5	528.7	705.0	881.2	1057.5	1233.7
63	16	Single acting	Push side	3117.2	173.6	485.3	797.1	1108.8	1420.5	1732.2	2044.0
			Pull side	2916.2	153.5	445.1	736.8	1028.4	1320.0	1611.6	1903.2
		Double acting	Push side	3117.2	311.7	623.4	935.2	1246.9	1558.6	1870.3	2182.1
			Pull side	2916.2	291.6	583.2	874.9	1166.5	1458.1	1749.7	2041.3
80	20	Single acting	Push side	5026.5	305.6	808.2	1310.9	1813.5	2316.2	2818.8	3321.5
			Pull side	4712.4	274.1	745.4	1216.6	1687.9	2159.1	2630.3	3101.6
		Double acting	Push side	5026.5	502.7	1005.3	1508.0	2010.6	2513.3	3015.9	3518.6
			Pull side	4712.4	471.2	942.5	1413.7	1885.0	2356.2	2827.4	3298.7
100	20	Single acting	Push side	7854.0	499.1	1284.5	2069.9	2855.3	3640.7	4426.1	5211.5
			Pull side	7539.8	467.7	1221.7	1975.7	2729.6	3483.6	4237.6	4991.6
		Double acting	Push side	7854.0	785.4	1570.8	2356.2	3141.6	3927.0	4712.4	5497.8
			Pull side	7539.8	754.0	1508.0	2262.0	3015.9	3769.9	4523.9	5277.9
125	25	Double acting	Push side	12271.8	1227.2	2454.4	3681.5	4908.7	6135.9	7363.1	8590.3
			Pull side	11780.9	1178.1	2356.2	3534.3	4712.4	5890.5	7086.5	8246.6

Installation and application

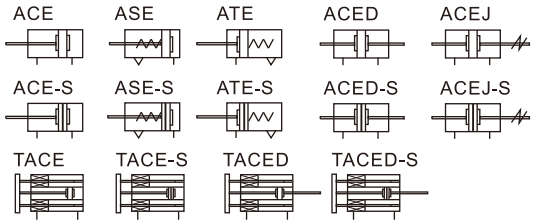
1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. As both of the front cover and piston of the cylinder are short, typically too large stroke can not be selected.
7. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
8. The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
9. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

ISO21287 Compact cylinder

ACE Series



Symbol



Specification

Bore size(mm)		12	16	20	25	32	40	50	63	80	100	125
Acting type		Double acting										
		Single acting_Push type、Single acting_Pull type										–
Fluid		Air(to be filtered by 40μm filter element)										
Operating pressure	Double acting	0.15~1.0MPa(22~145psi)										
	Single acting	0.2~1.0MPa(28~145psi)										
Proof pressure		1.5MPa(215psi)										
Temperature ℃		-20~70										
Speed range mm/s		Double acting：30~500 Single acting：50~500										
Stroke tolerance		Stroke≤100 $^{+1.0}_{0}$ Stroke>100 $^{+1.5}_{0}$										
Cushion type		Bumper										
Port size [Note1]		M5×0.8				1/8"						1/4"

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Stroke

Bore size (mm)			Standard stroke (mm)	Max.stroke
Common type	Double acting	12	5 10 15 20 25 30 35 40 45 50	50
		16	5 10 15 20 25 30 35 40 45 50 55 60 70 75	75
		20	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100	100
		25	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100 110 120 125 150	150
		32 40	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100 110 120 125 150 160 175 200	200
		50 63	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100 110 120 125 150 160 175 200 225 250	250
		80 100 125	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100 110 120 125 150 160 175 200 225 250 275 300	300
	Single acting	12	5 10	10
		16~100	5 10 15 20 25	25
Non-rotating with yoke	Double acting	12	5 10 15 20 25 30 35 40 45 50	50
		16	5 10 15 20 25 30 35 40 45 50 55 60 70 75	75
		20 25	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100	100
		32 40	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100	100
		50 63	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100	100
		80 100	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100	100

Note) 1. Please contact the company for other special strokes.
2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

Product feature

1. In accordance with ISO21287 standard, the mounting size is vogue.
2. The cylinder body connects with the threads of the front and back cover, forming high strength and convenient maintenance.
3. The internal diameter of the body is treated with rolling followed by the treatment of hard anodizing, forming an excellent abrasion resistance and durability.
4. The seal of piston adopts heterogeneous two-way seal structure. It has compact dimension and the function of oil reservation.
5. Compact structure can effectively save fifty percent installation space with ISO15552 standard cylinder.
6. There are magnetic switch slots around the cylinder body, which is convenient to install inducting switch.
7. Bumper is available and it can availably absorb excrescent energy.
8. Installing accessories with various specifications are optional.

Ordering code

ACE 20×30 S B □ G
ACED 20×30 S B □ G
ACEJ 20×30–30 S B □ G

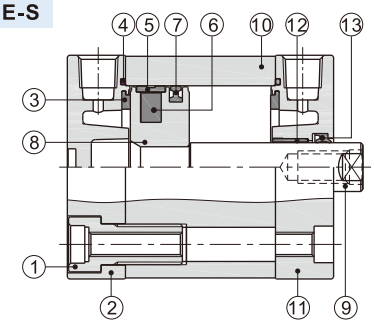
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①Model	②Bore size	③Stroke	④Adjustable Stroke	⑤Magnet	⑥Rod type	⑦Mounting type [Note1]	⑧Thread type[Note2]
ACE: Compact cylinder (Double acting)	12 16 20 25 32 40 50 63 80 100 125	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	Blank: Female thread B: Male thread	Blank: No accessories FA: FA type FB: FB type CA: CA type CB: CB type CR: CR type FTC: FTC type LB: LB type SDB: SDB type	G: G Thread
ASE: Compact cylinder (Single acting-push)	12 16 20 25 32 4050 63 80 100						
ATE: Compact cylinder (Single acting-pull)							
TACE: Compact cylinder (Double acting non-rotating with yoke)					No this code	Blank: No accessories FB: FB type CA: CA type CB: CB type CR: CR type FTC: FTC type	
TACED: Compact cylinder (Double rod non-rotating with yoke)						Blank: No accessories FB: FB type	
ACED: Compact cylinder (Double rod)	12 16 20 25 32 40 50 63 80 100 125				Blank: Female thread B: Male thread	Blank: No accessories FA: FA type FTC: FTC type LB: LB type	
ACEJ: Compact cylinder (Adjustable stroke)			10 20 30 40 50 75 100				

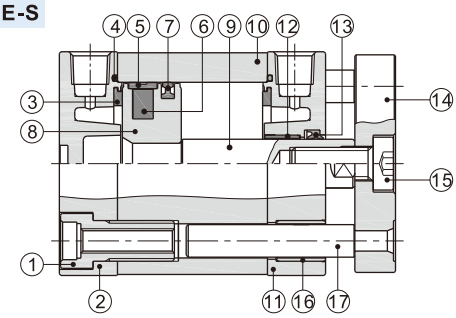
[Note1]Please refer to page 332~334 for accessory parts; CR must be used with CB, SDB must be used with CA, FTC must be used with TCM2.
[Note2]Standard thread is blank here.

Inner structure and material of major parts

ACE-S



TACE-S

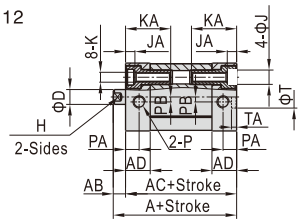


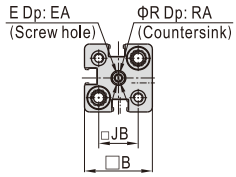
NO.	Item	Material
1	Screw	Carbon steel
2	Back cover	Aluminum alloy
3	Bumper	TPU
4	O-ring	NBR
5	Wear ring	No(Φ12~20)\Wear resistant material(Others)
6	Magnet	Sintered metal(Neodymium-iron-boron)(Φ12~20)\Plastic(Others)
7	Piston seal	NBR
8	Piston	Aluminum alloy
9	Piston rod	S45C
10	Body	Aluminum alloy
11	Front cover	Aluminum alloy
12	Bushing	No(Φ12~25)\Wear resistant material(Others)
13	Front cover packing	NBR
14	Panal	Aluminum alloy
15	Screw	Carbon steel
16	Bushing	Wear resistant material
17	Guide rod	Stainless steel(Φ12~40)\S45C(Others)

Dimensions

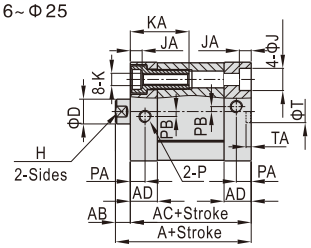
ACE

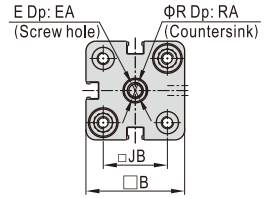
Φ12



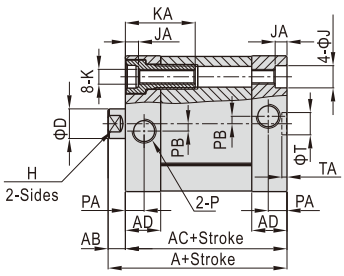


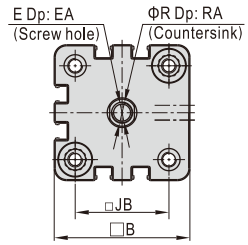
Φ16~Φ25



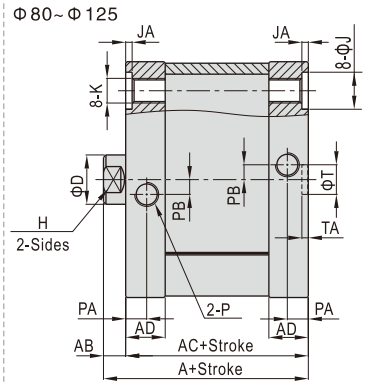


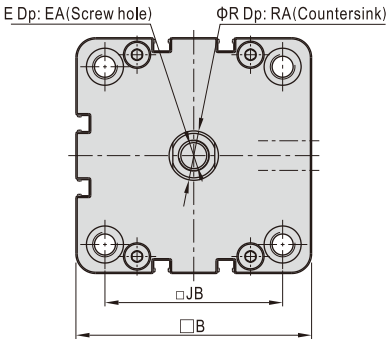
Φ32~Φ63





Φ80~Φ125





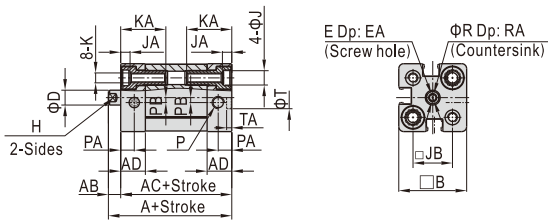
Bore size\Item	A	AB	AC	AD	B	D	E	EA	H	J	JA	JB	K	KA	P	PA	PB	R	RA	T	TA
12	40	5	35	10	27.5	6	M3×0.5	8	5	6	3.5	16	M4×0.7	18.5	M5×0.8	5.5	2	3.5	1.5	9	2.1
16	40	5	35	10	30	8	M4×0.7	10	7	6	3.5	18	M4×0.7	18.5	M5×0.8	5.5	2	4.5	1.5	9	2.1
20	43	6	37	10.5	35.5	10	M6×1.0	14	9	9	4.5	22	M5×0.8	23.5	M5×0.8	6	2	6.5	2.5	9	2.1
25	45	6	39	11	40	10	M6×1.0	14	9	9	4.5	26	M5×0.8	23.5	M5×0.8	6	2	6.5	2.5	9	2.1
32	51	7	44	14	49.5	12	M8×1.25	16	10	9	4.5	32.5	M6×1.0	28.5	G1/8	7.5	3	8.5	3.5	9	2.1
40	52.5	7	45.5	14.5	55	12	M8×1.25	16	10	9	4.5	38	M6×1.0	28.5	G1/8	7.5	3	8.5	3.5	9	2.1
50	53.5	8	45.5	14.5	65.5	16	M10×1.5	20	13	11	4.5	46.5	M8×1.25	30.5	G1/8	7.5	3	10.5	4.5	12	2.6
63	57	8	49	15	75.5	16	M10×1.5	20	13	11	4.5	56.5	M8×1.25	30.5	G1/8	7.5	4	10.5	4.5	12	2.6
80	63	9	54	16	95.5	20	M12×1.75	20	17	15	2.5	72	M10×1.5	–	G1/8	8.5	6	12.5	6	12	2.6
100	76	9	67	19	113.5	20	M12×1.75	20	17	15	2.5	89	M10×1.5	–	G1/8	10.5	7	12.5	6	12	2.6
125	92	11	81	20	134.5	25	M16×2.0	25	21	–	–	110	M12×1.75	–	G1/4	10.5	8	16.5	7	12	2.6

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder. Please refer to page 331 for male thread dimensions.

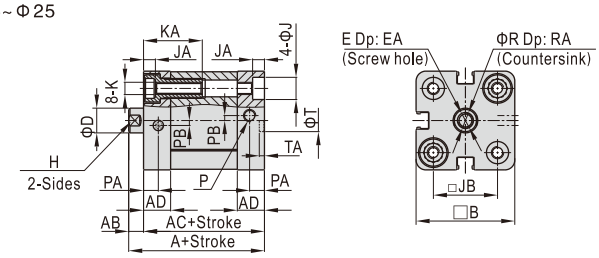
ACE Series

ASE

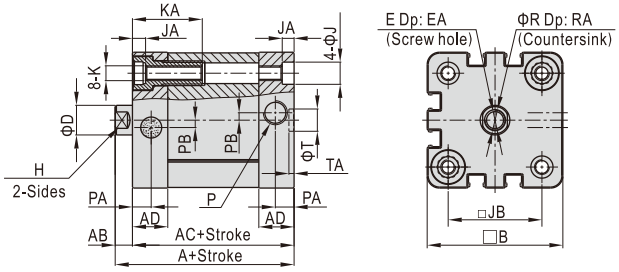
Φ12



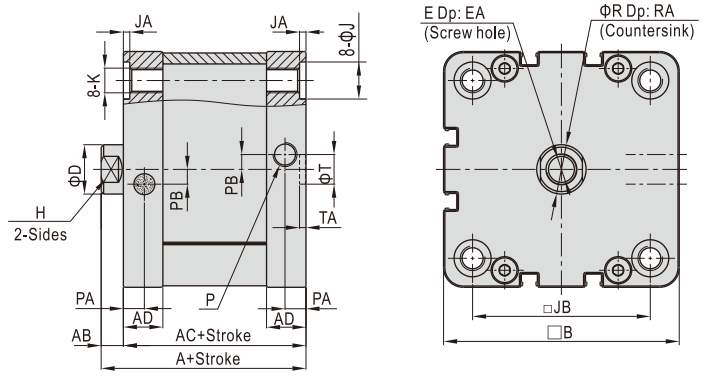
Φ16~Φ25



Φ32~Φ63

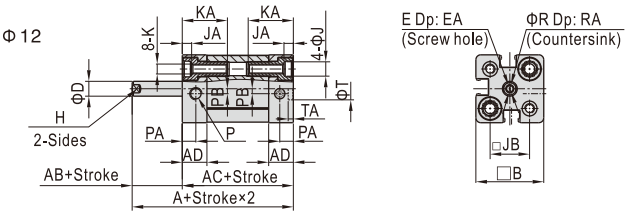


Φ80/Φ100

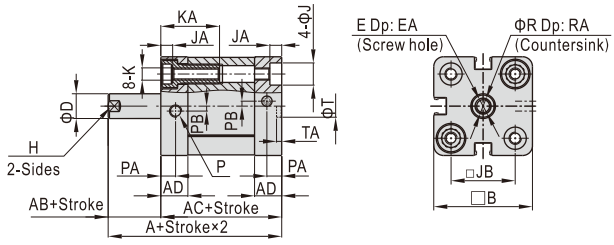


ATE

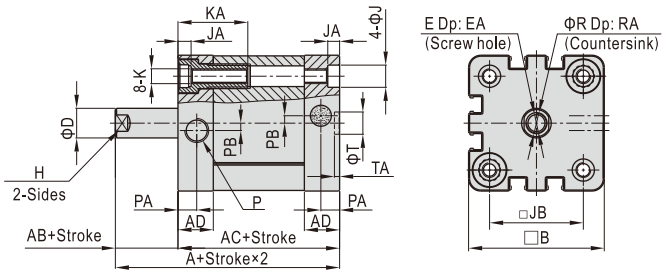
Φ12



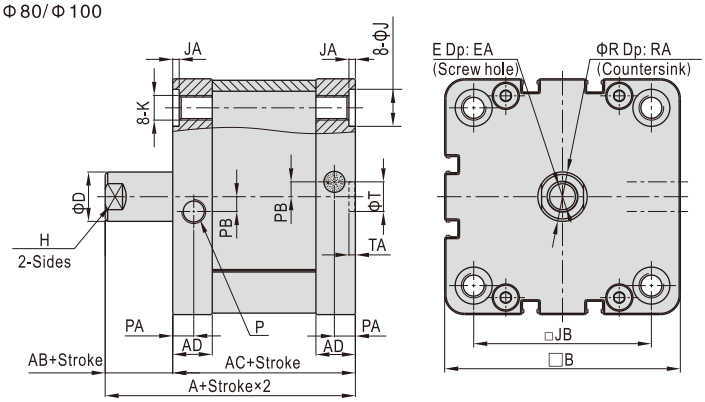
Φ16~Φ25



Φ32~Φ63



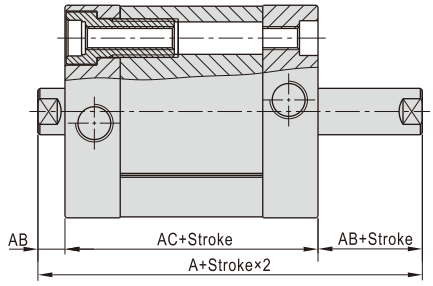
Φ80/Φ100



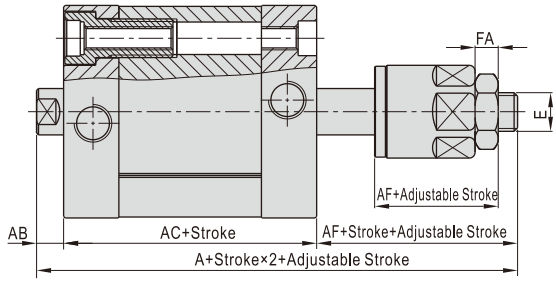
Bore size\Item	A	AB	AC	AD	B	D	E	EA	H	J	JA	JB	K	KA	P	PA	PB	R	RA	T	TA
12	40	5	35	10	27.5	6	M3×0.5	8	5	6	3.5	16	M4×0.7	18.5	M5×0.8	5.5	2	3.5	1.5	9	2.1
16	40	5	35	10	30	8	M4×0.7	10	7	6	3.5	18	M4×0.7	18.5	M5×0.8	5.5	2	4.5	1.5	9	2.1
20	43	6	37	10.5	35.5	10	M6×1.0	14	9	9	4.5	22	M5×0.8	23.5	M5×0.8	6	2	6.5	2.5	9	2.1
25	45	6	39	11	40	10	M6×1.0	14	9	9	4.5	26	M5×0.8	23.5	M5×0.8	6	2	6.5	2.5	9	2.1
32	51	7	44	14	49.5	12	M8×1.25	16	10	9	4.5	32.5	M6×1.0	28.5	G1/8	7.5	3	8.5	3.5	9	2.1
40	52.5	7	45.5	14.5	55	12	M8×1.25	16	10	9	4.5	38	M6×1.0	28.5	G1/8	7.5	3	8.5	3.5	9	2.1
50	53.5	8	45.5	14.5	65.5	16	M10×1.5	20	13	11	4.5	46.5	M8×1.25	30.5	G1/8	7.5	3	10.5	4.5	12	2.6
63	57	8	49	15	75.5	16	M10×1.5	20	13	11	4.5	56.5	M8×1.25	30.5	G1/8	7.5	4	10.5	4.5	12	2.6
80	63	9	54	16	95.5	20	M12×1.75	20	17	15	2.5	72	M10×1.5	–	G1/8	8.5	6	12.5	6	12	2.6
100	76	9	67	19	113.5	20	M12×1.75	20	17	15	2.5	89	M10×1.5	–	G1/8	10.5	7	12.5	6	12	2.6

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder. Please refer to page 331 for male thread dimensions.

ACED



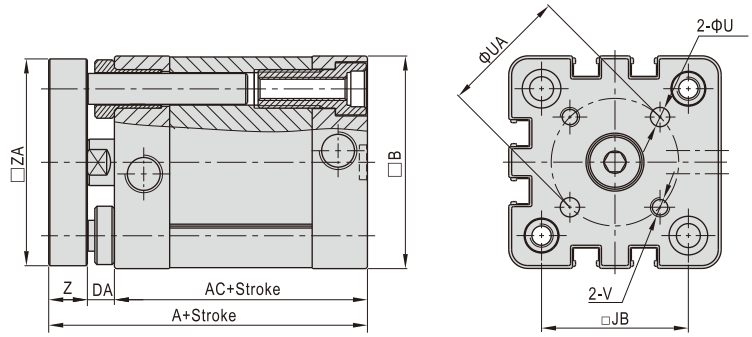
ACEJ



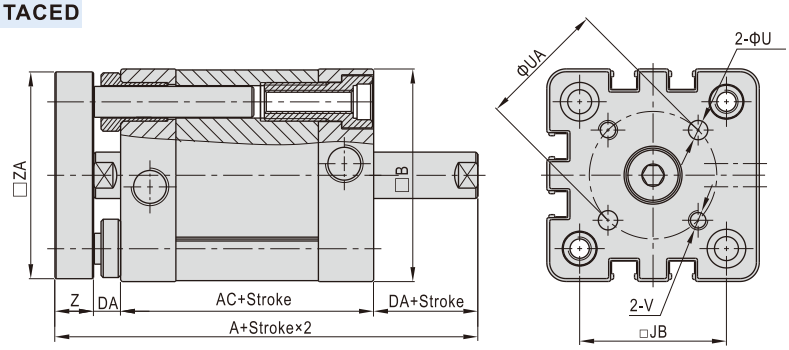
Bore size\Item	A(ACED)	A(ACEJ)	AB	AC	AF	FA	E
12	45	57	5	35	17	4	M5×0.8
16	45	61	5	35	21	5	M6×1.0
20	49	68	6	37	25	6	M8×1.25
25	51	70	6	39	25	6	M8×1.25
32	58	78	7	44	27	6	M10×1.25
40	59.5	79.5	7	45.5	27	6	M10×1.25
50	61.5	81.5	8	45.5	28	7	M12×1.25
63	65	85	8	49	28	7	M12×1.25
80	72	92	9	54	29	8	M16×1.5
100	85	105	9	67	29	8	M16×1.5
125	103	127.5	11	81	35.5	10	M20×1.5

Remark:
1. The unmarked dimension is the same as ACE standard type
2. The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

TACE



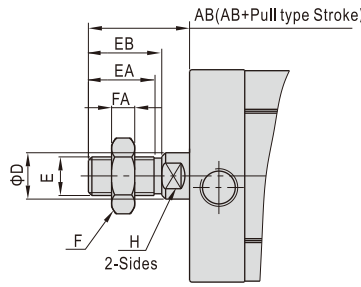
TACED



Bore size\Item	A(TACE)	A(TACED)	AC	B	DA	JB	U	UA	V	Z	ZA
12	46	51	35	27.5	5	16	3	12	M3×0.5	6	26.5
16	46	51	35	30	5	18	3	14	M3×0.5	6	29
20	51	57	37	35.5	6	22	4	17	M4×0.7	8	34.5
25	53	59	39	40	6	26	5	22	M5×0.8	8	39
32	61	68	44	49.5	7	32.5	5	28	M5×0.8	10	48
40	62.5	69.5	45.5	55	7	38	5	33	M5×0.8	10	53.5
50	65.5	73.5	45.5	65.5	8	46.5	6	42	M6×1.0	12	64
63	69	77	49	75.5	8	56.5	6	50	M6×1.0	12	74
80	77	86	54	95.5	9	72	8	65	M8×1.25	14	94
100	90	99	67	113.5	9	89	10	80	M10×1.5	14	112

Remark:
1. The unmarked dimension is the same as ACE standard type
2. The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

Male thread



Bore size\Item	AB	D	E	EA	EB	F	FA	H
12	15	6	M5×0.8	9	10	8	4	5
16	17	8	M6×1.0	11	12	10	5	7
20	22	10	M8×1.25	15	16	12	6	9
25	22	10	M8×1.25	15	16	12	6	9
32	26	12	M10×1.25	17	19	17	6	10
40	26	12	M10×1.25	17	19	17	6	10
50	30	16	M12×1.25	20	22	17	7	13
63	30	16	M12×1.25	20	22	17	7	13
80	37	20	M16×1.5	26	28	23	8	17
100	37	20	M16×1.5	26	28	23	8	17
125	51	25	M20×1.5	38	40	26	10	21

List for ordering code of accessories

Accessories / Bore size	Mounting accessories								Knuckle				Sensor switch	
	LB	FA/FB	CA	CB	CR	SDB	FTC	TCM2	I	Y	F	U	CMSE	DMSE
12	F-ACE12LB	F-ACE12FA	F-ACE12CA	-	-	F-MI12SDB	-	-	F-ACQ12I	F-ACQ12Y	F-M5X080F	F-M5X080U	CMSE	DMSE
16	F-ACP12LB	F-ACE16FA	F-ACE16CA	-	-	F-MI12SDB	-	-	F-M6X100I	F-M6X100Y	F-M6X100F	F-M6X100U		
20	F-ACP20LB	F-ACE20FA	F-ACE20CA	-	-	F-MI20SDB	-	-	F-M8X125I	F-M8X125Y	F-M8X125F	F-M8X125U		
25	F-ACP25LB	F-ACE25FA	F-ACE25CA	-	-	F-MI20SDB	-	-						
32	F-ACE32LB	F-SI32FA	F-SE32CA	F-SE32CB	F-SI32CR	-	F-SI32FTC	F-SI32TCM2	F-M10X125I	F-M10X125Y	F-M10X125F	F-M10X125U		
40	F-ACE40LB	F-SI40FA	F-SE40CA	F-SE40CB	F-SI40CR	-	F-SI40FTC	F-SI40TCM2						
50	F-ACE50LB	F-SI50FA	F-SE50CA	F-SE50CB	F-SI50CR	-	F-SI50FTC	F-SI40TCM2	F-M12X125I	F-M12X125Y	F-M12X125F	F-M12X125U		
63	F-ACE63LB	F-SI63FA	F-SE63CA	F-SE63CB	F-SI63CR	-	F-SI63FTC	F-SI63TCM2						
80	F-ACE80LB	F-SI80FA	F-SE80CA	F-SE80CB	F-SI80CR	-	F-SI80FTC	F-SI63TCM2	F-M16X150I	F-M16X150Y	F-M16X150F	F-M16X150U		
100	F-ACE100LB	F-SI100FA	F-SE100CA	F-SE100CB	F-SI100CR	-	F-SI100FTC	F-SI125TCM2						
125	-	F-SI125FA	F-SE125CA	F-SE125CB	F-SI125CR	-	F-SI125FTC	F-SI125TCM2	F-M20X150I	F-M20X150Y	F-M20X150F	F-M20X150U		

Accessory selection

Cylinder model\Accessories			Mounting accessories									Knuckle[Note1]				Sensor switch	
			LB	FA	FB	CA	CB	CR	SDB	FTC	TCM2	I	Y	U	F	CMSE	DMSE
ACE	Female thread	Without magnet	●	●	●	●	●	●	●	●	●	×	×	×	×	×	×
		With magnet														●	●
	Male thread	Without magnet										●	●	●	●	×	×
		With magnet														●	●
ASE ATE	Female thread	Without magnet	●	●	●	●	●	●	●	●	●	×	×	×	×	×	×
		With magnet														●	●
	Male thread	Without magnet										●	●	●	●	×	×
		With magnet														●	●
ACED ACEJ	Female thread	Without magnet	●	●	×	×	×	×	×	●	●	×	×	×	×	×	×
		With magnet														●	●
	Male thread	Without magnet										●	●	●	●	×	×
		With magnet														●	●
TACE	Female thread	Without magnet	×	×	●	●	●	●	●	●	●	×	×	×	×	×	×
		With magnet														●	●
TACED	Female thread	Without magnet	×	×	●	×	×	×	×	×	×	×	×	×	×	×	×
		With magnet														●	●

[Note1] The I knuckle and Y knuckle for bore Φ12 are adaptable to ACQ cylinders, and other knuckles are common parts. Please refer to P572~575 for knuckle detail.

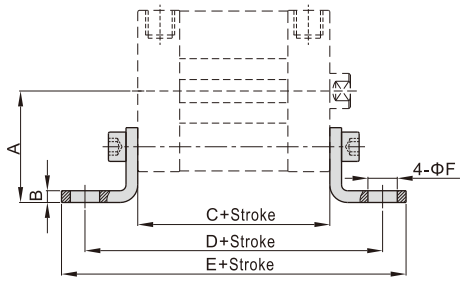
Material of accessories

Accessories / Bore size	Mounting accessories									Knuckle			
	LB	FA	FB	CA	CB	CR	SDB	FTC	TCM2	I	Y	F	U
12~25	△	●	●	●	–	–	△	■	●	□	□	□	□
32~100	△	●	●	◇	◇	◇	–	■	●	□	□	□	□
125	–	◇	◇	◇	◇	◇	–	■	●	□	□	□	□

●——Aluminum alloy; ■——Cast Steel; ◇——Ductile Iron; △——SPCC; □——Carbon Steel

Dimensions

LB

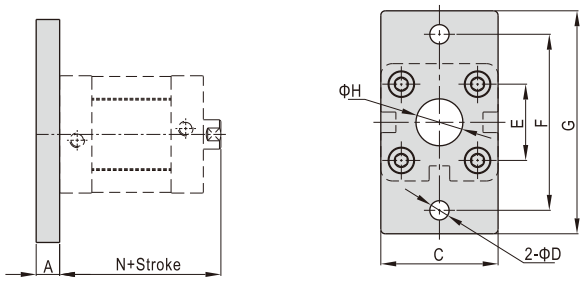


Bore size\Item	A	B	C	D	E	F	G	H
12	21	3	35	61	71	5.5	16	25
16	22	3	35	61	70.6	5.5	18	27
20	27	3.8	37	69	81.6	6.5	22	34
25	29	3.8	39	71	83.6	6.5	26	38
32	33.5	4	44	76	89	7	32	48
40	38	4	45.5	81.5	97.5	10	36	54
50	45	5	45.5	87.5	103.5	10	45	65
63	50	5	49	91	107	10	50	75
80	63	6	54	106	127	12	63	95
100	74	6	67	121	146	14.5	75	112

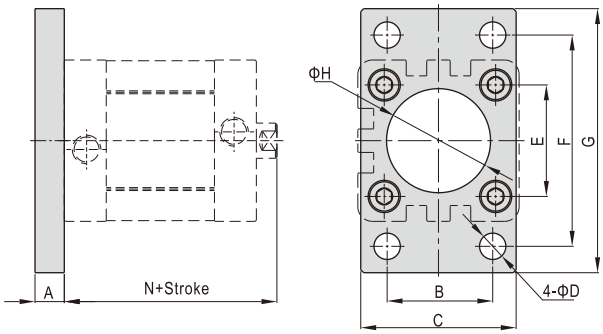
[Note] Value C in the above table is only for ACE series. Please refer to relevant content for value C of other series.

FA/FB

Φ12~Φ25



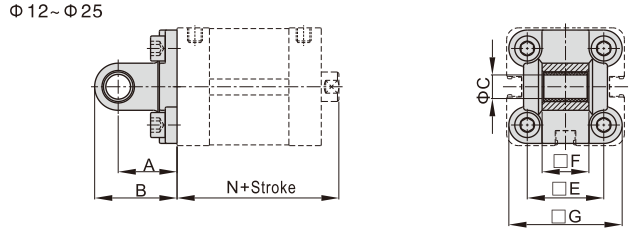
Φ32~Φ125



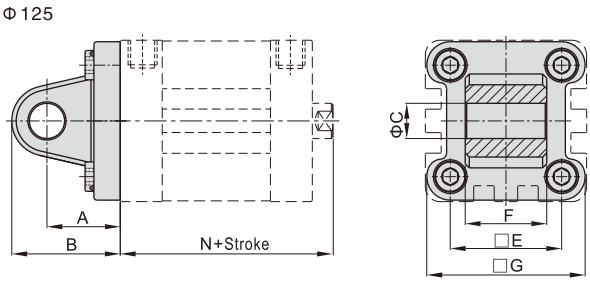
Bore size\Item	A	B	C	D	E	F	G	H	N
12	8	-	25	5.5	16	40	55	10	40
16	8	-	30	5.5	18	43	55	10	40
20	8	-	35	6.6	22	55	68	16	43
25	8	-	39.5	6.6	26	60	76	16	45
32	10	32	47	7	32.5	64	80	30.5	51
40	10	36	53	9	38	72	90	35.5	52.5
50	12	45	65	9	46.5	90	108	40.5	53.5
63	12	50	75	9	56.5	100	118	45.5	57
80	16	63	95	12.5	72	126	150	45.5	63
100	16	75	115	14.5	89	150	176	55.5	76
125	20	90	139	16.5	110	180	218	60.5	92

CA

Φ12~Φ25



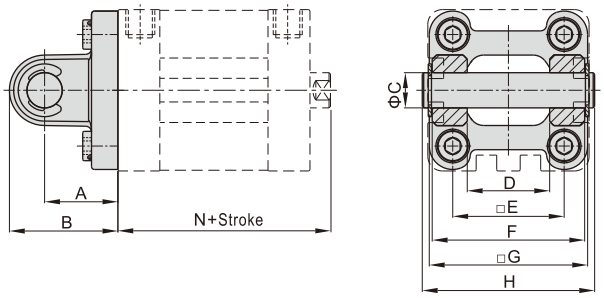
Φ32~Φ125



Bore size\Item	A	B	C	E	F	G	N
12	16	22	6	16	11.9	24	40
16	16	22	6	18	11.9	28.5	40
20	20	28	8	22	15.9	34.5	43
25	20	28	8	26	15.9	38.5	45
32	22	32.5	10	32.5	25.8	46.5	51
40	25	37	12	38	27.8	54	52.5
50	27	39	12	46.5	31.7	64	53.5
63	32	47	16	56.5	39.7	75	57
80	36	51.5	16	72	49.7	93	63
100	41	61	20	89	59.7	110	76
125	50	74	25	110	69.7	134	92

CB

Φ32~Φ125

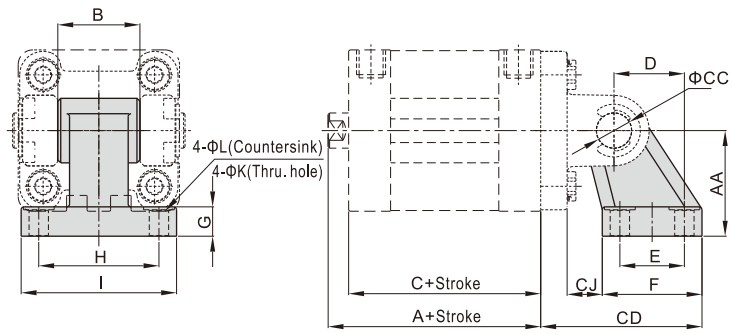


Bore size\Item	A	B	C	D	E	F	G	H	N
32	22	32.5	10	26	32.5	45	46.5	51	51
40	25	37	12	28	38	52	54	59	52.5
50	27	39	12	32	46.5	60	64	67	53.5
63	32	47	16	40	56.5	70	75	77	57
80	36	51.5	16	50	72	90	93	97	63
100	41	61	20	60	89	110	110	119	76
125	50	74	25	70	110	130	134	139	92

[Note] CB is attached with relevant PIN.

CR

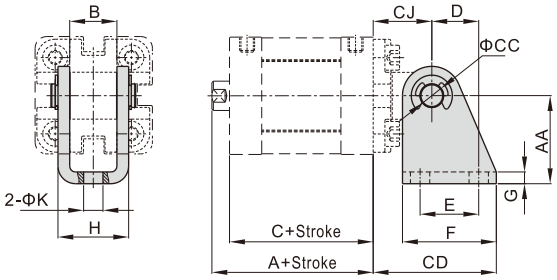
Φ32~Φ125



Bore size\Item	A	AA	B	C	CC	CD	CJ	D	E	F	G	H	I	K	L
32	51	32	26	44	10	50	10	21	18	31	8	38	51	6.6	11
40	52.5	36	28	45.5	12	56	12	24	22	35	10	41	54	6.6	11
50	53.5	45	32	45.5	12	68	13	33	30	45	12	50	65	9	14
63	57	50	40	49	16	77	17	37	35	50	12	52	67	9	14
80	63	63	50	54	16	93	19	47	40	60	14	66	86	11	17
100	76	71	60	67	20	106	22	55	50	70	15	76	96	11	17
125	92	90	70	81	25	135	26	70	60	90	20	94	124	14	20

[Note] CR cann't be used alone, it must be used with CB.

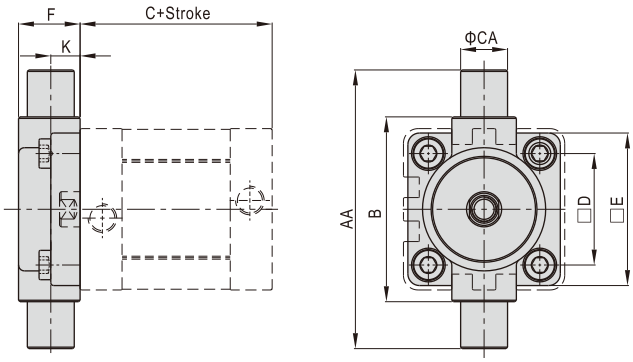
SDB Φ12~Φ25

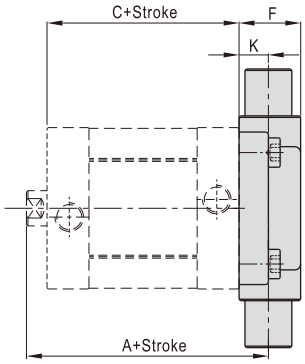


Bore size\Item	A	AA	B	C	CC	CD	CJ	D	E	F	G	H	K
12	40	27	12.1	35	6	34	16	13	15	25	2	18.1	5.5
16	40	27	12.1	35	6	34	16	13	15	25	2	18.1	5.5
20	43	30	16.1	37	8	42	20	16	20	32	2.5	24.1	6.6
25	45	30	16.1	39	8	42	20	16	20	32	2.5	24.1	6.6

[Note] SDB cann't be used alone, it must be used with CA.

FTC Φ32~Φ125

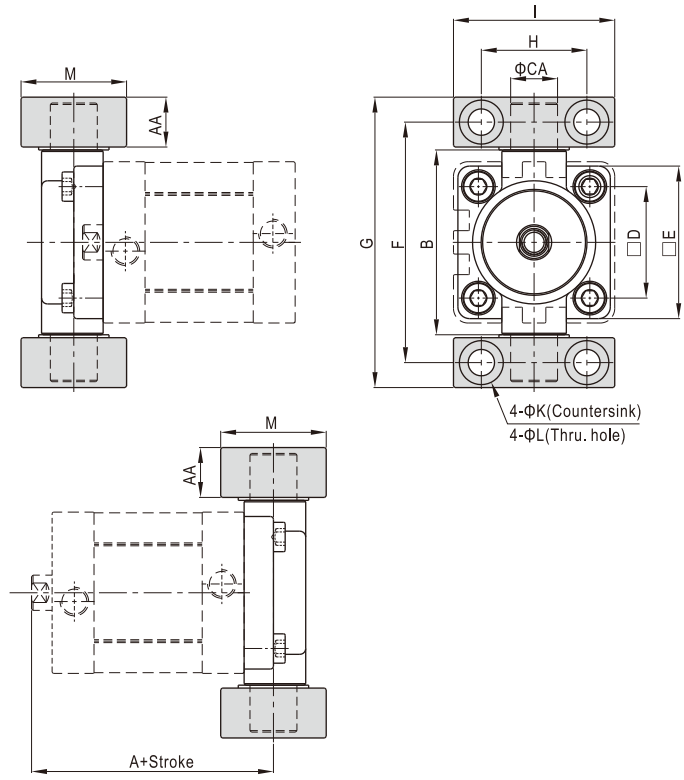




Bore size\Item	A	AA	B	C	CA
32	63	74	50	44	12
40	66.5	95	63	45.5	16
50	71.5	107	75	45.5	16
63	77	130	90	49	20
80	85	150	110	54	20
100	102	185	132	67	25
125	124	210	160	81	25

Bore size\Item	D	E	F	K
32	32.5	46	19	10
40	38	52	21	10
50	46.5	64	26	12
63	56.5	74	28	12
80	72	94	31	16
100	89	114	35	16
125	110	139	43	20

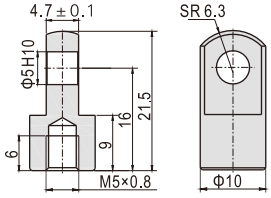
TCM2 Φ32~Φ125



Bore size\Item	A	AA	B	CA	D	E	F	G	H	I	K	L	M
32	63	14	52	12	32.5	46	66	80	32	46	11	7	30
40	66.5	17	65	16	38	52	82	99	36	55	15	9	36
50	71.5	17	75	16	46.5	64	94	111	36	55	15	9	36
63	77	20.5	90	20	56.5	74	113.5	134	42	65	18	11	40
80	85	20.5	112	20	72	94	133.5	154	42	65	18	11	40
100	102	24.5	135	25	89	114	159.5	184	50	75	20	14	50
125	124	24.5	170	25	110	139	187.5	212	50	75	20	14	50

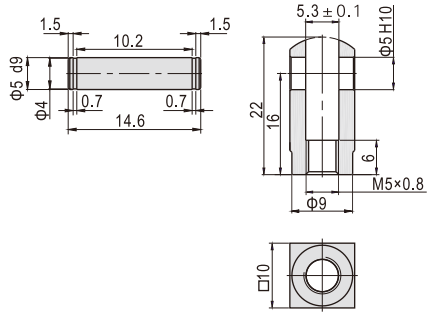
[Note] TCM2 cann't be used alone, it must be used with FTC.
The installation position of the accessories can not be adjusted arbitrarily.

I Knuckle F-ACQ12I



[Note] Other I knuckles are common parts .
Please refer to P572 for knuckle detail,

Y Knuckle F-ACQ12Y



[Note] Other Y knuckles are common parts .
Please refer to P573 for knuckle detail.

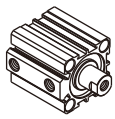
Compendium of ACQ Series

In accordance with JIS standard

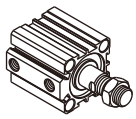
Magnetic switch slots around the cylinder body

There are magnetic switch slots around the cylinder body convenient to install inducting switch.

Two kinds of rod type

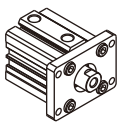


Female thread

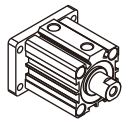


Male thread

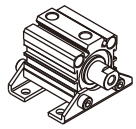
Multi-mounting accessories



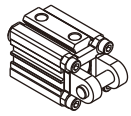
FA Type



FB Type



LB Type



CB Type

Thirteen bore size are available

Bore size: 12, 16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 140, 160



Multi-type cylinder

ACQ: Compact cylinder (Double acting)	
ASQ: Compact cylinder (Single acting-push)	
ATQ: Compact cylinder (Single acting-pull)	
ACQD: Compact cylinder (Double rod)	
ACQJ: Compact cylinder (Adjustable stroke)	
TACQ: Compact cylinder (Double acting with guider)	

Compact structure

C clip is adopted to connect the cylinder body and back cover or front cover, and riveted structure is adopted to connect piston and piston rod to make it compact and reliable.

Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa) 0.1	0.2	0.3	0.4	0.5	0.6	0.7
12	6	Single acting	Push side	113.1	-	13.6	24.9	36.2	47.5	58.9	70.2
			Pull side	84.8	-	8.0	16.4	24.9	33.4	41.9	50.4
		Double acting	Push side	113.1	11.3	22.6	33.9	45.2	56.5	67.9	79.2
			Pull side	84.8	8.5	17.0	25.4	33.9	42.4	50.9	59.4
16	8	Single acting	Push side	201.1	-	27.0	47.1	67.2	87.3	107.4	127.5
			Pull side	150.8	-	17.0	32.0	47.1	62.2	77.3	92.4
		Double acting	Push side	201.1	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull side	150.8	15.1	30.2	45.2	60.3	75.4	90.5	105.6
20	10	Single acting	Push side	314.2	-	36.8	68.2	99.7	131.1	162.5	193.9
			Pull side	235.6	-	21.1	44.7	68.2	91.8	115.4	138.9
		Double acting	Push side	314.2	31.4	62.8	94.2	125.7	157.1	188.5	219.9
			Pull side	235.6	23.6	47.1	70.7	94.2	117.8	141.4	164.9
25	12	Single acting	Push side	490.9	18.1	67.2	116.3	165.3	214.4	263.5	312.6
			Pull side	377.8	6.8	44.6	82.3	120.1	157.9	195.7	233.4
		Double acting	Push side	490.9	49.1	98.2	147.3	196.3	245.4	294.5	343.6
			Pull side	377.8	37.8	75.6	113.3	151.1	188.9	226.7	264.4
32	16	Single acting	Push side	804.2	27.4	107.8	188.3	268.7	349.1	429.5	510.0
			Pull side	603.2	7.3	67.6	128.0	188.3	248.6	308.9	369.2
		Double acting	Push side	804.2	80.4	160.8	241.3	321.7	402.1	482.5	563.0
			Pull side	603.2	60.3	120.6	181.0	241.3	301.6	361.9	422.2
40	16	Single acting	Push side	1256.6	44.7	170.3	296.0	421.7	547.3	673.0	798.6
			Pull side	1055.6	24.6	130.1	235.7	341.2	446.8	552.3	657.9
		Double acting	Push side	1256.6	125.7	251.3	377.0	502.7	628.3	754.0	879.6
			Pull side	1055.6	105.6	211.1	316.7	422.2	527.8	633.3	738.9
50	20	Single acting	Push side	1963.5	96.3	292.7	489.0	685.4	881.7	1078.1	1274.4
			Pull side	1649.3	64.9	229.9	394.8	559.7	724.7	889.6	1054.5
		Double acting	Push side	1963.5	196.3	392.7	589.0	785.4	981.7	1178.1	1374.4
			Pull side	1649.3	164.9	329.9	494.8	659.7	824.7	989.6	1154.5
63	20	Single acting	Push side	3117.2	141.7	453.4	765.2	1076.9	1388.6	1700.3	2012.1
			Pull side	2803.1	110.3	390.6	670.9	951.2	1231.5	1511.9	1792.2
		Double acting	Push side	3117.2	311.7	623.4	935.2	1246.9	1558.6	1870.3	2182.1
			Pull side	2803.1	280.3	560.6	840.9	1121.2	1401.5	1681.9	1962.2
80	25	Double acting	Push side	5026.5	502.7	1005.3	1508.0	2010.6	2513.3	3015.9	3518.6
			Pull side	4535.7	453.6	907.1	1360.7	1814.3	2267.8	2721.4	3175.0
100	32	Double acting	Push side	7854.0	785.4	1570.8	2356.2	3141.6	3927.0	4712.4	5497.8
			Pull side	7049.7	705.0	1409.9	2114.9	2819.9	3524.9	4229.8	4934.8
125	32	Double acting	Push side	12271.8	1227.2	2454.4	3681.5	4908.7	6135.9	7363.1	8590.2
			Pull side	11467.6	1146.8	2293.5	3440.3	4587.0	5733.8	6880.6	8027.3
140	32	Double acting	Push side	15393.8	1539.4	3078.8	4618.1	6157.5	7696.9	9236.3	10775.7
			Pull side	14589.6	1459.0	2917.9	4376.9	5835.8	7294.8	8753.8	10212.7
160	40	Double acting	Push side	20106.2	2010.6	4021.2	6031.9	8042.5	10053.1	12063.7	14074.3
			Pull side	18849.6	1885.0	3769.9	5654.9	7539.8	9424.8	11309.8	13194.7

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. As both of the front cover and piston of the cylinder are short, typically too large stroke can not be selected.
7. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
8. The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
9. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.
10. C clip Installation:
    10.1. Removal & Installation of C clip must be done with proper tool & care.
    10.2. Ensure C clip is securely fitted into the proper slot to prevent leakage.

ACQ Series

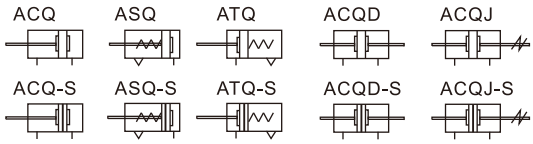


Specification

Bore size(mm)		12	16	20	25	32	40	50	63	80	100
Acting type		Double acting									
		Single acting_Push type、Single acting_Pull type									–
Fluid		Air(to be filtered by 40μm filter element)									
Operating pressure	Double acting	0.15~1.0MPa(22~145psi)									
	Single acting	0.2~1.0MPa(28~145psi)									
Proof pressure		1.5MPa(215psi)									
Temperature ℃		-20~70									
Speed range mm/s		Double acting：30~500 Single acting：50~500									
Stroke tolerance		Stroke≤100 $^{+1.0}_{0}$ Stroke>100 $^{+1.5}_{0}$									
Cushion type		Bumper									
Port size [Note1]		M5×0.8				1/8"		1/4"		3/8"	

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. JIS standard is implemented.
2. C clip is adopted to connect the cylinder body and back cover or front cover, and riveted structure is adopted to connect piston and piston rod to make it compact and reliable.
3. The internal diameter of the body is treated with rolling followed by the treatment of hard anodizing, forming an excellent abrasion resistance and durability.
4. The seal of piston adopts heterogeneous two-way seal structure. It has compact dimension and the function of grease reservation.
5. Compact structure can effectively save installation space.
6. There are magnetic switch slots around the cylinder body, which is convenient to install inducting switch.
7. Installing accessories with various specifications are optional.

Stroke

Bore size (mm)		Standard stroke (mm)	Max.std stroke
12	Double acting	5 10 15 20 25 30 35 40 45 50	50
	Single acting	5 10 15 20	20
16	Double acting	5 10 15 20 25 30 35 40 45 50 55 60	60
	Single acting	5 10 15 20	20
20 25	Double acting	5 10 15 20 25 30 35 40 45 50 60 70 75 80 90 100	100
	Single acting	5 10 15 20 25 30	30
32 40 50 63	Double acting	5 10 15 20 25 30 35 40 45 50 60 70 75 80 90 100	100
	Single acting	5 10 15 20 25 30	30
80 100	Double acting	5 10 15 20 25 30 35 40 45 50 60 70 75 80 90 100	100

Note) 1. Please contact the company for other special strokes.
2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

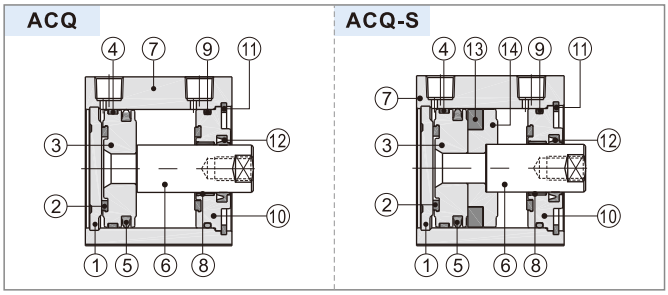
Ordering code

ACQ 20×30 S B □ G
ACQD 20×30 S B □ G
ACQJ 20×30–30 S B □ G
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①Model	②Bore size	③Stroke	④Adjustable Stroke	⑤Magnet	⑥Rod type	⑦Mounting type [Note1]	⑧Thread type [Note2]
ACQ: Compact cylinder (Double acting)	12 16 20 25 32 40 50 63 80 100	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	Blank: Female thread B: Male thread	Blank: No accessories FA: FA type FB: FB type CB: CB type LB: LB type	G: G Thread
ASQ: Compact cylinder (Single acting-push)	12 16 20 25 32 4050 63						
ATQ: Compact cylinder (Single acting-pull)							
ACQD: Compact cylinder (Double rod)	12 16 20 25 32 40 50 63 80 100					Blank: No accessories FA: FA type FB: FB type LB: LB type	
ACQJ: Compact cylinder (Adjustable stroke)			10 20 30 40 50 75 100				

[Note1]Please refer to page 347~348 for accessory parts.
[Note2]Standard thread is blank here.

Inner structure and material of major parts

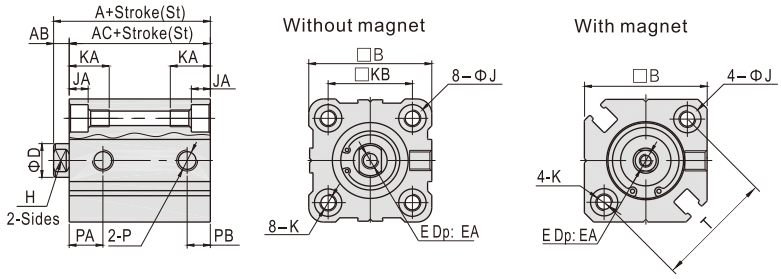


NO.	Item	Material
1	Back cover	No(Φ12, 16)\Aluminum alloy(Others)
2	Bumper	TPU(Φ12~25)\NBR(Others)
3	Piston	Brass(Φ12, 16)\Aluminum alloy(Others)
4	Wear ring	No(Φ12~32)\Wear resistant material(Others)
5	Piston seal	NBR
6	Piston rod	Carbon steel with 20μm chrome plated
7	Body	Aluminum alloy
8	Bushing	No(Φ12~32)\Wear resistant material(Others)
9	O-ring	NBR
10	Front cover	Aluminum alloy
11	C clip	Spring steel
12	Front cover packing	NBR
13	Magnet	Sintered metal(Neodymium-iron-boron)(Φ12~25)\Plastic(Others)
14	Magnet holder	Brass(Φ12, 16)\Aluminum alloy(Others)

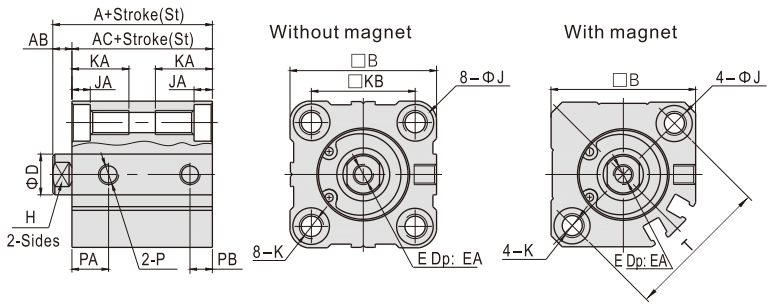
Dimensions

ACQ

Φ12、Φ16

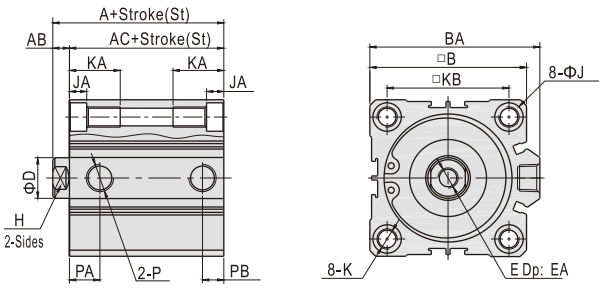


Φ20、Φ25



Type	Without magnet						With magnet		AB	B	D	E	EA	H	J	JA	K	KA	KB	P	Without magnet		With magnet		T
Bore size\Item	A			AC			A	AC													PA	PB	PA	PB	
Stroke	St≤50	St=55	St≥60	St≤50	St=55	St≥60																			
12	20.5	-	-	17	-	-	31.5	28	3.5	25	6	M3×0.5	6	5	6	3.5	M4×0.7 Thru.hole:Φ3.4	11	15.5	M5×0.8	7.5	5	9	7	22
16	22	22	22	18.5	18.5	18.5	34	30.5	3.5	29	8	M4×0.7	8	6	6	3.5	M4×0.7 Thru.hole:Φ3.4	11	20	M5×0.8	8	5.5	9.5	5.5	28
20	24	-	34	19.5	-	29.5	36	31.5	4.5	36	10	M5×0.8	7	8	9	5.5	M6×1.0 Thru.hole:Φ5.2	17	25.5	M5×0.8	9	5.5	9.5	5.5	36
25	27.5	-	37.5	22.5	-	32.5	37.5	32.5	5	40	12	M6×1.0	12	10	9	5.5	M6×1.0 Thru.hole:Φ5.2	17	28	M5×0.8	11	5.5	11	5.5	40

Φ32~Φ100 (Stroke≤100)



Item / Bore size	A(Without magnet) St≤50	A(Without magnet) St≥60	A (With magnet)	AB	AC(Without magnet) St≤50	AC(Without magnet) St≥60	AC (With magnet)	B	BA	D	E
32	30	40	40	7	23	33	33	45	49.5	16	M8×1.25
40	36.5	46.5	46.5	7	29.5	39.5	39.5	53	57	16	M8×1.25
50	38.5	48.5	48.5	8	30.5	40.5	40.5	64	71	20	M10×1.5
63	44	54	54	8	36	46	46	77	84	20	M10×1.5
80	53.5	63.5	63.5	10	43.5	53.5	53.5	98	104	25	M16×2.0
100	65	75	75	12	53	63	63	117	123.5	32	M20×2.5

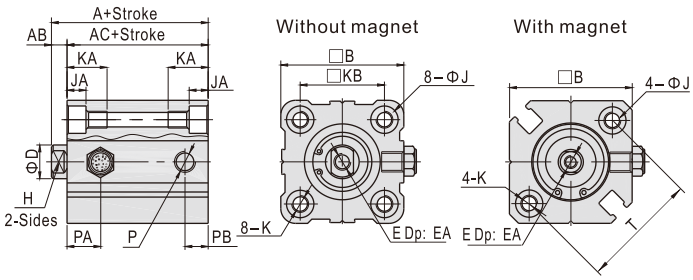
Item / Bore size		EA	H	J	JA	K	KA Note	KB	P	Without magnet PA	Without magnet PB	With magnet PA	With magnet PB
32	St=5	13	14	9	5.5	M6×1.0 Thru.hole:Φ5.2	17	34	1/8"	7.5	6.5	10.5	7.5
	St>5									10.5	7.5		
40		13	14	9	5.5	M6×1.0 Thru.hole:Φ5.2	17	40	1/8"	11	8	11	8
50	St=5	15	17	10.5	6.5	M8×1.25 Thru.hole:Φ6.8	22	50	1/4"	9	9	10.5	10.5
	St>5									10.5	10.5		
63	St≥25	15	17	14	9	M10×1.5 Thru.hole:Φ8.5	28.5	60	1/4"	14 (15)	9.5 (10.5)	15	10.5
	St=20						27						
	St≤15						thread						
80		20	22	17	11	M12×1.75 Thru.hole:Φ10.3	35.5	77	3/8"	16	14	16	14
100		26	27	17	11	M12×1.75 Thru.hole:Φ10.3	35.5	94	3/8"	20	17.5	20	17.5

Note: PA/PB in "()" is the value when stroke >5.

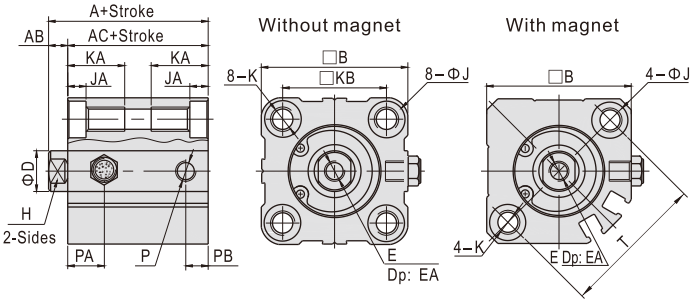
Note) The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 55mm stroke cylinder has the same dimensions of 60 std. stroke cylinder.

ASQ

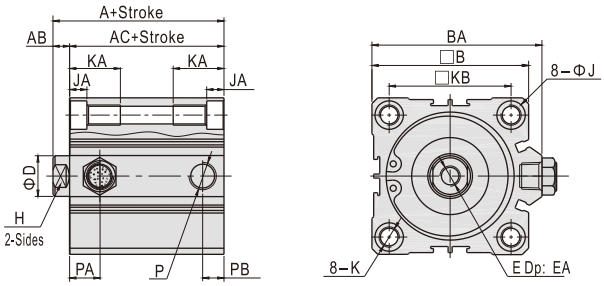
Φ12、Φ16



Φ20 Φ25

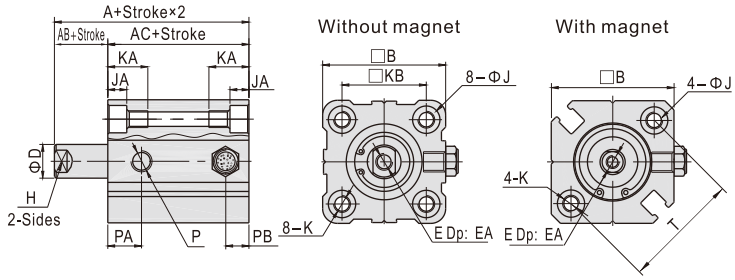


Φ32~Φ63

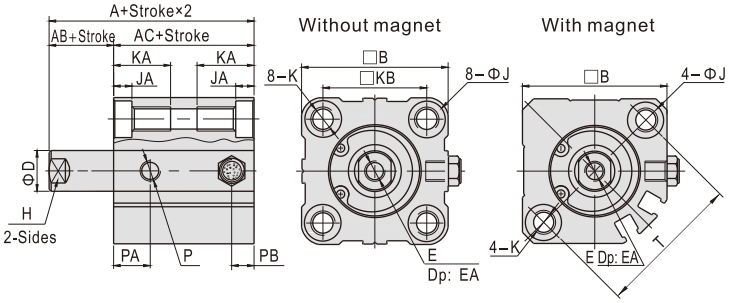


ATQ

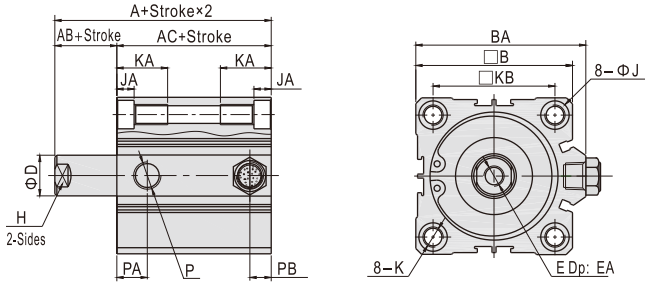
Φ12、Φ16



Φ20 Φ25



Φ32~Φ63

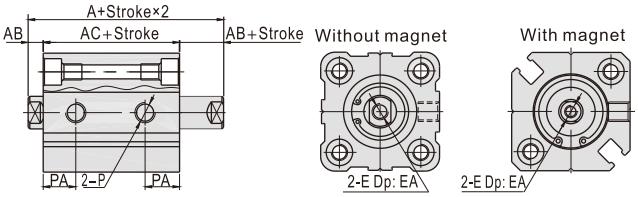


Bore size\Item	A(Without magnet)			A(With magnet)			AB	AC(Without magnet)			AC(With magnet)			B	BA	D	E	EA
Stroke	5\10	15\20	25\30	5\10	15\20	25\30		5\10	15\20	25\30	5\10	15\20	25\30					
12	25.5	30.5	-	36.5	41.5	-	3.5	22	27	-	33	38	-	25	-	6	M3×0.5	6
16	27	32	-	39	44	-	3.5	23.5	28.5	-	35.5	40.5	-	29	-	8	M4×0.7	8
20	29	34	39	41	46	51	4.5	24.5	29.5	34.5	36.5	41.5	46.5	36	-	10	M5×0.8	7
25	32.5	37.5	42.5	42.5	47.5	52.5	5	27.5	32.5	37.5	37.5	42.5	47.5	40	-	12	M6×1.0	12
32	35	40	45	45	50	55	7	28	33	38	38	43	48	45	49.5	16	M8×1.25	13
40	41.5	46.5	51.5	51.5	56.5	61.5	7	34.5	39.5	44.5	44.5	49.5	54.5	53	57	16	M8×1.25	13
50	48.5	53.5	58.5	58.5	63.5	68.5	8	40.5	45.5	50.5	50.5	55.5	60.5	64	71	20	M10×1.5	15
63	54	59	64	64	69	74	8	46	51	56	56	61	66	77	84	20	M10×1.5	15

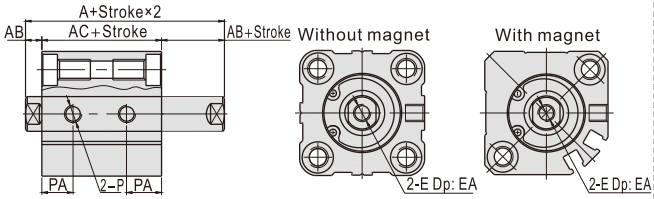
Bore size\Item	H	J	JA	K	KA	KB	P	PA(Without magnet)	PA(With magnet)	PB(Without magnet)	PB(With magnet)	T
12	5	6	3.5	M4×0.7 Thru.hole:Φ3.4	11	15.5	M5×0.8	7.5	9	5	7	22
16	6	6	3.5	M4×0.7 Thru.hole:Φ3.4	11	20	M5×0.8	8	9.5	5.5	5.5	28
20	8	9	5.5	M6×1.0 Thru.hole:Φ5.2	17	25.5	M5×0.8	9	9.5	5.5	5.5	36
25	10	9	5.5	M6×1.0 Thru.hole:Φ5.2	17	28	M5×0.8	11	11	5.5	5.5	40
32	14	9	5.5	M6×1.0 Thru.hole:Φ5.2	17	34	1/8"	10.5	10.5	7.5	7.5	-
40	14	9	5.5	M6×1.0 Thru.hole:Φ5.2	17	40	1/8"	11	11	8	8	-
50	17	10.5	6.5	M8×1.25 Thru.hole:Φ6.8	22	50	1/4"	10.5	10.5	10.5	10.5	-
63	17	14	9	M10×1.5 Thru.hole:Φ8.5	28.5	60	1/4"	15	15	10.5	10.5	-

ACQD

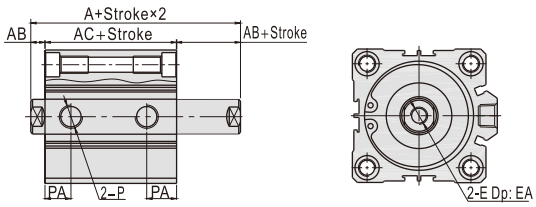
Φ12、Φ16



Φ20 Φ25

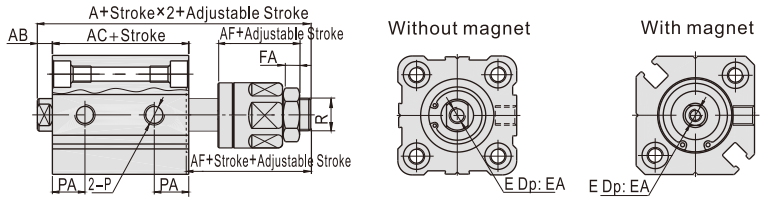


Φ32~Φ100

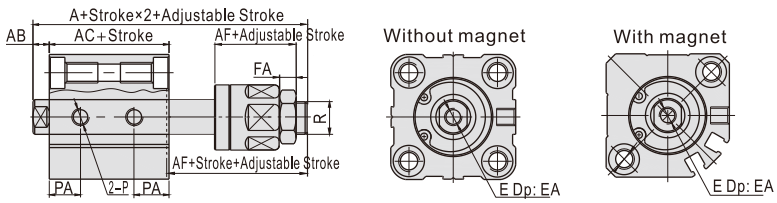


ACQJ

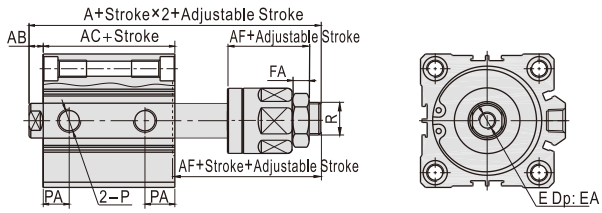
Φ12、Φ16



Φ20 Φ25



Φ32~Φ100

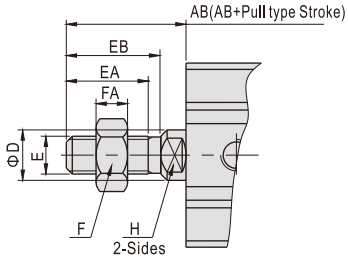


Item	A(ACQD)		A(ACQJ)		AC(ACQD)		AC(ACQJ)		AB	AF	E	EA	FA	PA	R
Bore size	Without magnet	With magnet	Without magnet	With magnet	Without magnet	With magnet	Without magnet	With magnet							
12	32.2	39.4	45.2	52.4	25.2	32.4	25.2	32.4	3.5	17	M3×0.5	6	4	9	M5×0.8
16	33	43	50	60	26	36	26	36	3.5	21	M4×0.7	8	5	9.5	M6×1.0
20	35	47	55	67	26	38	26	38	4.5	25	M5×0.8	7	6	9.5	M8×1.25
25	39	49	60.5	70.5	29	39	29	39	5	27	M6×1.0	9.5(St=5)/12(St>5)	6	11	M10×1.25
32	44.5	54.5	64.9	74.9	30.5	40.5	30.5	40.5	7	28	M8×1.25	9(St≤10)/13(St>10)	7	10	M12×1.25
40	54	64	74.5	84.5	40	50	40	50	7	28	M8×1.25	11(St≤10)/13(St>10)	7	13	M12×1.25
50	56.5	66.5	77	87	40.5	50.5	40.5	50.5	8	29	M10×1.5	12(St≤10)/15(St>10)	8	13.5	M16×1.5
63	58	68	78.4	88.4	42	52	42	52	8	29	M10×1.5	12(St≤10)/15(St>10)	8	14.5(St=5)/16(St>5)	M16×1.5
80	71	81	95.8	105.8	51	61	51	61	10	35.5	M16×2.0	14(St≤15)/20(St>15)	10	16	M20×1.5
100	84.5	94.5	114.3	124.3	60.5	70.5	60.5	70.5	12	42.5	M20×2.5	20(St≤25)/26(St>25)	13.5	21	M27×2.0

Remark) The unmarked dimension is the same as ACQ standard type. Please refer to this page for male thread dimensions.

Male thread

(Bore size: Φ12~Φ100, Stroke≤100)



Bore size\Item	AB	D	E	EA	EB	F	FA	H
12	14	6	M5×0.8	9	10	8	4	5
16	15.5	8	M6×1.0	10	11.5	10	5	6
20	18.5	10	M8×1.25	12	13.5	12	6	8
25	22.5	12	M10×1.25	15	17	17	6	10
32	28.5	16	M14×1.5	20.5	23.5	19	8	14
40	28.5	16	M14×1.5	20.5	23.5	19	8	14
50	34	20	M18×1.5	25.5	27.5	27	11	17
63	33.5	20	M18×1.5	26	28	27	11	17
80	43.5	25	M22×1.5	32.5	35.5	32	13	22
100	43.5	32	M26×1.5	32.5	35.5	36	13	27

ACQ Series——Big bore size



Specification

Bore size(mm)	125	140	160
Acting type	Double acting		
Fluid	Air(to be filtered by 40μm filter element)		
Operating pressure	0.15~1.0MPa(22~145psi)		
Proof pressure	1.5MPa(215psi)		
Temperature ℃	-20~70		
Speed range mm/s	30~500		
Stroke tolerance	Stroke≤100 $^{+1.0}_{0}$ Stroke>100 $^{+1.5}_{0}$		
Cushion type	Bumper		
Port size [Note1]	3/8"		

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol



Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke
125	10 20 30 40 50 75 100 125 150 175 200 250 300	300
140		
160		

Note) Please contact us for special strokes.

Product feature

1. JIS standard is implemented.
2. C clip is adopted to connect the cylinder body and back cover or front cover to make it compact and reliable.
3. The internal diameter of the body is treated with rolling followed by the treatment of hard anodizing, forming an excellent abrasion resistance and durability.
4. The seal of piston adopts heterogeneous two-way seal structure. It has compact dimension and the function of grease reservation.
5. Compact structure can effectively save installation space.
6. There are magnetic switch slots around the cylinder body, which is convenient to install inducting switch.

Ordering code

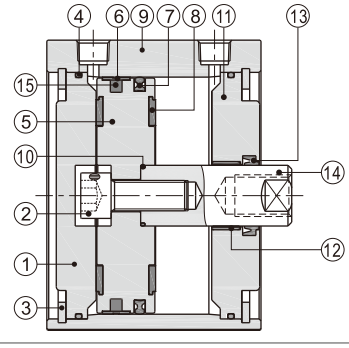
ACQ 125×30 S B G
ACQD 125×30 S B G
ACQJ 125×30–30 S B G

1 2 3 4 5 6 7

①Model	②Bore size	③Stroke	④Adjustable Stroke	⑤Magnet	⑥Rod type	⑦Thread type
ACQ: Compact cylinder (Double acting)	125 140 160	Refer to stroke table for details	No this code	S: With magnet	Blank: Female thread B: Male thread	G: G Thread
ACQD: Compact cylinder (Double rod)						
ACQJ: Compact cylinder (Adjustable stroke)			10 20 30 40 50 75 100			

Inner structure and material of major parts

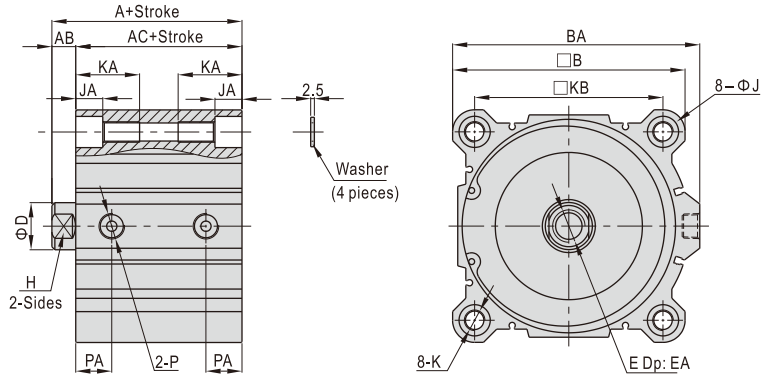
ACQ-S



NO.	Item	Material	NO.	Item	Material
1	Back cover	Aluminum alloy	9	Body	Aluminum alloy
2	Screw	Carbon steel	10	O-ring	NBR
3	C clip	Spring steel	11	Front cover	Aluminum alloy
4	O-ring	NBR	12	Bushing	Wear resistant material
5	Piston	Aluminum alloy	13	Front cover packing	NBR
6	Wear ring	Wear resistant material	14	Piston rod	Carbon steel with 20μm chrome plated
7	Piston seal	NBR			
8	Bumper	NBR	15	Magnet	Rubber

Dimensions

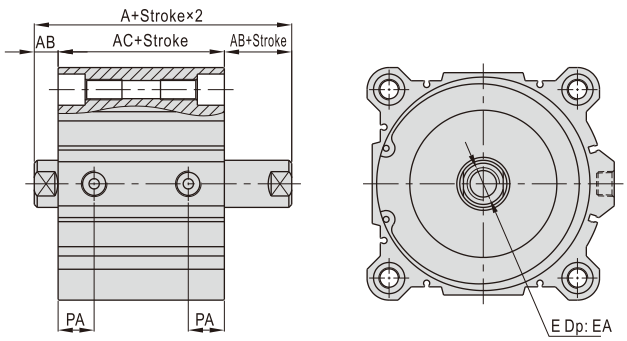
ACQ



Bore size\Item	A	AB	AC	B	BA	D	E	EA(St≤10)	EA(St>10)	H	J	JA	K	KA	KB	P	PA
125	99	16	83	142	153	32	M22×2.5	22.5	30	27	21.5	18.4	M14×2.0 Thru.hole:Φ12.4	43.5	114	3/8"	24.5
140	99	16	83	158	168	32	M22×2.5	22.5	30	27	21.5	18.4	M14×2.0 Thru.hole:Φ12.4	43.5	128	3/8"	24.5
160	108	17	91	178	188	40	M24×3.0	26.5	33	36	24.5	21.2	M16×2.0 Thru.hole:Φ14.4	49	144	3/8"	27.5

Remark) Washer must be used when the cylinder be mounted by through hole.Please refer to this page for male thread dimensions.

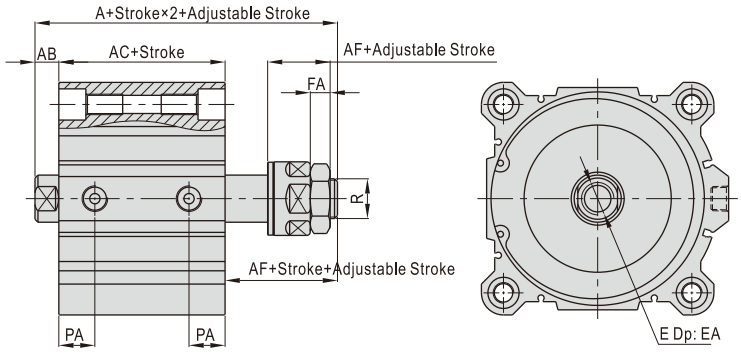
ACQD



Bore size\Item	A	AB	AC	E	EA		PA
					St≤10	St>10	
125	115	16	83	M22×2.5	22.5	30	24.5
140	115	16	83	M22×2.5	22.5	30	24.5
160	125	17	91	M24×3.0	26.5	33	27.5

Remark) The unmarked dimension is the same as ACQ standard type.
Please refer to this page for male thread dimensions.

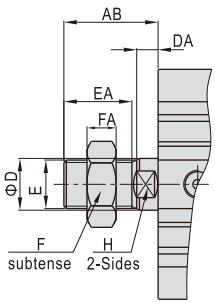
ACQJ



Bore size\Item	A	AB	AC	AF	E	EA		FA	PA	R
						St≤10	St>10			
125	140.8	16	83	42.5	M22×2.5	22.5	30	13.5	24.5	M27×2.0
140	140.8	16	83	42.5	M22×2.5	22.5	30	13.5	24.5	M27×2.0
160	175.3	17	91	68	M24×3.0	26.5	33	18	27.5	M36×2.0

Remark) The unmarked dimension is the same as ACQ standard type.
Please refer to this page for male thread dimensions.

Male thread

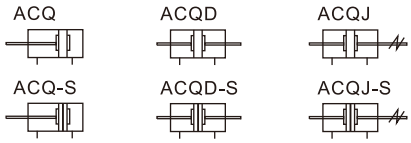


Bore size\Item	AB	D	E	EA	EB	F	FA	H
125	58	32	M30×1.5	42	45	46	18	27
140	58	32	M30×1.5	42	45	46	18	27
160	64	40	M36×1.5	47	50	55	21	36

ACQ Series——Longer stroke



Symbol



Specification

Bore size(mm)	32	40	50	63	80	100
Acting type	Double acting					
Fluid	Air(to be filtered by 40μm filter element)					
Operating pressure	0.15~1.0MPa(22~145psi)					
Proof pressure	1.5MPa(215psi)					
Temperature ℃	-20~70					
Speed range mm/s	30~500					
Stroke tolerance	$^{+1.5}_{0}$					
Cushion type	Bumper					
Port size [Note1]	1/8"		1/4"		3/8"	

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Product feature

1. JIS standard is implemented.
2. C clip is adopted to connect the cylinder body and back cover or front cover, and riveted structure is adopted to connect piston and piston rod to make it compact and reliable.
3. The internal diameter of the body is treated with rolling followed by the treatment of hard anodizing, forming an excellent abrasion resistance and durability.
4. The seal of piston adopts heterogeneous two-way seal structure. It has compact dimension and the function of greasel reservation.
5. Compact structure can effectively save installation space.
6. There are magnetic switch slots around the cylinder body, which is convenient to install inducting switch.
7. Installing accessories with various specifications are optional.

Stroke

Bore size(mm)	Standard stroke (mm)	Max.std stroke
32 40 50 63 80 100	125 150 175 200 250 300	300

Note) Within allowable stroke scope, when the stroke is larger than the maximum value, it shall be treated as non-standard one. Please contact the company for other special strokes.

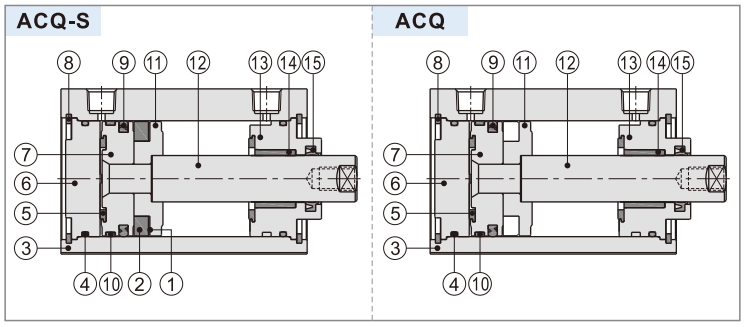
Ordering code

ACQ 50 × 150 S B □ G
ACQD 50 × 150 S B □ G
ACQJ 50 × 150–30 S B □ G
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①Model	②Bore size	③Stroke	④Adjustable Stroke	⑤Magnet	⑥Rod type	⑦Mounting type [Note1]	⑧Thread type
ACQ: Compact cylinder (Double acting)	32 40 50 63 80 100	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	Blank: Female thread B: Male thread	Blank: No accessories FA: FA type FB: FB type CB: CB type LB: LB type	G: G Thread
ACQD: Compact cylinder (Double rod)						Blank: No accessories FA: FA type FB: FB type LB: LB type	
ACQJ: Compact cylinder (Adjustable stroke)			10 20 30 40 50 75 100				

[Note1]Please refer to page 347~348 for accessory parts.

Inner structure and material of major parts

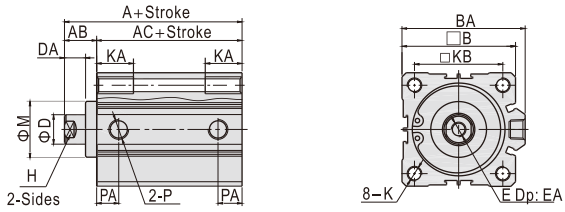


NO.	Item	Material	NO.	Item	Material
1	Magnet washer	NBR	10	Wear ring	No(Φ32)\Wear resistant material(Others)
2	Magnet	Plastic			
3	Body	Aluminum alloy	11	Magnet holder	Aluminum alloy
4	O-ring	NBR	12	Piston rod	Carbon steel with 20μm chrome plated
5	Bumper	NBR			
6	Back cover	Aluminum alloy	13	Front cover	Aluminum alloy
7	Piston	Aluminum alloy	14	Bushing	No(Φ32)\Wear resistant material(Others)
8	C clip	Spring steel			
9	Piston seal	NBR	15	Front cover packing	NBR

Dimensions

ACQ

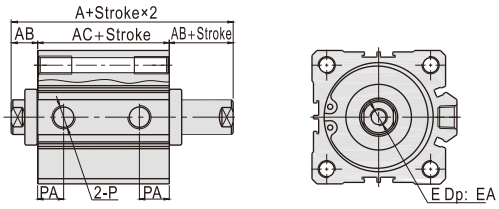
Φ32~Φ100(Stroke＞100)



Bore size\Item	A	AB	AC	B	BA	D	DA	E	EA	H	K	KA	KB	M	P	PA
32	62.5	17	45.5	45	49.5	16	12	M8×1.25	13	14	M6×1.0 Thru.hole:Φ5.2	17	34	22	1/8"	12.5
40	72	17	55	53	57	16	12	M8×1.25	13	14	M6×1.0 Thru.hole:Φ5.2	17	40	28	1/8"	14
50	73.5	18	55.5	64	71	20	13	M10×1.5	15	17	M8×1.25 Thru.hole:Φ6.7	22	50	35	1/4"	14
63	75	18	57	77	84	20	13	M10×1.5	15	17	M10×1.5 Thru.hole:Φ8.5	27	60	35	1/4"	16.5
80	86	20	66	98	104	25	15	M16×2.0	21	22	M12×1.75 Thru.hole:Φ10.4	32	77	43	3/8"	19
100	97.5	22	75.5	117	123.5	32	17	M20×2.5	27	27	M12×1.75 Thru.hole:Φ10.4	33	94	59	3/8"	23

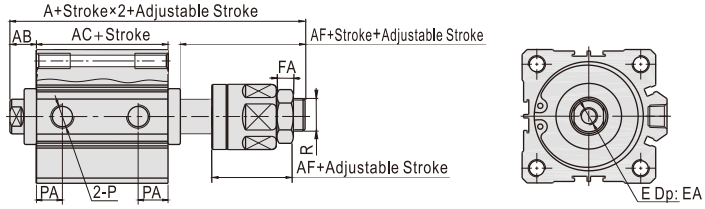
ACQD

Φ32~Φ100(Stroke＞100)



ACQJ

Φ32~Φ100(Stroke＞100)

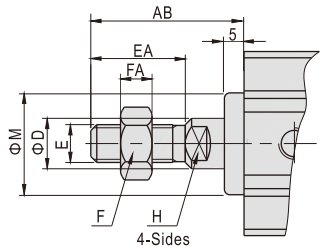


Bore size\Item	A(ACQD)		A(ACQJ)		AB	AC		AF	EA	FA	PA	R
	Without magnet	With magnet	Without magnet	With magnet		Without magnet	With magnet					
32	79.5	89.5	95.5	105.5	17	45.5	55.5	28	13	7	12.5	M12×1.25
40	89	99	105	115	17	55	65	28	13	7	14	M12×1.25
50	91.5	101.5	107.5	117.5	18	55.5	65.5	29	15	8	14	M16×1.5
63	93	103	109	119	18	57	67	29	15	8	16.5	M16×1.5
80	106	116	126.5	136.5	20	66	76	35.5	21	10	19	M20×1.5
100	119.5	129.5	145	155	22	75.5	85.5	42.5	27	13.5	23	M27×2.0

Remark) The unmarked dimension is the same as ACQ standard type.

Male thread

(Bore size: Φ32~Φ100 Stroke>100 Longer type)



Bore size\Item	AB	D	E	EA	FA	F	H	M
32	38.5	16	M14×1.5	23	8	19	14	22
40	38.5	16	M14×1.5	23	8	19	14	28
50	43.5	20	M18×1.5	28	11	27	17	35
63	43.5	20	M18×1.5	28	11	27	17	35
80	53.5	25	M22×1.5	35	13	32	22	43
100	53.5	32	M26×1.5	35	13	36	27	59



Specification

Bore size(mm)	12	16	20	25	32	40	50	63	80	100
Acting type	Double acting									
Fluid	Air(to be filtered by 40μm filter element)									
Operating pressure	0.15~1.0MPa(22~145psi)									
Proof pressure	1.5MPa(215psi)									
Temperature ℃	-20~70									
Speed range mm/s	30~500									
Stroke tolerance	$^{+1.0}_{0}$									
Cushion type	Bumper									
Port size [Note1]	M5×0.8				1/8"		1/4"		3/8"	
Non-rotating tolerance [Note2]	±0.2°		±0.15°							

[Note1] G thread is available.
[Note2] Retract position.
Add) Refer to P576 for detail of sensor switch.

Symbol

TACQ TACQ-S



Product feature

1. JIS standard is implemented and with guider.
2. C clip is adopted to connect the cylinder body and back cover or front cover to make it compact and reliable.
3. The internal diameter of the body is treated with rolling followed by the treatment of hard anodizing, forming an excellent abrasion resistance and durability.
4. The seal of piston adopts heterogeneous two-way seal structure. It has compact dimension and the function of greasel reservation.
5. Compact structure can effectively save installation space.
6. There are magnetic switch slots around the cylinder body, which is convenient to install inducting switch.
7. Double rod non-rotating structure enables to bear large working load and lateral load.

Stroke

Bore size(mm)	Standard stroke (mm)												Max.std stroke (mm)	Middle stroke range(mm)
	5	10	15	20	25	30	35	40	45	50	75	100		
12 16	●	●	●	●	●	●	×	×	×	×	×	×	30	1~29
20 25	●	●	●	●	●	●	●	●	●	●	×	×	50	1~49
32 40	●	●	●	●	●	●	●	●	●	●	●	●	100	1~99
50 63 80 100	×	●	●	●	●	●	●	●	●	●	●	●	100	5~99

[Note] The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.
Please contact the company for other special strokes.

Ordering code

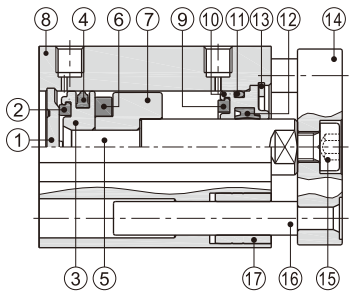
TACQ 50 × 100 S G

1 2 3 4 5

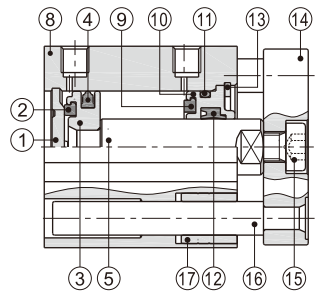
①Model	②Bore size	③Stroke	④Magnet	⑤Thread type
TACQ: Compact cylinder (Double acting with guider)	12 16 20 25 32 40 50 63 80 100	Refer to stroke table for details	Blank: Without magnet S: With magnet	G: G Thread

Inner structure and material of major parts

TACQ-S



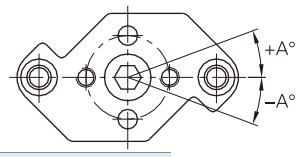
TACQ



NO.	Item	Material	NO.	Item	Material
1	Back cover	Aluminum alloy	10	Front cover	Aluminum alloy
2	Bumper	NBR	11	O-ring	NBR
3	Piston	Aluminum alloy	12	Front cover packing	NBR
4	Piston seal	NBR			
5	Piston rod	Carbon steel with 20μm chrome plated	13	C clip	Spring steel
			14	Fixing plate	Aluminum alloy
6	Magnet	Sintered metal (Neodymium-iron-boron)	15	Screw	Carbon steel
7	Magnet holder	Aluminum alloy	16	Leader	Stainless steel(Φ12~Φ40)
8	Body	Aluminum alloy			Carbon steel with 20μm chrome plated (Φ50~Φ100)
9	Wear ring	NBR	17	Bushing	Brass

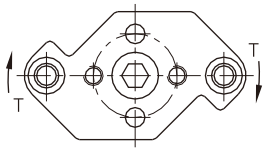
Installation and application

1. TACQ series cylinder is designed with double guide rod which is non-rotating. Make sure the non-rotating accuracy of the fixing plate is in the allowable range.



Bore size	12,16	20,25,32,40,50,63,80,100
Non-rotating tolerance	±0.2°	±0.15°

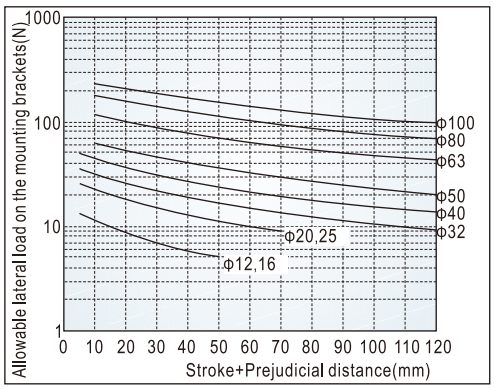
2. Do not apply reverse torque to the piston rods. The torque beyond the limits may cause malfunction or reduction of the service life.

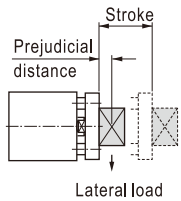


Unit: N·m

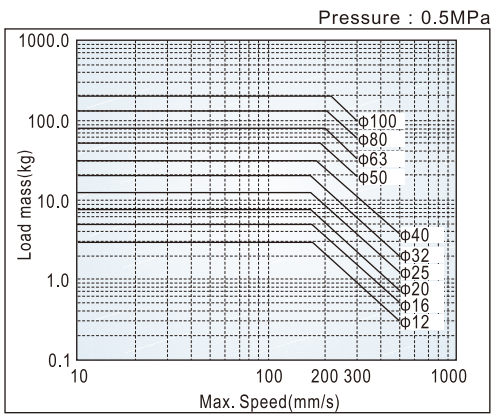
Bore size\Stroke	5	10	15	20	25	30	35	40	45	50	75	100
12	0.11	0.10	0.08	0.07	0.07	0.06	–	–	–	–	–	–
16	0.15	0.12	0.11	0.10	0.09	0.08	–	–	–	–	–	–
20	0.37	0.32	0.28	0.25	0.23	0.21	0.19	0.18	0.17	0.16	–	–
25	0.40	0.35	0.31	0.28	0.25	0.23	0.21	0.20	0.18	0.17	–	–
32	0.66	0.59	0.53	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.25	0.20
40	1.06	0.96	0.88	0.81	0.75	0.70	0.65	0.61	0.58	0.55	0.43	0.36
50	–	1.70	1.56	1.45	1.35	1.26	1.19	1.12	1.06	1.01	0.80	0.67
63	–	3.90	3.62	3.37	3.15	2.96	2.80	2.65	2.51	2.39	1.92	1.61
80	–	7.44	6.98	6.56	6.20	5.87	5.57	5.31	5.07	4.84	3.98	3.37
100	–	11.85	11.19	10.61	10.08	9.60	9.17	8.77	8.41	8.07	6.73	5.77

3. Make sure the lateral load on the mounting bracket is within the limits. Any exceeding may cause malfunction or reduction of the service life.



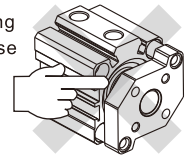


4. Make sure the load quality and the maximum speed are within the limits. Any exceeding may cause malfunction or reduction of the service life.

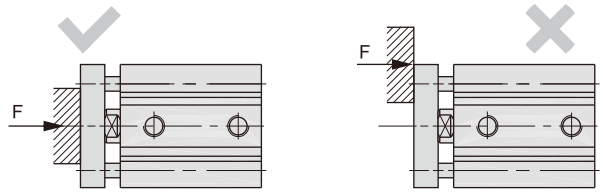


5. Caution before mounting:

5.1) Do not put hands between the mounting bracket and cylinder, which may cause damage to a human body when the piston rod retracts.



5.2) Make sure the external force against the mounting bracket is concentric with the piston rod.
Any extra torque may cause damage to the cylinder.

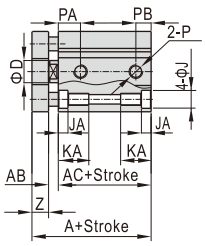


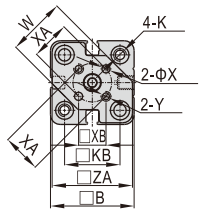
5.3) Install the fixture onto the mounting bracket only when the piston rod is in the retraction state.
Do not apply the installation torque on the guide rod.

5.4) Avoid any damage on piston rod and guide rod, which may cause damage on seals and air leakage or malfunction.

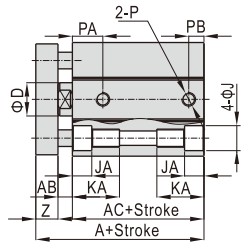
Dimensions

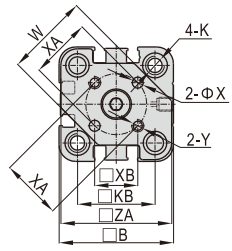
Φ12/Φ16





Φ20/Φ25

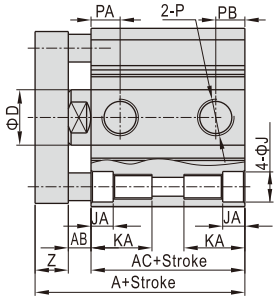


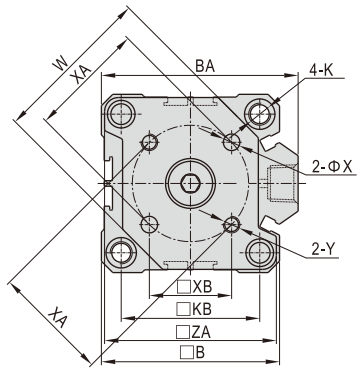


Bore size\Item	A		AC		AB	B	D	J	JA	K
	Without magnet	With magnet	Without magnet	With magnet						
12	26.5	37.5	17.3	28.3	3	26	6	6	3.5	M4×0.7 Thru.hole:Φ3.4
16	28	40	19	31	3	30	8	6	3.5	M4×0.7 Thru.hole:Φ3.4
20	32	44	20.5	32.5	3.5	36	10	9	5.5	M6×1.0 Thru.hole:Φ5.2
25	35.5	45.5	23	33	4.5	41	12	9	5.5	M6×1.0 Thru.hole:Φ5.2

Bore size\Item	KA	KB	P	PA		PB		W	X	XA	XB	Y	Z	ZA
				Without magnet	With magnet	Without magnet	With magnet							
12	11	15.5	M5×0.8	7.5	9	5	7	15	3	10	7.1	M3×0.5	6	25
16	11	20	M5×0.8	8.5	10	5.5	5.5	21	3	14	9.9	M3×0.5	6	29
20	17	25.5	M5×0.8	10	10.5	5.5	5.5	26	4	17	12	M4×0.7	8	35
25	17	28	M5×0.8	11.5	11.5	5.5	5.5	30	5	22	15.6	M5×0.8	8	40

Φ32~Φ100





Bore size\Item	A(Without magnet)		A	AB	AC(Without magnet)		AC	B	BA	D	J	JA	K
	St≤50	St≥75	(Witht magnet)		St≤50	St≥75	(With magnet)						
32	40	50	50	6.5	23.5	33.5	33.5	45	49.5	16	9	5.5	M6×1.0 Thru.hole:Φ5.2
40	46.5	56.5	56.5	6.6	30	40	40	53	57	16	9	5.5	M6×1.0 Thru.hole:Φ5.2
50	50.5	60.5	60.5	7.5	31	41	41	64	71	20	10.5	6.5	M8×1.25 Thru.hole:Φ6.8
63	56	66	66	8	36	46	46	77	84	20	14	9	M10×1.5 Thru.hole:Φ8.5
80	67.5	77.5	77.5	10	43.5	53.5	53.5	98	104	25	17	11	M12×1.75 Thru.hole:Φ10.4
100	81	91	91	12	53	63	63	117	123.5	32	17	11	M12×1.75 Thru.hole:Φ10.4

Bore size\Item		KA	KB	P	PA (Without magnet)	PA (With magnet)	PB (Without magnet)	PB (With magnet)	W	X	XA	XB	Y	Z	ZA
32	St=5	17	34	1/8"	8	10.5	6.5	7.5	37	5	28	19.8	M5×0.8	10	43
	St>5				11		7.5								
40		17	40	1/8"	11	11	8	8	46	5	33	23.3	M5×0.8	10	51
50		22	50	1/4"	10.5	11	11	10.5	58	6	42	29.7	M6×1.0	12	62
63		28.5	60	1/4"	15	15	10.5	10.5	69	6	50	35.4	M6×1.0	12	75
80		35.5	77	3/8"	16	16	14	14	90	8	65	46	M8×1.25	14	95
100		35.5	94	3/8"	20	20	17.5	17.5	113.5	10	80	56.6	M10×1.5	16	114.5

List for ordering code of accessories

Accessories / Bore size	Mounting accessories			Knuckle				Sensor switch
	LB	FA/FB	CB	I	Y	F	U	
12	F-ACQ12LB	F-ACQ12FA	F-ACQ12CB	F-ACQ12I	F-ACQ12Y	-	F-M5X080U	CMSG DMSG EMSG
16	F-ACQ16LB	F-ACQ16FA	F-ACQ16CB	F-ACQ16I	F-ACQ16Y	-	F-M6X100U	
20	F-ACQ20LB	F-ACQ20FA	F-ACQ20CB	F-ACQ20I	F-ACQ20Y	F-M8X125F	F-M8X125U	
25	F-ACQ25LB	F-ACQ25FA	F-ACQ25CB	F-ACQ25I	F-ACQ25Y	F-M10X125F	F-M10X125U	
32	F-ACQ32LB	F-ACQ32FA	F-ACQ32CB	F-ACQ32I	F-ACQ32Y	F-M14X150F	F-M14X150U	CMSJ DMSJ CMSG DMSG EMSG
40	F-ACQ40LB	F-ACQ40FA	F-ACQ40CB					
50	F-ACQ50LB	F-ACQ50FA	F-ACQ50CB	F-ACQ50I	F-ACQ50Y	F-M18X150F	F-M18X150U	
63	F-ACQ63LB	F-ACQ63FA	F-ACQ63CB					
80	F-ACQ80LB	F-ACQ80FA	F-ACQ80CB	F-ACQ80I	F-ACQ80Y	-	-	
100	F-ACQ100LB	F-ACQ100FA	F-ACQ100CB	F-ACQ100I	F-ACQ100Y	-	F-M26X150U	
125	-	-	-					CMSH\DMSH EMSH CMSG\DMSG EMSG
140	-	-	-					
160	-	-	-					

Accessory selection

Cylinder model / Accessories			Mounting accessories				Knuckle[Note2]				Sensor switch[Note3]		
			LB	FA	FB	CB [1]	I	Y	U	F	CMSJ DMSJ	CMSG/DMSG EMSG	CMSH/DMSH EMSH
ACQ	Female thread	Without magnet	●	●	●	●	×	×	×	×	×	×	×
		With magnet									●	●	●
	Male thread	Without magnet					●	●	●	●	×	×	×
		With magnet									●	●	●
ASQ ATQ	Female thread	Without magnet	●	●	●	●	×	×	×	×	×	×	×
		With magnet									●	●	●
	Male thread	Without magnet					●	●	●	●	×	×	×
		With magnet									●	●	●
ACQD ACQJ	Female thread	Without magnet	●	●	×	×	×	×	×	×	×	×	×
		With magnet									●	●	●
	Male thread	Without magnet					●	●	●	●	×	×	×
		With magnet									●	●	●

Material of accessories

Accessories / Bore size	Mounting accessories				Knuckle			
	LB	FA	FB	CB	I	Y	F	U
12, 15	△	●	●	●	▲	▲	▲	▲
20, 25	△	●	●	●	▲	▲	▲	▲
32~100	△	●	●	■	▲	■	▲	▲

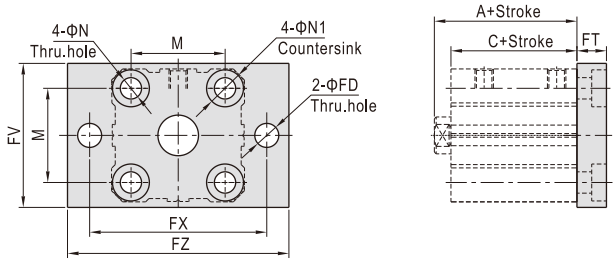
●——Aluminum alloy ; ■——Carbon Steel
▲——S45C ; △——SPCC

[Note1] CB is attached with relevant PIN.
Mounting accessories and Knuckle unavailable for bore size 125,140,160 cylinder.
[Note2] Please refer to P572~575 for knuckle detail.

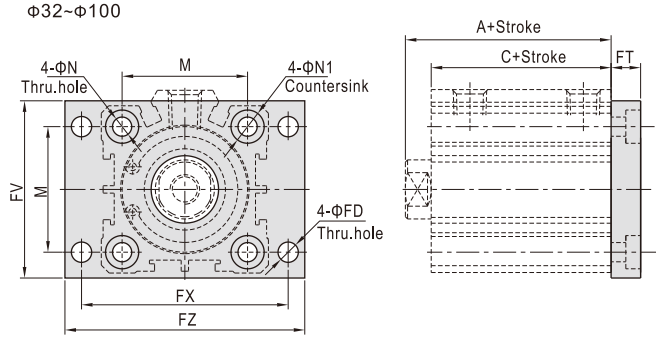
Dimensions

FA/FB

Φ12~Φ25



Φ32~Φ100

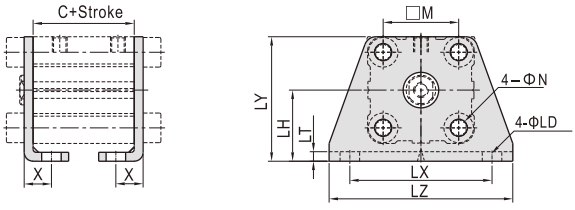


Bore size\Item	A [Note1]				C				M	N	N1	FD	FT	FV	FX	FZ
	Without magnet			With magnet	Without magnet			With magnet								
Stroke	≤50	55	≥60		≤50	55	≥60									
12	20.5	-	-	31.5	17	-	-	28	15.5	4.5	7.5	4.5	5.5	25	45	55
16	22	22	-	34	18.5	18.5	-	30.5	20	4.5	7.5	4.5	5.5	30	45	55
20	24	-	34	36	19.5	-	29.5	31.5	25.5	6.5	10.5	6.5	8	39.5	48	60
25	27.5	-	37.5	37.5	22.5	-	32.5	32.5	28	6.5	10.5	6.5	8	42	52	64
32	30	-	40	40	23	-	33	33	34	6.5	10.5	5.5	8	48	56	65
40	36.5	-	46.5	46.5	29.5	-	39.5	39.5	40	6.5	10.5	5.5	8	54	62	72
50	38.5	-	48.5	48.5	30.5	-	40.5	40.5	50	8.5	13.5	6.5	9	67	76	89
63	44	-	54	54	36	-	46	46	60	10.5	16.5	9	10	80	92	108
80	53.5	-	63.5	63.5	43.5	-	53.5	53.5	77	12.5	18.5	11	12	99	116	134
100	65	-	75	75	53	-	63	63	94	12.5	18.5	11	12	117	136	154

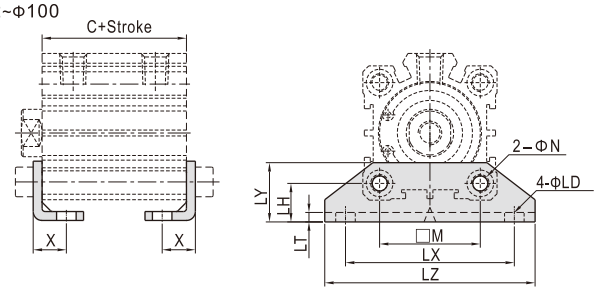
[Note] Value A and C in the above table are only for ACQ series.
Please refer to relevant content for value A and C of other series.

LB

Φ12~Φ25



Φ32~Φ100

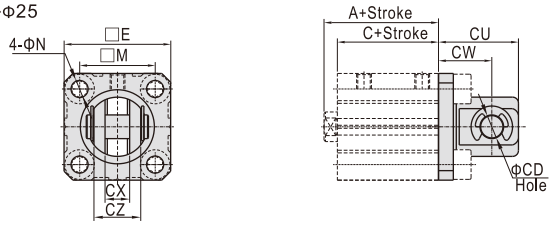


Bore size\Item	C [Note]				M	N	X	LD	LH	LT	LX	LY	LZ
	Without magnet			With magnet									
Stroke	≤50	55	≥60										
12	17	-	-	28	15.5	4.5	8	4.5	17	2	34	29.5	44
16	18.5	18.5	-	30.5	20	4.5	8	4.5	19	2	38	33.5	48
20	19.5	-	29.5	31.5	25.5	6.5	9.2	6.5	24	3	48	42	62
25	22.5	-	32.5	32.5	28	6.5	10.7	6.5	26	3	52	46	66
32	23	-	33	33	34	6.5	11.2	6.5	13	3	57	20	71
40	29.5	-	39.5	39.5	40	6.5	11.2	6.5	13	3	64	20	78
50	30.5	-	40.5	40.5	50	8.5	12.2	8.5	14	3	79	22	95
63	36	-	46	46	60	10.5	13.7	10.5	16	3	95	26	113
80	43.5	-	53.5	53.5	77	13	16.5	13	20.5	4.5	118	32	140
100	53	-	63	63	94	13	23	13	24	6	137	36	162

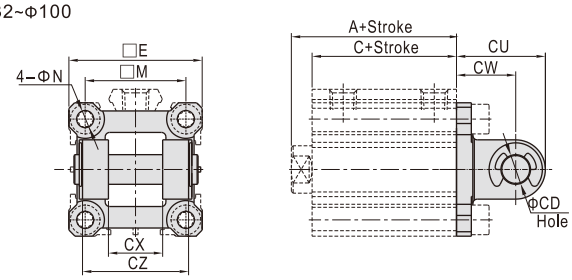
[Note] Value C in the above table is only for ACQ series.
Please refer to relevant content for value C of other series.

CB

Φ12~Φ25



Φ32~Φ100



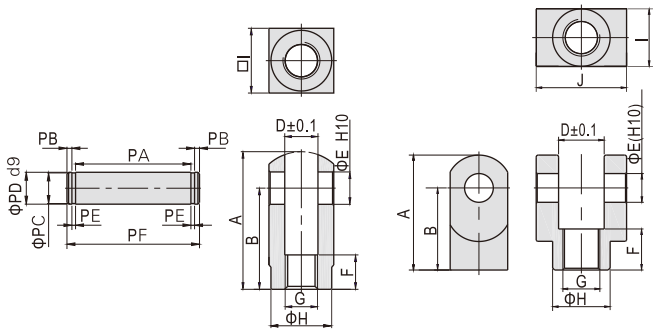
Item	A [Note]				C				E	M	N	CD	CU	CW	CX	CZ
Bore size	Without magnet			With magnet	Without magnet			With magnet								
Stroke	≤50	55	≥60		≤50	55	≥60									
12	20.5	-	-	31.5	17	-	-	28	25	15.5	4.5	5	20	14	5.3	9.8
16	22	22	-	34	18.5	18.5	-	30.5	29	20	4.5	5	21	15	6.8	11.8
20	24	-	34	36	19.5	-	29.5	31.5	36	25.5	6.5	8	27	18	8.3	15.8
25	27.5	-	37.5	37.5	22.5	-	32.5	32.5	40	28	6.5	10	30	20	10.3	19.8
32	30	-	40	40	23	-	33	33	45.5	34	6.5	10	30	20	18.3	35.8
40	36.5	-	46.5	46.5	29.5	-	39.5	39.5	53.5	40	6.5	10	32	22	18.3	35.8
50	38.5	-	48.5	48.5	30.5	-	40.5	40.5	64.5	50	8.5	14	42	28	22.3	43.8
63	44	-	54	54	36	-	46	46	77.5	60	10.5	14	44	30	22.3	43.8
80	53.5	-	63.5	63.5	43.5	-	53.5	53.5	98.5	77	12.5	18	56	38	28.3	55.8
100	65	-	75	75	53	-	63	63	117.5	94	12.5	22	67	45	32.3	63.8

[Note] Value A and C in the above table are only for ACQ series.
Please refer to relevant content for value A and C of other series.

Y Knuckle

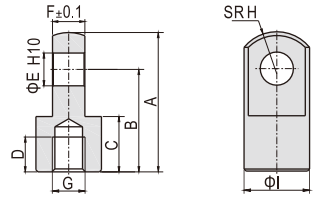
F-ACQ12Y
F-ACQ16Y
F-ACQ20Y
F-ACQ25Y

F-ACQ32Y
F-ACQ50Y
F-ACQ80Y
F-ACQ100Y



Type\Item	A	B	D	E	F	G	H	I	J	PA	PB	PC	PD	PE	PF
F-ACQ12Y	22	16	5.3	5	6	M5×0.8	9	10	-	10.2	1.5	4	5	0.7	14.6
F-ACQ16Y	28	21	6.6	5	11	M6×1.0	11	12	-	12.4	1.5	4	5	0.7	16.8
F-ACQ20Y	34	25	8.3	8	8.5	M8×1.25	15	16	-	16.2	1.5	7	8	0.9	21
F-ACQ25Y	41	30	10.3	10	10.5	M10×1.25	19	20	-	20.2	2	8	10	1.1	26.4
F-ACQ32Y	42	30	18.4	10	16	M14×1.5	22	22	36	36.2	2	8	10	1.1	42.4
F-ACQ50Y	56	40	22.4	14	20	M18×1.5	28	28	44	44.2	2	12	14	1.1	50.4
F-ACQ80Y	71	50	28.4	18	23	M22×1.5	38	38	56	56.2	2	15	18	1.7	63.6
F-ACQ100Y	79	55	32.4	22	24	M26×1.5	44	44	64	64.2	2.5	19	22	1.7	72.6

I Knuckle



Type\Item	A	B	C	D	E	F	G	H	I
F-ACQ12I	21.5	16	9	6	5	4.7	M5×0.8	6.3	10
F-ACQ16I	32	25	11	8	5	6.2	M6×1.0	8.1	12
F-ACQ20I	34	25	13.5	8.5	8	7.7	M8×1.25	10.3	16
F-ACQ25I	41	30	16	11	10	9.7	M10×1.25	12.8	20
F-ACQ32I	42	30	16	14	10	17.6	M14×1.5	12	22
F-ACQ50I	56	40	20	18	14	21.6	M18×1.5	16	28
F-ACQ80I	71	50	23	21	18	27.6	M22×1.5	21	38
F-ACQ100I	79	55	24	22	22	31.6	M26×1.5	24	44

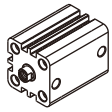
In accordance with ISO21287 standard

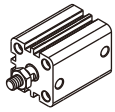
Compendium of ACF Series

In accordance with ISO21287 standard

In accordance with ISO21287 standard, the mounting size is vogue.

Two kinds of rod type

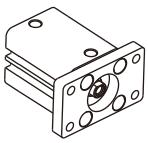

Female thread

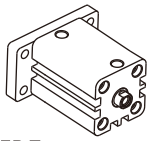

Male thread

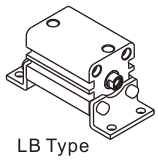
Magnetic switch slots around the cylinder body

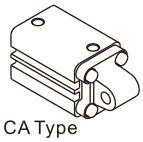
There are magnetic switch slots around the cylinder body convenient to install inducting switch.

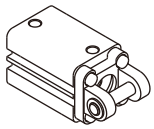
Multi-mounting accessories

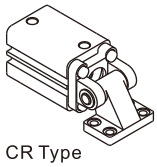

FA Type

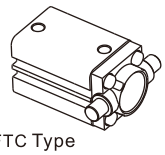

FB Type

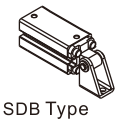

LB Type

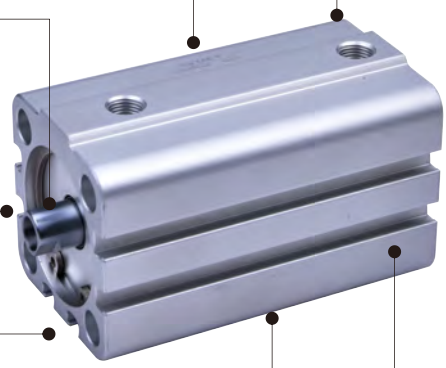

CA Type


CB Type


CR Type


FTC Type


SDB Type



Multi-type cylinder

ACF: Compact cylinder (Double acting)	
ASF: Compact cylinder (Single acting-push)	
ATF: Compact cylinder (Single acting-pull)	
ACFD: Compact cylinder (Double rod)	
ACFJ: Compact cylinder (Adjustable stroke)	
TACF: Compact cylinder (Double acting non-rotating with yoke)	
TACFD: Compact cylinder (Double rod non-rotating with yoke)	

Compact structure

Compact structure can effectively save fifty percent installation space with ISO15552 standard cylinder.

Eight bore size are available

Bore size: 12, 16, 20, 25, 32, 40, 50, 63

Criteria for selection: Cylinder thrust

Unit : Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa) 0.1	0.2	0.3	0.4	0.5	0.6	0.7
12	6	Single acting	Push side	113.1	-	6.1	17.4	28.7	40.0	51.4	62.7
			Pull side	84.8	-	0.5	8.9	17.4	25.9	34.4	42.9
		Double acting	Push side	113.1	11.3	22.6	33.9	45.2	56.5	67.9	79.2
			Pull side	84.8	8.5	17.0	25.4	33.9	42.4	50.9	59.4
16	8	Single acting	Push side	201.1	-	18.1	38.2	58.3	78.4	98.5	118.6
			Pull side	150.8	-	8.1	23.1	38.2	53.3	68.4	83.5
		Double acting	Push side	201.1	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull side	150.8	15.1	30.2	45.2	60.3	75.4	90.5	105.6
20	10	Single acting	Push side	314.2	-	33.1	64.5	96.0	127.4	158.8	190.2
			Pull side	235.6	-	17.4	41.0	64.5	88.1	111.7	135.2
		Double acting	Push side	314.2	31.4	62.8	94.2	125.7	157.1	188.5	219.9
			Pull side	235.6	23.6	47.1	70.7	94.2	117.8	141.4	164.9
25	10	Single acting	Push side	490.9	13.8	62.9	112.0	161.0	210.1	259.2	308.3
			Pull side	412.3	5.9	47.2	88.4	129.6	170.9	212.1	253.3
		Double acting	Push side	490.9	49.1	98.2	147.3	196.3	245.4	294.5	343.6
			Pull side	412.3	41.2	82.5	123.7	164.9	206.2	247.4	288.6
32	12	Single acting	Push side	804.2	30.8	111.2	191.7	272.1	352.5	432.9	513.4
			Pull side	691.2	19.5	88.6	157.7	226.9	296.0	365.1	434.2
		Double acting	Push side	804.2	80.4	160.8	241.3	321.7	402.1	482.5	563.0
			Pull side	691.2	69.1	138.2	207.3	276.5	345.6	414.7	483.8
40	12	Single acting	Push side	1256.6	54.2	179.8	305.5	431.2	556.8	682.5	808.1
			Pull side	1143.5	42.9	157.2	271.6	385.9	500.3	614.6	729.0
		Double acting	Push side	1256.6	125.7	251.3	377.0	502.7	628.3	754.0	879.6
			Pull side	1143.5	114.4	228.7	343.1	457.4	571.8	686.1	800.5
50	16	Single acting	Push side	1963.5	90.1	286.5	482.8	679.2	875.5	1071.9	1268.2
			Pull side	1762.4	70.0	246.3	422.5	598.8	775.0	951.3	1127.5
		Double acting	Push side	1963.5	196.3	392.7	589.0	785.4	981.7	1178.1	1374.4
			Pull side	1762.4	176.2	352.5	528.7	705.0	881.2	1057.5	1233.7
63	16	Single acting	Push side	3117.2	173.6	485.3	797.1	1108.8	1420.5	1732.2	2044.0
			Pull side	2916.2	153.5	445.1	736.8	1028.4	1320.0	1611.6	1903.2
		Double acting	Push side	3117.2	311.7	623.4	935.2	1246.9	1558.6	1870.3	2182.1
			Pull side	2916.2	291.6	583.2	874.9	1166.5	1458.1	1749.7	2041.3

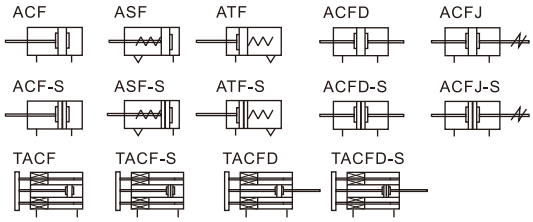
Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. As both of the front cover and piston of the cylinder are short, typically too large stroke can not be selected.
7. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
8. The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
9. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

ACF Series



Symbol



Specification

Bore size(mm)		12	16	20	25	32	40	50	63
Acting type		Double acting							
		Single acting_Push type、Single acting_Pull type							
Fluid		Air(to be filtered by 40μm filter element)							
Operating pressure	Double acting	0.15~1.0MPa(22~145psi)							
	Single acting	0.2~1.0MPa(28~145psi)							
Proof pressure		1.5MPa(215psi)							
Temperature ℃		-20~70							
Speed range mm/s		Double acting：30~500 Single acting：50~500							
Stroke tolerance		Stroke≤100 $^{+1.0}_{0}$ Stroke>100 $^{+1.5}_{0}$							
Cushion type		Bumper							
Port size [Note1]		M5×0.8				1/8"			

[Note1] G thread is available. Add) Refer to P576 for detail of sensor switch.

Stroke

Bore size (mm)			Standard stroke (mm)	Max.stroke
Common type	Double acting	12	5 10 15 20 25 30 35 40 45 50	50
		16	5 10 15 20 25 30 35 40 45 50 55 60 70 75	75
		20	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100	100
		25	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100 110 120 125 150	150
		32 40	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100 110 120 125 150 160 175 200	200
		50 63	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100 110 120 125 150 160 175 200 225 250	250
	Single acting	12	5 10	10
		16~63	5 10 15 20 25	25
Non-rotating with yoke	Double acting	12	5 10 15 20 25 30 35 40 45 50	50
		16	5 10 15 20 25 30 35 40 45 50 55 60 70 75	75
		20 25	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100	100
		32 40	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100	100
		50 63	5 10 15 20 25 30 35 40 45 50 55 60 70 75 80 90 100	100

Note) 1. Please contact the company for other special strokes.
2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

Product feature

1. In accordance with ISO21287 standard, the mounting size is vogue.
2. C clip is adopted to connect the cylinder body and back cover or front cover, and riveted structure is adopted to connect piston and piston rod to make it compact and reliable.
3. The internal diameter of the body is treated with rolling followed by the treatment of hard anodizing, forming an excellent abrasion resistance and durability.
4. The seal of piston adopts heterogeneous two-way seal structure. It has compact dimension and the function of oil reservation.
5. Compact structure can effectively save fifty percent installation space with ISO15552 standard cylinder.
6. There are magnetic switch slots around the cylinder body, which is convenient to install inducting switch.
7. Bumper is available and it can availably absorb excrescent energy.
8. Installing accessorirs with various specifications are optional.

Ordering code

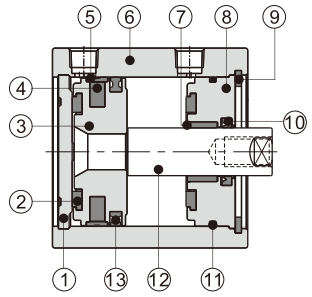
ACF 20 ×30 S B □ G
ACFD 20 ×30 S B □ G
ACFJ 20 ×30 -30 S B □ G
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①Model	②Bore size	③Stroke	④Adjustable Stroke	⑤Magnet	⑥Rod type	⑦Mounting type [Note1]		⑧Thread type[Note2]
ACF: Compact cylinder (Double acting)	12 16 20 25 32 40 50 63	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	Blank: Female thread B: Male thread	Blank: No accessories FA: FA type FB: FB type CA: CA type CB: CB type	CR: CR type FTC: FTC type LB: LB type SDB: SDB type	G: G
ASF: Compact cylinder (Single acting-push)								
ATF: Compact cylinder (Single acting-pull)								
TACF: Compact cylinder (Double acting non-rotating with yoke)					No this code	Blank: No accessories FB: FB type CA: CA type	CB: CB type CR: CR type FTC: FTC type	
TACFD: Compact cylinder (Double rod non-rotating with yoke)						Blank: No accessories FB: FB type		
ACFD: Compact cylinder (Double rod)					Blank: Female thread B: Male thread	Blank: No accessories FA: FA type FTC: FTC type LB: LB type		
ACFJ: Compact cylinder (Adjustable stroke)			10 20 30 40 50 75 100					

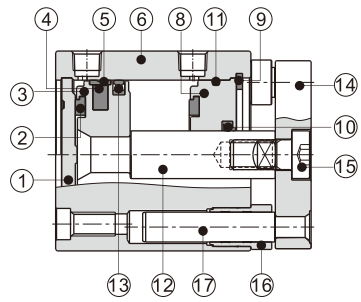
[Note1]Please refer to page 354~356 for accessory parts; CR must be used with CB, SDB must be used with CA, FTC must be used with TCM2.
[Note2]Standard thread is blank here.

Inner structure and material of major parts

ACF-S



TACF-S

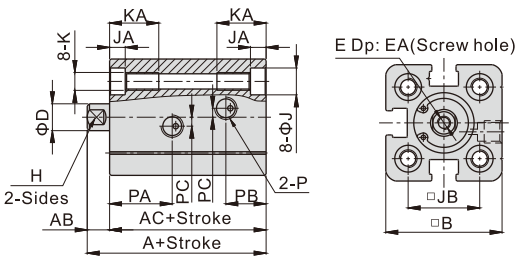


NO.	Item	Material
1	Back cover	No(Φ12、16)\(Aluminum alloy(Others)
2	Bumper	TPU
3	Piston	Brass(Φ12、16)\(Aluminum alloy(Others)
4	Magnet	Sintered metal(Neodymium-iron-boron)(Φ12~16)\Plastic(Others)
5	Wear ring	No(Φ12~32)\Wear resistant material(Others)
6	Body	Aluminum alloy
7	Bushing	No(Φ12~32)\Wear resistant material(Others)
8	Front cover	Aluminum alloy
9	C clip	Spring steel
10	Front cover packing	NBR
11	O-ring	NBR
12	Piston rod	S45C
13	Piston seal	NBR
14	Panal	Aluminum alloy
15	Screw	Carbon steel
16	Bushing	Brass
17	Guide rod	Stainless steel(Φ12~40)\S45C(Others)

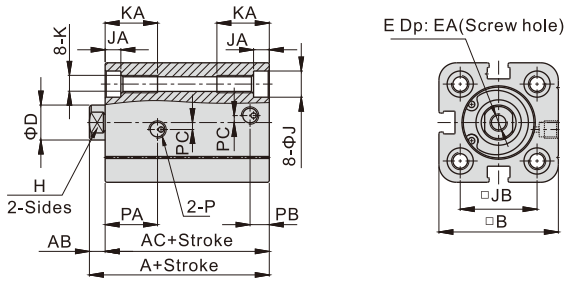
Dimensions

ACF

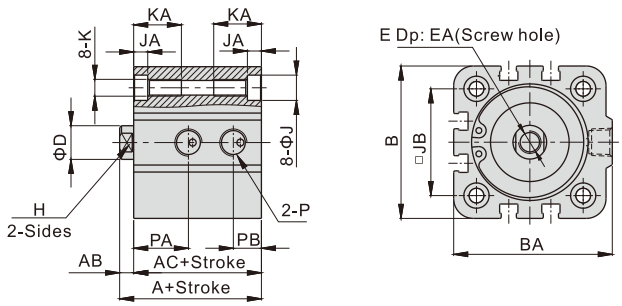
Φ12



Φ16~Φ25



Φ32~Φ63



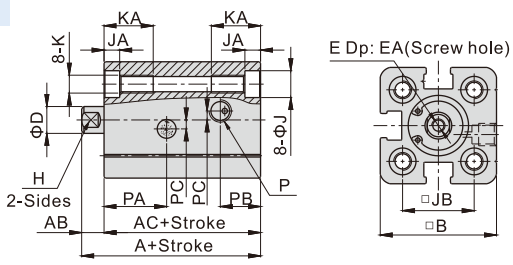
Bore size\Item	A	AB	AC	B	BA	D	E	EA	H	J	JA	JB	K	KA	P	PA	PB	PC
12	40	5	35	26	-	6	M3×0.5	6	5	6	3.5	16	M4×0.7	11	M5×0.8	14	9	2
16	40	5	35	29	-	8	M4×0.7	8	6	6	3.5	18	M4×0.7	11	M5×0.8	14.5	5.5	2
20	43	6	37	34	-	10	M6×1.0	12	8	7.5	4.5	22	M5×0.8	15	M5×0.8	15	5.5	2
25	45	6	39	39.5	-	10	M6×1.0	12	8	7.5	4.5	26	M5×0.8	15	M5×0.8	16.5	5.5	2
32	51	7	44	48.5	50	12	M8×1.25	13	10	9	5	32.5	M6×1.0	17	G1/8	18	8.5	-
40	52.5	7	45.5	54	56.5	12	M8×1.25	13	10	9	5	38	M6×1.0	17	G1/8	19.5	10	-
50	53.5	8	45.5	64.5	67	16	M10×1.5	16	14	10.5	5	46.5	M8×1.25	20	G1/8	19.5	10.5	-
63	57	8	49	74.5	78.5	16	M10×1.5	16	14	10.5	5	56.5	M8×1.25	20	G1/8	19.5	12	-

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder. Please refer to page 355 for male thread dimensions.

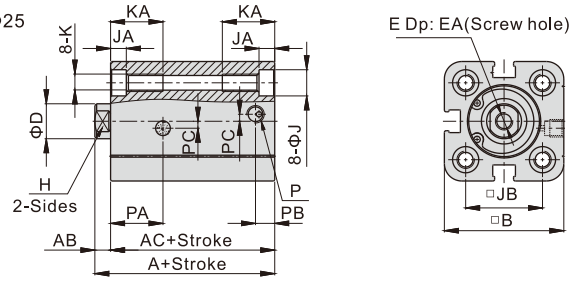
ACF Series

ASF

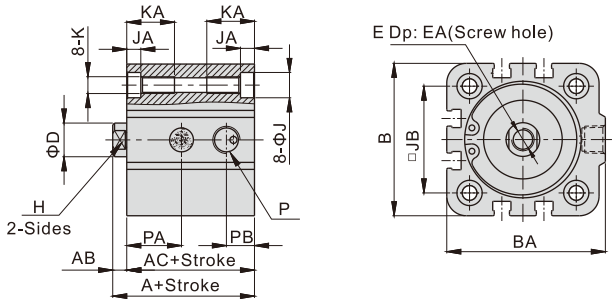
Φ12



Φ16~Φ25

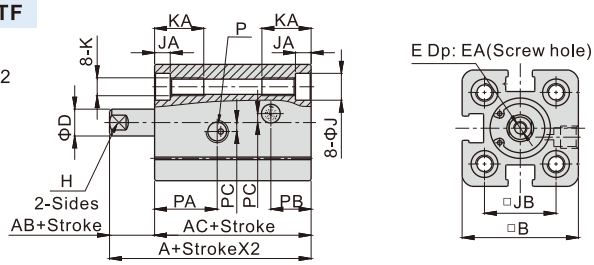


Φ32~Φ63

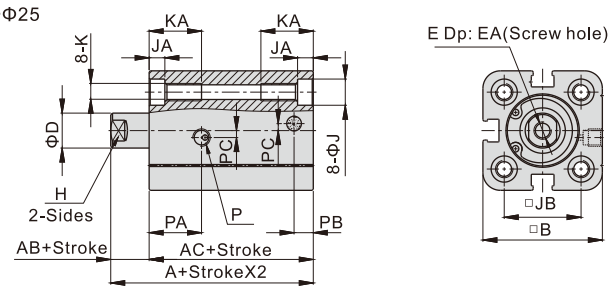


ATF

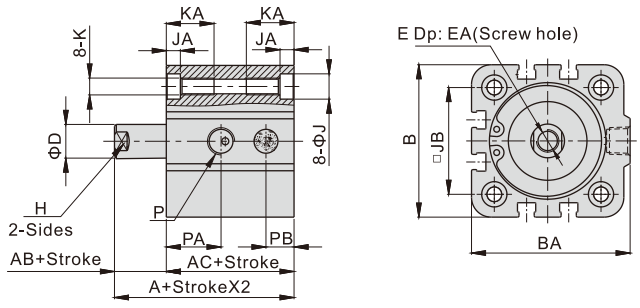
Φ12



Φ16~Φ25



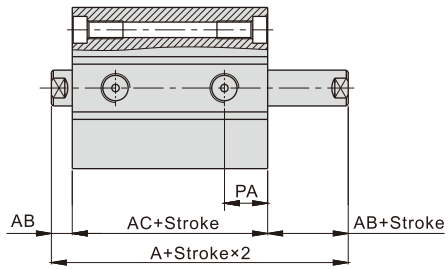
Φ32~Φ63



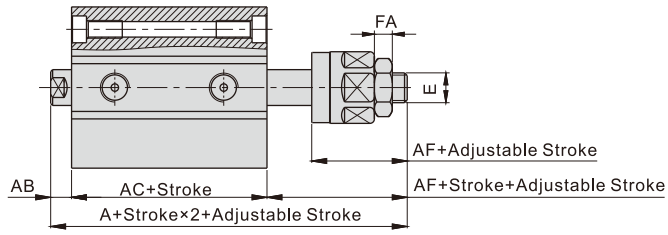
Bore size\Item	A	AB	AC	B	BA	D	E	EA	H	J	JA	JB	K	KA	P	PA	PB	PC
12	40	5	35	26	-	6	M3×0.5	6	5	6	3.5	16	M4×0.7	11	M5×0.8	14	9	2
16	40	5	35	29	-	8	M4×0.7	8	6	6	3.5	18	M4×0.7	11	M5×0.8	14.5	5.5	2
20	43	6	37	34	-	10	M6×1.0	12	8	7.5	4.5	22	M5×0.8	15	M5×0.8	15	5.5	2
25	45	6	39	39.5	-	10	M6×1.0	12	8	7.5	4.5	26	M5×0.8	15	M5×0.8	16.5	5.5	2
32	51	7	44	48.5	50	12	M8×1.25	13	10	9	5	32.5	M6×1.0	17	G1/8	18	8.5	-
40	52.5	7	45.5	54	56.5	12	M8×1.25	13	10	9	5	38	M6×1.0	17	G1/8	19.5	10	-
50	53.5	8	45.5	64.5	67	16	M10×1.5	16	14	10.5	5	46.5	M8×1.25	20	G1/8	19.5	10.5	-
63	57	8	49	74.5	78.5	16	M10×1.5	16	14	10.5	5	56.5	M8×1.25	20	G1/8	19.5	12	-

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder. Please refer to page 355 for male thread dimensions.

ACFD



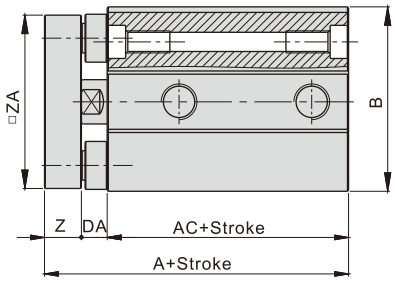
ACFJ

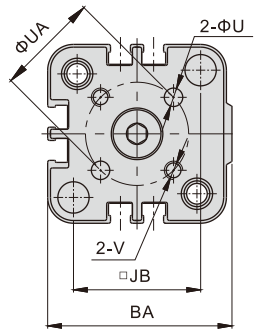


Bore size\Item	A(ACFD)	A(ACFJ)	AB	AC	AF	FA	PA	E
12	45	57	5	35	17	4	10.5	M5×0.8
16	45	61	5	35	21	5	10.5	M6×1.0
20	49	68	6	37	25	6	10.5	M8×1.25
25	51	70	6	39	25	6	11	M8×1.25
32	58	78	7	44	27	6	12.5	M10×1.25
40	59.5	79.5	7	45.5	27	6	13.5	M10×1.25
50	61.5	81.5	8	45.5	28	7	14.5	M12×1.25
63	65	85	8	49	28	7	15.5	M12×1.25

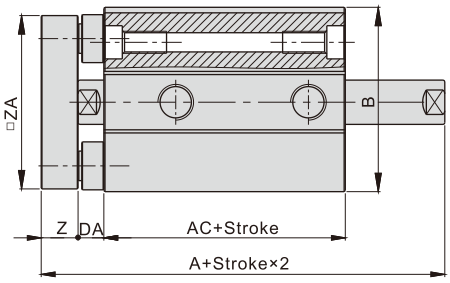
Remark:
1. The unmarked dimension is the same as ACF standard type
2. The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

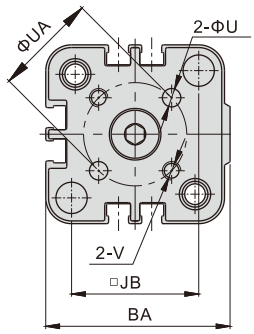
TACF





TACFD

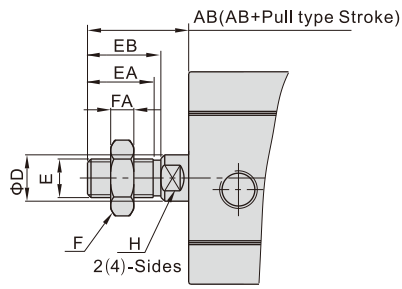




Bore size\Item	A(TACF)	A(TACFD)	AC	B	BA	DA	JB	U	UA	V	Z	ZA
12	46	51	35	26	-	5	16	3	12	M3×0.5	6	25
16	46	51	35	29	-	5	18	3	14	M3×0.5	6	28
20	51	57	37	34	-	6	22	4	17	M4×0.7	8	33
25	53	59	39	39.5	-	6	26	5	22	M5×0.8	8	38.5
32	61	68	44	48.5	50	7	32.5	5	28	M5×0.8	10	47
40	62.5	69.5	45.5	54	56.5	7	38	5	33	M5×0.8	10	52.5
50	65.5	73.5	45.5	64.5	67	8	46.5	6	42	M6×1.0	12	63
63	69	77	49	74.5	78.5	8	56.5	6	50	M6×1.0	12	73

Remark:
1. The unmarked dimension is the same as ACF standard type
2. The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

Male thread



Bore size\Item	AB	D	E	EA	EB	F	FA	H
12	15	6	M5×0.8	9	10	8	4	5
16	17	8	M6×1.0	11	12	10	5	6
20	22	10	M8×1.25	14.5	16	12	6	8
25	22	10	M8×1.25	14.5	16	12	6	8
32	26	12	M10×1.25	17	19	17	6	10
40	26	12	M10×1.25	17	19	17	6	10
50	30	16	M12×1.25	20	22	17	7	14
63	30	16	M12×1.25	20	22	17	7	14

List for ordering code of accessories

Accessories / Bore size	Mounting accessories								Knuckle				Sensor switch	
	LB	FA/FB	CA	CB	CR	SDB	FTC	TCM2	I	Y	F	U	CMSE	DMSE
12	F-ACE12LB	F-ACE12FA	F-ACE12CA	-	-	F-MI12SDB	-	-	F-ACQ12I	F-ACQ12Y	F-M5X080F	F-M5X080U	CMSE	DMSE
16	F-ACP12LB	F-ACE16FA	F-ACE16CA	-	-	F-MI12SDB	-	-	F-M6X100I	F-M6X100Y	F-M6X100F	F-M6X100U		
20	F-ACP20LB	F-ACE20FA	F-ACE20CA	-	-	F-MI20SDB	-	-	F-M8X125I	F-M8X125Y	F-M8X125F	F-M8X125U		
25	F-ACP25LB	F-ACE25FA	F-ACE25CA	-	-	F-MI20SDB	-	-						
32	F-ACE32LB	F-SI32FA	F-SE32CA	F-SE32CB	F-SI32CR	-	F-SI32FTC	F-SI32TCM2	F-M10X125I	F-M10X125Y	F-M10X125F	F-M10X125U		
40	F-ACE40LB	F-SI40FA	F-SE40CA	F-SE40CB	F-SI40CR	-	F-SI40FTC	F-SI40TCM2						
50	F-ACE50LB	F-SI50FA	F-SE50CA	F-SE50CB	F-SI50CR	-	F-SI50FTC	F-SI40TCM2	F-M12X125I	F-M12X125Y	F-M12X125F	F-M12X125U		
63	F-ACE63LB	F-SI63FA	F-SE63CA	F-SE63CB	F-SI63CR	-	F-SI63FTC	F-SI63TCM2						

Accessory selection

Cylinder model\Accessories			Mounting accessories									Knuckle[Note1]				Sensor switch	
			LB	FA	FB	CA	CB	CR	SDB	FTC	TCM2	I	Y	U	F	CMSE	DMSE
ACF	Female thread	Without magnet	●	●	●	●	●	●	●	●	●	×	×	×	×	×	×
		With magnet														●	●
	Male thread	Without magnet										●	●	●	●	×	×
		With magnet														●	●
ASF ATF	Female thread	Without magnet	●	●	●	●	●	●	●	●	●	×	×	×	×	×	×
		With magnet														●	●
	Male thread	Without magnet										●	●	●	●	×	×
		With magnet														●	●
ACFD ACFJ	Female thread	Without magnet	●	●	×	×	×	×	×	●	●	×	×	×	×	×	×
		With magnet														●	●
	Male thread	Without magnet										●	●	●	●	×	×
		With magnet														●	●
TACF	Female thread	Without magnet	×	×	●	●	●	●	●	●	●	×	×	×	×	×	×
		With magnet														●	●
TACFD	Female thread	Without magnet	×	×	●	×	×	×	×	×	×	×	×	×	×	×	×
		With magnet														●	●

[Note1] The I knuckle and Y knuckle for bore Φ12 are adaptable to ACQ cylinders, and other knuckles are common parts. Please refer to P572~575 for knuckle detail.

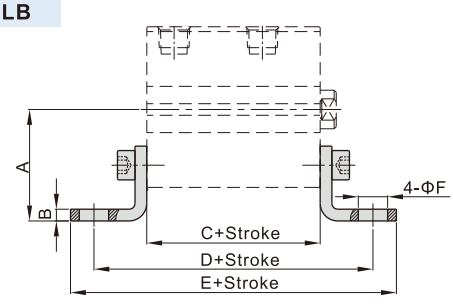
Material of accessories

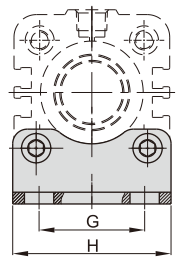
Accessories / Bore size	Mounting accessories									Knuckle			
	LB	FA	FB	CA	CB	CR	SDB	FTC	TCM2	I	Y	F	U
12~25	△	●	●	●	-	-	△	■	●	□	□	□	□
32~63	△	●	●	◇	◇	◇	-	■	●	□	□	□	□

●——Aluminum alloy ; ■——Cast Steel ; ◇——Ductile Iron ; △——SPCC ; □——Carbon Steel

Dimensions

LB



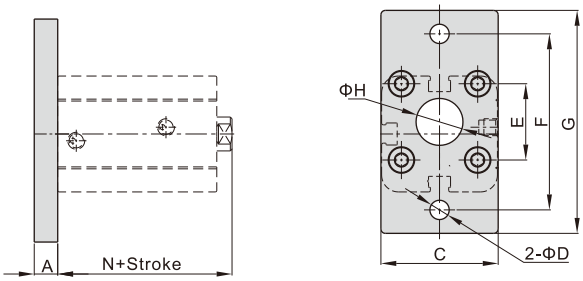


Bore size\Item	A	B	C	D	E	F	G	H
12	21	3	35	61	71	5.5	16	25
16	22	3	35	61	70.6	5.5	18	27
20	27	3.8	37	69	81.6	6.5	22	34
25	29	3.8	39	71	83.6	6.5	26	38
32	33.5	4	44	76	89	7	32	48
40	38	4	45.5	81.5	97.5	10	36	54
50	45	5	45.5	87.5	103.5	10	45	65
63	50	5	49	91	107	10	50	75

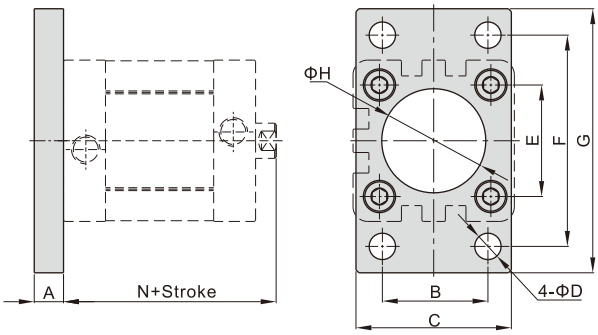
[Note] Value C in the above table is only for ACF series. Please refer to relevant content for valve C of other series.

FA/FB

Φ12~Φ25



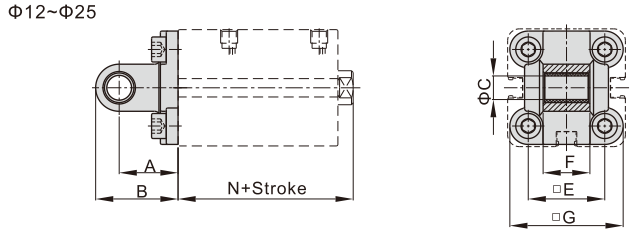
Φ32~Φ63



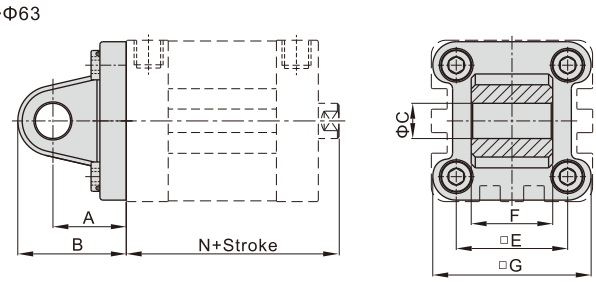
Bore size\Item	A	B	C	D	E	F	G	H	N
12	8	-	25	5.5	16	40	55	10	40
16	8	-	30	5.5	18	43	55	10	40
20	8	-	35	6.6	22	55	68	16	43
25	8	-	39.5	6.6	26	60	76	16	45
32	10	32	47	7	32.5	64	80	30.5	51
40	10	36	53	9	38	72	90	35.5	52.5
50	12	45	65	9	46.5	90	108	40.5	53.5
63	12	50	75	9	56.5	100	118	45.5	57

CA

Φ12~Φ25



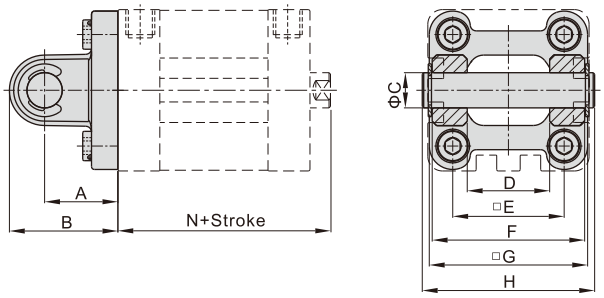
Φ32~Φ63



Bore size\Item	A	B	C	E	F	G	N
12	16	22	6	16	11.9	24	40
16	16	22	6	18	11.9	28.5	40
20	20	28	8	22	15.9	34.5	43
25	20	28	8	26	15.9	38.5	45
32	22	32.5	10	32.5	25.8	46.5	51
40	25	37	12	38	27.8	54	52.5
50	27	39	12	46.5	31.7	64	53.5
63	32	47	16	56.5	39.7	75	57

CB

Φ32~Φ63

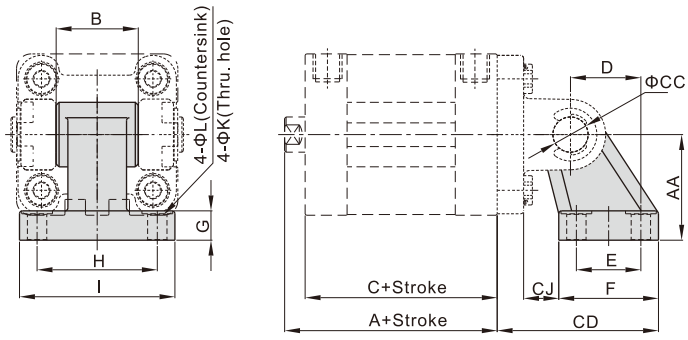


Bore size\Item	A	B	C	D	E	F	G	H	N
32	22	32.5	10	26	32.5	45	46.5	51	51
40	25	37	12	28	38	52	54	59	52.5
50	27	39	12	32	46.5	60	64	67	53.5
63	32	47	16	40	56.5	70	75	77	57

[Note] CB is attached with relevant PIN.

CR

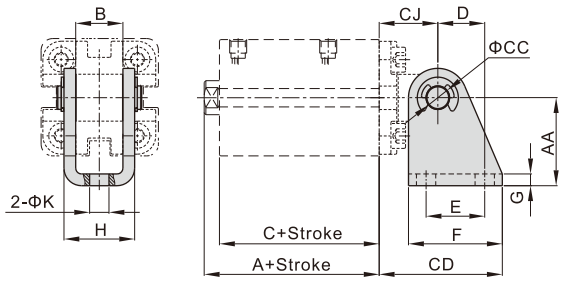
Φ32~Φ63



Bore size\Item	A	AA	B	C	CC	CD	CJ	D	E	F	G	H	I	K	L
32	51	32	26	44	10	50	10	21	18	31	8	38	51	6.6	11
40	52.5	36	28	45.5	12	56	12	24	22	35	10	41	54	6.6	11
50	53.5	45	32	45.5	12	68	13	33	30	45	12	50	65	9	14
63	57	50	40	49	16	77	17	37	35	50	12	52	67	9	14

[Note] CR cann't be used alone, it must be used with CB.

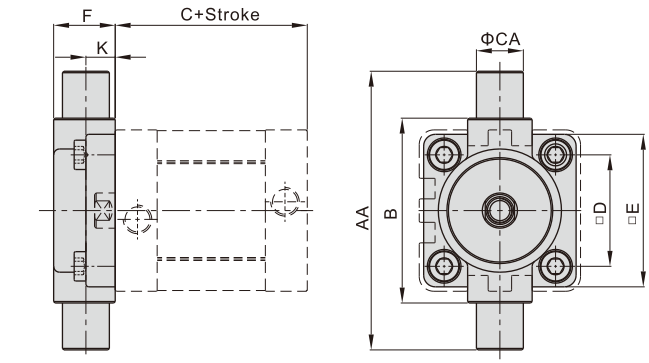
SDB Φ12~Φ25

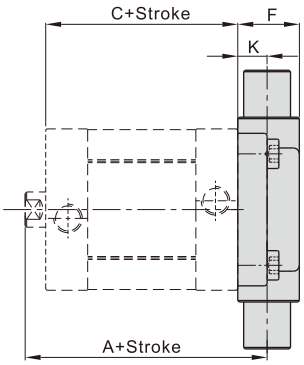


Bore size\Item	A	AA	B	C	CC	CD	CJ	D	E	F	G	H	K
12	40	27	12.1	35	6	34	16	13	15	25	2	18.1	5.5
16	40	27	12.1	35	6	34	16	13	15	25	2	18.1	5.5
20	43	30	16.1	37	8	42	20	16	20	32	2.5	24.1	6.6
25	45	30	16.1	39	8	42	20	16	20	32	2.5	24.1	6.6

[Note] SDB cann't be used alone, it must be used with CA.

FTC Φ32~Φ63

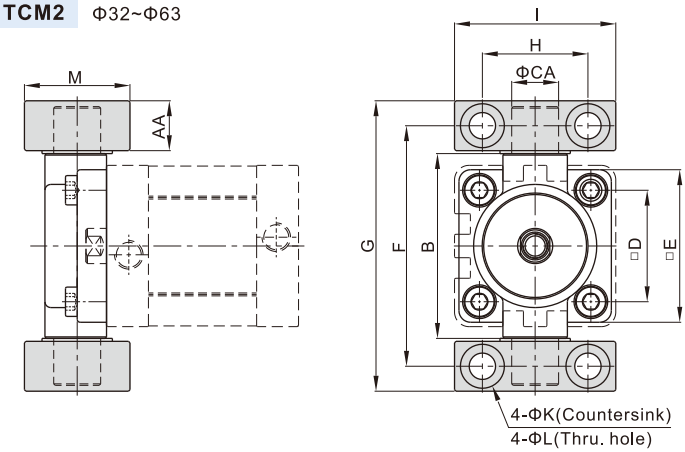


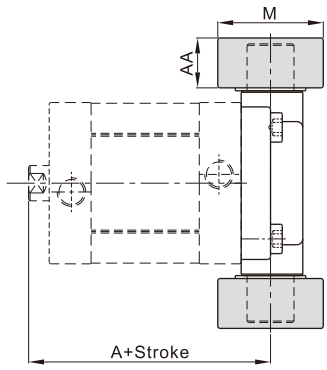


Bore size\Item	A	AA	B	C	CA
32	63	74	50	44	12
40	66.5	95	63	45.5	16
50	71.5	107	75	45.5	16
63	77	130	90	49	20

Bore size\Item	D	E	F	K
32	32.5	46	19	10
40	38	52	21	10
50	46.5	64	26	12
63	56.5	74	28	12

TCM2 Φ32~Φ63

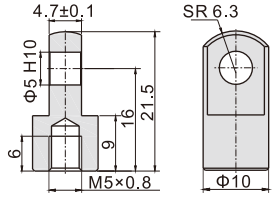




Bore size\Item	A	AA	B	CA	D	E	F	G	H	I	K	L	M
32	63	14	52	12	32.5	46	66	80	32	46	11	7	30
40	66.5	17	65	16	38	52	82	99	36	55	15	9	36
50	71.5	17	75	16	46.5	64	94	111	36	55	15	9	36
63	77	20.5	90	20	56.5	74	113.5	134	42	65	18	11	40

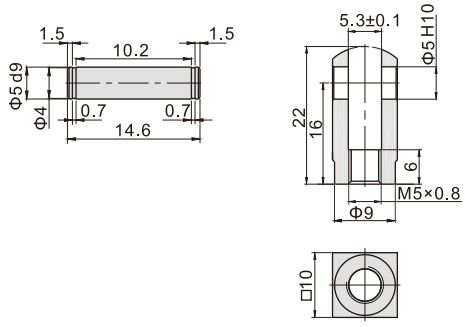
[Note] TCM2 cann't be used alone, it must be used with FTC.
The installation position of the accessories can not be adjusted arbitrarily.

I Knuckle F-ACQ12I



[Note] Other I knuckle are common parts .
Please refer to our catalog for knuckle detail,

Y Knuckle F-ACQ12Y

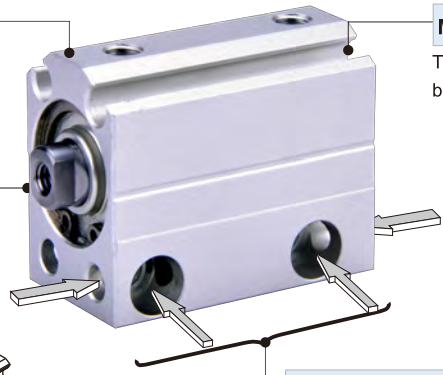


[Note] Other Y knuckles are common parts .
Please refer to our catalog for knuckle detail.

Compendium of MU Series

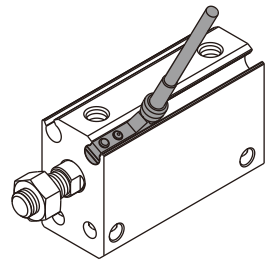
Seven bore size are available

Bore size: 4, 6, 8, 10, 12, 16, 20

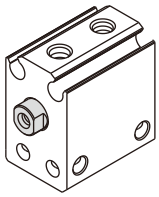


Magnetic switch slots around the cylinder body

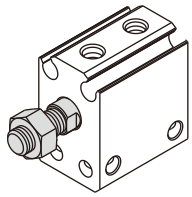
There are magnetic switch slots around the cylinder body convenient to install inducting switch.



Two kinds of rod type



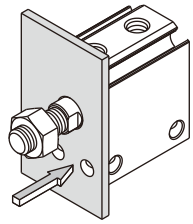
Female thread



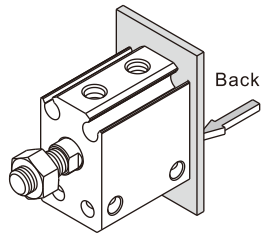
Male thread

Mounted from 4 directions

Cylinder can be mounted from 4 directions, and convenient to install and use.



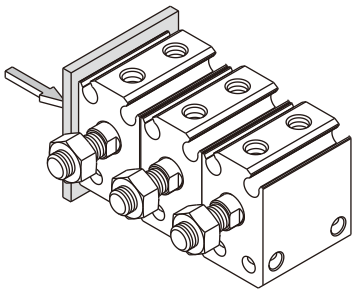
Front mounting



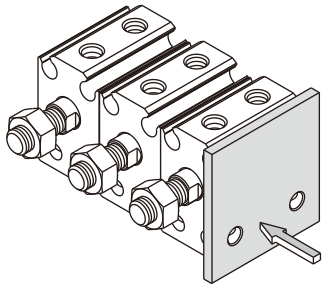
Back mounting

Mounted side by side

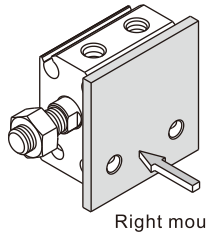
Multitudinous cylinder can be mounted side by side to save space.



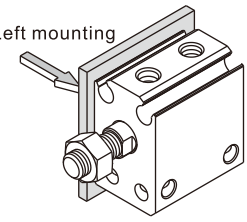
Mounted side by side from left



Mounted side by side from right



Right mounting



Left mounting

Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)						
					0.1	0.2	0.3	0.4	0.5	0.6	0.7
4	2	Single acting_push		12.6	-	0.3	1.6	2.8	4.1	5.3	6.6
		Double acting	Push side	12.6	1.3	2.5	3.8	5.0	6.3	7.6	8.8
			Pull side	9.4	0.9	1.9	2.8	3.8	4.7	5.6	6.6
6	4	Single acting_push		28.3	-	-	5.1	7.9	10.7	13.5	16.4
		Double acting	Push side	28.3	-	5.7	8.5	11.3	14.2	17.0	19.8
			Pull side	15.7	-	3.1	4.7	6.3	7.9	9.4	11.0
8	5	Single acting_push		50.3	-	-	8.3	13.4	18.4	23.4	28.5
		Double acting	Push side	50.3	-	10.1	15.1	20.1	25.2	30.2	35.2
			Pull side	30.6	-	6.1	9.2	12.2	15.3	18.4	21.4
10	6	Single acting_push		78.5	-	8.7	16.5	24.4	32.2	40.1	47.9
		Double acting	Push side	78.5	1.3	15.7	23.6	31.4	39.3	47.1	55.0
			Pull side	50.3	0.9	10.1	15.1	20.1	25.2	30.2	35.2
12	6	Single acting_push		113.1	-	13.6	24.9	36.2	47.5	58.9	70.2
		Double acting	Push side	113.1	11.3	22.6	33.9	45.2	56.5	67.9	79.2
			Pull side	84.8	8.5	17.0	25.4	33.9	42.4	50.9	59.4
16	8	Single acting_push		201.1	-	27.0	47.1	67.2	87.3	107.4	127.5
		Double acting	Push side	201.1	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull side	150.8	15.1	30.2	45.2	60.3	75.4	90.5	105.6
20	10	Single acting_push		314.2	-	36.8	68.2	99.7	131.1	162.5	193.9
		Double acting	Push side	314.2	31.4	62.8	94.2	125.7	157.1	188.5	219.9
			Pull side	236.5	23.7	47.1	70.7	94.2	117.8	141.4	164.9

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. As both of the front cover and piston of the cylinder are short, typically too large stroke can not be selected.
7. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
8. The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
9. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

Mini free mount cylinder

MU Series

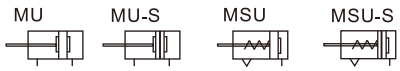


Specification

Bore size(mm)		4	6	8	10	12	16	20
Acting type		MU：Double acting MSU：Single acting_Pull type						
Fluid		Air(to be filtered by 40μm filter element)						
Operating pressure	Double acting	0.2~0.7MPa(29~100psi)	0.15~0.7MPa(22~100psi)					
	Single acting	0.3~0.7MPa(44~100psi)			0.2~0.7MPa(29~100psi)			
Proof pressure		1.2MPa(175psi)						
Temperature ℃		-20~70						
Speed range mm/s		Double acting：30~500 Single acting：50~500						
Stroke tolerance		$^{+1.0}_{0}$						
Cushion type		No					Bumper	
Port size		M3×0.5					M5×0.8	

Add) Refer to P576 for detail of sensor switch.

Symbol



Stroke

Bore size (mm)		Standard stroke (mm)	Max.std stroke
4	Double acting	4 6 8 10 15 20	20
	Single acting	4 6	6
6	Double acting	4 6 8 10 15 20 25 30	30
	Single acting	4 6 8	8
8	Double acting	4 6 8 10 15 20 25 30	30
	Single acting	4 6 8 10	10
10	Double acting	4 6 8 10 15 20 25 30	30
	Single acting	4 6 8 10	10
12	Double acting	5 10 15 20 25 30 35 40 45 50	50
	Single acting	5 10	10
16	Double acting	5 10 15 20 25 30 35 40 45 50	50
	Single acting	5 10	10
20	Double acting	5 10 15 20 25 30 35 40 45 50	50
	Single acting	5 10	10

Note) 1. Please contact the company for other special strokes.
2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

Product feature

1. JIS standard is implemented.
2. Cylinder can be mounted from 4 directions, and convenient to install and use.
3. Multitudinous cylinder can be mounted side by side to save space.
4. The front end of the cylinder is designed with boss. Centering can be done easily.
5. The internal diameter of the body is treated with rolling followed by the treatment of hard anodizing, forming an excellent abrasion resistance and durability.
6. With magnet type is of the feature of position sensing.
7. There are magnetic switch slots around the cylinder body, which is convenient to install inducting switch.
8. The seal of piston adopts heterogeneous two-way seal structure. It has compact dimension and the function of grease reservation.

Ordering code

MU □ 12×10 S □

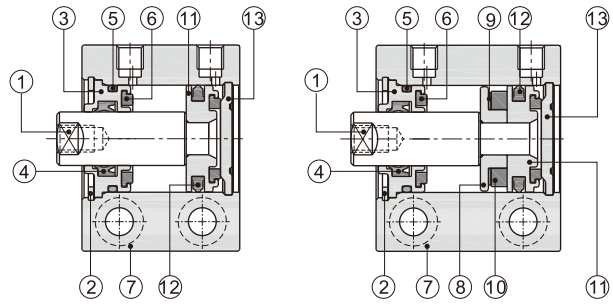
MSU □ 12×10 S □

① ② ③ ④ ⑤ ⑥

①Model	②Body mounted type	③Bore size	④Stroke	⑤Magnet	⑥Rod type
MU: Mini free mount cylinder (double acting)	No this code	4	Refer to stroke table for details	No this code(Without magnet)	Blank: No thread; B: Male thread
		6		Blank: Without magnet S: With magnet	Blank: Female thread B: Male thread
		8			
MSU: Mini free mount cylinder (single acting-push)		10			
	Blank: Transverse mounting R: Axial mounting	12			
		16			
		20			

Inner structure and material of major parts

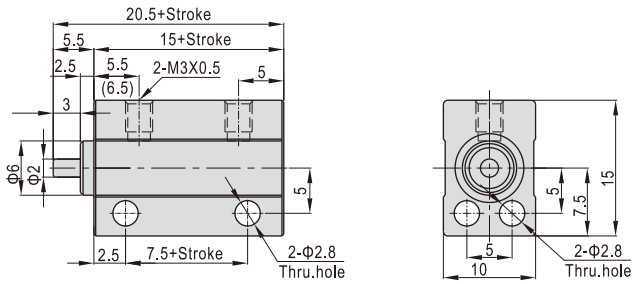
MU20 MU20-S



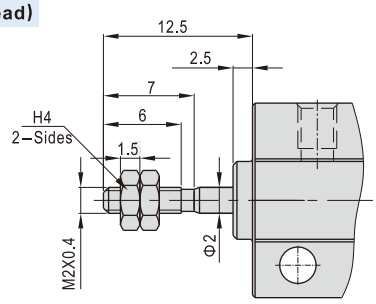
NO.	Item	Material
1	Piston rod	Stainless steel or Carbon steel with 20 μ m chrome plated
2	C clip	Spring steel
3	Front cover	Aluminum alloy
4	Front cover packing	NBR
5	O-ring	NBR
6	Bumper	TPU
7	Body	Aluminum alloy
8	Magnet holder	Brass(Φ12)/Aluminum alloy(Others)
9	Magnet washer	NBR
10	Magnet	Sintered metal (Neodymium-iron-boron)
11	Piston	Brass(Φ12,16)/Aluminum alloy(Others)
12	Piston seal	NBR
13	Back cover	No(Φ12,16)/Aluminum alloy(Others)

Dimensions

Φ4

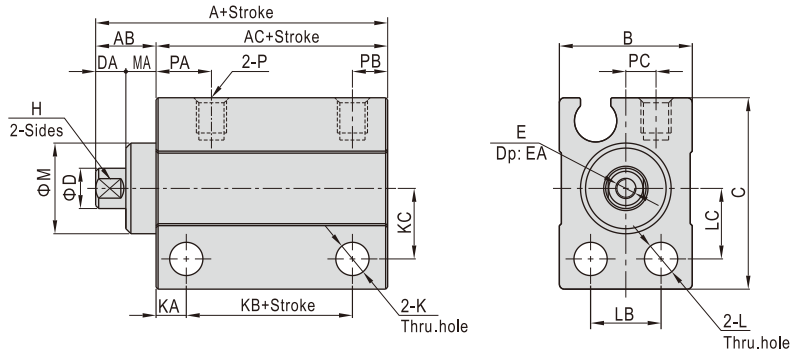


Φ4(Male thread)



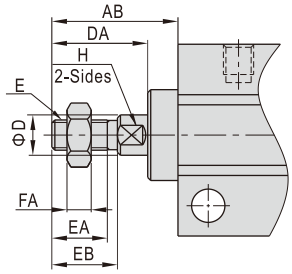
[Note] The value in the "( )" is single–acting type's value.

Φ6~Φ10



Bore size\Item	A	AC	KB	A	AC	KB	AB	B	C	D		DA	E	EA	H		K	KA	KC	L	LB	LC	M	MA	P	PA	PB	PC
	With magnet			Without magnet						MU	MSU				MU	MSU												
6	24	18	11.5	19	13	6.5	6	13	19	4	3.5	3	M2.5×0.45	5	3.5	3	3.3	3	7	3.3	7	7	9	3	M3×0.5	5.5	3.5	3
8	24	18	11.5	19	13	6.5	6	13	21	5		3	M3×0.5	6	4		3.3	3	8	3.3	7	8	11	3	M3×0.5	5.5	3.5	3
10	24	18	11.5	19	13	6.5	6	13.5	22	6		3	M3×0.5	6	5		3.3	3	8.5	3.3	7	8.5	12	3	M3×0.5	5.5	3.5	3.5

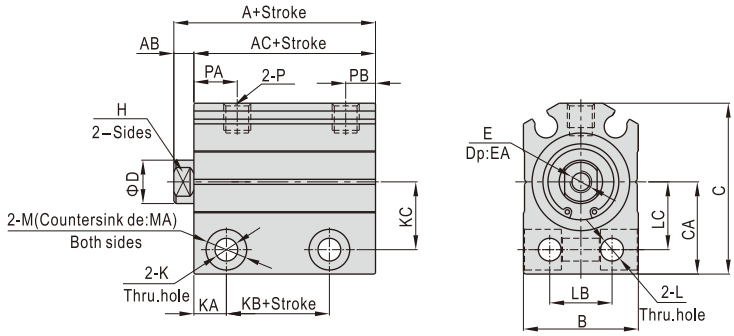
Φ6~Φ10(Male thread)



Bore size\Item	AB	D(MU)	D(MSU)	DA	E	EA	EB	FA	H
6	12.5	4	3.5	9.5	M3×0.5	5.5	6.5	2.4	3.5
8	14.5	5	5	11.5	M4×0.7	7	8.5	3	4
10	16.5	6	6	13.5	M5×0.8	9	10.5	4	5

[Note] The unmarked dimensions are the same as Female type.

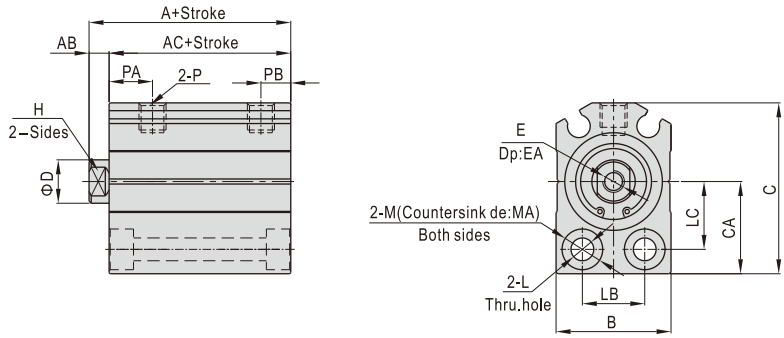
Φ12~Φ20(Transverse mounted)



Bore size\Item	A	AC	KB	A	AC	KB	AB	B	C	CA	D	E	EA	H	K	KA	KC	L	LB	LC	M	MA	P	PA	PB
	With magnet			Without magnet																					
12	25.5(30.5)	22(27)	8.5(13.5)	20.5(25.5)	17(22)	3.5(8.5)	3.5	17	28.5	15.5	6	M3×0.5	6	5	4.3	6	11	4.3	8	11	7.5	7	M5×0.8	7.5	5
16	27(32)	23.5(28.5)	9(14)	22(27)	18.5(23.5)	4(9)	3.5	21	31.5	17	8	M4×0.7	8	6	4.3	6	12.5	4.3	11.5	12.5	7.5	7	M5×0.8	8	5.5
20	29(34)	24.5(29.5)	10.5(15.5)	24(29)	19.5(24.5)	5.5(10.5)	4.5	25	38.5	21	10	M5×0.8	7	8	5.5	7	15.5	5.5	13.5	15.5	9	9	M5×0.8	9	5.5

[Note] The value in the "( )" are single-acting type's value.

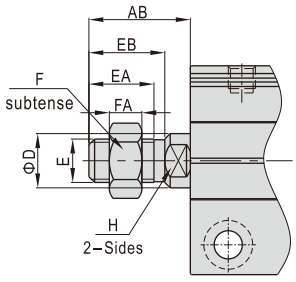
Φ12~Φ20(Axial mounted)



Bore size\Item	A	AC	A	AC	AB	B	C	D	CA	E	EA	H	L	LB	LC	M	MA	P	PA	PB
	With magnet		Without magnet																	
12	25.5(30.5)	22(27)	20.5(25.5)	17(22)	3.5	17	28.5	6	15.5	M3×0.5	6	5	4.3	8	11	7.5	4.5	M5×0.8	7.5	5
16	27(32)	23.5(28.5)	22(27)	18.5(23.5)	3.5	21	31.5	8	17	M4×0.7	8	6	4.3	11.5	12.5	7.5	4.5	M5×0.8	8	5.5
20	29(34)	24.5(29.5)	24(29)	19.5(24.5)	4.5	25	38.5	10	21	M5×0.8	7	8	5.5	13.5	15.5	9	5.5	M5×0.8	9	5.5

[Note] The value in the "( )" are single-acting type's value.

Φ12~Φ20(Male thread)



Bore size\Item	AB	D	E	EA	EB	F	FA	H
12	14	6	M5×0.8	9	10.5	8	4	5
16	15.5	8	M6×1.0	10	12	10	5	6
20	18.5	10	M8×1.25	12	14	12	6	8

[Note] The unmarked dimensions are the same as Female type.

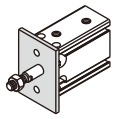
Compendium of MD\MK Series

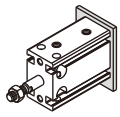
Six bore size are available

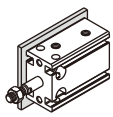
Bore size: 6, 10, 16, 20, 25, 32

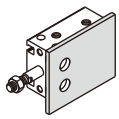
Mounted from 6 directions

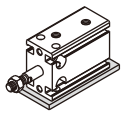
Cylinder can be mounted from 6 directions, and convenient to install and use.

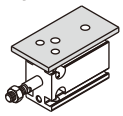

Front mounting

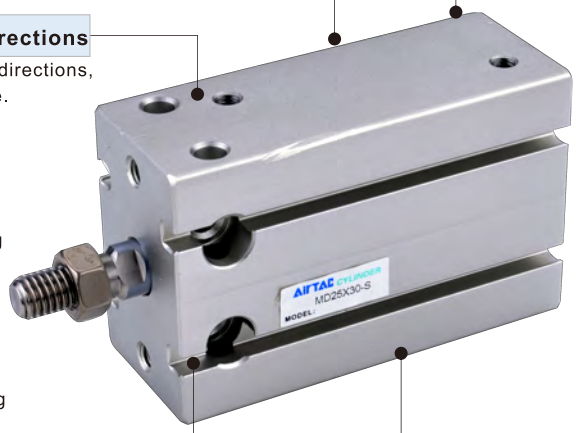

Back mounting


Left mounting


Right mounting


Bottom mounting


Up mounting

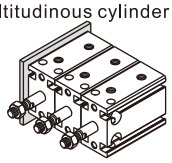


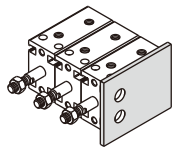
Magnetic switch slots around the cylinder body

There are magnetic switch slots around the cylinder body convenient to install inducting switch.

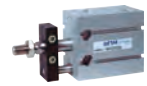
Mounted side by side

Multitudinous cylinder can be mounted side by side to save space.


Mounted side by side from left


Mounted side by side from right

Multi-type cylinder

MD: Multi-mount cylinder (Double acting type)	
MSD: Multi-mount cylinder (Single acting-push type)	
MTD: Multi-mount cylinder (Single acting-pull type)	
MDD: Multi-mount cylinder (Double rod type)	
MDJ: Multi-mount cylinder (Adjustable stroke type)	
MK: Multi-mount cylinder (Double acting no-rotating type)	
MSK: Multi-mount cylinder (Single acting-push no-rotating type)	
MTK: Multi-mount cylinder (Single acting-pull no-rotating type)	
MKD: Multi-mount cylinder (Double rod no-rotating type)	
MKJ: Multi-mount cylinder (Adjustable stroke no-rotating type)	

Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)						
					0.1	0.2	0.3	0.4	0.5	0.6	0.7
6	3	Single acting	Push side	28.3	-	1.5	2.9	4.3	5.7	7.2	8.6
			Pull side	21.2	-	-	0.8	1.5	2.2	2.9	3.6
		Double acting	Push side	28.3	2.8	5.7	8.5	11.3	14.1	17.0	19.8
			Pull side	21.2	2.1	4.2	6.4	8.5	10.6	12.7	14.8
10	4	Single acting	Push side	78.5	-	3.9	7.9	11.8	15.8	19.7	23.7
			Pull side	66.0	-	1.4	4.1	6.8	9.5	12.2	14.9
		Double acting	Push side	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
			Pull side	66.0	6.6	13.2	19.8	26.4	33.0	39.6	46.2
16	6	Single acting	Push side	201.1	-	10.1	30.2	50.3	70.4	90.5	110.6
			Pull side	172.8	-	8.7	25.9	43.2	60.5	77.8	95.1
		Double acting	Push side	201.1	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull side	172.8	17.3	34.6	51.8	69.1	86.4	103.7	121.0
20	8	Single acting	Push side	314.2	-	15.7	47.1	78.6	110.0	141.4	172.8
			Pull side	263.9	-	13.2	39.6	66.0	92.3	118.7	145.1
		Double acting	Push side	314.2	31.4	62.8	94.2	125.7	157.1	188.5	219.9
			Pull side	263.9	26.4	52.8	79.2	105.6	131.9	158.3	184.7
25	10	Single acting	Push side	490.9	-	24.7	73.8	122.8	179.1	221.0	270.1
			Pull side	412.3	-	20.7	61.9	103.1	144.4	185.6	226.8
		Double acting	Push side	490.9	49.1	98.2	147.3	196.3	245.4	294.5	343.6
			Pull side	412.3	41.2	82.5	123.7	164.9	206.2	247.4	288.6
32	12	Single acting	Push side	804.2	-	40.2	120.7	201.1	281.5	361.9	442.4
			Pull side	691.2	-	34.7	103.8	173.0	242.1	311.2	380.3
		Double acting	Push side	804.2	80.4	160.8	241.3	321.7	402.1	482.5	563.0
			Pull side	691.2	69.1	138.2	207.3	276.5	345.6	414.7	483.8

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion;
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be cleared away before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. As both of the front cover and piston of the cylinder are short, typically too large stroke can not be selected.
7. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
8. The cylinder shall avoid the influence of side load in operation maintain the normal work of cylinder and extend the service life.
9. If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

Multi-mount cylinder

MD Series

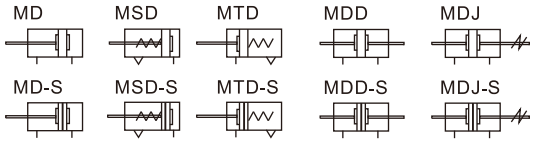


Specification

Bore size(mm)		6	10	16	20	25	32
Acting type	MD/MDD/MDJ	Double acting					
	MSD/MTD	Single acting					
Fluid		Air(to be filtered by 40μm filter element)					
Operating pressure	Double acting	0.15~1.0MPa(22~145psi)					
	Single acting	0.2~1.0MPa(28~145psi)					
Proof pressure		1.5MPa(215psi)					
Temperature ℃		-20~70					
Speed range mm/s		Double acting：30~500 Single acting：50~500					
Stroke tolerance		$^{+1.0}_{0}$					
Cushion type		Bumper					
Port size [Note]		M5×0.8					1/8"

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol



Stroke

Bore size (mm)		Standard stroke (mm)	Max.std stroke
6	Double acting	5 10 15 20 25 30 35	35
	Single acting	5 10 15 20	20
10	Double acting	5 10 15 20 25 30 35	35
	Single acting	5 10 15 20	20
16	Double acting	5 10 15 20 25 30 40 50	50
	Single acting	5 10 15 20	20
20	Double acting	5 10 15 20 25 30 40 50 60	60
	Single acting	5 10 15 20	20
25	Double acting	5 10 15 20 25 30 40 50 60	60
	Single acting	5 10 15 20	20
32	Double acting	5 10 15 20 25 30 40 50 60	60
	Single acting	5 10 15 20	20

Note) 1. Please contact the company for other special strokes.
2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

Product feature

1. Manufactured by our enterprise.
2. There are several ways to fix the cylinder and it is convenient to install and use.
3. Several cylinders can be assembled together to effectively save the installation space.
4. The guide precision of piston rod is high and no additional lubricant is needed.
5. Cylinders of various specifications are optional.
6. The seal material with high temperature resistance is adopted, operating temperature range is 0~150℃(Option).

Ordering code

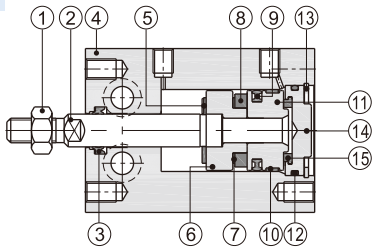
MD 32×30 S G
MDD 32×30 S G
MDJ 32×30–30 S G
① ② ③ ④ ⑤ ⑥

①Model	②Bore size	③Stroke	④Adjustable stroke	⑤Magnet	⑥Thread type [Note1]
MD: Multi-mount cylinder(Double acting type)	6 10 16 20 25 32	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	G: G Thread
MSD: Multi-mount cylinder(Single acting-push type)					
MTD: Multi-mount cylinder(Single acting-pull type)					
MDD: Multi-mount cylinder(Double rod type)					
MDJ: Multi-mount cylinder(Adjustable stroke type)			10 20 30		

[Note1] Standard thread is blank here.

Inner structure and material of major parts

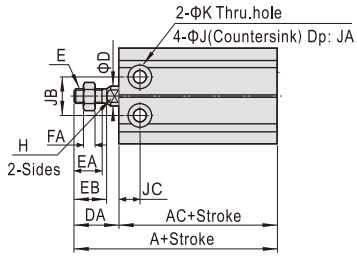
MD-S

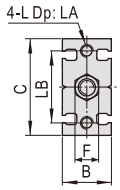


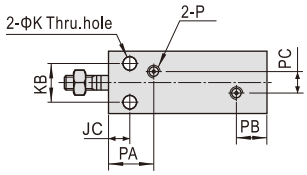
NO.	Item	Material	NO.	Item	Material
1	Rod nut	Carbon steel/Stainless steel	9	Piston seal	NBR
2	Piston rod	Stainless steel/S45C	10	Wear ring	Wear resistant material
3	Rod packing	NBR	11	Piston	Aluminum alloy
4	Body	Aluminum alloy	12	O-ring	NBR
5	Bumper	TPU	13	C-clip	Spring steel
6	Magnet holder	Aluminum alloy	14	Back cover	Aluminum alloy
7	Magnet washer	NBR	15	Bumper	TPU
8	Magnet	Sintered metal(Neodymium-iron-boron)			

Dimensions

MD

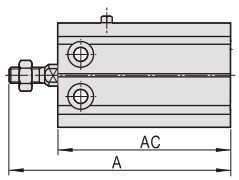




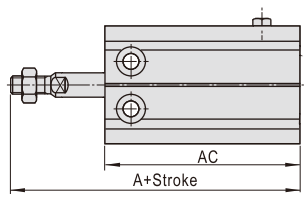


Bore size\Item	Without magnet		With magnet		B	C	D	DA	E	EA	EB	F	FA	H	J	JA	JB	JC	K	KB	L	LA	LB	P	PA	PB	PC
	A	AC	A	AC																							
6	46	33	46	33	16.5	22	3	13	M3×0.5	7	8	5.5	2.5	-	6	5	10	7	3.3	7	M3×0.5	5	17	M5×0.8	14	10	–
10	52	36	52	36	16.5	24	4	16	M4×0.7	10	11	7	2	-	6	5.5	11	7	3.3	9	M3×0.5	5	18	M5×0.8	15.5	10	–
16	46	30	56	40	20	32	6	16	M5×0.8	11	12.5	8	4	5	7.5	6.5	14	7	4.5	12	M4×0.7	5	25	M5×0.8	14.5	10	3
20	55	36	65	46	26	40	8	19	M6×1.0	12	14	10	5	6	9.5	8	16	9	5.5	16	M5×0.8	7.5	30	M5×0.8	19.3	9.5	9
25	63	40	73	50	32	50	10	23	M8×1.25	15.5	18	12	6	8	9.5	9	20	10	5.5	20	M5×0.8	8	38	M5×0.8	20.5	8.5	12
32	69	42	79	52	40	62	12	27	M10×1.25	19.5	22	17	6	10	11	11.5	24	11	6.5	24	M6×1.0	9	48	1/8"	22	12.5	13

MSD



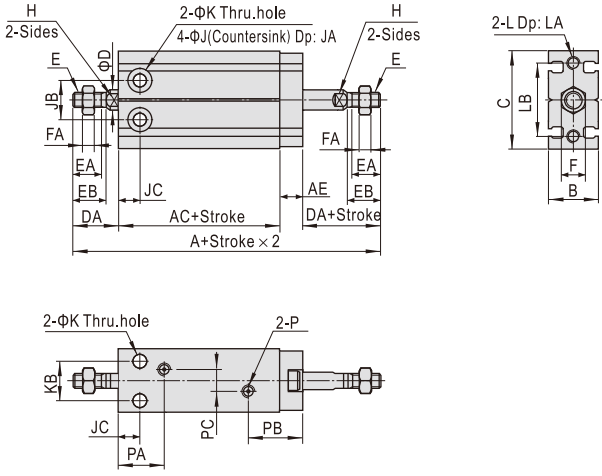
MTD



Item	A(Without magnet)				A(With magnet)				AC(Without magnet)				AC(With magnet)			
Bore size\Stroke	5St	10St	15St	20St	5St	10St	15St	20St	5St	10St	15St	20St	5St	10St	15St	20St
6	56	61	71	76	56	61	71	76	43	48	58	63	43	48	58	63
10	62	67	77	82	62	67	77	82	46	51	61	66	46	51	61	66
16	61	66	81	86	71	76	91	96	45	50	65	70	55	60	75	80
20	70	75	90	95	80	85	100	105	51	56	71	76	61	66	81	86
25	78	83	98	103	88	93	108	113	55	60	75	80	65	70	85	90
32	84	89	104	109	94	99	114	119	57	62	77	82	67	72	87	92

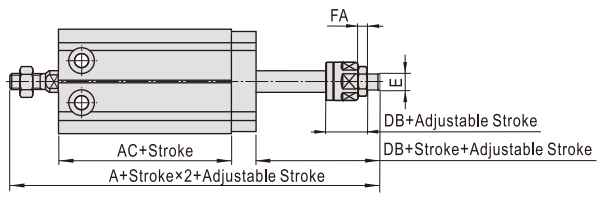
Remark) The unmarked dimension is the same as MD standard type.

MDD



Bore size\Item	Without magnet		With magnet		AE	B	C	D	DA	E	EA	EB	F	FA	H	J	JA	JB	JC	K	KB	L	LA	LB	P	PA	PB	PC
	A	AC	A	AC																							
6	70	38	70	38	6	16.5	22	3	13	M3×0.5	7	8	5.5	2.5	-	6	5	10	7	3.3	7	M3×0.5	5	17	M5×0.8	14	16	–
10	74	36	74	36	6	16.5	24	4	16	M4×0.7	10	11	7	2	-	6	5.5	11	7	3.3	9	M3×0.5	5	18	M5×0.8	15.5	16	–
16	69.5	30	79.5	40	7.5	20	32	6	16	M5×0.8	11	12.5	8	4	5	7.5	6.5	14	7	4.5	12	M4×0.7	5	25	M5×0.8	14.5	17.5	3
20	83	36	93	46	9	26	40	8	19	M6×1.0	12	14	10	5	6	9.5	8	16	9	5.5	16	M5×0.8	7.5	30	M5×0.8	19.3	18.5	9
25	95	40	105	50	9	32	50	10	23	M8×1.25	15.5	18	12	6	8	9.5	9	20	10	5.5	20	M5×0.8	8	38	M5×0.8	20.5	17.5	12
32	106	42	116	52	10	40	62	12	27	M10×1.25	19.5	22	17	6	10	11	11.5	24	11	6.5	24	M6×1.0	9	48	1/8"	22	22.5	13

MDJ



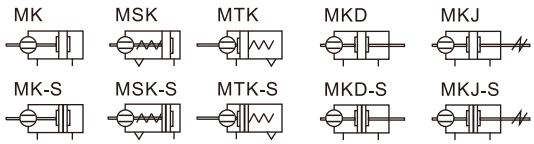
Bore size\Item	A(Without magnet)	A(With magnet)	AC(Without magnet)	AC(With magnet)	DB	E	FA
6	70	70	38	38	13	M3×0.5	2.5
10	73	73	36	36	15	M4×0.7	2
16	70.5	80.5	30	40	17	M5×0.8	4
20	85	95	36	46	21	M6×1.0	5
25	97	107	40	50	25	M8×1.25	6
32	106	116	42	52	27	M10×1.25	6

Remark) The unmarked dimension is the same as MD standard type.

MK Series



Symbol



Product feature

1. Manufactured by our enterprise.
2. There are several fixation ways for the cylinder, and also convenient to install and use.
3. Several cylinders can be assembled together to effectively save the installation space.
4. The guide precision of piston rod is high and no additional lubricant is needed.
5. Fixated block is attached to piston rod, which prevents it from rotating.
6. Various cylinders are available for your choice.
7. The seal material with high temperature resistance is adopted, operating temperature range is 0~150℃(Option).

Specification

Bore size(mm)		6	10	16	20	25	32
Acting type	MK/MKD/MKJ	Double acting					
	MSK/MTK	Single acting					
Fluid		Air(to be filtered by 40μm filter element)					
Operating pressure	Double acting	0.2~1.0MPa(28~145psi)		0.15~1.0MPa(22~145psi)			
	Single acting	0.2~1.0MPa(28~145psi)					
Proof pressure		1.5MPa(215psi)					
Temperature ℃		-20~70					
Speed range mm/s		Double acting: 30~500 Single acting: 50~500					
Stroke tolerance		$^{+1.0}_{0}$					
Cushion type		Bumper					
Port size [Note]		M5×0.8					1/8"

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Stroke

Bore size (mm)		Standard stroke (mm)	Max.std stroke
6	Double acting	5 10 15 20 25 30 35	35
	Single acting	5 10 15 20	20
10	Double acting	5 10 15 20 25 30 35	35
	Single acting	5 10 15 20	20
16	Double acting	5 10 15 20 25 30 40 50	50
	Single acting	5 10 15 20	20
20	Double acting	5 10 15 20 25 30 40 50 60	60
	Single acting	5 10 15 20	20
25	Double acting	5 10 15 20 25 30 40 50 60	60
	Single acting	5 10 15 20	20
32	Double acting	5 10 15 20 25 30 40 50 60	60
	Single acting	5 10 15 20	20

Note) 1. Please contact the company for other special strokes.
2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

Ordering code

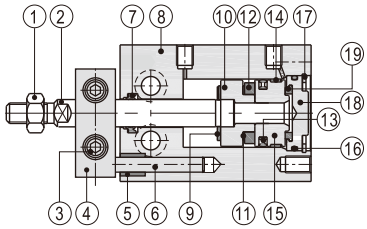
MK 32×30 S G
MKD 32×30 S G
MKJ 32×30–30 S G
① ② ③ ④ ⑤ ⑥

①Model	②Bore size	③Stroke	④Adjustable stroke	⑤Magnet	⑥Thread type [Note1]
MK: Multi-mount cylinder(Double acting no-rotating type)	6 10 16 20 25 32	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	G: G Thread
MSK: Multi-mount cylinder(Single acting-push no-rotating type)					
MTK: Multi-mount cylinder (Single acting-pull no-rotating type)					
MKD: Multi-mount cylinder(Double rod no-rotating type)					
MKJ: Multi-mount cylinder(Adjustable stroke no-rotating type)			10 20 30		

[Note1] Standard thread is blank here.

Inner structure and material of major parts

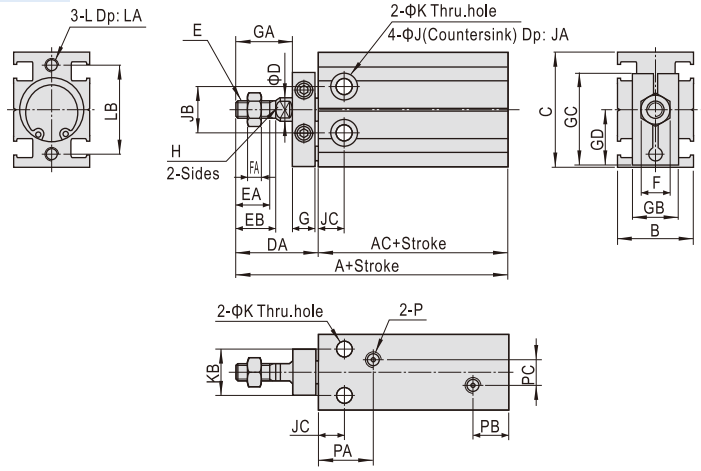
MK-S



NO.	Item	Material	NO.	Item	Material
1	Rod nut	Carbon steel/Stainless steel	11	Magnet washer	NBR
2	Piston rod	Stainless steel/S45C	12	Magnet	Sintered metal(Neodymium-iron-boron)
3	Screw	Carbon steel	13	Piston seal	NBR
4	No-rotating plate	Aluminum alloy	14	Wear ring	Wear resistant material
5	Bushing	Brass	15	Piston	Aluminum alloy
6	Fixed rod	Stainless steel	16	O-ring	NBR
7	Rod packing	NBR	17	C-clip	Spring steel
8	Body	Aluminum alloy	18	Back cover	Aluminum alloy
9	Bumper	TPU	19	Bumper	TPU
10	Magnet holder	Aluminum alloy			

Dimensions

MK

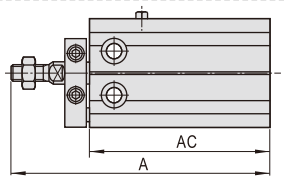


Bore size\Item	Without magnet		With magnet		B	C	D	DA	E
	A	AC	A	AC					
6	51	33	51	33	16.5	22	3	18	M3×0.5
10	57	36	57	36	16.5	24	4	21	M4×0.7
16	56	30	66	40	20	32	6	26	M5×0.8
20	65	36	75	46	26	40	8	29	M6×1.0
25	73	40	83	50	32	50	10	33	M8×1.25
32	84	42	94	52	40	62	12	42	M10×1.25

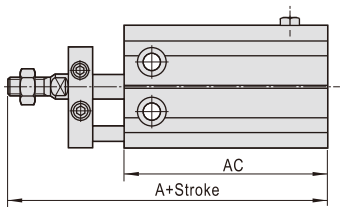
Bore size\Item	EA	EB	F	FA	G	GA	GB	GC	GD	H	J	JA
6	7	8	5.5	2.5	8	9	11	19	10.7	-	6	5
10	10	11	7	2	8	12	13	20.5	11.6	-	6	5.5
16	11	12.5	8	4	8	17	13	26.5	15.6	5	7.5	6.5
20	12	14	10	5	8	20	16	32	19.5	6	9.5	8
25	15.5	18	12	6	10	22	19	40	24.5	8	9.5	9
32	19.5	22	17	6	12	29	24	49	30.5	10	11	11.5

Bore size\Item	JB	JC	K	KB	L	LA	LB	P	PA	PB	PC
6	10	7	3.3	7	M3×0.5	5	17	M5×0.8	14	10	–
10	11	7	3.3	9	M3×0.5	5	18	M5×0.8	15.5	10	–
16	14	7	4.5	12	M4×0.7	5	25	M5×0.8	14.5	10	3
20	16	9	5.5	16	M5×0.8	7.5	30	M5×0.8	19.3	9.5	9
25	20	10	5.5	20	M5×0.8	8	38	M5×0.8	20.5	8.5	12
32	24	11	6.5	24	M6×1.0	9	48	1/8"	22	12.5	13

MSK



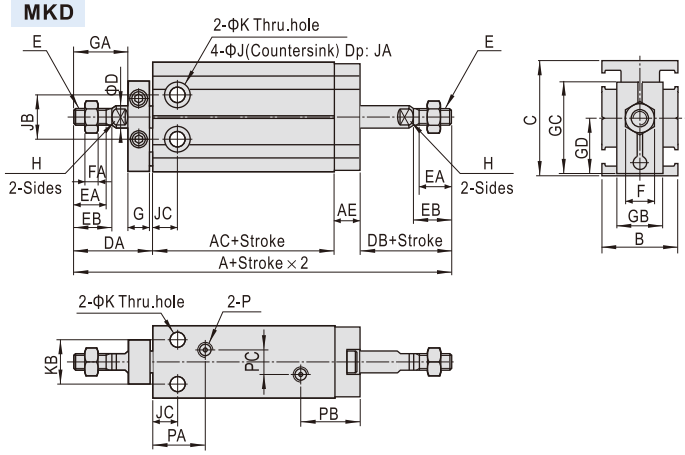
MTK



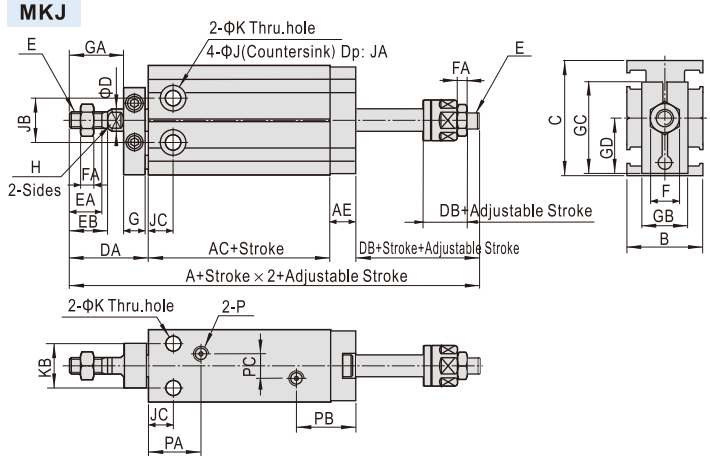
Item	A(Without magnet)				A(With magnet)				AC(Without magnet)				AC(With magnet)			
Bore size\Stroke	5St	10St	15St	20St	5St	10St	15St	20St	5St	10St	15St	20St	5St	10St	15St	20St
6	61	66	76	81	61	66	76	81	43	48	58	63	43	48	58	63
10	67	72	82	87	67	72	82	87	46	51	61	66	46	51	61	66
16	71	76	91	96	81	86	101	106	45	50	65	70	55	60	75	80
20	80	85	100	105	90	95	110	115	51	56	71	76	61	66	81	86
25	88	93	108	113	98	103	118	123	55	60	75	80	65	70	85	90
32	99	104	119	124	109	114	129	134	57	62	77	82	67	72	87	92

Remark) The unmarked dimension is the same as MK standard type.

MKD



MKJ



Bore size\Item	A(Without magnet)		A(With magnet)		AC (Without magnet)	AC (With magnet)	AE	B	C	D	DA	DB		E
	MKD	MKJ	MKD	MKJ								MKD	MKJ	
6	75	75	75	75	38	38	6	16.5	22	3	18	13	13	M3×0.5
10	79	78	79	78	36	36	6	16.5	24	4	21	16	14.7	M4×0.7
16	79.5	80.5	89.5	90.5	30	40	7.5	20	32	6	26	16	17	M5×0.8
20	93	95	103	105	36	46	9	26	40	8	29	19	21	M6×1.0
25	105	107	115	117	40	50	9	32	50	10	33	23	25	M8×1.25
32	121	121	131	131	42	52	10	40	62	12	42	27	27	M10×1.25

Bore size\Item	EA	EB	F	FA	G	GA	GB	GC	GD	H	J	JA	JB	JC	K	KB	P	PA	PB	PC
6	7	8	5.5	2.5	8	9	11	19	10.7	-	6	5	10	7	3.3	7	M5×0.8	14	16	–
10	10	11	7	2	8	12	13	20.5	11.6	-	6	5.5	11	7	3.3	9	M5×0.8	15.5	16	–
16	11	12.5	8	4	8	17	13	26.5	15.6	5	7.5	6.5	14	7	4.5	12	M5×0.8	14.5	17.5	3
20	12	14	10	5	8	20	16	32	19.5	6	9.5	8	16	9	5.5	16	M5×0.8	19.3	18.5	9
25	15.5	18	12	6	10	22	19	40	24.5	8	9.5	9	20	10	5.5	20	M5×0.8	20.5	17.5	12
32	19.5	22	17	6	12	29	24	49	30.5	10	11	11.5	24	11	6.5	24	1/8"	22	22.5	13

Compendium of MPG Series

Five bore size are available

Bore size: 6, 8, 10, 12, 16

Multi-type cylinder

MPG: Standard plate cylinder (double acting)

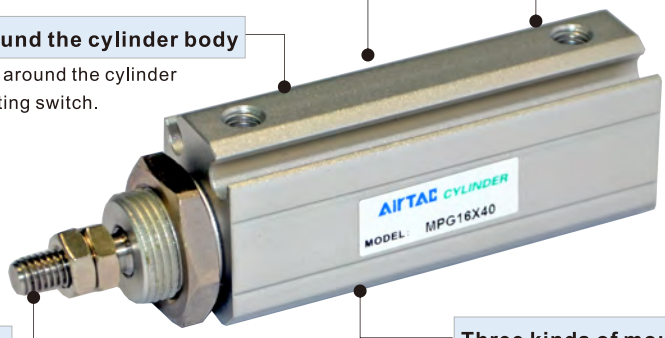


MPGH: Hinge mounting type cylinder (double acting)

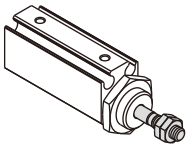


Magnetic switch slots around the cylinder body

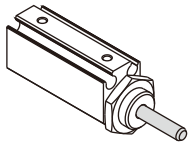
There are magnetic switch slots around the cylinder body convenient to install inducting switch.



Two kinds of rod type

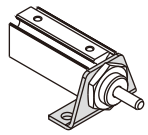


Male thread

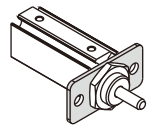


No thread

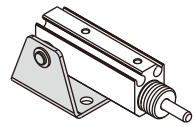
Three kinds of mounting type



LB Type

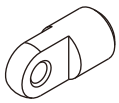


FA Type

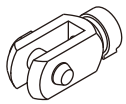


SDB Type

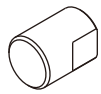
Four kinds of cylinder joints



I Knuckle



Y Knuckle



FC Rubber bumper (flat head)



RC Rubber bumper (ball head)

Criteria for selection: Cylinder thrust

Unit: Newton(N)

Model	Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)						
						0.1	0.2	0.3	0.4	0.5	0.6	0.7
MPG MPGH	6	3	Double acting	Push side	28.3	2.8	5.7	8.5	11.3	14.2	17.0	19.8
				Pull side	21.2	2.1	4.2	6.4	8.5	10.6	12.7	14.8
	8	4	Double acting	Push side	50.3	5.0	10.1	15.1	20.1	25.2	30.2	35.2
				Pull side	37.7	3.8	7.5	11.3	15.1	18.9	22.6	26.4
	10	4	Double acting	Push side	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
				Pull side	65.9	6.6	13.2	19.8	26.4	33.0	39.5	46.1
	12	6	Double acting	Push side	113.0	11.3	22.6	33.9	45.2	56.5	67.8	79.1
				Pull side	84.7	8.5	17.0	25.4	33.9	42.4	50.8	59.3
	16	6	Double acting	Push side	201.0	20.1	40.2	60.3	80.4	100.5	120.6	140.7
				Pull side	172.7	17.3	34.5	51.8	69.1	86.4	103.6	120.9

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. As both of the front cover and piston of the cylinder are short, typically too large stroke can not be selected.
7. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
8. The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
9. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

Plate Cylinder

MPG Series



Specification

Bore size(mm)	6	8	10	12	16
Acting type	Double acting				
Fluid	Air(to be filtered by 40μm filter element)				
Operating pressure	0.15~0.7MPa(22~100psi)				
Proof pressure	1.2MPa(175psi)				
Mounting type	Basic、FA、LB、SDB				
Temperature ℃	-20~70				
Speed range mm/s	30~500				
Stroke tolerance	$^{+1.0}_{0}$				
Cushion type	Bumper				
Port size	M3×0.5			M5×0.8	

Add) Refer to P576 for detail of sensor switch.

Symbol



Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke
6	5 10 15 20 25	25
8	5 10 15 20 25 30 35 40	40
10	5 10 15 20 25 30 35 40	40
12	5 10 15 20 25 30 35 40	40
16	5 10 15 20 25 30 35 40	40

[Note] Please contact the company for other special strokes.

Product feature

1. It is compact, small size and light weight. It is easy to install and dismantle.
2. The guide precision of piston rod is high and no additional lubricant is needed.
3. Advanced rubber coating process is applied to the back cover.
4. Mounting accessories with various specifications are optional.
5. With magnet type is of the feature of position sensing.
6. There are magnetic switch slots around the cylinder body, which is convenient to install inducting switch.
7. Cylinders of various specifications are optional.

Ordering code

MPG 10×30 S N □

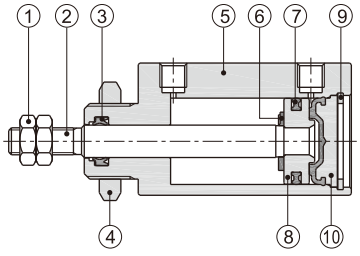
MPGH 10×30 S N □

① ② ③ ④ ⑤ ⑥

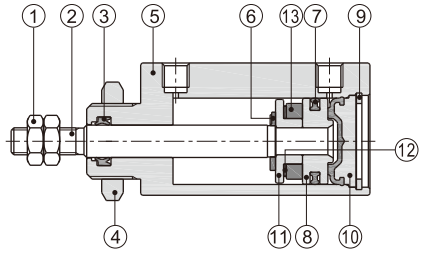
①Model	②Bore size	③Stroke	④Magnet	⑤Rod type	⑥Mounting type
MPG: Standard plate cylinder (double acting)	6 8 10 12 16	Refer to stroke table for details	Blank: Without magnet S: With magnet	Blank: Male thread N: No thread	Blank: No accessories LB: LB type FA: FA type
MPGH: Hinge mounting type cylinder (double acting)					Blank: No accessories SDB: SDB type

Inner structure and material of major parts

MPG(Φ8~Φ16)



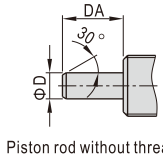
MPG-S(Φ8~Φ16)



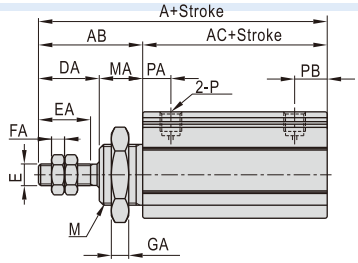
NO.	Item	Material
1	Rod nut	Stainless steel
2	Piston rod	Stainless steel
3	Front cover packing	NBR
4	Front cover nut	Carbon steel
5	Body	Aluminum alloy
6	Bumper	TPU
7	Piston	Aluminum alloy(Φ16) Brass(Others)
8	Piston seal	NBR
9	clip	Spring steel
10	Back cover	Aluminum alloy & Rubber
11	Magnet holder	Stainless steel(Φ6)/Brass(Φ8~Φ12) Aluminum alloy(Φ16)
12	Magnet washer	NBR
13	Magnet	Sintered metal (Neodymium-iron-boron)

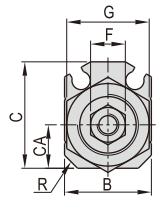
Dimensions

MPG/MPG-S



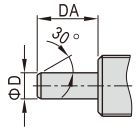
Piston rod without thread



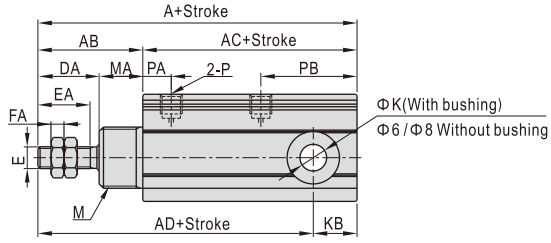


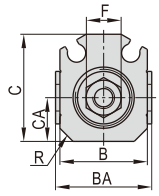
Bore size\Item	A	AC	A	AC	AB	B	C	CA	D	DA	E	EA	F	FA	G	GA	M	MA	P	PA	PB	R
	Without magnet		With magnet																			
6	33	16	38	21	17	14	16.5	6	3	9	M3×0.5	7	5.5	2.4	13	4	M10×1.0	8	M3×0.5	5.5	6.5	2
8	38	18	43	23	20	14.5	17.5	7	4	12	M4×0.7	10	7	3	17	4	M12×1.0	8	M3×0.5	6	7	2
10	39.5	19.5	44.5	24.5	20	15	19	7	4	12	M4×0.7	10	7	3	17	4	M12×1.0	8	M3×0.5	6	7	2.5
12	43.5	19.5	48.5	24.5	24	17	21.5	8.5	6	14	M5×0.8	12	8	3	19	4	M14×1.0	10	M5×0.8	6.5	7.5	2.5
16	43.5	19.5	48.5	24.5	24	20	24.5	10	6	14	M5×0.8	12	8	3	19	4	M14×1.0	10	M5×0.8	6.5	7.5	3

MPGH/MPGH-S



Piston rod without thread

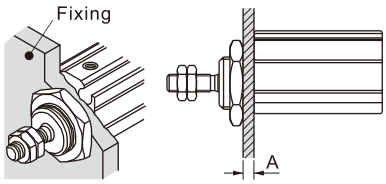




Bore size\Item	A	AC	AD	A	AC	AD	AB	B	BA	C	CA	D	DA	E	EA	F	FA	K	KB	M	MA	P	PA	PB	R
	Without magnet			With magnet																					
6	38	21	34	43	26	39	17	14	–	16.5	6	3	9	M3×0.5	7	5.5	2.4	$3^{+0.05}_{0}$	4	M10×1.0	8	M3×0.5	5.5	11.5	2
8	46	26	41	51	31	46	20	14.5	–	17.5	7	4	12	M4×0.7	10	7	3	$4^{+0.05}_{0}$	5	M12×1.0	8	M3×0.5	6	15	2
10	50.5	30.5	44	55.5	35.5	49	20	15	17	19	7	4	12	M4×0.7	10	7	3	$5^{+0.065}_{0}$	6.5	M12×1.0	8	M3×0.5	6	18	2.5
12	58	34	48	63	39	53	24	17	19	21.5	8.5	6	14	M5×0.8	12	8	3	$6^{+0.065}_{0}$	10	M14×1.0	10	M5×0.8	6.5	22	2.5
16	58	34	48	63	39	53	24	20	22	24.5	10	6	14	M5×0.8	12	8	3	$6^{+0.065}_{0}$	10	M14×1.0	10	M5×0.8	6.5	22	3

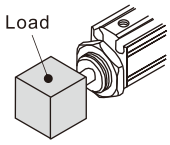
Installation and application

1. Select the plate thickness and tightening torque of the front cover thread according to the table below:



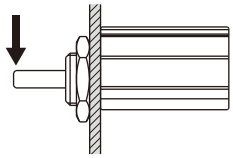
Bore size	Front cover thread	Maximum allowable torque(N.m)	Maximum thickness(A)
6	M10×1.0	12.5	4
8	M12×1.0	21.0	4
10	M12×1.0	21.0	4
12	M14×1.0	34.0	5
16	M14×1.0	34.0	5

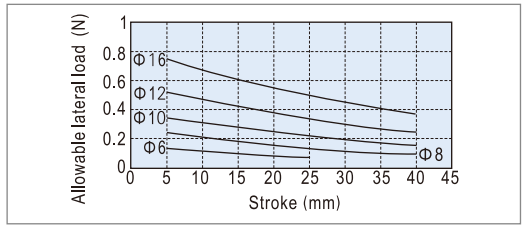
2. The extra torque produced by the load at the piston rod end cannot exceed the allowable value specified in the table below. Otherwise may cause damage to the cylinder or reduce the service life.



Bore size	Piston rod thread	Maximum allowable torque(N.m)
6	M3×0.5	0.3
8	M4×0.7	0.8
10	M4×0.7	0.8
12	M5×0.8	1.6
16	M5×0.8	1.6

3. Allowable Rod End Lateral Load





List for ordering code of accessories

Accessories / Bore size	Mounting accessories			Knuckle				Sensor switch		
	LB	FA	SDB	FC	RC	I	Y	CMSH	DMSH	EMSH
6	F-MPG6LB	F-MPG6FA	F-MPG6SDB	F-MPG6FC	F-MPG6RC	F-M3×050I	F-M3×050Y	CMSH	DMSH	EMSH
8	F-MPG10LB	F-MPG10FA	F-MPG8SDB	F-MPG10FC	F-MPG10RC	F-M4×070I	F-M4×070Y			
10			F-MPG10SDB							
12	F-MPG16LB	F-MPG16FA	F-MPG12SDB	F-MPG16FC	F-MPG16RC	F-M5×080I	F-M5×080Y			
16			F-MPG16SDB							

Accessory selection

Accessories / Cylinder model		Mounting accessories [Note1]			Knuckle[Note2]				Sensor switch		
		LB	FA	SDB	I	Y	FC	RC	CMSH	DMSH	EMSH
MPG	No magnet	●	●	×	●	●	●	●	×	×	×
	With magnet	●	●	×	●	●	●	●	●	●	●
MPGH	No magnet	×	×	●	●	●	●	●	×	×	×
	With magnet	×	×	●	●	●	●	●	●	●	●

Material of accessories

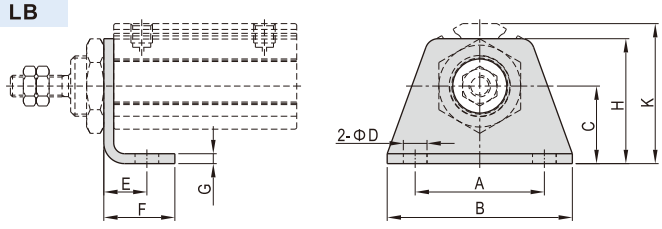
Accessories / Bore size	Mounting accessories			Knuckle			
	LB	FA	SDB	I	Y	FC	RC
6~16	△	△	△	◇	◇	□	□

△——SPCC; □——POM; ◇——Carbon steel

[Note1] SDB is attached with relevant PIN.
[Note2] Please refer to P572~575 for knuckle detail.

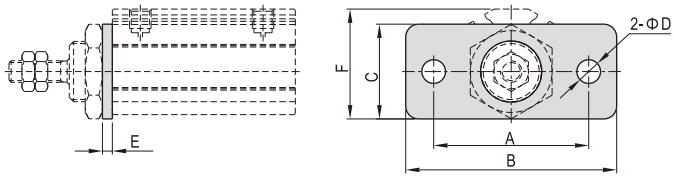
Dimensions

LB



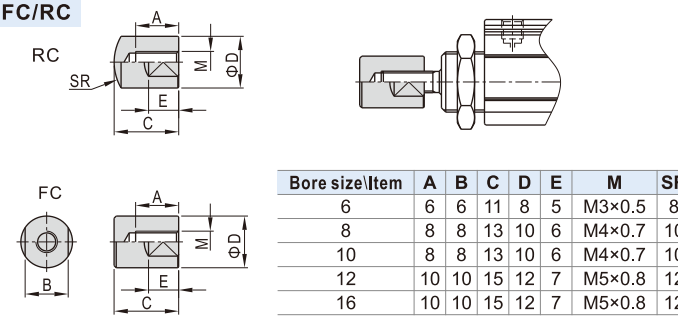
Bore size\Item	A	B	C	D	E	F	G	H	K
6	20	28	11	3.4	6.5	10.5	1.5	19	21.5
8	24	33	13	4.5	7	12	1.5	22	23.5
10	24	33	13	4.5	7	12	1.5	22	25
12	30	43	18	5.5	10	16.5	2.5	29	31
16	30	43	18	5.5	10	16.5	2.5	29	32.5

FA



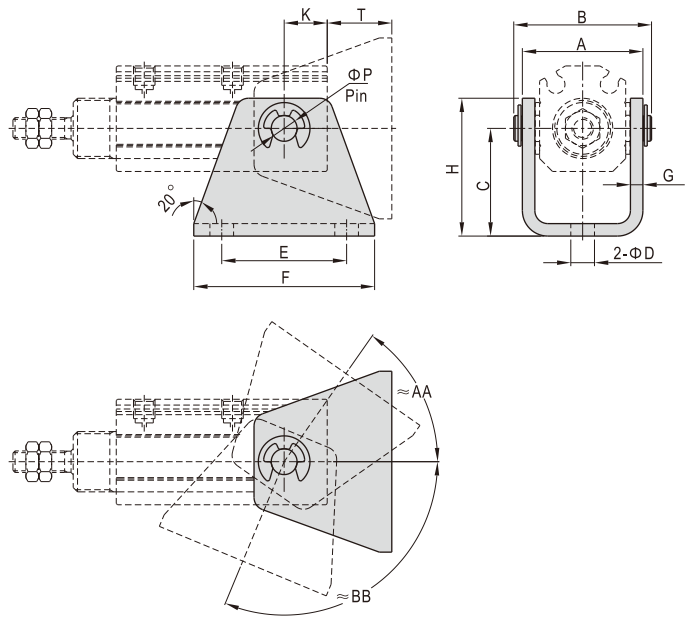
Bore size\Item	A	B	C	D	E	F
6	24	32	16	3.4	1.5	18.5
8	28	37	18	4.5	1.5	19.5
10	28	37	18	4.5	1.5	21
12	36	49	22	5.5	2.5	24
16	36	49	22	5.5	2.5	25.5

FC/RC



Bore size\Item	A	B	C	D	E	M	SR
6	6	6	11	8	5	M3×0.5	8
8	8	8	13	10	6	M4×0.7	10
10	8	8	13	10	6	M4×0.7	10
12	10	10	15	12	7	M5×0.8	12
16	10	10	15	12	7	M5×0.8	12

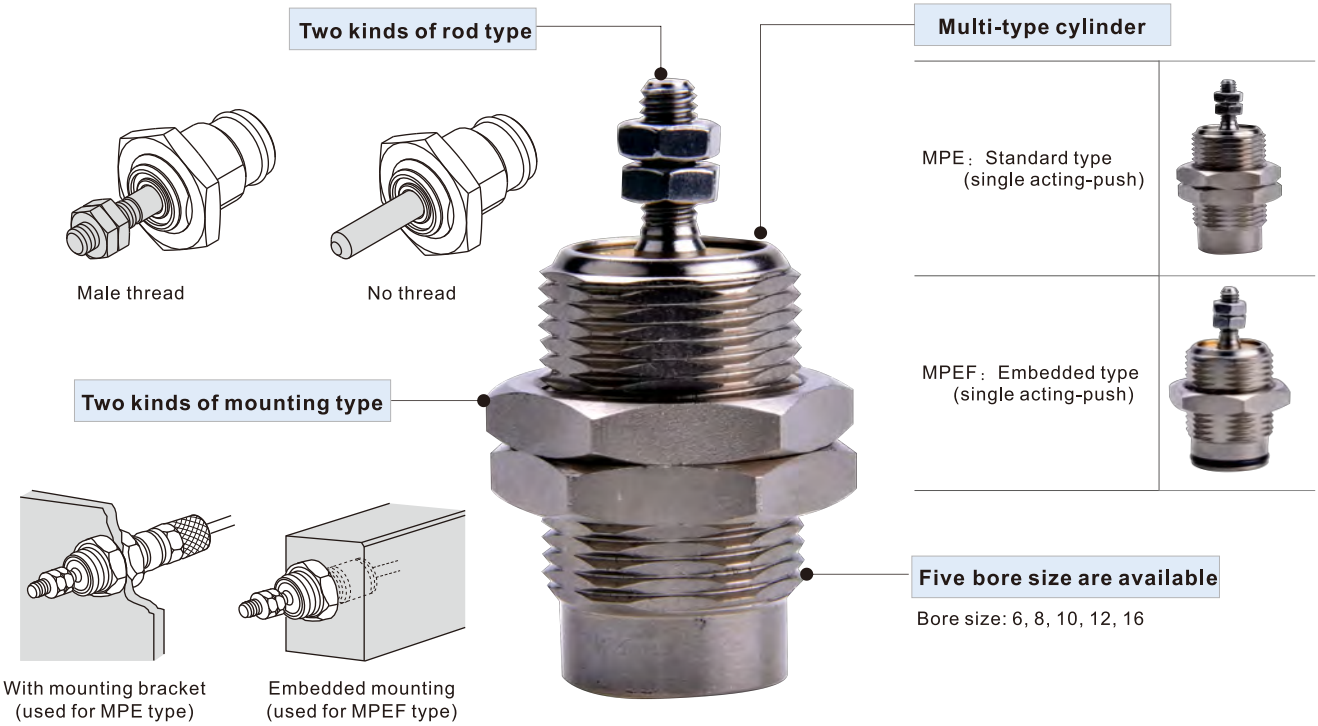
SDB



Bore size\Item	A	AA*	B	BB*	C	D	E	F	G	H	K	T	P
6	18.5	55°	21.5	110°	16	3.4	18	26	1.5	20	4	12	3
8	19	55°	23	110°	18	4.5	21	30	1.5	23	5	13	4
10	20.5	65°	24.1	110°	20	4.5	24	33	1.5	25.5	6.5	13.5	5
12	25	55°	29	110°	25	5.5	26	39	3	32	10	15	6
16	28	55°	32	110°	25	5.5	29	42	3	32	10	15	6

*Note: AA and BB are for reference only.
Specific value depends on the actual situation.

Compendium of MPE Series



Criteria for selection: Cylinder thrust

Unit: Newton(N)

Model	Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)						
						0.1	0.2	0.3	0.4	0.5	0.6	0.7
MPE MPEF	6	3	Single acting	Push side	28.3	-	1.8	4.6	7.4	10.3	13.1	15.9
				Pull side	21.2	1.6						
	8	4	Single acting	Push side	50.3	-	4.8	9.8	14.8	19.9	24.9	29.9
				Pull side	37.7	2.7						
	10	5	Single acting	Push side	78.5	-	9.4	17.3	25.1	33.0	40.8	48.7
				Pull side	58.9	2.8						
	12	6	Single acting	Push side	113.0	-	13.3	24.6	35.9	47.2	58.5	69.8
				Pull side	84.7	3.45						
	16	6	Single acting	Push side	201.0	-	29.4	49.5	69.6	89.7	109.8	129.9
				Pull side	172.7	4.8						

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. As both of the front cover and piston of the cylinder are short, typically too large stroke can not be selected.
7. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
8. The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
9. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

Threaded cylinder

MPE Series



Specification

Bore size(mm)	6	8	10	12	16
Acting type	Single acting				
Fluid	Air(to be filtered by 40μm filter element)				
Operating pressure	0.2~0.7MPa(28~100psi)		0.15~0.7MPa(22~100psi)		
Proof pressure	1.2MPa(175psi)				
Mounting type	Embedded type, End inlet type				
Temperature ℃	-20~70				
Speed range mm/s	50~500				
Stroke tolerance	$^{+1.0}_{0}$				
Cushion type	No cushion				
Port size	M5×0.8				

Symbol



Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke
6	5 10 15	15
8	5 10 15	15
10	5 10 15	15
12	5 10 15	15
16	5 10 15	15

[Note] Please contact the company for other special strokes.

Product feature

1. It is compact, small and light.
2. Multi cylinders can be integrated to save space.
3. Mounting accessories are not necessary.
4. Cylinders of various specifications are optional.

Ordering code

MPE 16 x 15 N

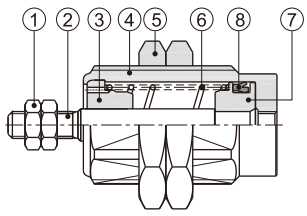
MPEF 16 x 15 N

① ② ③ ④

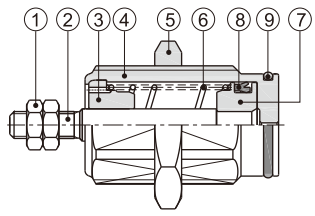
①Model	②Bore size	③Stroke	④Rod type
MPE：Standard type (single acting-push) MPEF：Embedded type (single acting-push)	6 8 10 12 16	Refer to stroke table for details	Blank: Male thread N: No thread

Inner structure and material of major parts

MPE



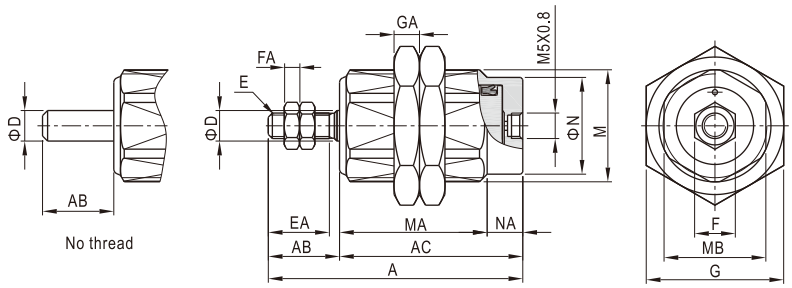
MPEF



NO.	Item	Material
1	Rod nut	Stainless steel
2	Piston rod	Stainless steel
3	Front cover	Brass
4	Body	Brass (nickel-plated)
5	Body nut	Carbon steel
6	Spring	Spring steel
7	Piston	Stainless steel
8	Piston seal	NBR
9	O-ring	NBR

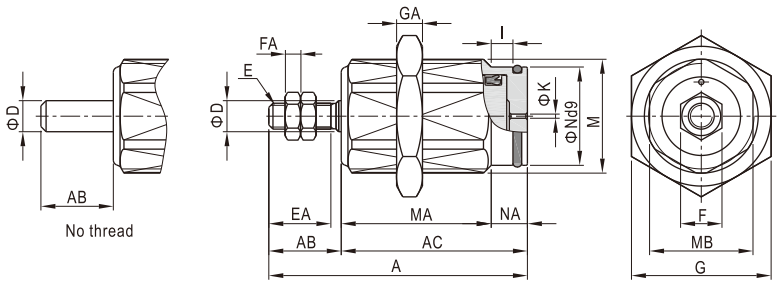
Dimensions

MPE

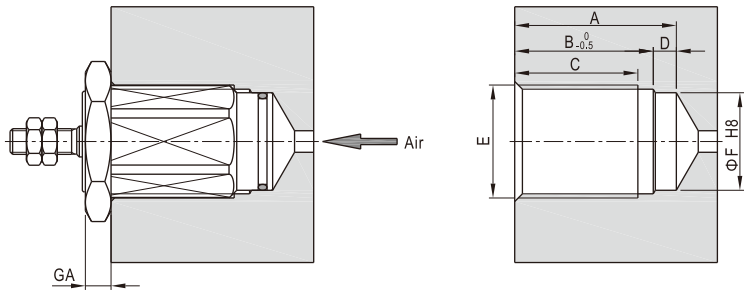


Bore size\Item	A			AB	AC			MA			D	E	EA	F	FA	G	GA	M	MB	N	NA
Stroke	5St	10St	15St		5St	10St	15St	5St	10St	15St											
6	30.5	37.5	44.5	9	21.5	28.5	35.5	15.5	22.5	29.5	3	M3×0.5	7	5.5	2.4	14	4	M10×1.0	9	8.5	6
8	34.5	41.5	48.5	12	22.5	29.5	36.5	16.5	23.5	30.5	4	M4×0.7	10	7	3	17	4	M12×1.0	11	10	6
10	35	42	49	12	23	30	37	17	24	31	5	M4×0.7	10	7	3	19	4	M16×1.5	14	12	6
12	37.5	43.5	49.5	12	25.5	31.5	37.5	19.5	25.5	31.5	6	M5×0.8	10	8	3	24	5	M18×1.5	16	15	6
16	40.5	46.5	52.5	14	26.5	32.5	38.5	19.5	25.5	31.5	6	M5×0.8	12	8	3	27	5	M22×1.5	20	19	7

MPEF



Bore size\Item	A			AB	AC			MA			D	E	EA	F	FA	G	GA	I	M	MB	N	NA	K
Stroke	5St	10St	15St		5St	10St	15St	5St	10St	15St													
6	28	35	42	9	19	26	33	13	20	27	3	M3×0.5	7	5.5	2.4	14	4	2.5	M10×1.0	9	8.5	6	0.6
8	32	39	46	12	20	27	34	14	21	28	4	M4×0.7	10	7	3	17	4	2.5	M12×1.0	11	10	6	0.8
10	32.5	39.5	46.5	12	20.5	27.5	34.5	14	21	28	5	M4×0.7	10	7	3	19	4	2.5	M16×1.5	14	12	6.5	1
12	35	41	47	12	23	29	35	16.5	22.5	28.5	6	M5×0.8	10	8	3	24	5	2.7	M18×1.5	16	15	6.5	1.3
16	38	44	50	14	24	30	36	17	23	29	6	M5×0.8	12	8	3	27	5	2.7	M22×1.5	20	19	7	1.7

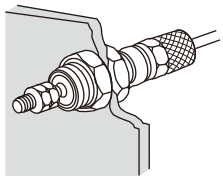


Bore size\Item	A			B			C			D	E	F	GA
Stroke	5St	10St	15St	5St	10St	15St	5St	10St	15St				
6	14.5	21.5	28.5	11	18	25	8.5	15.5	22.5	3.5	M10×1.0	8.5	4
8	15	22	29	11.5	18.5	25.5	9	16	23	3.5	M12×1.0	10	4
10	15.5	22.5	29.5	12	19	26	9	16	23	3.5	M16×1.5	12	4
12	17	23	29	13.5	19.5	25.5	10.5	16.5	22.5	3.5	M18×1.5	15	5
16	18	24	30	14	20	26	11	17	23	4	M22×1.5	19	5

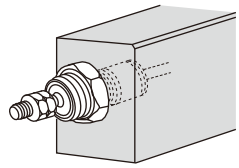
[Note] Size E and F must be concentric.

Mounting and use

1. Select applicable cylinder model and mounting method based on actual situation:



With mounting bracket (used for MPE type)

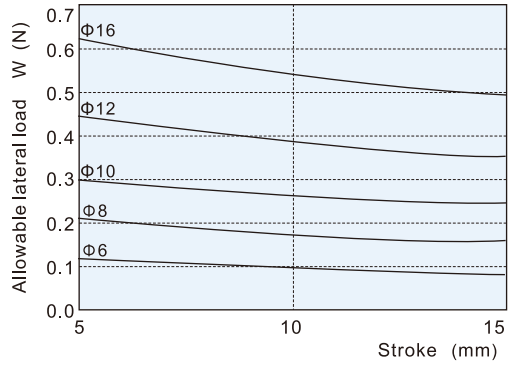


Embedded mounting (used for MPEF type)

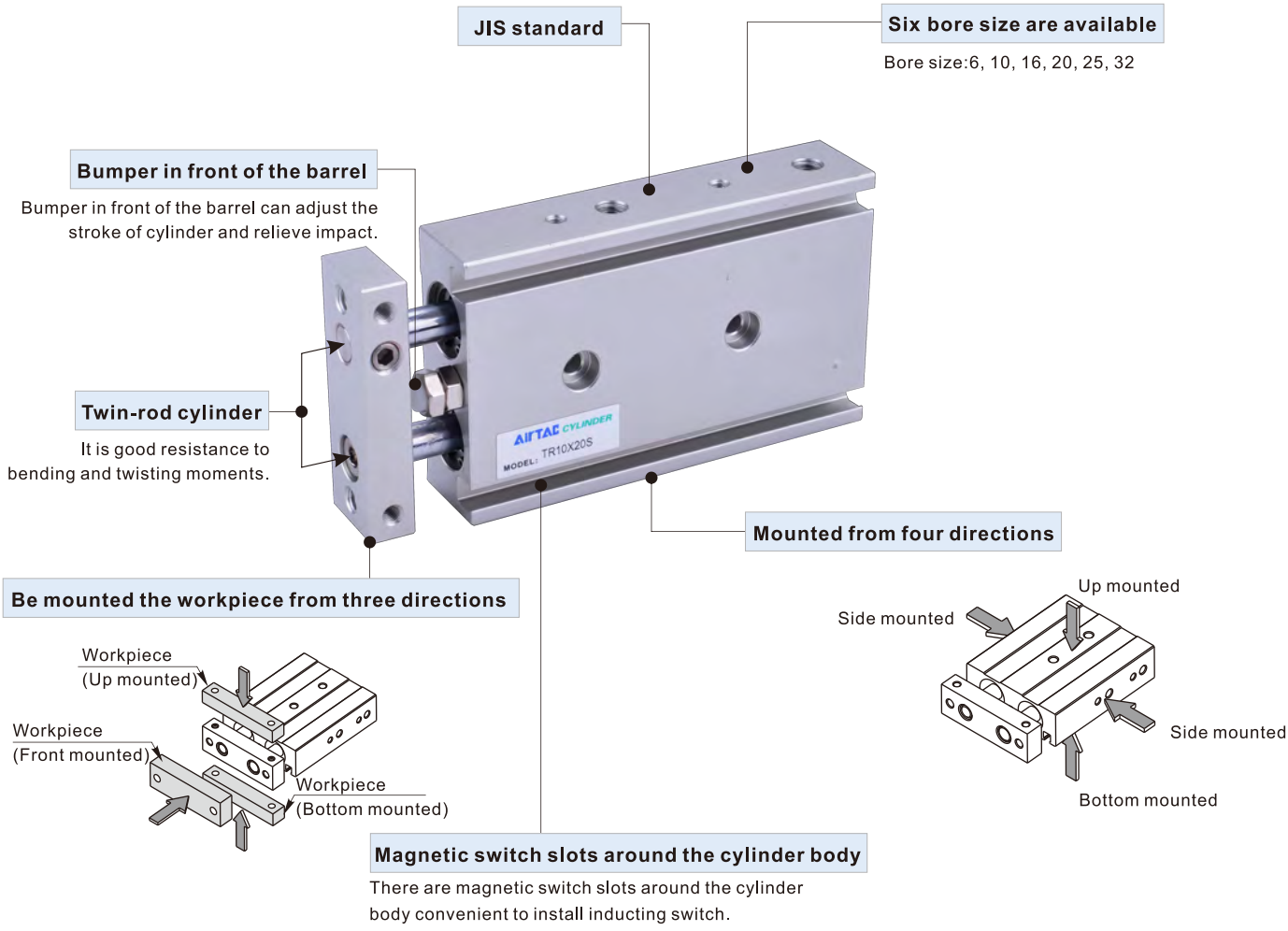
2. MPE series are single acting cylinders. No load is allowed at the piston rod when it is on the retraction state.

3. The force of the spring of the cylinder is for retraction of the piston rod only. The piston rod may not retract to the bottom end if there's any load.

4. Make sure the rod end lateral load is allowable. Otherwise may cause damage to the cylinder or reduce the service life.



Compendium of TR Series



Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)						
					0.1	0.2	0.3	0.4	0.5	0.6	0.7
6	4	Double acting	Push side	56.5	5.7	11.3	17.0	22.6	28.3	33.9	39.6
			Pull side	31.4	3.1	6.3	9.4	12.6	15.7	18.8	22.0
10	6	Double acting	Push side	157.1	15.7	31.4	47.1	62.8	78.6	94.3	110.0
			Pull side	100.5	10.1	20.1	30.2	40.2	50.3	60.3	70.4
16	8	Double acting	Push side	402.1	40.2	80.4	120.6	160.8	201.1	241.3	281.5
			Pull side	301.6	30.2	60.3	90.5	120.6	150.8	181.0	211.1
20	10	Double acting	Push side	628.3	62.8	125.7	188.5	251.3	314.2	377.0	439.8
			Pull side	471.2	47.1	94.2	141.4	188.5	235.6	282.7	329.8
25	12	Double acting	Push side	981.7	98.2	196.4	294.5	392.7	490.9	589.0	687.2
			Pull side	755.6	75.6	151.1	226.7	302.2	377.8	453.4	528.9
32	16	Double acting	Push side	1608.5	160.9	321.7	482.6	643.4	804.3	965.1	1126.0
			Pull side	1206.4	120.6	241.3	361.9	482.6	603.2	723.8	844.5

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion;
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder;
5. The medium used by cylinder shall be filtered to 40μm or below.
6. As both the front cover and piston are short, too large stroke can not be selected.
7. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
8. The cylinder shall avoid redial load in operation to maintain the normal and extend service life.
9. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust cap shall be inserted into the inlet and outlet ports. As the precision of the manufacture and guide is high, Please do not dismantle the fixed block or cylinder cover .

Twin-rod cylinder

TR Series

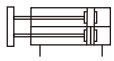


Specification

Bore size(mm)	6	10	16	20	25	32
Acting type	Double acting					
Fluid	Air(to be filtered by 40μm filter element)					
Operating pressure	0.2~1.0MPa(29~145psi)		0.15~1.0MPa(22~145psi)			
Proof pressure	1.5MPa(215psi)					
Temperature ℃	-20~70					
Speed range mm/s	30~500					
Adjustable stroke mm	-5~0					
Stroke tolerance	$\leq 100^{+1.0}_{0}$		$> 100^{+1.5}_{0}$			
Cushion type	Bumper					
Non-rotating tolerance [Note1]	±0.2°		±0.15°			±0.1°
Port size [Note2]	M5×0.8					1/8"

[Note1] Retract position.
[Note2]G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. JIS standard is implemented.
2. The non-rotating precision is high and deflection of the end of piston rod is low, which is suitable for precise guide.
3. It adopts lengthening type sliding supporting guide. No additional lubricant is needed and it has good performance of guide.
4. Mounting holes on three sides facilitates multi-position mounting.
5. It is good resistance to bending and twisting moments.
6. Except for the axial, each side of the cylinder has installation orifices to provide several installation and fixation ways for the customers.
7. There are two groups of air intake and outlet at two sides of the cylinder for the actual selection.
8. Bumper in front of the barrel can adjust the stroke of cylinder and relieve impact.
9. Standard configuration of this series has magnet and the type without magnet is not available.

Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke
6	10 20 30 40 50	50
10	10 20 30 40 50 60 70 80 90 100	100
16	10 20 30 40 50 60 70 80 90 100 125 150 175 200	200
20	10 20 30 40 50 60 70 80 90 100 125 150 175 200	200
25	10 20 30 40 50 60 70 80 90 100 125 150 175 200	200
32	10 20 30 40 50 60 70 80 90 100 125 150 175 200	200

[Note] When the stroke less then or equal to 100mm, The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 35mm stroke cylinder has the same dimensions of 40 std. stroke cylinder.

Ordering code

TR 20×50 S G

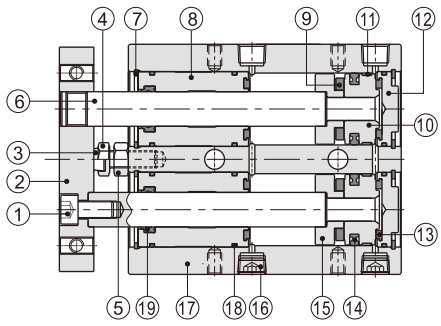
1 2 3 4 5

①Model	②Bore size	③Stroke	④Magnet [Note1]	⑤Thread type [Note 2]
TR: Twin-rod cylinder (Double acting type)	6 10 16 20 25 32	Refer to stroke table for details	S: With magnet	G: G Thread

[Note1] TR Series are all with magnet. [Note2] When the thread is standard, the code is blank.

Inner structure and material of major parts

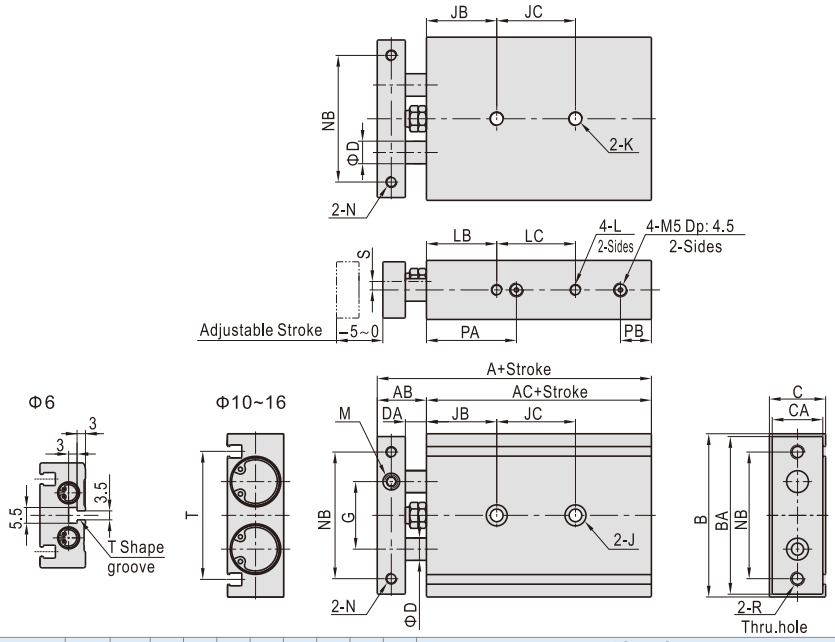
TR



NO.	Item		Material	NO.	Item		Material
1	Screw		Carbon steel	10	Piston	Φ6,10	SUS304
2	Fixing plate		Aluminum alloy			Other	Aluminum alloy
3	Bumper		POM	11	Wear ring		Nylon 6
4	Screw		Free cutting steel	12	Back cover		Aluminum alloy
5	Nut		Carbon steel	13	Bumper		TPU
6	Piston rod	Φ20~32	Carbon steel	14	Piston seal		NBR
		Other	SUS304	15	Magnet holder	Φ6,10	SUS304
7	C clip		Spring steel			Other	Aluminum alloy
8	Front cover		Aluminum alloy	16	Screw		Carbon steel
9	Magnet	Φ32	Plastic	17	Body		Aluminum alloy
		Other	Sintered metal (Neodymium-iron-boron)	18	Back cover O-ring		NBR
				19	Wiper seal		NBR

Dimensions

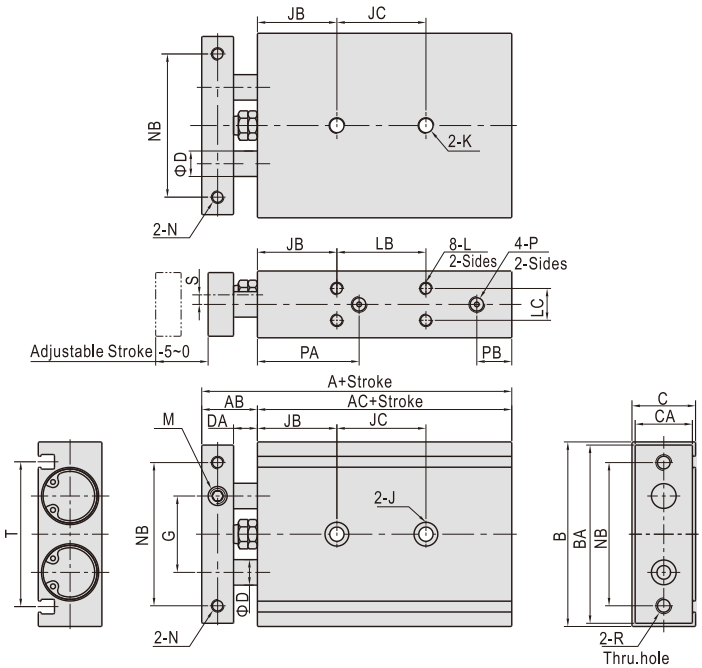
TR6~16



Bore size\Item / Stroke	A	AB	AC	B	BA	C	CA	D	DA	G	JC LC 10~25	JC LC 30~50	JC LC 60~80	JC LC 90~100	JC LC 125	JC LC 150	JC LC 175	JC LC 200	T
6	58.5	13.5	45	37	35	16	14	4	8	16	JC=10+Stroke/2 LC=13+Stroke		-	-	-	-	-	-	23
10	72	17	55	46	44	17	15	6	9	20	30	40	50	60	-	-	-	-	36.5
16	79	19	60	58	56	20	18	8	9	25	25	35	45	55	65	75	145	145	46.5

Bore size\Item	J	JB	K	L	LB	M	N	NB	PA	PB	R	S
6	One side:Φ6.5Dp:3.5Thru.hole:Φ3.5	13	-	M3×0.5Dp:4.5	10	M3×0.5	M3×0.5Thru.hole	28	24.5	6.5	M3×0.5	4.5
10	One side:Φ6.5Dp:3.5Thru.hole:Φ3.5	20	M4×0.7Thru.thread	M3×0.5Dp:5	20	M5×0.8	M3×0.5Dp:7.5	35	30	8	M4×0.7	3.5
16	One side:Φ8.0Dp:4.5Thru.hole:Φ4.5	30	M5×0.8Thru.thread	M4×0.7Dp:5	30	M6×1.0	M4×0.7Thru.hole	45	38	8	M5×0.8	5

TR20~32

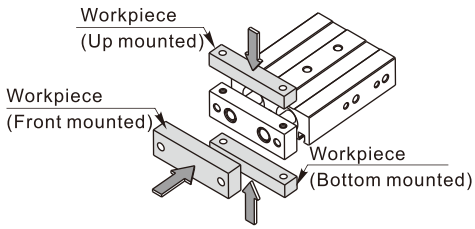


Bore size\Item / Stroke	A	AB	AC	B	BA	C	CA	D	DA	G	JB	JC LB 10~25	JC LB 30~50	JC LB 60~100	JC LB 125	JC LB 150	JC LB 175	JC LB 200	P	PA	PB
20	94	24	70	64	62	25	23	10	12	28	30	30	40	60	80	80	100	100	M5×0.8	46	9
25	96	24	72	80	78	30	28	12	12	35	30	30	40	60	80	80	100	100	1/8"	43	9
32	112	30	82	98	96	38	36	16	14	44	30	40	50	70	90	90	110	110	1/8"	53	10

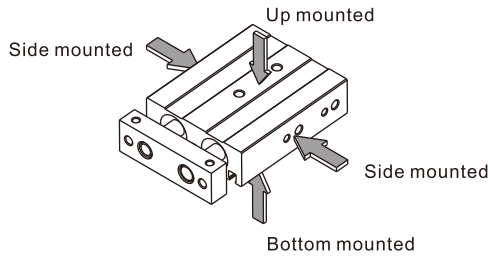
Bore size\Item	J	K	L	LC	M	N	NB	R	S	T
20	One side:Φ9.5Dp:5.5Thru.hole:Φ5.5	M6×1.0	M4×0.7Dp:5.5	9.5	M8×1.25	M4×0.7Dp:6	50	M5×0.8	6.5	52
25	One side:Φ11Dp:6.5Thru.hole:Φ7	M8×1.25	M5×0.8Dp:7	13	M8×1.25	M5×0.8Dp:7.5	60	M6×1.0	9	61
32	One side:Φ11Dp:6.5Thru.hole:Φ7	M8×1.25	M5×0.8Dp:7	20	M10×1.5	M5×0.8Dp:8	75	M6×1.0	11.5	73

Installation and application

1、How to mount workpiece:



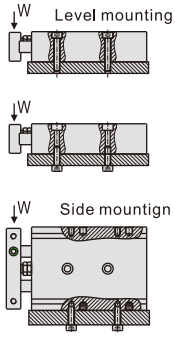
How to mount the workpiece

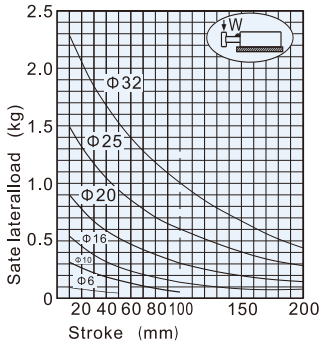


How to mount the cylinder

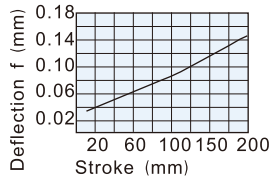
2、Max. weight of allowable side-load

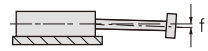
Mounting type





3、Safe deflection





The average value of deflection of rod end of the whole series basically stays in the line showed in the chart on the right.

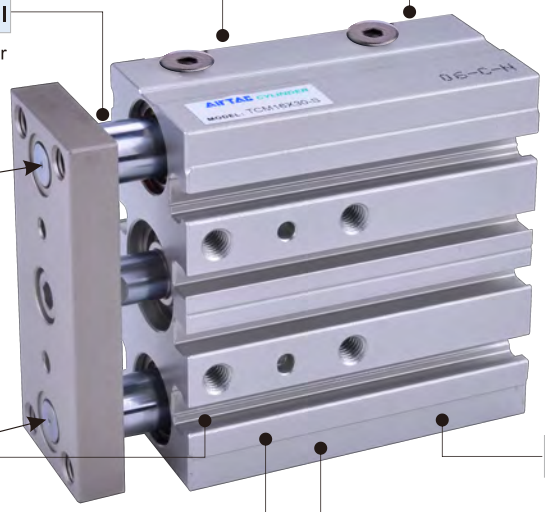
Compendium of TCL/TCM Series

JIS standard

Multi-type cylinder

Two guides of special bearing steel

Steel ball linear bearing(TCL) or
Brass sliding bearing(TCM)



TCL: Linear bearing



TCM: Brass bearing



Double-rod guide unit

Two guides of special bearing steel and linear bearing or brass bearing guide are used to prevent rotating. They can bear high torque and radial load.

Magnetic switch slots around the cylinder body

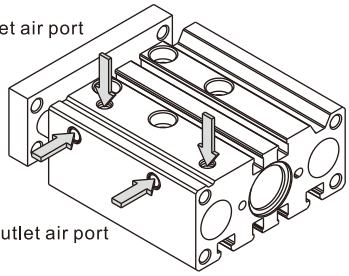
There are magnetic switch slots around the cylinder body convenient to install inducting switch.

Twelve bore size are available

Bore size: 6, 10, 12, 16, 20, 25, 32, 40, 50, 63, 80, 100

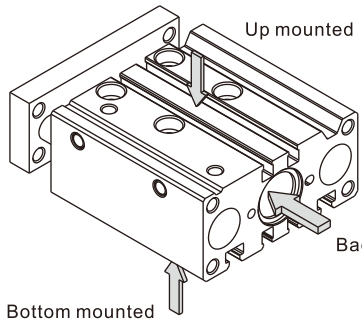
Two groups of inlet and outlet air ports

Up inlet or outlet air port



Side inlet or outlet air port

Mounted from three directions



Criteria for selection: Cylinder thrust

Unit : Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)						
					0.1	0.2	0.3	0.4	0.5	0.6	0.7
6	3	Double acting	Push side	28.3	2.8	5.7	8.5	11.3	14.1	17.0	19.8
			Pull side	21.2	2.1	4.2	6.4	8.5	10.6	12.7	14.8
10	5	Double acting	Push side	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
			Pull side	58.9	5.9	11.8	17.7	23.6	29.5	35.3	41.2
12	6	Double acting	Push side	113.1	11.3	22.6	33.9	45.2	56.5	67.9	79.2
			Pull side	84.8	8.5	17.0	25.4	33.9	42.4	50.9	59.4
16	8	Double acting	Push side	201.1	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull side	150.8	15.1	30.2	45.2	60.3	75.4	90.5	105.6
20	10	Double acting	Push side	314.2	31.4	62.8	94.2	125.7	157.1	188.5	219.9
			Pull side	235.6	23.6	47.1	70.7	94.2	117.8	141.4	164.9
25	12	Double acting	Push side	490.9	49.1	98.2	147.3	196.3	245.4	294.5	343.6
			Pull side	377.8	37.8	75.6	113.3	151.1	188.9	226.7	264.4
32	16	Double acting	Push side	804.2	80.4	160.8	241.3	321.7	402.1	482.5	563.0
			Pull side	603.2	60.3	120.6	181.0	241.3	301.6	361.9	422.2
40	16	Double acting	Push side	1256.6	125.7	251.3	377.0	502.7	628.3	754.0	879.6
			Pull side	1055.6	105.6	211.1	316.7	422.2	527.8	633.3	738.9
50	20	Double acting	Push side	1963.5	196.3	392.7	589.0	785.4	981.7	1178.1	1374.4
			Pull side	1649.3	164.9	329.9	494.8	659.7	824.7	989.6	1154.5
63	20	Double acting	Push side	3117.2	311.7	623.4	935.2	1246.9	1558.6	1870.3	2182.1
			Pull side	2803.1	280.3	560.6	840.9	1121.2	1401.5	1681.9	1962.2
80	25	Double acting	Push side	5026.5	502.7	1005.3	1508.0	2010.6	2513.3	3015.9	3518.6
			Pull side	4535.7	453.6	907.1	1360.7	1814.3	2267.8	2721.4	3175.0
100	25	Double acting	Push side	7854.0	785.4	1570.8	2356.2	3141.6	3927.0	4712.4	5497.8
			Pull side	7363.1	736.3	1472.6	2208.9	2945.2	3681.6	4417.9	5154.2

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be cleared away before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
7. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
8. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust cap shall be inserted into the inlet and outlet ports. As the precision of the manufacture and guide is high, never dismantle the fixed block or cylinder cover without permission.

Tri-rod cylinder

TCL,TCM Series

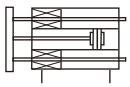


Specification

Bore size(mm)		6	10	12	16	20	25	32	40	50	63	80	100
Acting type		Double acting											
Fluid		Air(to be filtered by 40μm filter element)											
Operating pressure		0.2~0.7MPa(29~100psi)		0.15~1.0MPa(22~145psi)									
Proof pressure		1.2MPa(175psi)		1.5MPa(215psi)									
Temperature ℃		-20~70											
Speed range mm/s		50~500		30~500								50~400	
Stroke tolerance		≤100 $^{+1.0}_{0}$ >100 $^{+1.5}_{0}$											
Cushion type		Bumper											
Non-rotating tolerance [Note1]	TCL	-		±0.08°		±0.07°		±0.06°		±0.05°		±0.04°	
	TCM	±0.1°		±0.10°		±0.09°		±0.08°		±0.06°		±0.05°	
Port size [Note2]		M3×0.5		M5×0.8		1/8"				1/4"		3/8"	

[Note1] Retract position.
[Note2]G thread is available.
Add) Refer to P578 for detail of sensor switch.

Symbol



Product feature

1. JIS standard is implemented.
2. Two guides of special bearing steel and linear bearing or brass bearing guide are used to prevent rotating. They can bear high torque and radial load.
   ★Note: Steel ball linear bearing: It is suitable for elevation action of cylinder or the situation requiring high precision and high bearing ability, especially for the situation requiring low fraction action process.
   Brass sliding bearing: it is suitable for the action that has radial load resistance. Compared with normal cylinder of same use, the horizontal impact resistance is doubled and it has stronger torsion rigidity.
3. Drive unit and guide unit are in the same barrel that no additional accessories are needed with minimal space required. The air intake is optional and it is convenient to install.
4. The bottom, back side and fixing plate of main body respectively has two exact orientation orifices (See ΦPA orifice and the orifice in XX point), which can provide orientation installation with high precision for the special situation.
5. Options of switch mounting with provision 4 mounting slots.
6. Special design of main body provides multi-mount;

Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke
6	5 10 15 20	20
10	5 10 15 20 25 30	30
12	10 20 25 30 40 50 60 70 75 80 90 100 125 150	150
16	10 20 25 30 40 50 60 70 75 80 90 100 125 150 175 200	200
20 25	20 25 30 40 50 60 70 75 80 90 100 125 150 175 200 225 250	250
32 40 50 63	25 30 40 50 60 70 75 80 90 100 125 150 175 200 225 250	250
80 100	25 30 40 50 60 70 75 80 90 100 125 150 175 200 225 250	250

[Note] When the discrepancy between non-standard stroke and standard stroke is 1~5mm, The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 86mm stroke cylinder has the same dimensions of 90 std. stroke cylinder. But 84mm stroke cylinder shout be ordered by non-standard stroke.

Ordering code

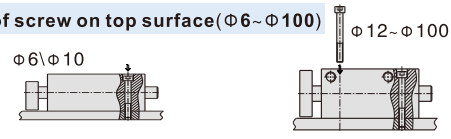
TC M 50×50 S G
① ② ③ ④ ⑤ ⑥

①Model	②Bearing type	③Bore size	④Stroke	⑤ Magnet	⑥Thread type [Note 2]
TC: Tri-rod cylinder (Double acting type)	M: Brass bearing	6 10	Refer to stroke table for details	S: With magnet [Note1]	G: G Thread
	L: Linear bearing M: Brass bearing	12 16 20 25 32 40 50 63 80 100			

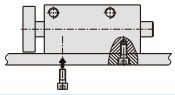
[Note1] TC Series are all with magnet. [Note2] When the thread is standard, the code is blank.

How to mount

Fixation of screw on top surface(Φ6~Φ100)



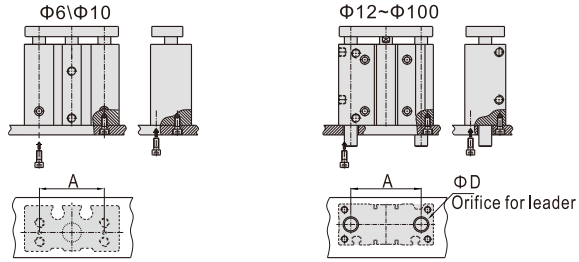
Fixation of screw at bottom surface(Φ12~Φ100)



Fixation of T slot at bottom(Φ12~Φ100)



Fixation of screw at back side(Φ6~Φ100)

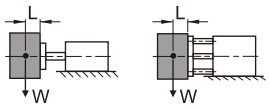


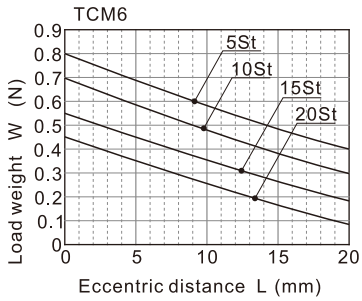
Bore size\Item		6	10	12	16	20	25	32	40	50	63	80	100
A		20.5	23	41	46	54	64	78	86	110	124	156	188
D (Min)	TCM	X	X	10	12	13	20	20	20	20	20	30	–
	TCL	–	–	8	10	10	13					–	30

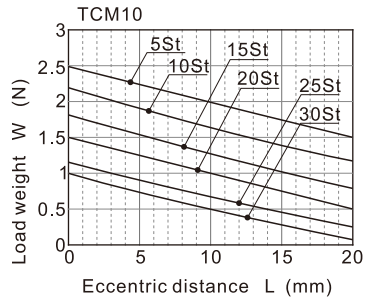
Safe load and torque

1. Max. safe load

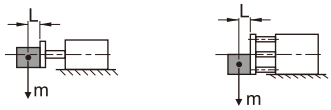
TCM6,10 Max. safe load



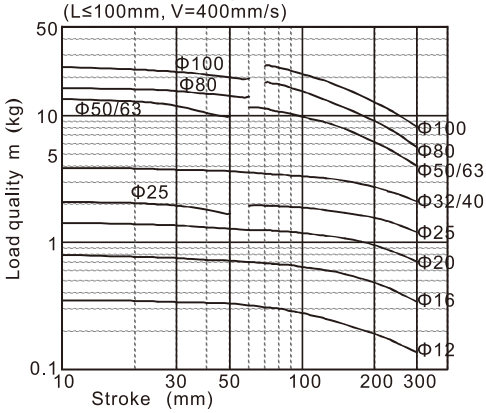


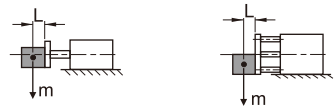


TC12~100 Max. safe load

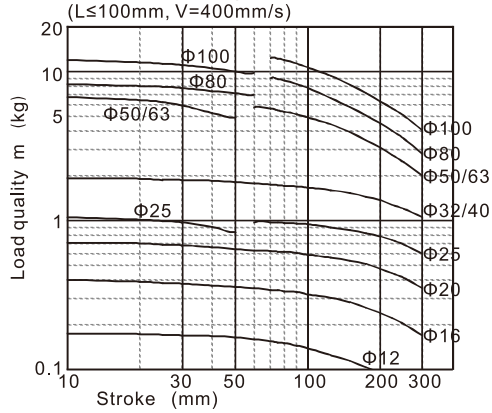


TCM(Brass bearing)Horizontal action
(L≤100mm, V=400mm/s)

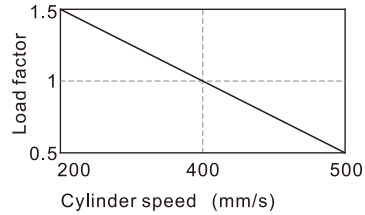




TCL(Linear bearing)Horizontal action
(L≤100mm, V=400mm/s)

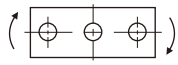


For other operating speeds of the cylinder, multiply the value of the graph when V=400mm/s by the coefficient in the following table, and the obtained value is the approximate value of the allowable load mass.



2. Max. safe torque

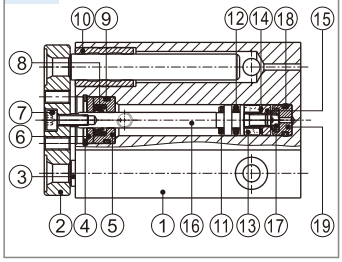
Max. safe torque **Unit: Newton·Meter(N·m)**



Bore size	Type	Stroke(mm)																			
		5	10	15	20	25	30	40	50	60	70	75	80	90	100	125	150	175	200	225	250
6	TCM	0.008	0.007	0.006	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	TCM	0.045	0.039	0.033	0.028	0.024	0.021	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	TCM	-	0.39	-	0.32	0.29	0.27	0.24	0.21	0.49	0.46	0.43	0.42	0.39	0.36	0.31	0.27	-	-	-	-
	TCL		0.35	-	0.29	0.26	0.24	0.22	0.19	0.44	0.39	0.37	0.35	0.32	0.29	0.24	0.20	-	-	-	-
16	TCM	-	0.69	-	0.58	0.54	0.49	0.43	0.38	0.75	0.72	0.69	0.65	0.61	0.58	0.50	0.44	0.40	0.36	-	-
	TCL	-	0.62	-	0.52	0.49	0.44	0.39	0.34	0.68	0.65	0.62	0.59	0.55	0.52	0.43	0.37	0.32	0.28	-	-
20	TCM	-	-	-	1.05	0.99	0.93	0.83	0.75	1.97	1.90	1.88	1.86	1.72	1.63	1.44	1.28	1.16	1.06	1.01	0.90
	TCL	-	-	-	0.95	0.89	0.84	0.75	0.68	1.77	1.59	1.52	1.46	1.33	1.25	1.30	1.15	1.03	0.93	0.88	0.76
25	TCM	-	-	-	1.76	1.65	1.55	1.38	1.25	3.17	3.06	2.96	2.91	2.77	2.57	2.26	2.02	1.83	1.67	1.57	1.42
	TCL	-	-	-	1.58	1.49	1.40	1.24	1.13	2.71	2.42	2.38	2.33	2.19	1.97	2.03	1.78	1.58	1.41	1.22	1.16
32	TCM	-	-	-	-	6.35	6.00	5.73	5.13	5.98	5.74	5.69	5.62	5.11	4.97	4.42	3.98	3.61	3.31	2.97	2.84
	TCL	-	-	-	-	5.72	5.40	5.16	4.62	5.38	5.15	5.11	5.02	4.60	4.47	3.98	3.58	3.25	2.98	2.67	2.56
40	TCM	-	-	-	-	7.00	6.60	6.11	5.66	6.66	6.31	6.27	6.23	5.86	5.48	4.78	4.38	3.98	3.65	3.34	3.13
	TCL	-	-	-	-	6.30	5.94	5.50	5.09	5.99	5.67	5.62	5.58	5.27	4.93	4.30	3.94	3.58	3.29	3.01	2.82
50	TCM	-	-	-	-	13.00	12.60	11.00	10.80	13.70	12.70	12.00	11.80	11.10	10.60	9.50	8.60	7.86	7.24	6.80	6.24
	TCL	-	-	-	-	9.17	8.75	8.30	7.62	10.30	9.94	9.83	9.77	8.82	8.74	8.55	7.74	7.07	6.52	6.12	5.62
63	TCM	-	-	-	-	14.70	13.60	12.90	12.10	19.40	16.20	13.50	12.70	12.10	11.90	10.70	9.69	8.86	8.16	7.52	7.04
	TCL	-	-	-	-	10.20	9.74	9.20	8.48	17.46	14.00	11.00	10.60	10.20	9.74	9.63	8.72	7.97	7.34	6.77	6.34
80	TCM	-	-	-	-	21.90	20.80	19.70	18.60	15.80	24.00	22.90	21.70	21.00	20.50	18.60	17.00	15.60	14.50	13.50	12.60
	TCL	-	-	-	-	15.10	14.30	13.60	12.90	12.20	21.60	20.61	19.53	18.90	18.45	16.74	15.30	14.04	13.05	12.15	11.34
100	TCM	-	-	-	-	38.80	36.80	35.00	33.50	28.50	39.40	37.50	35.60	34.50	33.80	30.90	28.40	26.20	24.40	22.50	21.40
	TCL	-	-	-	-	27.10	25.70	24.40	30.15	25.65	35.46	33.75	32.04	31.05	30.42	27.81	25.56	23.58	21.96	20.25	19.26

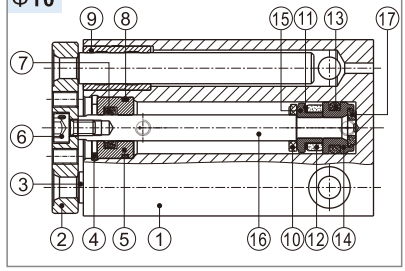
Inner structure and material of major parts

Φ6



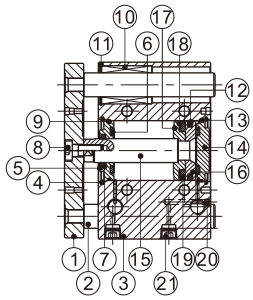
NO.	Item	Material
1	Body	Aluminum alloy
2	Fixing plate	Carbon steel
3	Guide rod	Stainless steel
4	C clip	Spring steel
5	Front cover	Aluminum alloy
6	O-ring stop block	Aluminum alloy
7	Screw	Alloy steel
8	Piston rod O-ring	NBR
9	O-ring	NBR
10	Bearing	Brass
11	Bumper	TPU
12	Piston seal	NBR
13	Magnet	Rare Earth
14	Magnet washer	NBR
15	Piston	Stainless steel
16	Piston rod	Stainless steel
17	Bumper	TPU
18	O-ring	NBR
19	Washer	Aluminum alloy

Φ10

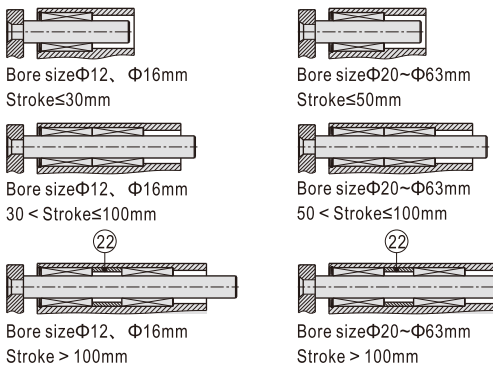


NO.	Item	Material
1	Body	Aluminum alloy
2	Fixing plate	Carbon steel
3	Guide rod	Stainless steel
4	C clip	Spring steel
5	Front cover	Aluminum alloy
6	Screw	Alloy steel
7	Piston rod O-ring	NBR
8	O-ring	NBR
9	Bearing	Brass
10	Bumper	TPU
11	Magnet washer	NBR
12	Magnet	Rare Earth
13	Piston seal	NBR
14	Piston	Brass
15	Magnet holder	Brass
16	Piston rod	Stainless steel
17	Bumper	TPU

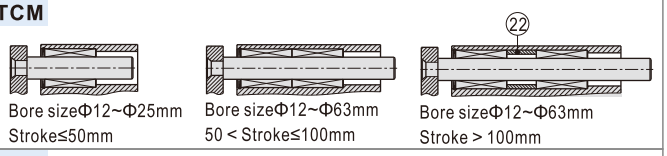
Φ12~63



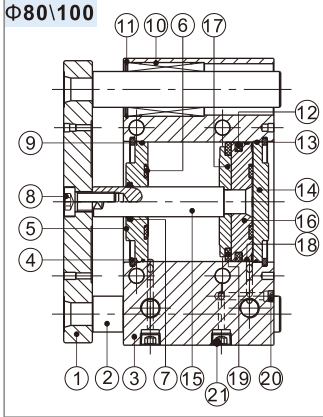
TCL



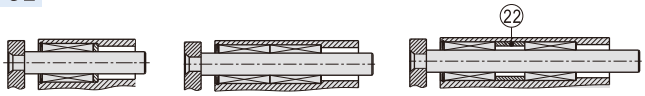
TCM



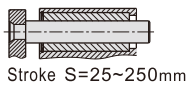
Φ80\100



TCL



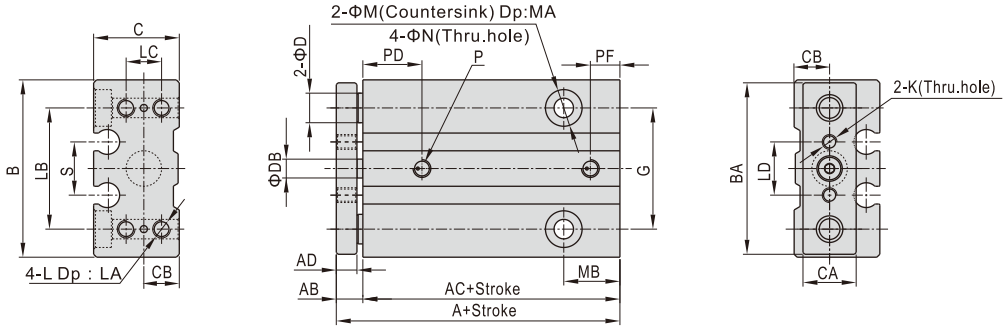
TCM



NO.	Item	Material
1	Fixing plate	Carbon steel
2	Leader	Carbon steel
3	Body	Aluminum alloy
4	C clip	Spring steel
5	Front cover	Aluminum alloy
6	Bumper	TPU
7	Piston rod O-ring	NBR
8	Screw	Alloy steel
9	O-ring	NBR
10	Bearing	Bearing steel/brass
11	C clip	Spring steel
12	Piston seal	NBR
13	O-ring	NBR
14	Back cover	Brass/aluminum alloy
15	Piston rod	Carbon steel
16	Piston	Brass/aluminum alloy
17	Magnet holder	Brass/aluminum alloy
18	Magnet washer	NBR
19	Magnet	Rare Earth/Plastic
20	Screw	Alloy steel
21	Screw	Alloy steel
22	Spacer	Aluminum alloy

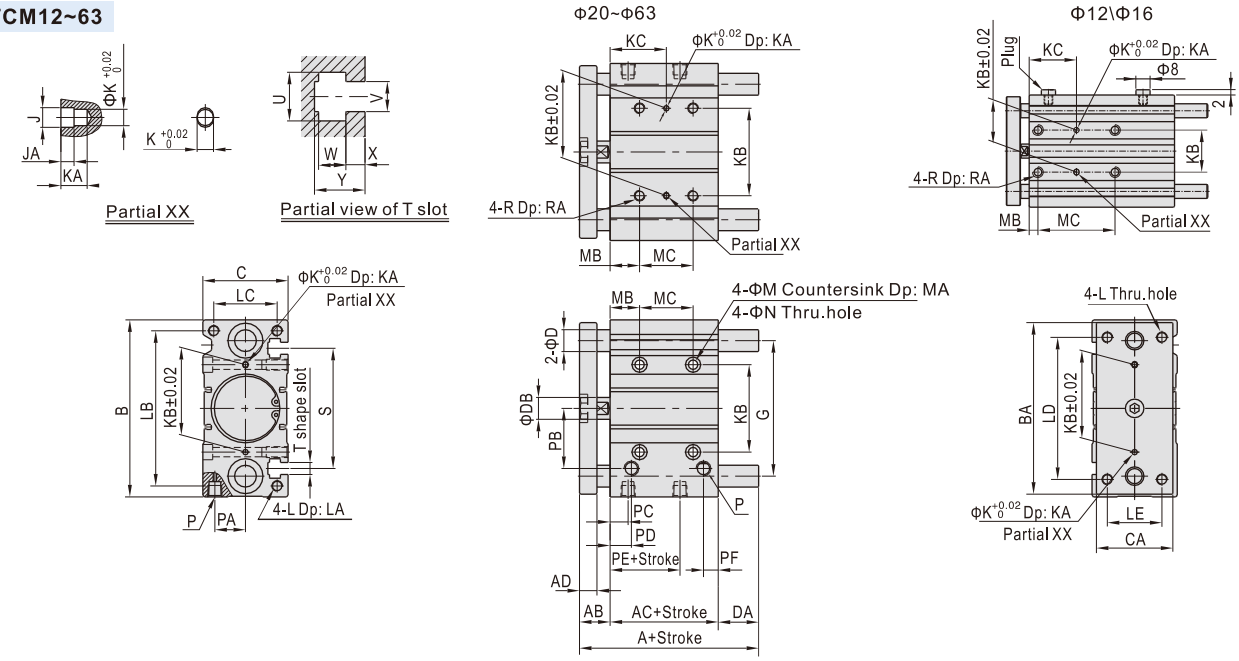
Dimensions

TCM6\TCM10



Bore size\Item	A	AB	AC	AD	B	BA	C	CA	CB	D	DB	G	K	L	LA	LB	LC	LD	M	MA	MB	N	P	PD	PF
6	29.5	6	23.5	5	30	29	14.5	9	6	5	3	20.5	M2.5X0.45	M3X0.5	5	20.5	6	9	6	3	9.5	3.5	M3X0.5	9.5	5.5
10	32	6	26	5	34	33	18	10	7.5	6	5	23	M3X0.5	M4X0.7	5	23	8	11	8	4	8.5	4.5	M3X0.5	11.5	5

TCL/TCM12~63

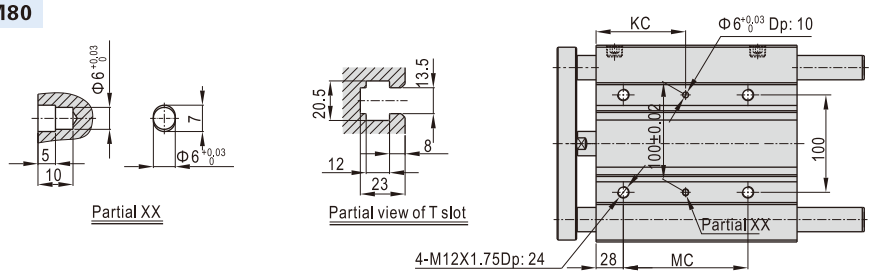


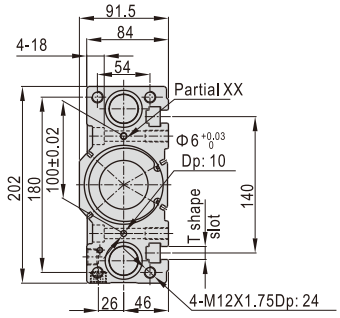
Bore size\Item	A					DA								MC				KC			
	TCL	TCM	TCL\TCM			TCL				TCM											
Stroke	≤30	≤50	31(51)~100	101~200	> 200	≤30	31~100	101~200	> 200	≤50	51~100	101~200	> 200	≤30	31~100	101~200	> 200	≤30	31~100	101~200	> 200
12	42		55	85	-	0	13	43	-	0	13	43	-	20	40	110	-	15	25	60	-
16	46		65	95	-	0	19	49	-	0	19	49	-	24	44	110	-	17	27	60	-
20	53		80	104	122	0	27	51	69	0	27	51	69	24	44	120	200	29	39	77	117
25	53.5		82	104.5	122	0	28.5	51	68.5	0	28.5	51	68.5	24	44	120	200	29	39	77	117
Stroke	≤50	≤50	51~100	101~200	> 200	≤50	51~100	101~200	> 200	≤50	51~100	101~200	> 200	≤40	41~100	101~200	> 200	≤40	41~100	101~200	> 200
32	65	78	102	118	140	5.5	42.5	58.5	80.5	18.5	42.5	58.5	80.5	24	48	124	200	33	45	83	121
40	66	78	102	118	140	0	36	52	74	12	36	52	74	24	48	124	200	34	46	84	122
50	76	89	118	134	161	4	46	62	89	17	46	62	89	24	48	124	200	36	48	86	124
63	77	89	118	134	161	0	41	57	84	12	41	57	84	28	52	128	200	38	50	88	124

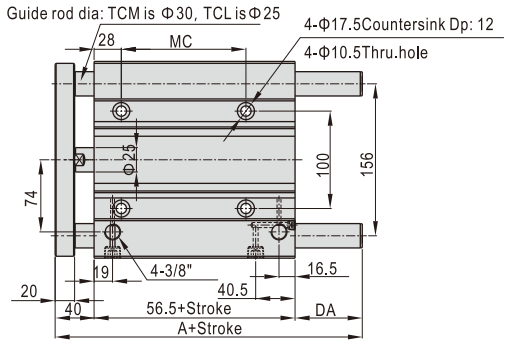
Bore size\Item	AB	AC	AD	B	BA	C	CA	D(TCL)	D(TCM)	DB	G	J	JA	K	KA	KB	L	LA	LB	LC	LD
12	13	29	8	58	56	26	22	6	8	6	41	3.5	3	3	6	23	M4×0.7	10	50	18	48
16	13	33	8	64	62	30	25	8	10	6	46	3.5	3	3	6	24	M5×0.8	12	56	22	54
20	16	37	10	83	81	36	30	10	12	10	54	3.5	3	3	6	28	M5×0.8	13	72	24	70
25	16	37.5	10	93	91	42	38	12	16	12	64	4.5	3	4	6	34	M6×1.0	15	82	30	78
32	22	37.5	12	112	110	48	44	16	20	16	78	4.5	3	4	6	42	M8×1.25	20	98	34	96
40	22	44	12	120	118	54	44	16	20	16	86	4.5	3	4	6	50	M8×1.25	20	106	40	104
50	28	44	16	148	146	64	60	20	20	20	110	6	4	5	8	66	M10×1.5	22	130	46	130
63	28	49	16	162	158	78	70	20	20	20	124	6	4	5	8	80	M10×1.5	22	142	58	130

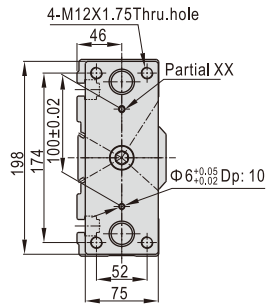
Bore size\Item	LE	M	MA	MB	N	P	PA	PB	PC	PD	PE	PF	R	RA	S	U	V	W	X	Y
12	14	8	4.5	5	4.5	M5×0.8	8	18	11	11	13	7.5	M5×0.8	12	37	7.5	4.5	4	2	6.5
16	16	8	4.5	5	4.5	M5×0.8	10	19	11	11	15	8	M5×0.8	10	38	7.5	4.5	4	2.5	7
20	18	9.5	5.5	17	5.5	1/8"	11	25	10.5	10.5	12.5	9	M6×1.0	12	44	8.5	5.5	4.5	3	8
25	26	9.5	5.5	17	5.5	1/8"	13.5	28.5	11.5	11.5	12.5	9	M6×1.0	12	50	8.5	5.5	4.5	3	8.5
32	30	11	7.5	21	6.5	1/8"	16	34	12.5	12.5	7	9	M8×1.25	16	63	10.5	6.5	5.5	3.5	9.5
40	30	11	7.5	22	6.5	1/8"	18	38	14	14	13	10	M8×1.25	16	72	10.5	6.5	5.5	4	11
50	40	14	9	24	8.5	1/4"	21.5	47	12	14	9	11	M10×1.5	20	92	13.5	8.5	7.5	4.5	13.5
63	50	14	9	24	8.5	1/4"	28	55	16.5	16.5	14	13.5	M10×1.5	20	110	18	11	10	7	18.5

TCL/TCM80



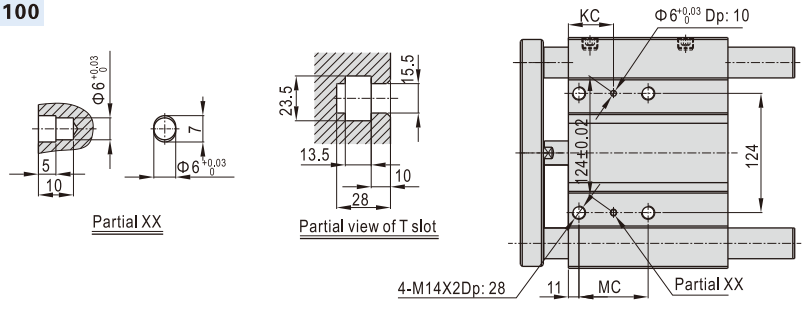


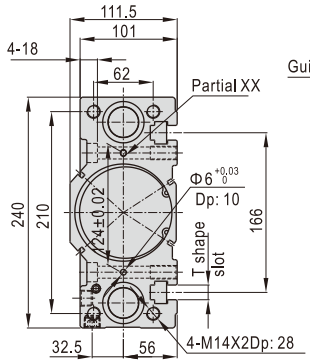


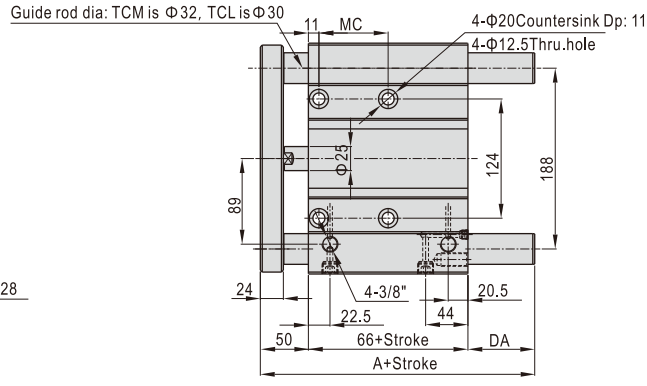


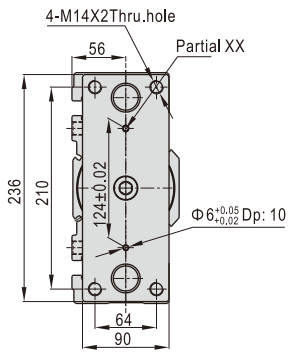
Item\Stroke	25	30	40	50	60	70	75	80	100	125	150	175	200	225	250
A	TCM=112.5/TCL=106.5					165.5						187.5			
DA	TCM=16/TCL=10					69						91			
KC	42			54						92				128	
MC	28			52						128				200	

TCL/TCM100









Item\Stroke	25	30	40	50	60	70	75	80	100	125	150	175	200	225	250
A	TCM=128/TCL=122					186						208			
DA	TCM=12/TCL=6					70						92			
KC	35			47						85				121	
MC	48			72						148				220	

Compendium of HGS Series

Stainless steel rail

Rail is made of special stainless steel, high rigidity.

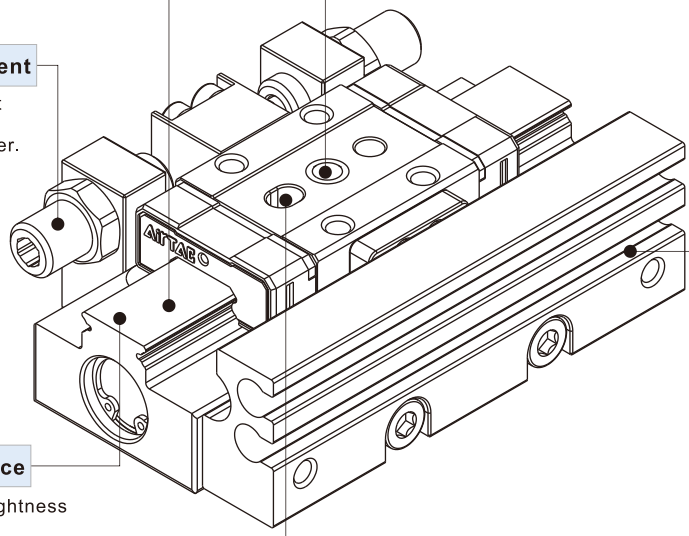
Connecting pin

Connecting pin is made of high strength alloy steel with impact resistance and long service life.



Adjustable stroke equipment

Adjustable stroke equipment is available, and can directly replace the oil shock absorber.



With sensor groove

Sensors can be installed easily at cylinder surrounding grooves.

Precision guidance

The guide rail has excellent straightness and non-rotating accuracy.

Positioning pin hole

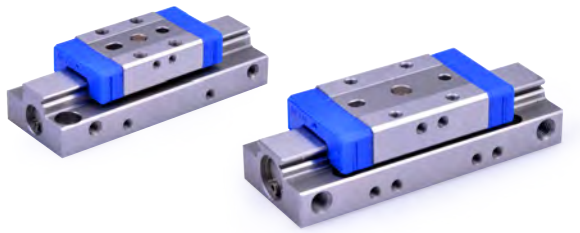
Body and slider with positioning pin hole which can improve the precision and the consistency of repeated dismounting and positioning.

Installation and application

1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder should be filtered to 40μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

Slide table cylinder

HGS Series



Symbol



Specification

Bore size(mm)		6	8	10	12
Acting type		Double acting			
Fluid		Air(to be filtered by 40μm filter element)			
Operating pressure	Φ6/8/10	36~100psi(0.25~0.7MPa)			
	Φ12	29~100psi(0.2~0.7MPa)			
Proof pressure		175psi(1.2MPa)			
Cushion type		Bumper		Bumper or shock absorber	
Temperature		-20~70℃			
Lubrication		Not required			
Speed range		50~500mm/s			
Stroke tolerance		$^{+0.5}_{0}$			
Sensor switches		DMSH\EMSH [Note1]			
Port size		M3×0.5	M5×0.8		

Note) Refer to P578 for detail of sensor switch.

Product feature

1.Rail is made of special stainless steel, with high rigidity, corrosion resistance.
2.Connecting pin is made of high strength alloy steel with impact resistance and long service life.
3.Adjustable stroke equipment is available, and can directly replace the oil shock absorber.
4.The guide rail has excellent straightness and no turning accuracy.
5.Sensors can be installed easily at cylinder surrounding grooves.
6.Body and slider with positioning pin hole which can improve the precision and the consistency of repeated dismounting and positioning.

Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke
6	5 10	10
8	5 10 15 20	20
10	5 10 15 20	20
12	5 10 15 20 25	25

[Note] Consult us for non-standard stroke.

Ordering code

HGS 10 × 15 S J
① ② ③ ④ ⑤

①Model	②Bore size	③Stroke	④Magnet	⑤Stroke adjustment device
HGS: Slide table cylinder	6	5 10	Blank: Without magnet	Blank: Without stroke adjustment device
	8	5 10 15 20	S: With magnet 	J: With stroke adjustment device [Note] 
	10	5 10 15 20		
	12	5 10 15 20 25		

[Note] Stroke adjustment device of Φ10\Φ12 can be replaced by shock absorber.

Ordering code of accessories

F – HGS 10 × 15 H
① ② ③ ④

①Model	②Bore size	③Stroke	④ Accessories type	
HGS: Slide table cylinder	6	5 10	H: Sensor fixed seat package 	J: Stroke adjusting screw package 
	8	5 10 15 20		
	10	5 10 15 20		
	12	5 10 15 20 25		

Matching table

Sensor						
Ordering code		Stroke (mm)				
		5	10	15	20	25
Bore size	6	F-HGS6X5H	F-HGS6X10H			
	8	F-HGS8X5H	F-HGS8X10H	F-HGS8X15H	F-HGS8X20H	
	10	F-HGS10X5H	F-HGS10X10H	F-HGS10X15H	F-HGS10X20H	
	12	F-HGS12X5H		F-HGS12X15H	F-HGS12X20H	F-HGS12X25H

Stroke adjusting screw						
Ordering code		Stroke (mm)				
		5	10	15	20	25
Bore size	6	F-HGS6X5J	F-HGS6X10J			
	8	F-HGS8X5J	F-HGS8X10J	F-HGS8X15J		
	10	F-HGS10X5J	F-HGS10X10J	F-HGS10X15J		
	12	F-HGS10X10J				F-HGS10X15J

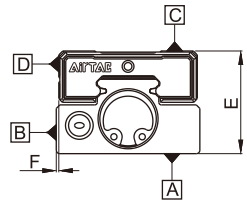
Production weight table

Unit: g

Model	Body weight	Sensor fixed seat package weight	Stroke adjusting screw package weight		
			Single adjusting screw	Single shock absorber	Other accessories
HGS6X5	116.1	14.25	2.4	–	11.61
HGS10X5	152.3	19.05	2.4	-	11.61
HGS8X5	133.01	14.05	2.4	-	10.34
HGS8X10	167.46	18.54	2.4	-	10.34
HGS8X15	207.07	23.35	2.4	-	10.34
HGS8X20	239.37	28.16	2.4	-	10.34
HGS10X5	194.26	15.91	6.8	16	27.36
HGS10X10	248.98	19.12	6.8	16	26.2
HGS10X15	303.39	24	6.8	16	21.8
HGS10X20	352.05	28.93	6.8	16	21.8
HGS12X5	291.01	21.64	6.8	16	27.36
HGS12X10	318.12	21.64	6.8	16	26.2
HGS12X15	356.79	27.63	6.8	16	21.8
HGS12X20	445.92	33.25	6.8	16	21.8
HGS12X25	491.34	38.87	6.8	16	21.8

Example:
HGS10X15SJ=Body weight+Sensor fixed seat package weight+Single adjusting screw weithgX2+Other accessories weight =303.39+24+6.8X2+21.8=362.79(g)

Table precision



[Unit: mm]

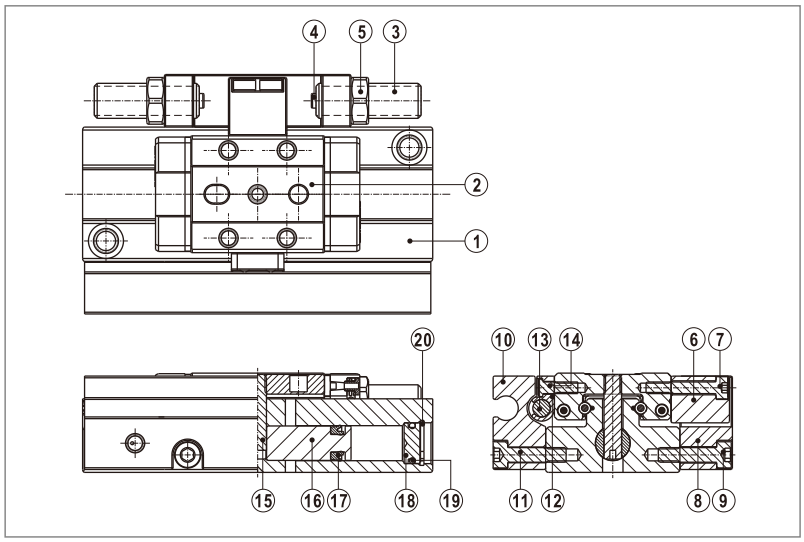
Model		HGS6	HGS8	HGS10	HGS12
Parallelism	C surface to A surface	0.02			
	D surface to B surface	0.02			
Parallelism of walking	C surface to A surface	0.004			
	D surface to B surface	0.004			
Dimensional tolerance of E		±0.05			
Dimensional tolerance of F		±0.05			

Max. allowable load

[Unit: kg]

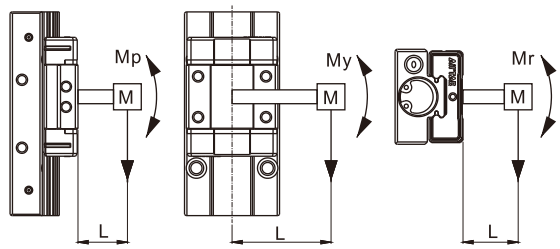
Model	HGS6	HGS8	HGS10	HGS12
No stroke adjustment device	0.3	0.3	0.8	1.2
With stroke adjustment device	0.2	0.5	0.8	1.2
With shock absorber	-	-	1.6	2.0

Inner structure and material of major parts



NO.	Item	Material	NO.	Item	Material
1	Body	Stainless steel	11	Hexagon socket head screws	Alloy steel
2	Slide table	Stainless steel	12	Magnet holder	Plastic
3	Adjustable screw	Stainless steel	13	Magnet	Rare earths
4	Bumper	NBR	14	Screw	Alloy steel
5	Hex nut	Stainless steel	15	Pin	Stainless steel
6	Middle stopping block	Cutting steel	16	Piston	Stainless steel
7	Hexagon socket head screws	Alloy steel	17	Piston packing	NBR
8	End stopping block	Aluminum alloy	18	End cover	TPU
9	Hexagon socket head screws	Alloy steel	19	O ring	NBR
10	Sensor fixed rail	Aluminum alloy	20	C clip	Spring steel

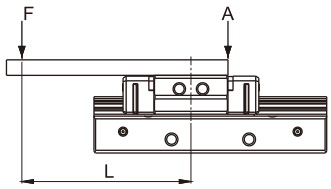
Max. allowable torque

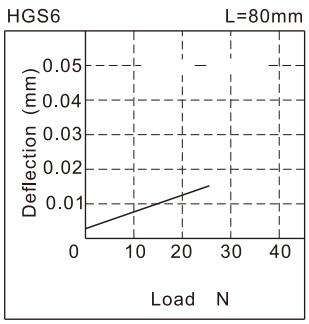


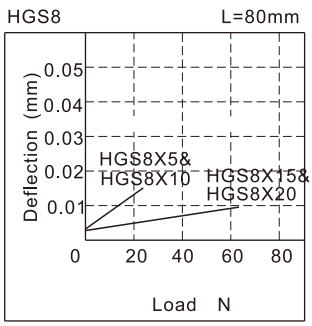
Model	Max. Allowable torque (N.m)		
	Pitch moment Mp	Yaw moment My	Roll moment Mr
HGS6X5	0.42	0.42	0.87
HGS6X10			
HGS8X5	0.42	0.42	0.87
HGS8X10			
HGS8X15	1.7	1.7	1.8
HGS8X20			
HGS10X5	1.2	1.4	2.3
HGS10X10			
HGS10X15	2.8	3.1	3.3
HGS10X20			
HGS12X5	2.4	2.9	4.7
HGS12X10			
HGS12X15			
HGS12X20	6.5	7.7	7.3
HGS12X25			

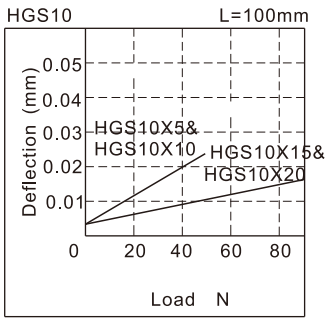
Table deflection

Table deflection due to pitch moment









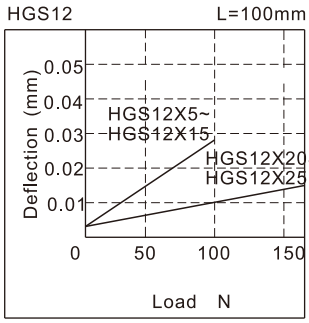
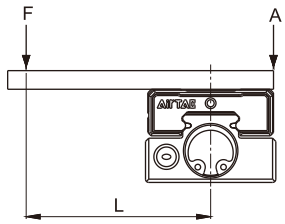
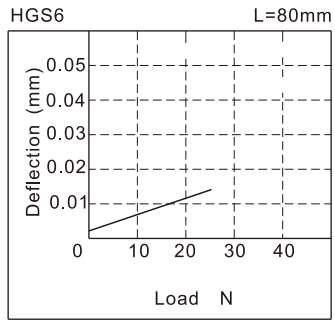
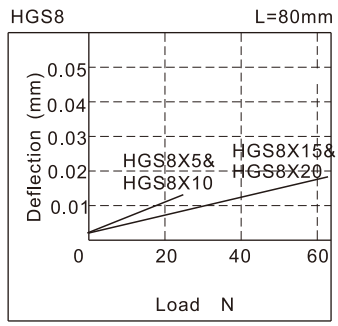
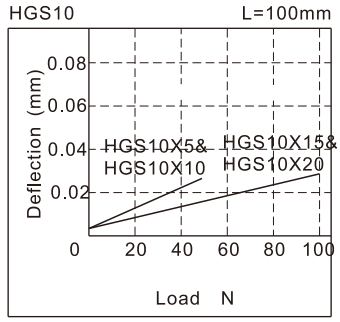


Table deflection due to yaw moment









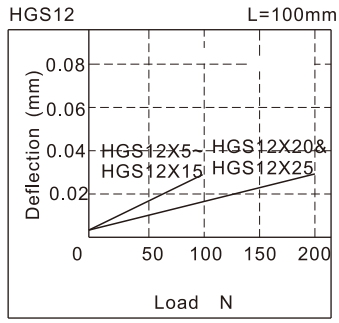
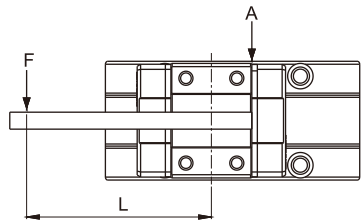
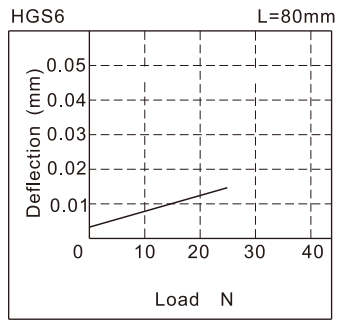
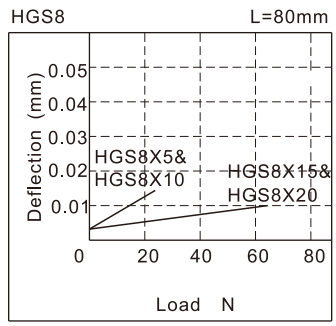
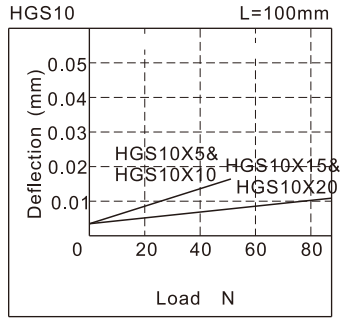


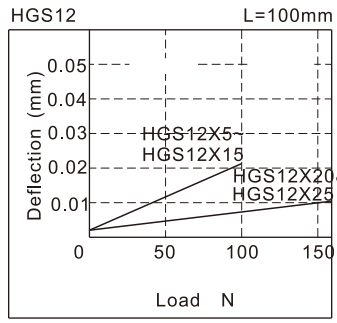
Table deflection due to roll moment





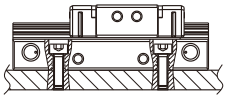






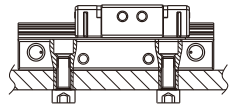
Installation and application

1. Cylinder can be mounted from 4 directions
2. When mounting an compact slide cylinder, screws of appropriate length should be used and tightened properly within the maximum tightening torque.
   If screws are tightened beyond designed limits, malfunction may occur. If they are tightened insufficiently, it may result in sliding of falling off from its position.



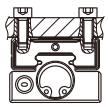
Model	Bolt used	Max. tightening torque (Nm)	Max. screw–in depth(mm)
HGS6	M3×0.5	1.1	4.3
HGS8	M3×0.5	1.1	6.3
HGS10	M3×0.5	1.1	6
HGS12	M3×0.5	1.1	4.8
HGS12	M4×0.7	2.5	4.8

Note: M3X0.5 bolt is used for HGS12X5/10.

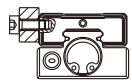


Model	Bolt used	Max. tightening torque (Nm)	Max. screw–in depth(mm)
HGS6	M4×0.7	2.5	4.3
HGS8	M4×0.7	2.5	6.3
HGS10	M4×0.7	2.5	6
HGS12	M4×0.7	2.5	6.8
HGS12	M5×0.8	5.1	6.8

Note: M4X0.7 bolt is used for HGS12X5/10.



Model	Bolt used	Max. tightening torque (Nm)	Max. screw–in depth(mm)
HGS6	M3×0.5	1.1	3
HGS8	M3×0.5	1.1	3
HGS10	M3×0.5	1.1	3
HGS12	M3×0.5	1.1	4

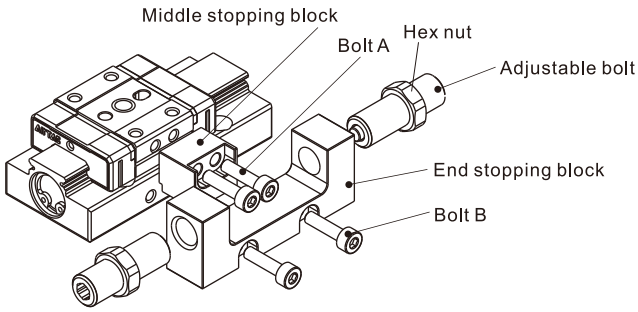


Model	Bolt used	Max. tightening torque (Nm)	Max. screw–in depth(mm)
HGS6	M2×0.4	0.26	4
HGS8	M2×0.4	0.26	4
HGS10	M3×0.5	1.1	3
HGS12	M3×0.5	1.1	4

Installation of Accessories

Locking torque shown in the following table is recommended to tighten the bolts, if bolts are tightened beyond designed limits, malfunction may occur;
If they are tightened insufficiently, it may result in sliding of falling off from its position.

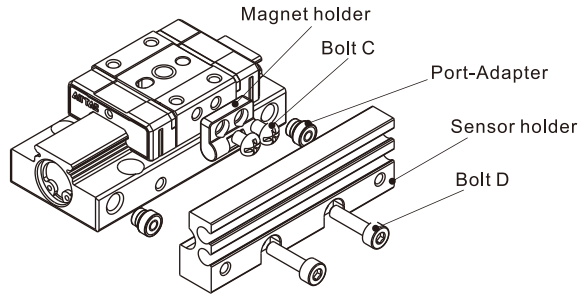
Stroke adjustable device



Model	Bolt A used	Max locking torque(N.m)	Bolt B used	Max locking torque(N.m)
HGS6	M2X0.4X10L	0.26	M2.5X0.45X10L	0.36
HGS8	M2X0.4X10L	0.26	M3X0.5X10L	1.1
HGS10	M3X0.5X12L	1.1	M3X0.5X12L	1.1
HGS12	M3X0.5X12L	1.1	M3X0.5X12L	1.1

Sensor seat

Port-adapter must be assembled correctly, leaks may happen if it is missing.

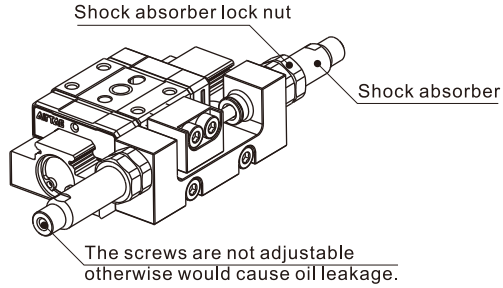


Model	Bolt C used	Max locking torque(N.m)	Bolt D used	Max locking torque(N.m)
HGS6	M2X0.4X6L	0.26	M2.5X0.45X10L	0.36
HGS8	M2X0.4X6L	0.26	M3X0.5X10L	1.1
HGS10	M3X0.5X4L	1.1	M3X0.5X10L	1.1
HGS12	M3X0.5X4L	1.1	M3X0.5X10L	1.1

Sensor seat can be installed on both sides of cylinder while stroke adjustment device can only be installed on the side with no ports.

About shock absorber

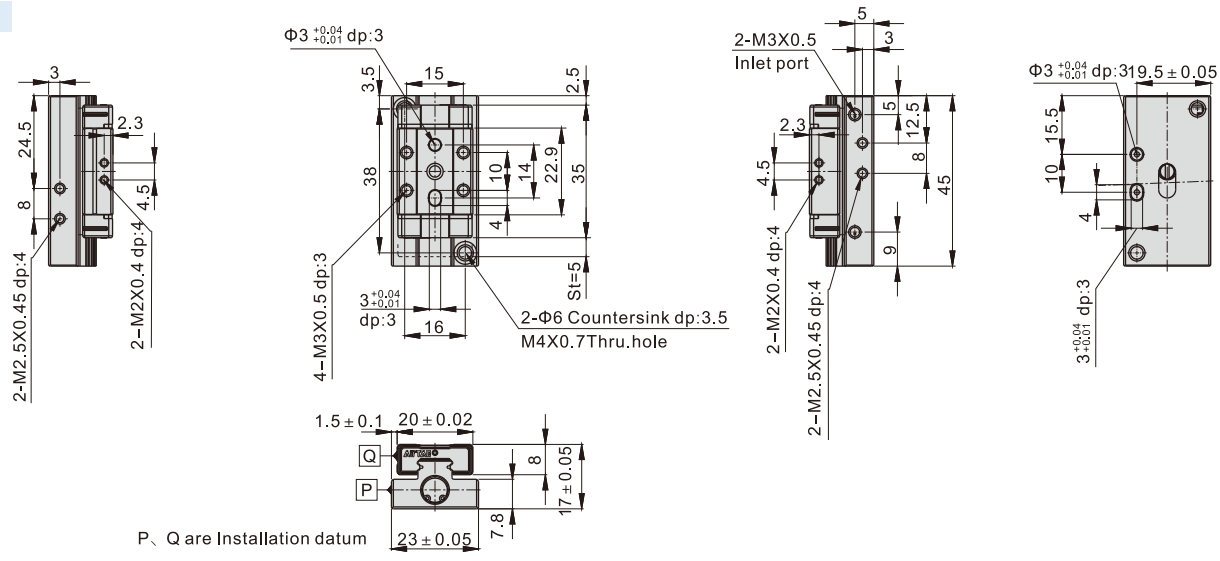
1. Shock absorbers are expendable. Promptly replace them when energy absorbing capacity decreases.
2. Never turn or adjust the screws on bottom of the shock absorber body. The screws are not for adjusting.
   Otherwise would cause oil leakage.
3. Follow the table for tightening torque of shock absorber to lock nuts.



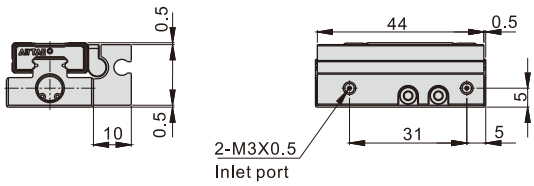
Model	Shock absorber	Tightening torque
HGS6	Without shock absorber	
HGS8		
HGS10	ACA0806-1N	1.67(N.m)
HGS12	ACA0806-1N	1.67(N.m)

Dimensions(HGS6)

HGS6X5

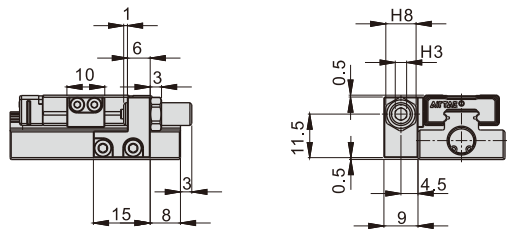


HGS6X5S

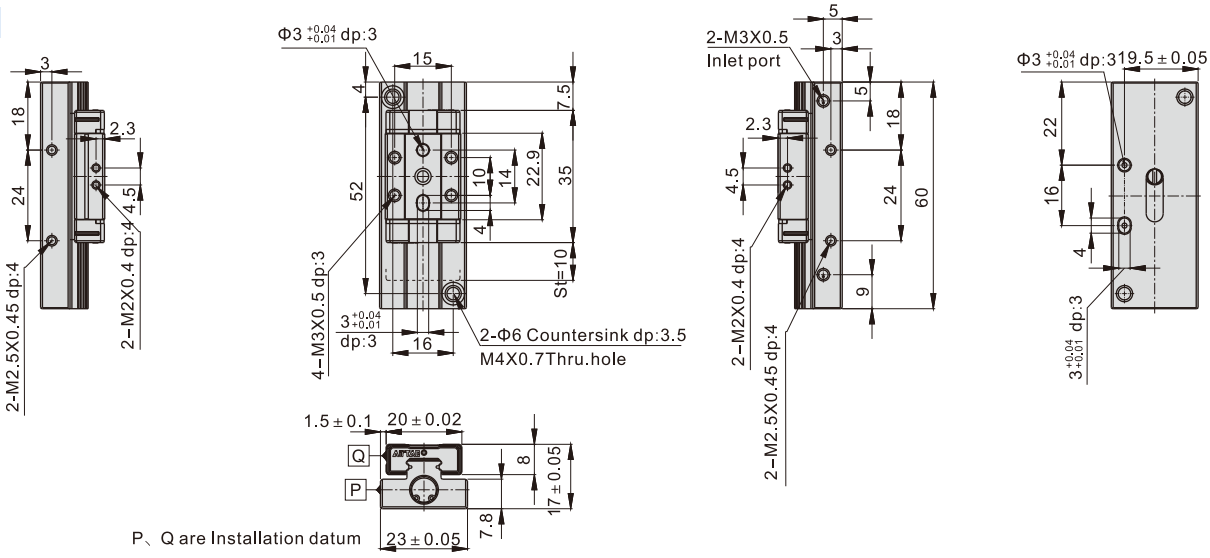


HGS6X5J

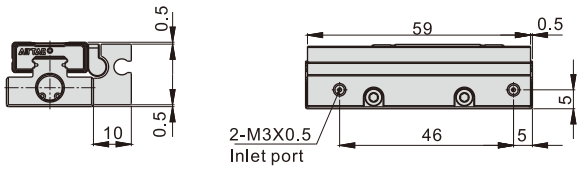
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HGS6X10

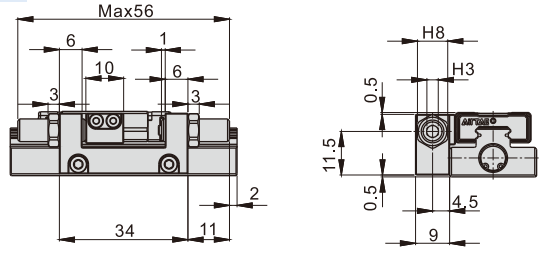


HGS6X10S



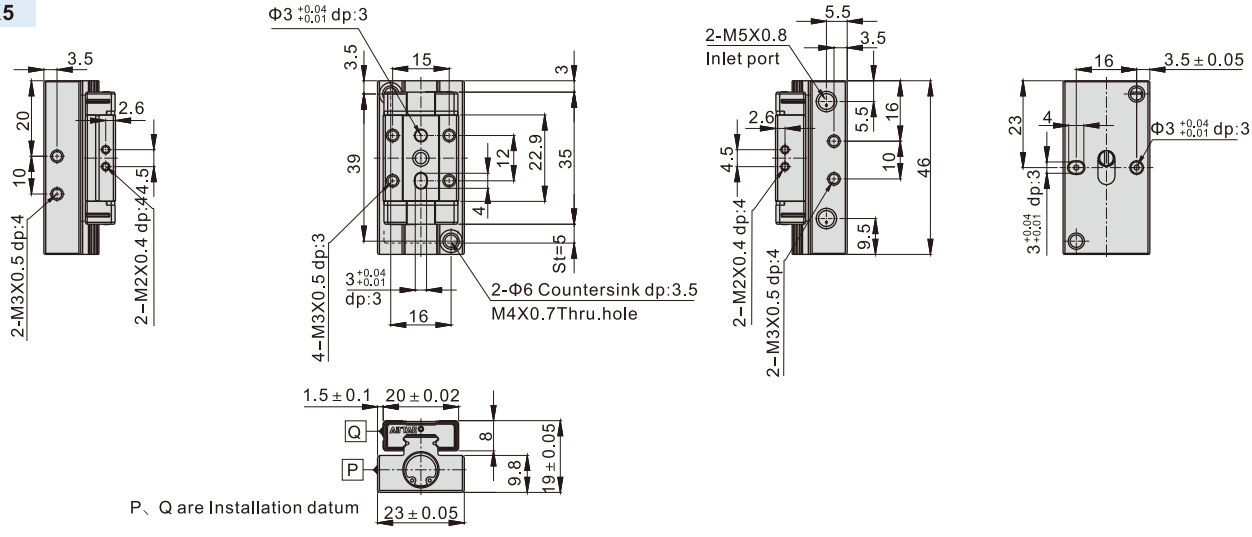
HGS6X10J

Adjustable range：5mm of each sides.

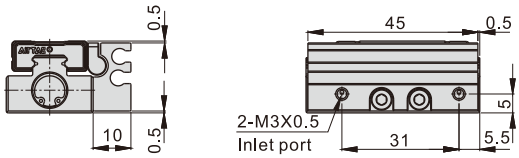


Dimensions(HGS8)

HGS8X5

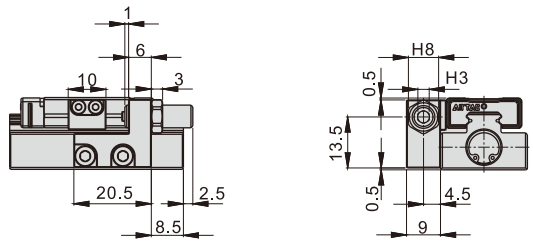


HGS8X5S

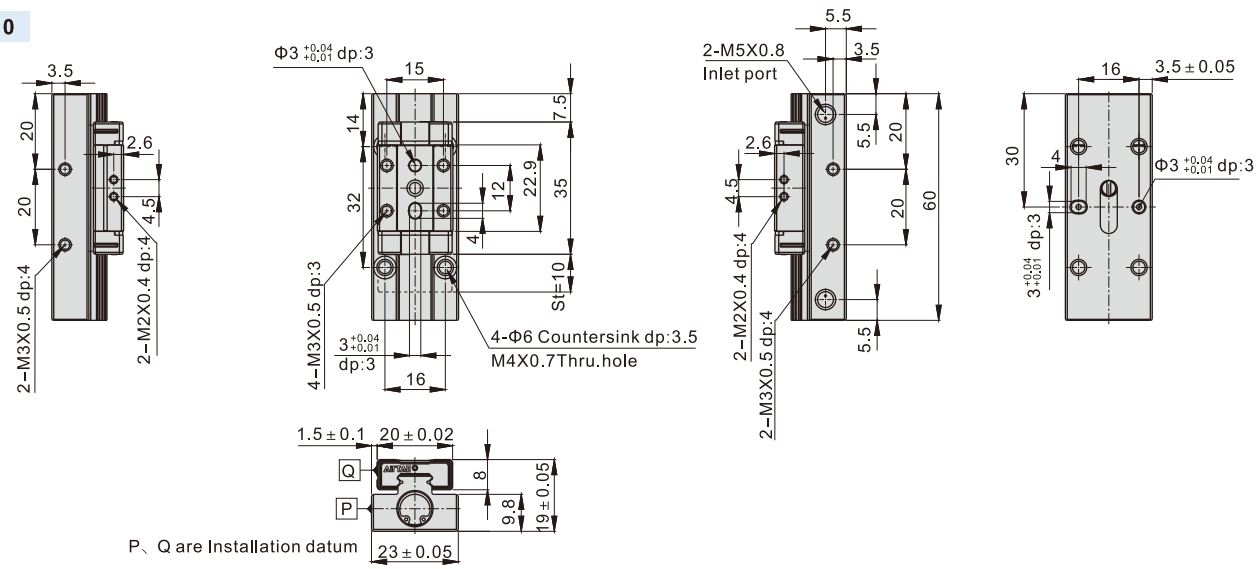


HGS8X5J

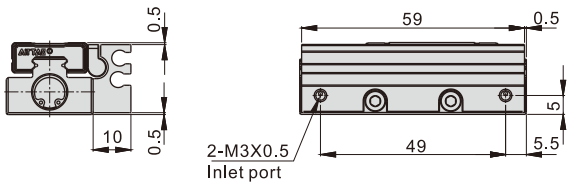
Adjustable range：5mm



HGS8X10

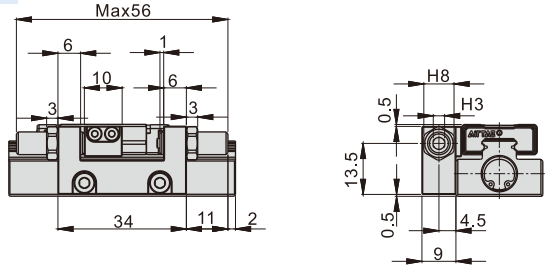


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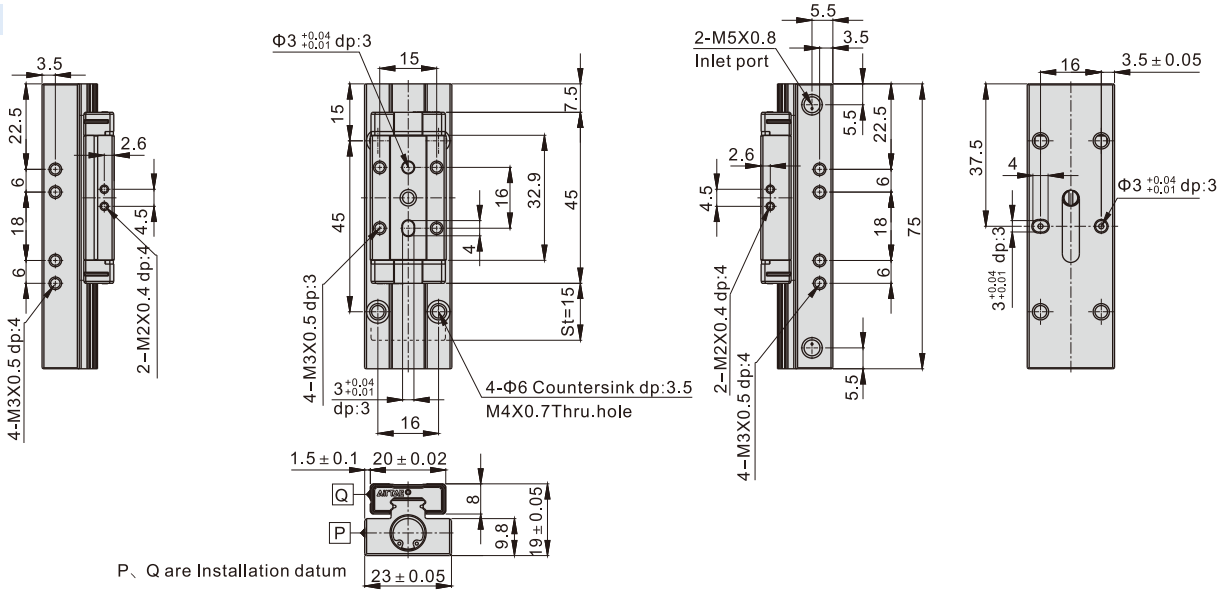


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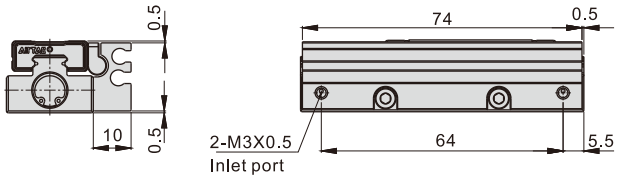
Adjustable range：5mm of each sides.



HGS8X15

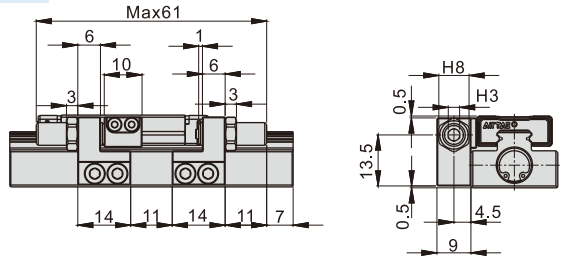


HGS8X15S

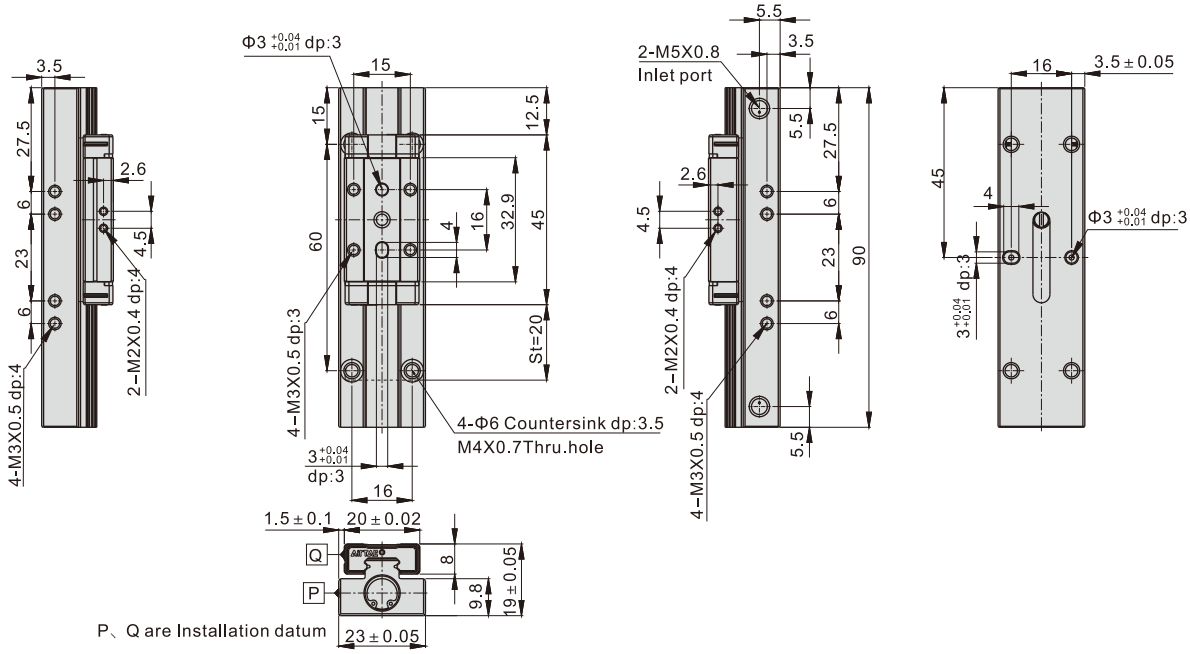


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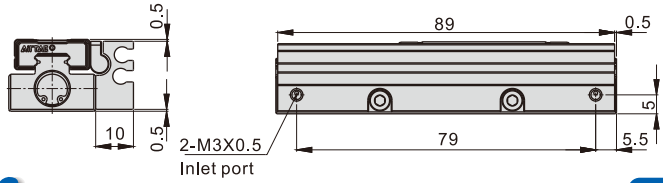
Adjustable range：5mm of each sides.



HGS8X20

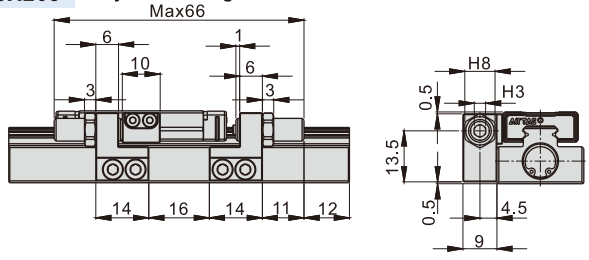


HGS8X20S



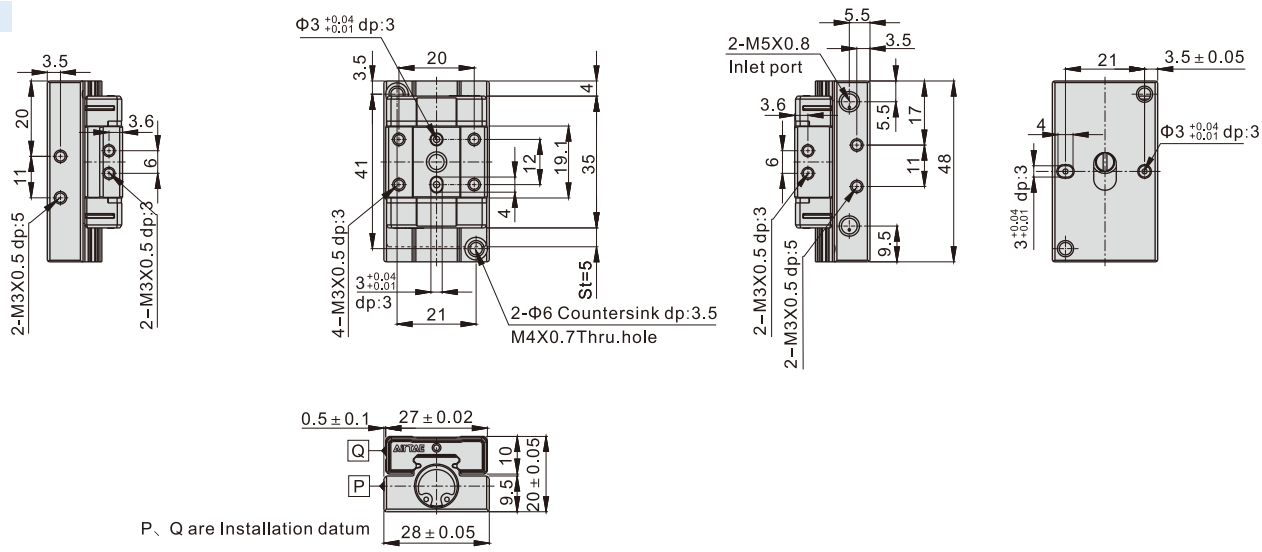
HGS8X20J

Adjustable range：5mm of each sides.

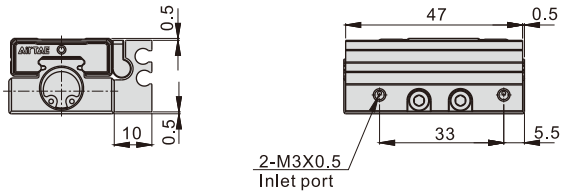


Dimensions(HGS10)

HGS10X5

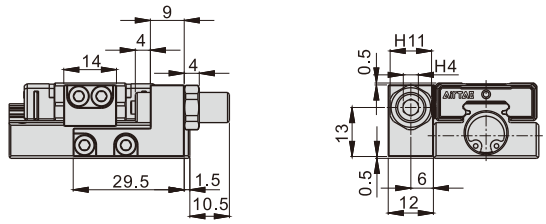


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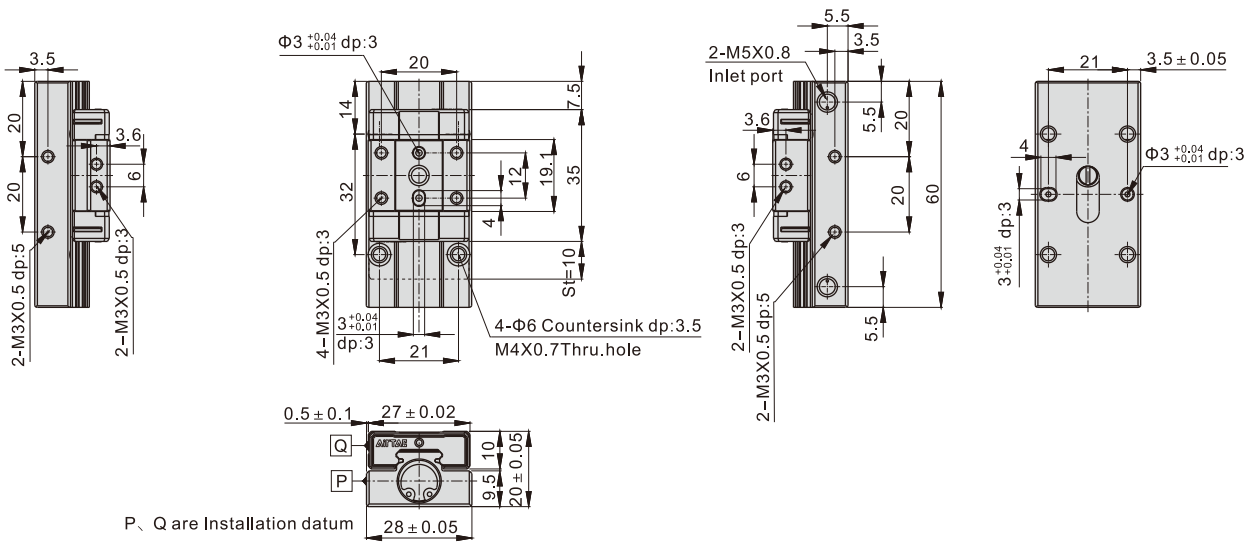


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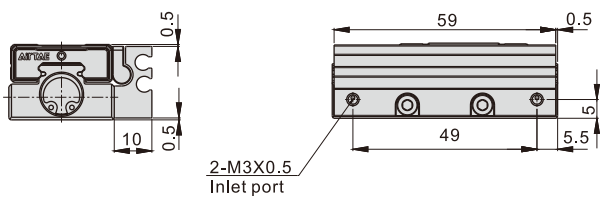
Adjustable range：5mm



HGS10X10

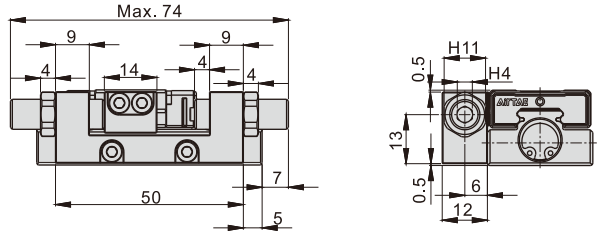


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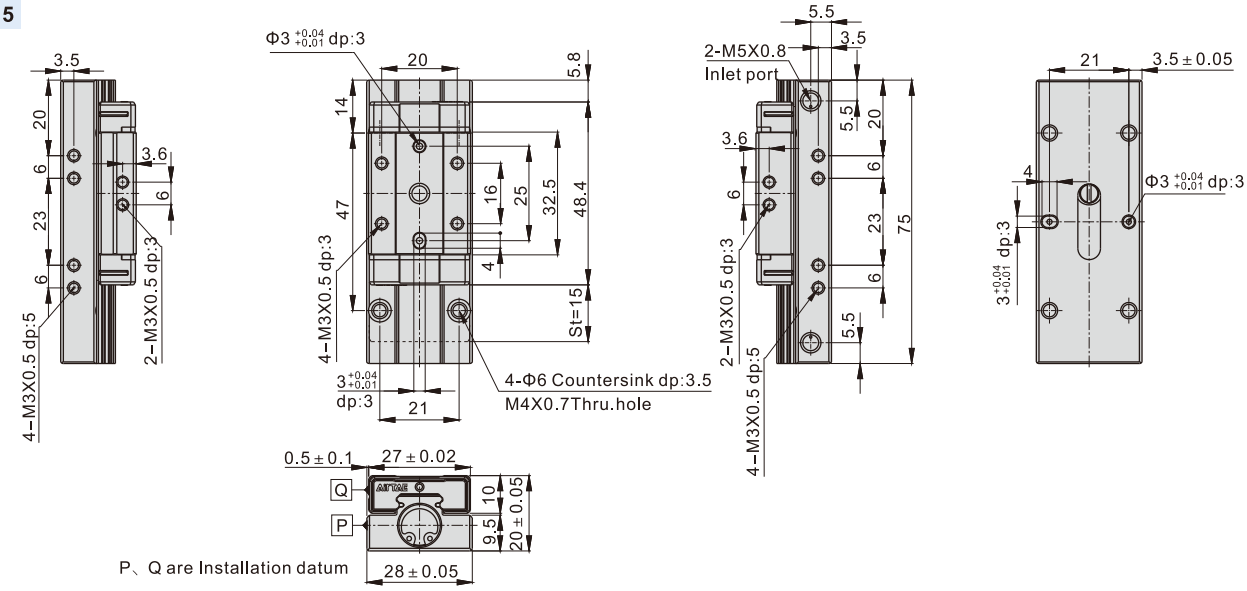


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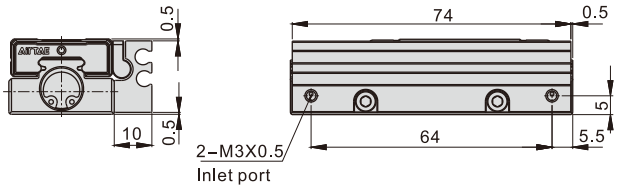
Adjustable range：5mm of each sides.



HGS10X15

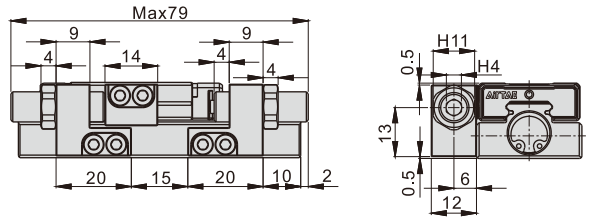


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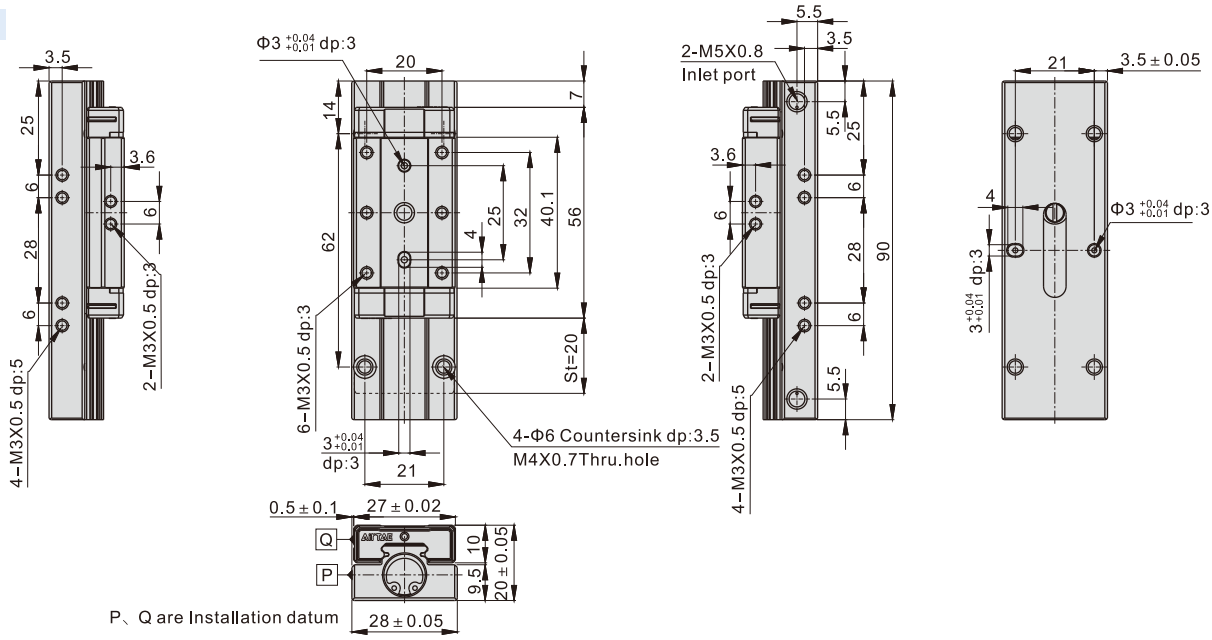


HGS10X15J

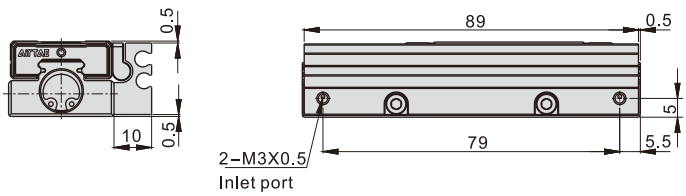
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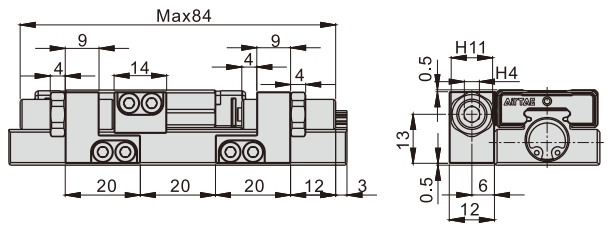


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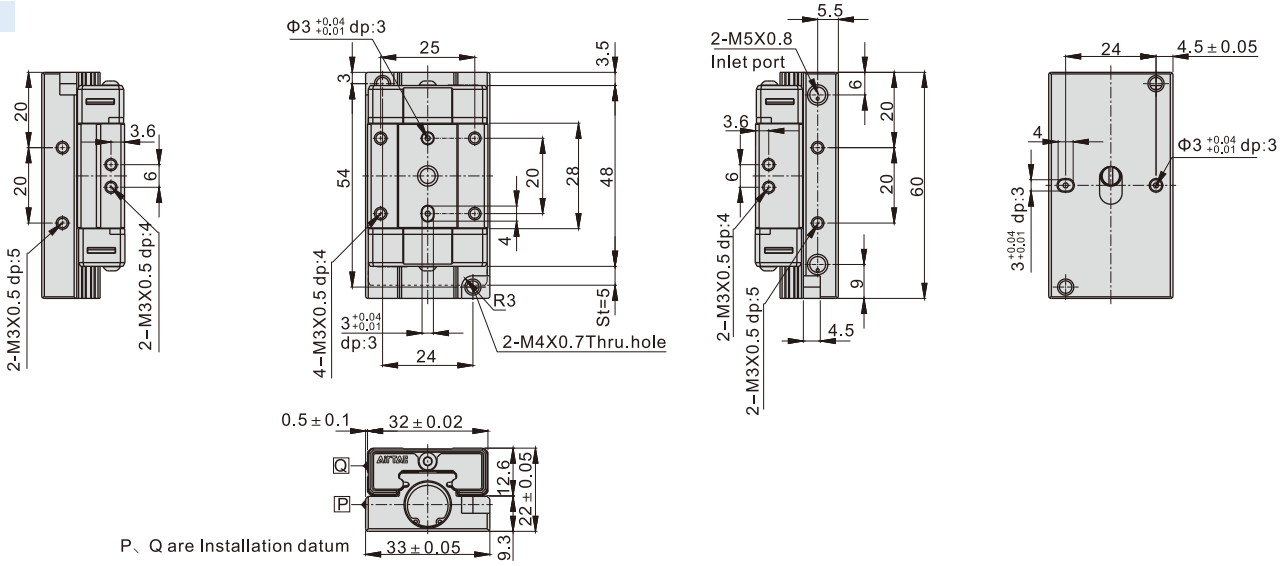
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Adjustable range：5mm of each sides.

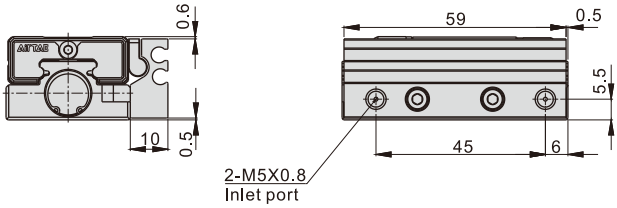


Dimensions(HGS12)

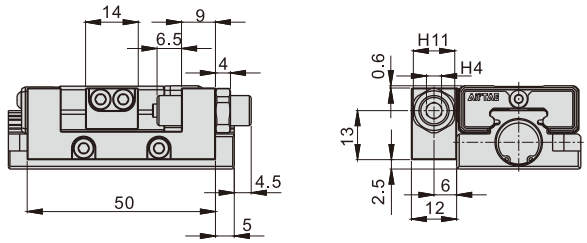
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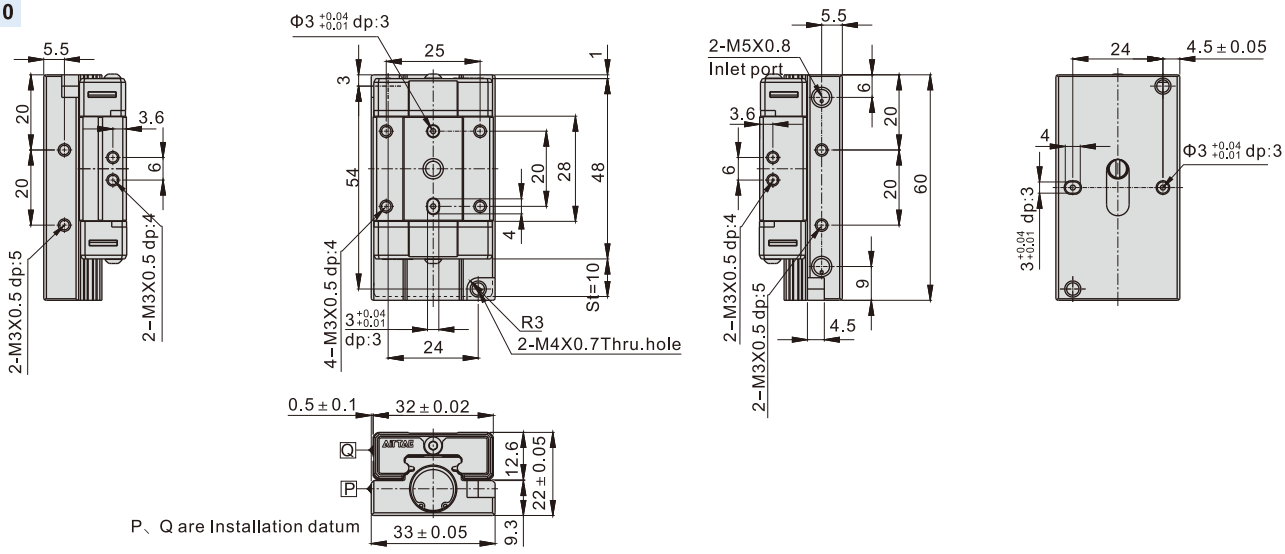
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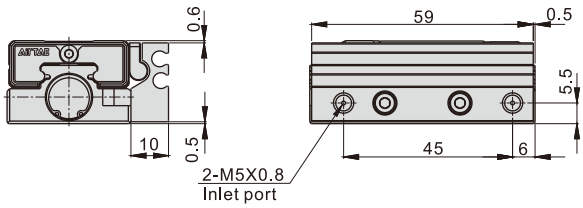
HGS12X5J Adjustable range：5mm



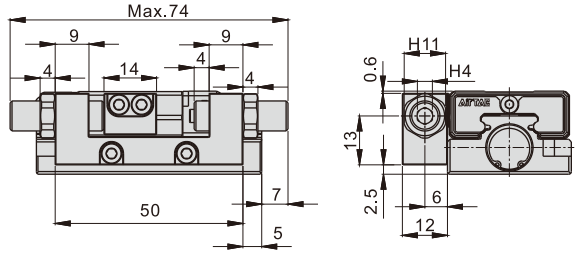
HGS12X10



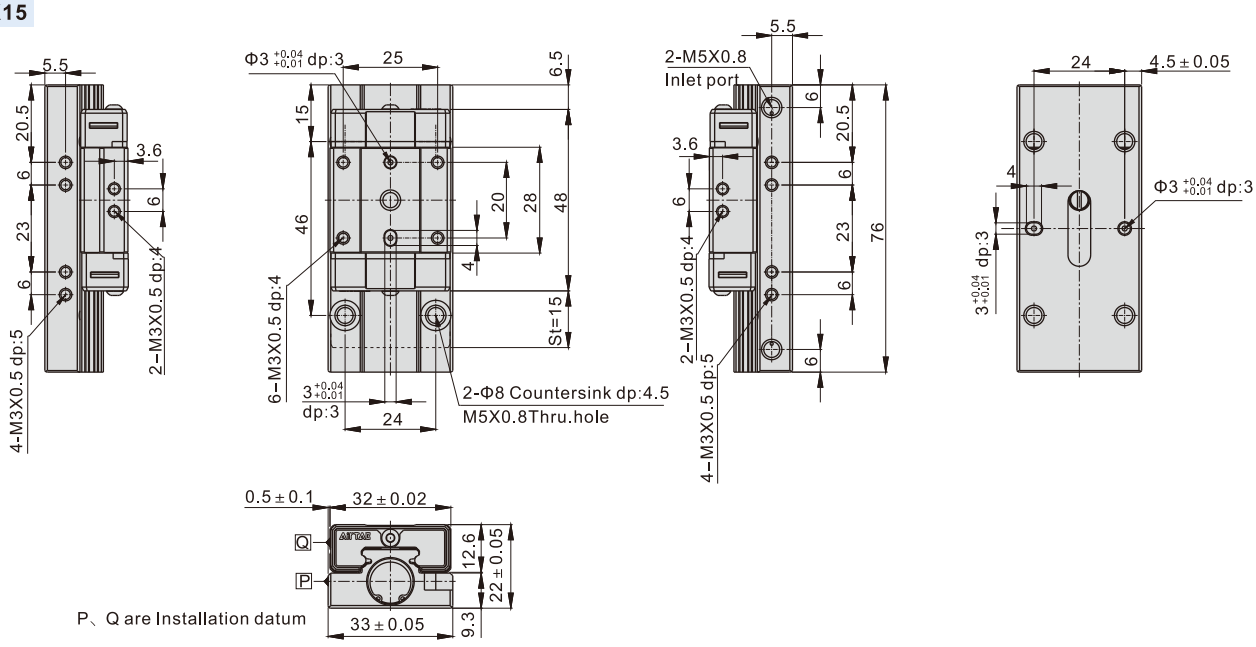
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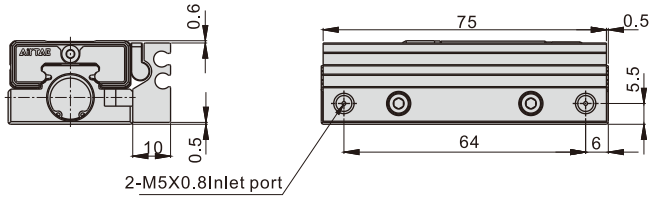
HGS12X10J Adjustable range：5mm of each sides.



HGS12X15

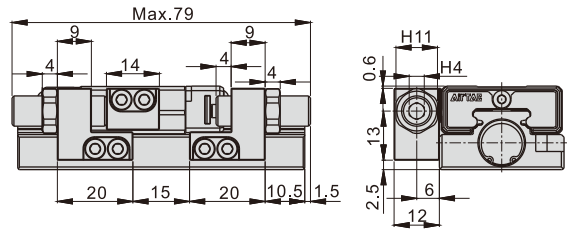


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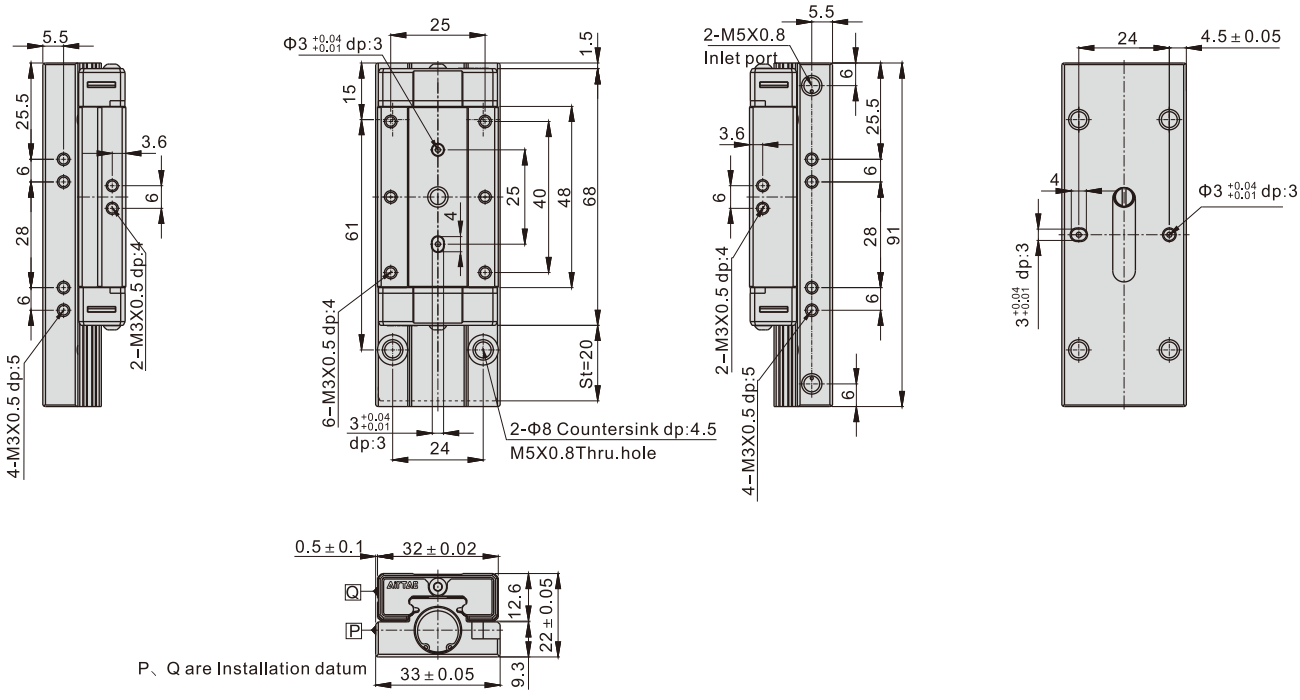


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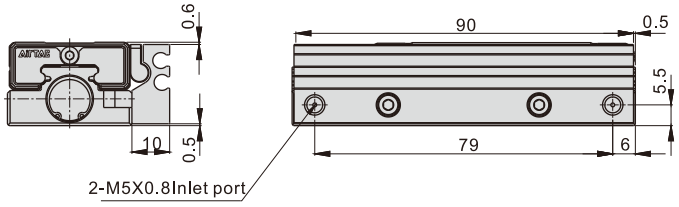
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HGS12X20

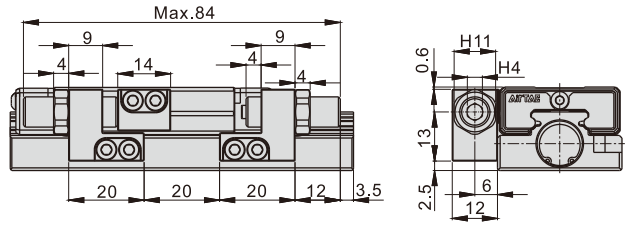


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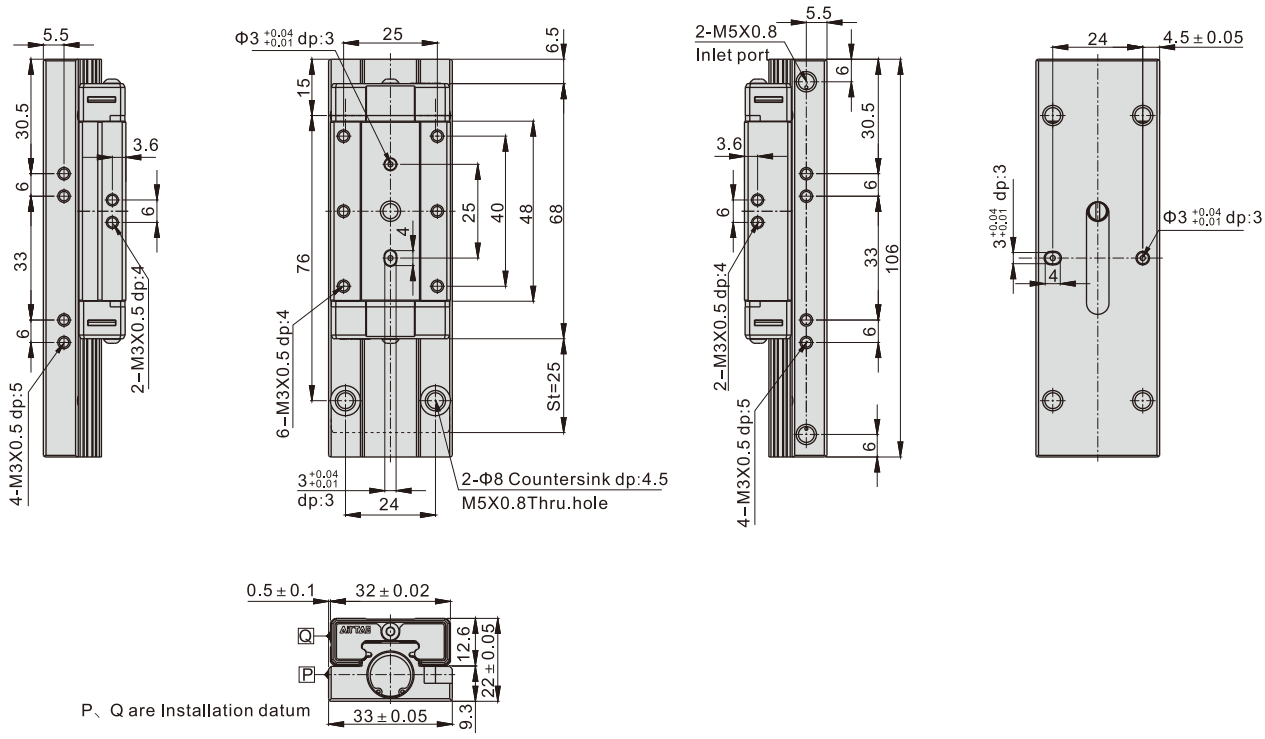


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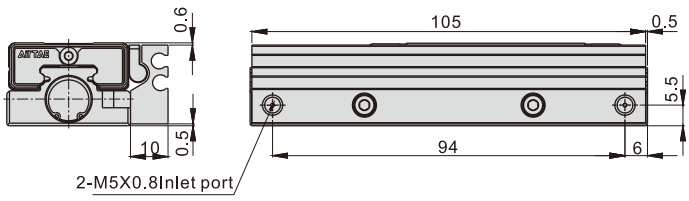
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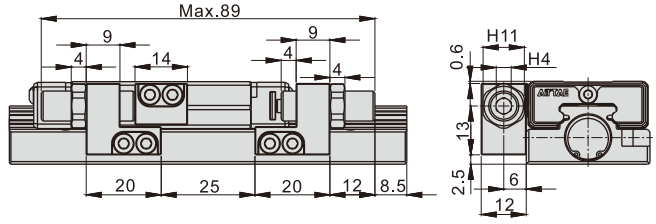


HGS12X25S



HGS12X25J

Adjustable range：5mm of each sides.

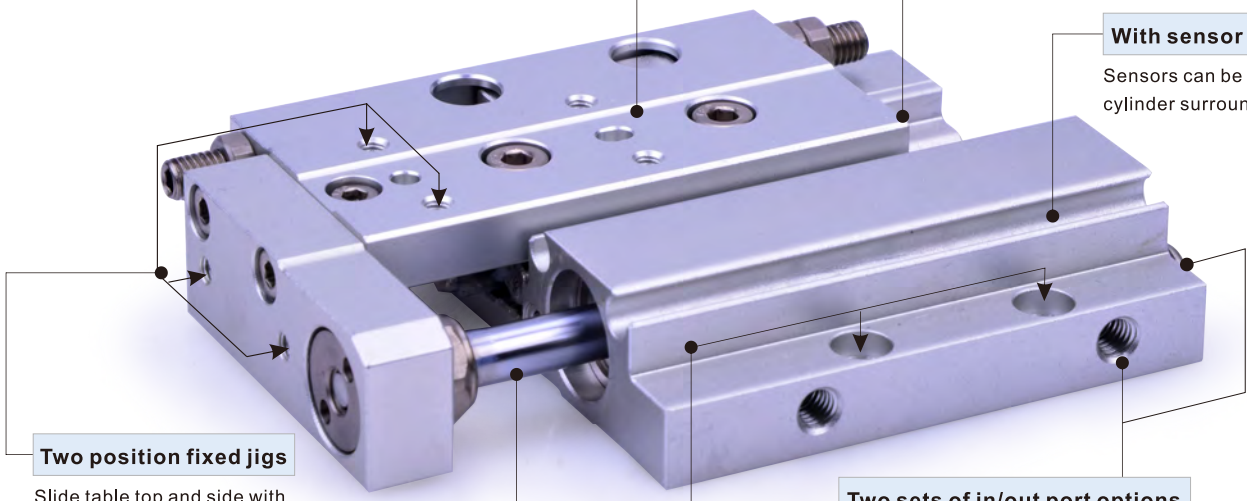


Compendium of HLF Series

Precise orientation
With superior straightness and non-rotating accuracy for precision assembly application

Integrated type
Effectively reduce height by integrated design of cross roller guide and cylinder

With sensor groove
Sensors can be installed easily at cylinder surrounding grooves.



Two position fixed jigs
Slide table top and side with a fixed jig for mounting screw

Two sets of in/out port options
For easier piping, the body possess a set of inlet/outlet port at side and end respectively

Various bore size and stroke options
Bore size options of 8,12,16,20 each bore size has various specifications and strokes for easy selection

Two position fixed cylinders
Cylinder can be installed at 2 directions, top and bottom, easy to use.

Criteria for selection: Cylinder thrust

Unit : Newton(N)

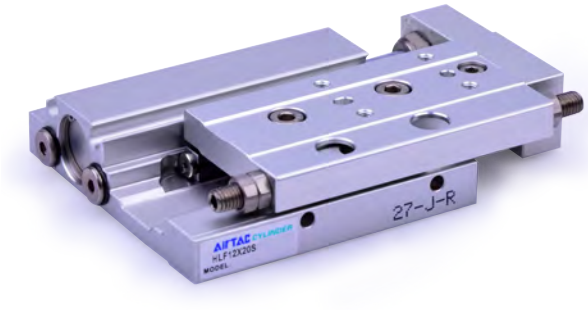
Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)						
					0.1	0.2	0.3	0.4	0.5	0.6	0.7
8	3	Double acting	Push-side	50.3	5.0	10.1	15.1	20.1	25.1	30.2	35.2
			Pull-side	43.2	4.3	8.6	13.0	17.3	21.6	25.9	30.2
12	4	Double acting	Push-side	113.1	11.3	22.6	33.9	45.2	56.5	67.9	79.2
			Pull-side	100.5	10.1	20.1	30.2	40.2	50.3	60.3	70.4
16	6	Double acting	Push-side	201.0	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull-side	172.7	17.3	34.5	51.8	69.1	86.4	103.6	120.9
20	8	Double acting	Push-side	314.0	31.4	62.8	94.2	125.6	157.0	188.4	219.8
			Pull-side	263.8	26.4	52.8	79.1	105.5	131.9	158.3	184.7

Installation and application

1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder should be filtered to 40μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

Slide table cylinder

HLF Series

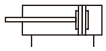


Specification

Bore size(mm)	8	12	16	20
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	0.2~0.7MPa(29~100psi)(2.0~7.0bar)	0.15~0.7MPa(22~100psi)(1.5~7.0bar)		
Proof pressure	1.2MPa(175psi)(12.0bar)			
Temperature ℃	-20~70			
Speed range mm/s	50~500			
Stroke tolerance	$^{+1.0}_{0}$			
Cushion type	Bumper			
Sensor switches [Note1]	DMSH、CMSH、EMSH			
Port size	M3×0.5	M5×0.8		

[Note1] Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. cross roller linear guide and cylinder integrated type design, effectively reducing cylinder thickness.
2. With superior straightness and non-rotating accuracy for precision assembly application.
3. cylinder can be installed from 2 directions.
4. Piping is possible from 2 directions.

Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke
8	10 20 30	30
12	10 20 30 40 50	50
16	10 20 30 40 50 75 100	100
20	10 20 30 40 50 75 100	100

[Note] Consult us for non–standard stroke.

Ordering code

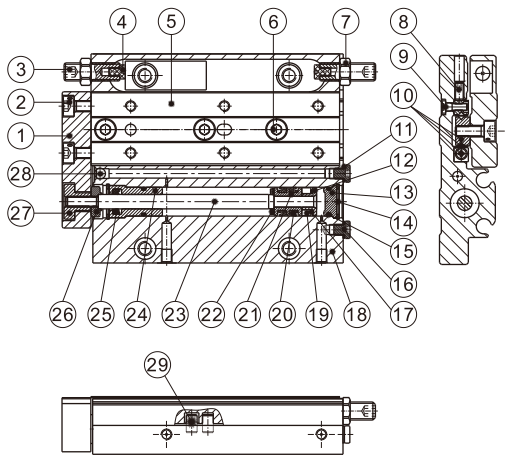
HLF 20 × 30 S

① ② ③ ④

①Model	②Bore size	③Stroke	④Magnet
HLF: Slide table cylinder (Roller type)	8 12 16 20	Refer to stroke table for details	S: With magnet

Inner structure and material of major parts

HLF



NO.	Item	Material	NO.	Item	Material
1	Fixed plate	Aluminum alloy	16	Plug screw	carbon steel
2	Hexagon socket head screws	Alloy steel	17	Magnet pad	NBR
3	Adjustable screw	Alloy steel	18	Body	Aluminum alloy
4	Bumper	TPU	19	Magnet	Sintered NdFeB
5	Slide table	Aluminum alloy	20	Piston packing	NBR
6	Hexagon socket head screws	Alloy steel	21	Piston	brass
7	Hex nut	Carbon steel	22	Bumper	TPU
8	Socket set screws	Alloy steel	23	Rod	Stainless steel
9	Hexagon socket head screws	Alloy steel	24	Front cover	Aluminum alloy
10	Roller assembly		25	Spool O ring	NBR
11	Gasket	Wear resistant material	26	Floating joint 2	Cutting steel
12	Magnet holder	brass	27	Floating joint 1	Cutting steel
13	Back cover	Aluminum alloy	28	Φ3 steel ball	Stainless steel
14	C clip	Spring steel	29	Pin	Stainless steel
15	O ring	NBR			

Model Selection Method

Please select compact cylinder's type according to following procedure, and cross reference with data sheets.

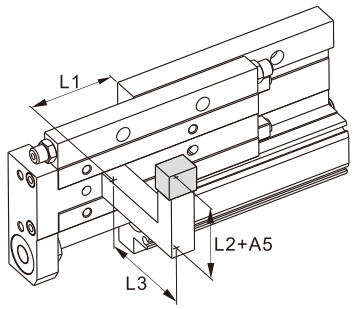
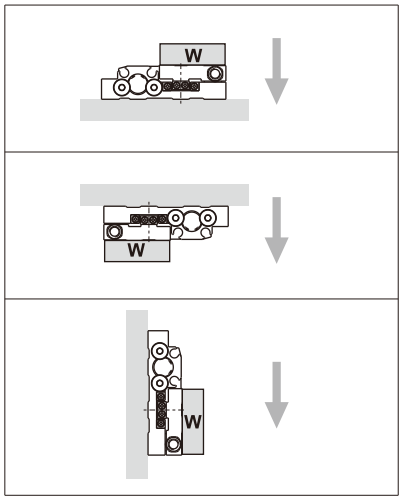
Steps	Calculation formula, data	Example
1、Conditions of Use:		
Consider installation, the shape of the workpiece, the conditions of use.	1. Model used(Bore size, Stroke) 2. Type of cushion(Bumper, Shock absorber) 3. Mounting position of work(Top, front) 4. Mounting direction(Axial, Vertical) 5. Average speed Va(mm/s) 6. Applied load W(kg) **Fig. 1** 7. Overhang Ln(mm) **Fig. 2**	 1. Model used: HLF20X50 2. Type of cushion: Bumper 3. Mounting position of work: Table top mounting 4. Mounting direction: Horizontal arm installation 5. Average speed Va=300(mm/s) 6. Applied load W=0.5(kg) 7. Overhang L1=10mm L2=30mm L3=30mm
2、Kinetic energy check		
1. Calculate kinetic energy of load E(J) 2. Calculate allowable kinetic energy Ea(J) 3. Check that kinetic energy of load doesn't exceed allowable kinetic energy: E≤Ea	$E=W\times(V/1000)^2/2$ Impact speed V=1.4(Correction factor (reference value))×Va Ea=K×Emax Mounting work coefficient K: **Fig 3** Maximum allowable kinetic energy :**Table 1** Kinetic energy of load(E)≤ Allowable kinetic energy(Ea)	$E=0.5\times(420/1000)^2/2=0.044$ V=1.4×300=420 Ea=1×0.16=0.16 E=0.044≤Ea=0.16 Can be used
3、Load rate check		
3-1、Concentrated load rate 1. Calculate allowable applied load Wa (kg) Note) In the case of vertical use, there is no need to discuss this load rate. (α1=0) 2. Calculate load rate α1.	Wa=K×β×Wmax Mounting work coefficient K : **Fig 3** Applied load coefficient β : **Map 1** Maximum allowable applied load Wmax: **Table2** **α**1=W/Wa	Wa=1×1×4=4 K=1 β =1 Wmax=4 α1=0.5/4=0.125
3-2、Static moment rate 1. Calculate static moment M(N.m) 2. Calculate allowable static moment Ma(N.m) 3. Calculate static moment rate α2	M=W×9.8(Ln+An)/1000 Correction value for center position distance of moment An: **Table3** Ma=K×γ×Mmax Mounting work coefficient K: **Fig 3** Allowable moment coefficient γ : **Map 2** Maximum allowable moment Mmax: **Table4** **α**2=M/Ma	**Yaw moment My** My=0.5×9.8(10+11)/1000=0.11 A3=11 May=1×1×9.14=9.14 Mymax=9.14 K=1 γ=1 α2=0.11/9.14=0.012 **Roll moment Mr** Mr=0.5×9.8(30+17)/1000=0.23 A6=17 Mar=9.14(Same as May) α'2=0.23/9.14=0.025
3-3、Dynamic moment rate 1. Calculate dynamic moment Me(N.m) 2. Calculate allowable dynamic moment Mea(N.m) 3. Calculate dynamic moment rate α3.	Me=(We×9.8(Ln+An)/1000)/3 Impact equivalent mass We= δ×W×V δ□ Cushion factor With polyurethane bumper (standard)=4/100 Correction value for center position distance of moment An: **Table3** Mea=K×γ×Mmax Mounting work coefficient K: **Fig 3** Allowable moment coefficient γ : **Map 2** Maximum allowable moment Mmax: **Table4** **α**3=Me/Mea	**Pitch moment Mep** Mep=(8.4×9.8(30+17)/1000)/3 =1.3 We=4/100×0.5×420=8.4 A2=17 Meap=1×0.7×9.14=6.40 K=1 γ=0.7 Mpmax=9.14 α3=1.3/6.40=0.20 **Yaw moment Mey** Mey=(8.4×9.8(30+34)/1000)/3 =1.8 We=8.4 A4=34 Meay=6.4(Same as Meap) α'3=1.8/6.4=0.28
3-4、Sum of load ratio The total load rate does not exceed 1, can be used.	Σαn=α1+α2+α3≤1	Depent on: Σαn=α1+α2+α'2+α3+α'3 =0.125+0.012+0.025+0.20+0.28=0.642≤1 Can be used.

Fig. 1 Applied load： W(kg)



Note: The state of vertical use does not need to consider this load rate.

Fig 3 Mounting work coefficient: K

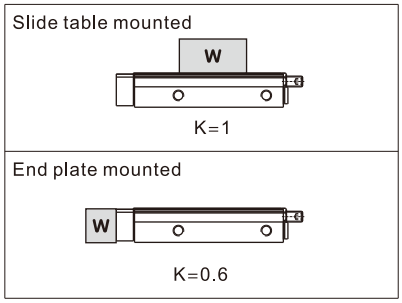
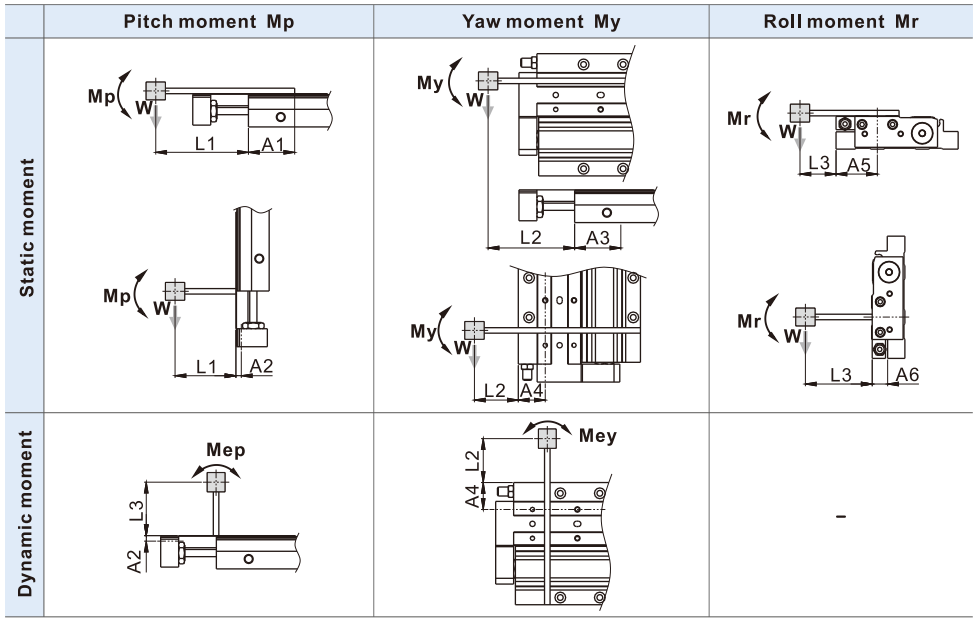


Fig. 2 Overhang： Ln(mm)、Correction value for center position distance of moment: An(mm)



Note: Static moment: Generated by gravity.
Dynamic moment: Generated by the impact when the limiter is impacted.

Table 1 Maximum allowable kinetic energy :Emax(J)

Type	Emax(Bumper)
HLF8	0.027
HLF12	0.055
HLF16	0.11
HLF20	0.16

Map 1 Applied load coefficient : β

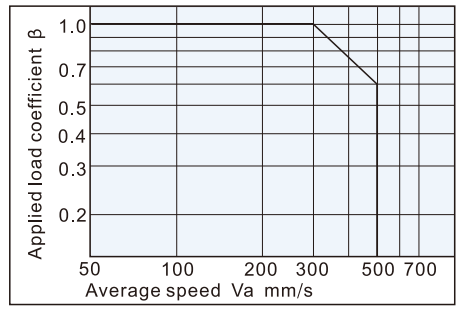


Table2 Maximum allowable applied load: Wmax(kg)

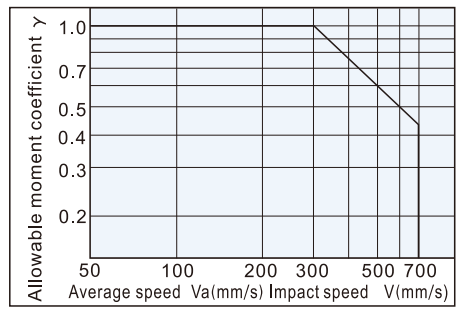
Model	Wmax
HLF8	0.6
HLF12	1
HLF16	2
HLF20	4

Table3 Correction value for center position distance of moment: An(mm)

Model	An					
	A_1	A_2	A_3	A_4	A_5	A_6
HLF8	6 Note1	10	6 Note1	21	21	10
HLF12	10	11	10	23	23	11
HLF16	10	12	10	28	28	12
HLF20	11	17	11	34	34	17

Note1： Only HLF8X10 is 16mm.

Map 2 Allowable moment coefficient: γ



Note:Calculate static moment using average speed
Calculate dynamic moment using impact speed

Table4 Maximum allowable moment： Mmax(N.m)

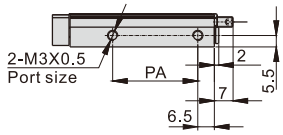
Type	Stroke (mm)					
	10	20	30	50	70	100
HLF8	0.56	0.78	0.98	–	–	–
HLF12	–	1.65	2.22	3.34	–	–
HLF16	–	–	3.41	5.69	7.96	–
HLF20	–	–	6.66	9.14	13.70	18.27

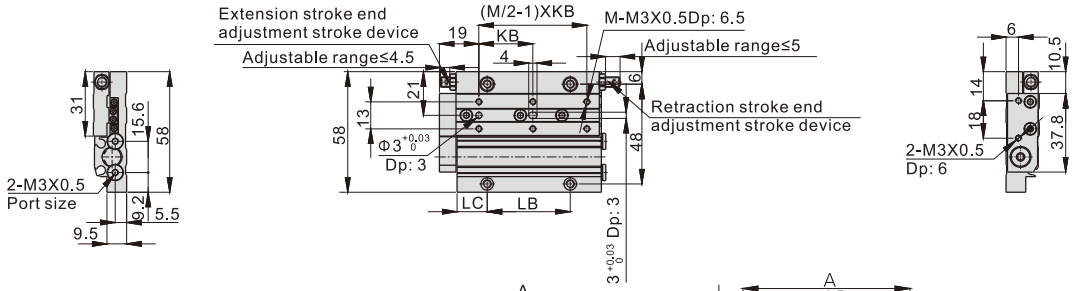
Symbol and Unit

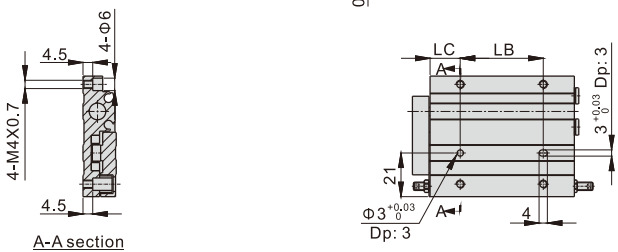
Symbol	Item	Unit	Symbol	Item	Unit
An(n=1～6)	Correction value for center position distance of moment	mm	Va	Average speed	mm/s
E	Kinetic energy	J	W	Applied load	kg
Ea	Allowable kinetic energy	J	Wa	Allowable applied load	kg
Emax	Maximum allowable kinetic energy	J	We	Impact equivalent load	kg
Ln(n=1～3)	Overhang	mm	Wmax	Maximum allowable applied load	kg
M(Mp, My, Mr)	Static moment(Pitch、Yaw、Roll)	N. m	α	Load rate	–
Ma(Map, May, Mar)	Allowable static moment(Pitch、Yaw、Roll)	N. m	β	Applied load coefficient	–
Me(Mep, Mey)	Dynamic moment(Pitch、Yaw)	N. m	γ	Allowable moment coefficient	–
Mea(Meap, Meay)	Allowable dynamic moment(Pitch、Yaw)	N. m	δ	Bumper	–
Mmax(Mpmax, Mymax, Mrmax)	Maximum allowable static moment(Pitch、Yaw、Roll)	N. m	K	Mounting work coefficient	–
V	Impact speed	mm/s			

Dimensions

HLF8

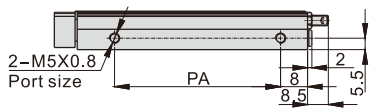


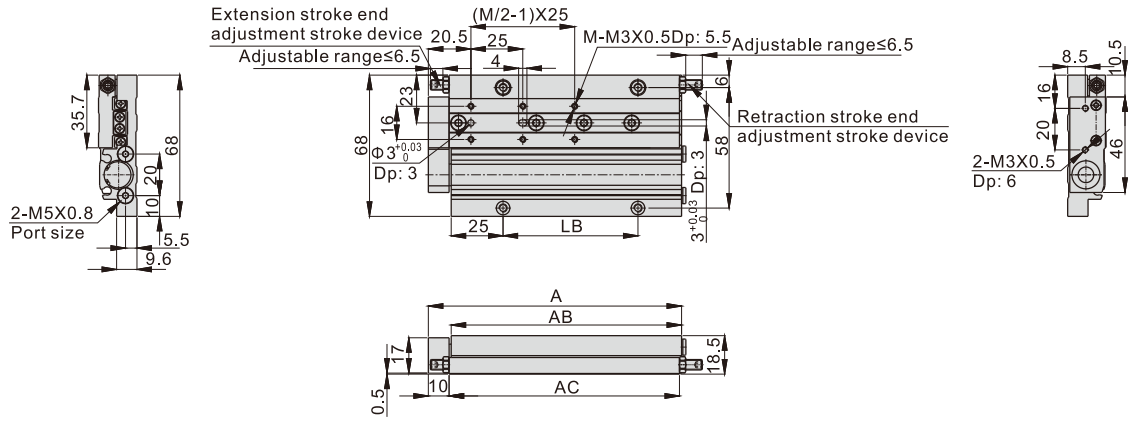


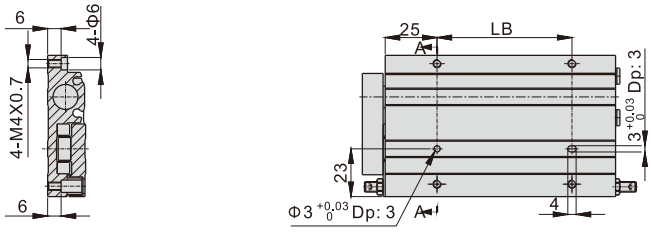


Stroke\Item	A	AB	AC	KB	LB	LC	M	PA
10	58	49.5	49	20	22	13.5	4	23
20	68	59.5	59	26	26	14.5	4	33
30	78	69.5	69	26	40	14.5	6	43

HLF12

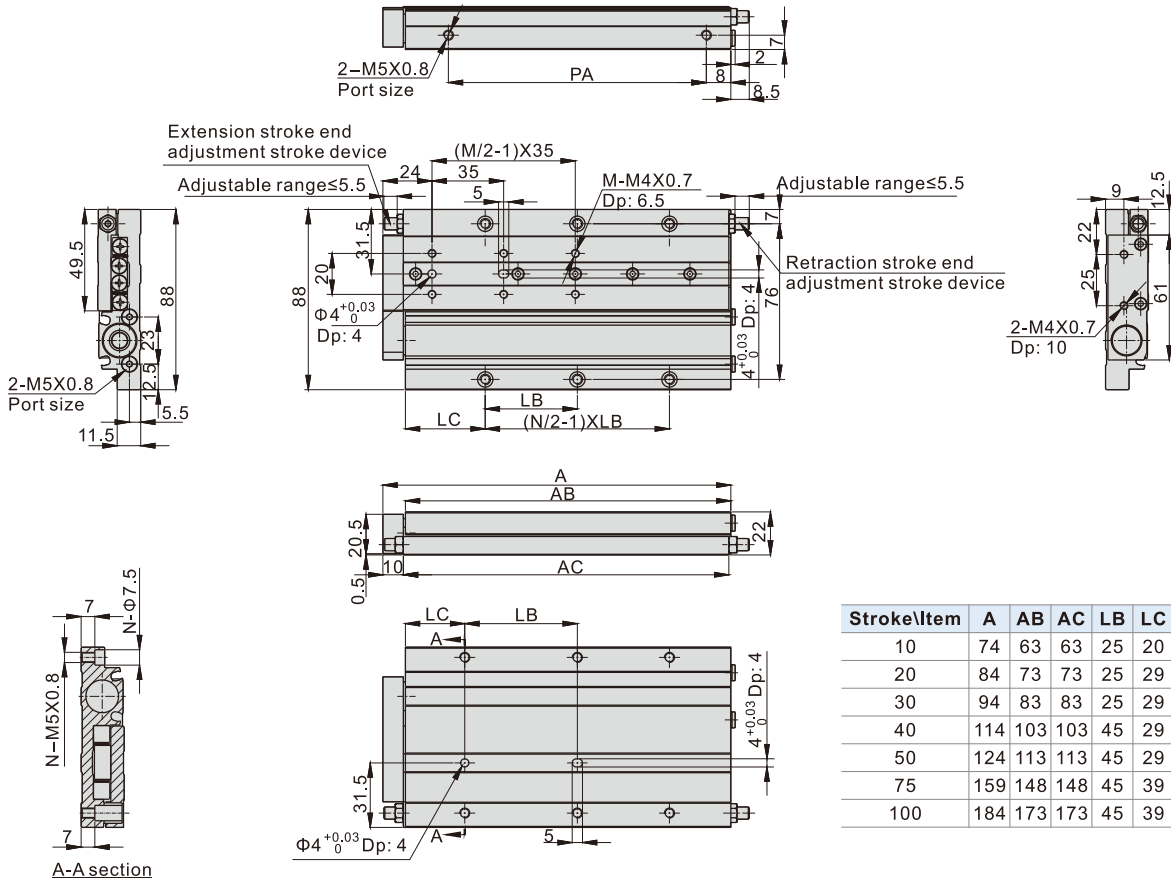






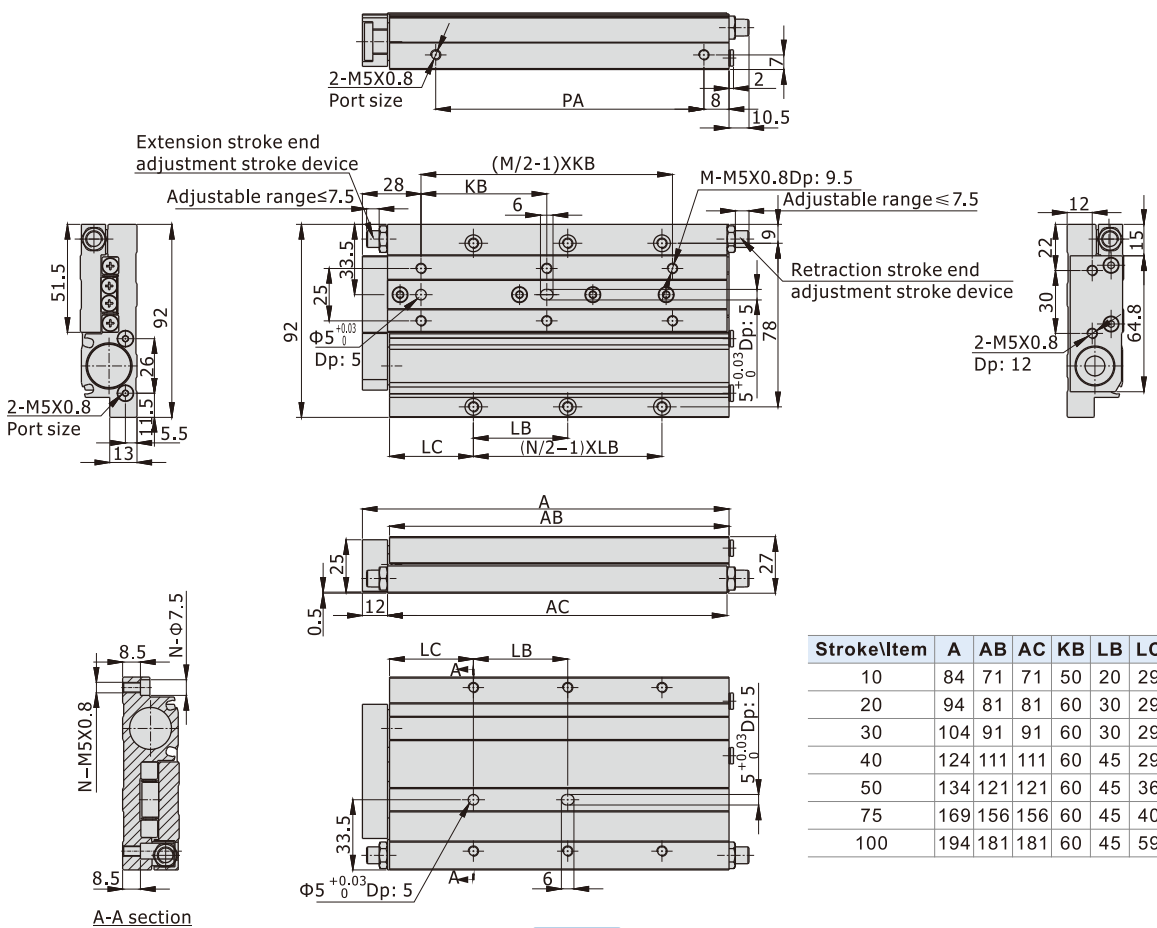
Stroke\Item	A	AB	AC	LB	M	PA
10	66	55	55	15	4	29
20	76	65	65	22	4	39
30	86	75	75	30	4	49
40	106	95	95	45	6	69
50	116	105	105	65	6	79

HLF16



Stroke\Item	A	AB	AC	LB	LC	M	N	PA
10	74	63	63	25	20	4	4	27
20	84	73	73	25	29	4	4	44
30	94	83	83	25	29	4	4	54
40	114	103	103	45	29	6	4	74
50	124	113	113	45	29	6	4	84
75	159	148	148	45	39	6	6	119
100	184	173	173	45	39	6	6	144

HLF20



Stroke\Item	A	AB	AC	KB	LB	LC	M	N	PA
10	84	71	71	50	20	29	4	4	41
20	94	81	81	60	30	29	4	4	51
30	104	91	91	60	30	29	4	4	61
40	124	111	111	60	45	29	4	4	81
50	134	121	121	60	45	36	4	4	91
75	169	156	156	60	45	40	6	6	126
100	194	181	181	60	45	59	6	6	151

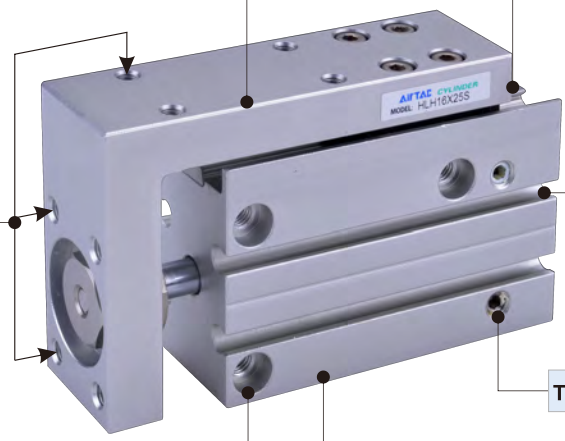
Compendium of HLH Series

Exactitude pilot

With the excellent straightness and non-rotation precision, it is more suitable for precision assembly.

Integrative design

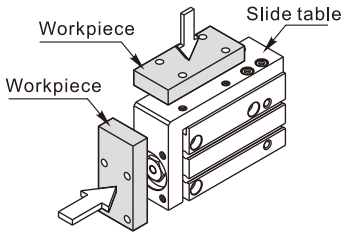
Miniature linear roller ball bearing integrated wise cylinder.



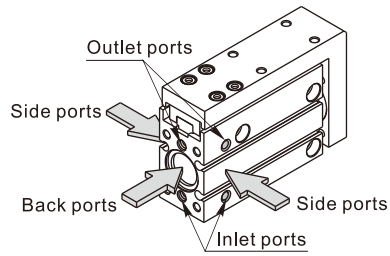
With magnetic switch slots

There are magnetic switch slots both sides of the cylinder body convenient to install inducting switch.

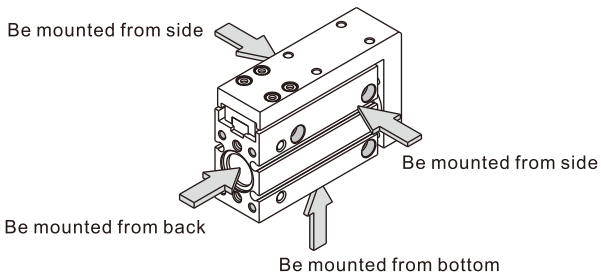
Mounting workpiece from 2 directions



Three groups of inlet and outlet air ports



Mounting cylinder from 4 directions



Four bore size are available

Bore size: 6, 10, 16, 20

Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)						
					0.1	0.2	0.3	0.4	0.5	0.6	0.7
6	3	Double acting	Push-side	28.3	-	5.7	8.5	11.3	14.2	17.0	19.8
			Pull-side	21.2	-	4.2	6.4	8.5	10.6	12.7	14.8
10	4	Double acting	Push-side	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
			Pull-side	66.0	6.6	13.2	19.8	26.4	33.0	39.6	46.2
16	6	Double acting	Push-side	201.0	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull-side	172.7	17.3	34.5	51.8	69.1	86.4	103.6	120.9
20	8	Double acting	Push-side	314.0	31.4	62.8	94.2	125.6	157.0	188.4	219.8
			Pull-side	263.8	26.4	52.8	79.1	105.5	131.9	158.3	184.7

Installation and application

1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder should be filtered to 40μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

Slide table cylinder

HLH Series

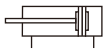


Specification

Bore size(mm)	6	10	16	20
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	0.2~0.7MPa(29~100psi)(2.0~7.0bar)		0.15~0.7MPa(22~100psi)(1.5~7.0bar)	
Proof pressure	1.2MPa(175psi)(12.0bar)			
Temperature ℃	-20~70			
Speed range mm/s	50~500			
Allowable kinetic energy(J)	0.008	0.025	0.05	0.1
Stroke tolerance	$^{+1.0}_{0}$			
Cushion type	Bumper			
Sensor switches [Note1]	CMSH, DMSH, EMSH			
Port size	M5×0.8			

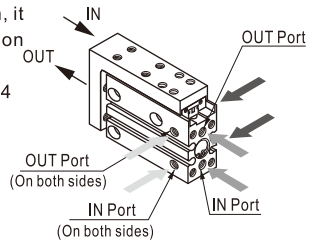
[Note1] Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. Miniature linear roller ball bearing integrated wise cylinder.
2. With the excellent straightness and non-rotation precision, it is more suitable for precision assembly.
3. Mounting is possible from 4 directions.
4. Piping is possible from 3 directions.



Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke
6	5 10 15 20 25 30	30
10	5 10 15 20 25 30 40 50	50
16	5 10 15 20 25 30 40 50 60	60
20	5 10 15 20 25 30 40 50 60	60

[Note] Consult us for non–standard stroke.

Ordering code

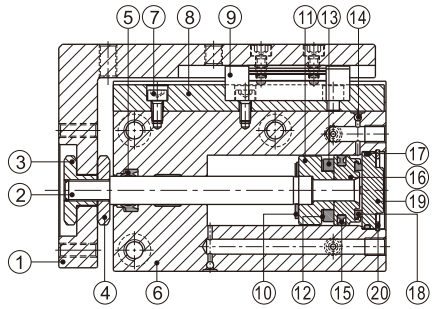
HLH 20 × 30 S

① ② ③ ④

①Model	②Bore size	③Stroke	④Magnet
HLH: Slide table cylinder(Double acting type)	6 10 16 20	Refer to stroke table for details	S: With magnet

Inner structure and material of major parts

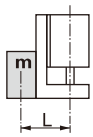
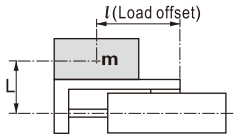
HLH



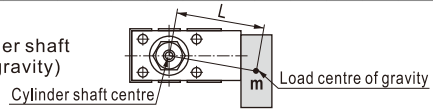
NO.	Item	Material	NO.	Item	Material
1	Slide table	Aluminum alloy	12	Magnet washer	NBR
2	Piston rod	Stainless steel	13	Magnet	Sintered metal (Neodymium-iron-boron)
3	Hexagon nut	Carbon steel			
4	Hexagon nut	Carbon steel	14	Steel ball	SUS304
5	Rod seal	NBR	15	Piston seal	NBR
6	Body	Aluminum alloy	16	Piston	Aluminum alloy
7	Screw	Carbon steel	17	O-ring	NBR
8	Linear guide	Stainless steel	18	Bumper	TPU
9	Slide block		19	Back cover	Aluminum alloy
10	Bumper	TPU	20	C clip	Spring steel
11	Magnet holder	Aluminum alloy			

Model Selection Method

1. Select the bore size according to the thrust and practicality. Refer to the table on page 404.
2. Determine the selection conditions in order, starting from the upper row in the table below, and choose one of the selection graphs to be used.

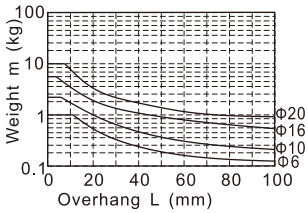
	Vertical			Horizontal								
Mounting position												
Maximum speed(mm/s)	≤100	≤300	≤500	≤100			≤300			≤500		
Load offset l(mm)	-	-	-	50	100	200	50	100	200	50	100	200
Selection graph	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

L: Overhang
(the distance from the cylinder shaft centre to the load centre of gravity)

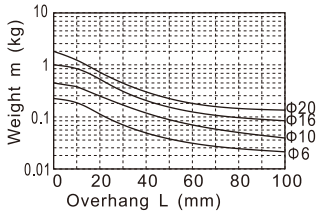


2.1) The relation between loading and overhang(Selection graphs)

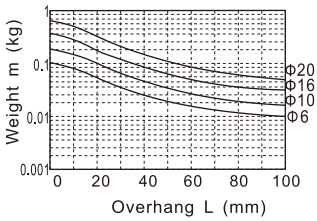
Selection Graphs(1)
Maximum speed 100(mm/s) or less



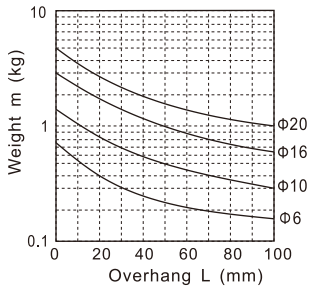
Selection Graphs(2)
Maximum speed 300(mm/s) or less



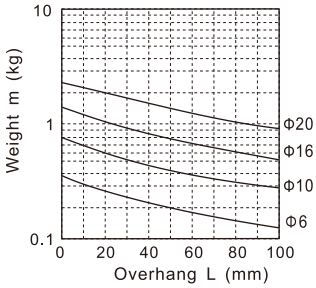
Selection Graphs(3)
Maximum speed 500(mm/s) or less



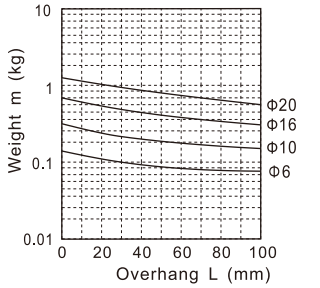
Selection Graphs(4)
Maximum speed 100(mm/s) or less
Load eccentricity 50mm



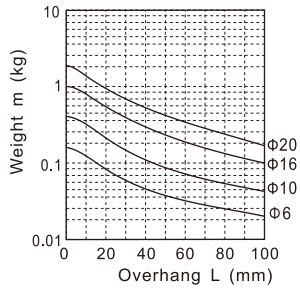
Selection Graphs(5)
Maximum speed 100(mm/s) or less
Load eccentricity 100mm



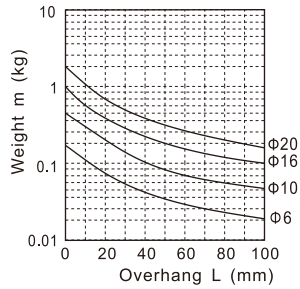
Selection Graphs(6)
Maximum speed 100(mm/s) or less
Load eccentricity 200mm



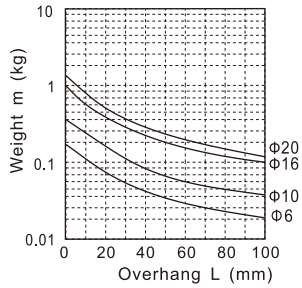
Selection Graphs(7)
Maximum speed 300(mm/s) or less
Load eccentricity 50mm



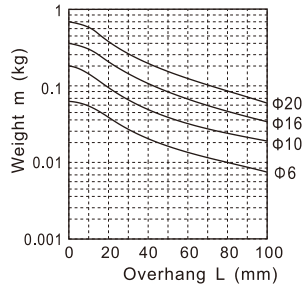
Selection Graphs(8)
Maximum speed 300(mm/s) or less
Load eccentricity 100mm



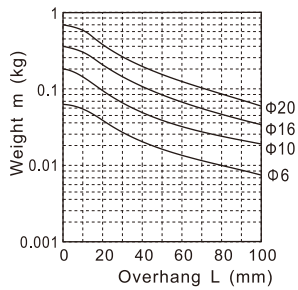
Selection Graphs(9)
Maximum speed 300(mm/s) or less
Load eccentricity 200mm



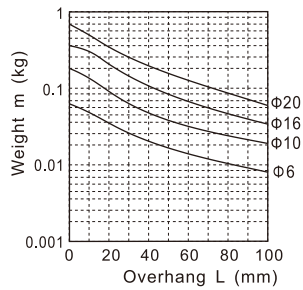
Selection Graphs(10)
Maximum speed 500(mm/s) or less
Load eccentricity 50mm



Selection Graphs(11)
Maximum speed 500(mm/s) or less
Load eccentricity 100mm



Selection Graphs(12)
Maximum speed 500(mm/s) or less
Load eccentricity 200mm



2.2) Selection Examples

Example ①: Mounting: Vertical
Maximum speed: 500mm/s
Overhang: 40mm
Load weight: 0.1Kg

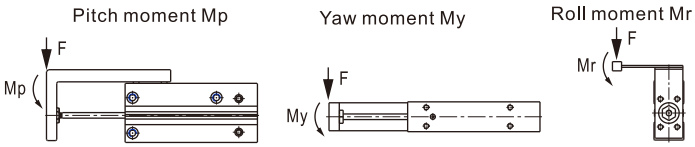
Refer to Graph based on vertical mounting and a speed of 500mm/s. In Graph , find the intersection of a 40mm overhang and load weight of 0.1Kg, which results in a selection of ø20.

Example ②: Mounting: Horizontal
Maximum speed: 500mm/s
Load eccentricity: 50mm
Overhang: 30mm
Load weight: 0.1Kg

Refer to Graph based on horizontal mounting, a speed of 500mm/s and load eccentricity of 50mm. In Graph , find the intersection of a 30mm overhang and load weight of 0.1Kg, which results in a selection of ø16.

Installation and application

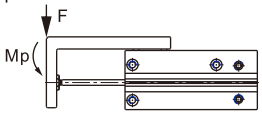
1. The actual loading and moment of cylinder must be less than it's allowable loading and moment:
1.1) The allowable moment of cylinder

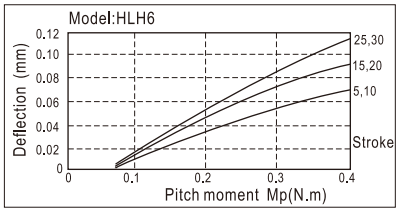


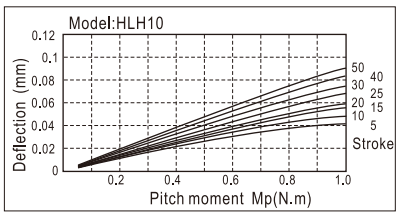
Model/Allowable torque (Nm)	Pitch moment Mp	Yaw moment My	Roll moment Mr
HLH6	0.25	0.25	0.41
HLH10	0.95	0.95	1.49
HLH16	3.28	3.28	3.45
HLH20	6.29	6.29	6.61

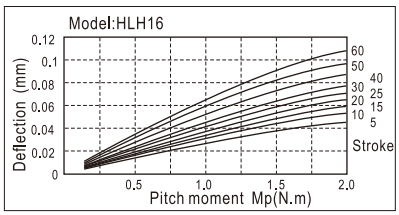
1.2) When the cylinder is subjected to different type of moment, there will be different degree of shift in performance, please refer to the following table for details.

Table deflection due to pitch moment
Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.









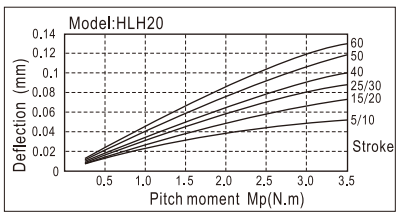
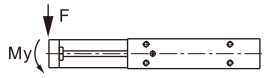
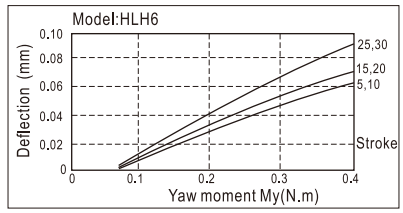
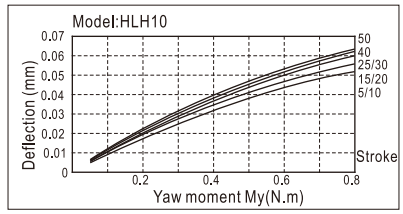
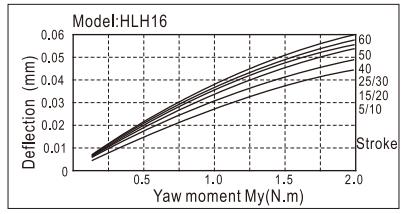


Table deflection due to yaw moment
Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.









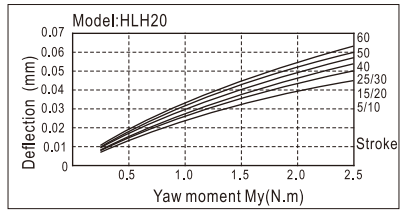
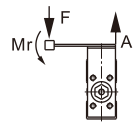
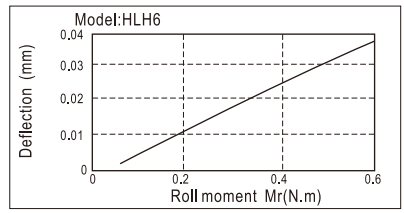
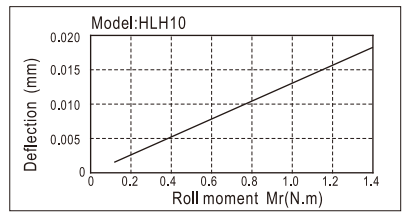
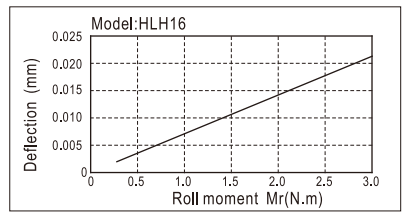


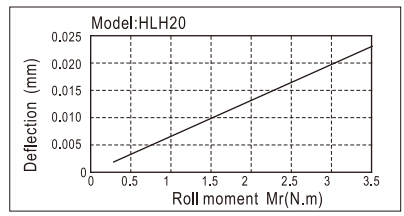
Table deflection due to roll moment
Table deflection(at A) when a load acts upon section F at the full stroke of the compact slide.



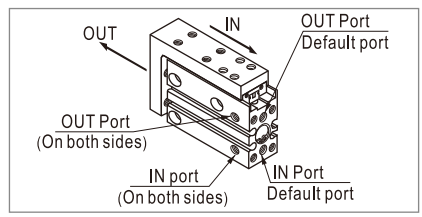




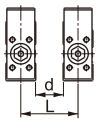




2. The compact slide can be piped from 3 directions. Confirm the pressure ports and operating direction. (See drawing right)



3. In compact slides with sensor switch, there is a danger of sensor switch malfunction if the mounting pitch is less than the dimensions shown in Table right. Be sure to allow at least the indicated interval.



At least indicated interval (mm)/Model	HLH6	HLH10	HLH16	HLH20
d	5	5	10	15
L	21	25	35	47

4. When the output of the compact slide will be directly applied to the table, it should be applied along the rod axis. (See drawing below.)

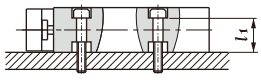


The loading and piston rod are coaxial

The loading and piston rod are offset

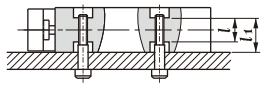
5. Be sure to use a flow control value, and adjust the speed to 500mm/s or less.
6. A compact slide can be mounted from 4 directions. Don't exceed the max.fastering torque then fightening the mounting bolts.

Lateral Mounting(Through Holes)



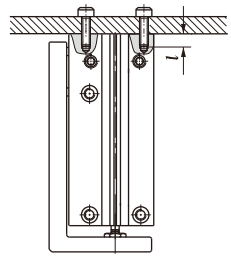
Model	Bolts	Max.fastening torque	L1
HLH6	M3×0.5	1.1(Nm)	12.7
HLH10	M4×0.7	2.5(Nm)	15.6
HLH16	M4×0.7	2.5(Nm)	20.6
HLH20	M5×0.8	5.1(Nm)	24.0

Lateral Mounting(Tapped Holes)

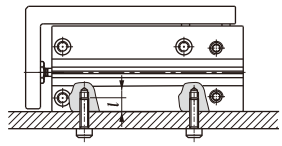


Model	Bolts	Max.fastening torque	L1	L
HLH6	M4×0.7	2.5(Nm)	12.7	9.4
HLH10	M5×0.8	5.1(Nm)	15.6	11.2
HLH16	M5×0.8	5.1(Nm)	20.6	16.2
HLH20	M6×1.0	8.1(Nm)	24.0	16.0

Axial Mounting(Tapped Holes)



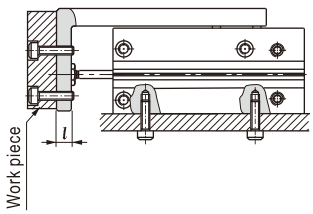
Vertical Mounting(Tapped Holes)



Model	Bolts	Max.fastening torque	L
HLH6	M3×0.5	1.1(Nm)	5
HLH10	M4×0.7	2.5(Nm)	6
HLH16	M4×0.7	2.5(Nm)	6
HLH20	M5×0.8	5.1(Nm)	8

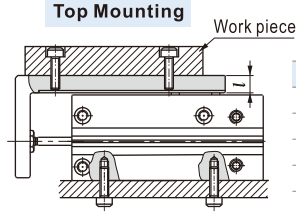
7. Work Piece Mounting
7.1) Work pieces can be mounted on 2 surfaces of the compact slide. When mounting a work piece, tighten the bolts properly at a torque value within the limiting range.

Front Mounting



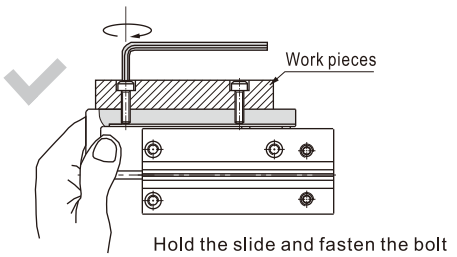
Model	Bolts	Max.fastening torque	L
HLH6	M3×0.5	1.1(Nm)	5.5
HLH10	M4×0.7	2.5(Nm)	7.5
HLH16	M4×0.7	2.5(Nm)	10
HLH20	M5×0.8	5.1(Nm)	11

Top Mounting

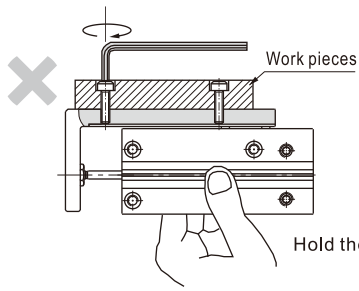


Model	Bolts	Max.fastening torque	L
HLH6	M3×0.5	1.1(Nm)	6.5
HLH10	M4×0.7	2.5(Nm)	8
HLH16	M4×0.7	2.5(Nm)	9
HLH20	M5×0.8	5.1(Nm)	9.5

7.2) Since the table is supported by the linear guide, take care not to apply strong impact or large moment to the guide section.
7.3) Hold the slide when fastening work pieces with bolts, If the body is held while tightening bolts, excessive moment may damage guide section.



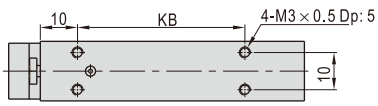
Hold the slide and fasten the bolt

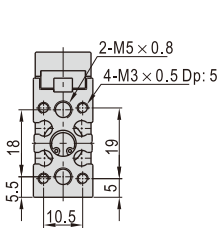


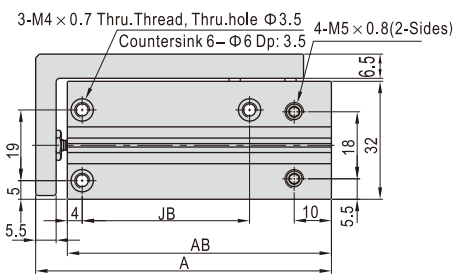
Hold the body and fasten the bolt

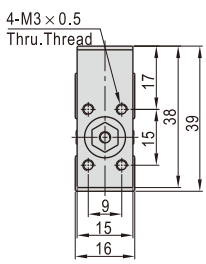
Dimensions

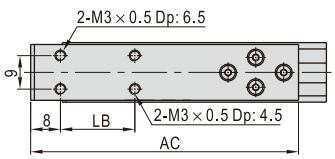
HLH6





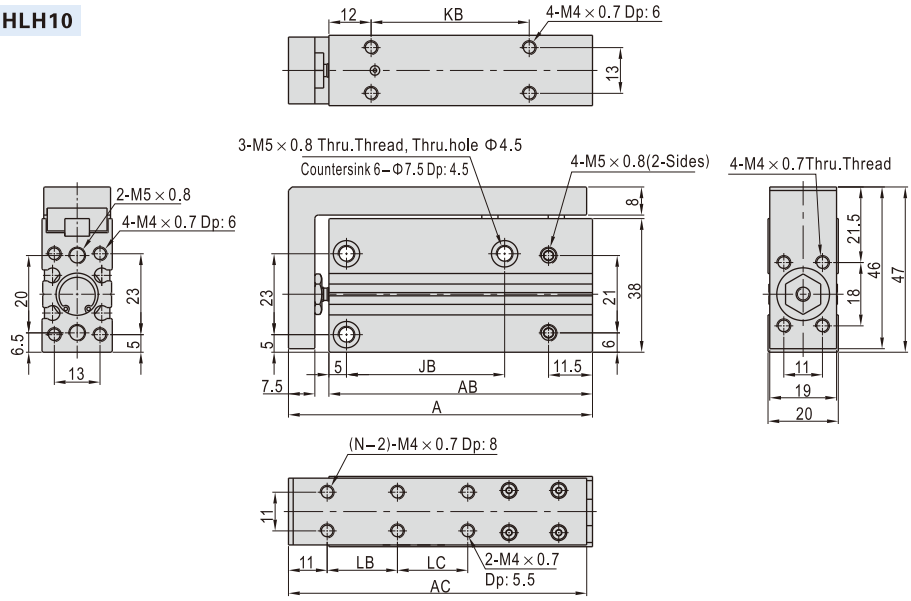






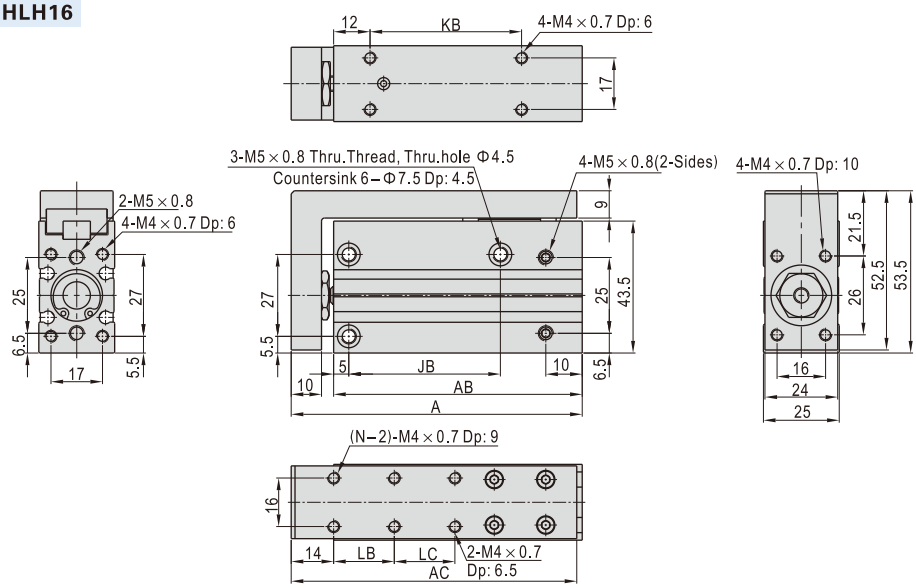
Stroke\Item	A	AB	AC	JB	KB	LB
5	44.5	36	42	14	10	10
10	49.5	41	42	14	15	10
15	54.5	46	52	24	20	20
20	59.5	51	52	24	25	20
25	64.5	56	62	30	30	30
30	69.5	61	62	30	35	30

HLH10



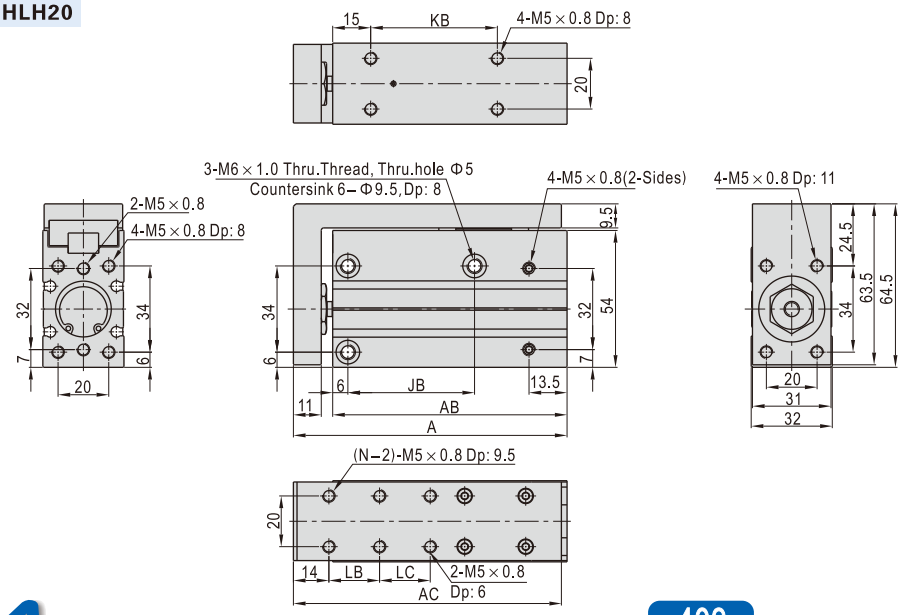
Stroke\Item	A	AB	AC	JB	KB	LB	LC	N
5	51.5	40	50	14	10	10	-	4
10	56.5	45	55	14	15	10	-	4
15	61.5	50	60.5	24	20	20	-	4
20	66.5	55	63	24	25	20	-	4
25	71.5	60	70.5	30	30	30	-	4
30	76.5	65	75.5	30	35	30	-	4
40	86.5	75	85.5	45	45	20	20	6
50	96.5	85	93	55	55	25	25	6

HLH16



Stroke\Item	A	AB	AC	JB	KB	LB	LC	N
5	61	47	60	20	15	10	-	4
10	66	52	64.5	20	20	10	-	4
15	71	57	69.5	30	25	20	-	4
20	76	62	75	30	30	20	-	4
25	81	67	80	40	35	30	-	4
30	86	72	84.5	40	40	30	-	4
40	96	82	95	50	50	20	20	6
50	106	92	104.5	60	60	25	25	6
60	116	102	114.5	60	70	30	30	6

HLH20



Stroke\Item	A	AB	AC	JB	KB	LB	LC	N
5	73	57.5	72	20	15	10	-	4
10	78	62.5	72	20	20	10	-	4
15	83	67.5	82	25	25	20	-	4
20	88	72.5	82	25	30	20	-	4
25	93	77.5	92	40	35	30	-	4
30	98	82.5	92	40	40	30	-	4
40	108	92.5	101.5	50	50	20	20	6
50	118	102.5	113.5	70	60	25	25	6
60	128	112.5	122.5	70	70	30	30	6

Compendium of HLQ\HLQL Series

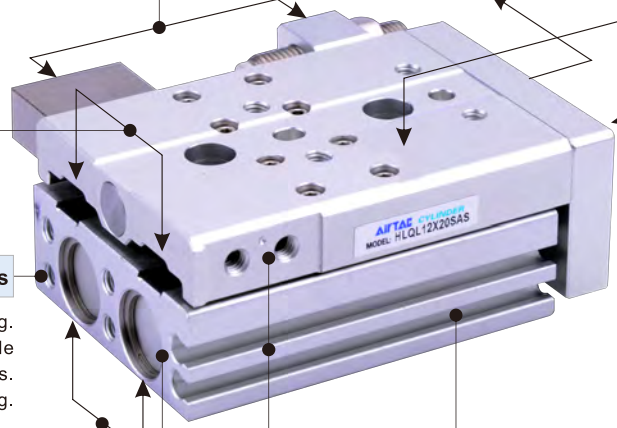


Floating joint design

Piston rod needn't endure additional torque

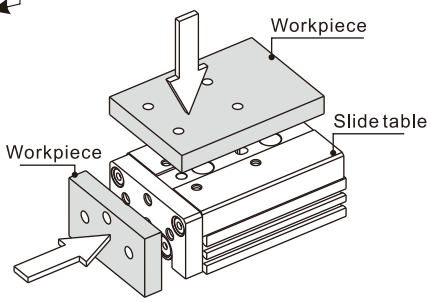
Multi-adjuster option

Mounting workpiece from 2 directions



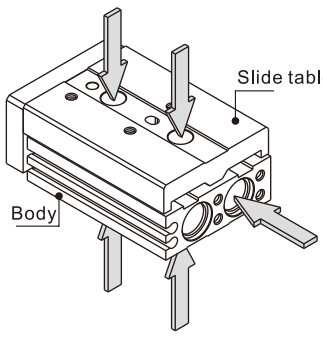
Ball bearing type

Ball bearing type,
it achieves high precision, high rigidity,
with antirust and dustproof function.



Mounting cylinder from 3 directions

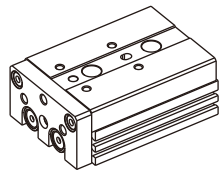
Through hole for body mounting.
Body mounting holes provide
3 mounting positions.
Pin holes for positioning.



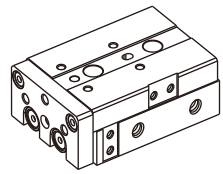
With magnetic switch slots

There are magnetic switch slots side of the cylinder body
convenient to install inducting switch.

Two models (HLQ/HLQL) are available



Standard：HLQ



Symmetrical：HLQL

Dual rod structure

Dual rod doubles the output thrust

Six bore size are available

Bore size: 6, 8, 12, 16, 20, 25

Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)					
					0.2	0.3	0.4	0.5	0.6	0.7
6	3	Double acting	Push-side	42	8	13	17	21	25	29
			Pull-side	57	11	17	23	29	34	40
8	4	Double acting	Push-side	75	15	23	30	38	45	53
			Pull-side	101	20	30	40	51	61	71
12	6	Double acting	Push-side	170	34	51	68	85	102	119
			Pull-side	226	45	68	90	113	136	158
16	8	Double acting	Push-side	302	60	91	121	151	181	211
			Pull-side	402	80	121	161	201	241	281
20	10	Double acting	Push-side	471	94	141	188	236	283	330
			Pull-side	628	126	188	251	314	377	440
25	12	Double acting	Push-side	756	151	227	302	378	454	529
			Pull-side	982	186	295	393	491	589	687

Installation and application

1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder should be filtered to 40μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

Slide table cylinder(ball bearing type)

HLQ、HLQL Series

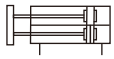


Specification

Bore size(mm)	6	8	12	16	20	25
Number of guide rail	Single guide rail		Double guide rail			
Acting type	Double acting					
Fluid	Air(to be filtered by 40μm filter element)					
Operating pressure	0.2~0.7MPa(29~100psi)(2.0~7.0bar)		0.15~0.7MPa(22~100psi)(1.5~7.0bar)			
Proof pressure	1.2MPa(175psi)(12.0bar)					
Temperature ℃	-20~70					
Speed range mm/s	50~500					
Stroke tolerance	Stroke≤100 $^{+1.0}_{0}$		Stroke>100 $^{+1.5}_{0}$			
Cushion type	Bumper(Both ends)、Shock absorber					
Sensor switches	CMSH、DMSH、EMSH					
Port size [Note1]	M5×0.8				1/8"	

[Note1] G thread is available. Refer to P576 for detail of sensor switch.

Symbol



Stroke

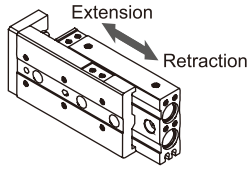
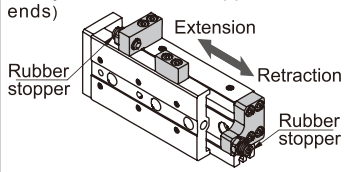
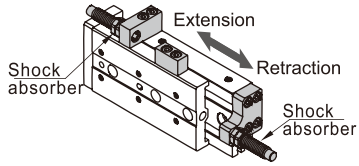
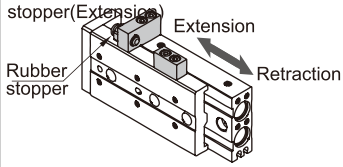
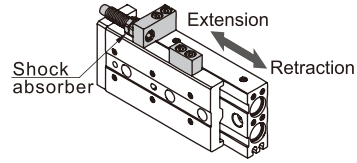
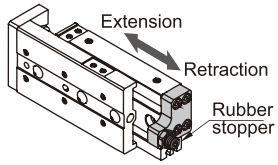
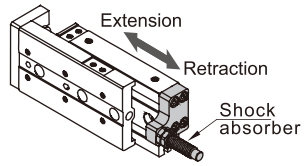
Bore size (mm)	Standard stroke (mm)	Max.std stroke
6	10 20 30 40 50	50
8	10 20 30 40 50 75	75
12	10 20 30 40 50 75 100	100
16	10 20 30 40 50 75 100 125	125
20	10 20 30 40 50 75 100 125 150	150
25	10 20 30 40 50 75 100 125 150	150

[Note] Consult us for non-standard stroke.

Ordering code

HLQ 20 × 30 S AS G

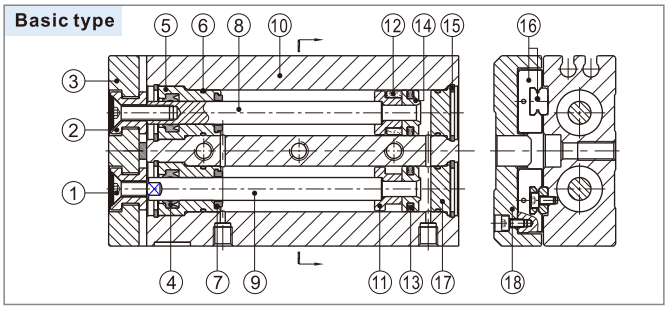
1 2 3 4 5 6

①Model	②Bore Size	③Stroke	④Magnet	⑤Adjuster option [Note1]		⑥Thread type [Note2]
HLQ: Slide table cylinder (Double acting type) (ball bearing type) HLQL: Symmetrical slide table cylinder (Double acting type) (ball bearing type)	6 8 12 16 20 25	Refer to stroke table for details	S: With magnet	Blank: Without adjuster(Basic type) 		G: G Thread
				A: Adjustable rubber stopper(Both ends) 	B: Shock absorber(Both ends) 	
				AS: Adjustable rubber stopper(Extension) 	BS: Shock absorber(Extension) 	
				AF: Adjustable rubber stopper(Retraction) 	BF: Shock absorber(Retraction) 	

[Note1] B type, BS type, BF type are unavailable for bore size of Φ6. [Note2]When the thread is standard, the code is blank.

Inner structure and material of major parts

Basic type



NO.	Item	Material	NO.	Item	Material
1	Screw	Carbon steel	11	Magnet holder	Brass
2	Floating joint	Carbon steel	12	Magnet	Sintered metal (Neodymium-iron-boron)
3	Fixing plate	Aluminum alloy			
4	Rod seal	NBR	13	Piston seal	NBR
5	Front cover	Aluminum alloy	14	Piston	Brass
6	O-ring	NBR	15	C clip	Spring steel
7	Bumper	TPU	16	Linear guide combination	
8	Piston rod A	Stainless steel			
9	Piston rod B	Carbon steel	17	Back cover	Brass
10	Body	Aluminum alloy	18	Slide table	Aluminum alloy

Model Selection Method

Please select compact cylinder's type according to following procedure, and cross reference with data sheets.

A) Operating conditions(According to mounting position and work form)

1. Model used(Bore size, Stroke)
2. Type of cushion(Bumper, Shock absrober)
3. Mounting position of work(Top, front)
4. Mounting direction(Axial, Vertical)
5. Average speed Va(mm/s)
6. Applied load W(N)
7. Overhang L1, L2, L3(mm)

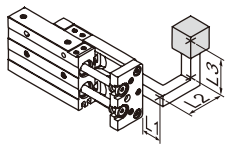
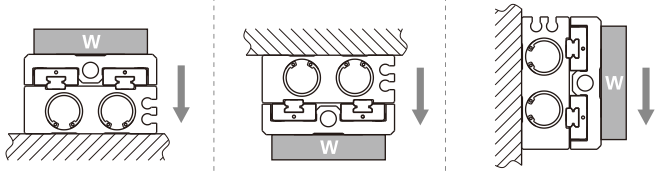


Fig. 1

Explain: L1 is the distance of load's center beyond the end plank's plane.
If load's center is not beyond the end plank's plane, L1 is negative.

Fig. 1: Applied load



B) Kinetic energy check

1. Calculate kinetic energy of load E(J)

$$E=\frac{1}{2}\times\frac{W}{g}\times\left(\frac{1.4\times Va}{1000}\right)^2$$

2. Calculate allowable kinetic energy Ea(J)

$$Ea = K \times E_{max}$$

K:Mounting work coefficient (**Fig 2**)
E_{max}:Maximum allowable kinetic energy (**Table 1**)

3. Check that kinetic energy of load doesn't exceed allowable kinetic energy: E≤Ea

C) Load check

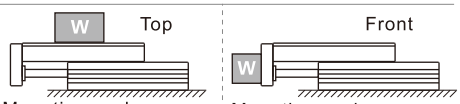
1. Calculate allowable applied load Wa (N)

$$Wa = K \times \beta \times W_{max}$$

K:Mounting work coefficient **(Fig 2)**
W_{max}:Maximum allowable applied load **(Table 1)**
β:Applied load coefficient **(Fig 3)**

2. Check that load(W) doesn't exceed allowable applied load(Wa): W≤Wa

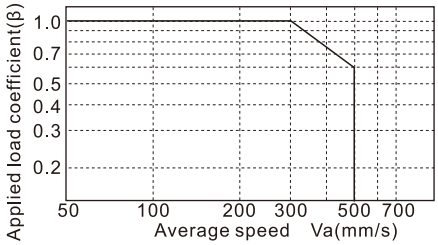
Fig 2: Mounting work coefficient (K)



Mounting work coefficient K=1

Mounting work coefficient K=0.6

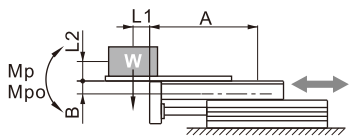
Fig 3: Applied load coefficient (β)



D) Moment check

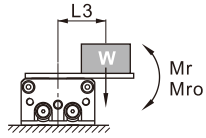
Horizontal

1. Calculate actual moment: Mp、Mpo、My、Myo、Mr、Mro (Nm)



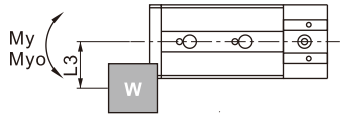
Dynamic moment:
$Mp=W\times(L1+A)/1000$

Static moment:
$Mpo=\frac{W\times(L1+A)}{1000}+\frac{W\times a\times(L2+B)}{1000\times g}$



Dynamic moment:
$Mr=W\times L3/1000$

Static moment:
$Mro=(W\times a\times L3)/1000g$



Dynamic moment:
$My=0$

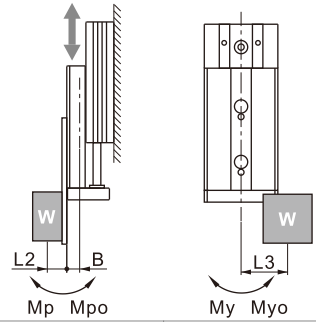
Static moment:
$Myo=(W\times a\times L3)/1000g$

2. Check

Dynamic moment:	$\frac{Mp}{Mp_{max}}+\frac{My}{My_{max}}+\frac{Mr}{Mr_{max}}\leqslant 1$
Static moment:	$\frac{Mpo}{Mpo_{max}}+\frac{Myo}{Myo_{max}}+\frac{Mro}{Mro_{max}}\leqslant 1$

Vertical

1. Calculate actual moment: Mp、Mpo、My、Myo(Nm)



Dynamic moment:
$Mp=W\times(L2+B)/1000$

Static moment:
$Mpo=\frac{W\times(L2+B)}{1000}+\frac{W\times a\times(L2+B)}{1000\times g}$

Dynamic moment:
$My=W\times L3/1000$

Static moment:
$Myo=\frac{W\times a\times L3}{1000g}+\frac{W\times L3}{1000}$

2. Check

Dynamic moment:	$\frac{Mp}{Mp_{max}}+\frac{My}{My_{max}}\leqslant 1$
Static moment:	$\frac{Mpo}{Mpo_{max}}+\frac{Myo}{Myo_{max}}\leqslant 1$

Explain:
L1/L2/L3: The distance of load center to mount plane(Determined by actuality).
A/B: Correction value for center position distance of moment(Refer to table 2).
$Mp_{max}/My_{max}/Mr_{max}/Mpo_{max}/Myo_{max}/Mro_{max}$: Maximum allowable moment(Refer to table 2).
g: Acceleration of gravity($g=9.81m/s^2$).
a: Acceleration of inertia
(Bumper: $a=1600\times(Va/1000)^2$, Shock absorber: $a=400\times(Va/1000)^2$)
W: Load weight(Determined by actuality).

HLQ、HLQL Series

Table 1: Maximum allowable kinetic energy(Emax)
Maximum allowable applied load(Wmax)

Model	Max. allowable kinetic energy Emax(J)			Max. allowable applied load Wmax(N)
	Basic type	Rubber stopper type	Shock absorber type	
HLQ6	0.01	0.01	–	4
HLQ8	0.024	0.024	0.048	8
HLQ12	0.05	0.05	0.1	15
HLQ16	0.1	0.1	0.2	30
HLQ20	0.13	0.13	0.26	40
HLQ25	0.22	0.22	0.44	70

Note: Symbol and unit

Symbol	Item	Unit
A, B	Correction value for center position distance of moment	mm
a	Acceleration of inertia	–
E	Kinetic energy	J
Ea	Allowable kinetic energy	J
Emax	Maximum allowable kinetic energy	J
g	Acceleration of gravity g=9.81	m/s^2
K	Mounting work coefficient	–
L1, L2, L3	Overhang	mm
Mp, My, Mr	Dynamic moment(Pitch、Yaw、Roll)	Nm
Mp_{max}, My_{max}, Mr_{max}	Maximum allowable dynamic moment (Pitch、Yaw、Roll)	Nm
Mpo, Myo, Mro	Static moment(Pitch、Yaw、Roll)	Nm
Mpo_{max}, Myo_{max}, Mro_{max}	Maximum allowable static moment (Pitch、Yaw、Roll)	Nm
Va	Average speed	mm/s
W	Applied load	N
Wmax	Maximum allowable applied load	N
β	Applied load coefficient	-

Table 2: Maximum allowable moment(Nm),
Correction value for center position distance of moment(mm)

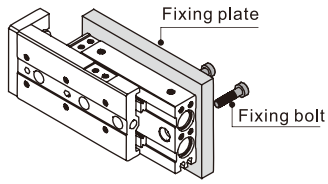
Bore size	Stroke	Static moment			Dynamic moment			Correction value	
		Mpo_{max}	Myo_{max}	Mro_{max}	Mp_{max}	My_{max}	Mr_{max}	A	B
6	10	3.3	3.8	2.6	0.7	0.7	0.6	30	7
	20	3.3	3.8	2.6	0.7	0.8	0.6	40	
	30	3.3	3.8	2.6	0.7	0.8	0.6	50	
	40	7.2	7.9	3.6	1.3	1.3	0.6	60	
	50	12.4	12.7	4.7	1.8	1.8	0.6	70	
8	10	10.1	9.1	8.8	2.5	2.5	2.0	30	7
	20	10.1	9.1	8.8	2.6	2.6	2.0	40	
	30	10.1	9.1	8.8	2.8	2.8	2.0	50	
	40	12.4	10.8	10.1	3.4	3.4	2.3	60	
	50	23.6	24.8	13.9	4.4	4.4	2.1	70	
	75	32.8	35.3	16.4	4.6	4.6	1.8	95	
12	10	8.5	8.5	13.6	2.5	2.5	4	32	11
	20	8.5	8.5	13.6	2.5	2.5	4	44	
	30	8.5	8.5	13.6	2.5	2.5	4	54	
	40	8.5	8.5	13.6	2.5	2.5	4	62	
	50	8.5	8.5	13.6	2.5	2.5	4	72	
	75	52.3	52.3	85.6	18.9	18.9	13	115	
	100	53.9	53.9	86.9	19.5	19.5	13	142	
16	10	33.6	33.6	35.2	8.4	8.4	8.8	49	12
	20	33.6	33.6	35.2	8.4	8.4	8.8	49	
	30	33.6	33.6	35.2	8.4	8.4	8.8	59	
	40	33.6	33.6	35.2	8.4	8.4	8.8	69	
	50	33.6	33.6	35.2	8.4	8.4	8.8	79	
	75	70.2	70.2	62.5	28.1	28.1	25	120	
	100	76.6	76.6	62.5	38.3	38.3	25	150	
	125	78	78	62.5	39	39	25	175	
20	10	34.8	34.8	36.8	8.7	8.7	9.2	53	14
	20	34.8	34.8	36.8	8.7	8.7	9.2	53	
	30	34.8	34.8	36.8	8.7	8.7	9.2	63	
	40	34.8	34.8	36.8	8.7	8.7	9.2	73	
	50	34.8	34.8	36.8	8.7	8.7	9.2	83	
	75	70.2	70.2	74.5	28.1	28.1	29.7	123	
	100	76.6	76.6	74.5	38.3	38.3	29.7	157	
	125	78	78	74.5	39	39	29.7	178	
	150	98.4	98.4	74.5	49.2	49.2	29.7	210	
25	10	56.7	56.7	51	16.2	16.2	17	60	17
	20	56.7	56.7	51	16.2	16.2	17	60	
	30	56.7	56.7	51	16.2	16.2	17	70	
	40	56.7	56.7	51	16.2	16.2	17	80	
	50	56.7	56.7	51	16.2	16.2	17	90	
	75	122.5	122.5	138.5	49	49	55.4	130	
	100	173.8	173.8	138.5	79	79	55.4	168	
	125	217	217	138.5	108.6	108.6	55.4	205	
	150	221.8	221.8	138.5	110.9	110.9	55.4	230	

Installation and application

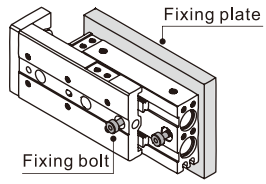
1. How to mount cylinder:

1.1) Cylinder can to be mounted from 3 directions

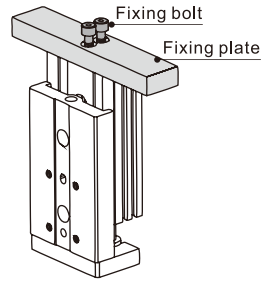
Vertical Mounting(Body thread holes)



Vertical Mounting(Body through holes)

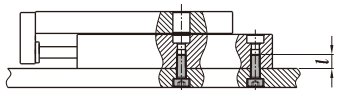


Axial Mounting (Body thread holes)



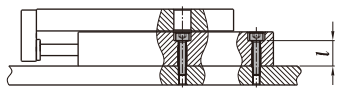
1.2) When mounting an compact slide cylinder, screws of appropriate length should be used and tightened properly within the maximum tightening torque. If screws are tightened beyond designed limits, malfunction may occur. If they are tightened insufficiently, it may result in sliding of falling off from its position.

Vertical Mounting(Body thread holes)



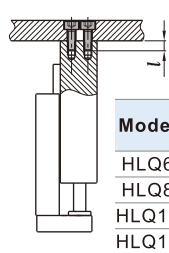
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLQ6	M4×0.7	2.1	8
HLQ8	M4×0.7	2.1	8
HLQ12	M5×0.8	4.4	10
HLQ16	M6×1.0	4.4	10
HLQ20	M6×1.0	7.4	12
HLQ25	M8×1.25	18.0	16

Vertical Mounting(Body through holes)



Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLQ6	M3×0.5	1.2	8.0
HLQ8	M3×0.5	1.2	9.6
HLQ12	M4×0.7	2.8	13.4
HLQ16	M5×0.8	5.7	16.7
HLQ20	M5×0.8	5.7	22.0
HLQ25	M6×1.0	10.0	27.0

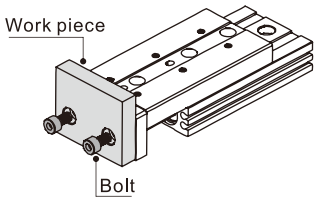
Axial Mounting(Body thread holes)



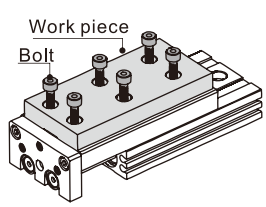
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLQ6	M2.5×0.45	0.5	3.5
HLQ8	M3×0.5	0.9	4.0
HLQ12	M4×0.7	2.1	6.0
HLQ16	M5×0.8	4.4	7.0
HLQ20	M5×0.8	4.4	8.0
HLQ25	M6×1.0	7.4	10.0

2. Work Piece Mounting:
2.1) Work pieces can be mounted on 2 surfaces of the compact slide.

Front Mounting

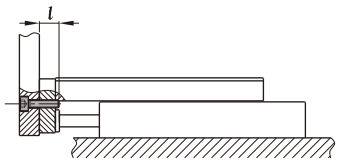


Top Mounting



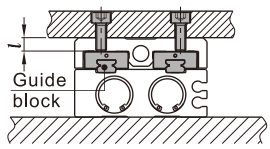
2.2) When mounting a work piece, tighten the bolts properly at a torque value within the limiting range. Use blots at least 0.5mm shorter than maximum thread depth to prevent bolts from contacting the guide block. If the bolts are too long, they hit the guide block and cause damage.

Front Mounting



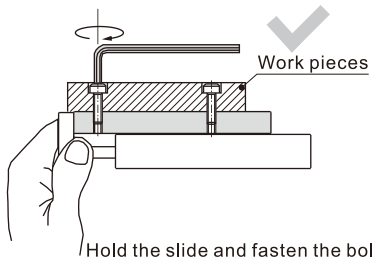
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLQ6	M3×0.4	0.9	5
HLQ8	M4×0.7	2.1	6
HLQ12	M5×0.8	4.4	8
HLQ16	M6×1.0	7.4	10
HLQ20	M6×1.0	7.4	13
HLQ25	M8×1.25	18.0	15

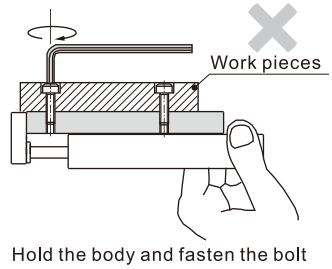
Top Mounting



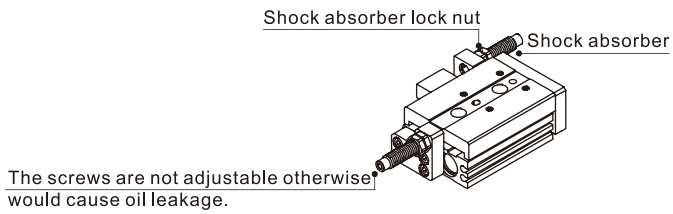
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLQ6	M3×0.5	0.9	4.7
HLQ8	M3×0.5	0.9	4.7
HLQ12	M4×0.7	2.1	5.0
HLQ16	M5×0.8	4.4	5.0
HLQ20	M5×0.8	4.4	8.0
HLQ25	M6×1.0	7.4	9.0

2.3) Since the table is supported by the linear guide, take care not to apply strong impact or large moment to the guide section.
2.4) Hold the slide when fastening work pieces to it with bolts, If the body is held while tightening bolts, excessive moment may damage guide section.



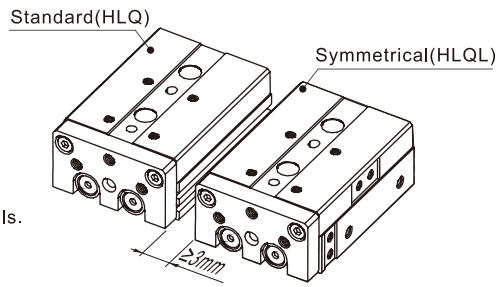


3. About shock absorber:
3.1) Shock absorbers are expendable. Promptly replace them when energy absorbing capacity decreases.
3.2) Never turn or adjust the screws on bottom of the shock absorber body. The screws are not for adjusting. Otherwise would cause oil leakage.
3.3) Follow the table for tightening torque of shock absorber to lock nuts.



Model	Shock absorber	Tightening torque
HLQ6	Without shock absorber	
HLQ8	ACA0806-1N	1.67(Nm)
HLQ12	ACA0806-1N	1.67(Nm)
HLQ16	ACA1007-1N	3.14(Nm)
HLQ20	ACA1210-1N	3.14(Nm)
HLQ25	ACA1412-1N	10.8(Nm)

4. How to mount sensor switch:
4.1) HLQ Series are all with magnet. The matching sensor switches are CMSH, DMSH, EMSH series.
4.2) Maintain a minimum spacing of at least 3mm if two compact cylinders are used side by side in order to avoid malfunction.

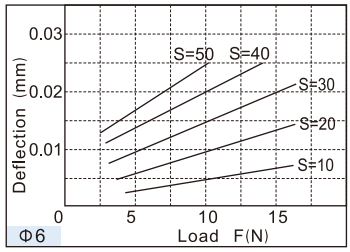


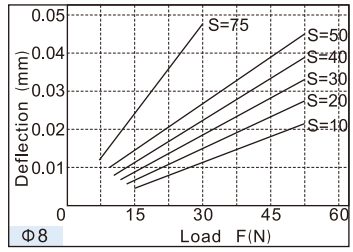
5. Make sure to connect the compact cylinder to speed controller at the meter-out side, and the speed of compact cylinder must below 500mm/s.
6. Don't apply a load beyond the range of the operation limits. Different load or torque will cause different deflection to table, please see below for details.

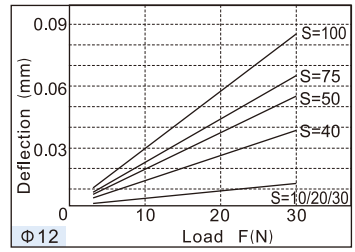
6.1) Table deflection due to pitch moment:

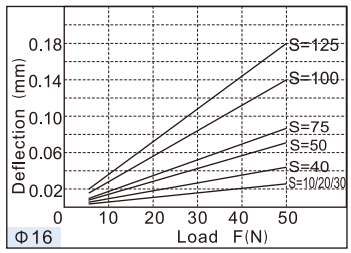
Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.

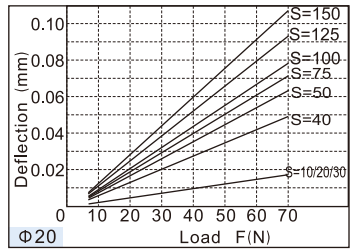


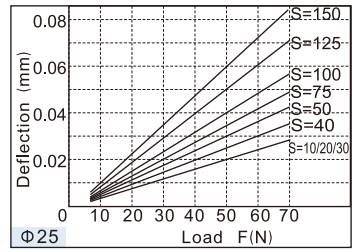






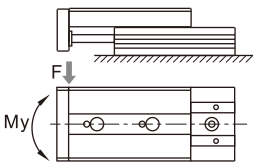


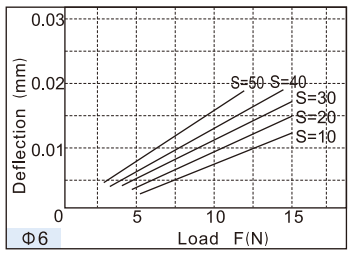


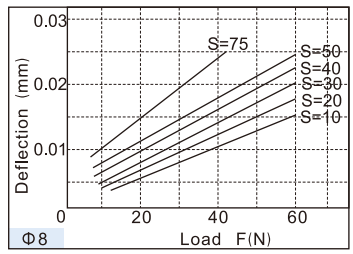


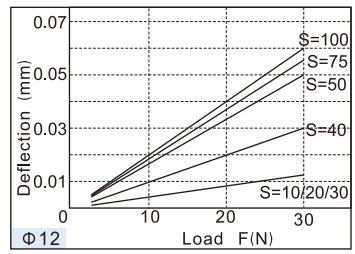
6.2) Table deflection due to yaw moment:

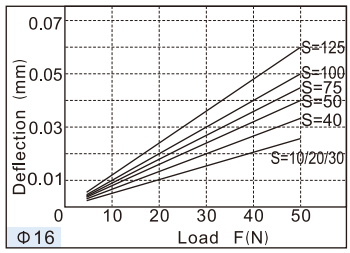
Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.

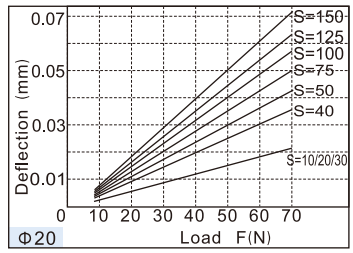


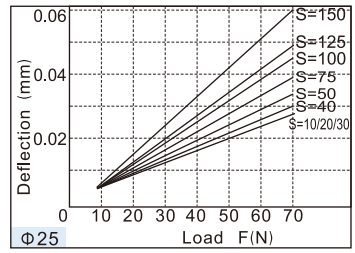






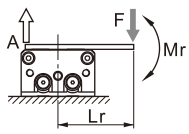


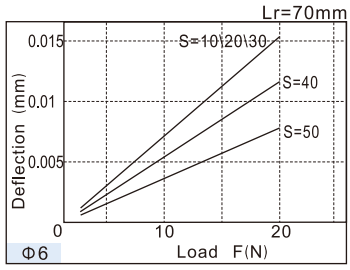


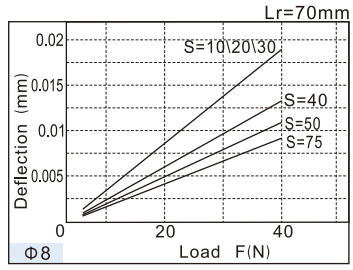


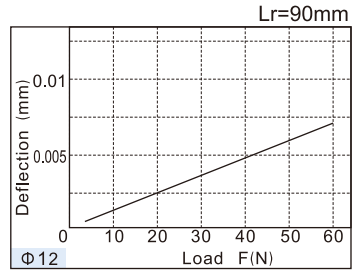
6.3) Table deflection due to roll moment:

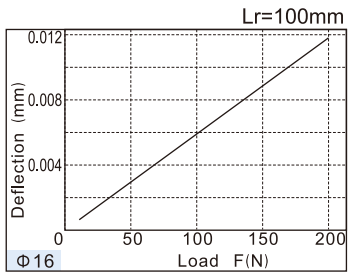
Table deflects (A) when a load acts upon section F at the full stroke of the compact slide.

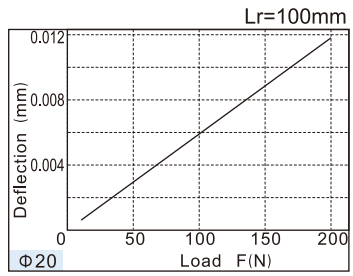


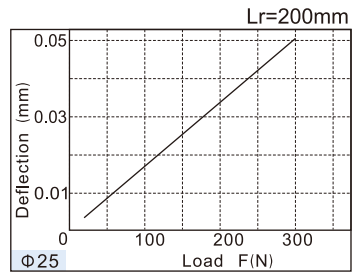






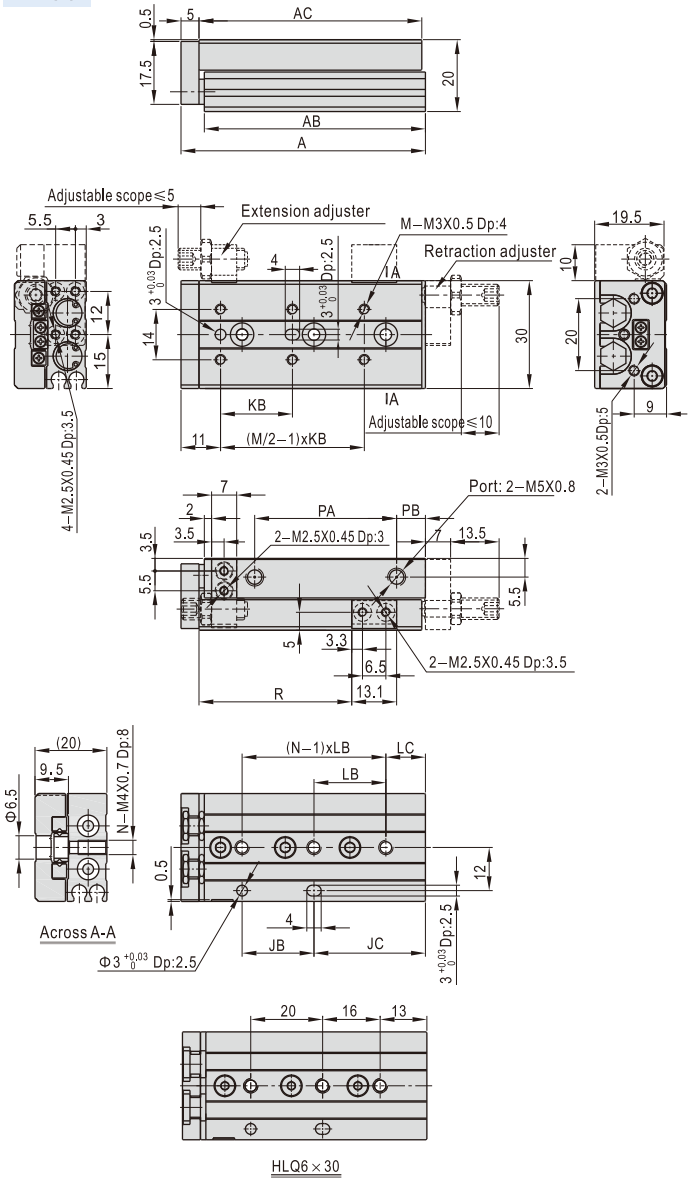






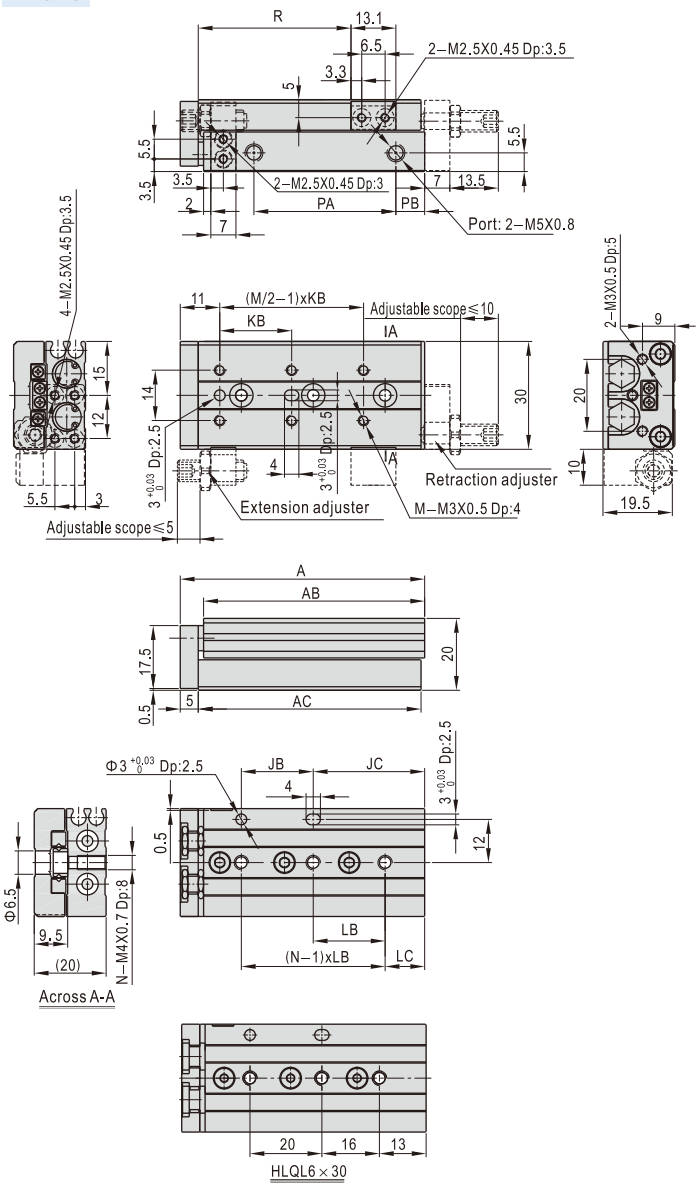
Dimensions

HLQ6



Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	48	41.5	42	16	13	22	23	6	4	2	16	9	21.5
20	58	51.5	52	26	13	25	26	13	4	2	26	9	31.5
30	68	61.5	62	20	29	21	–	–	6	3	36	9	41.5
40	86	79.5	80	28	39	26	28	11	6	3	47	16	51.5
50	96	89.5	90	28	49	27	28	21	6	3	64	9	61.5

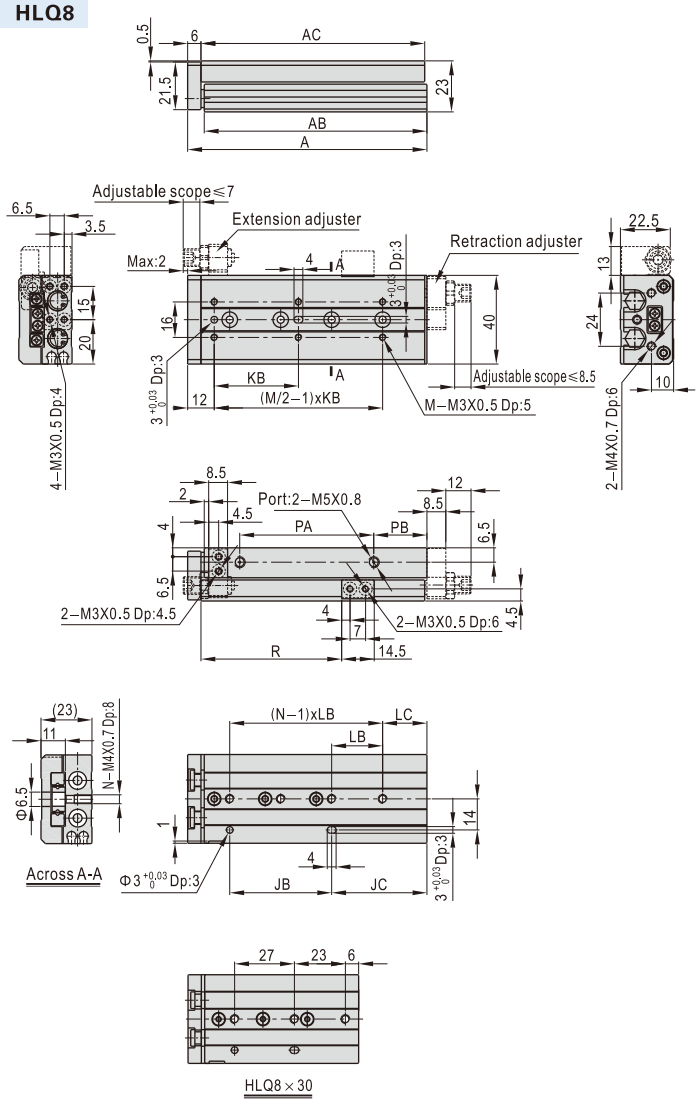
HLQL6



Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	48	41.5	42	16	13	22	23	6	4	2	16	9	21.5
20	58	51.5	52	26	13	25	26	13	4	2	26	9	31.5
30	68	61.5	62	20	29	21	–	–	6	3	36	9	41.5
40	86	79.5	80	28	39	26	28	11	6	3	47	16	51.5
50	96	89.5	90	28	49	27	28	21	6	3	64	9	61.5

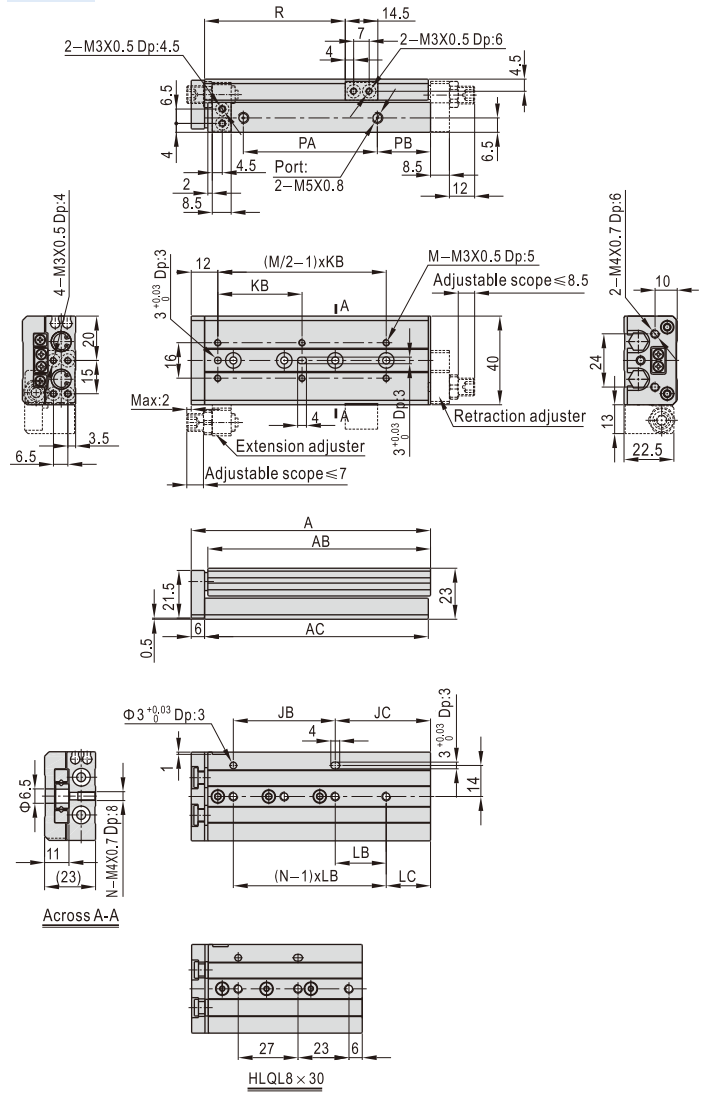
HLQ、HLQL Series

HLQ8



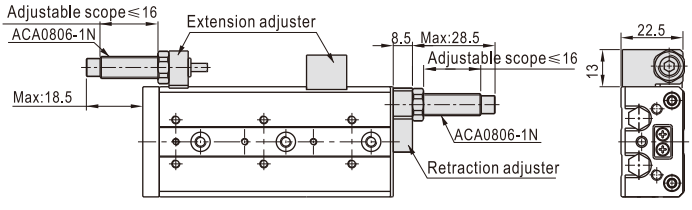
Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	53	45.5	46	19	13	25	25	7	4	2	17.5	10.5	23.5
20	63	55.5	56	28	14	25	28	14	4	2	28	10	33.5
30	77	69.5	70	27	29	26	–	–	6	3	42	10	43.5
40	91	83.5	84	31	39	32	31	8	6	3	54	12	53.5
50	116	108.5	109	58	37	46	29	8	6	4	79	12	63.5
75	144	136.5	137	60	63	50	30	33	6	4	109	10	88.5

HLQL8

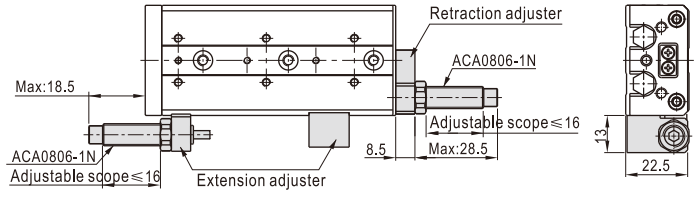


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	53	45.5	46	19	13	25	25	7	4	2	17.5	10.5	23.5
20	63	55.5	56	28	14	25	28	14	4	2	28	10	33.5
30	77	69.5	70	27	29	26	–	–	6	3	42	10	43.5
40	91	83.5	84	31	39	32	31	8	6	3	54	12	53.5
50	116	108.5	109	58	37	46	29	8	6	4	79	12	63.5
75	144	136.5	137	60	63	50	30	33	6	4	109	10	88.5

HLQ8(With shock absorber)

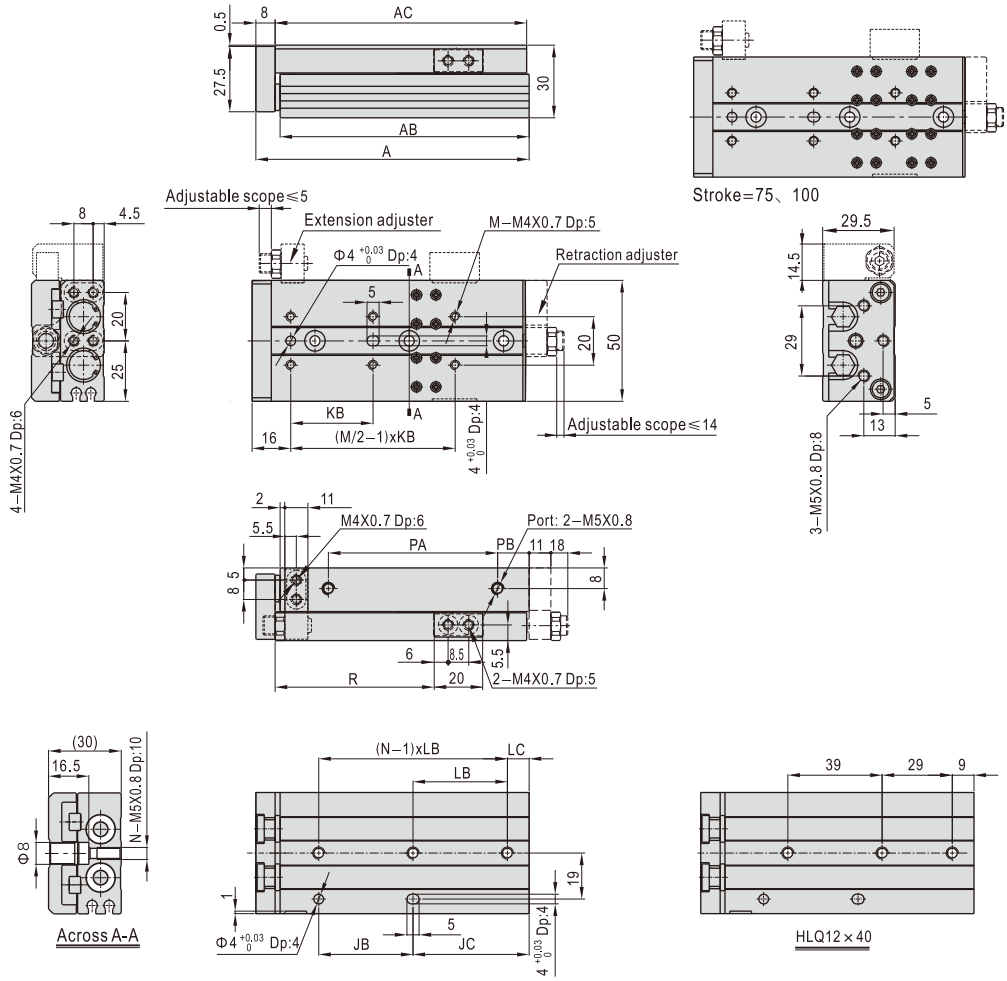


HLQL8(With shock absorber)



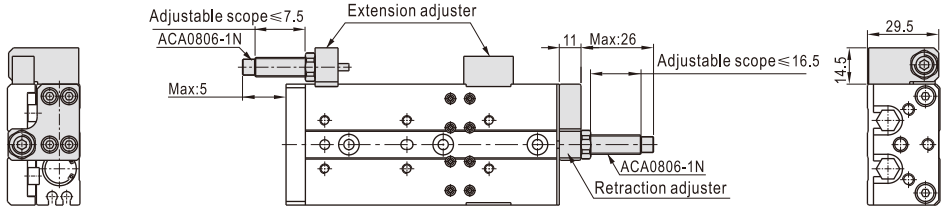
HLQ、HLQL Series

HLQ12

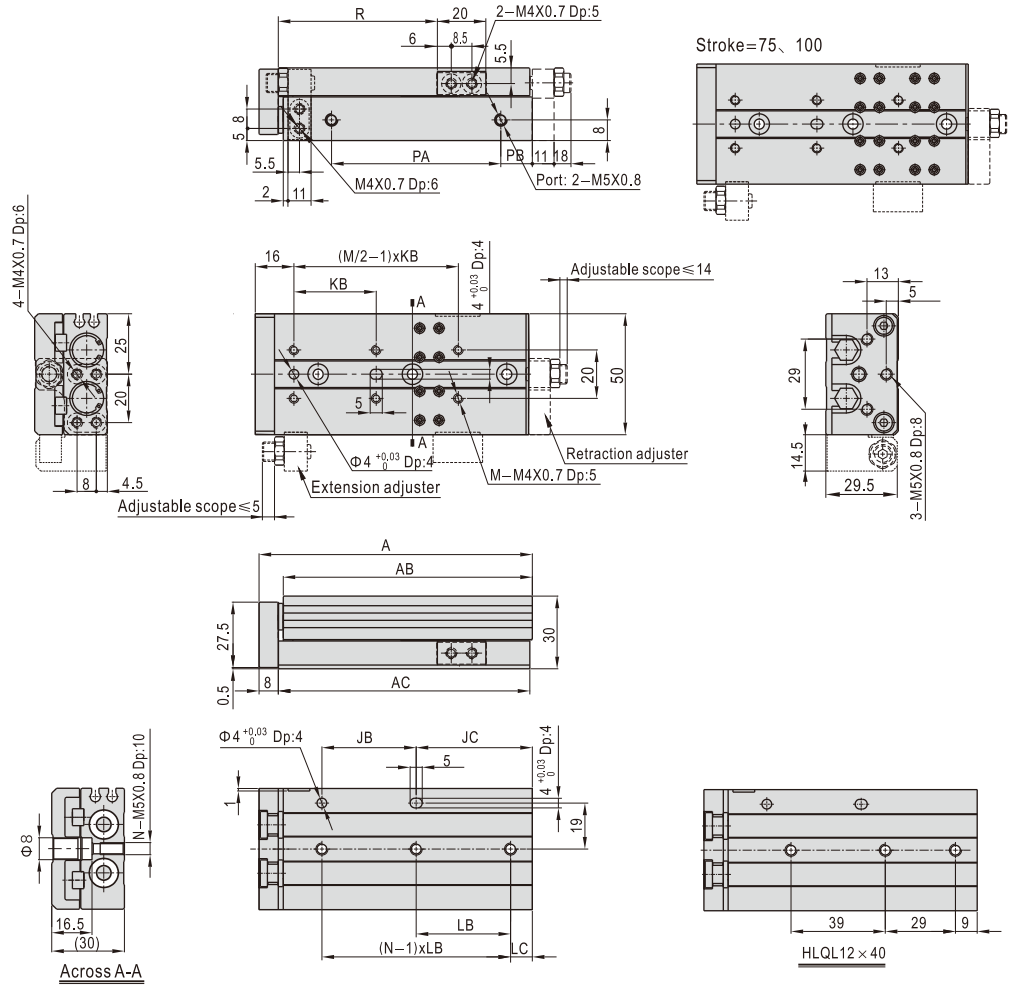


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	76	66	67	32	18	28	32	18	4	2	32.5	13	35
20	76	66	67	32	18	28	32	18	4	2	32.5	13	45
30	86	76	77	40	20	38	40	20	4	2	42.5	13	55
40	103	93	94	39	38	34	–	–	6	3	59.5	13	65
50	113	103	104	39	48	34	39	9	6	3	69.5	13	75
75	157	147	148	72	59	36	36	23	8	4	113.5	13	99
100	182	172	173	72	84	36	36	12	10	5	134.5	17	124

HLQ12(With shock absorber)

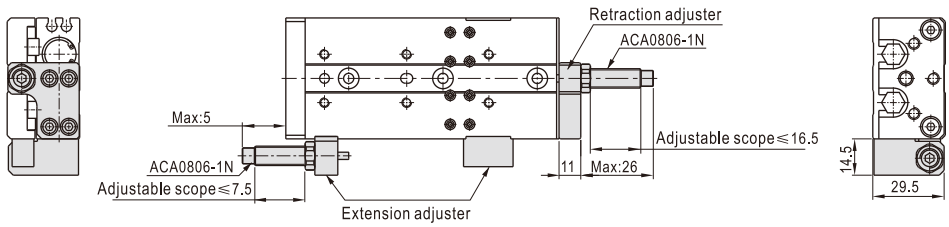


HLQL12



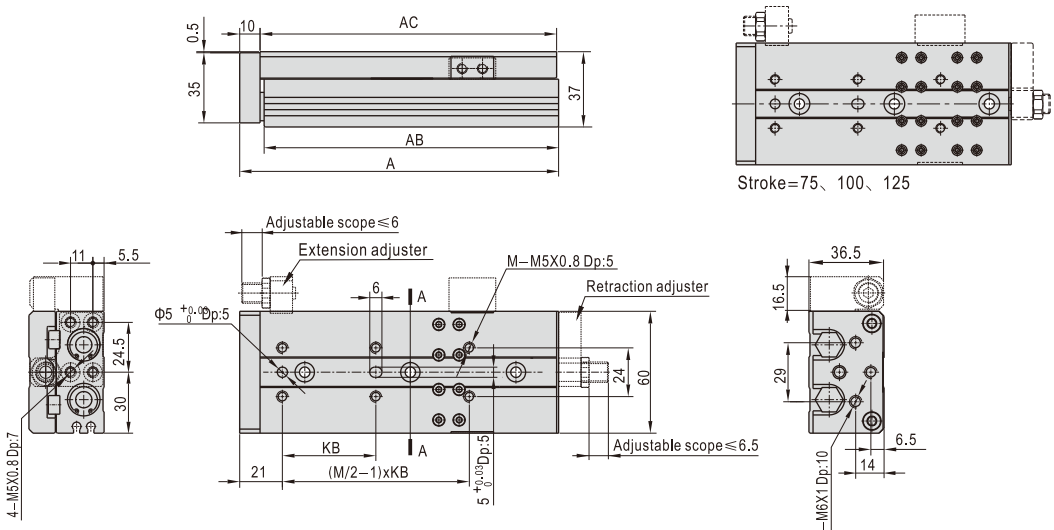
Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	76	66	67	32	18	28	32	18	4	2	32.5	13	35
20	76	66	67	32	18	28	32	18	4	2	32.5	13	45
30	86	76	77	40	20	38	40	20	4	2	42.5	13	55
40	103	93	94	39	38	34	–	–	6	3	59.5	13	65
50	113	103	104	39	48	34	39	9	6	3	69.5	13	75
75	157	147	148	72	59	36	36	23	8	4	113.5	13	99
100	182	172	173	72	84	36	36	12	10	5	134.5	17	124

HLQL12(With shock absorber)



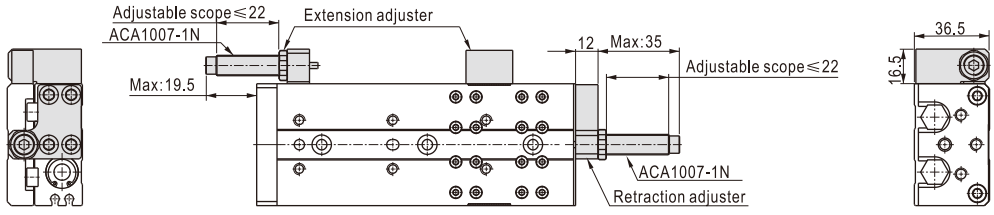
HLQ、HLQL Series

HLQ16

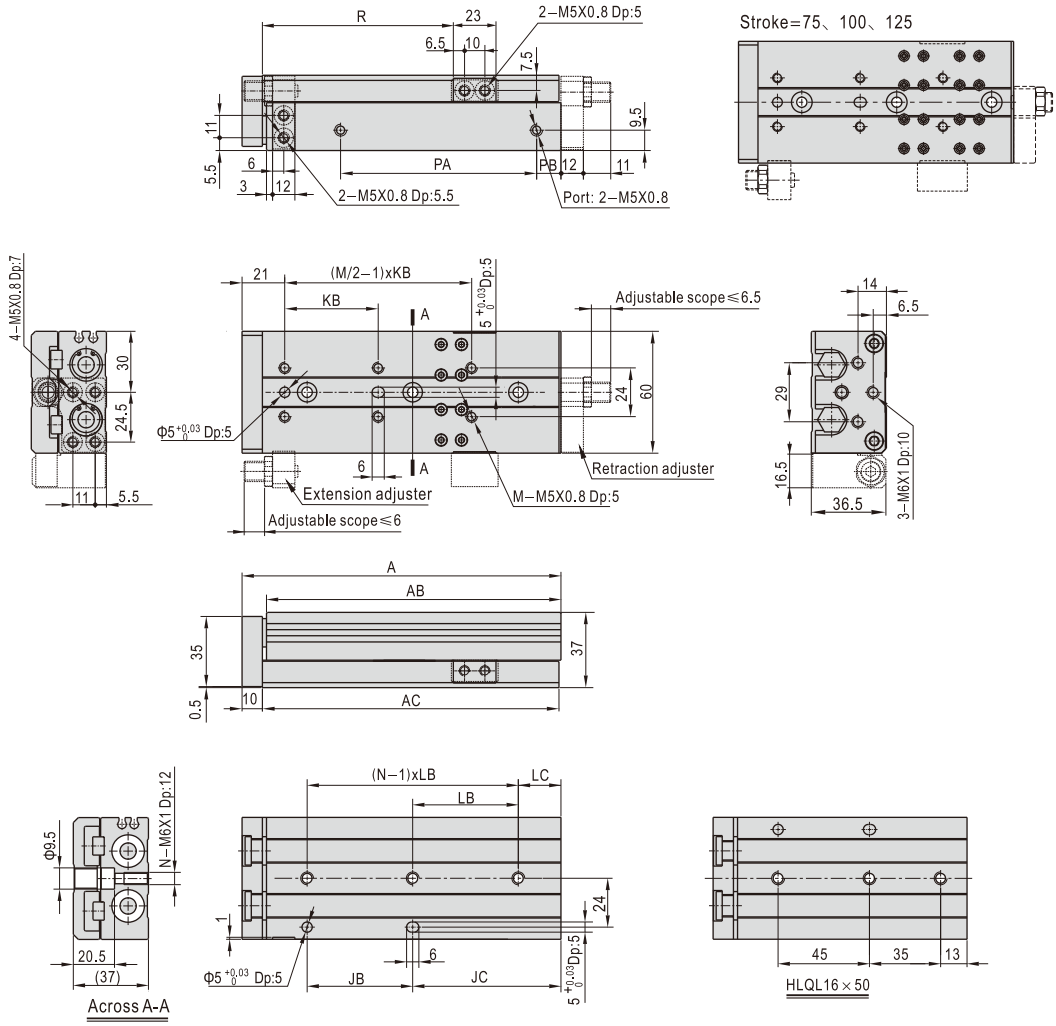


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	89	77	78	39	18	38	39	18	4	2	40.5	12	28.5
20	89	77	78	39	18	38	39	18	4	2	40.5	12	38.5
30	99	87	88	48	19	48	48	19	4	2	50.5	12	48.5
40	109	97	98	58	19	58	58	19	4	2	60.5	12	58.5
50	125	113	114	45	48	40	–	–	6	3	70.5	18	68.5
75	157	145	146	52	73	46	52	21	6	3	108.5	12	93.5
100	200	188	189	88	80	44	44	36	8	4	151.5	12	118.5
125	225	213	214	88	105	44	44	17	10	5	176.5	12	143.5

HLQ16(With shock absorber)

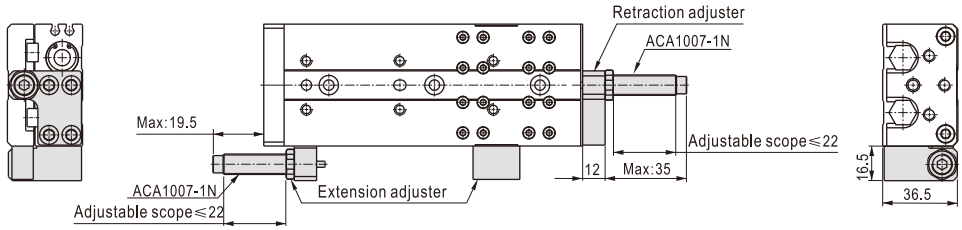


HLQL16



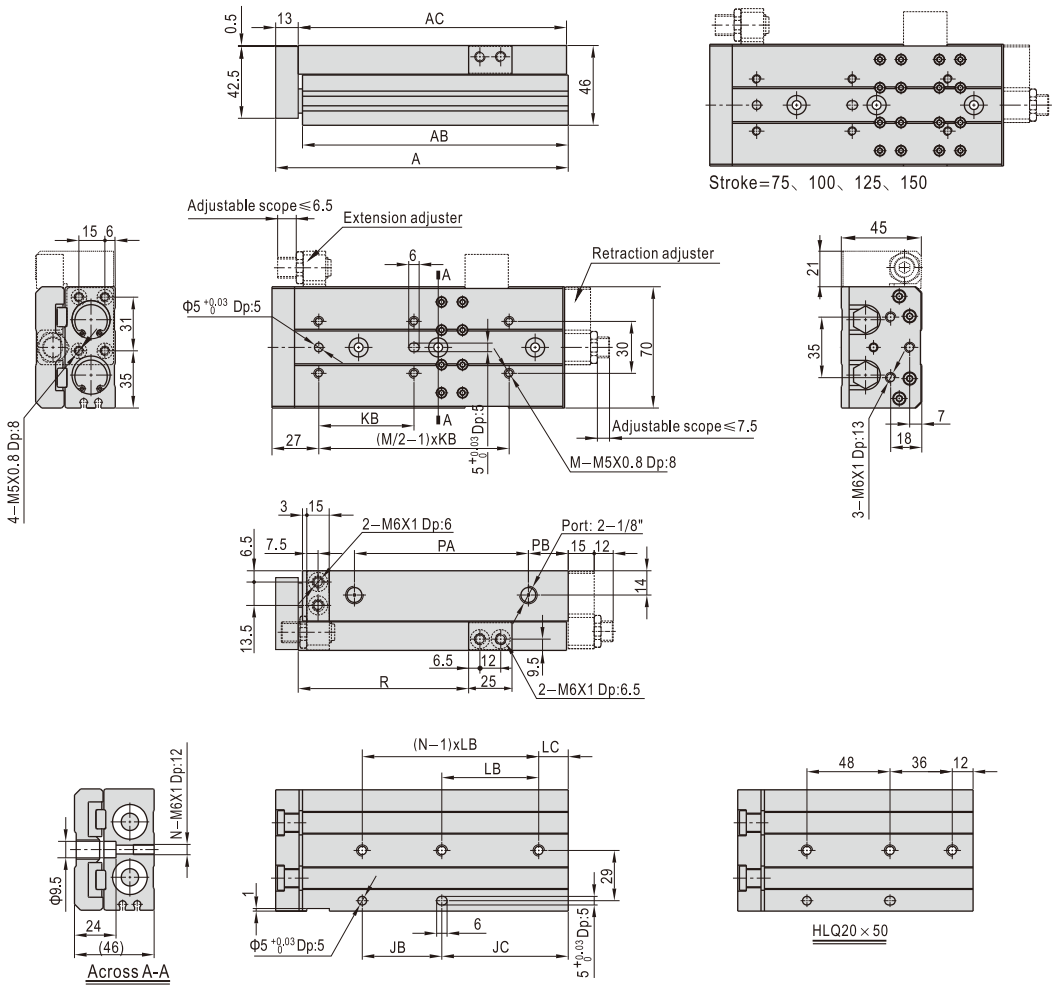
Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	89	77	78	39	18	38	39	18	4	2	40.5	12	28.5
20	89	77	78	39	18	38	39	18	4	2	40.5	12	38.5
30	99	87	88	48	19	48	48	19	4	2	50.5	12	48.5
40	109	97	98	58	19	58	58	19	4	2	60.5	12	58.5
50	125	113	114	45	48	40	–	–	6	3	70.5	18	68.5
75	157	145	146	52	73	46	52	21	6	3	108.5	12	93.5
100	200	188	189	88	80	44	44	36	8	4	151.5	12	118.5
125	225	213	214	88	105	44	44	17	10	5	176.5	12	143.5

HLQL16(With shock absorber)



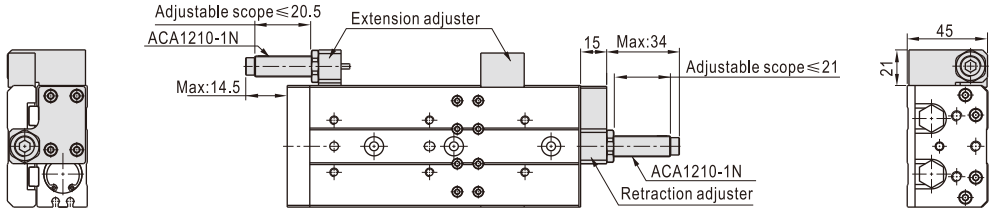
HLQ、HLQL Series

HLQ20

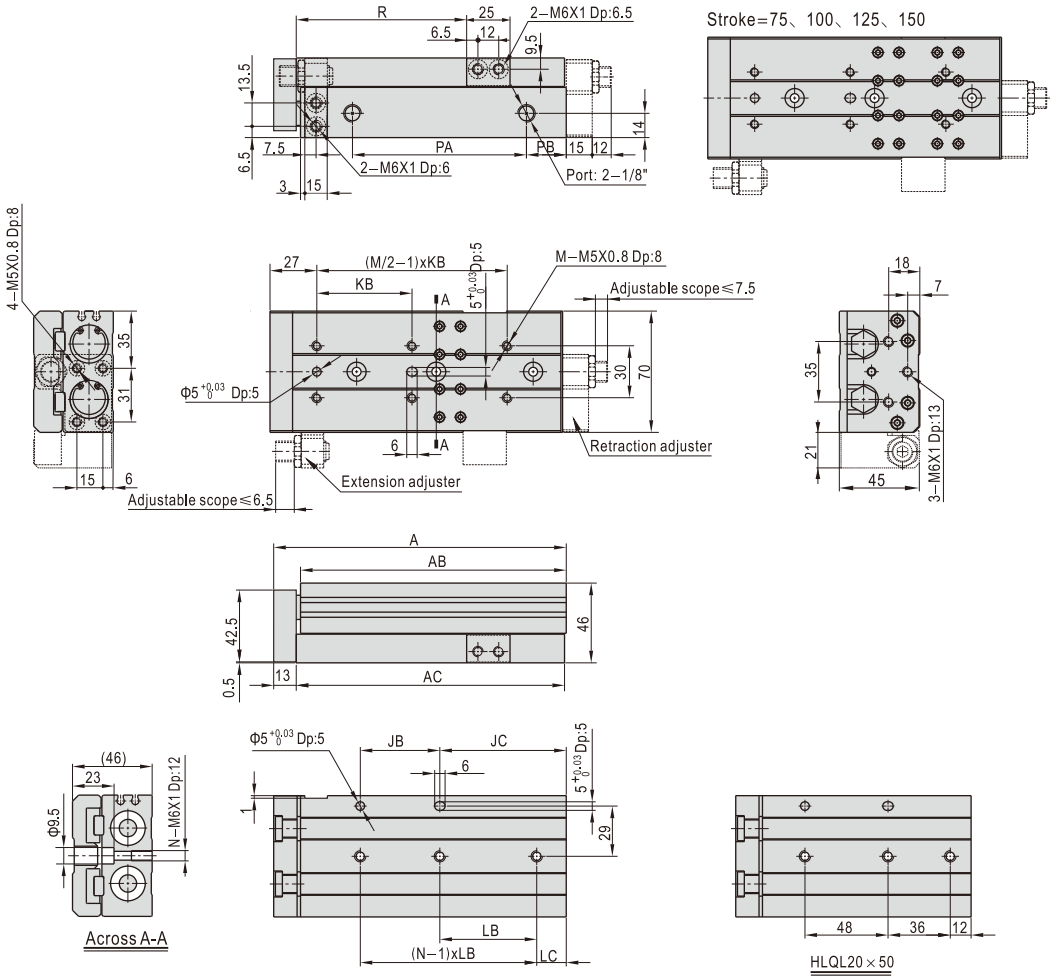


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	108	92.5	94	50	18	45	46	22	4	2	46.5	16	32.5
20	108	92.5	94	50	18	40	46	22	4	2	46.5	16	42.5
30	108	92.5	94	50	18	48	46	22	4	2	46.5	16	52.5
40	118	102.5	104	56	22	58	56	22	4	2	56.5	16	62.5
50	136	120.5	122	48	48	42	–	–	6	3	72.5	18	72.5
75	169	153.5	155	56	73	55	56	17	6	3	98.5	25	97.5
100	226	210.5	212	112	74	50	56	18	8	4	155.5	25	122.5
125	254	238.5	240	118	96	55	59	37	8	4	183.5	25	147.5
150	282	266.5	268	124	118	62	62	56	8	4	211.5	25	172.5

HLQ20(With shock absorber)

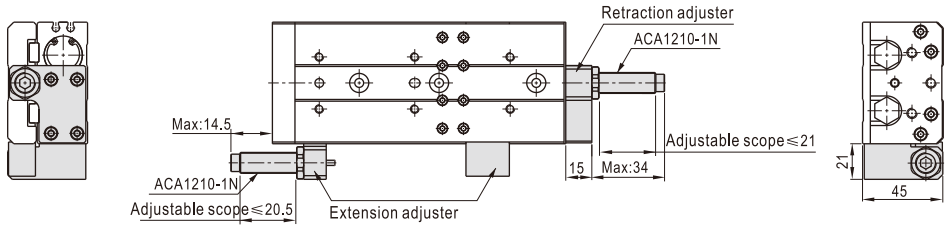


HLQL20

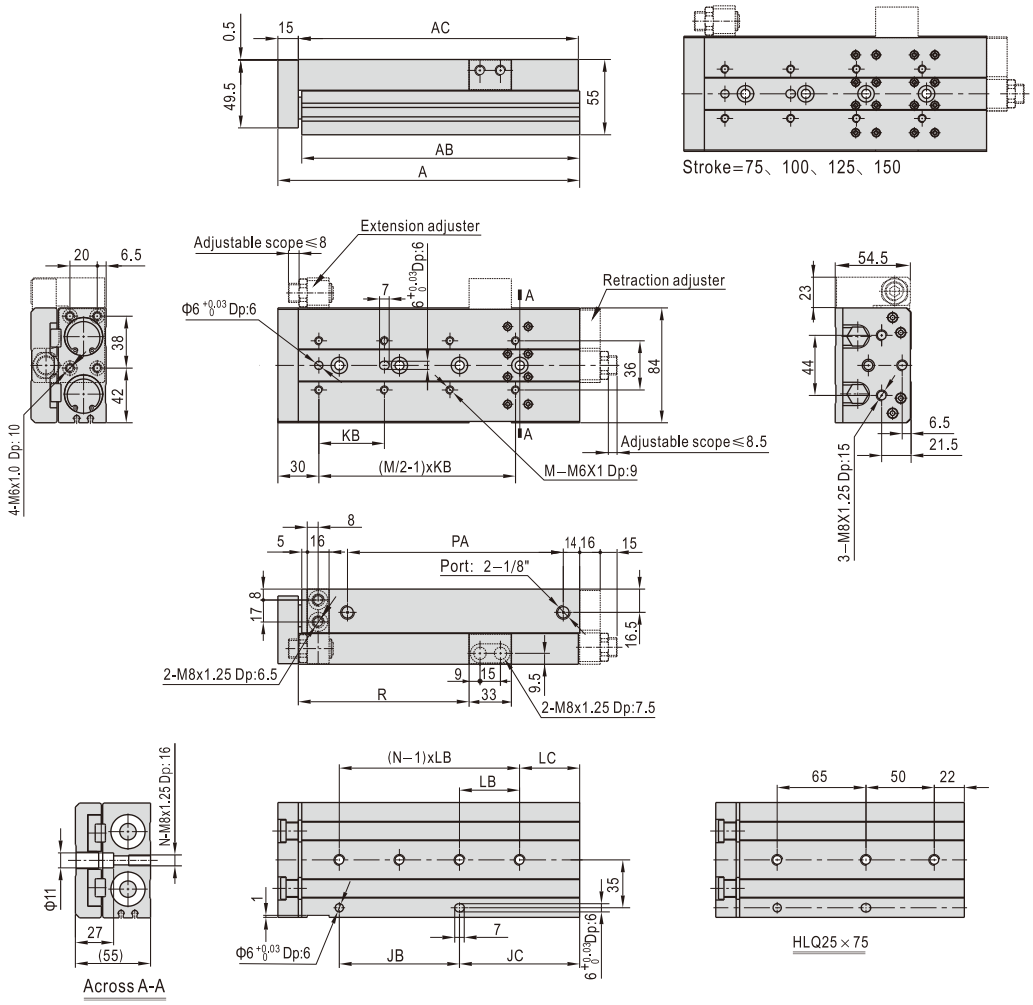


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	108	92.5	94	50	18	45	46	22	4	2	46.5	16	32.5
20	108	92.5	94	50	18	40	46	22	4	2	46.5	16	42.5
30	108	92.5	94	50	18	48	46	22	4	2	46.5	16	52.5
40	118	102.5	104	56	22	58	56	22	4	2	56.5	16	62.5
50	136	120.5	122	48	48	42	–	–	6	3	72.5	18	72.5
75	169	153.5	155	56	73	55	56	17	6	3	98.5	25	97.5
100	226	210.5	212	112	74	50	56	18	8	4	155.5	25	122.5
125	254	238.5	240	118	96	55	59	37	8	4	183.5	25	147.5
150	282	266.5	268	124	118	62	62	56	8	4	211.5	25	172.5

HLQL20(With shock absorber)

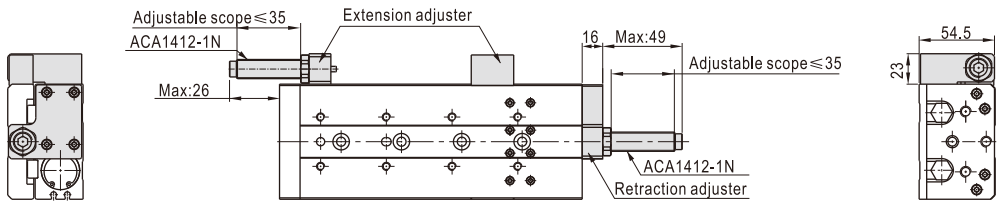


HLQ25



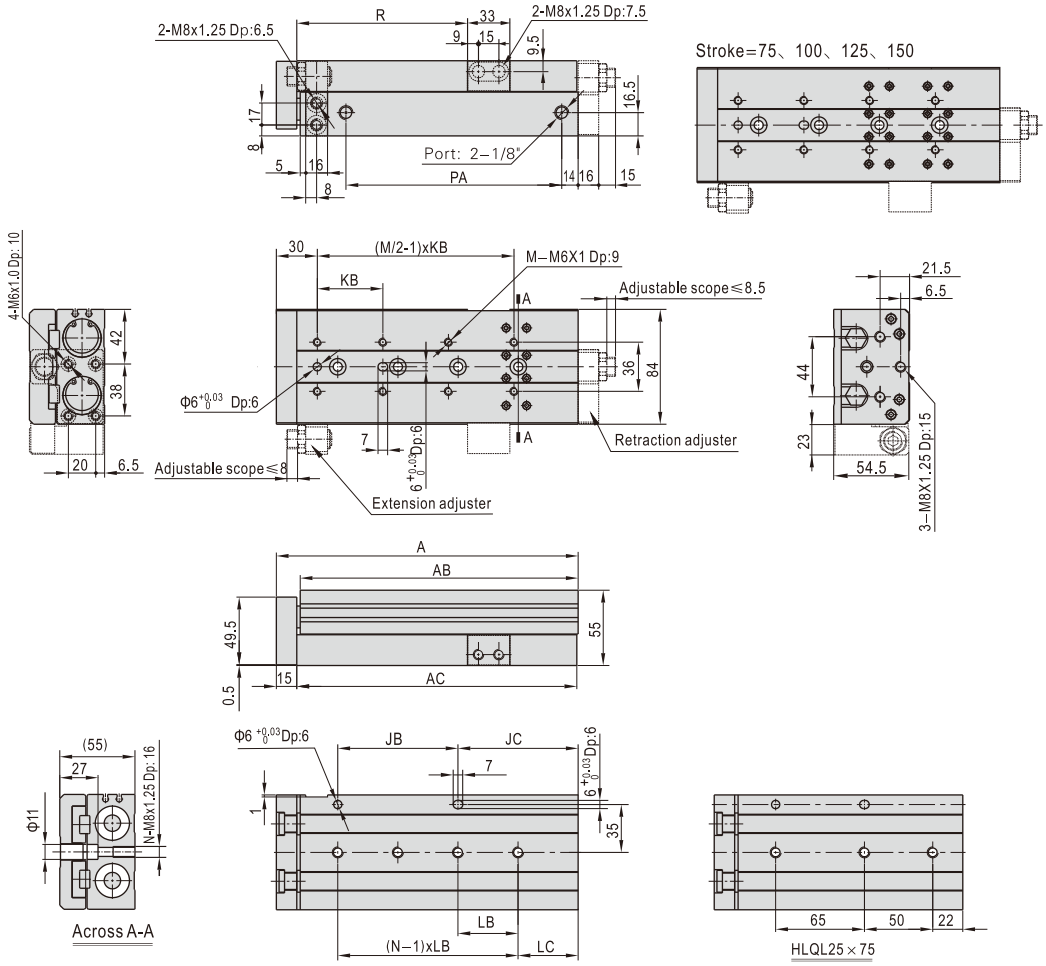
Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	R
10	123	105.5	107	55	23	55	55	23	4	2	58	35
20	123	105.5	107	55	23	46	55	23	4	2	58	45
30	123	105.5	107	55	23	55	55	23	4	2	58	55
40	133	115.5	117	65	23	65	65	23	4	2	68	65
50	157	139.5	141	80	32	75	80	32	4	2	92	75
75	182	164.5	166	65	72	60	–	–	6	3	117	100
100	221	203.5	205	88	88	48	44	44	8	4	156	125
125	274	256.5	258	132	97	60	66	31	8	4	209	150
150	299	281.5	283	132	122	65	66	56	8	4	234	175

HLQ25(With shock absorber)



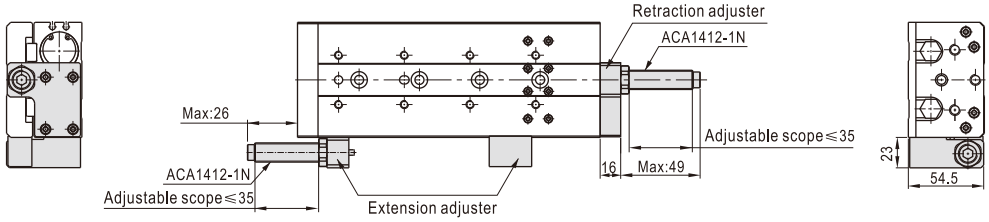
HLQ、HLQL Series

HLQL25



Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	R
10	123	105.5	107	55	23	55	55	23	4	2	58	35
20	123	105.5	107	55	23	46	55	23	4	2	58	45
30	123	105.5	107	55	23	55	55	23	4	2	58	55
40	133	115.5	117	65	23	65	65	23	4	2	68	65
50	157	139.5	141	80	32	75	80	32	4	2	92	75
75	182	164.5	166	65	72	60	–	–	6	3	117	100
100	221	203.5	205	88	88	48	44	44	8	4	156	125
125	274	256.5	258	132	97	60	66	31	8	4	209	150
150	299	281.5	283	132	122	65	66	56	8	4	234	175

HLQL25(With shock absorber)



Accessory selection

	Accessories\Bore size		6	8	12
Standard (HLQ)	Both ends	A(Adjustable rubber stopper)	F-HLQ6A	F-HLQ8A	F-HLQ12A
		B(Shock absorber)	×	F-HLQ8B	F-HLQ12B
	Extension	AS(Adjustable rubber stopper)	F-HLQ6AS	F-HLQ8AS	F-HLQ12AS
		BS(Shock absorber)	×	F-HLQ8BS	F-HLQ12BS
	Retraction	AF(Adjustable rubber stopper)	F-HLQ6AF	F-HLQ8AF	F-HLQ12AF
		BF(Shock absorber)	×	F-HLQ8BF	F-HLQ12BF

	Accessories\Bore size		16	20	25
Standard (HLQ)	Both ends	A(Adjustable rubber stopper)	F-HLQ16A	F-HLQ20A	F-HLQ25A
		B(Shock absorber)	F-HLQ16B	F-HLQ20B	F-HLQ25B
	Extension	AS(Adjustable rubber stopper)	F-HLQ16AS	F-HLQ20AS	F-HLQ25AS
		BS(Shock absorber)	F-HLQ16BS	F-HLQ20BS	F-HLQ25BS
	Retraction	AF(Adjustable rubber stopper)	F-HLQ16AF	F-HLQ20AF	F-HLQ25AF
		BF(Shock absorber)	F-HLQ16BF	F-HLQ20BF	F-HLQ25BF

	Accessories\Bore size		6	8	12
Symmetrical (HLQL)	Both ends	A(Adjustable rubber stopper)	F-HLQL6A	F-HLQL8A	F-HLQL12A
		B(Shock absorber)	×	F-HLQL8B	F-HLQL12B
	Extension	AS(Adjustable rubber stopper)	F-HLQ6AS	F-HLQ8AS	F-HLQ12AS
		BS(Shock absorber)	×	F-HLQ8BS	F-HLQ12BS
	Retraction	AF(Adjustable rubber stopper)	F-HLQL6AF	F-HLQL8AF	F-HLQL12AF
		BF(Shock absorber)	×	F-HLQL8BF	F-HLQL12BF

	Accessories\Bore size		16	20	25
Symmetrical (HLQL)	Both ends	A(Adjustable rubber stopper)	F-HLQL16A	F-HLQL20A	F-HLQL25A
		B(Shock absorber)	F-HLQL16B	F-HLQL20B	F-HLQL25B
	Extension	AS(Adjustable rubber stopper)	F-HLQ16AS	F-HLQ20AS	F-HLQ25AS
		BS(Shock absorber)	F-HLQ16BS	F-HLQ20BS	F-HLQ25BS
	Retraction	AF(Adjustable rubber stopper)	F-HLQL16AF	F-HLQL20AF	F-HLQL25AF
		BF(Shock absorber)	F-HLQL16BF	F-HLQL20BF	F-HLQL25BF

Note): A=AS+AF; B=BS+BF.

F – HLQ 20 AS
① ② ③ ④

①Accessory	②Cylindeer model	③Bore size	④Accessory type
	HLQ: Standard HLQL: Symmetrical	6 8 12 16 20 25	A: Adjustable rubber stopper(Both ends) AS: Adjustable rubber stopper(Extension) AF: Adjustable rubber stopper(Retraction) B: Shock absorber (Both ends) BS: Shock absorber (Extension) BF: Shock absorber (Retraction)

Dimensions

AS: Adjustable rubber stopper(Extension)

Body Mounting

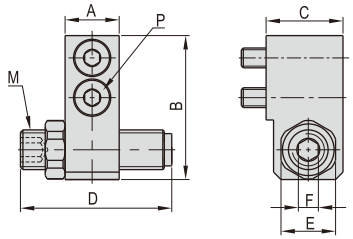
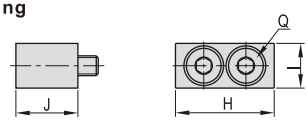


Table Mounting



Bore size\Item	Adjusting stroke range	A	B	C	D	E	F
6	5	7	19	10.5	16.5	8	3
8	5	8.5	21.5	14	21.5	11	4
12	5	11	29	15.5	31.5	11	4
16	5	12	36	17.5	24	14	5
20	5	15	44.5	22	28	17	6
25	5	16	53.5	24	32	19	6

Bore size\Item	M	P	H	I	J	Q
6	M6×1.0	M2.5Length:10	12.5	6.5	10.5	M2.5Length:10
8	M8×1.0	M3Length:14	14.5	8	12	M3Length:14
12	M8×1.0	M4Length:16	20	9	13.5	M4Length:12
16	M10×1.0	M5Length:16	23	10.5	17	M5Length:16
20	M12×1.0	M6Length:20	25	12.5	21	M6Length:20
25	M14×1.5	M8Length:20	33	16.5	23	M8Length:20

BS: Shock absorber(Extension)

Body Mounting

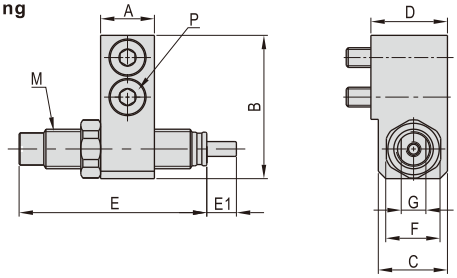
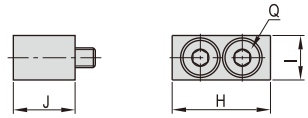
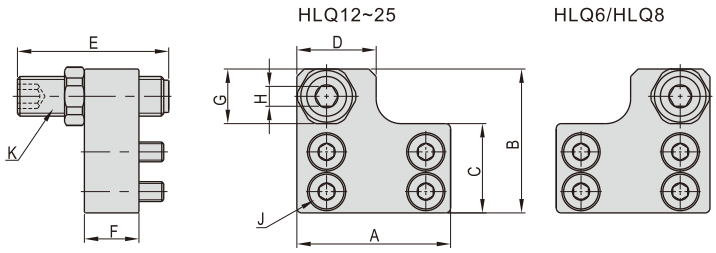


Table Mounting



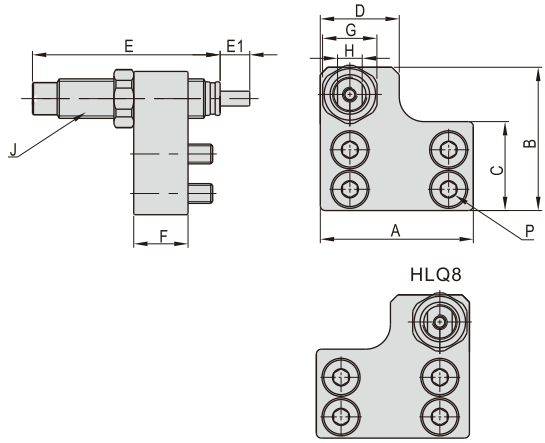
Bore size\Item	A	B	C	D	E	E1	F	G	M	P	H	I	J	Q
8	8.5	21.5	12.5	14	40	6	11	7	M8×1.0	M3Length:14	14.5	8	12	M3Length:14
12	11	29	14	15.5	40	6	11	7	M8×1.0	M4Length:16	20	9	13.5	M4Length:12
16	12	36	16	17.5	49	7	14	9	M10×1.0	M5Length:16	23	10.5	17	M5Length:16
20	15	44.5	20	22	53.5	10	17	11	M12×1.0	M6Length:20	25	12.5	21	M6Length:20
25	16	53.5	22	24	68.5	12	19	12	M14×1.5	M8Length:20	33	16.5	23	M8Length:20

AF: Adjustable rubber stopper(Retraction, for standard)



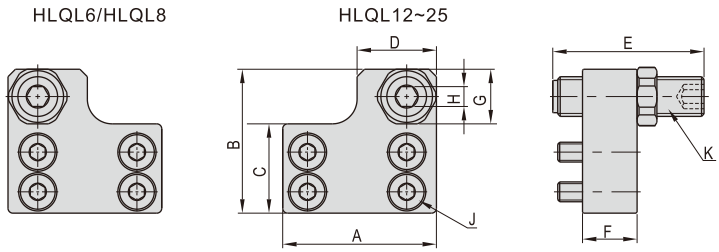
Bore size\Item	Adjusting stroke range	A	B	C	D	E	F	G	H	J	K
6	5	18	19	11	8	21.5	7	8	3	M2.5Length:6	M6×1.0
8	5	24	22	13	14	21.5	8.5	11	4	M3Length:8	M8×1.0
12	5	31	29	18	16	31.5	11	11	4	M4Length:12	M8×1.0
16	5	37	36	21.5	18	24	12	14	5	M5Length:12	M10×1.0
20	5	45.5	44	25.5	23	28	15	17	6	M5Length:16	M12×1.0
25	5	54	53.5	31.6	28	32	16	19	6	M6Length:18	M14×1.5

BF: Shock absorber(Retraction, for standard)



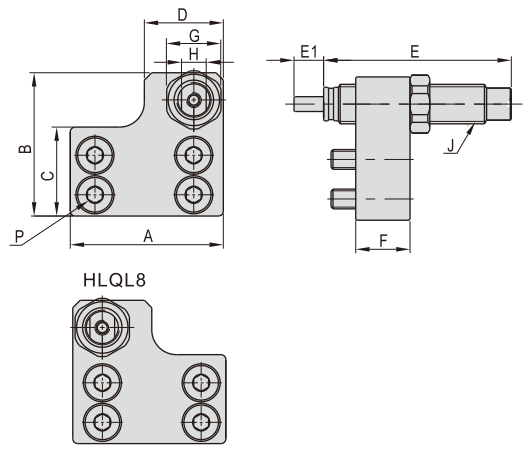
Bore size\Item	A	B	C	D	E	E1	F	G	H	J	P
8	24	22	13	14	40	6	8.5	11	7	M8×1.0	M3Length:8
12	31	29	18	16	40	6	11	11	7	M8×1.0	M4Length:12
16	37	36	21.5	18	49	7	12	14	9	M10×1.0	M5Length:12
20	45.5	44	25.5	23	53.5	10	15	17	11	M12×1.0	M5Length:16
25	54	53.5	31.6	28	68.5	12	16	19	12	M14×1.5	M6Length:18

AF: Adjustable rubber stopper(Retraction, for symmetrical)



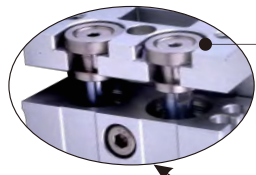
Bore size\Item	Adjusting stroke range	A	B	C	D	E	F	G	H	J	K
6	5	18	19	11	8	21.5	7	8	3	M2.5Length:6	M6×1.0
8	5	24	22	13	14	21.5	8.5	11	4	M3Length:8	M8×1.0
12	5	31	29	18	16	31.5	11	11	4	M4Length:12	M8×1.0
16	5	37	36	21.5	18	24	12	14	5	M5Length:12	M10×1.0
20	5	45.5	44	25.5	23	28	15	17	6	M5Length:16	M12×1.0
25	5	54	53.5	31.6	28	32	16	19	6	M6Length:18	M14×1.5

BF: Shock absorber(Retraction, for symmetrical)



Bore size\Item	A	B	C	D	E	E1	F	G	H	J	P
8	24	22	13	14	40	6	8.5	11	7	M8×1.0	M3Length:8
12	31	29	18	16	40	6	11	11	7	M8×1.0	M4Length:12
16	37	36	21.5	18	49	7	12	14	9	M10×1.0	M5Length:12
20	45.5	44	25.5	23	53.5	10	15	17	11	M12×1.0	M5Length:16
25	54	53.5	31.6	28	68.5	12	16	19	12	M14×1.5	M6Length:18

Compendium of HLS\HLSL Series



Multi-adjuster option

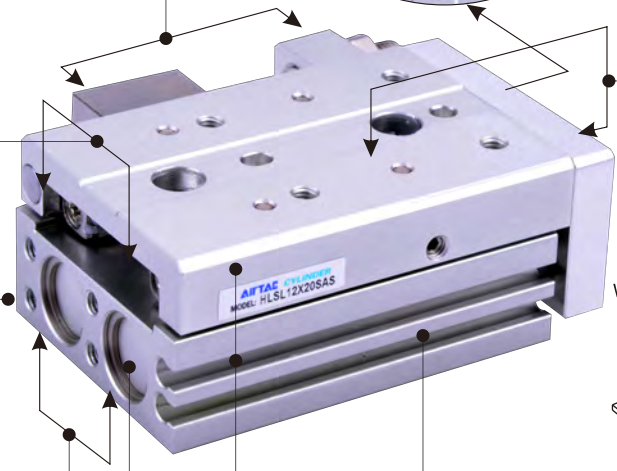
Floating joint design

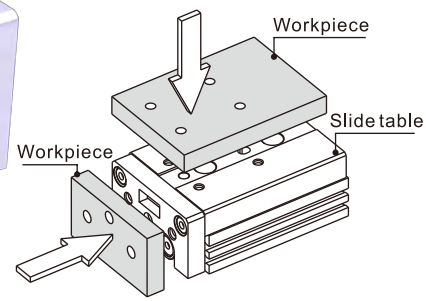
Piston rod needn't endure additional torque

Mounting workpiece from 2 directions

Cross roller type

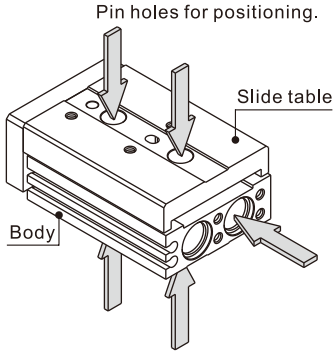
Cross roller type incorporating the cylinder, it achieves high precision, high rigidity, high load, excellent linearity and non-rotate tolerance.





Mounting cylinder from 3 directions

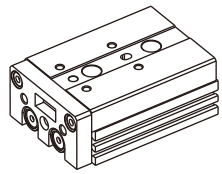
Through hole for body mounting.
Body mounting holes provide 3 mounting positions.
Pin holes for positioning.



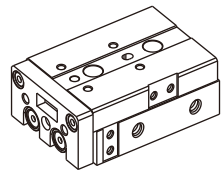
With magnetic switch slots

There are magnetic switch slots side of the cylinder body convenient to install inducting switch.

Two models (HLS/HLSL) are available



Standard：HLS



Symmetrical：HLSL

Dual rod structure

Dual rod doubles the output thrust

Six bore size are available

Bore size: 6, 8, 12, 16, 20, 25

Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(MPa)					
					0.2	0.3	0.4	0.5	0.6	0.7
6	3	Double acting	Push-side	42	8	13	17	21	25	29
			Pull-side	57	11	17	23	29	34	40
8	4	Double acting	Push-side	75	15	23	30	38	45	53
			Pull-side	101	20	30	40	51	61	71
12	6	Double acting	Push-side	170	34	51	68	85	102	119
			Pull-side	226	45	68	90	113	136	158
16	8	Double acting	Push-side	302	60	91	121	151	181	211
			Pull-side	402	80	121	161	201	241	281
20	10	Double acting	Push-side	471	94	141	188	236	283	330
			Pull-side	628	126	188	251	314	377	440
25	12	Double acting	Push-side	756	151	227	302	378	454	529
			Pull-side	982	186	295	393	491	589	687

Installation and application

1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder should be filtered to 40μm or below .
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

Slide table cylinder(Cross roller type)

HLS、HLSL Series

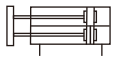


Specification

Bore size(mm)	6	8	12	16	20	25
Acting type	Double acting					
Fluid	Air(to be filtered by 40μm filter element)					
Operating pressure	0.2~0.7MPa(29~100psi)(2.0~7.0bar)		0.15~0.7MPa(22~100psi)(1.5~7.0bar)			
Proof pressure	1.2MPa(175psi)(12.0bar)					
Temperature ℃	-20~70					
Speed range mm/s	50~500					
Stroke tolerance	Stroke≤100 $^{+1.0}_{0}$ Stroke>100 $^{+1.5}_{0}$					
Cushion type	Bumper(Both ends)、Shock absorber					
Sensor switches	CMSH、DMSH、EMSH					
Port size [Note1]	M5×0.8				1/8"	

[Note1] G thread is available. Refer to P576 for detail of sensor switch.

Symbol



Stroke

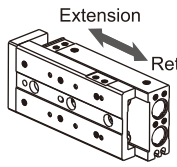
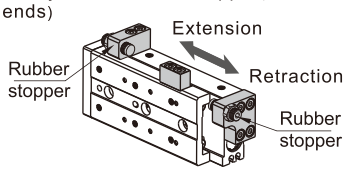
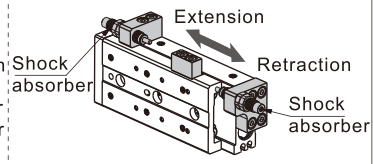
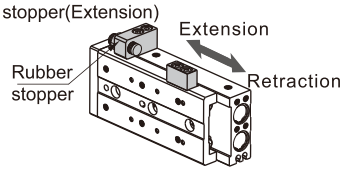
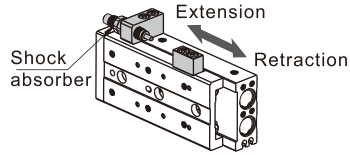
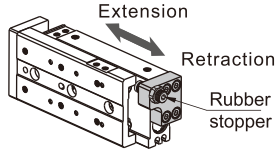
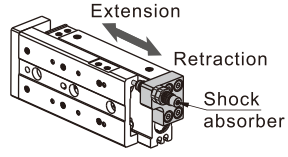
Bore size (mm)	Standard stroke (mm)	Max.std stroke
6	10 20 30 40 50	50
8	10 20 30 40 50 75	75
12	10 20 30 40 50 75 100	100
16	10 20 30 40 50 75 100 125	125
20	10 20 30 40 50 75 100 125 150	150
25	10 20 30 40 50 75 100 125 150	150

[Note] Consult us for non-standard stroke.

Ordering code

HLS 20 × 30 S AS G

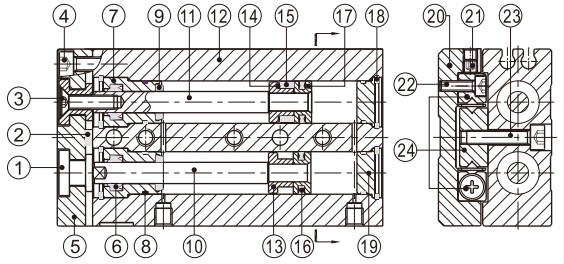
1 2 3 4 5 6

①Model	②Bore Size	③Stroke	④Magnet	⑤Adjuster option [Note1]		⑥Thread type [Note2]
HLS: Slide table cylinder (Double acting type) (Cross roller type) HLSL: Symmetrical slide table cylinder (Double acting type) (Cross roller type)	6 8 12 16 20 25	Refer to stroke table for details	S: With magnet	Blank: Without adjuster(Basic type) 		G: G Thread
				A: Adjustable rubber stopper(Both ends) 	B: Shock absorber(Both ends) 	
				AS: Adjustable rubber stopper(Extension) 	BS: Shock absorber(Extension) 	
				AF: Adjustable rubber stopper(Retraction) 	BF: Shock absorber(Retraction) 	

[Note1] B type, BS type, BF type are unavailable for bore size of Φ6. [Note2]When the thread is standard, the code is blank.

Inner structure and material of major parts

Basic type



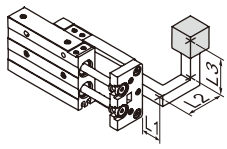
NO.	Item	Material	NO.	Item	Material
1	Floating joint	Carbon steel	13	Magnet holder	Brass
2	Bumper	TPU	14	Magnet washer	NBR
3	Screw	Carbon steel	15	Magnet	Sintered metal (Neodymium-iron-boron)
4	Screw	Carbon steel			
5	Fixing plate	Aluminum alloy	16	Piston seal	NBR
6	Rod seal	NBR	17	Piston	Brass
7	Front cover	Aluminum alloy	18	C clip	Spring steel
8	O-ring	NBR	19	Back cover	Aluminum alloy
9	Bumper	TPU	20	Slide table	Aluminum alloy
10	Piston rod A	Carbon steel	21	Nut	Carbon steel
11	Piston rod B	Stainless steel	22	Screw	Carbon steel
12	Body	Aluminum alloy	23	Screw	Carbon steel
			24	Slide guidecombination	subassembly

Model Selection Method

Please select compact cylinder's type according to following procedure, and cross reference with data sheets.

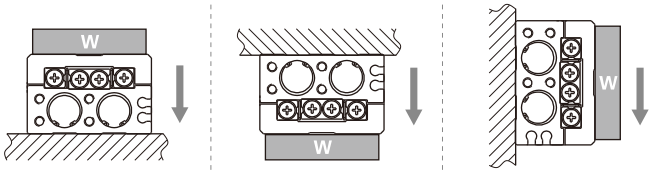
A) Operating conditions(According to mounting position and work form)

1. Model used(Bore size, Stroke)
2. Type of cushion(Bumper, Shock absrober)
3. Mounting position of work(Top, front)
4. Mounting direction(Axial, Vertical)
5. Average speed Va(mm/s)
6. Applied load W(N) **Fig. 1**
7. Overhang L1, L2, L3(mm)



Explain: L1 is the distance of load's center beyond the end plank's plane.
If load's center is not beyond the end plank's plane, L1 is negative.

Fig. 1: Applied load



B) Kinetic energy check

1. Calculate kinetic energy of load E(J)

$$E=\frac{1}{2}\times\frac{W}{g}\times\left(\frac{1.4\times Va}{1000}\right)^2$$

2. Calculate allowable kinetic energy Ea(J)

$$Ea = K \times E_{max}$$

K:Mounting work coefficient **(Fig 2)**
E_{max}:Maximum allowable kinetic energy **(Table 1)**

3. Check that kinetic energy of load doesn't exceed allowable kinetic energy: E≤Ea

C) Load check

1. Calculate allowable applied load Wa (N)

$$Wa = K \times \beta \times W_{max}$$

K:Mounting work coefficient **(Fig 2)**
W_{max}:Maximum allowable applied load **(Table 1)**
β:Applied load coefficient **(Fig 3)**

2. Check that load(W) doesn't exceed allowable applied load(Wa): W≤Wa

Fig 2: Mounting work coefficient (K)

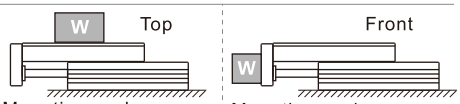
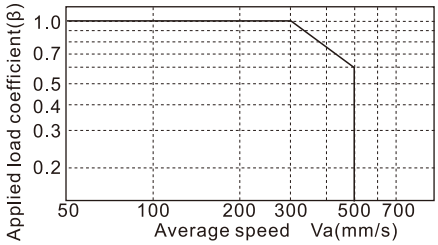


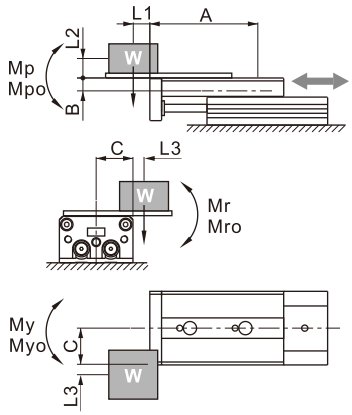
Fig 3: Applied load coefficient (β)



D) Moment check

Horizontal

1. Calculate actual moment: Mp、Mpo、My、Myo、Mr、Mro (Nm)



Dynamic moment: Mp=W×(L1+A)/1000
Static moment: $Mpo=\frac{W\times(L1+A)}{1000}+\frac{W\times a\times(L2+B)}{1000\times g}$

Dynamic moment: Mr=W×(C+L3)/1000
Static moment: Mro=(W×a×(C+L3))/1000g

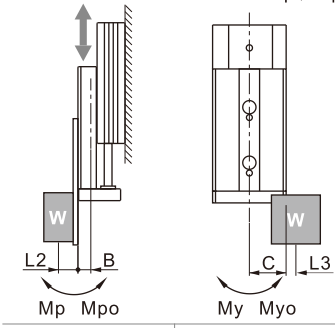
Dynamic moment: My=0
Static moment: Myo=(W×a×(C+L3))/1000g

2. Check

Dynamic moment:	$\frac{Mp}{Mp_{max}}+\frac{My}{My_{max}}+\frac{Mr}{Mr_{max}}\leqslant 1$
Static moment:	$\frac{Mpo}{Mpo_{max}}+\frac{Myo}{Myo_{max}}+\frac{Mro}{Mro_{max}}\leqslant 1$

Vertical

1. Calculate actual moment: Mp、Mpo、My、Myo(Nm)



Dynamic moment: Mp=W×(L2+B)/1000
Static moment: $Mpo=\frac{W\times(L2+B)}{1000}+\frac{W\times a\times(L2+B)}{1000\times g}$

Dynamic moment: My=W×(C+L3)/1000
Static moment: $Myo=\frac{W\times a\times(C+L3)}{1000g}+\frac{W\times(C+L3)}{1000}$

2. Check

Dynamic moment:	$\frac{Mp}{Mp_{max}}+\frac{My}{My_{max}}\leqslant 1$
Static moment:	$\frac{Mpo}{Mpo_{max}}+\frac{Myo}{Myo_{max}}\leqslant 1$

Explain:
L1/L2/L3: The distance of load center to mount plane(Determined by actuality).
A/B/C: Correction value for center position distance of moment(Refer to table 2).
$Mp_{max}/My_{max}/Mr_{max}/Mpo_{max}/Myo_{max}/Mro_{max}$: Maximum allowable moment(Refer to table 2).
g: Acceleration of gravity($g=9.81m/s^2$).
a: Acceleration of inertia
(Bumper: $a=1600\times(Va/1000)^2$, Shock absorber: $a=400\times(Va/1000)^2$)
W: Load weight(Determined by actuality).

HLS、HLSL Series

Table 1: Maximum allowable kinetic energy(Emax)
Maximum allowable applied load(Wmax)

Model	Max. allowable kinetic energy Emax(J)			Max. allowable applied load Wmax(N)
	Basic type	Rubber stopper type	Shock absorber type	
HLS6	0.01	0.01	–	4
HLS8	0.024	0.024	0.048	8
HLS12	0.05	0.05	0.1	15
HLS16	0.1	0.1	0.2	30
HLS20	0.13	0.13	0.26	40
HLS25	0.22	0.22	0.44	70

Note: Symbol and unit

Symbol	Item	Unit
A, B, C	Correction value for center position distance of moment	mm
a	Acceleration of inertia	–
E	Kinetic energy	J
Ea	Allowable kinetic energy	J
Emax	Maximum allowable kinetic energy	J
g	Acceleration of gravity g=9.81	m/s^2
K	Mounting work coefficient	–
L1, L2, L3	Overhang	mm
Mp, My, Mr	Dynamic moment(Pitch、Yaw、Roll)	Nm
Mp_{max}, My_{max}, Mr_{max}	Maximum allowable dynamic moment (Pitch、Yaw、Roll)	Nm
Mpo, Myo, Mro	Static moment(Pitch、Yaw、Roll)	Nm
Mpo_{max}, Myo_{max}, Mro_{max}	Maximum allowable static moment (Pitch、Yaw、Roll)	Nm
Va	Average speed	mm/s
W	Applied load	N
Wmax	Maximum allowable applied load	N
β	Applied load coefficient	-

Table 2: Maximum allowable moment(Nm),
Correction value for center position distance of moment(mm)

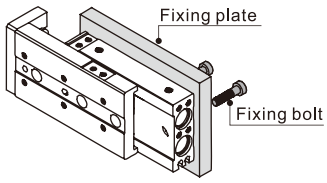
Bore size	Stroke	Static moment			Dynamic moment			Correction value		
		Mpo_{max}	Myo_{max}	Mro_{max}	Mp_{max}	My_{max}	Mr_{max}	A	B	C
6	10	3.3	3.8	2.6	0.7	0.7	0.6	27	7.3	16
	20	3.3	3.8	2.6	0.7	0.8	0.6	42		
	30	3.3	3.8	2.6	0.7	0.8	0.6	52		
	40	7.2	7.9	3.6	1.3	1.3	0.6	72		
	50	12.4	12.7	4.7	1.8	1.8	0.6	87		
8	10	10.1	9.1	8.8	2.5	2.5	2.0	32	8.5	20
	20	10.1	9.1	8.8	2.6	2.6	2.0	42		
	30	10.1	9.1	8.8	2.8	2.8	2.0	57		
	40	12.4	10.8	10.1	3.4	3.4	2.3	72		
	50	23.6	24.8	13.9	4.4	4.4	2.1	92		
	75	32.8	35.3	16.4	4.6	4.6	1.8	132		
12	10	33.0	34.3	30.9	7.3	7.3	5.8	48	10	25
	20	33.0	34.3	30.9	7.6	7.6	5.8	58		
	30	33.0	34.3	30.9	7.8	7.8	5.8	68		
	40	33.0	34.3	30.9	8.0	8.0	5.8	78		
	50	53.4	49.6	39.7	9.8	9.8	5.8	88		
	75	78.8	71.9	48.6	14.2	14.2	6.8	125		
	100	78.8	71.9	48.6	14.7	14.7	6.8	160		
16	10	33.0	34.3	30.9	8.8	8.8	7.6	43	11	30
	20	33.0	34.3	30.9	9.2	9.2	7.6	53		
	30	33.0	34.3	30.9	9.5	9.5	7.6	63		
	40	33.0	34.3	30.9	10.0	10.0	7.6	78		
	50	53.4	49.6	39.7	12.2	12.2	7.6	93		
	75	78.8	71.9	48.6	17.6	17.6	8.9	130		
	100	78.8	71.9	48.6	18.2	18.2	8.9	165		
	125	143.7	144.5	53.3	24.8	24.8	7.8	204		
20	10	60.1	50.5	72.8	14.5	14.5	15.2	47	16.5	35
	20	60.1	50.5	72.8	15.2	15.2	15.2	57		
	30	60.1	50.5	72.8	15.7	15.7	15.2	67		
	40	60.1	50.5	72.8	16.3	16.3	15.2	82		
	50	60.1	50.5	72.8	16.6	16.6	15.2	92		
	75	169.3	154.3	114.4	41.2	41.2	22.0	136		
	100	169.3	154.3	114.4	42.8	42.8	22.0	176		
	125	169.3	154.3	114.4	43.6	43.6	22.0	205		
	150	267.5	286.6	145.6	49.0	49.0	20.5	249		
25	10	60.1	50.5	72.8	16.3	16.3	17.6	52	20.3	42
	20	60.1	50.5	72.8	17.0	17.0	17.6	62		
	30	60.1	50.5	72.8	17.4	17.4	17.6	72		
	40	60.1	50.5	72.8	17.8	17.8	17.6	82		
	50	60.1	50.5	72.8	18.2	18.2	17.6	96		
	75	169.3	154.3	114.4	45.2	45.2	25.3	141		
	100	169.3	154.3	114.4	46.2	46.2	25.3	165		
	125	169.3	154.3	114.4	48.0	48.0	25.3	210		
	150	267.5	286.6	145.6	65.0	65.0	28.3	254		

Installation and application

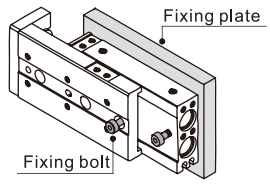
1. How to mount cylinder:

1.1) Cylinder can to be mounted from 3 directions

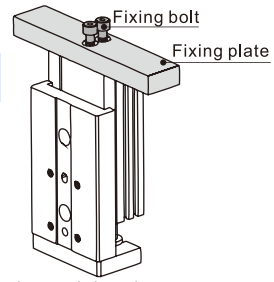
Vertical Mounting(Body thread holes)



Vertical Mounting(Body through holes)

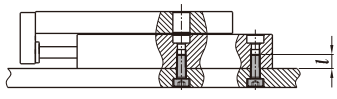


Axial Mounting (Body thread holes)



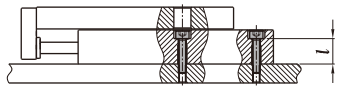
1.2) When mounting an compact slide cylinder, screws of appropriate length should be used and tightened properly within the maximum tightening torque. If screws are tightened beyond designed limits, malfunction may occur. If they are tightened insufficiently, it may result in sliding of falling off from its position.

Vertical Mounting(Body thread holes)



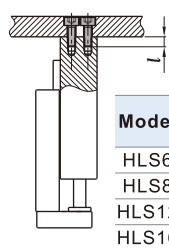
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLS6	M4×0.7	2.1	8
HLS8	M4×0.7	2.1	8
HLS12	M5×0.8	4.4	10
HLS16	M6×1.0	4.4	10
HLS20	M6×1.0	7.4	12
HLS25	M8×1.25	18.0	16

Vertical Mounting(Body through holes)



Model	Bolt used	Max. tightening torque (Nm)	Body depth(mm)
HLS6	M3×0.5	1.2	11.0
HLS8	M3×0.5	1.2	12.5
HLS12	M4×0.7	2.8	18.0
HLS16	M5×0.8	5.7	25.0
HLS20	M5×0.8	5.7	28.0
HLS25	M6×1.0	10.0	36.2

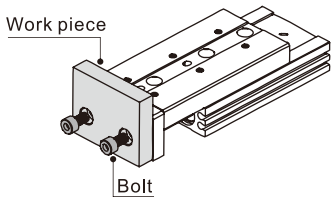
Axial Mounting(Body thread holes)



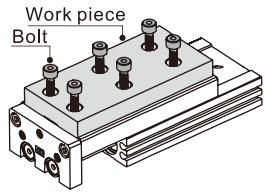
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLS6	M2.5×0.45	0.5	3.5
HLS8	M3×0.5	0.9	4.0
HLS12	M4×0.7	2.1	6.0
HLS16	M5×0.8	4.4	7.0
HLS20	M5×0.8	4.4	8.0
HLS25	M6×1.0	7.4	10.0

2. Work Piece Mounting:
2.1) Work pieces can be mounted on 2 surfaces of the compact slide.

Front Mounting

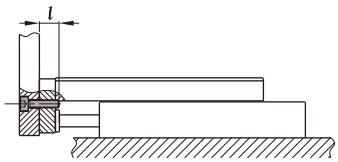


Top Mounting



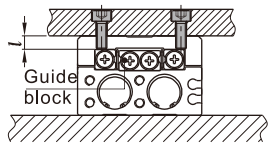
2.2) When mounting a work piece, tighten the bolts properly at a torque value within the limiting range. Use blots at least 0.5mm shorter than maximum thread depth to prevent bolts from contacting the guide block. If the bolts are too long, they hit the guide block and cause damage.

Front Mounting



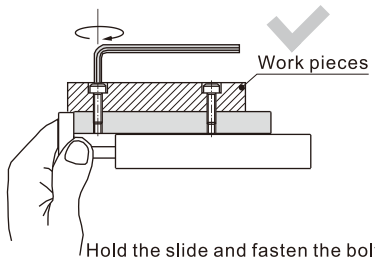
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLS6	M3×0.4	0.9	5
HLS8	M4×0.7	2.1	6
HLS12	M5×0.8	4.4	8
HLS16	M6×1.0	7.4	10
HLS20	M6×1.0	7.4	13
HLS25	M8×1.25	18.0	15

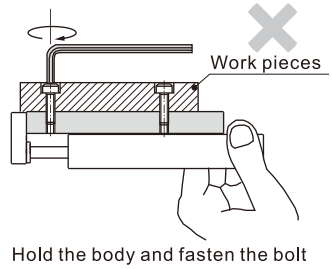
Top Mounting



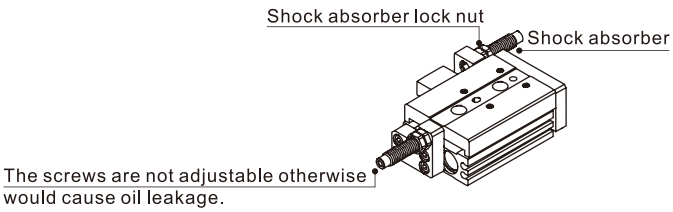
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLS6	M3×0.5	0.9	4.0
HLS8	M3×0.5	0.9	5.0
HLS12	M4×0.7	2.1	5.5
HLS16	M5×0.8	4.4	6.0
HLS20	M5×0.8	4.4	10.0
HLS25	M6×1.0	7.4	13.0

2.3) Since the table is supported by the linear guide, take care not to apply strong impact or large moment to the guide section.
2.4) Hold the slide when fastening work pieces to it with bolts, If the body is held while tightening bolts, excessive moment may damage guide section.



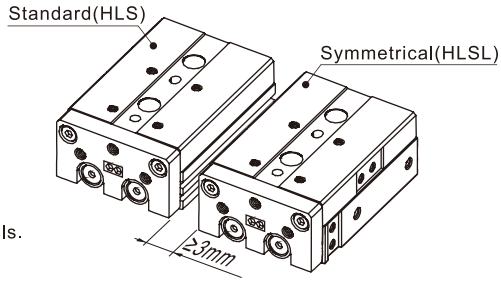


3. About shock absorber:
3.1) Shock absorbers are expendable. Promptly replace them when energy absorbing capacity decreases.
3.2) Never turn or adjust the screws on bottom of the shock absorber body. The screws are not for adjusting. Otherwise would cause oil leakage.
3.3) Follow the table for tightening torque of shock absorber to lock nuts.



Model	Shock absorber	Tightening torque
HLS6	Without shock absorber	
HLS8	ACA0806-1N	1.67(Nm)
HLS12	ACA0806-1N	1.67(Nm)
HLS16	ACA1007-1N	3.14(Nm)
HLS20	ACA1210-1N	3.14(Nm)
HLS25	ACA1412-1N	10.8(Nm)

4. How to mount sensor switch:
4.1) HLS Series are all with magnet. The matching sensor switches are CMSH、DMSH、EMSH) series.
4.2) Maintain a minimum spacing of at least 3mm if two compact cylinders are used side by side in order to avoid malfunction.

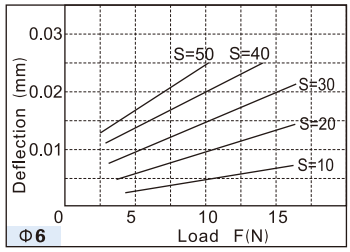


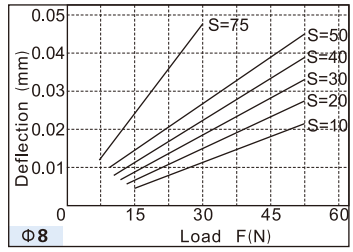
5. Make sure to connect the compact cylinder to speed controller at the meter-out side, and the speed of compact cylinder must below 500mm/s.
6. Don't apply a load beyond the range of the operation limits. Different load or torque will cause different deflection to table, please see below for details.

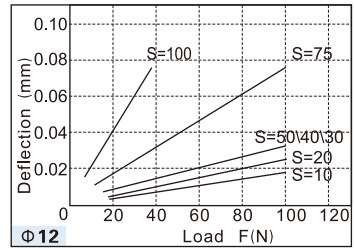
6.1) Table deflection due to pitch moment:

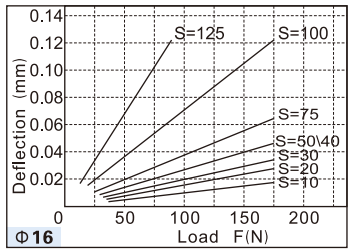
Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.

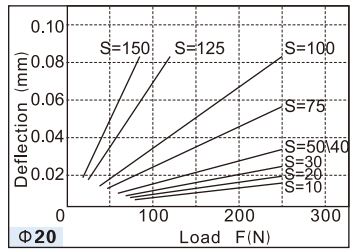


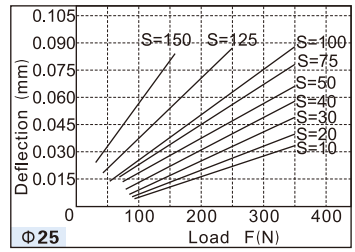






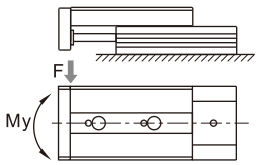


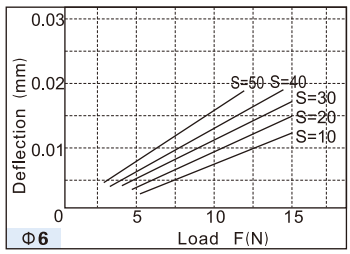


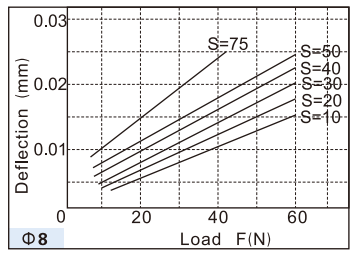


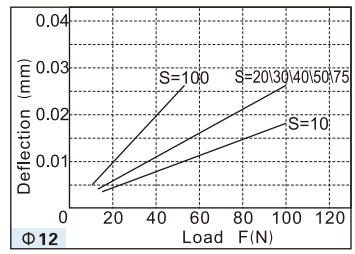
6.2) Table deflection due to yaw moment:

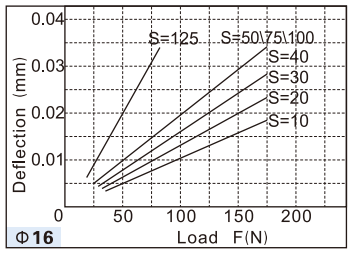
Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.

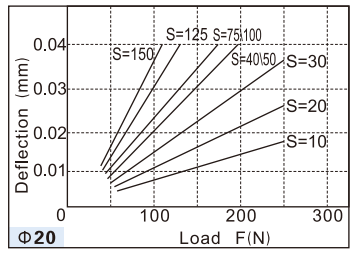


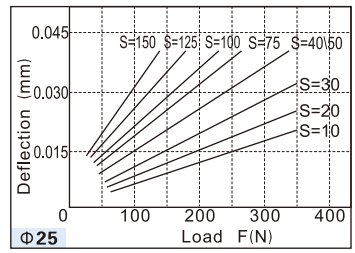






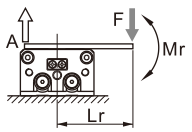


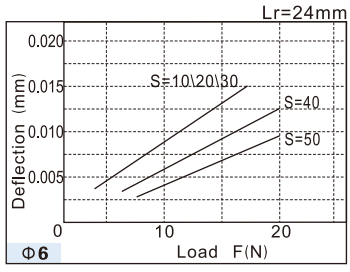


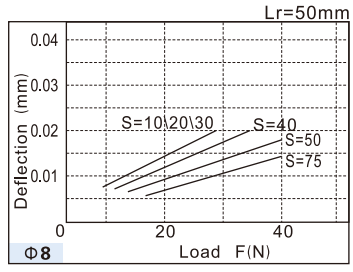


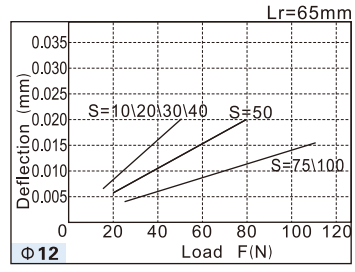
6.3) Table deflection due to roll moment:

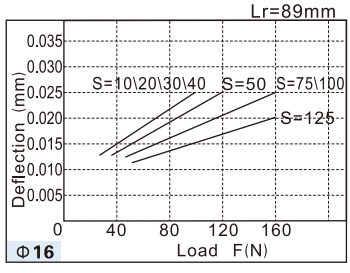
Table deflects (A) when a load acts upon section F at the full stroke of the compact slide.

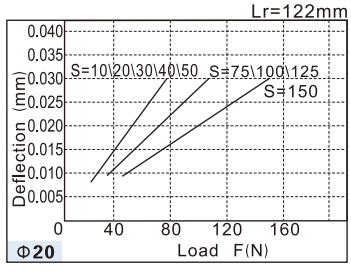


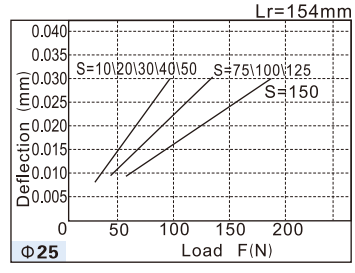






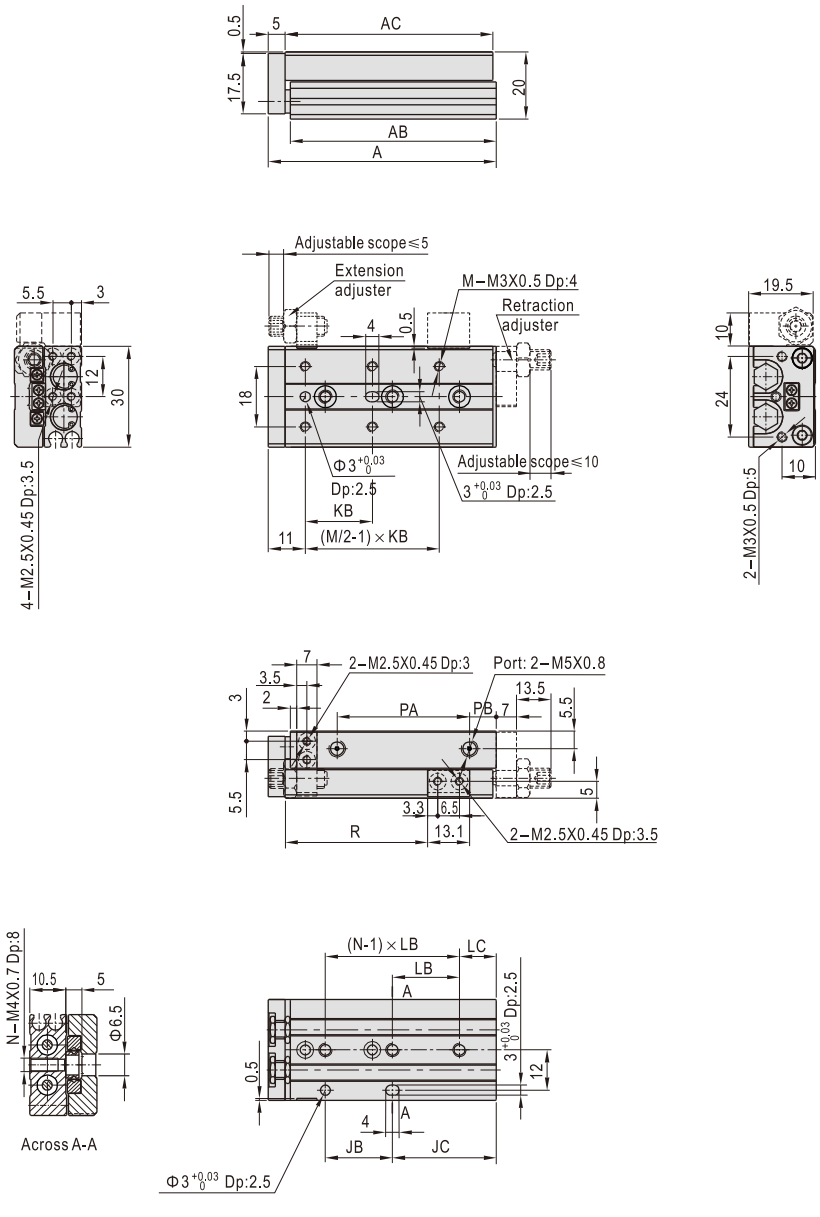






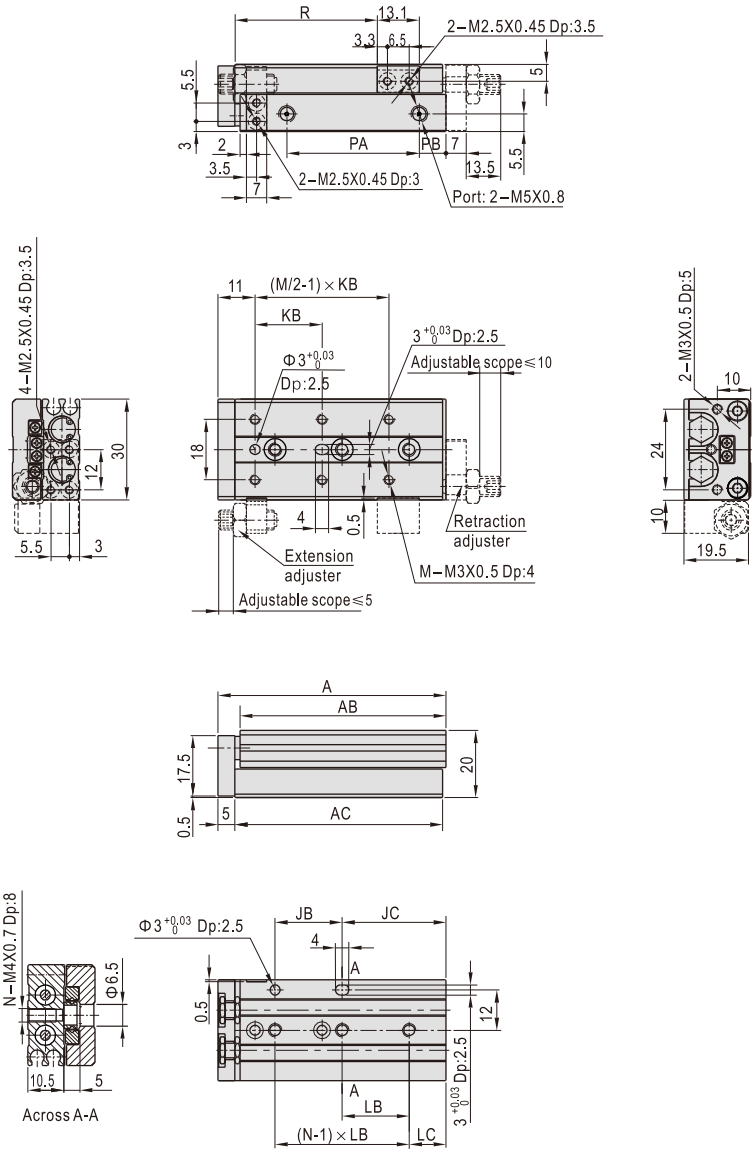
Dimensions

HLS6



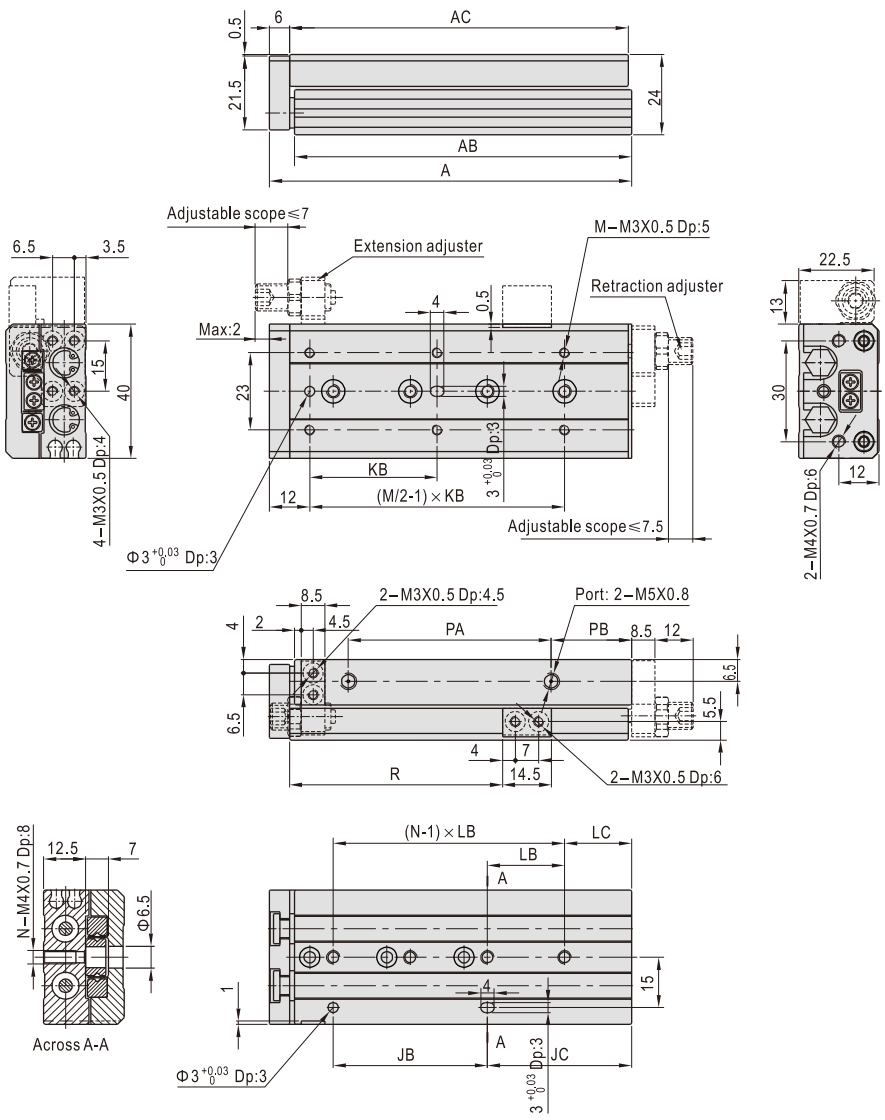
Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	48	41.5	42	20	11	20	25	6	4	2	19	8	21.5
20	58	51.5	52	20	21	30	35	6	4	2	28	9	31.5
30	68	61.5	62	20	31	20	20	11	6	3	39	8	41.5
40	90	83.5	84	30	43	28	30	13	6	3	51	18	51.5
50	106	99.5	100	48	41	38	24	17	6	4	61	24	61.5

HLSL6



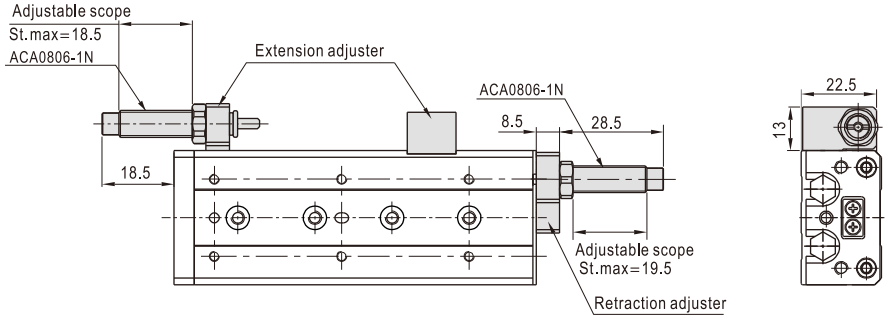
Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	48	41.5	42	20	11	20	25	6	4	2	19	8	21.5
20	58	51.5	52	20	21	30	35	6	4	2	28	9	31.5
30	68	61.5	62	20	31	20	20	11	6	3	39	8	41.5
40	90	83.5	84	30	43	28	30	13	6	3	51	18	51.5
50	106	99.5	100	48	41	38	24	17	6	4	61	24	61.5

HLS8

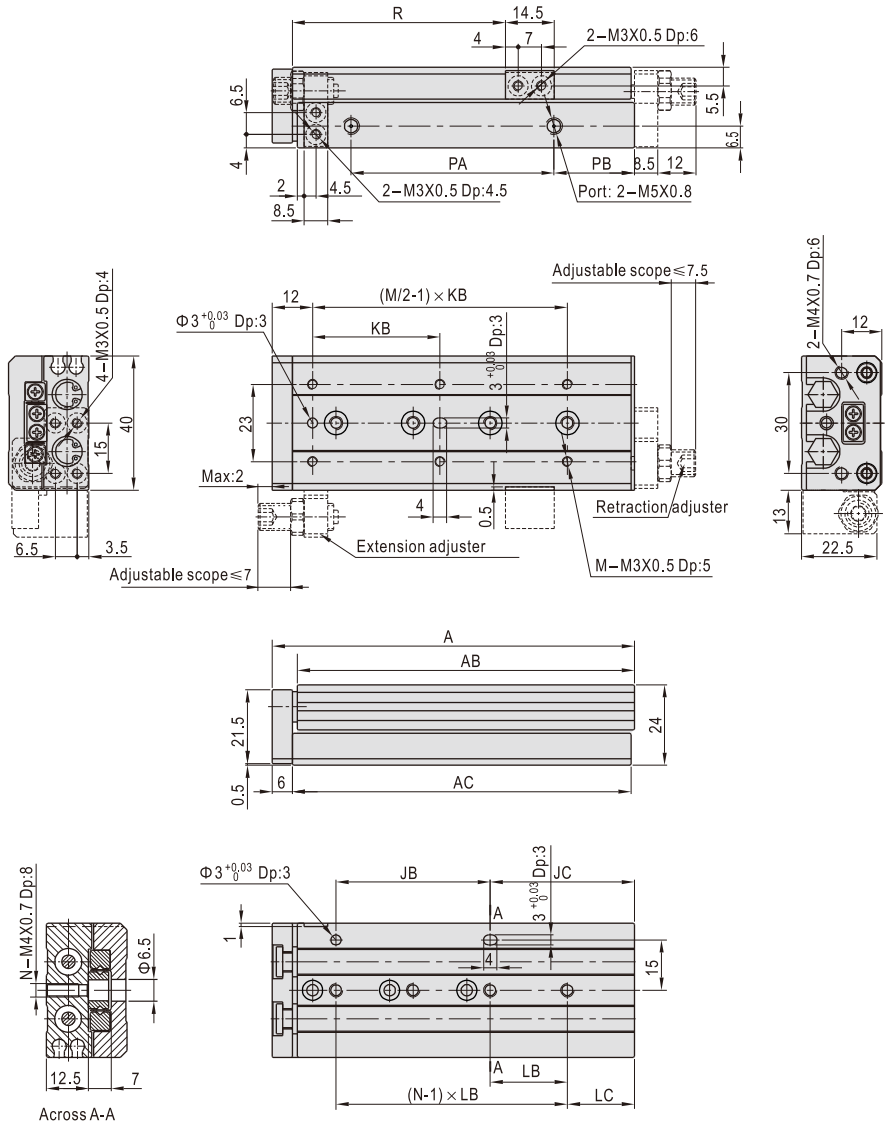


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	56	48.5	49	20	17	25	28	9	4	2	19.5	12.5	23.5
20	61	53.5	54	30	12	25	30	12	4	2	30	7	33.5
30	72	64.5	65	20	33	40	20	13	4	3	41	7	43.5
40	90	82.5	83	28	43	50	28	15	4	3	56	10	53.5
50	108	100.5	101	46	43	38	23	20	6	4	68	16	63.5
75	158	150.5	151	56	83	50	28	27	6	5	94	40	88.5

HLS8(With shock absorber)

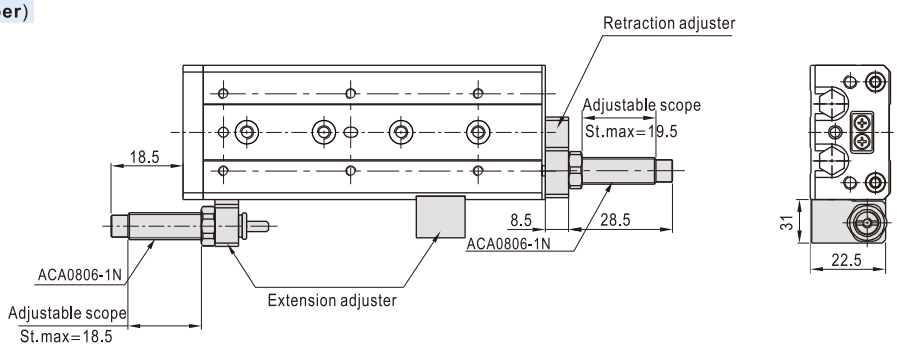


HLSL8

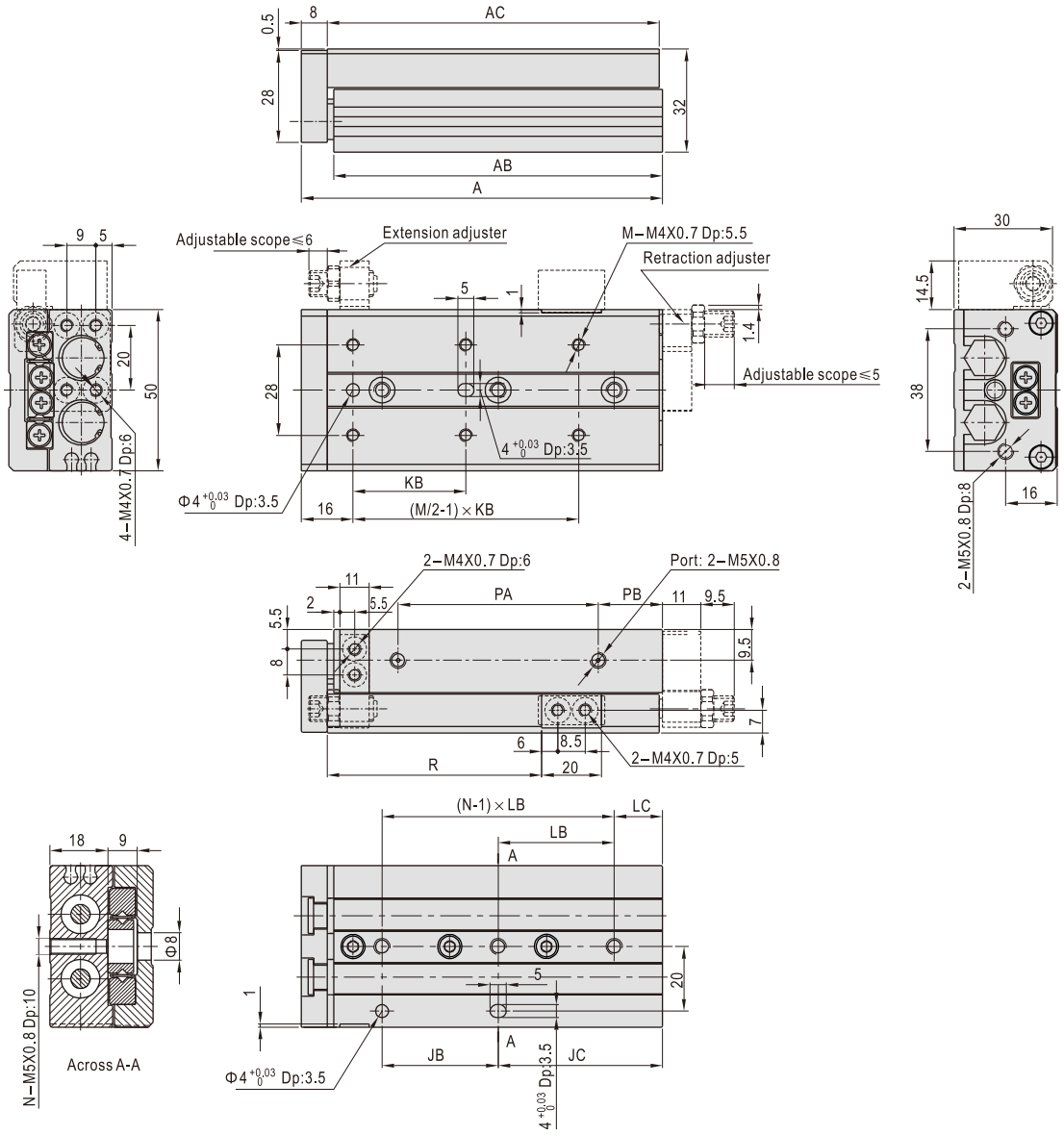


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	56	48.5	49	20	17	25	28	9	4	2	19.5	12.5	23.5
20	61	53.5	54	30	12	25	30	12	4	2	30	7	33.5
30	72	64.5	65	20	33	40	20	13	4	3	41	7	43.5
40	90	82.5	83	28	43	50	28	15	4	3	56	10	53.5
50	108	100.5	101	46	43	38	23	20	6	4	68	16	63.5
75	158	150.5	151	56	83	50	28	27	6	5	94	40	88.5

HLSL8(With shock absorber)

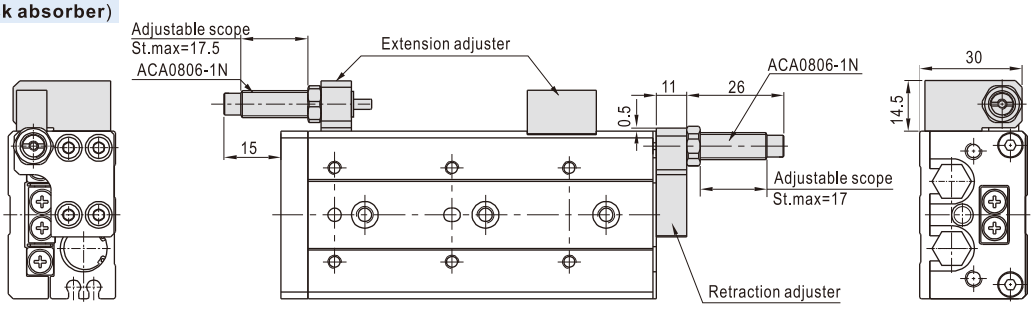


HLS12

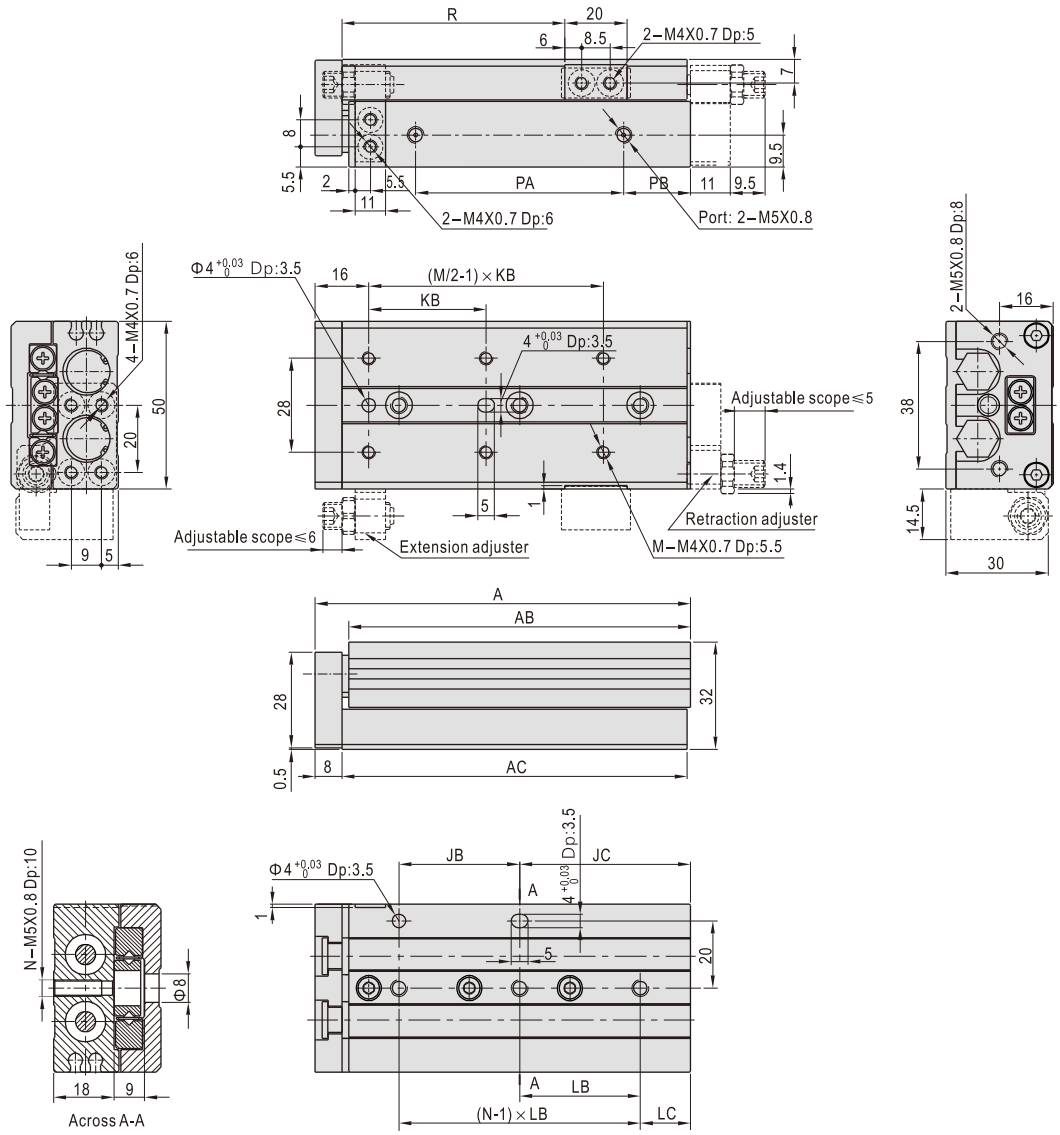


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	80	70	71	40	15	35	40	15	4	2	39.5	10	25
20	80	70	71	40	15	35	40	15	4	2	39.5	10	35
30	80	70	71	40	15	35	40	15	4	2	39.5	10	45
40	92	82	83	25	42	50	25	17	4	3	51.5	10	55
50	112	102	103	36	51	35	36	15	6	3	61.5	20	65
75	158	148	149	72	61	55	36	25	6	4	87.5	40	90
100	212	202	203	76	111	65	38	35	6	5	131.5	50	115

HLS12(With shock absorber)

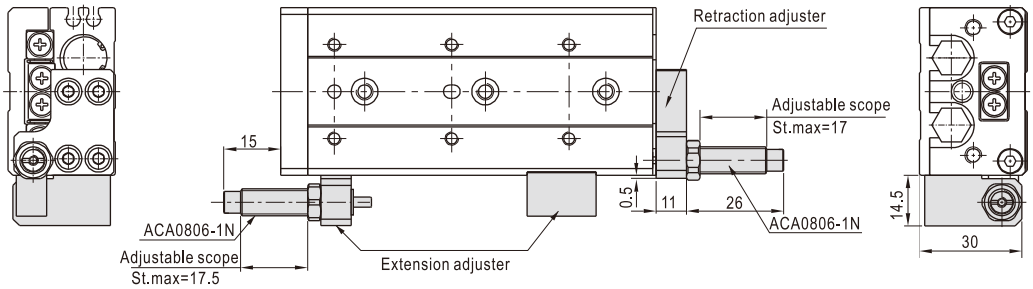


HLSL12

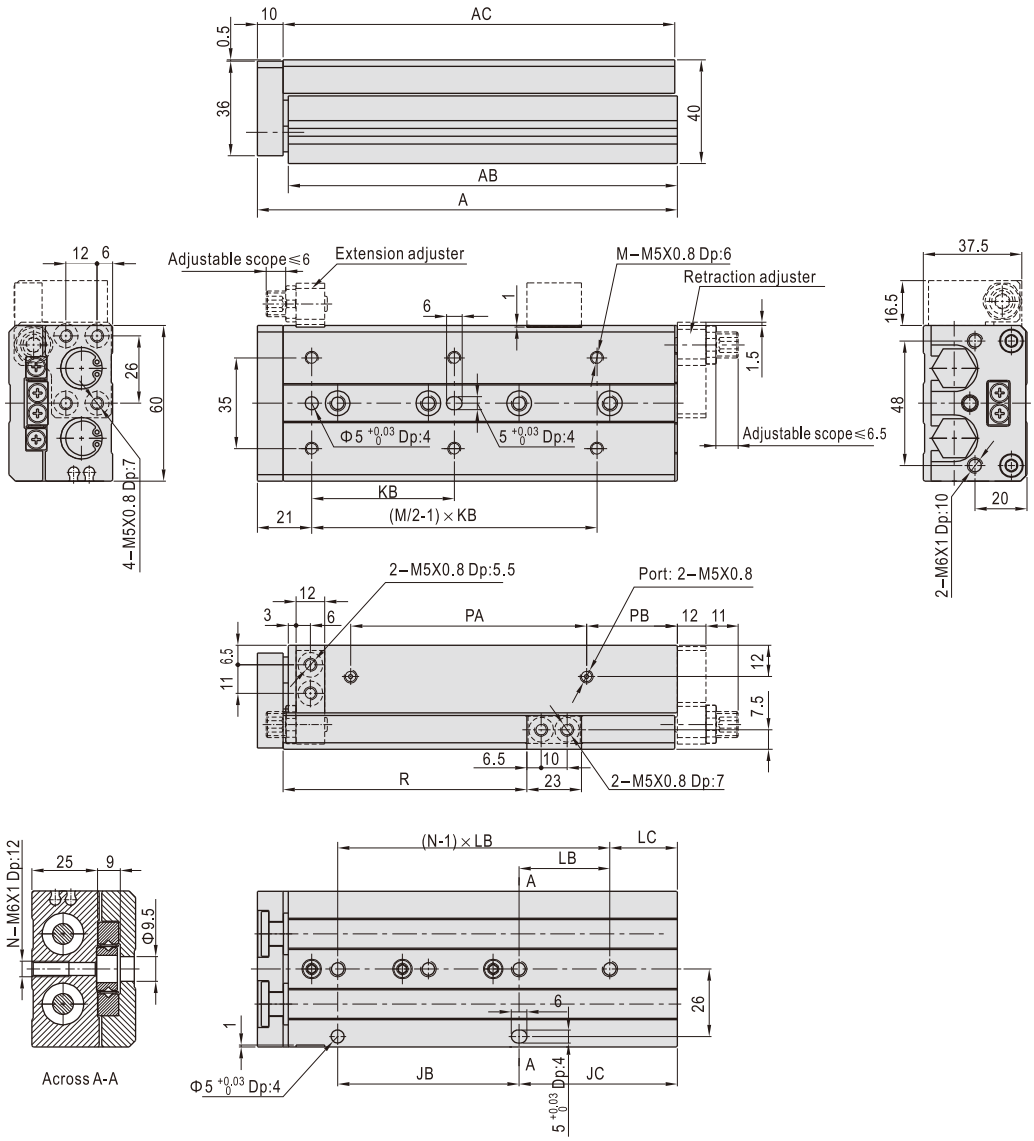


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	80	70	71	40	15	35	40	15	4	2	39.5	10	25
20	80	70	71	40	15	35	40	15	4	2	39.5	10	35
30	80	70	71	40	15	35	40	15	4	2	39.5	10	45
40	92	82	83	25	42	50	25	17	4	3	51.5	10	55
50	112	102	103	36	51	35	36	15	6	3	61.5	20	65
75	158	148	149	72	61	55	36	25	6	4	87.5	40	90
100	212	202	203	76	111	65	38	35	6	5	131.5	50	115

HLSL12(With shock absorber)

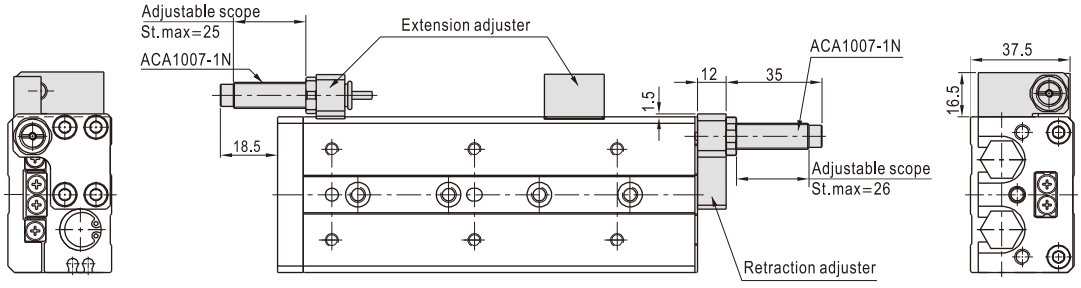


HLS16

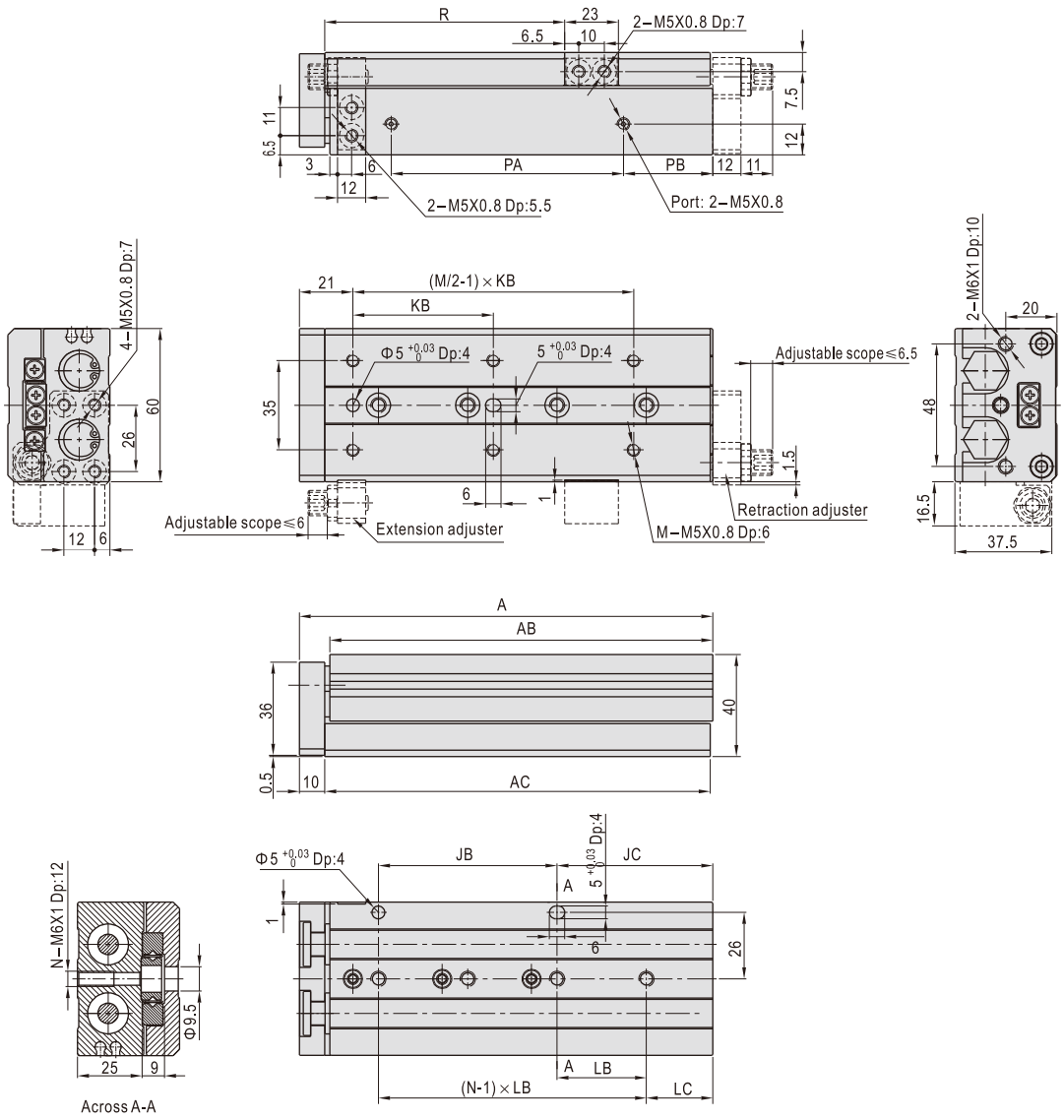


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	87	75	76	40	16	35	40	16	4	2	42.5	8	28.5
20	87	75	76	40	16	35	40	16	4	2	42.5	8	38.5
30	87	75	76	40	16	35	40	16	4	2	42.5	8	48.5
40	97	85	86	50	16	40	50	16	4	2	52.5	8	58.5
50	112	100	101	30	51	30	30	21	6	3	63.5	12	68.5
75	162	150	151	70	61	55	35	26	6	4	90.5	35	93.5
100	210	198	199	70	109	65	35	39	6	5	118.5	55	118.8
125	260	248	249	70	159	70	35	19	8	7	153.5	70	143.5

HLS16(With shock absorber)

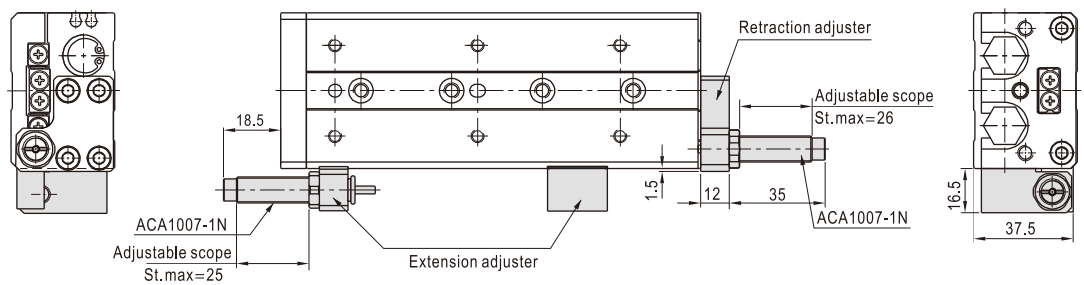


HLSL16

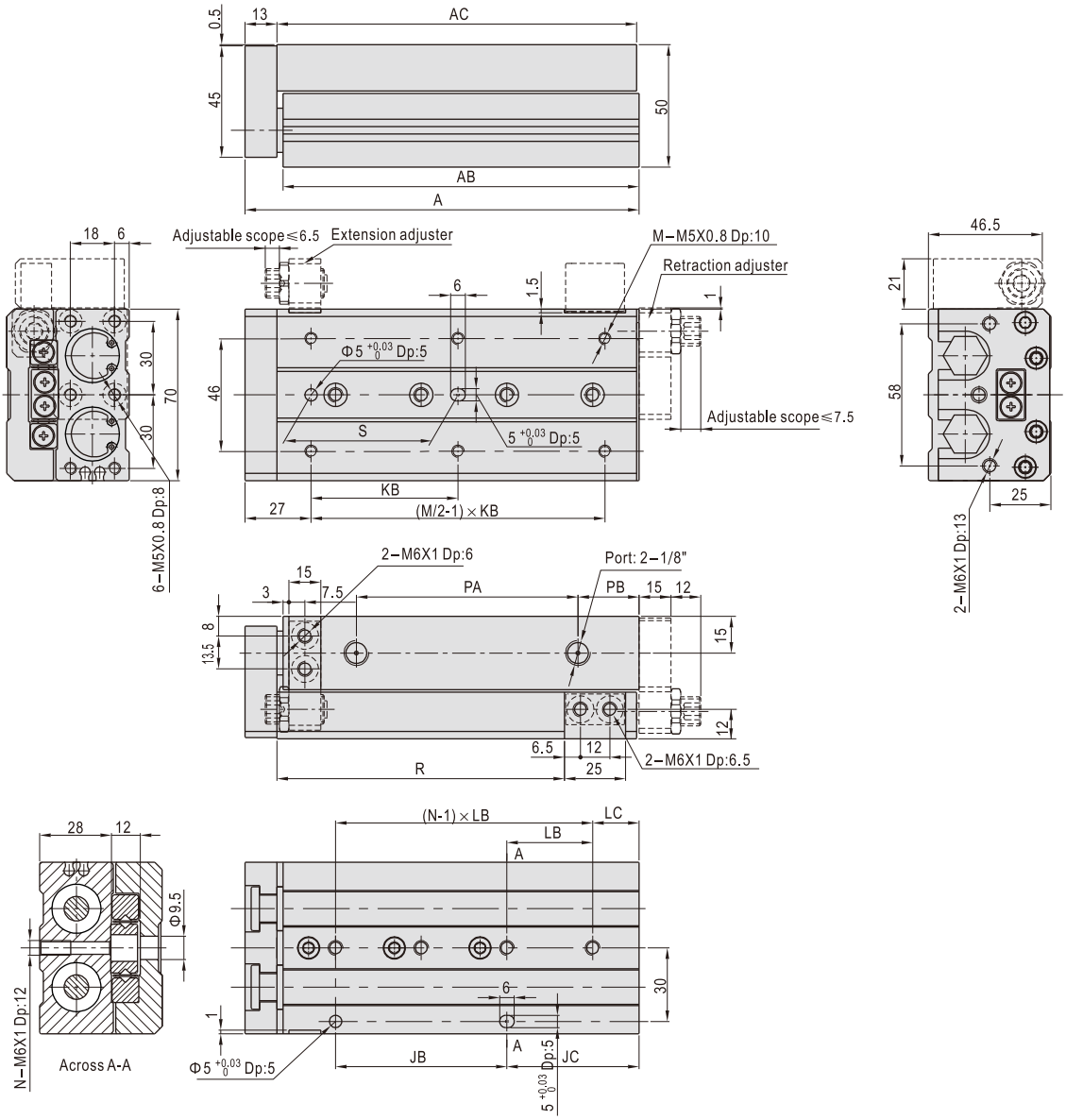


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	87	75	76	40	16	35	40	16	4	2	42.5	8	28.5
20	87	75	76	40	16	35	40	16	4	2	42.5	8	38.5
30	87	75	76	40	16	35	40	16	4	2	42.5	8	48.5
40	97	85	86	50	16	40	50	16	4	2	52.5	8	58.5
50	112	100	101	30	51	30	30	21	6	3	63.5	12	68.5
75	162	150	151	70	61	55	35	26	6	4	90.5	35	93.5
100	210	198	199	70	109	65	35	39	6	5	118.5	55	118.8
125	260	248	249	70	159	70	35	19	8	7	153.5	70	143.5

HLSL16(With shock absorber)

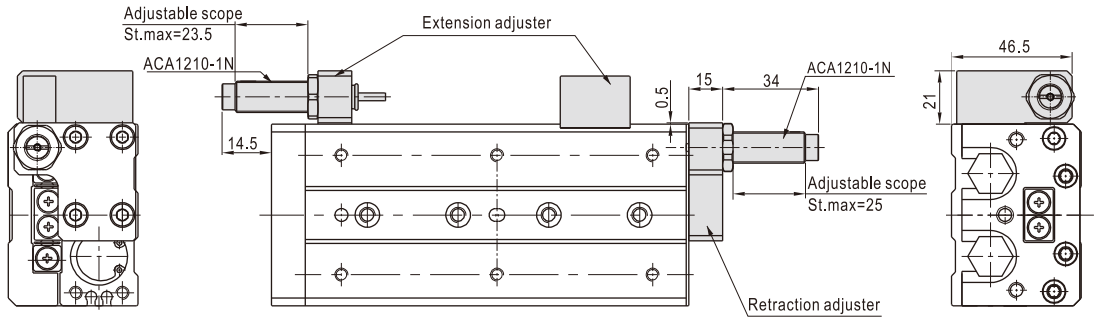


HLS20

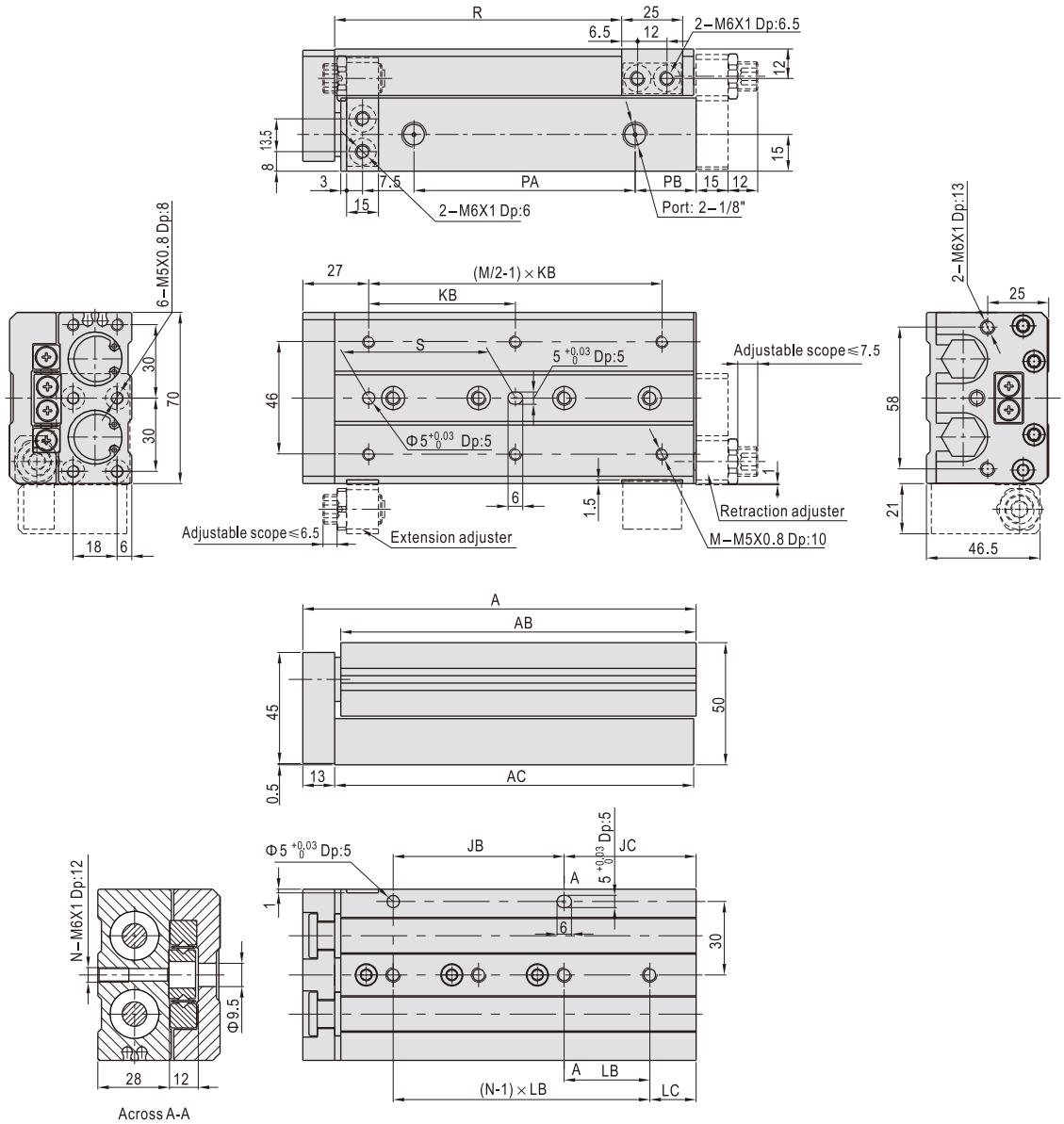


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	S	PA	PB	R
10	97	81.5	83	35	25	50	45	15	4	2	40	43.5	10	32.5
20	97	81.5	83	35	25	50	45	15	4	2	40	43.5	10	42.5
30	97	81.5	83	35	25	50	45	15	4	2	40	43.5	10	52.5
40	107	91.5	93	35	35	60	55	15	4	2	50	53.5	10	62.5
50	122	106.5	108	35	50	35	35	15	6	3	35	68.5	10	72.5
75	161	145.5	147	70	54	60	35	19	6	4	60	107.5	10	97.5
100	214	198.5	200	70	107	70	35	37	6	5	70	115.5	55	122.5
125	268	252.5	254	76	155	70	38	41	8	6	70	154.5	70	147.5
150	320	304.5	306	88	195	80	44	19	8	7	80	186.5	90	172.5

HLS20(With shock absorber)

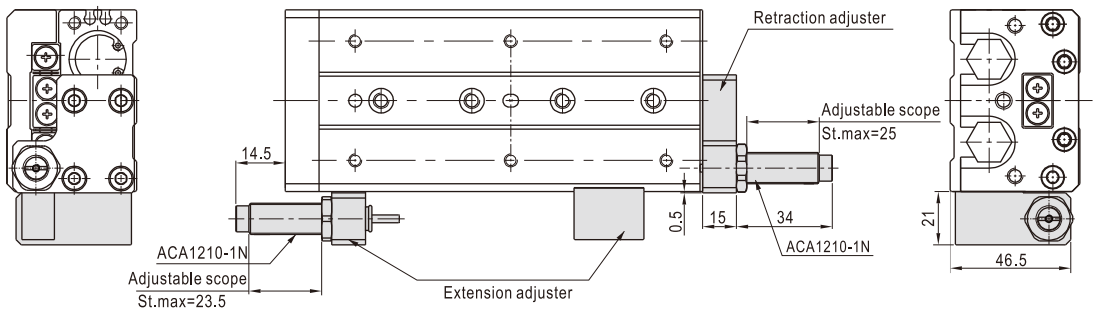


HLSL20

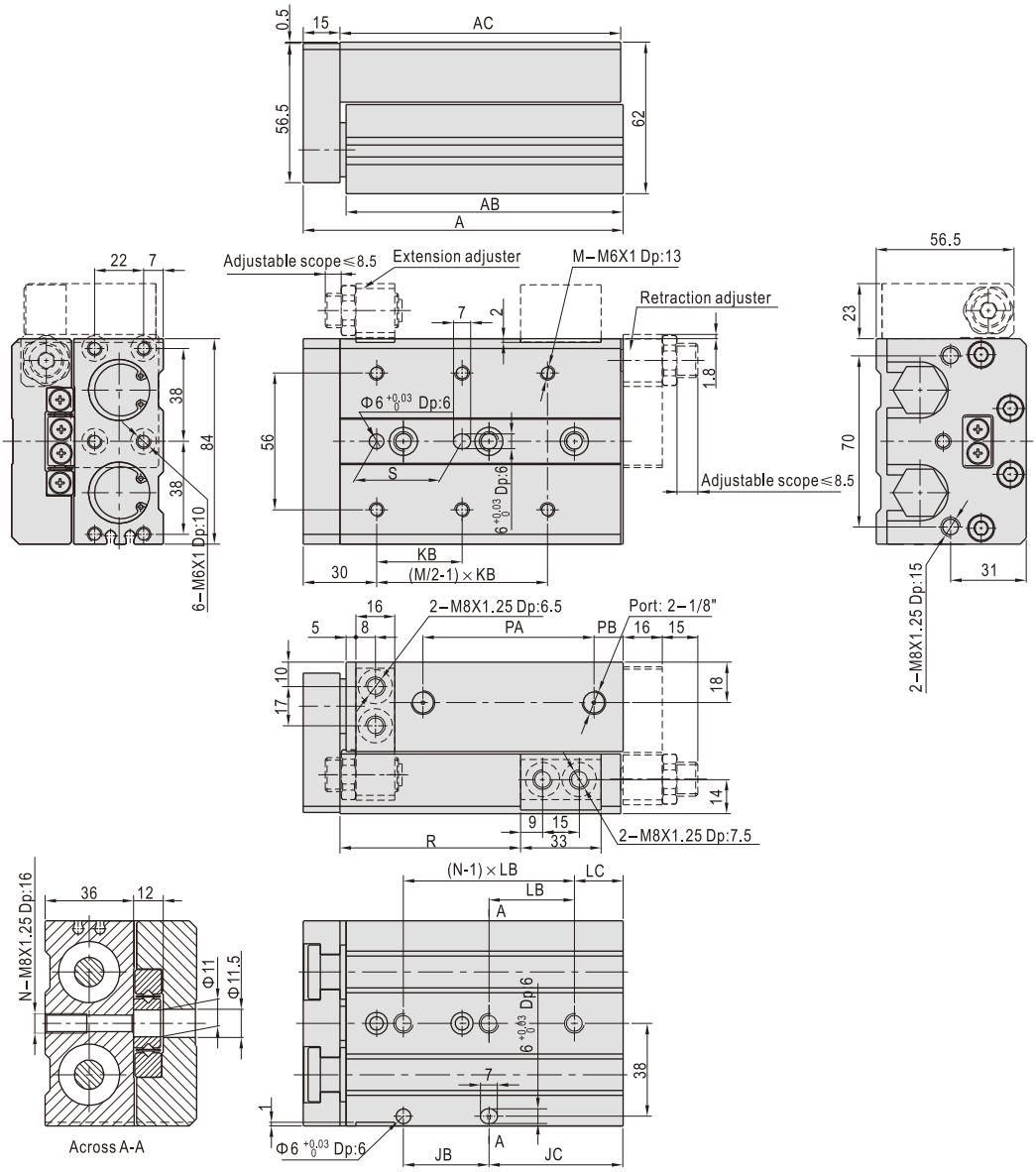


Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	S	PA	PB	R
10	97	81.5	83	35	25	50	45	15	4	2	40	43.5	10	32.5
20	97	81.5	83	35	25	50	45	15	4	2	40	43.5	10	42.5
30	97	81.5	83	35	25	50	45	15	4	2	40	43.5	10	52.5
40	107	91.5	93	35	35	60	55	15	4	2	50	53.5	10	62.5
50	122	106.5	108	35	50	35	35	15	6	3	35	68.5	10	72.5
75	161	145.5	147	70	54	60	35	19	6	4	60	107.5	10	97.5
100	214	198.5	200	70	107	70	35	37	6	5	70	115.5	55	122.5
125	268	252.5	254	76	155	70	38	41	8	6	70	154.5	70	147.5
150	320	304.5	306	88	195	80	44	19	8	7	80	186.5	90	172.5

HLSL20(With shock absorber)

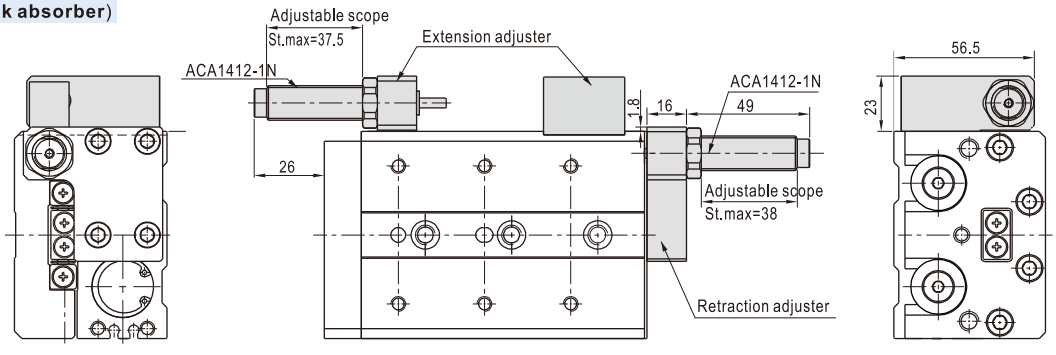


HLS25



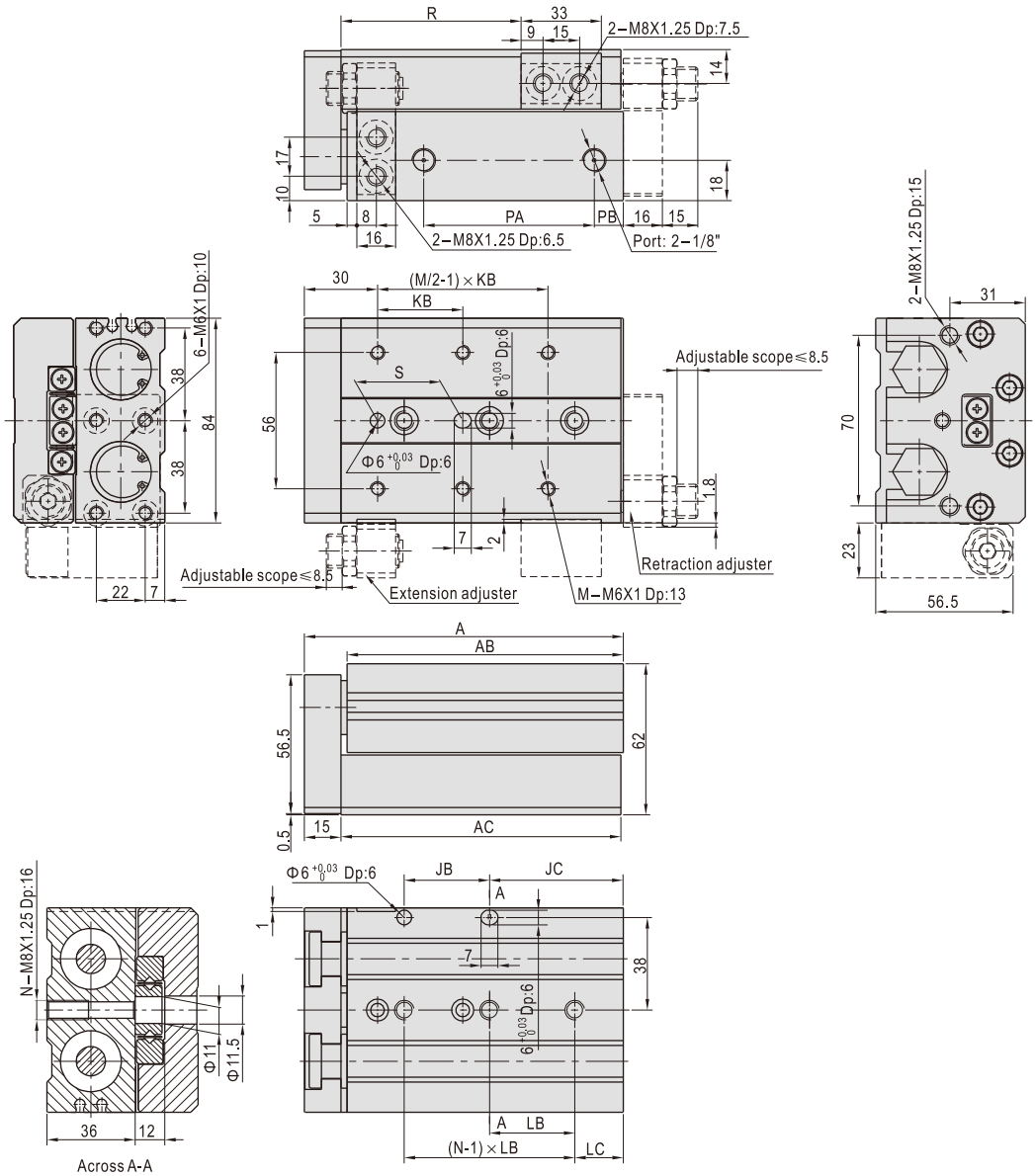
Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	S	PA	PB	R
10	108	90.5	92	45	22	50	45	22	4	2	40	47	12	35
20	108	90.5	92	45	22	50	45	22	4	2	40	47	12	45
30	108	90.5	92	45	22	50	45	22	4	2	40	47	12	55
40	118	100.5	102	55	22	60	55	22	4	2	50	57	12	65
50	131	113.5	115	35	55	35	35	20	6	3	35	70	12	75
75	172	154.5	156	70	61	60	35	26	6	4	60	90	33	100
100	213	195.5	197	70	102	70	35	32	6	5	70	119	45	125
125	271	253.5	255	76	154	75	38	40	8	6	75	155	67	150
150	311	293.5	295	80	190	80	40	30	8	7	80	180	82	175

HLS25(With shock absorber)



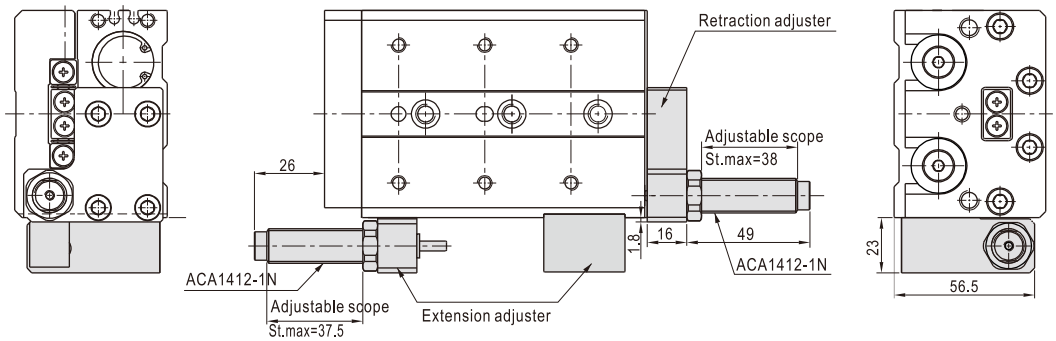
HLS、HLSL Series

HLSL25



Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	S	PA	PB	R
10	108	90.5	92	45	22	50	45	22	4	2	40	47	12	35
20	108	90.5	92	45	22	50	45	22	4	2	40	47	12	45
30	108	90.5	92	45	22	50	45	22	4	2	40	47	12	55
40	118	100.5	102	55	22	60	55	22	4	2	50	57	12	65
50	131	113.5	115	35	55	35	35	20	6	3	35	70	12	75
75	172	154.5	156	70	61	60	35	26	6	4	60	90	33	100
100	213	195.5	197	70	102	70	35	32	6	5	70	119	45	125
125	271	253.5	255	76	154	75	38	40	8	6	75	155	67	150
150	311	293.5	295	80	190	80	40	30	8	7	80	180	82	175

HLSL25(With shock absorber)



Accessory selection

	Accessories\Bore size		6	8	12
Standard (HLS)	Both ends	A(Adjustable rubber stopper)	F-HLQ6A	F-HLS8A	F-HLS12A
		B(Shock absorber)	×	F-HLS8B	F-HLS12B
	Extension	AS(Adjustable rubber stopper)	F-HLS6AS	F-HLS8AS	F-HLS12AS
		BS(Shock absorber)	×	F-HLQ8BS	F-HLQ12BS
	Retraction	AF(Adjustable rubber stopper)	F-HLQ6AF	F-HLS8AF	F-HLS12AF
		BF(Shock absorber)	×	F-HLS8BF	F-HLS12BF

	Accessories\Bore size		16	20	25
Standard (HLS)	Both ends	A(Adjustable rubber stopper)	F-HLS16A	F-HLS20A	F-HLS25A
		B(Shock absorber)	F-HLS16B	F-HLS20B	F-HLS25B
	Extension	AS(Adjustable rubber stopper)	F-HLS16AS	F-HLS20AS	F-HLS25AS
		BS(Shock absorber)	F-HLQ16BS	F-HLQ20BS	F-HLQ25BS
	Retraction	AF(Adjustable rubber stopper)	F-HLS16AF	F-HLS20AF	F-HLS25AF
		BF(Shock absorber)	F-HLS16BF	F-HLS20BF	F-HLS25BF

	Accessories\Bore size		6	8	12
Symmetrical (HLSL)	Both ends	A(Adjustable rubber stopper)	F-HLQL6A	F-HLSL8A	F-HLSL12A
		B(Shock absorber)	×	F-HLSL8B	F-HLSL12B
	Extension	AS(Adjustable rubber stopper)	F-HLS6AS	F-HLS8AS	F-HLS12AS
		BS(Shock absorber)	×	F-HLQ8BS	F-HLQ12BS
	Retraction	AF(Adjustable rubber stopper)	F-HLQL6AF	F-HLSL8AF	F-HLSL12AF
		BF(Shock absorber)	×	F-HLSL8BF	F-HLSL12BF

	Accessories\Bore size		16	20	25
Symmetrical (HLSL)	Both ends	A(Adjustable rubber stopper)	F-HLSL16A	F-HLSL20A	F-HLSL25A
		B(Shock absorber)	F-HLSL16B	F-HLSL20B	F-HLSL25B
	Extension	AS(Adjustable rubber stopper)	F-HLS16AS	F-HLS20AS	F-HLS25AS
		BS(Shock absorber)	F-HLQ16BS	F-HLQ20BS	F-HLQ25BS
	Retraction	AF(Adjustable rubber stopper)	F-HLSL16AF	F-HLSL20AF	F-HLSL25AF
		BF(Shock absorber)	F-HLSL16BF	F-HLSL20BF	F-HLSL25BF

Note): A=AS+AF; B=BS+BF.

F – HLS 20 AF

① ② ③ ④

①Accessory	②Cylindeer model	③Bore size	④Accessory type[Note]
	HLS: Standard HLSL: Symmetrical	6 8 12 16 20 25	A: Adjustable rubber stopper(Both ends) AS: Adjustable rubber stopper(Extension) AF: Adjustable rubber stopper(Retraction) B: Shock absorber (Both ends) BF: Shock absorber (Retraction)

[Note]The list accessories are for HLS cylinder. Accessories that are adaptable to other cylinder are not shown. Please refer to accessory list for selection and ordering information.

Dimensions

AS: Adjustable rubber stopper(Extension)

Body Mounting

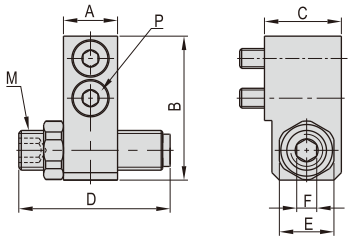
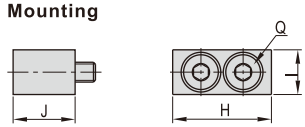


Table Mounting



Bore size\Item	Adjusting stroke range	A	B	C	D	E	F	M	P	H	I	J	Q
6	5	7	19	10.5	16.5	8	3	M6×1.0	M2.5 Length:10	12.5	6.5	10.5	M2.5 Length:10
8	5	8.5	21.5	14	21.5	11	4	M8×1.0	M3 Length:14	14.5	8	12	M3 Length:14
12	5	11	29	15.5	31.5	11	4	M8×1.0	M4 Length:16	20	9	13.5	M4 Length:12
16	5	12	36	17.5	24	14	5	M10×1.0	M5 Length:16	23	10.5	17	M5 Length:16
20	5	15	44.5	22	28	17	6	M12×1.0	M6 Length:20	25	12.5	21	M6 Length:20
25	5	16	53.5	24	32	19	6	M14×1.5	M8 Length:20	33	16.5	23	M8 Length:20

BS: Shock absorber(Extension)

Body Mounting

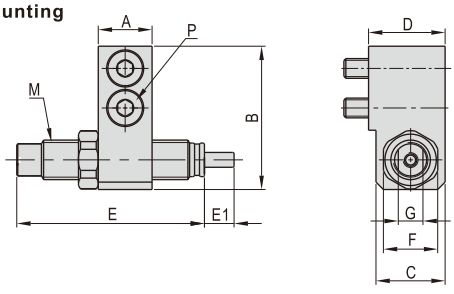
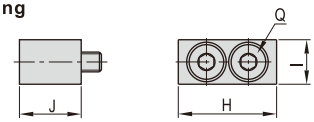


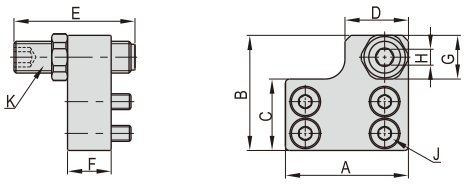
Table Mounting



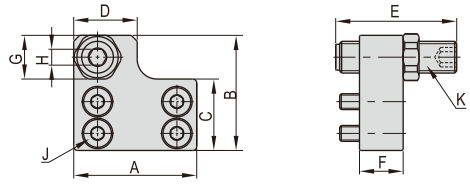
Bore size\Item	A	B	C	D	E	E1	F	G	M	P	H	I	J	Q
8	8.5	21.5	12.5	14	40	6	11	7	M8×1.0	M3 Length:14	14.5	8	12	M3 Length:14
12	11	29	14	15.5	40	6	11	7	M8×1.0	M4 Length:16	20	9	13.5	M4 Length:12
16	12	36	16	17.5	49	7	14	9	M10×1.0	M5 Length:16	23	10.5	17	M5 Length:16
20	15	44.5	20	22	53.5	10	17	11	M12×1.0	M6 Length:20	25	12.5	21	M6 Length:20
25	16	53.5	22	24	68.5	12	19	12	M14×1.5	M8 Length:20	33	16.5	23	M8 Length:20

AF: Adjustable rubber stopper(Retraction)

For standard type



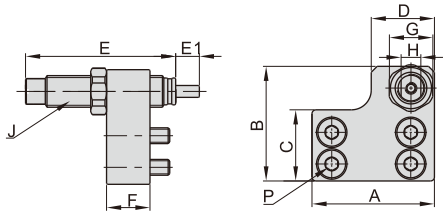
For symmetrical type



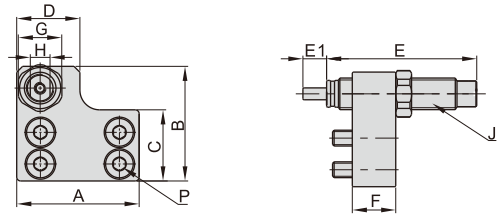
Bore size\Item	Adjusting stroke range	A	B	C	D	E	F	G	H	J	K
6	5	18	19	11	8	21.5	7	8	3	M2.5 Length:6	M6×1.0
8	5	24	22.5	13	14	21.5	8.5	11	4	M3 Length:8	M8×1.0
12	5	31	29	18	16	21.5	11	11	4	M4 Length:12	M8×1.0
16	5	37	37.5	23	18	24	12	14	5	M5 Length:12	M10×1.0
20	5	45.5	47	28.5	23	28	15	17	6	M5 Length:16	M12×1.0
25	5	54	56	34	28	32	16	19	6	M6 Length:18	M14×1.5

BF: Shock absorber(Retraction)

For standard type

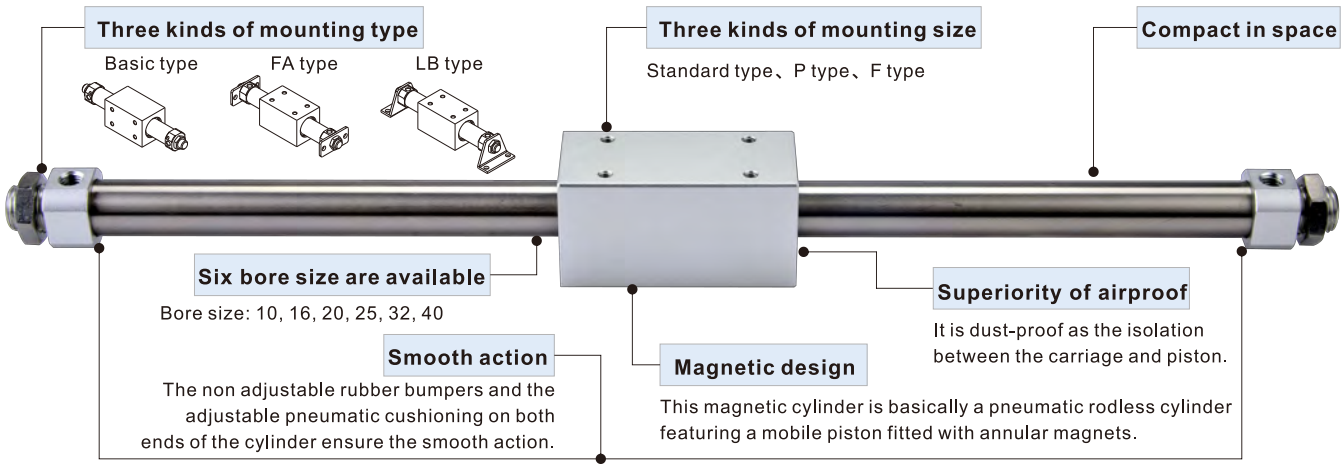


For symmetrical type



Bore size\Item	A	B	C	D	E	E1	F	G	H	J	P
8	24	22.5	13	14	40	6	8.5	11	7	M8×1.0	M3 Length:8
12	31	29	18	16	40	6	11	11	7	M8×1.0	M4 Length:12
16	37	37.5	23	18	49	7	12	14	9	M10×1.0	M5 Length:12
20	45.5	47	28.5	23	53.5	10	15	17	11	M12×1.0	M5 Length:16
25	54	56	34	28	68.5	12	16	19	12	M14×1.5	M6 Length:18

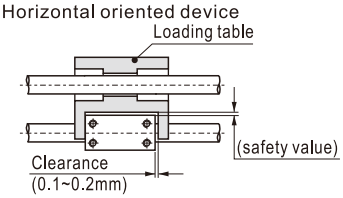
Compendium of RMS Series



Installation and application

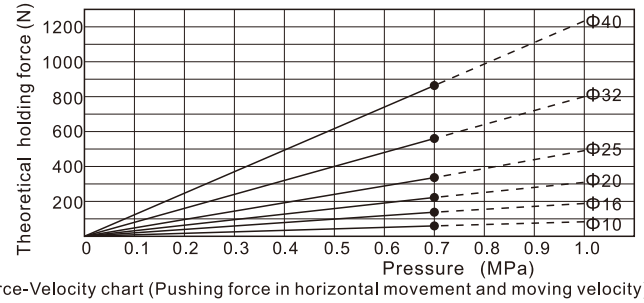
1. The maxi load to move must be less than the theoretical holding force.
2. How to mount load:
2.1. Horizontal mounting: the permissible radial load must be lower than the figures in the chart below.

Horizontal oriented device

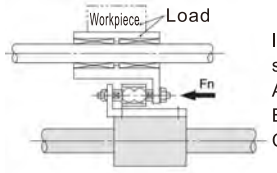


Bore size	10	16	20	25	32	40
Max. Loading table weight(kg)	0.4	1.0	1.1	1.2	1.5	2.0

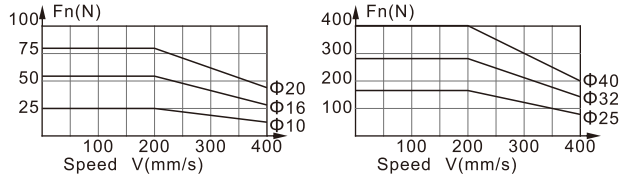
[Note] If Max. load be larger than the value of above table, please conform with our company.



Force-Velocity chart (Pushing force in horizontal movement and moving velocity)

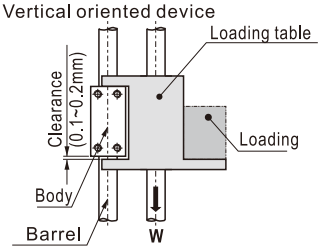


In horizontal movement, please choose proper bore size based on Force-Velocity chart
A.Find required pushing force
B.Find moving velocity
C.Choose proper spec based on force-Velocity chart



2.2. Vertical mounting: The load guiding method should adopt rolling support (linear guide rail, etc.); if the sliding support is used, the sliding resistance will increase due to the load mass and the torque generated by the load, resulting in poor operation.

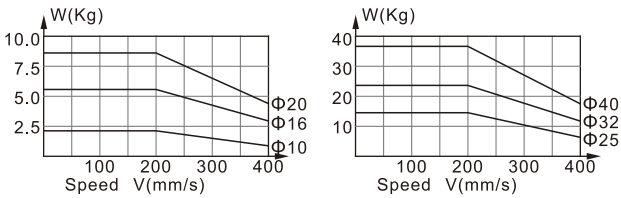
Vertical oriented device



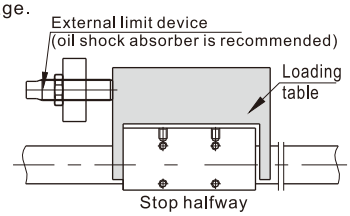
Bore size	Max. Load weight(Loading table+Load)(kg)
10	2.2
16	5.6
20	8.8
25	15
32	24
40	37

[Note] If pressure be larger then the max. pressure, magnetic core might disengage.

Load-Velocity chart (Load in vertical movement and moving velocity)



3. Middle-stop:
3.1 When using stopper mechanism to fulfill middle-stop application, working pressure of cylinder cannot exceeds figures stated in the table on the right. Once working pressure exceeds these figures, energy cannot be absorbed when hitting happens on external stopper and it may cause discouple. Shock absorber is recommended in stopper design. When adjusting the mechanism, observe that if hitting process is done smoothly and there is no bounce happened.
3.2 In designing middle-stop application for pneumatic system, allowable kinetic energy must be within figures shown in the table on the right. (Moving speed needs to be smaller than max velocity)



Bore size	Maximum allowable working pressure for middle-stop
10	0.55MPa
16	0.55MPa
20	0.55MPa
25	0.55MPa
32	0.55MPa
40	0.55MPa

Bore size	Allowable kinetic energy for middle-stop application in pneumatic system(ES)(J)
10	0.03
16	0.13
20	0.24
25	0.45
32	0.88
40	1.53

Note : When kinetic energy exceeds allowable figures, discouple will happen, which means body and piston inside the barrel will separate from each other, please be careful when design.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust jam cap shall be added in air inlet and outlet ports.

Rodless magnetic cylinder

RMS Series



Specification

Series name	RMS Series	RMS、RMSF Series					RMSP Series		
Bore size(mm)	10	16	20	25	32	40	16	20	32
Acting type	Double acting								
Fluid	Air(to be filtered by 40μm filter element)								
Operating pressure	0.2~0.7MPa (29~100psi)(2.0~7bar)	0.15~0.7MPa(22~100psi)(1.5~7bar) [Note2]							
Proof pressure	1.2MPa(175psi)(12.0bar)								
Temperature ℃	-20~70								
Speed range mm/s	50~400								
Stroke tolerance mm	$0\sim250^{+1.0}_{0}$ $251\sim1000^{+1.5}_{0}$ $1001\sim^{+2.0}_{0}$								
Cushion type	Bumper	Variable cushion+Fixed cushion							
Port size [Note1]	M5×0.8	1/8"			1/4"		M5×0.8	1/8"	
Safe holding force N	55	140	220	345	560	880	140	220	560

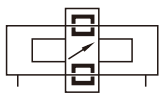
[Note1] G thread is available.
[Note 2] when stopping in the middle, Operating pressure shall not exceed 0.55MPa, and buffer shall be provided when stopping at both ends.

Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke
10	50 100 150 200 250 300	1000
16	50 100 150 200 250 300 350 400 450 500	1500
20	50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000	2000
25	50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000	2500
32	50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000	3000
40	50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000	3000

[Note] Consult us for non-standard stroke.

Symbol



Product feature

1. This magnetic cylinder is basically a pneumatic rodless cylinder featuring a mobile piston fitted with annular magnets. The mobile carriage is also equipped with magnets to provide magnetic coupling (carriage/piston). The carriage slide freely along the main tube.
2. It is dust-proof as the isolation between the carriage and piston.
3. It is compact in space.
4. The non adjustable rubber bumpers and the adjustable pneumatic cushioning on both ends of the cylinder ensure the smooth action.

Ordering code

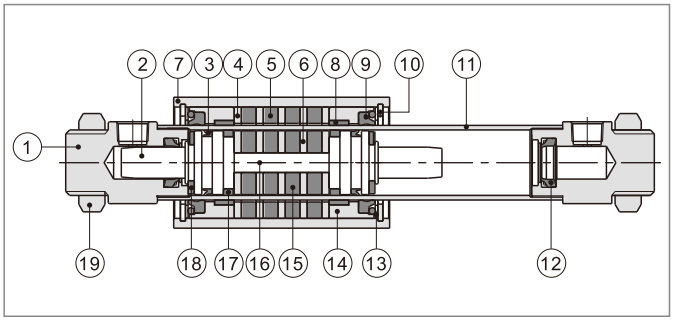
RMS □ 20×200 □ G

① ② ③ ④ ⑤ ⑥

①Model	②Version	③Bore size	④Stroke	⑤Mounting type [Note1]	⑥Thread type [Note2]
RMS: Rodless magnetic cylinder	Blank: basic version	10 16 20 25 32 40	Refer to stroke table for details	Blank: non bracket LB: LB type FA: FA type	G: G Thread
	P: P size version	16 20 32			
	F: F size version	16 20 25 32 40			

[Note1] RMSF40 series do not have FA mounting accessories.
[Note2]Blank on thread code means metric M thread. There is only metric thread for Φ10/Φ16.

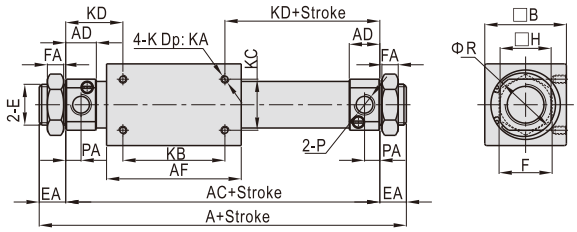
Inner structure and material of major parts



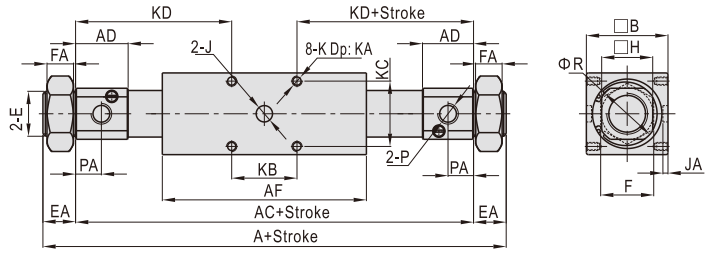
NO.	Item	Material	NO.	Item	Material
1	End cap	Aluminum alloy	11	Barrel	Stainless steel
2	Piston	Aluminum alloy	12	Cushion O-ring	TPU
3	Piston seal	TPU	13	Washer	Stainless steel
4	Magnet washer	Carbon steel	14	Cover	Aluminum alloy
5	Magnet	Rare-earth material	15	Magnet	Rare-earth material
6	Magnet washer	Carbon steel	16	Connecting rod	Stainless steel
7	Body	Aluminum alloy	17	Wear ring	Wear resistant material
8	Wear ring	Wear resistant material	18	Bumper	NBR
9	Scraping dust ring	Plastics	19	Nut	Stainless steel
10	C Clip	Spring steel			

Dimensions

RMS **RMS–P**



RMS–F



Model\Item	A	AC	AD	AF	B	E	EA	F	FA	H	J	JA	K	KA	KB	KC	KD	P	PA	R
RMS10	91	73	9.5	48	25	M10×1.0	9	14	4	15	-	-	M3×0.5	4	30	16	21.5	M5×0.8	5	17
RMS16	103	83	10	57	35	M10×1.0	10	14	4	20	-	-	M4×0.7	5	35	19	24	M5×0.8	5.5	22
RMSP16	112	92	14.5	57		M10×1.0	10	14	4		-	-	M4×0.7	7	34	25	29		7.5	
RMSF16	205	181	34	80		M16×1.5	12	23	8		8	3	M5×0.8	7.5	26	26	77.5		20	
RMS20	132	106	15	66	40	M20×1.5	13	26	8	25	-	-	M4×0.7	5.5	50	25	28	1/8"	7.5	29
RMSP20	143	115	19.5	66		M20×1.5	14	26	8		-	-	M5×0.8	7	40	30	37.5	1/8"	10	
RMSF20	217	185	29.5	90		M22×1.5	16	29	7		8	2.5	M5×0.8	8.5	32	32	76.5		15	
RMS25	137	111	15	70	46	M26×1.5	13	32	8	30	-	-	M5×0.8	7.5	50	30	30.5	1/8"	7.5	33.5
RMSF25	238	206	37.5	90		M22×1.5	16	29	7		10	3	M6×1.0	10	36	36	85	1/8"	20	
RMS32	156	124	16	80	60	M26×1.5	16	32	8	36	–	–	M6×1.0	8	50	40	37	1/8"	8	39.5
RMSP32	165	133	20.5	80		M26×1.5		32	8		–	–		8			41.5	1/8"	10	
RMSF32	270	238	48	110		M30×1.5		36	7		10	3.5		12.5	48	48	95		28	
RMS40	182	150	22	92	70	M32×2.0	16	41	10	46	–	–	M6×1.0	9	60	40	45	1/4"	11	49.5
RMSF40	327	295	44.5	130		M38×1.5		46	8		12	4.5	M8×1.25	16	50	56	122.5	1/4"	25	

List for ordering code of accessories

Accessories\Bore size		10	16			20			25		32			40	
		RMS	RMS	RMSP	RMSF	RMS	RMSP	RMSF	RMS	RMSF	RMS	RMSP	RMSF	RMS	RMSF
Mounting accessories	LB	F-PB12LB	F-RMS16LB		F-RMSF16LB	F-RMS20LB		F-RMSF20LB	F-RMS25LB	F-RMSF25LB	F-RMS32LB		F-RMSF32LB	F-RMS40LB	F-RMSF40LB
	FA	F-PB12FA	F-PB12FA		F-MI12FA	F-MF20FA		F-MA20FA	F-MF32FA	F-MA20FA	F-MF32FA		F-MA40FA	F-MF40FA	–

Accessory selection

Accessories\Cylinder model		RMS	RMSP	RMSF
Mounting accessories	LB	●	●	●
	FA	●	●	●

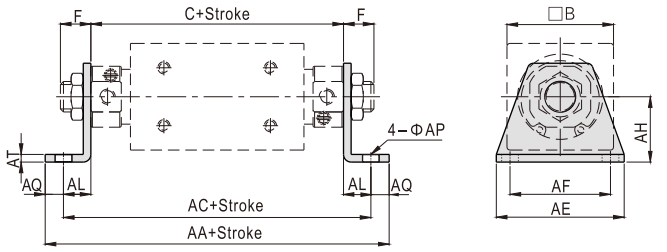
Material of accessories

Accessories\Bore size		10	16			20			25		32			40	
		RMS	RMS	RMSP	RMSF	RMS	RMSP	RMSF	RMS	RMSF	RMS	RMSP	RMSF	RMS	RMSF
Mounting accessories	LB	△	△		△	△		△	△	△	△		△	△	△
	FA	△	△		△	△		○	△	○	△		○	△	–

○——Lower carbon steel; △——SPCC

Dimensions

RMS-LB RMSP-LB

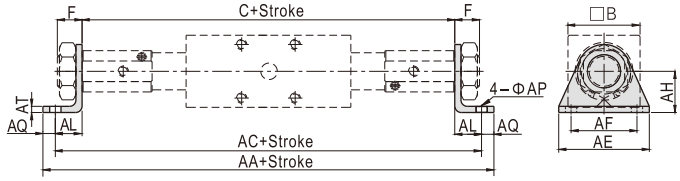


Bore size\Item	AA		AC		C		F	
	RMS	RMSP	RMS	RMSP	RMS	RMSP	RMS	RMSP
10	103	-	91	-	73	-	9	-
16	113	122	101	110	83	92	10	10
20	158	167	142	151	106	115	13	14
25	167	-	151	-	111	-	13	-
32	184	193	170	179	124	133	16	16
40	216	-	196	-	150	-	16	-

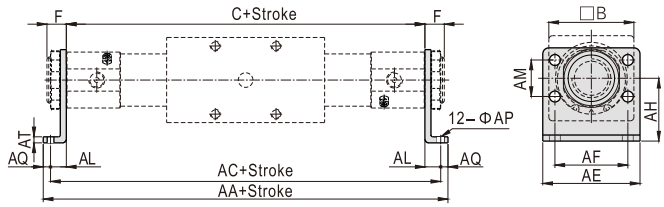
Bore size\Item	AE	AF	AH	AL	AP	AQ	AT	B
10	42	33	14	9	5.5	6	2.5	25
16	42	33	20	9	5.5	6	2.5	35
20	43	30	23	18	6.5	8	3	40
25	54	40	26	20	6.5	8	4	46
32	62	46	33	23	7	7	4	60
40	75	55	38	23	9	10	5	70

RMSF-LB

Φ16~Φ25



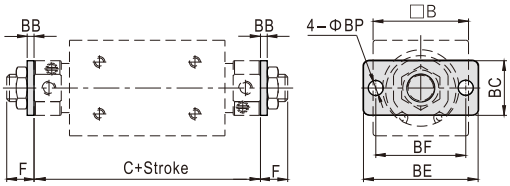
Φ32、Φ40



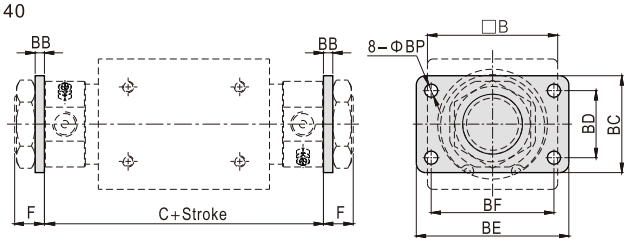
Bore size\Item	AA	AC	AE	AF	AH	AL	AM	AP	AQ	AT	B	C	F
16	221	209	44	32	20	14	-	5.5	6	2.5	35	181	12
20	235	219	54	40	23	17	-	6.5	8	3	40	185	16
25	256	240	54	40	26	17	-	6.5	8	4	46	206	16
32	280	266	66	52	33	14	28	7	7	4	60	238	16
40	353	333	80	60	38	19	30	9	10	5	70	295	16

RMS-FA RMSP-FA

Φ16~Φ32



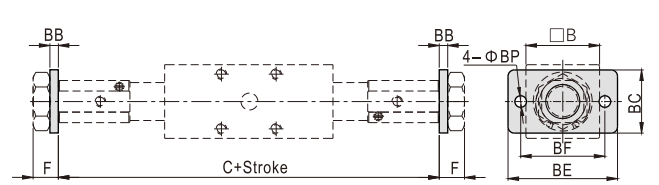
Φ40



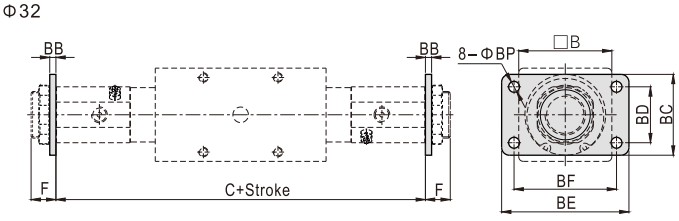
Bore size\Item	B	BB	BC	BD	BE	BF	BP	C		F	
								RMS	RMSP	RMS	RMSP
10	25	3	20	-	42	33	5.5	73	-	9	-
16	35	3	20	-	42	33	5.5	83	92	10	10
20	40	4	34	-	75	60	7	106	115	13	14
25	46	4	40	-	75	60	7	111	-	13	-
32	60	4	40	-	75	60	7	124	133	16	16
40	70	5	52	36	82	66	7	150	-	16	-

RMSF-FA

Φ16~Φ25



Φ32

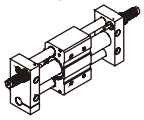


Bore size\Item	B	BB	BC	BD	BE	BF	BP	C	F
16	35	4	30	-	52	40	5.5	181	12
20	40	4	38	-	64	50	6.5	185	16
25	46	4	38	-	64	50	6.5	206	16
32	60	4	50	36	84	70	6.5	238	16

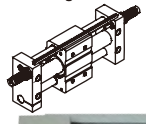
Compendium of RMT Series

With manget and without magnet are available

Without magnet



With magnet

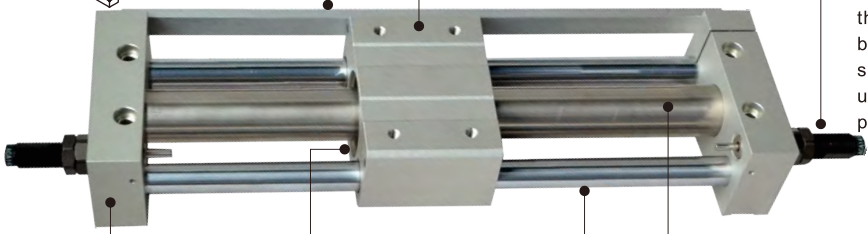


Magnetic design

This magnetic cylinder is basically a pneumatic rodless cylinder featuring a mobile piston fitted with annular magnets.

Two kinds of cushion type

The non adjustable rubber bumpers and the adjustable pneumatic cushioning on both ends of the cylinder ensure the smooth action. If shock absorber be used, the cushioning effect is more perfection.



Double guides

Double guides ensure high precision and can endure proper side load or offset load.

Five bore size are available

Bore size: 16, 20, 25, 32, 40

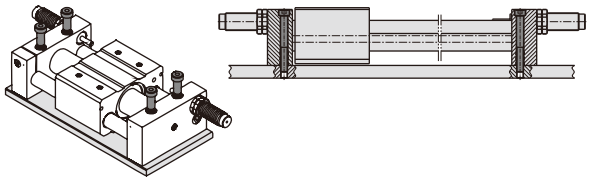
It is compact in space

Can be mounted from top and bottom.

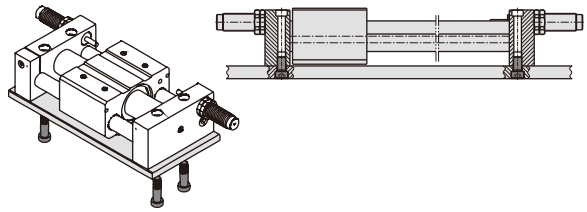
Superiority of airproof

It is dust-proof as the isolation between the carriage and piston.

Top bolt mounting



Bottom bolt mounting



Installation and application

1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder shall be filtered to 40μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

Guided rodless cylinder(Magnetic Coupled)

RMT Series

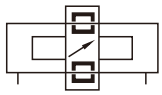


Specification

Bore size(mm)	16	20	25	32	40
Acting type	Double acting				
Fluid	Air(to be filtered by 40μm filter element)				
Operating pressure	0.2~0.7MPa(30~100psi(2.0~7bar)	0.25~0.7MPa(36~100psi(2.5~7bar)			
Proof pressure	1.2MPa(175psi)(12.0bar)				
Temperature ℃	-20~70				
Speed range mm/s	50~400				
Stroke tolerance mm	0~250 $^{+1.0}_{0}$	251~1000 $^{+1.5}_{0}$	1001~ $^{+2.0}_{0}$		
Cushion type	Fixed cushion	Shock absorber(Available)			
Safe holding force N	140	220	345	560	880
Port size [Note1]	M5×0.8	1/8"			1/4"

[Note1] G thread is available.
Add) Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. This magnetic cylinder is basically a pneumatic rodless cylinder featuring a mobile piston fitted with annular magnets. The mobile carriage is also equipped with magnets to provide magnetic coupling (carriage/piston). The carriage slide freely along the main tube.
2. It is dust-proof as the isolation between the carriage and piston.
3. It is compact in space.
4. The non adjustable rubber bumpers and the adjustable pneumatic cushioning on both ends of the cylinder ensure the smooth action. If shock absorber be used, the cushioning effect is more perfection.
5. Double guides ensure high precision and can endure proper side load or offset load.

Stroke

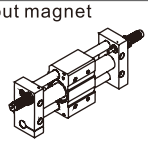
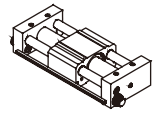
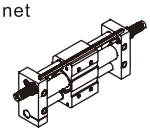
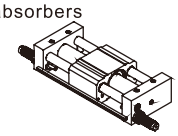
Bore size (mm)	Standard stroke (mm)	Max.std stroke
16	50 100 150 200 250 300 350 400 450 500	750
20	50 100 150 200 250 300 350 400 450 500 600 700 750 800	1000
25	50 100 150 200 250 300 350 400 450 500 600 700 750 800	1500
32	50 100 150 200 250 300 350 400 450 500 600 700 750 800	1500
40	50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000	1500

[Note] Consult us for non–standard stroke.

Ordering code

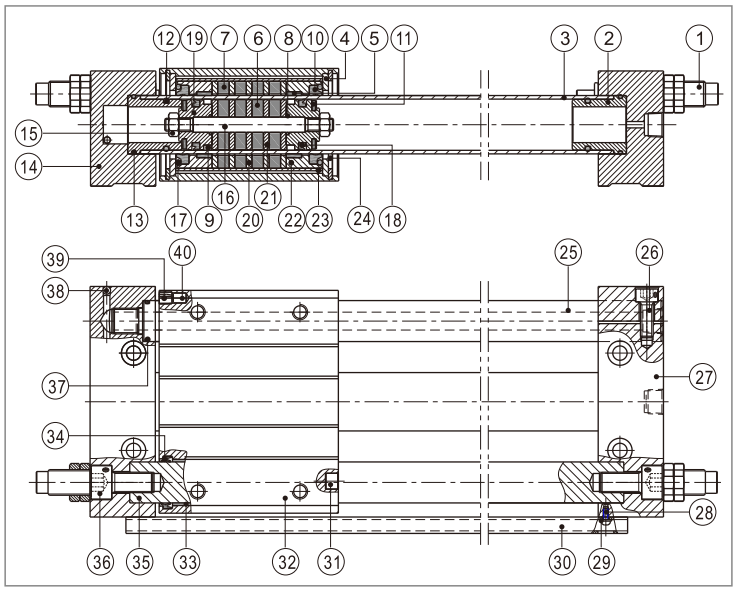
RMT 20 × 100 S □ G

1 2 3 4 5 6

①Model	②Bore size	③Stroke	④Magnet	⑤Cushion type	⑥Thread type [Note1]
RMT: Guided rodless cylinder(Magnetic Coupled)	16 20 25 32 40	Refer to stroke table for details	Blank: Without magnet 	Blank: With two adjustable nuts 	G: G Thread
			S: With magnet 	A: With two shock absorbers 	

[Note1] Blank on thread code means metric M thread. There is only metric thread for Φ16.

Inner structure and material of major parts

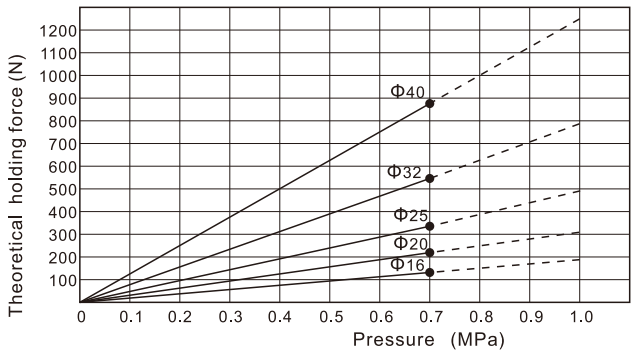


NO.	Item	Material	NO.	Item	Material
1	Shock absorber	Combination	21	Magnet washer	Carbon steel
2	Washer cover	Aluminum alloy	22	End cover	Aluminum alloy
3	Stainless steel barrel	Stainless steel	23	Moveable core	Aluminum alloy
4	Washer	Carbon steel	24	C clip	Spring steel
5	Wearing ring	Wear resistant material	25	Guide I	Carbon steel
6	Magnet	Rare-earth material	26	Countersink screw	Carbon steel
7	Magnet	Rare-earth material	27	Fixing plate	Aluminum alloy
8	O-ring	NBR	28	Screw	Carbon steel
9	Wear ring	Wear resistant material	29	Spring washer	Spring steel
10	Scraping dust ring	Plastics	30	Rail	Aluminum alloy
11	Bumper	NBR	31	Bumper block	Stainless steel
12	O-ring	NBR	32	Barrel	Aluminum alloy
13	O-ring	NBR	33	Bushing	Bronze+Fill lubricant
14	Fixing plate	Aluminum alloy	34	Gasket	TPU
15	Nut	SS41	35	Guide II	Carbon steel
16	Joint pole	Stainless steel	36	Countersink screw	Carbon steel
17	O-ring	NBR	37	O-ring	NBR
18	Piston seal	TPU	38	Steel ball	Stainless steel
19	Magnet	Aluminum alloy	39	Location washer	NBR
20	Magnet washer	Carbon steel	40	Magnet	Rare-earth material

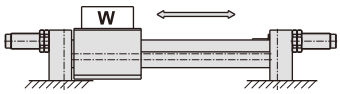
Installation and application

1. How to determine load：

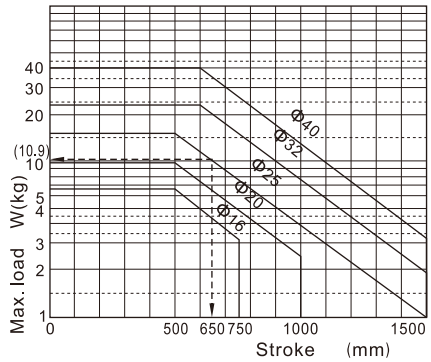
1.1) The maxi load to move must be less than the theoretical holding force.



1.2) The relation between loading and stroke as below(Loading center and slide table center must be superposition)



Bore size	Max.Load W(kg)	Stroke scope
16	5.6	~300mm
20	9.6	~500mm
25	16	~500mm
32	24	~600mm
40	40	~600mm



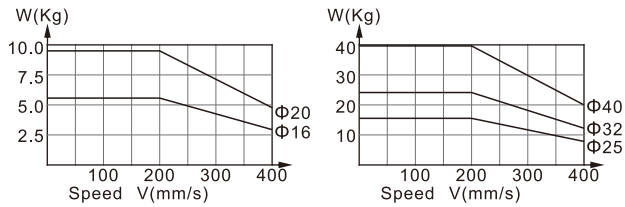
In horizontal movement, please choose proper bore size based on Load-Velocity chart

A.Find required load

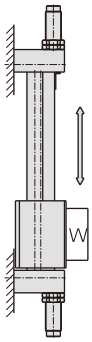
B.Find moving velocity

C.Choose proper spec based on Load-Velocity chart

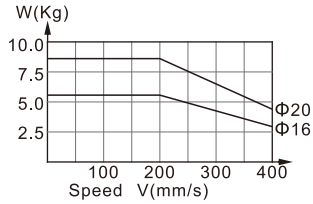
Load-Velocity chart (Load in horizontal movement and moving velocity)

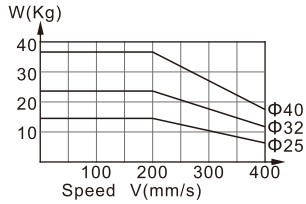


1.3. Load-Velocity chart (Load in vertical movement and moving velocity)



Load-Velocity chart (Load in vertical movement and moving velocity)



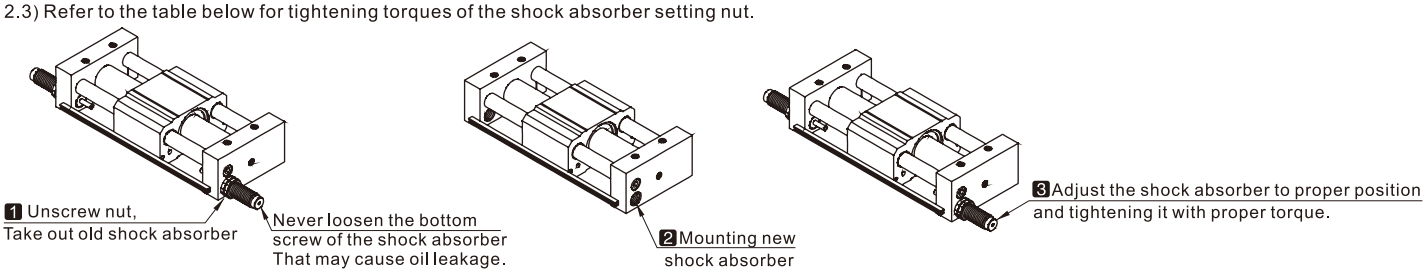


2. About shock absorber

2.1) Shock absorbers are consumable parts. When a decrease in energy absorption capacity is noticed, it must be replaced. Refer to the table below for shock absorber type.

2.2) Never loosen the bottom screw of the shock absorber. (It is not an adjustment screw.) That may cause oil leakage.

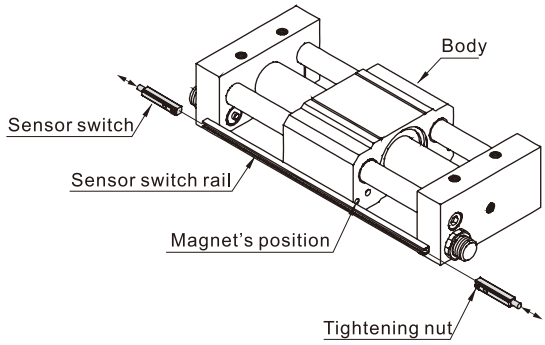
2.3) Refer to the table below for tightening torques of the shock absorber setting nut.

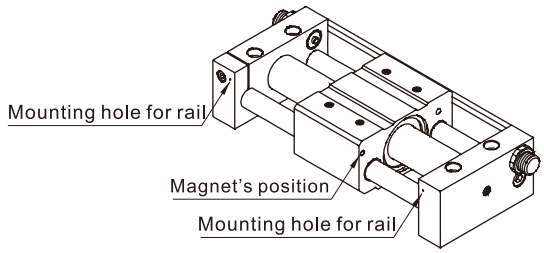


Cylinder model	RMT16	RMT20	RMT25	RMT32	RMT40
Shock absorber type	ACA1006-A	ACA1007-1N	ACA1412-1N	ACA2020-1N	ACA2020-1N
Tightening torque(Nm)	1.67	1.67	3.14	10.80	10.80

3. About sensor switch

3.1) Sensor switch only can be used for the cylinder with magnet . The magnet located the four corner of body's(refer below) .The cylinder with magnet have both group mounting hole for mounting rail. please refer to below for ordering sensor switch, mounting it into the rsil's groove, adjusting it to proper position, tightening it with proper torque.



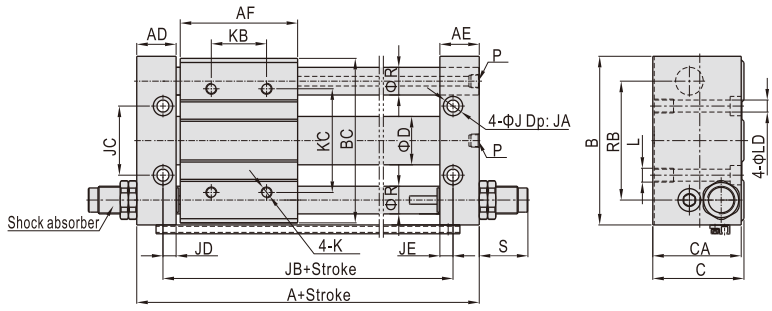


Cylinder model	RMT16	RMT20	RMT25	RMT32	RMT40
Sensor switch	CMSG、DMSG、EMSG				

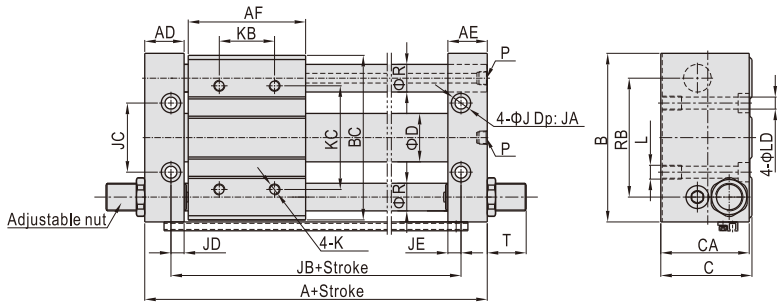
4. Use an external limit device to stop the load midway: Please refer to RMS series for details.

Dimensions

RMT-A



RMT

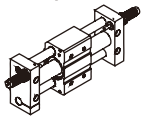


Bore size\Item	A	AD	AE	AF	B	BC	C	CA	D	J	JA	JB	JC	JD	JE	K	KB	KC	L	LD	P	R	RB	S	T
16	107	22.5	22.5	60	75	72	40	39	18	9.5	5	75	30	6.5	6.5	M5×0.8Dp:10	30	50	M6×1.0Dp:9.5	5.5	M5×0.8	12	52	18.5	13.5
20	124	25.5	25.5	70	90	87	46	45	22.8	9.5	5	90	38	8.5	8.5	M6×1.0Dp:10	40	70	M6×1.0Dp:9.5	5.5	1/8"	16	63	22.5	10
25	124	25.5	25.5	70	100	97	54	53	27.8	11	6.5	90	42	8.5	8.5	M6×1.0Dp:10	40	70	M8×1.25Dp:10	7	1/8"	16	70	40.5	15
32	148	28.5	28.5	85	122	119	66	64	35	14	8	110	50	9.5	9.5	M8×1.25Dp:12	40	75	M10×1.5Dp:15	8.5	1/8"	20	86	57.5	16
40	170	35.5	35.5	95	145	142	76	74	43	14	8	120	64	10.5	10.5	M8×1.25Dp:12	65	105	M10×1.5Dp:15	8.5	1/4"	25	105	50.5	10

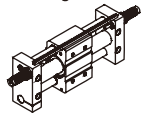
Compendium of RMTL Series

With manget and without magnet are available

Without magnet



With magnet



Magnetic design

This magnetic cylinder is basically a pneumatic rodless cylinder featuring a mobile piston fitted with annular magnets.

Two kinds of cushion type

The non adjustable rubber bumpers and the adjustable pneumatic cushioning on both ends of the cylinder ensure the smooth action. If shock absorber be used, the cushioning effect is more perfection.

Six bore size are available

Bore size: 10, 16, 20, 25, 32, 40

Double guides

Double guides ensure high precision and can endure proper side load or offset load.

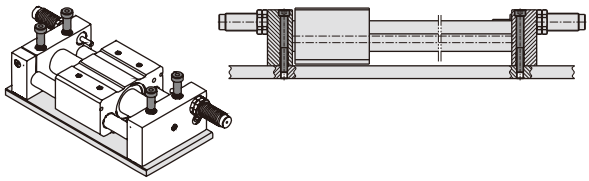
It is compact in space

Can be mounted from top and bottom.

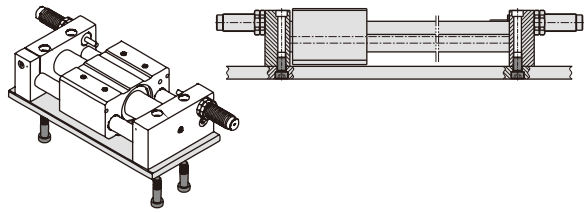
Superiority of airproof

It is dust-proof as the isolation between the carriage and piston.

Top bolt mounting



Bottom bolt mounting



Installation and application

1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder shall be filtered to 40μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

Guided rodless cylinder(Magnetic Coupled/Ball bearing)

RMTL Series



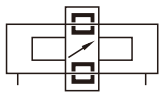
Specification

Bore size(mm)	10	16	20	25	32	40
Acting type	Double acting					
Fluid	Air(to be filtered by 40μm filter element)					
Operating pressure	0.2~0.7MPa(30~100psi(2.0~7bar)					
Proof pressure	1.2MPa(175psi)(12.0bar)					
Temperature ℃	-20~70					
Speed range mm/s	50~500					
Stroke tolerance mm	$0\sim250\ ^{+1.0}_{0}$		$251\sim1000^{+1.5}_{0}$		$1001\sim^{+2.0}_{0}$	
Cushion type	Fixed cushion		Shock absorber(Available)			
Safe holding force N	55	140	220	345	560	880
Port size [Note1]	M5×0.8		1/8"			1/4"

[Note1] G thread is available.

Add) Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. This magnetic cylinder is basically a pneumatic rodless cylinder featuring a mobile piston fitted with annular magnets. The mobile carriage is also equipped with magnets to provide magnetic coupling (carriage/piston). The carriage slide freely along the main tube.
2. It is dust-proof as the isolation between the carriage and piston.
3. It is compact in space.
4. The non adjustable rubber bumpers and the adjustable pneumatic cushioning on both ends of the cylinder ensure the smooth action. If shock absorber be used, the cushioning effect is more perfection.
5. Double guides ensure high precision and can endure proper side load or offset load.

Stroke

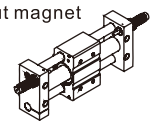
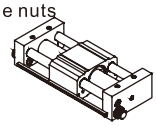
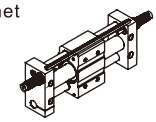
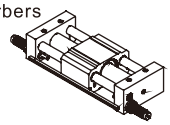
Bore size (mm)	Standard stroke (mm)	Max.std stroke
10	50 100 150 200 250 300	500
16	50 100 150 200 250 300 350 400 450 500	750
20	50 100 150 200 250 300 350 400 450 500 600 700 750 800	1000
25	50 100 150 200 250 300 350 400 450 500 600 700 750 800	1500
32	50 100 150 200 250 300 350 400 450 500 600 700 750 800	1500
40	50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000	1500

[Note] Consult us for non–standard stroke.

Ordering code

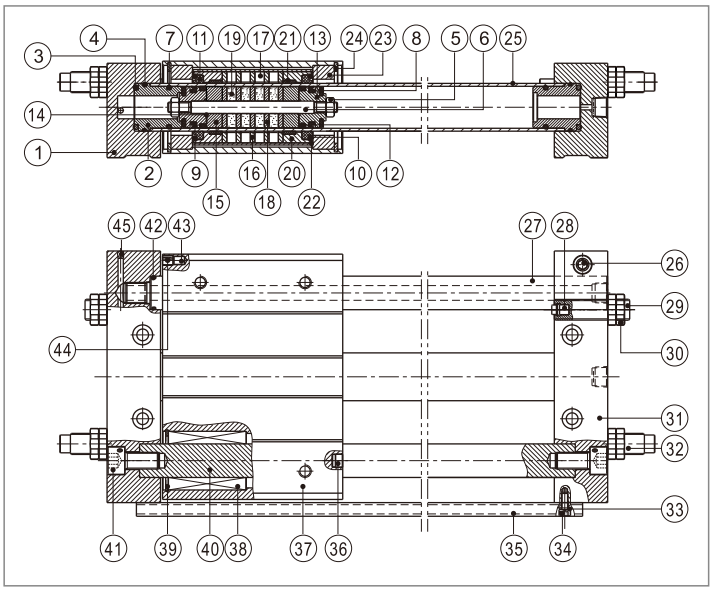
RMTL 20 × 100 S □ G

① ② ③ ④ ⑤ ⑥

①Model	②Bore size	③Stroke	④Magnet	⑤Cushion type [Note1]	⑥Thread type
RMTL: Guided rodless cylinder(Magnetic Coupled/Ball bearing)	10 16	Refer to stroke table for details	Blank: Without magnet 	Blank: With two adjustable nuts 	Blank: M5
	20 25 32 40		S: With magnet 	A: With two shock absorbers 	G: G Thread

[Note1] When **A** type is selected, the two adjustable nuts are added too.

Inner structure and material of major parts

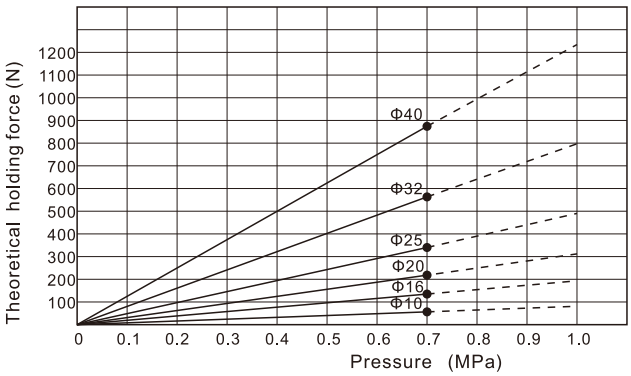


NO.	Item	Material	NO.	Item	Material
1	Fixing plate	Aluminum alloy	24	C clip	Spring steel
2	Washer cover	Aluminum alloy	25	Barrel	Stainless steel
3	O-ring	NBR	26	Countersink screw	Carbon steel
4	O-ring	NBR	27	Guide I	Carbon steel
5	Nut	Carbon steel	28	Bumper	TPU
6	Joint pole	Stainless steel	29	Adjustable screw	Carbon steel
7	O-ring	NBR	30	Nut	Ss41
8	Bumper	NBR	31	Fixing plate	Aluminum alloy
9	Piston seal	TPU	32	Shock absorber	Combination
10	O-ring	NBR	33	Spring washer	Spring steel
11	Scraping dust ring	Plastics	34	Countersink screw	Carbon steel
12	Wearing ring	Wear resistant material	35	Rail	Aluminum alloy
13	Piston	Aluminum alloy	36	Bumper block	Stainless steel
14	O-ring	NBR	37	Body	Aluminum alloy
15	Piston washer	Aluminum alloy	38	Bushing	
16	Magnet washer	Carbon steel	39	C clip	Spring steel
17	Magnet	Rare-earth material	40	Guide II	Carbon steel
18	Magnet washer	Carbon steel	41	Countersink screw	Carbon steel
19	Magnet	Rare-earth material	42	O-ring	NBR
20	Body cover	Aluminum alloy	43	Magnet	Rare-earth material
21	Wearing ring	Wear resistant material	44	Location washer	NBR
22	Mobility iron	Aluminum alloy	45	Steel ball	Stainless steel
23	Washer	Aluminum alloy			

Installation and application

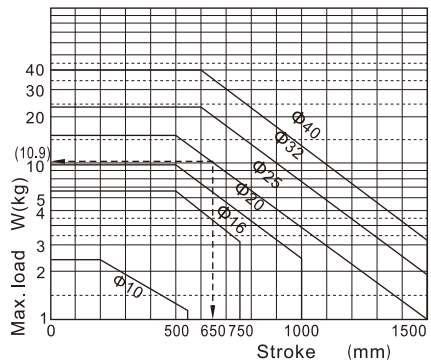
1. How to determine load

The maxi load to move must be less than the theoretical holding force.



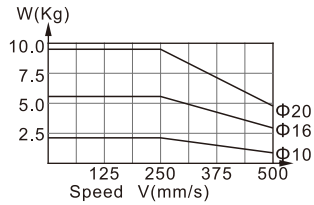
The relation between loading and stroke as below
(Loading center and slide table center must be superposition)

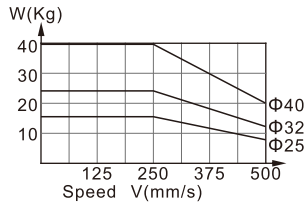
Bore size	Max.Load W(kg)	Stroke scope
10	2.4	~200mm
16	5.6	~300mm
20	9.6	~500mm
25	16	~500mm
32	24	~600mm
40	40	~600mm



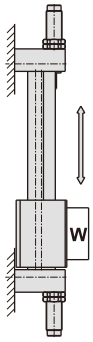
In horizontal movement, please choose proper bore size based on Load-Velocity chart
A.Find required load
B.Find moving velocity
C.Choose proper spec based on Load-Velocity chart

Load-Velocity chart (Load in horizontal movement and moving velocity

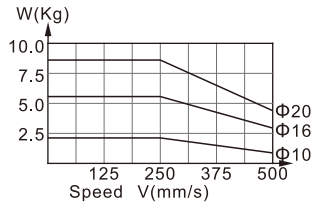


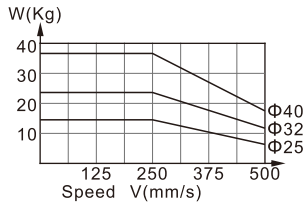


1.3. Load-Velocity chart (Load in vertical movement and moving velocity)



Load-Velocity chart (Load in vertical movement and moving velocity)





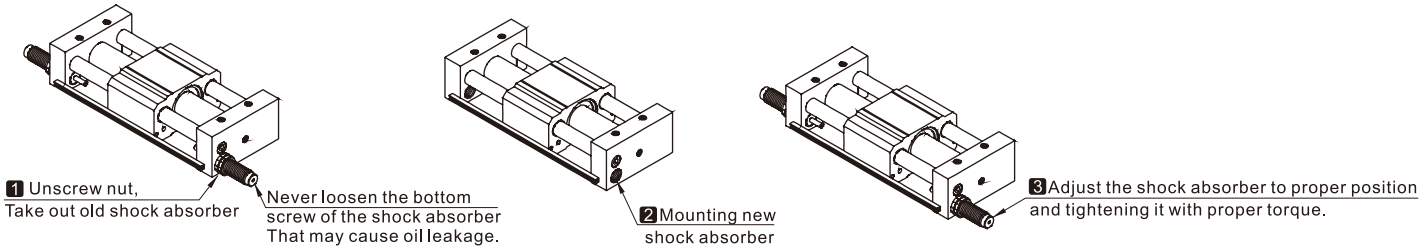
RMTL Series

2. About shock absorber

2.1) Shock absorbers are consumable parts. When a decrease in energy absorption capacity is noticed, it must be replaced. Refer to the table below for shock absorber type.

2.2) Never loosen the bottom screw of the shock absorber. (It is not an adjustment screw.) That may cause oil leakage.

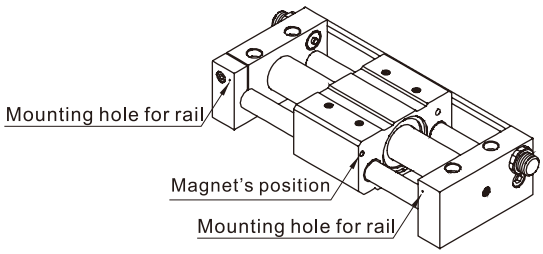
2.3) Refer to the table below for tightening torques of the shock absorber setting nut.

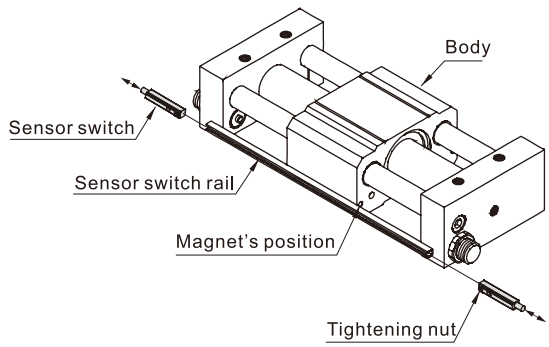


Bore size	10	16	20	25	32	40
Shock absorber type	ACA0806-1N	ACA1006-A	ACA1007-1N	ACA1412-1N	ACA2020-1N	ACA2020-1N
Tightening torque(Nm)	1.67	1.67	1.67	3.14	10.80	10.80

3. About sensor switch

3.1) Sensor switch only can be used for the cylinder with magnet . The magnet located the four corner of body's(refer below) .The cylinder with magnet have both group mounting hole for mounting rail. please refer to below for ordering sensor switch, mounting it into the rail's groove, adjusting it to proper position, tightening it with proper torque.

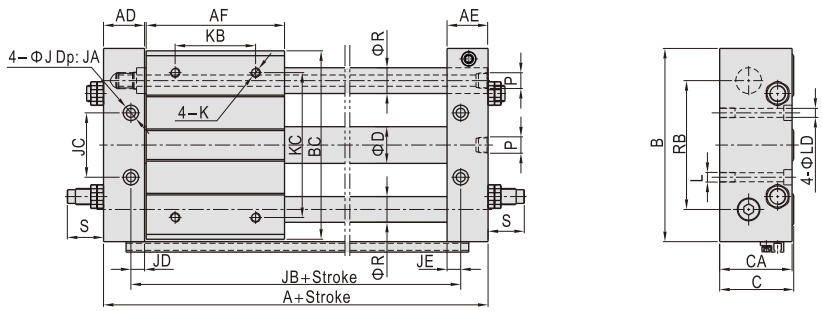




Cylinder model	RMTL10	RMTL16	RMTL20	RMTL25	RMTL32	RMTL40
Sensor switch	CMSG、DMSG、EMSG					

4. Use an external limit device to stop the load midway: Please refer to RMS series for details.

Dimensions



Model	A	AD	AE	AF	B	BC	C	CA	D	J	JA	JB	JC	JD	JE	K	KB	KC	L	LD	P	R	RB	S
RMTL10	111	20.5	20.5	68	80	77	34	33	12	8	4	85	26	7.5	7.5	M4X0.7Dp:8	30	60	M5X0.8Dp:9.5	4.5	M5X0.8	10	52	17.5
RMTL16	122	22.5	22.5	75	95	92	40	39	18	9.5	5	90	30	6.5	6.5	M5X0.8Dp:10	45	70	M6X1.0Dp:9.5	5.5	M5X0.8	12	65	18.5
RMTL20	139	25.5	25.5	86	120	117	46	45	22.8	9.5	5	105	40	8.5	8.5	M6X1.0Dp:10	50	90	M6X1.0Dp:10	5.5	1/8"	16	80	22.5
RMTL25	139	25.5	25.5	86	130	127	54	53	27.8	11	6.5	105	50	8.5	8.5	M6X1.0Dp:10	60	100	M8X1.25Dp:10	7	1/8"	16	90	40.5
RMTL32	159	28.5	28.5	100	160	157	66	64	35	14	8	121	60	9.5	9.5	M8X1.25Dp:12	70	120	M10X1.5Dp:15	8.5	1/8"	20	110	57.5
RMTL40	209	35.5	35.5	136	190	187	78	74	43	14	8	159	84	10.5	10.5	M8X1.25Dp:12	90	140	M10X1.5Dp:15	8.5	1/4"	25	130	50.5

Compendium of RMH Series

Magnetic design

This magnetic cylinder is basically a pneumatic rodless cylinder featuring a mobile piston fitted with annular magnets.

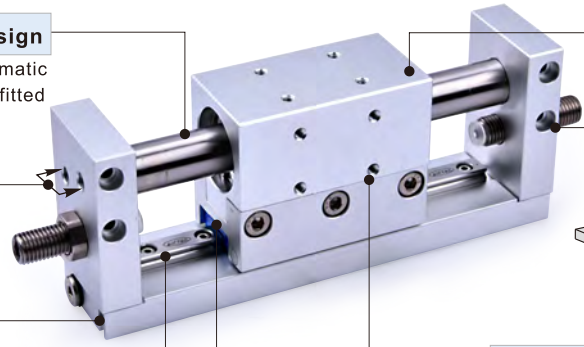
Inlet and outlet ports are on the same side

Sensor switch rail

Matching sensor model：CMSH、DMSH、EMSH

With the slide rail

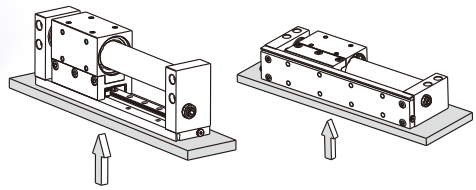
The operation accuracy of the body is high, the body does not rotate accurately, and the load capacity is strong.



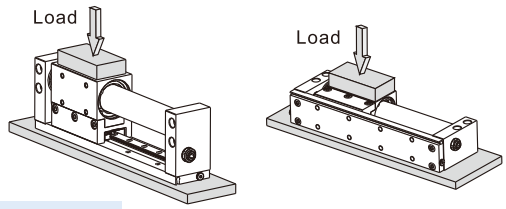
Four bore size are available

Bore size: 10, 16, 20, 25

Cylinder can be mounted from two directions

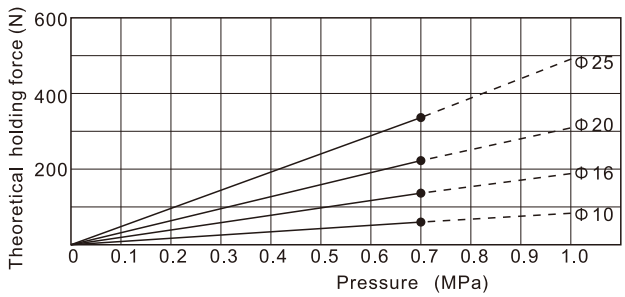


Can be loeded from two directions

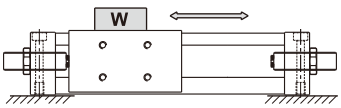


Installation and application

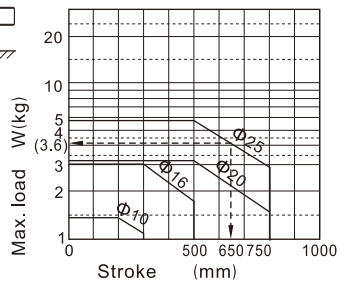
1. The maxi load to move must be less than the theoretical holding force.

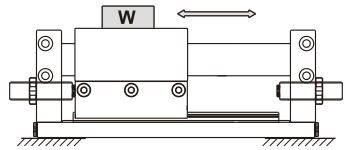


2.The relation between loading and stroke as below(Loading center and slide table center must be superposition)

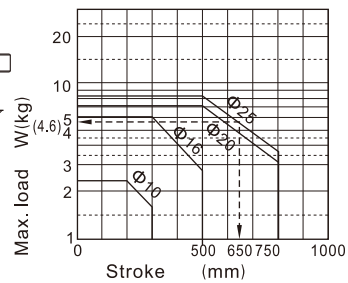


Bore size	Max.Load W(kg)	Stroke scope
10	1.4	~200mm
16	3	~300mm
20	3.6	~500mm
25	4.8	~500mm





Bore size	Max.Load W(kg)	Stroke scope
10	2.4	~200mm
16	5	~300mm
20	6	~500mm
25	8	~500mm



3. About adjusting screw:
RMH series is compacted with two adjusting screws, but you can replace them with oil shock absorber by conditions.

Bore size	Shock absorber type
10	ACA0806-1
16	ACA1007-1
20	ACA1007-1
25	ACA1412-1

4. When use external limiter to stop load middle way: please refer to RMS series.
5. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
6. The medium used by cylinder shall be filtered to 40μm or below.
7. If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust jam cap shall be added in air inlet and outlet ports.

Rodless magnetic cylinder(With Linear guide)

RMH Series

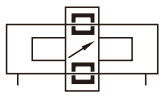


Specification

Bore size(mm)	10	16	20	25
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	0.2~0.7MPa(28~100psi)(2~7bar)			
Proof pressure	1.2MPa(175psi)(12.0bar)			
Temperature ℃	-20~70			
Speed range mm/s	50~400			
Stroke tolerance mm	0~250 $^{+1.0}_{0}$ 251~800 $^{+1.5}_{0}$			
Cushion type	Bumper			
Port size [Note1]	M5×0.8		1/8"	
Safe holding force N	55	140	220	345

[Note1] G thread is available.

Symbol



Stroke

Bore size (mm)	Standard stroke (mm)
10	50 100 150 200 250 300
16	50 100 150 200 250 300 350 400 450 500
20	50 100 150 200 250 300 350 400 450 500 600 700 750 800
25	50 100 150 200 250 300 350 400 450 500 600 700 750 800

[Note] Consult us for non-standard stroke.

Product feature

1. This magnetic cylinder is basically a pneumatic rodless cylinder featuring a mobile piston fitted with annular magnets.
   The mobile carriage is also equipped with magnets to provide magnetic coupling (carriage/piston). The carriage slide freely along the main tube.
2. It is dust-proof as the isolation between the carriage and piston.
3. It is compact in space.
4. The non adjustable rubber bumpers and the adjustable pneumatic cushioning on both ends of the cylinder ensure the smooth action.
5. With the slide rail, the operation accuracy of the body is high, the body does not rotate accurately, and the load capacity is strong.

Ordering code

RMH 20×200 S G

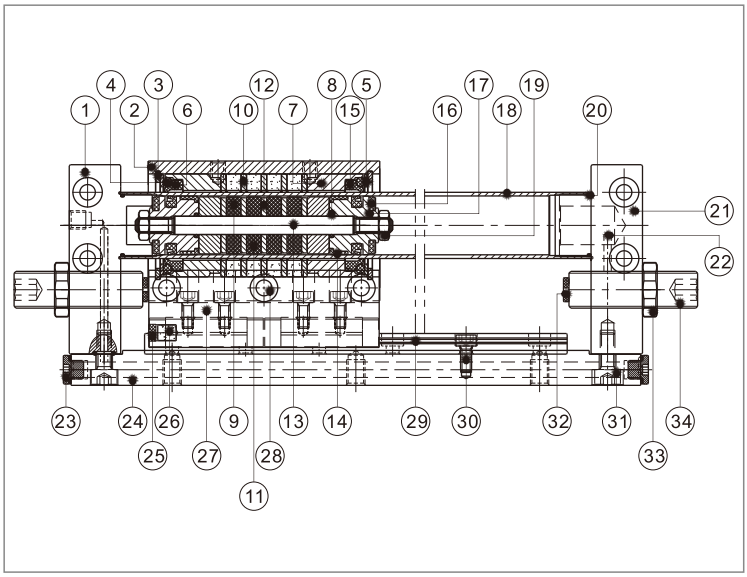
① ② ③ ④ ⑤

①Model	②Bore Size	③ Stroke [Note1]	④Magnet	⑤Thread type [Note2]
RMH: Rodless magnetic cylinder (With linear guide)	10 16 20 25	Refer to stroke table for details	S: With magnet	G: G Thread

[Note1] Consult us for non-standard stroke.

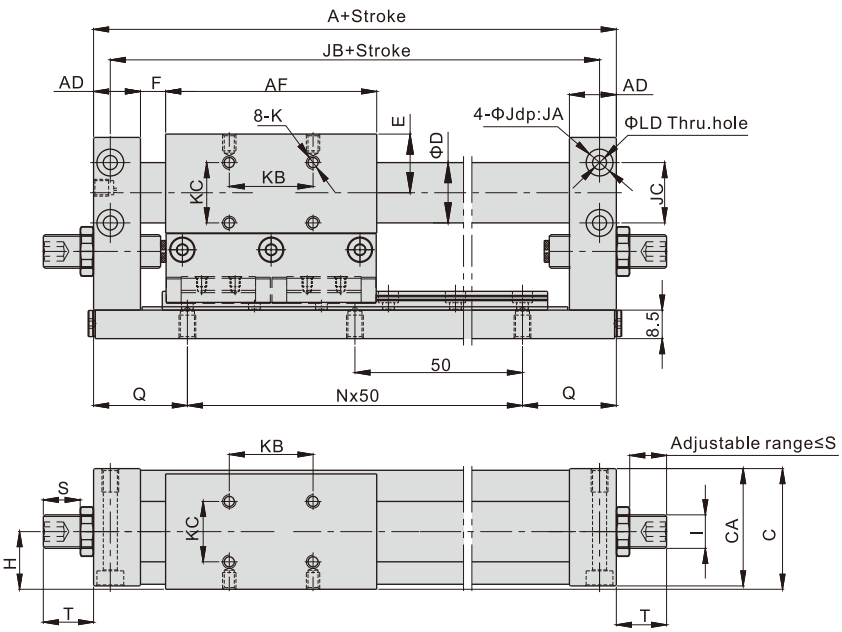
[Note2]Blank on thread code means metric M thread. There is only metric thread for Φ10/Φ16.

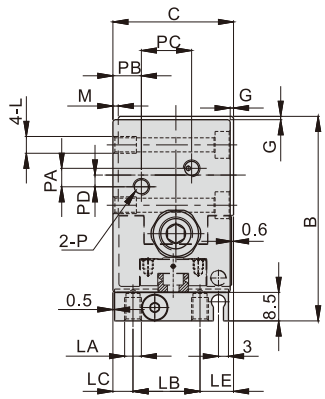
Inner structure and material of major parts



NO.	Item	Material	NO.	Item	Material
1	End cover	Aluminum alloy	18	Barrel	Stainless steel
2	Body	Aluminum alloy	19	Nut	Stainless steel
3	C Clip	TPU	20	O-ring	NBR
4	O-ring	NBR	21	End cover	Aluminum alloy
5	Washer	Stainless steel	22	Steel ball	Stainless steel
6	Scraping dust ring	Plastics	23	Pluger screw	Carbon steel
7	Cover	Aluminum alloy	24	Fixed block	Aluminum alloy
8	O-ring	NBR	25	Push block	Plastics
9	Magnet	Rare-earth material	26	Magnet	Rare-earth material
10	Magnet washer	Carbon steel	27	Jointing block	Aluminum alloy
11	Magnet	Rare-earth material	28	Bolt	Alloy steel
12	Magnet washer	Carbon steel	29	Linear rail	–
13	Connecting rod	Stainless steel	30	Bolt	Alloy steel
14	Wear ring	Wear resistant material	31	Bolt	Alloy steel
15	Piston seal	TPU	32	Bumper	TPU
16	Bumper	NBR	33	Nut	Alloy steel
17	Piston	Aluminum alloy	34	Bolt	Alloy steel

Dimensions





Type\Item	A	AD	AF	B	C	CA	D	E	F	G	H	I	J	JA	JB	JC	K	KB	KC	L	LA	LB	LC
RMH10	86	10.5	52	52	30	29	12	14	6.5	1	14	M8X1.0	6	3.5	78	14	M3X0.5dp:4	20	15	M4X0.7dp:6	M4X0.7dp:6	16	4
RMH16	106	14	63	61	36	35	18	17.5	7.5	1	17	M10X1.0	8	4.5	96	18	M4X0.7dp:5	25	18	M5X0.8dp:7	M5X0.8dp:7	20	6
RMH20	124	14	76	71	39	38	22.8	20	10	1	18.5	M10X1.0	9.5	5.5	112	17	M4X0.7dp:5	40	22	M6X1.0dp:8	M6X1.0dp:8	22	5
RMH25	137	17.5	77	76	45	43	27.8	22.5	12.5	2	21.5	M14X1.5	9.5	5.5	124	20	M5X0.8dp:6	40	28	M6X1.0dp:8	M6X1.0dp:8	26	7

Type\Item	P	LD	LE	M	PA	PB	PC	PD	Q	S	T	N													
Stroke												50	100	150	200	250	300	350	400	450	500	600	700	750	800
RMH10	M5X0.8	3.5	10	1.5	4	7.5	11	2	18	10.5	14.5	2	3	4	5	6	7	-	-	-	-	-	-	-	-
RMH16	M5X0.8	4.5	10	1.5	5.5	8.5	15	3.5	28	11	15	2	3	4	5	6	7	8	9	10	11	-	-	-	-
RMH20	1/8"	5.5	12	1.5	0	10	18.5	0	37	8.5	12.5	2	3	4	5	6	7	8	9	10	11	13	15	16	17
RMH25	1/8"	5.5	12	1.5	0	11	22	0	43.5	16	22	2	3	4	5	6	7	8	9	10	11	13	15	16	17

Compendium of HRQ Series

Higher manufacturing precision of working platform

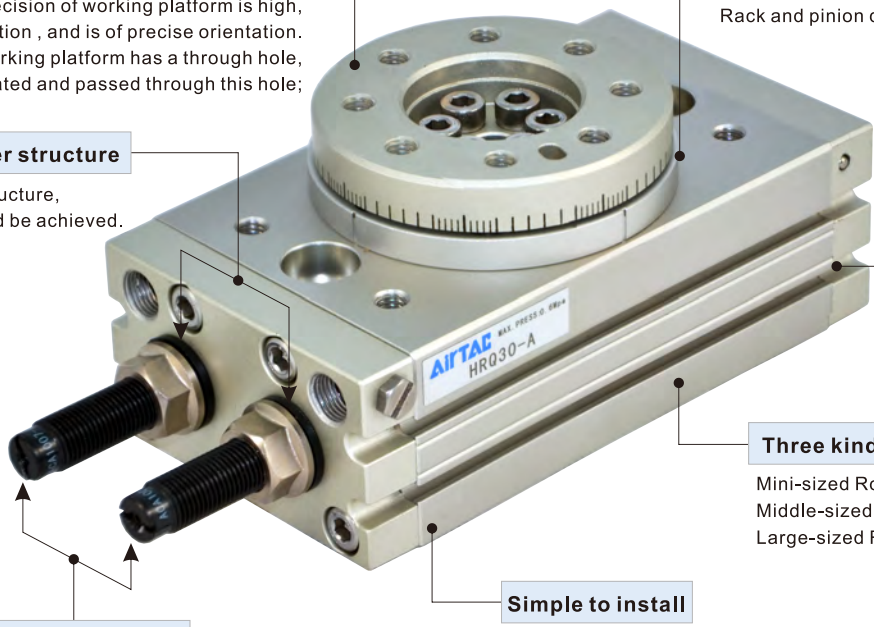
The manufacturing precision of working platform is high, and is easy for installation , and is of precise orientation. The center of working platform has a through hole, and pipe can be located and passed through this hole;

Rack and pinion design

Rack and pinion design, stable functioning.

Double cylinder structure

Double cylinder structure, double output could be achieved.



With magnetic switch slots

Three kinds of type could be chosen

Mini-sized Rotary Cylinder: 2、3、7
Middle-sized Rotary Cylinder: 10、20、30、50
Large-sized Rotary Cylinder: 70、100、200

Simple to install

Guide hole is designed on the both side of the cylinder body (10~200) or undersurface (2~7), which is simply to install.

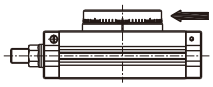
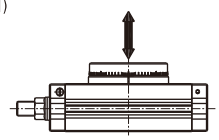
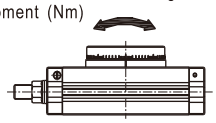
Two modes of buffer could be chosen

Adjustment bolt buffer and internal shock absorber could be chosen

Installation and application

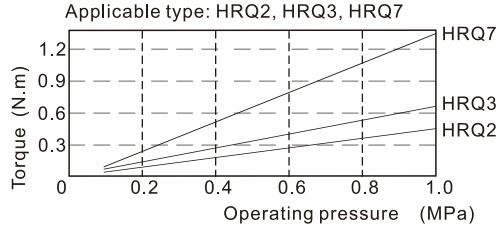
1.Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2.The medium used by cylinder shall be filtered to 40μm or below.
3.Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4.If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

Maximum allowed loading

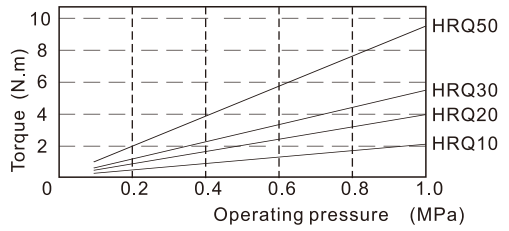
Loading type	Model									
	HRQ2	HRQ3	HRQ7	HRQ10	HRQ20	HRQ30	HRQ50	HRQ70	HRQ100	HRQ200
Maximum allowed radial loading (N) 	18	30	50	80	150	200	300	330	390	540
Maximum allowed axial loading (N) 	35	50	70	80	150	200	300	300	500	740
Maximum allowed bending moment (Nm) 	0.8	1.1	1.5	2.5	4.0	5.5	10.0	12.0	18.0	25.0

Actual torque output

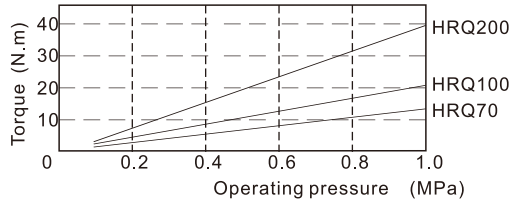
Applicable type: HRQ2, HRQ3, HRQ7



Applicable type: HRQ10, HRQ20, HRQ30, HRQ50



Applicable type: HRQ70, HRQ100, HRQ200



Rotary table cylinder

HRQ Series



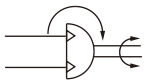
Specification

Specification		2	3	7	10	20	30	50	70	100	200
Acting type		Double rack and pinion(Double acting)									
Fluid		Air(to be filtered by 40μm filter element)									
Operating pressure	With adjustment bolt	0.25~0.7MPa (37~100psi) (2.5~7bar)		0.2~0.7MPa (29~100psi) (2~7bar)	0.15~0.7MPa (22~100psi)(1.5~7.0bar)						
	With internal shock absorber	-			0.15~0.7MPa (22~100psi)(1.5~7.0bar)						
Proof pressure		1.2MPa(175psi)(12.0bar)									
Temperature ℃		-20~70									
Angle adjustment range		0~190°							0~190°		
Repeatable precision	With adjustment bolt	0.2°									
	With internal shock absorber	-			0.05°						
Theoretic moment (Nm)(0.5MPa)		0.2	0.33	0.63	1.1	2.2	2.8	5.0	7.5	11.0	22.0
Cushion type	With adjustment bolt	Rubber bumper									
	With internal shock absorber	-			Shock absorber						
Port size	End ports	M5×0.8					1/8" [Note1]				
	Side ports						M5×0.8				
Weight g		120	175	270	535	940	1260	2060	2890	4100	7650

[Note1] G thread is available.

Add) Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. Rack and pinion design, stable functioning.
2. Double cylinder structure, double output could be achieved.
3. The manufacturing precision of working platform is high, and is easy for installation , and is of precise orientation.
4. The center of working platform has a through hole, and pipe can be located and passed through this hole;
5. Guide hole is designed on the both side of the cylinder body (10~200) or undersurface (2~7), which is simply to install.
6. Two modes of buffer could be chosen, adjustment bolt buffer and internal shock absorber, the maximum buffer energy of internal shock absorber is 3-5 times that of adjustment bolt buffer.

Maximum allowed movement energy and rotation times

Model	Maximal allowed energy (J)		Rotation times (s/90°)	
	With adjustment bolt	With internal shock absorber	With adjustment bolt	With internal shock absorber
HRQ2	0.0015	-	0.2~0.7	-
HRQ3	0.002	-	0.2~0.7	-
HRQ7	0.006	-	0.2~1.0	-
HRQ10	0.01	0.04	0.2~1.0	0.2~0.7
HRQ20	0.025	0.12	0.2~1.0	0.2~0.7
HRQ30	0.05	0.12	0.2~1.0	0.2~0.7
HRQ50	0.08	0.30	0.2~1.0	0.2~0.7
HRQ70	0.24	1.1	0.2~1.5	0.2~1.0
HRQ100	0.32	1.6	0.2~2.0	0.2~1.0
HRQ200	0.56	2.9	0.2~2.5	0.2~1.0

[Note]

1: The movement energy should not exceed the allowed maximum energy, or the inner accessories of product would be damaged;

2: When the rotation times of with shock absorber is larger than the allowed tolerance, the bigger effect will be lost.

Ordering code

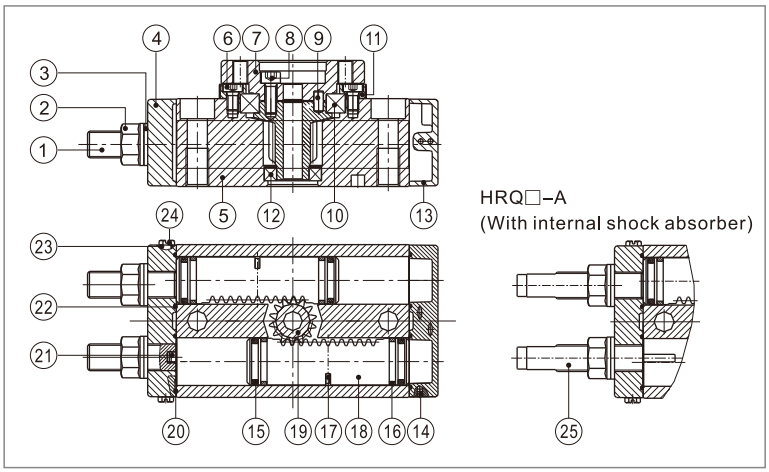
HRQ 20 A G

① ② ③ ④

①Model	②Specification	③Cushion type	④Thread type
HRQ: Rotary Table/Rack & Pinion Style	2	Blank: With adjustment bolt	No this code
	3		
	7		
	10	Blank: With adjustment bolt A: With internal shock absorber	G: G Thread
	20		
	30		
	50		
	70		
	100		
	200		

[Note] HRQ series are all atteched with magnet.

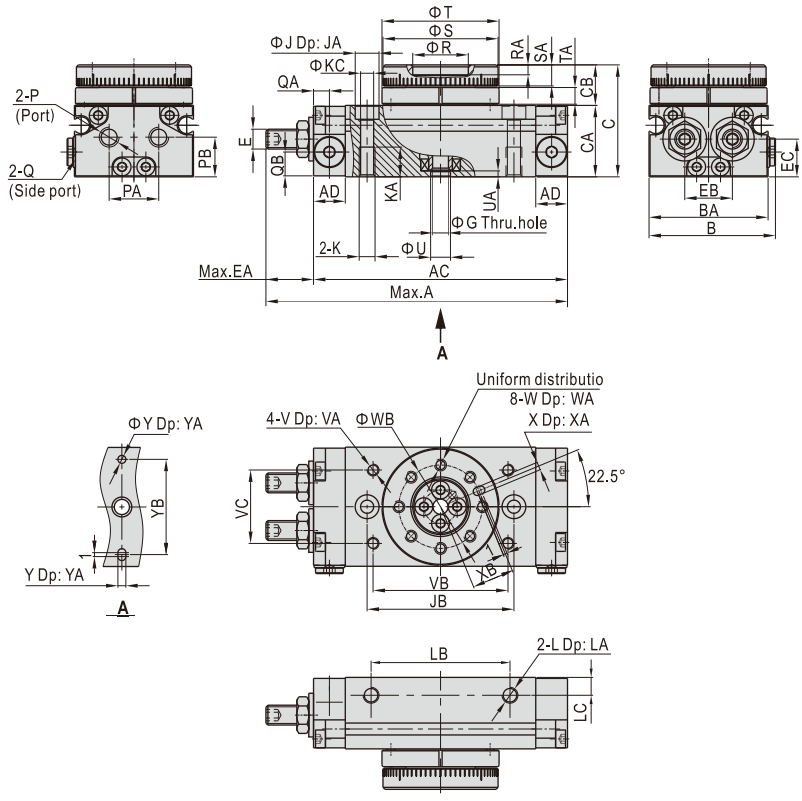
Inner structure and material of major parts



NO.	Item	Material
1	Adjustment bolt	Carbon steel
2	Hexagon nut	Carbon steel
3	Seal washer	Carbon steel & Rubber
4	Front cover	Aluminum alloy
5	Body	Aluminum alloy
6	Hexagon socket head cap bolt	Carbon steel
7	Table	Aluminum alloy
8	Hexagon socket head cap bolt	Carbon steel
9	Guide pin/flat key	Carbon steel
10	Deep-groove bearing	Subassembly
11	Bearing retainer	Aluminum alloy
12	Deep-groove bearing/Needle bearing	Subassembly
13	Back cover	Aluminum alloy
14	Steel ball	Stainless steel
15	Piston seal	NBR
16	Wear ring	Wear resistant material
17	Magnet	Rare earths
18	Rack	Stainless steel/Carbon steel
19	Pinion	Chrome molybdenum steel
20	O-ring	NBR
21	Bumper	NBR
22	O-ring	NBR
23	O-ring	NBR
24	Hexagon screw	Stainless steel
25	Shock absorber	Subassembly

Dimensions

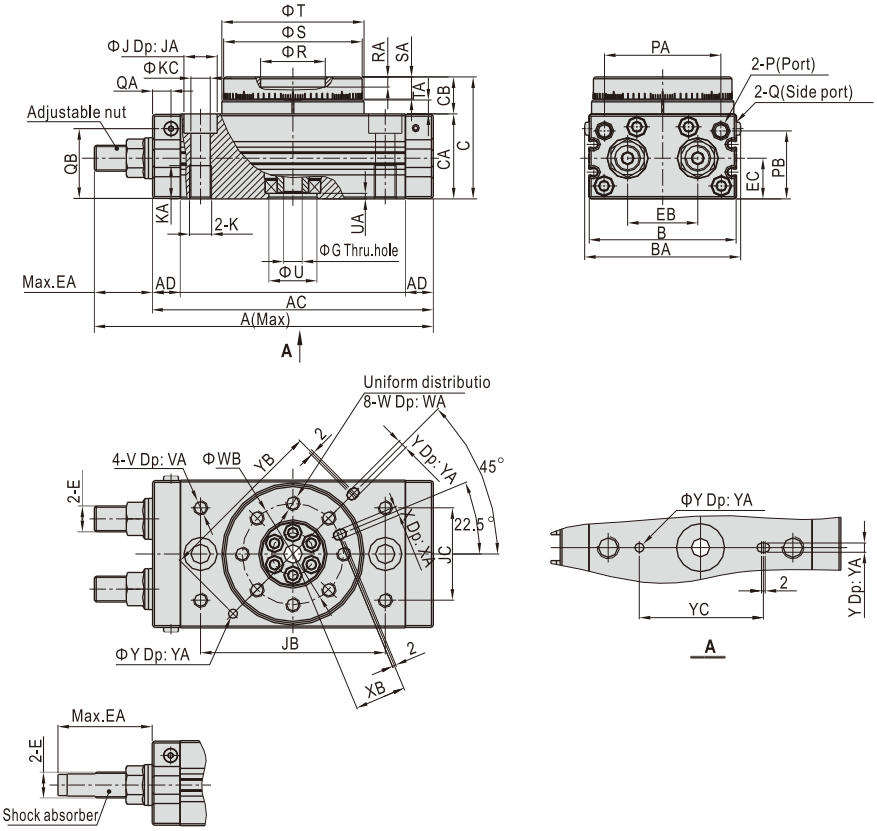
HRQ2/3/7



Type\Item	A	AC	AD	B	BA	C	CA	CB	E	EA	EB	EC	G	J	JA	JB	K	KA	KC	L	LA	LB	LC	P	PA
2	76	64	8	32	30	28	18	10	M5×0.8	12	12	9.5	4	6	3.5	37	M4×0.7	7.5	3.5	M4×0.7	4	35	4.5	M5×0.8	12.5
3	82	70	8	36.5	34.5	30.5	20.5	10	M5×0.8	12	15.5	10.5	5	7.5	4.5	43	M5×0.8	8.5	4.5	M4×0.7	4	40	4.5	M5×0.8	15.5
7	94.5	79.5	8	43	41	34.5	23	11.5	M6×1.0	15	18.5	12	6	7.5	4.5	50	M5×0.8	8.5	4.5	M5×0.8	5	50	5	M5×0.8	18.5

Type\Item	PB	Q	QA	QB	R	RA	S	SA	T	TA	U	UA	V	VA	VB	VC	W	WA	WB	X	XA	XB	Y	YA	YB
2	10	M5×0.8	4	6	14(H9)	2.5	29(h9)	5.5	29.5(h9)	4	5(H9)	1.5	M3×0.5	3.5	34	18.5	M3×0.5	5.5	21	2(H9)	2	10.5	2(H9)	2	24
3	12	M5×0.8	4	7.5	17(H9)	2.5	33(h9)	5.5	34(h9)	4	6(H9)	1.5	M3×0.5	3.5	38	23	M3×0.5	5.5	25	2(H9)	2	12.5	2(H9)	2	28
7	14	M5×0.8	4	9	20(H9)	3	39(h9)	6.5	40(h9)	4.5	7(H9)	1.5	M4×0.7	4.5	45	30	M4×0.7	6.5	29	3(H9)	3	14.5	3(H9)	3	32

HRQ10~50



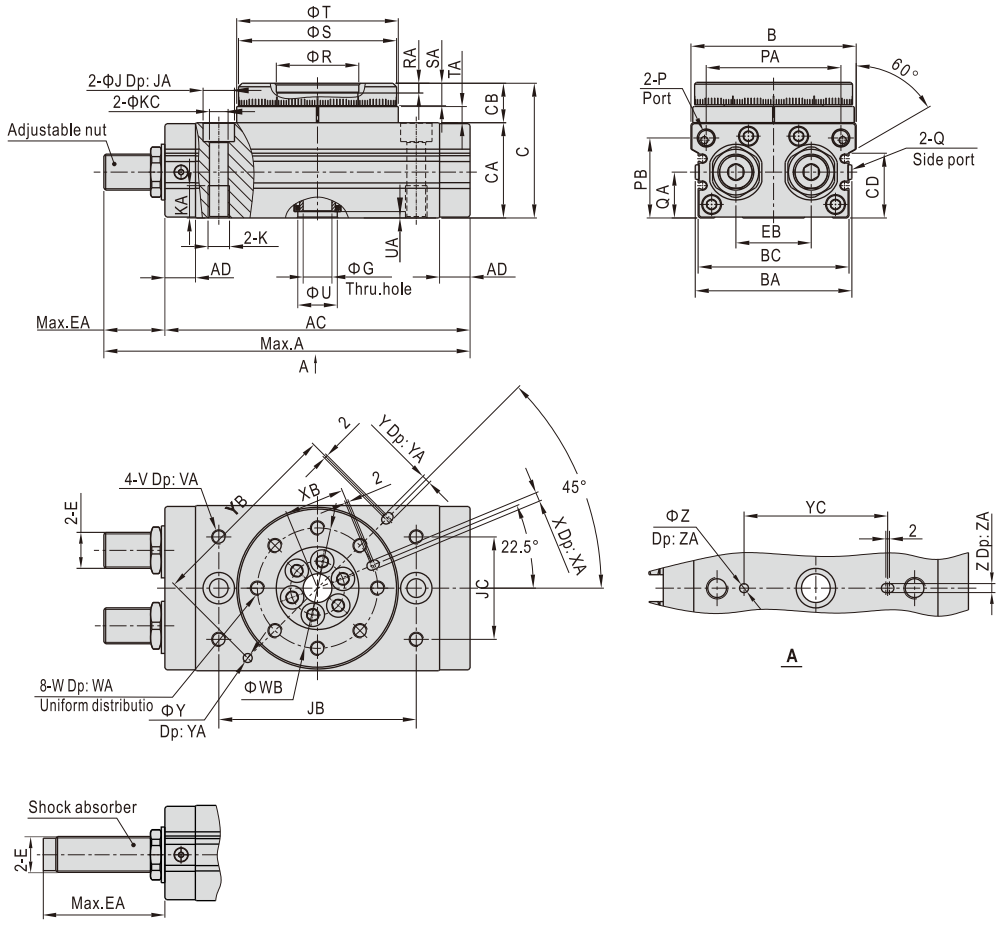
HRQ□-A(With internal shock absorber)

Type\Item	A(With internal shock absorber)	A(With adjustment bolt)	AC	AD	B	BA	C	CA	CB	E	EA(With internal shock absorber)	EA(With adjustment bolt)
10	123	112	92	9.5	50	54	47	34	13	M10×1.0	31	20
20	169	145.3	117	11	65	69	54	37	17	M12×1.0	52	28.3
30	178.5	154.5	127	11.5	70	74	57	40	17	M12×1.0	51.5	27.5
50	212	185.9	152	15	80	84	66	46	20	M14×1.5	60	33.9

Type\Item	EB	EC	G	J	JA	JB	JC	K	KA	KC	P	PA	PB	Q	QA	QB	R	RA	S	SA
10	20.5	14	5	11	6.5	60	27	M8×1.25	12	6.5	M5×0.8	34.5	28	M5×0.8	4.5	29	20(H9)	4.5	45(h9)	8
20	27.5	16	9	14	8.5	76	34	M10×1.5	15	8.5	M5×0.8	47	30	M5×0.8	6	30	28(H9)	6.5	60(h9)	10
30	29	18.5	9	14	8.5	84	37	M10×1.5	15	8.5	1/8"	50	32	M5×0.8	6.5	34	32(H9)	5	65(h9)	10
50	38	22	10	17.5	12	100	50	M12×1.75	18	10.5	1/8"	63	38	M5×0.8	10	38	35(H9)	5.5	75(h9)	12

Type\Item	T	TA	U	UA	V	VA	W	WA	WB	X	XA	XB	Y	YA	YB	YC
10	46(h9)	4.5	15(H9)	3	M5×0.8	8	M5×0.8	8	32	3(H9)	3.5	16	3(H9)	3.5	56	40
20	61(h9)	6.5	17(H9)	2.5	M6×1.0	8	M6×1.0	10	43	4(H9)	4.5	21.5	4(H9)	4.5	74	50
30	67(h9)	6.5	22(H9)	3	M6×1.0	8	M6×1.0	10	48	4(H9)	5	24	4(H9)	4.5	80	58
50	77(h9)	7.5	26(H9)	3	M8×1.25	8	M8×1.25	12	55	5(H9)	6	27.5	5(H9)	5.5	92	68

HRQ70~200



HRQ□-A(With internal shock absorber)

Type\Item	A(With adjustment bolt)	A(With internal shock absorber)	AC	AD	B	BA	BC	C	CA	CB	CD	E	EA(With adjustment bolt)
70	206.8	244	170	17	92	88	84	75	53	22	36	M20×1.5	36.8
100	225.7	263	189	17	102	99	95	86	59	27	42	M20×1.5	36.7
200	279.5	316.5	240	24	120	117	113	106	74	32	57	M27×1.5	39.5

Type\Item	EA(With internal shock absorber)	EB	G	J	JA	JB	JC	K	KA	KC	P	PA	PB	Q	QA	R	RA	S	SA
70	74	42	16	17.5	12	110	57	M12×1.75	18	10.5	1/8"	75	44.5	M5×0.8	25.5	46(H9)	5	88(h9)	12.5
100	74	50	19	17.5	12	130	66	M12×1.75	18	10.5	1/8"	85	50.5	M5×0.8	29.5	56(H9)	6	98(h9)	14.5
200	76.5	60	24	20	12.5	150	80	M16×2.0	25	14	1/8"	103	63	M5×0.8	36.5	64(H9)	9	116(h9)	16.5

Type\Item	T	TA	U	UA	V	VA	W	WA	WB	X	XA	XB	Y	YA	YB	YC	Z	ZA
70	90(h9)	9	22(H9)	3.5	M8×1.25	10	M8×1.25	12.5	67	5(H9)	5.5	33.5	5(H9)	3.5	110	80	5(H9)	3.5
100	100(h9)	12	24(H9)	3.5	M8×1.25	10	M10×1.5	14.5	77	6(H9)	6.5	38.5	6(H9)	4.5	120	100	6(H9)	4.5
200	118(h9)	15	32(H9)	5.5	M12×1.75	13	M12×1.75	16.5	90	8(H9)	8.5	45	8(H9)	4.5	140	110	8(H9)	6.5

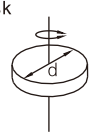
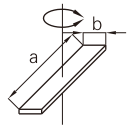
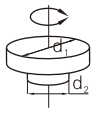
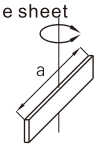
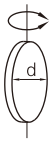
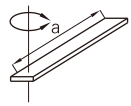
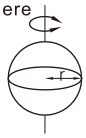
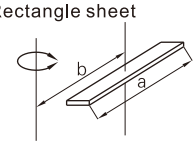
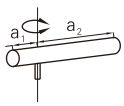
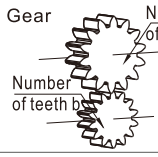
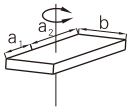
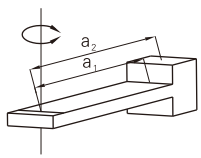
How to select product

1. Determine the following working conditions according to the actual situation:
1.1) Rotation angle θ: The actual rotation angle must be within the maximum allowed range of rotation angle of cylinder.
1.2) Rotation time t: The rotation time must be within the maximum allowed range of rotation time of cylinder.
1.3) Installation position of cylinder: Allow enough installation space, so as to ensure leaving adequate space for rotation of cylinder and workpieces.
1.4) Determination of loading mass and loading shape.

$T = K \times I \times \dot{\omega}$, $\dot{\omega} = \frac{2\theta}{t^2}$

T: Necessary torque required for loading rotation (N.m)
K: Coefficient of allowance, K is defined as 5
I: Moment of inertia(kg.m^2)
ω: Angular acceleration(rad/s^2)
θ: Rotation Angle(rad)
t: Rotation time(s)

2. Calculation of necessary torque needed when loading rotation (T(N.m):
Calculate the necessary moment required for loading rotation according to the formula below, and combine with the torque diagram of actual effect, to choose pneumatic cylinder with suitable torque output.
2.1) Calculation method of moment of inertia in different conditions

Diagram	Description	Calculation formula of moment of inertia	Rotation radius	Diagram	Description	Calculation formula of moment of inertia	Rotation radius
Disk 	d:Diameter (m) m:Mass (kg)	$I=\frac{md^2}{8}$	$\frac{d^2}{8}$	Rectangle sheet 	a:Sheet length (m) b:Length of side(m) m:Mass(kg)	$I=\frac{m(a^2+b^2)}{12}$	$\frac{a^2+b^2}{12}$
		Note: no special installation direction				Note: no special installation direction	
Classified disk 	d_1:Diameter(m) d_2:Diameter(m) m_1:d_1 Mass(kg) m_2:d_2 Mass(kg)	$I=\frac{m_1d_1^2+m_2d_2^2}{8}$	$\frac{d_1^2+d_2^2}{8}$	Rectangle sheet 	a:Sheet length (m) m:Mass (kg)	$I=\frac{ma^2}{12}$	$\frac{a^2}{12}$
		Note: compare d_1 with d_2, disregard d_1 if d_1 is extremely tiny				Note: no special installation direction	
Disk 	d:Diameter (m) m:Mass (kg)	$I=\frac{md^2}{16}$	$\frac{d^2}{16}$	Rectangle sheet 	a:Sheet length (m) m:Mass (kg)	$I=\frac{ma^2}{3}$	$\frac{a^2}{3}$
		Note: no special installation direction				Note: 1. horizontal installation. 2. pay attention to the change of movement time when vertical installation.	
Sphere 	r:Radius(m) m:Mass(kg)	$I=\frac{2mr^2}{5}$	$\frac{2r^2}{5}$	Rectangle sheet 	a:Sheet length (m) b:Distance between the rotation axis and the gravity center of loading(m) m:Mass(kg)	$I=\frac{ma^2}{12}+mb^2$	$\frac{a^2}{12}+b^2$
		Note: no special installation direction				Note: the cuboids are same too.	
Thin-stick 	a_1:Length of stick(m) a_2:Length of stick(m) m_1:a_1 Mass(kg) m_2:a_2Mass(kg)	$I=\frac{m_1a_1^2+m_2a_2^2}{3}$	$\frac{a_1^2+a_2^2}{3}$	Gear 	a:Tooth number of gear b:Tooth number of loading gear	$I_a=(\frac{a}{b})^2I_b$	
		Note: 1. horizontal installation. 2. pay attention to the change of movement time when vertical installation.					
Rectangle sheet 	a_1:Sheet length (m) a_2:Sheet length (m) b: Length of side(m) m_1:a_1 Mass(kg) m_2:a_2 Mass(kg)	$I=\frac{m_1(4a_1^2+b^2)+m_2(4a_2^2+b^2)}{12}$	$\frac{2a_1^2+2a_2^2+b^2}{6}$	Concentrated load 	a_1:Vertical distance between the rotation axis and the concentrated loading(m) a_2:Length of arm(m) m_1:Mass of concentrated loading(kg) m_2:Mass of arm(kg)	$I=m_1a_1^2+\frac{m_2a_2^2}{3}+m_1K$	
		Note: 1. horizontal installation. 2. pay attention to the change of movement time when vertical installation.				Note: 1. horizontal installation. 2. compared with m, disregard if m is extremely tiny. 3. calculate K according to the shape of concentrated loading row by row. For example, when the loading is spheroid, $K=2r^2/5$	

3. Calculation of maximum movement energy E_{max}(J):
Calculate the maximum movement energy E_{max} according to the formula below, and make sure that the maximum movement energy is within allowed energy range of the chosen pneumatic cylinder, excessive large movement energy would lead to damage of inner parts, please choose rotation cylinder attached with shock absorber when the movement energy is fairly large.

$E_{max}=\frac{1}{2} I\omega^2_{max}$ $\omega_{max}=\frac{2\theta}{t}$ ω_{max}: Maximal angular velocity(rad/s)

4. Calculation of loading rate
Calculate the loading rate according to the formula below, and the loading rate must not be more than 1.

$$\text{Loading rate} = \frac{W_s}{\text{Maximal allowed axial loading}} + \frac{W_r}{\text{Maximal allowed radial loading}} + \frac{M}{\text{Maximal allowed bending moment of working platform}} \leqslant 1$$

W_s: Actual axial loading W_r: Actual radial loading M: Actual loaded bending moment of working platform

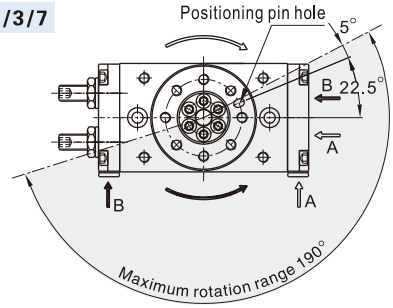
5. Determination method
It could be used only when the chosen pneumatic cylinder must meet the requirements of article 2, 3 and 4 simultaneously.

Installation and application

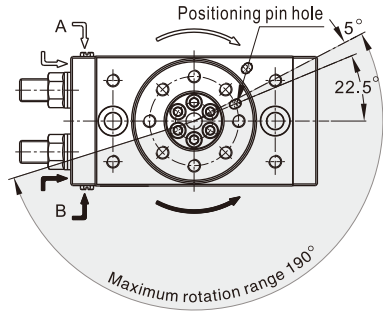
1. Rotation Direction and Rotation Angle

1.1) Rotation Direction

HRQ2/3/7



HRQ10~200



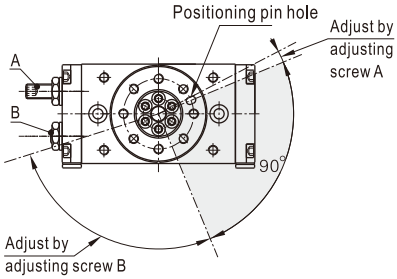
A) By adjusting the adjustment bolt, the rotation end can be set within the range shown in the up drawing: Maximum ratation is 190° ;

B) The rotary table turns in the clockwise direction when the A port is pressurized, and in the counter–clockwise direction when the B port is pressurized.

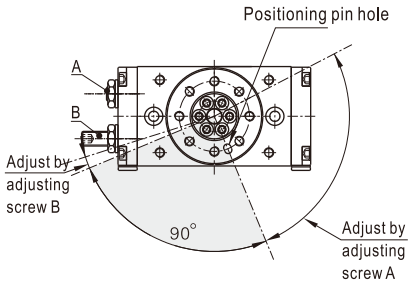
1.2) Rotation Range Example(90° Rotation)

HRQ2/3/7

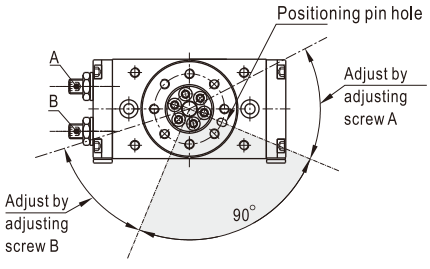
Adjustment amount by adjustment bolt B



Adjustment amount by adjustment bolt A

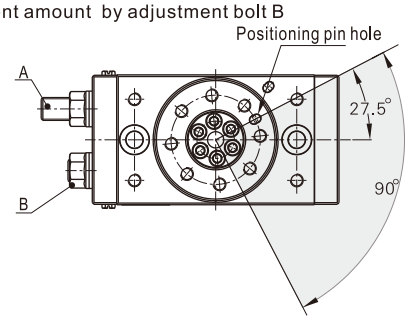


Adjustment amount by adjustment bolt A, B

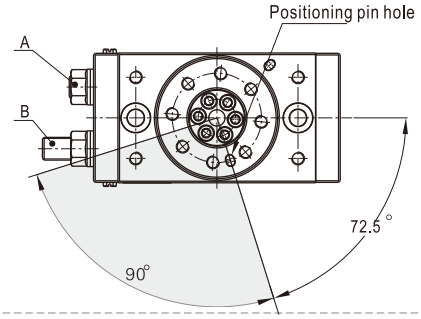


HRQ10~200

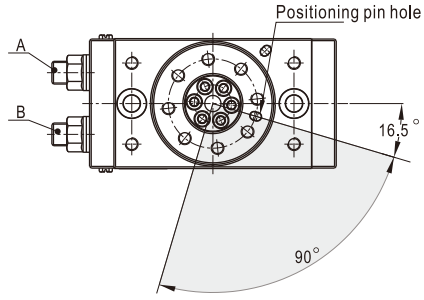
Adjustment amount by adjustment bolt B



Adjustment amount by adjustment bolt A



Adjustment amount by adjustment bolt A, B



1.3) The rotation angle can also be set on a type with internal absorber.

Model	Adjustment angle per rotation of angle(adjustment screw)	Model	Adjustment angle per rotation of angle(adjustment screw or shock absorber)
HRQ2	11.5°	HRQ10	10.2°
HRQ3	10.9°	HRQ20	6.5°
HRQ7	10.2°	HRQ30	6.5°
		HRQ50	8.2°
		HRQ70	7.0°
		HRQ100	6.1°
		HRQ200	4.9°

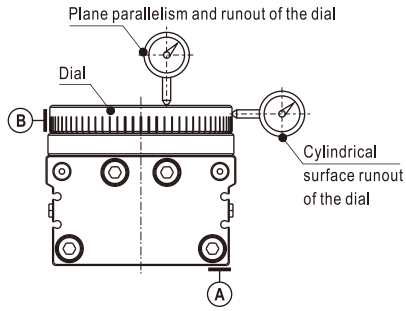
2. The range of rotation angle has been adjusted to the maximum in the factory, please do not enlarge the rotation angle any more.
3. The movement energy should not exceed the allowed maximum energy, or the inner parts will be damaged.
4. The rotary parts need no lubrication.
5. Series HRQ is equipped with a rubber bumper or shock absorber. Therefore, perform rotation adjustment in the pressurized condition(minimum operation pressure: 0.1 Mpa or more for adjustment bolt and internal shock absorber types, and 0.2 MPa or more for external shock absorber type.)
6. Refer to the table below for tightening torques of the shock absorber setting nut.

Shock absorber size	Max. tightening torque(Nm)
M10	3.5
M12	8.0
M14	11.0
M20	24.0
M27	63.0

7. Never loosen the bottom screw of the shock absorber. (It is not an adjustment screw.) That may cause oil leakage.
8. Shock absorbers are consumable parts.
When a decrease in energy absorption capacity is noticed, it must be replaced.

Rotary table cylinder	Shock absorber
HRQ10	ACA1006-A
HRQ20\HRQ30	ACA1215-A
HRQ50	ACA1416-A
HRQ70\HRQ100	ACA2020-A
HRQ200	ACA2725-A

9.Strictly control run out and parallelism of the dial according to the requirements of the following table.



Items	Specific requirements	Relative datum
Plane parallelism of the dial	0.1	A
Plane runout of the dial	0.1	A
Cylindrical surface runout of the dial	0.1	B

Compendium of HRS Series

Double cylinder structure

Reinforced cylinder structure allows for double output to be achieved.

Rack and pinion design

Rack and pinion design, provides stable operation.



With magnetic switch slots

Switch slots are designed on the both side of the cylinder body.

Five specifications are available

Specification: 10、15、20、30、40

Two modes of buffer could be chosen

Bumpers and air cushion provided as standard options, providing excellent cushion performance.

Simple to install

With guide holes on both sides of the cylinder body, installation is simple.

Installation and application

1.Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2.The medium used by cylinder requires 40 micron or lower filtration.
3.Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4.If unit or components to be stored for an extended period of time, it is recommenced to apply an anti corrosive treatment to exterior. Dust caps shall be added in air inlet and outlet ports.

Rotary table cylinder

HRS Series



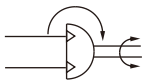
Specification

Specification	10	15	20	30	40
Acting type	Double rack and pinion(Double acting)				
Fluid	Air(to be filtered by 40μm filter element)				
Operating pressure	0.25~0.7MPa (37~100psi)(2.5~7.0bar)	0.15~0.7MPa (22~100psi)(1.5~7.0bar)			
Proof pressure	1.2MPa(175psi)(12.0bar)				
Temperature	-20~70℃				
Angle adjustment range	0~190°				
Repeatable precision	0.2°				
Theoretic moment(N.m)(0.5MPa)	0.33	1.1	2.2	2.8	5
Cushion type	Rubber bumper		Bumper and air cushion		
Port size	M5×0.8		1/8" [Note1]		
Weight g	145	359	822	1120	1806

[Note1] G thread is available.

Add) Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. Rack and pinion design, stable functioning.
2. Double cylinder structure, double force could be achieved.
3. Guide hole is designed on the both side of the cylinder body, which is simple to install.
4. Standard come with both bumper and air cushion, providing excellent cushion performance.

Note : HRS10/15 only has bumpers (do not have air cushion).

Ordering code

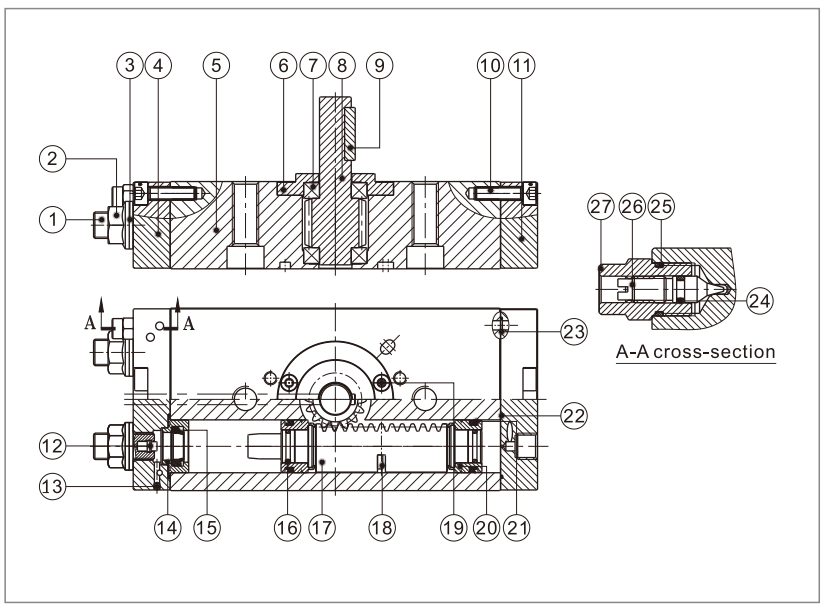
HRS 20 X 90° G

① ② ③ ④

①Model	②Specification	③Rotating angle	④Thread type
HRS: Rotary Table/Rack & Pinion Style	10	90° 180°	No this code
	15		
	20		G: G
	30		
	40		

[Note] HRS series are all come with magnet.

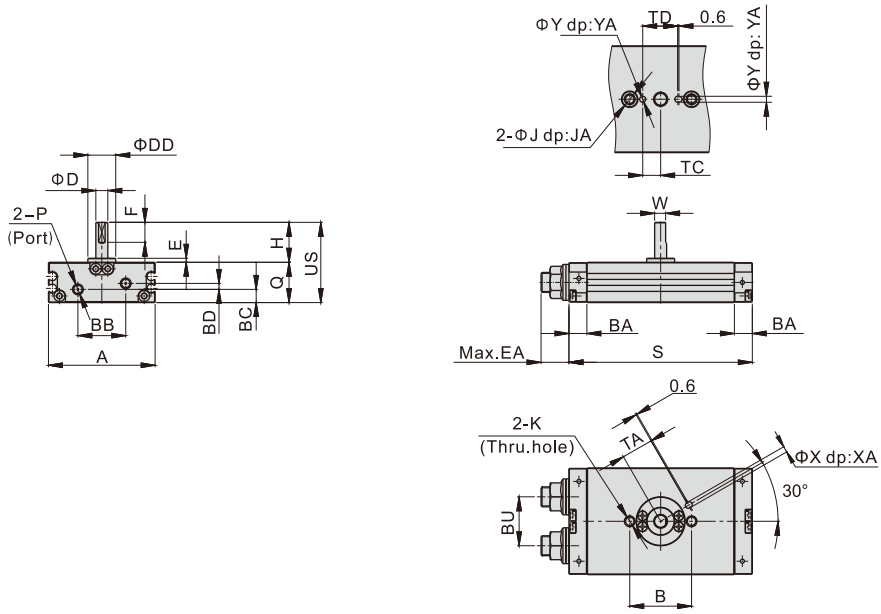
Inner structure and material of major parts



NO.	Item	Material
1	Adjustment bolt	Carbon steel
2	Hexagon nut	Carbon steel
3	Seal washer	Carbon steel & Rubber
4	Front cover	Aluminum alloy
5	Body	Aluminum alloy
6	Top cap	Carbon steel
7	Deep-groove bearing	Subassembly
8	Gear shaft	Carbon steel
9	Flat key	Carbon steel
10	Hexagon socket head cap bolt	Carbon steel
11	Back cover	Aluminum alloy
12	Bumper	NBR
13	Steel ball	Stainless steel
14	Buffering Cap	Aluminum alloy
15	O-ring	NBR
16	O-ring	NBR
17	Rack	Stainless steel
18	Magnet	Rare earths
19	Hexagon socket head cap bolt	Carbon steel
20	Piston	Brass
21	Piston seal	NBR
22	O-ring	NBR
23	O-ring	NBR
24	O-ring	NBR
25	O-ring	NBR
26	Air cushion screw	Brass
27	Screw	Brass/Carbon steel

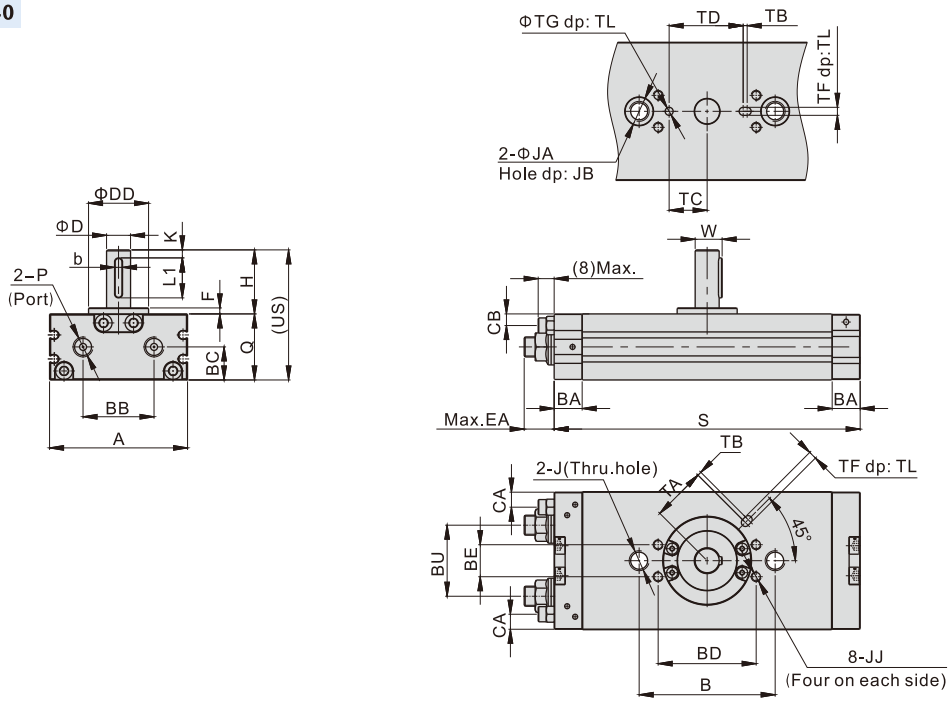
Dimensions

HRS10/15



Item / Type	Rotating angle	A	EA	B	BA	BB	BC	BD	BU	D	DD	E	F	H	K	W	Q	S	US	TA	TC	TD	J	JA	X	XA	Y	YA	P
10	90°	42.5	11.4	29	8.5	16.7	5.5	6	16.7	5	12	2	10	18	M5×0.8	4.5	17	62	35	15.5	8	15.4	7.5	4.5	3 (H9)	2	3 (H9)	2	M5×0.8
	180°																	69											
15	90°	53.5	14	31	9	24.5	6.5	0	24.5	6	14	2	10	20	M5×0.8	5.5	20	75	40	16	9	17.6	7.5	4.5	3 (H9)	2	3 (H9)	2	M5×0.8
	180°																	92											

HRS20/30/40



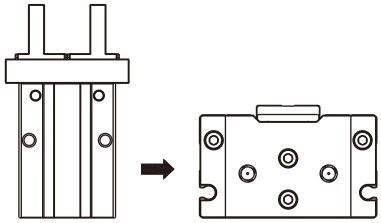
Type\Item	Rotating angle	A	B	EA	BA	BB	BC	BD	BE	BU	CA	CB	D	DD	F	H	J	JA
20	90° 180°	63	50	14.5	14	32.5	14.5	/	/	32.5	6	4.8	10	25	2.5	30	M8X1.25	11
30	90° 180°	69	68	14.5	14	35.5	16.5	49	16	35.5	7.5	5.8	12	30	3	32	M10X1.5	14
40	90° 180°	81	76	19.5	16	44	18.5	55	16	44	7	6.5	15	32	3	36	M10X1.5	14

Type\Item	Rotating angle	JB	K	JJ	P	Q	S	W	key		US	TA	TB	TC	TD	TF	TG	TL
									b	L1								
20	90°	6.5	3	/	1/8"	29	110	11.5	4	20	59	24.5	1	13.5	27	4(H9)	4(H9)	2.5
	180°						136											
30	90°	8.5	4	M5X0.8 dp:6	1/8"	33	122	13.5	4	20	65	27	2	19	37	4(H9)	4(H9)	2.5
	180°						153											
40	90°	8.5	5	M6X1 dp:7	1/8"	37	141	17	5	25	73	32.5	2	20	39.5	5(H9)	5(H9)	3.5
	180°						179											

Compendium of HFD Series

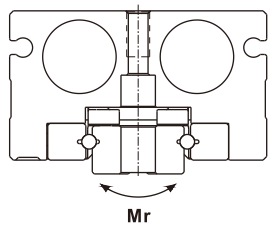
Compact structure

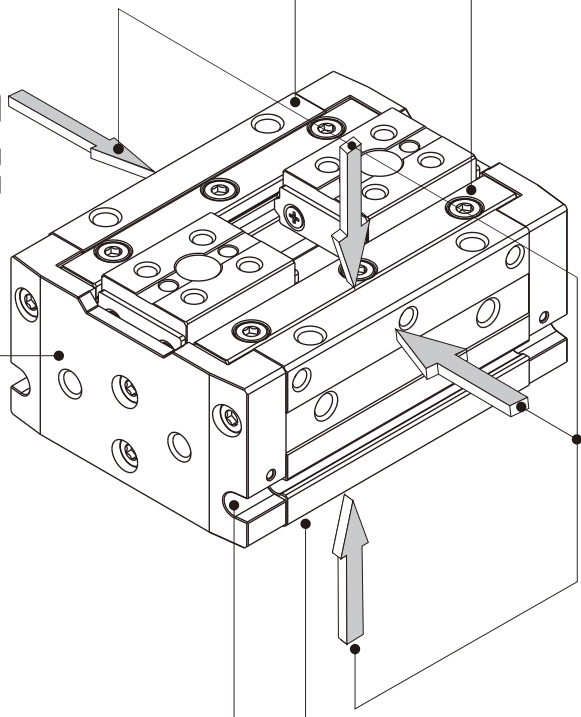
The overall height is reduced by about 50% compared to the parallel jaw product of the same clamping force, effectively reducing the device space and sloshing moment.



Double rail design

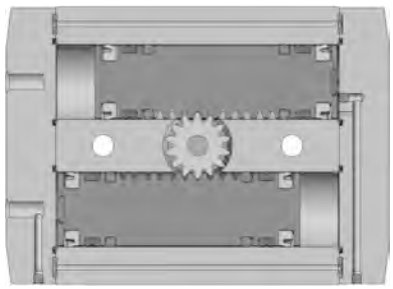
The double-track design increases the load span and the bending moment (Mr) load is better.





Double piston structure

Double piston drive, double output, for greater clamping force.



Fixed on four sides

Can be fixed in four directions and has a high degree of freedom.

With roundness magnetic switch slots

The roundness magnetic switch slots convenient to install DMSH\CMSH\EMSH type inducting switch.

With positioning hole

The bottom of the body is provided with a positioning hole which can improve the precision and the consistency of repeated dismounting and positioning.

Gripping force and stroke

Bore size	8			12			16			20			25	
Stroke (mm)	8	15	30	10	25	50	15	30	60	20	40	80	40	80
Gripping force per finger Effective value(N)	19			48			90			141			210	
Weight (g)	88.8	105.7	153.4	226.7	303.7	441.9	505.3	642.3	946.7	1019.6	1319.1	1983.3	1693.7	2558.9

[Note] The gripping force in the above table is in the working pressure of 0.5MPa, and with a gripping point of L=20mm.

Compact air gripper

HFD Series

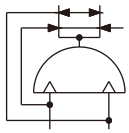


Specification

Bore size (mm)		8	12	16	20	25
Acting type		Double acting				
Fluid		Air(to be filtered by 40μm filter element)				
Operating pressure	Φ8	0.25~0.7MPa(36~100psi)(2.5~7bar)				
	Φ12	0.2~0.7MPa(29~100psi)(2~7bar)				
	Φ16/20/25	0.15~0.7MPa(22~100psi)(1.5~7bar)				
Proof pressure		1.2MPa(175psi)(12bar)				
Temperature		-20~70℃				
Lubrication		Not required				
Repeatability mm		±0.05				
Max. frequency		Longer stroke:60(c.p.m)				
		Middle and short stroke:120(c.p.m)				
Sensor switches		CMSH, DMSH, EMSH				
Port size		M3×0.5	M5×0.8			

Note) Refer to P576 for detail of sensor switch.

Symbol



Ordering code

HFD 16 X 15

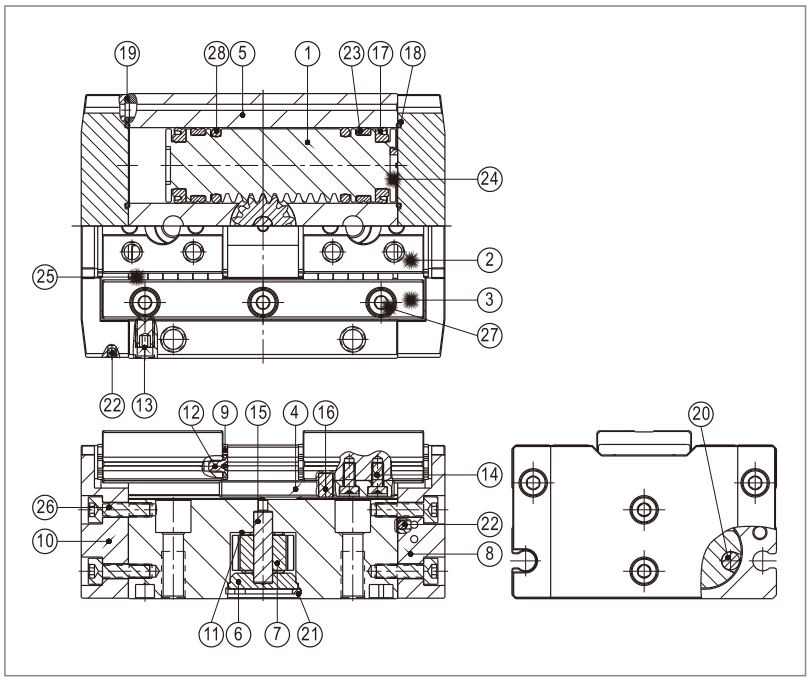
1 2 3

①Model	②Bore size	③Stroke
HFD: Compact air finger (Double acting)	8	8 15 30
	12	10 25 50
	16	15 30 60
	20	20 40 80
	25	40 80

Product feature

1. The double-track design increases the load span and the bending moment (Mr) load is better.
2. Double piston drive, double output, for greater clamping force.
3. The bottom of the body is provided with a positioning hole which can improve the precision and the consistency of repeated dismounting and positioning.
4. The jaw rails are made of stainless steel for high rigidity and corrosion resistance.
5. Can be fixed in four directions and has a high degree of freedom.
6. The overall height is reduced by about 50% compared to the parallel jaw product of the same clamping force, effectively reducing the device space and sloshing moment.

Inner structure and material of major parts

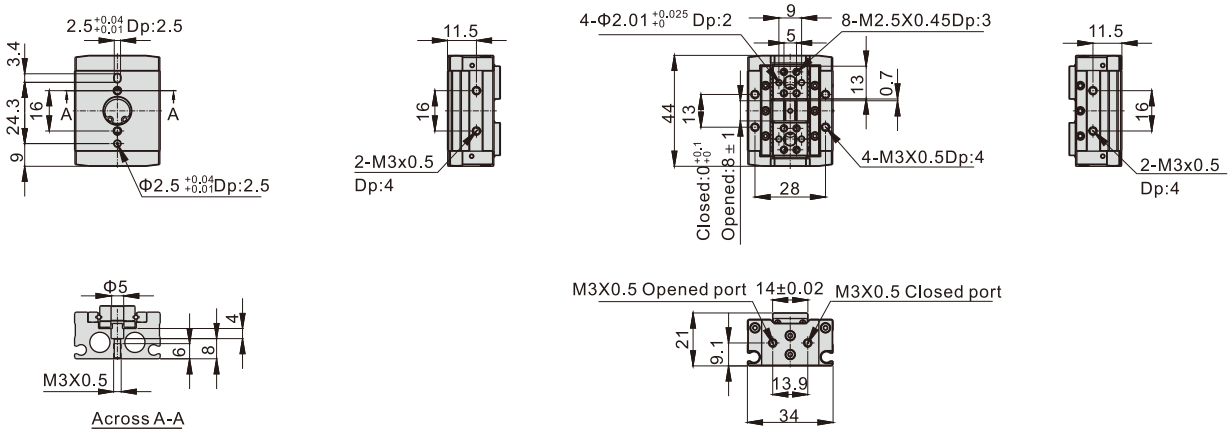


NO.	Item	Material
1	Rack	Stainless steel
2	Jaws	Stainless steel
3	Guide	Stainless steel
4	Joint arm	Cr-Mo steel
5	Body	Aluminum alloy
6	Rack end cap	Aluminum alloy
7	Gear	Cr-Mo steel
8	Back cover	Aluminum alloy
9	Baffle	Stainless steel
10	Front cover	Aluminum alloy
11	Plastic bearing	Wear resistant material
12	Screw	Stainless steel/Alloy steel
13	Screw	Alloy steel
14	Screw	Alloy steel
15	Pin	Bearing steel
16	Pin	Bearing steel
17	Piston seal	NBR
18	O-ring	NBR
19	O-ring	NBR
20	Magnet	Rare earth material
21	C clip	Spring steel
22	Steel ball	Stainless steel
23	Wear ring	Wear resistant material
24	Bumper	TPU
25	Steel ball	Bearing steel
26	Bolt	Alloy steel/Stainless steel
27	Bolt	Alloy steel/Stainless steel
28	O-ring	NBR

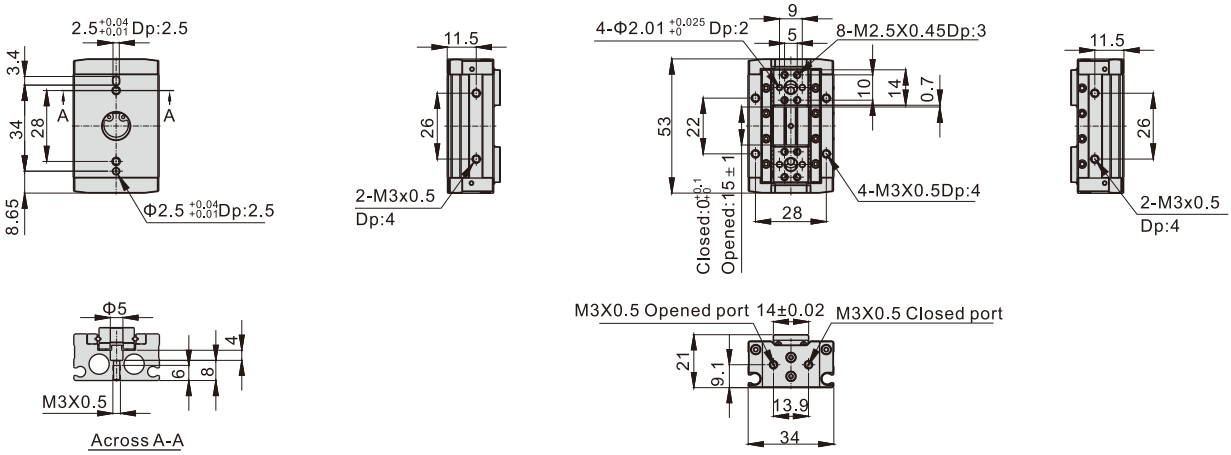
Note: HFD8 No. 12 and No. 27 are made of alloy steel.

Dimensions

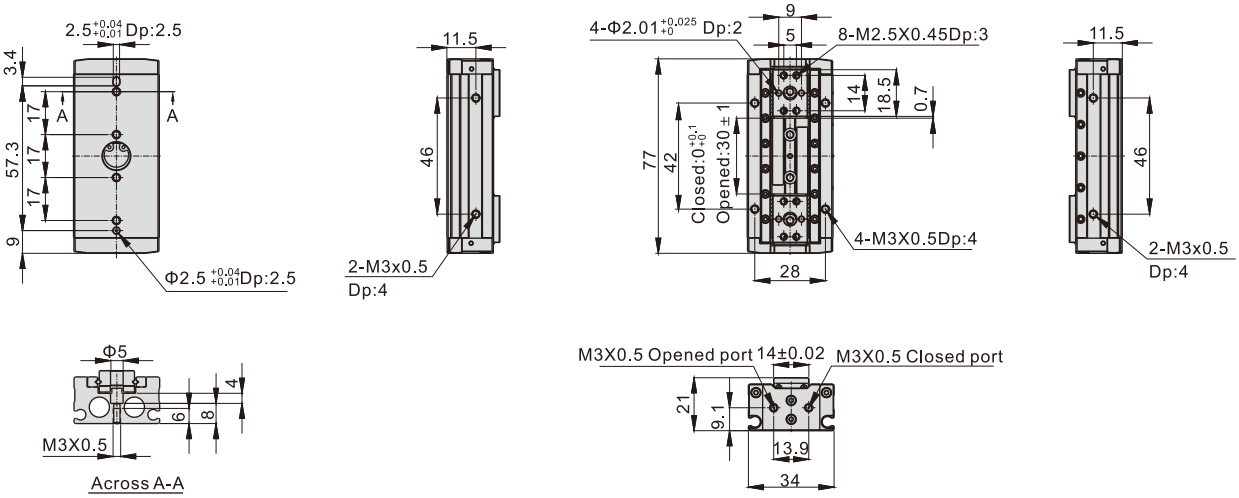
HFD8X8



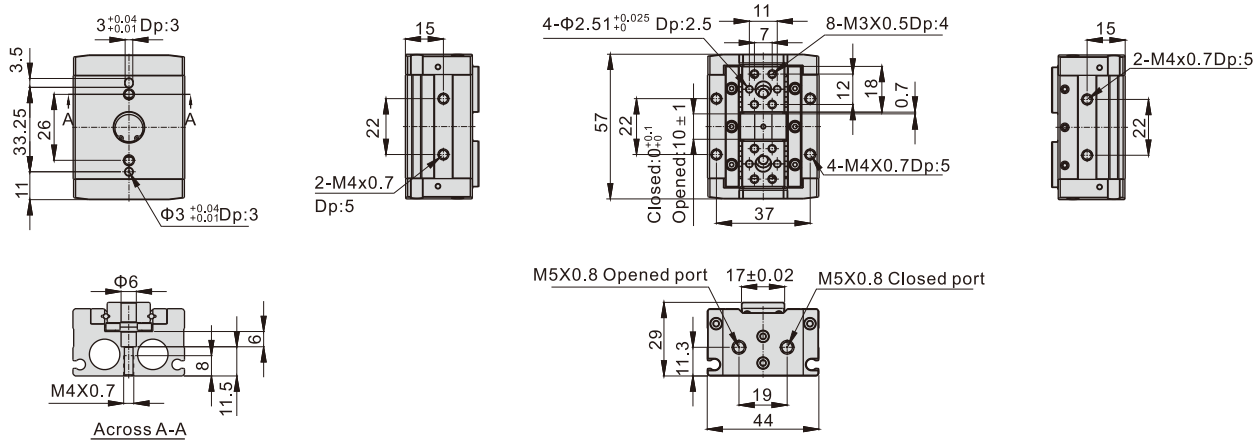
HFD8X15



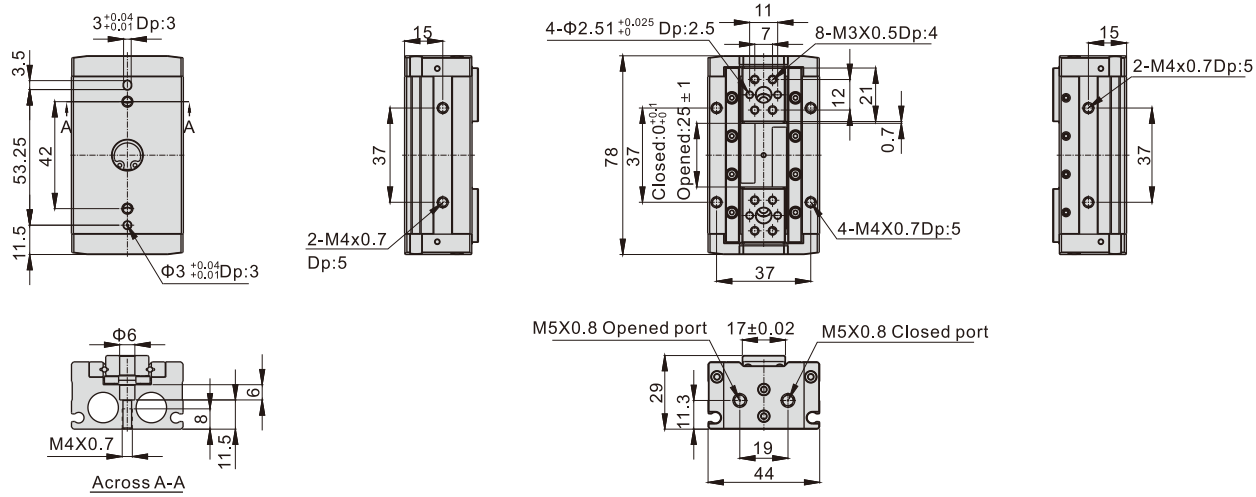
HFD8X30



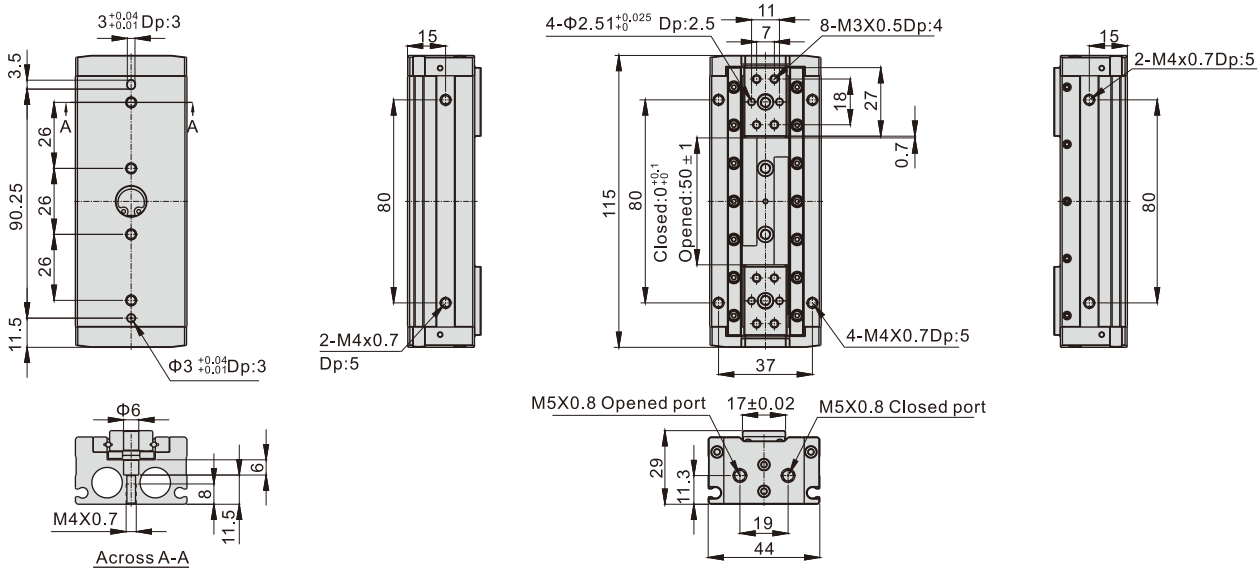
HFD12X10



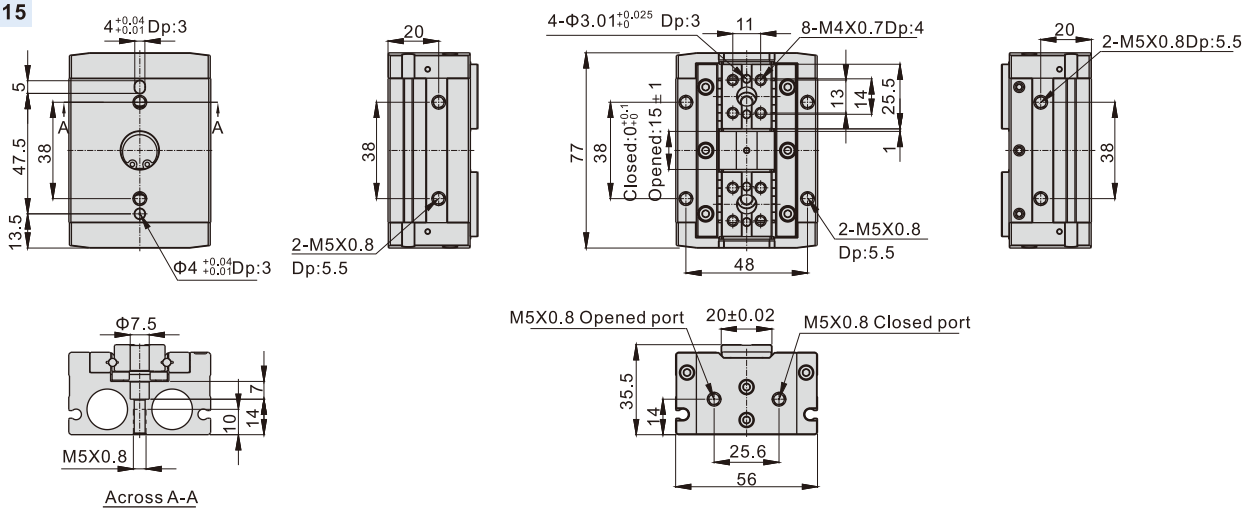
HFD12X25



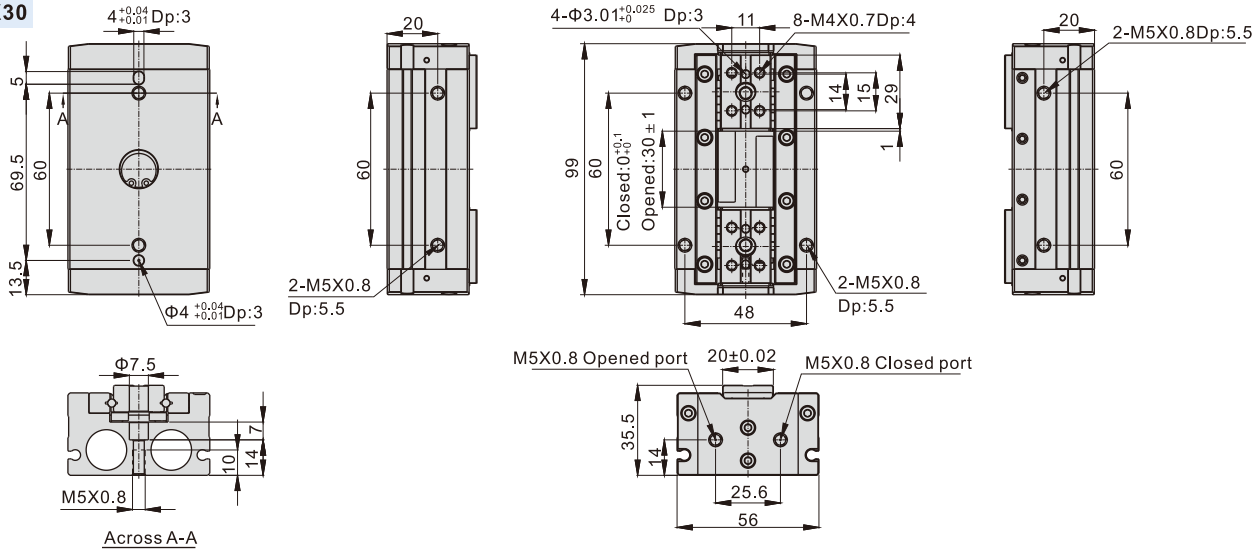
HFD12X50



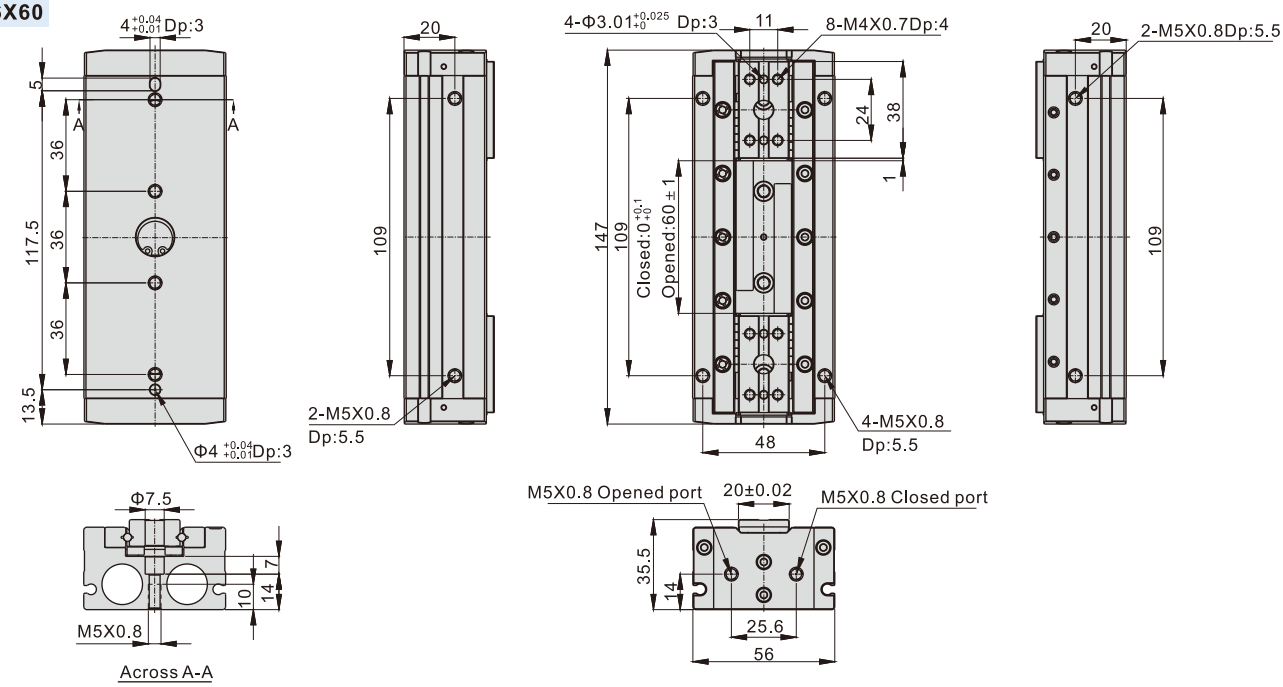
HFD16X15



HFD16X30

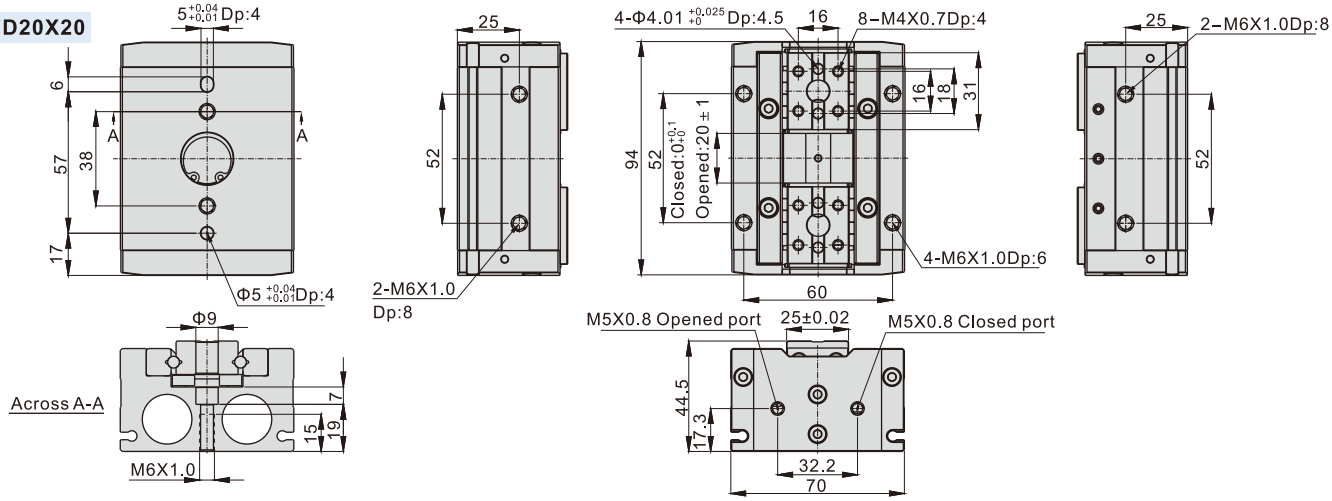


HFD16X60

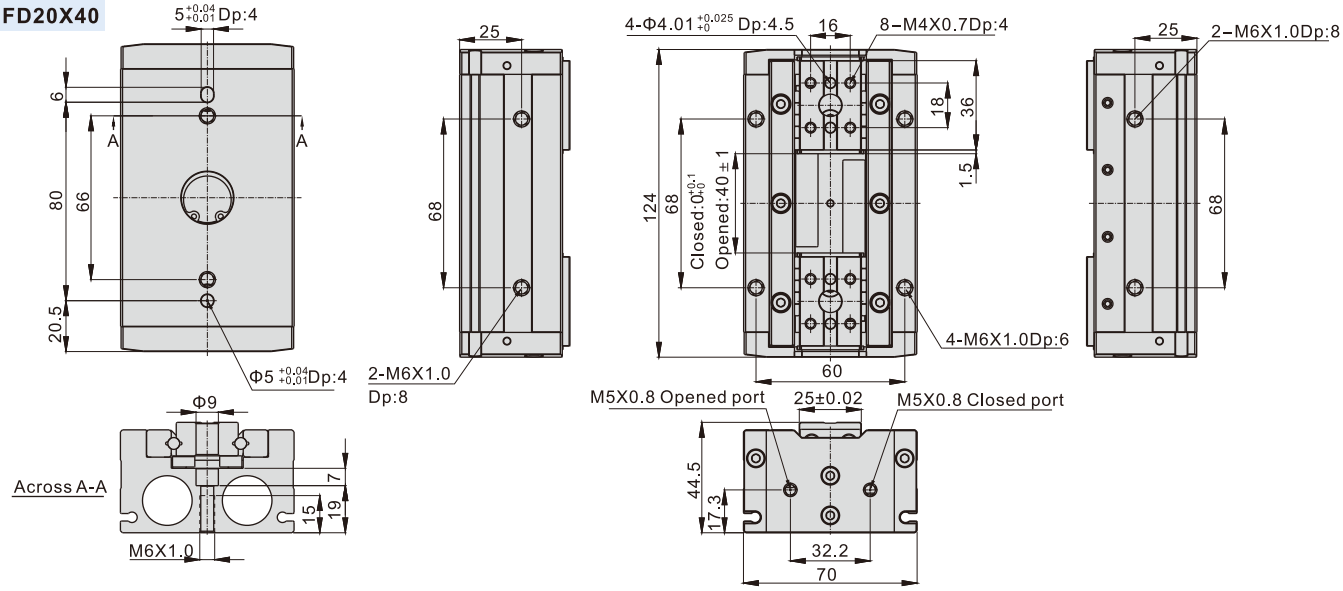


HFD Series

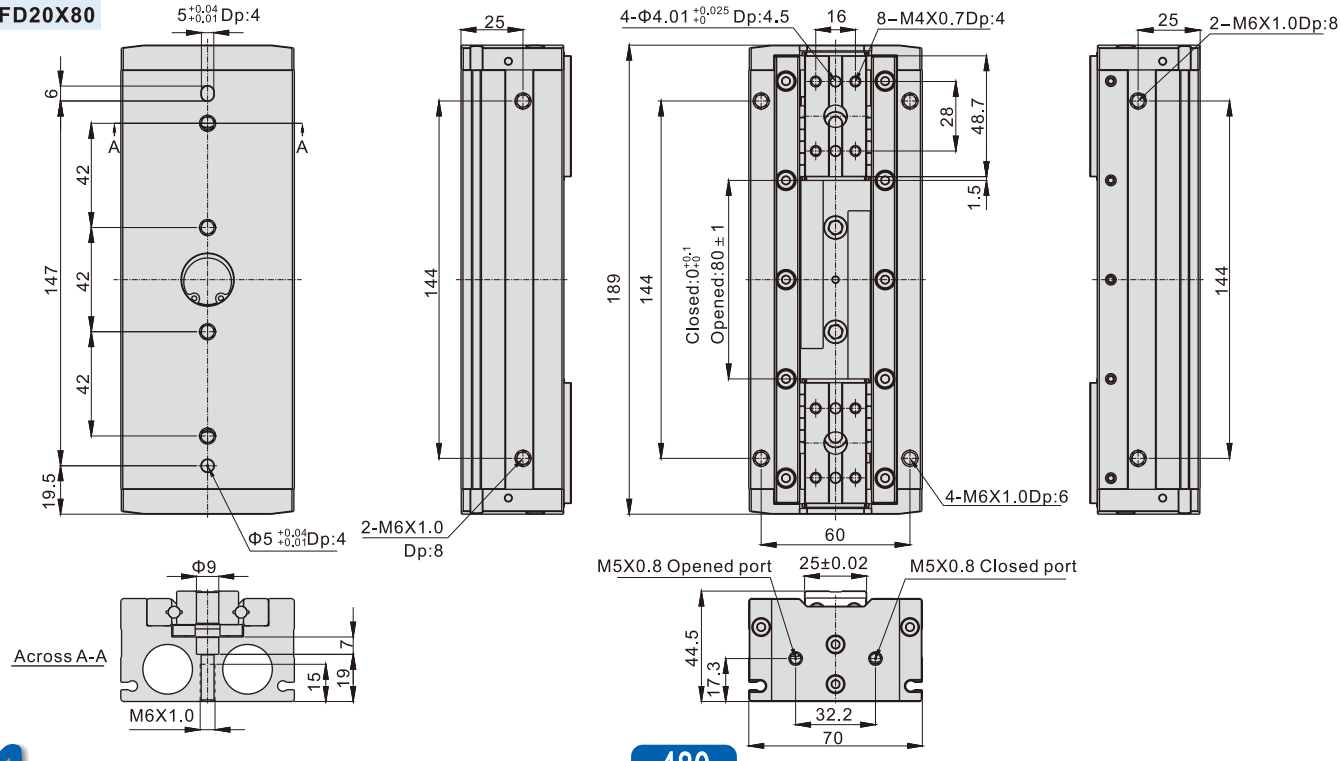
HFD20X20



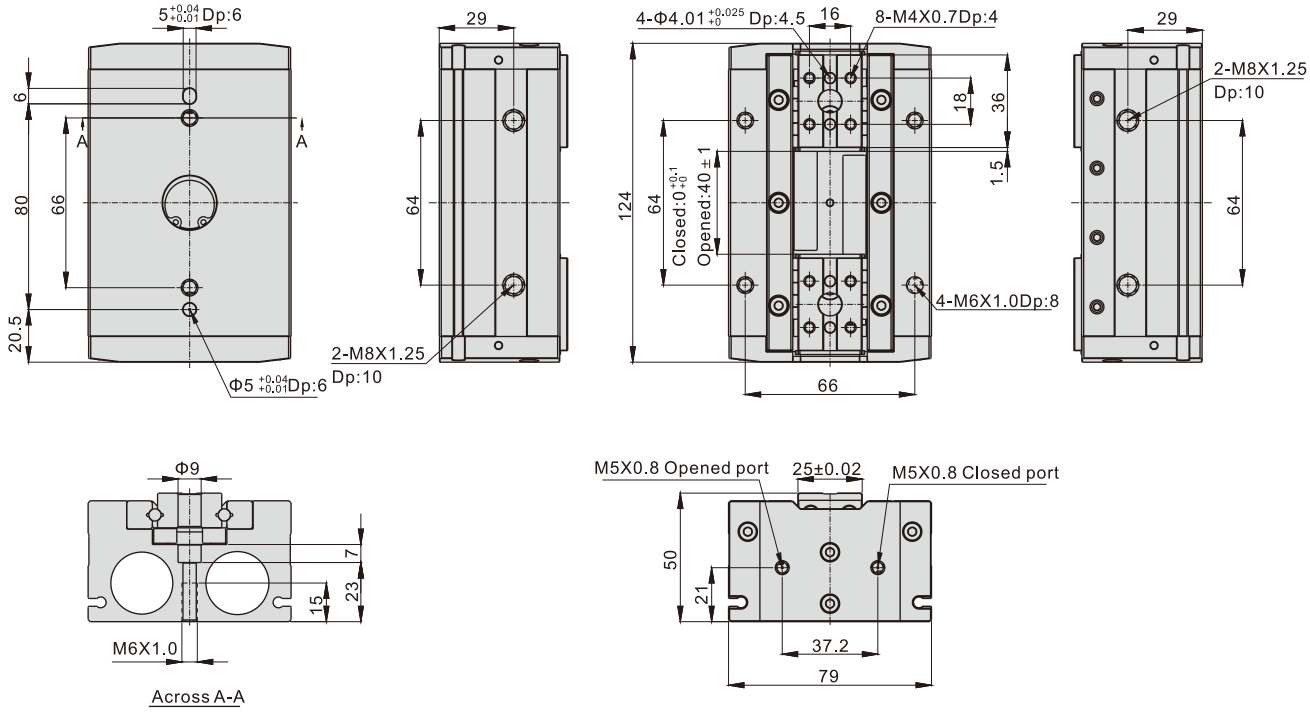
HFD20X40



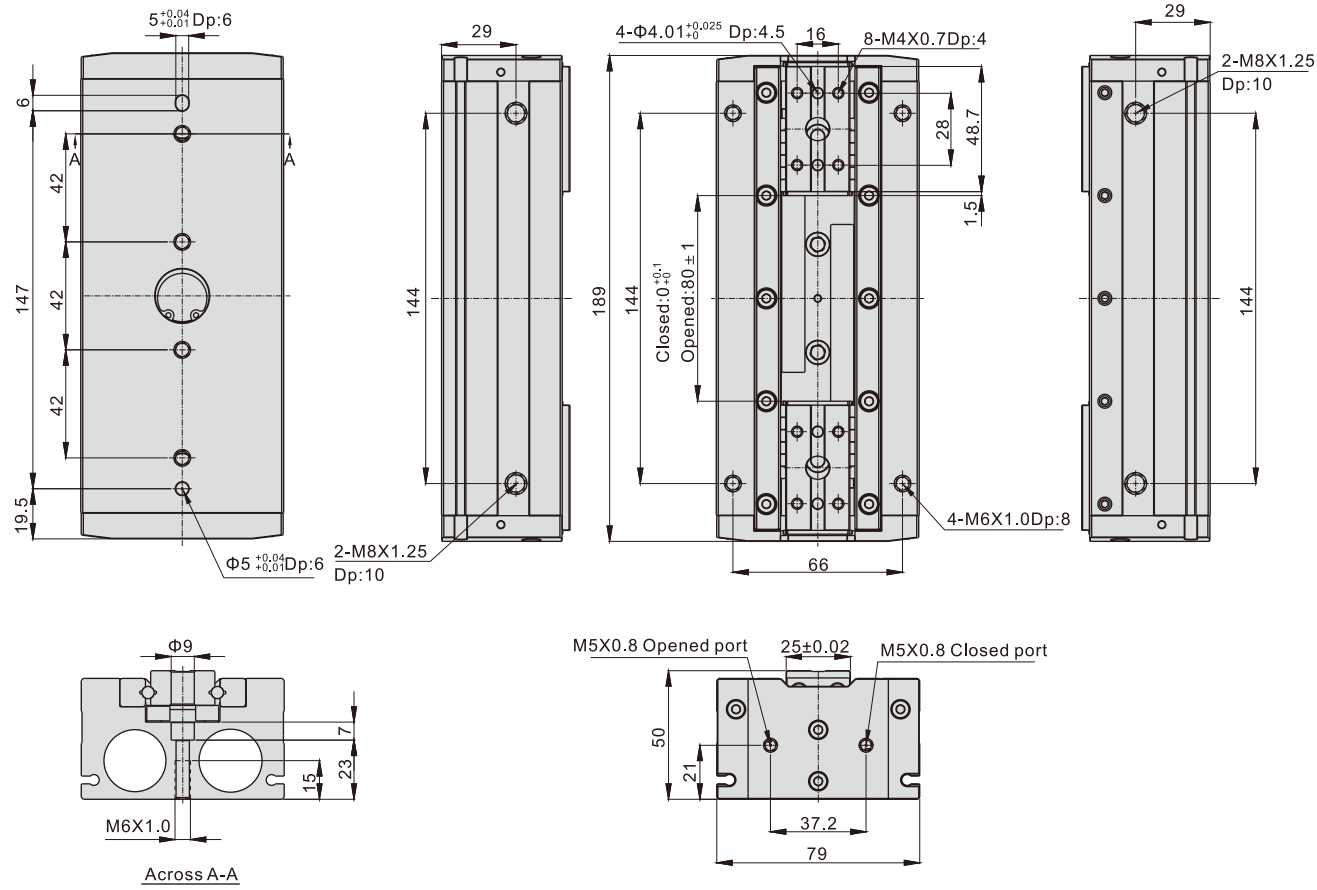
HFD20X80



HFD25X40



HFD25X80

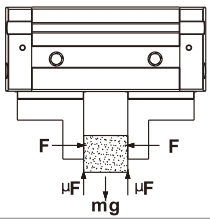


How to select product

Please select pneumatic finger according to the following steps:

①The selection of the effective gripping force → ②The confirmation of the gripping point → ③The confirmation of the external force put on the gripping jaw

1. The selection of the gripping force
The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

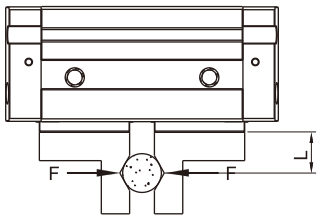


The work-pieces as shown in the left :		μ =0.2	μ =0.1
n: Number of gripping F: Gripping force (N) μ: friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity (=9.8m/s²)	The condition that the work-pieces won't drop is: n×μF>mg so: $F>\frac{mg}{n\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{n\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$	$F=\frac{mg}{2\times0.1}\times4=20\times mg$
		10 times of the mass of the gripped objects	20 times of the mass of the gripped objects

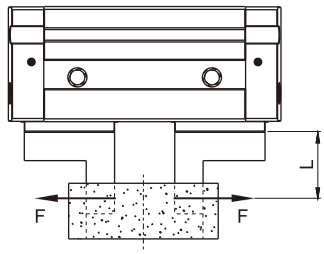
Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

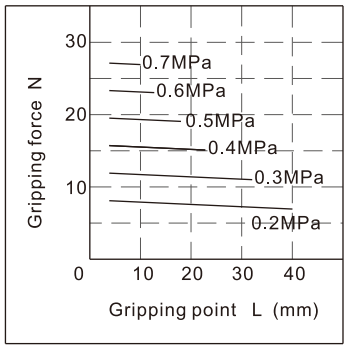
Closed gripping force



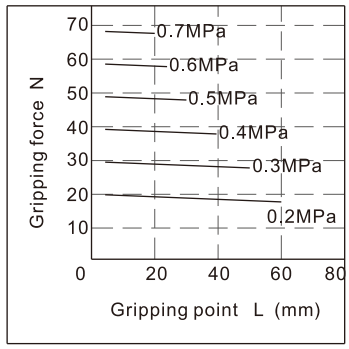
Opened gripping force



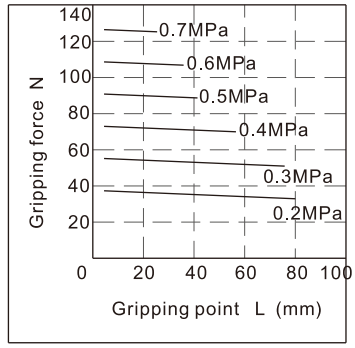
HFD8



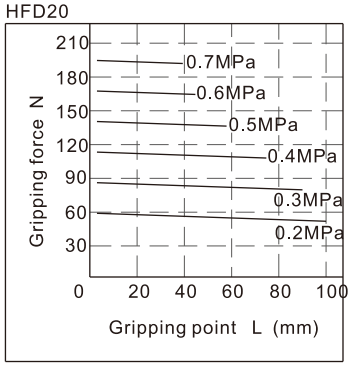
HFD12



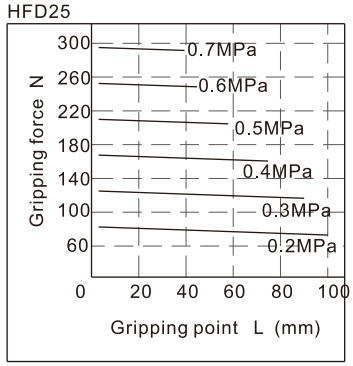
HFD16



HFD20



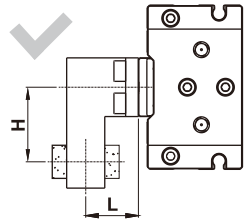
HFD25



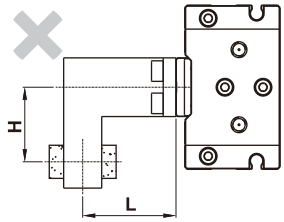
2. The selection of the gripping point

2.1) Please select the gripping point within the limited field shown below.
Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.

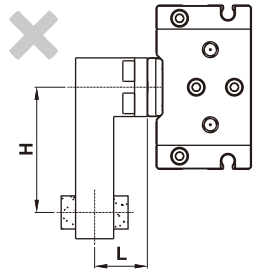
L and H have proper sizes



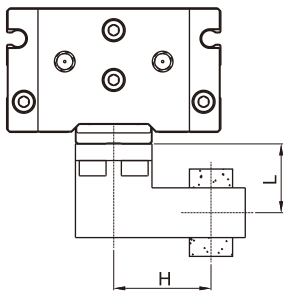
L is too long



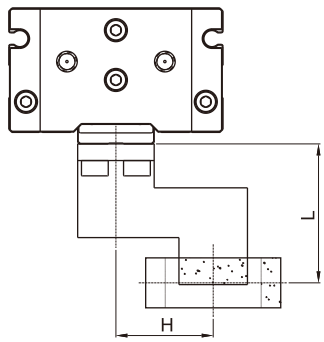
H is too long



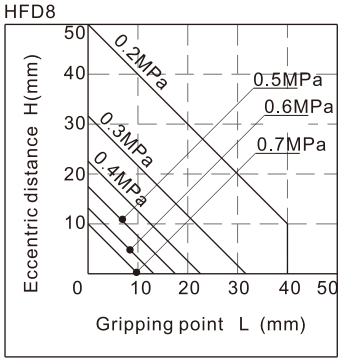
The range of the closed gripping points



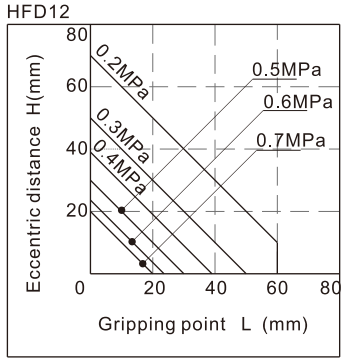
The range of the Opened gripping points



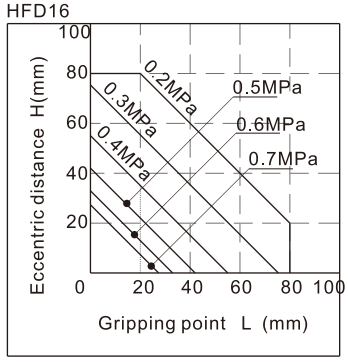
HFD8



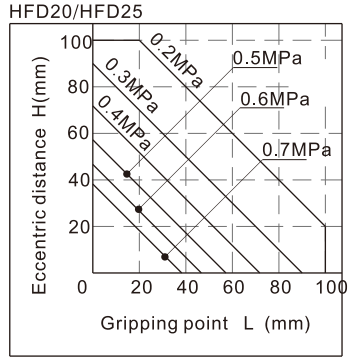
HFD12



HFD16

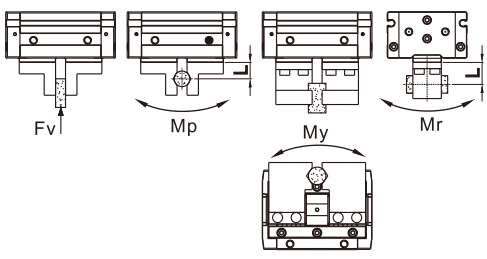


HFD20/HFD25



2.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.

3. The confirmation of the external force put on the gripping jaw.



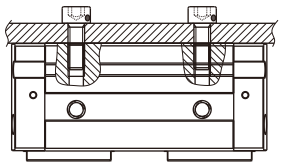
[Note]
The loads and torque values of said are all static values.
L=Distance to load point(mm).

Bore size	The allowed vertical loads Fv(N)	Max. permissible torque(Nm)			The calculation of allowable forces when moment loads work	Examples of calculation
		Mp	My	Mr		
8	58	0.26	0.26	0.64	Allowable load(N) = M(Maximum permissible moment)(N.m) / L×10^{-3} (Unit conversion constant)	In the guide rail of HFD12, the external force of the pitching moment static loads put on the point of L=30mm is f=10 N, Allowable load F= 0.68 / 30×10^{-3} = 22.7(N) Actual load f=10(N) <22.7(N) To meet the using requirements
12	98	0.68	0.68	1.68		
16	176	1.4	1.4	3.36		
20	294	2	2	4.8		
25	294	2	2	4.8		

Installation and application

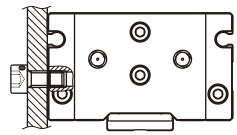
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces.
   In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. There are several kinds of installation method, and the locking torque of fastening screw must be within the prescribed torque range shown in the below chart.
   If the locking torque is too large, it will cause the dysfunctional. If the locking torque is too small, it will cause the position deviation and fall.

Tail installation type



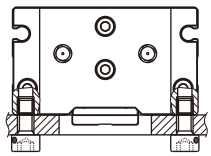
Bore size	The bolts type	Max. locking moment(N.m)	Max. screwed depth(mm)
8	M3×0.5	0.95	6
12	M4×0.7	2.2	8
16	M5×0.8	4.5	10
20	M6×1.0	7.8	15
25	M6×1.0	7.8	15

Side installation type



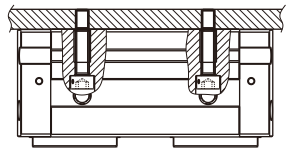
Bore size	The bolts type	Max. locking moment(N.m)	Max. screwed depth(mm)
8	M3×0.5	0.63	4
12	M4×0.7	1.5	5
16	M5×0.8	3	5.5
20	M6×1.0	5.2	8
25	M8×1.25	12	10

Bottom installation type



Bore size	The bolts type	Max. locking moment(N.m)	Max. screwed depth(mm)
8	M3×0.5	0.63	4
12	M4×0.7	1.5	5
16	M5×0.8	3	5.5
20	M6×1.0	5.2	6
25	M6×1.0	5.2	8

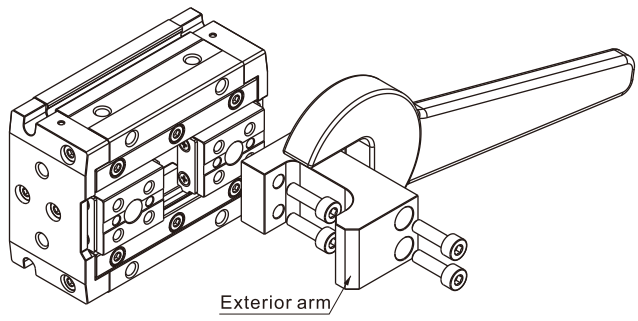
Front installation type



Bore size	The bolts type	Max. locking moment(N.m)
8	M2.5×0.45	0.36
12	M3×0.5	0.63
16	M4×0.7	1.5
20	M5×0.8	5
25	M5×0.8	5

7. The installation method of the gripping jaw fittings
   When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner,
   and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.

Bore size	The bolts type	Max. locking moment（N.m）
8	M2.5×0.45	0.36
12	M3×0.5	0.63
16	M4×0.7	1.5
20	M4×0.7	1.5
25	M4×0.7	1.5



Parallel open/close hollow style

Compendium of HFCQ Series

Hollow structure

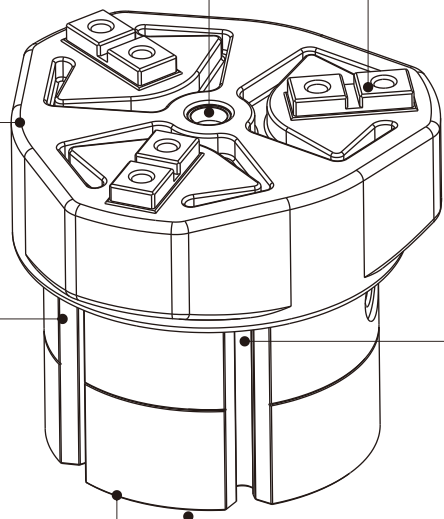
The hollow tube can be matched with the mechanism to achieve the blowing effect.

Stainless steel jaw

The jaws and piston rods are made of high-grade stainless steel, which has high strength, corrosion resistance and small assembly clearance, low shaking and high durability.

Dustproof design

All series are equipped with a dust jacket, which can also be used in special occasions.



Bumper design

The bumper is adopted in the front of piston, which can reduce the noise of metal bump.

With roundness magnetic switch slots

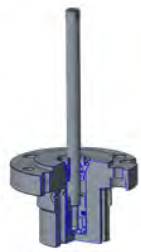
The roundness magnetic switch slots convenient to install CMSH\DMSH\EMSH type inducting switch.

With positioning hole

A positioning hole is attached to the bottom of the body, which can improve the precision and the consistency of repeated dismounting and positioning.

Push function

The tail end is equipped with a push rod mechanism for the push function.



Cylinder pusher module



Spring pusher module

Gripping force and stroke

Model	Gripping force per finger Effective valve(N)		Opening/Closing stroke (Both sides)(mm)	Weight (g)
	Internal	External		
HFCQ16	15	9	4	100
HFCQ20	26	21	4	140
HFCQ25	45	36	6	220
HFCQ32	77	62	8	430
HFCQ40	118	97	8	560
HFCQ50	187	155	12	950
HFCQ63	329	280	16	1600

Note) The gripping force in the above table is in the working pressure of 0.5MPa, and with a gripping point of L=20mm(Φ16~Φ25) or L=30mm(Φ32~Φ63).

Add) Please refer to page 490 for the definition of "L".

Installation and application

1. Dirty substances in the pipe must be eliminated before air gripper is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder shall be filtered to 40μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the air gripper is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

Air gripper(parallel open/close hollow style)

HFCQ Series

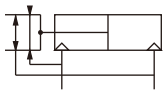


Specification

Bore size (mm)	16	20	25	32	40	50	63
Acting type	Double acting						
Fluid	Air(to be filtered by 40μm filter element)						
Operating pressure	0.2~0.7MPa(28~100psi)(2.0~7.0bar)			0.15~0.7MPa(22~100psi)(1.5~7.0bar)			
Temperature ℃	-20~70						
Lubrication	Not required						
Repeatability mm	± 0.01						
Max. frequency	120(c.p.m)			60(c.p.m)			
Sensor switches	CMSH、DMSH、EMSH						
Port size	M3 × 0.5	M5 × 0.8					
Hollow diameter	Φ3 $^{+0.05}_{+0}$	Φ3 $^{+0.05}_{+0}$	Φ4 $^{+0.05}_{+0}$	Φ6 $^{+0.05}_{+0}$	Φ10 $^{+0.05}_{+0}$	Φ12 $^{+0.05}_{+0}$	Φ16 $^{+0.05}_{+0}$
Push rod mechanism	-			Cylinder or Spring push rod mechanism			
Port size of push rod mechanism	-			M5 × 0.8			

[Note] Sensor switch should be ordered additionally. Refer to P576 for detail.

Symbol



Product feature

1. The hollow tube can be matched with the mechanism to achieve the blowing effect.
2. The jaws and piston rods are made of high-grade stainless steel, which has high strength, corrosion resistance and small assembly clearance, low shaking and high durability.
3. All series are equipped with a dust jacket, which can also be used in special occasions.
4. A positioning hole is attached to the bottom of the body, which can improve the precision and the consistency of repeated dismounting and positioning.
5. The tail end is equipped with a push rod mechanism for the push function.
6. The sensor grooves of each specification are shared.

Ordering code

HFCQ 20 E

① ② ③

①Model	②Bore size	③Push rod mechanism		
HFCQ: Air finger (Double acting, parallel hollow type)	16 20 25 32 40 50 63	Blank: Without push rod mehanism	E: Cylinder push rod mechanism 	V: Spring push rod mechanism 

[Note]
1. The push rod mechanism can only be used with Φ32/Φ40/Φ50/Φ63.
2. HFCQ series are all attached with magnet.

Push rod mechanism ordering code

F–HFCQ 32 E

① ② ③

①Model	②Bore size	③Push rod mechanism type	
HFCQ: Air finger (Double acting, parallel hollow type)	32 40 50 63	E: Cylinder push rod mechanism 	V: Spring push rod mechanism 

Specification of Cylinder push rod mechanism

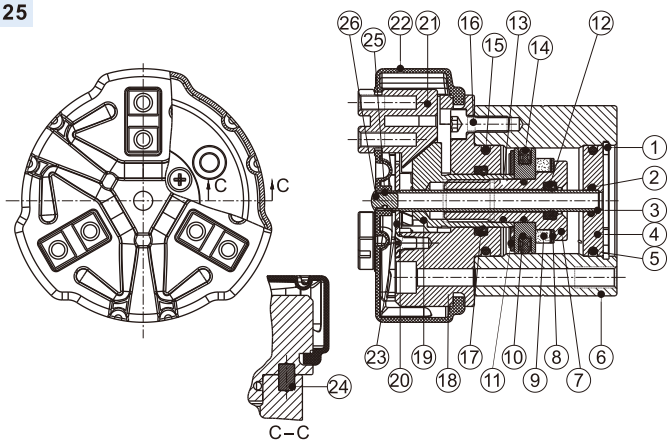
Model	HFCQ32E	HFCQ40E	HFCQ50E	HFCQ63E
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	0.2~0.7MPa(28~100psi)	0.15~0.7MPa(22~100psi)		
Temperature	-20~70 ℃			
Lubrication	Not required			
Push stroke mm	7	8	14	15
Max. frequency	60(c.p.m)			
Sensor switches	CMSH、DMSH、EMSH			
Push force N(0.5MPa)	45	130	204	335
Weight g	560	790	1350	2280

Specification of Spring push rod mechanism

Model	HFCQ32V	HFCQ40V	HFCQ50V	HFCQ63V
Push stroke mm	7	8	14	15
Push spring force N	5~12	9~18	16~31	24~40
Weight g	530	730	1270	2190

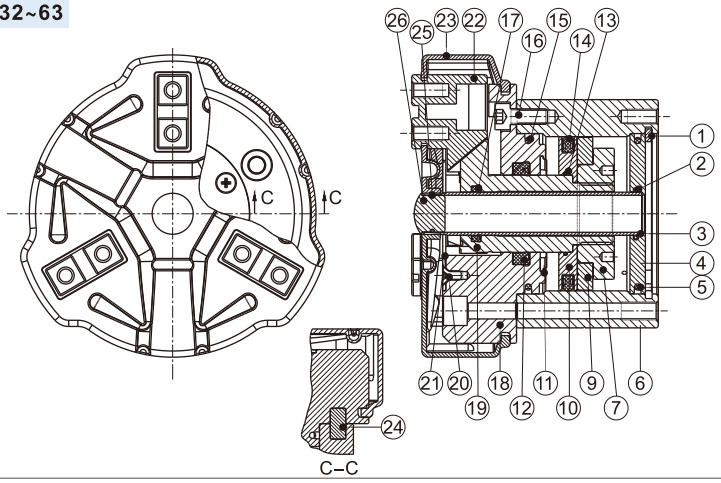
Inner structure and material of major parts

HFCQ16~25

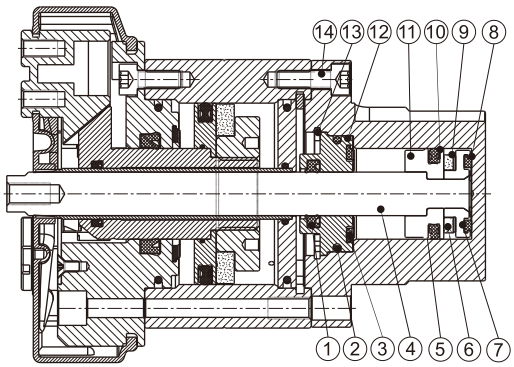


NO.	Item	Material
1	C clip	Spring steel
2	O-ring	NBR
3	Hollow tube	Stainless steel
4	Back cover	Aluminum alloy
5	O-ring	NBR
6	Body	Aluminum alloy
7	Magnet holder	Stainless steel
8	Magnet washer	NBR
9	Magnet	Rare earths
10	Piston	Aluminum alloy
11	Bumper	TPU
12	Rod packing	NBR
13	O-ring	NBR
14	Piston seal	NBR
15	O-ring	NBR
16	Countersink screw	Alloy steel
17	Rod packing	NBR(16~25) TPU(32~63)
18	Front cover	Aluminum alloy
19	Piston rod	Stainless steel
20	Screw	Stainless steel
21	Jaw	Stainless steel
22	Dustproof cover	NBR
23	Cover blank	Stainless steel
24	Pin	Stainless steel
25	O-ring	NBR
26	Dustproof pluger	NBR

HFCQ32~63

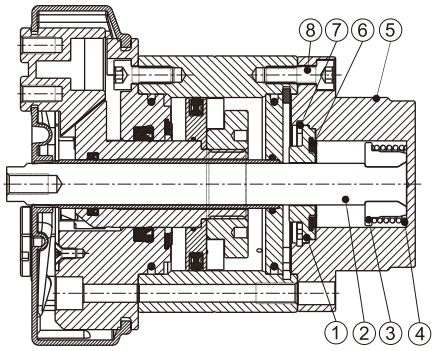


HFCQ32E~63E



NO.	Item	Material
1	Rod packing	NBR
2	O-ring	NBR
3	Bumper	TPU/NBR
4	Push rod	Stainless steel
5	Piston seal	NBR
6	Magnet washer	NBR
7	Bumper	TPU/NBR
8	Body	Aluminum alloy
9	Magnet holder	Brass/Aluminum alloy
10	Magnet	Rare earths
11	Piston	Brass/Aluminum alloy
12	Front cover	Aluminum alloy
13	C clip	Spring steel
14	Countersink screw	Alloy steel

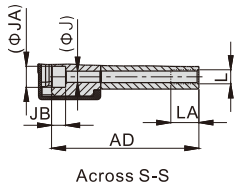
HFCQ32V~63V

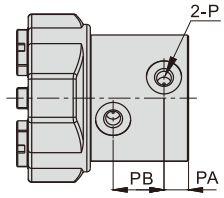


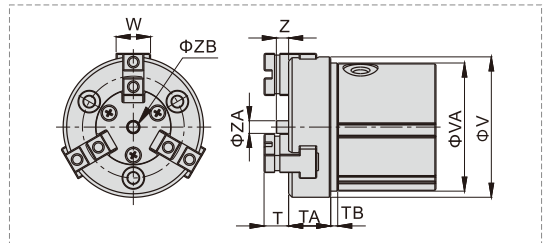
NO.	Item	Material
1	Front cover	Aluminum alloy
2	Push rod	Stainless steel
3	Piston	Aluminum alloy
4	Spring	SWPB
5	Body	Aluminum alloy
6	Bumper	TPU/NBR
7	C clip	Spring steel
8	Countersink screw	Alloy steel

Dimensions

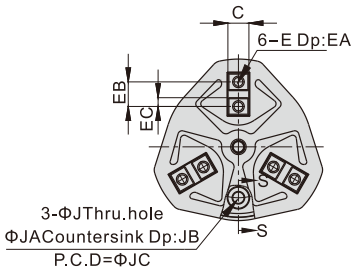
HFCQ16~25

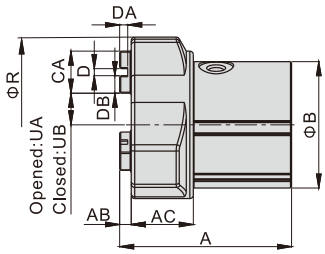


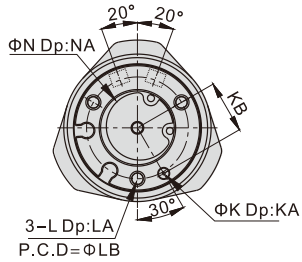




Dimensions of unused dust cover.
Other dimensions are the same as standard(used dust cover)



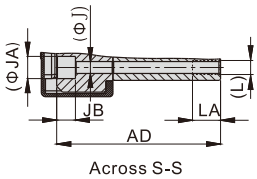


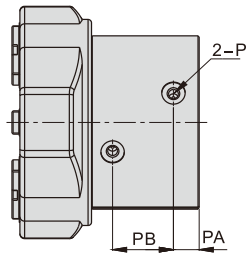


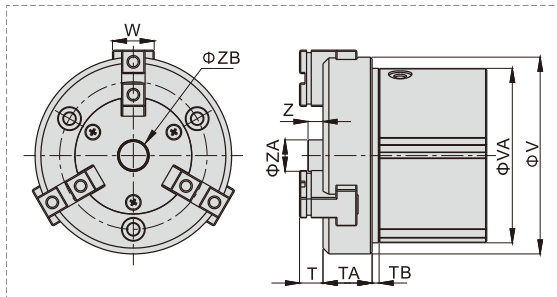
Bore size\Item	A	AB	AC	AD	B	C	CA	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	K	KA	KB	L	LA	LB
16	46	3	16	39	31	$5^{-0.01}_{-0.03}$	11	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	4.5	M3×0.5	5	6	2	3.2	6	4	24	$3^{+0.04}_{+0.01}$	3	12	M4×0.7	8	24
20	49	3	18	42	36	$6^{-0.01}_{-0.03}$	12	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	5	M3×0.5	5	7	2.5	3.2	6	4	29	$3^{+0.04}_{+0.01}$	3	15	M4×0.7	8	29
25	55	3	20	47	42	$6^{-0.01}_{-0.03}$	14	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	6	M3×0.5	5	8	3	3.2	6	4	34	$3^{+0.04}_{+0.01}$	3	18	M4×0.7	8	34

Bore size\Item	N	NA	P	PA	PB	R	T	TA	TB	UA	UB	V	VA	W	Z	ZA	ZB
16	$17^{+0.05}_{0}$	1.5	M3×0.5	7	14	44	7	10.5	3	9	7	34	31.5	8	3.5	3.7	$3^{+0.05}_{0}$
20	$21^{+0.05}_{0}$	1.5	M5×0.8	7	14	50	7	12	3	10	8	40	36.5	10	3.5	3.7	$3^{+0.05}_{0}$
25	$26^{+0.05}_{0}$	1.5	M5×0.8	8	17	59	8	13	3	12.5	9.5	47	42.5	12	4.5	4.7	$4^{+0.05}_{0}$

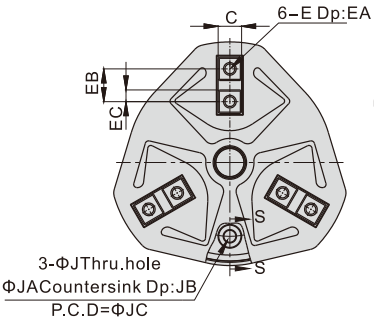
HFCQ32~63

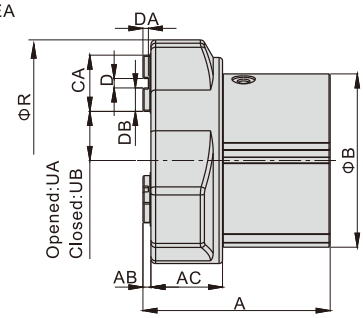


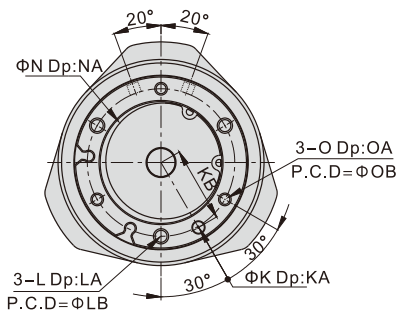




Dimensions of unused dust cover.
Other dimensions are the same as standard(used dust cover)





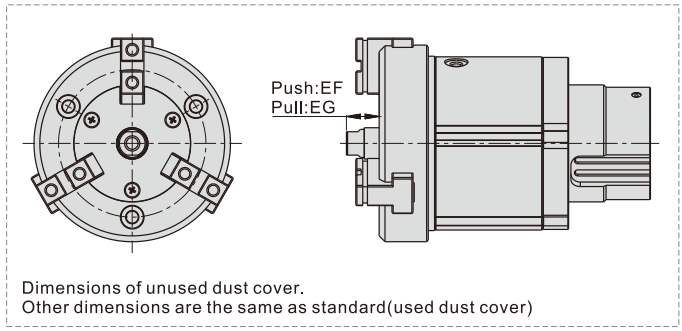


Bore size\Item	A	AB	AC	AD	B	CA	C	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	K	KA	KB	L	LA	LB	N	NA
32	63	3	24	54	55	20	$8^{-0.01}_{-0.03}$	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8	11	4.5	4.2	8	7	44	$4^{+0.04}_{+0.01}$	4	22	M5×0.8	10	44	$34^{+0.05}_{0}$	2
40	66	3	26	57	62	21	$8^{-0.01}_{-0.03}$	$3^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8	12	4.5	4.2	8	7	52	$4^{+0.04}_{+0.01}$	4	26	M5×0.8	10	52	$42^{+0.05}_{0}$	2
50	80	3	31	70	74	24	$10^{-0.01}_{-0.03}$	$4^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	10	M5×0.8	10	14	5	5.1	9.5	8	63	$5^{+0.04}_{+0.01}$	5	32	M6×1.0	12	63	$52^{+0.05}_{0}$	2
63	91	4	37	79	92	28	$12^{-0.01}_{-0.03}$	$6^{+0.04}_{+0.01}$	$3^{+0.2}_{0}$	11	M5×0.8	10	17	5.5	6.6	11	8	78	$6^{+0.04}_{+0.01}$	6	40	M8×1.25	16	78	$65^{+0.05}_{0}$	2.5

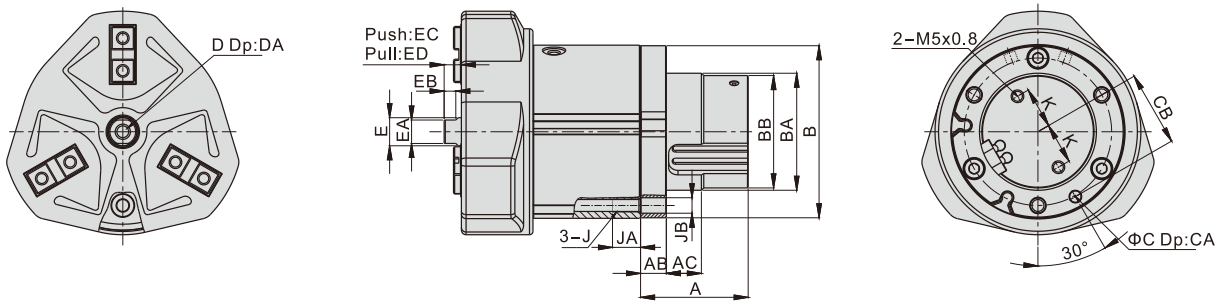
Bore size\Item	O	OA	OB	P	PA	PB	R	UA	UB	T	TA	TB	V	VA	W	Z	ZA	ZB
32	M4×0.7	8	44	M5×0.8	10	19	76	15.5	11.5	9	15.5	2.5	62	55.5	14	5	7.4	$6^{+0.05}_{0}$
40	M4×0.7	8	52	M5×0.8	11	19	86	19	15	9	17.5	2.5	72	62.5	16	5	11.4	$10^{+0.05}_{0}$
50	M5×0.8	10	63	M5×0.8	11	26	103	24	18	10	21	3	84	74.5	18	6	13.4	$12^{+0.05}_{0}$
63	M6×1.0	12	78	M5×0.8	13	29	125	31	23	12	26	3	102	92.5	24	7	17.4	$16^{+0.05}_{0}$

HFCQ32E~63E

(With Cylinder push rod mechanism)



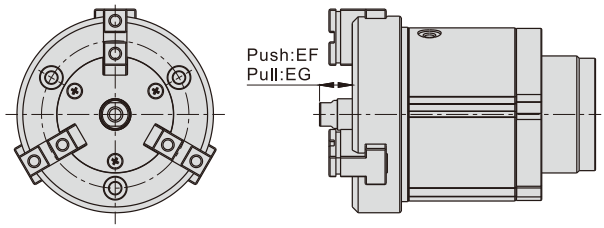
Dimensions of unused dust cover.
Other dimensions are the same as standard(used dust cover)



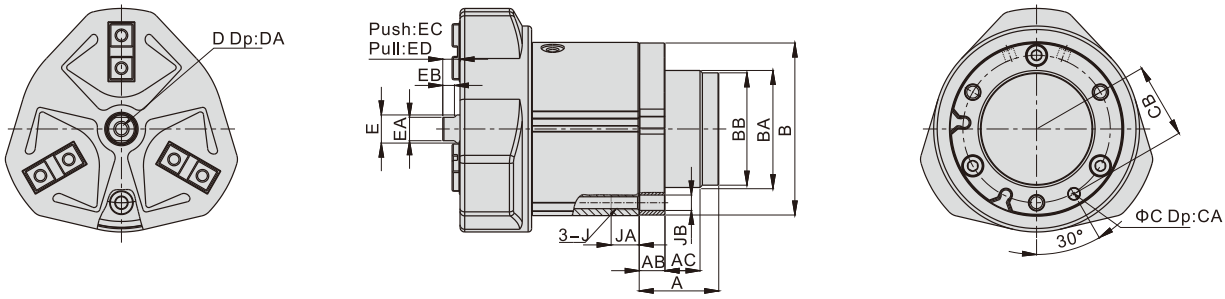
Bore size\Item	A	AB	AC	B	BA	BB	C	CA	CB	D	DA	E	EA	EB	EC	ED	EF	EG	J	JA	JB	K
32	36	9	9	54.5	$32^{0}_{-0.05}$	30	$4^{+0.04}_{+0.01}$	4	22	M3×0.5	6	6	5	3.5	14	7	20	13	M5×0.8	10	5.5	9.5
40	38	9	12	61.5	$40^{0}_{-0.05}$	38	$4^{+0.04}_{+0.01}$	4	26	M5×0.8	10	10	8	4.5	15	7	21	13	M5×0.8	10	5.5	13.5
50	48	11	15	73.5	$50^{0}_{-0.05}$	48	$5^{+0.04}_{+0.01}$	5	32	M6×1.0	12	12	10	5	21	7	28	14	M6×1.0	12	6.6	17.5
63	53	13	18	91.5	$60^{0}_{-0.05}$	58	$6^{+0.04}_{+0.01}$	6	40	M8×1.25	16	16	14	7	24	9	32	17	M8×1.25	16	8.6	20

HFCQ32C~63V

(With Spring push rod mechanism)



Dimensions of unused dust cover.
Other dimensions are the same as standard(used dust cover)



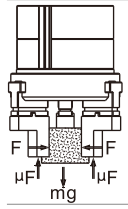
Bore size\Item	A	AB	AC	B	BA	BB	C	CA	CB	D	DA	E	EA	EB	EC	ED	EF	EG	J	JA	JB
32	20	9	11	54.5	$32^{0}_{-0.05}$	-	$4^{+0.04}_{+0.01}$	4	22	M3×0.5	6	6	5	3.5	14	7	20	13	M5×0.8	10	5.5
40	24	9	15	61.5	$40^{0}_{-0.05}$	-	$4^{+0.04}_{+0.01}$	4	26	M5×0.8	10	10	8	4.5	15	7	21	13	M5×0.8	10	5.5
50	34	11	15	73.5	$50^{0}_{-0.05}$	48	$5^{+0.04}_{+0.01}$	5	32	M6×1.0	12	12	10	5	21	7	28	14	M6×1.0	12	6.6
63	40	13	18	91.5	$60^{0}_{-0.05}$	58	$6^{+0.04}_{+0.01}$	6	40	M8×1.25	16	16	14	7	24	9	32	17	M8×1.25	16	8.6

How to select product

Please select pneumatic finger according to the following steps:

①The selection of the effective gripping force >> **②the confirmation of the gripping point**

1. The selection of the gripping force
The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

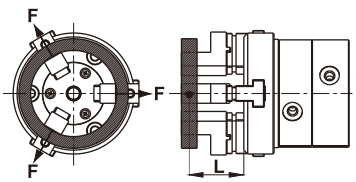


The work-pieces as shown in the left :		μ =0.2	μ =0.1
n: number of gripper F: Gripping force (N) μ: friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity (=9.8m/s²)	The condition that the work-pieces won't drop is: n×μF>mg so: $F>\frac{mg}{n\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{n\times\mu}\times a$	$F=\frac{mg}{2\times 0.2}\times 4=10\times mg$ 10 times of the mass of the gripped objects	$F=\frac{mg}{2\times 0.1}\times 4=20\times mg$ 20 times of the mass of the gripped objects

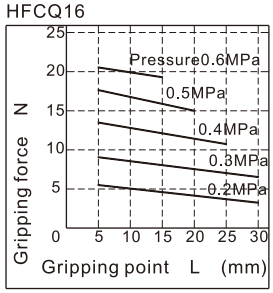
Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

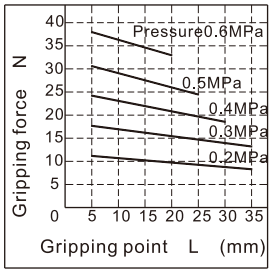
Opened gripping force



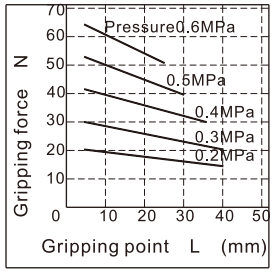
HFCQ16



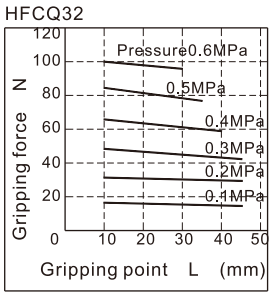
HFCQ20



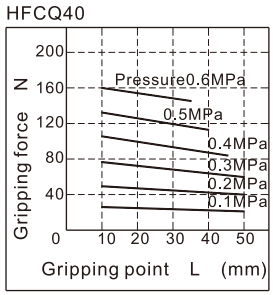
HFCQ25



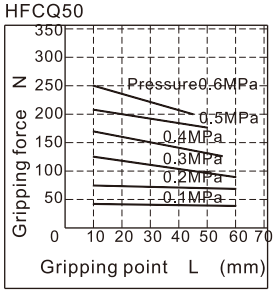
HFCQ32



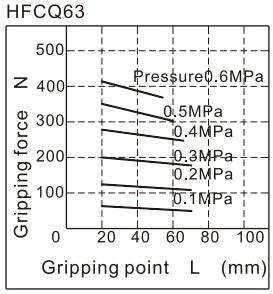
HFCQ40



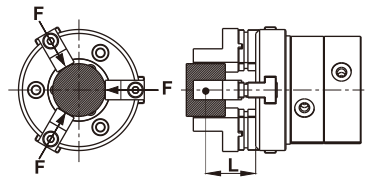
HFCQ50



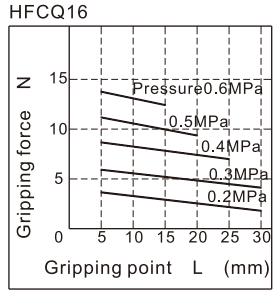
HFCQ63



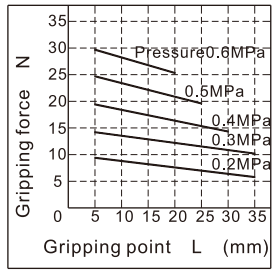
Closed gripping force



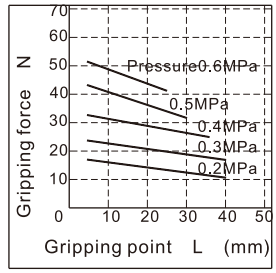
HFCQ16



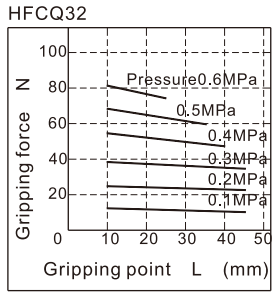
HFCQ20



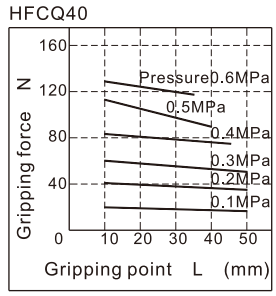
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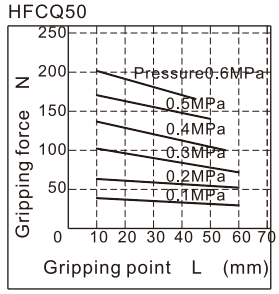
HFCQ32



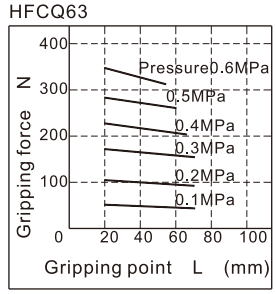
HFCQ40



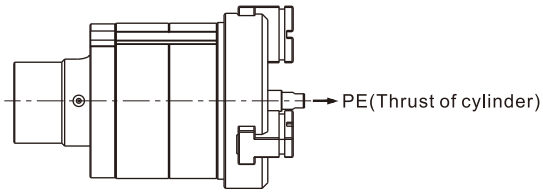
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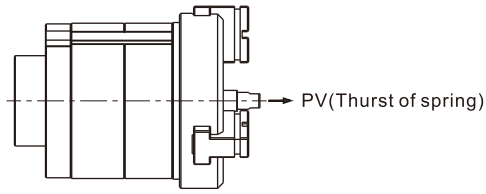


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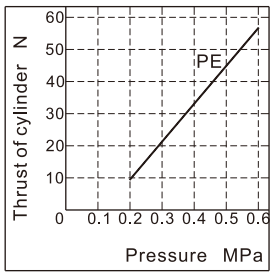


Effective thrust of Push rod mechanism

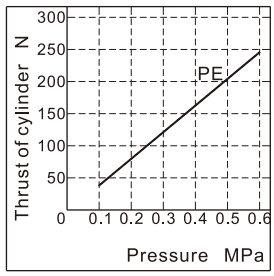




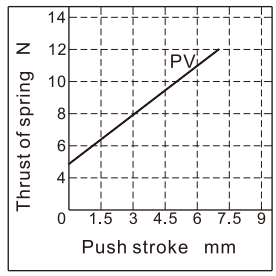
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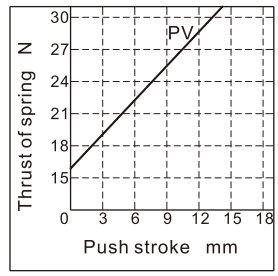
HFCQ50E



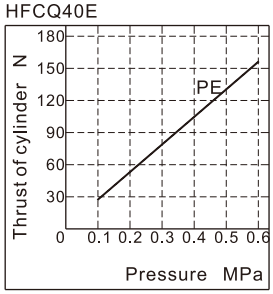
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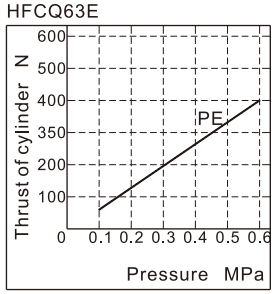
HFCQ50V



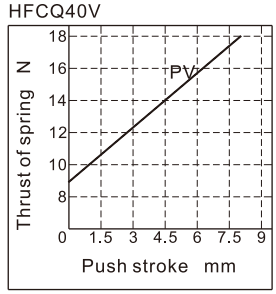
HFCQ40E



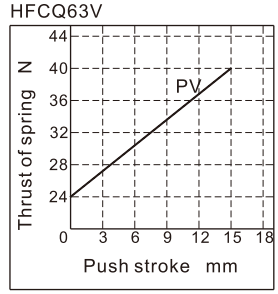
HFCQ63E



HFCQ40V



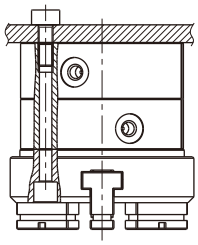
HFCQ63V



Installation and application

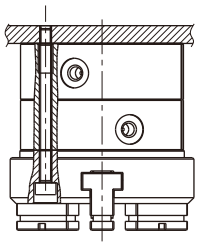
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. There are several kinds of installation method, and the locking torque of fastening screw must be within the prescribed torque range shown in the below chart. If the locking torque is too large, it will cause the dysfunctional. If the locking torque is too small, it will cause the position deviation and fall.

Tail installation type



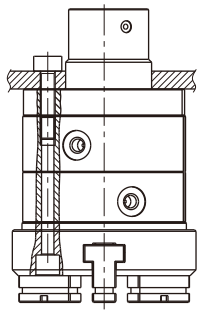
Bore size	The bolts type	Max. locking moment(N.m)	Max. screwed depth(mm)	The aperture of the positioning bore(mm)	The depth of the positioning bore(mm)
16	M4×0.7	2.1	8	Φ17 $^{+0.05}_{0}$	1.5
20	M4×0.7	2.1	8	Φ21 $^{+0.05}_{0}$	1.5
25	M4×0.7	2.1	8	Φ26 $^{+0.05}_{0}$	1.5
32	M4×0.7	2.1	8	Φ34 $^{+0.05}_{0}$	2
	M5×0.8	4.3	10	Φ34 $^{+0.05}_{0}$	2
40	M4×0.7	2.1	8	Φ42 $^{+0.05}_{0}$	2
	M5×0.8	4.3	10	Φ42 $^{+0.05}_{0}$	2
50	M5×0.8	4.3	10	Φ52 $^{+0.05}_{0}$	2
	M6×1.0	7.3	12	Φ52 $^{+0.05}_{0}$	2
63	M6×1.0	7.3	12	Φ65 $^{+0.05}_{0}$	2.5
	M8×1.25	18	16	Φ65 $^{+0.05}_{0}$	2.5

The installation of the front through hole



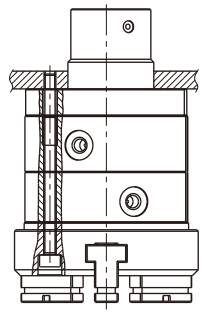
Bore size	The bolts type	Max. locking mement(N.m)
16	M3×0.5	0.88
20	M3×0.5	0.88
25	M3×0.5	0.88
32	M4×0.7	2.1
40	M4×0.7	2.1
50	M5×0.8	4.3
63	M6×1.0	7.3

Tail installation type(with push rod)



Bore size	The bolts type	Max. locking moment(N.m)	Max. screwed depth(mm)	The aperture of the positioning bore(mm)
32	M5×0.8	4.3	10	Φ32 $^{0}_{-0.05}$
40	M5×0.8	4.3	10	Φ40 $^{0}_{-0.05}$
50	M6×1.0	7.3	12	Φ50 $^{0}_{-0.05}$
63	M8×1.25	18	16	Φ60 $^{0}_{-0.05}$

The installation of the front through hole(with push rod)

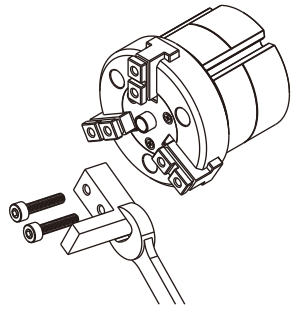


Bore size	The bolts type	Max. locking mement(N.m)
32	M4×0.7	2.1
40	M4×0.7	2.1
50	M5×0.8	4.3
63	M6×1.0	7.3

6. The installation method of the gripping jaw fittings
When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.

Install the gripping jaw fittings

Bore size	The bolts type	Max. locking mement(N.m)
16	M3×0.5	0.59
20	M3×0.5	0.59
25	M3×0.5	0.59
32	M4×0.7	1.4
40	M4×0.7	1.4
50	M5×0.8	2.8
63	M5×0.8	2.8



Parallel with guide/longer stroke/roller bearing style

Compendium of HFKL Series

Four kinds of bore size and three kinds of type

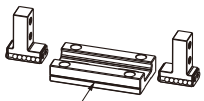
Bore size: 10, 16, 20, 25. HFKL: Double acting
HFSKL: Single acting and normally closed
HFTKL: Single acting and normally opened

Long clamping stroke

The gripping stroke is long and the size of the gripping object is different.

Integrated design of linear guide roller

Integrated design of linear guide roller, high rigidity and high precision.

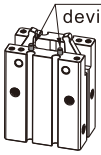


Integration of a linear guide roller

With positioning pin

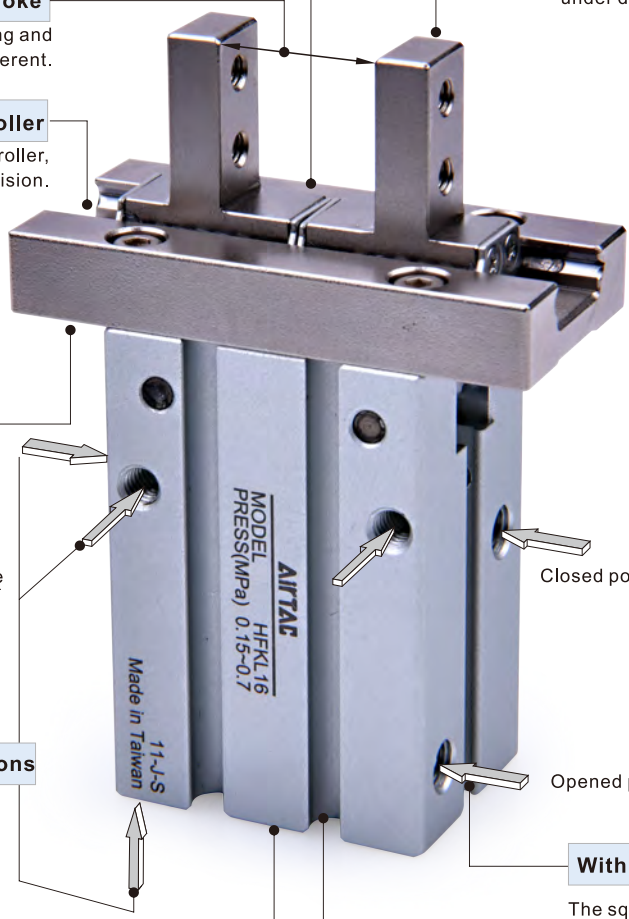
A positioning pin is attached to the bottom of the linear guide rail, which can prevent the deviation of the positioning rail and body.

The positioning pin prevents the deviation of the rail and body



Can be mounted from three directions

With mounting holes on the side and tail.



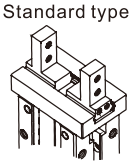
Closed port

Opened port

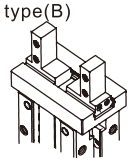
Multiple kinds of finger type

According to the actual using requirements of customers, the initial position of clamping jaw can be customized to meet the different needs under different working conditions.

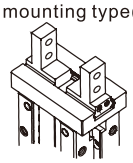
Standard type



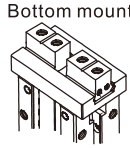
Side mounting type(B)



Thru.hole mounting type(N)



Bottom mounting type(F)



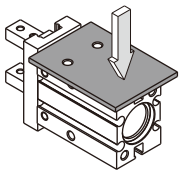
With squareness magnetic switch slots

The squareness magnetic switch slots convenient to install DMSG\CMSG\EMSG type inducting switch.

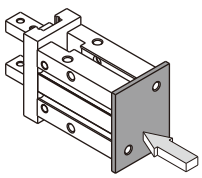
With roundness magnetic switch slots

The roundness magnetic switch slots convenient to install DMSH\CMSH\EMSH type inducting switch.

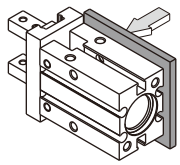
Surface installation



Tail installation

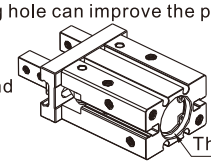


Front installation



With positioning hole

The positioning hole can improve the precision and the consistency of repeated dismounting and positioning.



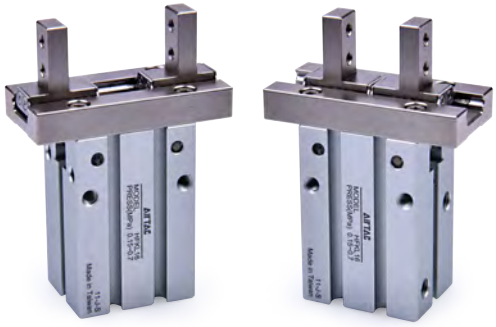
The positioning hole

Bore size (mm)			10	16	20	25
Acting type			Double acting	Single acting		
Fluid			Air(to be filtered by 40μm filter element)			
Operating pressure	Double acting	Φ10	0.2~0.7MPa(28~100psi)(2.0~7.0bar)			
		Others	0.15~0.7MPa(22~100psi)(1.5~7.0bar)			
	Single acting	Φ10	0.35~0.7MPa(50~100psi)(3.5~7.0bar)			
		Others	0.25~0.7MPa(36~100psi)(2.5~7.0bar)			
Temperature ℃			-20~70			
Lubrication			Not required			
Repeatability mm			±0.01			
Max. frequency			120(c.p.m)			
Sensor switches			DMSH\CMSH EMSH	DMSG\CMSG\EMSG DMSH\CMSH\EMSH		
Port size			M3×0.5	M5×0.8		

Note) Refer to P576 for detail of sensor switch.

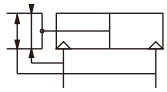
Air gripper(Parallel with guide/longer stroke/roller bearing style)

HFKL Series

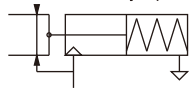


Symbol

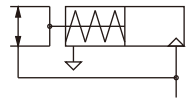
HFKL: Double acting



HFTKL: Single acting and normally opened



HFSKL: Single acting and normally closed



Gripping force and stroke

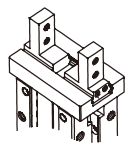
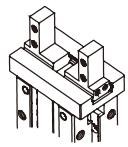
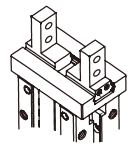
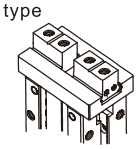
Acting type		Double acting(HFKL)				Single acting_NO (HFTKL)				Single acting_NC (HFSKL)			
Bore size		10	16	20	25	10	16	20	25	10	16	20	25
Gripping force per finger Effective value(N)	External	11	34	45	69	7	27	35	55	-	-	-	-
	Internal	17	45	68	102	-	-	-	-	13	38	59	87
Opening/Closing stroke(Both sides)(mm)		8	12	18	22	8	12	18	22	8	12	18	22
Weight (g)	F Type	64	146	275	484	74	154	294	530	73	154	294	528
	Others	64	146	273	489	73	155	292	525	72	155	292	523

[Note] The gripping force in the above table is in the working pressure of 0.5MPa, and with a gripping point of L=20mm.
Add) Please refer to page 497 for the definition of "L".

Ordering code

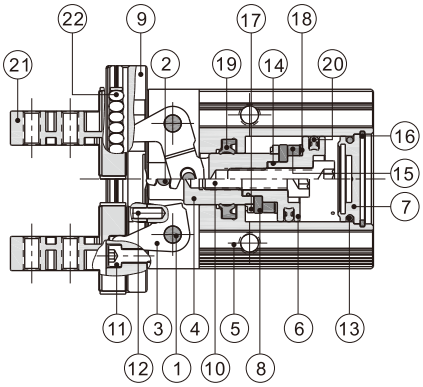
HFKL 20 □

① ② ③

①Model	②Bore size	③Finger type			
HFKL: Air finger(Double acting) HFSKL: Air finger (Single acting and nrmally closed) HFTKL: Air finger (Single acting and normally opened)	10 16 20 25	Blank: Standard 	B: Side mounting type 	N: Thru.hole mounting type 	F: Bottom mounting type 

[Note] HFKL series are all attached with magnet, and sensor switch should be ordered additionally.

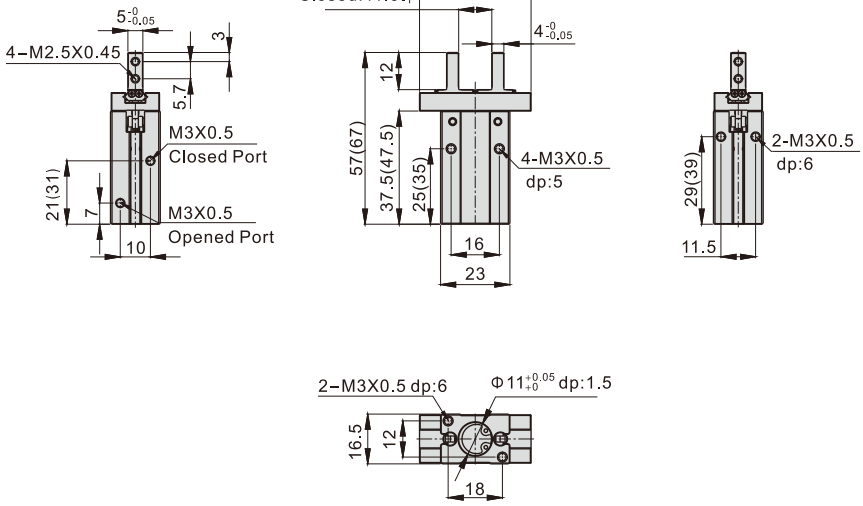
Inner structure and material of major parts



NO.	Item	Material	NO.	Item	Material
1	Pin	Stainless steel	12	Pin	Bearing steel
2	Pin	Stainless steel	13	O-ring	NBR
3	Curved bar	Stainless steel	14	O-ring	NBR
4	Piston rod	Aluminum alloy/Stainless steel	15	Magnet	Sintered metal(Neodymium-iron-boron)
5	Body	Aluminum alloy	16	C clip	Spring steel
6	Piston	Aluminum alloy/Stainless steel	17	Bumper	TPU
7	Back cover	Brass/Aluminum alloy	18	Magnet washer	NBR
8	Magnet fixed flake	Aluminum alloy/Stainless steel	19	Rod packing	NBR
9	Rail	Alloy steel	20	Piston seal	NBR
10	Countersink screw	Alloy steel	21	Clamping jaw	Bearing steel
11	Countersink screw	Alloy steel	22	Guide roller	Bearing steel

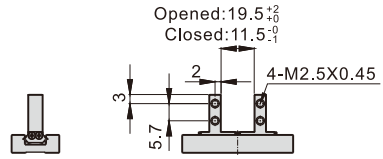
Dimensions

HFKL10

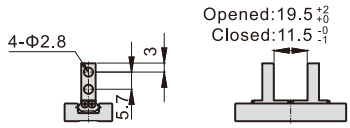


[Note]The values in "()" in the above table are single acting type sizes.

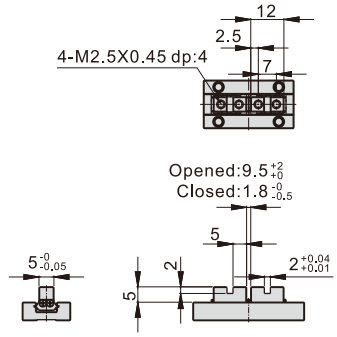
Side mounting type(B type)



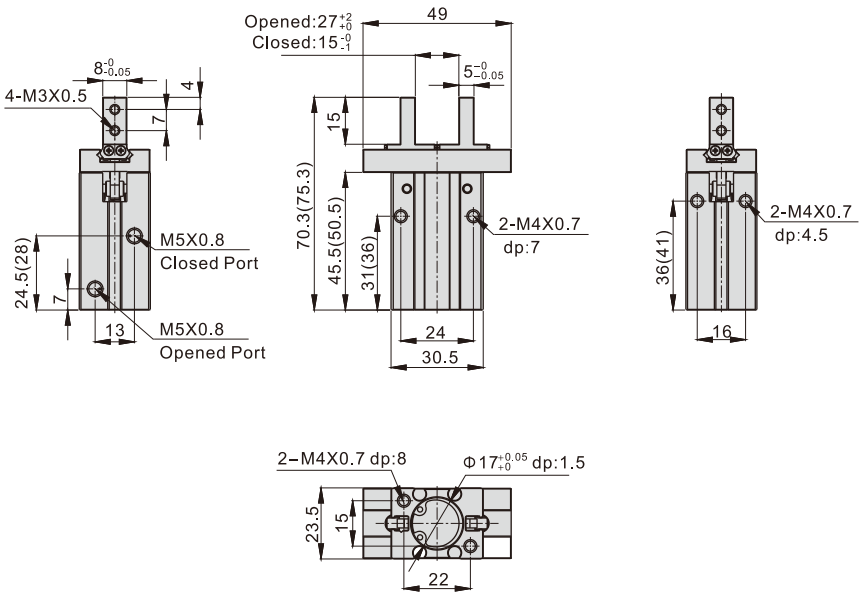
Thru.hole mounting type(N type)



Bottom mounting type(F type)

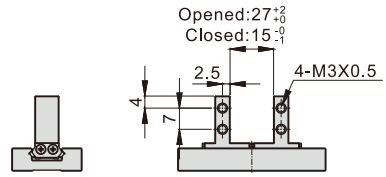


HFKL16

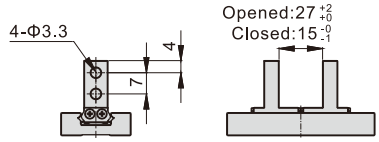


[Note]The values in "()" in the above table are single acting type sizes.

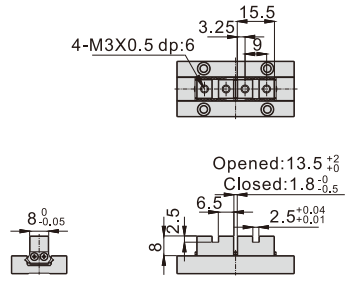
Side mounting type(B type)



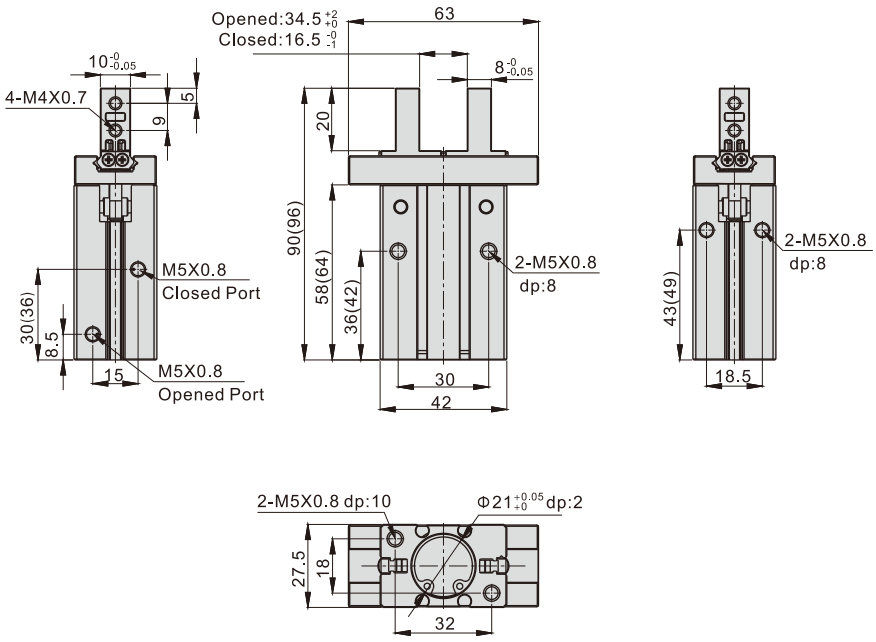
Thru.hole mounting type(N type)



Bottom mounting type(F type)

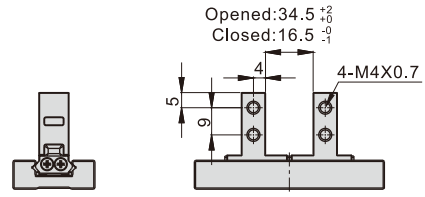


HFKL20

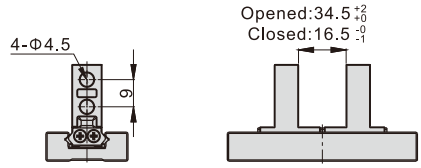


[Note]The values in "()" in the above table are single acting type sizes.

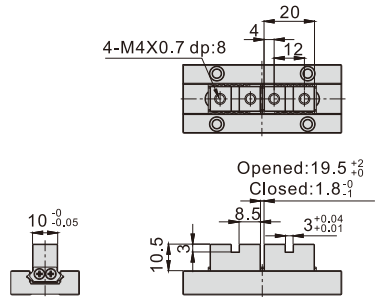
Side mounting type(B type)



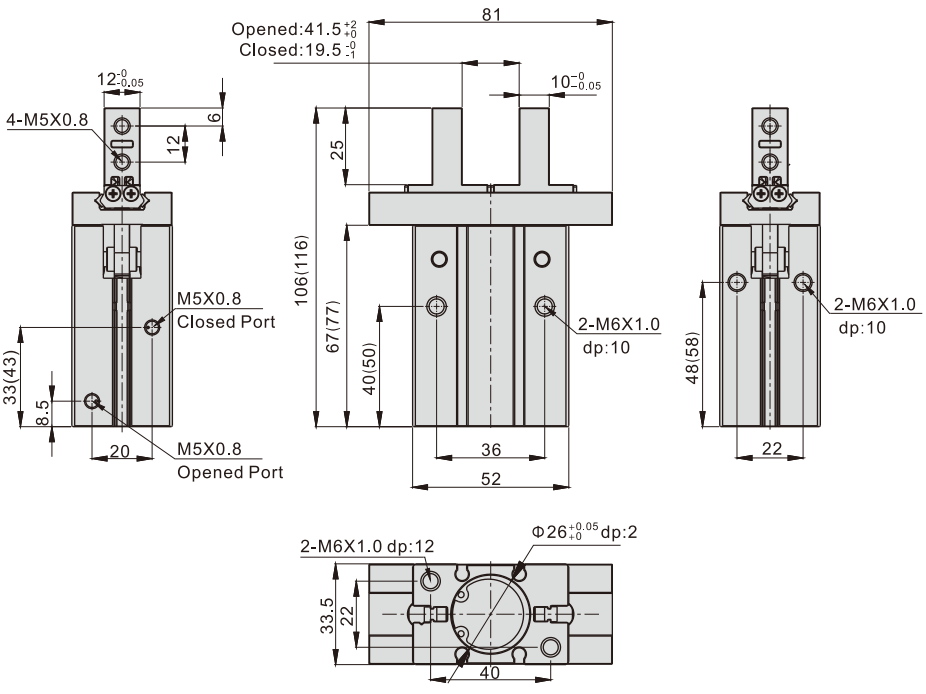
Thru.hole mounting type(N type)



Bottom mounting type(F type)

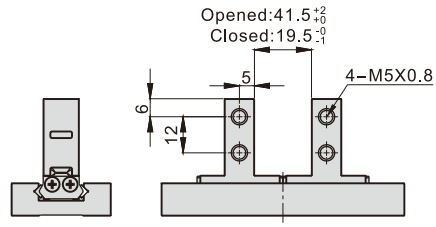


HFKL25

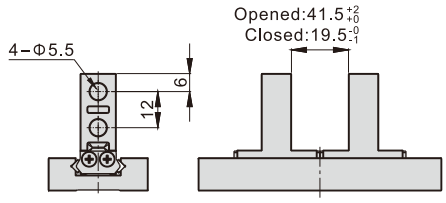


[Note]The values in "()" in the above table are single acting type sizes.

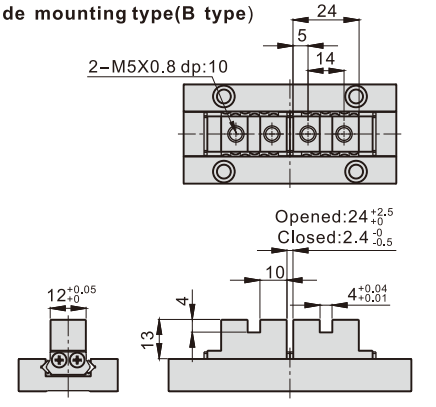
Side mounting type(B type)



Thru.hole mounting type(N type)



Side mounting type(B type)



HFKL Series

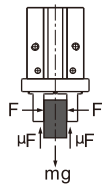
How to select product

Please select pneumatic finger according to the following steps:

①The selection of the effective gripping force → ②the confirmation of the gripping point → ③the confirmation of the external force put on the gripping jaw

1. The selection of the gripping force

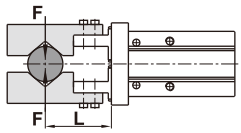
The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

	The work-pieces as shown in the left :		μ =0.2	μ =0.1
	F: Gripping force (N) μ: friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity (=9.8m/s²)	The condition that the work-pieces won't drop is: 2×μF>mg so: $F>\frac{mg}{2\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{2\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$	$F=\frac{mg}{2\times0.1}\times4=20\times mg$
			10 times of the mass of the gripped objects	20 times of the mass of the gripped objects

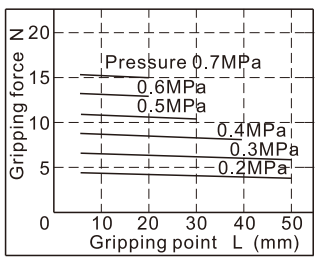
Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

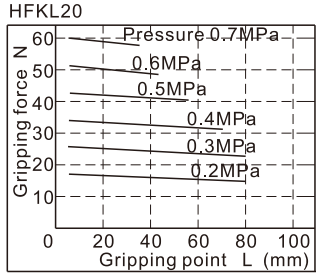
Double acting type closed gripping force



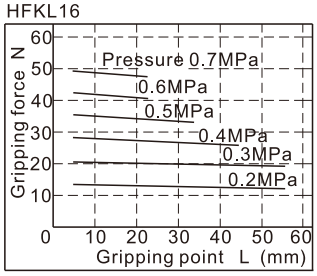
HFKL10



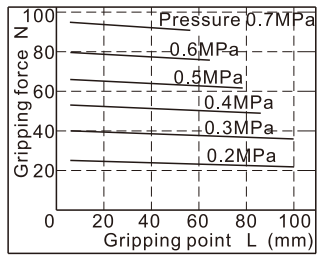
HFKL20



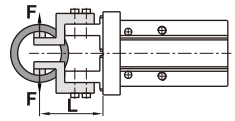
HFKL16



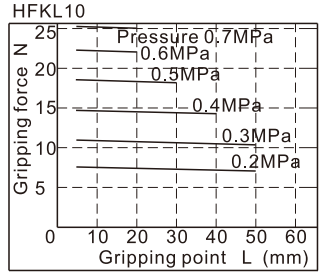
HFKL25



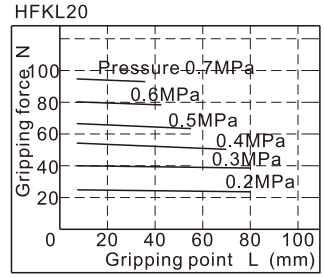
Double acting type opened gripping force



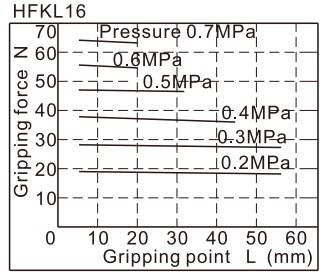
HFKL10



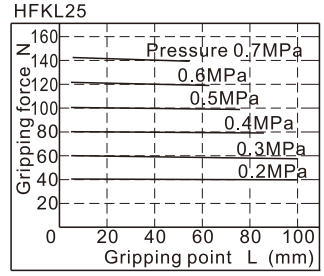
HFKL20



HFKL16

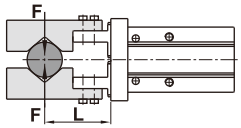


HFKL25

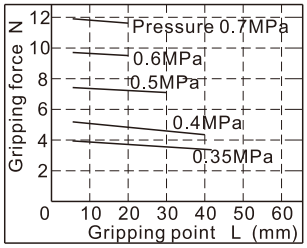


HFKL Series

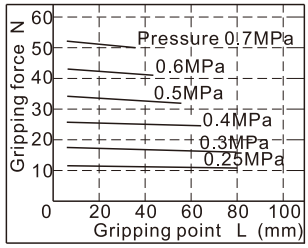
Single acting normally opened gripping force



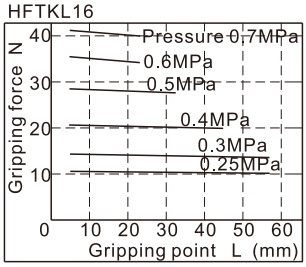
HFTKL10



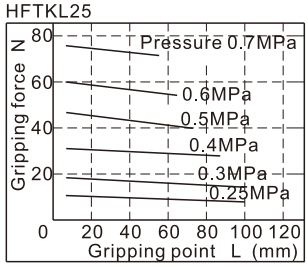
HFTKL20



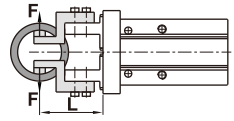
HFTKL16



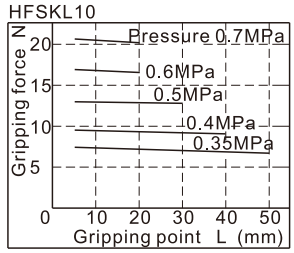
HFTKL25



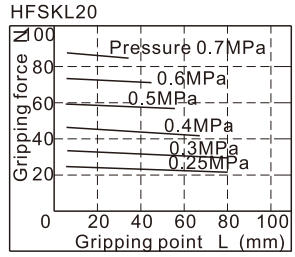
Single acting normally closed clamping force



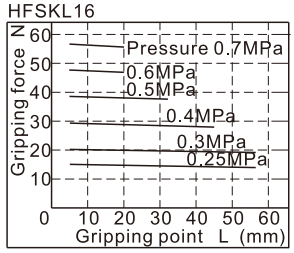
HFSKL10



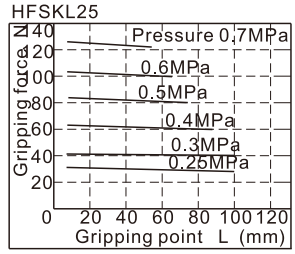
HFSKL20



HFSKL16

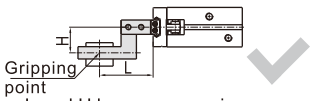


HFSKL25

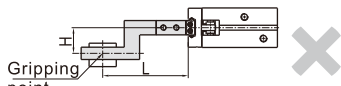


2. The selection of the gripping point

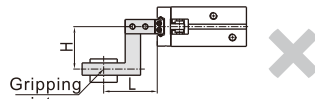
2.1) Please select the gripping point within the limited field shown below.
Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.



L and H have proper sizes



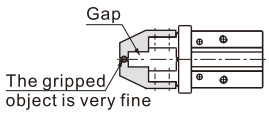
L is too long

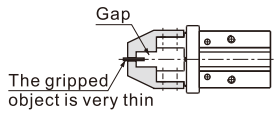


H is too long

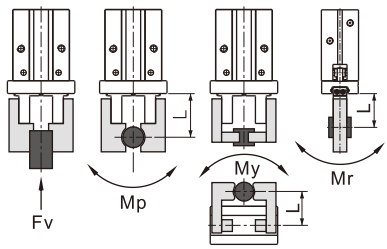
2.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.

2.3) When the gripped object is very fine and thin, you have to equip with gap between fittings. If not, there will be unstable clamp, resulting in a position offset and adverse clamping and so on.





3. The confirmation of the external force put on the gripping jaw.

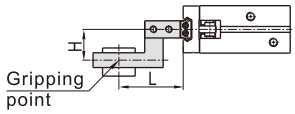


[Note] The loads and torque values of said are all static values.

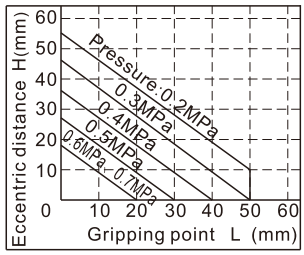
Bore size	The allowed vertical loads Fv(N)	Max. permissible torque(Nm)			The calculation of allowable forces when moment loads work	Examples of calculation
		Mp	My	Mr		
10	87	0.26	0.26	0.53	Allowable load(N) = M(Maximum permissible moment)(N.m) / L×10^{-3} (Unit conversion constant)	In the guide rail of HFKL16, the external force of the pitching moment static loads put on the point of L=30mm is f=10 N, Allowable load F= 0.68/(30×10^{-3}) = 22.7(N) Actual load f=10(N)<22.7(N) To meet the using requirements
16	147	0.68	0.68	1.36		
20	221	1.32	1.32	2.65		
25	382	1.94	1.94	3.88		

HFKL Series

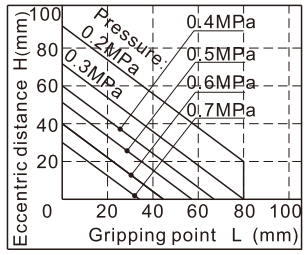
The range of the closed gripping points



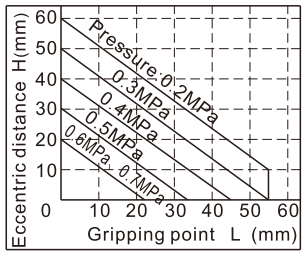
HFKL10



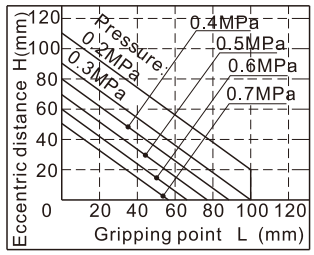
HFKL20



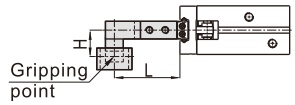
HFKL16



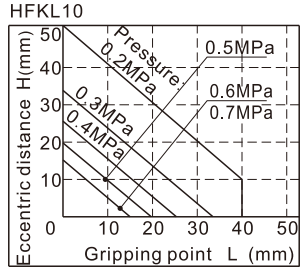
HFKL25



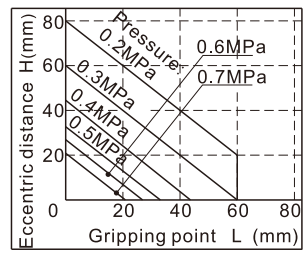
The range of the opened clamping point



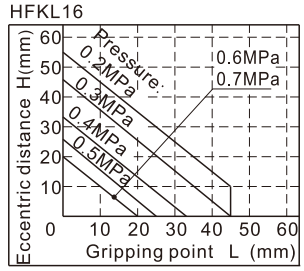
HFKL10



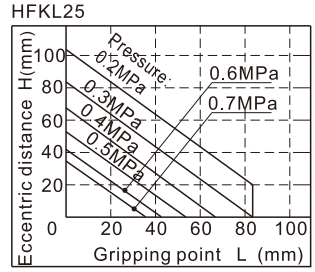
HFKL20



HFKL16



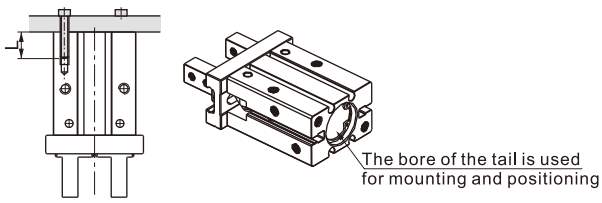
HFKL25



Installation and application

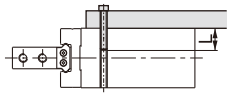
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. Please contact with us when the single acting type clamps only with the spring force.
4. When install and fix the air gripper, avoid falling down, collision and damage.
5. When fixing the gripping jaw parts, don't twist the gripping jaw.
6. There are several kinds of installation method, and the locking torgue of fastening screw must be within the prescribed torque range shown in the below chart. If the locking torque is too large, it will cause the dysfunctional. If the locking torque is too small, it will cause the position deviation and fall.

Tail installation type



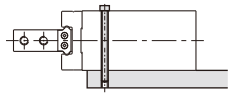
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
10	M3×0.5	0.88N.m	6mm	Φ11mm $^{+0.05}_{0}$	1.5mm
16	M4×0.7	2.1N.m	8mm	Φ17mm $^{+0.05}_{0}$	1.5mm
20	M5×0.8	4.3N.m	10mm	Φ21mm $^{+0.05}_{0}$	2mm
25	M6×1.0	7.3N.m	12mm	Φ26mm $^{+0.05}_{0}$	2mm

The installation of the front threaded hole

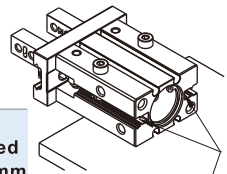


Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
10	M3×0.5	0.69	5
16	M4×0.7	2.1	7
20	M5×0.8	4.3	8
25	M6×1.0	7.3	10

The installation of the front through hole

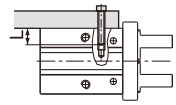


Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm
10	M2.5×0.45	0.49	5
16	M3×0.5	0.88	8
20	M4×0.7	2.1	10
25	M5×0.8	4.3	12



When installed from front through holes, sensors can not be installed in the sensor grooves that are interfered by screws.

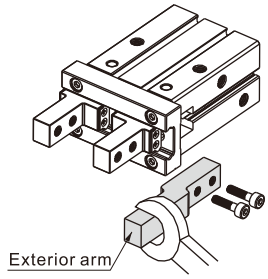
Surface installation type



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
10	M3×0.5	0.9	6
16	M4×0.7	1.6	4.5
20	M5×0.8	3.3	8
25	M6×1.0	5.9	10

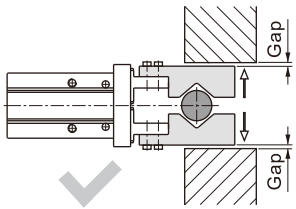
7. The installation method of the gripping jaw fittings
When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.

Bore size	The bolts type	Max. locking moment（Nm）
10	M2.5×0.45	0.31
16	M3×0.5	0.59
20	M4×0.7	1.4
25	M5×0.8	2.8

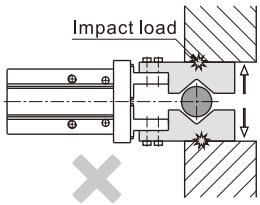


8. Confirm that there is no external forces exerted on the gripping jaw.
Transverse load acts on the gripping jaw, which will cause impact load and leads to the shaking and damage of gripping jaw. Equip with gaps so that the air gripper will not crash into work-pieces and accessories at the end of its trip.

8.1) The end of stroke under the open state of air gripper

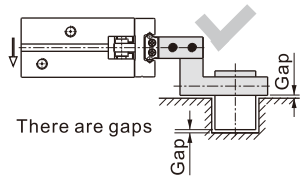


There are gaps

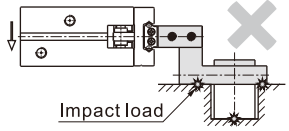


There aren't gaps

8.2) The end of stroke under the move state of air gripper

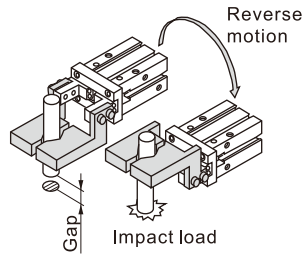


There are gaps

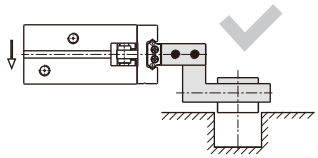


There aren't gaps

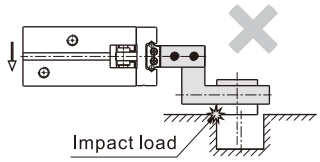
8.3) Reverse motion state
When reverse motion state, the gripping point must be precision, otherwise in the reverse motion state the air gripper maybe impact with ambience and will cause impact load .



9. When the work-pieces are inserted, the center line should be coaxial, no offset, in case there are external force generated on gripping jaw. When testing, it is specially required that the manual operation should be reduced, the pressure should be used to run it at a low speed, and guarantee the safety and no impact.



Center coaxial



Center offset

10. Please use the flow control valve to adjust the opening and closing speed of gripping jaw if too fast.
11. People can not enter the movement path of air gripper and articles can not be placed on the path too.
12. Before removing the air gripper, please confirm that it is out of working state, and then discharge of compressed air.

Parallel style with guide track——ball bearing

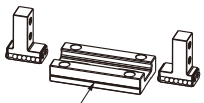
Compendium of HFZ Series

Seven kinds of bore size and three kinds of type

Bore size: 6, 10, 16, 20, 25, 32, 40,
HFZ: Double acting
HFSZ: Single acting and normally closed
HFTZ: Single acting and normally opened

Integrated design of linear guide rail

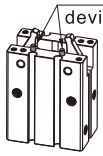
Integrated design of linear guide rail, high rigidity and high precision.



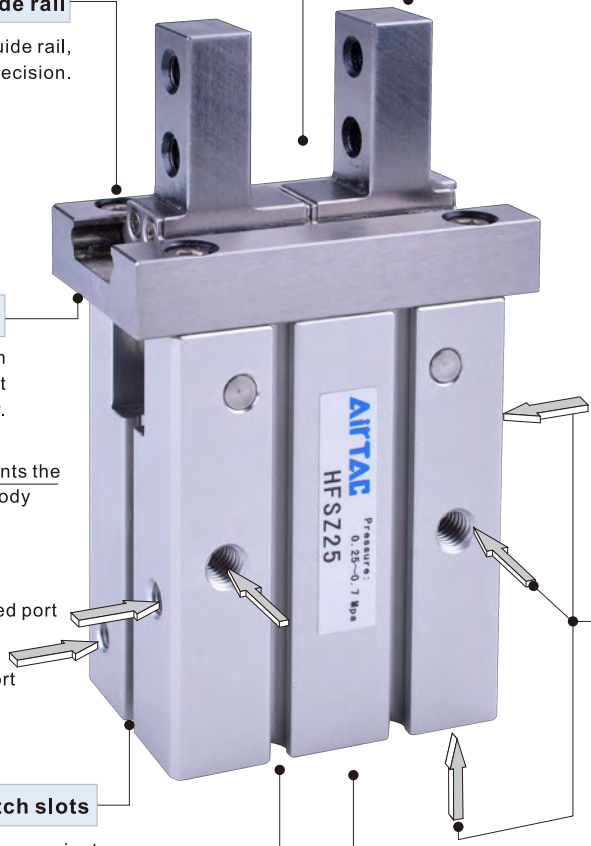
Integration of a linear guide rail

With positioning pin

A positioning pin is attached to the bottom of the linear guide rail, which can prevent the deviation of the positioning rail and body.



The positioning pin prevents the deviation of the rail and body



Closed port

Opened port

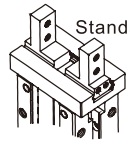
With squareness magnetic switch slots

The squareness magnetic switch slots convenient to install DMSG\CMSG\EMSG type inducting switch.

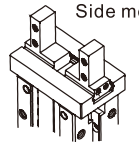
With roundness magnetic switch slots

The roundness magnetic switch slots convenient to install DMSH\CMSH\EMSH type inducting switch.

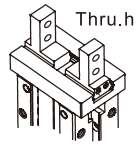
Four kinds of finger type



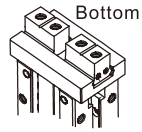
Standard type(Φ6~Φ40)



Side mounting type(B)(Φ6)



Thru.hole mounting type(N)(Φ6)



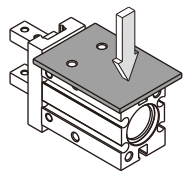
Bottom mounting type(F)(Φ6)

According to the actual using requirements of customers, the initial position of clamping jaw can be customized to meet the different needs under different working conditions.

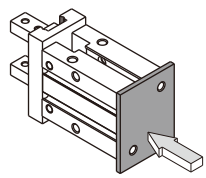
Can be mounted from three directions

With mounting holes on the side and tail.

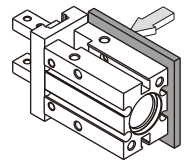
Surface installation



Tail installation

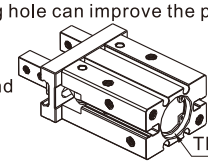


Front installation



With positioning hole

The positioning hole can improve the precision and the consistency of repeated dismounting and positioning.



The positioning hole

Bore size (mm)			6	10	16	20	25	32	40
Acting type			Double acting Single acting						
Fluid			Air(to be filtered by 40μm filter element)						
Operating pressure	Double acting	Φ6, Φ10	0.2~0.7MPa(28~100psi)(2.0~7.0bar)						
		Others	0.15~0.7MPa(22~100psi)(1.5~7.0bar)						
	Single acting	Φ6, Φ10	0.35~0.7MPa(50~100psi)(3.5~7.0bar)						
		Others	0.25~0.7MPa(36~100psi)(2.5~7.0bar)						
Temperature ℃			-20~70						
Lubrication			Not required						
Repeatability mm			±0.01					±0.02	
Max. frequency			180(c.p.m)					60(c.p.m)	
Sensor switches			DMSH/CMSH EMSH		DMSG\CMSG\EMSG DMSH\CMSH\EMSH				
Port size			M3×0.5		M5×0.8				

Note) Refer to P576 for detail of sensor switch.

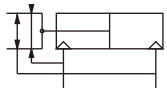
Air gripper(parallel style——ball bearing)

HFZ Series

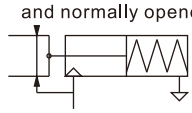


Symbol

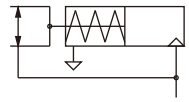
HFZ: Double acting



HFTZ: Single acting and normally opened



HFSZ: Single acting and normally closed



Gripping force and stroke

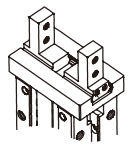
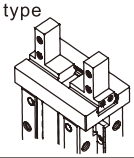
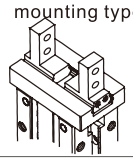
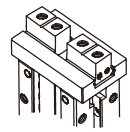
Acting type		Double acting(HFZ)							Single acting_NO (HFTZ)							Single acting_NC (HFSZ)						
Bore size		6	10	16	20	25	32	40	6	10	16	20	25	32	40	6	10	16	20	25	32	40
Gripping force per finger Effective value(N)	External	3.3	11	34	45	69	160	255	1.9	7	27	35	55	133	220	-	-	-	-	-	-	-
	Internal	6.1	17	45	68	102	195	320	-	-	-	-	-	-	-	3.7	13	38	59	87	163	270
Opening/Closing stroke(Both sides)(mm)		3	4	6	10	14	22	30	3	4	6	10	14	22	30	3	4	6	10	14	22	30
Weight (g)	F Type	24	-	-	-	-	-	-	25	-	-	-	-	-	-	25	-	-	-	-	-	-
	Others	25	56	124	236	428	729	1268	26	57	125	238	430	778	1365	26	57	125	238	430	778	1365

[Note] The gripping force in the above table is in the working pressure of 0.5MPa, and with a gripping point of L=20mm.
Add) Please refer to page 509 for the definition of "L".

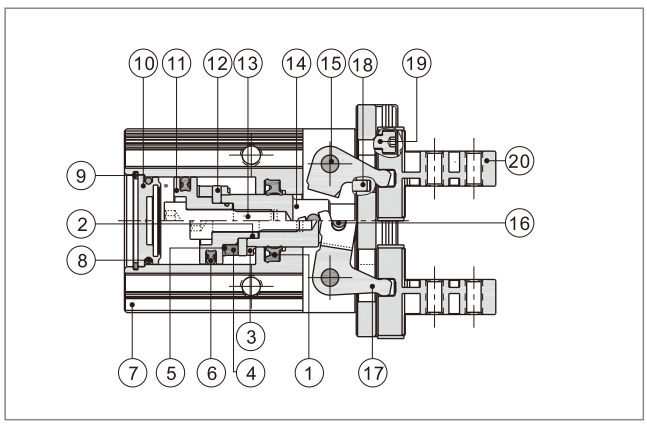
Ordering code

HFZ 20 □

1 2 3

①Model	②Bore size	③Finger type			
HFZ: Air finger(Double acting) HFSZ: Air finger (Single acting and nrmally closed) HFTZ: Air finger (Single acting and normally opened)	6 10 16 20 25 32 40	Blank:Standard 			
	6	B:Side mounting type 	N:Thru.hole mounting type 	F:Bottom mounting type 	HFZ series are all attached with magnet. Sensor switch should be ordered individually.

Inner structure and material of major parts



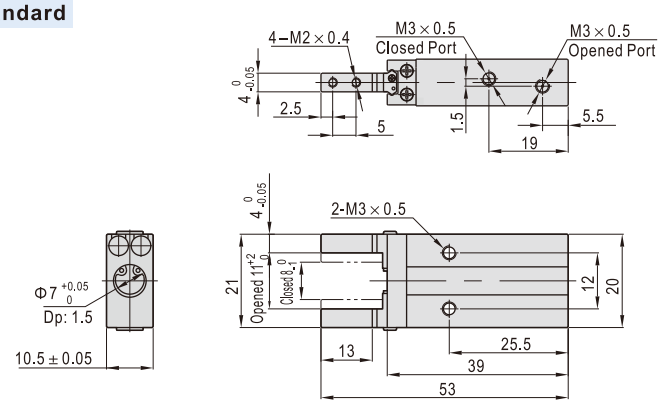
NO.	Item	Material
1	Rod packing	NBR
2	O-ring	NBR
3	Bumper	TPU
4	Magnet	Sintered metal(Neodymium-iron-boron)
5	Magnet washer	NBR
6	Piston seal	NBR
7	Body	Aluminum alloy
8	O-ring	NBR
9	C clip	Spring steel
10	Back cover	Aluminum alloy
11	Piston	Aluminum alloy/Stainless steel
12	Magnet fixed flake	Stainless steel
13	Screw	Alloy steel
14	Piston rod	Aluminum alloy/Stainless steel
15	Pin	Stainless steel
16	Pin	Stainless steel
17	Curved bar	Stainless steel
18	Pin	Stainless steel
19	Countersink screw	Alloy steel
20	Assembly of clamping jaw and guide rail	Alloy steel

HFZ Series

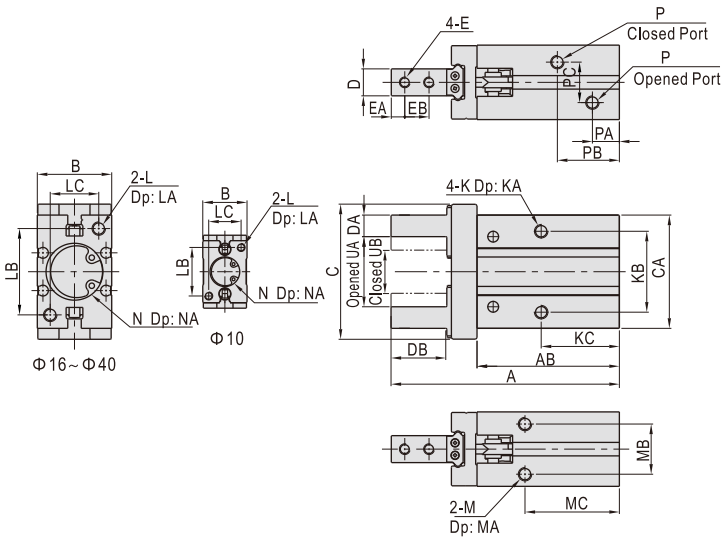
Dimensions

Standard

Φ6



Φ10~Φ40



Model\Item	A	AB	B	C	CA	D	DA	DB	E	EA
HFZ10	57	37.5	16.5	30	23	$5^{0}_{-0.05}$	$4^{0}_{-0.05}$	12	M2.5×0.45	3
HFZ16	67.5	42.5	23.5	39	30.5	$8^{0}_{-0.05}$	$5^{0}_{-0.05}$	15	M3×0.5	4
HFZ20	85	53	27.5	53	42	$10^{0}_{-0.05}$	$8^{0}_{-0.05}$	20	M4×0.7	5
HFZ25	103	64	33.5	71	52	$12^{0}_{-0.05}$	$10^{0}_{-0.05}$	25	M5×0.8	6
HFZ32	113(122)	67(76)	40	106	60	$15^{0}_{-0.05}$	$12^{0}_{-0.05}$	29	M6×1.0	7
HFZ40	139(152)	83(96)	48	132	72	$18^{0}_{-0.05}$	$14^{0}_{-0.05}$	36	M8×1.25	9

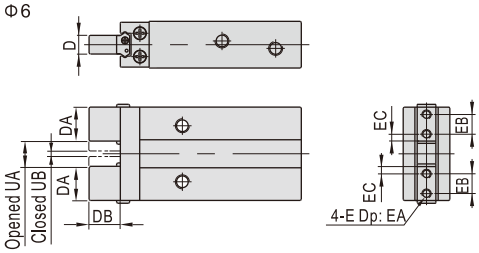
Model\Item	EB	K	KA	KB	KC	L	LA	LB	LC	M	MA	MB
HFZ10	5.7	M3×0.5	5	16	23	M3×0.5	6	18	12	M3×0.5	6	11.5
HFZ16	7	M4×0.7	7	24	24.5	M4×0.7	8	22	15	M4×0.7	4.5	16
HFZ20	9	M5×0.8	8	30	29	M5×0.8	10	32	18	M5×0.8	8	18.5
HFZ25	12	M6×1.0	10	36	30	M6×1.0	12	40	22	M6×1.0	10	22
HFZ32	14	M6×1.0	10	46	40(49)	M6×1.0	12	46	26	M6×1.0	10	26
HFZ40	17	M8×1.25	12	56	49(62)	M8×1.25	16	56	32	M8×1.25	12	32

Model\Item	MC	N	NA	P	PA	PB	PC	UA(Opened)	UB(Closed)
HFZ10	27	$\Phi11^{+0.05}_{0}$	1.5	M3×0.5	7	19	10	15.5^{+2}_{0}	11.5^{0}_{-1}
HFZ16	30	$\Phi17^{+0.05}_{0}$	1.5	M5×0.8	7.5	19	13	21^{+2}_{0}	15^{0}_{-1}
HFZ20	35	$\Phi21^{+0.05}_{0}$	2	M5×0.8	9.5	23	15	26.5^{+2}_{0}	16.5^{0}_{-1}
HFZ25	36.5	$\Phi26^{+0.05}_{0}$	2	M5×0.8	9	24	20	33.5^{+2}_{0}	19.5^{0}_{-1}
HFZ32	48(57)	$\Phi34^{+0.05}_{0}$	2.5	M5×0.8	9.5	31(40)	24	$48^{+2.5}_{0}$	26^{0}_{-1}
HFZ40	58(71)	$\Phi42^{+0.05}_{0}$	2.5	M5×0.8	10.5	38(50)	28	$60^{+2.5}_{0}$	30^{0}_{-1}

[Note]The values in "()" in the above table are single acting type sizes.

Bottom mounting type(F type)

Φ6

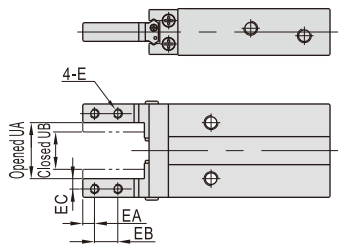


Model\Item	D	DA	DB	EA	EB	E
HFZ6-F	$4^{0}_{-0.05}$	7.5	7	3	3.5	M2×0.4

Model\Item	UA(Opened)	UB(Closed)
HFZ6-F	$5^{+1.5}_{0}$	$1.8^{0}_{-0.5}$

Side mounting type(B type)

Φ6

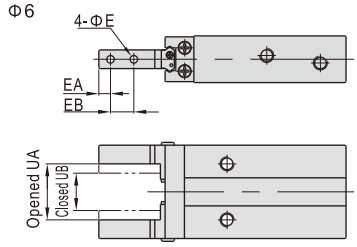


Model\Item	E	EA	EB	EC
HFZ6-B	M2×0.4	2.5	5	2

Model\Item	UA(Opened)	UB(Closed)
HFZ6-B	11^{+2}_{0}	8^{0}_{-1}

Thru.hole mounting type(N type)

Φ6



Model\Item	E	EA	EB
HFZ6-N	2.3	2.5	5

Model\Item	UA(Opened)	UB(Closed)
HFZ6-N	11^{+2}_{0}	8^{0}_{-1}

[Note] The other dimensions are the same as standard type.

How to select product \ Installation and application

Please refer to HFK series for details.

Parallel style with guide track——roller bearing

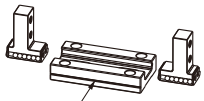
Compendium of HFK Series

Six kinds of bore size and three kinds of type

Bore size: 10, 16, 20, 25, 32, 40,
HFK: Double acting
HFSK: Single acting and normally closed
HFTK: Single acting and normally opened

Integrated design of linear guide roller

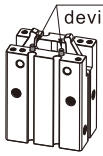
Integrated design of linear guide roller, high rigidity and high precision.



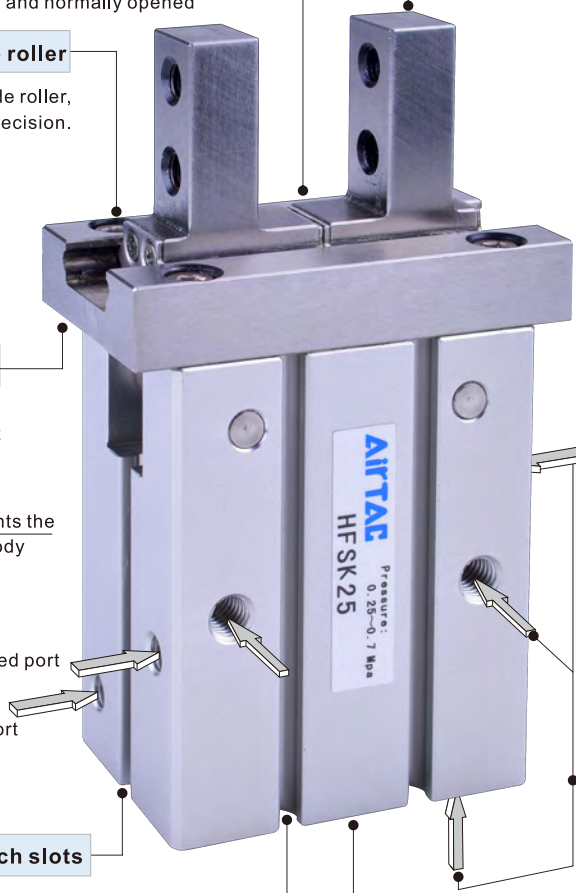
Integration of a linear guide roller

With positioning pin

A positioning pin is attached to the bottom of the linear guide rail, which can prevent the deviation of the positioning rail and body.



The positioning pin prevents the deviation of the rail and body



Closed port

Opened port

With squareness magnetic switch slots

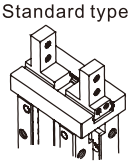
The squareness magnetic switch slots convenient to install DMSG\CMSG\EMSG type inducting switch.

With roundness magnetic switch slots

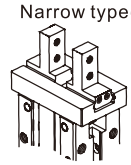
The roundness magnetic switch slots convenient to install DMSH\CMSH\EMSH type inducting switch.

Seven kinds of finger type

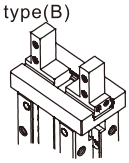
Standard type



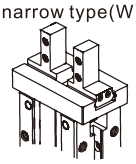
Narrow type(R)



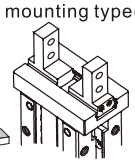
Side mounting type(B)



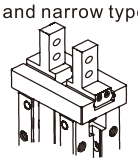
Side mounting and narrow type(W)



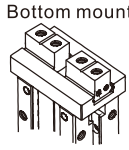
Thru.hole mounting type(N)



Thru.hole mounting and narrow type(M)



Bottom mounting type(F)

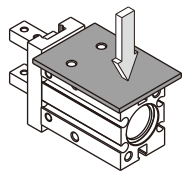


According to the actual using requirements of customers, the initial position of clamping jaw can be customized to meet the different needs under different working conditions.

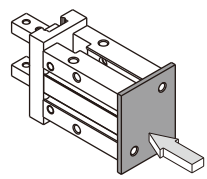
Can be mounted from three directions

With mounting holes on the side and tail.

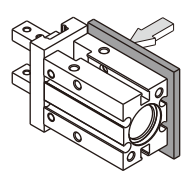
Surface installation



Tail installation

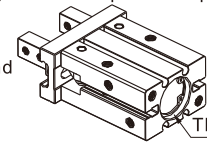


Front installation



With positioning hole

The positioning hole can improve the precision and the consistency of repeated dismounting and positioning.



The positioning hole

Bore size (mm)			10	16	20	25	32	40
Acting type			Double acting Single acting					
Fluid			Air(to be filtered by 40μm filter element)					
Operating pressure	Double acting	Φ10	0.2~0.7MPa(28~100psi)(2.0~7.0bar)					
		Others	0.15~0.7MPa(22~100psi)(1.5~7.0bar)					
	Single acting	Φ10	0.35~0.7MPa(50~100psi)(3.5~7.0bar)					
		Others	0.25~0.7MPa(36~100psi)(2.5~7.0bar)					
Temperature ℃			-20~70					
Lubrication			Not required					
Repeatability mm			±0.01				±0.02	
Max. frequency			180(c.p.m)				60(c.p.m)	
Sensor switches			DMSH\CMSH\EMSH	DMSG\CMSG\EMSG, DMSH\CMSH\EMSH				
Port size			M3×0.5	M5×0.8				

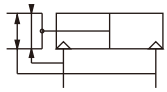
Note) Refer to P576 for detail of sensor switch.

HFK Series

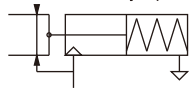


Symbol

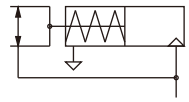
HFK: Double acting



HFTK: Single acting and normally opened



HFSK: Single acting and normally closed



Gripping force and stroke

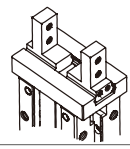
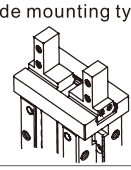
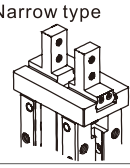
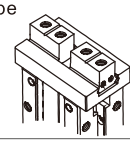
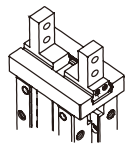
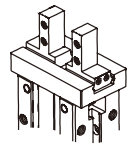
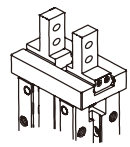
Acting type		Double acting(HFK)						Single acting_NO (HFTK)						Single acting_NC (HFSK)					
Bore size		10	16	20	25	32	40	10	16	20	25	32	40	10	16	20	25	32	40
Gripping force per finger Effective value(N)	External	11	34	45	69	160	255	7	27	35	55	133	220	-	-	-	-	-	-
	Internal	17	45	68	102	195	320	-	-	-	-	-	-	13	38	59	87	163	270
Opening/Closing stroke(Both sides)(mm)		4	6	10	14	22	30	4	6	10	14	22	30	4	6	10	14	22	30
Weight (g)	F Type	56	124	236	418	750	1340	57	125	238	420	799	1437	57	125	238	420	799	1437
	Others	56	124	236	428	729	1268	57	125	238	430	778	1365	57	125	238	430	778	1365

[Note] The gripping force in the above table is in the working pressure of 0.5MPa, and with a gripping point of L=20mm.
Add) Please refer to page 507 for the definition of "L".

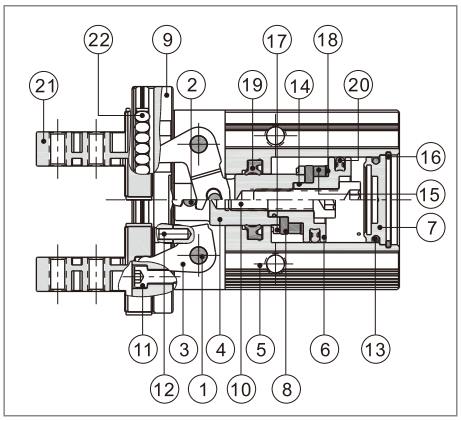
Ordering code

HFK 20 □

① ② ③

①Model	②Bore size	③Finger type			
HFK: Air finger(Double acting) HFSK: Air finger (Single acting and nrmally closed)	10 16 20 25 32 40	Blank: Standard 	B: Side mounting type 	R: Narrow type 	F: Bottom mounting type 
HFTK: Air finger (Single acting and normally opened)	10 16 20 25	N: Thru.hole mounting type 	W: Side mounting and narrow type 	M: Thru.hole mounting and narrow type 	HFK series are all attached with magnet. Sensor switch should be ordered individually.

Inner structure and material of major parts

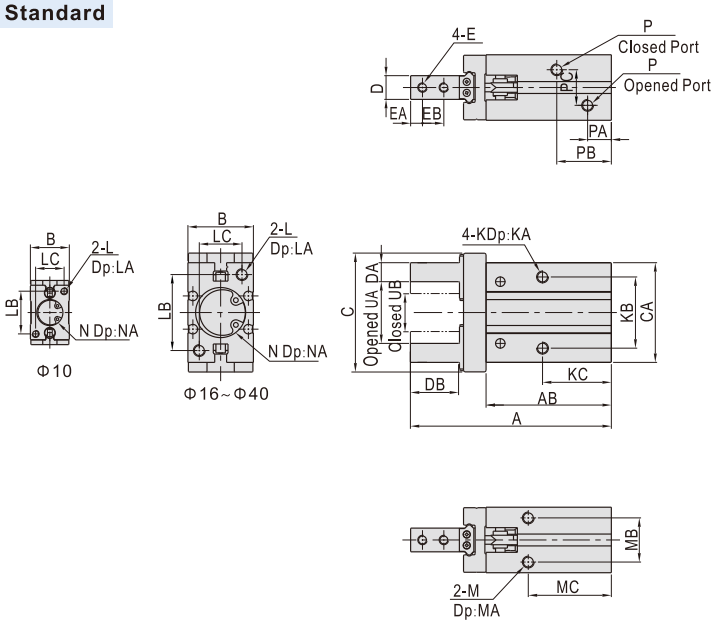


NO.	Item	Material	NO.	Item	Material
1	Pin	Stainless steel	12	Pin	Bearing steel
2	Pin	Stainless steel	13	O-ring	NBR
3	Curved bar	Stainless steel	14	O-ring	NBR
4	Piston rod	Aluminum alloy/Stainless steel	15	Magnet	Sintered metal(Neodymium-iron-boron)
5	Body	Aluminum alloy	16	C clip	Spring steel
6	Piston	Aluminum alloy/Stainless steel	17	Bumper	TPU
7	Back cover	Brass/Aluminum alloy	18	Magnet washer	NBR
8	Magnet fixed flake	Aluminum alloy/Stainless steel	19	Rod packing	NBR
9	Rail	Alloy steel	20	Piston seal	NBR
10	Countersink screw	Alloy steel	21	Clamping jaw	Bearing steel
11	Countersink screw	Alloy steel	22	Guide roller	Bearing steel

HFK Series

Dimensions

Standard



Model\Item	A	AB	B	C	CA	D	DA	DB	E	EA
HFK10	57	37.5	16.5	30	23	$5^{0}_{-0.05}$	$4^{0}_{-0.05}$	12	M2.5×0.45	3
HFK16	67.5	42.5	23.5	39	30.5	$8^{0}_{-0.05}$	$5^{0}_{-0.05}$	15	M3×0.5	4
HFK20	85	53	27.5	53	42	$10^{0}_{-0.05}$	$8^{0}_{-0.05}$	20	M4×0.7	5
HFK25	103	64	33.5	71	52	$12^{0}_{-0.05}$	$10^{0}_{-0.05}$	25	M5×0.8	6
HFK32	113(122)	67(76)	40	106	60	$15^{0}_{-0.05}$	$12^{0}_{-0.05}$	29	M6×1.0	7
HFK40	139(152)	83(96)	48	132	72	$18^{0}_{-0.05}$	$14^{0}_{-0.05}$	36	M8×1.25	9

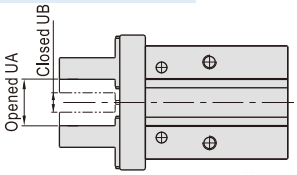
Model\Item	EB	K	KA	KB	KC	L	LA	LB	LC	M	MA	MB
HFK10	5.7	M3×0.5	5	16	23	M3×0.5	6	18	12	M3×0.5	6	11.5
HFK16	7	M4×0.7	7	24	24.5	M4×0.7	8	22	15	M4×0.7	4.5	16
HFK20	9	M5×0.8	8	30	29	M5×0.8	10	32	18	M5×0.8	8	18.5
HFK25	12	M6×1.0	10	36	30	M6×1.0	12	40	22	M6×1.0	10	22
HFK32	14	M6×1.0	10	46	40(49)	M6×1.0	12	46	26	M6×1.0	10	26
HFK40	17	M8×1.25	12	56	49(62)	M8×1.25	16	56	32	M8×1.25	12	32

Model\Item	MC	N	NA	P	PA	PB	PC	UA(Opened)	UB(Closed)
HFK10	27	$\Phi11^{+0.05}_{0}$	1.5	M3×0.5	7	19	10	15.5^{+2}_{0}	11.5^{0}_{-1}
HFK16	30	$\Phi17^{+0.05}_{0}$	1.5	M5×0.8	7.5	19	13	21^{+2}_{0}	15^{0}_{-1}
HFK20	35	$\Phi21^{+0.05}_{0}$	2	M5×0.8	9.5	23	15	26.5^{+2}_{0}	16.5^{0}_{-1}
HFK25	36.5	$\Phi26^{+0.05}_{0}$	2	M5×0.8	9	24	20	33.5^{+2}_{0}	19.5^{0}_{-1}
HFK32	48(57)	$\Phi34^{+0.05}_{0}$	2.5	M5×0.8	9.5	31(40)	24	$48^{+2.5}_{0}$	26^{0}_{-1}
HFK40	58(71)	$\Phi42^{+0.05}_{0}$	2.5	M5×0.8	10.5	38(50)	28	$60^{+2.5}_{0}$	30^{0}_{-1}

[Note]The values in "()" in the above table are single acting type sizes.

Narrow type(R type)

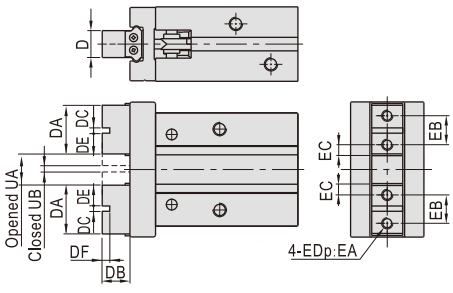
Φ10~Φ25



Model\Item	UA(Opened)	UB(Closed)
HFK10-R	10^{+2}_{0}	6^{0}_{-1}
HFK16-R	12.5^{+2}_{0}	6.5^{0}_{-1}
HFK20-R	17^{+2}_{0}	7^{0}_{-1}
HFK25-R	$23^{+2.5}_{0}$	9^{0}_{-1}

Bottom mounting type(F type)

Φ10~Φ40

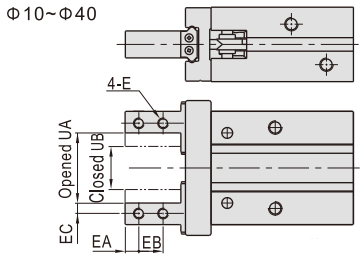


Model\Item	D	DA	DB	DC	DE	E
HFK10-F	$5^{0}_{-0.05}$	11	5	$2^{+0.04}_{+0.01}$	4.5	M2.5×0.45
HFK16-F	$8^{0}_{-0.05}$	14	8	$2.5^{+0.04}_{+0.01}$	5.8	M3×0.5
HFK20-F	$10^{0}_{-0.05}$	18	10.5	$3^{+0.04}_{+0.01}$	7.5	M4×0.7
HFK25-F	$12^{0}_{-0.05}$	22	13	$4^{+0.04}_{+0.01}$	9	M5×0.8
HFK32-F	$15^{0}_{-0.05}$	34.5	18	$5^{+0.04}_{+0.01}$	14.8	M6×1.0
HFK40-F	$18^{0}_{-0.05}$	41.5	22	$6^{+0.04}_{+0.01}$	17.7	M8×1.25

Model\Item	DF	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10-F	2	4	6	2.45	5.5^{+2}_{0}	$1.8^{0}_{-0.5}$
HFK16-F	2.5	6	8	3.05	7.5^{+2}_{0}	$1.8^{0}_{-0.5}$
HFK20-F	3	8	10	3.95	11.5^{+2}_{0}	$1.8^{0}_{-0.5}$
HFK25-F	4	10	12	4.9	$16^{+2.5}_{0}$	$2.4^{0}_{-0.5}$
HFK32-F	5	12	20	7.3	$25^{+2.5}_{0}$	$3.4^{0}_{-0.5}$
HFK40-F	6	16	24	8.7	33^{+3}_{0}	$3.4^{0}_{-0.5}$

Side mounting type(B type)

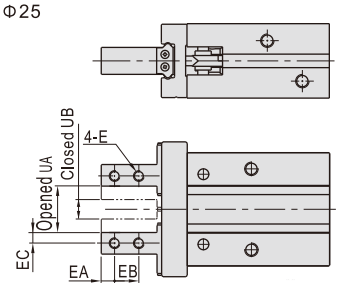
Φ10~Φ40



Model\Item	E	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10-B	M2.5×0.45	3	5.7	2	15.5^{+2}_{0}	11.5^{0}_{-1}
HFK16-B	M3×0.5	4	7	2.5	21^{+2}_{0}	15^{0}_{-1}
HFK20-B	M4×0.7	5	9	4	26.5^{+2}_{0}	16.5^{0}_{-1}
HFK25-B	M5×0.8	6	12	5	33.5^{+2}_{0}	19.5^{0}_{-1}
HFK32-B	M6×1.0	7	14	6	$48^{+2.5}_{0}$	26^{0}_{-1}
HFK40-B	M8×1.25	9	17	7	$60^{+2.5}_{0}$	30^{0}_{-1}

Side mounting and narrow type(W type)

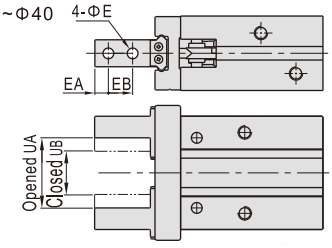
Φ10~Φ25



Model\Item	E	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10-W	M2.5×0.45	3	5.7	2	10^{+2}_{0}	6^{0}_{-1}
HFK16-W	M3×0.5	4	7	2.5	12.5^{+2}_{0}	6.5^{0}_{-1}
HFK20-W	M4×0.7	5	9	4	17^{+2}_{0}	7^{0}_{-1}
HFK25-W	M5×0.8	6	12	5	$23^{+2.5}_{0}$	9^{0}_{-1}

Thru.hole mounting type(N type)

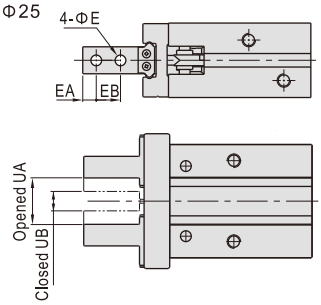
Φ10~Φ40



Model\Item	E	EA	EB	UA(Opened)	UB(Closed)
HFK10-N	2.8	3	5.7	15.5^{+2}_{0}	11.5^{0}_{-1}
HFK16-N	3.3	4	7	21^{+2}_{0}	15^{0}_{-1}
HFK20-N	4.5	5	9	26.5^{+2}_{0}	16.5^{0}_{-1}
HFK25-N	5.5	6	12	33.5^{+2}_{0}	19.5^{0}_{-1}
HFK32-N	6.5	7	14	$48^{+2.5}_{0}$	26^{0}_{-1}
HFK40-N	9	9	17	$60^{+2.5}_{0}$	30^{0}_{-1}

Thru.hole mounting and narrow type(M type)

Φ10~Φ25



Model\Item	E	EA	EB	UA(Opened)	UB(Closed)
HFK10-M	2.8	3	5.7	10^{+2}_{0}	6^{0}_{-1}
HFK16-M	3.3	4	7	12.5^{+2}_{0}	6.5^{0}_{-1}
HFK20-M	4.5	5	9	17^{+2}_{0}	7^{0}_{-1}
HFK25-M	5.5	6	12	$23^{+2.5}_{0}$	9^{0}_{-1}

[Note] The other dimensions are the same as standard type.

HFZ, HFK Series

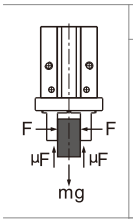
How to select product

Please select pneumatic finger according to the following steps:

①The selection of the effective gripping force > ②the confirmation of the gripping point > ③the confirmation of the external force put on the gripping jaw

1. The selection of the gripping force

The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.



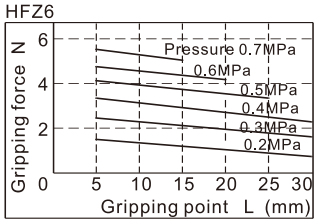
The work-pieces as shown in the left :		μ =0.2	μ =0.1
F: Gripping force (N) μ: friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity (=9.8m/s²)	The condition that the work-pieces won't drop is: 2×μF>mg so: $F>\frac{mg}{2\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{2\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$	$F=\frac{mg}{2\times0.1}\times4=20\times mg$
		10 times of the mass of the gripped objects	20 times of the mass of the gripped objects

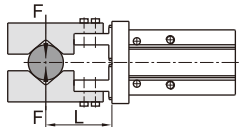
Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

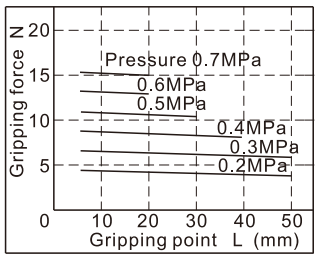
Double acting type closed gripping force

HFZ6

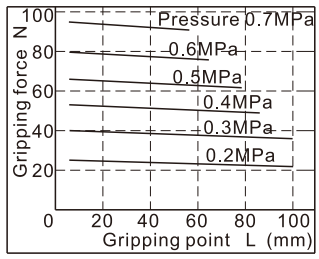




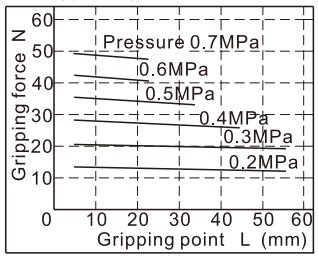
HFZ10\HFK10



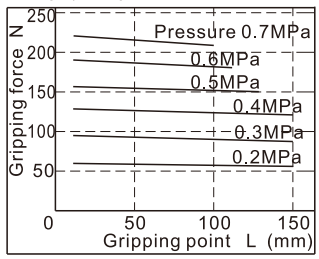
HFZ25\HFK25



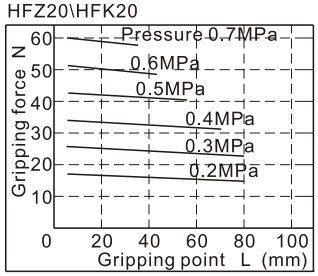
HFZ16\HFK16



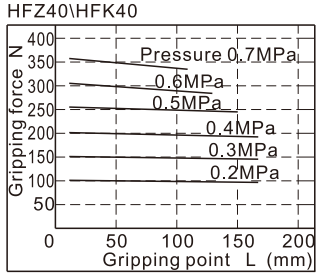
HFZ32\HFK32



HFZ20\HFK20

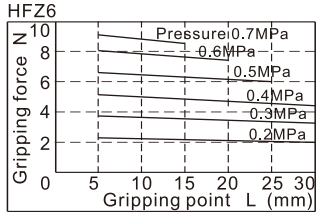


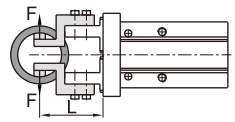
HFZ40\HFK40



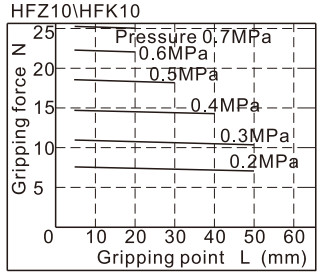
Double acting type opened gripping force

HFZ6

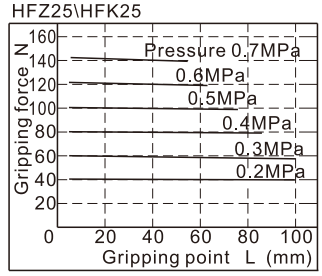




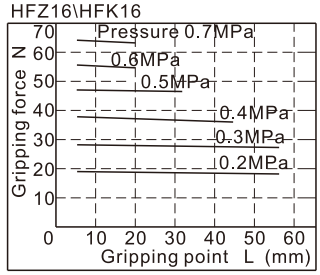
HFZ10\HFK10



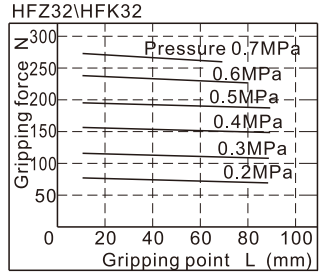
HFZ25\HFK25



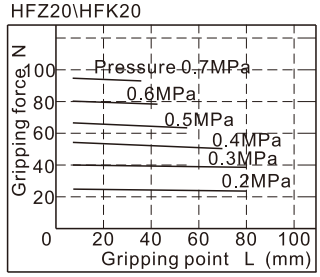
HFZ16\HFK16



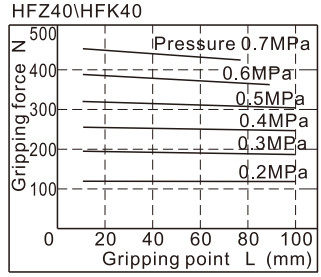
HFZ32\HFK32



HFZ20\HFK20



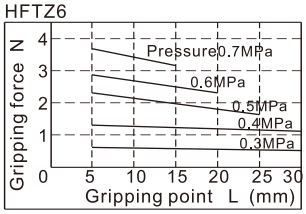
HFZ40\HFK40

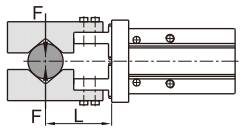


HFZ, HFK Series

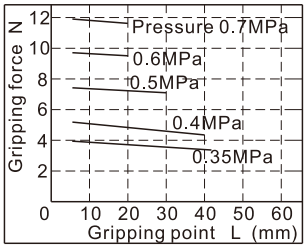
Single acting normally opened gripping force

HFTZ6

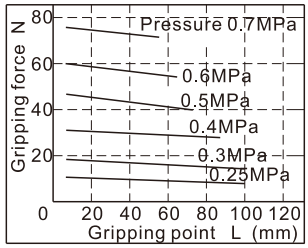




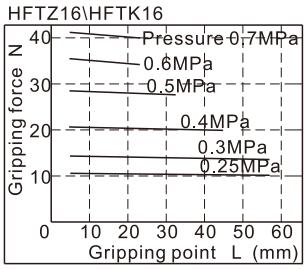
HFTZ10\HFTK10



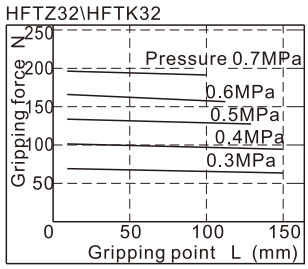
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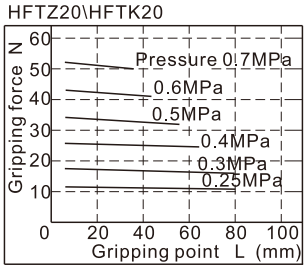
HFTZ16\HFTK16



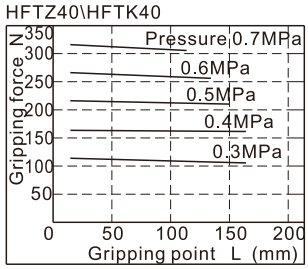
HFTZ32\HFTK32



HFTZ20\HFTK20

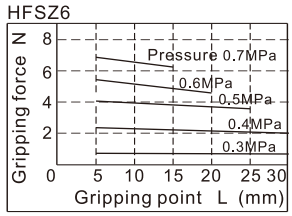


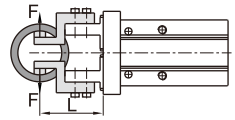
HFTZ40\HFTK40



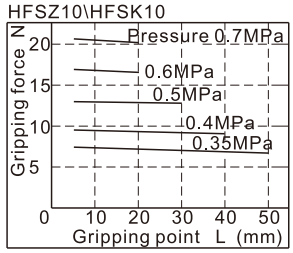
Single acting normally closed clamping force

HFSZ6

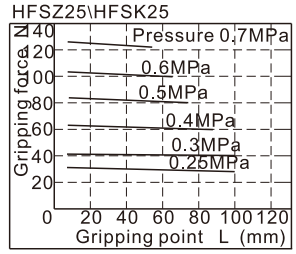




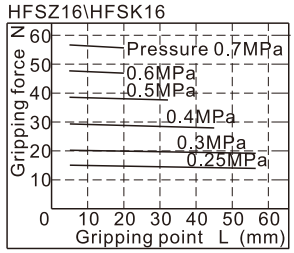
HFSZ10\HFSK10



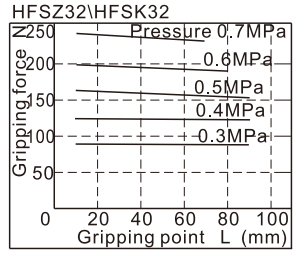
HFSZ25\HFSK25



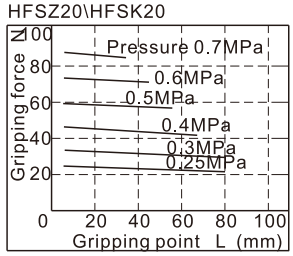
HFSZ16\HFSK16



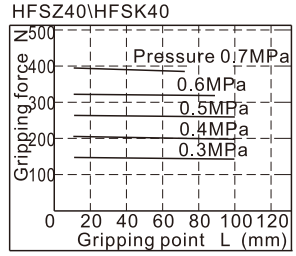
HFSZ32\HFSK32



HFSZ20\HFSK20



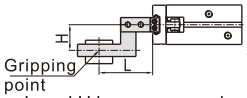
HFSZ40\HFSK40



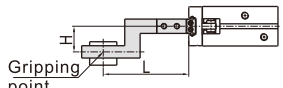
2. The selection of the gripping point

2.1) Please select the gripping point within the limited field shown below.

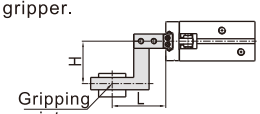
Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.



L and H have proper sizes



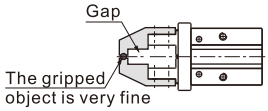
L is too long

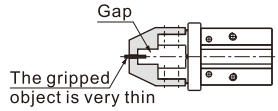


H is too long

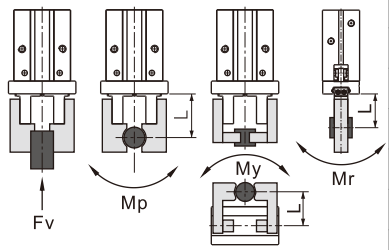
2.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.

2.3) When the gripped object is very fine and thin, you have to equip with gap between fittings. If not, there will be unstable clamp, resulting in a position offset and adverse clamping and so on.





3. The confirmation of the external force put on the gripping jaw.



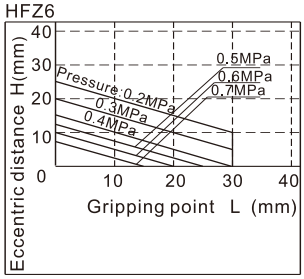
[Note] The loads and torque values of said are all static values.

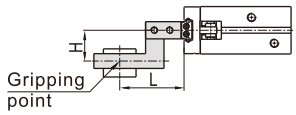
Bore size	The allowed vertical loads Fv(N)		Max. permissible torque(Nm)			The calculation of allowable forces when moment loads work	Examples of calculation
	HFZ	HFK	Mp	My	Mr		
6	10	-	0.04	0.04	0.08	Allowable load(N) = M(Maximum permissible moment)(N.m) / L×10⁻³ (Unit conversion constant)	In the guide rail of HFK16, the external force of the pitching moment static loads put on the point of L=30mm is f=10 N, Allowable load F= 0.68 / 30×10⁻³ = 22.7(N) Actual load f=10(N)<22.7(N) To meet the using requirements
10	58	87	0.26	0.26	0.53		
16	98	147	0.68	0.68	1.36		
20	147	221	1.32	1.32	2.65		
25	255	382	1.94	1.94	3.88		
32	343	514	3	3	6		
40	490	735	4.5	4.5	9		

HFZ, HFK Series

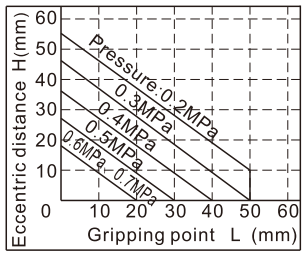
The range of the closed gripping points

HFZ6

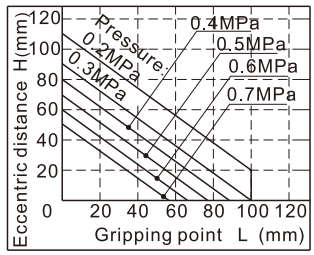




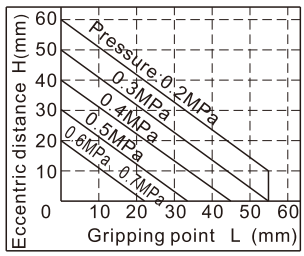
HFZ10\HFK10



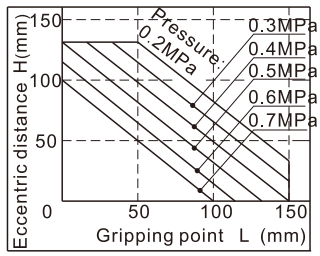
HFZ25\HFK25



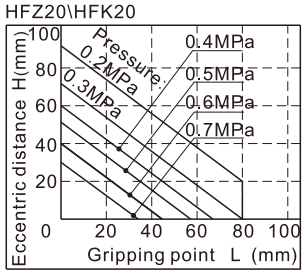
HFZ16\HFK16



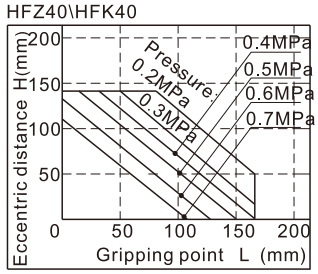
HFZ32\HFK32



HFZ20\HFK20

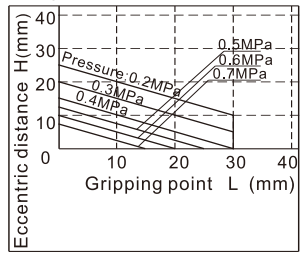


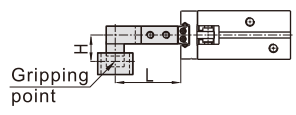
HFZ40\HFK40



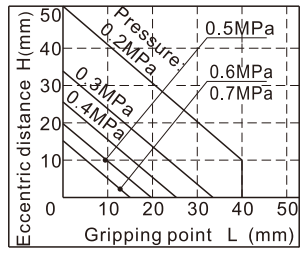
The range of the opened clamping point

HFZ6

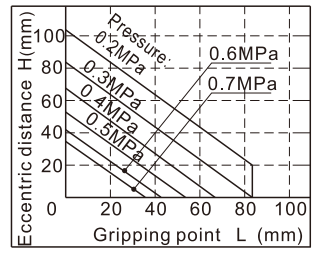




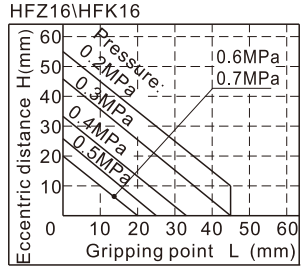
HFZ10\HFK10



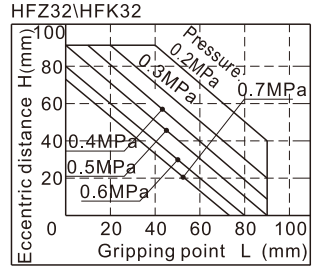
HFZ25\HFK25



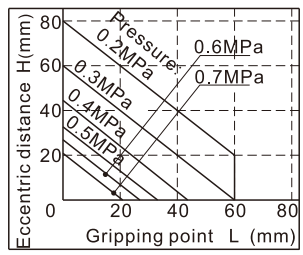
HFZ16\HFK16



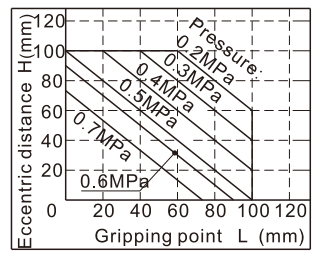
HFZ32\HFK32



HFZ20\HFK20



HFZ40\HFK40

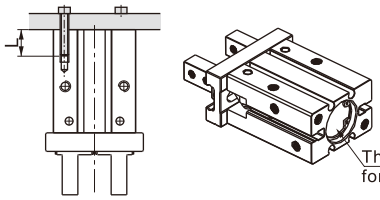


HFZ, HFK Series

Installation and application

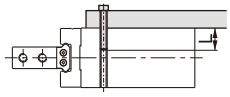
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. Please contact with us when the single acting type clamps only with the spring force.
4. When install and fix the air gripper, avoid falling down, collision and damage.
5. When fixing the gripping jaw parts, don't twist the gripping jaw.
6. There are several kinds of installation method, and the locking torgue of fastening screw must be within the prescribed torque range shown in the below chart. If the locking torque is too large, it will cause the dysfunctional. If the locking torque is too small, it will cause the position deviation and fall.

Tail installation type



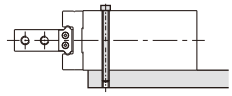
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
10	M3×0.5	0.88N.m	6mm	Φ11mm $^{+0.05}_{0}$	1.5mm
16	M4×0.7	2.1N.m	8mm	Φ17mm $^{+0.05}_{0}$	1.5mm
20	M5×0.8	4.3N.m	10mm	Φ21mm $^{+0.05}_{0}$	2mm
25	M6×1.0	7.3N.m	12mm	Φ26mm $^{+0.05}_{0}$	2mm
32	M6×1.0	7.9N.m	12mm	Φ34mm $^{+0.05}_{0}$	2.5mm
40	M8×1.25	17.7N.m	16mm	Φ42mm $^{+0.05}_{0}$	2.5mm

The installation of the front threaded hole

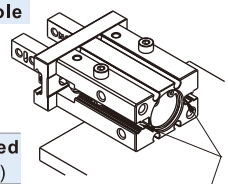


Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	M3×0.5	0.88	10
10	M3×0.5	0.69	5
16	M4×0.7	2.1	7
20	M5×0.8	4.3	8
25	M6×1.0	7.3	10
32	M6×1.0	7.9	12
40	M8×1.25	17.7	12

The installation of the front through hole

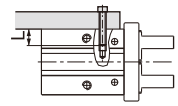


Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	M2.5×0.45	0.49	-
10	M2.5×0.45	0.49	5
16	M3×0.5	0.88	8
20	M4×0.7	2.1	10
25	M5×0.8	4.3	12
32	M5×0.8	4.3	13
40	M6×1.0	7.3	16



When installed from front through holes, sensors can not be installed in the sensor grooves that are interfered by screws.

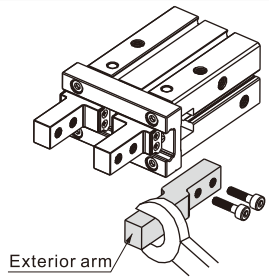
Surface installation type



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
10	M3×0.5	0.9	6
16	M4×0.7	1.6	4.5
20	M5×0.8	3.3	8
25	M6×1.0	5.9	10
32	M6×1.0	5.9	10
40	M8×1.25	13.7	12

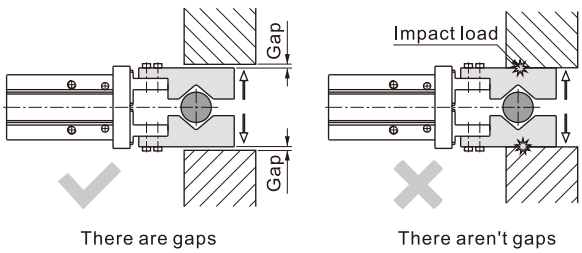
7. The installation method of the gripping jaw fittings
When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.

Bore size	The bolts type	Max. locking moment(Nm)
6	M2×0.4	0.15
10	M2.5×0.45	0.31
16	M3×0.5	0.59
20	M4×0.7	1.4
25	M5×0.8	2.8
32	M6×1.0	4.9
40	M8×1.25	11.8

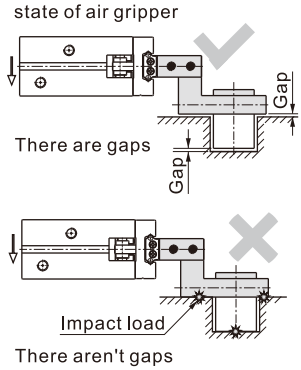


8. Confirm that there is no external forces exerted on the gripping jaw.
Transverse load acts on the gripping jaw, which will cause impact load and leads to the shaking and damage of gripping jaw. Equip with gaps so that the air gripper will not crash into work-pieces and accessories at the end of its trip.

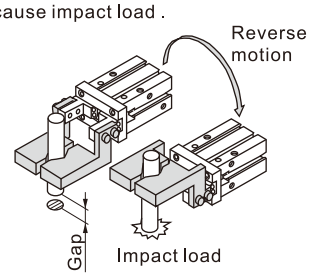
8.1) The end of stroke under the open state of air gripper



8.2) The end of stroke under the move state of air gripper



8.3) Reverse motion state
When reverse motion state, the gripping point must be precision, otherwise in the reverse motion state the air gripper maybe impact with ambience and will cause impact load .



9. When the work-pieces are inserted, the center line should be coaxial, no offset, in case there are external force generated on gripping jaw. When testing, it is specially required that the manual operation should be reduced, the pressure should be used to run it at a low speed, and guarantee the safety and no impact.



10. Please use the flow control valve to adjust the opening and closing speed of gripping jaw if too fast.
11. People can not enter the movement path of air gripper and articles can not be placed on the path too.
12. Before removing the air gripper, please confirm that it is out of working state, and then discharge of compressed air.

Parallel Gripper with dust-proof cover and roller bearing style

HFKP Series



Specification

Bore size (mm)	16	20	25	32
Acting type	Double acting			
Fluid	Air(to be filtered by 40 μ m filter element)			
Operating pressure	0.15~0.7MPa(22~100psi)(1.5~7.0bar)			
Temperature ℃	-20~70			
Lubrication	Not required			
Repeatability mm	±0.01			±0.02
Max. frequency	180(c.p.m)			60(c.p.m)
Sensor switches	CMSH、DMSH、EMSH、CMSG、DMSG、EMSG			
Port size	M5×0.8			

Note) Refer to P576 for detail of sensor switch.

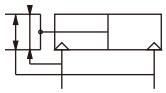
Gripping force and stroke

Bore size		16	20	25	32
Gripping force per finger Effective value(N)	Closed	30	42	65	158
	open	40	66	104	193
Opening/Closing stroke(Both sides)(mm)		6	10	14	22
Weight (g)		130	251	475	792

[Note] The gripping force in the above table is at working pressure of 0.5MPa, and with a gripping point of L=20mm.

Add) Please refer to page 516 for the definition of "L".

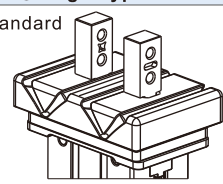
Symbol



Ordering code

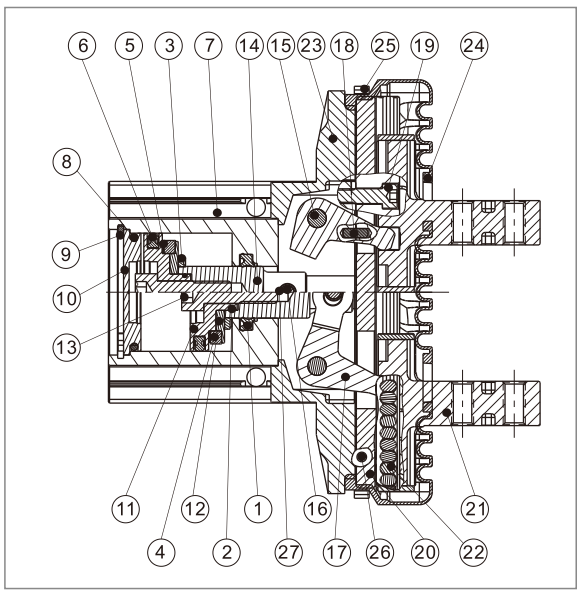
HFKP 32 □

① ② ③

①Model	②Bore size	③Finger type
HFKP: Parallel Gripper with dust-proof cover and roller bearing style(Double acting)	16 20 25 32	Blank: Standard 

[Note]:HFKP series are all standard come with magnet. (not includes sensor)

Inner structure and material of major parts

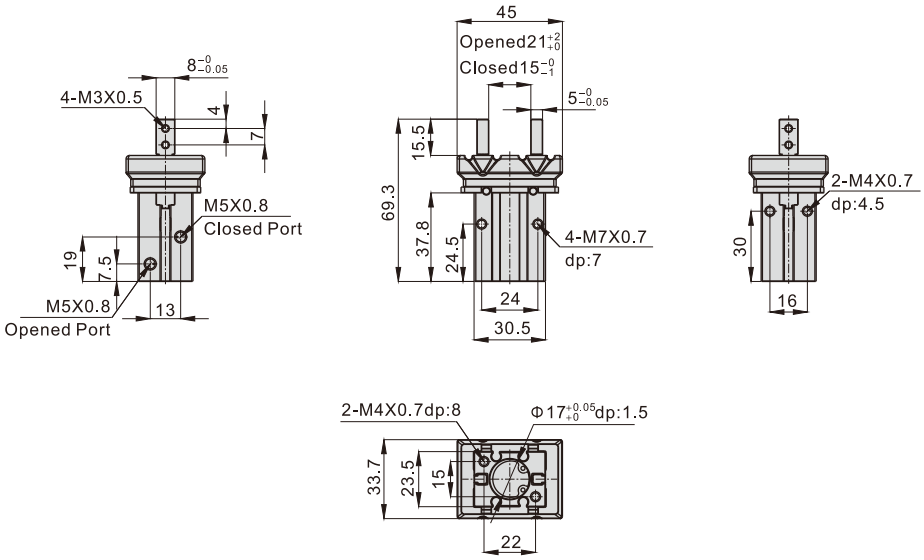


NO.	Item	Material	NO.	Item	Material
1	Rod packing	NBR	15	Pin	Stainless steel
2	O-ring	NBR	16	Pin	Stainless steel
3	Bumper	TPU	17	Curved bar	Stainless steel
4	Magnet	Neodymium-iron-boron	18	Pin	Bearing steel
5	Magnet washer	NBR	19	Countersink screw	Alloy steel
6	Piston seal	NBR	20	Guide roller	Alloy steel
7	Body	Aluminum alloy	21	Clamping jaw	Bearing steel
8	O-ring	NBR	22	Guide rail	Bearing steel
9	C clip	Spring steel	23	Dustproof cover ring	Resin
10	Back cover	Aluminum alloy	24	Dustproof cover	NBR
11	Piston	Aluminum alloy/Stainless steel	25	Fixed rod	Cold rolled sheet
12	Magnet fixed flake		26	Screw	Alloy steel
13	Countersink screw	Alloy steel	27	Pin bushing	Stainless steel
14	Piston rod	Aluminum alloy/Stainless steel			

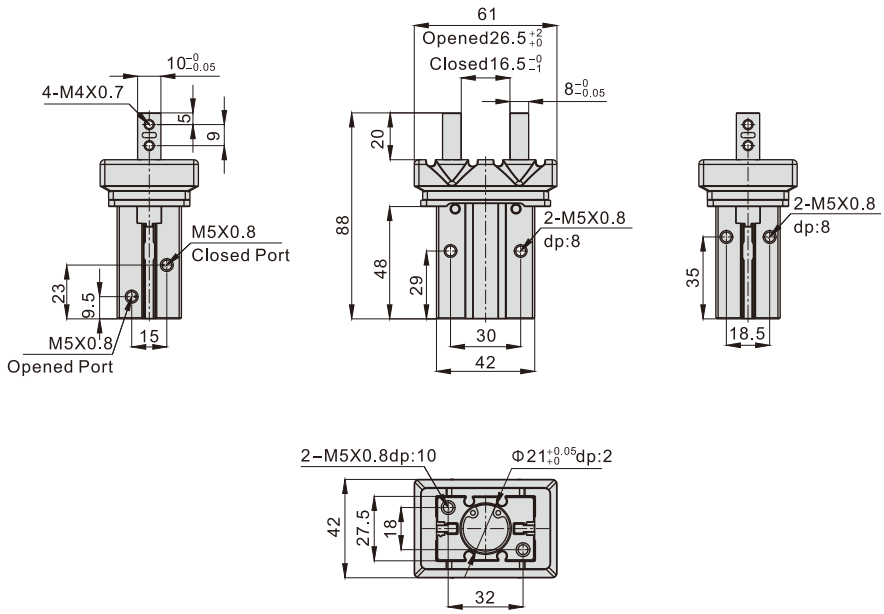
[Note]: No. 25 and No. 26 in the above table are only for HFKP32.

Dimensions

HFKP16

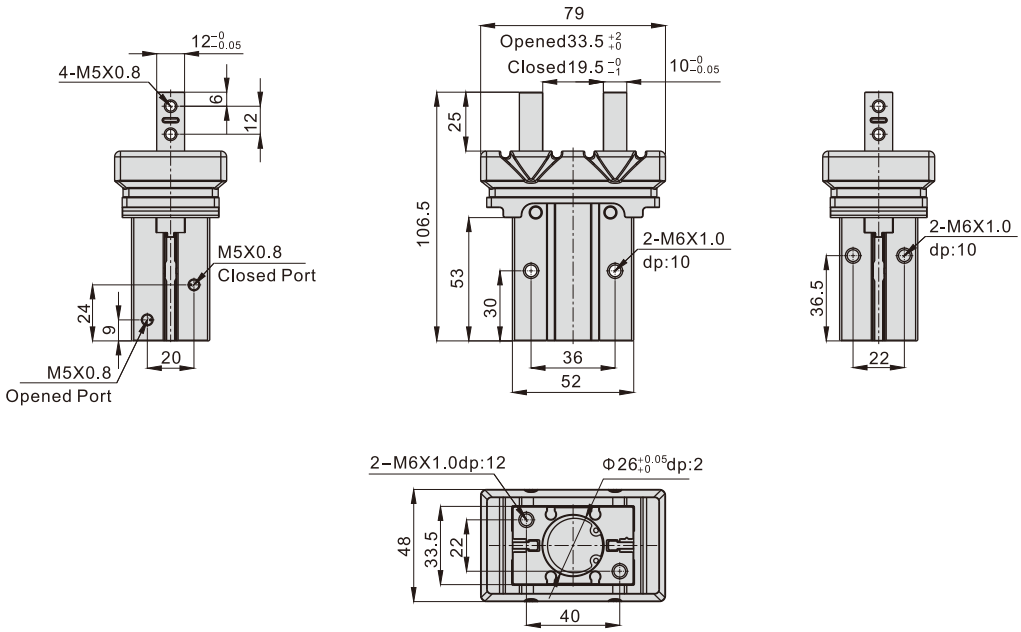


HFKP20

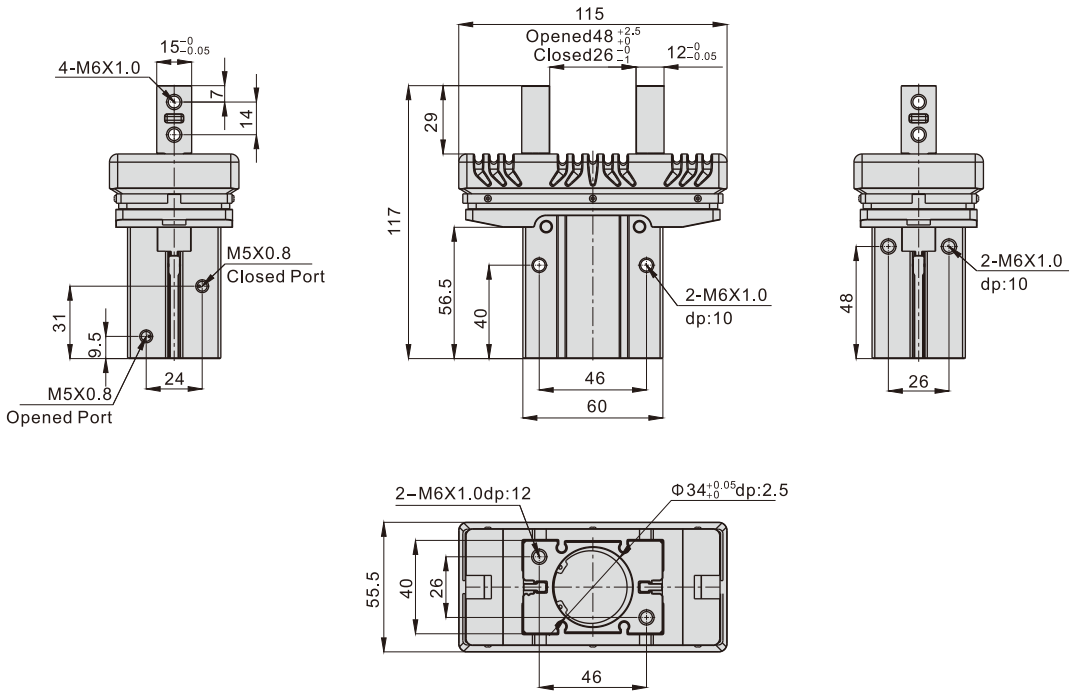


HFKP Series

HFKP25



HFKP32



How to select product

Please select pneumatic finger according to the following steps:

①The selection of the effective gripping force → ②the confirmation of the gripping point → ③the confirmation of the external force put on the gripping jaw

1. The selection of the gripping force

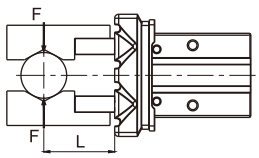
The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

The work-pieces as shown in the left :		μ =0.2	μ =0.1
F: Gripping force (N) μ : friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity (=9.8m/s²)	The condition that the work-pieces won't drop is: 2× μ F>mg so: $F>\frac{mg}{2\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{2\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$	$F=\frac{mg}{2\times0.1}\times4=20\times mg$
		10 times of the mass of the gripped objects	20 times of the mass of the gripped objects

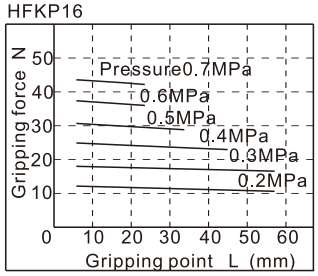
Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

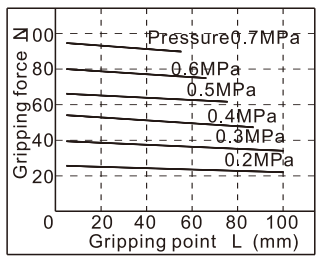
Closed gripping force



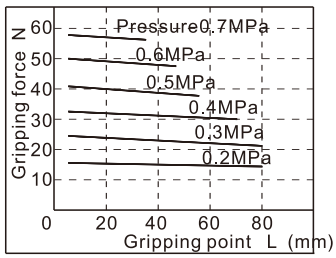
HFKP16



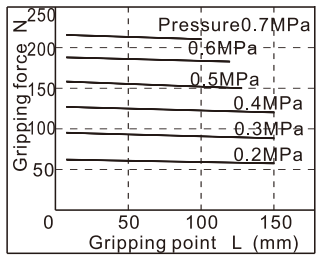
HFKP25



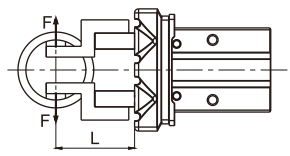
HFKP20



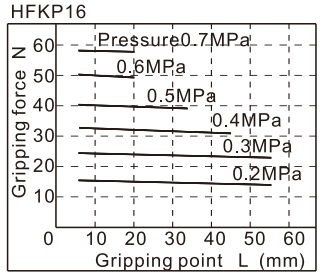
HFKP32



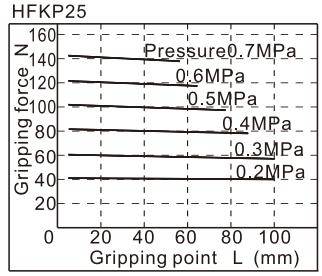
Opened gripping force



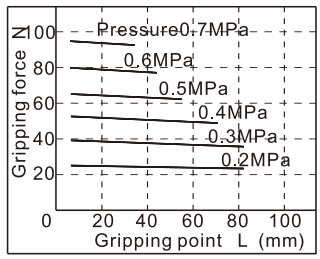
HFKP16



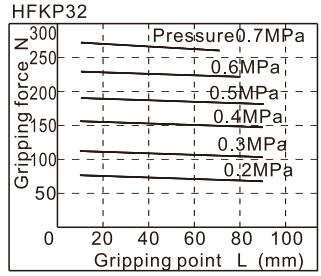
HFKP25



HFKP20



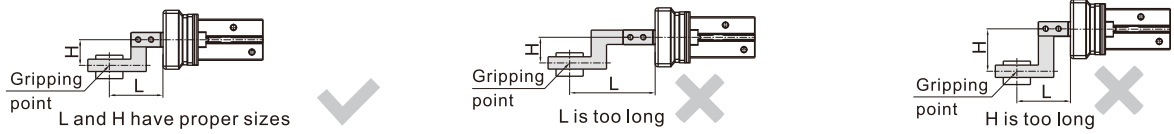
HFKP32



HFKP Series

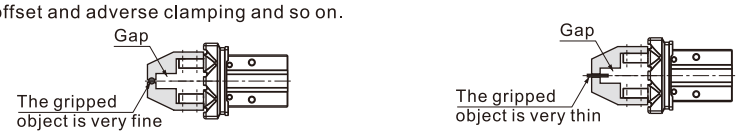
2. The selection of the gripping point

2.1) Please select the gripping point within the limited field shown below.
Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.

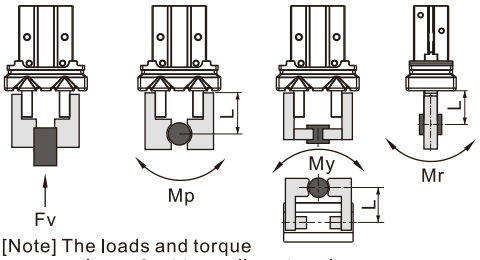


2.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.

2.3) When the gripped object is very fine and thin, you have to equip with gap between fittings. If not, there will be unstable clamp, resulting in a position offset and adverse clamping and so on.



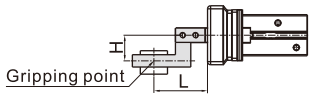
3. The confirmation of the external force put on the gripping jaw.



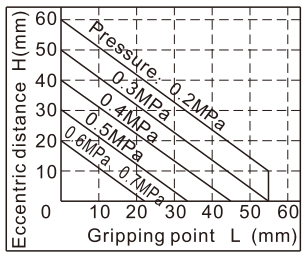
[Note] The loads and torque values of said are all static values.

Bore size	The allowed vertical loads Fv(N)	Max. permissible torque(Nm)			The calculation of allowable forces when moment loads work	Examples of calculation
		Mp	My	Mr		
16	147	0.68	0.68	1.36	Allowable load(N) = M(Maximum permissible moment)(N.m) / L×10^{-3} (Unit conversion constant)	In the guide rail of HFKP16, the external force of the pitching moment static loads put on the point of L=30mm is f=10 N, Allowable load F= 0.68/(30×10^{-3}) = 22.7(N) Actual load f=10(N)<22.7(N) To meet the using requirements
20	221	1.32	1.32	2.65		
25	382	1.94	1.94	3.88		
32	514	3	3	6		

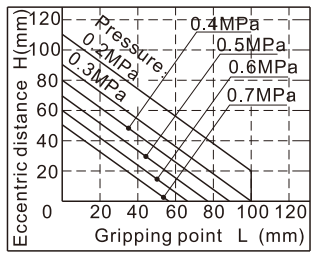
Closed gripping points



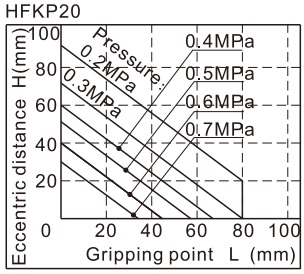
HFKP16



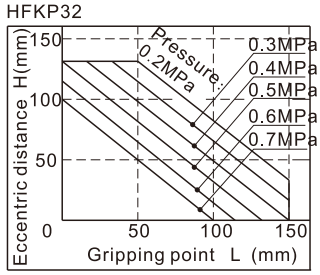
HFKP25



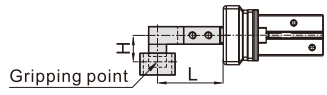
HFKP20



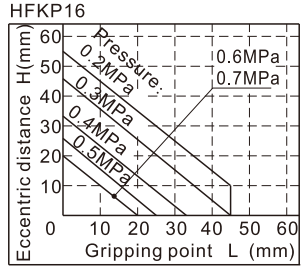
HFKP32



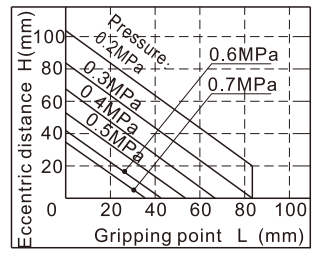
Opened clamping point



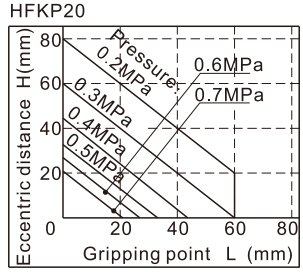
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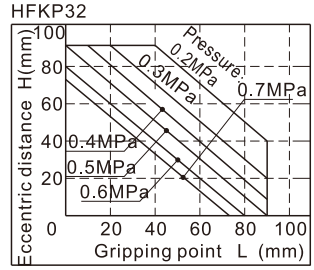
HFKP25



HFKP20



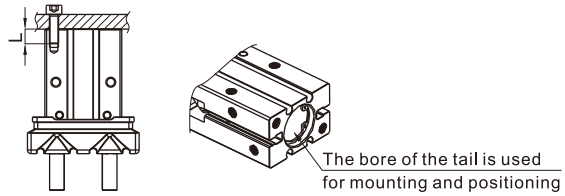
HFKP32



Installation and application

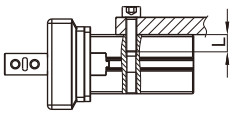
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. There are several kinds of installation method, and the locking torgue of fastening screw must be within the prescribed torque range shown in the below chart. If the locking torque is too large, it will cause the dysfunctional. If the locking torque is too small, it will cause the position deviation and fall.

Tail installation type



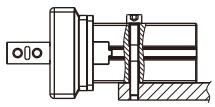
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
16	M4×0.7	2.1N.m	8mm	Φ17mm $^{+0.05}_{0}$	1.5mm
20	M5×0.8	4.3N.m	10mm	Φ21mm $^{+0.05}_{0}$	2mm
25	M6×1.0	7.3N.m	12mm	Φ26mm $^{+0.05}_{0}$	2mm
32	M6×1.0	7.9N.m	12mm	Φ34mm $^{+0.05}_{0}$	2.5mm

The installation of the front threaded hole

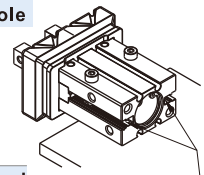


Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
16	M4×0.7	2.1	7
20	M5×0.8	4.3	8
25	M6×1.0	7.3	10
32	M6×1.0	7.9	10

The installation of the front through hole

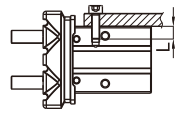


Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
16	M3×0.5	0.88	8
20	M4×0.7	2.1	10
25	M5×0.8	4.3	12
32	M5×0.8	4.3	13



When installed from front through holes, sensors can not be installed in the sensor grooves that are interfered by screws.

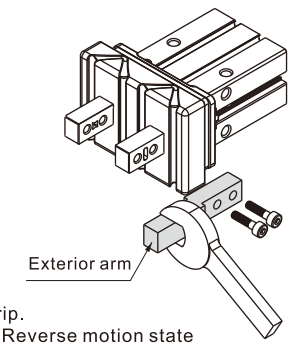
Surface installation type



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
16	M4×0.7	1.6	4.5
20	M5×0.8	3.3	8
25	M6×1.0	5.9	10
32	M6×1.0	5.9	10

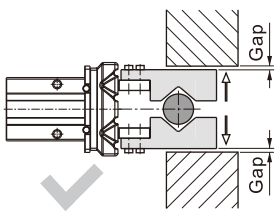
6. The installation method of the gripping jaw fittings
When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.

Bore size	The bolts type	Max. locking moment(Nm)
16	M3×0.5	0.59
20	M4×0.7	1.4
25	M5×0.8	2.8
32	M6×1.0	4.9

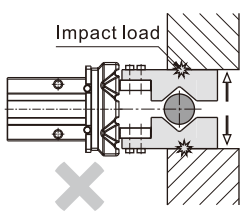


7. Confirm that there is no external forces exerted on the gripping jaw.
Transverse load acts on the gripping jaw, which will cause impact load and leads to the shaking and damage of gripping jaw. Equip with gaps so that the air gripper will not crash into work-pieces and accessories at the end of its trip.

7.1) The end of stroke under the open state of air gripper

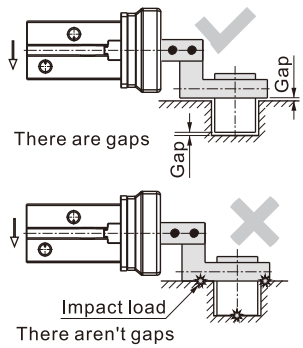


There are gaps

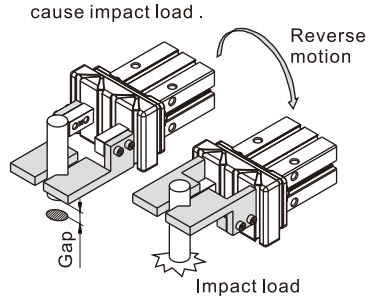


There aren't gaps

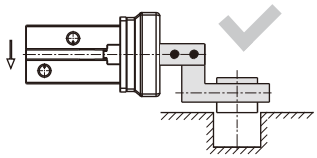
7.2) The end of stroke under the move state of air gripper



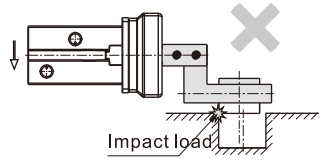
7.3) Reverse motion state
When reverse motion state, the gripping point must be precision, otherwise in the reverse motion state the air gripper maybe impact with ambience and will cause impact load .



8. When the work-pieces are inserted, the center line should be coaxial, no offset, in case there are external force generated on gripping jaw. When testing, it is specially required that the manual operation should be reduced, the pressure should be used to run it at a low speed, and guarantee the safety and no impact.



Center coaxial



Center offset

9. Please use the flow control valve to adjust the opening and closing speed of gripping jaw if too fast.
10. People can not enter the movement path of air gripper and articles can not be placed on the path too.
11. Before removing the air gripper, please confirm that it is out of working state, and then discharge of compressed air.

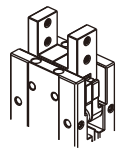
Compendium of HFP Series

Five kinds of bore size and two kinds of type

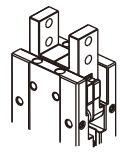
Bore size: 10, 16, 20, 25, 32
HFP: Double acting
HFTP: Single acting and normally opened

Two kinds of finger type

Standard type



Thru.hole mounting type(N)



Structure of lever type gripping

A structure of lever type gripping is designed to reduce the cost under the premise of accuracy. The finger clamps when the piston rod pushes out and stretches when the piston rod retracts. The gripping force is 20%~30% greater than the tensile force.

High gripping accuracy

The contact area between finger and body is enlarged to reduce shaking and enhance the gripping accuracy.

Anti-abrasion

A sheet metal is installed between the finger and body to reduce abrasion and extend the service life.



Opened port

Closed port

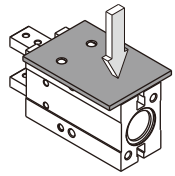
Can be mounted from two directions

With mounting holes on the side and tail.

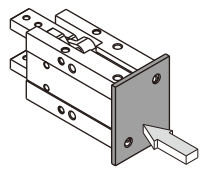
With magnetic switch slots

The magnetic switch slots convenient to install inducting switch.

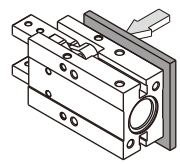
Surface installation



Tail installation

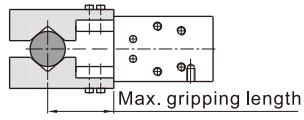


Front installation



Bore size (mm)			10	16	20	25	32
Acting type			Double acting，Single acting				
Fluid			Air(to be filtered by 40μm filter element)				
Operating pressure	Double acting	Φ10	0.2~0.7MPa(28~100psi)(2.0~7.0bar)				
		Others	0.15~0.7MPa(22~100psi)(1.5~7.0bar)				
	Single acting	Φ10	0.35~0.7MPa(50~100psi)(3.5~7.0bar)				
		Others	0.25~0.7MPa(36~100psi)(2.5~7.0bar)				
Proof pressure			1.05MPa(150psi)(10.5bar)				
Temperature ℃			-20~70				
Lubrication			Cylinder：Not required； Gripper jaws: Lubricate grease				
Max. gripping length [Note1] mm			30	40	60	70	90
Max. frequency			180(c.p.m)				60(c.p.m)
Sensor switches [Note2]				CMSG\DMSG\EMSG			CMSG\DMSG\EMSG、CMSH\DMSH\EMSH
Port size			M3×0.5	M5×0.8			

[Note1] Refer to right graph for the definition of max. gripping length.
[Note2] Sensor switch should be ordered additionally, please refer to P576 for detail of sensor switch.



Air gripper(Mechanical parallel style)

HFP Series

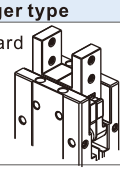
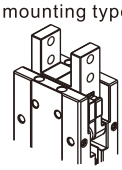




Ordering code

HFP 20 □

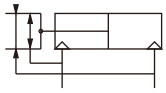
1 2 3

①Model	②Bore size	③Finger type
HFP: Air finger(Double acting) (mechanical parallel style) HFTP: Air finger (Single acting and normally opened) (mechanical parallel style)	10 16 20 25 32	Blank: Standard  N: Thru.hole mounting type 

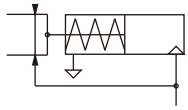
[Note] HFP series are all attached with magnet.

Symbol

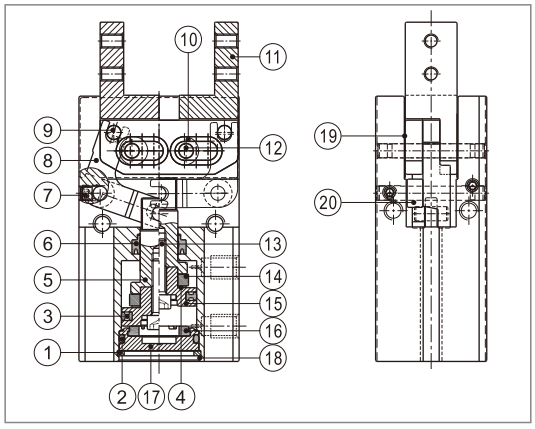
HFP: Double acting



HFTP: Single acting and normally opened



Inner structure and material of major parts

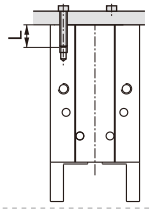


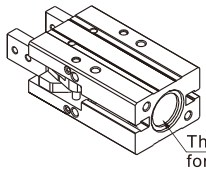
NO.	Item	Material	NO.	Item	Material
1	C clip	Spring steel	11	Gripping jaws	Stainless steel
2	O-ring	NBR	12	Pin	Stainless steel
3	Piston seal	NBR	13	Screw	Carbon steel
4	Magnet washer	NBR	14	Magnet	Sintered metal (Neodymium-iron-boron)
5	Piston rod	Aluminum alloy Stainless steel	15	Piston	Aluminum alloy Stainless steel
6	Rod packing	NBR	16	Bumper	TPU
7	Countersink screw	Carbon steel	17	Back cover	Aluminum alloy
8	Curved bar	Stainless steel	18	Body	Aluminum alloy
9	Pin	Stainless steel	19	Retaining ring	Stainless steel
10	Guide sleeve	Stainless steel	20	Stopper sleeve	Stainless steel

Installation and application

1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. There are several kinds of installation method, and the locking torgue of fastening screw must be within the prescribed torque range shown in the below chart. If the locking torque is too large, it will cause the dysfunctional. If the locking torque is too small, it will cause the position deviation and fall.

Tail installation type

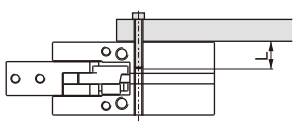




The bore of the tail is used for mounting and positioning

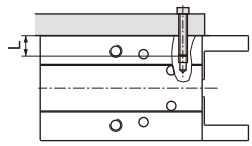
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
10	M3×0.5	1.0N.m	6mm	Φ11mm $^{+0.05}_{0}$	1.0mm
16	M4×0.7	2.0N.m	8mm	Φ17mm $^{+0.05}_{0}$	1.2mm
20	M5×0.8	4.5N.m	10mm	Φ21mm $^{+0.05}_{0}$	1.2mm
25	M6×1.0	7.0N.m	12mm	Φ26mm $^{+0.05}_{0}$	1.5mm
32	M6×1.0	7.0N.m	12mm	Φ34mm $^{+0.05}_{0}$	1.5mm

The installation of the front threaded hole



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
10	M3×0.5	0.7	5
16	M4×0.7	2.0	8
20	M5×0.8	4.5	10
25	M6×1.0	7.0	12
32	M6×1.0	7.0	12

Surface installation type



Bore size	The bolts type	Max. locking moment（Nm）	Max. screwed depth（mm）
10	M3×0.5	1.0	6
16	M4×0.7	2.0	8
20	M5×0.8	4.5	10
25	M6×1.0	7.0	12
32	M6×1.0	7.0	12

6. Other contents of installation and operation are the same with those of HFZ. Refer to the “Installation and Operation” instruction of HFZ.

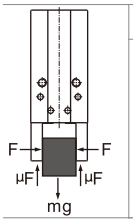
How to select product

Please select pneumatic finger according to the following steps:

①The selection of the effective gripping force ② the confirmation of the gripping point ③the confirmation of the external force put on the gripping jaw

1. The selection of the gripping force

The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

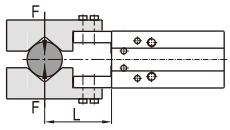


The work-pieces as shown in the left :		μ =0.2	μ =0.1
F: Gripping force (N) μ: friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity (=9.8m/s^2)	The condition that the work-pieces won't drop is: 2×μF>mg so: $F>\frac{mg}{2\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{2\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$	$F=\frac{mg}{2\times0.1}\times4=20\times mg$
		10 times of the mass of the gripped objects	20 times of the mass of the gripped objects

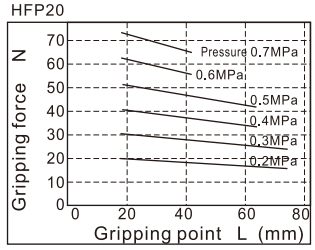
Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

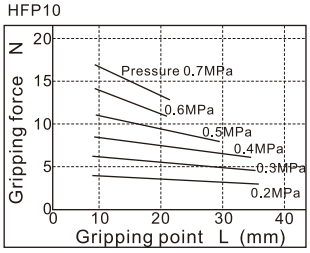
Double acting type closed gripping force



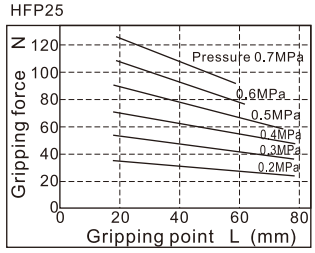
HFP20



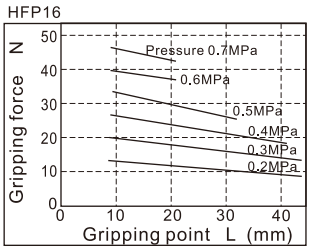
HFP10



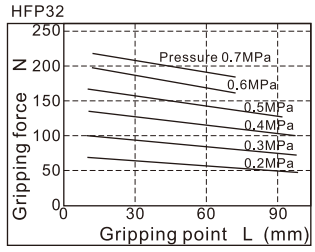
HFP25



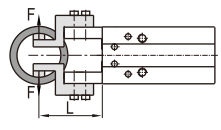
HFP16



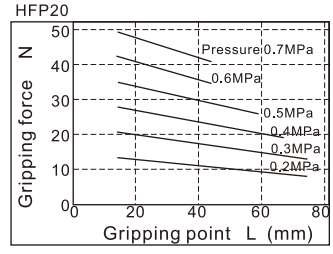
HFP32



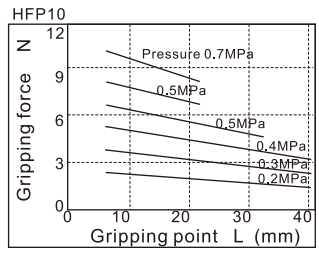
Double acting type opened gripping force



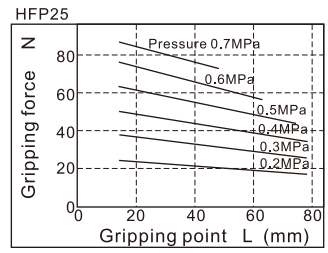
HFP20



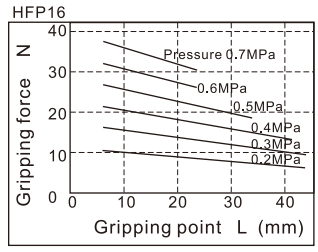
HFP10



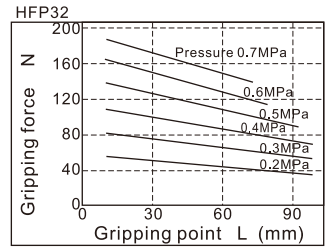
HFP25



HFP16

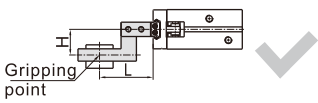


HFP32

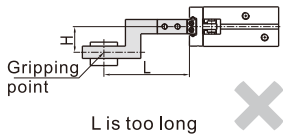


2. The selection of the gripping point

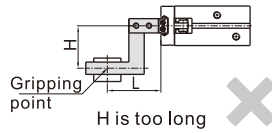
2.1) Select the gripping point within the maximum gripping length range. Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.



L and H have proper sizes



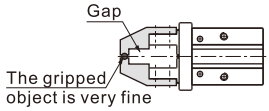
L is too long

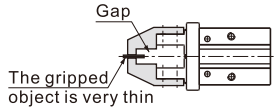


H is too long

2.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.

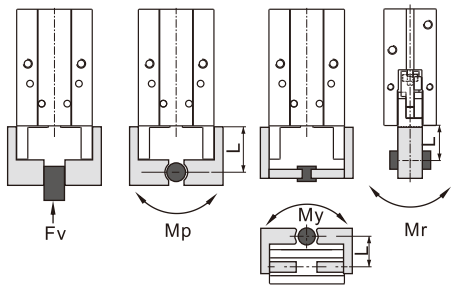
2.3) When the gripped object is very fine and thin, you have to equip with gap between fittings. If not, there will be unstable clamp, resulting in a position offset and adverse clamping and so on.





HFP Series

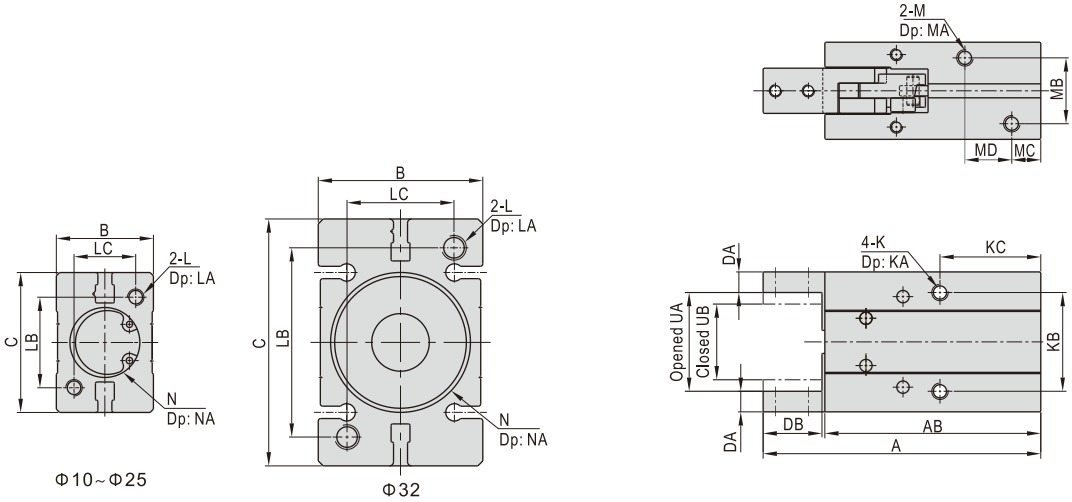
3. The confirmation of the external force put on the gripping jaw.

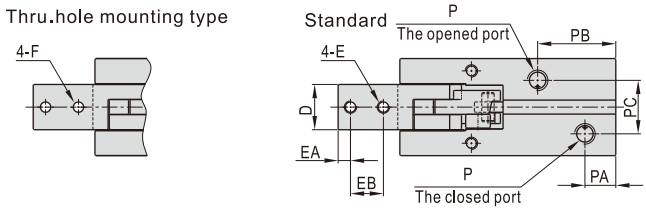


[Note] The loads and torque values of said are all static values.

Bore size	The allowed vertical loads Fv(N)	Max. permissible torque(Nm) Mp	My	Mr	The calculation of allowable forces when moment loads work	Examples of calculation
10	58	0.26	0.26	0.53	Allowable load(N) = M(Maximum permissible moment)(N.m) / (L×10^{-3} Unit conversion constant)	In the guide rail of HFP16, the external force of the pitching moment static loads put on the point of L=30mm is f=10 N, Allowable load F= $\frac{0.68}{30\times10^{-3}}$ = 22.7(N) Actual load f=10(N)<22.7(N) To meet the using requirements
16	98	0.68	0.68	1.36		
20	147	1.32	1.32	2.65		
25	255	1.94	1.94	3.88		
32	343	3	3	6		

Dimensions





Model\Item	A	AB	B	C	D	DA	DB	E	EA	EB	F	K	KA	KB	KC	L	LA
HFP10	57(62)	44.5(49.5)	16	23	7	4	12	M2.5×0.45	3	5.5	Φ2.8	M3×0.5	5	16	23(28)	M3×0.5	6
HFP16	72(77)	56.5(61.5)	23.5	34	11	5	15	M3×0.5	4	7	Φ3.3	M4×0.7	8	24	29(34)	M4×0.7	8
HFP20	89.5(94.5)	69(74)	27.5	45	12	6	20	M4×0.7	5	9	Φ4.5	M5×0.8	10	30	34(39)	M5×0.8	10
HFP25	104.5(109.5)	78.5(83.5)	33.5	52	14	8	25	M5×0.8	6	12	Φ5.5	M6×1.0	12	36	31.5(36.5)	M6×1.0	12
HFP32	118(126)	88(96)	40	60	18	9	29	M6×1.0	7	14	Φ6.5	M6×1.0	12	46	37.5(45.5)	M6×1.0	12

Model\Item	LB	LC	M	MA	MB	MC	MD	N	NA	P	PA	PB	PC	UA(Opened)	UB(Closed)
HFP10	18	12	M3×0.5	6	10	6(11)	10	Φ11 $^{+0.05}_{0}$	1	M3×0.5	6	16.5(23)	10	14.5 $^{+1.5}_{0}$	10.5 $^{0}_{-1}$
HFP16	22	15	M4×0.7	8	16	6(11)	16	Φ17 $^{+0.05}_{0}$	1.2	M5×0.8	7.5	20(25)	13	23.5 $^{+1.5}_{0}$	15.5 $^{0}_{-1}$
HFP20	32	18	M5×0.8	10	18	8(13)	16	Φ21 $^{+0.05}_{0}$	1.2	M5×0.8	7.5	24(29)	15	32.5 $^{+1.5}_{0}$	20.5 $^{0}_{-1}$
HFP25	40	22	M6×1.0	12	24	8(13)	16	Φ26 $^{+0.05}_{0}$	1.5	M5×0.8	8	22(29)	20	35.5 $^{+1.5}_{0}$	21.5 $^{0}_{-1}$
HFP32	46	26	M6×1.0	12	30	8(16)	20	Φ34 $^{+0.05}_{0}$	1.5	M5×0.8	9.5	26(37)	22	42 $^{+1.5}_{0}$	26.5 $^{0}_{-1}$

[Note]The values in "()" in the above table are single acting type sizes.

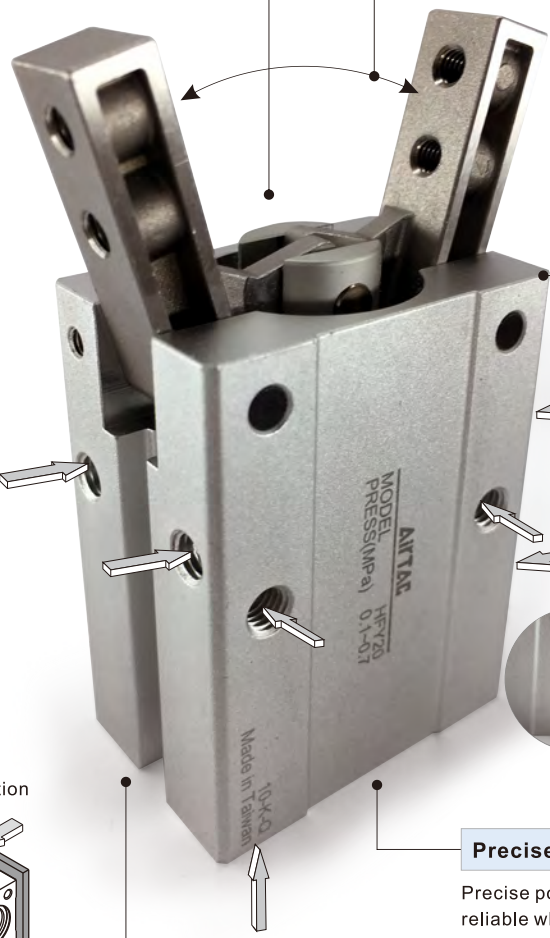
Compendium of HFY Series

Six kinds of bore size and two kinds of type

Bore size: 6, 10, 16, 20, 25, 32
HFY: Double acting
HFTY: Single acting and normally opened

Reasonable gripping angle

Reasonable gripping angle,
wide range of actual use.



Single piston structure

Using a single piston structure,
large gripping torque.

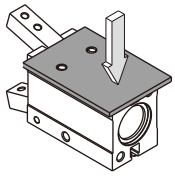
Air port

Air port

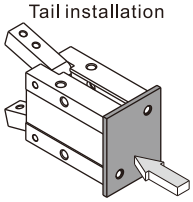
Can be mounted from three directions

With mounting holes on the side and tail.

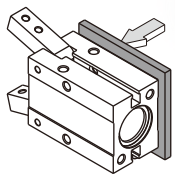
Surface installation



Tail installation



Front installation





Integrated with variable flow valve

Integrated with variable flow valve,
it is easy and convenient to adjust the
speed of opening and closing of gripping jaw.

Precise positioning accuracy

Precise positioning accuracy, it is more accurate and
reliable when gripping work-piece.

With magnetic switch slots

The magnetic switch slots convenient
to install inducting switch.

Bore size (mm)			6	10	16	20	25	32
Acting type			Double acting Single acting					
Fluid			Air(to be filtered by 40μm filter element)					
Operating pressure	Double acting		0.2~0.7MPa(29~100psi)(2.0~7.0bar)		0.15~0.7MPa(22~100psi)(1.5~7.0bar)			
	Single acting	Φ6	0.3~0.7MPa(45~100psi)(3.0~7.0bar)					
		Φ10~Φ32	0.25~0.7MPa(36~100psi)(2.5~7.0bar)					
Temperature ℃			-20~70					
Lubrication			Cylinder：Not required； Gripper jaws：Lubricate grease					
Cushion type			Bumper					
Max. frequency			180(c.p.m)					
Sensor switches [Note1]			CMSH\DMSH\EMSH		CMSG\DMSG\EMSG			
Port size			M3×0.5		M5×0.8			

[Note1] Sensor switch should be ordered additionally, please refer to P576 for detail of sensor switch.

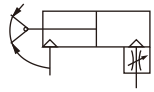
Air gripper(Angular style)

HFY Series

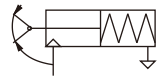


Symbol

HFY: Double acting



HFTY: Single acting and normally opened



Gripping force and stroke

Acting type		Double acting(HFY)						Single acting Normally opened(HFTY)					
Bore size		6	10	16	20	25	32	6	10	16	20	25	32
Theoretical gripping torque (N·cm)	Closed	7.4×P	17.6×P	90×P	152×P	304×P	637×P	5.7×P	11.8×P	71.2×P	122.4×P	252×P	589×P
	Opened	10.6×P	29.4×P	129×P	252×P	473×P	904×P	-	-	-	-	-	-
Max. length of griping point (L)(mm)		30	30	40	60	70	85	30	30	40	60	70	85
Opening angle (°)		$30\ ^{+3}_{0}$											
Closing angle (°)		$-10\ ^{0}_{-3}$											

[Note] The P in the gripping torque shown in the above chart represents the actual use of air pressure.

Ordering code

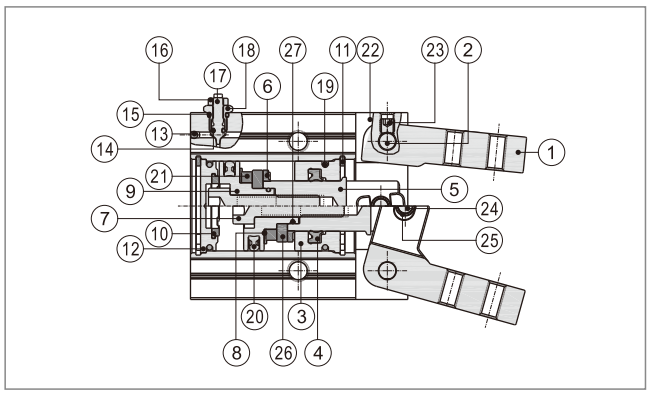
HFY 20

① ②

①Model	②Bore size
HFY: Air finger (Angle style, Double acting)	6 10 16
HFTY: Air finger (Angle style, Single acting and normally opened)	20 25 32

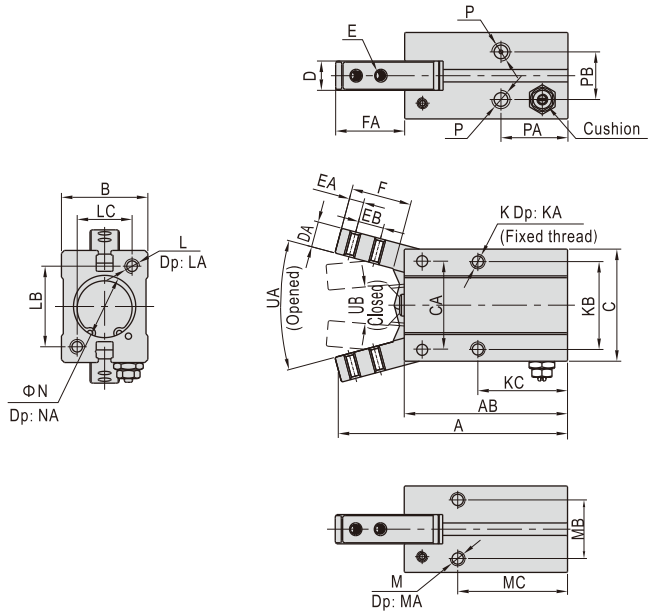
[Note] HFY series are all attached with magnet.

Inner structure and material of major parts



NO.	Item	Material
1	Gripping jaws	Carbon steel
2	Pin	Stainless steel
3	Front cover	Aluminum alloy
4	Rod packing	NBR
5	Piston rod	Aluminum alloy/Stainless steel
6	Bumper	TPU
7	Countersink screw	Carbon steel
8	Magnet washer	NBR
9	Piston	Aluminum alloy/Stainless steel
10	Bumper	TPU
11	C clip	Spring steel
12	Back cover	Aluminum alloy
13	Steel ball	Stainless steel
14	O-ring	NBR
15	O-ring	NBR
16	Screw cap	Carbon steel
17	Adjustable nut	Brass
18	Fixed nut	Brass
19	O-ring	NBR
20	Piston seal	NBR
21	Magnet	Sintered metal(Neodymium-iron-boron)
22	Body	Aluminum alloy
23	Countersink screw	Alloy steel
24	Pin	Stainless steel
25	Pin sheath	Stainless steel
26	Magnet fixed flake	Stainless steel
27	O-ring	NBR

Dimensions

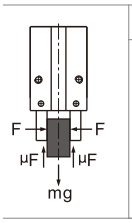


Bore size\Item	A	AB	B	C	CA	D	DA	E	EA	EB	F	FA	K	KA	KB	KC	L
6	47.5	36	10.5	20	14	4	4	M2×0.4	2.5	5	11	12	M3×0.5	Thru. thread	12	26	-
10	52.5	38.5	16.5	23	14	6.4	4	M2.5×0.45	3	5.7	12	14.5	M3×0.5	5	16	23	M3×0.5
16	62.5	44.5	23.5	30.5	24	8	7	M3×0.5	4	7	16	19	M4×0.7	7	24	24.5	M4×0.7
20	78	55	27.5	42	30	10	8	M4×0.7	5	9	20	23.5	M5×0.8	8	30	29	M5×0.8
25	92	60.5	33.5	52	36	12	10	M5×0.8	8	12	27	33	M6×1.0	10	36	30	M6×1.0
32	96.5	68	40	60	42	18	10	M6×1.0	6	14	27	29.5	M6×1.0	10	44	37.5	M6×1.0

Bore size\Item	LA	LB	LC	M	MA	MB	MC	N	NA	P	PA	PB	UA(Opened)	UB(Closed)
6	-	-	-	-	-	-	-	$7^{+0.05}_{0}$	1.5	M3×0.5	19	1.5	30°	10°
10	6	18	12	M3×0.5	6	11.5	27	$11^{+0.05}_{0}$	1.5	M3×0.5	19	10	30°	10°
16	8	22	15	M4×0.7	8	16	30	$17^{+0.05}_{0}$	1.5	M5×0.8	18.5	13	30°	10°
20	10	32	18	M5×0.8	10	18.5	35	$21^{+0.05}_{0}$	1.5	M5×0.8	22	15	30°	10°
25	12	40	22	M6×1.0	10	22	36.5	$26^{+0.05}_{0}$	1.5	M5×0.8	23.5	20	30°	10°
32	12	46	26	M6×1.0	10	26	30	$34^{+0.05}_{0}$	2	M5×0.8	31	24	30°	10°

How to select product

1. The selection of the gripping force
The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.



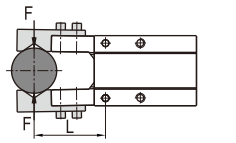
The work-pieces as shown in the left :		μ =0.2	μ =0.1
F: Gripping force (N) μ: friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity (=9.8m/s²)	The condition that the work-pieces won't drop is: 2×μF>mg so: $F>\frac{mg}{2\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{2\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$ 10 times of the mass of the gripped objects	$F=\frac{mg}{2\times0.1}\times4=20\times mg$ 20 times of the mass of the gripped objects

Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

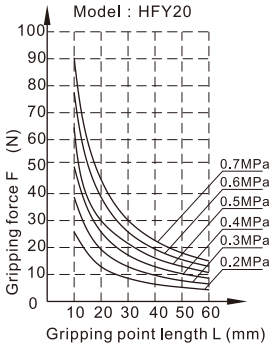
2. The selection of the gripping point
When the gripping force is determined, select the gripping point according to the limitation ranges shown in the below chart. If the gripping point is over the limit, the gripping jaw will be subjected to excessive moment load, and lead to short life of air gripper.

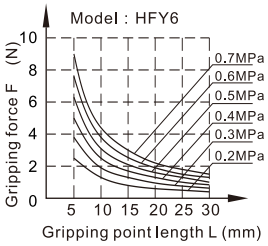
HFY Series

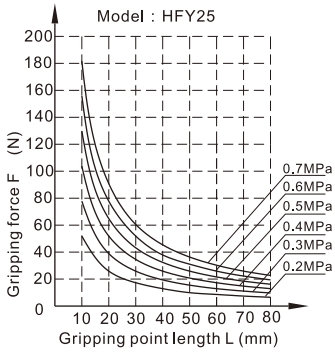
Double acting type closed gripping force

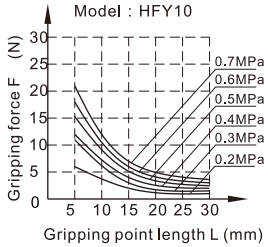


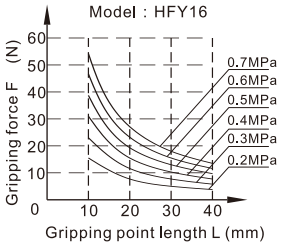
Gripping point length (mm)

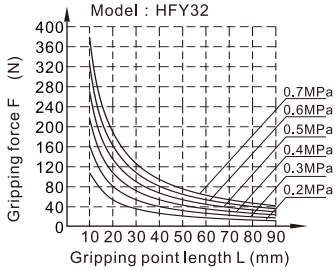




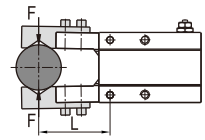




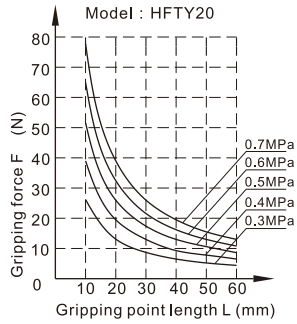


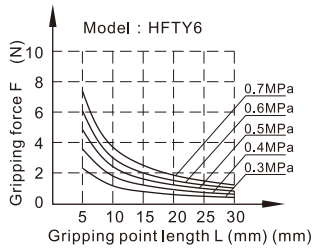


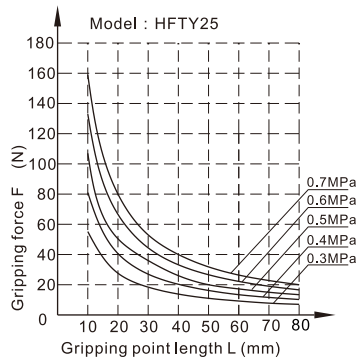
Single acting closed gripping force

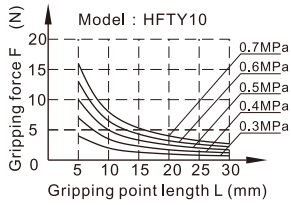


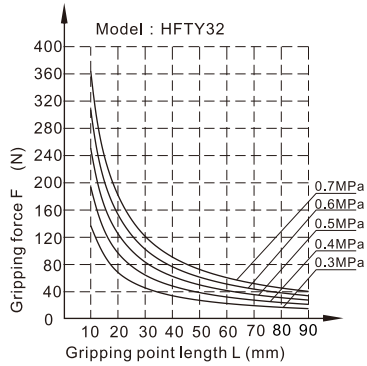
Gripping point length (mm)

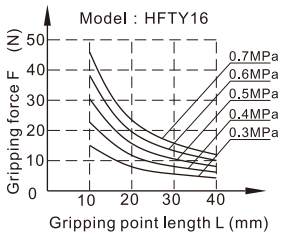








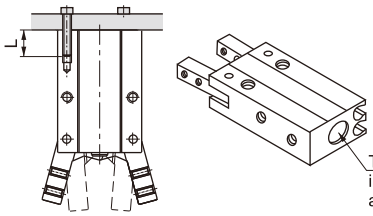




Installation and application

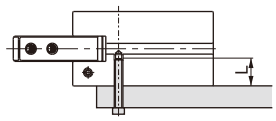
1. Due to the abrupt changes, the pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. There are several kinds of installation method, and the torque of fastening screw must be within the prescribed moment range shown in the below chart. If the locking moment is too large, it will cause the dysfunctional. If the locking moment is too small, it will cause the position deviation and fall.

Tail installation type



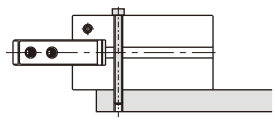
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
6	-	-	-	Φ7mm $^{+0.04}_{+0.01}$	1.5mm
10	M3×0.5	0.88N.m	6mm	Φ11mm $^{+0.04}_{+0.01}$	1.5mm
16	M4×0.7	2.1N.m	8mm	Φ17mm $^{+0.05}_{0}$	1.5mm
20	M5×0.8	4.3N.m	10mm	Φ21mm $^{+0.05}_{0}$	1.5mm
25	M6×1.0	7.3N.m	12mm	Φ26mm $^{+0.05}_{0}$	1.5mm
32	M6×1.0	7.3N.m	12mm	Φ34mm $^{+0.05}_{0}$	2.0mm

The installation of the front threaded hole

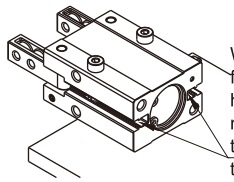


Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	M3×0.5	0.69	5
10	M3×0.5	0.69	5
16	M4×0.7	2.1	7
20	M5×0.8	4.3	8
25	M6×1.0	7.3	10
32	M6×1.0	7.3	10

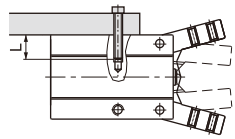
The installation of the front through hole



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	M2.5×0.45	0.49	5
10	M2.5×0.45	0.49	5
16	M3×0.5	0.88	7
20	M4×0.7	2.1	8
25	M5×0.8	4.3	10
32	M5×0.8	4.3	10



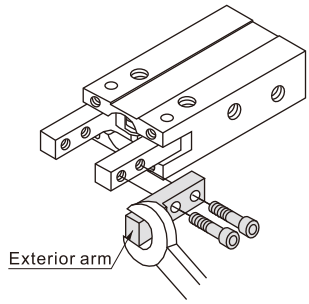
Surface installation type



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	-	-	-
10	M3×0.5	0.88	6
16	M4×0.7	1.6	6.5
20	M5×0.8	3.3	8
25	M6×1.0	5.9	10
32	M6×1.0	5.9	10

6. The installation method of the gripping jaw fittings
When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.

Bore size	The bolts type	Max. locking moment(Nm)
6	M2×0.4	0.15
10	M2.5×0.45	0.31
16	M3×0.5	0.59
20	M4×0.7	1.4
25	M5×0.8	2.8
32	M6×1.0	4.9



7. When gripping work-piece, the work-piece must be located in the center line of the two gripping jaws, and the two gripping jaws also need to touch the work-piece at the same time, otherwise they will be easily damaged.
8. Confirm that there is no additional external forces that are exerted on the gripping jaw. Transverse load acts on the gripping jaw, which will cause impact load and leads to the shaking and damage of gripping jaw. Equip with gaps so that the air gripper will not crash into work-pieces and accessories at the end of its trip.
9. When the work-pieces are inserted, the center line should be coaxial, no offset, in case there are external force generated on gripping jaw. When testing, it is specially required that the manual operation should be reduced, the pressure should be used to run it at a low speed, and guarantee the safety and no impact.
10. Please use the flow control valve to adjust the opening and closing speed of gripping jaw if too fast.
11. People can not enter the movement path of air gripper and articles can not be placed on the path too.
12. Before removing the air gripper, please confirm that it is out of working state, and then discharge of compressed air.

180° open/close style

Compendium of HFR Series

Five kinds of bore size

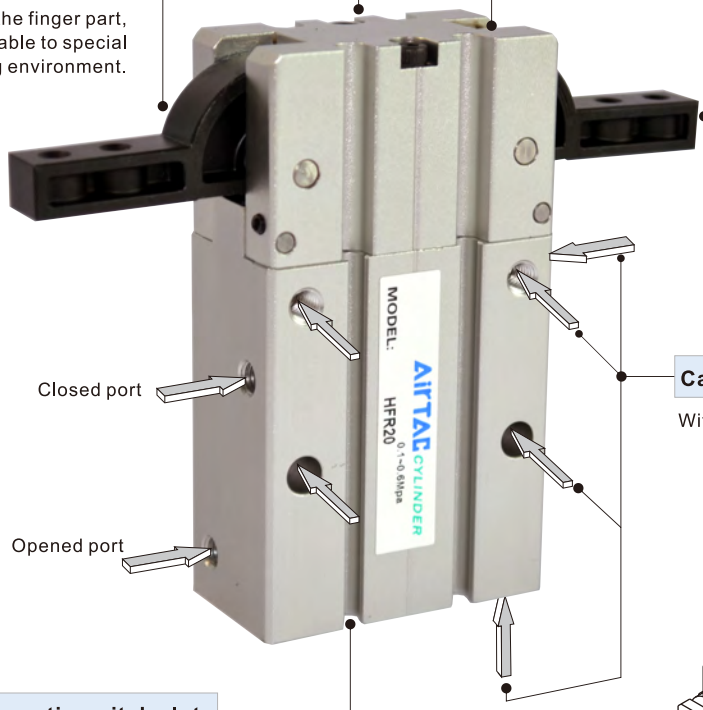
Bore size: 10, 16, 20, 25, 32

Anti-abrasion

A sheet metal is installed between the finger and body to reduce abrasion and extend the service life.

Dust proof is designed

Dust proof is designed in the finger part, which is applicable to special working environment.



180°Open/close type

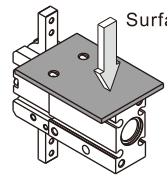
180° open/close type, simplify the gripping action.

Closed port

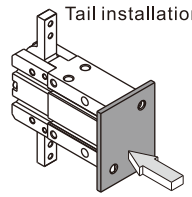
Opened port

Can be mounted from three directions

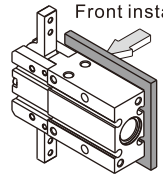
With mounting holes on the side and tail.



Surface installation



Tail installation



Front installation

With magnetic switch slots

The magnetic switch slots convenient to install inducting switch.

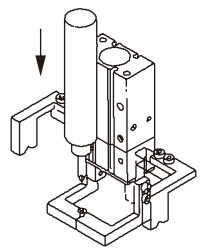
Bore size (mm)	10	16	20	25	32
Acting type	Double acting				
Fluid	Air(to be filtered by 40μm filter element)				
Operating pressure	Φ10: 0.2~0.7MPa(29~100psi)(2.0~7.0bar)				
	Others: 0.15~0.7MPa(22~100psi)(1.5~7.0bar)				
Temperature ℃	-20~70				
Lubrication	Cylinder：Not required； Gripper jaws：Lubricate grease				
Cushion type	Bumper				
Max. frequency	60(c.p.m)				
Repeatability	±0.2mm				
Gripping force [Note1]	0.16N.m	0.55N.m	1.10N.m	2.30N.m	5.00N.m
Open or close angle	Open: -2° ~ -5° Close: 180° ± 2°				
Port size	M5×0.8				
Sensor switches [Note2]	CMSH\DMSH\EMSH				

[Note1] The gripping force is the value when the operating pressure is 0.5Mpa.

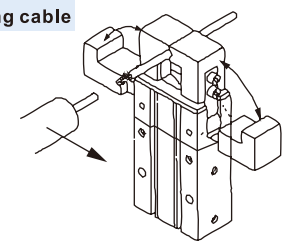
[Note2] Sensor switch should be ordered additionally, please refer to P576 for detail of sensor switch.

Example

Screw down



Clamping cable

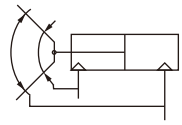


Air gripper(180°open/close style)

HFR Series



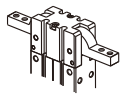
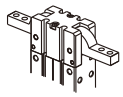
Symbol



Ordering code

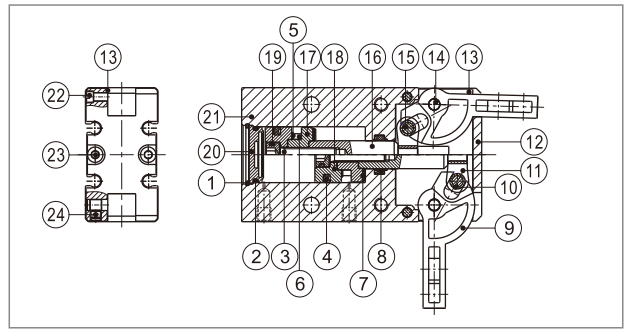
HFR 20 □

① ② ③

① Model	②Bore size	③ Mounting type
HFR: 180°open/close air gripper	10 16 20 25 32	Blank: Mounting through tapped holes  N: Mounting through holes (tapped in open/close direction) 

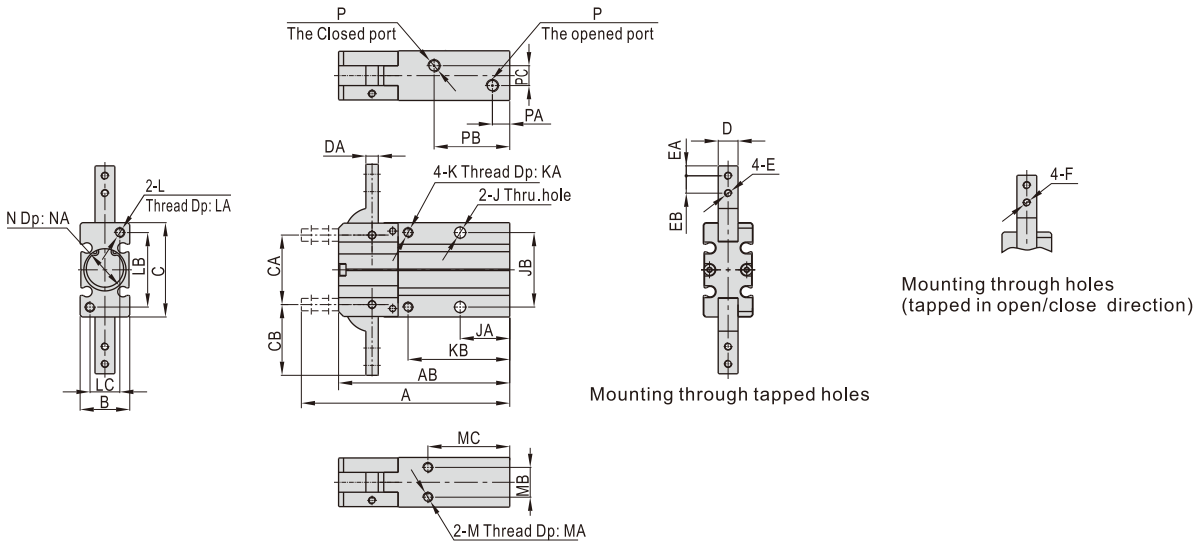
[Note] HFR series are all attached with magnet.

Inner structure and material of major parts



NO.	Item	Material	NO.	Item	Material
1	C clip	Spring steel	12	Front cover	Aluminum alloy
2	O-ring	NBR	13	Sheet metal	Stainless steel
3	Countersink screw	Carbon steel	14	Pin	Stainless steel
			15	Pin	Stainless steel
4	Piston seal	NBR	16	Piston rod	Stainless steel
5	Magnet washer	NBR	17	Magnet holder	Aluminum alloy
6	Magnet	Sintered metal (Neodymium-iron-ioron)	18	Piston	Aluminum alloy
			19	O-ring	NBR
7	Bumper	TPU	20	Back cover	Aluminum alloy
8	Rod packing	NBR	21	Body	Aluminum alloy
9	Gripping jaws	Stainless steel	22	Pin	Stainless steel
10	Pin sheath	Stainless steel	23	Countersink screw	Carbon steel
11	Push block	Stainless steel	24	Countersink screw	Carbon steel

Dimensions

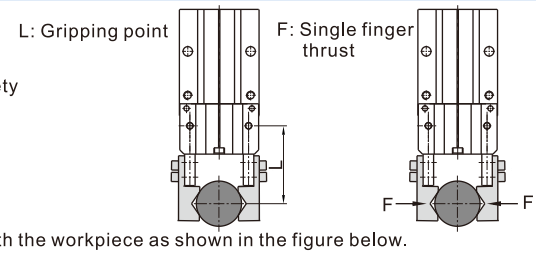


Bore size\Item	A	AB	B	C	CA	CB	D	DA	E	F	EA	EB	J	JA	JB	K	KA
10	71	58	15	30	22	23.5	6	4	M3×0.5	Φ3.3	3	6	Φ3.3	18	24	M3×0.5	6
16	84	69	20	38	28	28.5	8	5	M3×0.5	Φ3.3	4	7	Φ4.5	20	30	M4×0.7	8
20	106	86	26	48	36	37	10	8	M4×0.7	Φ4.5	5	9	Φ5.5	25	36	M5×0.8	10
25	131	107	30	58	45	45	12	10	M5×0.8	Φ5.5	6	12	Φ6.5	30	42	M6×1.0	12
32	158.5	122	40	72	55	62.5	14	12	M6×1.0	Φ6.5	9	16	Φ6.5	35	46	M6×1.0	12

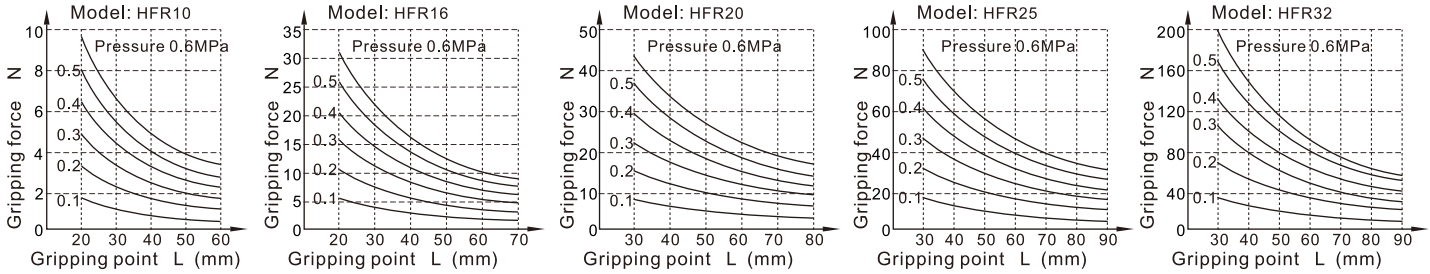
Bore size\Item	KB	L	LA	LB	LC	M	MA	MB	MC	N	NA	P	PA	PB	PC
10	35	M3×0.5	6	24	9	M3×0.5	4	9	30	$\Phi 11^{+0.05}_{0}$	1.5	M5×0.8	7	28.5	3
16	41	M4×0.7	8	30	12	M4×0.7	5	12	33	$\Phi 17^{+0.05}_{0}$	1.5	M5×0.8	7	30.5	8
20	50	M5×0.8	10	38	16	M5×0.8	8	14	42	$\Phi 21^{+0.05}_{0}$	1.5	M5×0.8	8	38.5	12
25	60	M6×1.0	12	46	18	M6×1.0	10	16	50	$\Phi 26^{+0.05}_{0}$	1.5	M5×0.8	8	48	14
32	64	M6×1.0	12	46	26	M6×1.0	12	26	59	$\Phi 34^{+0.05}_{0}$	2	M5×0.8	9	56	18

How to select product

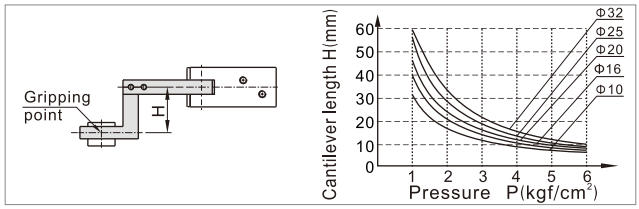
1. Confirmation of effective gripping force
   1.1) Though the coefficient of friction between the attachments and the workpiece is different, select a gripping force which is 10 to 20 times greater than the workpiece weight.
   1.2) If high acceleration or impact forces are encountered during motion, a further margin of safety should be considered.
   Example: When the workpiece weight is 0.05 and the gripping point distance L is 30mm, the operating pressure will be 5kgf/cm^2.
   Effective gripping force=0.05kg×20 times×9.8m/s^2=more than 10N
   Model selection: HFR16 is recommended. The effective gripping force is 17N, which is 20 times greater than the set value of gripping force.



   1.3) The finger thrust is expressed as F, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.
2. Connection between gripping force and gripping point distance



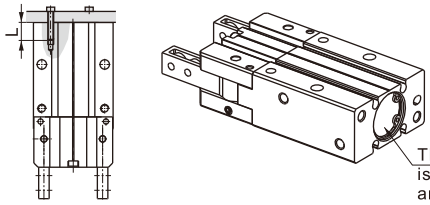
3. The selection of the gripping point
   3.1) Please select the gripping point within the limited field shown left.Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.
   3.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.



Installation and application

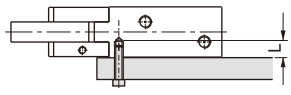
1. Due to the abrupt changes, the pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. There are several kinds of installation method, and the torque of fastening screw must be within the prescribed moment range shown in the below chart. If the locking moment is too large, it will cause the dysfunctional. If the locking moment is too small, it will cause the position deviation and fall.

Tail installation type



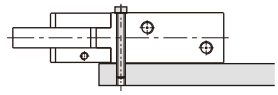
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
10	M3×0.5	1.0N.m	6mm	Φ11mmH9	1.5mm
16	M4×0.7	2.0N.m	8mm	Φ17mmH9	1.5mm
20	M5×0.8	4.5N.m	10mm	Φ21mmH9	1.5mm
25	M6×1.0	7.0N.m	12mm	Φ26mmH9	1.5mm
32	M6×1.0	7.0N.m	14mm	Φ34mmH9	2.0mm

The installation of the front threaded hole



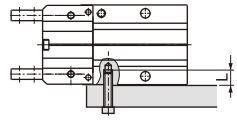
Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
10	M3×0.5	1.0	6
16	M4×0.7	2.0	8
20	M5×0.8	4.5	10
25	M6×1.0	7.0	12
32	M6×1.0	7.0	14

The installation of the front through hole



Bore size	The bolts type	Max. locking moment（Nm）
10	M3×0.5	1.0
16	M4×0.7	2.0
20	M5×0.8	4.5
25	M6×1.0	7.0
32	M6×1.0	7.0

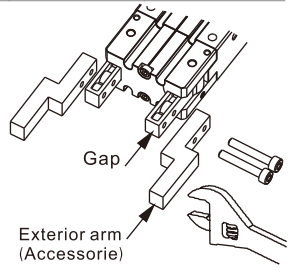
Surface installation type



Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
10	M3×0.5	0.6	4
16	M4×0.7	1.5	5
20	M5×0.8	3.5	8
25	M6×1.0	6.0	10
32	M6×1.0	6.0	12

6. The installation method of the gripping jaw fittings. When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.
7. Other contents of installation and operation are the same with those of HFY. Refer to the “Installation and Operation” instruction of HFY.

Bore size	The bolts type	Max. locking moment（Nm）
10	M3×0.5	0.6
16	M3×0.5	0.6
20	M4×0.7	0.8
25	M5×0.8	1.5
32	M6×1.0	3.0



Compendium of HFC Series

Seven kinds of bore size

Bore size: 16, 20, 25, 32, 40, 50, 63

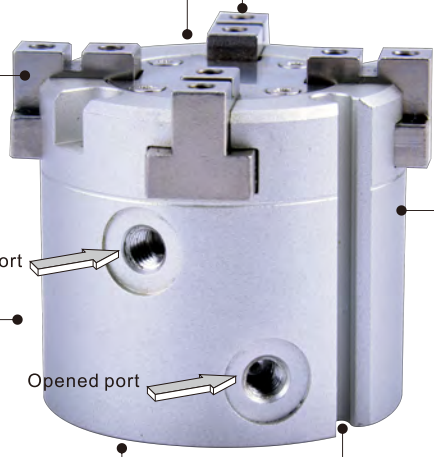
Three kinds of finger type

Two fingers (I Type) | Three fingers (Y Type) | Four fingers (X Type)



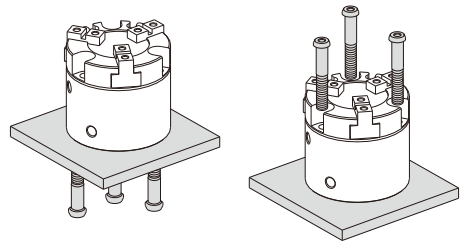
Cuniform block construct

Cuniform block is adopted in the interior of the air gripper to afford larger gripper force.



Can be mounted from two directions

Tail installation (thread hole) | Front installation (thru.hole)



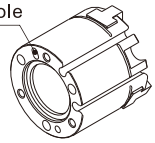
Bumper design

The bumper is adopted in the front of piston, which can reduce the noise of metal bump.

With positioning hole

A positioning hole is attached to the bottom of the body, which can improve the precision and the consistency of repeated dismounting and positioning.

The positioning hole



With roundness magnetic switch slots

The roundness magnetic switch slots convenient to install CMSH\DMSH\EMSH type inducting switch.

Gripping force and stroke

Model		Gripping force per finger Effective valve(N)		Opening/Closing stroke (Both sides)(mm)
		Internal	External	
2 grippers	HFCI16	23	21	4
	HFCI20	42	37	4
	HFCI25	71	63	6
	HFCI32	123	111	8
	HFCI40	195	177	8
	HFCI50	306	280	12
	HFCI63	537	502	16
3 grippers	HFCY16	16	14	4
	HFCY20	28	25	4
	HFCY25	47	42	6
	HFCY32	82	74	8
	HFCY40	130	118	8
	HFCY50	204	187	12
	HFCY63	359	335	16
4 grippers	HFCX16	12	10	4
	HFCX20	21	19	4
	HFCX25	35	31	6
	HFCX32	61	55	8
	HFCX40	97	88	8
	HFCX50	153	140	12
	HFCX63	268	251	16

Note) The gripping force in the above table is in the working pressure of 0.5MPa, and with a gripping point of L=20mm(Φ16~Φ25) or L=30mm(Φ32~Φ63).

Add) Please refer to page 533 for the definition of "L".

Installation and application

1. Dirty substances in the pipe must be eliminated before air gripper is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder shall be filtered to 40μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the air gripper is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

Air gripper(parallel open/close style)

HFC Series

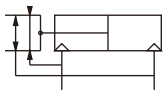


Specification

Bore size (mm)	16	20	25	32	40	50	63
Acting type	Double acting						
Fluid	Air(to be filtered by 40μm filter element)						
Operating pressure	0.2~0.7MPa(28~100psi)(2.0~7.0bar)			0.15~0.7MPa(22~100psi)(1.5~7.0bar)			
Temperature ℃	-20~70						
Lubrication	Not required						
Repeatability mm	±0.01						
Max. frequency	120(c.p.m)			60(c.p.m)			
Sensor switches	CMSH\DMSH\EMSH [Note]						
Port size	M3×0.5	M5×0.8					

[Note] Sensor switch should be ordered additionally, please refer to P576 for detail of sensor switch.

Symbol



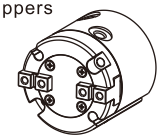
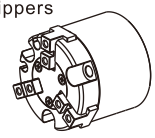
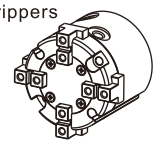
Product feature

1. Cuniform block is adopted in the interior of the air gripper to afford larger gripper force.
2. The bumper is adopted in the front of piston, which can reduce the noise of metal bump.
3. A positioning hole is attached to the bottom of the body, which can improve the precision and the consistency of repeated dismounting and positioning.
4. Precision repeating snatch which adopted roboticized equipment.
5. Kinds of series and styles for you to choice which snatch multiform workpiece.

Ordering code

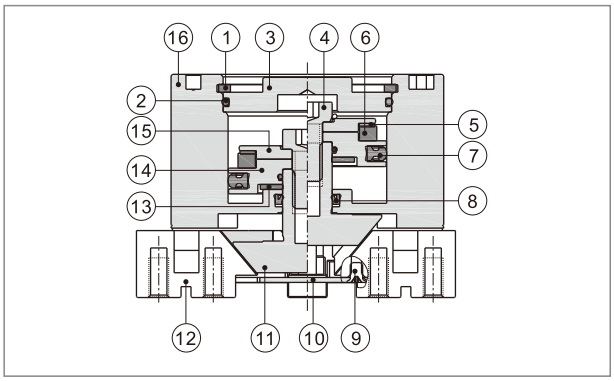
HFC Y 20

① ② ③

①Model	②Finger type			③Bore size
HFC: Air finger (Double acting, parallel type)	I: Two grippers 	Y: Three grippers 	X: Four grippers 	16 20 25 32 40 50 63

Note: HFC series are all attached with magnet.

Inner structure and material of major parts

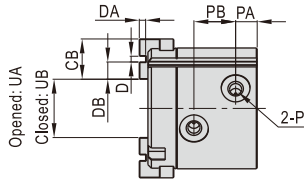


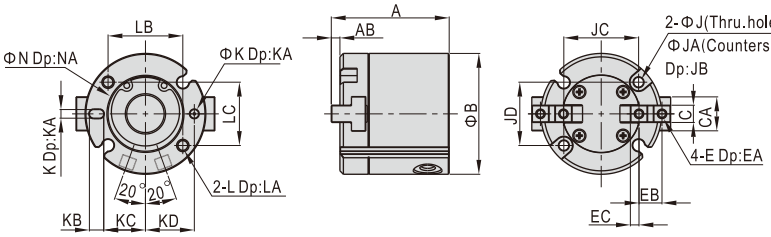
NO.	Item	Material
1	C clip	Spring steel
2	O-ring	NBR
3	Back cover	Aluminum alloy
4	Screw	Carbon steel
5	Magnet washer	NBR
6	Magnet	Sintered metal(Neodymium-iron-boron)
7	Piston seal	NBR
8	Rod packing	NBR
9	Countersink screw	Stainless steel
10	Cover blank	Stainless steel
11	Piston rod	Stainless steel
12	Gripper	Stainless steel
13	Bumper	TPU
14	Piston	Aluminum alloy
15	Magnet holder	Aluminum alloy
16	Body	Aluminum alloy

Dimensions

Two grippers

Φ16~Φ25



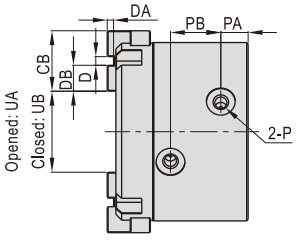


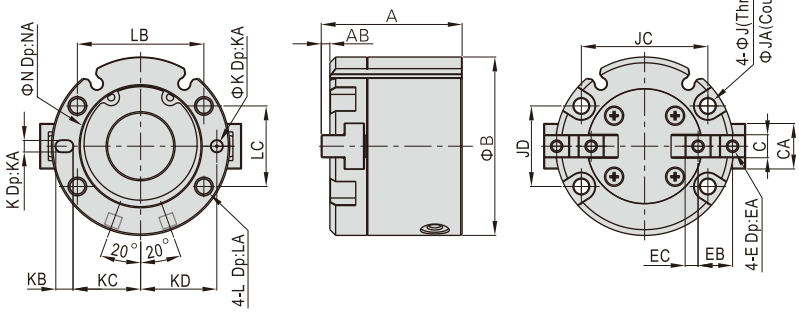
Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA
HFCI16	35	3	30	$5^{-0.01}_{-0.03}$	8	10	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	4	M3×0.5	5
HFCI20	39	3	36	$6^{-0.01}_{-0.03}$	10	12	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	5	M3×0.5	5
HFCI25	41	3	42	$6^{-0.01}_{-0.03}$	12	14	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	6	M3×0.5	5

Model\Item	EB	EC	J	JA	JB	JC	JD	K	KA	KB	KC	KD
HFCI16	6	2	3.4	6	6	18	16	$2^{+0.04}_{+0.01}$	2	3	11	12.5
HFCI20	7	2.5	3.4	6	6	24	18	$2^{+0.04}_{+0.01}$	2	3	13	14.5
HFCI25	8	3	3.4	6	6	26	22	$3^{+0.04}_{+0.01}$	3	5	14.5	17

Model\Item	L	LA	LB	LC	N	NA	P	PA	PB	UA	UB
HFCI16	M4×0.7	8	18	16	$17^{+0.05}_{0}$	1.5	M3×0.5	7	10	14	10
HFCI20	M4×0.7	8	24	18	$21^{+0.05}_{0}$	1.5	M5×0.8	7	13	16	12
HFCI25	M4×0.7	8	26	22	$26^{+0.05}_{0}$	1.5	M5×0.8	7.5	14.5	20	14

Φ32~Φ63



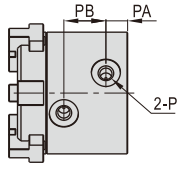


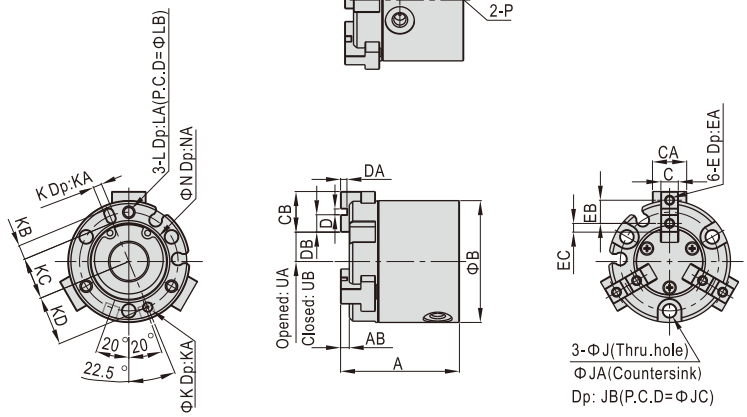
Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA
HFCI32	45	3	55	$8^{-0.01}_{-0.03}$	14	20	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8
HFCI40	49	3	62	$8^{-0.01}_{-0.03}$	16	21	$3^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8
HFCI50	57	3	70	$10^{-0.01}_{-0.03}$	18	24	$4^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	10	M5×0.8	9
HFCI63	68	4	86	$12^{-0.01}_{-0.03}$	24	28	$6^{+0.04}_{+0.01}$	$3^{+0.2}_{0}$	11	M5×0.8	9

Model\Item	EB	EC	J	JA	JB	JC	JD	K	KA	KB	KC	KD
HFCI32	11	4.5	4.2	8	9	38	25	$3^{+0.04}_{+0.01}$	3	5	20.5	23
HFCI40	12	4.5	5.2	9.5	9	44	28	$4^{+0.04}_{+0.01}$	4	6	23.5	26.5
HFCI50	14	5	5.2	9.5	12	52	34	$4^{+0.04}_{+0.01}$	4	6	28	31
HFCI63	17	5.5	5.2	9.5	14	66	38	$5^{+0.04}_{+0.01}$	5	7	34.5	38

Model\Item	L	LA	LB	LC	N	NA	P	PA	PB	UA	UB
HFCI32	M5×0.8	10	38	25	$34^{+0.05}_{0}$	2	M5×0.8	8.5	16	24	16
HFCI40	M6×1.0	12	44	28	$42^{+0.05}_{0}$	2	M5×0.8	9.5	17.5	28	20
HFCI50	M6×1.0	12	52	34	$52^{+0.05}_{0}$	2	M5×0.8	9.5	21	34	22
HFCI63	M6×1.0	12	66	38	$65^{+0.05}_{0}$	2.5	M5×0.8	12	24	46	30

Three grippers





Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA
HFCY16	35	3	30	$5^{-0.01}_{-0.03}$	8	10	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	4	M3×0.5	5
HFCY20	39	3	36	$6^{-0.01}_{-0.03}$	10	12	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	5	M3×0.5	5
HFCY25	41	3	42	$6^{-0.01}_{-0.03}$	12	14	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	6	M3×0.5	5
HFCY32	45	3	52	$8^{-0.01}_{-0.03}$	14	20	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8
HFCY40	49	3	62	$8^{-0.01}_{-0.03}$	16	21	$3^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8
HFCY50	57	3	70	$10^{-0.01}_{-0.03}$	18	24	$4^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	10	M5×0.8	9
HFCY63	68	4	86	$12^{-0.01}_{-0.03}$	24	28	$6^{+0.04}_{+0.01}$	$3^{+0.2}_{0}$	11	M5×0.8	9

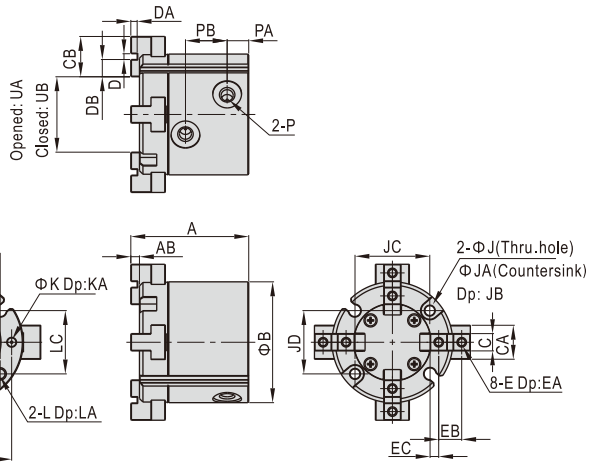
Model\Item	EB	EC	J	JA	JB	JC	K	KA	KB	KC	KD	L
HFCY16	6	2	3.4	6	6	25	$2^{+0.04}_{+0.01}$	2	3	11	12.5	M3×0.5
HFCY20	7	2.5	3.4	6	6	29	$2^{+0.04}_{+0.01}$	2	3	13	14.5	M3×0.5
HFCY25	8	3	4.5	8	9	34	$3^{+0.04}_{+0.01}$	3	5	14.5	17	M4×0.7
HFCY32	11	4.5	4.5	8	9	44	$3^{+0.04}_{+0.01}$	3	5	19.5	22	M4×0.7
HFCY40	12	4.5	5.5	9.5	9	53	$4^{+0.04}_{+0.01}$	4	6	23.5	26.5	M5×0.8
HFCY50	14	5	5.5	9.5	12	62	$4^{+0.04}_{+0.01}$	4	6	28	31	M5×0.8
HFCY63	17	5.5	6.6	11	14	76	$5^{+0.04}_{+0.01}$	5	7	34.5	38	M6×1.0

Model\Item	LA	LB	N	NA	P	PA	PB	UA	UB
HFCY16	6	25	$17^{+0.05}_{0}$	1.5	M3×0.5	7	10	7	5
HFCY20	6	29	$21^{+0.05}_{0}$	1.5	M5×0.8	7	13	8	6
HFCY25	8	34	$26^{+0.05}_{0}$	1.5	M5×0.8	7.5	14.5	10	7
HFCY32	8	44	$34^{+0.05}_{0}$	2	M5×0.8	8.5	16	12	8
HFCY40	10	53	$42^{+0.05}_{0}$	2	M5×0.8	9.5	17.5	14	10
HFCY50	10	62	$52^{+0.05}_{0}$	2	M5×0.8	9.5	21	17	11
HFCY63	12	76	$65^{+0.05}_{0}$	2.5	M5×0.8	12	24	23	15

HFC Series

Four grippers

Φ16~Φ25

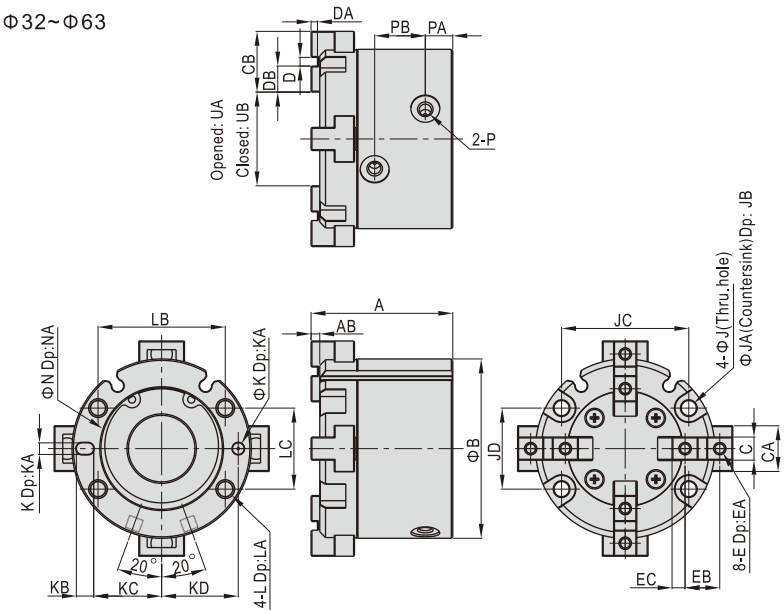


Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA
HFCX16	35	3	30	$5^{-0.01}_{-0.03}$	8	10	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	4	M3×0.5	5
HFCX20	39	3	36	$6^{-0.01}_{-0.03}$	10	12	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	5	M3×0.5	5
HFCX25	41	3	42	$6^{-0.01}_{-0.03}$	12	14	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	6	M3×0.5	5

Model\Item	EB	EC	J	JA	JB	JC	JD	K	KA	KB	KC	KD
HFCX16	6	2	3.4	6	6	18	16	$2^{+0.05}_{0}$	2	3	11	12.5
HFCX20	7	2.5	3.4	6	6	24	18	$2^{+0.05}_{0}$	2	3	13	14.5
HFCX25	8	3	3.4	6	6	26	22	$3^{+0.05}_{0}$	3	5	14.5	17

Model\Item	L	LA	LB	LC	N	NA	P	PA	PB	UA	UB
HFCX16	M4×0.7	8	18	16	$17^{+0.05}_{0}$	1.5	M3×0.5	7	10	17	13
HFCX20	M4×0.7	8	24	18	$21^{+0.05}_{0}$	1.5	M5×0.8	7	13	19	15
HFCX25	M4×0.7	8	26	22	$26^{+0.05}_{0}$	1.5	M5×0.8	7.5	14.5	26	20

Φ32~Φ63



Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA
HFCX32	45	3	55	$8^{-0.01}_{-0.03}$	14	20	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8
HFCX40	49	3	62	$8^{-0.01}_{-0.03}$	16	21	$3^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8
HFCX50	57	3	70	$10^{-0.01}_{-0.03}$	18	24	$4^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	10	M5×0.8	9
HFCX63	68	4	86	$12^{-0.01}_{-0.03}$	24	28	$6^{+0.04}_{+0.01}$	$3^{+0.2}_{0}$	11	M5×0.8	9

Model\Item	EB	EC	J	JA	JB	JC	JD	K	KA	KB	KC	KD
HFCX32	11	4.5	4.2	8	9	38	25	$3^{+0.04}_{+0.01}$	3	5	20.5	23
HFCX40	12	4.5	5.2	9.5	9	44	28	$4^{+0.04}_{+0.01}$	4	6	23.5	26.5
HFCX50	14	5	5.2	9.5	12	52	34	$4^{+0.04}_{+0.01}$	4	6	28	31
HFCX63	17	5.5	5.2	9.5	14	66	38	$5^{+0.04}_{+0.01}$	5	7	34.5	38

Model\Item	L	LA	LB	LC	N	NA	P	PA	PB	UA	UB
HFCX32	M5×0.8	10	38	25	$34^{+0.05}_{0}$	2	M5×0.8	8.5	16	28	20
HFCX40	M6×1.0	12	44	28	$42^{+0.05}_{0}$	2	M5×0.8	9.5	17.5	32	24
HFCX50	M6×1.0	12	52	34	$52^{+0.05}_{0}$	2	M5×0.8	9.5	21	38	26
HFCX63	M6×1.0	12	66	38	$65^{+0.05}_{0}$	2.5	M5×0.8	12	24	51	36

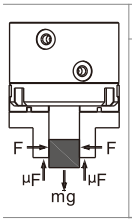
How to select product

Please select pneumatic finger according to the following steps:

①The selection of the effective gripping force >> **②the confirmation of the gripping point**

1. The selection of the gripping force

The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.



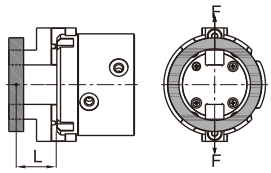
The work-pieces as shown in the left :		μ =0.2	μ =0.1
n: number of gripper F: Gripping force (N) μ: friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity (=9.8m/s²)	The condition that the work-pieces won't drop is: n×μF>mg so: $F>\frac{mg}{n\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{n\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$	$F=\frac{mg}{2\times0.1}\times4=20\times mg$
		10 times of the mass of the gripped objects	20 times of the mass of the gripped objects

Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

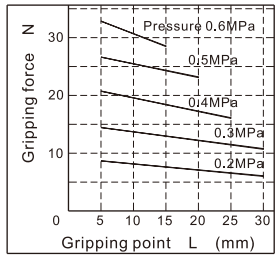
1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

HFC Series

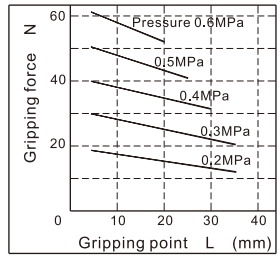
Opened gripping force(I Type)



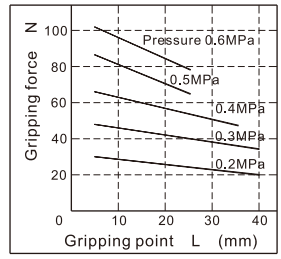
HFCI16



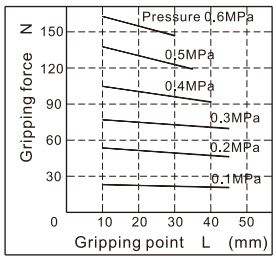
HFCI20



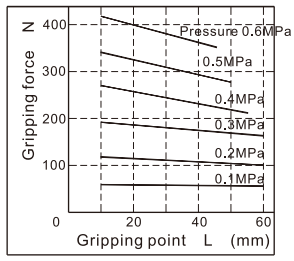
HFCI25



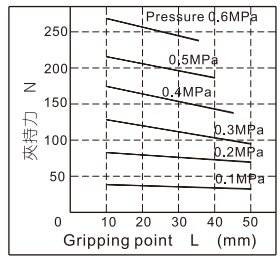
HFCI32



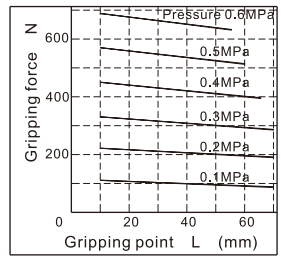
HFCI50



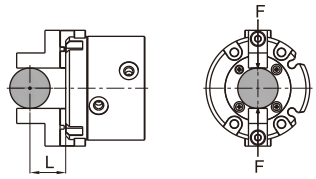
HFCI40



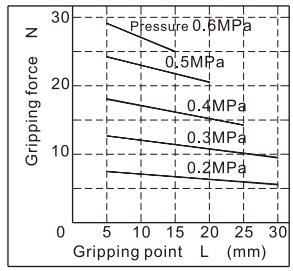
HFCI63



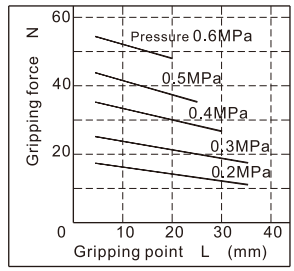
Closed gripping force(I Type)



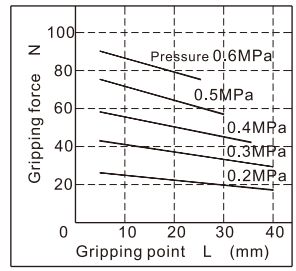
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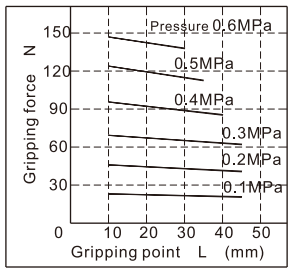
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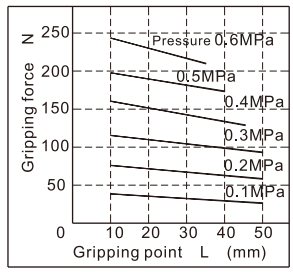
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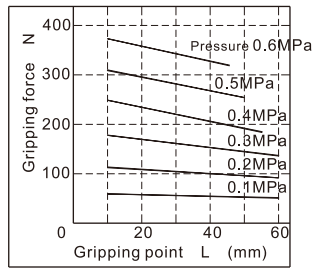
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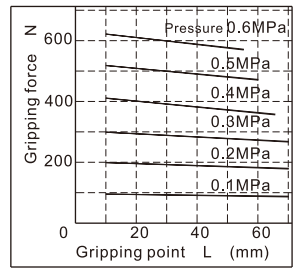
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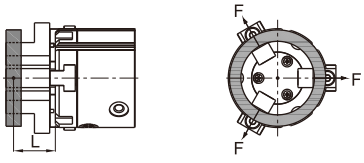
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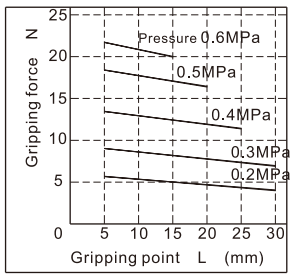
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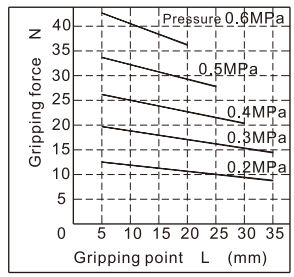
Opened gripping force(Y Type)



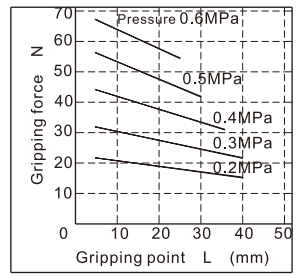
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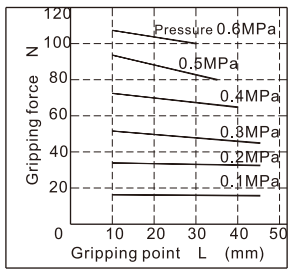
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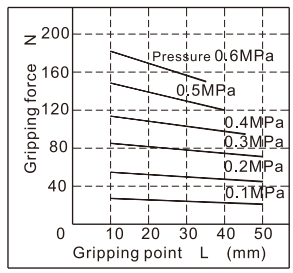
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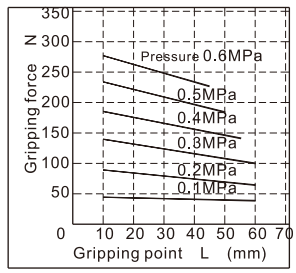
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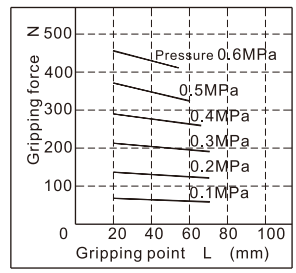
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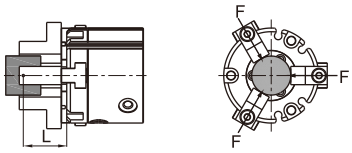
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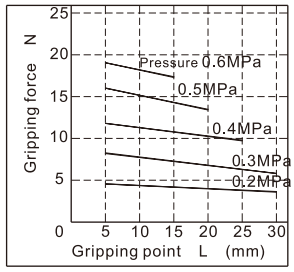
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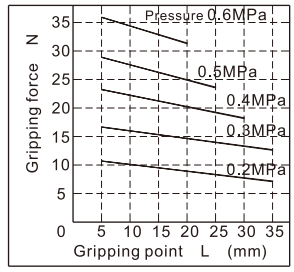
Closed gripping force(Y Type)



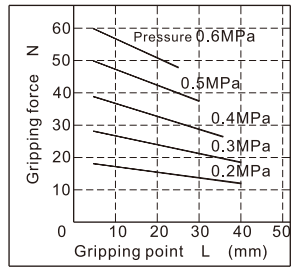
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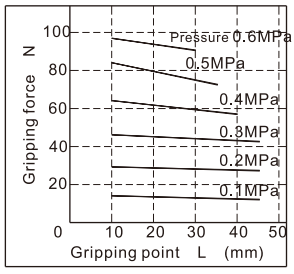
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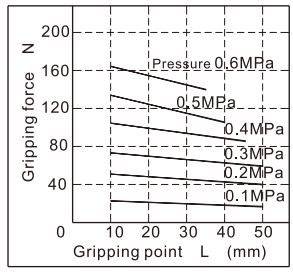
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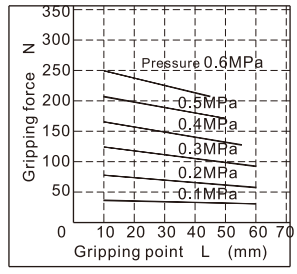
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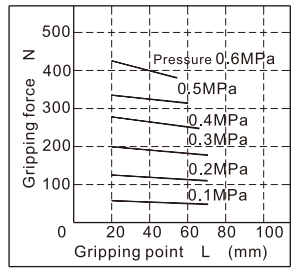
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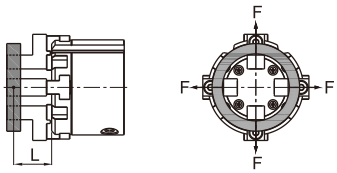
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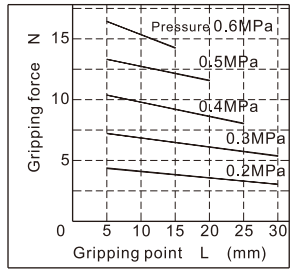
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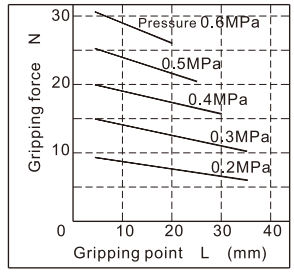
Opened gripping force(X Type)



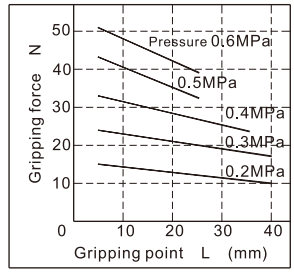
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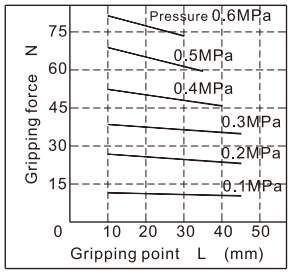
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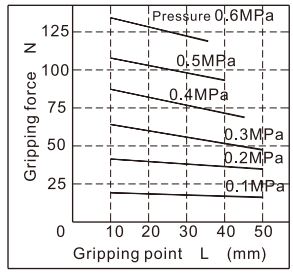
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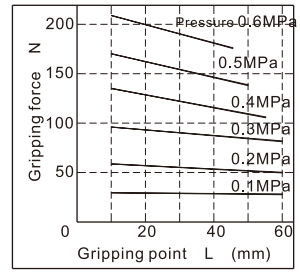
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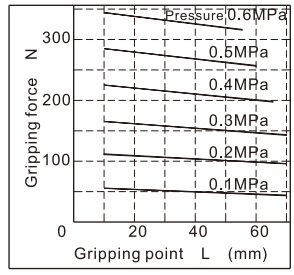
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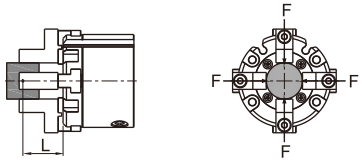
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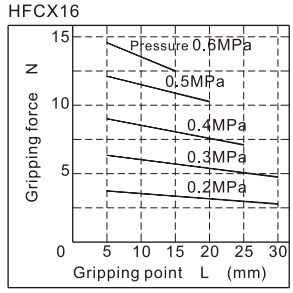
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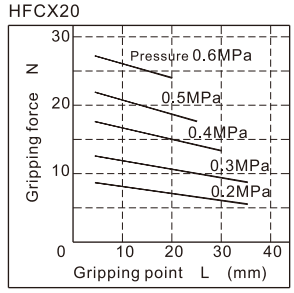
Closed gripping force(X Type)



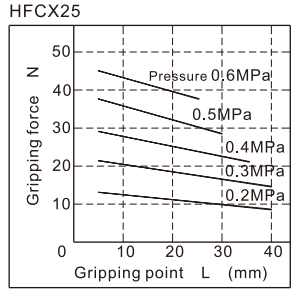
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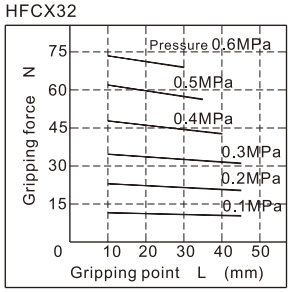
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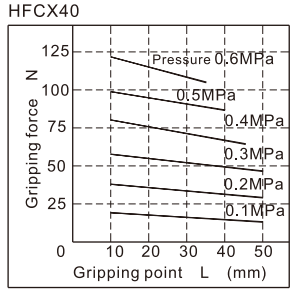
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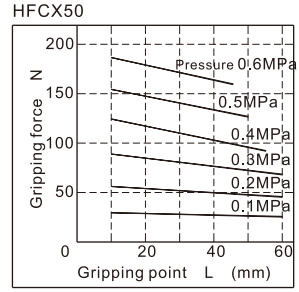
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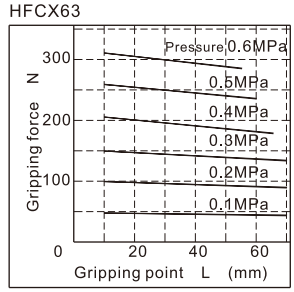
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HFCX50



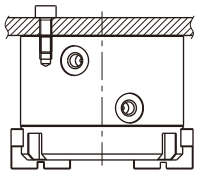
HFCX63



Installation and application

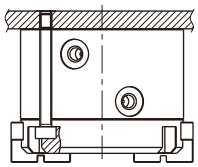
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. There are several kinds of installation method, and the locking torgue of fastening screw must be within the prescribed torque range shown in the below chart. If the locking torque is too large, it will cause the dysfunctional. If the locking torque is too small, it will cause the position deviation and fall.

Tail installation type



Model	Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)	The aperture of the positioning bore(mm)	The depth of the positioning bore(mm)
HFCI HFCX	16	M4×0.7	2.1	8	Φ17 $^{+0.05}_{0}$	1.5
	20	M4×0.7	2.1	8	Φ21 $^{+0.05}_{0}$	1.5
	25	M4×0.7	2.1	8	Φ26 $^{+0.05}_{0}$	1.5
	32	M5×0.8	4.3	10	Φ34 $^{+0.05}_{0}$	2
	40	M6×1.0	7.3	12	Φ42 $^{+0.05}_{0}$	2
	50	M6×1.0	7.3	12	Φ52 $^{+0.05}_{0}$	2
	63	M6×1.0	7.3	12	Φ65 $^{+0.05}_{0}$	2.5
HFCY	16	M3×0.5	0.88	6	Φ17 $^{+0.05}_{0}$	1.5
	20	M3×0.5	0.88	6	Φ21 $^{+0.05}_{0}$	1.5
	25	M4×0.7	2.1	8	Φ26 $^{+0.05}_{0}$	1.5
	32	M4×0.7	2.1	8	Φ34 $^{+0.05}_{0}$	2
	40	M5×0.8	4.3	10	Φ42 $^{+0.05}_{0}$	2
	50	M5×0.8	4.3	10	Φ52 $^{+0.05}_{0}$	2
	63	M6×1.0	7.3	12	Φ65 $^{+0.05}_{0}$	2.5

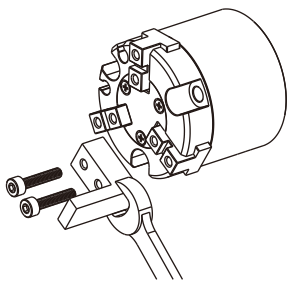
The installation of the front through hole



Model	Bore size	The bolts type	Max. locking moment(Nm)
HFCI HFCX	16	M3×0.5	0.88
	20	M3×0.5	0.88
	25	M3×0.5	0.88
	32	M4×0.7	2.1
	40	M5×0.8	4.3
	50	M5×0.8	4.3
	63	M5×0.8	4.3
HFCY	16	M3×0.5	0.88
	20	M3×0.5	0.88
	25	M4×0.7	2.1
	32	M4×0.7	2.1
	40	M5×0.8	4.3
	50	M5×0.8	4.3
	63	M6×1.0	7.3

6. The installation method of the gripping jaw fittings
When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.

Install the gripping jaw fittings



Bore size	The bolts type	Max. locking moment(Nm)
16	M3×0.5	0.59
20	M3×0.5	0.59
25	M3×0.5	0.59
32	M4×0.7	1.4
40	M4×0.7	1.4
50	M5×0.8	2.8
63	M5×0.8	2.8

Compendium of HFT Series

Rack & pinion mechanism

The gripper opening or closing can be precisely synchronized with the rack & pinion mechanism.

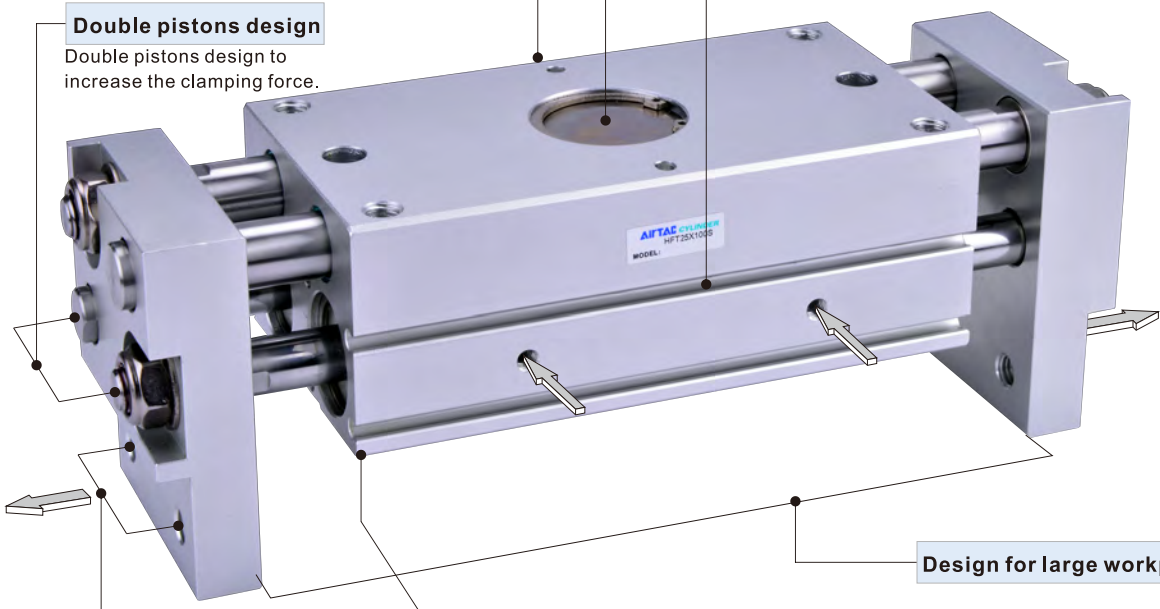
With magnetic switch slots

Five kinds of bore size

Bore size: 10,16,20,25,32

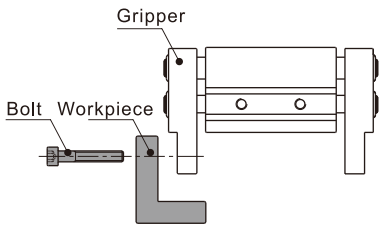
Double pistons design

Double pistons design to increase the clamping force.

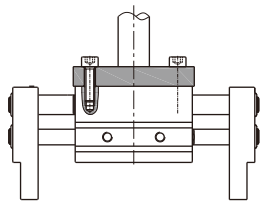


Design for large workpiece

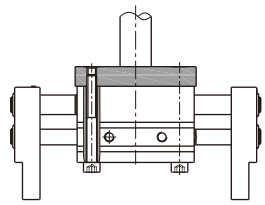
Convenience to mount workpiece



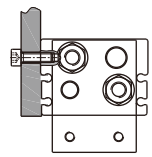
Be mounted from three directions



Axial mounted(thread hole)



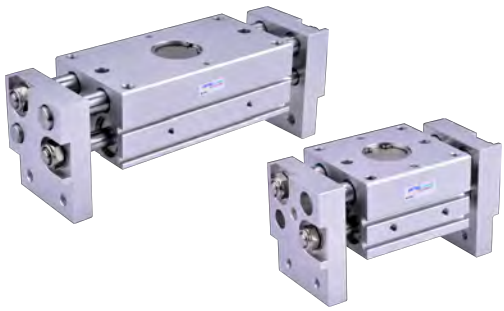
Axial mounted(through hole)



Besides mounted

Air gripper(wide style)

HFT Series



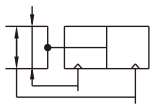
Specification

Bore size (mm)	10	16	20	25	32
Acting type	Double acting				
Fluid	Air(to be filtered by 40μm filter element)				
Operating pressure	0.25~0.7MPa(36~100psi)	0.15~0.7MPa(22~100psi)			
Proof pressure	1.2MPa(175psi)				
Temperature	-20~70℃				
Lubrication	Cylinder：No necessary				
Cushion type	Bumper				
Repeatablity	±0.1mm				
Gripping force (N)[Note1]	14	45	74	131	228
Max. frequency	40 cycle/minute				20 cycle/minute
Port size	M5×0.8				1/8"

[Note1] Pressure 0.5MPa and gripping length 40mm(Ø10 ~ Ø25) or 80mm(Ø32).

Add) Refer to P576 for detail of sensor switch.

Symbol



Product feature

1. Design for large workpiece.
2. Double pistons design to increase the clamping force.
3. Magnet is included in the standard configuration.
4. The gripper opening or closing can be precisely synchronized with the rack & pinion mechanism.

Stroke

Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)
10	20 30 40 60	60
16	30 40 60 80	80
20	40 60 80 100	100
25	40 60 80 100	100
32	60 80 100 150	150

[Note] Consult us for non–standard stroke.

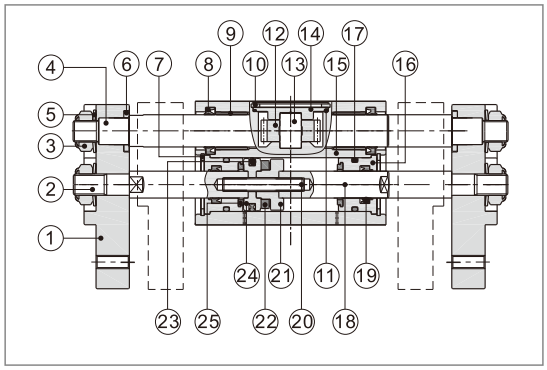
Ordering code

HFT 10 ×20 S G

① ② ③ ④ ⑤

①Model	②Bore size	③Stroke	④Magnet	⑤Thread type
HFT: Wide air gripper (Double acting)	10	20 30 40 60	S: With magnet	No this code
	16	30 40 60 80		
	20	40 60 80 100		
	25	40 60 80 100		
	32	60 80 100 150		G: G Thread

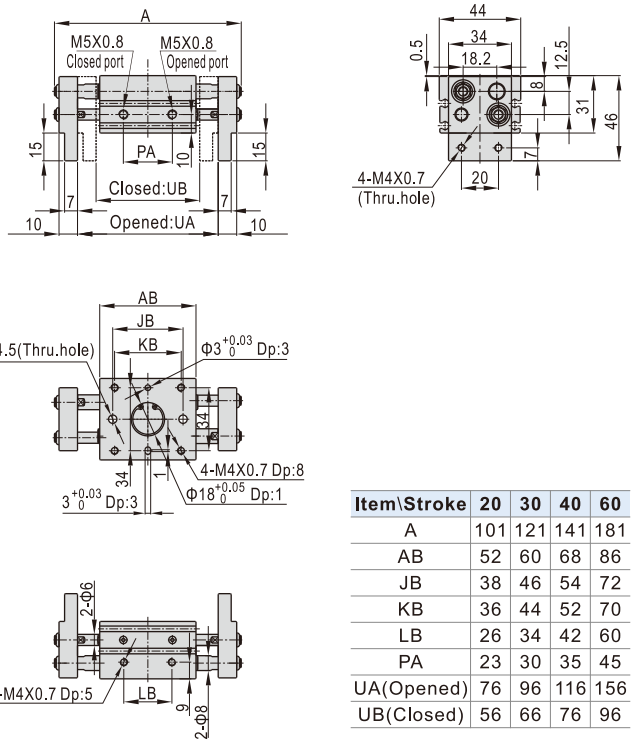
Inner structure and material of major parts



NO.	Item	Material	NO.	Item	Material
1	Faceplate	Aluminum alloy	14	Gear cover	Carbon steel
2	Piston rod A	Stainless steel	15	Body	Aluminum alloy
3	Locknut	Carbon steel	16	Front cover	Aluminum alloy
4	Leader	Stainless steel	17	O-ring	NBR
5	Washer	Spring steel	18	Piston rod B	Stainless steel
6	Gasket	Carbon steel	19	O-ring	NBR
7	C clip	Spring steel	20	Joint bolt	Stainless steel
8	Dustproof ring	TPU	21	Magnet seat	Brass/Aluminum alloy
9	Bearing	Wear resistant material	22	Magnet	Sintered metal (Neodymium-iron-boron)
10	C clip	Spring steel			
11	O-ring	NBR	23	Piston O-ring	NBR
12	Gear	Chrome molybdenum steel	24	Piston	Brass/Aluminum alloy
13	Gear axes	Bearing steel	25	Bumper	TPU

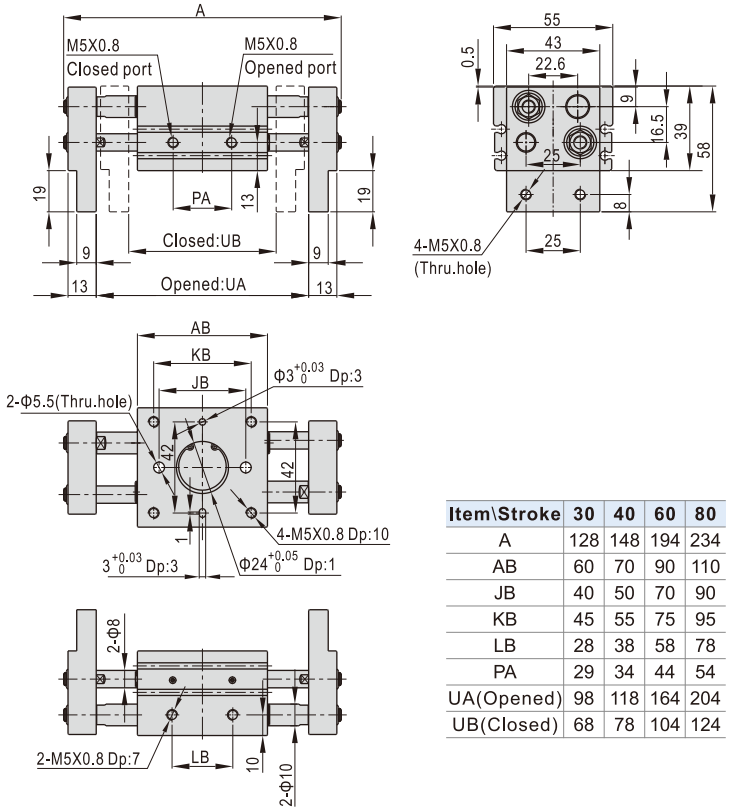
Dimensions

HFT10



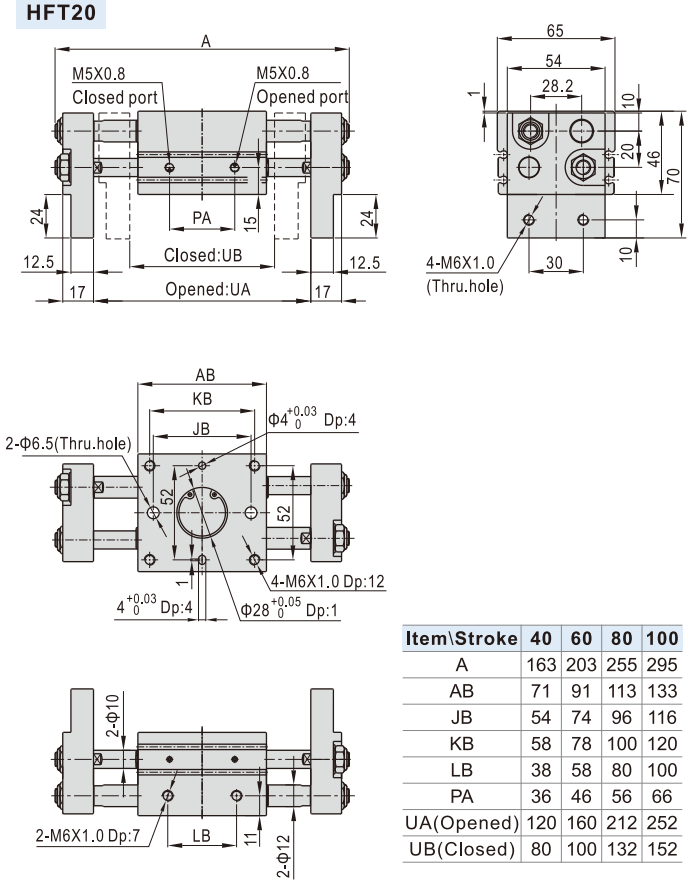
Item\Stroke	20	30	40	60
A	101	121	141	181
AB	52	60	68	86
JB	38	46	54	72
KB	36	44	52	70
LB	26	34	42	60
PA	23	30	35	45
UA(Opened)	76	96	116	156
UB(Closed)	56	66	76	96

HFT16



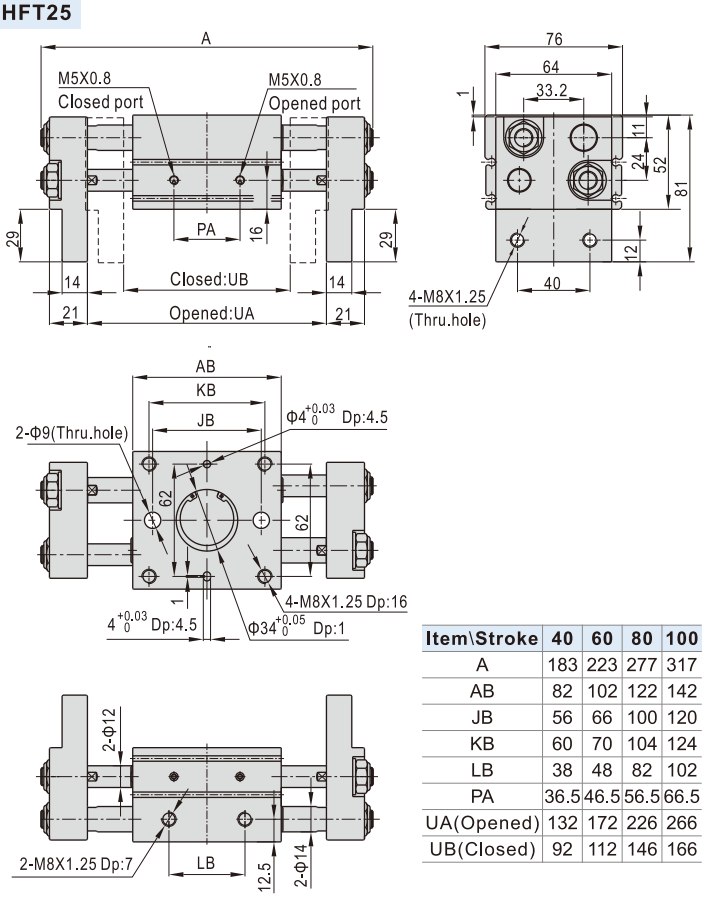
Item\Stroke	30	40	60	80
A	128	148	194	234
AB	60	70	90	110
JB	40	50	70	90
KB	45	55	75	95
LB	28	38	58	78
PA	29	34	44	54
UA(Opened)	98	118	164	204
UB(Closed)	68	78	104	124

HFT20



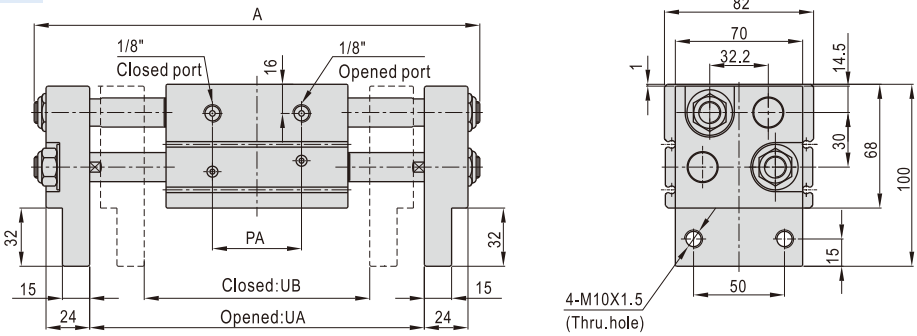
Item\Stroke	40	60	80	100
A	163	203	255	295
AB	71	91	113	133
JB	54	74	96	116
KB	58	78	100	120
LB	38	58	80	100
PA	36	46	56	66
UA(Opened)	120	160	212	252
UB(Closed)	80	100	132	152

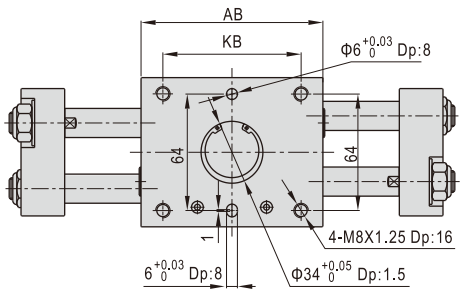
HFT25

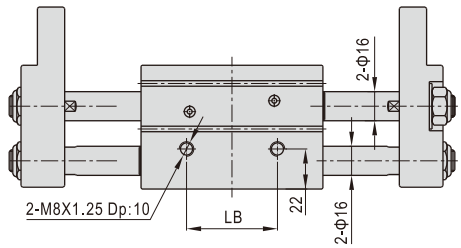


Item\Stroke	40	60	80	100
A	183	223	277	317
AB	82	102	122	142
JB	56	66	100	120
KB	60	70	104	124
LB	38	48	82	102
PA	36.5	46.5	56.5	66.5
UA(Opened)	132	172	226	266
UB(Closed)	92	112	146	166

HFT32







Item\Stroke	A	AB	KB	LB	PA	UA(Opened)	UB(Closed)
60	245	100	76	50	48	184	124
80	285	120	86	60	58	224	144
100	343	158	134	108	68	282	182
150	443	208	184	158	93	382	232

How to select product

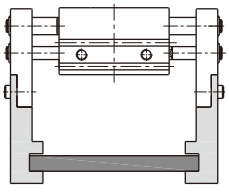
1.Please select pneumatic finger according to the following steps:

Confirmation of conditions > **Select possible type according to the workpiece length** > **Calculation of required gripping force** > **Selection of model by gripping force graph**

Workpiece form
Diameter x Length
200 mm x 20 mm plate

→ Workpiece length: From the dimensions of models that have an opening width of 200 mm or more
HFT16×80
HFT20×80/HFT20×100
HFT25×80/HFT25×100

Workpiece mass: 0.3 kg

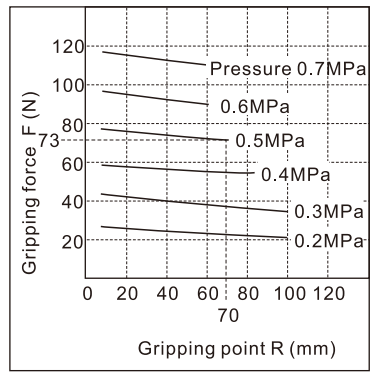


→ 1.Although conditions differ according to the workpiece shape and the coefficient of friction between the attachments and the workpiece, select a model that can provide a gripping force of 10 to 20 times the workpiece mass, or more.
2. Further allowance should be provided when great acceleration or impact is expected during workpiece transfer.
Example: For setting the gripping force to be at least 20 times the workpiece mass:
Required gripping force = 0.3kg x 20 x 9.8 m/s^2 ≅ 60 N

Gripping point R = 70 mm →

Operating pressure: 0.5 MPa →

HFT20×80/HFT20×100

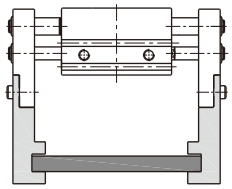


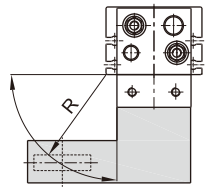
1.Selecting the HFT20×80 A gripping force of 73 N is obtained from the intersection point of gripping point position R= 70 and a pressure 0.5 MPa.
2.The gripping force is 24 times greater than the workpiece mass, and therefore satisfies a gripping force setting value of 20 times or more.

2. Gripping Point

2.1) The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.

2.2) If operated with the workpiece gripping point beyond the indicated ranges, the load that will be applied to the fingers or the guide will become excessively unbalanced. As a result, the fingers could become loosened and adversely affect the service life of the unit.

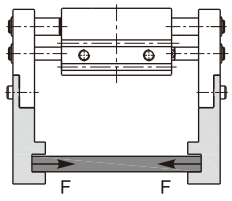




R: Gripping position (mm)

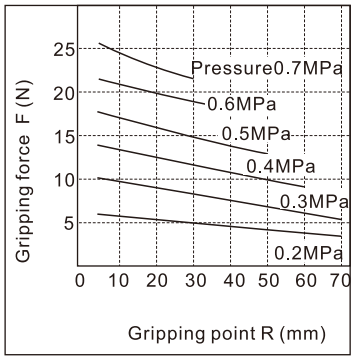
3. Effective Gripping Force

The gripping force shown in the tables represents the gripping force of one finger when all fingers and attachments are in contact with the work.

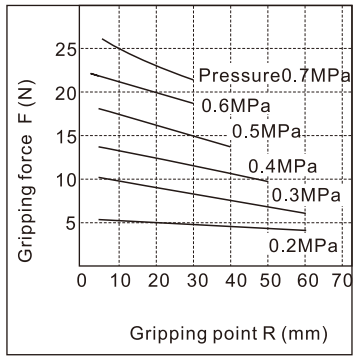


F = one finger thrust.

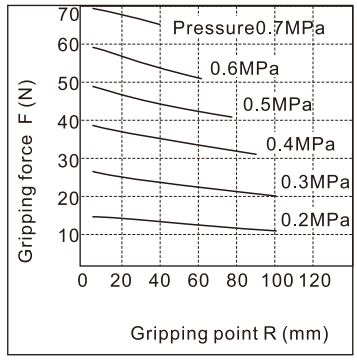
HFT10×20/HFT10×30



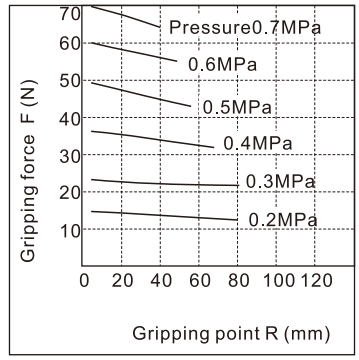
HFT10×40/HFT10×60



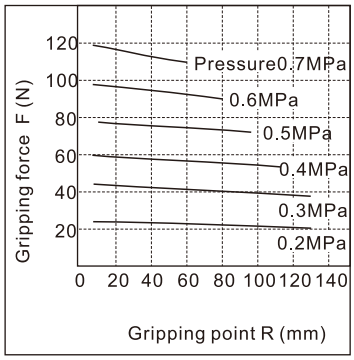
HFT16×30/HFT16×40



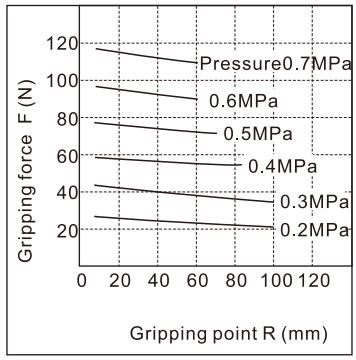
HFT16×60/HFT16×80



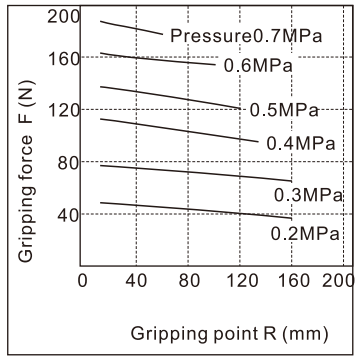
HFT20×40/HFT20×60



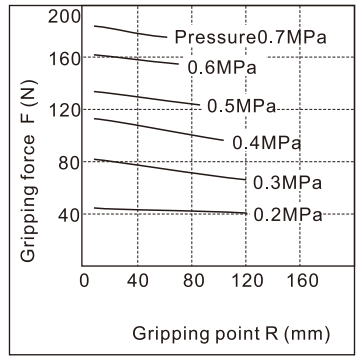
HFT20×80/HFT20×100



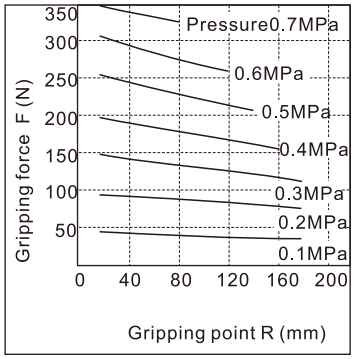
HFT25×40/HFT25×60



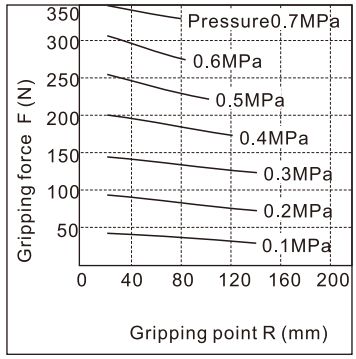
HFT25×80/HFT25×100



HFT32×60/HFT32×80

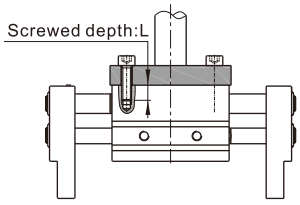


HFT32×100/HFT32×150



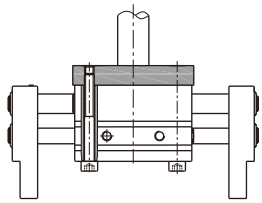
Installation and application

1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. There are several kinds of installation method, and the locking torque of fastening screw must be within the prescribed torque range shown in the below chart. If the locking torque is too large, it will cause the dysfunctional. If the locking torque is too small, it will cause the position deviation and fall.



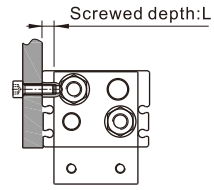
Axial mounted(thread hole)

Bore size	The bolts type	Max. locking moment (Nm)	Max. screwed depth (mm)
10	M4×0.7	2.1	8
16	M5×0.8	4.3	10
20	M6×1.0	7.3	12
25	M8×1.25	17.7	16
32	M8×1.25	17.7	16



Axial mounted(through hole)

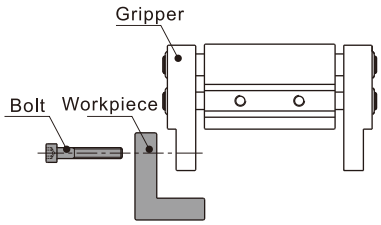
Bore size	The bolts type	Max. locking moment (Nm)
10	M4×0.7	2.1
16	M5×0.8	4.3
20	M6×1.0	7.3
25	M8×1.25	17.7
32	No Axial mounted(through hole)	



Besides mounted

Bore size	The bolts type	Max. locking moment (Nm)	Max. screwed depth (mm)
10	M4×0.7	1.4	5
16	M5×0.8	2.8	7
20	M6×1.0	4.8	7
25	M8×1.25	12	7
32	M8×1.25	12	10

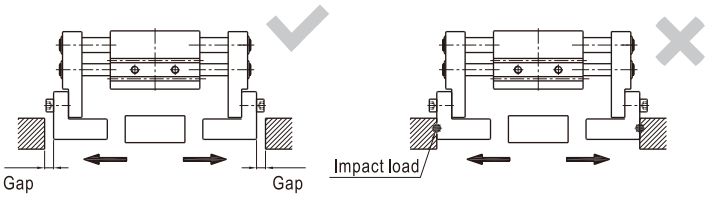
6. The installation method of the gripping jaw fittings
When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.



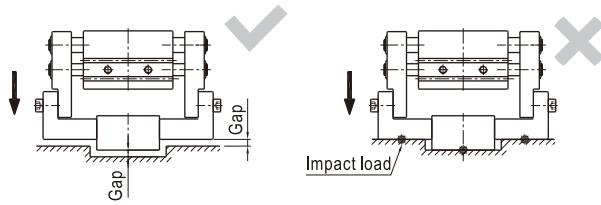
Bore size	The bolts type	Max. locking moment(Nm)
10	M4×0.7	1.4
16	M5×0.8	2.8
20	M6×1.0	4.8
25	M8×1.25	12
32	M10×1.5	24

7. Confirm that there is no external forces exerted on the gripping jaw.
Transverse load acts on the gripping jaw, which will cause impact load and leads to the shaking and damage of gripping jaw. Equip with gaps so that the air gripper will not crash into work-pieces and accessories at the end of its trip.

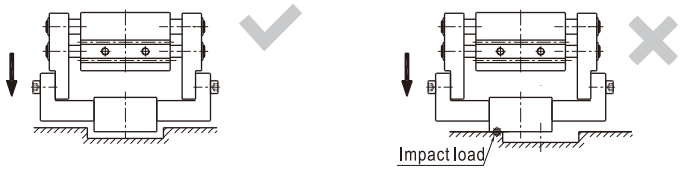
7.1) The end of stroke under the open state of air gripper



7.2) The end of stroke under the move state of air gripper



8. When the work-pieces are inserted, the center line should be coaxial, no offset, in case there are external force generated on gripping jaw. When testing, it is specially required that the manual operation should be reduced, the pressure should be used to run it at a low speed, and guarantee the safety and no impact.



9. Please use the flow control valve to adjust the opening and closing speed of gripping jaw if too fast.
10. People can not enter the movement path of air gripper and articles can not be placed on the path too.
11. Before removing the air gripper, please confirm that it is out of working state, and then discharge of compressed air.

Horizontal rotary clamp cylinder——QDK Series

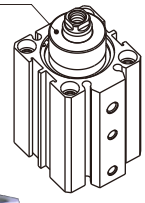
Compendium of QDK Series

Horizontal rotary construct

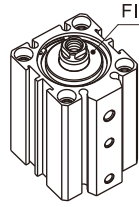
Complete rotation on the horizontal plane, so the rotation stroke is zero.

Two kinds of mounting type

Boss front end cap



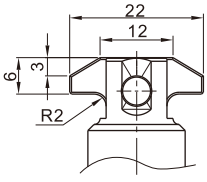
Flush front end cap

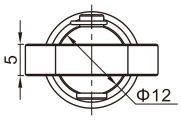


Clamp arm is available

Consult us for details









Stability acting

Double pins in the rotation guide groove to increase stability

Magnetic switch slots around the cylinder body

There are magnetic switch slots around the cylinder body convenient to install inducting switch.

Criteria for selection: Cylinder thrust

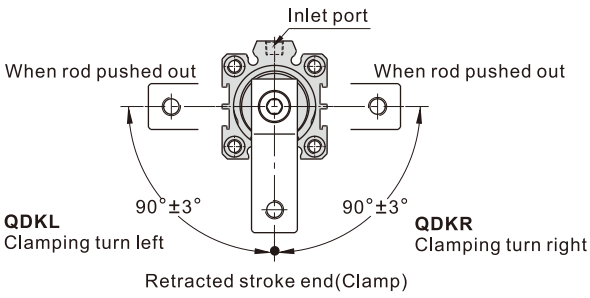
Unit: Newton(N)

Bore size	Rod size	Acting type	Operating pressure(MPa)							
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
20	12	IN(Clamp)	-	20.1	40.2	60.3	80.4	100.5	120.6	140.7
25	12	IN(Clamp)	17.7	55.5	93.3	131.1	168.9	206.7	244.5	282.3
32	12	IN(Clamp)	43.1	111.2	181.3	250.4	319.5	388.6	457.7	526.8
40	16	IN(Clamp)	75.2	180.7	286.2	391.7	497.2	602.7	708.2	813.7

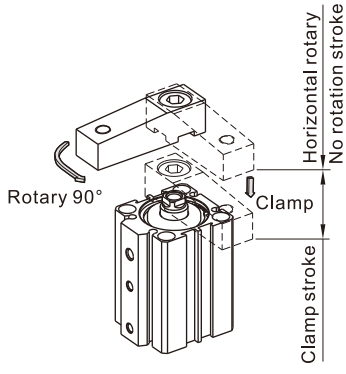
Installation and application

1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder shall be filtered to 40μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust jam cap shall be added in air inlet and outlet ports.
5. To insure the life-span of cylinder and jig, please use flow control valve to control the speed of cylinder.

The definition of rotation direction and angle

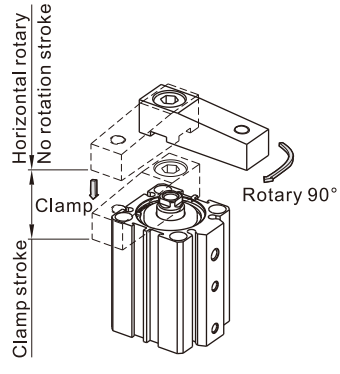


Levorotatory(QDKL):
When the piston of cylinder moves downward, the swivel arms moves anticlockwise, this is called levorotatory.



The order code is **L**

Dextrorotary(QDKR):
When the piston of cylinder moves downward, the swivel arms moves clockwise. this is called dextrorotary.



The order code is **R**

Horizontal rotary clamp cylinder

QDK Series

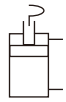


Specification

Bore size(mm)	20	25	32	40
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	0.15~1.0MPa(22~145psi)			
Proof pressure	1.5MPa(220psi)			
Temperature	-20~70℃			
Rotation angle	90°			
Repeatability	±2°			
Rotation direction	Turn left or turn right			
Rotation stroke(mm)	0(Horizontal rotary)			
Clamping stroke (mm)	5			
Cushion type	Bumper			
Port size	M5×0.8			1/8"

Add) please refer to Page 576 for the specific content of sensor switch.

Symbol



Product feature

1. Complete rotation on horizontal plane, so save more space compare with QCK series.
2. Boss front end cap and flush front end cap are available.
3. Double pins in the rotation guide groove to increase stability.
4. There are magnetic switch slots around the cylinder body convenient to install inducting switch.

Ordering code

QDK L 32×5 S U G

1 2 3 4 5 6 7

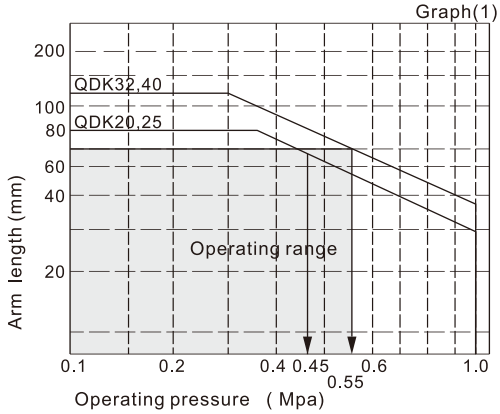
① Model	② Rotation direction	③ Bore size	④ Clamping stroke	⑤ Magnet	⑥Front cover type	⑦ Thread type [Note1]
QDK: Horizontal rotary clamp cylinder	L: Push and turn left R: Push and turn right	20 25 32 40	5: 5mm	S: With magnet	Blank: Boss front end cap U: Flush front end cap	G: G Thread

[Note1] When the thread is standard, the code is blank.

How to select product

1. When arms are to be made separately, their length and weight should be within the following range.
2. Allowable bending moment:
   Use the arm length and operating pressure within graph(1) for allowable bending moment loaded piston rod.

Graph(1)

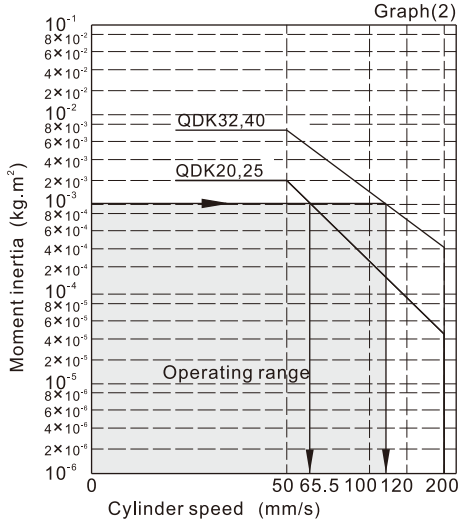


Example: When arm length is 80mm, pressure should be less than
QDK20/25:0.45MPa
QDK32/40:0.55MPa

4. Moment of inertia of cylinder's arm when rotating based on its rotary axis. Please refer page 549 for details.

3. Moment of inertia:
   When the arm is long and heavy, damage of internal parts may be caused due to inertia. Use the inertia moment and cylinder speed within graph(2) based on arm requirments.

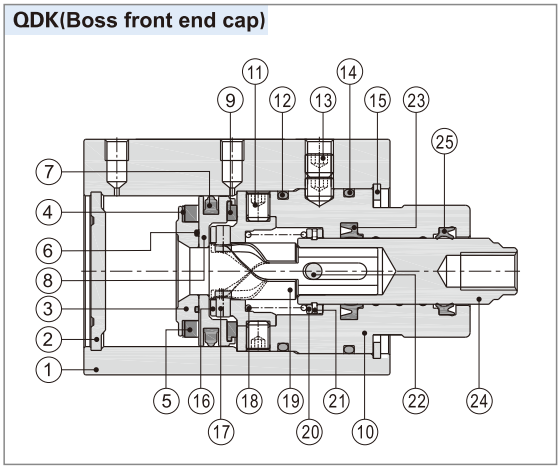
Graph(2)



Example: When arm's moment of inertia is 10^{-3}Kg·m², cylinder speed should be less than
QDK20/25:65.5mm/s
QDK32/40:120mm/s
Note) The average speed of piston= the highest speed of piston/1.6

Inner structure and material of major parts

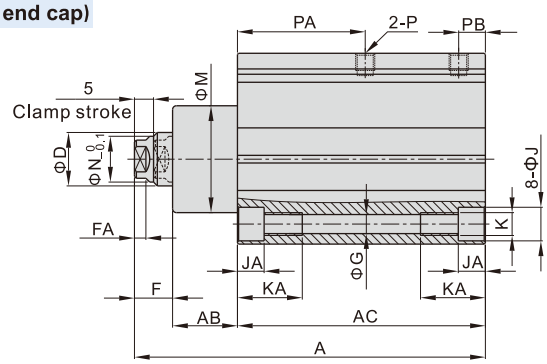
QDK(Boss front end cap)

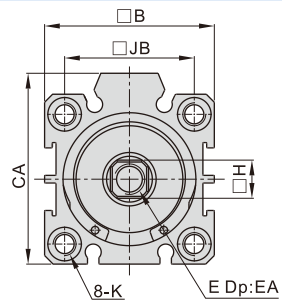


NO.	Item	Material	NO.	Item	Material
1	Body	Aluminum alloy	13	Fixing screw	Carbon steel
2	Back cover	Aluminum alloy	14	O-ring	NBR
3	Magnet holder	Aluminum alloy	15	C clip	Spring steel
4	Magnet washer	NBR	16	Middle seat	SCr440
5	Magnet	Sintered metal (Neodymium-iron-boron)	17	Pin	SUJ2
			18	Spring	Stainless steel
6	O-ring	NBR	19	Rotary axis	Scr440
7	Piston seal	NBR	20	Stop flake	Stainless steel
8	Piston	Aluminum alloy(Φ40)/brass(Other)	21	C clip	Spring steel
9	Bumper	TPU	22	Pin	SUJ2
10	Front cover	Aluminum alloy	23	Front cover packing	NBR
11	Fixing screw	Carbon steel	24	Piston rod	Scr440
12	O-ring	NBR	25	Front cover packing	NBR

Dimensions

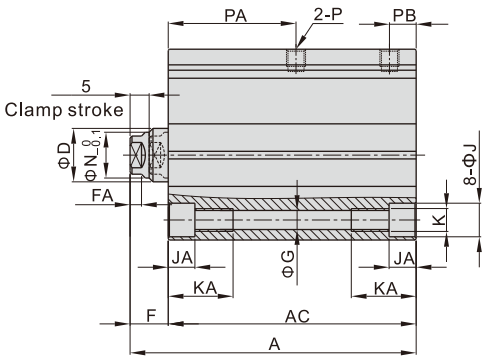
QDK(Boss front end cap)

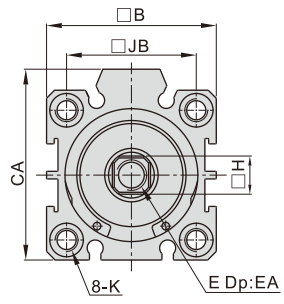




Bore size\Item	A	AB	AC	B	CA	D	E	EA	F	FA	G	H	J	JA	JB	K	KA	M	N	P	PA	PB
20	86.5	16.5	60	34	-	12	M6X1.0	12	10	3	4.2	8	7.3	4.5	24	M5X0.8	14	24	10	M5X0.8	31.5	7
25	86.5	16.5	60	40	-	12	M8X1.25	12	10	3	5.2	10	9	5.5	28	M6X1.0	17	26	-	M5X0.8	31	7
32	92	17	65	44.5	50	14	M8X1.25	12	10	3	5.2	10	9	5.5	34	M6X1.0	17	28	12	M5X0.8	33.5	7
40	98	18	70	52	58.5	16	M8X1.25	12	10	3	6.8	14	10.5	6.5	40	M8X1.25	20	30	-	1/8"	35	9

QDK–U(Flush front end cap)



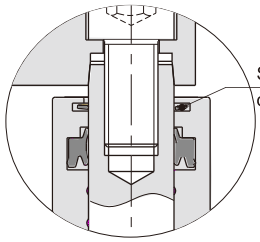


Bore size\Item	A	AC	B	CA	D	E	EA	F	FA	G	H	J	JA	JB	K	KA	N	P	PA	PB
20	70	60	34	-	12	M6X1.0	7.5	10	3	4.2	8	7.3	4.5	24	M5X0.8	14	10	M5X0.8	31.5	7
25	70	60	40	-	12	M8X1.25	8	10	3	5.2	10	9	5.5	28	M6X1.0	17	-	M5X0.8	31	7
32	75	65	44.5	50	14	M8X1.25	10	10	3	5.2	10	9	5.5	34	M6X1.0	17	12	M5X0.8	33.5	7
40	80	70	52	58.5	16	M8X1.25	10	10	3	6.8	14	10.5	6.5	40	M8X1.25	20	-	1/8"	35	9

Compendium of QCK Series

Dustproof and welding slag out desigh

The front cover with stainless steel dust scraping ring, can keep the dust and welding slag out, and protect cylinder internal parts.



Stainless steel dust scraping ring

Two kinds of rod type

Taper type (with clamp arm)



Across flat position rod type (without clamp arm)



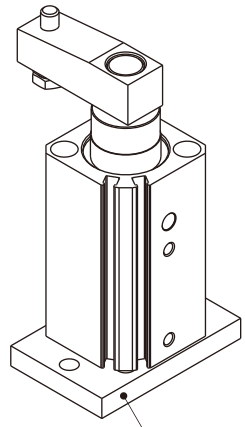
Be used on welding fixture

It can be used on welding fixture, the QPQ surface treatment prevent piston rod damage by welding slag; better than chrome plated piston rod.



Better commonness

The mounting dimension of body is the same as ACQ series, can use ACQ series' accessories.



ACQ series' accessories

Magnetic switch slots around the cylinder body

There are magnetic switch slots around the cylinder body convenient to install inducting switch.

Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size	Rod size	Acting type	Operating pressure(MPa)							
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
12	6	IN(Clamp)	8.5	17.0	25.4	33.9	42.4	50.9	59.4	67.9
		OUT(Release)	11.3	22.6	33.9	45.2	56.5	67.9	79.2	90.4
16	8	IN(Clamp)	15.1	30.2	45.2	60.3	75.4	90.5	105.6	120.6
		OUT(Release)	20.1	40.2	60.3	80.4	100.5	120.6	140.7	160.8
20	12	IN(Clamp)	20.1	40.2	60.3	80.4	100.5	120.6	140.7	160.8
		OUT(Release)	31.4	62.8	94.2	125.7	157.1	188.5	219.9	251.3
25	12	IN(Clamp)	37.8	75.6	113.3	151.1	188.9	226.7	264.4	302.2
		OUT(Release)	49.1	98.2	147.3	196.3	245.4	294.5	343.6	392.7
32	16	IN(Clamp)	60.3	120.6	181.0	241.3	301.6	361.9	422.2	482.5
		OUT(Release)	80.4	160.8	241.3	321.7	402.1	482.5	563.0	643.4
40	16	IN(Clamp)	105.6	211.1	316.7	422.2	527.8	633.3	738.9	844.5
		OUT(Release)	125.7	251.3	377.0	502.7	628.3	754.0	879.6	1005.3
50	20	IN(Clamp)	164.9	329.9	494.8	659.7	824.7	989.6	1154.5	1319.5
		OUT(Release)	196.3	392.7	589.0	785.4	981.7	1178.1	1374.4	1570.8
63	20	IN(Clamp)	280.3	560.6	840.9	1121.2	1401.5	1681.9	1962.2	2242.5
		OUT(Release)	311.7	623.4	935.2	1246.9	1558.6	1870.3	2182.1	2493.8

Installation and application

1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder shall be filtered to 40μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust jam cap shall be added in air inlet and outlet ports.
5. To insure the life-span of cylinder and jig, please use flow control valve to control the speed of cylinder.

Rotary clamp cylinder

QCK Series

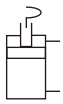


Specification

Bore size(mm)	12	16	20	25	32	40	50	63
Acting type	Double acting							
Fluid	Air(to be filtered by 40μm filter element)							
Operating pressure	0.2~1.0MPa(29~145psi)(2.0~10bar)		0.15~1.0MPa(22~145psi)(1.5~10bar)					
Proof pressure	1.5MPa(215psi)(15bar)							
Temperature	-20~70℃							
Speed range	50~200mm/s							
Rotation angle	90°							
Repeatability	±2°							
Rotation direction	Turn left or turn right							
Rotation stroke(mm)	7.5		9.5		15		19	
Clamping stroke (mm)	10 20		10 20 30		10 20 30 50			
Stroke tolerance	$^{+1.0}_{0}$							
Cushion type	Bumper							
Port size [Note1]	M5×0.8				1/8"		1/4"	

[Note1]G thread is available.
Add) QCK series are all attached with magnet,
please refer to Page 576 for the specific content of sensor switch.

Symbol



Product feature

1. It can be used on welding fixture, the QPQ surface treatment prevent piston rod damage by welding slag; better than chrome plated piston rod.
2. The front cover with stainless steel dust scraping ring, can keep the dust and welding slag out, and protect cylinder internal parts.
3. The mounting dimension of body is the same as ACQ series, can use ACQ series' accessories.

Ordering code

QCK L 32 × 10 S M FB G

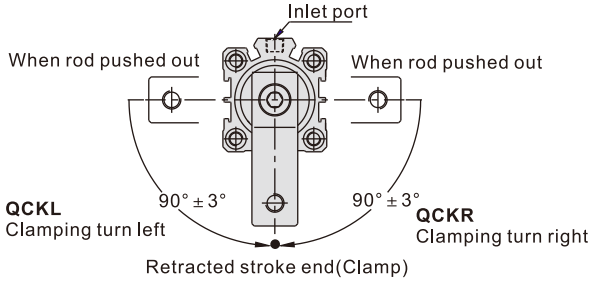
1 2 3 4 5 6 7 8

① Model	② Rotation direction	③ Bore size	④ Clamping stroke	⑤ Magnet	⑥ Rod type	⑦ Mounting type [Note1]	⑧Thread type [Note2]
QCK: Rotary clamp cylinder	L: Push and turn left R: Push and turn right	12	10 20	S: With magnet	Blank: Taper type (with clamp arm) M: Across flat position type(without clamp arm)	Blank: No bracket FB: FB type	G: G Thread
		16	10 20 30				
		20					
		25					
		32	10 20 30 50				
		40					
		50					
		63					

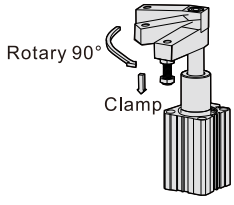
[Note1] Back flange is same as ACQ series (please refer right table), if need front flange, please contact us.
[Note2] When the thread is standard, the code is blank.

Bore size\Accessories	FB	Material	Bore size\Accessories	FB	Material
12	F-ACQ12FA	Aluminum alloy	32	F-ACQ32FA	Aluminum alloy
16	F-ACQ16FA		40	F-ACQ40FA	
20	F-ACQ20FA		50	F-ACQ50FA	
25	F-ACQ25FA		63	F-ACQ63FA	

The definition of rotation direction and angle

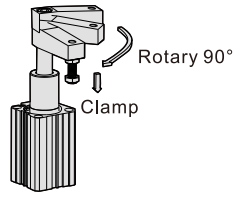


Levorotatory(QCKL):
When the piston of cylinder moves downward, the swivel arms moves anticlockwise, this is called levorotatory.



The order code is **L**

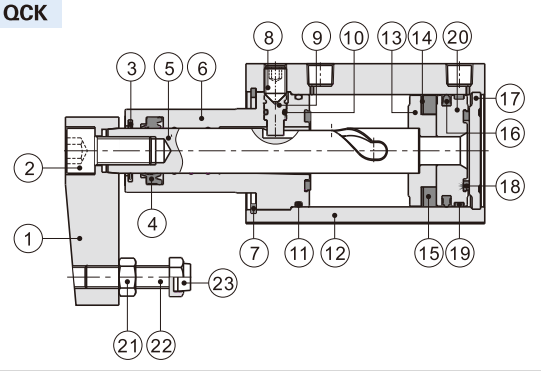
Dextrorotary(QCKR):
When the piston of cylinder moves downward, the swivel arms moves clockwise. this is called dextrorotary.



The order code is **R**

Inner structure and material of major parts

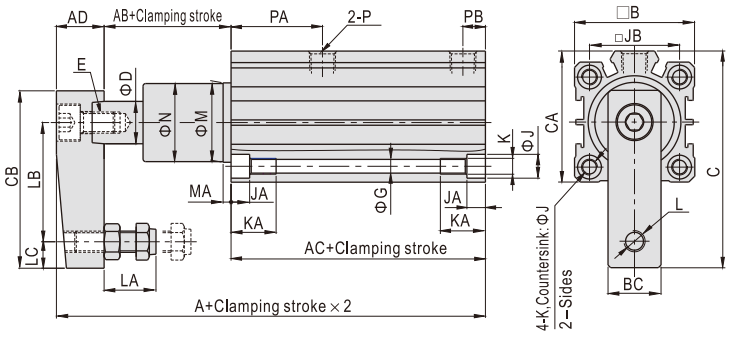
QCK

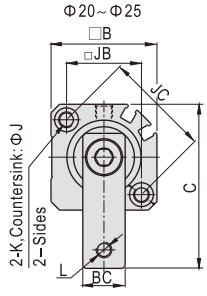


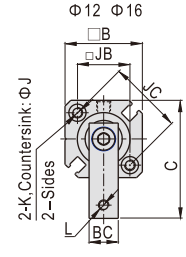
NO.	Item	Material	NO.	Item	Material
1	Rocker	Carbon steel	14	Magnet washer	NBR
2	Screw	Carbon steel	15	Magnet	Sintered metal (Neodymium-iron-boron(Φ12~Φ25)
3	Dust scraping ring	No(Φ12, Φ16) Stainless steel(Others)			Plastic(Others)
4	Front cover packing	NBR	16	Piston seal	NBR
5	Piston rod	Scr440	17	Back cover	Aluminum alloy
6	Front cover	Aluminum alloy	18	Bumper	TPU(Φ12~Φ25)\NBR(Others)
7	C Clip	Spring steel	19	Wear ring	No(Φ12~Φ32) Wear resistant material(Others)
8	Screw	Carbon steel			
9	Operating screw	SCr440	20	Piston	Brass(Φ12, Φ16) Aluminum alloy(Others)
10	O-ring	NBR			
11	O-ring	NBR	21	Screw	Carbon steel
12	Body	Aluminum alloy	22	Fixing screw	Carbon steel
13	Magnet holder	Brass(Φ12, Φ16) Aluminum alloy(Others)	23	Bumper	PTFE(Φ12~Φ40)\POM(Others)

Dimensions

QCK□(Taper type with clamp arm)





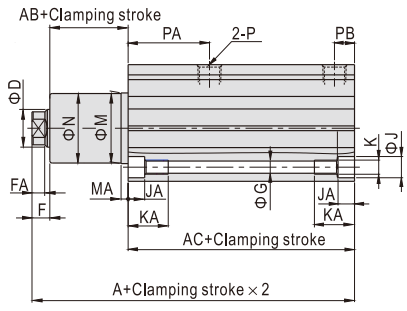


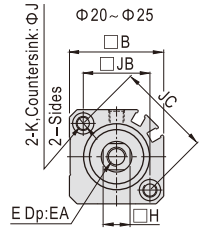
Bore size\Item	A	AB	AC	AD	B	BC	C	CA	CB	D
12	55	10.5	35.5	9	25	9	36.5	–	29	6
16	59	10.5	35.5	13	29	11	44.5	–	36	8
20	86	8	62	16	36	16	60	–	51	12
25	87	8	63	16	40	16	62	–	51	12
32	108	17.5	71.5	19	45	19	82	49.5	67	16
40	109	25	65	19	53	19	85.5	57	67	16
50	133	31	76.5	25.5	64	25.5	114	71	88	20
63	136	30.5	80	25.5	77	25.5	120.5	84	88	20

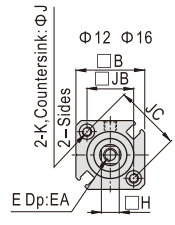
Bore size\Item	E	G	J	JA	JB	JC	K
12	M3×0.5	3.3	6	3.5	15.5	22	M4×0.7
16	M5×0.8	3.3	6	3.5	20	28	M4×0.7
20	M8×1.25	5	9	5.5	25.5	36	M6×1.0
25	M8×1.25	5	9	5.5	28	40	M6×1.0
32	M10×1.5	5	9	5.5	34	–	M6×1.0
40	M10×1.5	5	9	5.5	40	–	M6×1.0
50	M12×1.75	6.5	10.5	6.5	50	–	M8×1.25
63	M12×1.75	8.5	14	9	60	–	M10×1.5

Bore size\Item	KA	L	LA	LB	LC	M	MA	N	P	PA	PB
12	11	M4×0.7	7~13	20	4	11	3	10.8	M5×0.8	13.5	5.5
16	11	M4×0.7	7~13	25	5	14	3	13.8	M5×0.8	15	5.5
20	17	M6×1.0	9.5~20.5	35	7	18	3	17.8	M5×0.8	30	6
25	17	M6×1.0	9.5~20.5	35	7	23	6	22.5	M5×0.8	30	7
32	17	M8×1.25	13.5~25.5	45	10	30	7	29.5	1/8"	34.5	8.5
40	17	M8×1.25	13.5~25.5	45	10	30	3	29.5	1/8"	26.5	9
50	22	M10×1.5	14.5~30	65	10	37	3.5	36.5	1/4"	34	11.5
63	28.5	M10×1.5	14.5~30	65	10	48	3.5	47.5	1/4"	34.5	11.5

QCK□M(Across flat position type without clamp arm)







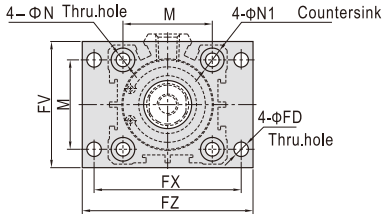
Bore size\Item	A	AB	AC	B	CA	D	F	FA
12	48	9.5	35.5	25	–	6	3	2.5
16	48	9.5	35.5	29	–	8	3	2.5
20	72.5	6.5	62	36	–	12	4	3
25	73.5	6.5	63	40	–	12	4	3
32	93.5	15.5	71.5	45	49.5	16	6.5	5.5
40	94.5	23	65	53	57	16	6.5	5.5
50	112	28	76.5	64	71	20	7.5	5.5
63	115	27.5	80	77	84	20	7.5	5.5

Bore size\Item	H	E	EA	G	J	JA
12	5	M3×0.5	6	3.3	6	3.5
16	7	M5×0.8	7	3.3	6	3.5
20	10	M8×1.25	13	5	9	5.5
25	10	M8×1.25	13	5	9	5.5
32	14	M10×1.5	15	5	9	5.5
40	14	M10×1.5	15	5	9	5.5
50	17	M12×1.75	20	6.5	10.5	6.5
63	17	M12×1.75	20	8.5	14	9

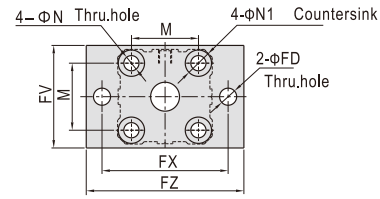
Bore size\Item	JB	JC	K	KA	M	MA	N	P	PA	PB
12	15.5	22	M4×0.7	11	11	3	10.8	M5×0.8	13.5	5.5
16	20	28	M4×0.7	11	14	3	13.8	M5×0.8	15	5.5
20	25.5	36	M6×1.0	17	18	3	17.8	M5×0.8	30	6
25	28	40	M6×1.0	17	23	6	22.5	M5×0.8	30	7
32	34	–	M6×1.0	17	30	7	29.5	1/8"	34.5	8.5
40	40	–	M6×1.0	17	30	3	29.5	1/8"	26.5	9
50	50	–	M8×1.25	22	37	3.5	36.5	1/4"	34	11.5
63	60	–	M10×1.5	28.5	48	3.5	47.5	1/4"	34.5	11.5

Q□K-FB(With flange)

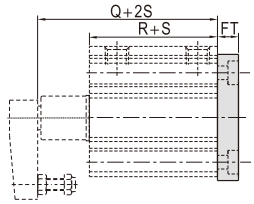
Φ32~Φ63



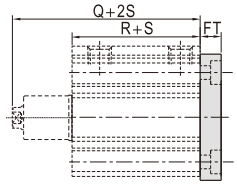
Φ12~Φ25



QCK□-FB(Taper type with clamp arm)



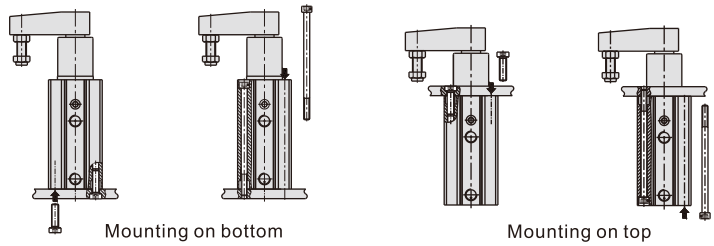
QCK□M-FB(Across flat position rod without clamp arm)



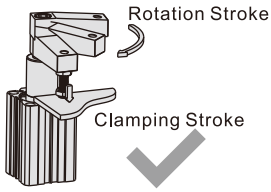
Bore size\Item	R	Q(QCK□)	Q(QCK□M)	M	N	N1	FD	FT	FV	FX	FZ
12	35.5	46	48	15.5	4.5	7.5	4.5	5.5	25	45	55
16	35.5	46	48	20	4.5	7.5	4.5	5.5	30	45	55
20	62	70	72.5	25.5	6.5	10.5	6.5	8	39	48	60
25	63	71	73.5	28	6.5	10.5	6.5	8	42	52	64
32	71.5	89	93.5	34	6.5	10.5	5.5	8	48	56	65
40	65	90	94.5	40	6.5	10.5	5.5	8	54	62	72
50	76.5	107.5	112	50	8.5	13.5	6.5	9	67	76	89
63	80	110.5	115	60	10.5	16.5	9	9	80	92	108

Installation and operation

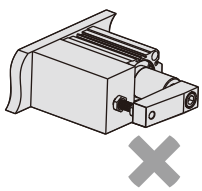
1. To insure the life-span of cylinder and jig, please use flow control valve to control the speed of cylinder.
2. The method of installation are mounted by flange on top or bottom.
3. Befor the cylinder is connected to pipeline sundries in the pipe must be eliminated, or may cause leakage.
4. Please clean the piston–rod and dust scraping ring to protect the cylinder.
5. The cylinder using normal magnet ring can use the same sensor as ACQ series. For the cylinder using strong magnet ring we suggest using AirTAC's DS1-69AM sensor.
6. Because the rotary force is strong when the cylinder's acting, we suggest using flow control valve to control the speed to protect cylinder.
7. Please install the cylinder following the right diagram.
8. The installation method as the diagram below is wrong, and will injure the cylinder and shorten the cylinder life.



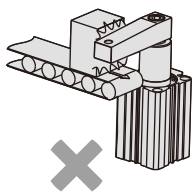
Mounting on bottom　　Mounting on top



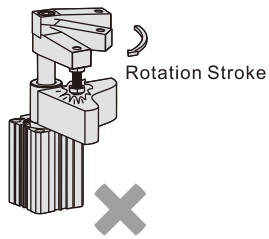
Only can clamping in clamping stroke.



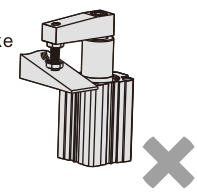
Don't installed horizontally



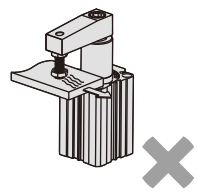
Don't exert horizontally load or force



Please don't clamp when rotating.



Please don't clamp on bevel



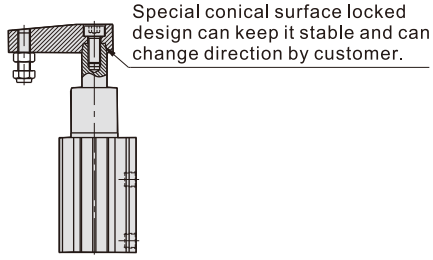
Do not move the workpiece when clamped

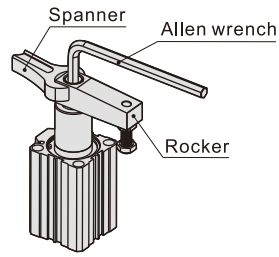
9. Rocker

9.1) The design of rocker can keep it stable and can change direction by customer.

9.2) Please follow the diagram below on right side to assemble/disassemble the rocker by spanner and allen wrench; don't hold the body to assemble/disassemble rocker, or will damage the cylinder.

9.3) If need customize rocker, please contact us.

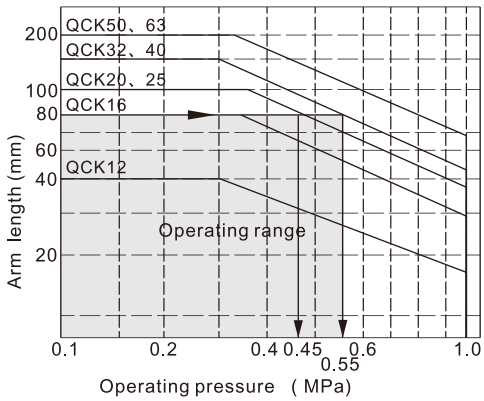




How to select product

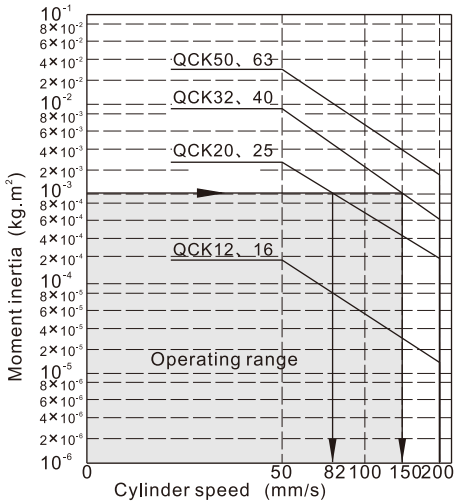
1. When arms are to be made separately, their length and weight should be within the following range.

2. Allowable bending moment:
Use the arm length and operating pressure within graph(1) for allowable bending moment loaded piston rod.



Example: When arm length is 80mm, pressure should be less than
QCK20/25:0.45MPa
QCK32/40:0.55MPa

3. Moment of inertia:
When the arm is long and heavy, damage of internal parts may be caused due to inertia. Use the inertia moment and cylinder speed within graph(2) based on arm requirments.

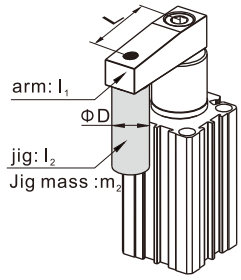


Example: When arm's moment of inertia is 10^{-3}Kg·m², cylinder speed should be less than
QCK20/25:82mm/s
QCK32/40:150mm/s
Note) The average speed of piston=the highest speed of piston/1.6

4. Moment of inertia of cylinder's arm when rotating based on its rotary axis, shown in graph(3).

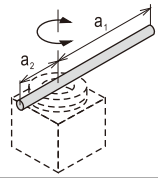
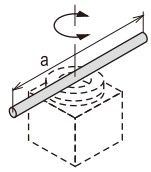
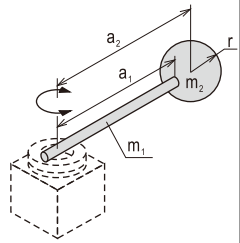
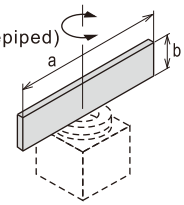
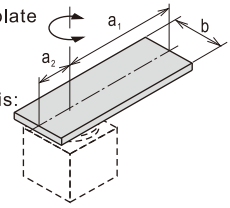
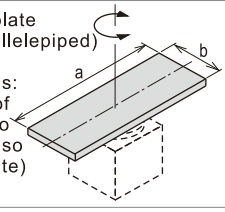
Model	Moment of inertia(Kg·m²)
QCK12	3.555×10^{-6}
QCK16	1.053×10^{-5}
QCK20\25	5.257×10^{-5}
QCK32\40	1.653×10^{-4}
QCK50\63	7.387×10^{-4}

5. Calculation reference :
5.1)Moment of inertia of arm (I1) : Refer to the graph(3) after he cylinder bore diameter is determined.
5.2)Moment of inertia of jig (I2) : According to shape of the jig and the next item 6 "Calculation for moment of inertia" , pick out a proper formula for calculation.
The jig shown on the right graph is a cylinder ,its formula of moment of inertia is:
$I_2=(m_2*D*D)/8+m_2*L*L$
When QCK32 is selected: L=0.045m(arm length);
If D=0.04m m_2=0.4kg



From graph(3): $I_1=1.653\times10^{-4}$(Kg·m²)
By Calculation : $I_2=(m_2*D*D)/8+m_2*L*L=$ (0.4*0.04*0.04)/8+0.4*0.045*0.045
$=8.9\times10^{-4}$ (Kg·m²)
Total value: $I=I_1+I_2=10.553\times10^{-4}=1.0553\times10^{-3}$(Kg·m²)
According to graph(2),the highest speed of the cylinder should be less than 150 mm/s;
According to graph(1),it can be used under a pressure of 0.9Mpa. The average speed of piston=the highest speed of piston/1.6=94 mm/s.

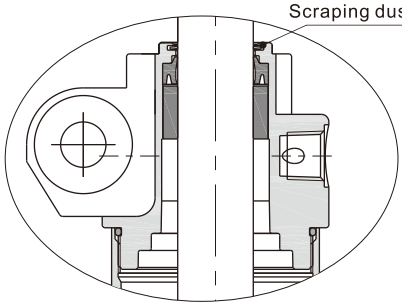
6. Calculation for moment of inertia

Diagram	Calculation formula of moment of inertia
1. Thin bar Position of rotary axis: Vertical to the bar and through the end 	$I=\frac{m_1a_1^2+m_2a_2^2}{3}$
2. Thin bar Position of rotary axis: Vertical to the bar and through the center of gravity 	$I=\frac{ma^2}{12}$
3. Load at the end of lever arm 	$I=m_1\times\frac{a_1^2}{3}+m_2\times a_2^2+k$ $k=m_2\times\frac{2r^2}{5}$
4. Thin rectangular plate (Rectangular parallelepiped) Position of rotary axis: Parallel to side b and through the center of gravity 	$I=\frac{ma^2}{12}$
5. Thin rectangular plate (Rectangular parallelepiped) Position of rotary axis: Vertica to the plate and through the end 	$I=m_1\times\frac{4a_1^2+b^2}{12}+m_2\times\frac{4a_2^2+b^2}{12}$
6. Thin rectangular plate (Rectangular parallelepiped) Position of rotary axis: Through the center of gravity and vertical to the plate(Same as also thickrectanglaur plate) 	$I=\frac{ma^2+mb^2}{12}$

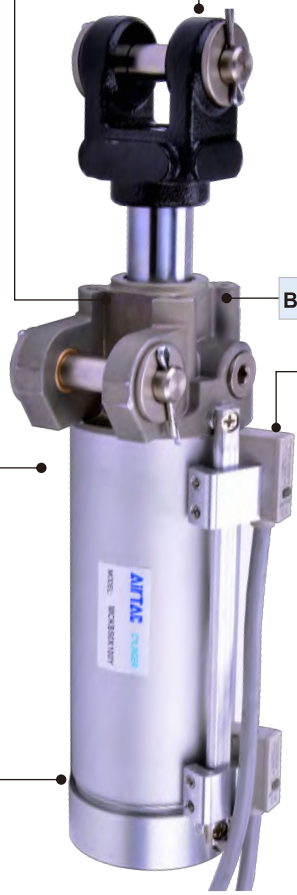
Compendium of MCK Series

Dustproof and welding slag out desigh

There is a scraping dust ring in front cover, and it is firm and durable that can avoid dust and splashed welding slag breaking cylinders. It is more reliable than dust helmet.



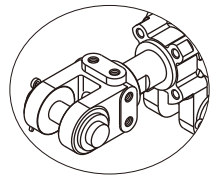
Two orifice models air available



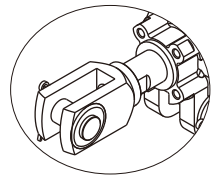
Rolling packed structure

Back cover and barrel adopt riveted rolling packed structure to form a reliable connection.

Y knuckle is available



Y：With M6 thread hole

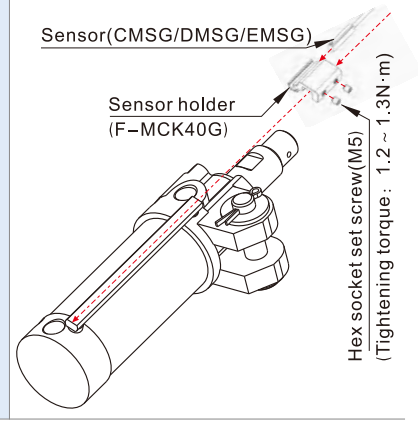


YW：Without M6 thread hole

Buffer adjustment and speedlimit adjustment are built-in

Various types of sensor switches are available.

1. The Anti-magnetic sensor should be used with the anti-magnetic bracket. For details, refer to page P509.
2. Common sensors (DMSG, CMSG, EMSG) should be used with the sensor holder (F-MCK40G). Please refer to common sensors for details about DMSG and CMSG EMSG sensor. The matching sensor holders need to be ordered separately. The ordering method and installation method are as follows:

Sensor holder's ordering code	F–MCK40G(Matching with MCK)
Sensor's installation method	**Installation steps：** 1. The sensor is installed in the G-shaped groove of the sensor fixing base and locked with a slotted screwdriver; 2. The sensor holder is installed on the fixing bar, moves to a proper position and closes to the outer cylinder of the cylinder, and then tightens the hexagonal cap screws with the hexagonal wrench. 3. Avoid mechanical damage during installation; 4. When installing, pay attention to avoid interference with peripheral components. 

Theoretical clamping force

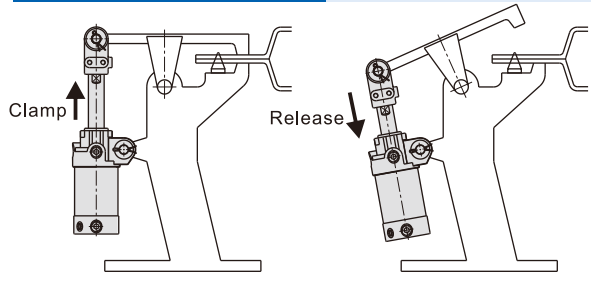
Unit：Newton(N)

Bore size	Rod size	Acting type		Operating pressure(MPa)							
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
40	20	Double acting	Push side	125.6	251.2	376.8	502.4	628.0	753.6	879.2	1004.8
			Pull side	94.2	188.4	282.6	376.8	471.0	565.2	659.4	753.6
50	20	Double acting	Push side	196.3	392.6	588.9	785.2	981.5	1177.8	1374.1	1570.4
			Pull side	164.9	329.8	494.7	659.6	824.5	989.4	1154.3	1319.2
63	20	Double acting	Push side	311.7	623.4	935.1	1246.8	1558.5	1870.2	2181.9	2493.6
			Pull side	280.3	560.6	840.9	1121.2	1401.5	1681.8	1962.1	2242.4
80	25	Double acting	Push side	502.6	1005.2	1507.8	2010.4	2513.0	3015.6	3518.2	4020.8
			Pull side	453.6	907.2	1360.8	1814.4	2268.0	2721.6	3175.2	3628.8

Installation and application

1. In normal situation such as: edge packing, installation, jig test...and so on. Standard cylinder is suggested.
2. In case of high-magnetic field generated by welding in the vicinity, anti-magnetic welding clamp cylinder shall be used and corresponding anti-magnetic sensor switch shall be matched.
3. Before cylinder connecting, the dust must be eliminated to avoid it entering in the cylinder.
4. The medium used by cylinder shall be filtered to 40μm or below.
5. Under high temperature environment, the cylinder of high-temperature resistance shall be selected. Anti-freezing measure shall be adopted under low temperature environment to prevent the water freezing in cylinder.
6. If cylinder is not used for a long time, please advert the surface to get rusty. Inlet and outlet ports should be have anti–dust caps and also spread the oil to avoid getting rusty on piston rod.

Application examples



Clamping cylinder

MCK Series



Specification

Bore size(mm)	40	50	63	80
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	0.15~1.0MPa(22~145psi)			
Proof pressure	1.5MPa(215psi)			
Temperature	-20~70 ℃			
Speed range	50~500mm/s			
Cushion type	Variable cushion for back cover or front cover(optional)			
Speed controlled valve	Standard setting for covers			
Lubrication	Not required			
Installatsion type	Double hinged-supports			
Port size [Note1]	1/4"			3/8"

[Note1]G thread is available.

Symbol

MCK　　MCK-S□ MCK-HS



Stroke

Bore size(mm)	Standard stroke(mm)	Available stroke
40、50、63、80	50 75 100 125 150	150

Remark) Consult us for non-standard stroke.

Product feature

1. It suits for workshops that make automation welding.
2. There is a scraping dust ring in front cover, and it is firm and durable that can avoid dust and splashed welding slag breaking cylinders. It is more reliable than dust helmet.
3. It fits the working environment where has strong magnetic field, if it uses the sensor switch which is with strong magnet and anti–strong magnetic field.
4. Inlet interface are optional on three sides; buffer adjustment and speed limit adjustment are built-in.
5. Various types of sensor switches are available.

Ordering code

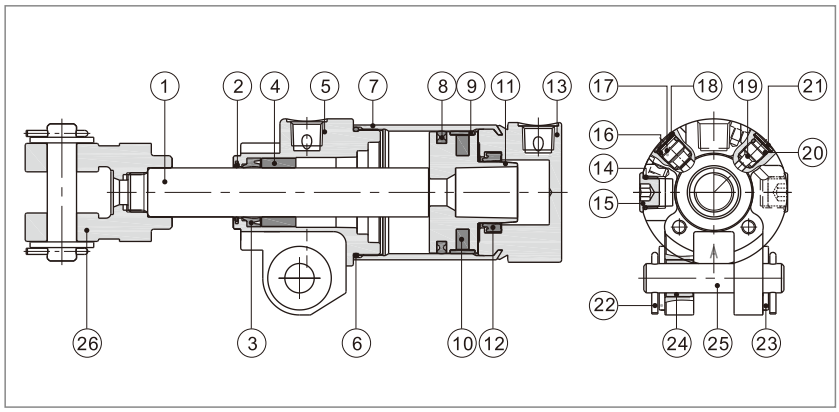
MCK A 50×75 S □ Y G

1 2 3 4 5 6 7 8

①Model	②Orifice model	③Bore size	④Stroke	⑤Magnet	⑥Mounting type	⑦Mounting type	⑧Thread type
MCK: Clamping cylinder (Double acting)	A: Orifice model A B: Orifice model B No this code	40 50 63 80	Refer to Stroke table for detial	Blank: Without magnet S: With normal magnet[Note1]	Blank: Three groups air port in the front and back cover (Variable cushion for back and front cover) Air port(Three groups) Variable cushion for back cover and front cover	Blank: Without Y knuckle Y: With Y knuckle (With M6 thread hole) YW: With Y knuckle (No M6 thread hole)	G: G Thread

[Note1] In powerful magnetic field, sensor switch for high-magnet shall be matched. Please refer to Page 556 for option.

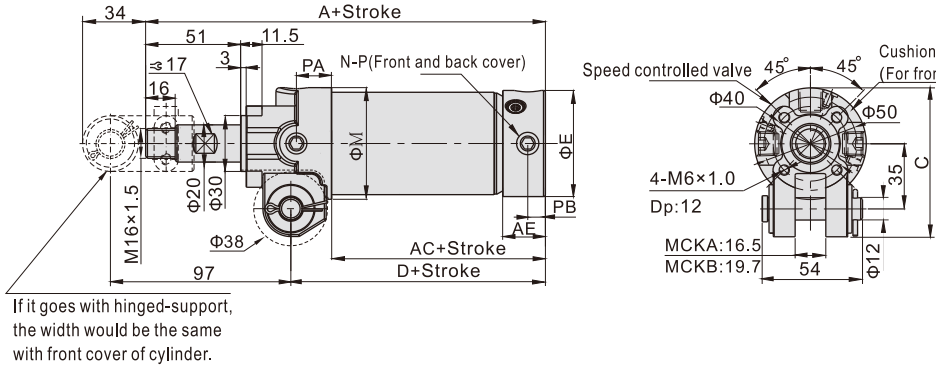
Inner structure and material of major parts



No.	Item	Material	No.	Item	Material
1	Piston rod	Carbon steel	15	Stop screw	S35C
2	Scraping dust ring	Stainless steel	16	O-ring	NBR
3	Spool packing	NBR	17	Cush controlled screw	Aluminum alloy
4	Sliding bushing	Aluminum alloy			
5	Front cover	Aluminum alloy	18	Bead flange	Spring steel
6	O-ring	NBR	19	Speed controlled screw	Aluminum alloy
7	Barrel	Aluminum alloy			
8	Piston O-ring	NBR	20	O-ring	NBR
9	Wear ring	Wear resistant material	21	Bead flange	Spring steel
10	Magnet	Magnetism material	22	Orifice Pin	Midl steel
11	Piston	Aluminum alloy	23	Cover blake	SPCC
12	Cushion O-ring	TPU	24	Sliding bushing	Wear resistant material
13	Back cover	Aluminum alloy			
14	O-ring	NBR	25	Pin	S45C
			26	Y knuckle	Nodular cast iron

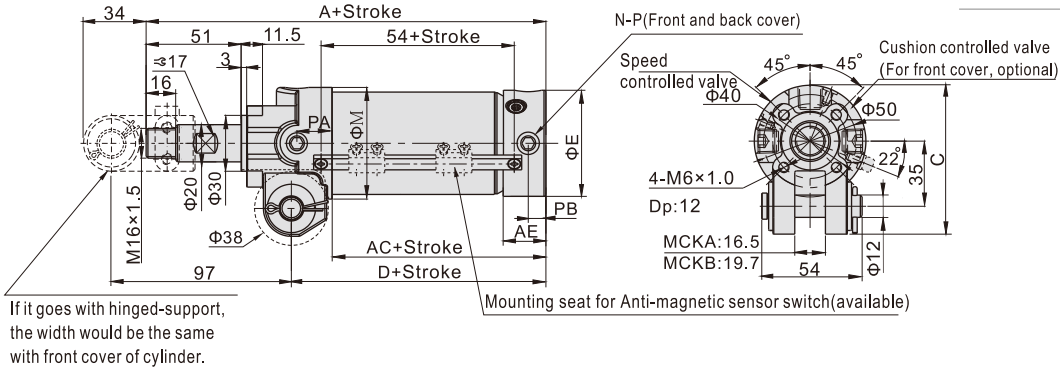
Dimensions

Φ40/50/63(Without magnet)

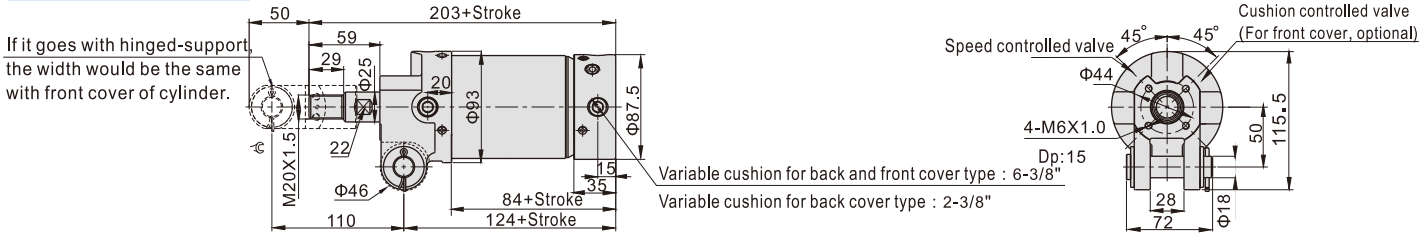


Item\Bore size		40	50	63
A		162	165	167
AC		59	65	67
AE		20	22	23
C		76	80	87
D		84	87	89
E		47	57	70
M		52	60	74
N (Number of hole)	Variable cushion for back and front cover	6	6	6
	Variable cushion for back cover	2	2	2
P(Inlet and out let port)		1/4"		
PA		20	19	19
PB		9	9.5	9.5

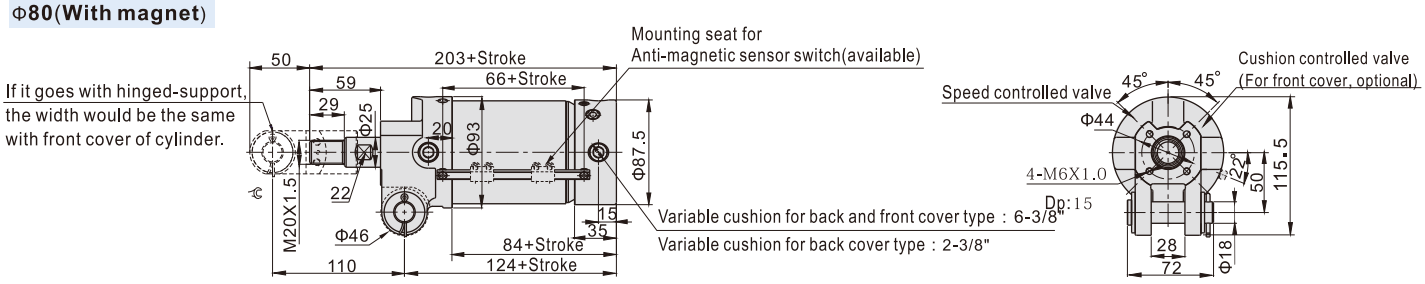
Φ40/50/63(With magnet)



Φ80(Without magnet)

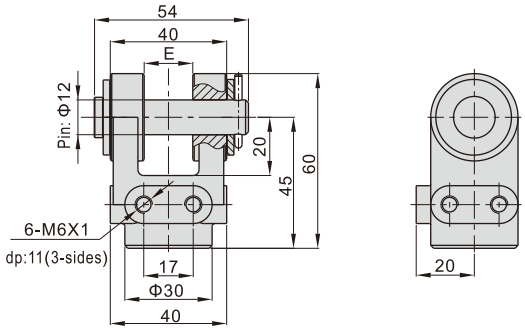


Φ80(With magnet)



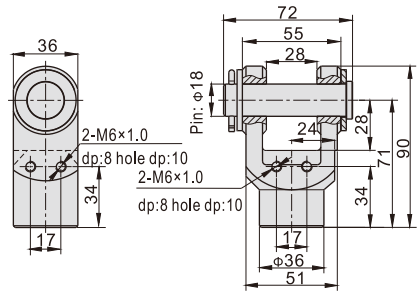
Specifications and ordering codes of Y knuckle

Φ40/50/63



Model	Ordering code	Applicable bore size	E
MCKA	MCKA50-Y	40\50\63	16.5
MCKB	MCKB50-Y	40\50\63	19.5

Φ80



Model	Ordering code	Applicable bore size
MCK	MCK80-Y	80

Sensor switch——DS1-69AM Series



Feature

DS1-69AM series are anti-magnetic sensor switch, which are for AC magnetic environment.

Ordering code

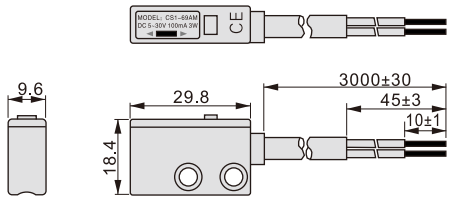
DS1-69AM

①Number of sensor swich	②Code
	69AM: Anti-magnetic sensor switch (AC resistant welder)

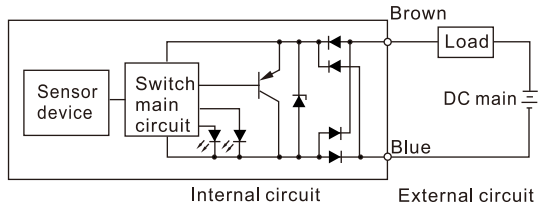
Specification

Item\Type	DS1-69AM
Switch logic	Transistor without contact, normally opened type
Sensor type	Transistor, two-line, nonpolarity
Operating voltage (V)	10~30V/DC
Max. Switching current	100mA Max.
Switching Rating (W)	3W Max.
Anti-magnetic current	AC 17000A
Voltage drop	4.8V Max. @100mA DC
Leakage current	0.6mA Max. @30V DC
Min. working current	3mA Min.
Indicator	Stable range:Green LED ; Non-table range:Red LED
Cable	Φ5.3/0.5SQ×2C×3m/oil resistant, Flame retarded, flection/gravy PVC
Sensitivity	30~40 Gauss
Max. Frequency	8Hz
Temperature range	-10~70℃
Shock	50m/s²
Vibration	9m/s²
Protection	IP 67(EN60529)
Protection circuit	Transistor without contact, surge suppression
Fire retardant grade	UL94-V0

Dimensions

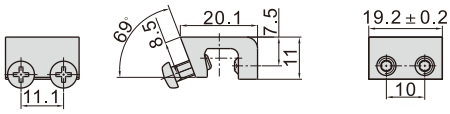
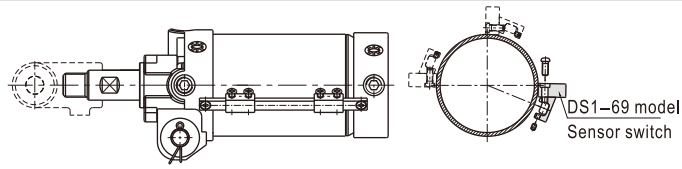


Wiring diagram

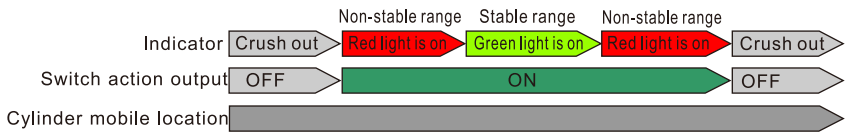


Mounting

In powerful magnetic field, sensor switch for high-magnet shall be matched, and the anti-magnetic bracket (F-MCK40H for MCK series) must be ordered separately, the ordering code, dimensions and the mounting method are below:

Ordering code	Dimensions	Mounting
F-MCK40H (For MCK Series)		

Indicator action illustration



Compendium of JCK Series

4 Arm styles are available

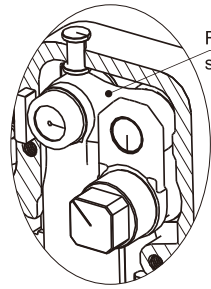
4 Arm styles AM1, AM2, AM3 and AM4 each with 3 specifications R, C and L for uses in different situations.

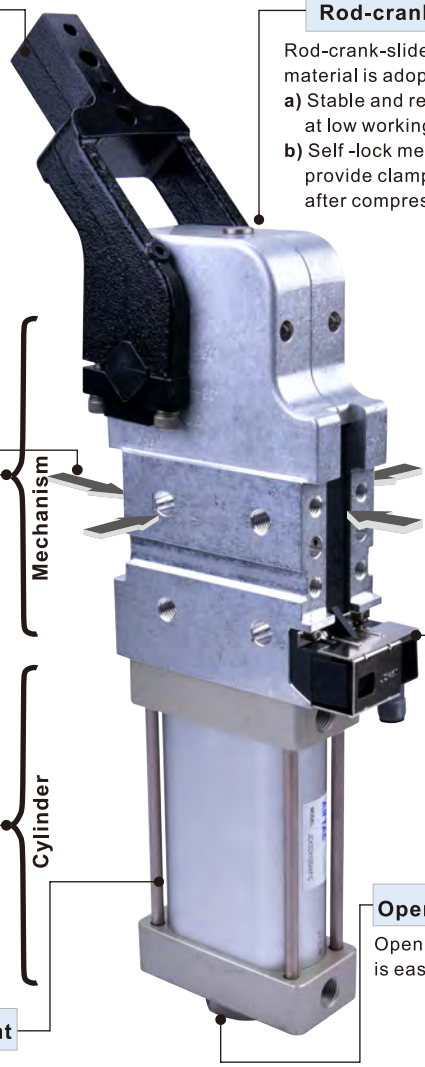
Rod-crank-slider structure

Rod-crank-slider structure made of high-strength, highly-wear-resisting material is adopted.

a) Stable and reliable structure which can produce large clamping force at low working pressure.

b) Self -lock mechanism is adopted at clamping position which can still provide clamping force even after compressed air is off.





4 sides are to be mounted

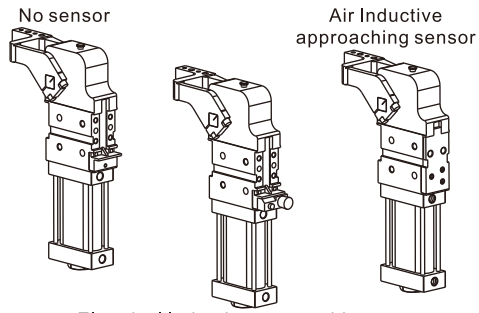
With dimensions subject to DIN standard.

Designed as a whole

Mechanism and cylinder designed as a whole.

Oval-shaped cylinder which is space efficient

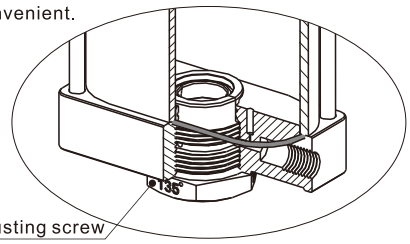
Electrical or Air inductive approaching sensor



Electrical Inductive approaching sensor (PNP/NPN type to be chosen)

Opening angle adjustment is easy and convenient

Opening angle adjustment by changing adjusting screw is easy and convenient.



Application



Power clamp cylinder

JCK Series——Standard type



Specification

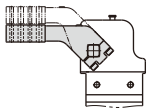
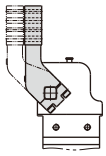
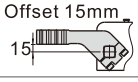
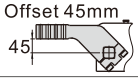
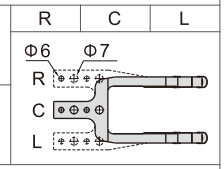
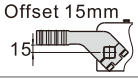
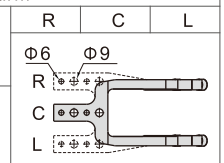
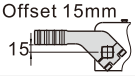
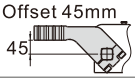
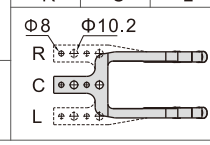
Model	JCK40	JCK50	JCK63	JCK80
Output torque (0.5MPa)	120N.m	160N.m	380N.m	800N.m
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	0.3~0.8MPa(43~116psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70 ℃			
Opening angle	15°/30°/45°/60°/75°/90°/105°/120°/135°			
Minimum opening and closure time	1 second clamping, 1 second opening			
Position sensing	Electrical or air Inductive approaching sensor			
Cushion type	Air buffer			
Weight (135°) [Note1]	2.2kg	4.0kg	5.5kg	13.0kg
Port size [Note2]	1/8"	1/4"		

[Note1] This weight includes 15mm offset clamping arm;
[Note2] G thread is available.

Ordering code

JCK □ 63 × 135 AM1R K G

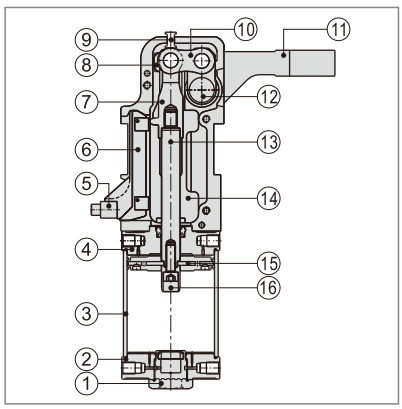
1 2 3 4 5 6 7

①Model	②Clamping arm position	③Bore size	④Opening angle	⑤Clamping arm [Note2]	⑥Sensor switch[Note3]	⑦Thread type
JCK: Power clamp cylinder (Double acting)	Blank: horizontal  V: Vertical 	40(circular)	15 30 45 60 75 90 105 120 135 [Note1]	Blank: No clamping arm AM1: Offset 15mm  AM3: Offset 45mm   Blank: No clamping arm AM1: Offset 15mm  AM3: Offset 45mm   AM2: Offset 15mm  AM4: Offset 45mm  	Blank：No sensor switch K：With electrical sensor switch(PNP) KN：With electrical sensor switch(NPN) KA：With air sensor switch	G: G Thread
		50(oval) 63(oval) 80(oval)				

[Note1] Please refer to the right table for details of max. opening angle.
[Note2] Please refer to the drawing for detailed dimensions of clamping arm.
Clamping arm AM1 and AM2 for 80 offset 20mm.
[Note3] K/KA type sensor switch can be ordered separately and please refer to relative contents.
KA type sensor switch cann't be ordered separately and 80 size no KA type.

Bore size	Arm position	Arm type	Maximum opening angle
40	horizontal	AM1	135°
		AM3	105°
	Vertical(V)	AM1	120°
		AM3	105°
50 63 80	horizontal	AM1、AM3 AM2、AM4	135°
	Vertical(V)	AM1、AM3 AM2、AM4	105°

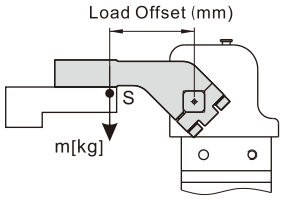
Inner structure and material of major parts



NO.	Item	Material
1	Adjusting screw	Free machining steel
2	Back cover	Aluminum alloy
3	Aluminum barrel	Aluminum alloy
4	Front cover	Aluminum alloy
5	Sensor switch	
6	Sensor switch fix	Plastic
7	Y knuckle	Alloy steel
8	Strengthen steel plate	Alloy steel
9	Retaining pin	Carbon steel
10	Connecting rod	Alloy steel
11	Clamping arm	Carbon steel
12	Pivot	Alloy steel
13	Piston rod	Carbon steel
14	End cap	Aluminum alloy
15	Piston	NBR
16	Cushion body	Aluminum alloy

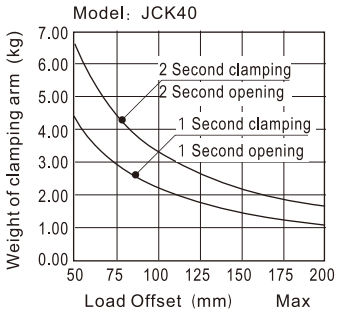
How to select product

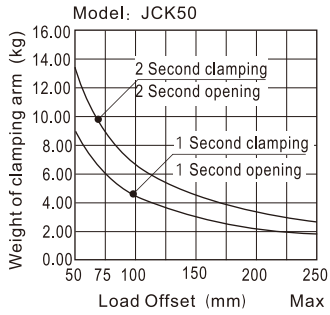
1. Please design appropriate fixture according to "Allowable Arm Load-Load Offset curve" diagram.

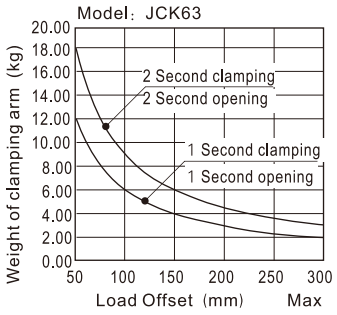


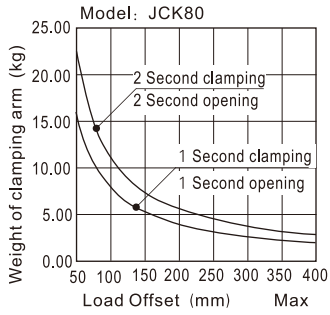
Bore size	Maximum load torque	
	1 second period	2 second period
40	2.2Nm	3.3Nm
50	4.5Nm	6.7Nm
63	6.0Nm	9.0Nm
80	8.0Nm	11.2Nm

S: distance from pivot point to center of mass of clamping arm
m: weight of clamping arm





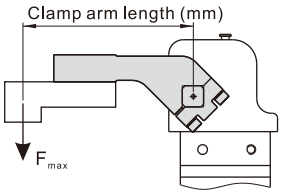




Attention: Please use with speed control valve.

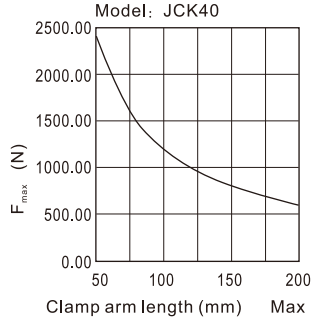
2. Please choose appropriate clamping position according to "Torque-Clamping Arm Length curve" diagram.

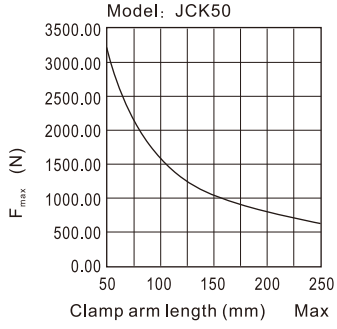
Note: For clamping force is produced by elbow mechanism, maximum torque is only reached at final clamping arm position.

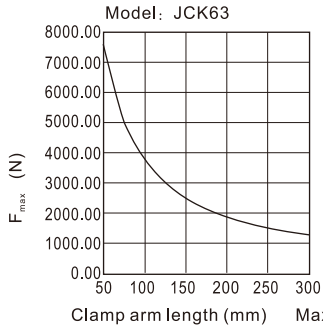


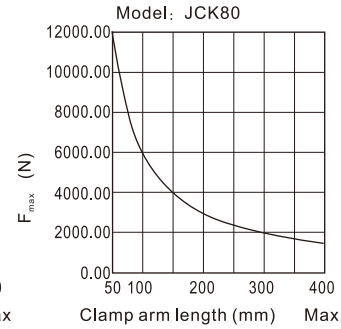
Bore size	Maximum holder torque
40	380Nm
50	800Nm
63	1500Nm
80	2500Nm

Bore size	Maximum clamp torque					
	0.3MPa	0.4MPa	0.5MPa	0.6MPa	0.7MPa	0.8MPa
40	72Nm	95Nm	120Nm	143Nm	167Nm	191Nm
50	99Nm	132Nm	165Nm	198Nm	230Nm	264Nm
63	230Nm	307Nm	384Nm	460Nm	537Nm	614Nm
80	482Nm	643Nm	803Nm	964Nm	1124Nm	1285Nm





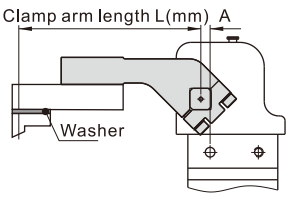




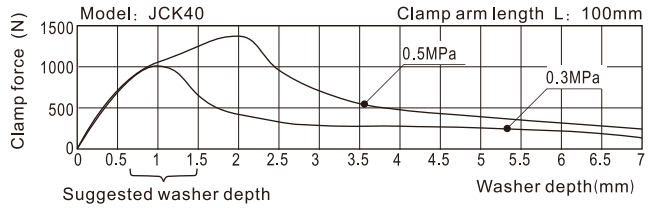
3. Please choose appropriate washer according to "Torque-Spacer thickness curve" diagram.

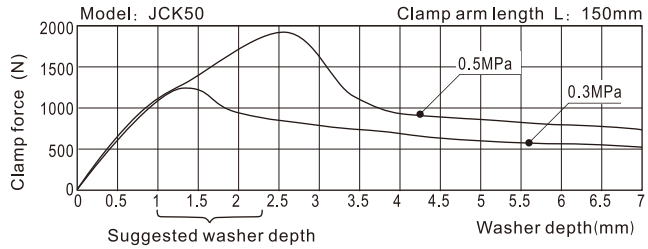
Note: Inserted washer exceeding maximum clamping torque position may lead to self-lock failure. Take safety issue into account when considering thickness of spacer inserted.

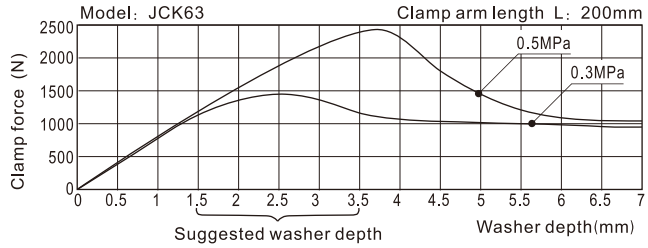
Besides, clamping arm length L represents distance from pivot point to clamping position. For distance from mounting base locating hole to pivot A, please refer to the following table.

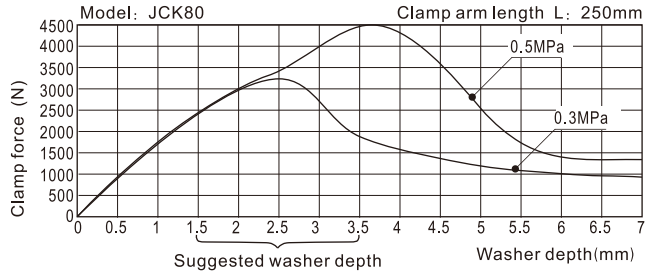


Bore size	A(mm)
40	12
50	10
63	10
80	15



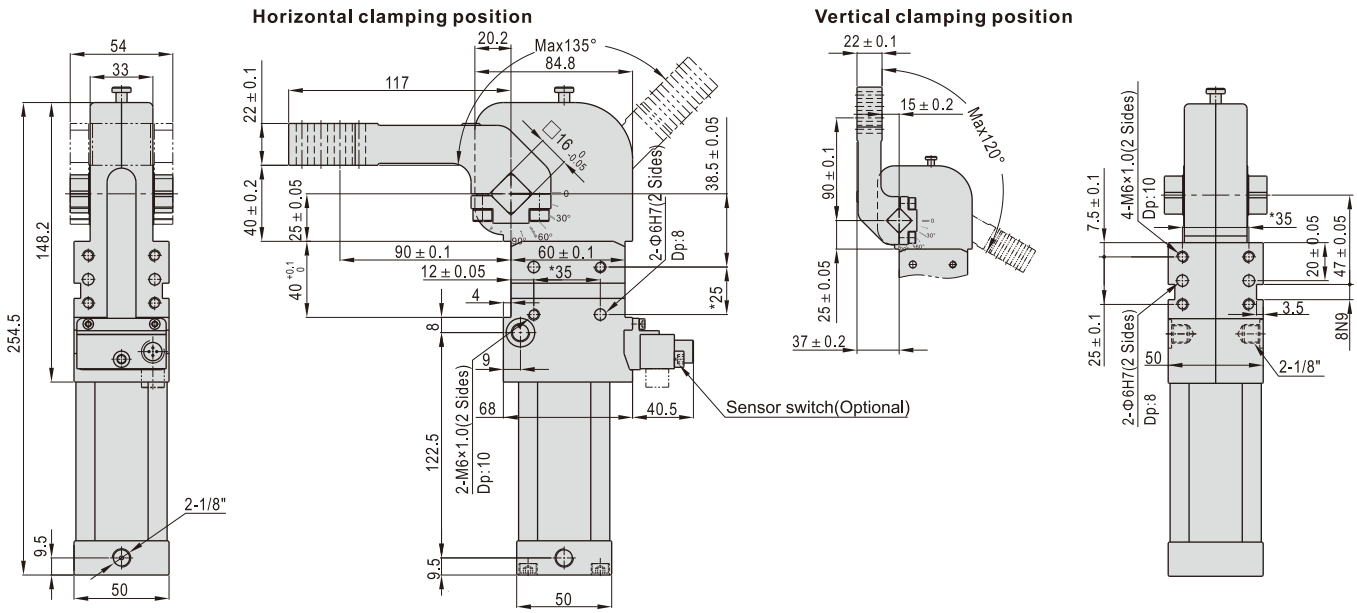






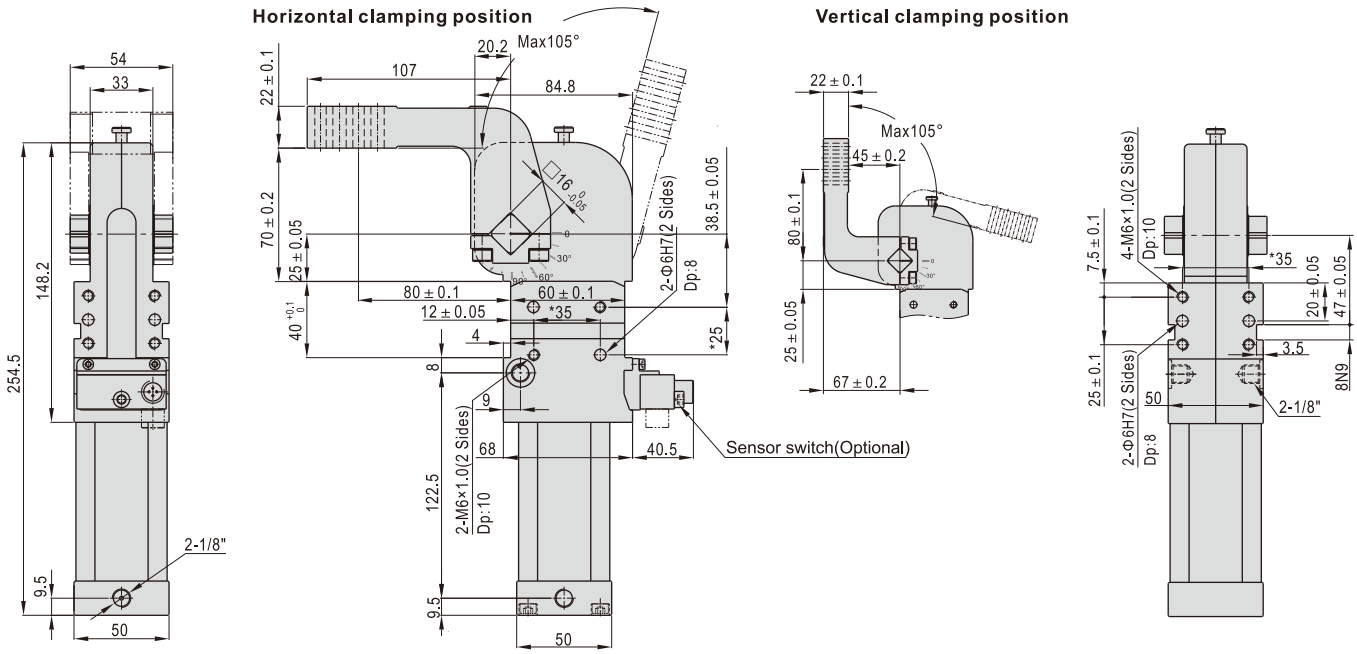
Dimensions

JCK40AM1



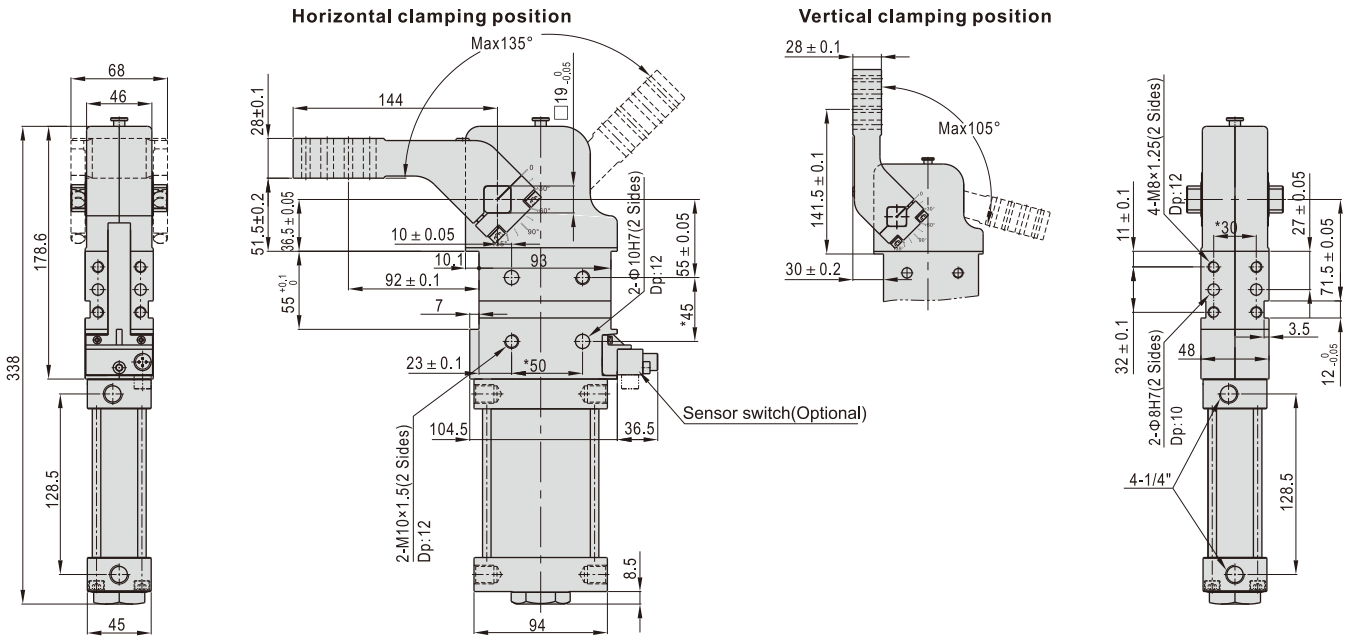
With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JCK40AM3



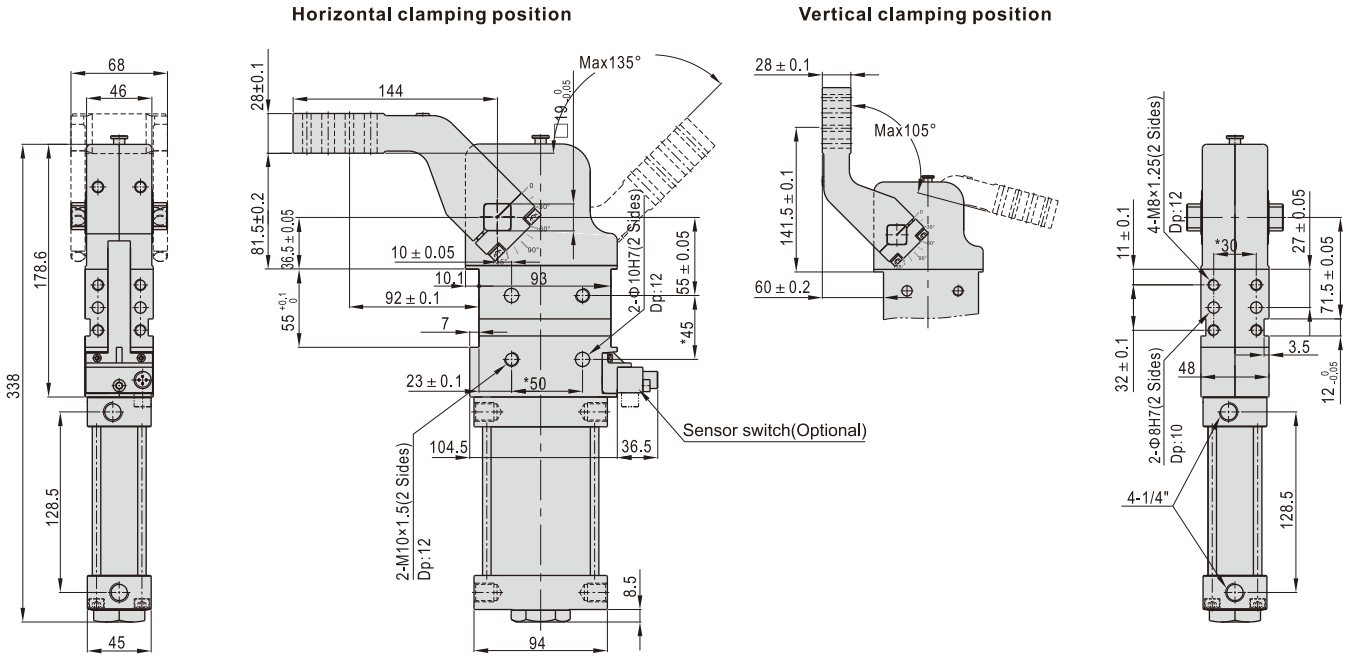
With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JCK50AM1(2)



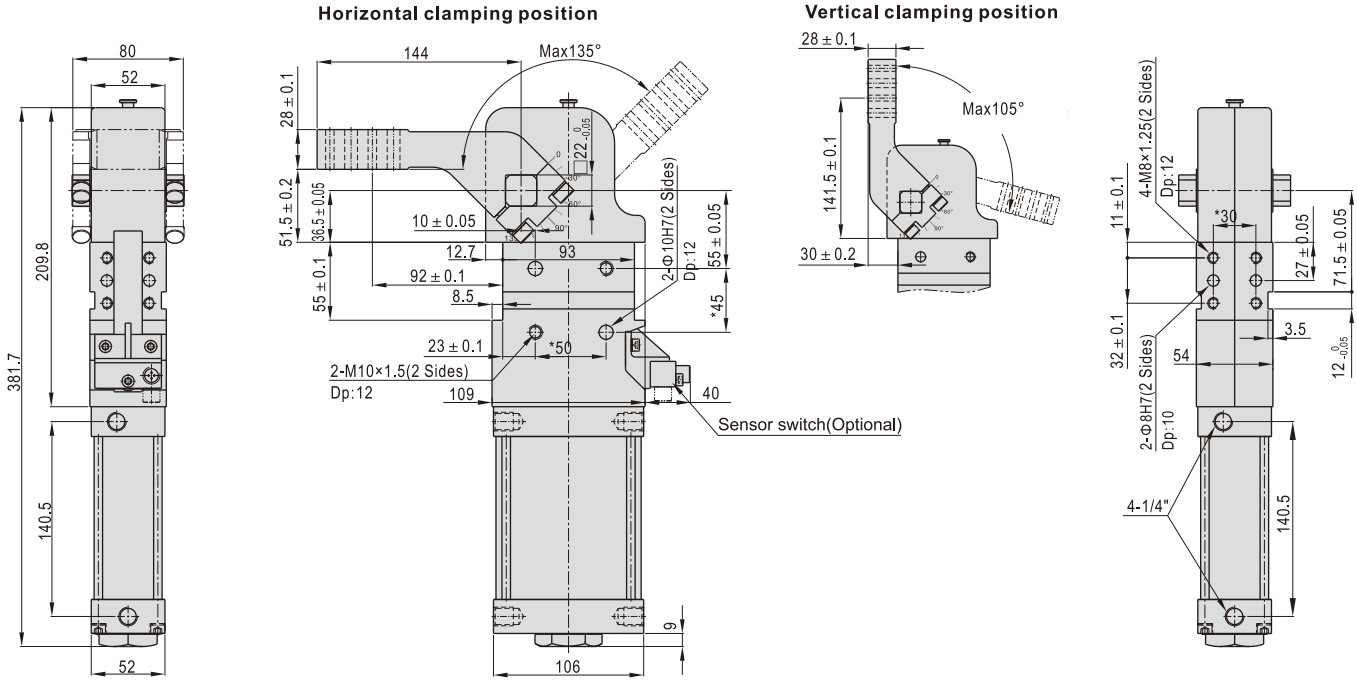
With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JCK50AM3(4)



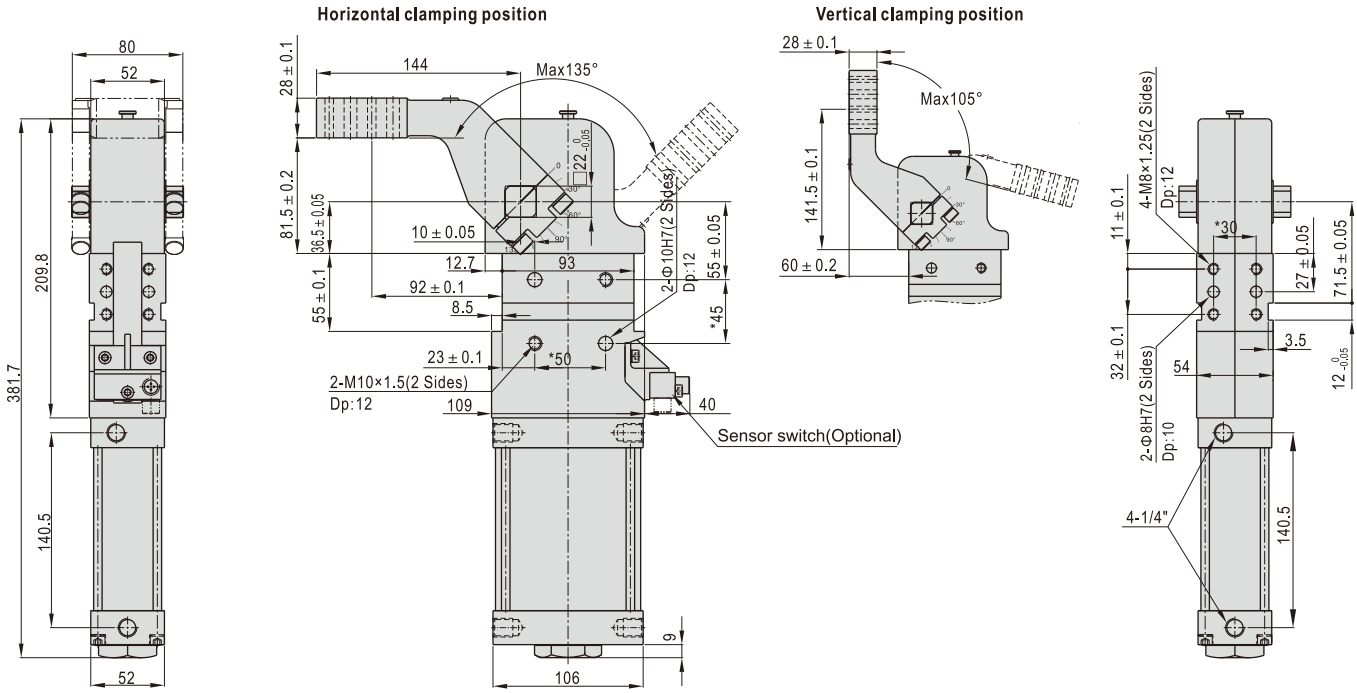
With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JCK63AM1(2)



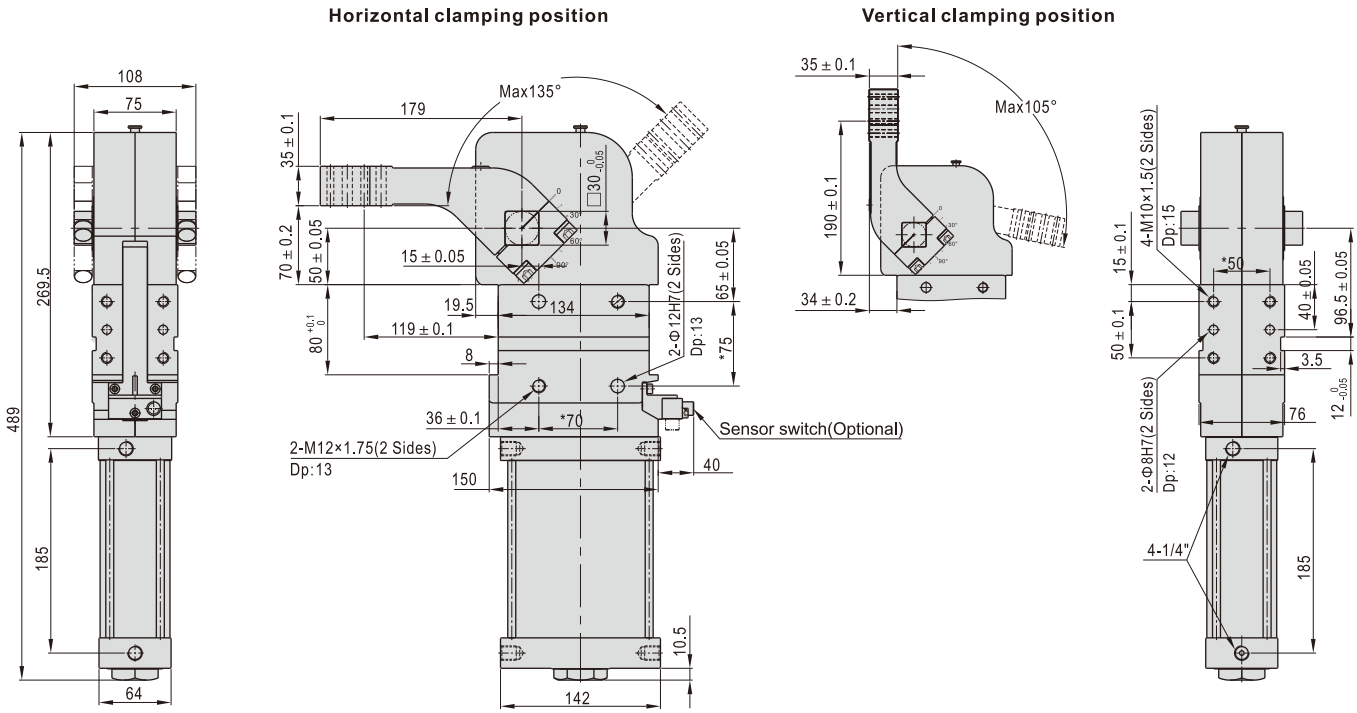
With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JCK63AM3(4)



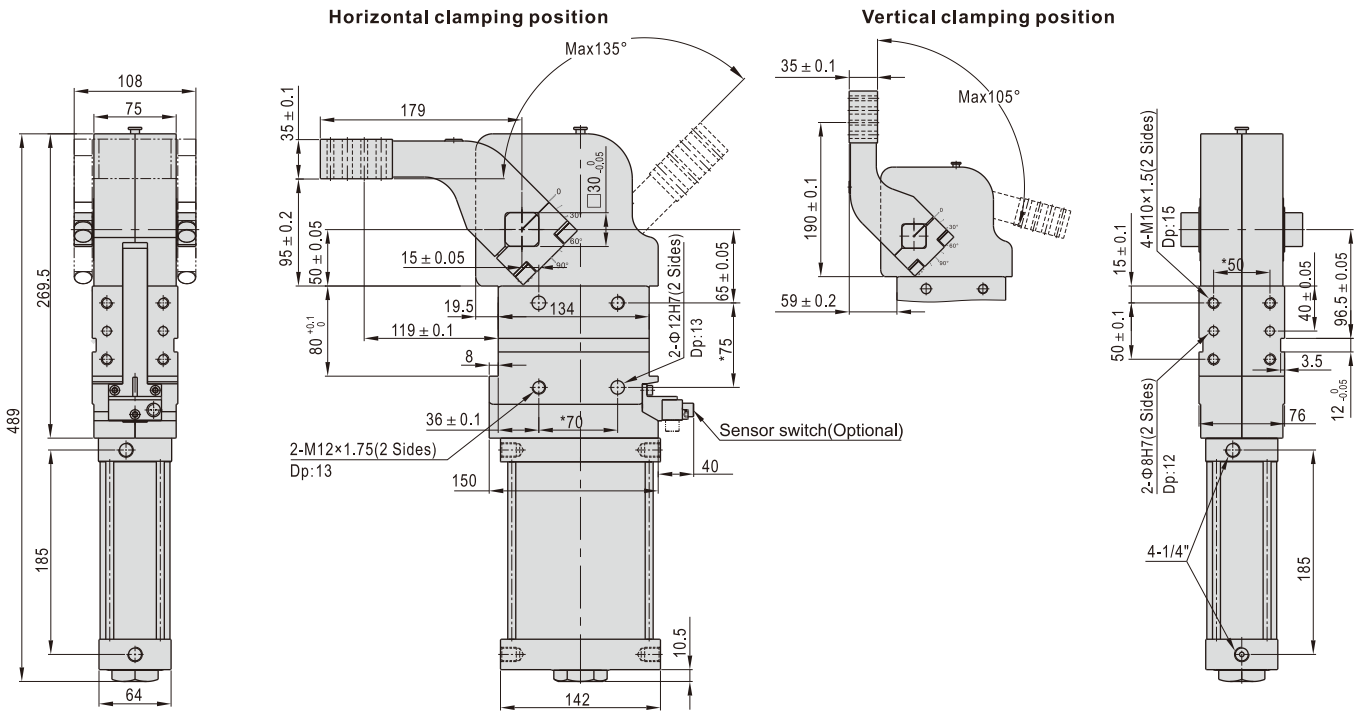
With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JCK80AM1(2)



With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JCK80AM3(4)



With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JCK Series——Air Inductive approaching sensor type



Specification

Model	JCK40□KA	JCK50□KA	JCK63□KA
Output torque (0.5MPa)	120N.m	160N.m	380N.m
Acting type	Double acting		
Fluid	Air(to be filtered by 40μm filter element)		
Operating pressure	0.3~0.8MPa(43~116psi)		
Proof pressure	1.2MPa(175psi)		
Temperature	-20~70 ℃		
Opening angle	15°/30°/45°/60°/75°/90°/105°/120°/135°		
Minimum opening and closure time	1 second clamping, 1 second opening		
Position sensing	Air Inductive approaching sensor		
Cushion type	Air buffer		
Weight (135°) [Note1]	2.2kg	4.0kg	5.5kg
Port size [Note2]	1/8"	1/4"	

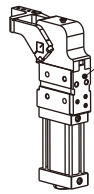
[Note1] This weight includes 15mm offset clamping arm;
[Note2] G thread is available.

Compendium of JCK(Air inductive approaching sensor type) Series

4 Arm styles are available

4 Arm styles AM1, AM2, AM3 and AM4 each with 3 specifications R, C and L for uses in different situations.

Standard is available

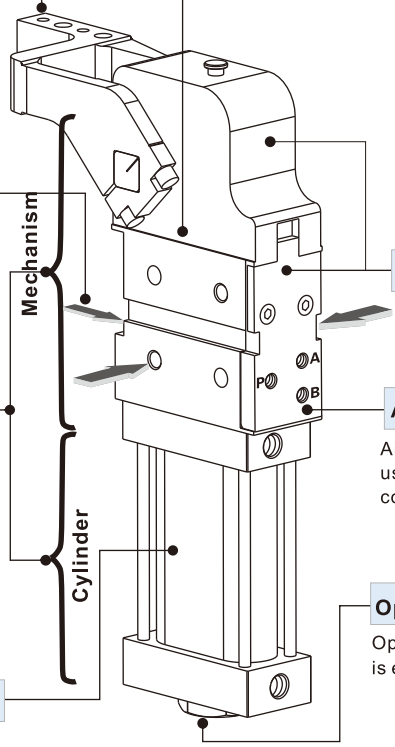


Air inductive approaching sensor

Standard type

3 sides are to be mounted

With dimensions subject to DIN standard.



Rod-crank-slider structure+Self -lock mechanism

Designed as a whole

Mechanism and cylinder designed as a whole.

Air inductive approaching sensor

Air inductive approaching sensor is pre-installed before it be used which uses with self-lock mechanism to realize air control completely.

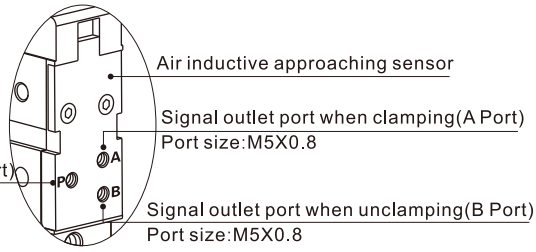
Opening angle adjustment is easy and convenient

Opening angle adjustment by changing adjusting screw is easy and convenient.

Oval-shaped cylinder which is space efficient

Installation and application

1. Can be mounted from three sides.
2. Air inductive approaching sensor is obturated completely which avoid dust and splashed welding slag breaking cylinders.
3. Adapt to air control loop's equipment. Main signal export to self-lock mechanism to check clamp or unclamp's position by air pressure signal.
4. Please connect air inductive approaching sensor's ports by the below sketch map.





How to select clamp arm and adjusting screw

Accessories\Cylinder type			JCK40	JCK50	JCK63	JCK80
Adjusting screw	F-JCK□□X15LM	F-JCK□□X30LM	●	●	●	●
	F-JCK□□X45LM	F-JCK□□X60LM	●	●	●	●
	F-JCK□□X75LM	F-JCK□□X90LM	●	●	●	●
	F-JCK□□X105LM	F-JCK□□X120LM	●	●	●	●
	F-JCK□□X135LM		●	●	●	●
Clamp arm	F-JCK□□AM1R	F-JCK□□AM3R	●	●	●	●
	F-JCK□□AM1C	F-JCK□□AM3C	●	●	●	●
	F-JCK□□AM1L	F-JCK□□AM3L	●	●	●	●
	F-JCK□□AM2R	F-JCK□□AM4R		●	●	●
	F-JCK□□AM2C	F-JCK□□AM4C		●	●	●
	F-JCK□□AM2L	F-JCK□□AM4L		●	●	●

Adjusting screw ordering code

F–JCK 63X135 LM

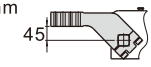
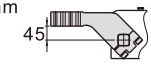
① ② ③ ④ ⑤

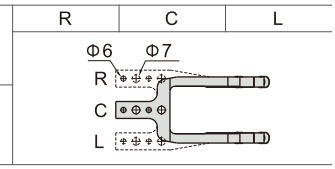
①Accessory code	②Cylinder type	③Bore size	④Adjusting angle	⑤Adjusting screw code
	JCK: Power clamp cylinder (Double acting)	40 : Φ40mm 50 : Φ50mm 63 : Φ64mm 80 : Φ80mm	15: 15° 30: 30° 45: 45° 60: 60° 75: 75° 90: 90° 105: 105° 120: 120° 135: 135°	LM: Adjusting screw

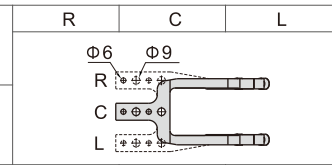
Clamp arm ordering code

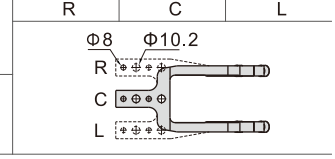
F–JCK 63 AM1C

① ② ③ ④

①Accessory code	②Cylinder type	③Bore size	④Clamping arm	
	JCK: Power clamp cylinder (Double acting)	40: Φ40mm	Blank: No clamping arm	
			AM1: Offset 15mm	
			AM3: Offset 45mm	
		50: Φ50mm 63: Φ64mm 80: Φ80mm	Blank: No clamping arm	
			AM1: Offset 15mm	
			AM3: Offset 45mm	
			AM2: Offset 15mm	
			AM4: Offset 45mm	



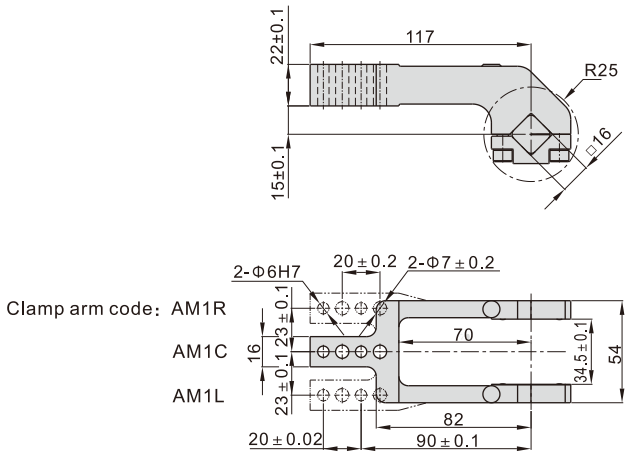




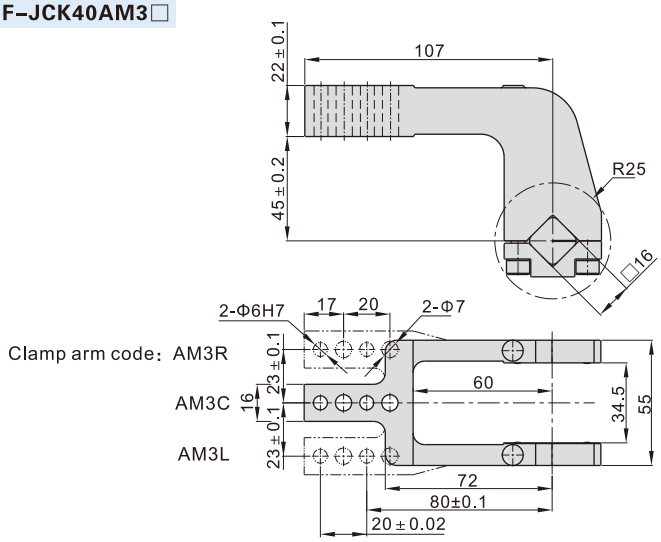
Note: Clamping arm AM1 and AM2 for 80 offset 20mm.

Dimensions of clamp arm

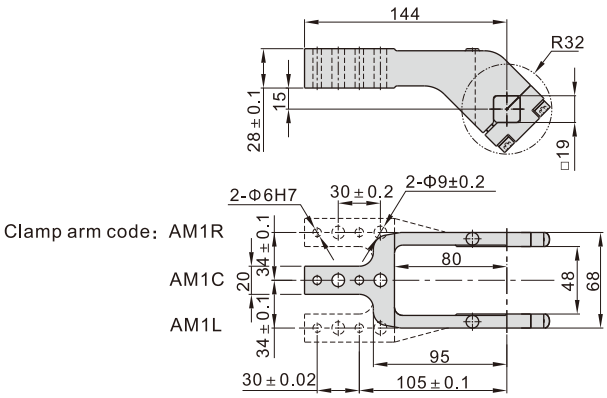
F-JCK40AM1□



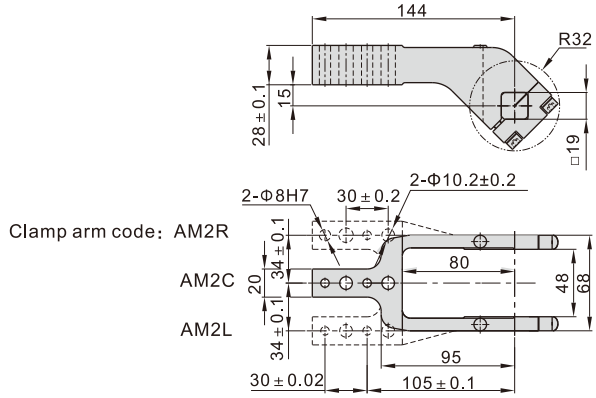
F-JCK40AM3□



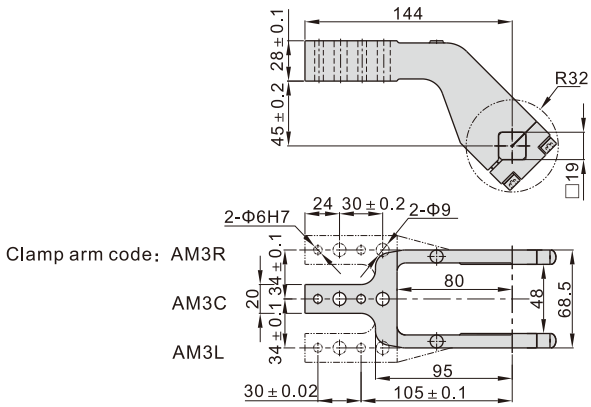
F-JCK50AM1□



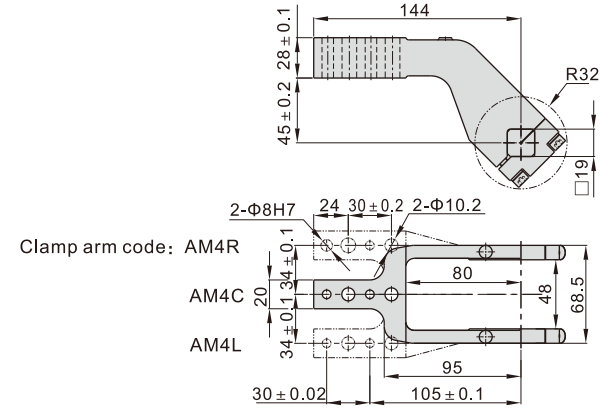
F-JCK50AM2□



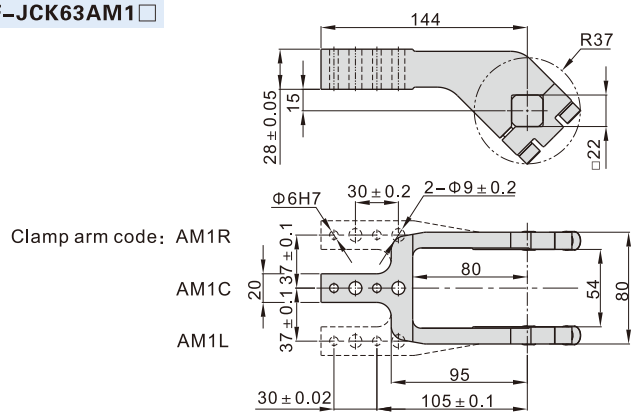
F-JCK50AM3□



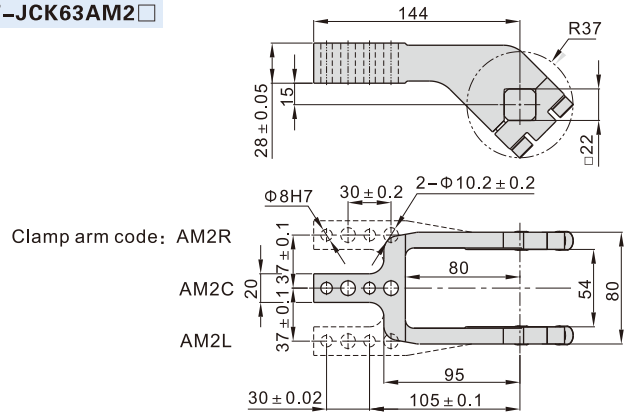
F-JCK50AM4□



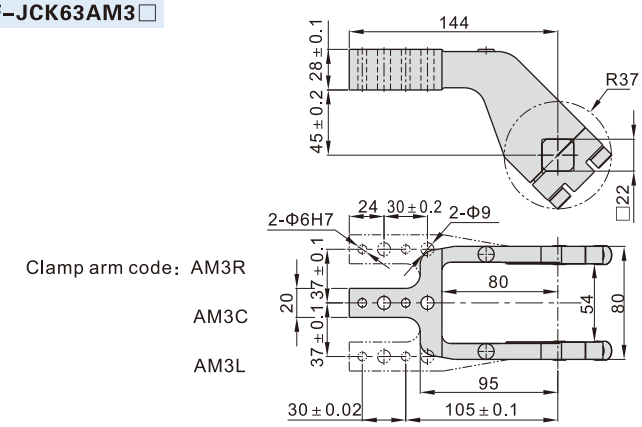
F-JCK63AM1□



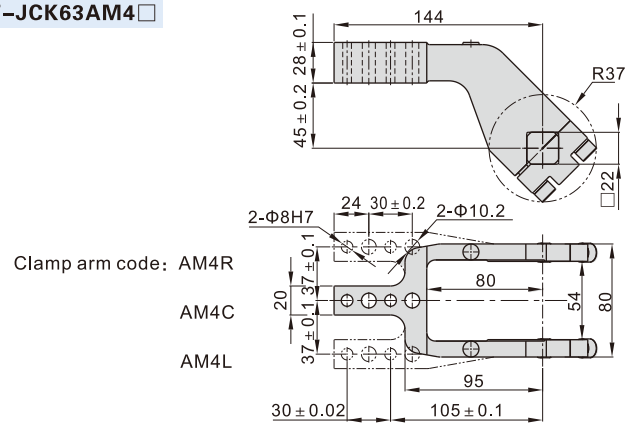
F-JCK63AM2□



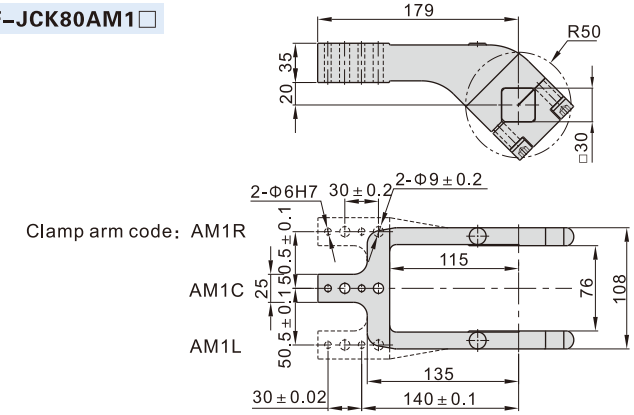
F-JCK63AM3□



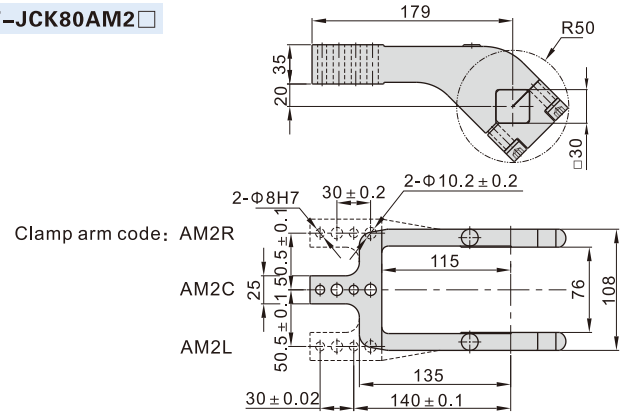
F-JCK63AM4□



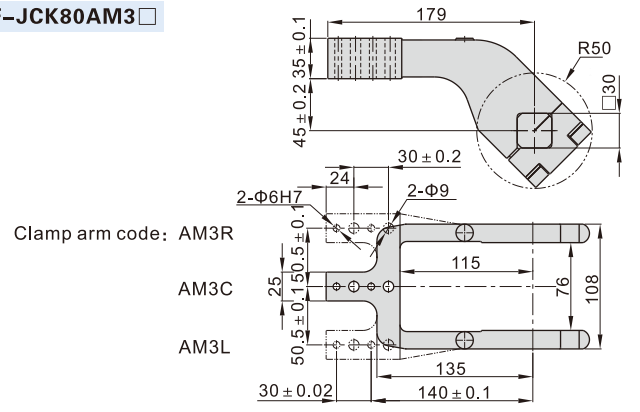
F-JCK80AM1□



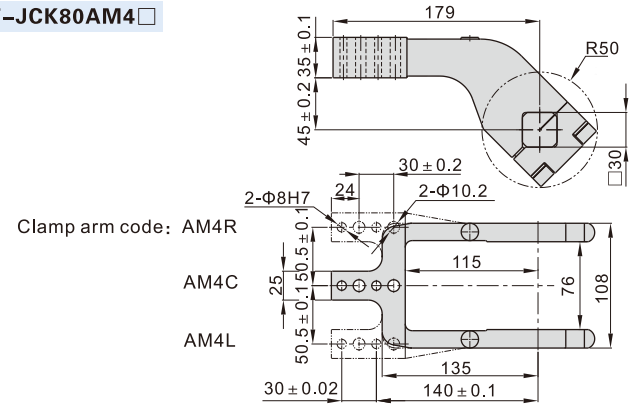
F-JCK80AM2□



F-JCK80AM3□



F-JCK80AM4□





Specification

Operating range	2mm
Voltage range	10~30V DC
Output type	N.O., PNP, NPN
Rated DC	150mA(max)
Switch frequency	30Hz
Shell material	PBT
Switch status indication	Clamping：Red Opening：Yellow
Voltage indication	Green

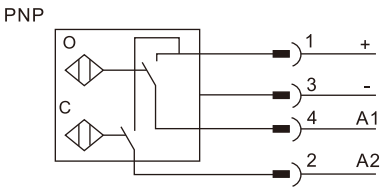
Ordering code

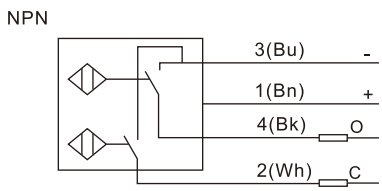
DS1 KP 63

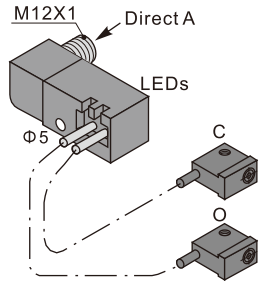
① ② ③

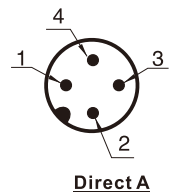
①Model	②Output type	③Bore size
DS1：Sensor witch	KP：PNP KN：NPN	63(Bore size：40、50、63) 80(Bore size：80)

Hookup





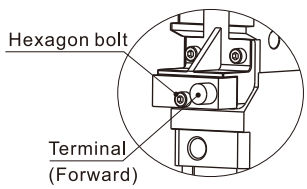


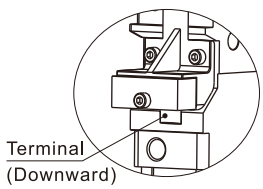


Installation and application of sensor switch

1. Sensor switch is well assembled before leaving factory which is free of adjusting. If you need to change terminals' wiring direction, change new sensor or rearrange angle, please do as follows:

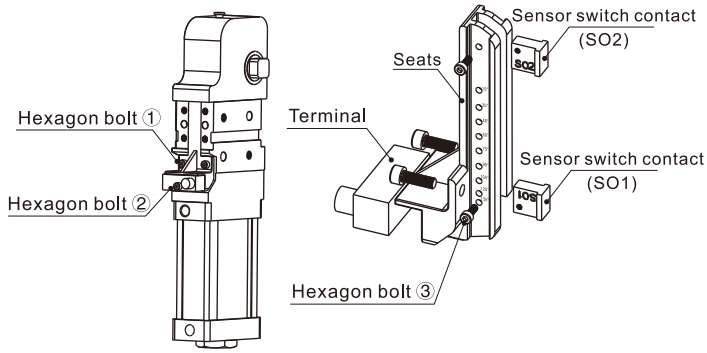
1.1) Steps of changing terminals' wiring direction:





(See figure above.) Unscrew the hexagon bolt→dismount sensor's Terminal→change terminals' wiring direction as you need→remounting→screw up the hexagon bolt.

1.2) Steps of change new sensor switch:



(See figure above.) unscrew two hexagon bolts ①→dismount sensor seats as a whole→unscrew two hexagon bolts ③→dismount two sensor switch contacts(SO1\SO2)→unscrew hexagon bolt ②→remove the sensor switch→choose new sensor switch →replace new sensor switch contact and screw up hexagon bolt ②→replace new wiring box and screw up hexagon bolt ①→finished.

Ecommended lock torque of hexagon bolt is listed in the following table:

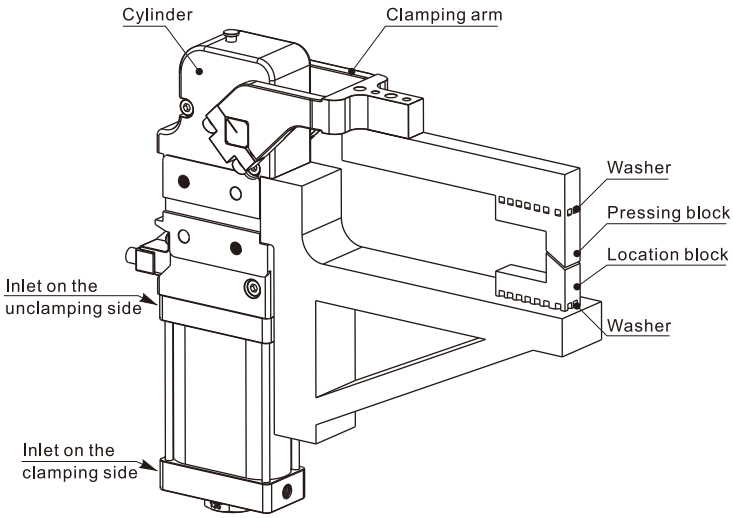
	Ecommended lock torque of hexagon bolt ①		Ecommended lock torque of hexagon bolt ②		Ecommended lock torque of hexagon bolt ③	
Bore size	Hexagon bolt type	Lock torque(N.m)	Hexagon bolt type	Lock torque(N.m)	Hexagon bolt type	Lock torque(N.m)
40、50	M3×0.5	1.2~1.5	M5×0.8	4.0~5.0	M3×0.5	1.2~1.5
63、80	M5×0.8	4.0~5.0				

1.3) Steps of readjusting angle: For more details, see latter contents.

Installation and application

1. Mount the cylinder at desired place with bolts and locating pin after choosing a mounting surface. Connect the cylinder and control valve with joint and rubber hose. To adjust the opening and closure speed, our pneumatic power welding clamp is equipped with return stroke air buffering. Buffering cannot function well if the clamping arm is over-weighted so that clamping arm' weight must be within the allowable limit;
2. Using clamping arm beyond the listed in this catalog is forbidden.
3. Workpiece mounting method:

3.1) When only clamping torque is used for clamping:



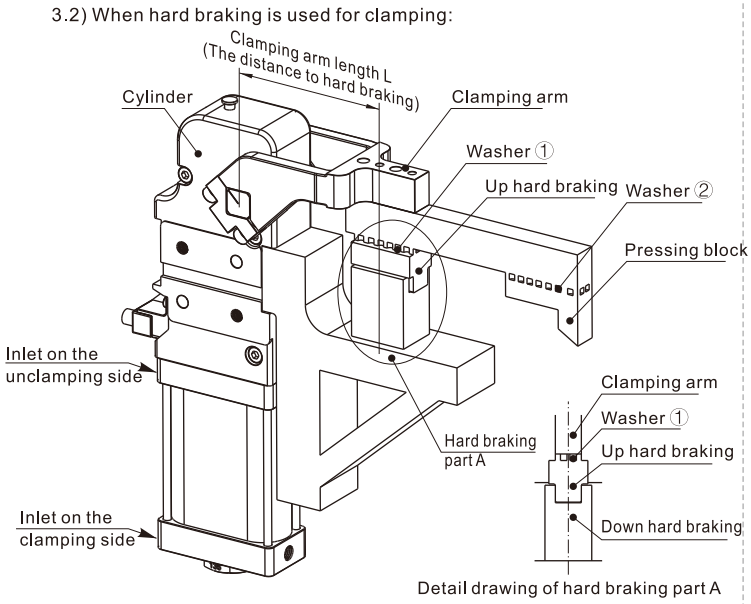
Please follow the steps to mount the workpiece onto the clamping arm:

A) Clamping the arm: supply compressed air through the inlet on the clamping side to keep the arm and pressing block at the closure position simultaneously. Make sure the arm is locked up.

B) Adjusting the clamping gap: adjust the spacer under the mentioned state to make the pressing block in line with the workpiece's thickness. (At this moment no clamping torque is produced theoretically.)

C) Applying clamping torque: Insert the spacer furthermore under the mentioned state until the gap is smaller than the workpiece's thickness and desired clamping torque is produced. (Make sure the mechanism passes the dead position to produce self-locking i.e. the retaining pin is pushed out.)

3.2) When hard braking is used for clamping:



Detail drawing of hard braking part A

Please follow the steps to mount the workpiece onto the clamping arm:

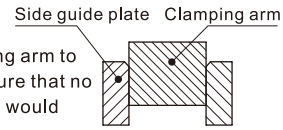
A) clamping the arm: supply compressed air through the inlet on the closure side to keep the arm and the braking block at the clamping position simultaneously. Make sure the arm is locked up;

B) Adjusting the clamping gap: Adjust washer ① under the mentioned state until the gap between the upside braking block and downside one. (At this moment no clamping torque is produced theoretically.)

C) Applying clamping torque: insert the washer① furthermore under the mentioned state to produce desired clamping torque. (Make sure the mechanism passes the dead position to produce self-locking i.e. the retaining pin is pushed out.)

D) Adjust washer ② under the state mentioned in C to make the pressing block in contact with the workpiece.

3.3) When side guide plate is mounted:

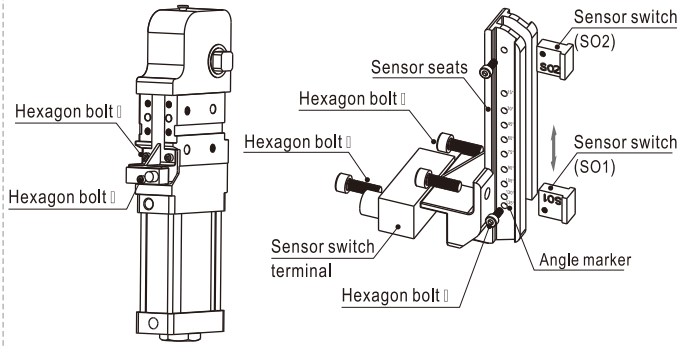


Side guide plate is mounted on the clamping arm to prevent transverse movement and make sure that no transverse load is applied and that the arm would not be stuck.

4. Angle adjusting method:

Standard adjusting angle range of the pneumatic clamp is 15°~135°. Opening angle can be changed via changing cylinder's stroke distance or the sensor's position;

4.1) Step 1 of adjusting angle--change of sensor's position:



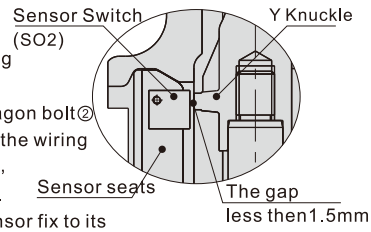
A) Unscrew hexagon bolt ① with inner hexagon wrench to take out the sensor seats;

B) Unscrew hexagon bolt ③ with inner hexagon wrench to take out sensor SO1 and align it to your desired angle indication positon and re-screw up hexagon bolt ③. (Note: when mounting sensor SO1, the number "SO1" should point downward except 15°.)

C) After the sensor's position is adjusted, replace the sensor seats by screwing up hexagon bolt ① with inner hexagon wrench (lock-up torque by related contents).

Note: 1) sensor SO2 controls the cylinder's end stroke position and its mounting position is well set when leaving factory and is not changeable.

2) the sensor wiring box is provided with two outgoing orientations: forward and downward. Unscrew hexagon bolt② and then you can change the wiring box orientation. After that, screw up hexagon bolt ②.

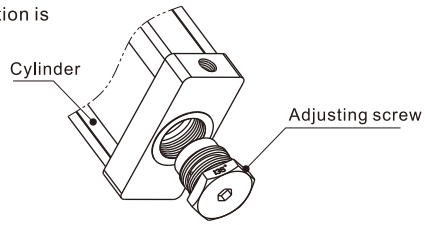


3) When remounting the sensor fix to its original position, the gap between the sensor and Y-knuckle should be less than 1.5mm. Otherwise, the sensor may not function well.

4.2) Step 2 of adjusting angle--change of the cylinder's stroke distance : The relation between the opening angle of clamping arm and cylinder's stroke distance is listed as follows:

Opening angle\Type	JCK40	JCK50	JCK63	JCK80
15°	20.2	21.6	23.1	36.1
30°	28.1	30.2	33.4	50.5
45°	34.8	37.5	41.6	62.7
60°	41.4	44.6	49.7	74.5
75°	48.0	51.8	57.5	86.3
90°	54.8	59.2	65.7	98.1
105°	61.5	66.4	73.8	109.6
120°	67.4	72.7	81.0	119.5
135°	71.6	77.3	86.2	126.4

During actual operation, the cylinder's stroke can be changed by changing the adjusting screw at the bottom to control the clamping arm's opening angle. Detailed description is as follows:



A) Unscrew original adjusting screw with inner hexagon wrench
B) Choose suitable adjusting screw according to actual need (the bottom is marked with corresponding opening angle).
C) Screw up new adjusting screw into the cylinder's end cap.

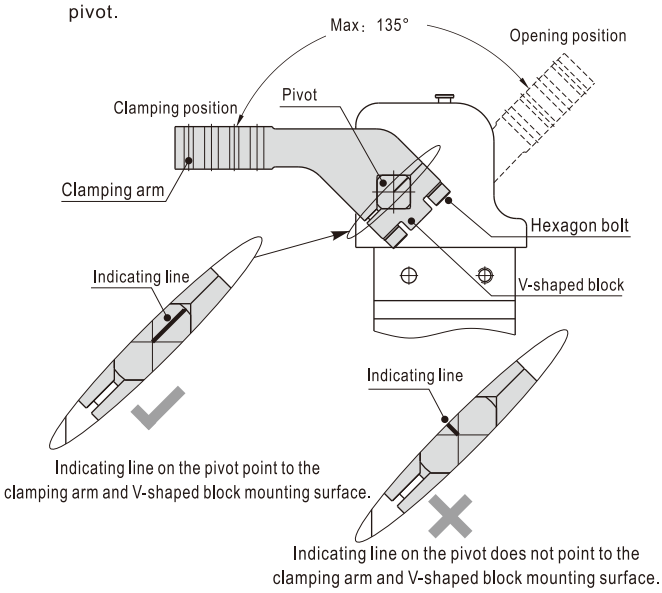
5. Mounting clamping arm:

The clamping arm is already mounted when leaving factory which can be remounted by yourself horizontally or vertically according to your actual need.

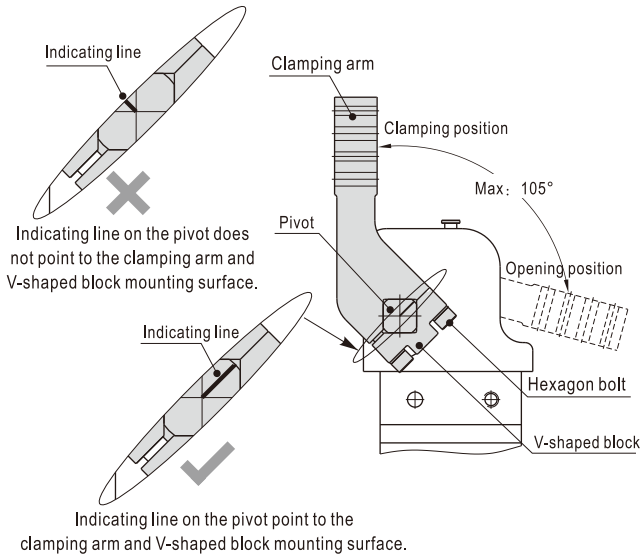
5.1) Mounting clamping arm horizontally:

Unscrew 4 hexagon bolts on both sides of the clamping arm to remove V-shaped block and then the clamping arm for substituting your desired one.

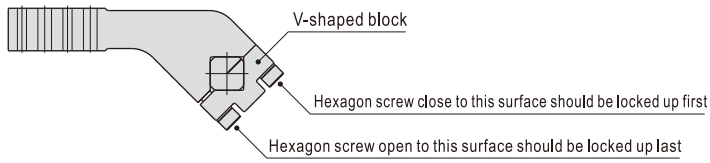
When mounting, please note the direction of the indicating line on the pivot.



5.2) Mounting clamping arm vertically:



5.3) V-shaped block mounting



5.4) Holding torque of clamping arm (recommended):

When holding clamping arm, please choose recommended value in the f ollowing list:

Bore size	Bolt type	Holding torque (N.m)
40	M6×1.0	13.8
50	M6×1.0	13.8
63	M8×1.25	33.0
80	M10×1.5	66.0

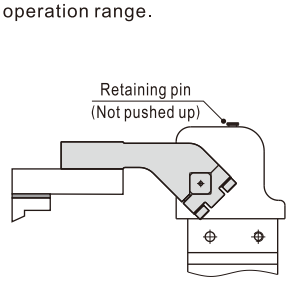
6. Self-lock function:

At the end of stroke, the crank-slider mechanism passes the dead point and gets self-locked up. The retaining pin gets pushed up at this moment. Even when compressed air is off, the cylinder can remain at closure state for safety. To open self-locking of the crank-slider mechanism, push down the retaining pin when compressed air is off.

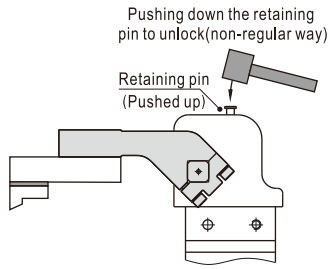
Warning:

Pushing down the retaining pin may cause clamping arm to spring off at closure state.

So when ushing the pin, please get yourself away from the clamping arm's operation range.



Retaining pin not pushed up, crank-slider mechanism not self-locked



Retaining pin pushed up, crank-slider mechanism self-locked

Power clamp cylinder

JSK Series



Specification

Model	JSK50	JSK63
Output torque (0.5MPa)	160N.m	380N.m
Acting type	Double acting	
Fluid	Air(to be filtered by 40μm filter element)	
Operating pressure	0.3~0.8MPa(43~116psi)	
Proof pressure	1.2MPa(175psi)	
Temperature	-20~70 ℃	
Opening angle	5°~135°	
Minimum opening and closure time	1 second clamping, 1 second opening	
Position sensing	Electrical Inductive approaching sensor	
Cushion type	Air buffer	
Weight [Note1]	3.7kg	5.0kg
Port size [Note2]	1/4"	

[Note1] This weight includes 15mm offset clamping arm;

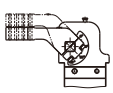
[Note2] G thread is available.

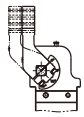
Ordering code

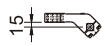
JSK □ 50 AM1R K G □

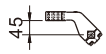
1 2 3 4 5 6 7

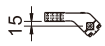
①Model	②Clamping arm position	③Bore size	④Clamping arm [Note1]	⑤Sensor switch[Note2]	⑥Thread type	⑦Port
JSK: Power clamp cylinder	Blank: Horizontal V: Vertical	50(oval) 63(oval)	Blank: No clamping arm AM1: Offset 15mm AM3: Offset 45mm AM2: Offset 15mm AM4: Offset 45mm	Blank: No sensor switch K: With electrical sensor switch(PNP) KN: With electrical sensor switch(NPN)	G: G	Blank B

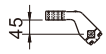


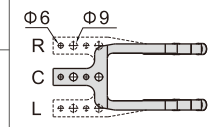


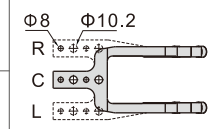


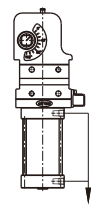


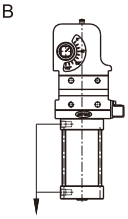










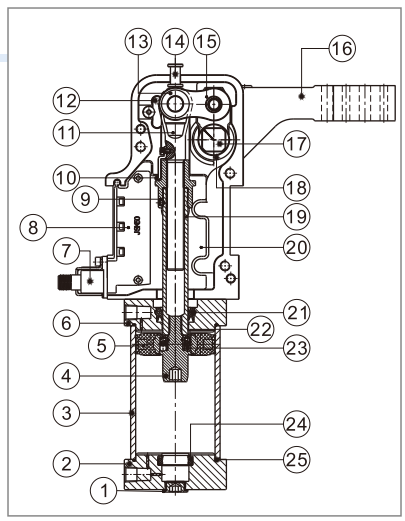


[Note1] Please refer to the drawing for detailed dimensions of clamping arm. products come with opening angle of 90°.

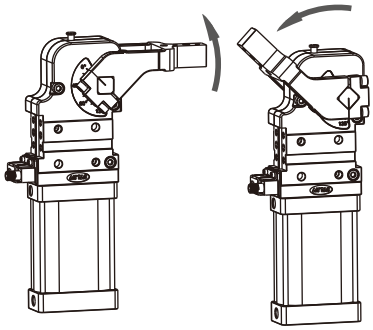
[Note2] K/KN type sensor switch can be ordered separately and please refer to relative contents.

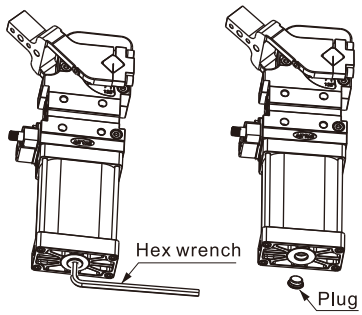
Inner structure and material of major parts

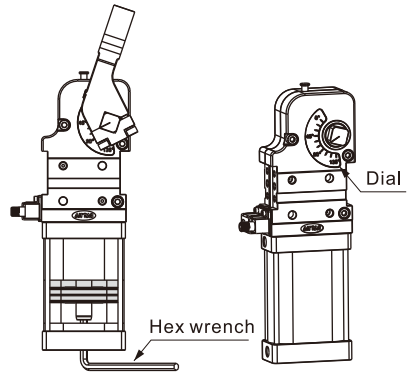
NO.	Item	Material	NO.	Item	Material
1	Plug	Carbon steel	14	Retaining pin	Carbon steel
2	Back cover	Aluminum alloy	15	Connecting rod	Alloy steel
3	Aluminum barrel	Aluminum alloy	16	Clamping arm	Carbon steel
4	Cushion body	Carbon steel	17	Pivot	Alloy steel
5	Piston	Aluminum alloy+NBR	18	Bushing	Alloy steel
6	Front cover	Aluminum alloy	19	Piston rod	Carbon steel
7	Sensor switch		20	End cap	Aluminum alloy
8	Sensor switch fix	Plastic	21	Spool O-ring	TPU
9	Joint	Alloy steel	22	Spring	Spring steel
10	Inductive block	Carbon steel	23	Steel ball	Stainless steel
11	I Knuckle	Alloy steel	24	Cushing O-ring	TPU
12	Strengthen steel plate	Alloy steel	25	O-ring	NBR
13	Bushing	Alloy steel			



Instructions







Step1: Adjust the clamping arm to the maximum opening angle;

Step2: Unscrew the plug by H8 hex wrench;

Step3: Adjust the clamping arm to the desired opening angle by H8 hex wrench.

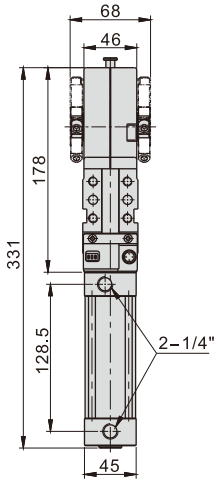
Instructions

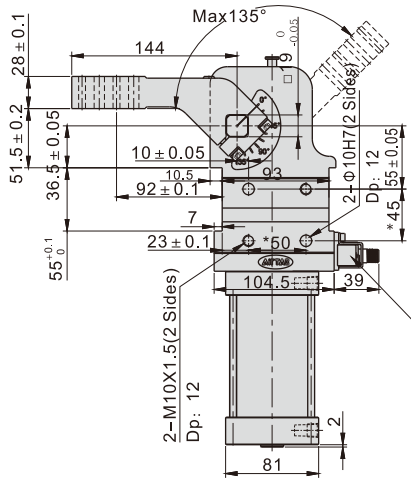
1. Cushioning body and piston are connected by thread and riveting.
2. Inductive block is fixed on the piston rod, which will move with piston rod while adjusting.
3. Sensor switch does not need further adjustment after finishing the angle adjustment.

Dimensions

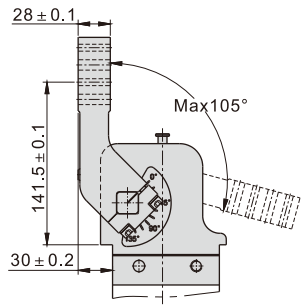
JSK50AM1(2)

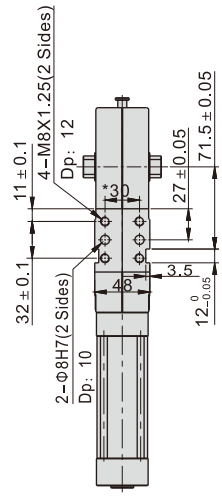
Horizontal clamping position





Vertical clamping position

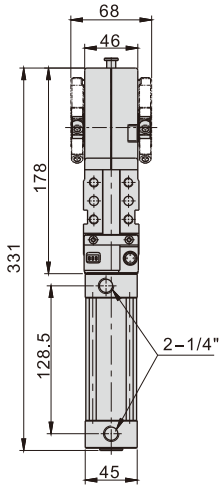


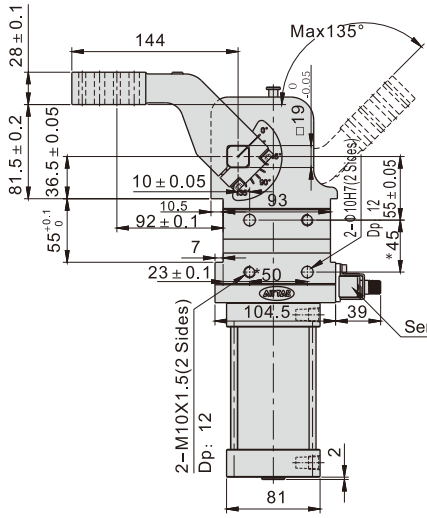


With * dimension: Pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

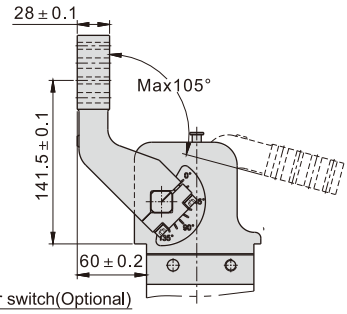
JSK50AM3(4)

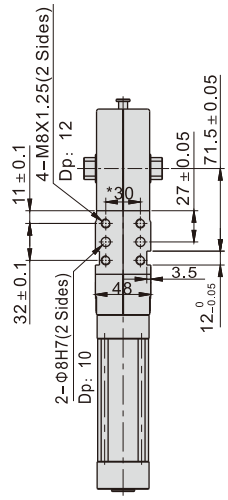
Horizontal clamping position





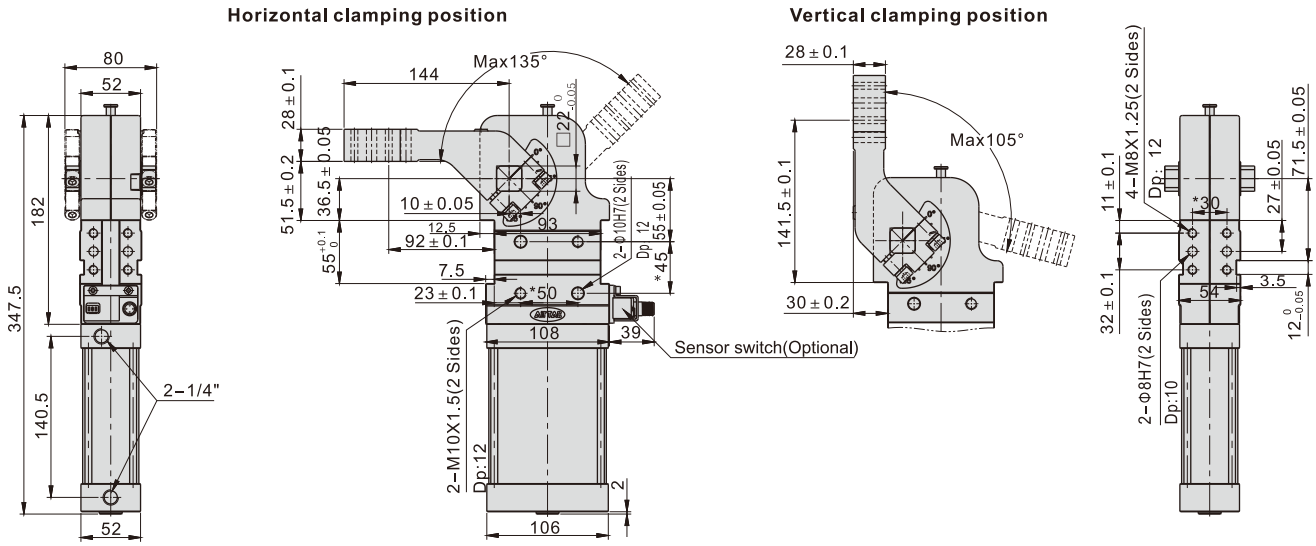
Vertical clamping position





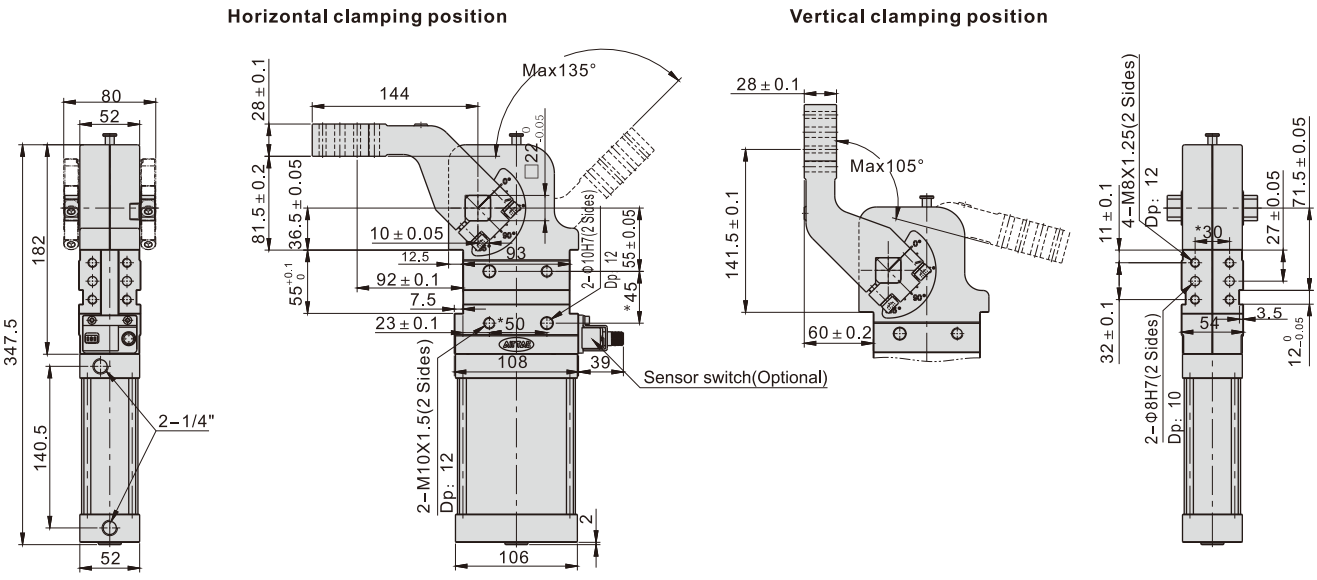
With * dimension: Pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JSK63AM1(2)



With * dimension: Pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JSK63AM3(4)



With * dimension: Pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

I Knuckle



Ordering code

F-M16X150 I

1 2 3 4

①Accessories code	②Screw thread	③Thread pitch	④Code
	M3：M3	050：0.5mm	I:I Knuckle
	M4：M4	070：0.7mm	
	M5：M5	080：0.8mm	
	M6：M6	100：1.0mm	
	M8：M8	125：1.25mm	
	M10：M10		
	M12：M12		
	M16：M16	150：1.5mm	
	M20：M20		
	M27：M27	200：2.0mm	
	M36：M36		
	M42：M42		

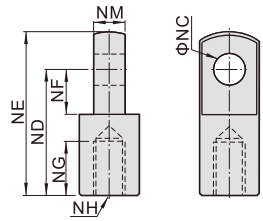
Table for I knuckle and cylinder

Cylinder	SAI								
Accessory	32	40	50	63	80	100	125	160	200
F-M10X125I	●								
F-M12X125I		●							
F-M16X150I			●	●					
F-M20X150I					●	●			
F-M27X200I							●		
F-M36X200I								●	●

Cylinder	SGC			
Accessory	125	160	200	250
F-M27X200I	●			
F-M36X200I		●	●	
F-M42X200I				●

Cylinder	MI								MPG					ACF							
Accessory	8	10	12	16	20	25	32	40	6	8	10	12	16	12	16	20	25	32	40	50	63
F-M3X050I									●												
F-M4X070I	●	●								●	●										
F-M5X080I												●	●	●							
F-M6X100I			●	●											●						
F-M8X125I					●											●	●				
F-M10X125I						●	●											●	●		
F-M12X125I								●												●	●

Dimensions



Type\Item	NC	ND	NE	NF	NG	NH	NM
F-M3x050I	3	12	15.5	5	5	M3×0.5	3
F-M4x070I	4	16	21	6.8	8	M4×0.7	4
F-M5x080I	5	25	32	14.1	7.5	M5×0.8	6.3
F-M6x100I	6	21	28	8.5	8	M6×1.0	6
F-M8x125I	8	30	40	11	15	M8×1.25	8
F-M10x125I	10	40	50	15	20	M10×1.25	10
F-M12x125I	12	48	62	24	20	M12×1.25	12
F-M16x150I	16	64	82	32	23	M16×1.5	16
F-M20x150I	20	80	102	40	30	M20×1.5	20
F-M27x200I	30	110	139	51	45	M27×2.0	30
F-M36x200I	35	144	181	65	55	M36×2.0	35
F-M42x200I	40	168	211	85	62	M42×2.0	40

Y Knuckle



Table for Y knuckle and cylinder

Cylinder Accessory	SAI								
	32	40	50	63	80	100	125	160	200
F-M10X125Y	●								
F-M12X125Y		●							
F-M16X150Y			●	●					
F-M20X150Y					●	●			
F-M27X200Y							●		
F-M36X200Y								●	●

Cylinder Accessory	SGC			
	125	160	200	250
F-M27X200Y	●			
F-M36X200Y		●	●	
F-M42X200Y				●

Cylinder Accessory	MI								MPG					ACF							
	8	10	12	16	20	25	32	40	6	8	10	12	16	12	16	20	25	32	40	50	63
F-M3X050Y									●												
F-M4X070Y	●	●								●	●										
F-M5X080Y												●	●	●							
F-M6X100Y			●	●											●						
F-M8X125Y					●											●	●				
F-M10X125Y						●	●											●	●		
F-M12X125Y								●												●	●

Ordering code

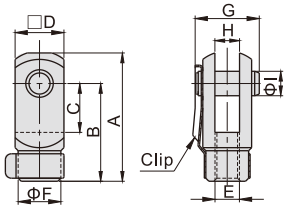
F–M16X150 Y

1 2 3 4

①Accessories code	②Screw thread	③Thread pitch	④Code
	M3：M3	050：0.5mm	Y:Y Knuckle
	M4：M4	070：0.7mm	
	M5：M5	080：0.8mm	
	M6：M6	100：1.0mm	
	M8：M8	125：1.25mm	
	M10：M10		
	M12：M12		
	M16：M16	150：1.5mm	
	M20：M20		
	M27：M27	200：2.0mm	
	M36：M36		
	M42：M42		

Dimensions

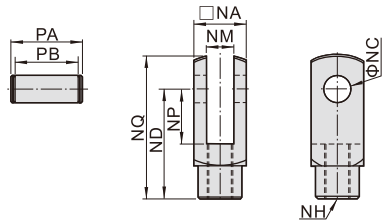
M10 and below



Type\Item	A	B	C	D	F
F-M3X050Y	15.5	12	5	6	6
F-M4X070Y	22	16	8	8	7
F-M5X080Y	28	21	10.2	12	10
F-M6X100Y	32	24	12	12	10
F-M8X125Y	42	32	16	16	14
F-M10X125Y	52	40	20	19	18

Type\Item	E	G	H	I
F-M3X050Y	M3×0.5	9	3	3
F-M4X070Y	M4×0.7	11.5	4	4
F-M5X080Y	M5×0.8	15.5	6.5	5
F-M6X100Y	M6×1.0	16	6	6
F-M8X125Y	M8×1.25	21	8	8
F-M10X125Y	M10×1.25	25	10	10

Others



Type\Item	NA	NC	ND	NP	NQ
F-M12X125Y	25.4	12	48	24	62
F-M16X150Y	32	16	64	32	80
F-M20X150Y	44.4	20	80	40	101
F-M27X200Y	54	30	110	55	139
F-M36X200Y	70	35	144	73	179
F-M42X200Y	85	40	168	86	211

Type\Item	NM	NH	PA	PB
F-M12X125Y	12	M12×1.25	32.4	26.2
F-M16X150Y	16	M16×1.5	39	32.8
F-M20X150Y	20	M20×1.5	53.4	45.2
F-M27X200Y	30	M27×2.0	64.2	54.8
F-M36X200Y	35	M36×2.0	80.2	70.8
F-M42X200Y	40.3	M42×2.0	115	93

Cylinder joint accessory

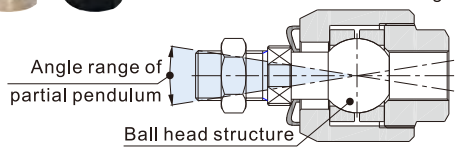
Floating Joint



Effectively dissolving the extra external force caused by eccentricity

Internal use of ball head structure

The internal use of ball head structure, flexible swing; axial no gap, deflection angle wide.



Various thread type specifications

Thread type			
M3X0.5	M8X1.25	M16X1.5	M22X1.5(New)
M4X0.7	M10X1.25	M18X1.5	M26X1.5(New)
M5X0.8	M12X1.25	M20X1.5	M27X2.0(New)
M6X1.0	M14X1.5		M36X2.0(New)



Thread type can be matched with a variety of series cylinders

Table for floating joint and cylinder

Cylinder / Accessory	PB					MI								MF				MBL				
	4	6	10	12	16	8	10	12	16	20	25	32	40	20	25	32	40	20	25	32	40	50	63
F-M3X050F		●																					
F-M4X070F			●			●	●																
F-M5X080F				●	●																		
F-M6X100F								●	●														
F-M8X125F										●				●				●					
F-M10X125F											●	●			●	●			●	●			
F-M12X125F													●								●		
F-M14X150F																	●					●	●

Cylinder / Accessory	ACQ									
	12	16	20	25	32	40	50	63	80	100
F-M8X125F			●							
F-M10X125F				●						
F-M14X150F					●	●				
F-M18X150F							●	●		
F-M22X150F									●	
F-M26X150F										●

Cylinder / Accessory	SGC				SAI								
	125	160	200	250	32	40	50	63	80	100	125	160	200
F-M10X125F					●								
F-M12X125F						●							
F-M16X150F							●	●					
F-M20X150F									●	●			
F-M27X200F	●										●		
F-M36X200F		●	●									●	●

Cylinder / Accessory	ACF							
	12	16	20	25	32	40	50	63
F-M5X080F	●							
F-M6X100F		●						
F-M8X125F			●	●				
F-M10X125F					●	●		
F-M12X125F							●	●

Ordering code

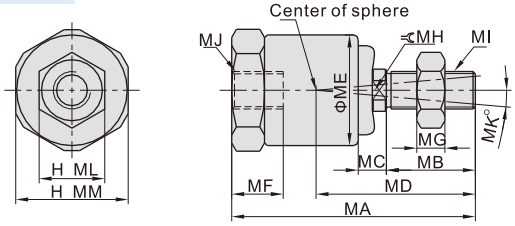
F - M22 X 150 F

① ② ③ ④

①Accessories code															
②Screw thread	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M26	M27	M36
③Thread pitch	050:0.5mm	070:0.7mm	080:0.8mm	100:1.0mm	125:1.25mm			150:1.5mm						200:2.0mm	
④Code	F: Floating joint														

Dimensions

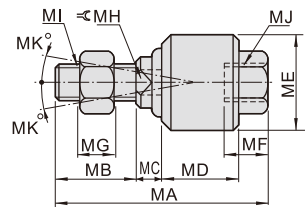
M6 and below



Type\Item	MA	MB	MC	MD	ME	MF	MG	MH	MI\MJ	ML	MM
F-M3X050F	23.5	7.5	3	15	11.8	5.5	2.4	4	M3×0.5	5.5	13
F-M4X070F	26	9.5	3	17	11.8	6	3	4	M4×0.7	7	13
F-M5X080F	34.5	13.5	3.5	22.8	13.8	8	4	6	M5×0.8	8	14
F-M6X100F	34.5	13.5	3.5	22.8	13.8	8	4	6	M6×1.0	10	14

Note: Angle compensation: ±5° . Radial direction compensation: 0.5

M8 and above



Type\Item	MA	MB	MC	MD	ME	MF	MG	MH	MI/MJ	MK
F-M8X125F	51	20	6	17	24	10.5	6	8	M8×1.25	13
F-M10X125F	58	22	7	21	26	11	6	10	M10×1.25	12
F-M12X125F	58	22	8	21	28	11.5	7	12	M12×1.25	12
F-M14X150F	70	22.5	8.5	28	34.5	16	8	15	M14×1.5	12
F-M16X150F	90	27	10	41	44.5	19	8	17	M16×1.5	7
F-M18X150F	92	27	10	41	44.5	21	11	18	M18×1.5	7
F-M20X150F	102	29	13	46	53	22	10	22	M20×1.5	10
F-M22X150F	108	32	13	46	53	25	13	22	M22×1.5	5
F-M26X150F	120	32	14.5	52.5	59.5	25	13	27	M26×1.5	5
F-M27X200F	136.5	40	14.5	52.5	59.5	40	13.5	27	M27×2.0	5
F-M36X200F	194.5	60	20.5	77.5	84	54	18	36	M36×2.0	5

Universal Joint



Table for universal joint and cylinder

Cylinder Accessory	SAI								
	32	40	50	63	80	100	125	160	200
F-M10X125U	●								
F-M12X125U		●							
F-M16X150U			●	●					
F-M20X150U					●	●			
F-M27X200U							●		
F-M36X200U								●	●

Cylinder Accessory	SGC			
	125	160	200	250
F-M27X200U	●			
F-M36X200U		●	●	

Cylinder Accessory	ACQ									
	12	16	20	25	32	40	50	63	80	100
F-M5X080U	●									
F-M6X100U		●								
F-M8X125U			●							
F-M10X125U				●						
F-M14X150U					●	●				
F-M18X150U							●	●		
F-M26X150U										●

Cylinder Accessory	MF				MBL					
	20	25	32	40	20	25	32	40	50	63
F-M6X100U										
F-M8X125U	●				●					
F-M10X125U		●	●			●	●			
F-M12X125U								●		
F-M14X150U				●					●	●

Cylinder Accessory	PB					MI							ACF							
	4	6	10	12	16	8	10	12	16	20	25	32	40	12	16	20	25	32	40	50	63
F-M4X070U			●			●	●														
F-M5X080U				●	●									●							
F-M6X100U								●	●						●						
F-M8X125U										●						●	●				
F-M10X125U											●	●						●	●		
F-M12X125U													●							●	●

Ordering code

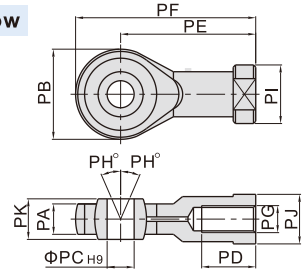
F-M10X125 U

① ② ③ ④

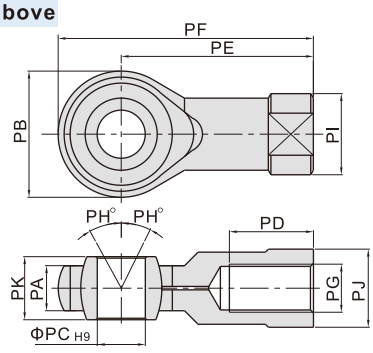
①Accessories code	②Screw thread	③Thread pitch	④Code
	M4：M4	070：0.7mm	U: Universal joint
	M5：M5	080：0.8mm	
	M6：M6	100：1.0mm	
	M8：M8	125：1.25mm	
	M10：M10		
	M12：M12		
	M14：M14	150：1.5mm	
	M16：M16		
	M18：M18		
	M20：M20		
	M26：M26		
	M27：M27	200：2.0mm	
	M36：M36		

Dimensions

M8 and below



M10 and above



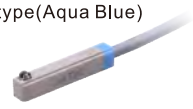
Type\Item	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK
F-M4X070U	6	18	5	10	27	36	M4×0.7	13	12.5	10	8
F-M5X080U	6	18	5	10	27	36	M5×0.8	13	12.5	10	8
F-M6X100U	6.8	20	6	12	30	40	M6×1.0	13	13	11	9
F-M8X125U	9	24	8	16	36	48	M8×1.25	13	16	14	12
F-M10X125U	11	26	10	20	43	56	M10×1.25	13	19	17	14
F-M12X125U	12	32	12	22	50	66	M12×1.25	13	22	19	16
F-M14X150U	14	36	14	28	57	75	M14×1.5	13	25	22	19
F-M16X150U	15	40	16	28	64	84	M16×1.5	15	27	22	21
F-M18X150U	16.5	46	18	30	71	94	M18×1.5	15	31	27	23
F-M20X150U	18	46	20	33	77	100	M20×1.5	15	34	30	25
F-M26X150U	22	60	25	48	94	124	M26×1.5	15	42	36	31
F-M27X200U	25	70	30	51	110	145	M27×2.0	15	50	41	37
F-M36X200U	27.5	80	35	56	125	165	M36×2.0	15	57.5	50	43

Compendium of DMS Series

Three types of sensors

General type(DMS)

General type(Aqua Blue)



Waterproof type(Yellow)



Manipulator industry(A05-DMS)

Product characteristics:
1. Flexure resistant curve material can be used in manipulator industry, such as multi joint manipulator and tank chain.
2. In case of high temperature, much dust, or water droplets and oil dust, the sensor shall take corresponding dust-proof measures.

High deflection wire

The deflection is increased by about 20% compared with the general type

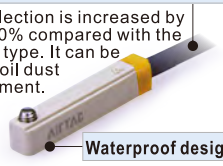


Oil resistance and deflection resistance (A06-DMS)

Product characteristics:
1. Flexure resistant curve material can be used in manipulator industry, such as multi joint manipulator and tank chain.
2. In case of welding slag, corresponding protective measures shall be taken for the sensor.

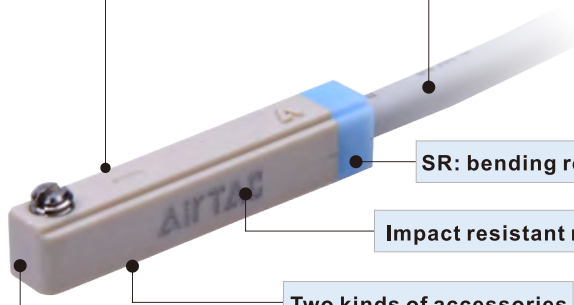
Oil resistant and flexural curve material

The deflection is increased by about 20% compared with the general type. It can be used in oil dust environment.

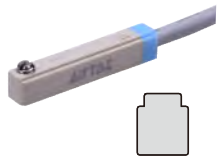


Note: The recommended minimum bending radius of A05-DMS,A06-DMS cables is 19mm.

Bending resistance

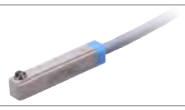


DMSG can be mounted with 2 accessories, applicable to multi-cylinders.

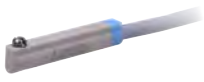
DMSG	F-MQ□
	
	F-SC□SH
	

Four types of cross section

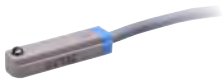
G Type



H Type



E Type



J Type



DMS Specifications

Item	DMS		
Model	2-wire	NPN	PNP
Power supply voltage	10V ~ 28V DC	5V ~ 30V DC	
Switching current	2.5mA ~ 100mA	30V/200mA Max.	
Contact capacity	2.8W Max.	6.0W Max.	
Current consumption	3mA Max.	5mA Max.	
Internal voltage drop	3.5V Max.	0.7V Max.	
Leakage current	0.05mA Max.	0.01mA Max.	
Switching frequency	1000Hz		
Impact resistance	50G		
Circuit protection	Reverse polarity protection Surge protection		
Operating Temp.	-10℃ ~ 70℃		
Enclosure	DMS,A05-DMS: IP64 / A06-DMS: IP68		
Standard	CE marking, RoHS		

[Note] A05 \ A06 type has only two-wire type.

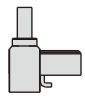
Ordering code for DMS

DMS G - □ 020 - □

A05-DMS G - □ 020

A06-DMS G - □ 020

1 2 3 4 5 6

G  H  E  J 

M08 

M12 

①Industry code		Blank: General type A05: Manipulator industry A06: Oil resistance and deflection resistance
②Model		DMS : Solid State Sensor
③Specifications		G H E J [Noet1]
④Output type		Blank: 2 wire N : NPN [Noet2] P : PNP
⑤Lead wire	Direct lead wire	020: 2m 030: 3m 050: 5m 100: 10m
	Plug connector [Noet3]	M08:0.5m with M8 plug connector M12:0.5m with M12 plug connector M08010:1m with M8 plug connector M12010:1m with M12 plug connector M08020:2m with M8 plug connector M12020:2m with M12 plug connector M08030:3m with M8 plug connector M12030:3m with M12 plug connector
⑥Additional specification		Blank: General type W:Waterproof type IP68 [note4]

[Note1]Type J is not available for A06. [Note2]A05 and A06 have no NPN and PNP option. [Note3]A05 and A06 have no plug connector option.
[Note4]A05 ,J type and M08, M12 don't have a-w Waterproof option. Standard A06 model already has a waterproof function.
Add:The sockets of M08 and M12 need additional order. Please check on page 585.

Compendium of EMS Series

Three types of sensors

General type(EMS)

General type(Aqua Blue)



Waterproof type(Yellow)



Manipulator industry(A05-EMS)

Product characteristics:
1. Flexure resistant curve material can be used in manipulator industry, such as multi joint manipulator and tank chain.
2. In case of high temperature, much dust, or water droplets and oil dust, the sensor shall take corresponding dust-proof measures.

High deflection wire

The deflection is increased by about 20% compared with the general type



Oil resistance and deflection resistance (A06-EMS)

Product characteristics:
1. Flexure resistant curve material can be used in manipulator industry, such as multi joint manipulator and tank chain.
2. In case of welding slag, corresponding protective measures shall be taken for the sensor.

Oil resistant and flexural curve material

The deflection is increased by about 20% compared with the general type. It can be used in oil dust environment.



Waterproof design(IP68)

Note: The recommended minimum bending radius of A05-EMS,A06-EMS cables is 19mm.



Bending resistance

SR: bending resistance

Impact resistant materials

High cylinder installation flexibility

EMSG is the mini type corresponding to DMSG, which can be used for long and short strokes.
EMSH is the mini type corresponding to DMSH, which can be used for long and short strokes.

Two types of cross section

G Type 	General type(Aqua Blue) 	Waterproof type(Yellow) 
H Type 	General type(Aqua Blue) 	Waterproof type(Yellow) 

EMS Specifications

Item	EMS
Model	2-wire
Power supply voltage	10V ~ 28V DC
Switching current	2.5mA ~ 100mA
Contact capacity	2.8W Max.
Current consumption	3mA Max.
Internal voltage drop	3.5V Max.
Leakage current	0.06mA Max.
Switching frequency	1000Hz
Impact resistance	50G
Circuit protection	Reverse polarity protection Surge protection
Operating Temp.	-10℃ ~ 70℃
Enclosure	EMS,A05-EMS: IP64 / A06-EMS: IP68
Standard	CE marking, RoHS
Note	Temperature overheat protection

Ordering code for EMS

EMS G - □ 020 - □

A05-EMS G - □ 020

A06-EMS G - □ 020

① ② ③ ④ ⑤ ⑥

G 

H 

M08 

M12 

①Industry code		Blank: General type A05: Manipulator industry A06: Oil resistance and deflection resistance
②Model		EMS : Solid State Sensor
③Specifications		G H
④Output type		Blank: 2 wire
⑤Lead wire	Direct lead wire	020: 2m 030: 3m 050: 5m 100: 10m
	Plug connector [Noet1]	M08:0.5m with M8 plug connector M12:0.5m with M12 plug connector M08010:1m with M8 plug connector M12010:1m with M12 plug connector M08020:2m with M8 plug connector M12020:2m with M12 plug connector M08030:3m with M8 plug connector M12030:3m with M12 plug connector
⑥Additional specification		Blank: General type W:Waterproof type IP68 [note2]

[Note1]A05 and A06 have no plug connector option. [Note2]A05 and A06 don't have a-w Waterproof option. Standard A06 model has a waterproof function.
Add:The sockets of M08 and M12 need additional order. Please check on page 585.

Compendium of CMS Series

Two types of sensors

General type(CMS)

General type(blue)



High temperature type (red)



Manipulator industry(A05-CMS)

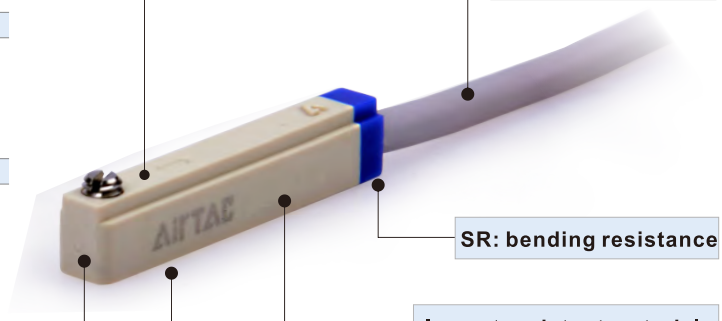
Product characteristics:
1. Flexure resistant curve material can be used in manipulator industry, such as multi joint manipulator and tank chain.
2. In case of high temperature, much dust, or water droplets and oil dust, the sensor shall take corresponding dust-proof measures.

High deflection wire

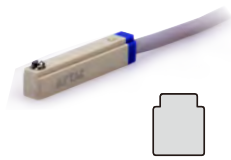
The deflection is increased by about 20% compared with the general type



Note: The recommended minimum bending radius of A05-CMS cables is 19mm.



CMSG can be mounted with 2 accessories, applicable to multi-cylinders.

CMSG	F-MQ□
	 
	F-SC□SH
	 

Four types of cross section

G Type	
H Type	
E Type	
J Type	

CMS Specifications

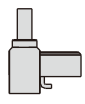
Item	CMS	
Model	General	Heat resistant
Power supply voltage	5V ~ 240V AC/DC	
Switching current	100mA	
Contact capacity	10W Max.	
Current consumption	N/A	
Internal voltage drop	2.5V Max. @100mA DC	N/A
Leakage current	N/A	
Switching frequency	200Hz	
Impact resistance	50G	
Circuit protection	N/A	
Operating Temp.	-10℃ ~ 70℃	-10℃ ~ 125℃
Enclosure	IP64	
Standard	CE marking, RoHS	

Ordering code for CMS

CMS G - 020 - □

A05-CMS G - 020

① ② ③ ④ ⑤

G  H  E  J 

M08 

M12 

①Industry code		Blank: General type A05: Manipulator industry
②Model		CMS : Reed Sensor
③Specifications		G H E J
④Lead wire	Direct lead wire	020: 2m 030: 3m 050: 5m 100: 10m
	Plug connector [Noet1]	M08:0.5m with M8 plug connector M12:0.5m with M12 plug connector M08010:1m with M8 plug connector M12010:1m with M12 plug connector M08020:2m with M8 plug connector M12020:2m with M12 plug connector M08030:3m with M8 plug connector M12030:3m with M12 plug connector
⑤Additional specification		Blank: General type H:Heat resistant [note2]

[Note1]A05 has no plug connector option. [Note2]A05 has no heat resistant option.
Add:The sockets of M08 and M12 need additional order. Please check on page 585.

Ordering code for accessories

F - MQ □ Cylinder Accessory



①Category	F：Accessory									
②Model	MQ：Cylinder Accessory									
③Cylinder	Aluminum alloy			Aluminum alloy (Thick type)			Stainless steel		
	Code	For series	For bore size	Code	For series	For bore size	Code	For series	For bore size
	A20: Φ20mm	MCK MBL	Φ20	A32T: Φ32mm	TWG	Φ32	S06: Φ6mm	PB/PBR MI MF MG MA/MAC	Φ6
	A25: Φ25mm		Φ25	A40T: Φ40mm		Φ40	S08: Φ8mm		Φ8
	A32: Φ32mm		Φ32	A50T: Φ50mm		Φ50	S10: Φ10mm		Φ10
	A40: Φ40mm		Φ40				S12: Φ12mm		Φ12
	A50: Φ50mm		Φ50				S16: Φ16mm		Φ16
	A63: Φ63mm		Φ63				S20: Φ20mm		Φ20
	A80: Φ80mm		Φ80				S25: Φ25mm		Φ25
							S32: Φ32mm		Φ32
							S40: Φ40mm		Φ40
							S50: Φ50mm		Φ50
							S63: Φ63mm		Φ63

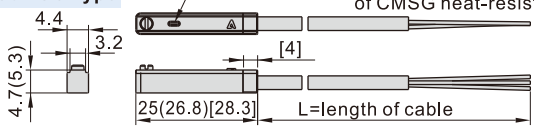
F - SC □ SH Tie Rod Cylinder Accessory



①Category	F：Accessory		
②Model	SC：Tie Rod Cylinder Accessory		
③Cylinder	Code	For series	For bore size
	32	SC SGC	Φ32, Φ40
	50		Φ50
	63		Φ63
	80		Φ80, Φ100
	125		Φ125
	160		Φ160, Φ200
	250		Φ250
④Attached			

Dimensions

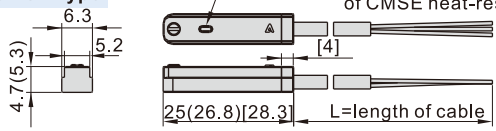
DMSG/CMSG Type



The value in "[ ]" is dimension of CMSG heat-resistant type.

Note: The value in "( )" is dimension of CMSG type.

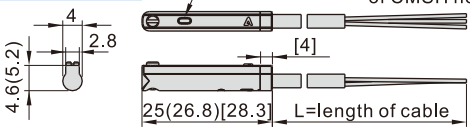
DMSE/CMSE Type



The value in "[ ]" is dimension of CMSE heat-resistant type.

Note: The value in "( )" is dimension of CMSE type.

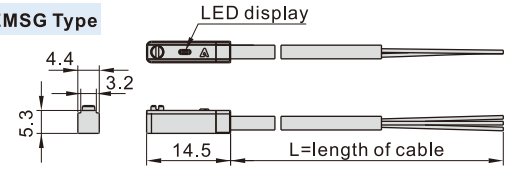
DMSH/CMSH Type



The value in "[ ]" is dimension of CMSH heat-resistant type.

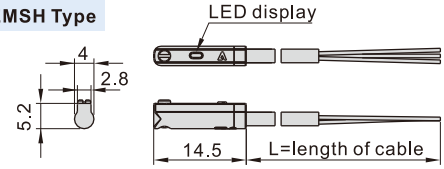
Note: The value in "( )" is dimension of CMSH type.

EMSG Type

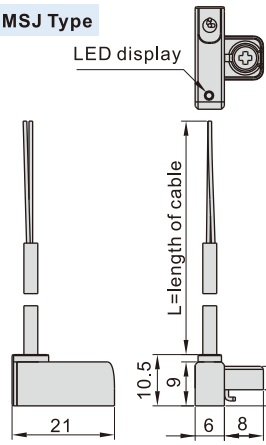


Note:a number in the bracket is the dimension of CMSH.

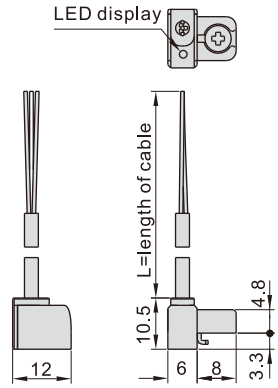
EMSH Type



CMSJ Type



DMSJ Type

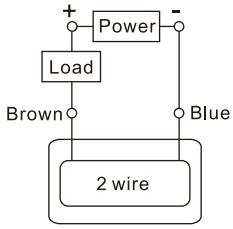


length of cable specification	length of cable(L)
020 Type	2000mm
030 Type	3000mm
050 Type	5000mm

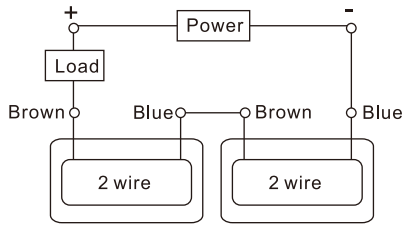
Connection method

2 wire, reed sensor connection

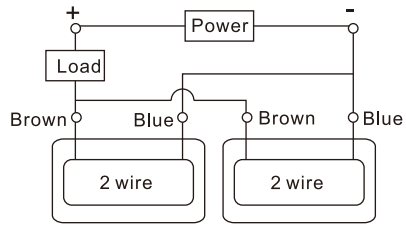
1.General connection



2.Series connection(And)



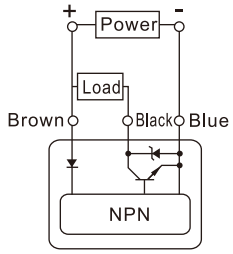
3.Parallel connection(OR)



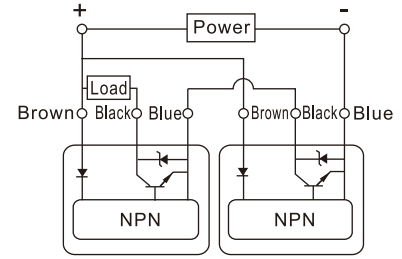
3 wire, solid state NPN connection

Note: The indicator lights will light up when both auto switches are turned NO.

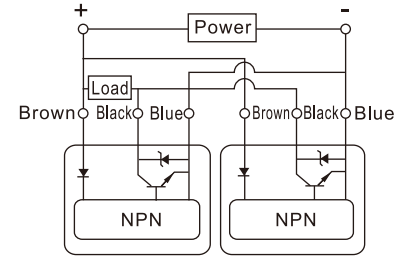
1.General connection



2.Series connection(And)



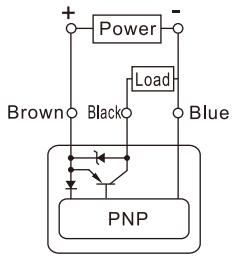
3.Parallel connection(OR)



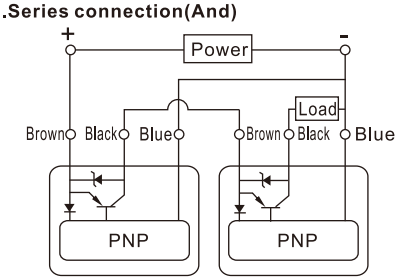
3 wire, solid state PNP connection

Note: The indicator lights will light up when both auto switches are turned NO.

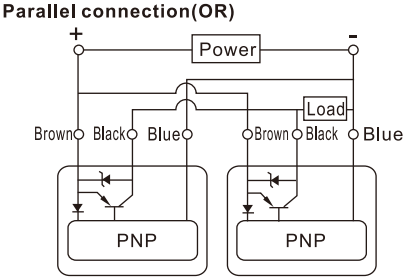
1.General connection



2.Series connection(And)



3.Parallel connection(OR)

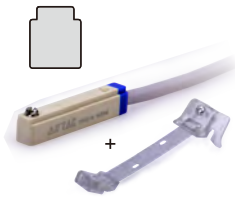


The selection of sensor

DMSG CMSG EMSG	HFKL				MCK						ACQ/TACQ										ACQ			HFKP				RMT	RMT/RMTL				
	10	16	20	25	25	32	40	50	63	80	12	16	20	25	32	40	50	63	80	100	125	140	160	16	20	25	32	10	16	20	25	32	40
		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

HFK	HFK/HFKP					HFK	TCL/TCM											QCK							TR						
10	16	20	25	32	40	6	10	12	16	20	25	32	40	50	63	80	100	12	16	20	25	32	40	50	63	6	10	16	20	25	32
	•	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

SAU						HFZ							HFY						HFP					MD/MK					
32	40	50	63	80	100	6	10	16	20	25	32	40	6	10	16	20	25	32	10	16	20	25	32	6	10	16	20	25	32
•	•	•	•	•	•			•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•



Stainless steel																														
PB/PBR					MI		MI/TMI				MI		MF				MG							MA/MAC						
6	8	10	12	16	8	10	12	16	20	25	32	40	20	25	32	40	20	25	32	40	50	63	16	20	25	32	40	50	63
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Aluminum alloy									
MBL						MCK			
20	25	32	40	50	63	40	50	63	80
•	•	•	•	•	•	•	•	•	•

It needs an accessory to mount a sensor on a cylinder



SGC			
125	160	200	250
•	•	•	•

It needs an accessory to mount a sensor on a cylinder

DMSJ CMSJ	ACQ/TACQ						SDA										QCK				QDK			
	32	40	50	63	80	100	12	16	20	25	32	40	50	63	80	100	32	40	50	63	20	25	32	40
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•



DMSH CMSH EMSH	ACQ			TC		HFZ							HFY	HFP	HFR					HFC							HFT				
	125	140	160	6	10	6	10	16	20	25	32	40	6	32	10	16	20	25	32	16	20	25	32	40	50	63	10	16	20	25	32
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

QDK				HLQ/HLQL						HLS/HLSL						MU						HLH			MPG					
20	25	32	40	6	8	12	16	20	25	6	8	12	16	20	25	6	8	10	12	16	20	6	10	16	20	6	8	10	12	16
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

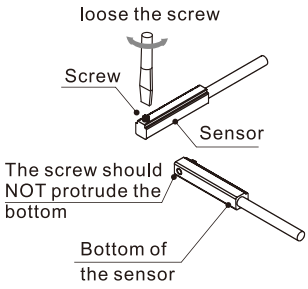
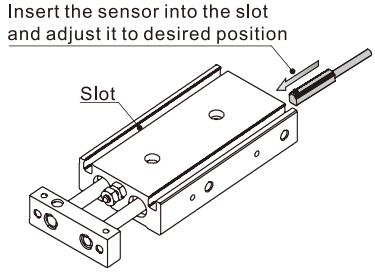
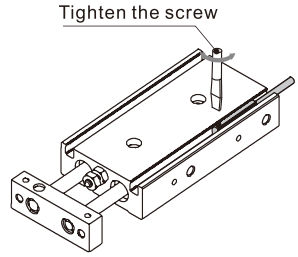
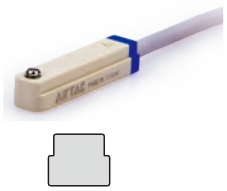
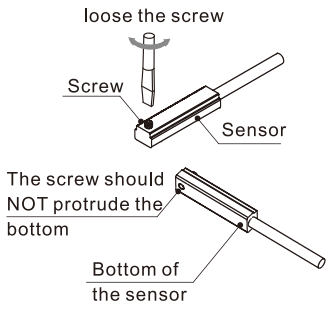
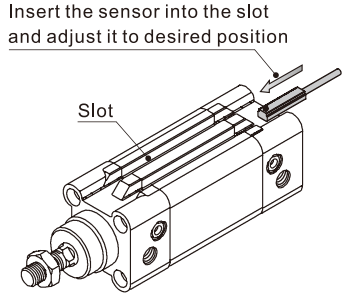
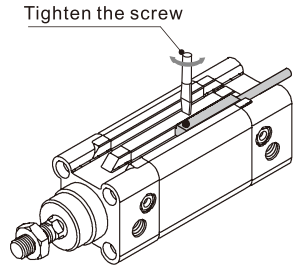
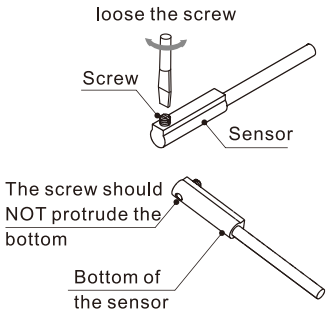
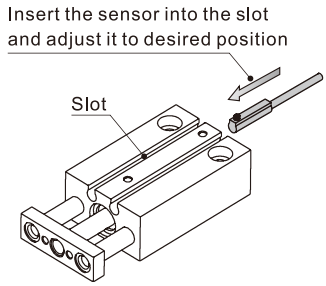
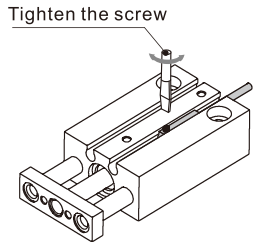
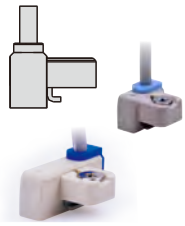
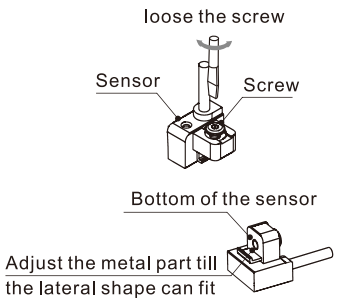
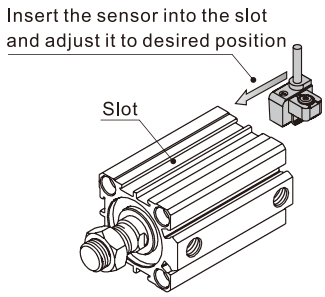
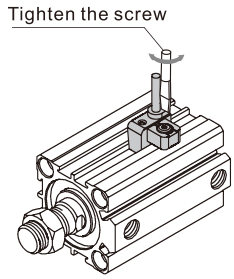
HRQ										HFK						HLF				HGS			RMH				HFD				
2	3	7	10	20	30	50	70	100	200	10	16	20	25	32	40	8	12	16	20	6	8	10	12	10	16	20	25	8	12	16	20	25
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•

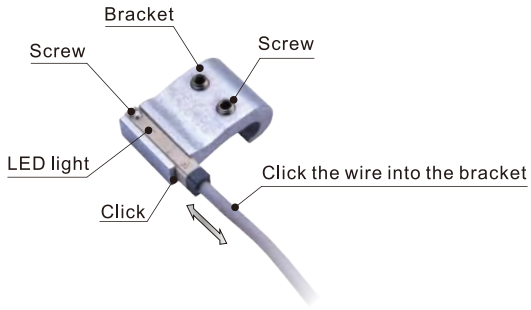
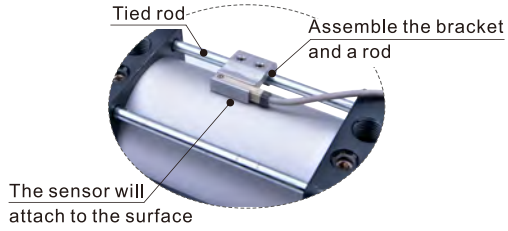
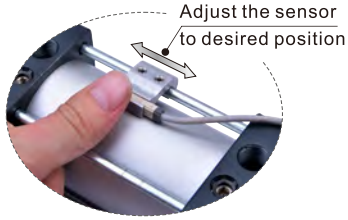
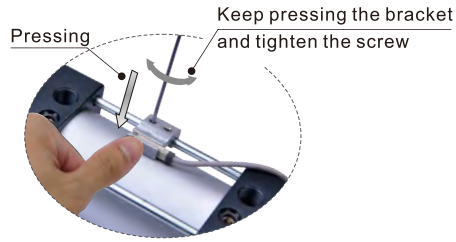
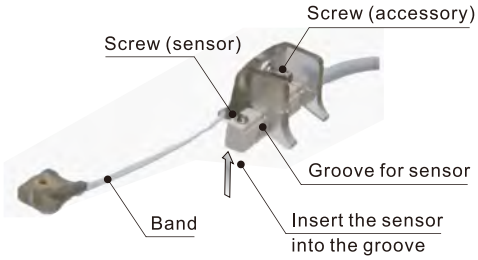
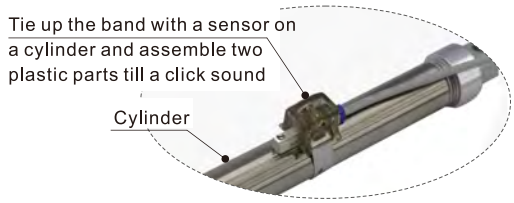
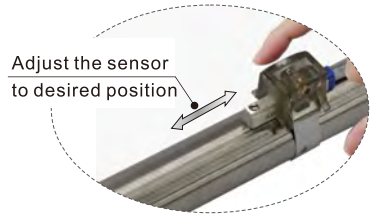
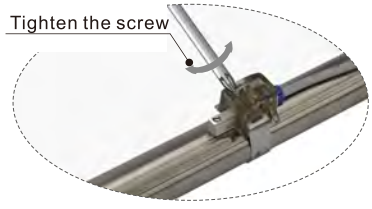
HFKL				HFCQ						HRS					HFKP			
10	16	20	25	16	20	25	32	40	50	63	10	15	20	30	40	16	20	25	32
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•



DMSE CMSE	ACF								SAI/TSAI						SAI			ACE										
	12	16	20	25	32	40	50	63	32	40	50	63	80	100	125	160	200	12	16	20	25	32	40	50	63	80	100	125
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Installation

Sensor model	Procedure		
DMSG/CMSG/EMSG	1	2	3
			
DMSE/CMSE	1	2	3
			
DMSH/CMSH/EMSH	1	2	3
			
DMSJ/CMSJ	1	2	3
			

Sensor model	Procedure	
DMSG+(F-SC□SH) CMSG+(F-SC□SH)	1 	2 
	3 	4 
DMSG+(F-MQ□) CMSG+(F-MQ□)	1 	2 
	3 	4 

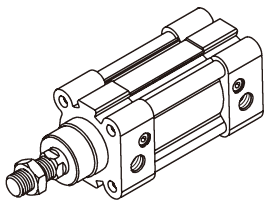
Sensor for " 米 " shape cylinder

SAI, SAU series will substitute for SI, SU series. And the corresponding sensors have some adjustments as the chart below.

New type(SAI)

Cylinder and accessory

Cylinder

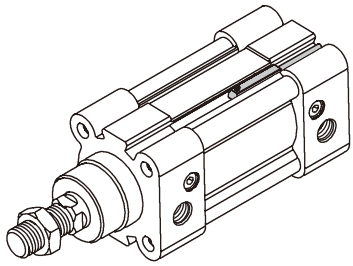


Sensor



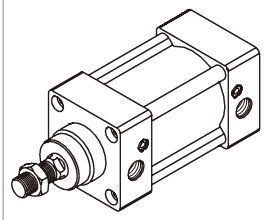
CMSE \ DMSE

Installation



Previous type(SI)

Cylinder



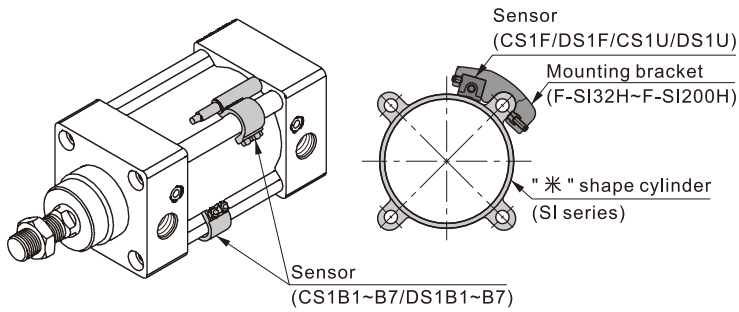
Sensor



CS1B1 / DS1B1
CS1B2 / DS1B2
CS1B3 / DS1B3
CS1B4 / DS1B4
CS1B5 / DS1B5
CS1B6 / DS1B6
CS1B7 / DS1B7



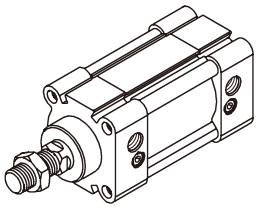
CS1F/DS1F/CS1U/DS1U
+
F-SI32H/F-SI40H
F-SI50H/F-SI63H
F-SI80H/F-SI100H
F-SI125H/F-SI160H
F-SI200H



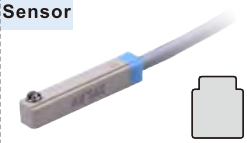
New type(SAU)

Cylinder and accessory

Cylinder

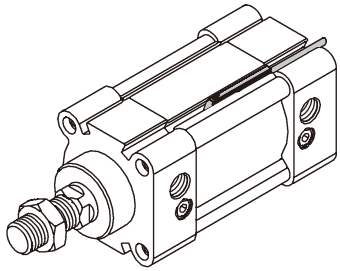


Sensor



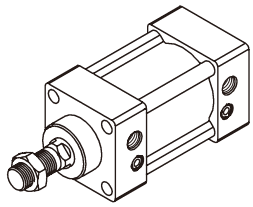
DMSG \ CMSG\ EMSG

Installation



Previous type(SU)

Cylinder



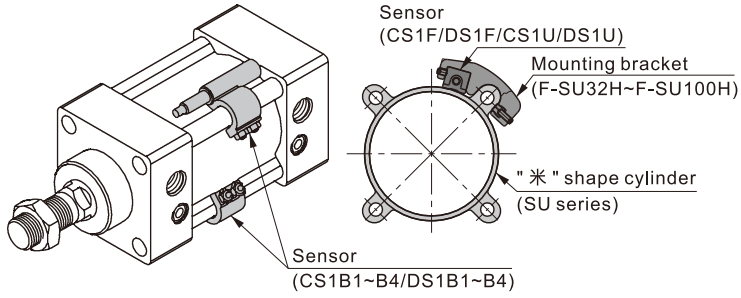
Sensor



CS1B1 / DS1B1
CS1B2 / DS1B2
CS1B3 / DS1B3
CS1B4 / DS1B4



CS1F/DS1F/CS1U/DS1U
+
F-SU32H/F-SU40H
F-SU50H/F-SU63H
F-SU80H/F-SU100H



Socket

Ordering code

F - EC M08 B 020 - □

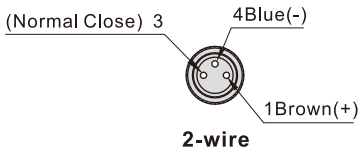
1 2 3 4 5 6



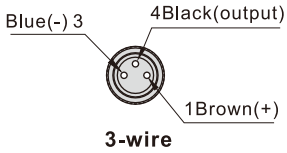
①Catagory code	F：Accessory
②Specification code	EC：Connecting Wire
③Socket type	M08:M8 socket M12:M12 socket
④Wire type	B: 2-wire type C:3-wire type
⑤Wire length	020: 2 meters 030:3meters 050:5meters 100:10meters
⑥Additional specification	Blank: General type

Appearance

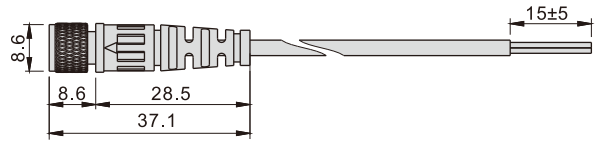
M8 socket



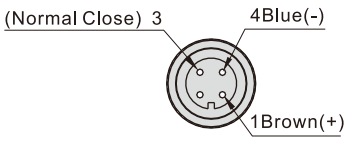
2-wire



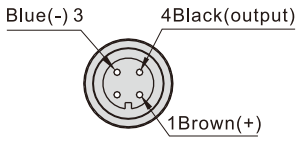
3-wire



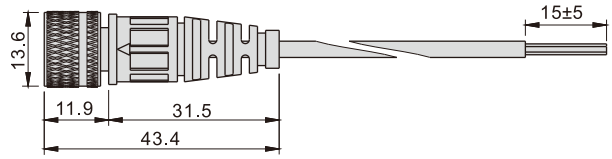
M12 socket



2-wire



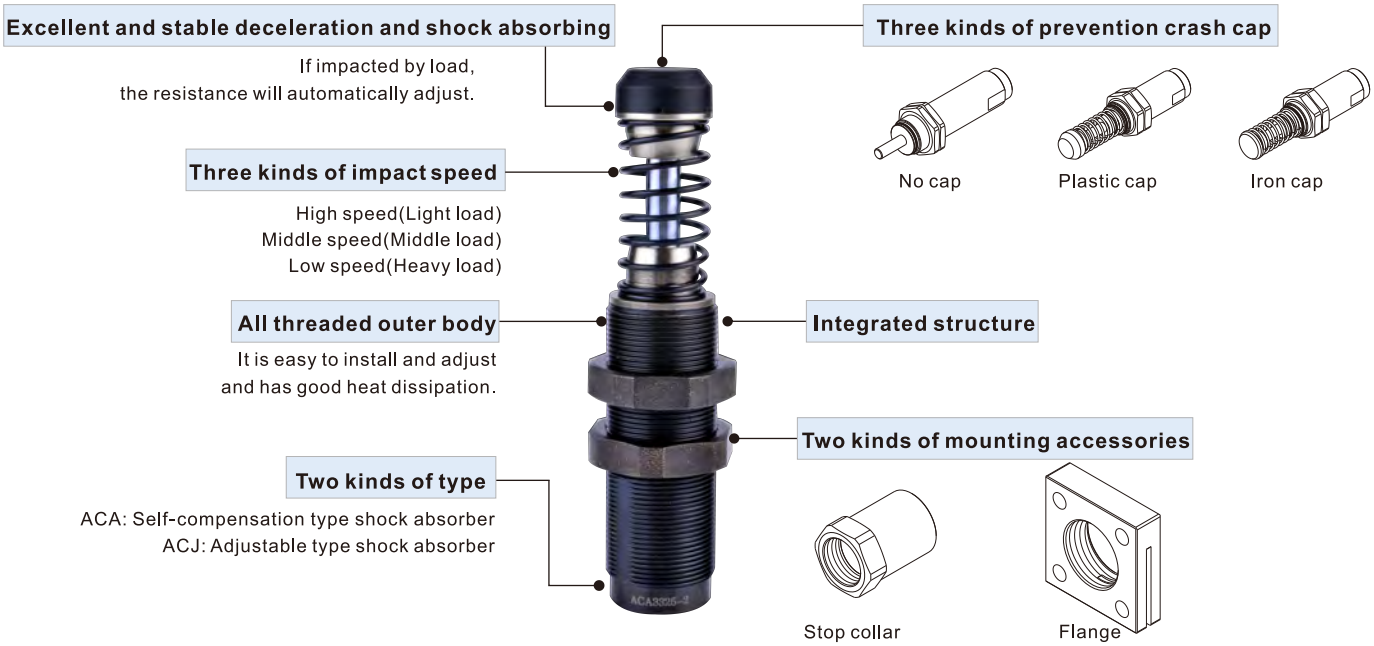
3-wire



Instruction

1. Sensor shall not fall down or bear great impact when it is installed.
2. The wire of the Sensor shall not move with the action of cylinder.
3. Clamping torque shall be within the allowable scope when the Sensor is installed(0.15~0.2Nm).
4. Sensor shall be installed in the middle position of the action scope.
5. Sensor wiring:
  A. The wire is unable to bear repetitive torsion and tension. Please wire an external load before switch the power on.
  B. No poor insulation in wire.
  C. Do not wire with power line, high voltage line or use one wiring pipe.
  D. Pleas wire the circuit correctly base on the circuit diagram.
6. Execute scheduled maintenance by the following guidelines:
  A. Make sure the sensor is firmly fixed.
  B. Make sure the wire is intact.
  C. Make sure that LED indicate the movement of cylinder correctly.
7. Application of environment:
  A. It is Not allow to use the sensor in the environment with explosive gas.
  B. Magnetic sensor shall not be used in the environment with external magnetism.
  C. Magnetic sensor shall not be used in the environment that is always eroded by water.
  D. Magnetic sensor shall not be used in the environment with oil moisture or chemical substance.
  E. Magnetic sensor shall not be used in the environment with periodically changing temperature.
  F. Magnetic sensor shall not be used in the environment with excessively great impact.
  G. Magnetic sensor shall not be used in the environment with sources of electrical pulse.
  H. Avoid the environment with accumulated iron power and dense magnetic objects.

Compendium of ACA/ACJ Series



Specification

Model	Stroke (mm)	Max. energy absorbed (Nm)	Max. energy absorbed/hour(Nm/h)	Max. effective mass(kg)			Max. impact speed(m/s)			Weight (g)
				High speed	Middle speed	Low speed	High speed	Middle speed	Low speed	
ACA0806	6	3	5400	5	20	25	4	2	1	12
ACA1007	7	6	14500	10	40	50	4	2	1	26
ACA1210	10	10	30000	18	60	80	4	2	1	40
ACA1215	15	14	35000	25	90	115	4	2	1	48
ACA1412	12	18	36000	30	110	150	4	2	1	70
ACA1416	16	22	39000	40	140	180	4	2	1	78
ACA1420	20	25	45000	45	155	200	4	2	1	85
ACA1616	16	35	43000	60	220	285	4	2	1	105
ACA1620	20	40	47000	70	250	325	4	2	1	115
ACA1625	25	45	51000	80	280	365	4	2	1	125
ACA2020	20	60	50000	240	660	960	4	2	1	175
ACA2025	25	65	54000	260	720	1040	4	2	1	185
ACA2030	30	70	58000	280	780	1120	4	2	1	210
ACA2040	40	80	65000	320	890	1280	4	2	1	225
ACA2525	25	100	75000	400	1100	1600	4	2	1	290
ACA2550	50	150	85000	600	1650	2400	4	2	1	370
ACA2725	25	140	85000	560	1550	2240	4	2	1	372
ACA2750	50	250	95000	1000	2780	4000	4	2	1	475
ACA3325	25	180	100000	720	2000	2880	4	2	1	596
ACA3350	50	300	120000	1200	3300	4800	4	2	1	750
ACA3625	25	220	135000	880	2400	3500	4	2	1	702
ACA3650	50	350	150000	1400	2500	5600	4	2	1	889

Model	Stroke(mm)	Max. energy absorbed (Nm)	Max. energy absorbed/hour(Nm/h)	Max. effective mass(kg)	Max. impact speed(m/s)	Weight(g)
ACJ1007	7	6	14500	50	4	28
ACJ1210	10	10	30000	80	4	43
ACJ1412	12	20	36000	160	4	75
ACJ2020	20	60	50000	960	4	189
ACJ2525	25	100	75000	1600	4	308
ACJ2550	50	150	85000	2400	4	395
ACJ2725	25	140	85000	2240	4	396
ACJ2750	50	250	95000	4000	4	510
ACJ3325	25	180	100000	2880	4	540
ACJ3350	50	300	110000	4800	4	800
ACJ3625	25	220	125000	2500	4	750
ACJ3650	50	350	130000	5600	4	950
ACJ4225	25	350	150000	5600	4	1150
ACJ4250	50	700	180000	11200	4	1420
ACJ4275	75	1050	210000	16800	4	1720

ACA, ACJ Series



Product feature

1. Excellent and stable deceleration and shock absorbing; if impacted by load, the resistance will automatically adjust.
2. Outer body of integrated structure is treated by QPQ, which has optimum corrosion and wear resistance and can withstand high pressure; it is easy to install and adjust for all threaded outer body which has good heat dissipation.
3. With high hardness stainless steel shaft, the shock absorber has better impact and corrosion resistance, and it can work under adverse conditions.
4. Special oiling process leads to stable shock absorbing.
5. Compact structure and high max. absorbed energy.
6. We use Special lubricants as buffer medium, which adapts to wide temperature range and ensures stable cushioning.

Ordering code

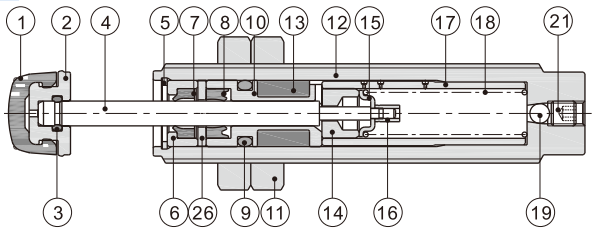
ACA 20 20 - 1 N

① ② ③ ④ ⑤

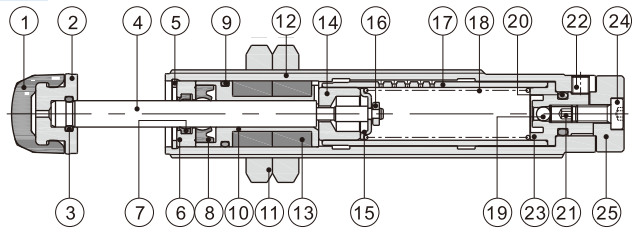
①Model	②Body male thread	③Stroke	④Impact speed	⑤Prevention crash cap
ACA: Self-compensation type shock absorber	08:M8	Refer to the pecification table for details.	1: High speed(Light load) 2: Middle speed(Middle load) 3: Low speed(Heavy load)	Blank: Plastic cap N: No cap
	10:M10			
	12:M12			
	14:M14			
	16:M16			Blank: Plastic cap F: Iron cap N: No cap
	20:M20			
	25:M25			
	27:M27			
	33:M33			Blank: Plastic cap F: Iron cap
	36:M36			
ACJ: Adjustable type shock absorber	10:M10		Not this code	Blank: Plastic cap N: No cap
	12:M12			
	14:M14			
	20:M20			Blank: Plastic cap F: Iron cap N: No cap
	25:M25			
	27:M27			
	33:M33			Blank: Plastic cap F: Iron cap
	36:M36			
	42:M42			

Inner structure and material of major parts

ACA

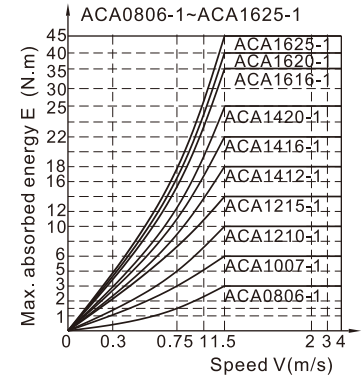


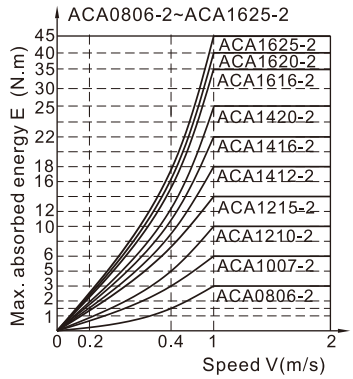
ACJ

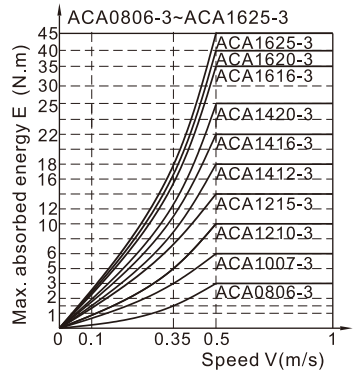


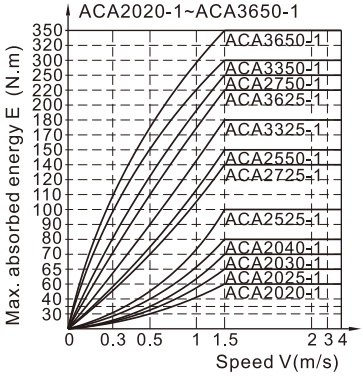
No.	Item	Material	No.	Item	Material
1	Bump cap	PA66(M8)\TPU(M10~M14)\TPU or S45C(M20~M42)	14	Piston	Brass
2	Bump cap(core)	No(M8)\Cutting steel(Othres)	15	Spring seat	Spring steel
3	O-ring	NBR	16	Busher	Brass(M8~M12)\Aluminum alloy(M20~M27)
4	Piston rod	Stainless steel(M8~M27)\S45C(M33~M42)	17	Inlet body	Cutting steel(M8~M14)\Seamless steel tube(M20~M42)
5	Clip	No(M8~M10)\Spring steel(M12~M42)	18	Spring	SWPB
6	Front cover	Brass(M8)\Cutting steel(M10)\Aluminum(M12~M42)	19	Ball	GCr15
7	Front cover gasket	No(M8)\TPU(M10~M42)	20	O-ring	NBR
8	Front cover gasket	NBR	21	Set screw	Alloy steel
9	O-ring	NBR	22	Set screw	Alloy steel
10	Correcting body	Brass	23	Back cover	Brass
11	Nut	SS41	24	Screw	Alloy steel
12	Body	Cutting steel	25	Knob	Aluminum alloy
13	Accumulator	Foamex	26	Washer	SUS304(M10~M14)\No(Othres)

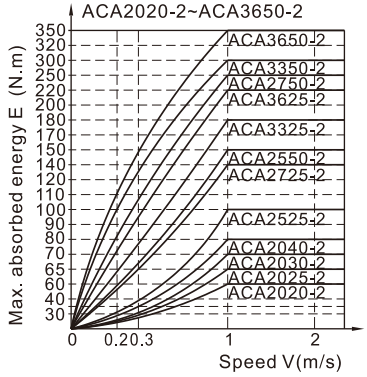
Max. absorbed energy and speed curve

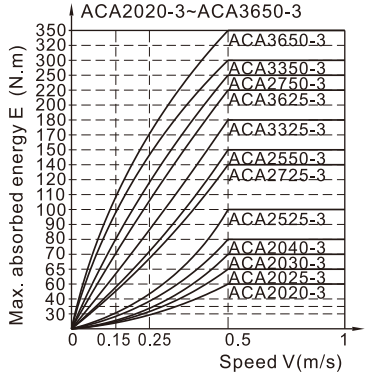






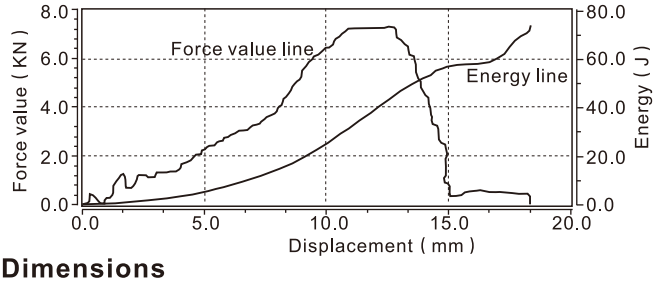






Note：1. The interval under the red line shows the energy range absorbed by corresponding shock absorber.
2. It is better to use 20%-80% of the Max. absorbed energy.

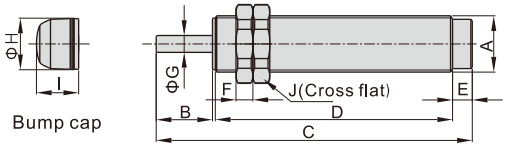
Buffer curve



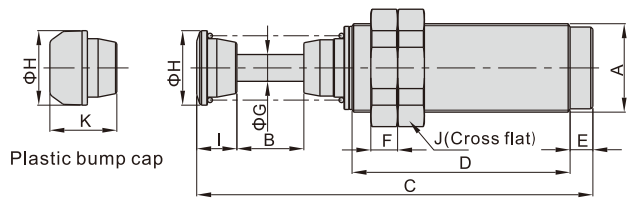
Note: As the chart shows, energy is absorbed by a lower reaction force at the beginning of the stroke, then by a smooth linear deceleration. It decelerates smoothly at last.

Dimensions

ACA



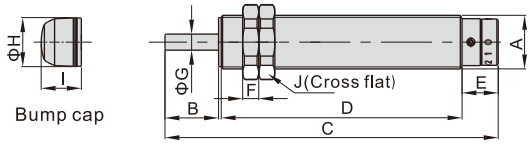
Model\Item	A	B	C	D	E	F	G	H	I	J
ACA0806	M8×1.0	6	46	32	5	4	3	6.5	6	11
ACA1007	M10×1.0	7	56	41	5	4	3	8.5	7.5	14
ACA1210	M12×1.0	10	63.5	47.5	5	4	3	10	7.5	17
ACA1215	M12×1.0	15	79	58	5	4	3	10	7.5	17
ACA1412	M14×1.5	12	80.5	62.5	5	6	4	12	12	19
ACA1416	M14×1.5	16	92.5	70.5	5	6	4	12	12	19
ACA1420	M14×1.5	20	103	77	5	6	4	12	12	19
ACA1616	M16×1.5	16	100.5	78.5	5	6	5	14	12	21
ACA1620	M16×1.5	20	109	83	5	6	5	14	12	21
ACA1625	M16×1.5	25	125	94	5	6	5	14	12	21
ACA2020	M20×1.5	20	112.5	84.5	7	6	6	18	15	26
ACA2025	M20×1.5	25	122.5	89.5	7	6	6	18	15	26
ACA2030	M20×1.5	30	142	104	7	6	6	18	15	26
ACA2040	M20×1.5	40	167.5	119.5	7	6	6	18	15	26
ACA2525	M25×1.5	25	123	89	8	6	6	23	16	32
ACA2550	M25×1.5	50	183	124	8	6	6	23	16	32
ACA2725	M27×1.5	25	127	93	8	6	8	24.5	17	36
ACA2750	M27×1.5	50	192	133	8	6	8	24.5	17	36



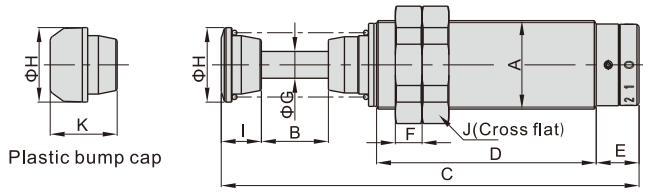
Model\Item	A	B	C	D	E	F	G	H	I	J	K
ACA3325	M33×1.5	25	148	81.5	8.5	10	10	27.8	15	41	25
ACA3350	M33×1.5	50	213	121.5	8.5	10	10	27.8	15	41	25
ACA3625	M36×1.5	25	148	81.5	8.5	10	10	27.8	15	46	25
ACA3650	M36×1.5	50	213	121.5	8.5	10	10	27.8	15	46	25

ACA, ACJ Series

ACJ



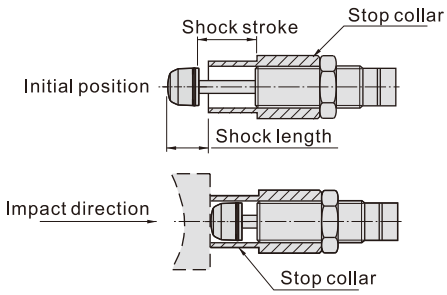
Model\Item	A	B	C	D	E	F	G	H	I	J
ACJ1007	M10×1.0	7	67	45.5	11	4	3	8.5	7.5	14
ACJ1210	M12×1.0	10	74	52	11	4	3	10	7.5	17
ACJ1412	M14×1.5	12	91	66.5	11.5	6	4	12	12	19
ACJ2020	M20×1.5	20	124.5	90	13.5	6	6	18	15	26
ACJ2525	M25×1.5	25	132.5	92	14.5	6	6	23	16	32
ACJ2550	M25×1.5	50	192.5	127	14.5	6	6	23	16	32
ACJ2725	M27×1.5	25	137	96.5	14.5	6	8	24.5	17	36
ACJ2750	M27×1.5	50	202	136.5	14.5	6	8	24.5	17	36



Model\Item	A	B	C	D	E	F	G	H	I	J	K
ACJ3325	M33×1.5	25	156	82	16	10	10	27.8	15	41	25
ACJ3350	M33×1.5	50	221	122	16	10	10	27.8	15	41	25
ACJ3625	M36×1.5	25	156	82	16	10	10	27.8	15	46	25
ACJ3650	M36×1.5	50	221	122	16	10	10	27.8	15	46	25
ACJ4225	M42×1.5	25	161.5	85.5	16	12	12	34.8	15	50	25
ACJ4250	M42×1.5	50	226.5	125.5	16	12	12	34.8	15	50	25
ACJ4275	M42×1.5	75	291.5	165.5	16	12	12	34.8	15	50	25

Accessories

How to set stop coller



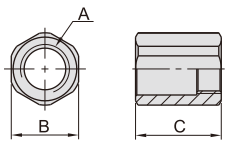
Ordering code

F – ACA 08 LM

① ② ③ ④

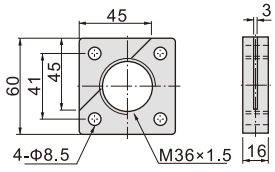
①Accessory	②Model	③Female thread size	④Accessories type
		08：M8	
		10：M10	
		12：M12	
		14：M14	
		16：M16	LM: Stop collar
		20：M20	
		25：M25	
		27：M27	
		33：M33	
		36：M36	LM: Stop collar \ FA: Flange
		42：M42	FA: Flange

Dimensions

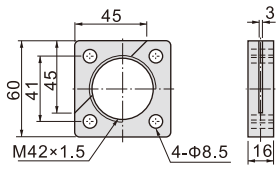


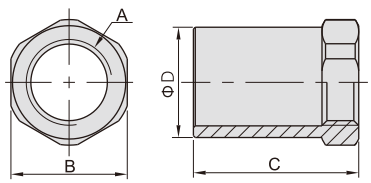
Model\Item	A	B	C
F-ACA08LM	M8×1.0	11	14
F-ACA10LM	M10×1.0	14	16
F-ACA12LM	M12×1.0	17	20

F–ACA36FA



F–ACA42FA





Model\Item	A	B	C	D
F-ACA14LM	M14×1.5	19	27	18
F-ACA16LM	M16×1.5	21	32	20
F-ACA20LM	M20×1.5	26	35	25
F-ACA25LM	M25×1.5	32	45	31
F-ACA27LM	M27×1.5	36	50	35
F-ACA33LM	M33×1.5	41	80	40
F-ACA36LM	M36×1.5	46	80	45

Selecting list

Model	Compatible absorber
F-ACA08LM	ACA0806
F-ACA10LM	ACA1007、ACJ1007
F-ACA12LM	ACA1210、ACA1215、ACJ1210
F-ACA14LM	ACA1412、ACA1416、ACA1420、ACJ1412
F-ACA16LM	ACA1616、ACA1620、ACA1625
F-ACA20LM	ACA2020、ACA2025、ACA2030、ACA2040、ACJ2020
F-ACA25LM	ACA2525、ACA2550、ACJ2525、ACJ2550
F-ACA27LM	ACA2725、ACA2750、ACJ2725、ACJ2750
F-ACA33LM	ACA3325、ACA3350、ACJ3325、ACJ3350
F-ACA36LM	ACA3625、ACA3650、ACJ3625、ACJ3650
F-ACA36FA	ACA3625、ACA3650、ACJ3625、ACJ3650
F-ACA42FA	ACJ4225、ACJ4250、ACJ4275

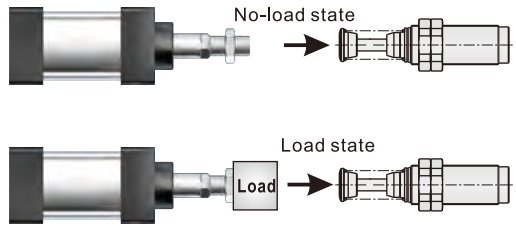
Accessories——Shock absorber

ACA, ACJ Series

How to select

Theoretical energy parameter table for cylinders under no-load state Unit : J (N.m)

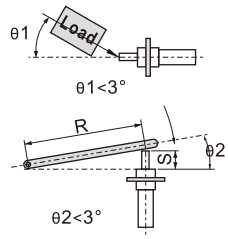
Stroke(mm)	6	7	10	12	15	16	20	25	30	40	50	75
Bore size (mm) 6	0.102	0.119	0.170	0.203	0.254	0.271	0.339	0.424	0.509	0.678	0.848	1.27
8	0.181	0.211	0.301	0.362	0.452	0.482	0.603	0.754	0.904	1.21	1.51	2.26
10	0.283	0.330	0.471	0.565	0.707	0.754	0.942	1.18	1.413	1.88	2.36	3.53
12	0.407	0.475	0.678	0.814	1.017	1.085	1.36	1.70	2.035	2.71	3.39	5.09
16	0.723	0.844	1.21	1.45	1.809	1.929	2.41	3.01	3.617	4.82	6.03	9.04
20	1.13	1.32	1.88	2.26	2.826	3.014	3.77	4.71	5.652	7.54	9.42	14.13
25	1.77	2.06	2.94	3.53	4.416	4.710	5.89	7.36	8.831	11.8	14.7	22.1
32	2.89	3.38	4.82	5.79	7.235	7.717	9.65	12.1	14.47	19.3	24.1	36.2
40	4.52	5.28	7.54	9.04	11.3	12.06	15.1	18.8	22.6	30.1	37.7	56.5
50	7.07	8.24	11.8	14.1	17.7	18.84	23.6	29.4	35.33	47.1	58.9	88.3
63	11.2	13.1	18.7	22.4	28.0	29.91	37.4	46.7	56.08	74.8	93.5	140.2
80	18.1	21.1	30.1	36.2	45.2	48.23	60.3	75.4	90.43	120.6	150.7	226.1
100	28.3	33.0	47.1	56.5	70.7	75.36	94.2	117.8	141.3	188.4	235.5	353.3
125	44.2	51.5	73.6	88.3	110.4	117.8	147.2	184.0	220.8	204.4	368.0	552.0
160	72.3	84.4	120.6	144.7	180.9	192.9	241.2	301.4	361.7	482.3	602.9	904.3
200	113.0	131.9	188.4	226.1	282.6	301.4	376.8	471.0	565.2	753.6	942.0	1413.0
250	176.6	206.1	294.4	353.3	441.6	471.0	588.5	735.9	883.1	1177.5	1471.9	2207.8
320	289.4	337.6	482.3	578.8	723.5	771.7	964.6	1205.8	1446.9	1929.2	2411.5	3617.3



For example:
When the pressure is 0.6MPa, bore size of ϕ40 under no-load state plus shock stroke of 12mm can produce energy of 9.04 N.m. Refer to the specification table, you will find ACA1412 fits.
Note: Cylinders under full-load state can produce as twice as the energy shown above.

Installation and Operation

1. The scale range of adjustable shock absorbers is 0 to 9 (8). Factory set is at 6 (4) position. 0 means the softest, while 9 means the hardest;
2. Correct selection of shock absorbers can ensure a smooth deceleration and good shock absorbing properties;
3. If there exists rebounding at the beginning of the stroke, it shows the effective weight is too high. In this case, self-compensation type shall be replaced by high speed type (-1), while adjustable type shall be adjusted to softer, that is closer to 0;
4. If there exists rebounding at the end of the stroke, it shows the effective weight is too low. In this case, self-compensation type shall be replaced by low speed type (-3), while adjustable type shall be adjusted to harder, that is closer to 9;
5. In the work process, lateral load should be avoided as possible as one can. Eccentric angle must be controlled within 3°. Shock absorbers shall be securely locked;
6. The operating temperature range shall be -5 to 70℃;
7. To extend the service life, piston shall be stopped 1mm before reaching the end. It is better to install set screw with positioning and precise adjustment;
8. If two or more shock absorbers are installed at the same side, please make sure that they act synchronously;
9. No painting, welding or cleaning with corrosive substance on the body as well as the piston rod.
10. when installed the absorber, the moment forced on absorber can't be out of the range given in below list or may cause the absorber damage.



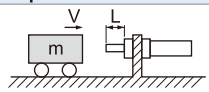
Compatible absorber	Male thread Spec(of body)	Max. Assembly Force on absorber(N.m)
ACA0806	M8×1.0[Note]	2.0
ACA1007、ACJ1007	M10×1.0	3.5
ACA1210、ACA1215、ACJ1210	M12×1.0	8.0
ACA1412、ACA1416、ACA1420、ACJ1412	M14×1.5	11.0
ACA1616、ACA1620、ACA1625	M16×1.5	15.0
ACA2020、ACA2025、ACA2030、ACA2040、ACJ2020	M20×1.5	24.0
ACA2525、ACA2550、ACJ2525、ACJ2550	M25×1.5	40.0
ACA2725、ACA2750、ACJ2725、ACJ2750	M27×1.5	63.0

[Note]
When ACA0806 is selected, bottom diameter of internal thread before tapping is $\Phi 7.1^{+0.1}_{0}$.

Calculation of energy under load state

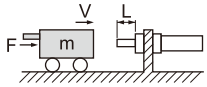
Horizontal impact

1)Horizontal impact



Impact weight (kg): m
Impact speed (m/s): v
Kinetic energy (J(N.m): $E1=\frac{m\times v^2}{2}$
Propelling energy(J(N.m): E2=0
Gross energy (J(N.m): E=E1+E2

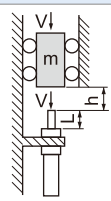
2)Horizontal impact with cylinder thrust



Impact weight (kg): m
Impact speed (m/s): v
Kinetic energy (J(N.m): $E1=\frac{m\times v^2}{2}$
Propelling energy(J(N.m): E2=F×L
Gross energy (J(N.m): E=E1+E2

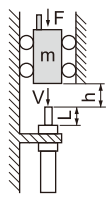
Vertical impact

1)Free fall



Impact weight (kg): m
Impact speed (m/s): v
Kinetic energy (J(N.m): E1=m×g×h
Propelling energy(J(N.m): E2=m×g×L
Gross energy (JN.m): E=E1+E2

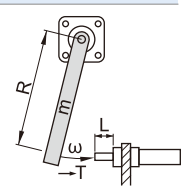
2)Push-down by cylinder



Impact weight (kg): m
Impact speed (m/s): v
Kinetic energy (J(N.m): E1= $\frac{m\times v^2}{2}$
Propelling energy(J(N.m): E2=(mg+F)×L
Gross energy (J(N.m): E=E1+E2

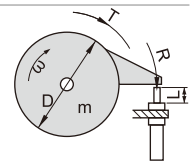
Rotation impact

1) Rocker



Impact weight (kg): m
Impact speed (m/s): v=R×ω
Kinetic energy (J(N.m): $E1=\frac{I\times\omega^2}{2}$
Propelling energy(J(N.m): $E2=\frac{T\times L}{R}$
Gross energy (J(N.m): E=E1+E2

2)Rotation



Impact weight (kg): m
Impact speed (m/s): v=R×ω
Kinetic energy (J(N.m): $E1=\frac{I\times\omega^2}{2}$
Propelling energy(J(N.m): $E2=\frac{T\times L}{R}$
Gross energy (J(N.m): E=E1+E2

Code	Explanation	Unit	Code	Explanation	Unit	Code	Explanation	Unit
m	Impact weight	kg	F	Thrust($(\pi\times D^2\times P)/4$)	N	N	Round per Minute	rpm
v	Impact speed	m/s	D	Nore size	mm	R	Distance fron rotation center to impact point	m
E	Gross energy	J(N.m)	P	Air pressure	MPa			
E1	Kinetic energy(Potential energy)	J(N.m)	L	Shock stroke	m	I	Moment of Inertia ($I=mr^2/2$)	$kg\times m^2$
E2	Propelling energy	J(N.m)	h	Height	m	ω	Angular velocity(ω=2πN/60) (90°=1.57rad/s)	rad/s
g	Gravity acceleration	$9.8(m/s^2)$	T	Torque	N.m			

The accessories is necessary for intact air system. AirTAC has many types of accessories for your choice:
1. G thread Fitting; 2. G thread Silencer; 3. G thread Speed Controller; 4. Polyurethane re-coil Hosepart.
5. PT thread Fitting; 6. PT thread Silencer; 7. PT thread Speed Controller.

Threaded type (G Thread)	GPC Series  596	GPC–M Series  597	GPL–M Series  597	GPL Series  599
	GPCF Series  599	GPMF Series  599	GPLF Series  599	GPLL Series  600
	GPHW Series  600	GPH Series  600	GPHF Series  600	GPKD Series  600
	GPEB Series  601	GPYB Series  601	GPED Series  601	GPZB Series  601
Metal one-touch fittings (G Thread)	GBPC Series  603	GBPMF Series  603	GBPCF Series  603	GBPM Series  603
	GBB, GBD Series  604	GBU Series  604	GBZ Series  604	GBKC Series  605
Tube-tube type	GPE Series  606	GPU Series  606	GPY Series  606	GPM Series  606
	GPV Series  606	GPLM Series  606	GPYW Series  607	GPEG Series  607

Tube-tube type	GPZ Series  608	GPEW Series  608	GPG Series  608	GPP Series  608
	GPGJ Series  609	GPZG Series  609	GPHK Series  609	GPHD Series  609
	GPKG Series  609			
Speed controllers (G Thread)	GPSS Series  610	GPSA Series  610	GPTL–M Series  614	GPTL Series  616
Finger valve	GPHV Series  617			
Silencers (G Thread)	GBSL Series  618	GBSLM Series  618	GBESL Series  618	PPA Series  620
Polyurethane re-coil hosepart	US98A, UE95A Series  621	UCS Series  622		
Flame resistant tube	UN54D Series  623			

Threaded type (PT Thread)	PC, POC Series  624	PC–M Series  625	PL–M Series  625	PL Series  626
	PCF Series  626	PMF Series  626	PLF Series  626	PLL Series  626
	PHW Series  626	PH Series  626	PHF Series  626	PKD Series  626
	PEB Series  626	PYB Series  626	PED Series  626	PZB Series  626
Metal one-touch fittings (PT Thread)	BPC Series  630	BPOC Series  630	BPMF Series  630	BPCF Series  630
	BB, BD Series  632	BU Series  632	BZ Series  632	BKC Series  633
Silencers (PT Thread)	BSL Series  634	BSLM Series  634	BESL Series  634	PAL, PALM Series  634
Speed controllers (PT Thread)	PSL Series  636	PSS Series  636	PTL–M Series  639	PTL Series  640

Installation and Operation of tube and fitting

1. Installation and removal of tubing:

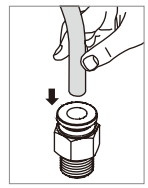
1.1. Installation of tubing

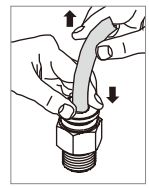
Grasp the tubing and slowly push it into the fitting until it comes to a stop. The tubing will be locked by the spring gasket.

1.2. Removal of tubing

Push the release button to open the spring gasket so that the tubing can be released.

Note: When remove the tubing, make sure the pressure in the tubing is Zero.



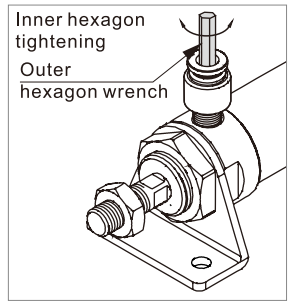


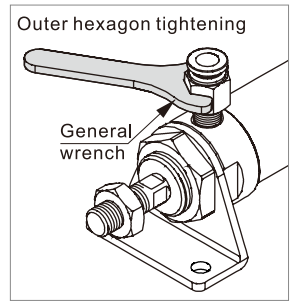
2. Connection thread tightening method

Use an inner or outer hexagon wrench to tighten the fitting as show in the picture below.

Note: Please refer to the tables below for the tightening torque.

Recommended tightening torque(N.m)						
Thread type	M3	M5	1/8"	1/4"	3/8"	1/2"
Tightening torque	0.3~0.6	1~1.5	5~7	6~8	8~10	12~15

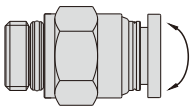


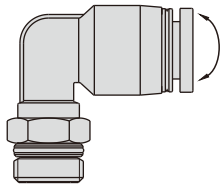


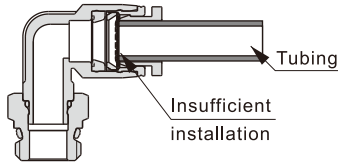
3. Caution

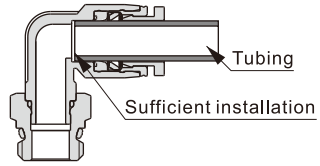
3.1. External force (bend, twist, and tension) may damage the fitting and cause air leakage.

3.2. Insufficient installation may cause air leakage or the tubing to release.

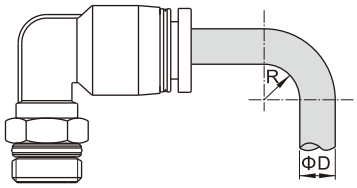








3.3. Pulling or twisting the tubing excessively may damage the fitting. For a mounting guide, see the table below.



Minimum bending radius of the tubing(mm)						
Tubing O.D.(ΦD)	3.2	4	6	8	10	12
Minimum bending radius(R)	15	20	30	50	80	150

4. Connection thread tightening method of the fitting with M5 type thread

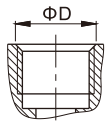
First, tighten by hand, then use a wrench to tighten an additional 1/4 turn. Excessive tightening may damage the thread portion or deform the gasket and cause air leakage. Insufficient tightening may loosen the threads, or cause air leakage.

5.Tolerance of the Polyurethane tubing O.D.

Polyurethane tubing O.D.(mm)	3.2	4	6	8	10	12
Tolerance(mm)	±0.1	±0.1	±0.1	±0.1	±0.15	±0.15

Notes

6.Recommended value of internal thread chamfer.



Thread size	G1/8	G1/4	G3/8	G1/2
Recommended value of chamfer(ΦD)	10.2~10.7	13.8~14.3	17.3~17.8	21.6~22.2

Other precautions

Notes

1. Before piping is connected, it should be washed to remove chips and other debris from inside the pipe.
2. Ensure the tubing being cut perpendicularly and no damage or scratch on the surface of the tubing outside diameter.
3. Use pipe length with sufficient margin to avoid over-bending on the top of the fitting.
4. Pull the tubing back gently to make sure it has a positive seal before using.
5. Push the release button flange evenly and sufficiently to release the button. If the release button is not held down sufficiently, the tubing cannot be with drawn and the outer surface of the tubing may be scratched and cause air leakage.
6. When removing tubing, do not rotate around or 360 degree. This may result in scratch and removal of the tubing difficult.
7. When screwing together pipes and fittings, be certain that chips from the pipe threads and sealing material do not get inside the pipe. Also, when the pipe tape is used, leave approx. 1.5~2 thread ridges exposed at the end of the threads.

Safety instructions

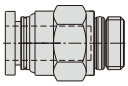
Warning

1 When remove the tubing, make sure the pressure in the tubing is Zero.
2 Do not use the ordinary fittings and tubing in locations where spatter is generated. Spattering may result in a fire hazard.
3 Ensure that the pressure and ambient temperature are within the specified range.
4 Do not use in an atmosphere having corrosive gases, chemicals, sea water, water, water steam, or where there is direct contact with any of these.
5 Do not use in a place subject to heavy vibration and/or shock.

Ordering code

GPC 6 01 □

① ② ③ ④

①Model	②Port size	③Thread connection		④Standard color	
GPC: Male connector (G thread) 	6 : Φ6mm 8 : Φ8mm 10 : Φ10mm 12 : Φ12mm	Thread connection	Adaptable port size	Standard color	Specification
		M5 : M5X0.8	Φ6	Blank: Gray	Release button:Gray
		01 : G1/8 02 : G1/4 03 : G3/8 04 : G1/2	Φ6, Φ8, Φ10, Φ12	D: Black	Release button:Black

Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Table for interface port and tube O.D.

Product series	Thread type	Port size			
		Φ6	Φ8	Φ10	Φ12
GPC	M5	•			
	G1/8	•	•	•	•
	G1/4	•	•	•	•
	G3/8	•	•	•	•
	G1/2	•	•	•	•

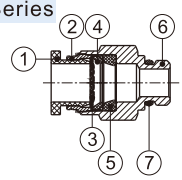
Product feature

1. The compact appearance space saving.
2. Gray and black are optional for the release button.
3. The threaded portion is attached with a sealing gasket to prevent air leakage over the connection thread portion.



Inner structure

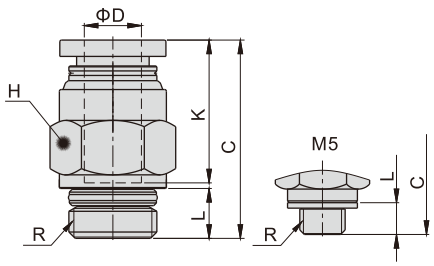
GPC Series



No.	Item	Material
1	Release button	POM
2	Guide	Aluminum alloy
3	Spring gasket	Stainless steel
4	Chuck	POM
5	O-ring	NBR
6	Body	Brass
7	O-ring	NBR

Dimensions

GPC Series



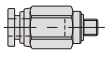


Model\Item	ΦD	R	L	C	K	H(Across flat)	Weight(g)	PCS/bag
GPC6M5	6	M5×0.8	3.5	22.5	16.5	12	8 .5	10
GPC601		G1/8	5.5	22	16.35	12	7.1	10
GPC602		G1/4	6.5	21	16.35	14	11.5	10
GPC603		G3/8	7	20.5	16.35	19	23.2	10
GPC604		G1/2	8.5	20.5	16.35	22	37.9	10
GPC801	8	G1/8	5.5	26	18.5	14	10.7	10
GPC802		G1/4	6.5	25	18.5	14	10.5	10
GPC803		G3/8	7	22	18.5	19	21.5	10
GPC804		G1/2	8.5	23.5	18.5	22	36.2	10
GPC1001	10	G1/8	5.5	29.5	20.9	17	13.2	10
GPC1002		G1/4	6.5	29	20.9	17	15.8	10
GPC1003		G3/8	7	25	20.9	19	18.2	10
GPC1004		G1/2	8.5	23.5	20.9	22	30.7	10
GPC1201	12	G1/8	5.5	32	22.7	21	22.3	10
GPC1202		G1/4	6.5	33	22.7	21	25.4	10
GPC1203		G3/8	7	30.5	22.7	21	23.6	10
GPC1204		G1/2	8.5	27.5	22.7	22	31.7	10

Ordering code

GPC 6 01 □ - M

① ② ③ ④ ⑤

①Model	②Port size	③Thread connection		④Standard color		⑤Style type
GPC: Male connector (G thread) 	3.2 : Φ3.2mm 4 : Φ4mm 6 : Φ6mm	Thread connection	Adaptable port size	Standard color	Specification	M : Mini type
		M3 : M3X0.5	Φ3.2, Φ4	Blank: Gray	Release button: Gray	
GPL: Male elbow(G thread) 		M5 : M5X0.8	Φ3.2, Φ4, Φ6			
		01 : G1/8	Φ4, Φ6	D: Black	Release button: Black	
		02 : G1/4	Φ4			

Specification

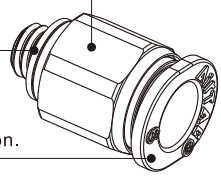
Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Table for interface port and tube O.D.

Product series	Thread type	Port size		
		Φ3.2	Φ4	Φ6
GPC GPL	M3	•	•	
	M5	•	•	•
	G1/8		•	•
	G1/4		•	

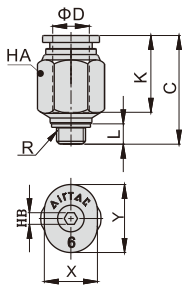
Product feature

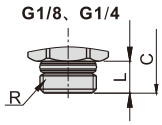
1. The compact appearance space saving.
2. The threaded portion is attached with a sealing gasket to prevent air leakage over the connection thread portion.
3. Gray and black are optional for the release button.



Dimensions

GPC Series

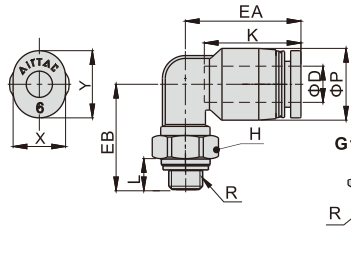






Model\Item	ΦD	R	L	C	K	X	Y	HA	HB	Weight(g)	PCS/bag
GPC3.2M3-M	3.2	M3×0.5	3	16	11.5	6.8	8.7	7	1.5	1.7	10
GPC3.2M5-M		M5×0.8	3.5	16	11.5	6.8	8.7	7	2	2.0	10
GPC4M3-M	4	M3×0.5	3	17.5	12.5	7.8	9.5	8	1.5	2.4	10
GPC4M5-M		M5×0.8	3.5	17	12.5	7.8	9.5	8	2	2.7	10
GPC401-M		G1/8	5.5	16	13.5	7.8	9.5	10	3	3.6	10
GPC402-M		G1/4	6.5	16.5	13.5	7.8	9.5	14	3	9.5	10
GPC6M5-M	6	M5X0.8	3.5	18.5	13.5	9.8	11.7	10	2	3.6	10
GPC601-M		G1/8	5.5	18.5	15.5	9.8	11.7	11	4	6.0	10

GPL Series





Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	X	Y	Weight(g)	PCS/bag
GPL3.2M3-M	3.2	M3×0.5	7.5	3	12	14.5	14	7	6.8	8.7	2.4	10
GPL3.2M5-M		M5×0.8		3.5	12		14.5	7	6.8	8.7	2.7	10
GPL4M3-M	4	M3×0.5	8.5	3	12.5	15	14	7	7.8	9.5	3.0	10
GPL4M5-M		M5×0.8		3.5	12.5		14.5	7	7.8	9.5	3.3	10
GPL401-M		G1/8		5.5	12.5		14	10	7.8	9.5	6.2	10
GPL402-M		G1/4		6.5	12.5		16.5	14	7.8	9.5	14.1	10
GPL6M5-M	6	M5X0.8	10.5	3.5	13.5	16.0	15.5	7	9.8	11.7	4.0	10
GPL601-M		G1/8		5.5	13.5		14.5	10	9.8	11.7	6.8	10

One-touch fittings—threaded type

Ordering code

Same diameter type fittings GPL 6 01 □

(1) (2) (3) (4)

①Model		②Port size	③Thread connection		④Standard color		
			Thread connection	Adaptable port size	Standard color	Specification	Adaptable model
GPHW: Double universal male elbow (G thread)	GPL: Male elbow (G thread)	4: Φ4mm 6: Φ6mm 8: Φ8mm 10: Φ10mm 12: Φ12mm	M5: M5X0.8	Φ4, Φ6	Blank: Gray	Release button: Gray	GPCF GPMF
GPHF: Universal female elbow(G thread)	GPLL: Extended male elbow(G thread)					Release button: Gray Body:Gray	Others
GPEB: Male branch tee (G thread)	GPLF: Female elbow (G thread)						
GPED: Male run tee (G thread)	GPCF: Female connector (G thread)		01: G1/8 02: G1/4 03: G3/8 04: G1/2	Φ4, Φ6 Φ8, Φ10 Φ12	D: Black	Release button: Black	GPCF GPMF
GPYB: Branch "Y" (G thread)	GPMF: Bulkhead connector(G thread)					Release button: Black Body: Black	Others
GPZB: Threaded cross(G thread)	GPH: Universal male elbow(G thread)						

Different diameter type fittings GPKD 6 - 4 01 □

(1) (2) (3) (4) (5)

①Model	②Port size	③Port size	④Thread connection	⑤Standard color	
				Standard color	Specification
GPKD: Male reducer triple branch (G thread)	6: Φ6mm 8: Φ8mm 10: Φ10mm	4: Φ4mm 6: Φ6mm 8: Φ8mm	01: G1/8 02: G1/4 03: G3/8	Blank: Gray	Release button: Gray/Body:Gray
				D: Black	Release button: Black/Body: Black

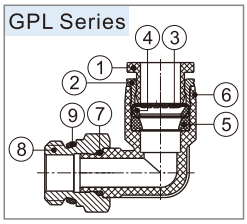
Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Product feature

1. Variable models can be widely used in every kind of pneumatic systems.
2. High circulation performance: bear the same flow with the volume of the tubing inside diameter.
3. Connect tubing easily and conveniently. The tubing connection portion is safe and durable.
4. The thread is attached with a sealing gasket to prevent air leakage over the connection thread portion.
5. The nickel plated body is anti-corrosion and anti-pollution, which allows a broader application.

Inner structure



No.	Item	Material
1	Release button	POM
2	Guide	Aluminum alloy
3	Spring gasket	Stainless steel
4	Chuck	POM
5	O-ring	NBR
6	Body	PBT
7	O-ring	NBR
8	Stud	Brass
9	O-ring	NBR

Table for interface port and tube O.D.

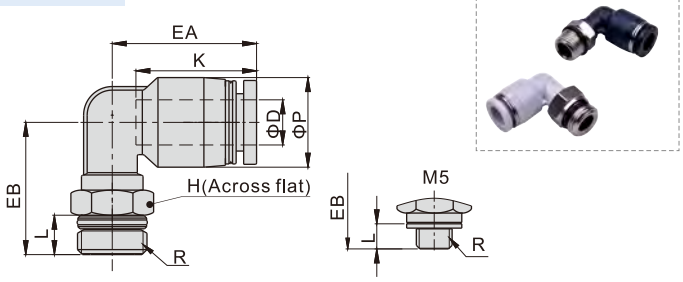
Product series	Thread type	Port size Φ4	Φ6	Φ8	Φ10	Φ12
GPL	M5		●			
	G1/8		●	●	●	●
	G1/4		●	●	●	●
	G3/8		●	●	●	●
	G1/2		●	●	●	●
GPLL	M5	●	●			
	G1/8	●	●	●	●	
	G1/4	●	●	●	●	●
	G3/8		●	●	●	●
	G1/2				●	●
GPEB GPED GPYB	M5	●	●			
	G1/8	●	●	●	●	
	G1/4	●	●	●	●	●
	G3/8		●	●	●	●
	G1/2			●	●	●
GPH GPHF	M5	●	●			
	G1/8	●	●	●		
	G1/4		●	●	●	
	G3/8		●	●	●	●
	G1/2			●	●	●
GPHW	G1/8	●	●	●		
	G1/4		●	●	●	
	G3/8		●	●	●	●
	G1/2			●	●	●
GPZB	G1/8		●	●		
	G1/4		●	●	●	
	G3/8		●	●	●	●
	G1/2			●	●	●

Product series	Thread type	Port size Φ4	Φ6	Φ8	Φ10	Φ12
GPLF	M5	●	●			
	G1/8	●	●	●	●	
	G1/4	●	●	●	●	●
	G3/8		●	●	●	●
	G1/2			●	●	●
GPCF	M5	●	●			
	G1/8	●	●	●	●	
	G1/4	●	●	●	●	●
	G3/8		●	●	●	●
	G1/2		●	●	●	●
GPMF	M5					
	G1/8	●	●	●	●	
	G1/4	●	●	●	●	●
	G3/8		●	●	●	●
	G1/2			●	●	●

Product series	Thread type	Port size Φ6-Φ4	Φ8-Φ6	Φ10-Φ8
GPKD	G1/8	●		
	G1/4		●	
	G3/8			●

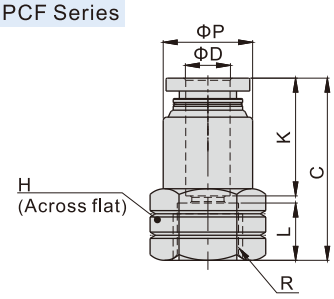
Dimensions

GPL Series



Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)	PCS/bag
GPL6M5	6	M5×0.8	12.5	3.5	17	20	17.0	8	4.5	10
GPL601		G1/8	12.5	5.5	17	20	18.5	10	5.2	10
GPL602		G1/4	12.5	6.5	17	20	22.0	14	11.9	10
GPL603		G3/8	12.5	7	17	20	23.0	19	20.5	10
GPL604		G1/2	12.5	8.5	17	20	26.5	22	32.7	10
GPL801	8	G1/8	15	5.5	18.5	23	19.0	10	6.9	10
GPL802		G1/4	15	6.5	18.5	23	24.0	14	12.2	10
GPL803		G3/8	15	7	18.5	23	24.0	19	21	10
GPL804		G1/2	15	8.5	18.5	23	27.5	22	32.7	10
GPL1001	10	G1/8	18	5.5	21	25.5	24.5	17	16.3	10
GPL1002		G1/4	18	6.5	21	25.5	25.0	17	17.4	10
GPL1003		G3/8	18	7	21	25.5	25.5	19	21	10
GPL1004		G1/2	18	8.5	21	25.5	29.0	22	33.7	10
GPL1201	12	G1/8	21	5.5	23	28.5	26.0	17	18.8	10
GPL1202		G1/4	21	6.5	23	28.5	26.5	17	19.9	10
GPL1203		G3/8	21	7	23	29.5	30.5	19	27.4	10
GPL1204		G1/2	21	8.5	23	29.5	30.5	22	33.7	10

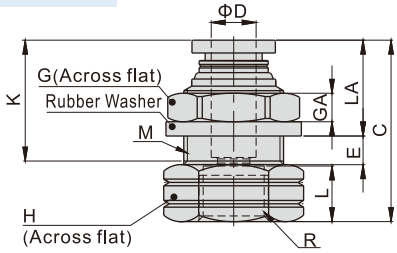
GPCF Series





Model\Item	ΦD	R	ΦP	L	C	K	H	Weight(g)	PCS/bag
GPCF4M5	4	M5×0.8	9	5	21	14	10	2.7	10
GPCF401		G1/8	9.5	8	23	14	14	4.5	10
GPCF402		G1/4	9.5	11	26	14	17	6.5	10
GPCF6M5	6	M5×0.8	12	5	21.5	16.5	12	3.9	10
GPCF601		G1/8	12.5	8	25.5	16.5	14	5.6	10
GPCF602		G1/4	12.5	11	28.5	16.5	17	7.5	10
GPCF603		G3/8	13	12	29.5	16.5	21	10.7	10
GPCF604		G1/2	13	13.5	31.0	16.5	25	13.8	10
GPCF801	8	G1/8	14	8	27.5	18.5	14	5.8	10
GPCF802		G1/4	14.5	11	30.5	18.5	17	8.4	10
GPCF803		G3/8	14.5	12	31.5	18.5	21	11.2	10
GPCF804		G1/2	14.5	13.5	33	18.5	25	14.4	10
GPCF1001	10	G1/8	17	8	29	21	17	9.5	10
GPCF1002		G1/4	17	11	33	21	17	9.9	10
GPCF1003		G3/8	18	12	34	21	21	14	10
GPCF1004		G1/2	18	13.5	35.5	21	25	17.1	10
GPCF1202	12	G1/4	21	11	33.5	23	21	17.5	10
GPCF1203		G3/8	21	12	35.5	23	21	16.6	10
GPCF1204		G1/2	21	13.5	37	23	25	19.7	10

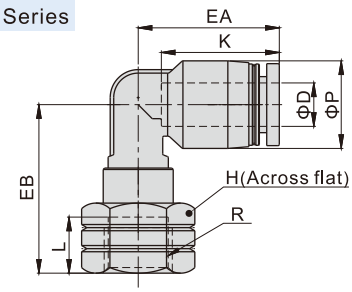
GPMF Series





Model\Item	ΦD	R	M	L	C	K	LA	E	GA	G	H	Weight(g)	PCS/bag
GPMF401	4	G1/8	M12X1	8	25	14	12.0	4	4	14	14	6.4	10
GPMF402		G1/4	M12X1	11	29	14	12.0	4	4	14	17	9	10
GPMF601	6	G1/8	M14X1	8	25.5	16.5	12.5	5	4	17	17	9.1	10
GPMF602		G1/4	M14X1	11	30.5	16.5	12.5	5	4	17	17	10.9	10
GPMF603		G3/8	M14X1	12	31.5	16.5	12.5	5	4	17	21	13.2	10
GPMF801	8	G1/8	M16X1	8	27.5	18.5	13.5	5.5	4	19	19	12.8	10
GPMF802		G1/4	M16X1	11	32	18.5	13.5	5.5	4	19	19	15.7	10
GPMF803		G3/8	M16X1	12	33	18.5	13.5	5.5	4	19	21	15	10
GPMF804		G1/2	M16X1	13.5	34.5	18.5	13.5	5.5	4	19	25	18.1	10
GPMF1001	10	G1/8	M20X1	8	30	21	14.5	7.5	5	24	22	19.6	10
GPMF1002		G1/4	M20X1	11	35	21	14.5	7.5	5	24	22	22.8	10
GPMF1003		G3/8	M20X1	12	36	21	14.5	7.5	5	24	22	21.1	10
GPMF1004		G1/2	M20X1	13.5	37.5	21	14.5	7.5	5	24	25	23.2	10
GPMF1202	12	G1/4	M22X1	11	34.5	23	15.5	8	6	27	24	26.2	10
GPMF1203		G3/8	M22X1	12	37.5	23	15.5	8	6	27	24	27	10
GPMF1204		G1/2	M22X1	13.5	39	23	15.5	8	6	27	25	26.2	10

GPLF Series

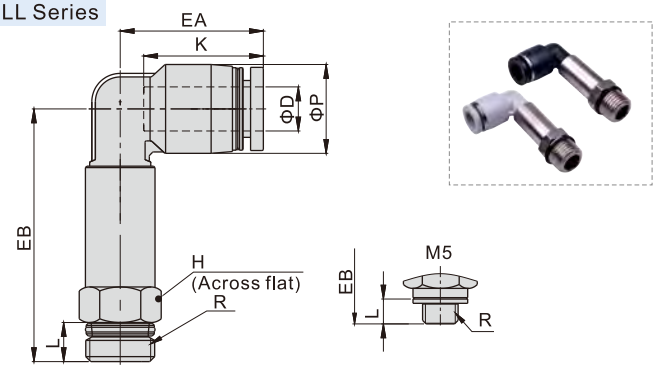




Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)	PCS/bag
GPLF4M5	4	M5×0.8	9	5	14	17	16	10	2.9	10
GPLF401		G1/8	9	8	14	17	21	14	4.6	10
GPLF402		G1/4	9	11	14	17	24	17	6.8	10
GPLF6M5	6	M5×0.8	12.5	5	17	20	18.5	10	7	10
GPLF601		G1/8	12.5	8	17	20	23	14	5.8	10
GPLF602		G1/4	12.5	11	17	20	26	17	8	10
GPLF603		G3/8	12.5	12	17	20	27	21	10.7	10
GPLF801	8	G1/8	15	8	18.5	23	20	14	6.6	10
GPLF802		G1/4	15	11	18.5	23	27.5	17	9.2	10
GPLF803		G3/8	15	12	18.5	23	28.5	21	11.9	10
GPLF804		G1/2	15	13.5	18.5	23	30	25	15.2	10
GPLF1001	10	G1/8	18	8	21	25.5	24	17	11.3	10
GPLF1002		G1/4	18	11	21	25.5	26.5	17	11.2	10
GPLF1003		G3/8	18	12	21	25.5	30	21	14.5	10
GPLF1004		G1/2	18	13.5	21	25.5	31.5	25	17.4	10
GPLF1202	12	G1/4	21	11	23	28.5	28.5	17	13.7	10
GPLF1203		G3/8	21	12	23	29.5	32	21	17.4	10
GPLF1204		G1/2	21	13.5	23	29.5	33	25	20.4	10

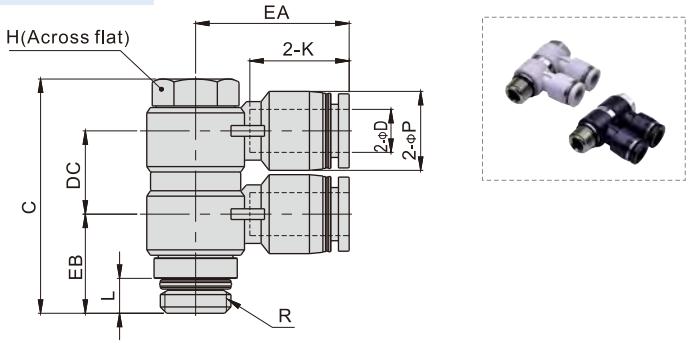
One-touch fittings—threaded type

GPLL Series



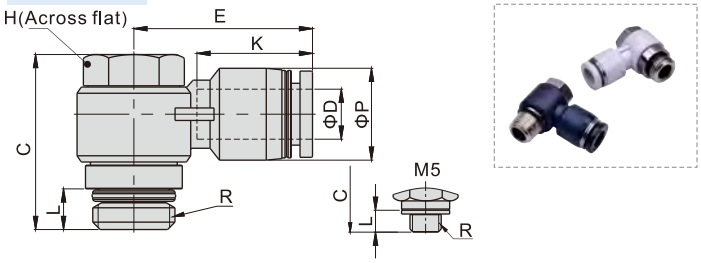
Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)	PCS/bag
GPLL4M5	4	M5×0.8	9	3.5	14	17	32.5	8	8.9	10
GPLL401		G1/8	9	5.5	14	17	33.5	10	11.4	10
GPLL402		G1/4	9	6.5	14	17	36.5	14	15.3	10
GPLL6M5	6	M5×0.8	12.5	3.5	17	20	34.5	8	9.9	10
GPLL601		G1/8	12.5	5.5	17	20	35.5	10	12.1	10
GPLL602		G1/4	12.5	6.5	17	20	38.5	14	16.4	10
GPLL603		G3/8	12.5	7	17	20	41	19	24	10
GPLL801	8	G1/8	15	5.5	18.5	23	43	12	16.4	10
GPLL802		G1/4	15	6.5	18.5	23	43.5	14	21.1	10
GPLL803		G3/8	15	7	18.5	23	46	19	28.5	10
GPLL1001	10	G1/8	18	5.5	21	25.5	50	15	37.3	10
GPLL1002		G1/4	18	6.5	21	25.5	51.5	15	39	10
GPLL1003		G3/8	18	7	21	25.5	52.5	19	41.5	10
GPLL1004		G1/2	18	8.5	21	25.5	53.5	22	44.1	10
GPLL1202	12	G1/4	21	6.5	23	28.5	56	15	44	10
GPLL1203		G3/8	21	7	23	29.5	58	19	56.8	10
GPLL1204		G1/2	21	8.5	23	29.5	59.5	22	53.4	10

GPHW Series



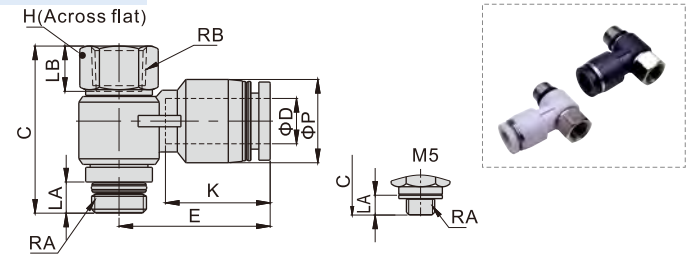
Model\Item	ΦD	R	ΦP	L	C	K	EA	EB	DC	H	Weight(g)	PCS/bag
GPHW401	4	G1/8	9	5.5	38	14	20.5	14.5	13	11	19	10
GPHW601	6	G1/8	12.5	5.5	38	16.5	23.0	15	13	11	21	10
GPHW602		G1/4	12.5	6.5	43.5	16.5	25.0	17.5	15.5	14	40.2	10
GPHW603		G3/8	12.5	7	50	16.5	27.0	20	16.5	19	69.2	5
GPHW801	8	G1/8	15	5.5	40.5	18.5	26.5	16.5	15.5	11	23.6	10
GPHW802		G1/4	15	6.5	43.5	18.5	28.5	18.5	15.5	14	40.8	10
GPHW803		G3/8	15	7	50	18.5	29.5	20	16.5	19	70.4	5
GPHW804		G1/2	15	8.5	61	18.5	32	24.5	22	24	134.8	5
GPHW1002	10	G1/4	18	6.5	46.5	21	31	20	18.5	14	47	10
GPHW1003		G3/8	18	7	55	21	33	21	22	19	87.5	5
GPHW1004		G1/2	18	8.5	61	21	35.5	25	22	24	137.7	5
GPHW1203	12	G3/8	21	7	55	23	36	23	22	19	86.4	5
GPHW1204		G1/2	21	8.5	61	23	38	26.5	22	24	147.5	5

GPH Series



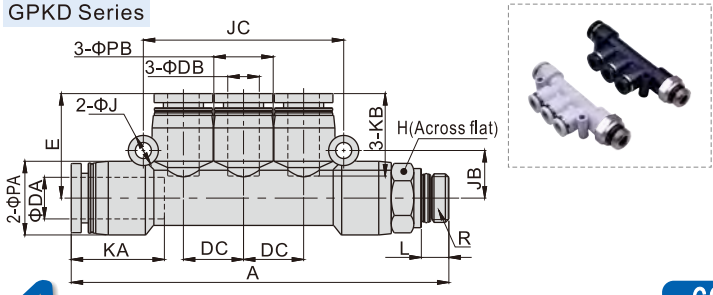
Model\Item	ΦD	R	ΦP	L	C	K	E	H	Weight(g)	PCS/bag
GPH4M5	4	M5×0.8	9	3.5	17	14	19	8	5.8	10
GPH401		G1/8	9	5.5	25	14	20.5	11	12.8	10
GPH6M5	6	M5×0.8	12.5	3.5	17	16.5	23.5	8	6.8	10
GPH601		G1/8	12.5	5.5	25	16.5	23	11	14	10
GPH602		G1/4	12.5	6.5	28	16.5	25	14	25.4	10
GPH603		G3/8	12.5	7	33	16.5	27	19	50.2	5
GPH801	8	G1/8	15	5.5	25	18.5	26.5	11	14.7	10
GPH802		G1/4	15	6.5	28	18.5	28.5	14	26.4	10
GPH803		G3/8	15	7	33	18.5	29.5	19	49.4	5
GPH804		G1/2	15	8.5	39	18.5	32	24	89	5
GPH1002	10	G1/4	18	6.5	28	21	31	14	27.7	10
GPH1003		G3/8	18	7	33	21	33	19	51.1	5
GPH1004		G1/2	18	8.5	39	21	35.5	24	88.5	5
GPH1203	12	G3/8	21	7	33	23	36	19	53	5
GPH1204		G1/2	21	8.5	39	23	38	24	92.8	5

GPHF Series



Model\Item	ΦD	RA	RB	ΦP	LA	LB	C	K	E	H	Weight(g)	PCS/bag
GPHF4M5	4	M5×0.8	M5×0.8	9	3.5	6	20	14	19	8	6.2	10
GPHF401		G1/8	G1/8	9	5.5	8	29.5	14	20.5	12	12.9	10
GPHF6M5	6	M5×0.8	M5×0.8	12.5	3.5	6	20	16.5	23.5	8	7.1	10
GPHF601		G1/8	G1/8	12.5	5.5	8	29.5	16.5	23	12	13.9	10
GPHF602		G1/4	G1/4	12.5	6.5	11	35	16.5	25	17	30.3	10
GPHF603		G3/8	G3/8	12.5	7	12	40	16.5	27	19	44.2	5
GPHF801	8	G1/8	G1/8	15	5.5	8	29.5	18.5	26.5	12	15	10
GPHF802		G1/4	G1/4	15	6.5	11	35	18.5	28.5	17	30.7	10
GPHF803		G3/8	G3/8	15	7	12	40	18.5	29.5	19	44.8	5
GPHF804		G1/2	G1/2	15	8.5	13.5	47.5	18.5	32	24	84.7	5
GPHF1002	10	G1/4	G1/4	18	6.5	11	35	21	31	17	32	10
GPHF1003		G3/8	G3/8	18	7	12	40	21	33	19	46.2	5
GPHF1004		G1/2	G1/2	18	8.5	13.5	47.5	21	35.5	24	86.1	5
GPHF1203	12	G3/8	G3/8	21	7	12	40	23	36	19	48.4	5
GPHF1204		G1/2	G1/2	21	8.5	13.5	47.5	23	38	24	89.7	5

GPKD Series

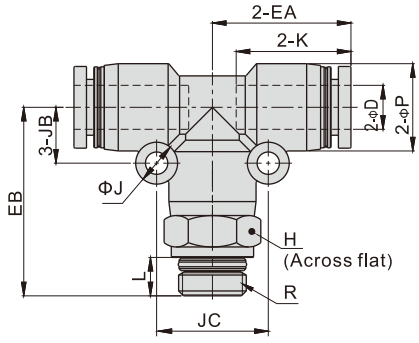


Model\Item	ΦDA	ΦDB	R	L	A	ΦPA	ΦPB	KA	KB
GPKD6-401	6	4	G1/8	5.5	66	12.5	9	16.5	14
GPKD8-602	8	6	G1/4	6.5	77	15	12.5	18.5	16.5
GPKD10-803	10	8	G3/8	7	89.5	18	15	21	18.5

Model\Item	ΦJ	JB	JC	DC	E	H	Weight(g)	PCS/bag
GPKD6-401	3.2	8	34	10	17.5	12	14.9	2
GPKD8-602	3.2	9.5	40	12	21	14	24.9	2
GPKD10-803	4.3	11	48	14.5	24	19	39	2

One-touch fittings—threaded type

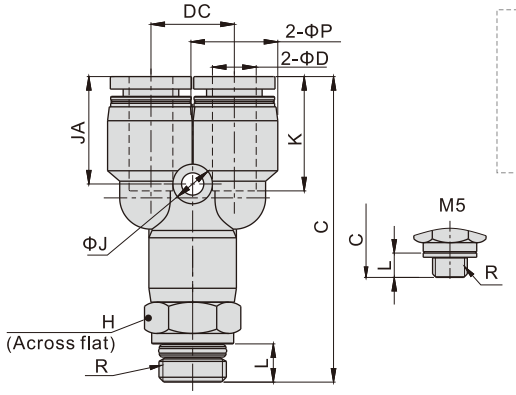
GPEB Series





Model\Item	ΦD	R	ΦP	L	K	EA	EB	ΦJ	JB	JC	H	Weight(g)	PCS/bag
GPEB4M5	4	M5×0.8	9	3.5	14	17	21	3.2	6.5	13	9	6.8	10
GPEB401		G1/8	9	5.5	14	17	23	3.2	6.5	13	10	7.9	10
GPEB402		G1/4	9	6.5	14	17	26	3.2	6.5	13	14	13.9	10
GPEB6M5	6	M5×0.8	12.5	3.5	16.5	20	23.5	3.2	8	16	12	11.2	10
GPEB601		G1/8	12.5	5.5	16.5	20	27	3.2	8	16	12	13.3	10
GPEB602		G1/4	12.5	6.5	16.5	20	28.5	3.2	8	16	14	17	10
GPEB603		G3/8	12.5	7	16.5	20	30	3.2	8	16	19	26.1	10
GPEB801	8	G1/8	15	5.5	18.5	23	30	4.3	9.5	19	14	18.2	10
GPEB802		G1/4	15	6.5	18.5	23	31	4.3	9.5	19	14	19.7	10
GPEB803		G3/8	15	7	18.5	23	32.5	4.3	9.5	19	19	29	10
GPEB804		G1/2	15	8.5	18.5	23	35	4.3	9.5	19	22	37.7	10
GPEB1001	10	G1/8	18	5.5	21	26.5	33.5	4.3	11	22	17	26.5	10
GPEB1002		G1/4	18	6.5	21	26.5	34.5	4.3	11	22	17	27.6	10
GPEB1003		G3/8	18	7	21	26.5	35.5	4.3	11	22	19	32.7	10
GPEB1004		G1/2	18	8.5	21	26.5	38	4.3	11	22	22	42.1	10
GPEB1202	12	G1/4	21	6.5	23	30	39	4.3	13	26	21	48	10
GPEB1203		G3/8	21	7	23	30	40	4.3	13	26	21	49.1	10
GPEB1204		G1/2	21	8.5	23	30	41.5	4.3	13	26	22	54	10

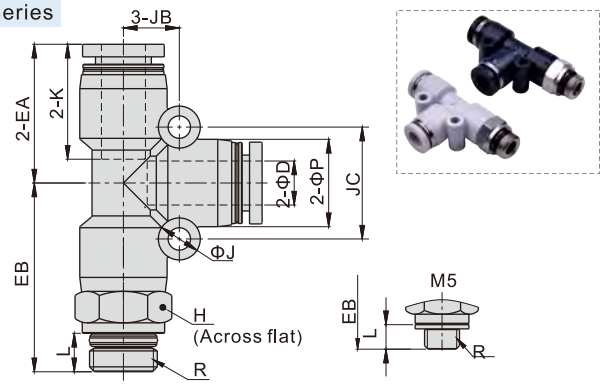
GPYB Series





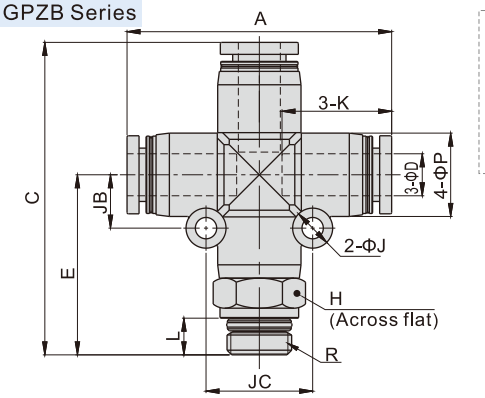
Model\Item	ΦD	R	ΦP	L	C	K	ΦJ	JA	DC	H	Weight(g)	PCS/bag
GPYB4M5	4	M5×0.8	9	3.5	35.5	14	3.2	13	10	9	6.7	10
GPYB401		G1/8	9	5.5	37.5	14	3.2	13	10	10	8.1	10
GPYB402		G1/4	9	6.5	40.5	14	3.2	13	10	14	9.2	10
GPYB6M5	6	M5×0.8	12.5	3.5	40.5	16.5	3.2	15.5	12	12	11.1	10
GPYB601		G1/8	12.5	5.5	44	16.5	3.2	15.5	12	12	13.5	10
GPYB602		G1/4	12.5	6.5	45.5	16.5	3.2	15.5	12	14	16.6	10
GPYB603		G3/8	12.5	7	47.0	16.5	3.2	15.5	12	19	25.8	10
GPYB801	8	G1/8	15	5.5	50	18.5	3.2	17	14.5	14	19.6	10
GPYB802		G1/4	15	6.5	50.5	18.5	3.2	17	14.5	14	20.4	10
GPYB803		G3/8	15	7	52	18.5	3.2	17	14.5	19	28.5	10
GPYB804		G1/2	15	8.5	55	18.5	3.2	17	14.5	22	37.5	10
GPYB1001	10	G1/8	18	5.5	56	21	4.3	19.5	18	17	27.2	10
GPYB1002		G1/4	18	6.5	57	21	4.3	19.5	18	17	27.9	10
GPYB1003		G3/8	18	7	58	21	4.3	19.5	18	19	33.3	10
GPYB1004		G1/2	18	8.5	60.5	21	4.3	19.5	18	22	42.1	10
GPYB1202	12	G1/4	21	6.5	64	23	4.3	21	20.5	21	25.7	10
GPYB1203		G3/8	21	7	65	23	4.3	21	20.5	21	49.7	10
GPYB1204		G1/2	21	8.5	66	23	4.3	21	20.5	22	53.5	10

GPED Series



Model\Item	ΦD	R	ΦP	L	K	EA	EB	ΦJ	JB	JB	H	Weight(g)	PCS/bag
GPED4M5	4	M5×0.8	9	3.5	14	17	21	3.2	6.5	13	9	6.8	10
GPED401		G1/8	9	5.5	14	17	23	3.2	6.5	13	10	7.9	10
GPED402		G1/4	9	6.5	14	17	26	3.2	6.5	13	14	13.9	10
GPED6M5	6	M5×0.8	12.5	3.5	16.5	20	23.5	3.2	8	16	12	11.2	10
GPED601		G1/8	12.5	5.5	16.5	20	27	3.2	8	16	12	13.3	10
GPED602		G1/4	12.5	6.5	16.5	20	28.5	3.2	8	16	14	17	10
GPED603		G3/8	12.5	7	16.5	20	30	3.2	8	16	19	26.1	10
GPED801	8	G1/8	15	5.5	18.5	23	30	4.3	9.5	19	14	18.2	10
GPED802		G1/4	15	6.5	18.5	23	31	4.3	9.5	19	14	19.7	10
GPED803		G3/8	15	7	18.5	23	33	4.3	9.5	19	19	29	10
GPED804		G1/2	15	8.5	18.5	23	35	4.3	9.5	19	22	37.7	10
GPED1001	10	G1/8	18	5.5	21	26.5	34	4.3	11	22	17	26.5	10
GPED1002		G1/4	18	6.5	21	26.5	35	4.3	11	22	17	27.6	10
GPED1003		G3/8	18	7	21	26.5	36	4.3	11	22	19	32.7	10
GPED1004		G1/2	18	8.5	21	26.5	38	4.3	11	22	22	42.1	10
GPED1202	12	G1/4	21	6.5	23	30	39	4.3	13	26	21	48	10
GPED1203		G3/8	21	7	23	30	40	4.3	13	26	21	49.1	10
GPED1204		G1/2	21	8.5	23	30	41.5	4.3	13	26	22	54	10

GPZB Series





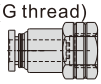
Model\Item	ΦD	R	L	A	E	C	ΦP	K	ΦJ	JB	JC	H	Weight(g)	PCS/bag
GPZB601	6	G1/8	5.5	39.5	27	47	12.5	16.5	3.2	8	16	12	15	10
GPZB602		G1/4	6.5		28.5	48.5						14	18.8	10
GPZB603		G3/8	7		30	50						19	27.8	10
GPZB801	8	G1/8	5.5	46	30	53	15	18.5	4.3	9.5	19	14	20.7	10
GPZB802		G1/4	6.5		31	54						14	22.2	10
GPZB803		G3/8	7		32.5	55.5						19	30.7	10
GPZB804		G1/2	8.5		35	58						22	40.2	10
GPZB1002	10	G1/4	6.5	52.5	35	61	18	21	4.3	11	22	17	31.9	10
GPZB1003		G3/8	7		36	62						19	37.3	10
GPZB1004		G1/2	8.5		38	64.5						22	45.9	10
GPZB1203	12	G3/8	7	59.5	40	70	21	23	4.3	13	26	21	54.4	10
GPZB1204		G1/2	8.5		41.5	71.5						22	62.1	10

Metal one-touch fittings

Ordering code

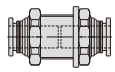
GBPC 6 01

① ② ③

①Model		②Port size	③Thread connection
GBPC: Metal male connector (G thread) 	GBPCF: Metal female connector (G thread) 	4 : Φ4mm 6 : Φ6mm 8 : Φ8mm 10 : Φ10mm 12 : Φ12mm	M5 : M5X0.8 01 : G1/8 02 : G1/4 03 : G3/8 04 : G1/2
GBPMF: Metal bulkhead female connector(G thread) 			

GBPM 6

① ②

①Model	②Port size
GBPM: Metal bulkhead connector (G thread) 	4 : Φ4mm 6 : Φ6mm 8 : Φ8mm 10 : Φ10mm 12 : Φ12mm

Specification

Operating pressure range	0~9kgf/cm²(0~0.9MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	0~150
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Note: The temperature resistance level of the tubing should be confirmed first when used in high temperature environments.

Product feature

1. High flow capacity; The flow rate of these fittings is equivalent to that of the adaptable tubes.
2. Inserting or removal tubing is simple and convenient, and the connecting portion is reliable and durable.
3. Thread is attached with a sealing gasket, to ensure no leakage of the threaded connection part.
4. The fitting metal body adopts a special nickel-plating process, which has good corrosion resistance.
5. Metal fittings can be used in high temperature environment.

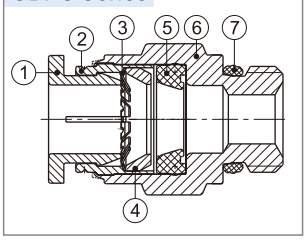
Table for interface port and tube O.D.

Product series	Thread type	Port size				
		Φ4	Φ6	Φ8	Φ10	Φ12
GBPC	M5	•	•			
	G1/8	•	•	•	•	
	G1/4	•	•	•	•	•
	G3/8		•	•	•	•
	G1/2				•	•
GBPCF	M5	•	•			
	G1/8	•	•	•		
	G1/4		•	•	•	
	G3/8				•	•
	G1/2					•
GBPMF	M5					
	G1/8	•	•	•		
	G1/4		•	•	•	
	G3/8				•	•
	G1/2					•

Product series	Port size				
	Φ4	Φ6	Φ8	Φ10	Φ12
GBPM	•	•	•	•	•

Inner structure

GBPC Series

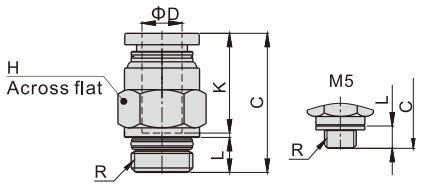


NO.	Name	Material
1	Metal connector	Brass
2	Locating ring	Aluminum alloy
3	Spring gasket	Stainless steel
4	Locating seat	Aluminum alloy
5	Special shape O-ring	Viton
6	Straight connector body	Brass
7	O-ring	NBR

Metal one-touch fittings

Dimensions

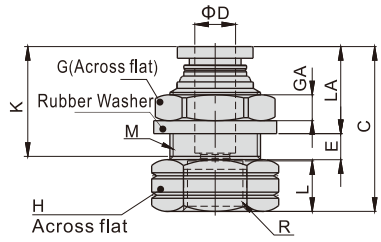
GBPC Series





Model\Item	ΦD	R	L	C	K	H	Weight(g)	PCS/bag
GBPC4M5	4	M5X0.8	3.5	19.5	14	9	5.5	10
GBPC401		G1/8	5.5	16.5	13	10	7.9	10
GBPC402		G1/4	6.5	17	13	14	8.7	10
GBPC6M5	6	M5X0.8	3.5	22	16	12	10.1	10
GBPC601		G1/8	5.5	21.5	16	12	13.8	10
GBPC602		G1/4	6.5	20.5	16	14	15.1	10
GBPC603		G3/8	7	20	16	19	26	10
GBPC801	8	G1/8	5.5	25.5	18	14	13.3	10
GBPC802		G1/4	6.5	24.5	18	14	13.5	10
GBPC803		G3/8	7	21.5	18	19	25.9	10
GBPC1001	10	G1/8	5.5	28.5	20.5	17	17.2	10
GBPC1002		G1/4	6.5	28	20.5	17	19.8	10
GBPC1003		G3/8	7	24	20.5	19	32.3	10
GBPC1004		G1/2	8.5	22.5	19.5	22	31.9	10
GBPC1202	12	G1/4	6.5	32.5	22	21	29.4	10
GBPC1203		G3/8	7	30	22	21	29.3	10
GBPC1204		G1/2	8.5	27	22	22	37.2	10

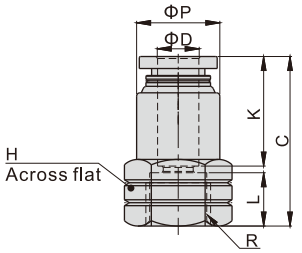
GBPMF Series





Model\Item	ΦD	R	M	L	C	K	LA	E	GA	G	H	Weight(g)	PCS/bag
GBPMF401	4	G1/8	M12X1	8	25	14	12	4	4	14	14	7.6	10
GBPMF601	6	G1/8	M14X1	8	25	16	12	5	4	17	17	10.4	10
GBPMF602		G1/4	M14X1	11	30	16	12	5	4	17	17	12.2	10
GBPMF801	8	G1/8	M16X1	8	27	18	13	5.5	4	19	19	13.9	10
GBPMF802		G1/4	M16X1	11	31.5	18	13	5.5	4	19	19	15.3	10
GBPMF1002	10	G1/4	M20X1	11	34.5	20.5	14	7.5	5	24	22	26.2	10
GBPMF1003		G3/8	M20X1	12	35.5	20.5	14	7.5	5	24	22	24.4	10
GBPMF1203	12	G3/8	M22X1	12	37	22	15	8	5	27	24	32.6	10
GBPMF1204		G1/2	M22X1	13.5	38.5	22	15	8	5	27	25	31.8	10

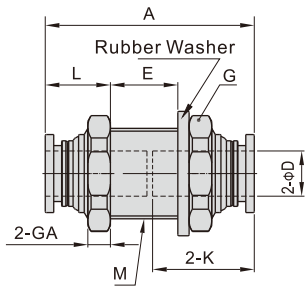
GBPCF Series





Model\Item	ΦD	R	ΦP	L	C	K	H	Weight(g)	PCS/bag
GBPCF4M5	4	M5X0.8	9	5	21	14	10	3.5	10
GBPCF401		G1/8	9.5	8	23	14	14	5.3	10
GBPCF6M5	6	M5X0.8	12	5	21	16	12	5.6	10
GBPCF601		G1/8	12.5	8	25	16	14	7.2	10
GBPCF602		G1/4	12.5	11	28	16	17	9.2	10
GBPCF801	8	G1/8	14	8	27	18	14	7.1	10
GBPCF802		G1/4	14.5	11	30	18	17	10.6	10
GBPCF1002	10	G1/4	17	11	32.5	20.5	17	13.5	10
GBPCF1003		G3/8	18	12	33.5	20.5	21	17.5	10
GBPCF1203	12	G3/8	21	12	35	22	21	22	10
GBPCF1204		G1/2	21	13.5	36.5	22	21	24.9	10

GBPM Series





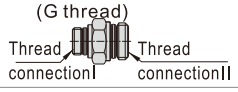
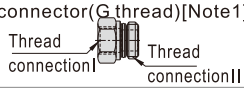
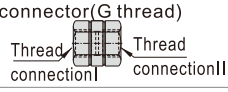
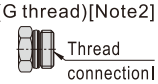
Model\Item	ΦD	M	A	K	L	E	G(Across flat)	GA	Weight(g)	PCS/bag
GBPM4	4	M12X1	28.5	14	10	7	14	4	6.4	10
GBPM6	6	M14X1	33	16	10	11	17	4	16.4	10
GBPM8	8	M16X1	37	18	11	13	19	4	15.8	10
GBPM10	10	M20X1	41.5	20.5	12	16	24	5	28.9	10
GBPM12	12	M22X1	45	22	13	17.5	27	6	40.3	10

One-touch fittings—threaded type

Ordering code

GBB 01 01

① ② ③

①Model				②Thread connection I	③Thread connection II
GBB: Male connector (G thread) 	GBD: Male & female connector(G thread)[Note1] 	GBU: Double female connector(G thread) 	GBZ: Hexagon head cap plug(G thread)[Note2] 	01 : G1/8 02 : G1/4 03 : G3/8 04 : G1/2	01 : G1/8 02 : G1/4 03 : G3/8 04 : G1/2

[Note1] For GBD series, Thread I is Female thread, Thread II is male thread; [Note2] For GBZ series, no thread II and thread I is male thread.

Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	3.0MPa
Ambient and fluid temperature (℃)	0~150

Product feature

1. Variable models can be widely used in every kind of pneumatic systems.
2. High circulation performance bear the same flow with the volume of the tube innerdiameter.
3. The nickel plated body is anti-corrosion and anti-pollution, which allows a broader application.
4. Metal fittings can be used in high temperature environment.

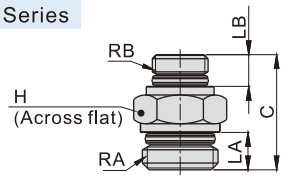
Configuration table of tubing thread

Product series	Thread connection I	Thread connection II			
		01	02	03	04
GBB	01	•	•	•	
	02		•	•	•
	03			•	•
	04				•
GBD	01		•	•	•
	02			•	•
	03				•
	04				
GBU	01	•			
	02		•		
	03			•	
	04				•

Product series	Thread connection			
	01	02	03	04
GBZ	•	•	•	•

Dimensions

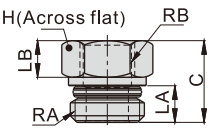
GBB Series





Model\Item	RA	RB	LA	LB	C	H	Weight(g)	PCS/bag
GBB0101	G1/8	G1/8	5.5	5.5	15.5	10	3.2	10
GBB0102	G1/4	G1/8	6.5	5.5	20	14	7.3	10
GBB0103	G3/8	G1/8	7	5.5	21.5	19	15.3	10
GBB0202	G1/4	G1/4	6.5	6.5	21	14	8.4	10
GBB0203	G3/8	G1/4	7	6.5	22.5	19	15.9	10
GBB0204	G1/2	G1/4	8.5	6.5	24.5	22	22.4	10
GBB0303	G3/8	G3/8	7	7	23.5	19	17.8	10
GBB0304	G1/2	G3/8	8.5	7	25	22	23	10
GBB0404	G1/2	G1/2	8.5	8.5	27	22	23.3	10

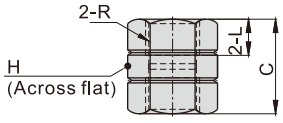
GBD Series





Model\Item	RA	RB	LA	LB	C	H	Weight(g)	PCS/bag
GBD0102	G1/4	G1/8	6.5	8	14.5	14	8.8	10
GBD0103	G3/8	G1/8	7	8	14	19	17.7	10
GBD0104	G1/2	G1/8	8.5	8	16	22	29.5	10
GBD0203	G3/8	G1/4	7	8.5	16	19	16.4	10
GBD0204	G1/2	G1/4	8.5	8.5	16	22	26.3	10
GBD0304	G1/2	G3/8	8.5	9.5	19	22	24.5	10

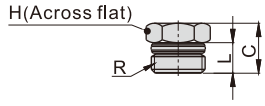
GBU Series





Model\Item	R	L	C	H	Weight(g)	PCS/bag
GBU0101	G1/8	6.5	17	14	8.4	10
GBU0202	G1/4	8.5	23	17	25.4	10
GBU0303	G3/8	9.5	25	21	40	10
GBU0404	G1/2	11	28	25	46.6	10

GBZ Series





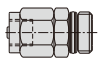
Model\Item	R	L	C	H	Weight(g)	PCS/bag
GBZ01	G1/8	5.5	9	10	3.7	10
GBZ02	G1/4	6.5	12.5	14	9.2	10
GBZ03	G3/8	7	14	19	18	10
GBZ04	G1/2	8.5	16	22	29.4	10

One-touch fittings—threaded type

Ordering code

GBKC 06 04 - 01

① ② ③ ④

①Model	②Tubing outer diameter	③Tubing inner diameter	④Thread connection
GBKC: Straight locknut connector (G thread) 	04 : Φ4mm 06 : Φ6mm 08 : Φ8mm 10 : Φ10mm 12 : Φ12mm	25 : Φ2.5mm 04 : Φ4mm 05 : Φ5mm 06 : Φ6mm 65 : Φ6.5mm 75 : Φ7.5mm 08 : Φ8mm 09 : Φ9mm	M3 : M3X0.5 M5 : M5X0.8 01 : G1/8 02 : G1/4 03 : G3/8 04 : G1/2

Note: When using the tubing Φ8×Φ5.5, the straight lock nut connector of GBKC0806 can be used.

Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	3.0MPa
Ambient and fluid temperature (℃)	0~150

Note: The temperature resistance level of the tubing should be confirmed first when used in high temperature environments.

Configuration table of tubing and tubing thread

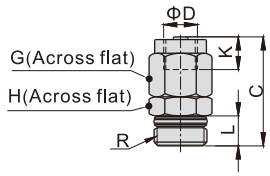
Product series	Tubing outer diameter	Tubing inner diameter	Thread connection					
			M3	M5	01	02	03	04
GBKC	04	25	•	•	•			
	06	04			•	•	•	
	08	05			•	•	•	
		06			•	•	•	
	10	65				•	•	•
		75				•	•	•
	12	08				•	•	•
		09				•	•	•

Product feature

1. Variable models can be widely used in every kind of pneumatic systems.
2. High circulation performance bear the same flow with the volume of the tube innerdiamater.
3. The nickel plated body is anti-corrosion and anti-pollution,which allows a broader application.
4. Metal fittings can be used in high temperature environments.

Dimensions

GBKC Series





Model\Item	ΦD		R	L	C	K	G	H	Weight (g)	PCS/bag
	O.D	I.D								
GBKC0425-M3	4	2.5	M3×0.5	3	17	5	8	8	4.4	10
GBKC0425-M5			M5×0.8	3.5	17.5			8	4.8	10
GBKC0425-01			G1/8	5.5	18.5			10	6.2	10
GBKC0604-01	6	4	G1/8	5.5	20	5.5	10	10	9	10
GBKC0604-02			G1/4	6.5	23.5			14	14.2	10
GBKC0604-03			G3/8	7	25			19	23.1	10
GBKC0805-01	8	5	G1/8	5.5	23.5	6.5	12	12	12.6	10
GBKC0805-02			G1/4	6.5	25.5			14	15.6	10
GBKC0805-03			G3/8	7	27			19	24.3	10
GBKC0806-01		5.5 or 6	G1/8	5.5	23.5			12	12.9	10
GBKC0806-02			G1/4	6.5	25.5			14	15.6	10
GBKC0806-03			G3/8	7	27			19	24.2	10

Model\Item	ΦD		R	L	C	K	G	H	Weight (g)	PCS/bag
	O.D	I.D								
GBKC1065-02	10	6.5	G1/4	6.5	28	7.5	15	15	23.7	10
GBKC1065-03			G3/8	7	29.5			19	29.7	10
GBKC1065-04			G1/2	8.5	32			22	40.5	10
GBKC1075-02		7.5 or 8	G1/4	6.5	28			15	22.5	10
GBKC1075-03			G3/8	7	29.5			19	29.5	10
GBKC1075-04			G1/2	8.5	32			22	40.1	10
GBKC1208-02	12	8	G1/4	6.5	28	7.5	17	17	28.9	10
GBKC1208-03			G3/8	7	29.5			19	32.7	10
GBKC1208-04			G1/2	8.5	32			22	43.2	10
GBKC1209-02		9 or 10	G1/4	6.5	28			17	29	10
GBKC1209-03			G3/8	7	29.5			19	32.5	10
GBKC1209-04			G1/2	8.5	32			22	42.9	10

Installation and application

1. Method of inserting or removal a tubing

1.1 Inserting a tubing

Place the locking cap over the tubing, and insert the tubing into the body , then tighten the locking cap. (As figure 1)

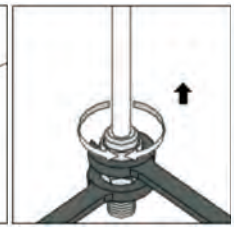
1.2 Removing a tubing

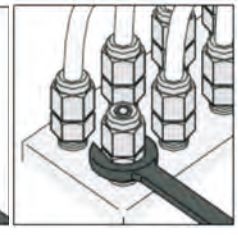
Loosen the locking cap first, then remove the tubing. (As figure 2)

2. Method of tightening the connector thread

Tighten the connector with a hex wrench, as shown right.


Figure 1


Figure 2


Figure 3

One-touch fittings—tube-tube type

Ordering code

Same diameter type fittings GPE 6 □

① ② ③

①Model				②Port size	③Standard color		
GPM: Bulkhead union	GPE: Union tee	GPP: Plug	GPV: Union elbow	4 : Φ4mm 6 : Φ6mm 8 : Φ8mm 10 : Φ10mm 12 : Φ12mm	Standard color	Specification	Adaptable model
					Blank: Gray	Release button:Gray	GPM
						Release button:Gray Body:Gray	Others
GPLM: Bulkhead male elbow	GPY: Union "Y"	GPZ: Cross	GPU: Straight union		D: Black	Release button:Black	GPM
						Release button:Black Body: Black	Others

Different diameter type fittings GPEG 6 - 4 □

① ② ③ ④

①Model					②Port size Ⅰ	③Port sizeⅡ	④Standard color	
GPG: Different diameter straight	GPZG: Different diameter cross	GPEW: Different diameter tee	GPYW: Different diameter union "Y"	GPGJ: Plug-in reducer	4: Φ4mm 6: Φ6mm 8: Φ8mm 10: Φ10mm 12: Φ12mm	4: Φ4mm 6: Φ6mm 8: Φ8mm 10: Φ10mm	Standard color	Specification
							Blank: Gray	Release button:Gray Body:Gray
GPEG: Different diameter tee	GPKG: Reducer triple branch union	GPHK: Universal reducer triple branch union	GPHD: Universal reducer four branch union				D: Black	Release button:Black Body: Black

Specification

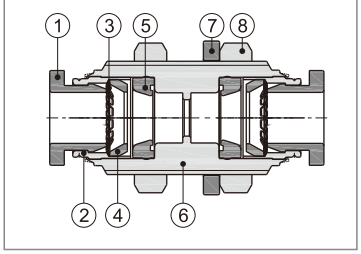
Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Product feature

1. Variable models can be widely used in every kind of pneumatic systems.
2. High circulation performance: bear the same flow with the volume of the tubing inside diameter.
3. Connect tubing easily and conveniently. The tubing connection portion is safe and durable.
4. The threaded portion is covered with sealant and the M5 thread is attached with a sealing gasket to prevent air leakage over the connection thread portion.

Inner structure

GPM Series



No.	Item	Material
1	Release button	POM
2	Guide	Aluminum alloy
3	Spring gasket	Stainless steel
4	Chuck	POM
5	O-ring	NBR
6	Body	Aluminum alloy
7	Rubber washer	NBR
8	Nut	Aluminum alloy

Table for interface port and tube O.D.

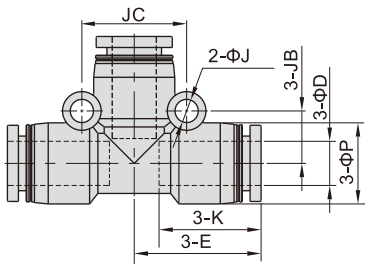
Product series	Port size Ⅰ	Port size Ⅱ			
		Φ4	Φ6	Φ8	Φ10
GPG GPGJ	Φ4				
	Φ6	•			
	Φ8	•	•		
	Φ10		•	•	
	Φ12			•	•
GPEG GPEW GPYW	Φ4				
	Φ6	•			
	Φ8		•		
	Φ10			•	
	Φ12			•	•
GPZG	Φ4				
	Φ6	•			
	Φ8		•		
	Φ10			•	
	Φ12				•
GPKG	Φ4				
	Φ6	•			
	Φ8		•		
	Φ10			•	
	Φ12				
GPHK GPHD	Φ4				
	Φ6				
	Φ8		•		
	Φ10			•	
	Φ12				

Product series	Port size				
	Φ4	Φ6	Φ8	Φ10	Φ12
GPE、GPY、GPV、GPU GPM、GPLM、GPP、GPZ	•	•	•	•	•

One-touch fittings—tube-tube type

Dimensions

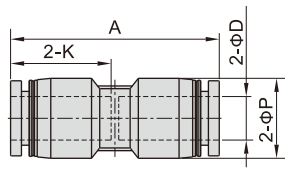
GPE Series





Model\Item	ΦD	ΦP	K	E	ΦJ	JB	JC	Weight(g)	PCS/bag
GPE4	4	9	14	17	3.2	6.5	13	3.1	10
GPE6	6	12.5	16.5	20	3.2	8	16	6.1	10
GPE8	8	15	18.5	23	4.3	9.5	19	8.8	10
GPE10	10	18	21	26.5	4.3	11	22	13.8	10
GPE12	12	21	23	30	4.3	13	26	21	10

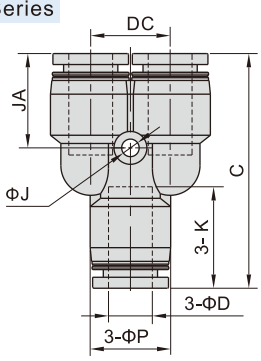
GPU Series





Model\Item	ΦD	ΦP	K	A	Weight(g)	PCS/bag
GPU4	4	9	14	29.5	1.7	10
GPU6	6	12.5	16.5	34	3.6	10
GPU8	8	15	18.5	38.5	5	10
GPU10	10	18	21	43	8.1	10
GPU12	12	21	23	47	12	10

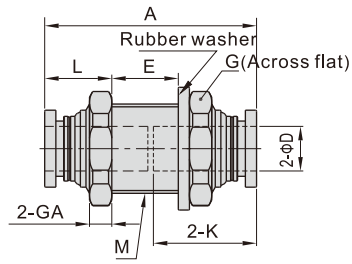
GPY Series





Model\Item	ΦD	ΦP	C	K	ΦJ	JA	DC	Weight(g)	PCS/bag
GPY4	4	9	31.5	14	3.2	13	10	3	10
GPY6	6	12.5	37	16.5	3.2	15.5	12	6	10
GPY8	8	15	42.5	18.5	3.2	17	14.5	8.6	10
GPY10	10	18	48.5	21	4.3	19.5	18	14	10
GPY12	12	21	54.5	23	4.3	21	20.5	21.2	10

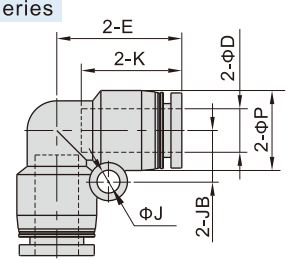
GPM Series





Model\Item	ΦD	M	A	K	L	E	GA	G	Weight(g)	PCS/bag
GPM4	4	M12X1	29	14	10	7	4	14	6.2	10
GPM6	6	M14X1	34	16.5	10.5	11	4	17	9.5	10
GPM8	8	M16X1	38	18.5	11.5	13	4	19	15.7	10
GPM10	10	M20X1	43	21	12.5	16	5	24	22.5	10
GPM12	12	M22X1	46.5	23	13.5	17.5	6	27	29.5	10

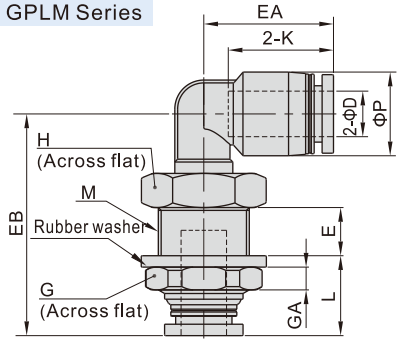
GPV Series





Model\Item	ΦD	ΦP	K	E	ΦJ	JB	Weight(g)	PCS/bag
GPV4	4	9	14	17	3.2	6.5	1.9	10
GPV6	6	12.5	16.5	20	3.2	8	4.2	10
GPV8	8	15	18.5	23	4.3	9.5	6	10
GPV10	10	18	21	26.5	4.3	11	9.3	10
GPV12	12	21	23	30	4.3	13	14.6	10

GPLM Series

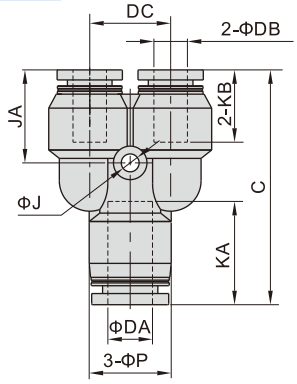




Model\Item	ΦD	ΦP	M	L	E	K	EA	EB	GA	G	H	Weight(g)	PCS/bag
GPLM4	4	9	M12X1	12	7.5	14	17	31	4	14	14	7.5	10
GPLM6	6	12.5	M14X1	12.5	8.5	17	20	35.5	4	17	17	12.1	10
GPLM8	8	15	M16X1	13.5	9	18.5	23	39	4	19	19	16.6	10
GPLM10	10	18	M20X1	14.5	11	21	25.5	44.5	5	24	22	26.2	10
GPLM12	12	21	M22X1	15.5	11	23	29.5	48	6	27	24	34	10

One-touch fittings—tube-tube type

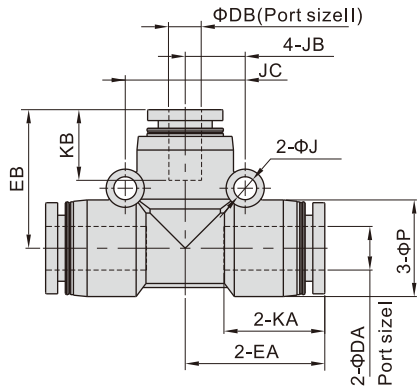
GPYW Series





Model\Item	ΦDA	ΦDB	C	ΦP	KA	KB	ΦJ	JA	DC	Weight(g)	PCS/bag
GPYW6-4	6	4	36.5	12.5	16.5	14	3.2	15	12	5.8	10
GPYW8-6	8	6	42	15	18.5	16.5	3.2	16.5	14.5	9.1	10
GPYW10-8	10	8	48.5	18	21	18.5	4.3	19	18	14.1	10
GPYW12-8	12	8	54	21	23	18.5	4.3	20.5	20.5	22.3	10
GPYW12-10	12	10	54.5	21	23	21	4.3	21	20.5	21.7	10

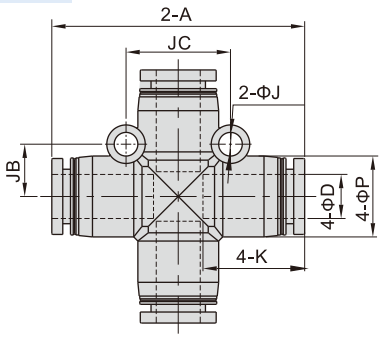
GPEG Series





Model\Item	ΦDA	ΦDB	ΦP	KA	KB	EA	EB	ΦJ	JB	JC	Weight(g)	PCS/bag
GPEG6-4	6	4	12.5	16.5	14	20.0	19.5	3.2	8	16	7	10
GPEG8-6	8	6	15	18.5	16.5	22.5	22	4.3	9.5	19	22.8	10
GPEG10-8	10	8	18	21	18.5	25.5	25.5	4.3	11	22	15.1	10
GPEG12-8	12	8	21	23	18.5	29	28.5	4.3	13	26	22	10
GPEG12-10	12	10	21	23	21	29	29	4.3	13	26	21.5	10

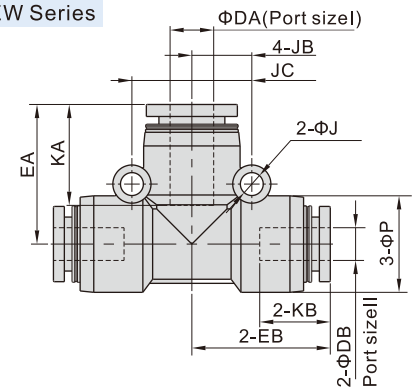
GPZ Series





Model\Item	ΦD	A	ΦP	K	ΦJ	JB	JC	Weight(g)	PCS/bag
GPZ4	4	34	9	14	3.2	6.5	13	3.9	10
GPZ6	6	39.5	12.5	16.5	3.2	8	16	7.9	10
GPZ8	8	46	15	18.5	4.3	9.5	19	11.1	10
GPZ10	10	52.5	18	21	4.3	11	22	17.5	10
GPZ12	12	59.5	21	23	4.3	13	26	26.6	10

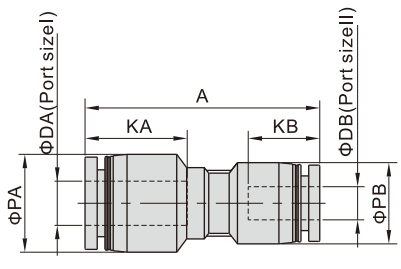
GPEW Series





Model\Item	ΦDA	ΦDB	ΦP	KA	KB	EA	EB	ΦJ	JB	JC	Weight(g)	PCS/bag
GPEW6-4	6	4	12.5	16.5	14	20	19.5	3.2	8	16	7	10
GPEW8-6	8	6	15	18.5	16.5	22.5	22	4.3	9.5	19	22.8	10
GPEW10-8	10	8	18	21	18.5	25.5	25.5	4.3	11	22	15.1	10
GPEW12-8	12	8	21	23	18.5	29	28.5	4.3	13	26	22	10
GPEW12-10	12	10	21	23	21	29	29	4.3	13	26	21.5	10

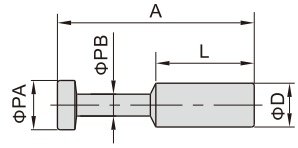
GPG Series





Model\Item	ΦDA	ΦDB	ΦPA	ΦPB	KA	KB	A	Weight(g)	PCS/bag
GPG6-4	6	4	12.5	9	16.5	14	33.5	2.7	10
GPG8-4	8	4	15	12.5	18.5	14	37.5	4.5	10
GPG8-6	8	6	15	12.5	18.5	16.5	38	4.5	10
GPG10-6	10	6	18	15	21	16.5	42	6.9	10
GPG10-8	10	8	18	15	21	18.5	42.5	6.7	10
GPG12-8	12	8	21	18	23	18.5	46.5	10.3	10
GPG12-10	12	10	21	18	23	21	47	10.2	10

GPP Series

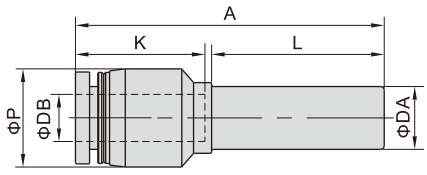




Model\Item	ΦD	ΦPA	ΦPB	L	A	Weight(g)	PCS/bag
GPP4	4	5	3	15	27.5	0.7	10
GPP6	6	7	3	17	32	0.9	10
GPP8	8	9	4	18	36	1.6	10
GPP10	10	11	5	20	42	2.5	10
GPP12	12	13	6	23	44	4.3	10

One-touch fittings—tube-tube type

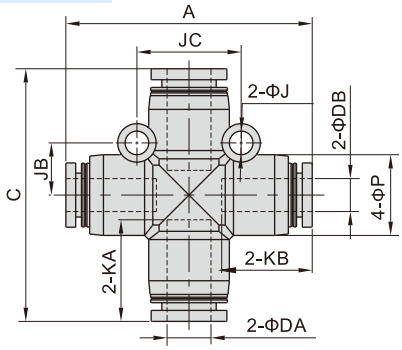
GPGJ Series





Model\Item	ΦDA	ΦDB	ΦP	K	L	A	Weight(g)	PCS/bag
GPGJ6-4	6	4	9	14	21	35	1.5	10
GPGJ8-4	8	4	12.5	14	22	39	2.6	10
GPGJ8-6	8	6	12.5	16.5	22	39.5	3.2	10
GPGJ10-6	10	6	15	16.5	25	44	4.1	10
GPGJ10-8	10	8	15	18.5	25	44.5	3.9	10
GPGJ12-8	12	8	18	18.5	26	48.5	6.2	10
GPGJ12-10	12	10	18	21	26	49	6	10

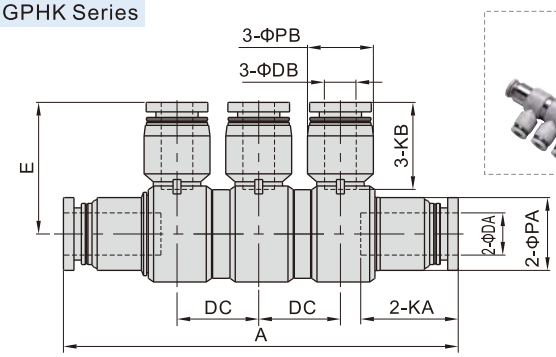
GPZG Series





Model\Item	ΦDA	ΦDB	A	C	ΦP	KA	KB	ΦJ	JB	JC	Weight(g)	PCS/bag
GPZG6-4	6	4	39	39.5	12.5	16.5	14	3.2	8	16	8.2	10
GPZG8-6	8	6	45	46	15	18.5	16.5	4.3	9.5	19	12	10
GPZG10-8	10	8	52	52.5	18	21	18.5	4.3	11	22	18.1	10
GPZG12-10	12	10	59	59.5	21	23	21	4.3	13	26	29	10

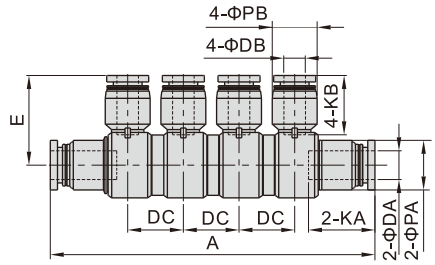
GPHK Series





Model\Item	ΦDA	ΦDB	A	ΦPA	ΦPB	KA	KB	DC	E	Weight(g)	PCS/bag
GPHK8-6	8	6	75	14	12.5	18.5	16.5	15.5	25	28.4	2
GPHK10-8	10	8	85.5	17	15	21	18.5	16.5	29.5	45	2

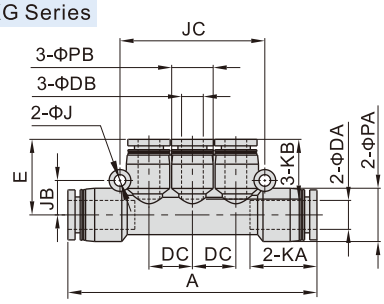
GPHD Series





Model\Item	ΦDA	ΦDB	A	ΦPA	ΦPB	KA	KB	DC	E	Weight(g)	PCS/bag
GPHD8-6	8	6	90.5	14	12.5	18.5	16.5	15.5	25	18.7	2
GPHD10-8	10	8	102.5	17	15	21	18.5	16.5	29.5	52.7	2

GPKG Series





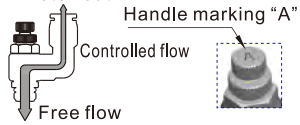
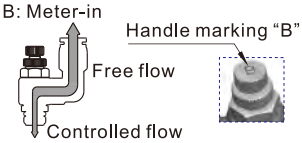
Model\Item	ΦDA	ΦDB	A	ΦPA	ΦPB	KA	KB	ΦJ	JB	JC	DC	E	Weight(g)	PCS/bag
GPKG6-4	6	4	58.5	12.5	9	16.5	14	3.2	8	34	10	17.5	8.6	5
GPKG8-6	8	6	69	15	12.5	18.5	16.5	3.2	9.5	40	12	21	13.5	5
GPKG10-8	10	8	80	18	15	21	18.5	4.3	11	48	14.5	24	20.7	5

GPSA, GPSS series

Ordering code

GPSS 6 01 A □

① ② ③ ④ ⑤

①Model	②Port size	③Thread connection		④Control method	⑤Standard color	
GPSS: Universal speed controller(G thread) 	4 : Φ4mm 6 : Φ6mm 8 : Φ8mm 10 : Φ10mm 12 : Φ12mm	Thread	Adaptable port size	A: Meter-out 	Standard color	Specification
		M5 : M5X0.8	Φ4		Blank: Gray	Release button: Gray Body:Gray
		01 : G1/8 02 : G1/4 03 : G3/8 04 : G1/2	Φ4 , Φ6 Φ8 , Φ10 Φ12	B: Meter-in 	D: Black	Release button: Black Body: Black

GPSA 6 □

① ② ③

①Model	②Port size	③Standard color	
GPSA: Straight speed controller 	4 : Φ4mm 6 : Φ6mm 8 : Φ8mm 10 : Φ10mm 12 : Φ12mm	Standard color	Specification
		Blank: Gray	Release button: Gray Body:Gray
		D: Black	Release button: Black Body: Black

Product feature

1. The speed controller is small size, and light weight with small installation space.
2. Effectively control the action speed and pressure signal transmission from pneumatic device.
3. Meter-in and meter-out types are optional, which is suitable for different size of actuators
4. Excellent flow charatentics, high sensitivity and easy to adjust.
5. The brass body adopts a special nickel-plating process, which has good corrosion resistance and anti-pollution property.
6. Anti-drop structure is designed on the regulating rod.
7. The sealant being coated on threaded portion can ensure no leakage of the threaded connection part.
8. The inserting direction of universal speed controller can be adjusted in 360°.

Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Table for interface port and tube O.D.

Product series	Thread type	Port size				
		Φ4	Φ6	Φ8	Φ10	Φ12
GPSA	-	•	•	•	•	•
GPSS	M5	•				
	G1/8		•	•		
	G1/4		•	•	•	
	G3/8				•	•
	G1/2					•

Symbol

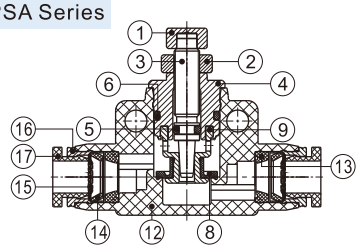
GPSA 

Meter-out (A) 

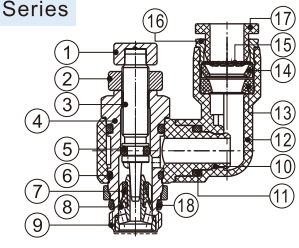
Meter-in (B) 

Inner structure

GPSA Series



GPSS Series

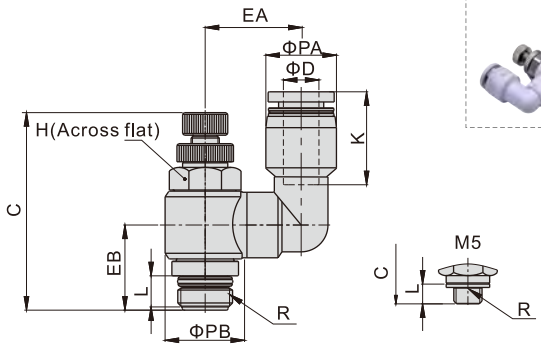


NO.	Name	Material	NO.	Name	Material	NO.	Name	Material
1	Adjusting cap	Aluminum alloy	7	Holder	PBT	13	O-ring	NBR
2	Locking cap	Aluminum alloy	8	O-ring	NBR	14	Locating seat	POM
3	Throttling column	Brass	9	Throttling sleeve	Aluminum alloy/Brass	15	Spring gasket	Stainless steel
4	Throttling body	Brass	10	Plastic body	PBT	16	Locating ring	Aluminum alloy
5	O-ring	NBR	11	O-ring	NBR	17	Plastic interface	POM
6	O-ring	NBR	12	Plastic body	PBT	18	O-ring	NBR

Dimensions

GPSS Series



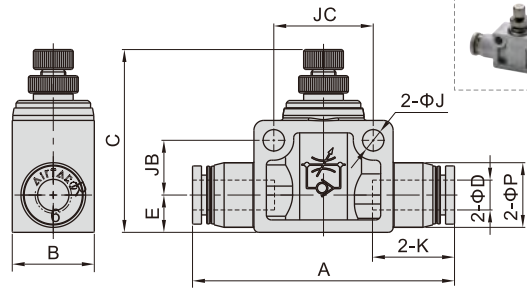


Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)	PCS/bag
						max	min						
GPSS4M5□	4	M5×0.8	9	10	3.5	30	27.5	14	12.5	9.5	8	8.1	2
GPSS601□	6	G1/8	12.5	14	5.5	41.5	35	17	17	15	11	19	2
GPSS602□		G1/4	12.5	18	6.5	47.5	41	17	19	17.5	14	34.7	2
GPSS801□	8	G1/8	15	14	5.5	41.5	35	18.5	17	15	11	20.2	2
GPSS802□		G1/4	15	18	6.5	47.5	41	18.5	19	17.5	14	39.8	2
GPSS1002□	10	G1/4	18	18	6.5	47.5	41	21	20.5	17.5	14	37.2	2
GPSS1003□		G3/8	18	22.5	7	52.5	45.5	21	24	20	19	66	2
GPSS1203□	12	G3/8	21	22.5	7	52.5	45.5	23	25.5	20	19	69.2	2
GPSS1204□		G1/2	21	28	8.5	58.5	51.5	23	28	25	24	105.8	2

[Note1] "□" stands for A or B. A indicates meter-out type while B indicates meter-in type. The two types are with the same overall dimension.

GPSA Series

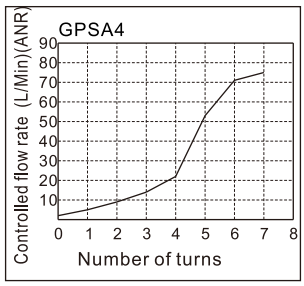


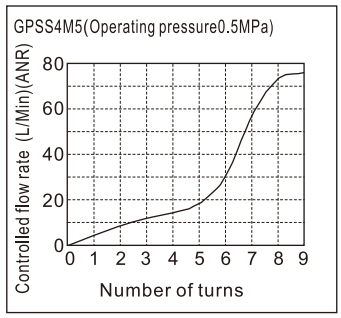


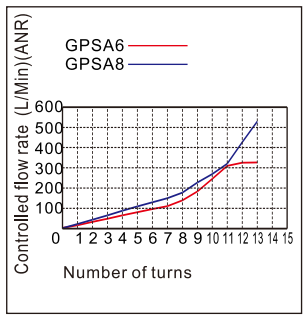
Model\Item	ΦD	A	B	C		ΦP	E	K	ΦJ	JB	JC	Weight (g)	PCS/bag
				max	min								
GPSA4	4	41	11	29	26.5	9.5	7	14	3.2	6	14	7.85	2
GPSA6	6	52.5	16.5	43.5	36.5	13	7.5	16.5	4.3	11	20	18.3	2
GPSA8	8	59.5	16.5	47	40	15	8.5	18.5	4.3	11	22	23.5	2
GPSA10	10	69	21	53.5	46.5	18	10.5	21	4.3	14.5	26	42.4	2
GPSA12	12	78.5	26	58.5	51	21.5	12	23	4.3	17.5	32	67.5	2

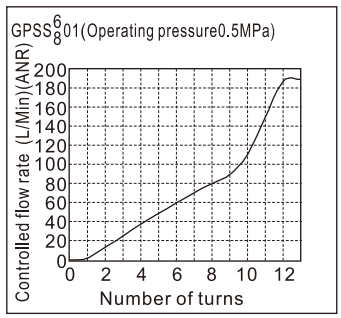
Flowrate characteristic

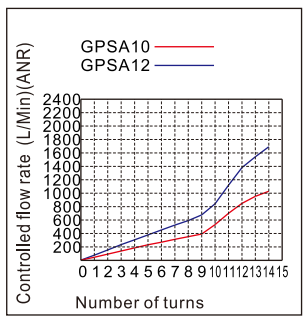
Controlled flow rate

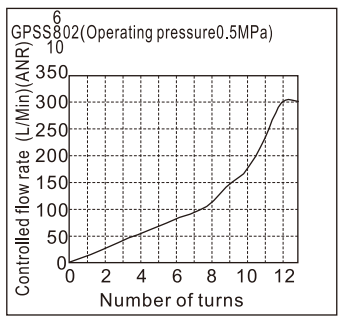


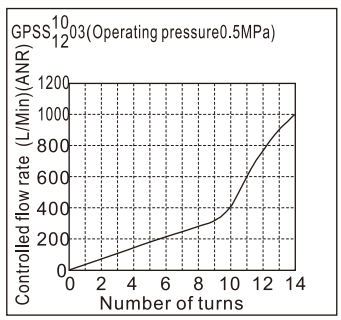


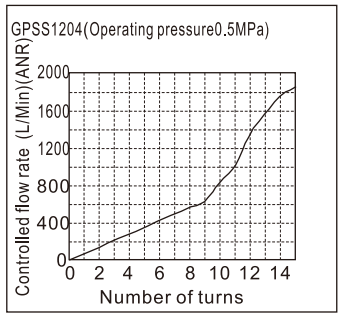




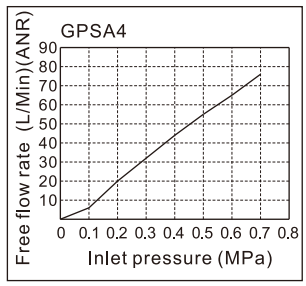


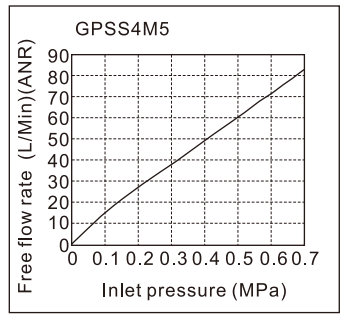


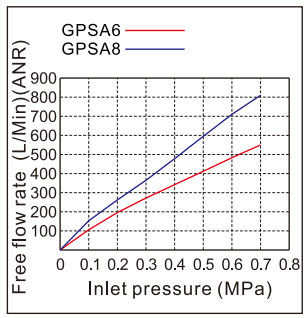


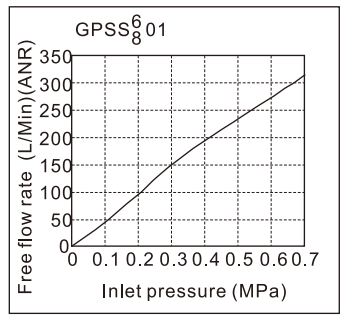


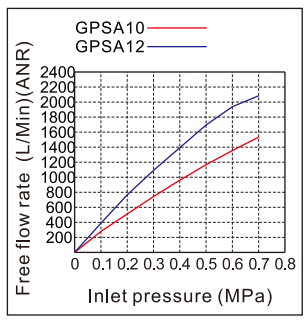
Free flow rate

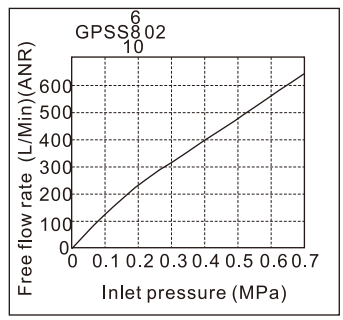


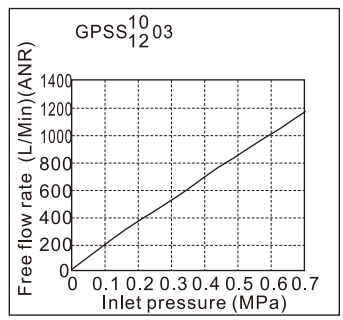


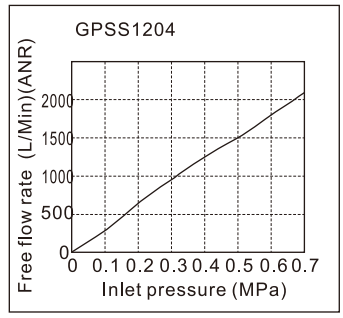












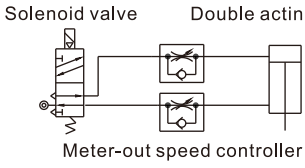
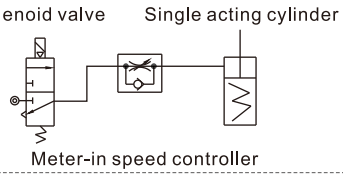
Selection, Installation and Operation

Selection

1. The speed controller has meter-out type and meter-in type:

	Working principle	Product identification
	A: Meter-out 1. The air flow is controlled from the threaded end to tubing connection end. 2. The air flow is free from the tubing connection end to the threaded end.	Handle marking "A" 
	B: Meter-in 1. The air flow is free from the threaded end to tubing connection end. 2. The air flow is controlled from the tubing connection end to the threaded end	Handle marking "B" 

2. Select the different control method according to the actual requirement. The meter-out type is the first priority.

2.1. The application example of the meter-out speed controller	2.2. The application example of the meter-in speed controller
	

Installation

1. Installation and removal of tubing:

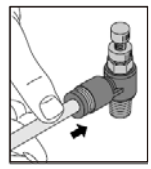
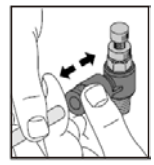
1.1. Installation of tubing

Grasp the tubing and slowly push it into the fitting until it comes to a stop. The tubing will be locked by the spring gasket.

1.2. Removal of tubing

Push the release button to open the spring gasket so that the tubing can be released.

Note:When remove the tubing, make sure the pressure in the tubing is Zero.


2. Mounting of the speed controller

Mount the speed controller into the inlet and outlet port of the cylinder with a wrench.

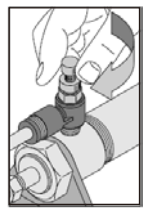
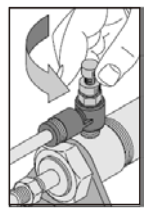
Note: Please refer to the fittings for the tightening torque and thread screw-in depth.

Operation

1. Adjustment of the cylinder speed

1.1. Make sure the speed controller is turned off before applying air pressure. The cylinder may fly out due to the high speed if the air is inlet when the speed controller is turned on.

1.2. Adjust the speed by opening the needle slowly from the fully closed state. When a needle valve is turned clockwise, the air flow through is reduced and the actuator speed decreases. When a needle valve is turned counter-clockwise, the air flow through is increased and the actuator speed increases.

2. Operation of the speed controller

2.1. Do not use tools such as pliers to rotate the handle. Do not apply excessive force or shock when the needle is at the place of top or bottom. It can cause damage or air leakage.

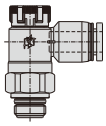
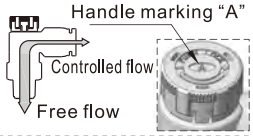
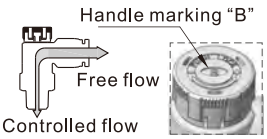
2.2. A certain amount of leakage is allowed in the closed state of the speed controller. It is not designed for the use as stop valve with zero air leakage.

GPTL Mini series

Ordering code

GPTL 6 M5 A □ - M

① ② ③ ④ ⑤ ⑥

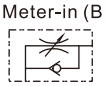
①Model	②Port size	③Thread connection	④Control method	⑤Standard color		⑥ Style
GPTL: Speed controller (Push lock) (G Thread) 	4 : Φ4mm 6 : Φ6mm	M5 : M5X0.8 01 : G1/8	A: Meter-out 	Standard color	Specification	M: Mini type
				Blank: Gray	Release button: Gray Body:Gray	
			B: Meter-in 	D: Black	Release button: Black Body: Black	

Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Symbol

Meter-out (A) 

Meter-in (B) 

Selection, Installation and Operation

1. The rotation torque of the push-lock speed controller cap should not be too large to avoid damage.
   It is recommended to use the torque below.

Thread size	Recommended torque(N.m)
M5	0.05
G1/8	0.08

2. Push-lock speed controller installation instructions is the same as general one. Please refer to general type for specific content.

Product feature

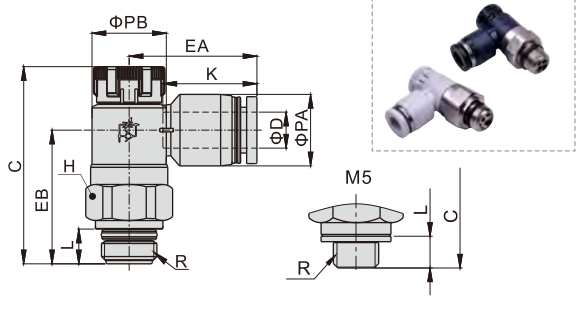
1. Compare with standard speed controller, smaller size, lighter weight, suitable for more occasions.
2. Effectively control the action speed and the pressure signal transmission from pneumatic device.
3. Simple push-lock, operation.
4. Adjust quickly, easily and accurately.
5. Excellent flow rate characteristic, high sensitivity and easy to adjust.
6. Options of Meter-out and meter-in, applicable for every type actuator.
7. Effectively prevent from corrosion and pollusion by nickle plated brass.

Table for interface port and tube O.D.

Product series	Thread type	Port size	
		Φ4	Φ6
GPTL	M5	•	•
	G1/8	•	•

Dimensions

GPTL Mini series



Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)	PCS/bag
						Pull	Push						
GPTL4M5□-M	4	M5×0.8	8.5	9	3.5	29.5	28	12.5	16.5	19	9	5	2
GPTL401□-M		G1/8	8.5	9	5.5	29.5	28	12.5	16.5	19.5	10	5.7	2
GPTL6M5□-M	6	M5×0.8	10.5	9	3.5	29.5	28	13.5	19.5	19	9	6.2	2
GPTL601□-M		G1/8	10.5	9	5.5	29.5	28	13.5	19.5	19.5	10	6.9	2

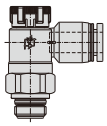
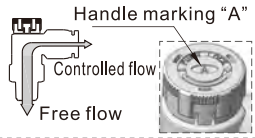
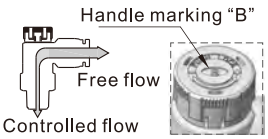
[Note1] "□" stands for A or B. A indicates meter-out type while B indicates meter-in type. The two types are with the same overall dimension.

GPTL series

Ordering code

GPTL 6 01 A □

① ② ③ ④ ⑤

①Model	②Port size	③Thread connection	④Control method	⑤Standard color	
GPTL: Speed controller (Push lock) (G Thread) 	6：Φ6mm	01：G1/8 02：G1/4 03：G3/8	A: Meter-out 	Standard color	Specification
	8：Φ8mm	01：G1/8 02：G1/4 03：G3/8 04：G1/2		Blank: Gray	Release button: Gray Body:Gray
	10：Φ10mm	02：G1/4 03：G3/8 04：G1/2	B: Meter-in 	D: Black	Release button: Black Body: Black
	12：Φ12mm	03：G3/8 04：G1/2			

Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Product feature

1. Compare with standard speed controller, smaller size, lighter weight, suitable for more occasions.
2. Effectively control the action speed and the pressure signal transmission from pneumatic device.
3. Simple push-lock, operation.
4. Adjust quickly, easily and accurately.
5. Excellent flow rate characteristic, high sensitivity and easy to adjust.
6. Options of Meter-out and meter-in, applicable for every type actuator.
7. Effectively prevent from corrosion and pollusion by nickle plated brass.

Symbol

Meter-out (A) 

Meter-in (B) 

Table for interface port and tube O.D.

Product series	Thread type	Port size			
		Φ6	Φ8	Φ10	Φ12
GPTL	G1/8	•	•		
	G1/4	•	•	•	
	G3/8	•	•	•	•
	G1/2		•	•	•

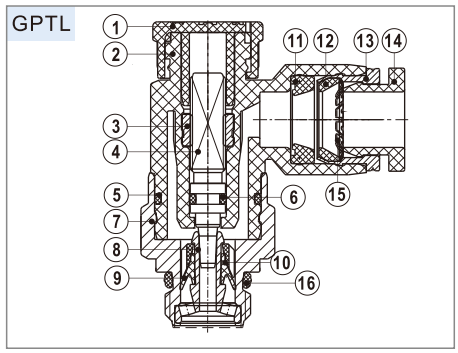
Selection, Installation and Operation

1. The rotation torque of the push-lock speed controller cap should not be too large to avoid damage.
   It is recommended to use the torque below.

Thread size	Recommended torque(N.m)
G1/8	0.08
G1/4	0.16
G3/8	0.24
G1/2	0.32

2. Push-lock speed controller installation instructions is the same as general one. Please refer to general type for specific content.

Inner structure

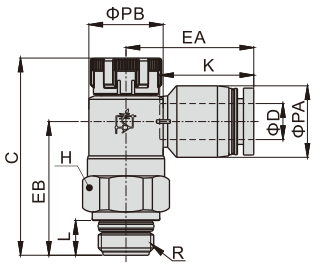
GPTL 

NO.	Name	Material	NO.	Name	Material
1	Adjusting cap	POM	9	Holder	PBT
2	Plastic body	PBT	10	O-ring	NBR
3	Locating ring	Aluminum alloy	11	O-ring	NBR
4	Throttling column	Aluminum alloy	12	Locating seat	POM
5	O-ring	NBR	13	Locating ring	Aluminum alloy
6	O-ring	NBR	14	Plastic interface	POM
7	Throttling body	Brass	15	Spring gasket	Stainless steel
8	Throttling sleeve	Aluminum alloy	16	O-ring	NBR

GPTL series

Dimensions

GPTL Series



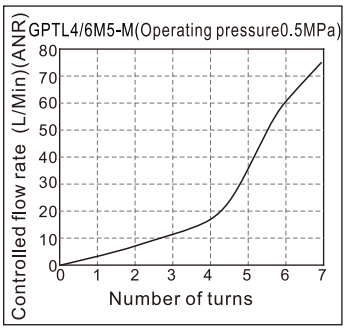


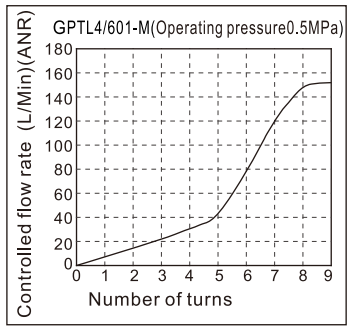
Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)	PCS/bag
						Pull	Push						
GPTL601□	6	G1/8	12.5	13	5.5	36	34.5	16.5	22.5	23.5	14	12.5	2
GPTL602□		G1/4	12.5	16.5	6.5	40.5	39	16.5	24	28	17	19.5	2
GPTL603□		G3/8	12.5	19	7	44	42.5	16.5	25.5	31	19	28.5	2
GPTL801□	8	G1/8	15	13	5.5	36	34.5	18.5	24.5	22.5	14	13	2
GPTL802□		G1/4	15	16.5	6.5	40.5	39	18.5	26	27	17	20.5	2
GPTL803□		G3/8	15	19	7	44	42.5	18.5	27	30	19	29	2
GPTL804□		G1/2	15	24	8.5	52.5	51	18.5	29.5	37.5	24	49	2
GPTL1002□	10	G1/4	18	16.5	6.5	40.5	39	21	31	26	17	22	2
GPTL1003□		G3/8	18	19	7	44	42.5	21	29	29	19	30.5	2
GPTL1004□		G1/2	18	24	8.5	52.5	51	21	31.5	36.5	24	50.5	2
GPTL1203□	12	G3/8	21	19	7	44	42.5	23	34.5	28	19	32.5	2
GPTL1204□		G1/2	21	24	8.5	52.5	51	23	34	28	24	53	2

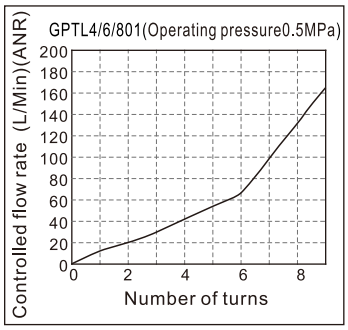
[Note1] "□" stands for A or B. A indicates meter-out type while B indicates meter-in type. The two types are with the same overall dimension.

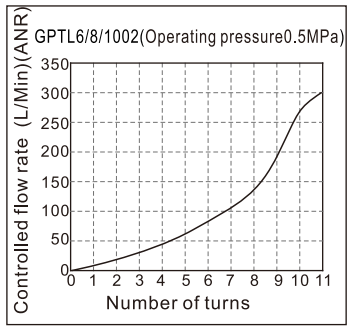
Flowrate characteristic

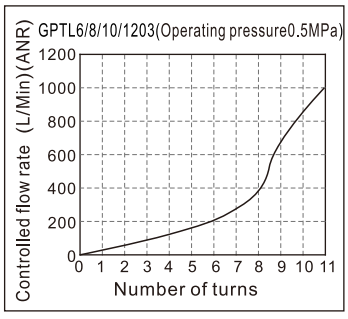
Controlled flow rate

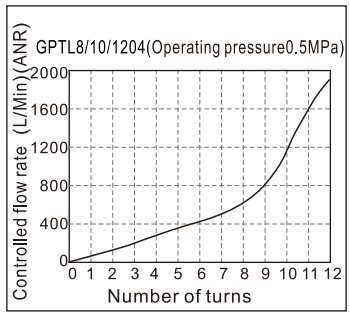




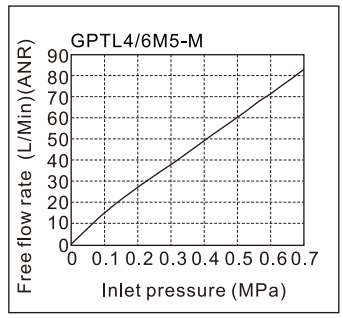


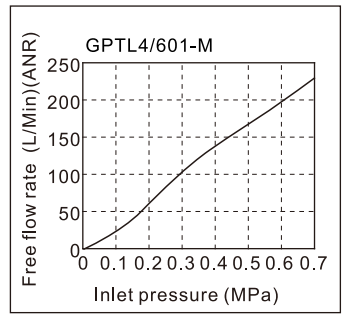


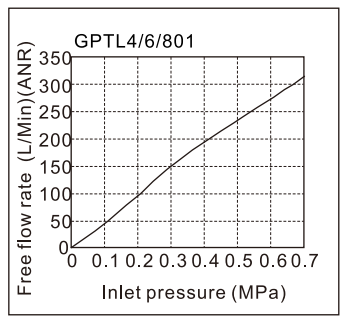


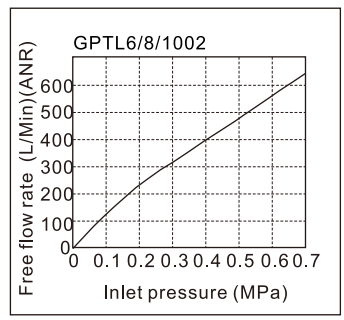


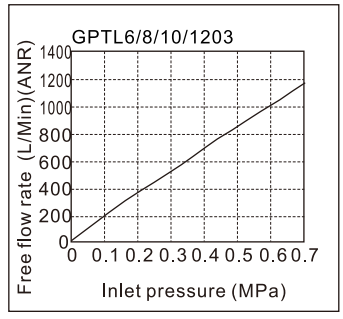
Free flow rate

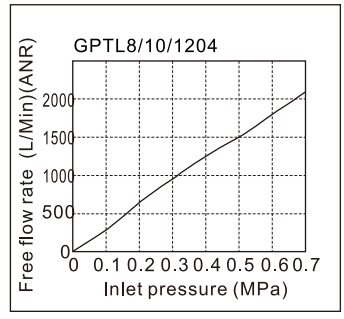












GPHV series

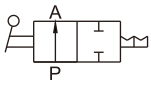


Specification

Model	GPHV6	GPHV8	GPHV10	GPHV12
Operating pressure range	0~10kgf/cm²(0~1.0MPa)			
Negative pressure	-750mmHg(10Torr)			
Proof pressure	1.5MPa			
Ambient and fluid temperature (℃)	-20~70			
Applicable tubing	Soft nylon or polyurethane			
Color	Gray/black			

Symbol

Two-way



Three-way



Product feature

1. GPHV series product doesn't contain brass, so can be used for forbidding brass condition.
2. When the three-way valve is closed, the outlet pressure is released, which facilitates in commissioning and maintenance.
3. The finger valve has excellent flow characteristic and high sensitive unti-direction characteristic.

Ordering code

GPHV 6 A □

① ② ③ ④

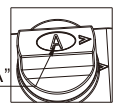
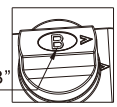
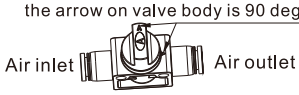
①Fitting type	②Port size	③Valve specification		④Standard color
GPHV: Finger valve	6：Φ6mm	A: Three-way Knob identifier "A" 	B: Two-way Knob identifier "B" 	Blank: Gray(Release button: Gray Body:Gray) D: Black(Release button: Black Body: Black)
	8：Φ8mm			
	10：Φ10mm			
	12：Φ12mm			

Diagram of finger valve in the open and closed states

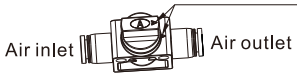
Closed state

Valve is closed, when the angle between the arrow on knob and the arrow on valve body is 90 degree

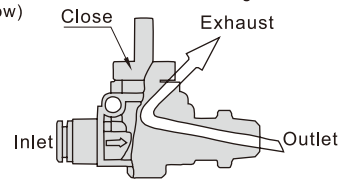


Opened state

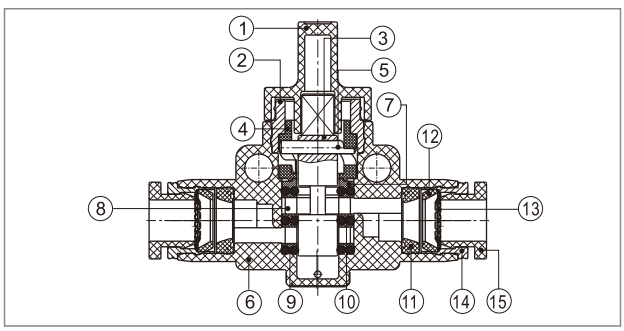
Valve is open, when the direction of the arrow on commutation knob is consistent with that on valve body.



When the three-way valve is closed, the outlet pressure is released, which facilitates in commissioning and maintenance. (as figure below)

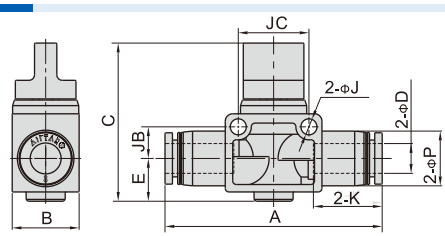


Inner structure



NO.	Name	Material	NO.	Name	Material
1	Knob	POM	9	Special shape O-ring	NBR
2	Fixing ring	Aluminum alloy	10	Spacer ring	Aluminum alloy
3	Spool	Aluminum alloy	11	Special shape O-ring	NBR
4	Cam groove block	POM	12	Locating seat	POM
5	Pin	Stainless steel	13	Spring gasket	Stainless steel
6	Plastic body	PBT	14	Locating ring	Aluminum alloy
7	Locating block	Aluminum alloy	15	Plastic interface	POM
8	Spacer	POM			

Dimensions



Model\Item	ΦD	A	B	C	ΦP	K	E	ΦJ	JB	JC	Weight(g)	PCS/bag
GPHV6□	6	51.5	17	40.5	12.5	16.5	10	4.3	8	18	14.3	2
GPHV8□	8	58.5	18	42.5	15	18.5	11.5	4.3	8.5	19	17.5	2
GPHV10□	10	66	21	42	18	21	11	4.3	11	24	25.1	2
GPHV12□	12	71	22	46	21	23	13	4.3	11	24	31.4	2

Note: "□" indicates "A" or "B", "A" indicates three-way, and "B" indicates two-way.
The two kinds of valve have same dimensions.

GBSL, GBSLM, GBESL series

Ordering code

GBSL 01

① ②

①Silencer Type	②Thread connection
GBSL: Universal silencer(G thread) GBSLM: Mini Silencer(G thread) GBESL: Throttling silencer(G thread)	M5 : M5X0.8 01 : G1/8 02 : G1/4 03 : G3/8 04 : G1/2

Product feature

1. This silencers have excellent noise silencing performance.
2. The installation of the silencer is simple and convenient, and the connecting portion is reliable and durable.
3. It is easy to adjust the exhaust flow of the throttling type silencer.

Configuration table of tubing thread

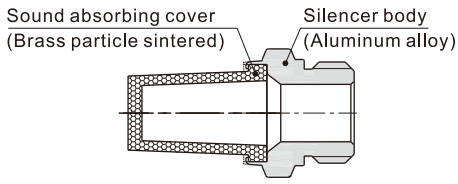
Product series	Thread connection				
	M5	01	02	03	04
GBSL	•	•	•	•	•
GBSLM	•	•	•	•	•
GBESL		•	•	•	•

Specification

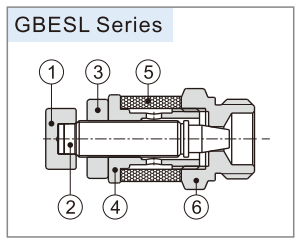
Model	GBSLM5	GBSL01	GBSL02	GBSL03	GBSL04	GBSLMM5	GBSLM01	GBSLM02	GBSLM03	GBSLM04
Thread connection	M5×0.8	G1/8	G1/4	G3/8	G1/2	M5×0.8	G1/8	G1/4	G3/8	G1/2
Silencing effect(dB)(0.5MPa)	15	20	20	20	12	15	20	20	20	20
Model	GBESL01	GBESL02	GBESL03	GBESL04						
Thread connection	G1/8	G1/4	G3/8	G1/2						
Silencing effect(dB)(0.5MPa)	20	20	20	20						
Operating pressure	0~10kgf/cm²(0~1.0MPa)									
Negative pressure	-750mmHg(10Torr)									
Proof pressure	1.5MPa									
Temperature range	-20~70℃									

Inner structure

GBSL Series



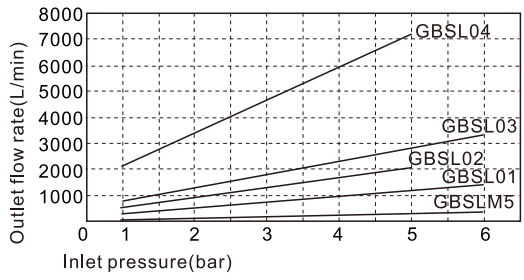
GBESL Series



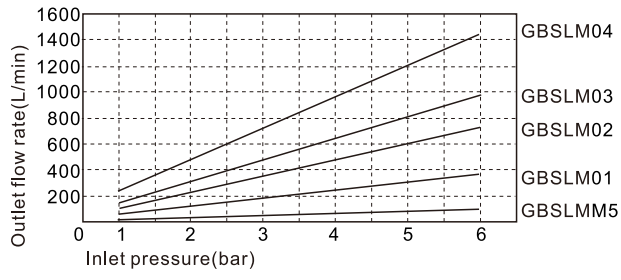
NO.	Name	Material
1	Adjusting cap	Aluminum alloy
2	Throttling column	Aluminum alloy
3	Locking cap	Aluminum alloy
4	Locking ring	Aluminum alloy
5	Silencer ring	Brass particle sintered
6	Silencer body	Aluminum alloy

Flowrate characteristic

GBSL Series

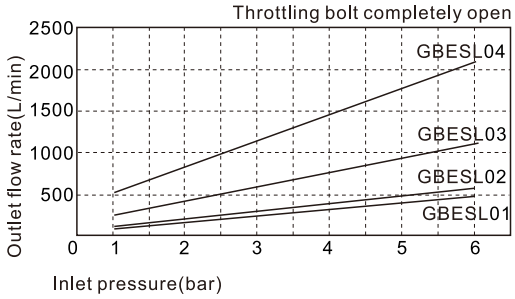


GBSLM Series

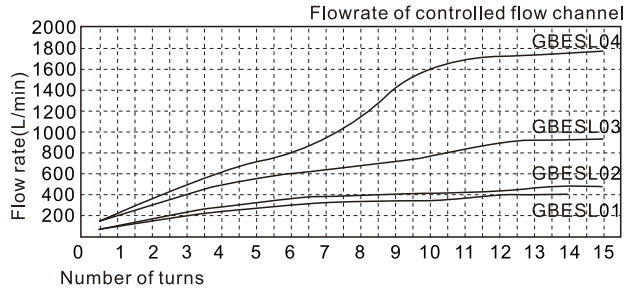


Flowrate characteristic

GBESL Series (Inlet pressure and outlet flow rate)

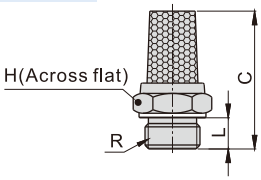


GBESL Series



Dimensions

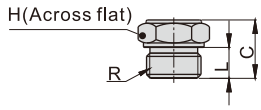
GBSL Series





Model\Item	R	L	C	H	Weight(g)	PCS/bag
GBSLM5	M5×0.8	3.5	19.5	8	2.9	10
GBSL01	G1/8	5.5	24	12	6.8	10
GBSL02	G1/4	6.5	29.5	15	11.3	10
GBSL03	G3/8	7	37.5	19	21.1	10
GBSL04	G1/2	8.5	45	22	33.6	10

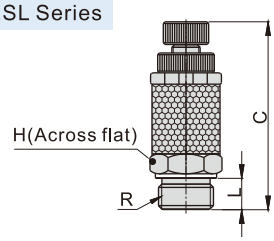
GBSLM Series





Model\Item	R	L	C	H	Weight(g)	PCS/bag
GBSLMM5	M5×0.8	3.5	9.5	8	2.3	10
GBSLM01	G1/8	5.5	11	11	4.4	10
GBSLM02	G1/4	6.5	13	15	8.1	10
GBSLM03	G3/8	7	14.5	19	14.9	10
GBSLM04	G1/2	8.5	17.5	22	24.5	10

GBESL Series





Model\Item	R	L	C		H	Weight(g)	PCS/bag
			max	min			
GBESL01	G1/8	5.5	40.5	33	12	10.1	10
GBESL02	G1/4	6.5	42	34.5	14	17.9	10
GBESL03	G3/8	7	48	40.5	17	30.3	10
GBESL04	G1/2	8.5	58.5	51	24	68.6	10

Plug-in Silencer

PPA Series



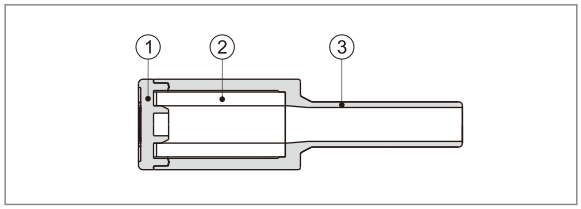
Specification

Model	PPA6	PPA8	PPA10	PPA12
Silencing effect(dB)(0.5MPa)	25	25	25	25
Operating pressure	0~10kgf/cm^2(0~1.0MPa)			
Negative pressure	-750mmHg(10Torr)			
Proof pressure	1.5MPa			
Temperature range	-20~70℃			

Product feature

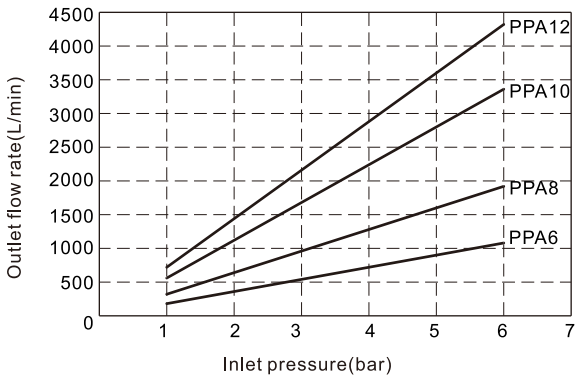
1. Full resin, excellent noise reduction and suitable for copper free environment.
2. Plug-in design, mount quickly and easily.

Inner structure and material of major parts



NO.	Name	Material
1	Cap	POM
2	Silencer filter	PE
3	Body	POM

Flowrate characteristic



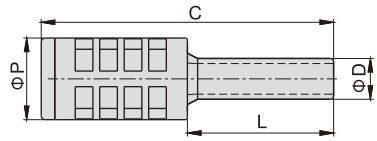
Ordering code

PPA 6

① ②

①Silencer Type	②Thread connection
PPA: Plug-in Silencer	6: Φ6 8: Φ8 10: Φ10 12: Φ12

Dimensions



Model\Item	C(Lenght)	D	L	P	Weight(g)
PPA6	43	6	21.5	12	2.0
PPA8	45	8	23	14	2.9
PPA10	61.5	10	26	16	5.3
PPA12	71.5	12	28	20	9.8

Polyurethane re-coil hosepart

US98A, UE95A Series



Product feature

1. Plastic polyurethane material conforms to the ROHS environment protection requirement.
2. High elasticity: small bend radius enables PU tube to pass through the tight space.
3. Anti-knot: better anti-knot effect than other plastic tube.
4. Excellent flexibility: it can bear repeated expansion.
5. Anti-abrasion: long working life and suitable for the environment in which it is easy to be worn.
6. Low permeability of gas: relieve the problems of leakage and pollution.
7. Good anti-solubility: no solvent leaks, therefore it will not pollute the environment.
8. Low compression: maintain excellent physical character.
9. Wide resistance: it has certain resistance to chemicals, water, fuel, oil and bacterium.

Specification(Standard pressure type)

Type [Note1]	Tube OD (mm)	Tube ID (mm)	Wall Thickness (mm)	Package Length(m)	Working Pressure at 23℃(MPa)[Note2]	Burst pressure at 23℃(MPa)	Bend radius (mm)	Weight per 100M(kg)	Temperature (℃)
US98A032020□□	3.2	2.0	0.60	100/200	1.0	3.0	8	0.60	-20~70
US98A040025□□	4.0	2.5	0.75	100/200	1.0	3.0	10	0.94	
US98A060040□□	6.0	4.0	1.00	100/200	1.0	3.0	15	1.93	
US98A080050□□	8.0	5.0	1.50	100	1.0	3.0	20	3.66	
US98A100065□□	10.0	6.5	1.75	100	1.0	3.0	25	5.44	
US98A120080□□	12.0	8.0	2.00	100	1.0	3.0	35	7.56	
US98A160110□□	16.0	11.0	2.50	100	1.0	3.0	80	10.03	
UE95A032020□□	3.2	2.0	0.60	20/100/200	1.0	2.5	8	0.60	-40~70
UE95A040025□□	4.0	2.5	0.75	20/100/200	1.0	2.5	8	0.94	
UE95A060040□□	6.0	4.0	1.00	20/100/200	1.0	2.5	12	1.91	
UE95A080050□□	8.0	5.0	1.50	20/100	1.0	2.5	17	3.58	
UE95A100065□□	10.0	6.5	1.75	20/100	1.0	2.5	20	5.32	
UE95A120080□□	12.0	8.0	2.00	20/100	1.0	2.5	30	7.27	

[Note1] The first square of "□□" in the type column is for ordering code "unit" and the second is for "color".

[Note2] Working pressure:3 to 1 safety factor.

Specification(Lower pressure type)

Type [Note1]	Tube OD (mm)	Tube ID (mm)	Wall Thickness (mm)	Package Length(m)	Working Pressure at 23℃(MPa)[Note2]	Burst pressure at 23℃(MPa)	Bend radius (mm)	Weight per 100M(kg)	Temperature (℃)
US98A080055□□	8.0	5.5	1.25	100	0.8	2.0	20	3.25	-20~70
US98A080060□□	8.0	6.0	1.00	100	0.4	1.5	25	2.70	
US98A100080□□	10.0	8.0	1.00	100	0.4	1.5	40	3.47	
US98A120100□□	12.0	10.0	1.00	100	0.4	1.5	60	4.24	
US98A160120□□	16.0	12.0	2.00	100	0.4	2.0	80	8.32	
UE95A080055□□	8.0	5.5	1.25	20/100	0.8	1.5	17	3.18	-40~70

[Note1] The first square of "□□" in the type column is for ordering code "unit" and the second is for "color".

[Note2] Working pressure:3 to 1 safety factor.

Ordering code

US98A 060 040 100M BU

① ② ③ ④ ⑤

①Model	②Tube OD	③Tube ID		④Material length	⑤Standard color [Note1]	
US98A: Ester Base,Shore A98±2	032 : Φ3.2mm 040 : Φ4.0mm 060 : Φ6.0mm	020 : Φ2.0mm 025 : Φ2.5mm 040 : Φ4.0mm 050 : Φ5.0mm 055 : Φ5.5mm 060 : Φ6.0mm	065 : Φ6.5mm 080 : Φ8.0mm 0100 : Φ10.0mm 0110 : Φ11.0mm 0120 : Φ12.0mm	100M : 100 m/coil 200M : 200 m/coil	BU: Blue BK: Black GE: Orange C: Clear WH: White CB: Clear Blue R: Red Y: Yellow GA: Gray	GN: Green BR: Brown CR: Clear Red CG: Clear Green CY: Clear Yellow CE: Clear Orange
	080 : Φ8.0mm 100 : Φ10.0mm 120 : Φ12.0mm 160 : Φ16.0mm			100M : 100 m/coil		
UE95A: Ether Base,Shore A95±2	032 : Φ3.2mm 040 : Φ4.0mm 060 : Φ6.0mm	020 : Φ2.0mm 025 : Φ2.5mm 040 : Φ4.0mm 050 : Φ5.0mm	055 : Φ5.5mm 065 : Φ6.5mm 080 : Φ8.0mm	20M : 20 m/coil 100M : 100 m/coil 200M : 200 m/coil		
	080 : Φ8.0mm 100 : Φ10.0mm 120 : Φ12.0mm			20M : 20 m/coil 100M : 100 m/coil		

[Note1] Φ8xΦ6, Φ10xΦ8, Φ12xΦ10 type have nine standard colors: Blue\ Black\ Orange\ Clear\ White\ Clear Blue\ Red\ Yellow\ Gray.

Polyurethane re-coil hosepart

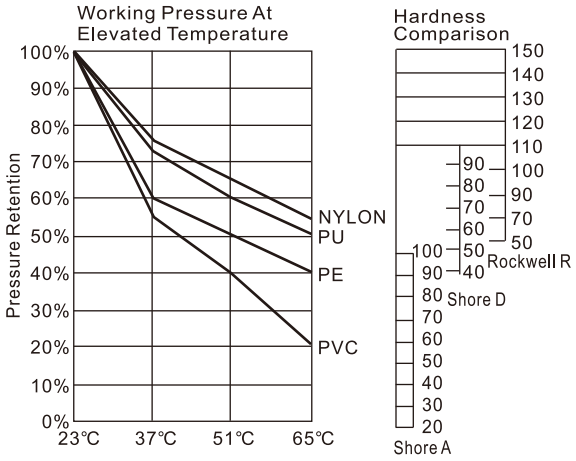
UCS Series



Product feature

1. Plastic polyurethane material conforms to the ROHS environment protection requirement.
2. High elasticity: small bend radius enables PU tube to pass through the tight space.
3. Anti-knot: better anti-knot effect than other plastic tube.
4. Excellent flexibility: it can bear repeated expansion.
5. Anti-abrasion: long working life and suitable for the environment in which it is easy to be worn.
6. Low permeability of gas: relieve the problems of leakage and pollution.
7. Good anti-solubility: no solvent leaks, therefore it will not pollute the environment.
8. Low compression: maintain excellent physical character.
9. Wide resistance: it has certain resistance to chemicals, water, fuel, oil and bacterium.

Technical chart



Specification(Standard pressure type)

Type [Note1]	Tube OD (mm)	Tube ID (mm)	Working Pressure at 23℃(MPa)[Note2]	Burst pressure at 23℃(MPa)	Bend radius(mm)	Length(m) [Note3]	Temp. (℃)
UCS060040□030□□	6.0	4.0	1.0	3.0	38	3	
UCS060040□060□□	6.0	4.0	1.0	3.0	38	6	
UCS060040□090□□	6.0	4.0	1.0	3.0	38	9	
UCS060040□120□□	6.0	4.0	1.0	3.0	38	12	
UCS060040□150□□	6.0	4.0	1.0	3.0	38	15	
UCS080050□060□□	8.0	5.0	1.0	3.0	38	6	
UCS080050□090□□	8.0	5.0	1.0	3.0	38	9	
UCS080050□120□□	8.0	5.0	1.0	3.0	38	12	
UCS080050□150□□	8.0	5.0	1.0	3.0	38	15	-20~70
UCS100065□060□□	10.0	6.5	1.0	3.0	50	6	
UCS100065□090□□	10.0	6.5	1.0	3.0	50	9	
UCS100065□120□□	10.0	6.5	1.0	3.0	50	12	
UCS100065□150□□	10.0	6.5	1.0	3.0	50	15	
UCS120080□060□□	12.0	8.0	1.0	3.0	60	6	
UCS120080□090□□	12.0	8.0	1.0	3.0	60	9	
UCS120080□120□□	12.0	8.0	1.0	3.0	60	12	
UCS120080□150□□	12.0	8.0	1.0	3.0	60	15	

Specification(Lower pressure type)

Type [Note1]	Tube OD (mm)	Tube ID (mm)	Working Pressure at 23℃(MPa)[Note2]	Burst pressure at 23℃(MPa)	Bend radius(mm)	Length(m) [Note3]	Temp. (℃)
UCS080055□060□□	8.0	5.5	0.8	2.0	38	6	
UCS080055□090□□	8.0	5.5	0.8	2.0	38	9	-20~70
UCS080055□120□□	8.0	5.5	0.8	2.0	38	12	
UCS080055□150□□	8.0	5.5	0.8	2.0	38	15	

[Note1] "□" in the type column is for "color", and "□□" is for "coupling type" and "coupling mode".

[Note2] Working pressure: 3 to 1 safety factor.

[Note3] Material length: length of operating status=(0.8~0.9)xMaterial length.

Ordering code

UCS 080 050 BU 090M A 1

① ② ③ ④ ⑤ ⑥ ⑦

①Model	②Tube OD	③Tube ID	④Standard color	⑤Material length	⑥Coupling type	⑦Coupling form
UCS: Ester Base	060 : Φ6.0mm 080 : Φ8.0mm 100 : Φ10.0mm 120 : Φ12.0mm	040 : Φ4.0mm 050 : Φ5.0mm 055 : Φ5.5mm 065 : Φ6.5mm 080 : Φ8.0mm	BU: Blue BK: Black GE: Orange C: Clear WH: White CB: Clear Blue R: Red Y: Yellow GN: Green BR: Brown CR: Clear Red CG: Clear Green CY: Clear Yellow CE: Clear Orange	030M : 3m 060M : 6m 090M : 9m 120M : 12m 150M : 15m	A: one end is 30cm and the other end is 10cm B: Both of the tubes of the couplings are 10cm C: Both of the tubes of the couplings are 0cm	1: Without coupling 2: With female-male coupling 3: With male-male coupling

Pipe end coupling

Name	Male quick coupling	Female quick coupling	Male quick coupling	Female quick coupling	Male quick coupling	Female quick coupling	Male quick coupling	Female quick coupling
Ordering code	GX-400-10PP	GX-230-10SP	GX-400-20PP	GX-230-20SP	GX-400-30PP	GX-230-30SP	GX-400-40PP	GX-230-40SP
Photo								
Type	Φ6×Φ4 quick coupling		Φ8×Φ5 quick coupling		Φ10×Φ6.5 quick coupling		Φ12×Φ8 quick coupling	

Flame resistant tube

UN54D Series



Product feature

1. Monolayer tube with flame resistant.
2. Excel in elasticity: can pass compactness space with lesser bend radius.
3. Excellent water-resistant and flexility.
4. Super doughty wearable and higher intensity of stretch.

Specification

Type [Note1]	Tube OD (mm)	Tube ID (mm)	Wall Thickness (mm)	Package Length(m)	Working Pressure at 23℃(MPa)	Burst pressure at 23℃	Bend radius (mm)	Weight per 100M(kg)	Temperature (℃)
UN54D□060040□□	6.0	4.0	1.00	100	1.0	4.0	12	1.93	-20~70
UN54D□080050□□	8.0	5.0	1.50	100	1.0	4.0	18	3.66	
UN54D□100065□□	10.0	6.5	1.75	100	1.0	4.0	20	5.44	
UN54D□120080□□	12.0	8.0	2.00	100	1.0	4.0	20	7.56	

[Note1] "□□" in the type column is for "color"

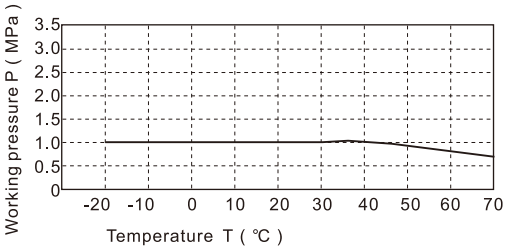
Ordering code

UN54D 120 080 100M Y

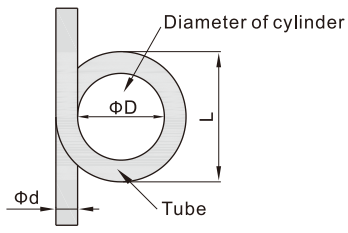
① ② ③ ④ ⑤

①Model	②Tube OD	③Tube ID	④Material length	⑤Standard color
UN54D：Flame resistant tube54D±3	060：Φ6.0mm 080：Φ8.0mm 100：Φ10.0mm 120：Φ12.0mm	040：Φ4.0mm 050：Φ5.0mm 065：Φ6.5mm 080：Φ8.0mm	100M：100 m/coil	BU: Blue BK: Black GN: Green WH: White R: Red Y: Yellow

Relationship of operation pressure and temperature



Mini bend radius



The least bend radius (JIS method)

JIS method (Base on JIS B8381 standard)

When the tube circle the cylinder tightly and the distortion rate is 25%, the cylinder radius is the least bend radius.

Testing condition：20℃，65%RH

N={1-(L-D)/2d}×100

N=Distortion rate (%) , less than 25% of standard value.

d=Tube diameter (mm)

L=Measure value (mm)

D=Diameter of cylinder (mm)

Ordering code

PC 6 01 □ □

① ② ③ ④ ⑤

①Model	②Port size	③Thread connection		④Standard color		⑤Thread type
PC: Male connector 	4 : Φ4mm 6 : Φ6mm 8 : Φ8mm 10 : Φ10mm 12 : Φ124mm	Thread connection	Adaptable port size	Standard color	Specification	Blank: PT
		M5 : M5X0.8	Φ4, Φ6	Blank: Gray	Release button:Gray	
POC: Male connector 		01 : 1/8" 02 : 1/4" 03 : 3/8" 04 : 1/2"	Φ4, Φ6 Φ8, Φ10 Φ12	D: Black	Release button:Black	

Specification

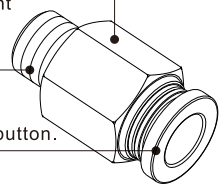
Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Table for interface port and tube O.D.

Product series	Thread type	Port size				
		Φ4	Φ6	Φ8	Φ10	Φ12
PC	1/8"	●	●	●	●	●
	1/4"	●	●	●	●	●
	3/8"		●	●	●	●
	1/2"		●	●	●	●
POC	M5	●	●			
	1/8"	●	●	●	●	
	1/4"	●	●	●	●	●
	3/8"			●	●	●
	1/2"				●	●

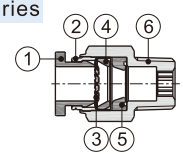
Product feature

1. The compact appearance space saving.
2. The threaded portion is covered with sealant to prevent air leakage over the connection thread portion.
3. Gray and black are optional for the release button.



Inner structure

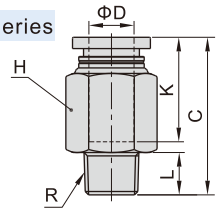
PC Series



No.	Item	Material
1	Release button	POM
2	Guide	Aluminum alloy
3	Spring gasket	Stainless steel
4	Chuck	POM
5	O-ring	NBR
6	Body	Brass

Dimensions

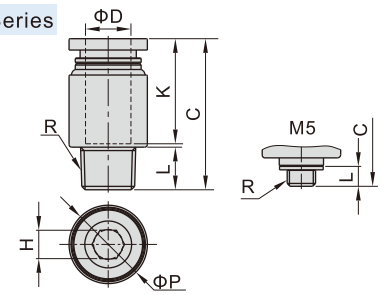
PC Series





Model\Item	ΦD	R	L	C	K	H(Across flat)	Weight(g)	PCS/bag
PC401	4	PT1/8	7.5	19.5	14	10	7	10
PC402		PT1/4	10	19.5	14	14	13.5	10
PC601	6	PT1/8	7.5	22.0	18.5	12	7.5	10
PC602		PT1/4	10	24.5	18.5	14	15.5	10
PC603		PT3/8	11	22.5	18.5	17	24	10
PC604		PT1/2	14	26.0	18.5	21	46	10
PC801	8	PT1/8	7.5	28	18.5	14	13.5	10
PC802		PT1/4	10	27	18.5	14	13	10
PC803		PT3/8	11	23.5	18.5	17	21	10
PC804		PT1/2	14	27	18.5	21	43.5	10
PC1001	10	PT1/8	7.5	30	21	17	20.5	10
PC1002		PT1/4	10	32.5	21	17	24	10
PC1003		PT3/8	11	28	21	17	20.5	10
PC1004		PT1/2	14	26.5	21	21	36	10
PC1201	12	PT1/8	7.5	32.5	23	21	38.5	10
PC1202		PT1/4	10	35	23	21	40.5	10
PC1203		PT3/8	11	30.5	23	21	28.5	10
PC1204		PT1/2	14	32.5	23	21	41.5	10

POC Series





Model\Item	ΦD	R	ΦP	L	C	K	H(Across flat)	Weight(g)	PCS/bag
POC4M5	4	M5×0.8	9	3.5	18.5	14	2.5	3.6	10
POC401		PT1/8	10	7.5	18	14	3	5.5	10
POC402		PT1/4	14	10	19.5	14	3	12.6	10
POC6M5	6	M5×0.8	12	3.5	21.5	16.5	2	5.9	10
POC601		PT1/8	12	7.5	22.0	18.5	4	6.3	10
POC602		PT1/4	14	10	22.0	18.5	4	11.8	10
POC801	8	PT1/8	14	7.5	26.5	18	5	9.9	10
POC802		PT1/4	14	10	25	18	6	10.1	10
POC803		PT3/8	17	11	23.5	18	6	19.3	10
POC1001	10	PT1/8	17	7.5	30	21	5	16.5	10
POC1002		PT1/4	17	10	29	21	6	15.4	10
POC1003		PT3/8	17	11	28	21	8	18.7	10
POC1004		PT1/2	21	14	26.5	21	8	35.3	10
POC1202	12	PT1/4	21	10	34.5	23	6	32.3	10
POC1203		PT3/8	21	11	30	23	8	25.1	10
POC1204		PT1/2	21	14	32	23	8	37.5	10

Ordering code

PC 6 01 □ □ - M

① ② ③ ④ ⑤ ⑥

①Model	②Port size	③Thread connection		④Standard color		⑤Thread type	⑥Style type
PC: Male connector 	4 : Φ4mm 6 : Φ6mm	Thread connection	Adaptable port size	Standard color	Specification	Blank: PT	M : Mini type
		01 : 1/8"	Φ4, Φ6	Blank: Gray	Release button: Gray		
PL: Male elbow 				D: Black	Release button: Black		

Specification

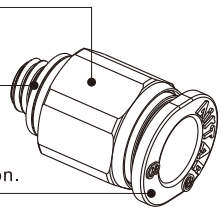
Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Table for interface port and tube O.D.

Product series	Thread type	Port size	
		Φ4	Φ6
PC/PL	1/8"	•	•

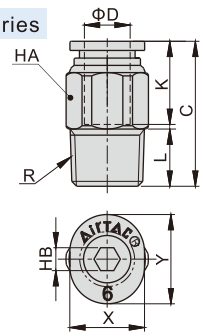
Product feature

1. The compact appearance space saving.
2. The threaded portion is covered with sealant to prevent air leakage over the connection thread portion.
3. Gray and black are optional for the release button.



Dimensions

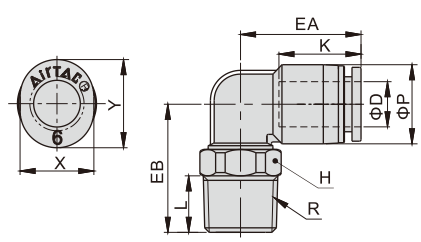
PC Series





Model\Item	ΦD	R	L	C	K	X	Y	HA	HB	Weight(g)	PCS/bag
PC401-M	4	PT1/8	7.5	17.5	13.5	7.8	9.5	10	3	5.5	10
PC601-M	6	PT1/8	7.5	19.0	15.5	9.8	11.7	10	4	6.0	10

PL Series





Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	X	Y	Weight(g)	PCS/bag
PL401-M	4	PT1/8	8.5	7.5	12.5	15	16	10	7.8	9.5	6.2	10
PL601-M	6	PT1/8	10.5	7.5	13.5	16.0	16.5	10	9.8	11.7	6.8	10

One-touch fittings—threaded type

Ordering code

Same diameter type fittings PL 6 01 □ □

① ② ③ ④ ⑤

①Model		②Port size	③Thread connection		④Standard color			⑤Thread type
			Thread connection	Adaptable port size	Standard color	Specification	Adaptable model	
PHW: Double universal male elbow	PL: Male elbow	4: Φ4mm 6: Φ6mm 8: Φ8mm 10: Φ10mm 12: Φ12mm	01: 1/8" 02: 1/4" 03: 3/8" 04: 1/2"	Φ4, Φ6 Φ8, Φ10 Φ12	Blank: Gray	Release button: Gray	PCF PMF	Blank: PT
PHF: Universal female elbow	PLL: Extended male elbow					Release button: Gray Body:Gray	Others	
PEB: Male branch tee	PLF: Female elbow							
PED: Male run tee	PCF: Female connector				D: Black	Release button: Black	PCF PMF	
PYB: Branch "Y"	PMF: Bulkhead connector					Release button: Black Body: Black	Others	
PZB: Threaded cross	PH: Universal male elbow							

Different diameter type fittings PKD 6 - 4 01 □ □

① ② ③ ④ ⑤ ⑥

①Model	②Port size	③Port size	④Thread connection	⑤Standard color		⑥Thread type
				Standard color	Specification	
PKD: Male reducer triple branch	6: Φ6mm 8: Φ8mm 10: Φ10mm	4: Φ4mm 6: Φ6mm 8: Φ8mm	01: 1/8" 02: 1/4" 03: 3/8"	Blank: Gray	Release button: Gray/Body:Gray	Blank: PT
				D: Black	Release button: Black/Body: Black	

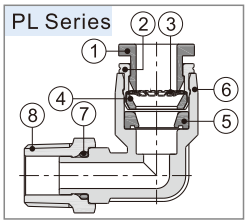
Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Product feature

1. Variable models can be widely used in every kind of pneumatic systems.
2. High circulation performance: bear the same flow with the volume of the tubing inside diameter.
3. Connect tubing easily and conveniently. The tubing connection portion is safe and durable.
4. The threaded portion is covered with sealant and the M5 thread is attached with a sealing gasket to prevent air leakage over the connection thread portion.
5. The nickel plated body is anti-corrosion and anti-pollution, which allows a broader application.

Inner structure



No.	Item	Material
1	Release button	POM
2	Guide	Aluminum alloy
3	Spring gasket	Stainless steel
4	Chuck	POM
5	O-ring	NBR
6	Body	PBT
7	O-ring	NBR
8	Stud	Brass

Table for interface port and tube O.D.

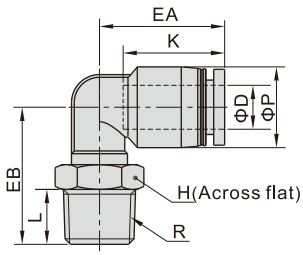
Product series	Thread type	Port size Φ4	Φ6	Φ8	Φ10	Φ12
PL	1/8"	●	●	●	●	●
	1/4"	●	●	●	●	●
	3/8"		●	●	●	●
	1/2"		●	●	●	●
PLL	1/8"	●	●	●	●	
	1/4"	●	●	●	●	●
	3/8"		●	●	●	●
	1/2"				●	●
PEB PED PYB	1/8"	●	●	●	●	
	1/4"	●	●	●	●	●
	3/8"		●	●	●	●
	1/2"			●	●	●
PH PHF	1/8"	●	●	●		
	1/4"		●	●	●	
	3/8"		●	●	●	●
	1/2"			●	●	●
PHW	1/8"	●	●	●		
	1/4"		●	●	●	
	3/8"		●	●	●	●
	1/2"			●	●	●
PZB	1/8"		●	●		
	1/4"		●	●	●	
	3/8"		●	●	●	●
	1/2"			●	●	●

Product series	Thread type	Port size Φ4	Φ6	Φ8	Φ10	Φ12
PLF	1/8"	●	●	●	●	
	1/4"	●	●	●	●	●
	3/8"		●	●	●	●
	1/2"			●	●	●
PCF	1/8"	●	●	●	●	
	1/4"	●	●	●	●	●
	3/8"		●	●	●	●
	1/2"		●	●	●	●
PMF	1/8"	●	●	●	●	
	1/4"	●	●	●	●	●
	3/8"		●	●	●	●
	1/2"			●	●	●

Product series	Thread type	Port size Φ6-Φ4	Φ8-Φ6	Φ10-Φ8
PKD	1/8"	●		
	1/4"		●	
	3/8"			●

Dimensions

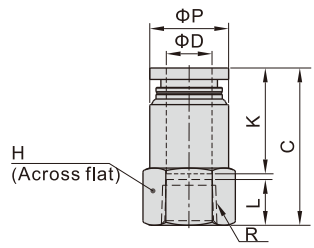
PL Series





Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)	PCS/bag
PL401	4	PT1/8	9	7.5	14	17	18.5	10	4.5	10
PL402		PT1/4	9	10	14	17	22.0	14	12	10
PL601	6	PT1/8	12.5	7.5	17	20	20.5	10	6	10
PL602		PT1/4	12.5	10	17	20	24.0	14	13.5	10
PL603		PT3/8	12.5	11	17	20	25.5	17	20.5	10
PL604		PT1/2	12.5	14	17	20	30.0	21	36	10
PL801	8	PT1/8	15	7.5	18.5	23	20.5	10	7.5	10
PL802		PT1/4	15	10	18.5	23	25.0	14	13	10
PL803		PT3/8	15	11	18.5	23	26.5	17	21	10
PL804		PT1/2	15	14	18.5	23	31.0	21	36	10
PL1001	10	PT1/8	18	7.5	21	25.5	25.0	17	16.5	10
PL1002		PT1/4	18	10	21	25.5	27.0	17	19	10
PL1003		PT3/8	18	11	21	25.5	28.0	17	21	10
PL1004		PT1/2	18	14	21	25.5	32.5	21	37	10
PL1201	12	PT1/8	21	7.5	23	28.5	26.5	17	19	10
PL1202		PT1/4	21	10	23	28.5	28.5	17	21.5	10
PL1203		PT3/8	21	11	23	29.5	33	17	25.5	10
PL1204		PT1/2	21	14	23	29.5	34	21	37	10

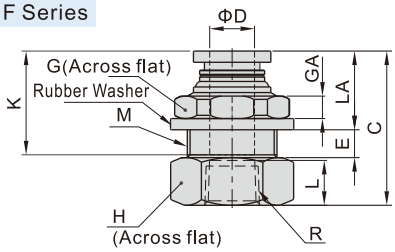
PCF Series





Model\Item	ΦD	R	ΦP	L	C	K	H	Weight(g)	PCS/bag
PCF401	4	PT1/8	9.5	8	23	14	14	4.5	10
PCF402		PT1/4	9.5	11	26	14	17	6.5	10
PCF601	6	PT1/8	12.5	8	25.5	16.5	14	5.6	10
PCF602		PT1/4	12.5	11	28.5	16.5	17	7.5	10
PCF603		PT3/8	13	12	29.5	16.5	21	10.7	10
PCF604		PT1/2	13	13.5	31.0	16.5	25	13.8	10
PCF801	8	PT1/8	14	8	27.5	18.5	14	5.8	10
PCF802		PT1/4	14.5	11	30.5	18.5	17	8.4	10
PCF803		PT3/8	14.5	12	31.5	18.5	21	11.2	10
PCF804		PT1/2	14.5	13.5	33	18.5	25	14.4	10
PCF1001	10	PT1/8	17	8	29	21	17	9.5	10
PCF1002		PT1/4	17	11	33	21	17	9.9	10
PCF1003		PT3/8	18	12	34	21	21	14	10
PCF1004		PT1/2	18	13.5	35.5	21	25	17.1	10
PCF1202	12	PT1/4	21	11	33.5	23	21	17.5	10
PCF1203		PT3/8	21	12	35.5	23	21	16.6	10
PCF1204		PT1/2	21	13.5	37	23	25	19.7	10

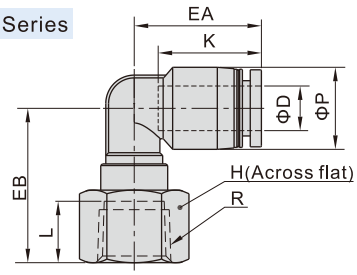
PMF Series





Model\Item	ΦD	R	M	L	C	K	LA	E	GA	G	H	Weight(g)	PCS/bag
PMF401	4	PT1/8	M12X1	8	25	14	12	4	4	14	14	6.4	10
PMF402		PT1/4	M12X1	11	29	14	12	4	4	14	17	9	10
PMF601	6	PT1/8	M14X1	8	25.5	16.5	12.5	5	4	17	17	9.1	10
PMF602		PT1/4	M14X1	11	30.5	16.5	12.5	5	4	17	17	10.9	10
PMF603		PT3/8	M14X1	12	31.5	16.5	12.5	5	4	17	21	13.2	10
PMF801	8	PT1/8	M16X1	8	27.5	18.5	13.5	5.5	4	19	19	12.8	10
PMF802		PT1/4	M16X1	11	32	18.5	13.5	5.5	4	19	19	15.7	10
PMF803		PT3/8	M16X1	12	33	18.5	13.5	5.5	4	19	21	15	10
PMF804		PT1/2	M16X1	13.5	34.5	18.5	13.5	5.5	4	19	25	18.1	10
PMF1001	10	PT1/8	M20X1	8	30	21	14.5	7.5	5	24	22	19.6	10
PMF1002		PT1/4	M20X1	11	35	21	14.5	7.5	5	24	22	22.8	10
PMF1003		PT3/8	M20X1	12	36	21	14.5	7.5	5	24	22	21.1	10
PMF1004		PT1/2	M20X1	13.5	37.5	21	14.5	7.5	5	24	25	23.2	10
PMF1202	12	PT1/4	M22X1	11	34.5	23	15.5	8	6	27	24	26.2	10
PMF1203		PT3/8	M22X1	12	37.5	23	15.5	8	6	27	24	27	10
PMF1204		PT1/2	M22X1	13.5	39	23	15.5	8	6	27	25	26.2	10

PLF Series

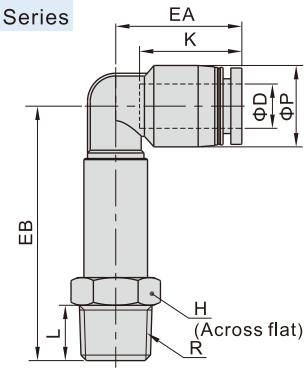




Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)	PCS/bag
PLF401	4	PT1/8	9	8	14	17	21	14	4.6	10
PLF402		PT1/4	9	11	14	17	24	17	6.8	10
PLF601	6	PT1/8	12.5	8	17	20	23	14	5.8	10
PLF602		PT1/4	12.5	11	17	20	26	17	8	10
PLF603		PT3/8	12.5	12	17	20	27	21	10.7	10
PLF801	8	PT1/8	15	8	18.5	23	20	14	6.6	10
PLF802		PT1/4	15	11	18.5	23	27.5	17	9.2	10
PLF803		PT3/8	15	12	18.5	23	28.5	21	11.9	10
PLF804		PT1/2	15	13.5	18.5	23	30	25	15.2	10
PLF1001	10	PT1/8	18	8	21	25.5	24	17	11.3	10
PLF1002		PT1/4	18	11	21	25.5	26.5	17	11.2	10
PLF1003		PT3/8	18	12	21	25.5	30	21	14.5	10
PLF1004		PT1/2	18	13.5	21	25.5	31.5	25	17.4	10
PLF1202	12	PT1/4	21	11	23	28.5	28.5	17	13.7	10
PLF1203		PT3/8	21	12	23	29.5	32	21	17.4	10
PLF1204		PT1/2	21	13.5	23	29.5	33	25	20.4	10

One-touch fittings—threaded type

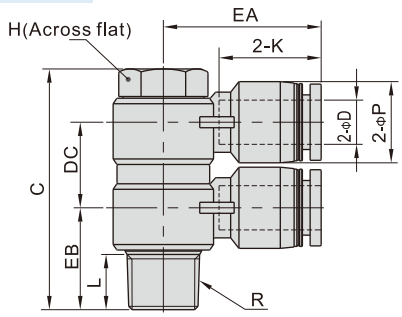
PLL Series





Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)	PCS/bag
PLL401	4	PT1/8	9	7.5	14	17	35.5	10	12.3	10
PLL402		PT1/4	9	10	14	17	38.5	14	16.9	10
PLL601	6	PT1/8	12.5	7.5	17	20	37.5	10	13	10
PLL602		PT1/4	12.5	10	17	20	40.5	14	18	10
PLL603		PT3/8	12.5	11	17	20	43	17	23.4	10
PLL801	8	PT1/8	15	7.5	18.5	23	43.5	12	16.6	10
PLL802		PT1/4	15	10	18.5	23	45.5	14	22.7	10
PLL803		PT3/8	15	11	18.5	23	48	17	27.7	10
PLL1001	10	PT1/8	18	7.5	21	25.5	50.5	15	37.5	10
PLL1002		PT1/4	18	10	21	25.5	53.5	15	40.6	10
PLL1003		PT3/8	18	11	21	25.5	54.5	17	40.7	10
PLL1004		PT1/2	18	14	21	25.5	59	21	47.4	10
PLL1202	12	PT1/4	21	10	23	28.5	55.5	15	43	10
PLL1203		PT3/8	21	11	23	29.5	60	17	55.4	10
PLL1204		PT1/2	21	14	23	29.5	63	21	56.7	10

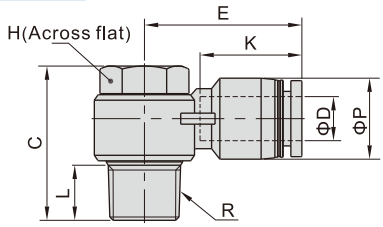
PHW Series





Model\Item	ΦD	R	ΦP	L	C	K	EA	EB	DC	H	Weight(g)	PCS/bag
PHW401	4	PT1/8	9	7.5	38	14	20.5	14.5	13	11	19	10
PHW601	6	PT1/8	12.5	7.5	38	16.5	23.0	15	13	11	21	10
PHW602		PT1/4	12.5	10	43.5	16.5	25.0	17.5	15.5	14	40.2	10
PHW603		PT3/8	12.5	11	50	16.5	27.0	20	16.5	19	69.2	5
PHW801	8	PT1/8	15	7.5	40.5	18.5	26.5	16.5	15.5	11	23.6	10
PHW802		PT1/4	15	10	43.5	18.5	28.5	18.5	15.5	14	40.8	10
PHW803		PT3/8	15	11	50	18.5	29.5	20	16.5	19	70.4	5
PHW804		PT1/2	15	14	61	18.5	32	24.5	22	24	134.8	5
PHW1002	10	PT1/4	18	10	46.5	21	31	20	18.5	14	47	10
PHW1003		PT3/8	18	11	55	21	33	21	22	19	87.5	5
PHW1004		PT1/2	18	14	61	21	35.5	25	22	24	137.7	5
PHW1203	12	PT3/8	21	11	55	23	36	23	22	19	86.4	5
PHW1204		PT1/2	21	14	61	23	38	26.5	22	24	147.5	5

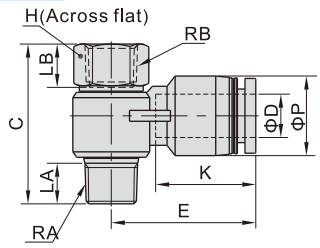
PH Series





Model\Item	ΦD	R	ΦP	L	C	K	E	H	Weight(g)	PCS/bag
PH401	4	PT1/8	9	7.5	25	14	20.5	11	12.8	10
PH601	6	PT1/8	12.5	7.5	25	16.5	23	11	14	10
PH602		PT1/4	12.5	10	28	16.5	25	14	25.4	10
PH603		PT3/8	12.5	11	33	16.5	27	19	50.2	5
PH801	8	PT1/8	15	7.5	25	18.5	26.5	11	14.7	10
PH802		PT1/4	15	10	28	18.5	28.5	14	26.4	10
PH803		PT3/8	15	11	33	18.5	29.5	19	49.4	5
PH804		PT1/2	15	14	39	18.5	32	24	89	5
PH1002	10	PT1/4	18	10	28	21	31	14	27.7	10
PH1003		PT3/8	18	11	33	21	33	19	51.1	5
PH1004		PT1/2	18	14	39	21	35.5	24	88.5	5
PH1203	12	PT3/8	21	11	33	23	36	19	53	5
PH1204		PT1/2	21	14	39	23	38	24	92.8	5

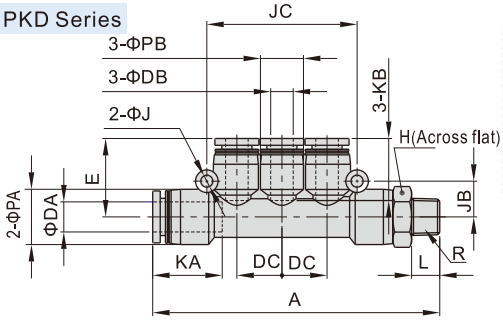
PHF Series





Model\Item	ΦD	RA	RB	ΦP	LA	LB	C	K	E	H	Weight(g)	PCS/bag
PHF401	4	PT1/8	PT1/8	9	7.5	8	29.5	14	20.5	12	12.9	10
PHF601	6	PT1/8	PT1/8	12.5	7.5	8	29.5	16.5	23	12	13.9	10
PHF602		PT1/4	PT1/4	12.5	10	11	35	16.5	25	17	30.3	10
PHF603		PT3/8	PT3/8	12.5	11	12	40	16.5	27	19	44.2	5
PHF801	8	PT1/8	PT1/8	15	7.5	8	29.5	18.5	26.5	12	15	10
PHF802		PT1/4	PT1/4	15	10	11	35	18.5	28.5	17	30.7	10
PHF803		PT3/8	PT3/8	15	11	12	40	18.5	29.5	19	44.8	5
PHF804		PT1/2	PT1/2	15	14	13.5	47.5	18.5	32	24	84.7	5
PHF1002	10	PT1/4	PT1/4	18	10	11	35	21	31	17	32	10
PHF1003		PT3/8	PT3/8	18	11	12	40	21	33	19	46.2	5
PHF1004		PT1/2	PT1/2	18	14	13.5	47.5	21	35.5	24	86.1	5
PHF1203	12	PT3/8	PT3/8	21	11	12	40	23	36	19	48.4	5
PHF1204		PT1/2	PT1/2	21	14	13.5	47.5	23	38	24	89.7	5

PKD Series



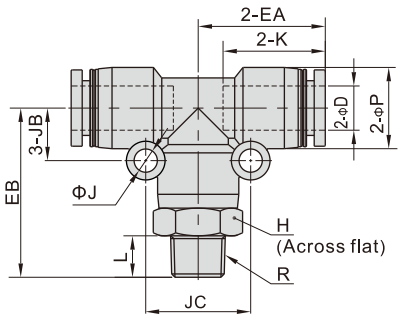


Model\Item	ΦDA	ΦDB	R	L	A	ΦPA	ΦPB	KA	KB
PKD6-401	6	4	PT1/8	7.5	66.5	12.5	9	16.5	14
PKD8-602	8	6	PT1/4	10	79	15	12.5	18.5	16.5
PKD10-803	10	8	PT3/8	11	91.5	18	15	21	18.5

Model\Item	ΦJ	JB	JC	DC	E	H	Weight(g)	PCS/bag
PKD6-401	3.2	8	34	10	17.5	12	15.8	2
PKD8-602	3.2	9.5	40	12	21	14	26.5	2
PKD10-803	4.3	11	48	14.5	24	17	38.2	2

One-touch fittings—threaded type

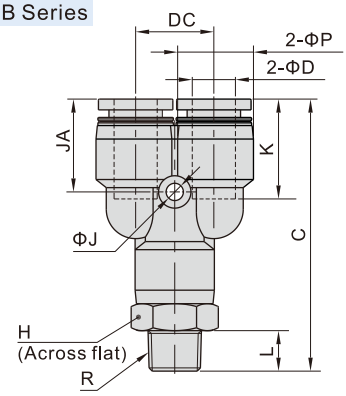
PEB Series





Model\Item	ΦD	R	ΦP	L	K	EA	EB	ΦJ	JB	JC	H	Weight(g)	PCS/bag
PEB401	4	PT1/8	9	7.5	14	17	25	3.2	6.5	13	10	8.8	10
PEB402		PT1/4	9	10	14	17	28	3.2	6.5	13	14	15.5	10
PEB601	6	PT1/8	12.5	7.5	16.5	20	27.5	3.2	8	16	12	13.5	10
PEB602		PT1/4	12.5	10	16.5	20	30.5	3.2	8	16	14	18.6	10
PEB603		PT3/8	12.5	11	16.5	20	32	3.2	8	16	17	25.3	10
PEB801	8	PT1/8	15	7.5	18.5	23	30.5	4.3	9.5	19	14	18.4	10
PEB802		PT1/4	15	10	18.5	23	33	4.3	9.5	19	14	21.3	10
PEB803		PT3/8	15	11	18.5	23	34.5	4.3	9.5	19	17	28.2	10
PEB804		PT1/2	15	14	18.5	23	38.5	4.3	9.5	19	21	41	10
PEB1001	10	PT1/8	18	7.5	21	26.5	34	4.3	11	22	17	26.7	10
PEB1002		PT1/4	18	10	21	26.5	36.5	4.3	11	22	17	29.2	10
PEB1003		PT3/8	18	11	21	26.5	37.5	4.3	11	22	17	31.9	10
PEB1004		PT1/2	18	14	21	26.5	41.5	4.3	11	22	21	45.4	10
PEB1202	12	PT1/4	21	10	23	30	41	4.3	13	26	21	49.6	10
PEB1203		PT3/8	21	11	23	30	42	4.3	13	26	21	51.2	10
PEB1204		PT1/2	21	14	23	30	45	4.3	13	26	21	57.3	10

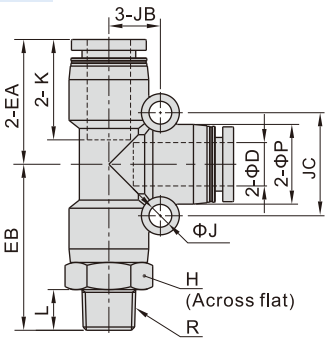
PYB Series





Model\Item	ΦD	R	ΦP	L	C	K	ΦJ	JA	DC	H	Weight(g)	PCS/bag
PYB401	4	PT1/8	9	7.5	39.5	14	3.2	13	10	10	9	10
PYB402		PT1/4	9	10	42.5	14	3.2	13	10	14	10.8	10
PYB601	6	PT1/8	12.5	7.5	44.5	16.5	3.2	15.5	12	12	13.7	10
PYB602		PT1/4	12.5	10	47.5	16.5	3.2	15.5	12	14	18.2	10
PYB603		PT3/8	12.5	11	49.0	16.5	3.2	15.5	12	17	25	10
PYB801	8	PT1/8	15	7.5	50	18.5	3.2	17	14.5	14	19.8	10
PYB802		PT1/4	15	10	52.5	18.5	3.2	17	14.5	14	22	10
PYB803		PT3/8	15	11	54	18.5	3.2	17	14.5	17	27.7	10
PYB804		PT1/2	15	14	58	18.5	3.2	17	14.5	21	40.8	10
PYB1001	10	PT1/8	18	7.5	56.5	21	4.3	19.5	18	17	27.4	10
PYB1002		PT1/4	18	10	59	21	4.3	19.5	18	17	29.5	10
PYB1003		PT3/8	18	11	60	21	4.3	19.5	18	17	32.5	10
PYB1004		PT1/2	18	14	64	21	4.3	19.5	18	21	45.4	10
PYB1202	12	PT1/4	21	10	66	23	4.3	21	20.5	21	27.3	10
PYB1203		PT3/8	21	11	67	23	4.3	21	20.5	21	51.8	10
PYB1204		PT1/2	21	14	70	23	4.3	21	20.5	21	56.8	10

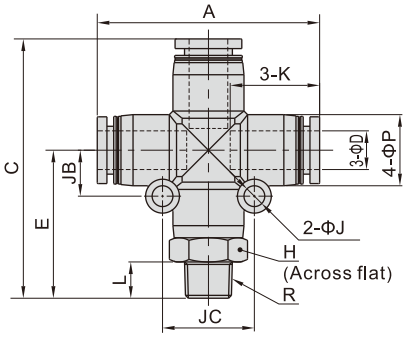
PED Series





Model\Item	ΦD	R	ΦP	L	K	EA	EB	ΦJ	JB	JC	H	Weight(g)	PCS/bag
PED401	4	PT1/8	9	7.5	14	17	25	3.2	6.5	13	10	8.8	10
PED402		PT1/4	9	10	14	17	28	3.2	6.5	13	14	15.5	10
PED601	6	PT1/8	12.5	7.5	16.5	20	27.5	3.2	8	16	12	13.5	10
PED602		PT1/4	12.5	10	16.5	20	30.5	3.2	8	16	14	18.6	10
PED603		PT3/8	12.5	11	16.5	20	32	3.2	8	16	17	25.3	10
PED801	8	PT1/8	15	7.5	18.5	23	30.5	4.3	9.5	19	14	18.4	10
PED802		PT1/4	15	10	18.5	23	33	4.3	9.5	19	14	21.3	10
PED803		PT3/8	15	11	18.5	23	34.5	4.3	9.5	19	17	28.2	10
PED804		PT1/2	15	14	18.5	23	38.5	4.3	9.5	19	21	41	10
PED1001	10	PT1/8	18	7.5	21	26.5	34	4.3	11	22	17	26.7	10
PED1002		PT1/4	18	10	21	26.5	36.5	4.3	11	22	17	29.2	10
PED1003		PT3/8	18	11	21	26.5	37.5	4.3	11	22	17	31.9	10
PED1004		PT1/2	18	14	21	26.5	41.5	4.3	11	22	21	45.4	10
PED1202	12	PT1/4	21	10	23	30	41	4.3	13	26	21	49.6	10
PED1203		PT3/8	21	11	23	30	42	4.3	13	26	21	51.2	10
PED1204		PT1/2	21	14	23	30	45	4.3	13	26	21	57.3	10

PZB Series





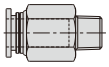
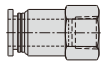
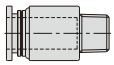
Model\Item	ΦD	R	L	A	E	C	ΦP	K	ΦJ	JB	JC	H	Weight(g)	PCS/bag
PZB601	6	PT1/8	7.5	39.5	27.5	47.5	12.5	16.5	3.2	8	16	12	15.2	10
PZB602		PT1/4	10		30.5	50.5						14	20.4	10
PZB603		PT3/8	11		32	52						17	27	10
PZB801	8	PT1/8	7.5	46	30.5	53.5	15	18.5	4.3	9.5	19	14	20.9	10
PZB802		PT1/4	10		33	56						14	23.8	10
PZB803		PT3/8	11		34.5	57.5						17	29.9	10
PZB804		PT1/2	14		38.5	61.5						21	43.5	10
PZB1002	10	PT1/4	10	52.5	36.5	63	18	21	4.3	11	22	17	33.5	10
PZB1003		PT3/8	11		37.5	64						17	36.5	10
PZB1004		PT1/2	14		41.5	68						21	49.2	10
PZB1203	12	PT3/8	11	59.5	42	72	21	23	4.3	13	26	21	56.5	10
PZB1204		PT1/2	14		45	75						21	65.4	10

Metal one-touch fittings

Ordering code

BPC 6 01 □

① ② ③ ④

①Model		②Port size	③Thread connection	④Thread type
BPC: Metal male connector 	BPCF: Metal female connector 	4 : Φ4mm 6 : Φ6mm 8 : Φ8mm 10 : Φ10mm 12 : Φ12mm	M5 : M5X0.8 01 : 1/8" 02 : 1/4" 03 : 3/8" 04 : 1/2"	Blank: PT
BPOC: Hexagon socket head metal male connector 	BPMF: Metal bulkhead female connector 			

Specification

Operating pressure range	0~9kgf/cm²(0~0.9MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	0~150
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Note: The temperature resistance level of the tubing should be confirmed first when used in high temperature environments.

Product feature

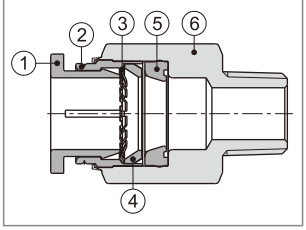
1. High flow capacity; The flow rate of these fittings is equivalent to that of the adaptable tubings.
2. Inserting or removal tubing is simple and convenient, and the connecting portion is reliable and durable.
3. Sealant is coated on threaded portion.
4. The fitting metal body adopts a special nickel-plating process, which has good corrosion resistance.
5. Metal fittings can be used in high temperature environment.

Table for interface port and tube O.D.

Product series	Thread type	Port size				
		Φ4	Φ6	Φ8	Φ10	Φ12
BPC	1/8"	•	•	•	•	
	1/4"	•	•	•	•	•
	3/8"		•	•	•	•
	1/2"				•	•
BPOC	M5	•	•			
	1/8"	•	•	•		
	1/4"		•	•	•	
	3/8"				•	•
	1/2"					•
BPCF	1/8"	•	•	•		
	1/4"		•	•	•	
	3/8"				•	•
	1/2"					•
BPMF	1/8"	•	•	•		
	1/4"		•	•	•	
	3/8"				•	•
	1/2"					•

Inner structure

BPC Series

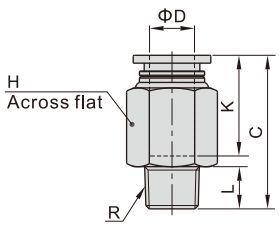


NO.	Name	Material
1	Metal connector	Brass
2	Locating ring	Aluminum alloy
3	Spring gasket	Stainless steel
4	Locating seat	Aluminum alloy
5	Special shape O-ring	Viton
6	Straight connector body	Brass

Metal one-touch fittings

Dimensions

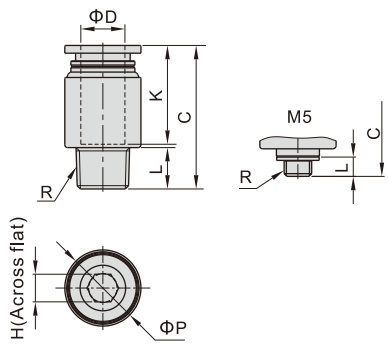
BPC Series





Model\Item	ΦD	R	L	C	K	H	Weight(g)	PCS/bag
BPC401	4	PT1/8	7.5	19.5	14	10	7.9	10
BPC402		PT1/4	10	19	14	14	8.7	10
BPC601	6	PT1/8	7.5	21.5	18	12	14.2	10
BPC602		PT1/4	10	24	18	14	19.1	10
BPC603		PT3/8	11	22.5	18	17	26.8	10
BPC801	8	PT1/8	7.5	27.5	18	14	16.1	10
BPC802		PT1/4	10	26.5	18	14	16	10
BPC803		PT3/8	11	23	18	17	25.4	10
BPC1001	10	PT1/8	7.5	29.5	20.5	17	24.5	10
BPC1002		PT1/4	10	32	20.5	17	28	10
BPC1003		PT3/8	11	27.5	20.5	17	34.6	10
BPC1004		PT1/2	14	25.5	20.5	21	39.3	10
BPC1202	12	PT1/4	10	34.5	22	21	44.5	10
BPC1203		PT3/8	11	30	22	21	34.2	10
BPC1204		PT1/2	14	32	22	21	47	10

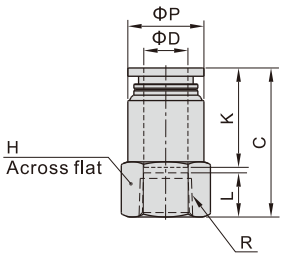
BPOC Series





Model\Item	ΦD	R	ΦP	L	C	K	H	Weight(g)	PCS/bag
BPOC4M5	4	M5X0.8	9	3.5	18.5	14	2	4.4	10
BPOC401		PT1/8	10	7.5	17.5	14	2.5	6.6	10
BPOC6M5	6	M5X0.8	12	3.5	21	16	2	7.1	10
BPOC601		PT1/8	12	7.5	21.5	18	4	8.4	10
BPOC602		PT1/4	14	10	21.5	18	4	13.6	10
BPOC801	8	PT1/8	14	7.5	26	17.5	5	12.3	10
BPOC802		PT1/4	14	10	24.5	17.5	6	12.7	10
BPOC1002	10	PT1/4	17	10	28.5	20.5	6	18.5	10
BPOC1003		PT3/8	17	11	27.5	20.5	8	24.9	10
BPOC1203	12	PT3/8	21	11	29.5	22	8	30.4	10
BPOC1204		PT1/2	21	14	31.5	22	8	42.4	10

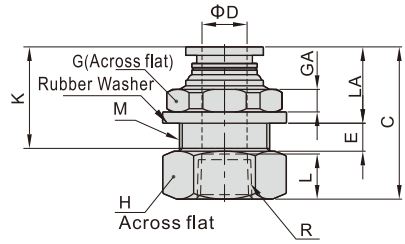
BPCF Series





Model\Item	ΦD	R	ΦP	L	C	K	H	Weight(g)	PCS/bag
BPCF401	4	PT1/8	9.5	8	23	14	14	5.3	10
BPCF601	6	PT1/8	12.5	8	25	16	14	7.2	10
BPCF602		PT1/4	12.5	11	28	16	17	9.2	10
BPCF801	8	PT1/8	14	8	27	18	14	7.1	10
BPCF802		PT1/4	14.5	11	30	18	17	10.6	10
BPCF1002	10	PT1/4	17	11	32.5	20.5	17	13.5	10
BPCF1003		PT3/8	18	12	33.5	20.5	21	17.5	10
BPCF1203	12	PT3/8	21	12	35	22	21	22	10
BPCF1204		PT1/2	21	13.5	36.5	22	25	24.9	10

BPMF Series





Model\Item	ΦD	R	M	L	C	K	LA	E	GA	G	H	Weight(g)	PCS/bag
BPMF401	4	PT1/8	M12X1	8	25	14	12	4	4	14	14	7.6	10
BPMF601	6	PT1/8	M14X1	8	25	16	12	5	4	17	17	10.4	10
BPMF602		PT1/4	M14X1	11	30	16	12	5	4	17	17	12.2	10
BPMF801	8	PT1/8	M16X1	8	27	18	13	5.5	4	19	19	13.9	10
BPMF802		PT1/4	M16X1	11	31.5	18	13	5.5	4	19	19	15.3	10
BPMF1002	10	PT1/4	M20X1	11	34.5	20.5	14	7.5	5	24	22	26.2	10
BPMF1003		PT3/8	M20X1	12	35.5	20.5	14	7.5	5	24	22	24.4	10
BPMF1203	12	PT3/8	M22X1	12	37	22	15	8	6	27	24	32.6	10
BPMF1204		PT1/2	M22X1	13.5	38.5	22	15	8	6	27	25	31.8	10

One-touch fittings—threaded type

Ordering code

BB 01 01 □

① ② ③ ④

①Model				②Thread connection I	③Thread connection II	④Thread type
BB: Male connector Thread connectionI Thread connectionII	BD: Male & female connector[Note1] Thread connectionI Thread connectionII	BU: Double female connector Thread connectionI Thread connectionII	BZ: Hexagon head cap plug[Note2] Thread connectionI	01 : 1/8" 02 : 1/4" 03 : 3/8" 04 : 1/2"	01 : 1/8" 02 : 1/4" 03 : 3/8" 04 : 1/2"	Blank: PT

[Note1] For BD series, Thread I is Female thread, Thread II is male thread; [Note2] For BZ series, no thread II and thread I is male thread.

Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	3.0MPa
Ambient and fluid temperature (℃)	0~150

Configuration table of tubing thread

Product series	Thread connection I	Thread connection II			
		01	02	03	04
BB	01	•	•	•	
	02		•	•	•
	03			•	•
	04				•
BD	01		•	•	•
	02			•	•
	03				•
	04				
BU	01	•			
	02		•		
	03			•	
	04				•

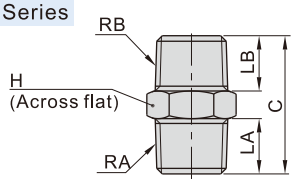
Product series	Thread connection			
	01	02	03	04
BZ	•	•	•	•

Product feature

1. Variable models can be widely used in every kind of pneumatic systems.
2. High circulation performance bear the same flow with the volume of the tube innerdiamater.
3. The nickel plated body is anti-corrosion and anti-pollution, which allows a broader application.
4. Metal fittings can be used in high temperature environment.

Dimensions

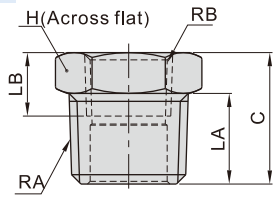
BB Series





Model\Item	RA	RB	LA	LB	C	H	Weight(g)	PCS/bag
BB0101	PT1/8	PT1/8	7.5	7.5	19.5	10	6.6	10
BB0102	PT1/4	PT1/8	10	7.5	22.5	14	12.1	10
BB0103	PT3/8	PT1/8	11	7.5	24	17	18.3	10
BB0202	PT1/4	PT1/4	10	10	25	14	14.6	10
BB0203	PT3/8	PT1/4	11	10	26.5	17	20.3	10
BB0204	PT1/2	PT1/4	14	10	30	21	34.3	10
BB0303	PT3/8	PT3/8	11	11	27.5	17	23.2	10
BB0304	PT1/2	PT3/8	14	11	31	21	36.2	10
BB0404	PT1/2	PT1/2	14	14	34	21	42.8	10

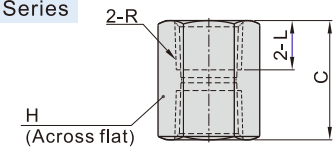
BD Series





Model\Item	RA	RB	LA	LB	C	H	Weight(g)	PCS/bag
BD0102	PT1/4	PT1/8	10	8	14.5	14	8.8	10
BD0103	PT3/8	PT1/8	11	8	16	17	17.1	10
BD0104	PT1/2	PT1/8	14	8	19.5	21	33.1	10
BD0203	PT3/8	PT1/4	11	11	16	17	12.7	10
BD0204	PT1/2	PT1/4	14	11	19.5	21	29.9	10
BD0304	PT1/2	PT3/8	14	12	19.5	21	22.5	10

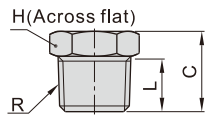
BU Series





Model\Item	R	L	C	H	Weight(g)	PCS/bag
BU0101	PT1/8	8	17	12	8.4	10
BU0202	PT1/4	11	23	17	25.4	10
BU0303	PT3/8	12	25	21	40	10
BU0404	PT1/2	13.5	28	24	46.6	10

BZ Series





Model\Item	R	L	C	H	Weight(g)	PCS/bag
BZ01	PT1/8	7.5	11	10	4.6	10
BZ02	PT1/4	10	14.5	14	10.8	10
BZ03	PT3/8	11	16	17	17.4	10
BZ04	PT1/2	14	19.5	21	33	10

One-touch fittings—threaded type

Ordering code

BKC 06 04 - 01 □

① ② ③ ④ ⑤

①Model	②Tubing outer diameter	③Tubing inner diameter	④Thread connection	⑤Thread type
BKC: Straight locknut connector 	04 : Φ4mm 06 : Φ6mm 08 : Φ8mm 10 : Φ10mm 12 : Φ12mm	25 : Φ2.5mm 04 : Φ4mm 05 : Φ5mm 06 : Φ6mm 65 : Φ6.5mm 75 : Φ7.5mm 08 : Φ8mm 09 : Φ9mm	01 : 1/8" 02 : 1/4" 03 : 3/8" 04 : 1/2"	Blank: PT

Note: When using the tubing Φ8×Φ5.5, the straight lock nut connector of BKC0806can be used.

Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	3.0MPa
Ambient and fluid temperature (℃)	0~150

Note: The temperature resistance level of the tubing should be confirmed first when used in high temperature environments.

Configuration table of tubing and tubing thread

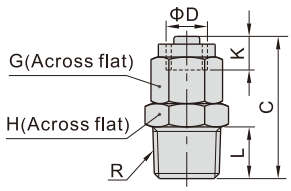
Product series	Tubing outer diameter	Tubing inner diameter	Thread connection			
			01	02	03	04
BKC	04	25	•			
	06	04	•	•	•	
	08	05	•	•	•	
		06	•	•	•	
	10	65		•	•	•
		75		•	•	•
	12	08		•	•	•
		09		•	•	•

Product feature

1. Variable models can be widely used in every kind of pneumatic systems.
2. High circulation performance bear the same flow with the volume of the tube innerdiamater.
3. The nickel plated body is anti-corrosion and anti-pollution,which allows a broader application.
4. Metal fittings can be used in high temperature environments.

Dimensions

BKC Series





Model\Item	ΦD		R	L	C	K	G	H	Weight (g)	PCS/bag
	O.D	I.D								
BKC0425-01	4	2.5	PT1/8	7.5	20.5	5	8	10	7.1	10
BKC0604-01	6	4	PT1/8	7.5	22	5.5	10	10	9.9	10
BKC0604-02			PT1/4	10	25.5			14	15.8	10
BKC0604-03			PT3/8	11	27			17	22.5	10
BKC0805-01	8	5	PT1/8	7.5	24	6.5	12	12	12.8	10
BKC0805-02			PT1/4	10	27.5			14	17.2	10
BKC0805-03			PT3/8	11	29			17	23.7	10
BKC0806-01		5.5 or 6	PT1/8	7.5	24			12	13.1	10
BKC0806-02			PT1/4	10	27.5			14	17.2	10
BKC0806-03			PT3/8	11	29			17	23.6	10

Model\Item	R	ΦD		L	C	K	G	H	Weight (g)	PCS/bag
		O.D	I.D							
BKC1065-02	PT1/4	10	6.5	10	30	7.5	15	15	25.3	10
BKC1065-03	PT3/8			11	31.5			17	29.1	10
BKC1065-04	PT1/2			14	35.5			21	44	10
BKC1075-02	PT1/4		7.5 or 8	10	30			15	24.1	10
BKC1075-03	PT3/8			11	31.5			17	28.9	10
BKC1075-04	PT1/2			14	35.5			21	43.6	10
BKC1208-02	PT1/4	12	8	10	30	7.5	17	17	30.5	10
BKC1208-03	PT3/8			11	31.5			17	32.1	10
BKC1208-04	PT1/2			14	35.5			21	46.7	10
BKC1209-02	PT1/4		9 or 10	10	30			17	30.6	10
BKC1209-03	PT3/8			11	31.5			17	31.9	10
BKC1209-04	PT1/2			14	35.5			21	46.4	10

Installation and application

1. Method of inserting or removal a tubing

1.1 Inserting a tubing

Place the locking cap over the tubing, and insert the tubing into the body , then tighten the locking cap. (As figure 1)

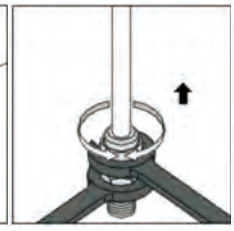
1.2 Removing a tubing

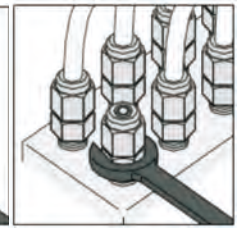
Loosen the locking cap first, then remove the tubing. (As figure 2)

2. Method of tightening the connector thread

Tighten the connector with a hex wrench, as shown right.


Figure 1


Figure 2


Figure 3

BSL, BSLM, BESL, PAL, PALM series

Ordering code

BSL 01 □

① ② ③

①Silencer Type	②Thread connection	③Standard color		
BSL: Universal silencer BSLM: Mini Silencer BESL: Throttling silencer PAL: Plastic silencer PALM: Mini plastic Silencer	01：1/8" 02：1/4" 03：3/8" 04：1/2"	Type	Color code	Color definition
		PAL、PALM	Blank: grey	Top cover: grey/Body: gray
			D: Black	Top cover: black/Body: black
		Others	No such code	

Product feature

BSL、BSLM、BESL Series：

1. This silencers have excellent noise silencing performance.
2. The installation of the silencer is simple and convenient, and the connecting portion is reliable and durable.
3. It is easy to adjust the exhaust flow of the throttling type silencer.

PAL Series、PALM Series：

1. The silencer body is made of plastic.
2. The mini type silencer has the characteristics of small volume and compact structure.

Configuration table of tubing thread

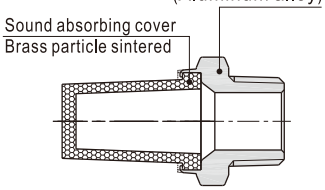
Product series	Thread connection			
	01	02	03	04
BSL	•	•	•	•
BSLM	•	•	•	•
BESL	•	•	•	•
PAL	•	•	•	•
PALM	•	•		

Specification

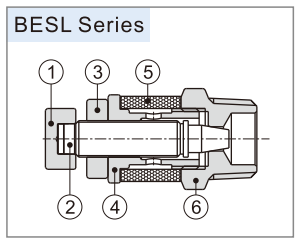
Model		BSL01	BSL02	BSL03	BSL04		BSLM01	BSLM02	BSLM03	BSLM04
Thread connection		1/8"	1/4"	3/8"	1/2"		1/8"	1/4"	3/8"	1/2"
Silencing effect(dB)(0.5MPa)		20	20	20	12		20	20	20	20
Model	BESL01	BESL02	BESL03	BESL04	PAL01	PAL02	PAL03	PAL04	PALM01	PALM02
Thread connection	1/8"	1/4"	3/8"	1/2"	1/8"	1/4"	3/8"	1/2"	1/8"	1/4"
Silencing effect(dB)(0.5MPa)	20	20	20	20	25	25	25	25	25	25
Operating pressure	0~10kgf/cm^2(0~1.0MPa)									
Negative pressure	-750mmHg(10Torr)									
Proof pressure	1.5MPa									
Temperature range	-20~70℃									

Inner structure

BSL Series

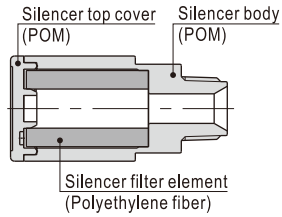


BESL Series



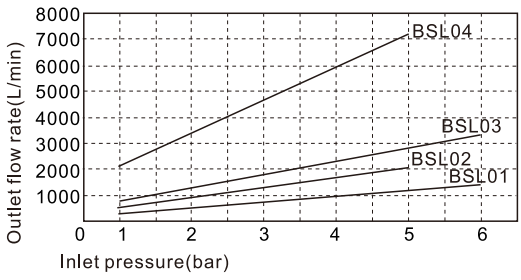
NO.	Name	Material
1	Adjusting cap	Aluminum alloy
2	Throttling column	Aluminum alloy
3	Locking cap	Aluminum alloy
4	Locking ring	Aluminum alloy
5	Silencer ring	Brass particle sintered
6	Silencer body	Aluminum alloy

PAL Series

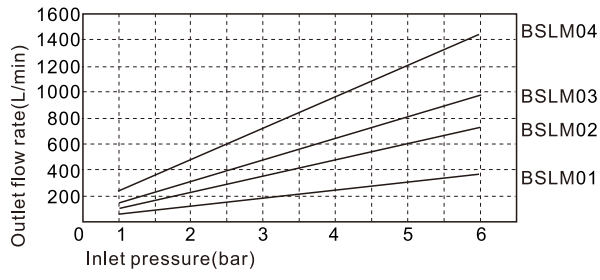


Flowrate characteristic

BSL Series

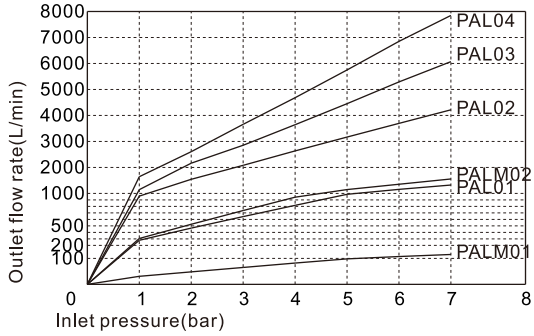


BSLM Series

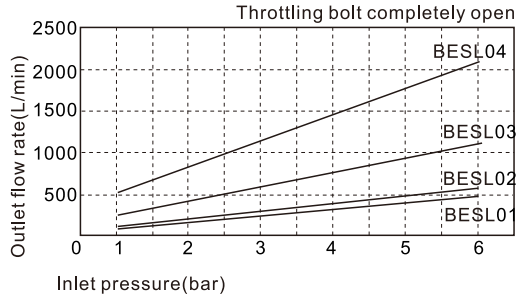


Flowrate characteristic

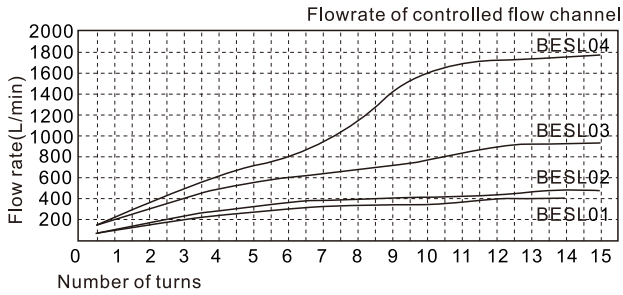
PAL、PALM Series



BESL Series (Inlet pressure and outlet flow rate)

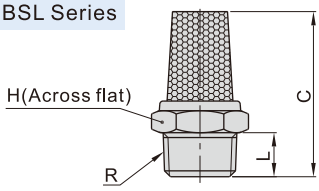


BESL Series



Dimensions

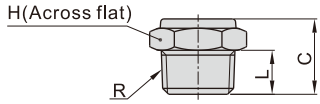
BSL Series





Model\Item	R	L	C	H	Weight(g)	PCS/bag
BSL01	PT1/8	6	24	12	6.7	10
BSL02	PT1/4	8	30	15	11.6	10
BSL03	PT3/8	9	38.5	19	22	10
BSL04	PT1/2	10.5	46	22	35	10

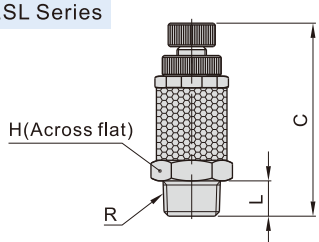
BSLM Series





Model\Item	R	L	C	H	Weight(g)	PCS/bag
BSLM01	PT1/8	6	11	12	4.3	10
BSLM02	PT1/4	8	13.5	15	8.4	10
BSLM03	PT3/8	9	15.5	19	15.8	10
BSLM04	PT1/2	10.5	19	22	25.9	10

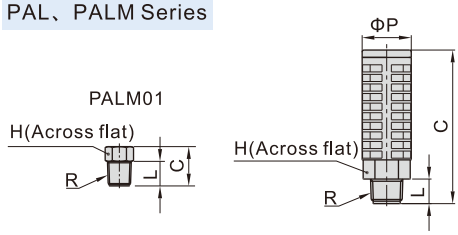
BESL Series





Model\Item	R	L	C		H	Weight(g)	PCS/bag
			max	min			
BESL01	PT1/8	6	40.5	33	12	10	10
BESL02	PT1/4	8	42.5	35	14	18.1	10
BESL03	PT3/8	9	49	41.5	17	31.1	10
BESL04	PT1/2	10.5	59.5	52	24	69.8	10

PAL、PALM Series





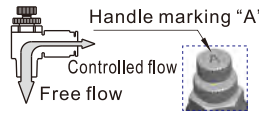
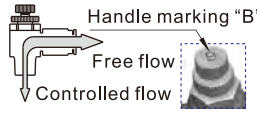
Model\Item	R	ΦP	L	C	H	Weight(g)	PCS/bag
PAL01	PT1/8	16	7	33	14	4.2	10
PALM01	PT1/8	/	10	16	10	0.9	10
PAL02	PT1/4	20	10	62.5	17	10.7	10
PALM02	PT1/4	16	10	36	14	5.1	10
PAL03	PT3/8	26	12	68	24	20	10
PAL04	PT1/2	28	12	73	24	23.1	10

PSL, PSS series

Ordering code

PSL 6 01 A □ □

① ② ③ ④ ⑤ ⑥

①Model	②Port size	③Thread connection		④Control method	⑤Standard color		⑥Thread type
PSL: Speed controller 	4□ Φ4mm 6：Φ6mm 8：Φ8mm 10：Φ10mm 12：Φ12mm	Thread	Adaptable port size	A: Meter-out 	Standard color	Specification	Blank: PT
		M5□ M5X0.8	Φ4，Φ6		Blank: Gray	Release button: Gray Body:Gray	
PSS: Universal speed controller 		01：1/8" 02：1/4" 03：3/8" 04：1/2"	Φ4，Φ6 Φ8，Φ10 Φ12	B: Meter-in 	D: Black	Release button: Black Body: Black	

Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Symbol

Meter-out (A) 

Meter-in (B) 

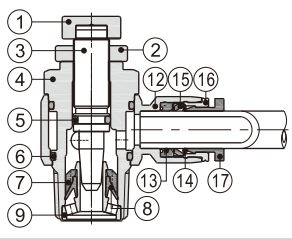
Product feature

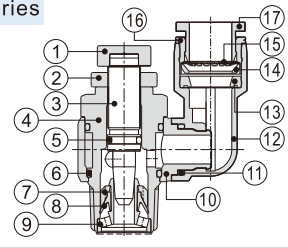
1. The speed control is small size, and light weight with small installation space.
2. Effectively control the action speed and pressure signal transmission from pneumatic device.
3. Meter-in and meter-out types are optional, which is suitable for different size of actuators
4. Excellent flow charatentics, high sensitivity and easy to adjust.
5. The brass body adopts a special nickel-plating process, which has good corrosion resistance and anti-pollution property.
6. Anti-drop structure is designed on the regulating rod.
7. The sealant being coated on threaded portion can ensure no leakage of the threaded connection part.
8. The inserting direction of universal speed controller can be adjusted in 360°.

Table for interface port and tube O.D.

Product series	Thread type	Port size				
		Φ4	Φ6	Φ8	Φ10	Φ12
PSL	M5	●	●			
	1/8"	●	●	●		
	1/4"		●	●	●	
	3/8"		●	●	●	●
	1/2"			●	●	●
PSS	1/8"		●	●		
	1/4"		●	●	●	
	3/8"				●	●
	1/2"					●

Inner structure

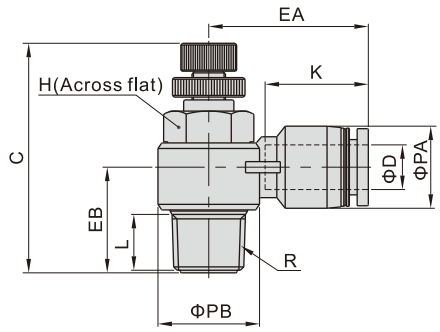
PSL Series 

PSS Series 

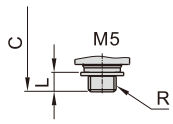
NO.	Name	Material	NO.	Name	Material	NO.	Name	Material
1	Adjusting cap	Aluminum alloy	7	Holder	PBT	13	O-ring	NBR
2	Locking cap	Aluminum alloy	8	O-ring	NBR	14	Locating seat	POM
3	Throttling column	Brass	9	Throttling sleeve	Aluminum alloy/Brass	15	Spring gasket	Stainless steel
4	Throttling body	Brass	10	Plastic body	PBT	16	Locating ring	Aluminum alloy
5	O-ring	NBR	11	O-ring	NBR	17	Plastic interface	POM
6	O-ring	NBR	12	Plastic body	PBT			

Dimensions

PSL Series



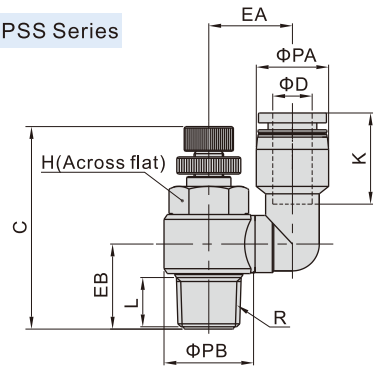




Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C max	C min	K	EA	EB	H	Weight (g)	PCS/bag
PSL4M5□	4	M5×0.8	9	10	3.5	30	27.5	14	19	9.5	8	6.5	2
PSL401□		PT1/8	9	14	7.5	41.5	35	14	20.5	15	11	16.5	2
PSL6M5□	6	M5×0.8	12.5	10	3.5	30	27.5	16.5	23.5	11.5	8	8	2
PSL601□		PT1/8	12.5	14	7.5	41.5	35	16.5	23	15.5	11	17.5	2
PSL602□		PT1/4	12.5	18	10	47.5	41	16.5	25	18	14	32	2
PSL603□		PT3/8	12.5	22.5	11	52.5	45.5	16.5	27	20	19	59.5	2
PSL801□	8	PT1/8	15	14	7.5	41.5	35	18.5	26.5	16.5	11	18	2
PSL802□		PT1/4	15	18	10	47.5	41	18.5	28.5	19	14	33	2
PSL803□		PT3/8	15	22.5	11	52.5	45.5	18.5	29.5	20	19	60	2
PSL804□		PT1/2	15	28	14	58.5	51.5	18.5	32	25	24	96.5	2
PSL1002□	10	PT1/4	18	18	10	47.5	41	21	31	20.5	14	34.5	2
PSL1003□		PT3/8	18	22.5	11	52.5	45.5	21	33	21.5	19	62	2
PSL1004□		PT1/2	18	28	14	58.5	51.5	21	35.5	25.5	24	98	2
PSL1203□	12	PT3/8	21	22.5	11	52.5	45.5	23	36	23.5	19	64	2
PSL1204□		PT1/2	21	28	14	58.5	51.5	23	38	27	24	100	2

[Note1] "□" stands for A or B. A indicates meter-out type while B indicates meter-in type. The two types are with the same overall dimension.

PSS Series



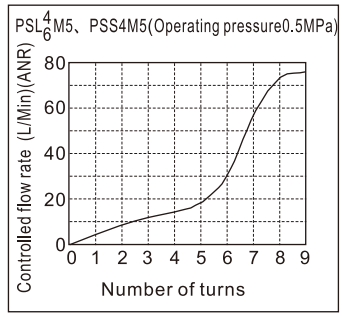


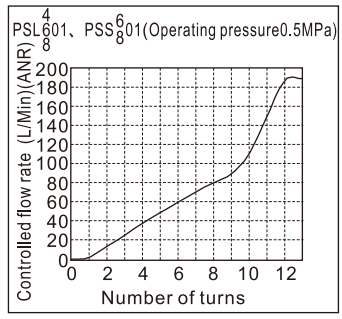
Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C max	C min	K	EA	EB	H	Weight (g)	PCS/bag
PSS601□	6	PT1/8	12.5	14	7.5	41.5	35	17	17	15	11	19	2
PSS602□		PT1/4	12.5	18	10	47.5	41	17	19	17.5	14	34.7	2
PSS801□	8	PT1/8	15	14	7.5	41.5	35	18.5	17	15	11	20.2	2
PSS802□		PT1/4	15	18	10	47.5	41	18.5	19	17.5	14	39.8	2
PSS1002□	10	PT1/4	18	18	10	47.5	41	21	20.5	17.5	14	37.2	2
PSS1003□		PT3/8	18	22.5	11	52.5	45.5	21	24	20	19	66	2
PSS1203□	12	PT3/8	21	22.5	11	52.5	45.5	23	25.5	20	19	69.2	2
PSS1204□		PT1/2	21	28	14	58.5	51.5	23	28	25	24	105.8	2

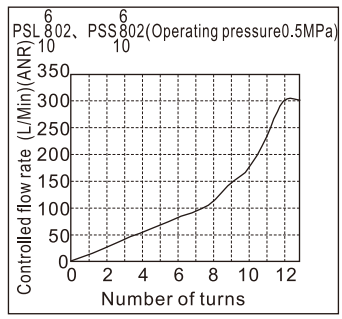
[Note1] "□" stands for A or B. A indicates meter-out type while B indicates meter-in type. The two types are with the same overall dimension.

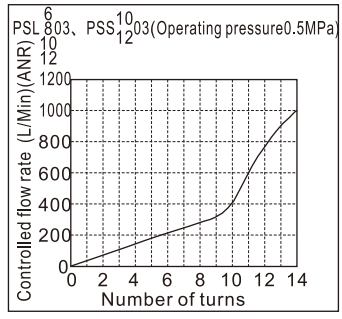
Flowrate characteristic

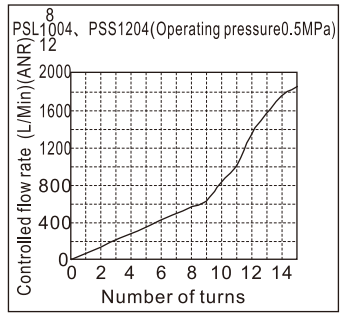
Controlled flow rate



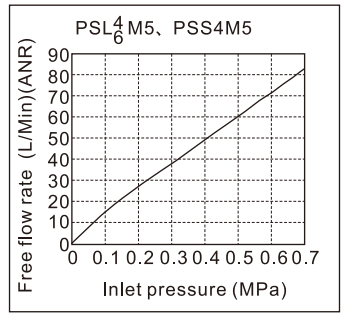


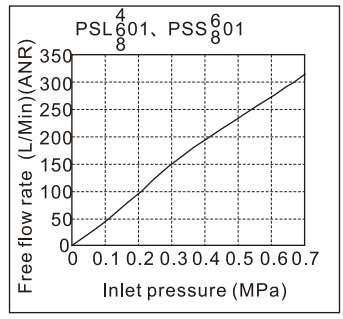


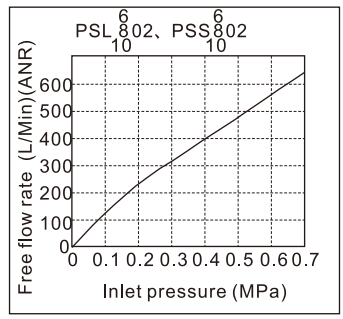


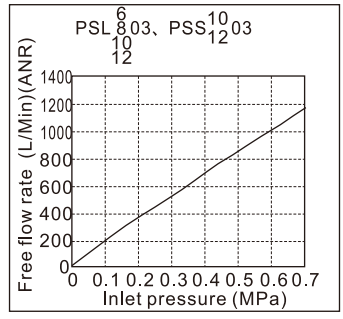


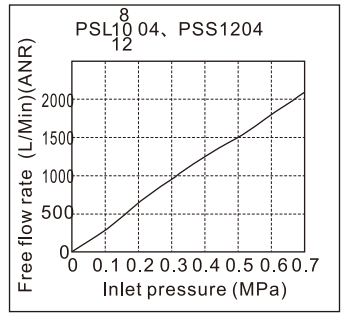
Free flow rate







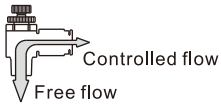




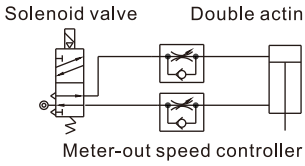
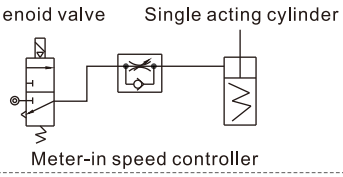
Selection, Installation and Operation

Selection

1. The speed controller has meter-out type and meter-in type:

	Working principle	Product identification
	A: Meter-out 1. The air flow is controlled from the threaded end to tubing connection end. 2. The air flow is free from the tubing connection end to the threaded end.	Handle marking "A" 
	B: Meter-in 1. The air flow is free from the threaded end to tubing connection end. 2. The air flow is controlled from the tubing connection end to the threaded end	Handle marking "B" 

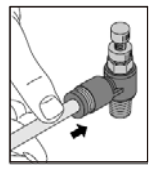
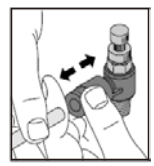
2. Select the different control method according to the actual requirement. The meter-out type is the first priority.

2.1. The application example of the meter-out speed controller	2.2. The application example of the meter-in speed controller
	

Installation

1. Installation and removal of tubing:
   1.1. Installation of tubing
   Grasp the tubing and slowly push it into the fitting until it comes to a stop. The tubing will be locked by the spring gasket.

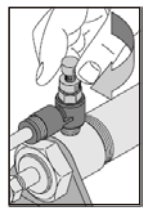
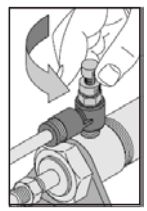
   1.2. Removal of tubing
   Push the release button to open the spring gasket so that the tubing can be released.
   Note:When remove the tubing, make sure the pressure in the tubing is Zero.


2. Mounting of the speed controller
   Mount the speed controller into the inlet and outlet port of the cylinder with a wrench.
   Note: Please refer to the fittings for the tightening torque and thread screw-in depth.

Operation

1. Adjustment of the cylinder speed
   1.1. Make sure the speed controller is turned off before applying air pressure. The cylinder may fly out due to the high speed if the air is inlet when the speed controller is turned on.
   1.2. Adjust the speed by opening the needle slowly from the fully closed state. When a needle valve is turned clockwise, the air flow through is reduced and the actuator speed decreases. When a needle valve is turned counter-clockwise, the air flow through is increased and the actuator speed increases.

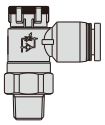
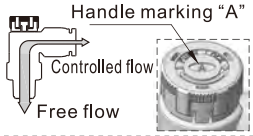
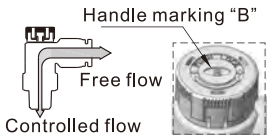
2. Operation of the speed controller
   2.1. Do not use tools such as pliers to rotate the handle. Do not apply excessive force or shock when the needle is at the place of top or bottom. It can cause damage or air leakage.
   2.2. A certain amount of leakage is allowed in the closed state of the speed controller. It is not designed for the use as stop valve with zero air leakage.

PTL Mini series

Ordering code

PTL 6 01 A □ □ - M

① ② ③ ④ ⑤ ⑥ ⑦

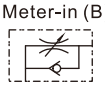
①Model	②Port size	③Thread connection	④Control method	⑤Standard color		⑥Thread type	⑦ Style
PTL: Speed controller (Push lock) 	4 : Φ4mm 6 : Φ6mm	01 : 1/8"	A: Meter-out 	Standard color	Specification	Blank: PT	M: Mini type
				Blank: Gray	Release button: Gray Body:Gray		
			B: Meter-in 	D: Black	Release button: Black Body: Black		

Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Symbol

Meter-out (A) 

Meter-in (B) 

Selection, Installation and Operation

1. The rotation torque of the push-lock speed controller cap should not be too large to avoid damage.
   It is recommended to use the torque below.

Thread size	Recommended torque(N.m)
1/8"	0.08

2. Push-lock speed controller installation instructions is the same as general one. Please refer to general type for specific content.

Product feature

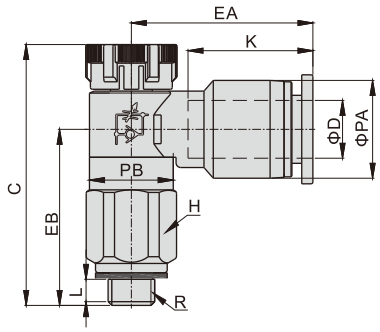
1. Compare with standard speed controller, smaller size, lighter weight, suitable for more occasions.
2. Effectively control the action speed and the pressure signal transmission from pneumatic device.
3. Simple push-lock, operation.
4. Adjust quickly, easily and accurately.
5. Excellent flow rate characteristic, high sensitivity and easy to adjust.
6. Options of Meter-out and meter-in, applicable for every type actuator.
7. Effectively prevent from corrosion and pollusion by nickle plated copper.
8. The sealant being coated on threaded portion can ensure no leakage of the threaded connection part.

Table for interface port and tube O.D.

Product series	Thread type	Port size	
		Φ4	Φ6
PTL	1/8"	•	•

Dimensions

PTL Mini series





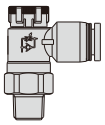
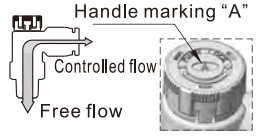
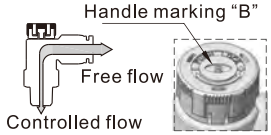
Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)	PCS/bag
						Pull	Push						
PTL401□-M	4	PT1/8	8.5	9	3.5	29.5	28	12.5	16.5	19	10	11	2
PTL601□-M	6	PT1/8	10.5	9	3.5	29.5	28	13.5	19.5	19	10	12	2

[Note1] "□" stands for A or B. A indicates meter-out type while B indicates meter-in type. The two types are with the same overall dimension.

PTL series

Ordering code

PTL 6 01 A □ □

①	②	③	④	⑤	⑥
①Model	②Port size	③Thread connection	④Control method	⑤Standard color	⑥Thread type
PTL: Speed controller (Push lock) 	6：Φ6mm	01：1/8" 02：1/4" 03：3/8"	A: Meter-out 	Standard color: Blank: Gray Specification: Release button: Gray Body:Gray	Blank: PT
	8：Φ8mm	01：1/8" 02：1/4" 03：3/8" 04：1/2"			
	10：Φ10mm	02：1/4" 03：3/8" 04：1/2"	B: Meter-in 	D: Black Release button: Black Body: Black	
	12：Φ12mm	03：3/8" 04：1/2"			

Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane
Color	Gray/black

Product feature

1. Compare with standard speed controller, smaller size, lighter weight, suitable for more occasions.
2. Effectively control the action speed and the pressure signal transmission from pneumatic device.
3. Simple push-lock, operation.
4. Adjust quickly, easily and accurately.
5. Excellent flow rate characteristic, high sensitivity and easy to adjust.
6. Options of Meter-out and meter-in, applicable for every type actuator.
7. Effectively prevent from corrosion and pollusion by nickle plated copper.
8. The sealant being coated on threaded portion can ensure no leakage of the threaded connection part.

Symbol

Meter-out (A) 

Meter-in (B) 

Table for interface port and tube O.D.

Product series	Thread type	Port size			
		Φ6	Φ8	Φ10	Φ12
PTL	1/8"	•	•		
	1/4"	•	•	•	
	3/8"	•	•	•	•
	1/2"		•	•	•

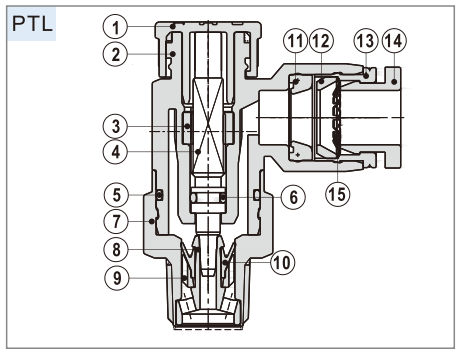
Selection, Installation and Operation

1. The rotation torque of the push-lock speed controller cap should not be too large to avoid damage.
   It is recommended to use the torque below.

Thread size	Recommended torque(N.m)
1/8"	0.08
1/4"	0.16
3/8"	0.24
1/2"	0.32

2. Push-lock speed controller installation instructions is the same as general one. Please refer to general type for specific content.

Inner structure

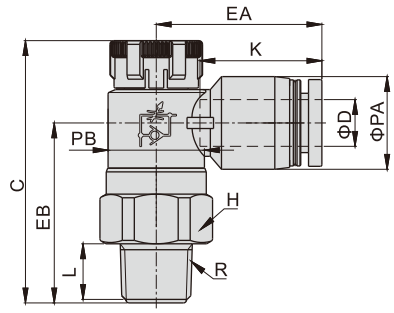
PTL 

NO.	Name	Material	NO.	Name	Material
1	Adjusting cap	POM	9	Holder	PBT
2	Plastic body	PBT	10	O-ring	NBR
3	Locating ring	Aluminum alloy	11	O-ring	NBR
4	Throttling column	Aluminum alloy	12	Locating seat	POM
5	O-ring	NBR	13	Locating ring	Aluminum alloy
6	O-ring	NBR	14	Plastic interface	POM
7	Throttling body	Brass	15	Spring gasket	Stainless steel
8	Throttling sleeve	Aluminum alloy			

PTL series

Dimensions

PTL Series



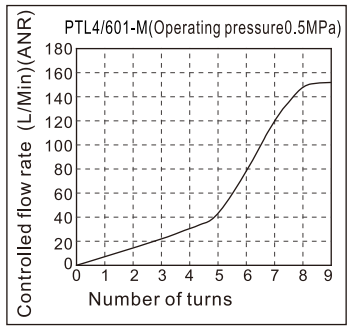


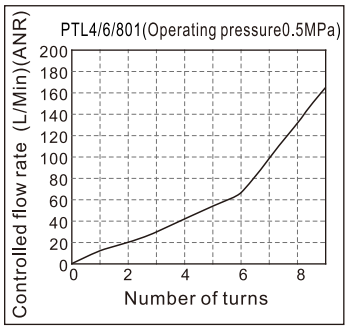
Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)	PCS/bag
						Pull	Push						
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PTL602□		PT1/4	12.5	16.5	11	40.5	39	16.5	24	28	17	19.5	2
PTL603□		PT3/8	12.5	19	12	44	42.5	16.5	25.5	31	19	28.5	2
PTL801□	8	PT1/8	15	13	8.5	36	34.5	18.5	24.5	22.5	14	13	2
PTL802□		PT1/4	15	16.5	11	40.5	39	18.5	26	27	17	20.5	2
PTL803□		PT3/8	15	19	12	44	42.5	18.5	27	30	19	29	2
PTL804□		PT1/2	15	24	15	52.5	51	18.5	29.5	37.5	24	49	2
PTL1002□	10	PT1/4	18	16.5	11	40.5	39	21	31	26	17	22	2
PTL1003□		PT3/8	18	19	12	44	42.5	21	29	29	19	30.5	2
PTL1004□		PT1/2	18	24	15	52.5	51	21	31.5	36.5	24	50.5	2
PTL1203□	12	PT3/8	21	19	12	44	42.5	23	34.5	28	19	32.5	2
PTL1204□		PT1/2	21	24	15	52.5	51	23	34	36	24	53	2

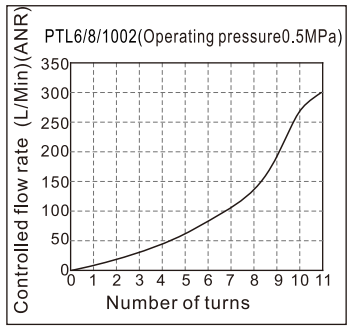
[Note1] "□" stands for A or B. A indicates meter-out type while B indicates meter-in type. The two types are with the same overall dimension.

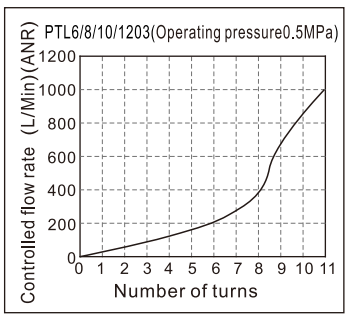
Flowrate characteristic

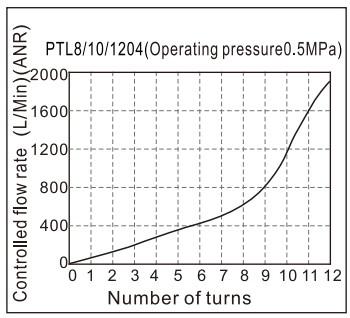
Controlled flow rate



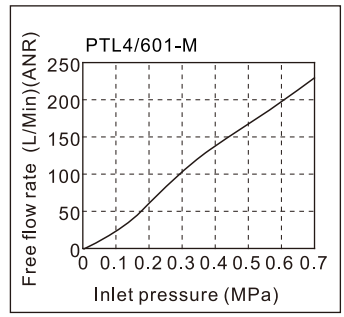


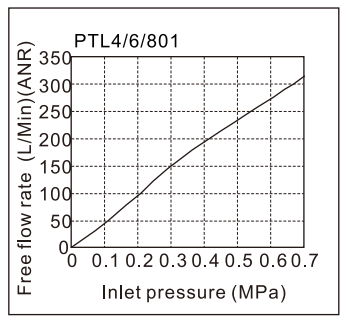


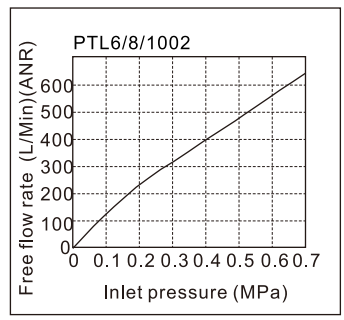


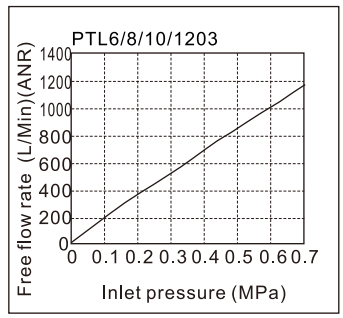


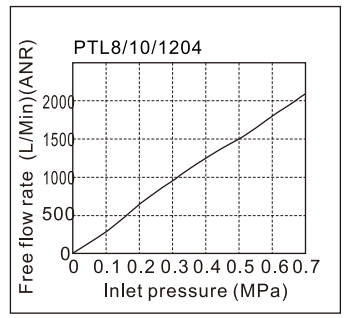
Free flow rate











Cylinder bore size, theory basic speed and corresponding valves list

Bore size (mm)	Theory basic speed (mm/s)	Necessary orifice size (mm^2)	Corresponding valves				Corresponding accessories		Corresponding tube
			Single solenoid valve	Double solenoid valve	Single air control valve	Double air control valve	Speed control valve	Silencer	Between valve and cylinder
Φ6	500	0.1	6V0510M5/6V110M5 4V110M5 4M110M5	6V0520M5/6V120M5 4V120M5 4M120M5	4A110M5	4A120M5	GPTLM5 GPSLM5 GPSSM5	GBSLM5 GBSLMM5	Φ4XΦ2.5 tube
Φ10	500	0.2							
Φ12	500	0.3							
Φ16	500	0.5							
Φ20	300	0.5	6V0510M5/6V110M5 4V110M5/4V11006 4M110M5/4M11006	6V0520M5/6V120M5 4V120M5/4V12006 4M120M5/4M12006	4A110M5 4A11006	4A120M5 4A12006	GPTLM5 GPSLM5 GPSSM5 GPTL01 GPSL01 GPSS01 ASC10006	GBSLM5 GBSLMM5 GBSL01 GBSLM01 GBESL01	Φ6XΦ4 tube
	400	0.7							
	500	0.8							
	600	1.0							
	700	1.2							
	800	1.3							
Φ25	300	0.8	6V0510M5/6V110M5 6V11006 4V110M5/4V11006 4M110M5/4M11006	6V0520M5/6V120M5 6V12006 4V120M5/4V12006 4M120M5/4M12006	4A110M5 4A11006	4A120M5 4A12006	GPTLM5 GPSLM5 GPSSM5 GPTL01 GPSL01 GPSS01 ASC10006	GBSLM5 GBSLMM5 GBSL01 GBSLM01 GBESL01	Φ6XΦ4 tube
	400	1.0							
	500	1.3							Φ8XΦ5 tube
	600	1.5							
	700	1.8							
	800	2.0							
Φ32	300	1.3							Φ6XΦ4 tube
	400	1.7							
	500	2.1							
	600	2.5	6V11006/6V21006 4V11006/4V21006 4M11006/4M21006	6V12006/6V22006 4V12006/4V22006 4M12006/4M22006	4A11006 4A21006	4A12006 4A22006	GPTL01 GPSL01 GPSS01 ASC10006	GBSL(M)01 GBESL01	Φ8XΦ5 tube
	700	2.9							
	800	3.4							
Φ40	300	2.0	6V11006/6V21006 6V21008 4V11006/4V21006 4V21008/4M11006 4M21006/4M21008	6V12006/6V22006 6V22008 4V12006/4V22006 4V22008/4M12006 4M22006/4M22008	4A11006 4A21006 4A21008	4A12006 4A22006 4A22008	GPTL01 GPSL01 GPSS01 ASC10006 GPTL02/GPSL02 GPSS02 ASC20008	GBSL01/02 GBSLM01/02 GBESL01/02	Φ6XΦ4 tube
	400	2.6							
	500	3.3							Φ8XΦ5 tube
	600	3.9							
	700	4.6							Φ10XΦ6.5 tube
	800	5.2							
Φ50	300	3.1	6V21008 4V21008 4M21008	6V22008 4V22008 4M22008	4A21008	4A22008	GPTL02 GPSL02 GPSS02 ASC20008	GBSL02 GBSLM02 GBESL02	Φ8XΦ5 tube
	400	4.1							
	500	5.1							Φ10XΦ6.5 tube
	600	6.1							
	700	7.2							
	800	8.3							
Φ63	300	4.9	6V21008/6V31010 4V21008/4V31008 4V31010/4M21008 4M31008/4M31010	6V22008/6V32010 4V22008/4V32008 4V32010/4M22008 4M32008/4M32010	4A21008 4A31008 4A31010	4A22008 4A32008 4A32010	GPTL02 GPSL02 GPSS02 ASC20008 GPTL03 GPSL03 GPSS03 ASC30010	GBSL02/03 GBSLM02/03 GBESL02/03	Φ8XΦ5
	400	6.5							
	500	8.1							Φ10XΦ6.5 tube
	600	9.7	6V31010 4V31008/4V31010 4M31008/4M31010	6V32010 4V32008/4V32010 4M32008/4M32010	4A31008 4A31010	4A32008 4A32010			
	700	11.4							
	800	13.0							Φ16XΦ11 tube
Φ80	300	7.9	6V31010 4V31010 4M31010	6V32010 4V32010 4M32010	4A31010	4A32010	GPTL03 GPSL03 GPSS03 ASC30010	GBSL03 GBSLM03 GBESL03	Φ10XΦ6.5 tube
	400	10.5							
	500	13.1							Φ16XΦ11 tube
	600	15.7							
	700	18.3							
	800	20.9							
Φ100	300	12.3	6V31010 4V31010 4V41015 4M31010	6V32010 4V32010 4V42015 4M32010	4A31010 4A41015	4A32010 4A42015	GPTL03 GPSL03 GPSS03 ASC30010 GPTL04/GPSL04 GPSS04 ASC30015	GBSL03/04 GBSLM03/04 GBESL03/04	Φ16XΦ11 tube
	400	16.4							
	500	20.4							
	600	24.5							
	700	28.6							
	800	32.7							

Production weight

Unit: g

Control components					
Series	Model	Weight	Series	Model	Weight
3V1	3V1	141	3A	3A110	70
3V	3V110	110		3A120	75
	3V120	158		3A210	134
	3V210	213		3A220	146
	3V220	314		3A310	213
	3V310	276		3A320	232
	3V320	376	4A	4A110	80
ESV	ESV210	435		4A120	90
	ESV220	550		4A130C(/E/P)	104
	ESV230(C/E/P)	625		4A210	145
	ESV310	673		4A220	158
	ESV320	724		4A230C(/E/P)	191
	ESV330(C/E/P)	923		4A310	245
	ESV410	888		4A320	265
	ESV420	995		4A330C(/E/P)	310
	ESV430(C/E/P)	1214	EAV	EAV210	317
	ESV610	2285		EAV220	312
	ESV620	2420		EAV230(C/E/P)	339
	ESV630(C/E/P)	2315		EAV310	557
4H	4H210	149		EAV320	553
	4H230(C/E)	151		EAV330(C/E/P)	578
	4H310	242		EAV410	770
	4H330(C/E)	245		EAV420	766
3V2	3V2	157		EAV430(C/E/P)	798
3V2M	3V2M	150		EAV610	2188
3V3	3V3	227		EAV620	2210
2V	2V025	228		EAV630(C/E/P)	2262
	2V130	618			
	2V250	1415			
PCV	PCV06	32.8	PCV	PCV10	137.8
	PCV06F	32		PCV10F	133
	PCV08	58.8		PCV15	182.5
	PCV08F	60		PCV15F	183
HSV	-6	36	3F 3FM	3FM210-M5	261
	-8	45		3FM210-08	250
	-10	71		3F210-08	395
	-15	145	4F	210-08	648
	-20	227		210-08L	669
	-25	398		210-08F	920
4HV	210-08	358		210-08LF	930
	310-10	585	NRV	-6	69
	410-15	1253		-8	66
	210-08L	374		-10	161
	310-10L	610		-15	152
	410-15L	1284		-20	344
				-25	315

Control components					
Series	Model	Weight	Series	Model	Weight
3L	3L110	67	M5	M5B110	35
	3L210	126		M5B210	117
	3L310	214		M5C110	99
4L	4L110	152		M5C210	139
	4L210	139		M5D110	92
	4L310	247		M5D210	134
S3	S3B	50		M5Y110	106
	S3C	85		M5Y210	156
	S3D	80		M5R110	94
	S3Y	115		M5R210	149
	S3R	80		M5L110	102
	S3L	89		M5L210	144
	S3V	89		M5PL110	104
	S3PL	112		M5PL210	158
	S3PP	76		M5PP110	90
	S3PF	74		M5PP210	140
	S3PM	78		M5PF110	93
	S3HS	79		M5PF210	138
M3	M3B110	47		M5PM110	93
	M3B210	95		M5PM210	142
	M3C110	82		M5HS110	92
	M3C210	131		M5HS210	142
	M3D110	77		M5B05	31
	M3D210	124		M5R05	50
	M3Y110	97		M5L05	55
	M3Y210	146	CM3	CM3B	45
	M3R110	79		CM3R	61
	M3R210	127		CM3L	66
	M3L110	86		CM3V	90
	M3L210	134		CM3Y	171
	M3PL110	94		CM3PL	106
	M3PL210	148		CM3PP	96
	M3PP110	81		CM3PF	106
	M3PP210	131		CM3PM	107
	M3PF110	85		CM3PMS	126
	M3PF210	133		CM3PMX	262
	M3PM110	83		CM3HS	176
	M3PM210	134		CM3HD	139
	M3HS110	83	ZM3	ZM3R06	281
	M3HS210	130		ZM3J06	321
	M3B05	24		ZM3P06	278
	M3R05	42	ASC	ASC100	40
	M3L05	47		ASC200	47
				ASC300	119

Preparation unit		
Series	Model	Weight
GAC	200-08	717
	300-10	1245
	400-15	2230
	500-20	2282
	200C-08	731
	300C-10	1264
	400C-15	2265
	500C-20	2305
	600C-25	4240
GAFC	200-08	577
	300-10	1018
	400-15	1745
	500-20	1840
	200C-08	573
	300C-10	1012
	400C-15	1700
	500C-20	1834
	600C-25	3268
GAFR	200-08J	311
	300-10J	539
	400-15J	920
	500-20J	977
	200C-08J	314
	300C-10J	533
	400C-15J	909
	500C-20J	973
	600C-25J	1851
GAF	200-08J	222
	300-10J	385
	400-15J	646
	500-20J	707
	200C-08J	215
	300C-10J	403
	400C-15J	658
	500C-20J	667
	600C-25J	1045
GAL	200-08J	219
	300-10J	389
	400-15J	700
	500-20J	702
	200C-08J	216
	GAL300C-10J	396
	GAL400C-15J	700
	GAL500C-20J	711
	GAL600C-25J	1086
GAR	GAR200-08J	183
	GAR300-10J	312
	GAR400-15J	607
	GAR500-20J	593
	GAR600-25J	1425
GA315	GAR200-P1	6
	GAR300-P1	7.3
GT	GTC200-08J	657
	GTFC200-08J	447
	GTFR200-08J	243
	GTF200-08J	158
	GTL200-08J	155
GA	GA200-08	45
	GA300-10	98
	GA400-15	185
	GA600-25	497

Preparation unit		
Series	Model	Weight
GA bracket	GA200T-P1	51
	GA300T-P1	87
	GA400T-P1	159
	GA600T-P1	352
	GA200U-P1	54
	GA300U-P1	82
	GA400U-P1	173
	GA600U-P1	355
	GA200L-P1	48
	GA300L-P1	80
	GA400L-P1	152
	GA600L-P1	337
GPF	GPF200-08J	216
	300-10J	382
	400-15J	664
	200C-08J	226
	300C-10J	409
	400C-15J	679
GPR	200-06J	174
	300-08J	384
	400-15J	750
GPFR	200-08J	321
	300-10J	523
	400-15J	937
	200C-08J	324
	300C-10J	534
	400C-15J	942
SDR	100-06	77
	200-08	153
GS	F-GS30	33
	F-GS40	48
	F-GS50	73.5
GF	F-GF40	56
	F-GF50	96
	F-GF60	105
GU	F-GU40	90
	F-GU50	129
	F-GU60	160
GP	F-GP30	29
	F-GP40	48
GV	F-GV40	47.7
GVR	200-08J	209
	300-10J	336
GVF	200-08J	218
	300-10J	355
	200C-08J	222
	300C-10J	374

Note: The data in the weight table is for reference only, and the actual weight shall be subject to the actual product.

Production weight(Standard cylinder)

Unit: g

SAI	Bore size(mm)		32	40	50	63	80	100	125	160	200
	Without magnet	Weight when stroke is zero	489.8	733.0	1106.0	1495.3	2301.4	3237.0	5611.3	10343.0	13667.5
	With magnet		497.0	745.0	1123.4	1521.7	2338.0	3285.0	5656.3	10410.0	13750.5
	Add weight of per 1mm stroke		2.54	3.48	4.96	5.49	7.96	9.34	14.65	26.49	30.42

TSAIM	Bore size(mm)		32	40	50	63	80	100
	Standard	Weight when stroke is zero	2880	3660	5640	7680	14300	18115
		Add weight of per 1mm stroke	7.5	8.4	9.9	10.3	19.1	20.7
	Add weight of standard with magnet		7.5	15	17.5	26.5	36.5	48
TSAIL	Standard	Weight when stroke is zero	2330	3080	5020	7060	12530	16330
		Add weight of per 1mm stroke	5.7	6.6	9.9	10.3	15.7	17.3
	Add weight of standard with magnet		7.5	15	17.5	26.5	36.5	48

SAILF	Bore size(mm)		40	50	63	80	100	125	160	200
	Without magnet	Weight when stroke is zero	731.0	1221.6	1638.1	2717.0	3609.0	6360.0	11588.5	15245.0
	With magnet		743.0	1239.0	1664.5	2753.6	3657.0	6405.0	11655.5	15328.0
	Add weight of per 1mm stroke		3.48	4.96	5.49	7.96	9.34	14.65	26.49	30.42
SAILB	Without magnet	Weight when stroke is zero	761.0	1263.6	1711.6	2790.0	3737.0	6639.0	12112.5	15718.0
	With magnet		773.0	1281.0	1738.0	2826.6	3785.0	6684.0	12179.5	15801.0
	Add weight of per 1mm stroke		3.48	4.96	5.49	7.96	9.34	14.65	26.49	30.42

SGC					
Bore size(mm)		125	160	200	250
SG series	Weight when stroke is zero	7690	14210	19800	33950
SGC series		7250	13140	17860	30460
Add weight of per 1mm stroke		13.51	22.12	23.82	36.66

BSAI								
Bore size(mm)	32	40	50	63	80	100	125
Stroke=25mm	927.3	1431.0	2279.6	2942.9	5549.0	7597.5	13464.5
Add weight of per 5mm stroke	12.7	17.4	24.8	27.5	39.8	46.7	73.3
Add weight of with magnet	7.2	12	17.4	26.4	36.6	48	45.0

Production weight(Roundline cylinder)

Unit: g

St.	MI8			MI10			MI12			MI16					MI20					MI25					MI32				MI40			
	CA	U		CA	U		CA	U		CA	CM	U	R		CA	CM	U	R		CA	CM	U	R		CM	U	R		CM	U	R	
10	36	35	Add weight of with magnet: 1	39	38	Add weight of with magnet: 1	74	69	Add weight of with magnet: 1	88	92	84	84	Add weight of with magnet: 1	158	164	146	146	Add weight of with magnet: 2	220	226	205	208	Add weight of with magnet: 3	284	259	262	Add weight of with magnet: 7	653	612	612	Add weight of with magnet: 12
15	37	35		40	39		76	71		91	94	86	87		162	168	150	150		226	232	211	214		293	268	270		664	623	623	
20	38	36		42	40		78	73		93	97	89	89		166	172	154	153		231	238	216	219		301	276	279		676	635	635	
25	39	37		/	/		80	75		96	99	91	92		170	176	158	157		237	244	222	225		310	285	287		688	647	647	
30	39	38		44	43		82	77		98	102	94	94		173	179	161	161		243	250	228	231		318	293	296		700	659	659	
40	41	40		46	45		87	82		103	107	99	99		181	187	169	168		255	261	240	243		335	310	313		723	682	682	
50	43	41		49	47		91	86		108	112	104	104		188	194	176	176		266	273	251	254		352	327	330		746	705	705	
60	44	43		51	50		95	90		113	117	109	109		196	202	184	183		278	285	263	266		369	344	347		770	729	729	
75	47	45		55	53		102	97		121	124	116	117		207	213	195	194		295	302	280	283		395	370	372		805	764	764	
80	48	46		56	54		104	99		123	127	119	119		210	216	198	198		301	308	286	289		403	378	381		817	776	776	
100	51	50		61	59		113	108		133	137	129	129		225	231	213	213		325	331	310	313		437	412	415		864	823	823	
125	55	54		66	65		124	119		146	149	141	142		244	250	232	231		354	360	339	342		480	455	457		922	881	881	
150	62	60		72	71		135	130		158	162	154	154		262	268	250	250		383	389	368	371		522	497	500		981	940	940	
160				75	73		139	134		163	167	159	159		270	276	258	257		394	401	379	382		539	514	517		1004	963	963	
175				78	77		146	141		171	174	166	167		281	287	269	268		412	418	397	400		565	540	542		1039	998	998	
200				84	83		156	151		183	187	179	179		300	306	288	287		441	447	426	429		607	582	585		1098	1057	1057	
250							178	173		208	212	204	204		337	343	325	324		499	505	484	487		692	667	670		1215	1174	1174	
300	/	/	/							233	237	229	229		374	380	362	361		557	564	542	545		777	752	755		1333	1292	1292	
350				/	/	/				258	262	254	254		411	417	399	398		615	621	600	603		/	/	/		/	/	/	
400							/	/	/	283	287	279	279		448	454	436	436		673	680	658	661		947	922	925		1567	1526	1526	
450										308	312	304	304		485	491	473	473		732	738	717	720		1032	1007	1010		1684	1643	1643	
500										333	337	329	329		523	529	511	510		790	796	775	778		1117	1092	1095		1801	1760	1760	

Note: The data in the weight table is for reference only, and the actual weight shall be subject to the actual product.

Production weight(Roundline cylinder)

Unit: g

MIC16					MIC20					MIC25					MIC32				MIC40			
St.	CA	CM	U		St.	CA	CM	U		St.	CA	CM	U		St.	CM	U		St.	CM	U	
10	84	87	80		10	156	162	144		10	233	238	215		10	332	305		10	653	608	
15	87	90	83		15	160	166	148		15	235	240	217		15	340	313		15	665	620	
20	89	92	85		20	164	170	152		20	237	242	219		20	347	320		20	677	632	
25	92	95	88		25	167	173	155		25	240	245	222		25	355	328		25	689	644	
30	94	97	90		30	171	177	159		30	242	247	224		30	363	336		30	702	657	
40	100	103	96		40	179	185	167		40	246	251	228		40	379	352		40	726	681	
50	105	108	101		50	187	193	175		50	251	256	233		50	394	367		50	750	705	
60	110	113	106		60	194	200	182		60	256	261	238		60	410	383		60	774	729	
75	118	121	114		75	206	212	194		75	263	268	245		75	433	406		75	811	766	
80	120	123	116	Add weight of with magnet: 1	80	209	215	197	Add weight of with magnet: 2	80	265	270	247	Add weight of with magnet: 3	80	441	414	Add weight of with magnet: 7	80	823	778	Add weight of with magnet: 10
100	131	134	127		100	225	231	213		100	274	279	256		100	472	445		100	872	827	
125	143	146	139		125	244	250	232		125	286	291	268		125	511	484		125	932	887	
150	156	159	152		150	263	269	251		150	297	302	279		150	550	523		150	993	948	
160	161	164	157		160	271	277	259		160	302	307	284		160	566	539		160	1017	972	
175	169	172	165		175	282	288	270		175	309	314	291		175	589	562		175	1054	1009	
200	182	185	178		200	301	307	289		200	320	325	302		200	628	601		200	1114	1069	
250	208	211	204		250	340	346	328		250	343	348	325		250	706	679		250	1236	1191	
300	234	237	230		300	378	384	366		300	366	371	348		300	784	757		300	1357	1312	
350	259	262	255		350	416	422	404		350	389	394	371		350	862	835		350	1478	1433	
400	285	288	281		400	454	460	442		400	412	417	394		400	940	913		400	1600	1555	
450	311	314	307		450	493	499	481		450	435	440	417		450	1018	991		450	1721	1676	
500	337	340	333		500	531	537	519		500	458	463	440		500	1096	1069		500	1842	1797	

TMIM	Bore size(mm)		12	16	20	25
	Standard	Weight when stroke is zero	490	505	1075	1230
		Add weight of per 1mm stroke	1.7	1.7	2.5	4.3
	Add weight of standard with magnet		1	1	2	3
TMIL	Standard	Weight when stroke is zero	380	395	870	940
		Add weight of per 1mm stroke	1.2	1.3	2.0	2.9
	Add weight of standard with magnet		1	1	2	3

PB4		PB6		PB10				PB12				PB16			
St.	R	St.	R	St.	U	CB	R	St.	U	CB	R	St.	U	CB	R
5	12	10	17	10	25	28	25	10	44	49	44	10	51	57	52
10	12.5	15	18	15	27	30	27	15	46	51	46	15	53	60	54
15	13	20	18	20	28	31	28	20	47	52	47	20	55	62	56
20	13.5	25	19	25	29	32	29	25	48	53	48	25	58	64	59
		30	20	30	30	33	30	30	50	55	50	30	60	66	61
		40	21	40	33	36	33	40	53	58	53	40	64	71	65
		50	23	50	35	38	35	50	55	60	55	50	69	75	70
		60	24	60	37	40	37	60	58	63	58	60	73	80	74
				75	41	44	41	75	62	67	62	75	80	86	81
				80	42	45	42	80	64	69	64	80	82	89	83
				100	47	50	47	100	69	74	69	100	91	98	92
				125	53	56	53	125	76	81	76	125	102	109	103
				150	59	62	59	150	83	88	83	150	113	120	114
				160	61	64	61	160	86	91	86	160	118	124	119
				175	65	68	65	175	90	95	90	175	125	131	126
				200	71	74	71	200	97	102	97	200	136	142	137
												250	158	165	159
												300	181	187	182

PBR6		PBR8			PBR10			PBR10			PBR12			PBR16		
St.	R	St.	U	R	St.	U	R	St.	U	R	St.	U	R	St.	U	R
10	20	10	32	32	10	33	33	10	33	33	10	56	56	10	59	60
15	20.6	15	33	33	15	34	34	15	34	34	15	58	58	15	61	62
20	21	20	34	34	20	35	35	20	35	35	20	59	59	20	64	65
25	22	25	35	35	25	36	36	25	36	36	25	60	60	25	66	67
30	23	30	36	36	30	37	37	30	37	37	30	62	62	30	68	69
40	24	40	37	37	40	40	40	40	40	40	40	65	65	40	73	74
50	26	50	39	39	50	42	42	50	42	42	50	67	67	50	77	78
60	27	60	40	40	60	45	45	60	45	45	60	70	70	60	82	83
		75	43	43	75	48	48	75	48	48	75	74	74	75	88	89
		80	44	44	80	49	49	80	49	49	80	76	76	80	91	92
		100	47	47	100	54	54	100	54	54	100	81	81	100	99	100
		125	51	51	125	60	60	125	60	60	125	88	88	125	111	112
		150	58	58	150	66	66	150	66	66	150	95	95	150	122	123
					160	69	69	160	69	69	160	98	98	160	126	127
					175	72	72	175	72	72	175	102	102	175	133	134
					200	78	78	200	78	78	200	109	109	200	144	145
														250	167	168
														300	189	190

Note: The data in the weight table is for reference only, and the actual weight shall be subject to the actual product.

Production weight(Roundline cylinder)

Unit: g

MF20				
St.	CM	CA	U	
10	143	144	133	
15	147	148	137	
20	151	152	141	
25	155	156	145	
30	158	159	148	
40	166	167	156	
50	173	174	163	
60	181	182	171	
75	192	193	182	
80	196	197	186	Add weight of with magnet: 2
100	211	212	201	
125	230	231	220	
150	248	249	238	
160	256	257	246	
175	267	268	257	
200	286	287	276	
250	323	324	313	
300	361	362	351	
400	436	437	426	
450	473	474	463	
500	511	512	501	

MF25				
St.	CM	CA	U	
10	215	216	202	
15	220	221	207	
20	225	226	212	
25	230	231	218	
30	235	236	223	
40	246	247	233	
50	256	257	243	
60	266	267	254	
75	282	283	269	
80	287	288	274	Add weight of with magnet: 3
100	308	309	295	
125	333	334	321	
150	359	360	347	
160	370	371	357	
175	385	386	373	
200	411	412	398	
250	463	464	450	
300	514	515	502	
400	618	619	605	
450	669	670	657	
500	721	722	708	

MF32				
St.	CM	CA	U	
10	276	288	265	
15	284	296	273	
20	292	304	281	
25	300	312	289	
30	308	320	297	
40	323	335	312	
50	339	351	328	
60	355	367	344	
75	379	391	368	
80	387	399	376	Add weight of with magnet: 7
100	419	431	408	
125	459	471	448	
150	498	510	487	
160	514	526	503	
175	538	550	527	
200	578	590	567	
250	657	669	646	
300	737	749	726	
400	895	907	884	
450	975	987	964	
500	1054	1066	1043	

MF40				
St.	CM	CA	U	
10	578	585	549	
15	590	597	561	
20	602	609	573	
25	614	621	585	
30	626	633	597	
40	649	656	620	
50	673	680	644	
60	697	704	668	
75	732	739	703	
80	744	751	715	Add weight of with magnet: 10
100	791	798	762	
125	850	857	821	
150	910	917	881	
160	933	940	904	
175	969	976	940	
200	1028	1035	999	
250	1146	1153	1117	
300	1264	1271	1235	
400	1501	1508	1472	
450	1619	1626	1590	
500	1737	1744	1708	

MFC20				
St.	CM	CA	U	
10	144	145	134	
15	148	149	138	
20	152	153	142	
25	156	157	146	
30	160	161	150	
40	167	168	157	
50	175	176	165	
60	182	183	172	
75	194	195	184	
80	198	199	188	Add weight of with magnet: 2
100	213	214	203	
125	232	233	222	
150	251	252	241	
160	259	260	249	
175	271	272	261	
200	290	291	280	
250	328	329	318	
300	366	367	356	
400	443	444	433	
450	481	482	471	
500	520	521	510	

MFC25				
St.	CM	CA	U	
10	215	214	200	
15	220	219	206	
20	226	225	211	
25	231	230	216	
30	236	235	222	
40	247	246	233	
50	258	257	243	
60	269	268	254	
75	285	284	270	
80	290	289	276	Add weight of with magnet: 3
100	312	311	297	
125	338	337	324	
150	365	364	351	
160	376	375	362	
175	392	391	378	
200	419	418	405	
250	473	472	458	
300	526	525	512	
400	634	633	619	
450	688	687	673	
500	741	740	727	

MFC32				
St.	CM	CA	U	
10	277	289	266	
15	285	297	274	
20	292	304	281	
25	299	311	288	
30	306	318	295	
40	321	333	310	
50	336	348	325	
60	350	362	339	
75	372	384	361	
80	379	391	368	Add weight of with magnet: 7
100	409	421	398	
125	445	457	434	
150	481	493	470	
160	496	508	485	
175	518	530	507	
200	554	566	543	
250	627	639	616	
300	700	712	689	
400	846	858	835	
450	919	931	908	
500	992	1004	981	

MFC40				
St.	CM	CA	U	
10	577	584	548	
15	589	596	560	
20	600	607	571	
25	612	619	583	
30	623	630	594	
40	646	653	617	
50	669	676	640	
60	692	699	663	
75	727	734	698	
80	738	745	709	Add weight of with magnet: 10
100	784	791	755	
125	842	849	813	
150	899	906	870	
160	922	929	893	
175	957	964	928	
200	1014	1021	985	
250	1129	1136	1100	
300	1244	1251	1215	
400	1474	1481	1445	
450	1589	1596	1560	
500	1704	1711	1675	

Note: The data in the weight table is for reference only, and the actual weight shall be subject to the actual product.

Production weight(Roundline cylinder)

Unit: g

MG20		
St.	MG	
10	111	Add weight of with magnet: 1
15	115	
20	119	
25	123	
30	126	
40	134	
50	141	
60	149	
75	160	
80	164	
100	179	
125	198	
150	217	
160	224	
175	236	
200	254	

MG25		
St.	MG	
10	166	Add weight of with magnet: 5
15	172	
20	177	
25	182	
30	188	
40	198	
50	209	
60	220	
75	236	
80	241	
100	262	
125	289	
150	316	
160	326	
175	342	
200	369	
250	423	
300	476	

MG32		
St.	MG	
10	249	Add weight of with magnet: 7
15	257	
20	265	
25	272	
30	280	
40	296	
50	311	
60	326	
75	349	
80	357	
100	388	
125	426	
150	464	
160	480	
175	503	
200	541	
250	618	
300	694	

MG40		
St.	MG	
10	440	Add weight of with magnet: 12
15	451	
20	463	
25	474	
30	485	
40	508	
50	530	
60	553	
75	586	
80	598	
100	643	
125	699	
150	755	
160	778	
175	811	
200	868	
250	980	
300	1093	

MG20		
St.	MG	
201	267	Add weight of with magnet: 1
225	280	
250	299	
300	336	
350	374	
400	412	
450	449	
500	487	

MG25		
St.	MG	
301	495	Add weight of with magnet: 5
350	539	
400	593	
500	1020	

MG32		
St.	MG	
301	1031	Add weight of with magnet: 7
350	1096	
400	1172	
500	1326	

MG40		
St.	MG	
301	1197	Add weight of with magnet: 12
350	1290	
400	1402	
500	1627	

MGC20		
St.	MGC	
10	115	Add weight of with magnet: 1
15	119	
20	123	
25	126	
30	130	
40	138	
50	145	
60	153	
75	164	
80	168	
100	183	
125	202	
150	221	
160	228	
175	239	
200	258	

MGC25		
St.	MGC	
10	125	Add weight of with magnet: 5
15	131	
20	138	
25	145	
30	152	
40	166	
50	180	
60	193	
75	214	
80	221	
100	248	
125	283	
150	317	
160	331	
175	351	
200	386	
250	455	
300	523	

MGC32		
St.	MGC	
10	244	Add weight of with magnet: 7
15	252	
20	260	
25	268	
30	276	
40	293	
50	309	
60	325	
75	350	
80	358	
100	391	
125	432	
150	472	
160	489	
175	513	
200	554	
250	636	
300	717	

MGC40		
St.	MGC	
10	452	Add weight of with magnet: 12
15	464	
20	476	
25	487	
30	499	
40	523	
50	546	
60	569	
75	605	
80	616	
100	663	
125	722	
150	781	
160	804	
175	839	
200	898	
250	1015	
300	1132	

MGC50		
St.	MGC	
10	797	Add weight of with magnet: 15
15	816	
20	835	
25	854	
30	873	
40	910	
50	948	
60	986	
75	1042	
80	1061	
100	1136	
125	1231	
150	1325	
160	1362	
175	1419	
200	1513	
250	1701	
300	1890	

MGC63		
St.	MGC	
10	1068	Add weight of with magnet: 22
15	1091	
20	1113	
25	1136	
30	1158	
40	1203	
50	1248	
60	1293	
75	1360	
80	1382	
100	1472	
125	1584	
150	1696	
160	1741	
175	1808	
200	1921	
250	2145	
300	2369	

MGC20		
St.	MG	
201	268	Add weight of with magnet: 1
225	286	
250	305	
300	343	
350	381	
400	418	
450	456	
500	494	

MGC25		
St.	MG	
301	540	Add weight of with magnet: 5
350	607	
400	676	
500	813	

MGC32		
St.	MG	
301	741	Add weight of with magnet: 7
350	821	
400	902	
500	1065	

MGC40		
St.	MG	
301	1170	Add weight of with magnet: 12
350	1285	
400	1402	
500	1636	

MGC50		
St.	MG	
301	1963	Add weight of with magnet: 15
350	2147	
400	2336	
500	2712	

MGC63		
St.	MG	
301	2460	Add weight of with magnet: 22
350	2680	
400	2904	
500	3352	

Note: The data in the weight table is for reference only, and the actual weight shall be subject to the actual product.

Production weight(Roundline cylinder)

Unit: g

MBL																							
Series		MBL/MBLC						MSBL/MTBL				MBLD/MBLCD						MBLJ/MBLCJ					
Bore size(mm)		20	25	32	40	50	63	20	25	32	40	20	25	32	40	50	63	20	25	32	40	50	63
U Type without magnet	Stroke=5mm	-	-	-	-	-	-	156.7	197.0	302.3	572.3	-	-	-	-	-	-	-	-	-	-	-	-
	Stroke=10mm	144	181	275	532	769	1055	-	-	-	-	203.6	266.7	352.6	711.6	1025	1299	-	-	-	-	-	-
	Stroke=55mm	-	-	-	-	-	-	212.4	274.7	425.9	740.9	-	-	-	-	-	-	-	-	-	-	-	-
	Stroke=105mm	-	-	-	-	-	-	267.9	351.1	536.5	905.3	-	-	-	-	-	-	-	-	-	-	-	-
Adj. stroke=10mm	Stroke=10mm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	252.3	339.5	428.2	850	1164	1437
Add weight of per 5mm stroke		4.4	5.9	7.9	12.2	13.4	15.0	4.4	5.9	7.9	12.2	6.0	6.8	12.5	20.2	21.5	28.7	6.0	6.8	12.5	20.2	21.5	28.7
Add weight when with magnet		4.0	4.8	6.9	11.7	17.3	26.4	4.0	4.8	6.9	11.7	4.0	4.8	6.9	11.7	17.3	26.4	4.0	4.8	6.9	11.7	17.3	26.4
Add weight when CA type		14.9	14.6	10.5	31.4	40.2	37.4	14.9	14.6	10.5	31.4	-	-	-	-	-	-	-	-	-	-	-	-
Add weight of per 10mm adj.stroke		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.8	31.2	33.7	61.4	61.4	61.4

MBL																							
St./Bore Size	20			25			32			40			50			63		
	CA	U		CA	U		CA	U		CA	U		CA	U		CA	U	
10	168	153	Add weight of with magnet: 1	214	200	Add weight of with magnet: 5	317	296	Add weight of with magnet: 7	572	540	Add weight of with magnet: 12	823	782	Add weight of with magnet: 15	1171	1131	Add weight of with magnet: 15
15	172	157		220	206		325	305		585	553		836	795		1184	1144	
20	176	161		226	212		333	313		597	565		850	809		1197	1157	
25	180	165		232	218		341	321		609	577		863	822		1211	1170	
30	184	169		238	224		349	329		622	590		877	836		1224	1183	
40	193	178		250	235		357	336		646	614		903	862		1250	1209	
50	201	186		262	247		373	352		671	639		930	889		1276	1236	
60	209	194		274	259		389	368		695	663		957	916		1302	1262	
75	222	207		292	277		413	393		732	700		997	956		1342	1301	
80	226	211		297	283		421	401		745	713		1010	969		1355	1314	
100	243	228		321	307		454	433		794	762		1063	1022		1407	1367	
125	264	249		351	336		494	474		856	824		1130	1089		1473	1432	
150	285	270		381	366		535	514		917	885		1197	1156		1538	1498	
160	293	278		392	378		551	530		942	910		1224	1183		1564	1524	
175	305	290		410	396		575	555		979	947		1264	1223		1604	1563	
200	326	311		440	425		616	595		1040	1008		1330	1289		1669	1629	
250	368	353		499	485		697	676		1163	1131		1464	1423		1800	1760	
300	410	395		559	544		778	757		1287	1255		1597	1556		1931	1891	
350	451	436		618	604		859	838		1410	1378		1731	1690		2062	2022	
400	493	478		677	663		940	919		1533	1501		1864	1823		2193	2153	
450	535	520		737	722		1021	1000		1656	1624		1998	1957		2324	2284	
500	576	561		796	782		1102	1081		1779	1747		2131	2090		2455	2415	

MBLC																							
St./Bore Size	20			25			32			40			50			63		
	CA	U		CA	U		CA	U		CA	U		CA	U		CA	U	
10	177	162	Add weight of with magnet: 1	218	203	Add weight of with magnet: 5	301	280	Add weight of with magnet: 7	544	512	Add weight of with magnet: 12	831	790	Add weight of with magnet: 15	1115	1075	Add weight of with magnet: 15
15	180	165		224	209		309	288		557	525		844	803		1130	1089	
20	184	169		229	215		317	296		569	537		856	815		1144	1104	
25	187	172		235	221		325	304		582	550		869	828		1159	1118	
30	191	176		241	226		333	312		594	562		882	841		1173	1133	
40	198	183		252	238		349	329		619	587		907	866		1202	1162	
50	205	190		264	249		365	345		645	613		932	891		1231	1191	
60	213	198		275	261		382	361		670	638		958	917		1260	1220	
75	223	208		293	278		406	385		707	675		996	955		1304	1263	
80	227	212		298	284		414	394		720	688		1008	967		1318	1278	
100	242	227		321	307		446	426		770	738		1059	1018		1376	1336	
125	260	245		350	336		487	466		833	801		1122	1081		1449	1408	
150	278	263		379	365		528	507		896	864		1185	1144		1521	1481	
160	285	270		391	376		544	523		921	889		1211	1170		1550	1510	
175	296	281		408	393		568	548		958	926		1249	1208		1594	1553	
200	314	299		437	422		609	588		1021	989		1312	1271		1666	1626	
250	350	335		494	480		690	669		1147	1115		1438	1397		1811	1771	
300	386	371		552	537		771	750		1272	1240		1565	1524		1956	1916	
350	422	407		609	595		852	831		1398	1366		1691	1650		2101	2061	
400	458	443		667	652		933	912		1523	1491		1818	1777		2246	2206	
450	494	479		724	710		1014	993		1649	1617		1944	1903		2391	2351	
500	530	515		782	768		1095	1075		1774	1742		2071	2030		2536	2496	

Note: The data in the weight table is for reference only, and the actual weight shall be subject to the actual product.

Production weight(Compact cylinder)

Unit: g

ACE	Bore size(mm)		12	16	20	25	32	40	50	63	80	100	125
	Female thread	Weight when stroke is zero	69.5	85.5	119.2	171.6	263.5	316.4	446	702	1041.5	1832	3467
		Add weight of per 1mm stroke	1.4	1.76	2.34	2.78	3.55	3.92	5.8	6.55	9	10.4	11
	Add weight of male		3	3.5	9	8.5	16.5	17	30	30	59	60	132
	Add weight of magnet		1	1	2.5	3.5	11	11.5	17	24.5	34.5	47.5	54

TACE	Bore size(mm)		12	16	20	25	32	40	50	63	80	100
	Female thread	Weight when stroke is zero	90	104.9	183.6	234	427	480	690.5	711.5	1455	2380
		Add weight of per 1mm stroke	1.4	1.76	2.34	2.78	3.55	3.92	5.8	6.55	9	10.4
	Add weight of magnet		1	1	2.5	3.5	11	11.5	17	24.5	34.5	47.5

ACQ	Bore size(mm)			100	125	140	160
	Without magnet	Female thread	Weight when stroke is zero	1480	3616	4788	6241
			Add weight of per 1mm stroke	20.6	21.7	24.6	31.7
	With magnet		Weight when stroke is zero	2177	3661	4840	6300
			Add weight of per 1mm stroke	20.6	21.7	24.6	31.7

TACQ	Bore size(mm)		12	16	20	25	32	40	50	63	80	100
	Standard	Weight when stroke is zero	41.5	59	84	125	174.5	281.5	434	672	1168	2650
		Add weight of per 1mm stroke	1.67	2.5	2.9	3.7	5	5.7	8.8	11	18	24.5
	With magnet	Weight when stroke is zero	61.5	89	124.3	165	234	359.4	533	857	1353	2682.5
		Add weight of per 1mm stroke	1.6	2.5	2.8	3.7	5	5.47	8.8	11	18	24.5

ACQ											
Bore size(mm)			12	16	20	25	32	40	50	63	80	100
Without magnet	Female thread	Weight when stroke is zero	39	40	56	75.5	106	196	299	498	975	1480
		Add weight of per 1mm stroke	1.5	1.9	2.9	3.5	4.3	5.1	7.5	9.0	14.6	20.6
With magnet		Weight when stroke is zero	47	76.3	103	122.7	159	269.3	402	683	1168	2177
		Add weight of per 1mm stroke	1.4	1.9	2.8	3.4	4.3	5.1	7.5	9.0	14.6	20.6

ACF	Bore size(mm)		12	16	20	25	32	40	50	63
	Female thread	Weight when stroke is zero	55	77	99	141	233	304	437	630
		Add weight of per 1mm stroke	1.5	1.9	2.5	3.1	4.3	4.7	6.7	7.4
	Add weight of magnet		1.0	1.8	1.4	2.0	2.9	4.0	5.9	8.8

TACF	Bore size(mm)		12	16	20	25	32	40	50	63
	Female thread	Weight when stroke is zero	68	93	132	181	313	394	595	831
		Add weight of per 1mm stroke	1.7	2.1	2.9	3.5	5.1	5.5	7.9	8.6
	Add weight of magnet		1.0	1.8	1.4	2.0	2.9	4.0	5.9	8.8

Production weight(Multi-mounting cylinder)

Unit: g

MU																								
Bore size(mm)		4						6	8	10	6	8	10	6	8	10	12	16	20	12	16	20	12	16	20
Stroke		4	6	8	10	15	20	4	4	4	Add weight of per 2mm stroke			Add weight of per 5mm stroke						5 (Transverse mounted)			Add weight of axial mounted		
Double acting	No thread	6	7	8	9	10	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	10	12	14	1	1	1.5	2.5	2.5	3	5	7	11	23	37	50	1	1.5	2.5
	Female(with magnet)	-	-	-	-	-	-	11	14	16										31	44	67			
	Male	7	8	9	10	11	13	11	14	17										26	41	59			
	Male (with magnet)	-	-	-	-	-	-	12	16	19										34	49	76			
Single acting	No thread	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	11	13	15	1	1	1.5	2.5	2.5	3	5	7	11	30	46	64	1	1.5	2.5
	Female(with magnet)	-	-	-	-	-	-	12	14	17										38	54	81			
	Male	7	8	-	-	-	-	12	15	18										33	51	73			
	Male (with magnet)	-	-	-	-	-	-	13	16	20										41	59	90			

MD							
Bore size(mm)			10	16	20	25	32
MD	Without magnet	Weight when stroke is zero	31	43	87	165.5	278
	With magnet		32	58	118	211	349
	Add weight of per 1mm stroke		0.8	1.2	2.0	3.2	4.6

MK	Bore size(mm)		6	10	16	20	25	32
	Without magnet	Weight when stroke is zero	24.7	36	53.2	97	190.5	330
	With magnet		25.1	17	62.7	128	232	399
	Add weight of per 1mm stroke		0.86	1	1.1	2.2	3.5	5.4

Production weight(Plate cylinder and Thread cylinder)

Unit: g

MPG	Bore size(mm)		6	8	10	12	16
	Without magnet	Weight when stroke is zero	9.65	19.05	21.8	32.6	36
	With magnet		16	22.7	26.6	37.4	42
	Short weight of no screw		0.64	1.4	1.4	1.4	1.4
	Add weight of per 1mm stroke		0.45	0.5	0.5	0.74	0.8
	Weight of body and nut		3.12	4.58	4.58	5.19	5.19

MPE	Bore size(mm)	6	8	10	12	16
	Weight when stroke is zero	12.3	20.4	23.5	46.5	64
	Short weight of no screw	0.64	1.4	1.4	1.4	1.4
	Add weight of per 1mm stroke	0.5	0.68	1.4	1.75	2
	Weight of body and nut	3.12	4.58	4.06	10.25	10.64

Note: The data in the weight table is for reference only, and the actual weight shall be subject to the actual product.

Production weight(Twin-rod cylinder and slide table cylinder)

Unit: g

TR						
St.	TR6	TR10	TR16	TR20	TR25	TR32
10	88	158	252	420	640	1183
20	102	178	280	456	692	1270
30	118	198	308	492	744	1357
40	132	218	334	529	798	1444
50	146	236	360	566	850	1531
60		256	387	603	902	1618
70		276	414	640	954	1704
80		296	441	677	1019	1791
90		316	468	714	1074	1878
100	/	336	495	751	1126	1965
125			563	844	1256	2176
150		/	631	937	1392	2386
175			699	1030	1522	2596
200			768	1123	1652	2806

HLH				
St.	HLH6	HLH10	HLH16	HLH20
5	62	118	218	430
10	68	128	233	446
15	76	140	248	462
20	82	150	264	478
25	90	162	277	494
30	96	172	290	510
40		194	320	556
50	/	214	350	605
60		/	382	654

HLQ										
Model	St.									Note
	10	20	30	40	50	75	100	125	150	
HLQ6	72	90	104	130	146	/				HLQL=HLQ
HLQ8	138	162	196	226	280	360	/			
HLQ12	298	300	342	390	426	591	682	/		
HLQ16	528	536	594	648	726	912	1124	1256	/	
HLQ20	848	862	880	966	1078	1340	1732	1920	2158	
HLQ25	1392	1410	1426	1555	1774	2100	2512	3038	3318	

HLF				
St.	HLF8	HLF12	HLF16	HLF20
10	122	206	383	530
20	143	234	421	575
30	163	267	453	621
40		319	549	743
50	/	353	579	808
75		/	740	990
100			880	1161

HLS										
Model	St.									Note
	10	20	30	40	50	75	100	125	150	
HLS6	72	89	104	136	158	/				HLSL=HLS
HLS8	148	164	194	232	278	396	/			
HLS12	352	354	360	431	498	674	878	/		
HLS16	556	564	572	659	736	1012	1284	1556	/	
HLS20	935	947	958	1056	1154	1540	1992	2358	2829	
HLS25	1468	1484	1500	1632	1774	2343	2862	3465	4014	

TCL																				
Model/St.	5	10	15	20	25	30	40	50	60	70	75	80	90	100	125	150	175	200	225	250
TCL12		220		254	271	288	344	378	412	446	463	480	517	551	653	738	/			
TCL16		318		364	387	410	480	526	572	618	641	664	710	756	896	1011	1126	1241	/	
TCL20				623	658	693	844	914	984	1054	1089	1124	1194	1264	1483	1658	1833	2008	2226	2401
TCL25				854	901	948	1141	1235	1329	1423	1470	1517	1611	1705	1990	2225	2460	2695	2955	3190
TCL32	/		/		1236	1366	1496	1626	1994	2124	2189	2254	2384	2514	2912	3237	3562	3887	4311	4636
TCL40		/			1532	1606	1754	1902	2282	2430	2504	2578	2726	2874	3315	3685	4055	4425	4880	5250
TCL50				/	2514	2625	2847	3069	3514	3736	3847	3958	4180	4402	5151	5706	6252	6807	7550	8105
TCL63					3218	3352	3620	3888	4516	4784	4918	5052	5320	5588	6369	7039	7709	8379	9234	9904
TCL80					5387	5562	5912	6262	6612	7758	7933	8108	8458	8808	9683	10558	11672	12547	13422	14297
TCL100					8416	8656	9136	9616	10096	11715	11955	12195	12675	13155	14355	15555	17084	18284	19484	20684

TCM																				
Model/St.	5	10	15	20	25	30	40	50	60	70	75	80	90	100	125	150	175	200	225	250
TCM6	45	51	57	63	/															
TCM10	68	76	84	92	100	108	/													
TCM12		237		275	294	313	351	389	458	496	515	534	572	610	754	849	/			
TCM16		344		394	419	444	495	545	651	701	726	751	801	851	1045	1170	1295	1420	/	
TCM20				682	720	758	845	921	1113	1189	1227	1265	1341	1417	1710	1900	2090	2280	2470	2660
TCM25				946	1000	1054	1171	1279	1584	1638	1692	1746	1854	1962	2358	2628	2898	3168	3438	3708
TCM32	/		/		1572	1646	1794	1942	2313	2461	2535	2609	2757	2905	3440	3810	4180	4550	5055	5425
TCM40		/			1806	1890	2058	2226	2604	2772	2856	2940	3108	3276	3843	4263	4683	5103	5641	6061
TCM50				/	2795	2906	3128	3350	3936	4158	4269	4380	4602	4824	5585	6140	6695	7250	7990	8545
TCM63					3526	3660	3928	4196	4826	5094	5228	5362	5630	5898	6758	7428	8098	8768	9651	10321
TCM80					5974	6166	6550	6934	7318	8706	8898	9090	9474	9858	10818	11778	13152	14112	15072	16032
TCM100					9120	9368	9864	10360	10856	12746	12994	13242	13738	14234	15474	16714	18507	19747	20987	22227

Note: The data in the weight table is for reference only, and the actual weight shall be subject to the actual product.

Production weight(Rodless cylinder)

Unit: g

RMS						
St.	RMS10	RMS16	RMS20	RMS25	RMS32	RMS40
50	136	250	545	750	1345	2153
100	150	276	580	795	1410	2230
150	164	302	615	840	1475	2307
200	178	328	650	885	1540	2384
250	192	354	688	930	1605	2461
300	206	380	725	975	1670	2538
350		407	763	1020	1735	2615
400		433	800	1065	1800	2692
450		459	835	1110	1863	2769
500		485	868	1155	1925	2845
600	/		934	1245	2050	3003
700			1000	1335	2175	3161
750		/	1033	1380	2235	3240
800			1066	1425	2295	3319
900			1125	1515	2415	3480
1000			1191	1605	2535	3638

RMH				
St.	RMH10	RMH16	RMH20	RMH25
50	754	704	1582	1813
100	809	781	1694	1940
150	865	857	1805	2067
200	921	934	1916	2194
250	976	1010	2028	2320
300	1032	1087	2139	2447
350		1164	2251	2574
400		1240	2390	2701
450		1317	2501	2828
500	/	1394	2613	2955
600			2836	3208
700		/	3285	3462
750			3396	3589
800			3508	3716

Bore size / St.	RMT(No sensor /With adjustable screw)					RMT(No sensor /With shock absorber)					RMT(With sensor /With adjustable screw)					RMT(With sensor /With shock absorber)				
	16	20	25	32	40	16	20	25	32	40	16	20	25	32	40	16	20	25	32	40
50	1018	1726	2173	4509	5936	1028	1736	2203	4599	6026	1040	1750	2197	4535	5964	1050	1760	2227	4625	6054
100	1135	1899	2374	4766	6395	1145	1909	2404	4856	6485	1165	1930	2405	4800	6430	1175	1940	2435	4890	6520
150	1253	2091	2574	5023	6853	1263	2101	2604	5113	6943	1290	2130	2613	5065	6896	1300	2140	2643	5155	6986
200	1370	2273	2774	5281	7311	1380	2283	2804	5371	7401	1415	2320	2821	5330	7362	1425	2330	2851	5420	7452
250	1487	2456	2975	5538	7770	1497	2466	3005	5628	7860	1540	2510	3029	5595	7828	1550	2520	3059	5685	7918
300	1605	2638	3175	5795	8228	1615	2648	3205	5885	8318	1665	2700	3237	5860	8294	1675	2710	3267	5950	8384
350	1722	2820	3375	6052	8686	1732	2830	3405	6142	8776	1790	2890	3445	6125	8760	1800	2900	3475	6215	8850
400	1839	3003	3576	6310	9145	1849	3013	3606	6400	9235	1915	3080	3653	6390	9226	1925	3090	3683	6480	9316
450	1956	3185	3776	6567	9603	1966	3195	3806	6657	9693	2040	3270	3861	6655	9692	2050	3280	3891	6745	9782
500	2074	3367	3976	6824	10061	2084	3377	4006	6914	10151	2165	3460	4069	6920	10158	2175	3470	4099	7010	10248
600		3732	4377	7339	10978		3742	4407	7429	11068		3840	4485	7450	11090		3850	4515	7540	11180
700		4096	4777	7854	11894		4106	4807	7944	11984		4220	4901	7980	12022		4230	4931	8070	12112
750	/	4279	4978	8111	12353	/	4289	5008	8201	12443	/	4410	5109	8245	12488	/	4420	5139	8335	12578
800		4461	5178	8368	12811		4471	5208	8458	12901		4600	5317	8510	12954		4610	5347	8600	13044
900		/	/	/	13728		/	/	/	13818		/	/	/	13886		/	/	/	13976
1000					14644					14734					14818					14908

Bore size / St.	RMTL(No sensor rail /With adjustable screw)						RMTL(No sensor rail /With adjustable screw and shock absorber)						RMTL(With sensor rail /With adjustable screw)						RMTL(with sensor rail /With adjustable screw and shock absorber)					
	10	16	20	25	32	40	10	16	20	25	32	40	10	16	20	25	32	40	10	16	20	25	32	40
50	929	1421	2527	2964	5312	9656	959	1471	2587	3084	5622	9966	952	1445	2553	2990	5340	9690	982	1495	2613	3110	5650	10000
100	1002	1528	2681	3156	5600	10049	1032	1578	2741	3276	5910	10359	1033	1560	2715	3190	5636	10090	1063	1610	2775	3310	5946	10400
150	1076	1635	2836	3349	5888	10441	1106	1685	2896	3469	6198	10751	1114	1675	2877	3390	5932	10490	1144	1725	2937	3510	6242	10800
200	1149	1743	2990	3541	6177	10833	1179	1793	3050	3661	6487	11143	1195	1790	3039	3590	6228	10890	1225	1840	3099	3710	6538	11200
250	1222	1850	3144	3733	6466	11226	1252	1900	3204	3853	6776	11536	1276	1905	3201	3790	6525	11290	1306	1955	3261	3910	6835	11600
300	1295	1957	3299	3926	6754	11618	1325	2007	3359	4046	7064	11928	1357	2020	3363	3990	6821	11690	1387	2070	3423	4110	7131	12000
350		2065	3453	4118	7043	12010		2115	3513	4238	7353	12320		2135	3525	4190	7117	12090		2185	3585	4310	7427	12400
400		2172	3607	4310	7331	12402		2222	3667	4430	7641	12712		2250	3687	4390	7413	12490		2300	3747	4510	7723	12800
450		2279	3761	4502	7619	12795		2329	3821	4622	7929	13105		2365	3849	4590	7709	12890		2415	3909	4710	8019	13200
500		2387	3916	4695	7908	13187		2437	3976	4815	8218	13497	/	2480	4011	4790	8005	13290		2530	4071	4910	8315	13600
600	/		4224	5079	8484	13972	/		4284	5199	8794	14282			4335	5190	8597	14090	/		4395	5310	8907	14400
700			4533	5464	9061	14756			4593	5584	9371	15066			4659	5590	9189	14890			4719	5710	9499	15200
750		/	4687	5656	9349	15149		/	4747	5776	9659	15459		/	4821	5790	9485	15290		/	4881	5910	9795	15600
800			4842	5849	9637	15541			4902	5969	9947	15851			4983	5990	9781	15690			5043	6110	10091	16000
900			/	/	/	16325			/	/	/	16635			/		/	16490			/	/	/	16800
1000						17110						17420						17290						17600

Note: The data in the weight table is for reference only, and the actual weight shall be subject to the actual product.

Production weight(Air gripper)

Unit: g

HFT																				
Bore size(mm)	10				16				20				25				32			
Stroke	20	30	40	60	30	40	60	80	40	60	80	100	40	60	80	100	60	80	100	150
Weight	305	340	380	465	585	660	805	950	1020	1225	1460	1660	1615	1890	2190	2460	2750	3130	3685	4650

HFY							
Bore size(mm)		6	10	16	20	25	32
Weight	HFY	23.5	44.5	97.9	172.6	299.4	424.5
	HFTY	24.3	44	106	170.5	295	430.5

HFZ							
Bore size(mm)	6	10	16	20	25	32	40
Weight HFZ	27.5	60	132.4	246.7	460.7	757.5	1350.3
Weight HFTZ	28	60.6	133.4	247	465.5	795	1418.5
Weight HFSZ	27.9	58.5	122.5	234	445	815.1	1445

HFC								
Bore size(mm)		16	20	25	32	40	50	63
Weight	HFCI	60	97	138.5	257	355	524.5	927.5
	HFCY	60.5	99	139.5	240.5	363	541.5	954
	HFCX	65.5	107	154	284	388	573	1027.5

HFK							
Bore size(mm)		10	16	20	25	32	40
Weight	HFK	58.3	124.4	243.5	456.0	751.0	1335.5
	HFTK	60.6	133.3	254.0	466.1	804.7	1431.1
	HFSK	60.8	132.7	254.7	465.9	813.1	1446.9

Production weight(Rotary clamp cylinder)

Unit: g

QCK								
Stroke\ Bore size(mm)	12	16	20	25	32	40	50	63
10	75	105	235	300	455	540	920	1350
20	90	135	280	355	525	635	1060	1540
30	-	165	330	410	600	730	1200	1725
50	-	-	-	-	810	915	1480	2100
Add weight when with clamping arm	15	30	75	75	140	140	340	340

QDK			
QDK		QDK-U	
QDK20	210	QDK20-U	185
QDK25	270	QDK25-U	240
QDK32	365	QDK32-U	325
QDK40	505	QDK40-U	460

HRQ			
Model	With adjustable screw	Model	With shock absorber
HRQ2	120	/	
HRQ3	175	/	
HRQ7	270	/	
HRQ10	535	HRQ10A	543
HRQ20	940	HRQ20A	960
HRQ30	1260	HRQ30A	1280
HRQ50	2060	HRQ50A	2076
HRQ70	2890	HRQ70A	2958
HRQ100	4100	HRQ100A	4168
HRQ200	7650	HRQ200A	7756

MCK	Bore size(mm)		25	32	40	50	63	80
	Without magnet	Weight when stroke is zero	180	235	640	730	1055	2095
	With magnet		193	250	660	755	1085	2130
	Add weight of per 1mm stroke		1.5	2	3.5	4	4	6
Y		MCKA	87.5	87.5	215	215	215	518.5
		MCKB	79	79	260	260	260	

Production weight(Cylinder joint accessory)

Unit: g

	Model	Model	Weight
I Knuckle	F-M3X050I	F-M3X050IN	2.0
	F-M4X070I	F-IJ004M04N	4.5
	F-M5X080I	F-IJC0065M05N	21.5
	F-M6X100I	F-M6X100IN	14.5
	F-M8X125I	F-IJ008M08N	38.0
	F-M10X125I	F-IJ010M10N	75.0
	F-M12X125I	F-IJ012M12N	127.0
	F-M14X150I	F-IJJ014M14N	91.0
	F-M16X150I	F-IJ016M16N	312.0
	F-M18X150I	F-IJJ020M18N	194.0
	F-M20X150I	F-IJ020M20N	608.0
	F-M22X150I	F-IJJ030M22N	515.0
	F-M26X150I	F-IJJ030M26N	1187.0
	F-M27X200I	F-IJ030M27N	1201.0
	F-M36X200I	F-IJ035M36N	2176.0
	F-M42X200I	F-IJ040M42N	4123.0

	Model	Weight
Y Knuckle	F-M3X050Y	2.7
	F-M4X070Y	6.0
	F-M5X080Y	16.5
	F-M6X100Y	20.5
	F-M8X125Y	47.3
	F-M10X125Y	86
	F-M12X125Y	175
	F-M14X150Y	107.4
	F-M16X150Y	367.5
	F-M18X150Y	249
	F-M20X150Y	860
	F-M22X150Y	792.1
	F-M26X150Y	771.8
	F-M27X200Y	1473
	F-M36X200Y	3083.8
	F-M42X200Y	5480

	Model	Weight
Floating joint	F-M3X050F	12
	F-M4X070F	13
	F-M5X080F	19
	F-M6X100F	21
	F-M8X125F	66
	F-M10X125F	107
	F-M12X125F	130
	F-M14X150F	240
	F-M16X150F	543
	F-M18X150F	565
	F-M20X150F	865
	F-M22X150F	936
	F-M26X150F	1354
	F-M27X200F	1470
	F-M36X200F	4126

	Model	Weight
Universal joint	F-M4X070U	19
	F-M5X080U	18
	F-M6X100U	26
	F-M8X125U	46
	F-M10X125U	69
	F-M12X125U	108
	F-M14X150U	159
	F-M16X150U	204
	F-M18X150U	304
	F-M20X150U	370
	F-M26X150U	690
	F-M27X200U	1210
	F-M36X200U	1664
	/	/
	/	/

Note: The data in the weight table is for reference only, and the actual weight shall be subject to the actual product.

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All data, charts, dimensions, etc. in this catalogue are obtained from the AirTAC lab or through calculations, for reference only.
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