AirTAC Pneumatic Equipment

Products Catalog–2020

Milestones

2016:
New Plant of Tainan on stream

2011:
Expanded R&D center

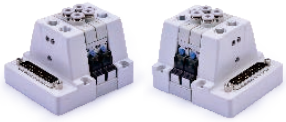
2011:
Expanded China Sales

2002:
AirTAC Ningbo established

1998:
AirTAC Guangdong established

1988:
AirTAC Taiwan established

Control components

CPV10 Series Solenoid valve

9

F-DSUB25 cable

23

3V2 Series Solenoid valve

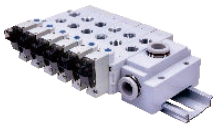
27

3V3 Series Solenoid valve

34

3V100~300 Series Solenoid valve

42

6HV Series Solenoid valve
New

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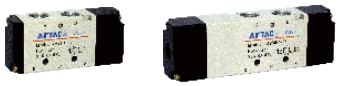
4V100~4V400 Series Solenoid valve

75

6TA Series air control valve
New

89

4A100~4A400 Series air control valve

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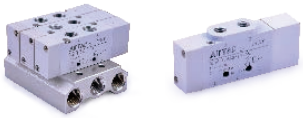
6A Series air control valve

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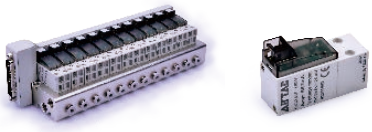
CPV15 Series Solenoid valve

15

3V1 Series Solenoid valve

24

3V2M Series Solenoid valve

30

6TV Series Solenoid valve
New

37

6V Series Solenoid valve

53

7V Series Solenoid valve

68

Manifold for Solenoid valve

87

3A100~3A300 Series air control valve

94

Manifold for Air valve

114

Control components

4H Series Hand lever valve

121

3L Series Push-pull valve

124

4L Series Push-pull valve

126

HSV Series Hand slide valve

128

4HV\4HVL Series Hand lever valve

130

S3 Series Control valve

133

M3 Series Control valve

138

M5 Series Control valve

143

CM3 Series Control valve

148

ZM3 Series Control valve

155

4F Series Foot Pedal valve

158

ASC Series Flow control valve

160

NRV Series Non-return valve

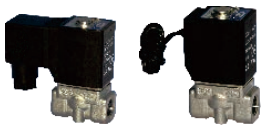
162

PCV Series Pilot No-return valve

164

Fluid control Valve

2S Series
(Direct-acting and normally closed)



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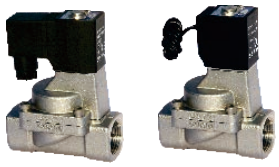
2S Series
(Internally piloted and normally closed)



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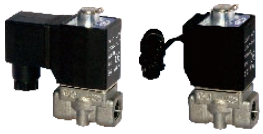
2KS Series
(Direct-acting and normally opened)



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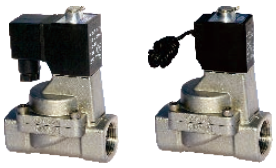
2KS Series
(Internally piloted and normally opened)



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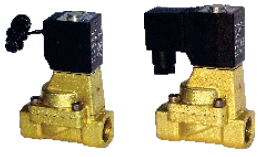
2W Series
(Direct-acting and normally closed)

178

2W Series
(Internally piloted and normally closed)

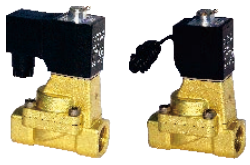


181

2KW Series
(Direct-acting and normally opened)

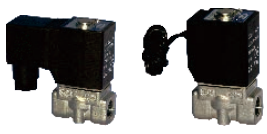
183

2KW Series
(Internally piloted and normally opened)



186

2L Series
(Direct-acting and normally closed)



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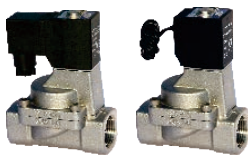
2L Series
(Internally piloted and normally closed)



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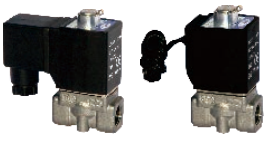
2KL Series
(Direct-acting and normally opened)



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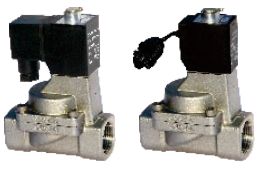
2KL Series
(Internally piloted and normally opened)



197

2V Series

202

Preparation Unit

GAC Series F.R.L Combination

205

GAFC Series FR.L Combination

208

GAFR Series Filter&Regulator

211

GAF Series Filter

214

GAR Series Regulator

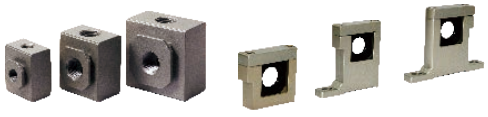
217

GAL Series Lubricator

220

GT Series Preparation Unit(Short PC Bowl)

222

GA Series Gas-distribution block & Bracket

226

GPF Series Oil Mistfilter

228

GPR Series Precision Regulator

231

GPFR Series Precision Filter&Regulator

235

SDR Series Regulator

238

DPS Series Digital Display Pressure switch

240

DPH Series Digital Display Pressure sensor (Analog output)

245

GS\GF\GU\GP\GV Series Pressure Gauge

252

GVF Series Vacuum Filter

254

GVR Series Vacuum Regulator

256

Actuator

NSU Series Standard Cylinder

258

NACQ Series Compact Cylinder

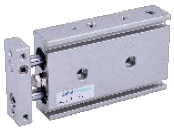
264

NACF Series Round Compact Cylinder

274

NPB Series Mini Cylinder

280

TR Series Twin-Rod Cylinder

289

TC Series Tri-Rod Cylinder

294

HGS Series Compact Slide Cylinder

298

HLF Series Slide Table Cylinder

318

HLH Series Compact Slide Cylinder

323

HLQ Series Compact Slide Cylinder

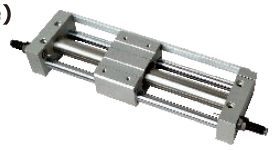
332

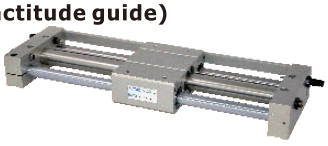
HLS Series Compact Slide Cylinder

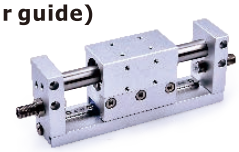
356

RMS Series Rodless magnetic Cylinder

380

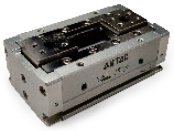
RMT Series Rodless magnetic Cylinder
(With guide)

385

RMTL Series Rodless magnetic Cylinder
(With exactitude guide)

389

RMH Series Rodless magnetic Cylinder
(With Linear guide)

392

HRQ Series Rotary Table Cylinder

395

HFD Series Compact Air Gripper

404

HFC Series Air Gripper
(Parallel open/close style)

415

Actuator

HFCQ Series Air Gripper(Hollow type)

424

HFZ Series Air Gripper(Ball bearing)

433

HFK Series Air Gripper(Roller bearing)

437

HFKL Series Air Gripper(Longer stroke)

448

HFP Series Air Gripper
(Mechanical parallel style)

453

HFY Series Air Gripper(Angular style)

458

HFR Series Air Gripper
(180° open/close style)

464

HFT Series Wide Air Gripper

468

DMS/CMS Series Sensor

475

Accessories

NACA/NACJ Series Shock Absorber

484

ACA/ACJ Series Shock Absorber

491

NUE95A/US98A/UE95A Series PU Tube

499

UCS Series PU Tube

501

PA12/PA6 Series Nylon Tube

503

UN54D Series Flame Resistant Tube

504

NPC/PC/POC Series One-Touch Fittings

505

PC/PL Mini Series One-Touch Fittings

508

One-Touch Fittings(Threaded type)

513

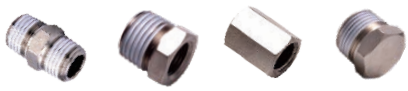
Metal one-touch fittings

526

One-Touch Fittings(Tube-Tube type)

532

One-Touch Fittings(Threaded type)



543

NPSA/NPSS Series Speed Controllers
PSA/PSL/PSS Series Speed Controllers

548

NPTL/PTL Series Speed Controllers(Push lock)

556

NPHV/PHV Series Finger Valve

561

NBSL\NBESL \NBSLM Series Silencers
BSL\BSLM\BESL\PAL\PALM Series Silencers

563

Accessories

PC-S/POC-S Series One-Touch Fittings (Stainless steel)

567

One-Touch Fittings(Threaded type) (Stainless steel)

577

PSA-S/PSL-S/PSS-S Series Speed Controllers (Stainless steel)

584

One-Touch Fittings(Threaded type) (Stainless steel)

576

PTL-S Series Speed Controllers(Push lock) (Stainless steel)

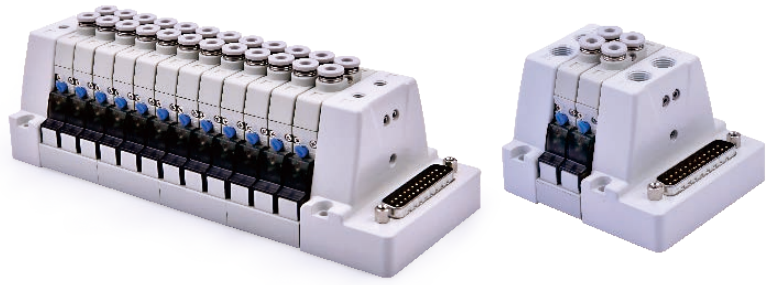
580

BSL-S\BSLM-S\BESL-S Series Silencers (Stainless steel)

589

Integrated solenoid valve (3/2 way)

CPV10S Series



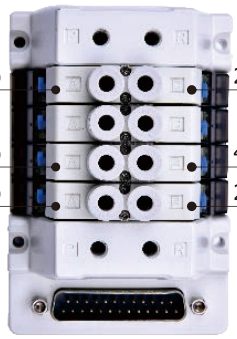
Ordering code

CPV10S J5/32 B 12F

1 2 3 4

①Model	②Port size	③Voltage	④Number of stations [Note]
CPV10S: CPV10S series integrated solenoid valve	J1/8: Φ1/8" J5/32: Φ5/32"	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) ..... 4F:The second mini solenoid valve on the right(2B) 2F:The first mini solenoid valve on the right(1B)

Specification

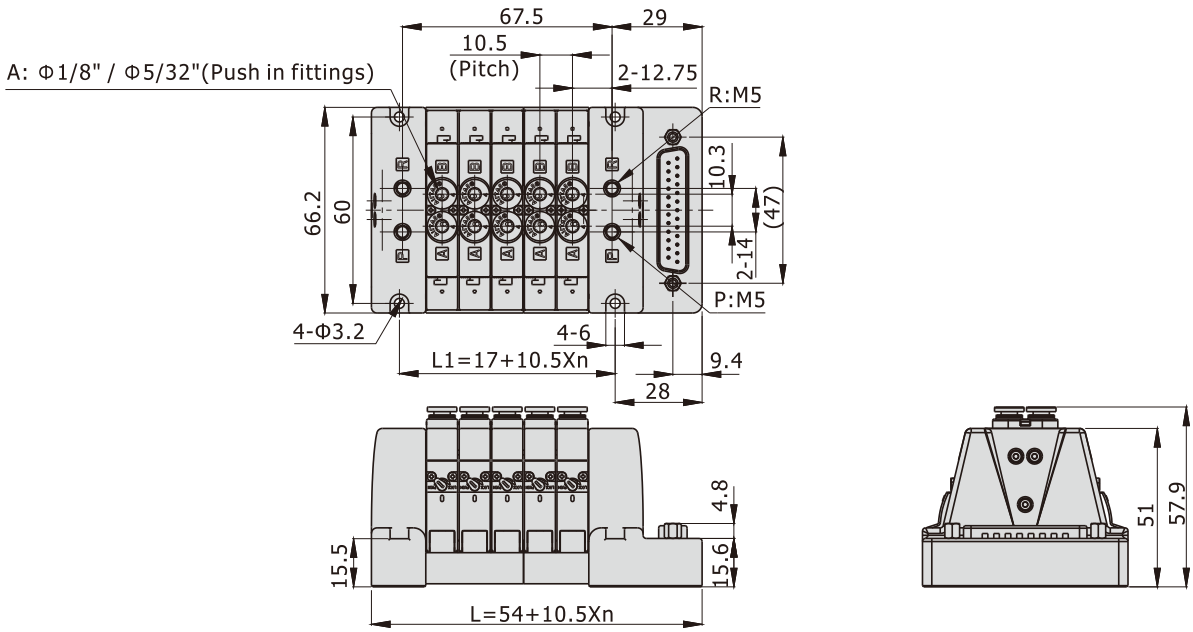
Model		CPV10SB	CPV10SF
Integrated solenoid valve	Fluid	Air(to be filtered by 40μm filter element)	
	Acting	Direct acting	
	Number of stations	4~24 stations	
	Electrical entry	Terminal, 25pin D-Sub	
	Port size	P/R: M5 A: Φ1/8"/ Φ5/32"(Push in fittings)	
	The type of Inlet and exhaust	Centralized inlet and exhaust	
	Operating pressure	0~114psi(0~0.8MPa)	
	Proof pressure	175psi(1.2MPa)	
	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.

CPV10S Series

Dimensions



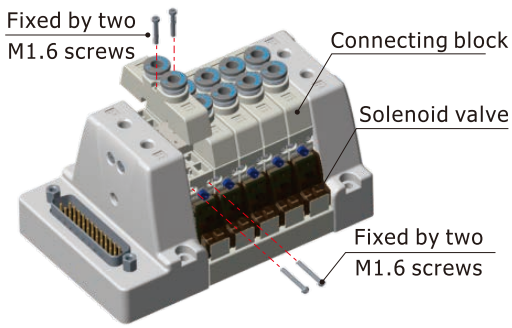
[Unit: mm]

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

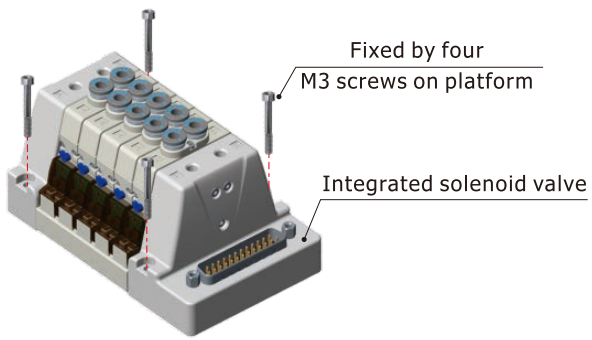
Assembly of connecting block and micro-solenoid valve

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

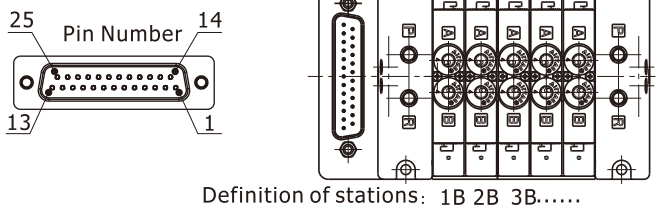


Mounting of integrated solenoid valve

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				

CPV10 Series

Ordering code

Ordering code of valve

CPV 10 B P-050

1 2 3 4 5

① Model	② Width of body	③Voltage
CPV: CPV series Micro-solenoid valve	10: 10mm	A: AC220V B: DC24V C: AC110V F: DC12V

④Code of manual override	⑤Wire length [Note1]
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	③ Wire length	
CPV: CPV series Micro-solenoid valve	050: 0.5m	200: 2.0m

②Terminal wire
T: Terminal wire

Specification

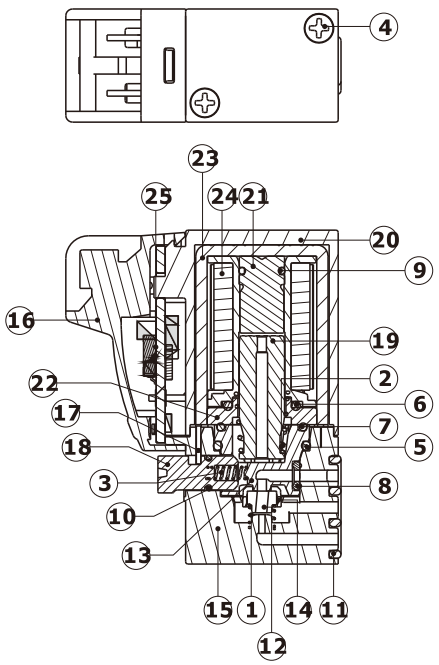
Model		CPV10
Fluid		Air(to be filtered by 40 μ m filter element)
Acting		Direct acting
Nominal diameter		Φ0.55mm
Effective area		P to A:0.25mm²(Cv=0.014); A to R:0.35mm²(Cv=0.02)
Valve type		3 /2 way
Weight	micro-solenoid valve	15g
	Terminal line	050: 4.6g 200: 21.4g
	Screw(2pcs)	0.46g
Operating pressure		0~114psi(0~0.8MPa)
Proof pressure		175psi(1.2MPa)
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

CPV10 Series

Product feature

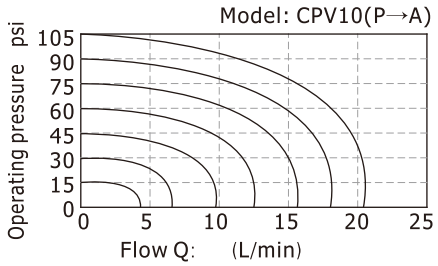
1. With anti-surge component can avoid the damage of solenoid valve.
2. Multi-direction installation and polarless circuit design.
3. AC voltage models possess a built-in full wave rectifier circuit to reduce the noise effectively.
4. Various of standard voltages: AC220V, AC110V, DC24V, DC12V.
5. Low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

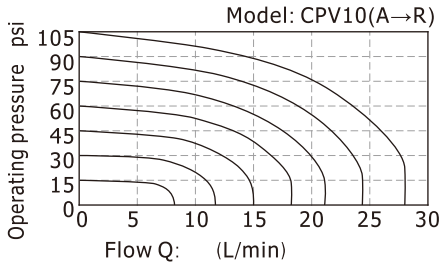
Inner structure



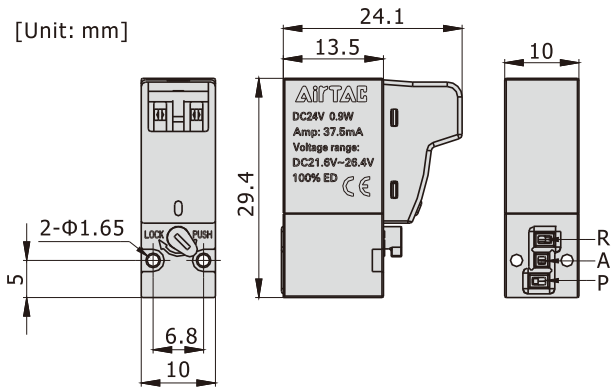
No.	Item	No.	Item
1	Spring	14	mandril
2	Spring	15	Body
3	Spring	16	Connector shell
4	Screw	17	Manual pin plate
5	O-ring	18	Manual pin
6	O-ring	19	Movable core
7	O-ring	20	Cover
8	O-ring	21	Electromagnet
9	O-ring	22	Plate
10	O-ring	23	U shape bracket
11	Gasket	24	Coil
12	Gasket	25	PCB assembly
13	Crater		

Flow chart



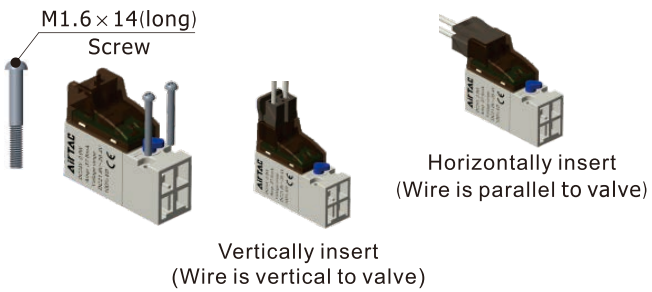


Dimensions



Installation and Application

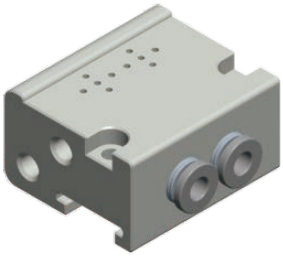
1.Micro-solenoid valve assembly
Fastened with torque of 0.1~0.15N.m by two M1.6 x14L screws.
2.Wiring instruction
Multi-direction installation and polarless circuit design.
Note: The terminal wire is non-polarity.
3.Prevent to connect AC coils in series with other devices.



CPV10 Series——Manifold and blank plate

Ordering code

Ordering code of manifold



CPV10M J1/8-20F

1 2 3

①Model	②Port size	③Number of stations
CPV10M: CPV10 series Manifold	J1/8: Φ1/8" J5/32: Φ5/32"	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.

Specification

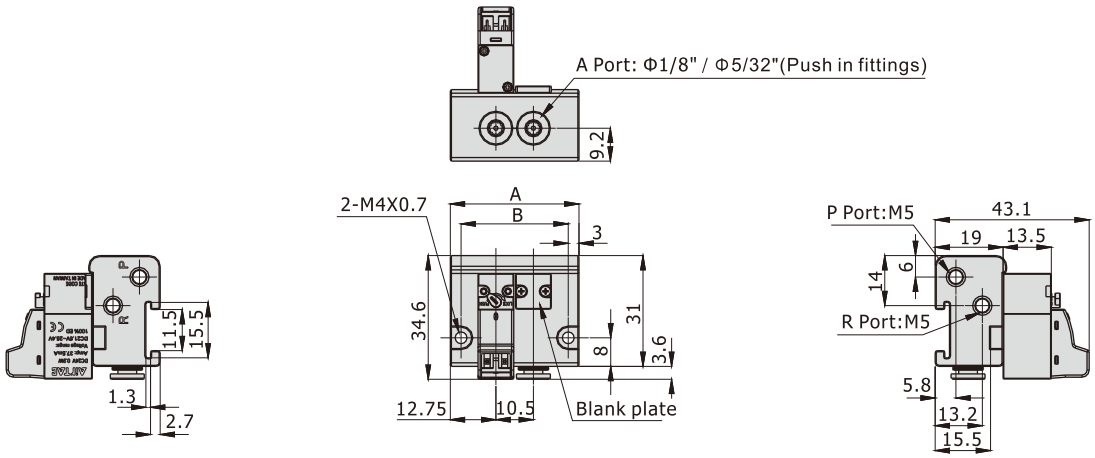
Model	CPV10MJ□□2F	CPV10MJ□□3F	.....	CPV10MJ□□20F
Fluid	Air(to be filtered by 40μm filter element)			
Temperature	-20~70℃			
Port size	P/R: M5 A: Φ1/8" / Φ5/32"(Push in fittings)			
Applicable valves	CPV10 series micro-solenoid valve			

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.

CPV10 Series——Manifold and blank plate

Dimensions

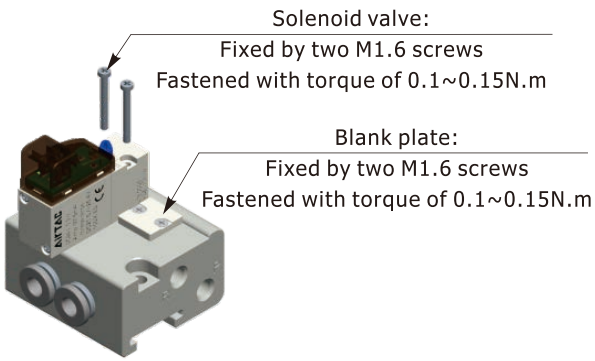


[Unit: mm]

Dim.\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

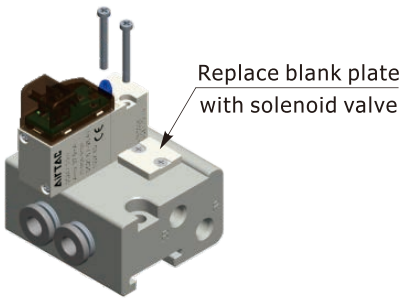
Installation and Application

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



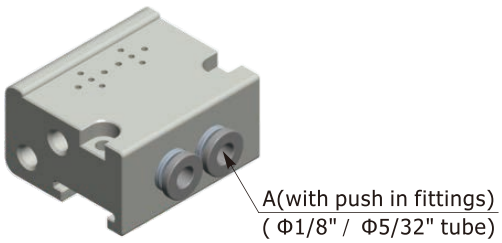
Expansion of micro-solenoid valve

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

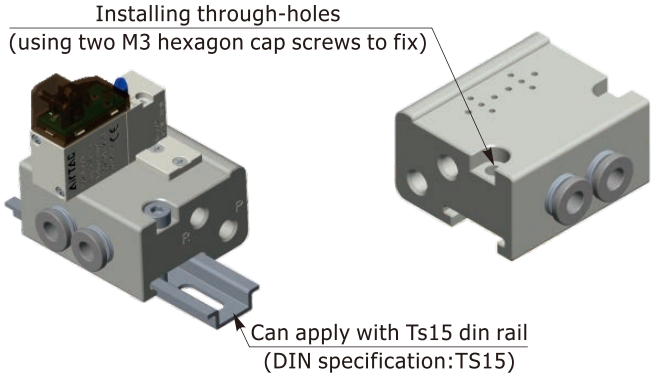


A port tubing

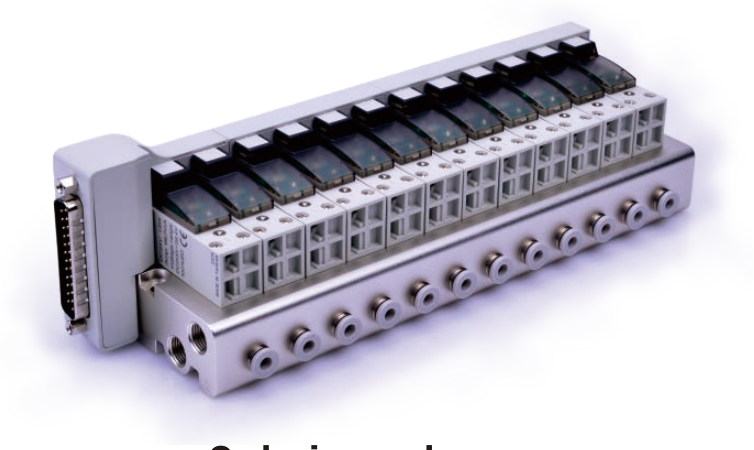
A port is at the side of manifold, port size is "Φ1/8" / Φ5/32""



Manifold mounting



CPV15S Series(NPT)



Ordering code

CPV15S B 20F T

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: 3 stations 4F: 4 stations ..... 20F: 20 stations	T: NPT

Specification

Model		CPV15SB	CPV15SF
Integrated solenoid valve	Fluid	Air(to be filtered by 40μm filter element)	
	Acting	Direct acting	
	Number of stations	2~20 stations	
	Electrical entry	Terminal, 25pin D-Sub	
	Port size	P/R: NPT1/8 A: Φ5/32"(Push in fittings)	
	The type of Inlet and exhaust	Centralized inlet and exhaust	
	Operating pressure	0~114psi(0~0.8MPa)	
	Proof pressure	175psi(1.2MPa)	
	Temperature	-20~70℃	
Coil	Protection	Dustproof	
	Standard voltage	DC24V	DC12V
	Scope of voltage	DC±10%	
	Temperature classification	F Class	
	Power consumption	DC: 1.6W	

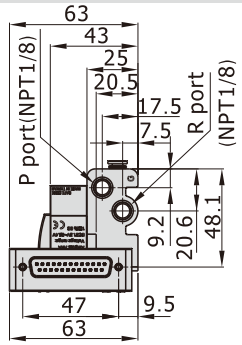
Product feature

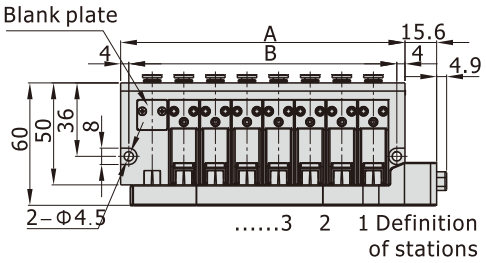
1. Integrated installation centralizes air intake, exhaust and power(25pin D-Sub)to save space and reduce additional accessories.
2. Flexible combination and expandability for various applications. Blank plates are optional.
3. Equipped with manual override for quick air circuit checking.
4. Low starting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

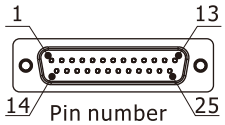
CPV15S Series(NPT)

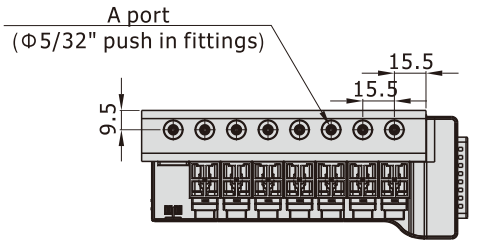
Dimensions

NPT thread









[Unit: mm]

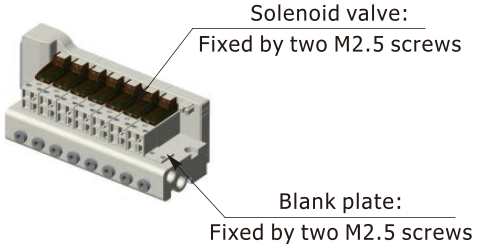
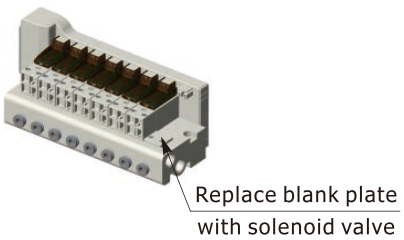
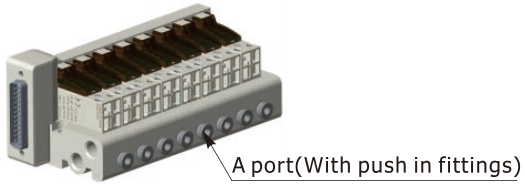
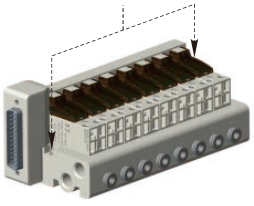
Terminal no.	Polarity -COM	Polarity +COM	Control object	Terminal no.	Polarity -COM	Polarity +COM	Control object
1	(+)	(-)	13 station	14	(+)	(-)	1 station
2	(+)	(-)	14 station	15	(+)	(-)	2 station
3	(+)	(-)	15 station	16	(+)	(-)	3 station
4	(+)	(-)	16 station	17	(+)	(-)	4 station
5	(+)	(-)	17 station	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] Gauge number of cable connecting to D-Sub pin No. 13 (COM) must be ≤22AWG.

Dim.\Number of stations	2F	4F	6F	8F	10F
A	46.5	77.5	108.5	139.5	170.5
B	38.5	69.5	100.5	131.5	162.5

Dim.\Number of stations	12F	14F	16F	18F	20F
A	201.5	232.5	263.5	294.5	325.5
B	193.5	224.5	255.5	286.5	317.5

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, port size is "Φ5/32""	Both sides of manifold attach two installing through-holes, using two M4 hexagon cap screws to fix.
	Installing through-holes (using two M4 hexagon cap screws to fix) 

CPV15S Series (NPT)—— Manifold, solenoid valve and blank plate

Ordering code

Ordering code of manifold

CPV15S 20F T

1 2 3

①Model

CPV15S: CPV15S series integrated solenoid valve

②Number of stations

2F: 2 stations
4F: 4 stations
6F: 6 stations
.....
20F: 20 stations

③Thread type

T: NPT

Ordering code of valve

CPV15 B P

1 2 3

①Model

CPV: CPV series micro-solenoid valve

②Voltage

B: DC24V
F: DC12V

③Code of manual override

P: With manual override

Ordering code of blank plate

P-CPV15S-R2

1 2

①Model

CPV15S: CPV15S series integrated solenoid valve

②Code

R2: Blank plate for manifold

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

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

Integrated solenoid valve (3/2 way)

CPV15S Series (NPT)—— Manifold, solenoid valve and blank plate

Specification

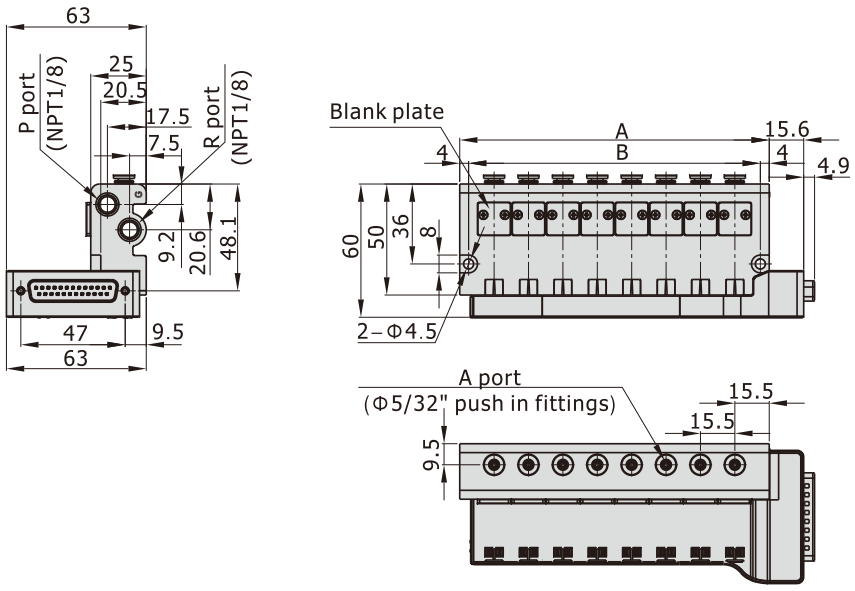
Model		CPV15S
Fluid		Air(to be filtered by 40μm filter element)
Number of stations		2 stations ~20 stations, only available in even stations
Electrical entry		Terminal, 25pin D-Sub
Port size		P/R: NPT1/8 A: Φ5/32"(Push in fittings)
The type of Inlet and exhaust		Centralized inlet and exhaust
Operating pressure		0~114psi(0~0.8MPa)
Proof pressure		175psi(1.2MPa)
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

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.

Dimensions

NPT thread



[Unit: mm]

Dim.\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

Installation and Application

Please refer to the "Installation and Application " instruction of Integrated solenoid valve(NPT thread) .

CPV15 Series

Ordering code

Ordering code of valve

CPV 15 B P-050

1 2 3 4 5

① Model	② Width of body	③Voltage
CPV: CPV series Micro-solenoid valve	15: 15mm	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V

④Code of manual pin	⑤Wire length [Note1]
P: With manual override	050: 0.5m 200: 2.0m

[Note1] Contain the two M2.5 screws.

Ordering code of terminal wire

CPV T 050

1 2 3

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

②Terminal wire
T: Terminal wire

Specification

Model		CPV15
Fluid		Air(to be filtered by 40 μ m filter element)
Acting		Direct acting
Nominal diameter		Φ0.8mm
Effective area		P to A:0.44mm²(Cv=0.024); A to R:0.55mm²(Cv=0.03)
Valve type		3 /2 way
Weight	micro-solenoid valve	33.2g
	Terminal line	050: 4.6g 200: 21.4g
	Screw(2pcs)	1.45g
Operating pressure		0~114psi(0~0.8MPa)
Proof pressure		175psi(1.2MPa)
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

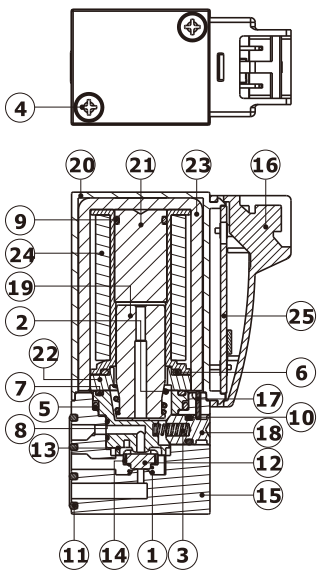
Micro-solenoid valve(3/2 way)

CPV15 Series

Product feature

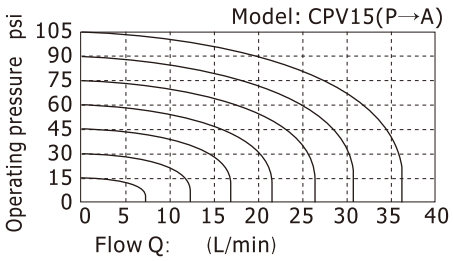
1. Multi-direction installation and polarless circuit design.
2. Low starting voltage and long service life.
3. AC voltage models possess a built-in full wave rectifier circuit to reduce the noise effectively.
4. With anti-surge component can avoid the damage of solenoid valve.

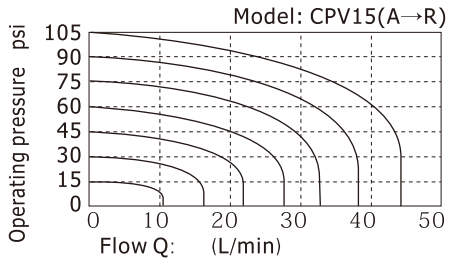
Inner structure



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

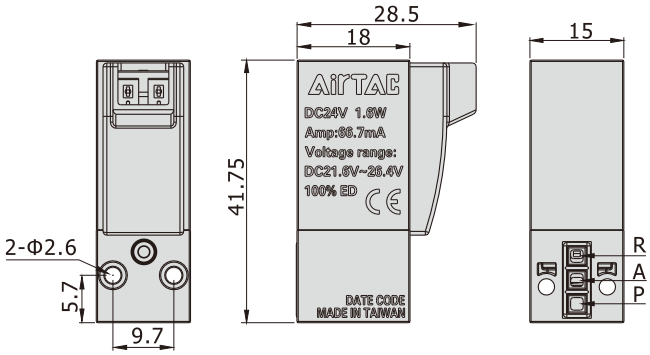
Flow chart





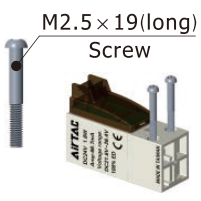
Dimensions

[Unit: mm]



Installation and Application

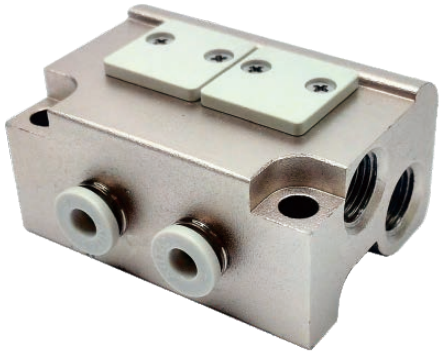
1. Micro-solenoid valve assembly
   Fastened with torque of 0.4~o.45N.m by two M2.5X19L screws.
2. Wiring instruction
   Multi-direction installation and polarless circuit design.
   Note: The terminal wore is non-polarity.
3. Prevent to connect AC coils in series with other devices.



Vertically insert
(Wire is vertical to valve)

Horizontally insert
(Wire is parallel to valve)

CPV15 Series —— Manifold (NPT)



Ordering code

Ordering code of manifold

CPV15M 20F T

1 2 3

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

Ordering code of 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.

Specification

Model	CPV15M2F	CPV15M3F	CPV15M4F	.....	CPV15M20F
Fluid	Air(to be filtered by 40μm filter element)				
Temperature	-20~70℃				
Port size	P/R: NPT1/8 A: Φ5/32"(Push in fittings)				
Applicable valves	CPV15 series micro–solenoid valve				

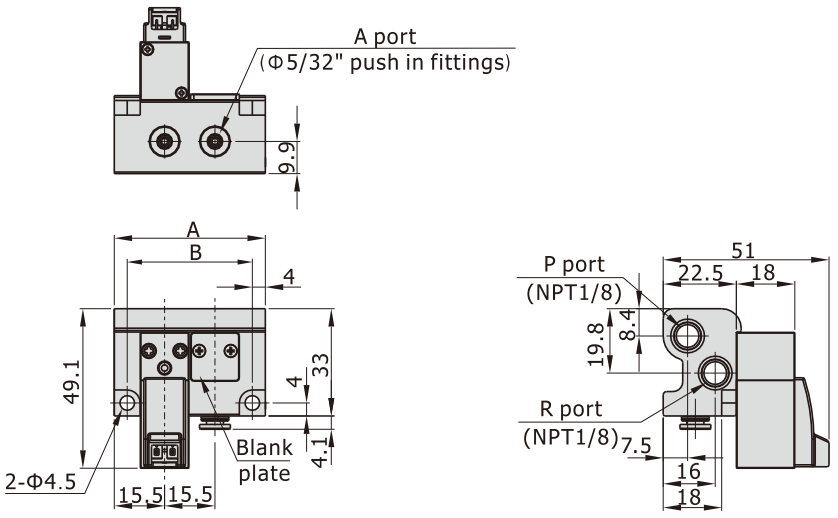
Product feature

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

CPV15 Series —— Manifold (NPT)

Dimensions

NPT thread

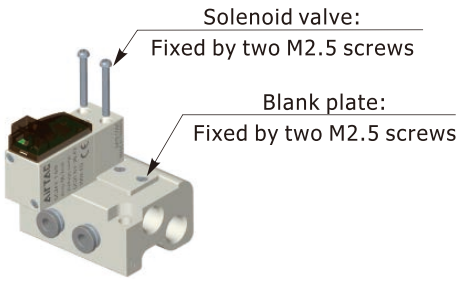
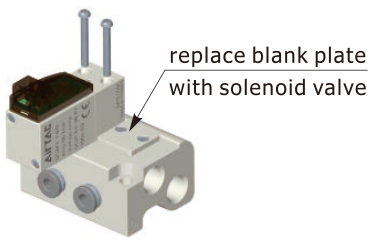
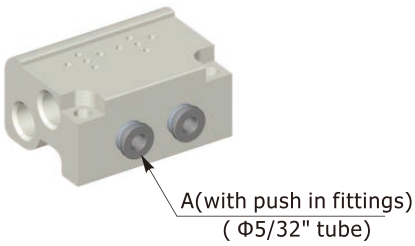
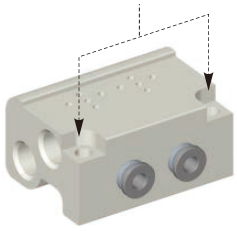


[Unit: mm]

Item\Number of stations	2F	3F	4F	5F	6F	7F	8F	9F	10F
A	46.5	62	77.5	93	108.5	124	139.5	155	170.5
B	38.5	54	69.5	85	100.5	116	131.5	147	162.5

Item\Number of stations	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
A	186	201.5	217	232.5	248	263.5	279	294.5	310	325.5
B	178	193.5	209	224.5	240	255.5	271	286.5	302	317.5

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, port size is "Φ5/32""	Both sides of manifold attach two installing through-holes, using two M4 hexagon cap screws to fix.
	Installing through-holes (using two M4 hexagon cap screws to fix) 

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 Females+ another wire
④Wire length	200: 2m/300: 3m/500: 5m	150: 1.5m/200: 2m/300: 3m

Specification

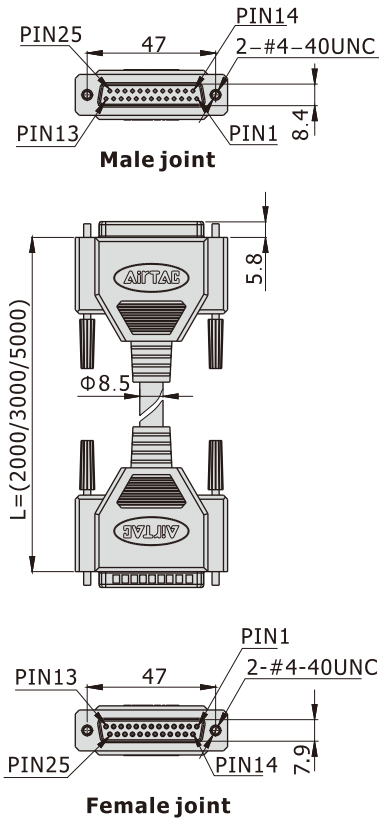
1. Flame resistand grade：UL94 VW-1.
2. Rated temperature：80℃.
3. Rated voltage：300V.

How to select cable

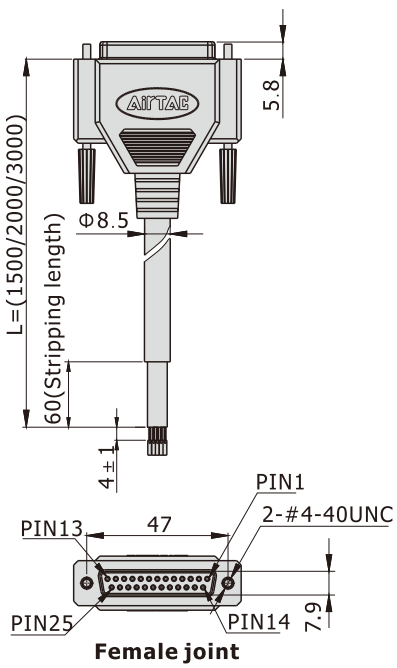
Cable type\Valve type	CPV10S	CPV15S
F-DSUB25	●	●

Dimensions and wire's assignment

F-DSUB25F(M) [Unit: mm]

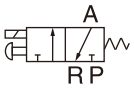


F-DSUB25S [Unit: mm]



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

3V1 Series



Ordering code

3V	1	06	A	□	T
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	T: NPT

Specification

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

[Note1] NPT thread is available.

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.

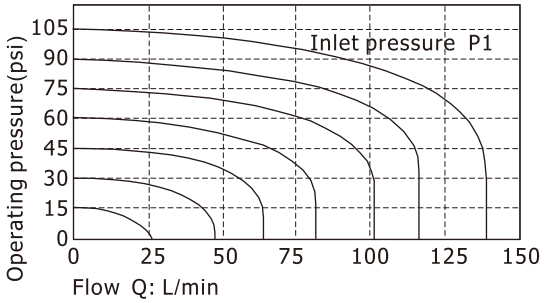
3V1 Series

Coil specification

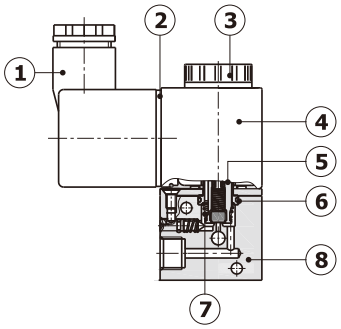
Item	Specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	4.5VA	4.5VA	5.0VA	3.0W	3.0W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below	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

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

Flow chart



Inner structure

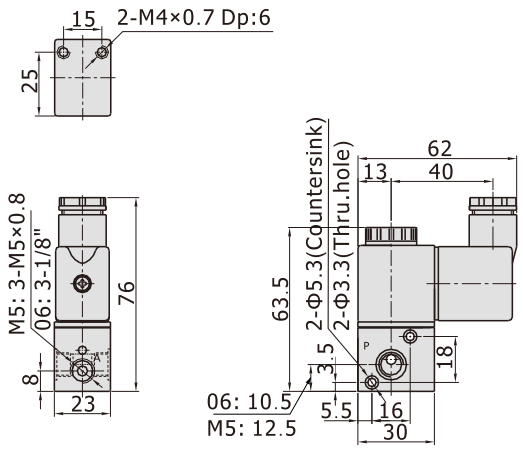


No.	Item	No.	Item
1	Connector	5	Armature
2	Gasket	6	O-ring
3	Coil nut	7	Return spring
4	Coil	8	Body

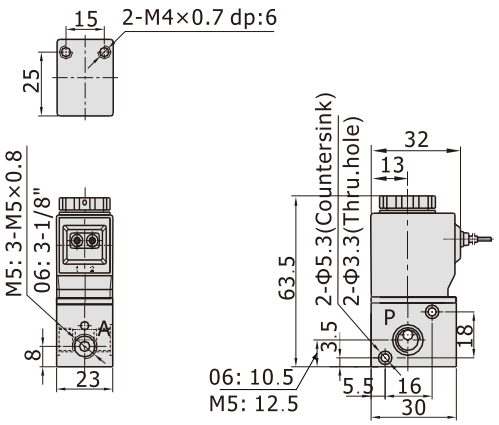
Dimensions

[Unit: mm]

Terminal



Grommet



3V1 Series

Ordering code for series

3V	1	06	A	□	3F	T
①	②	③	④	⑤	⑥	⑦

①Model
3V: Solenoid valve (3/2 way)

②Code
1: 1 Series

③Port size
M5: M5
06: 1/8"

④Standard voltage
A: AC220V
B: DC24V
C: AC110V
E: AC24V
F: DC12V

⑤Electrical entry
Blank: Terminal
I: Grommet

⑦Thread type
T: NPT

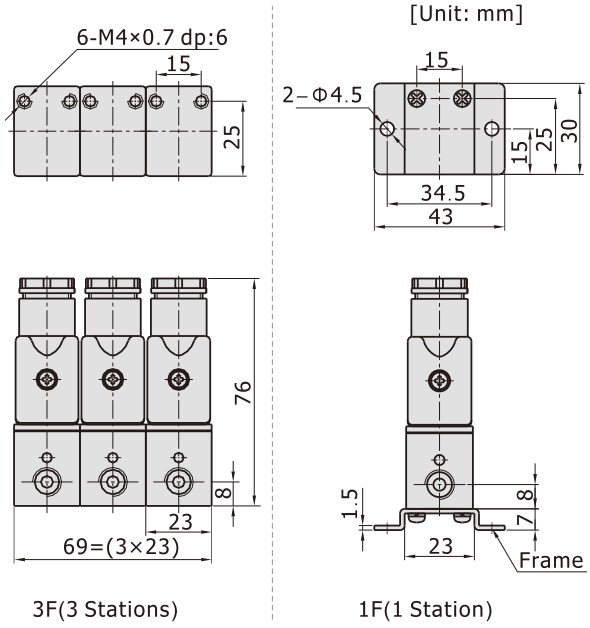
□ Number of stations
1F: 1 Station
2F: 2 Stations
3F: 3 Stations
.....
20F: 20 Stations

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

Dimensions of series

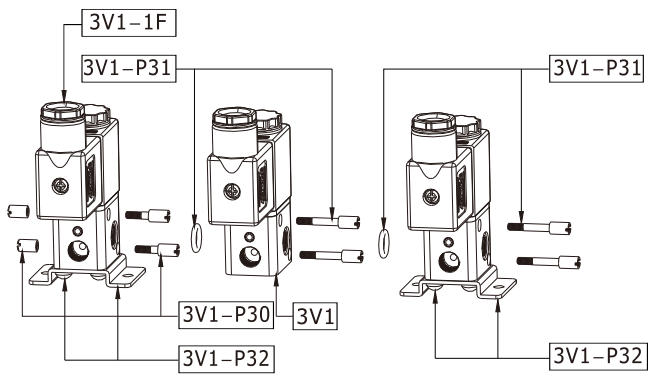
[Unit: mm]



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.

3V2 Series

Ordering code

Ordering code of solenoid valve

3V	2	08	NC	A	□	T
①	②	③	④	⑤	⑥	⑦

①Model	②Code	③Port size	④Acting type	⑤Standard voltage
3V: Solenoid valve (3/2 way)	2: 2 Series	06: 1/8"	NC: Normally closed	A: AC220V
		08: 1/4"	NO: Normally opened	B: DC24V
				C: AC110V
				E: AC24V
				F: DC12V

⑥Electrical entry	⑦Thread type
Blank: Terminal	T: NPT
I: Grommet	

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

Specification

Model		3V206	3V208
Fluid		Air(to be filtered by 40μm 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	0~114psi(0~0.8MPa)	
	vacuum	−1.45~14.2psi(-102.2kPa~0.1MPa)	
Proof pressure		175psi(1.2MPa)	
Temperature		-20~70℃	
Material of body		Aluminum alloy	

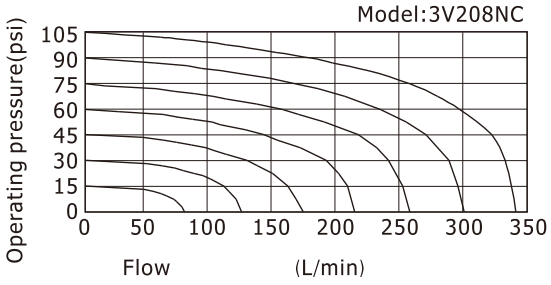
[Note1] NPT thread is available.

3V2 Series

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.

Flow chart

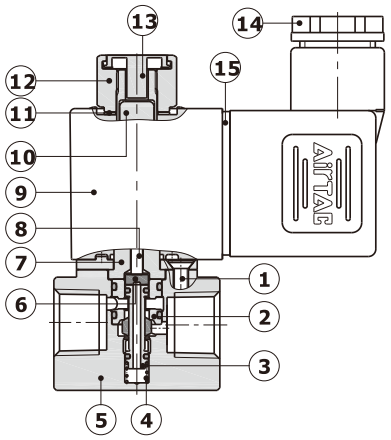


Coil specification

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.

Inner structure



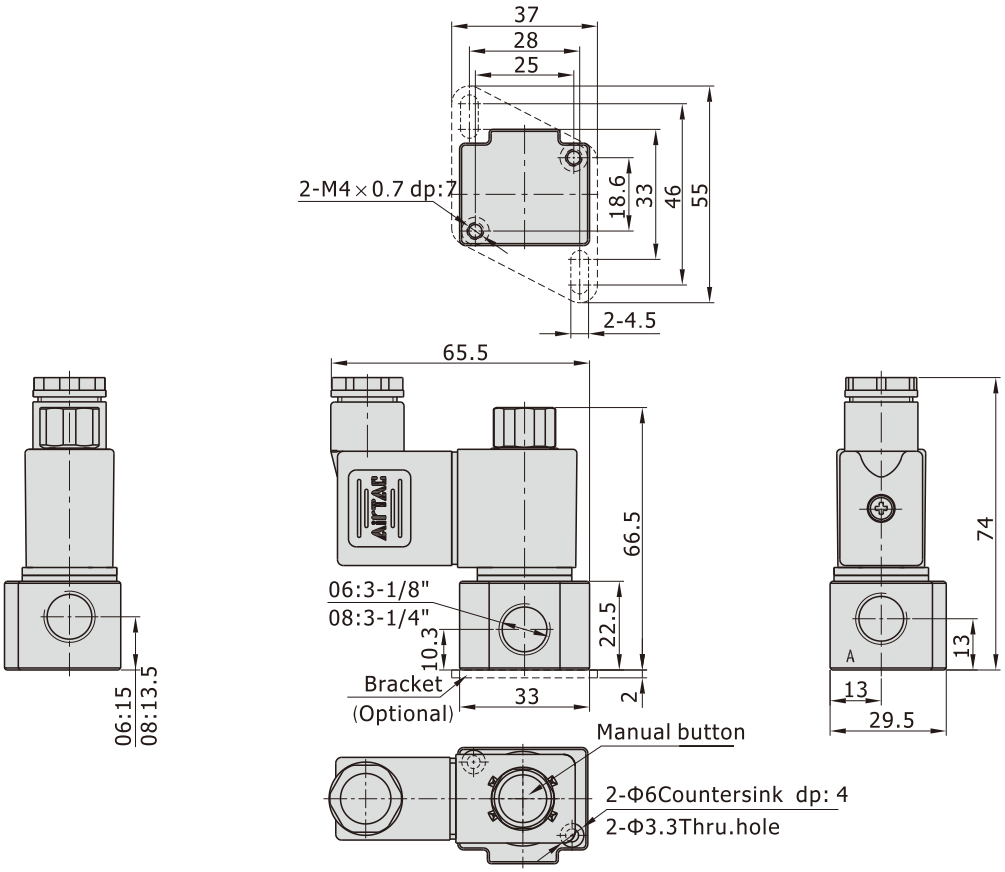
No.	Item	No.	Item
1	Pilot screw	9	Coil
2	Spacer	10	Armature
3	Spool	11	Washer
4	Spring	12	Coil nut
5	Body	13	Manual button
6	Washer	14	Connector
7	Electromagnet set	15	Gasket
8	Man drill		

3V2 Series

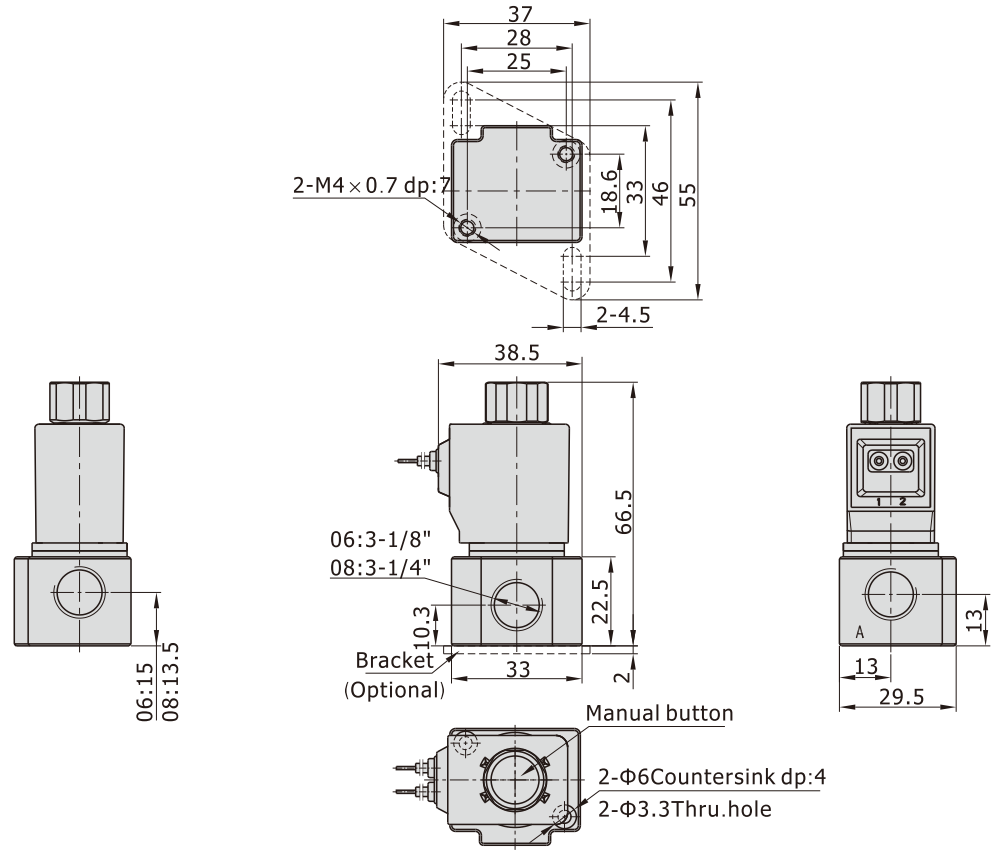
Dimensions

Terminal

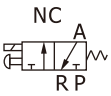
[Unit: mm]

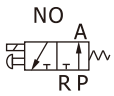


Grommet



3V2M Series





Ordering code

Ordering code for valve

3V2M NC A □

1 2 3 4

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

Ordering code for manifold

3V2M 5F D T

1 2 3 4

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	T: NPT

[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 T

1 2 3 4 5 6 7

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

⑤Number of stations	⑥Exhaust type	⑦Thread type
1F: 1 Stations 2F: 2 Stations ..... 20F: 20 Stations	Blank: Centralized exhaust D: Separated exhaust	T: NPT

Ordering code for blank plate

P–3V2M–R2

1 2 3

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.

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	0~114psi(0~0.8MPa)
Proof pressure	175psi(1.2MPa)
Temperature	-20~70℃
Material of body	Aluminum alloy

[Note1] NPT thread is available.

Coil specification

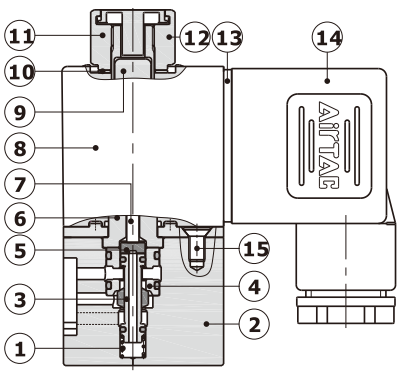
Item	specification
Standard voltage	AC220V、AC110V、AC24V、DC24V、DC12V
Scope of voltage	AC: ±15% DC: ±10%
Power consumption	AC: 7VA DC: 7.0W
Protection	IP65(DIN40050)
Temperature classification	B Class
Electrical entry	Terminal, Grommet
Activating time	0.05 sec and below
Max. frequency [Note1]	10 cycle/sec

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

Product feature

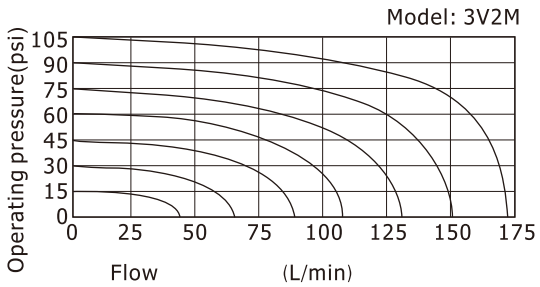
1. Direct acting type and normally closed mode, flexible in direction change.
2. Normally closed and normally open types are optional.
3. Structure in coaxial blanking mode: leakage proof and large air flow.
4. No need to add oil for lubrication.
5. Affiliated manual devices are equipped to facilitate 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.

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	Man drill	15	Pilot screw
8	Coil		

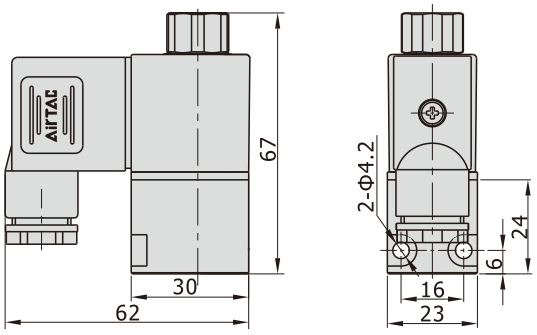
Flow chart



3V2M Series

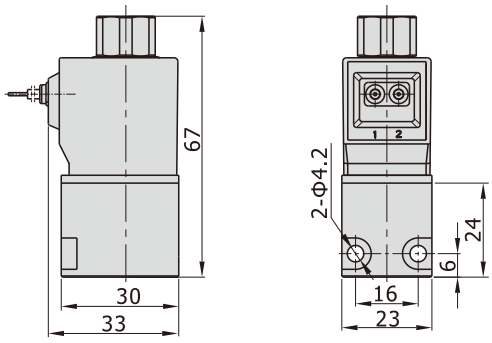
Dimensions

Valve(Terminal)

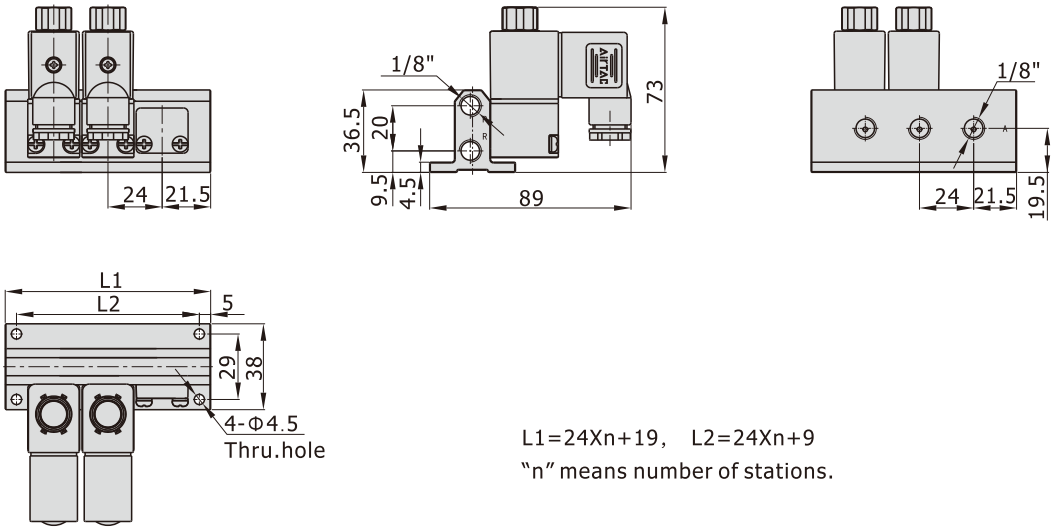


Valve(Grommet)

[Unit: mm]



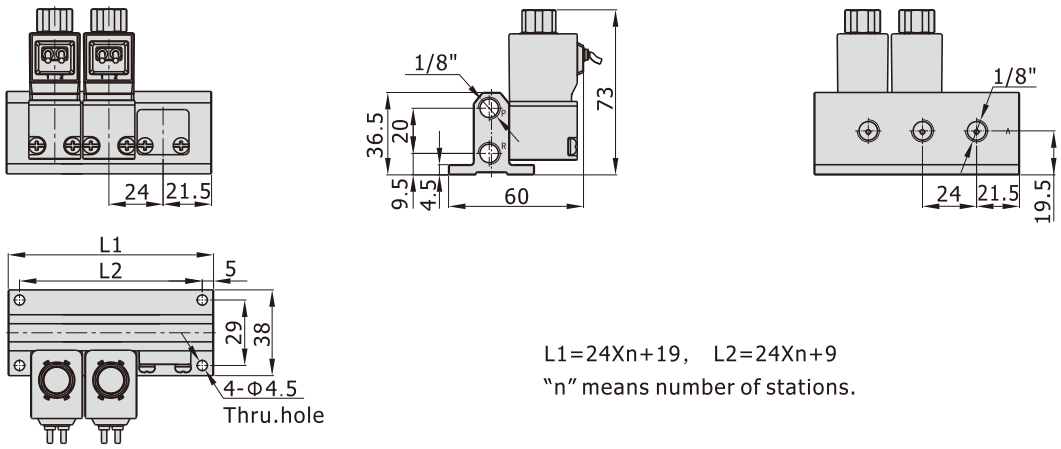
Valve's group(Terminal, Centralized exhaust)



L1=24Xn+19, L2=24Xn+9

"n" means number of stations.

Valve's group(Grommet, Centralized exhaust)



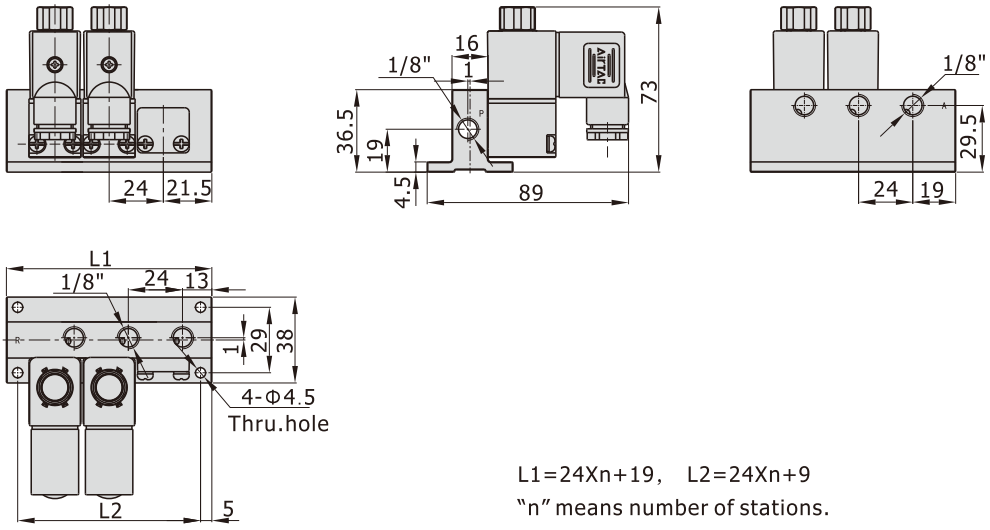
L1=24Xn+19, L2=24Xn+9

"n" means number of stations.

3V2M Series

Valve's group(Terminal, Separated exhaust)

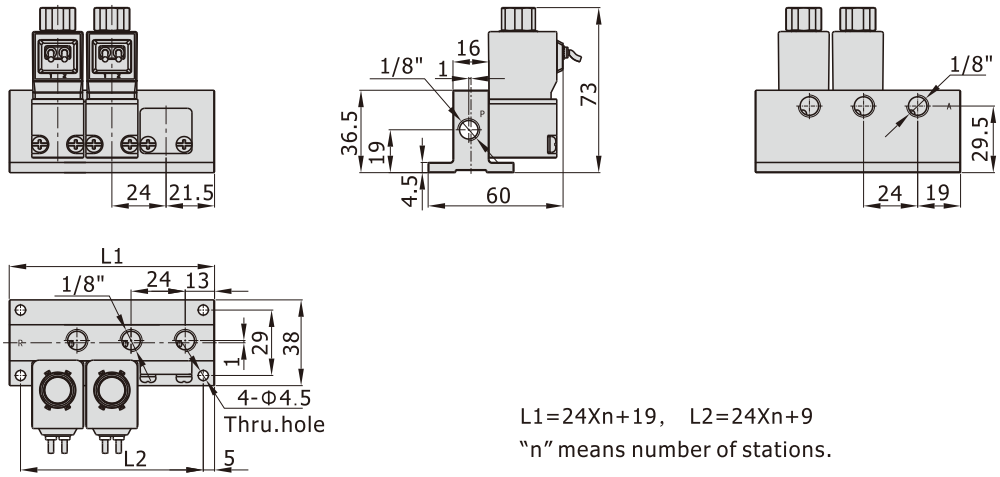
[Unit: mm]



L1=24Xn+19, L2=24Xn+9

"n" means number of stations.

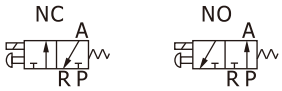
Valve's group(Grommet, Separated exhaust)



L1=24Xn+19, L2=24Xn+9

"n" means number of stations.

3V3 Series



Ordering code

3V	3	08	NC	A	□	T
①	②	③	④	⑤	⑥	⑦

①Model
3V: Solenoid valve (3/2 way)

②Code
3: 3 Series

③Port size
08: 1/4"

④Acting type
NC: Normally closed
NO: Normally opened

⑤Standard voltage
A: AC220V
B: DC24V
C: AC110V
E: AC24V
F: DC12V

⑥Electrical entry
Blank: Terminal
I: Grommet

⑦Thread type
T: NPT

Specification

Model		3V308
Fluid		Air(to be filtered by 40μm 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	0~114psi(0~0.8MPa)
	vacuum	-1.45~14.2psi(-102.2kPa~0.1MPa)
Proof pressure		175psi(1.2MPa)
Temperature		-20~70℃
Material of body		Aluminum alloy

[Note1] NPT thread is available.

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

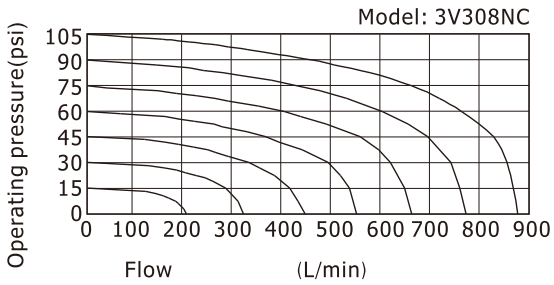
[Note1] The maximum actuation frequency is in the no-load state.

3V3 Series

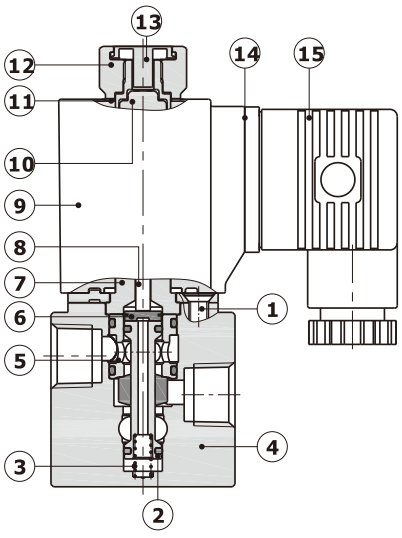
Product feature

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.

Flow chart



Inner structure



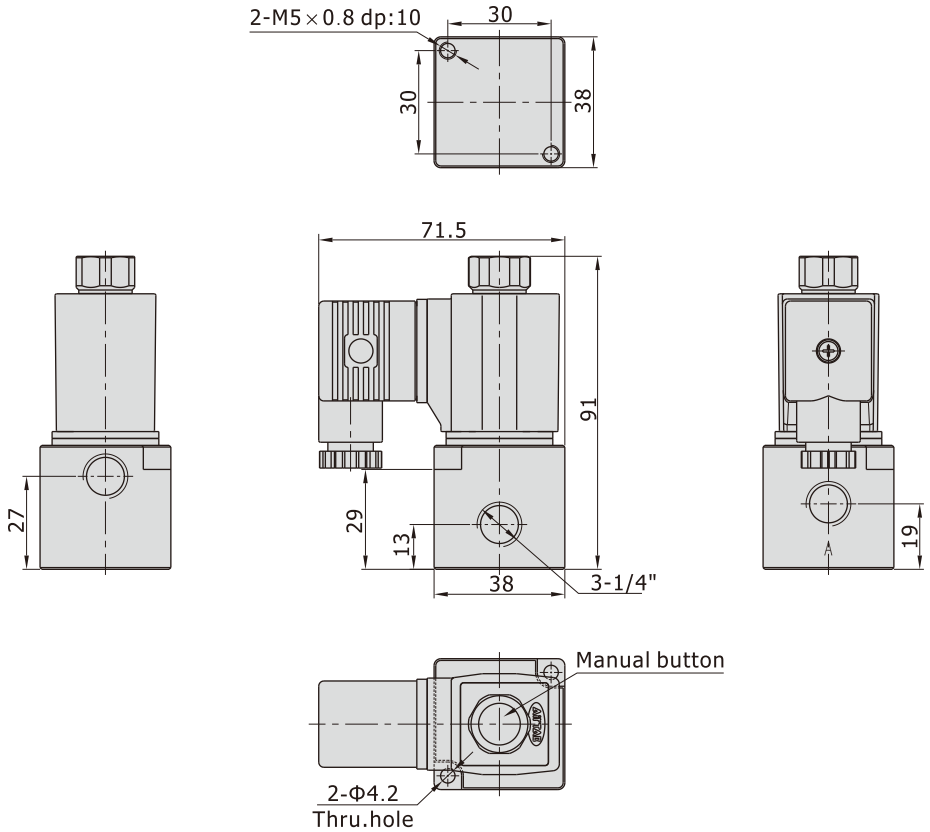
No.	Item	No.	Item
1	Pilot screw	9	Coil
2	Spool	10	Armature
3	Spring	11	Washer
4	Body	12	Coil nut
5	Washer	13	Manual button
6	Spacer	14	Gasket
7	Electromagnet set	15	Connector
8	Man drill		

3V3 Series

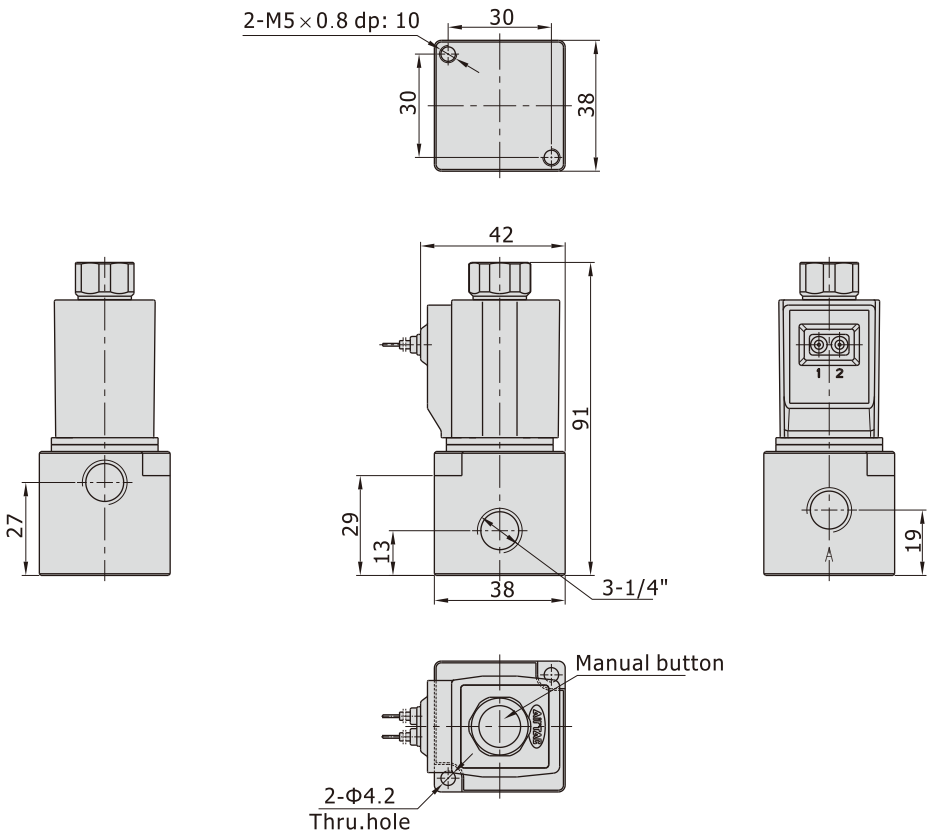
Dimensions

Terminal

[Unit: mm]

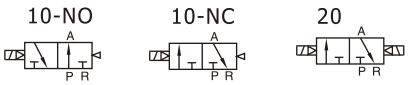


Grommet



Solenoid valve(3/2 way)

6TV Series



Ordering code

6TV	1	10	06	NC	B	050	T
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 3/2 way		20：Double solenoid 3/2 way			
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 don't acting type]		
⑥Voltage	A: AC220V		B: DC24V	C: AC110V	F: DC12V	
⑦Line length	050: 0.5m		200: 2.0m			
⑧Thread type	–		T: NPT			

Specification

Model	**6TV0510**	**6TV0520**	**6TV110**	**6TV120**
Port size [Note1]	In=Out=Exh=M5		In=Out=Exh=M5(or=1/8")	
Orifice size(Cv)	5.0mm²(0.28)		M5：5.0mm²(0.28)	
			06：10.0mm²(0.58)	
Weight (g)	28	43	52	67
Model	**6TV210**	**6TV220**	**6TV310**	**6TV320**
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)	06：10.0mm²(0.58)		36.0mm²(2.00)	
	08：18.0mm²(1.06)			
Weight (g)	90	105	180	215
Fluid	Air(to be filtered by 40μm filter element)			
Acting	Internal pilot			
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
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] NPT 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.

6TV Series

Coil specification

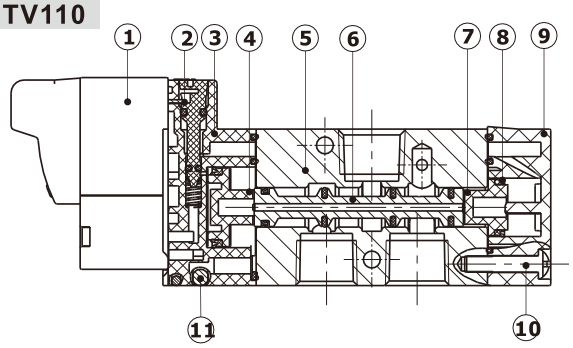
Item	Specification			
Standard voltage	AC220V	AC110V	DC24V	DC12V
Scope of voltage	AC：+15%～-10%		DC：±10%	
Power consumption	1.1VA		0.9W	
Protection	Dustproof			
Temperature classification	F Class			
Electrical entry	Terminal			
Activating time	0.05 sec and below			

Product feature

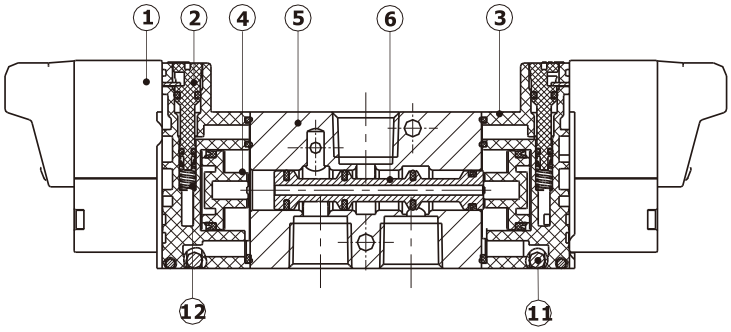
1. Electrical entry is terminal, horizontal and vertical insertion can freely switch.
2. Inner exhaust structure to collect pilot airflow, and then exhaust intensively from R port.
3. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service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

Inner structure

6TV110

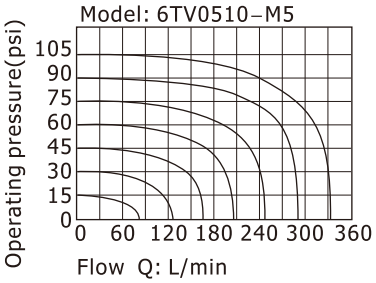


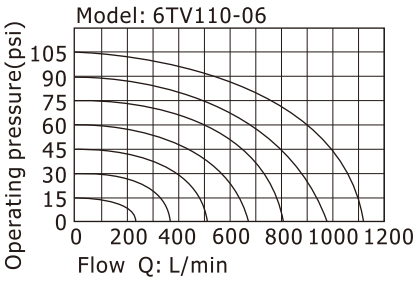
6TV120NC

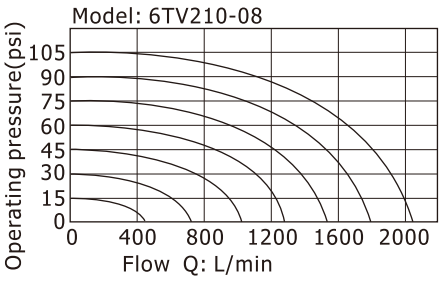


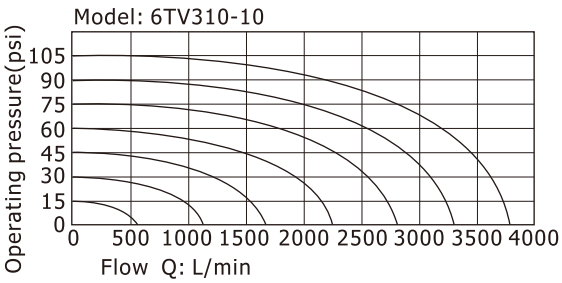
No.	Item	No.	Item
1	Pilot valve	7	Small piston
2	Manual override	8	Gasket
3	Pilot kit	9	Bottom cover
4	Big piston	10	Bolt
5	Body	11	Steel ball
6	Spool	12	Spring

Flow chart





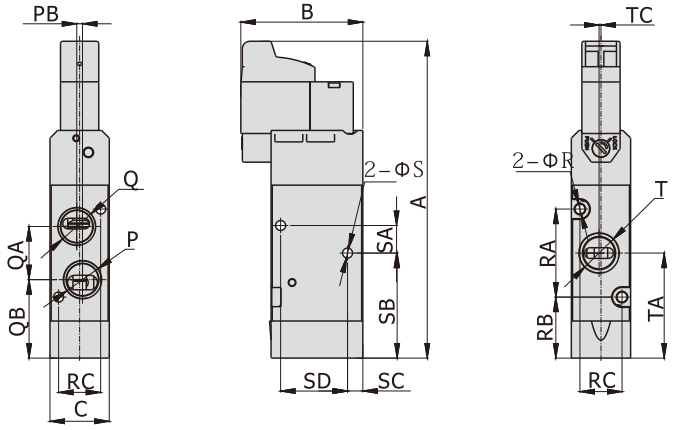




6TV Series

Dimensions

6TV0510
6TV110
6TV210
6TV310



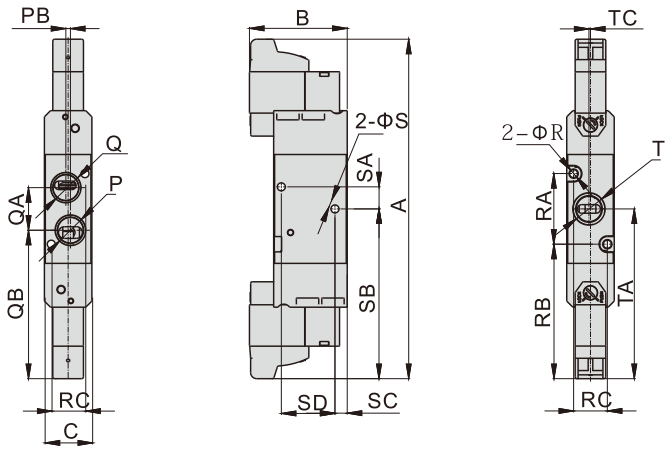
Port size [Unit: inch]

Model\Item	P	Q	T
6TV0510M5	M5X0.8	M5X0.8	M5X0.8
6TV110M5	M5X0.8	M5X0.8	M5X0.8
6TV11006	1/8"	1/8"	1/8"
6TV21006	1/8"	1/8"	1/8"
6TV21008	1/4"	1/8"	1/4"
6TV31010	3/8"	1/4"	3/8"

[Unit: mm]

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

6TV0520
6TV120
6TV220
6TV320



Port size [Unit: inch]

Model\Item	P	Q	T
6TV0520M5	M5X0.8	M5X0.8	M5X0.8
6TV120M5	M5X0.8	M5X0.8	M5X0.8
6TV12006	1/8"	1/8"	1/8"
6TV22006	1/8"	1/8"	1/8"
6TV22008	1/4"	1/8"	1/4"
6TV32010	3/8"	1/4"	3/8"

[Unit: mm]

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

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

Manifold for 6TV series

Ordering code

Ordering code for manifold

6TV100M 5F T

① ② ③

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	T: NPT			

Ordering code for blank plate

P-6TV100M-R2

① ②

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.

Specification

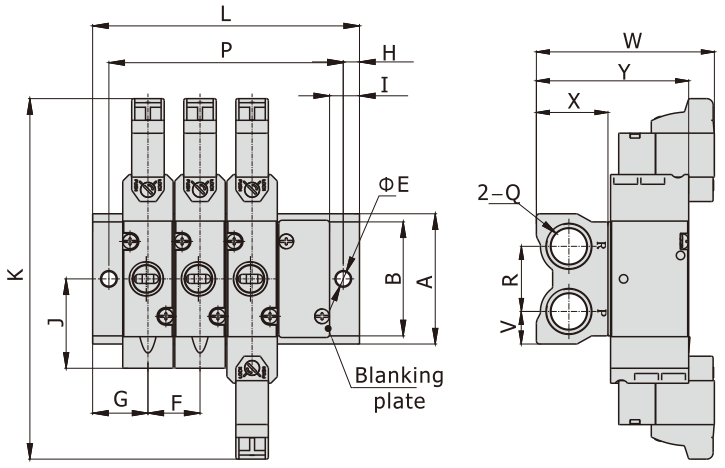
Item\Manifold Model	6TV0500M	6TV100M	6TV200M	6TV300M
Fluid	Air(to be filtered by 40μm filter element)			
Temperature	-20~70℃			
Adaptable valve's series	6TV0500 Series	6TV100 Series	6TV200 Series	6TV300 Series

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.

Manifold for 6TV series

Dimensions



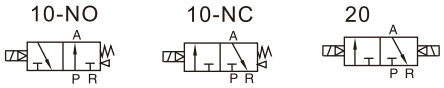
[Unit: mm]

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

3V100 Series



Ordering code

3V	1	10	06	NO	A	□	T
1	2	3	4	5	6	7	8

①Model
3V: Solenoid valve (3/2 way)

②Code
1: 100 Series

③Valve type
10: Single solenoid
20: Double solenoid

④Port size
M5: M5
06: 1/8"

⑤Acting type
NC: Normally closed
NO: Normally opened

⑥Standard voltage
A: AC220V
B: DC24V
C: AC110V
E: AC24V
F: DC12V

⑦Electrical entry
Blank: Terminal
I: Grommet

⑧Thread type
T: NPT

Please refer to 48 for manifold specification and the order way.

Specification

Model	3V110-M5	3V120-M5	3V110-06	3V120-06
Fluid	Air(to be filtered by 40μm filter element)			
Acting	Internal pilot			
Port size [Note1]	M5		1/8"	
Orifice size	5.5mm²(Cv=0.31)		12.0mm²(Cv=0.67)	
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			

[Note 1] NPT 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.

Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Double control solenoid 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. Affiliated manual devices are equipped to facilitate installation and debugging.
6. Several standard voltage grades are optional.
7. Integrate with the manifold to save installation space.

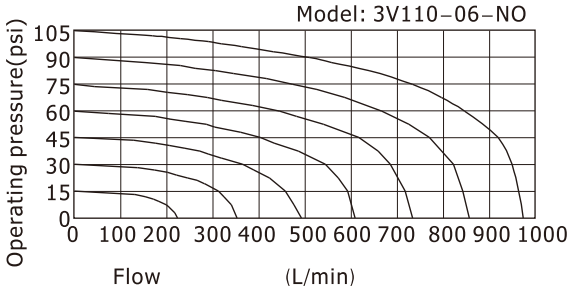
3V100 Series

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	2.5W	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				

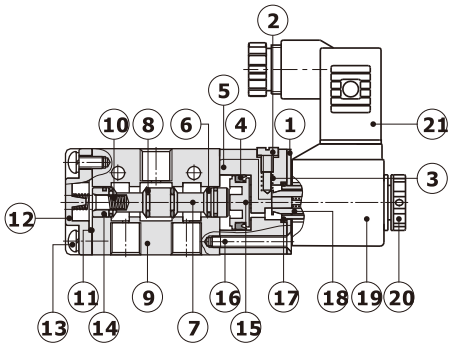
[Note1] The maximum actuation frequency is in the no-load state.

Flow chart

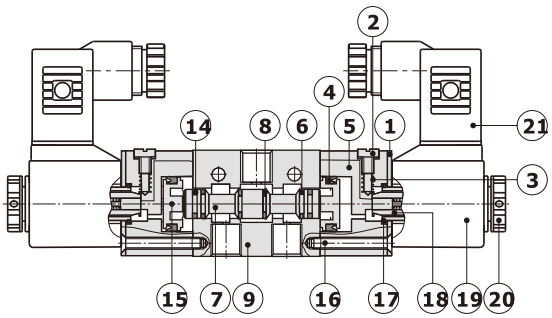


Inner structure

3V110



3V120



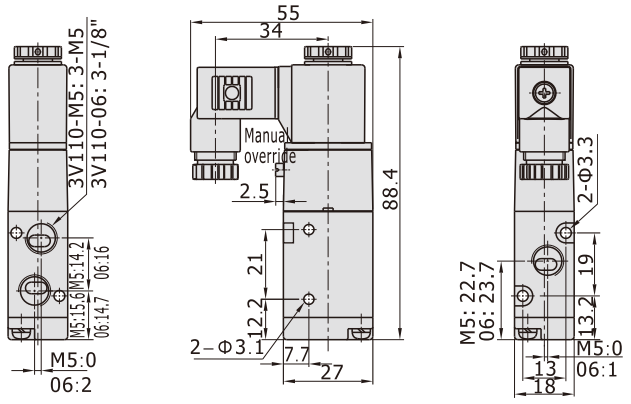
No.	Item	No.	Item	No.	Item
1	Fixed plate	8	O-ring	15	Piston
2	Manual override	9	Body	16	Pilot screw
3	Override spring	10	Spool spring	17	O-ring
4	Piston O-ring	11	Bottom cover gasket	18	Armature
5	Pilot body	12	Bottom cover	19	Coil
6	Spool packing	13	Screw	20	Coil net
7	Spool	14	Wear ring	21	Connector

3V100 Series

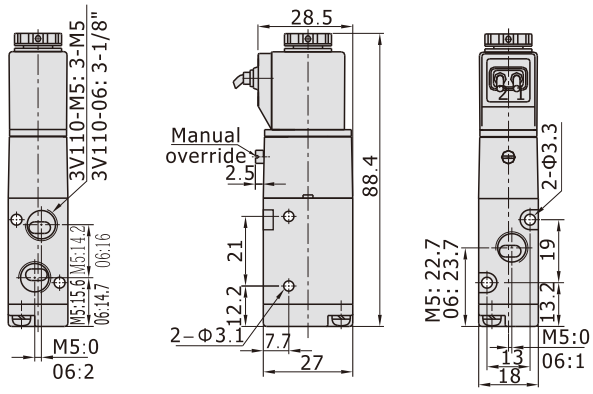
Dimensions

[Unit: mm]

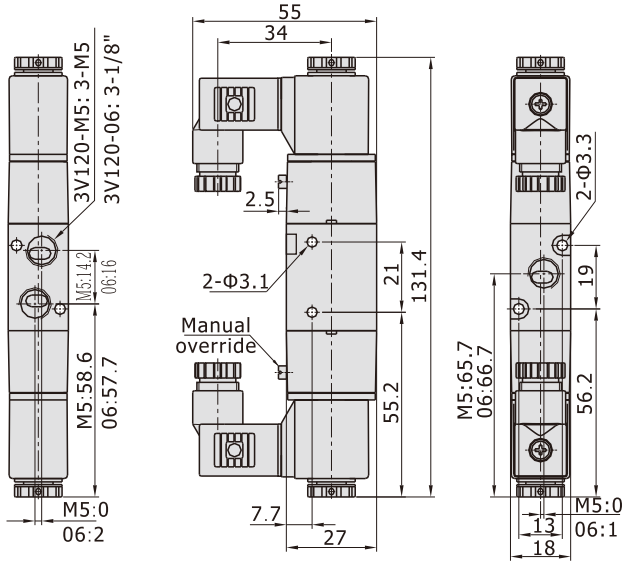
3V110(Terminal)



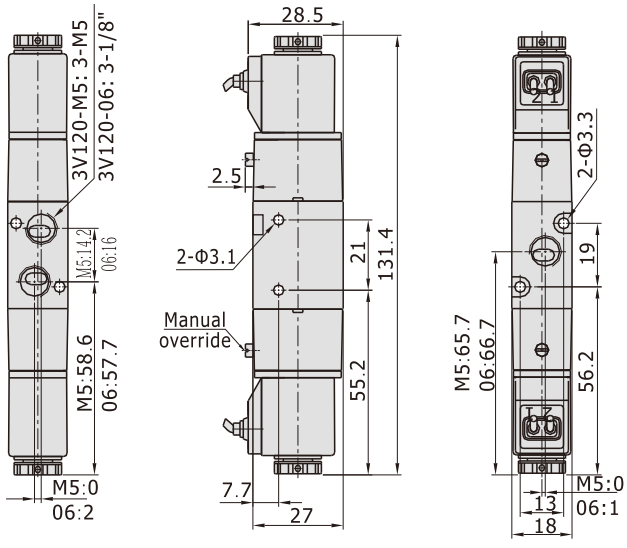
3V110(Grommet)



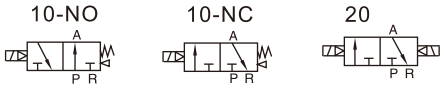
3V120(Terminal)



3V120(Grommet)



3V200 Series



Ordering code

3V	2	10	08	NO	A	□	T
1	2	3	4	5	6	7	8

①Model
3V: Solenoid valve (3/2 way)

②Code
2: 200 Series

③Valve type
10: Single solenoid
20: Double solenoid

④Port size
06: 1/8"
08: 1/4"

⑤Acting type
NC: Normally closed
NO: Normally opened

⑥Standard voltage
A: AC220V
B: DC24V
C: AC110V
E: AC24V
F: DC12V

⑦Electrical entry
Blank: Terminal
I: Grommet

⑧Thread type
T: NPT

Please refer to 48 for manifold specification and the order way.

Specification

Model	3V210-06	3V220-06	3V210-08	3V220-08
Fluid	Air(to be filtered by 40μm filter element)			
Acting	Internal pilot			
Port size [Note1]	In=Out=1/8"		In=Out=1/4"	
Orifice size	14.0mm²(Cv=0.78)		16.0mm²(Cv=0.89)	
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			

[Note 1] NPT 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.

Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Double control solenoid 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. Affiliated manual devices are equipped to facilitate installation and debugging.
6. Several standard voltage grades are optional.
7. Integrate with the manifold to save installation space.

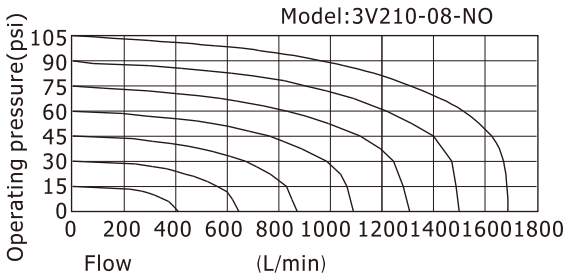
3V200 Series

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	3.0W
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				

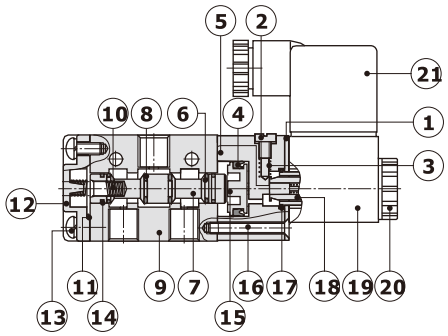
[Note1] The maximum actuation frequency is in the no-load state.

Flow chart

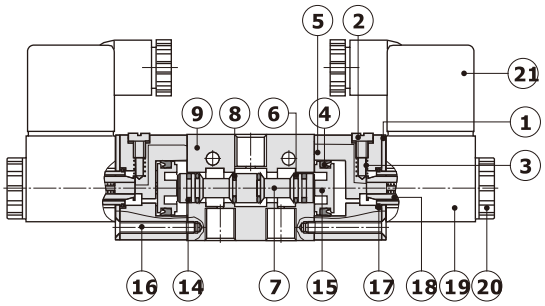


Inner structure

3V210



3V220



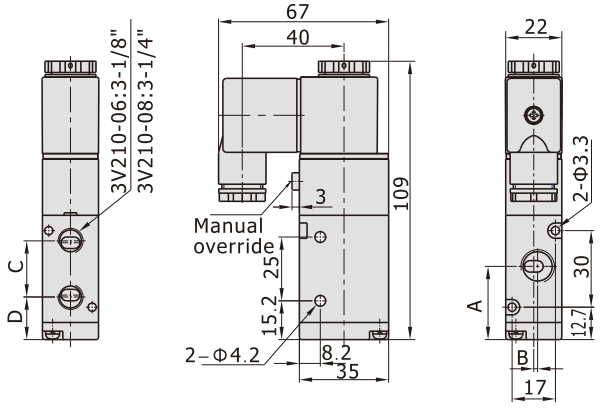
No.	Item	No.	Item	No.	Item
1	Fixed plate	8	O-ring	15	Piston
2	Manual override	9	Body	16	Pilot screw
3	Override spring	10	Spool spring	17	O-ring
4	Piston O-ring	11	Bottom cover gasket	18	Armature
5	Pilot body	12	Bottom cover	19	Coil
6	Spool packing	13	Screw	20	Coil net
7	Spool	14	Wear ring	21	Connector

3V200 Series

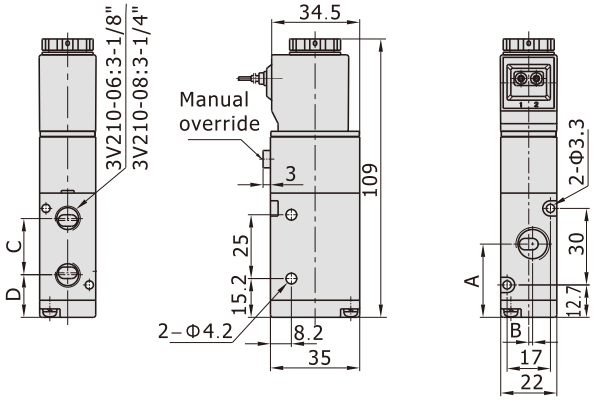
Dimensions

[Unit: mm]

3V210(Terminal)

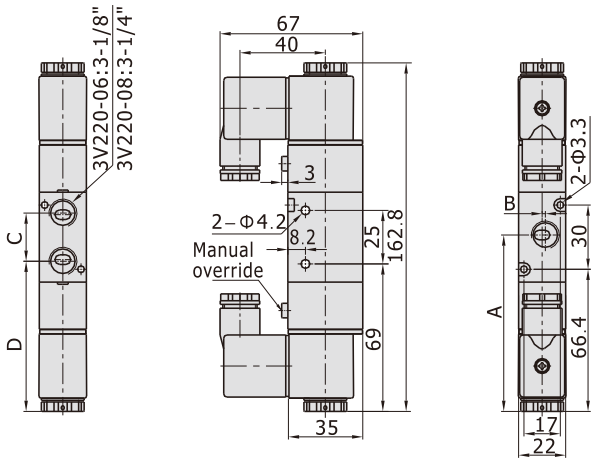


3V210(Grommet)

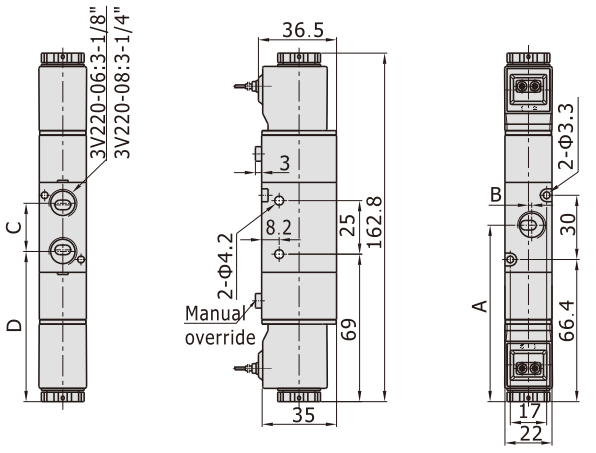


Model\Item	A	B	C	D
3V210-06	27.7	0	22	16.7
3V210-08	28.7	1.5	22.5	16.5

3V220(Terminal)

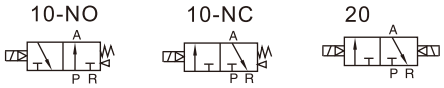


3V220(Grommet)



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

3V300 Series



Ordering code

3V	3	10	10	NO	A	□	T
1	2	3	4	5	6	7	8

①Model
3V: Solenoid valve (3/2 way)

②Code
3: 300 Series

③Valve type
10: Single solenoid
20: Double solenoid

④Port size
08: 1/4"
10: 3/8"

⑤Acting type
NC: Normally closed
NO: Normally opened

⑥Standard voltage
A: AC220V
B: DC24V
C: AC110V
E: AC24V
F: DC12V

⑦Electrical entry
Blank: Terminal
I: Grommet

⑧Thread type
T: NPT

Please refer to 48 for manifold specification and the order way.

Specification

Model	3V310-08	3V320-08	3V310-10	3V320-10
Fluid	Air(to be filtered by 40μm filter element)			
Acting	Internal pilot			
Port size [Note1]	In=Out=1/4"		In=Out=3/8"	
Orifice size	25.0mm²(Cv=1.39)		30.0mm²(Cv=1.67)	
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			

[Note 1] NPT 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.

Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Double control solenoid 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. Affiliated manual devices are equipped to facilitate installation and debugging.
6. Several standard voltage grades are optional.
7. Integrate with the manifold to save installation space.

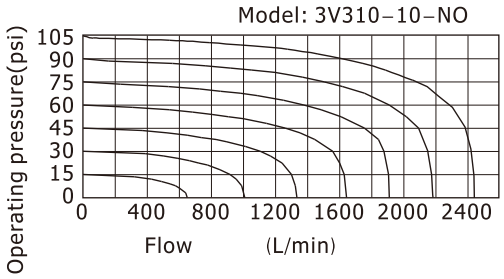
3V300 Series

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	3.0W
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				

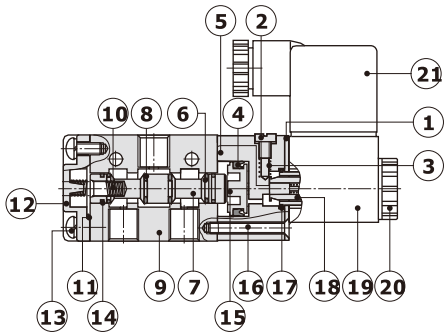
[Note1] The maximum actuation frequency is in the no-load state.

Flow chart

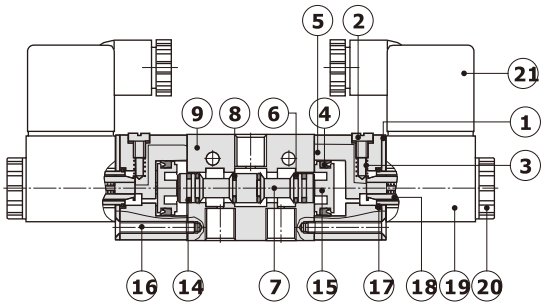


Inner structure

3V310



3V320



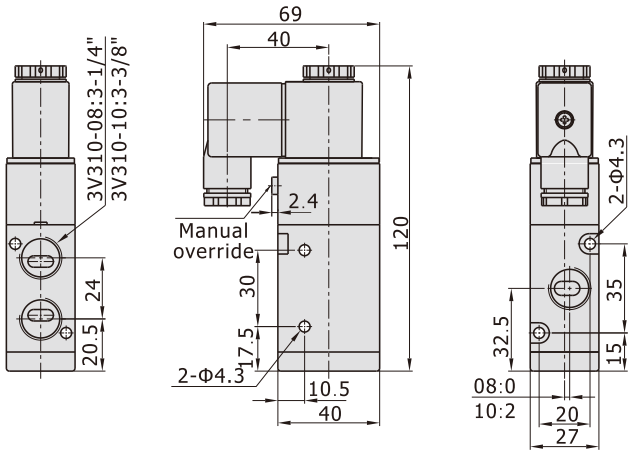
No.	Item	No.	Item	No.	Item
1	Fixed plate	8	O-ring	15	Piston
2	Manual override	9	Body	16	Pilot screw
3	Override spring	10	Spool spring	17	O-ring
4	Piston O-ring	11	Bottom cover gasket	18	Armature
5	Pilot body	12	Bottom cover	19	Coil
6	Spool packing	13	Screw	20	Coil net
7	Spool	14	Wear ring	21	Connector

3V300 Series

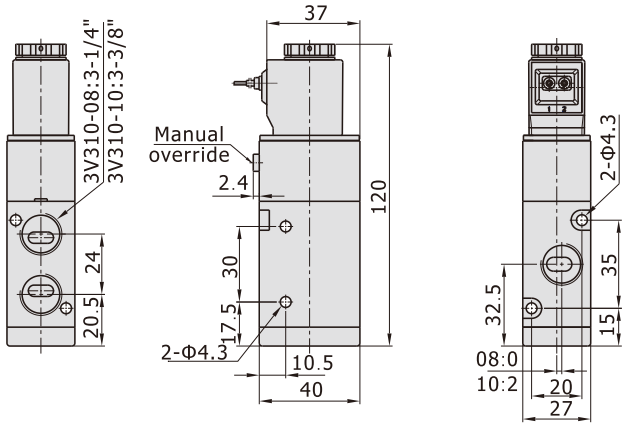
Dimensions

[Unit: mm]

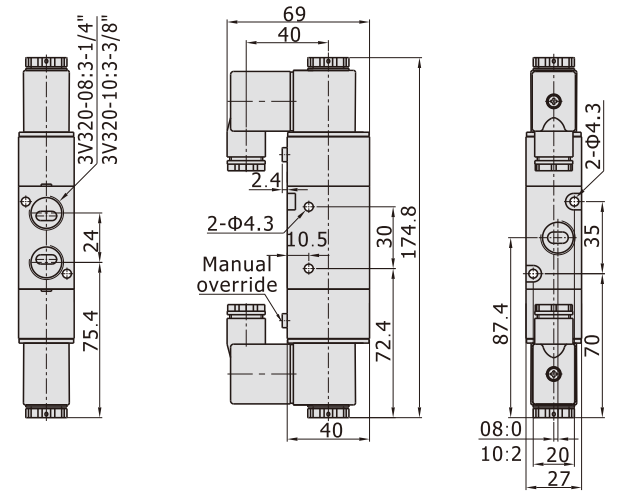
3V310(Terminal)



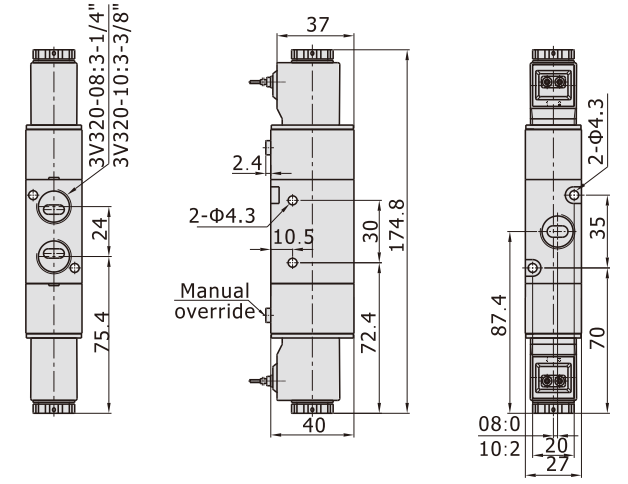
3V310(Grommet)



3V320(Terminal)



3V320(Grommet)



Manifold

Ordering code

Ordering code for manifold

3V100M 5F T

1 2 3

①Model	②Number of stations [Note1]	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	T: NPT

Ordering code for blank plate

P–3V100M–R2

1 2 3

①Kits	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 the two parts of the manifold's and the blank plate's.
2. Manifold kits contains manifold, seal and screw.
3. Blank plate kits contains blank plate, and screw.

Specification

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

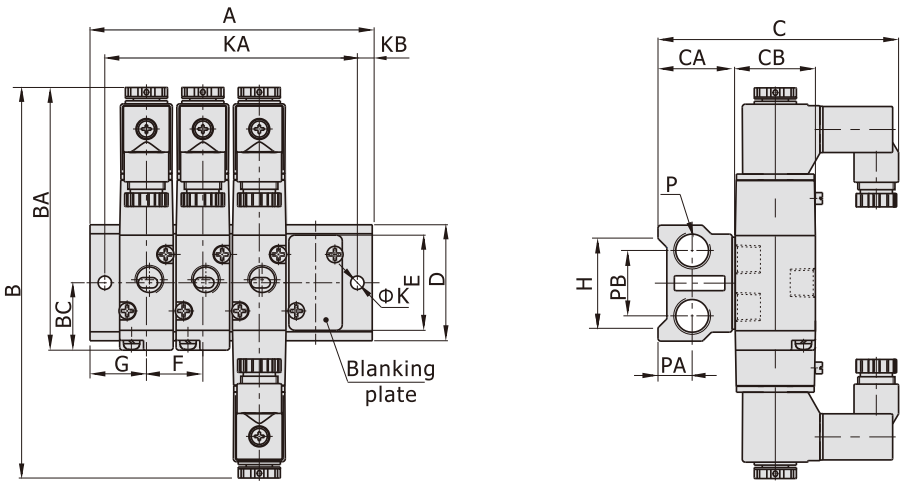
Product feature

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.

Manifold

Dimensions

With 3V solenoid valve



[Unit: mm]

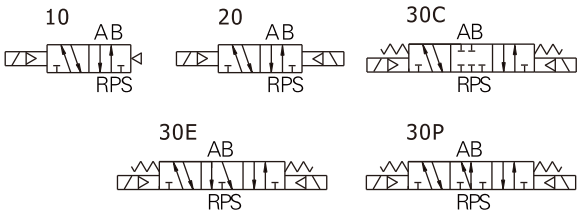
Model\Item	B	BA	BC	C	CA	CB	D	E	F	G	H	K	KB	P	PA	PB
3V100M	131.5	88.5	22.7	81	26	27	39	32	19	19	30	4.5	5	1/4"	11.5	22
3V200M	162.5	109	27.7	92.5	26	35	45	40	23	23	35	4.5	6	1/4"	11.5	25
3V300M	175	120	32.5	99	30	40	52	47	28	27	42	4.5	6	3/8"	13.5	28

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

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

6V Series



Ordering code

6V 2 10 J 5/16 B 050 T

1 2 3 4 5 6 7 8

①Model	6V：Solenoid valve (5/2, 5/3 way)						
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	M5: M5	M5: M5	06 : 1/8"	06 : 1/8"	08 : 1/4"	10 : 3/8"	
⑤Port size Tube	5/32 : Φ5/32	1/4: Φ1/4;	5/16: Φ5/16	5/16: Φ5/16;	3/8: Φ3/8	-	
⑥Voltage	A: AC220V	B: DC24V	C: AC110V	F: DC12V			
⑦Line length	050：0.5m　200：2.0m						
⑧Thread type	–	T: NPT					

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

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=Φ5/32			A port=B port=Φ5/32 (or=Φ1/4) (or=Φ5/16)		
Orifice size(Cv)		5.0mm²(0.28)		4.5mm²(0.25)	M5:5.5mm²(0.3)		
					06:10.0mm²(0.58)		8.5mm²(0.51)
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=Φ1/4(or=Φ5/16) (or=Φ3/8)			-		
Orifice size(Cv)		06:14.0mm²(0.78) 08:18.0mm²(1.06)		14.0mm²(0.82)	36.0mm²(2.00)		21.6mm²(1.20)
Weight		100g	115g	130g	230g	265g	305g
Fluid		Air(to be filtered by 40μm filter element)					
Acting		Internal pilot					
Operating pressure	5/3 way	29~114psi(0.2~0.8MPa)					
	5/2 way	21~114psi(0.15~0.8MPa)					
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] NPT 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.

6V Series

Coil specification

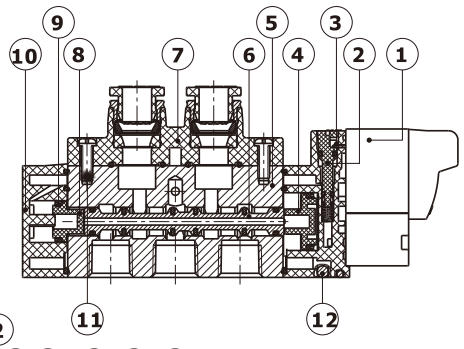
Item	Specification			
Standard voltage	AC220V	AC110V	DC24V	DC12V
Scope of voltage	AC: +15% ~-10%		DC: ±10%	
Power consumption	1.1VA		0.9W	
Protection	Dustproof			
Temperature classification	F Class			
Electrical entry	Terminal			
Activating time	0.05 sec and below			

Product feature

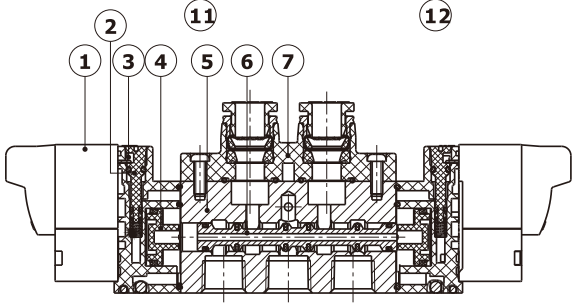
1. Electrical entry is terminal, horizontal and vertical insertion can freely switch.
2. Inner exhaust structure to collect pilot airflow, and then exhaust intensively from R, S port.
3. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long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

Inner structure

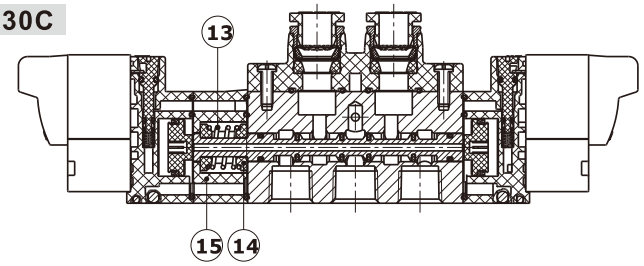
6V110



6V120

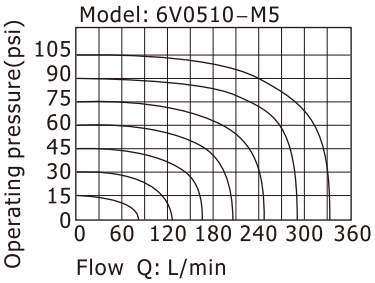


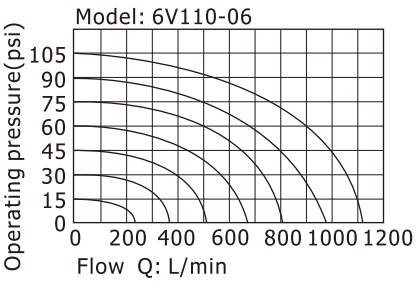
6V130C

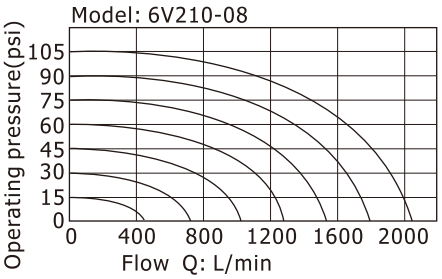


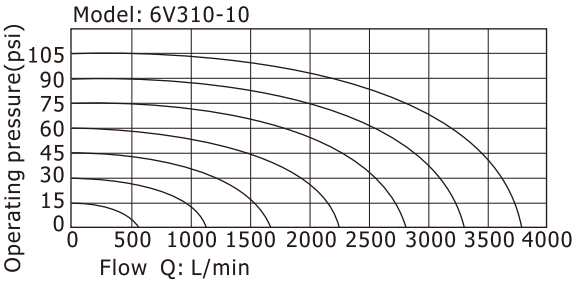
No.	Item	No.	Item	No.	Item
1	Pilot valve	6	Spool	11	Bolt
2	Manual override	7	Connecting block	12	Steel ball
3	Pilot kit	8	Little piston	13	Spring
4	Big piston	9	Gasket	14	Return holder
5	Body	10	Bottom cover	15	Side cover

Flow chart









6V Series

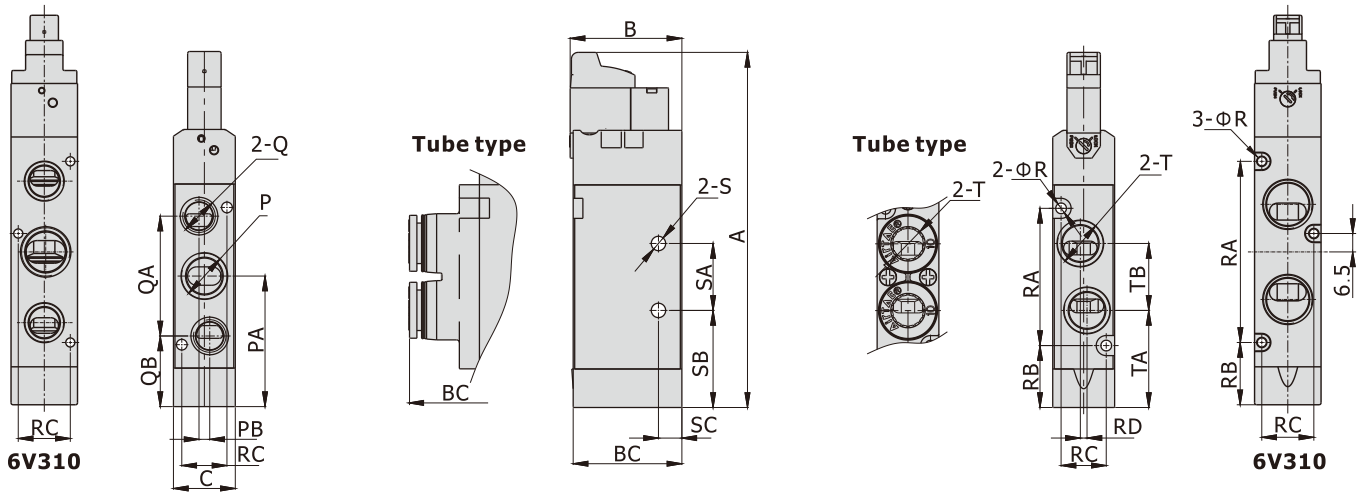
Dimensions

6V0510

6V110

6V210

6V310



Port size

[Unit: inch]

Model\Item	P	Q	T
6V0510M5	M5X0.8	M5X0.8	M5X0.8
6V0510J5/32			Φ5/32(tube)
6V110M5	M5X0.8	M5X0.8	M5X0.8
6V11006	1/8"	1/8"	1/8"
6V110J5/32			Φ5/32(tube)
6V110J1/4			Φ1/4(Tube)
6V110J5/16			Φ5/16(Tube)
6V21006	1/8"	1/8"	1/8"
6V21008	1/4"		1/4"
6V210J1/4			Φ1/4(Tube)
6V210J5/16			Φ5/16(Tube)
6V210J3/8			Φ3/8(Tube)
6V31010	3/8"	1/4"	3/8"

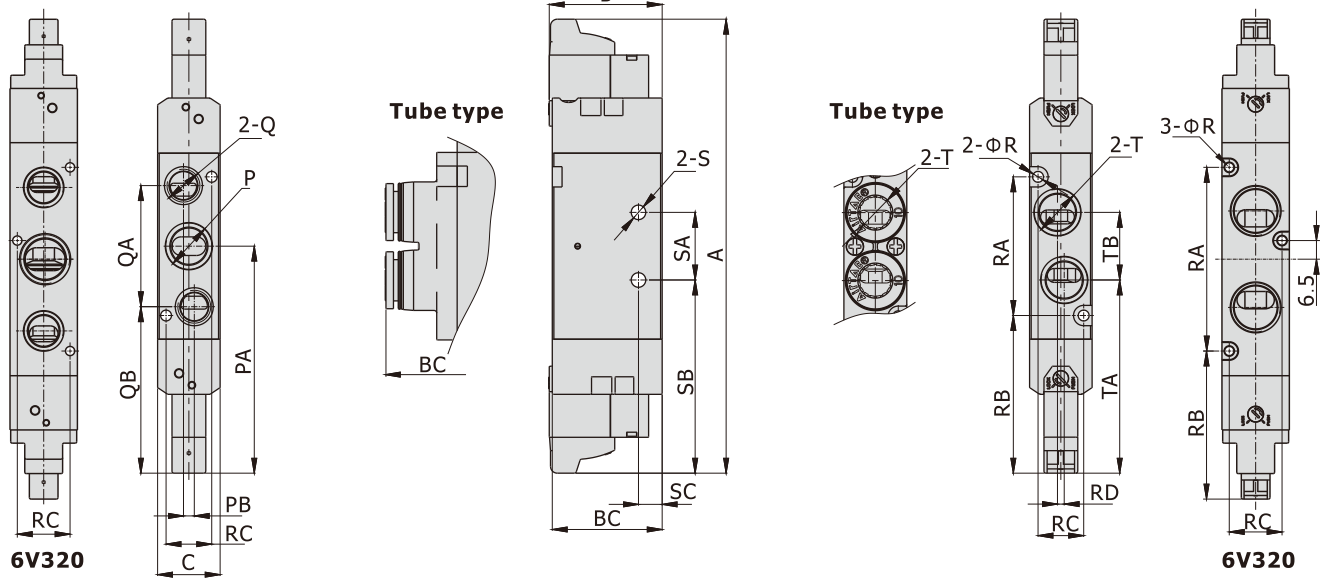
[Unit: mm]

Model\Item	A	B	BC	C	PA	PB	QA	QB	TA	TB	R	RA	RB	RC	RD	S	SA	SB	SC
6V0510M5	73	31	21	10.6	22.5	1	19	13	17.5	10	2.1	22.5	11	7.5	0	Φ2.6	10	17.5	4
6V0510J5/32			32.5													–	–	–	–
6V110M5	93.5	32	24	15.5	33	-	29.8	18	25.2	15.4	2.6	34	16	11	-	Φ3.2	14	26	4
6V11006						2.6	28	19	24.5	16.5					0	–	–	–	–
6V110J5/32			39.5																
6V110J1/4			41																
6V110J5/16			42.5																
6V21006	106	33.5	32.5	18.5	39	3.2	36	21	30	18	3.2	41	18.5	13.5	-	Φ4.3	20	29	7
6V21008									29	20					2	–	–	–	–
6V210J1/4			50.6																
6V210J5/16																			
6V210J3/8			53.5																
6V31010	137.5	46	46	23.5	54	0.5	50	29	37	33.5	3.2	64	22	18.4	0	Φ4.3	25	41.5	8

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

6V Series

6V0520
6V120
6V220
6V320



Port size

[Unit: inch]

Model\Item	P	Q	T
6V0520M5	M5X0.8	M5X0.8	M5X0.8
6V0520J5/32			Φ5/32(Tube)
6V120M5	M5X0.8	M5X0.8	M5X0.8
6V12006	1/8"	1/8"	1/8"
6V120J5/32			Φ5/32(Tube)
6V120J1/4			Φ1/4(Tube)
6V120J5/16			Φ5/16(Tube)
6V22006	1/8"	1/8"	1/8"
6V22008	1/8"		1/4"
6V220J1/4			Φ1/4(Tube)
6V220J5/16			Φ5/16(Tube)
6V220J3/8			Φ3/8(Tube)
6V32010	3/8"	1/4"	3/8"

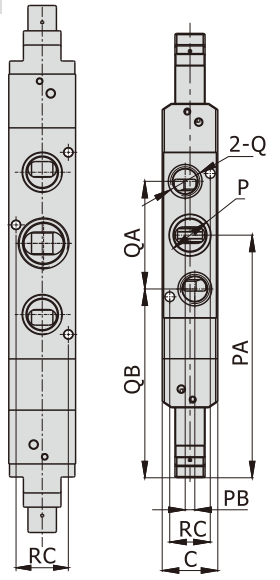
[Unit: mm]

Model\Item	A	B	BC	C	PA	PB	QA	QB	TA	TB	R	RA	RB	RC	RD	S	SA	SB	SC
6V0520M5	101.5	31	21	10.6	51	1	19	41	45.5	10	2.1	22.5	39.5	7.5	0	Φ2.6	10	45.5	4
6V0520J5/32			32.5													–	–	–	–
6V120M5	121.5	32	24	15.5	61	-	29.8	46	53.7	15.4	2.6	34	44	11	-	Φ3.2	14	54	4
6V12006						2.6	28	47	52.5	16.5					0	–	–	–	–
6V120J5/32			39.5																
6V120J1/4			41																
6V120J5/16			42.5																
6V22006	134	33.5	32.5	18.5	67	3.2	36	49	58	18	3.2	41	46.5	13.5	-	Φ4.3	20	57	7
6V22008									57	20					2	–	–	–	–
6V220J1/4			50.6																
6V220J5/16																			
6V220J3/8			53.5																
6V32010	167	46	46	23.5	83.5	0.5	50	58.5	67	33.5	3.2	64	51.5	18.4	0	Φ4.3	25	71	8

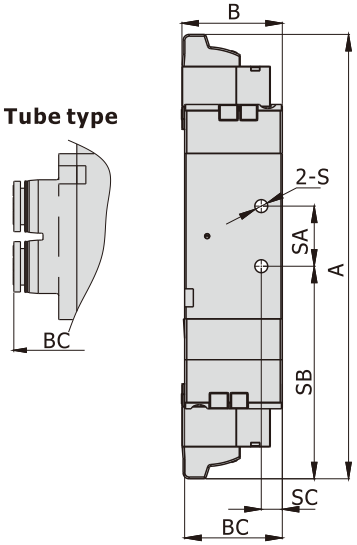
[Note]: The base of the tube type solenoid valve is only used with the base. No through hole "S" on the side.

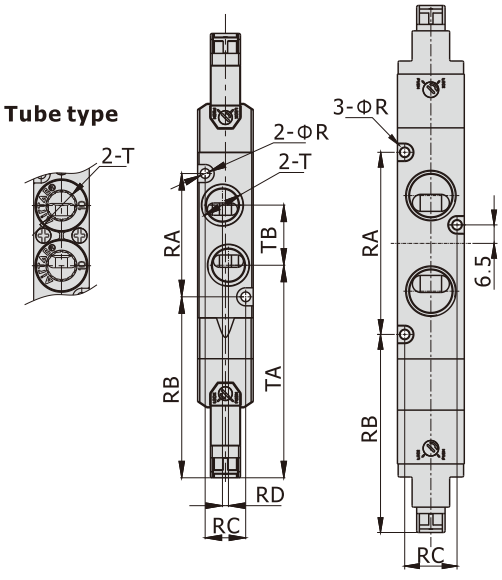
6V Series

6V0530
6V130
6V230
6V330



6V330





6V330

Port size

[Unit: inch]

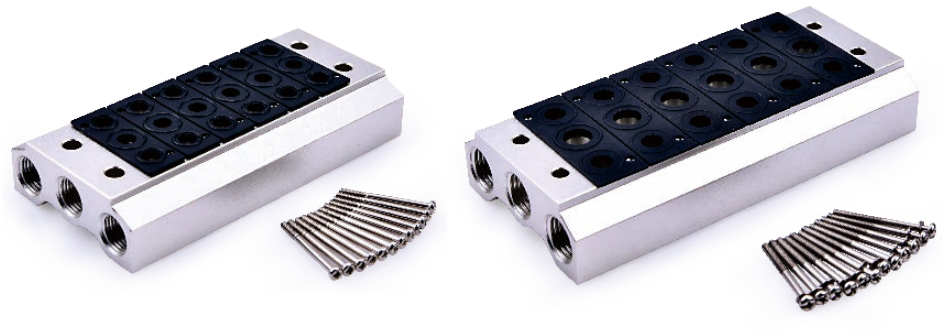
Model\Item	P	Q	T
6V0530M5	M5X0.8	M5X0.8	M5X0.8
6V0530J5/32			Φ5/32(Tube)
6V130M5	M5X0.8	M5X0.8	M5X0.8
6V13006	1/8"	1/8"	1/8"
6V130J5/32			Φ5/32(Tube)
6V130J1/4			Φ1/4(Tube)
6V130J5/16			Φ5/16(Tube)
6V23006	1/8"	1/8"	1/8"
6V23008	1/4"		1/4"
6V230J1/4			Φ1/4(Tube)
6V230J5/16			Φ5/16(Tube)
6V230J3/8			Φ3/8(Tube)
6V33010	3/8"	1/4"	3/8"

[Unit: mm]

Model\Item	A	B	BC	C	PA	PB	QA	QB	TA	TB	R	RA	RB	RC	RD	S	SA	SB	SC
6V0530M5	110	31	21	10.6	59	1	19	50	54	10	2.1	22.5	48	7.5	0	Φ2.6	10	54	4
6V0530J5/32			32.5													–	–	–	–
6V130M5	133	32	24	15.5	72.5	-	29.8	58	64.7	15.4	2.6	34	55.5	11	-	Φ3.2	14	65.5	4
6V13006						2.6	28	59	64	16.5					0	–	–	–	–
6V130J5/32			39.5																
6V130J1/4			41																
6V130J5/16			42.5																
6V23006	148	33.5	32.5	18.5	81	3.2	36	63	72	18	3.2	41	60.2	13.5	-	Φ4.3	20	70.7	7
6V23008									71	20					2	–	–	–	–
6V230J1/4			50.6																
6V230J5/16																			
6V230J3/8			53.5																
6V33010	185	46	46	23.5	101.5	0.5	50	76.5	85	33.5	3.2	64	69.5	18.4	0	Φ4.3	25	89	8

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

Manifold for 6V series



Ordering code

Ordering code for manifold

6V100M 5F T

1 2 3

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	T: NPT			

Ordering code for blank plate

P-6V100M-R2

1 2

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.

Specification

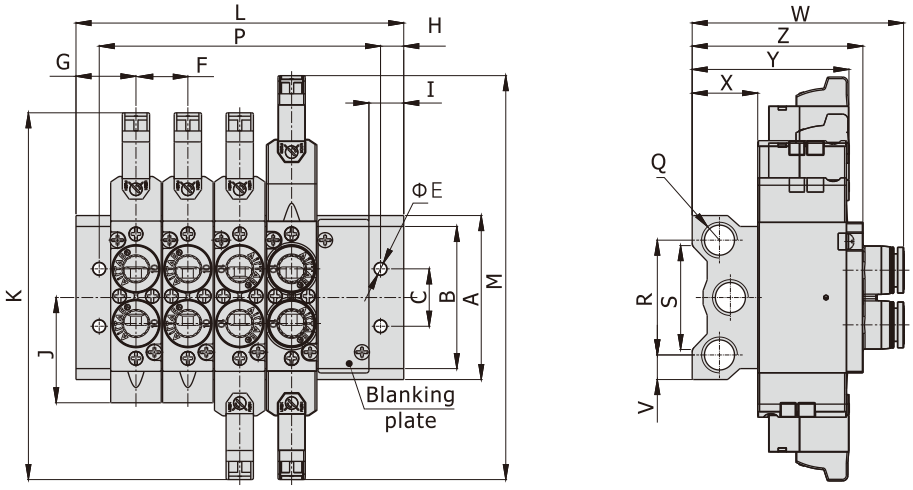
Item\Manifold Model	6V0500M	6V100M	6V200M	6V300M
Fluid	Air(to be filtered by 40μm filter element)			
Temperature	-20~70℃			
Adaptable valve's series	6V0500 Series	6V100 Series	6V200 Series	6V300 Series

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.

Manifold for 6V series

Dimensions



[Unit: mm]

Model\Item	A	B	C	E	F	G	H	I	J	K	M	Q	R
6V0500M	46	32	16	4.5	11	15	5	9.5	22.5	102	110	1/8"	32
6V100M	57.5	43	20	4.5	16	17	5	9.5	33	121.5	133.5	1/4"	40
6V200M	60	52	21	4.5	19	18.5	5	9.5	38.5	134.5	148	1/4"	42
6V300M	85	75	26	4.5	23.5	24	5	12	54	167	185	3/8"	57

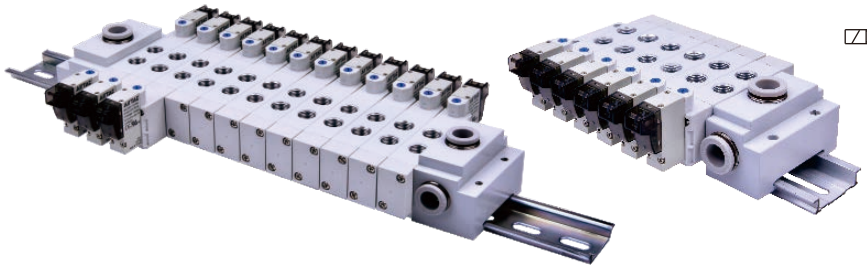
Model\Item	S	V	W			X	Y	Z
6V0500M	26	7	36.2(M5)	50.5(J5/32)		17	35.5	47.5
6V100M	36	9	55(M5/06)	62.5(J5/32)/64(J1/4)	65.5(J5/16)	22	46	54
6V200M	38	9	58.5(06/08)	75.2(J1/4)/76.5(J5/16)	78.5(J3/8)	24	57.5	62.5
6V300M	58	14	–	–	–	27	74	–

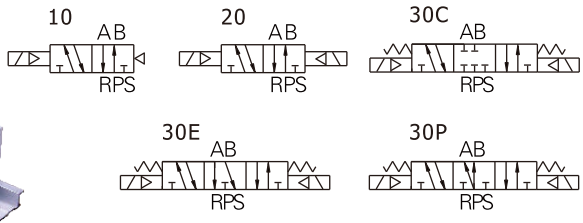
Model\Item	L																			
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F
6V0500M	30	41	52	63	74	85	96	107	118	129	140	151	162	173	184	195	206	217	228	239
6V100M	34	50	66	82	98	114	130	146	162	178	194	210	226	242	258	274	290	306	322	338
6V200M	37	56	75	94	113	132	151	170	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

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

6HV Series





Ordering code(Solenoid valve)

6HV 1 10 06 B 050 T

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
⑥Line length	050：0.5m　200：2.0m			
⑦Thread type	–	–	T: NPT	

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.

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.

6HV Series

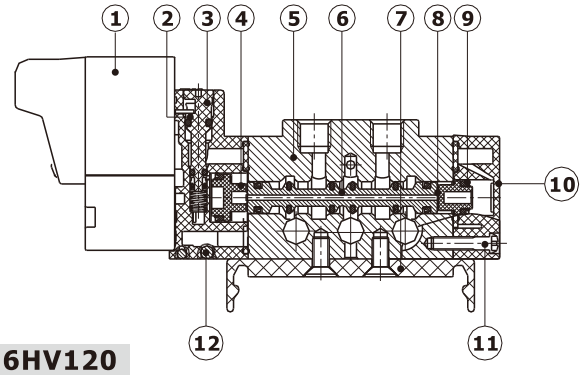
Specification

Model		6HV0510	6HV0520	6HV0530	6HV110	6HV120	6HV130
Port size [Note1]		In=Out=M5			In=Out=M5(or=1/8")		
Orifice size		5.0mm²		4.5mm²	M5:5.0mm²/06:10.0mm²		
Cv value		0.28		0.25	M5:0.28/06:0.58		
Max. frequency [Note2]		5 cycle/sec		3 cycle/sec	5 cycle/sec		3 cycle/sec
Fluid		Air(to be filtered by 40μm filter element)					
Acting		Pilot					
Operating pressure	6HV0530/6HV130	29~114psi(0.2~0.8MPa)					
	Othres	21~114psi(0.15~0.8MPa)					
Proof pressure		175psi(1.2MPa)					
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					

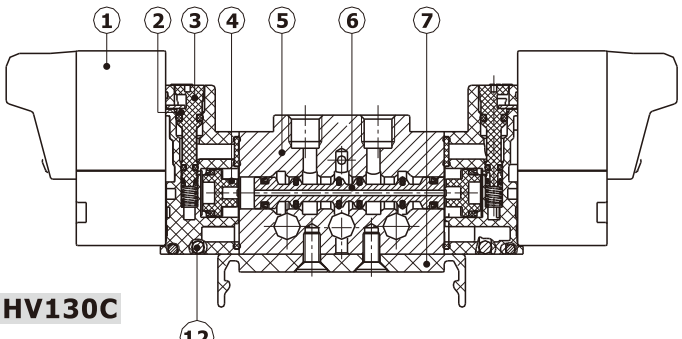
[Note1] NPT thread is available.
[Note2] The maximum actuation frequency is in the no-load state.
[Note3] Once lubricated air is used, continue with same medium to optimize valve life span.
Lubricants like ISO VG32 or equivalent are recommended.

Inner structure

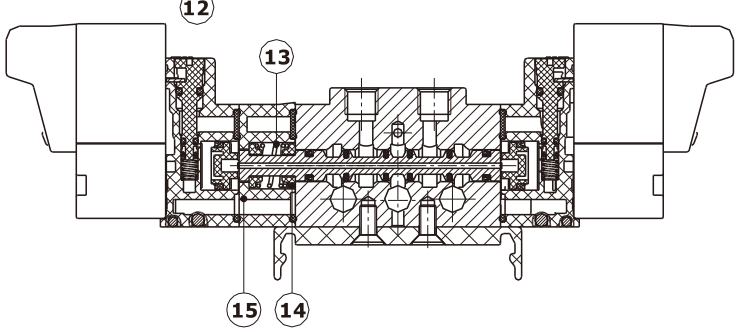
6HV110



6HV120



6HV130C



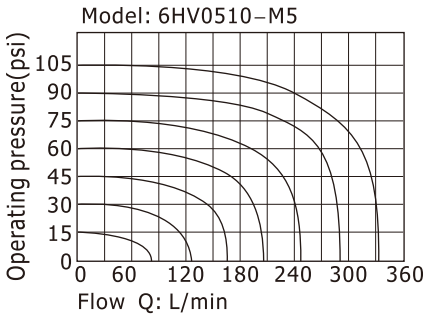
No.	Item	No.	Item	No.	Item
1	Pilot valve	6	Spool	11	Bolt
2	Manual override	7	Bracket	12	Steel ball
3	Pilot kit	8	Little piston	13	Spring
4	Big piston	9	Gasket	14	Return holder
5	Body	10	Bottom cover	15	Side cover

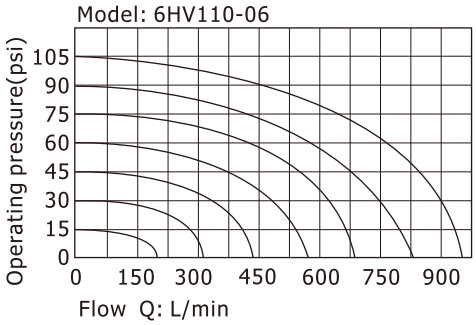
6HV Series

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			

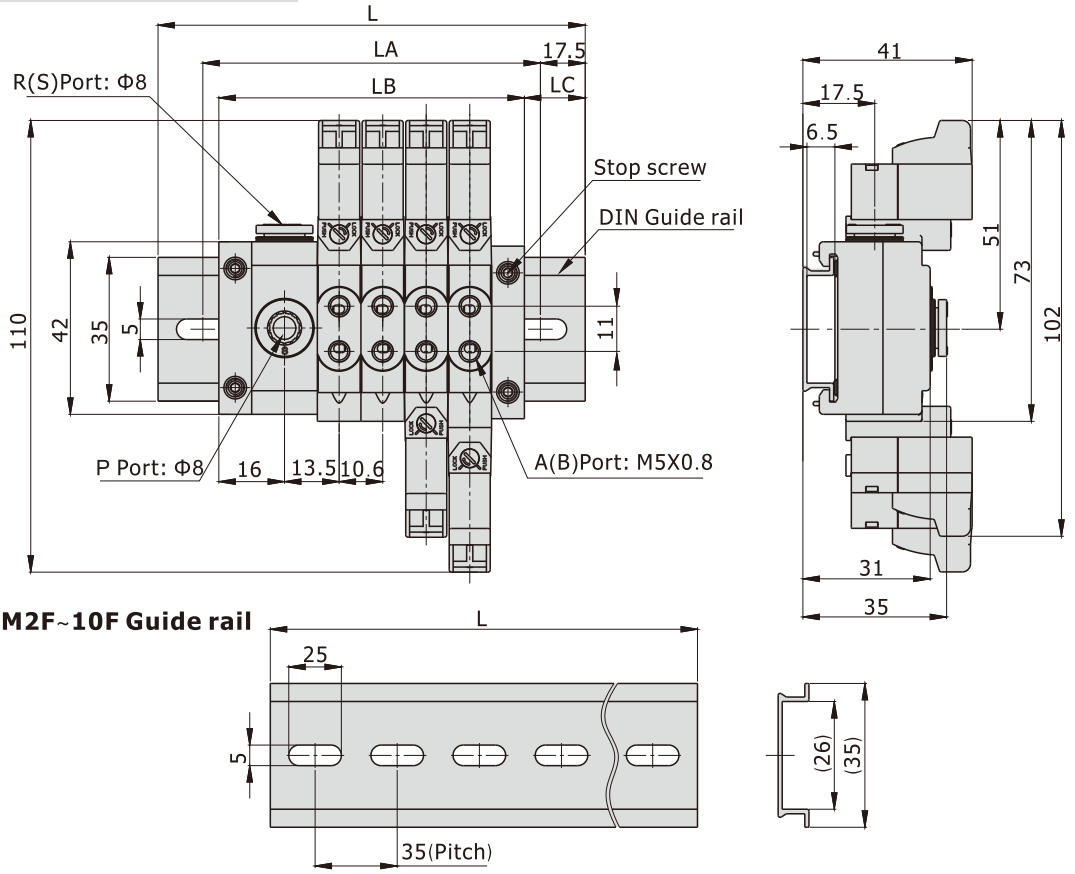
Flow chart





Dimensions

6HV0500+6HV0500M2F~10F

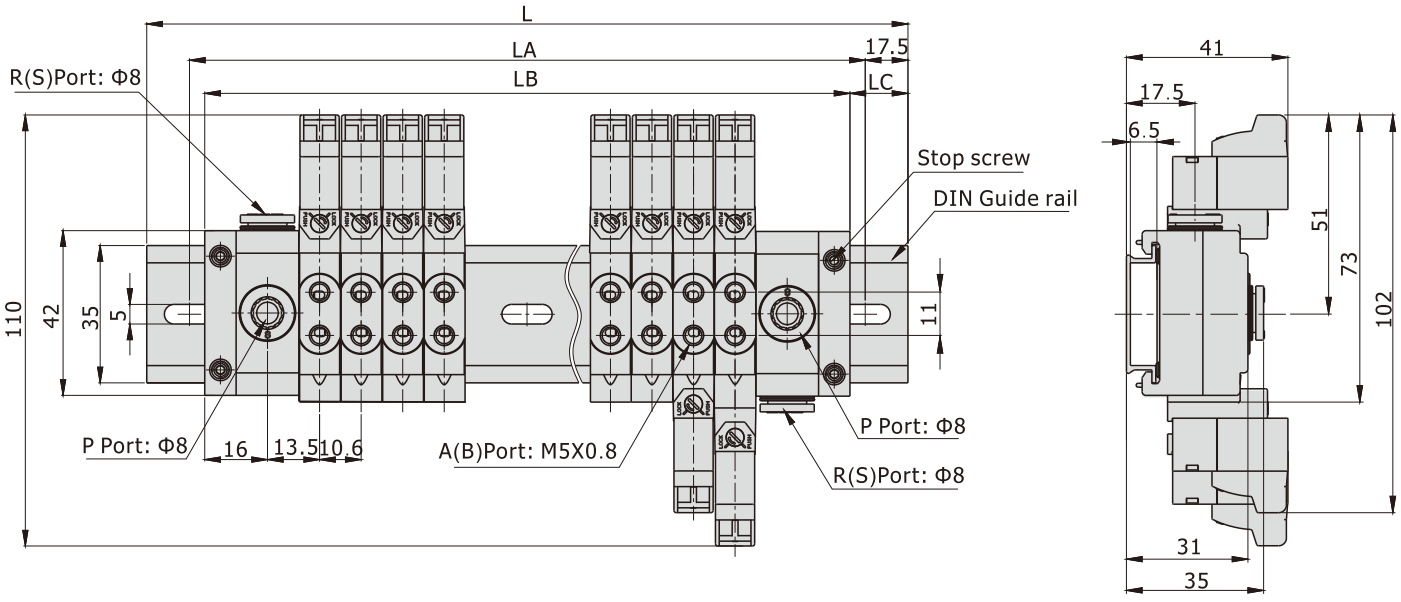


6HV0500M2F~10F Guide rail

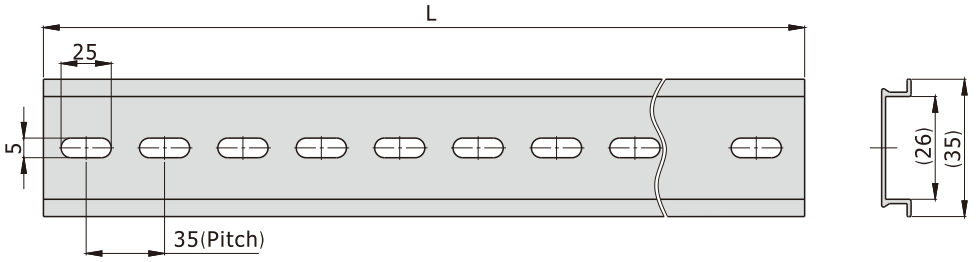
Item\Stations	2F	3F	4F	5F	6F	7F	8F	9F	10F
L	105	105	105	140	140	140	175	175	175
LA	70	70	70	105	105	105	140	140	140
LB	53	64	74.5	85	95.5	106	116	127.5	138
LC	26	20.5	15	27.5	22	17	29.5	23.8	18.5

6HV Series

6HV0500+6HV0500M11F~24F



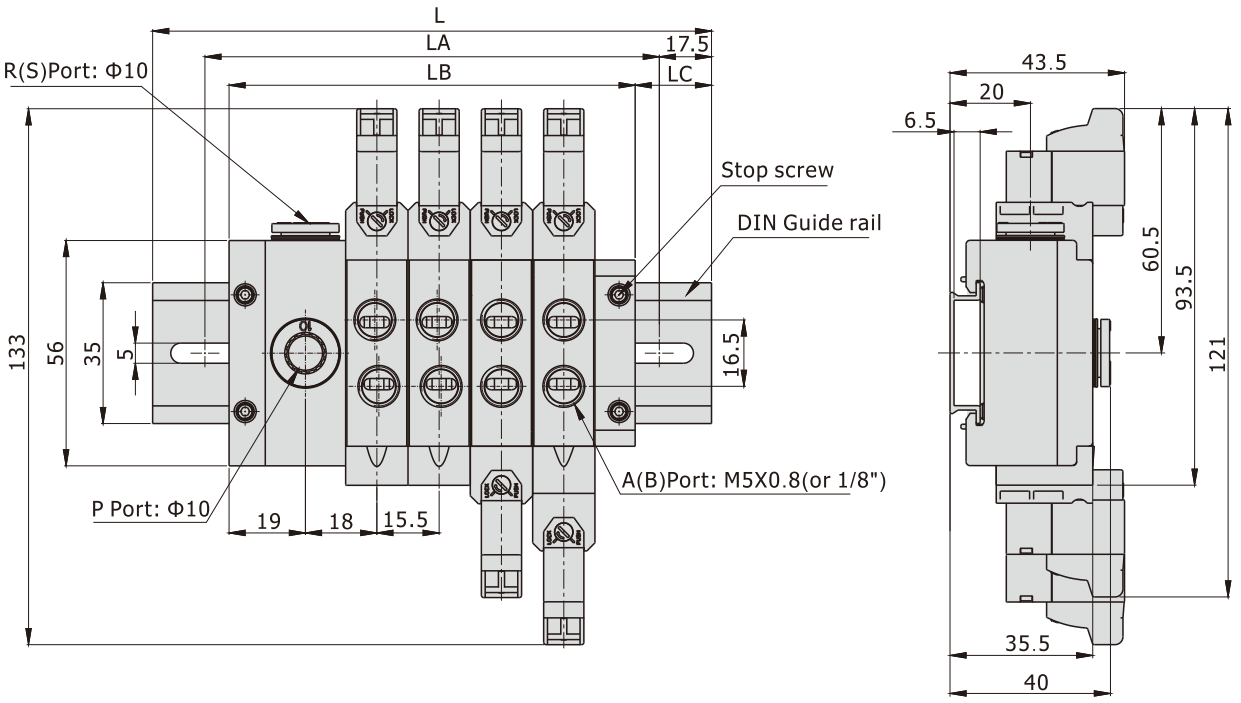
6HV0500M11F~24F Guide rail



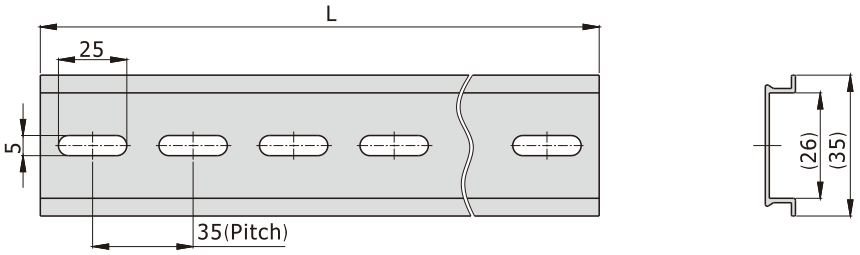
Item\Stations	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F	22F	23F	24F
L	210	210	245	245	245	280	280	280	315	315	315	350	350	350
LA	175	175	210	210	210	245	245	245	280	280	280	315	315	315
LB	164.5	175	185.5	196.5	207	217.5	228	238.5	249.5	260	270.5	281	292	302.5
LC	23	17.5	30	24	19	31	26	21	33	27.5	22	34.5	29	24

6HV Series

6HV100+6HV100M2F~10F



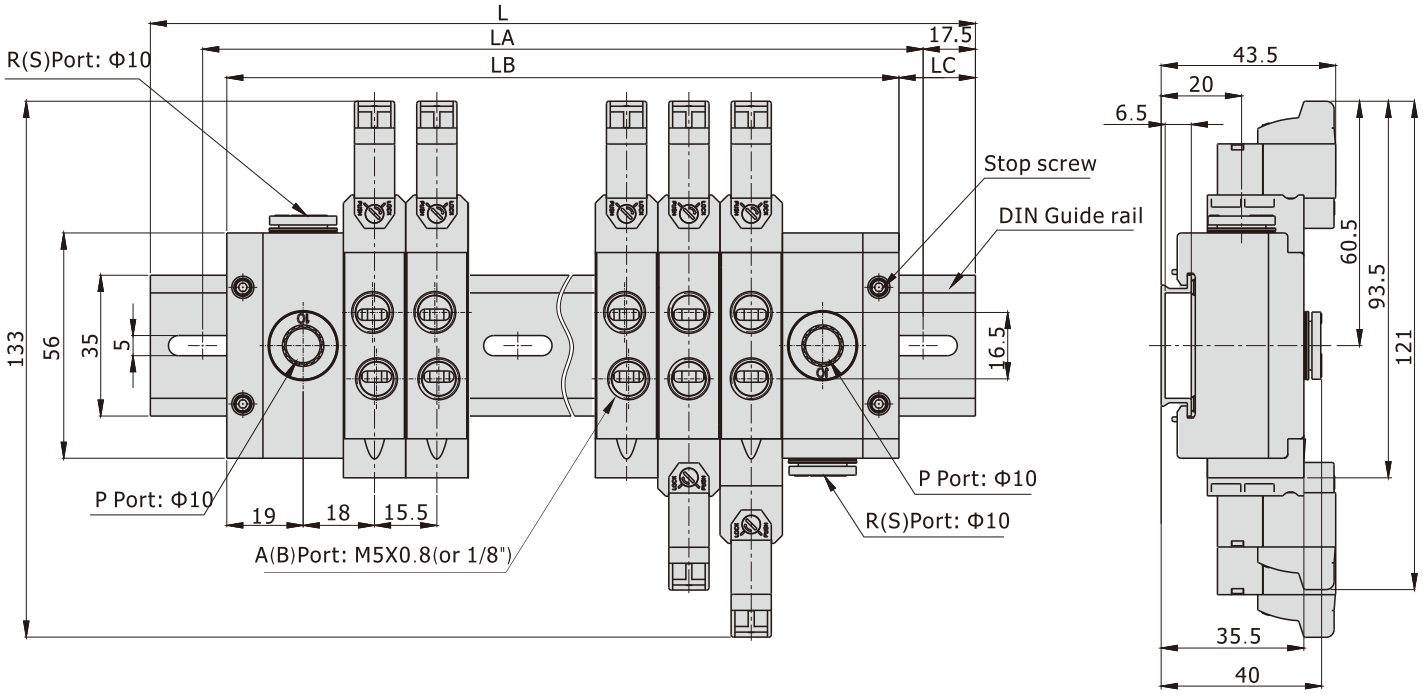
6HV100M2F~10F Guide rail



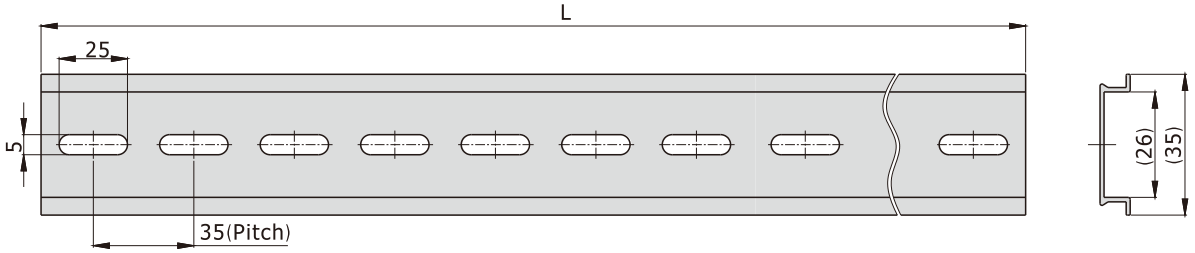
Item\Stations	2F	3F	4F	5F	6F	7F	8F	9F	10F
L	140	140	140	175	175	210	210	245	245
LA	105	105	105	140	140	175	175	210	210
LB	70	85.5	101	116.5	132	147.5	163	178.5	194
LC	35	27	19.5	29	21.5	31	23.5	33	25.5

6HV Series

6HV100+6HV100M11F~24F



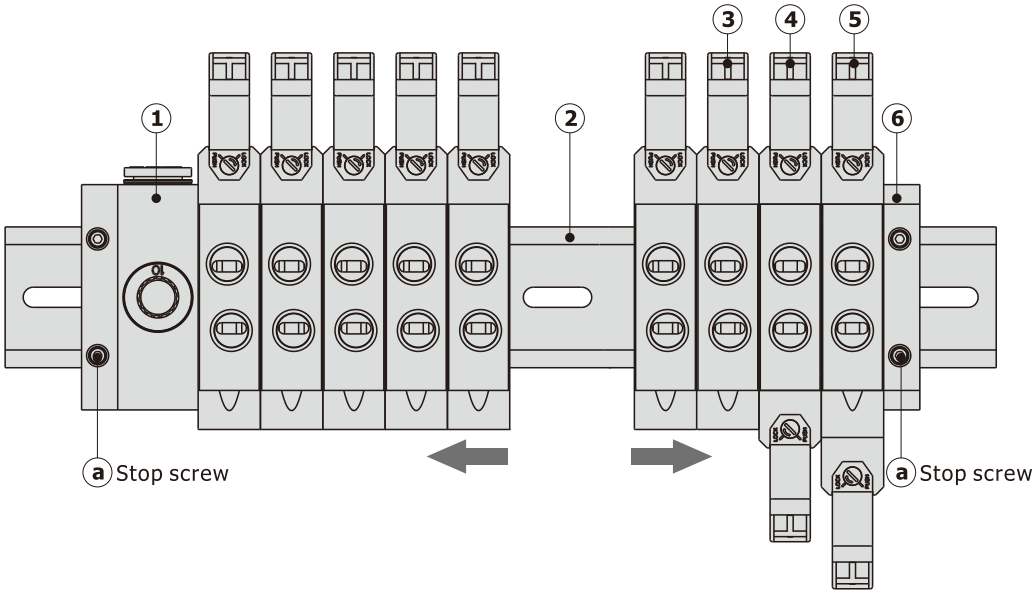
6HV100M11F~24F Guide rail



Item\Stations	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F	22F	23F	24F
L	280	280	315	315	350	350	385	385	420	420	455	455	490	490
LA	245	245	280	280	315	315	350	350	385	385	420	420	455	455
LB	228.5	244	259.5	275	290.5	306	321.5	337	352.5	368	383.5	399	414.5	430
LC	28	18	28	20	30	22	32	24	34	26	36	28	38	30

6HV Series

Installation and Application(Integrated Solenoid valve)



Configations 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.

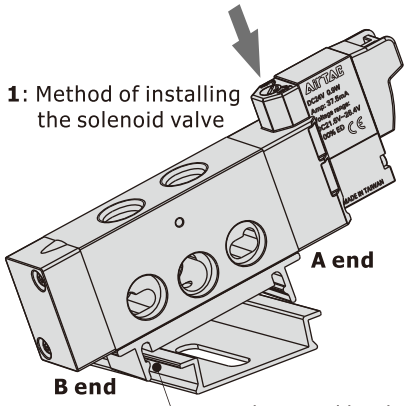
4.2) Fastening method: first fix one end cover, then push each function module hard so that there is no gap between the valves, then tighten the stop screw at the other end.

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.

6HV Series

Fig. 1: Method of installing the solenoid valve

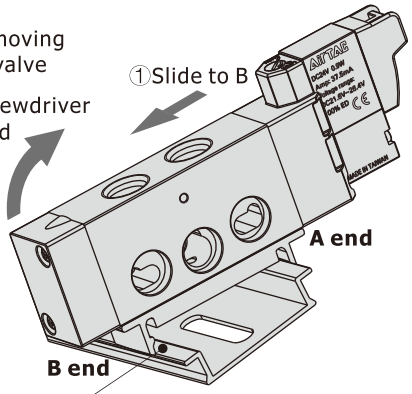


Hang the B end hook and press it in the direction of the arrow.⇩

Fig. 2: Method of removing the solenoid valve

①Slide to B

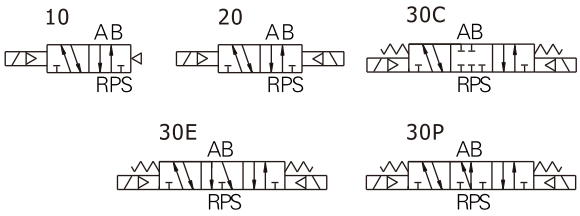
②Use a flat-blade screwdriver to remove the B end from the guide rail.



After pressing the A end hook on the DIN rail, use a flat-blade screwdriver to remove the B end from the guide rail.

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

7V Series



Ordering code

7V 2 10 J 5/16 B 050 T

1 2 3 4 5 6 7 8

①Model	7V：Solenoid valve (5/2, 5/3 way)					
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[Note1]					
⑤Port size Thread	M5: M5	06 : 1/8"		08 : 1/4"	10 : 3/8"	
⑤Port size Tube	5/32 : Φ5/32	5/32 : Φ5/32;	1/4: Φ1/4; 5/16: Φ5/16	5/16: Φ5/16;	3/8: Φ3/8	–
⑥Voltage	A: AC220V	B: DC24V	C: AC110V	F: DC12V		
⑦Line length	050：0.5m　200：2.0m					
⑧Thread type	–	T: NPT				

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

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=Φ5/32			Port A=Port B=Φ5/32(or Φ1/4 or Φ5/16)		
Orifice size (Cv value)		5.0mm²(0.28)		4.5mm²(0.25)	9.5mm²(0.55)		8.0mm²(0.48)
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=Φ5/16(or Φ3/8)			-		
Orifice size (Cv value)		14.0mm²(0.83)		11.0mm²(0.60)	36.0mm²(2.00)		21.6mm²(1.20)
Weight		120g	135g	145g	230g	265g	305g
Fluid		Air(to be filtered by 40μm filter element)					
Acting		Pilot					
Operating pressure	7V0530/7V130 7V230/7V330	29~114psi(0.2~0.8MPa)					
	Others	21~114psi(0.15~0.8MPa)					
Proof pressure		175psi(1.2MPa)					
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] NPT 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.

7V Series

Coil specification

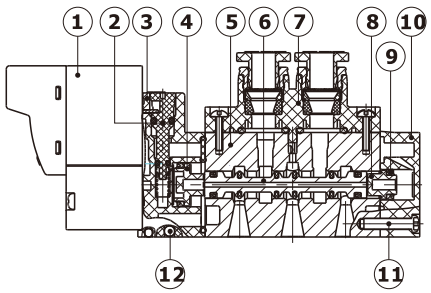
Item	Specification			
Standard voltage	AC220V	AC110V	DC24V	DC12V
Scope of voltage	AC: +15% ~-10%		DC: ±10%	
Power consumption	1.1VA		0.9W	
Protection	Dustproof			
Temperature classification	F Class			
Electrical entry	Terminal			
Activating time	0.05 sec and below			

Product feature

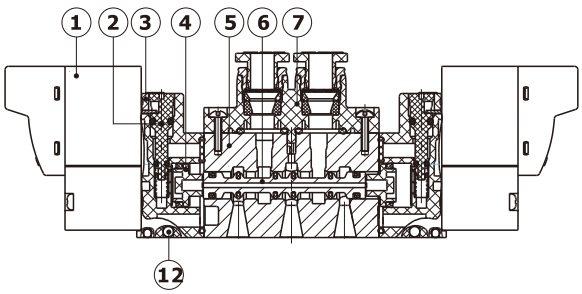
1. Electrical entry is terminal, horizontal and vertical insertion can freely switch.
2. Inner exhaust structure to collect pilot airflow, and then exhaust intensively from R, S port.
3. Die-cast molding with aluminum alloy for body. The shape of cavity is reasonable, which can increase valve's flow.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

Inner structure

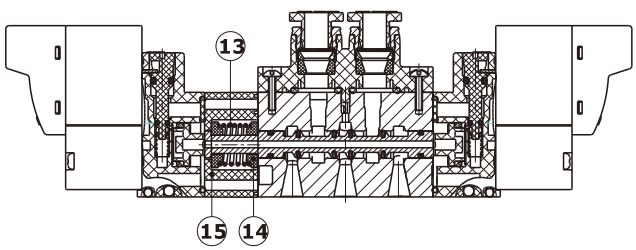
7V110



7V120



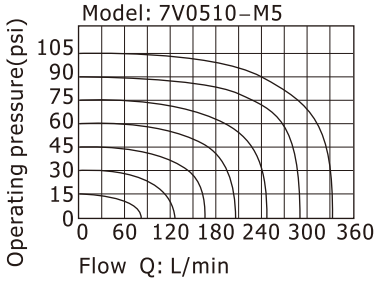
7V130C



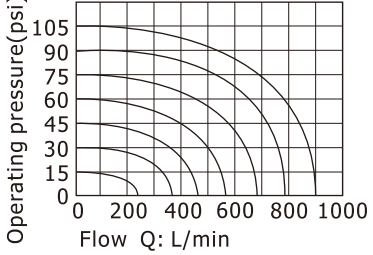
No.	Item	No.	Item	No.	Item
1	Pilot valve	6	Spool	11	Bolt
2	Manual override	7	Connecting block	12	Steel ball
3	Pilot kit	8	Little piston	13	Spring
4	Big piston	9	Gasket	14	Return holder
5	Body	10	Bottom cover	15	Side cover

Flow chart

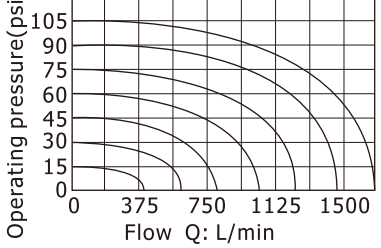
Model: 7V0510-M5



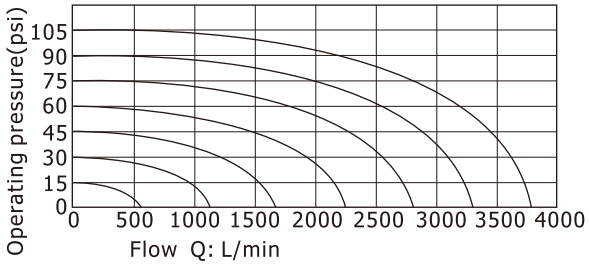
Model: 7V110-06



Model: 7V210-08



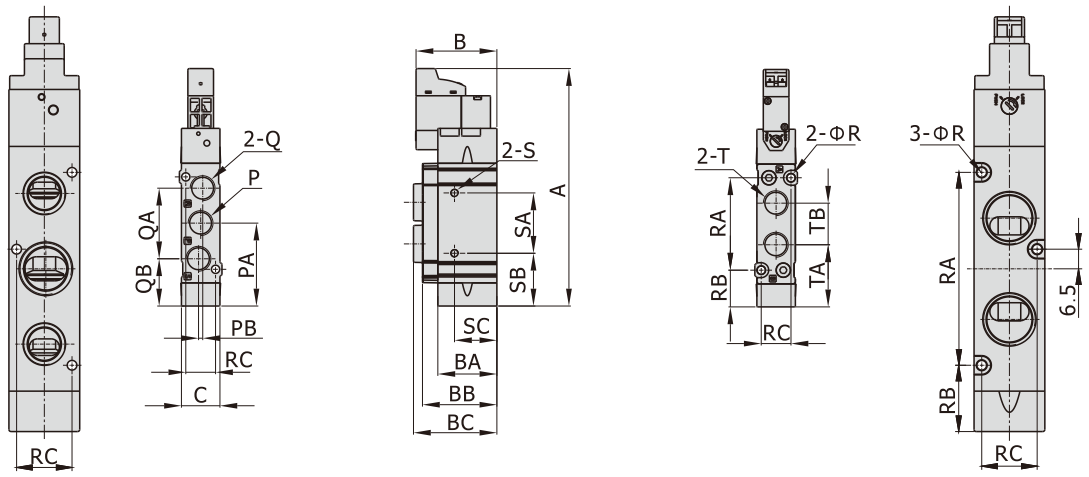
Model:7V310-10



7V Series

Dimensions

7V0510
7V110
7V210
7V310



7V310 **7V310**

Port size [Unit: inch]

Model\Item	P	Q	T
7V0510M5	M5X0.8	M5X0.8	M5X0.8
7V0510J5/32	Oval	Oval	Φ5/32(tube)
7V11006	1/8"	1/8"	1/8"
7V110J5/32	Oval	Oval	Φ5/32(tube)
7V110J1/4			Φ1/4(tube)
7V110J5/16			Φ5/16(tube)
7V21008	1/4"	1/8"	1/4"
7V210J5/16	Oval	Oval	Φ5/16(tube)
7V210J3/8			Φ3/8(tube)
7V31010	3/8"	1/4"	3/8"

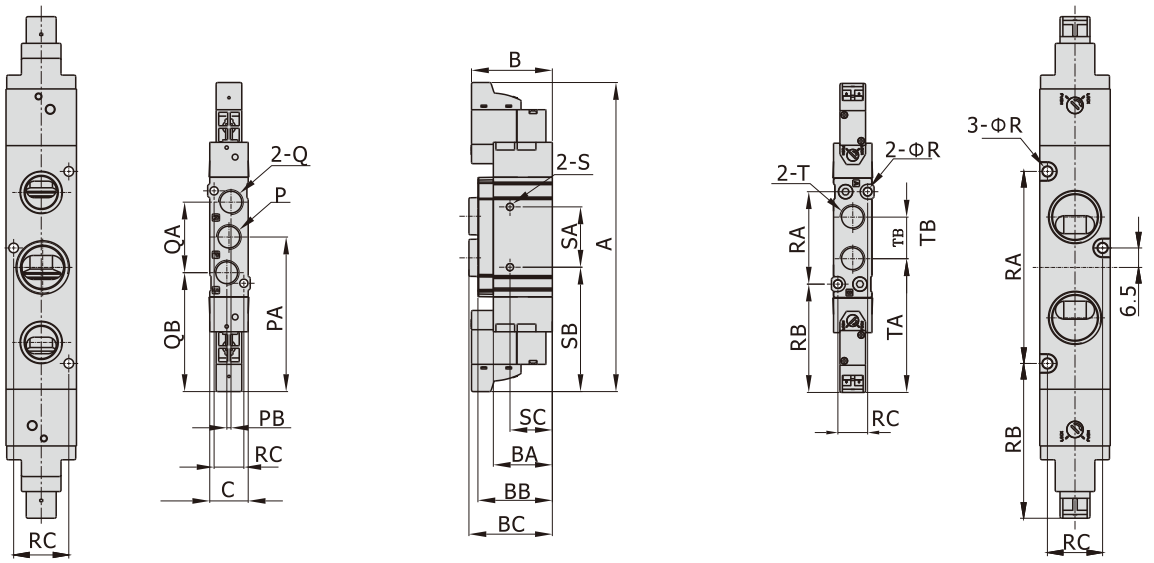
[Unit: mm]

Model\Item	A	B	BA	BB	BC	C	PA	PB	QA	QB	TA	TB	R	RA	RB	RC	S	SA	SB	SC
7V0510M5	73	30.5	18.5	23	23.5	10	22.5	1	19	13	17.5	10.5	2.1	21.4	12	8.6	M3X0.5dp3	9.5	17.8	4
7V0510J5/32					32.5												–	–	–	–
7V11006	92.5	32	23	29	32.5	15	32.5	1.6	27.2	18.5	24	16.2	3.2	36	14.5	11.6	M3X0.5dp3	23.5	20.5	16.5
7V110J5/32					38.2												–	–	–	–
7V110J1/4					40															
7V110J5/16					41.5															
7V21008	106	33.5	28	34	40.5	18	39	3	36	21	29	20	4.3	42	18	13.6	M4X0.7dp5	20	29	7
7V210J5/16					46.5												–	–	–	–
7V210J3/8					49															
7V31010	137.5	46	–	–	46	23.5	54	0.5	50	29	37	33.5	3.2	64	22	18.4	Φ4.3	25	41.5	8

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

7V Series

7V0520
7V120
7V220
7V320



7V320 **7V320**

Port size [Unit: inch]

Model\Item	P	Q	T
7V0520M5	M5X0.8	M5X0.8	M5X0.8
7V0520J5/32	Oval	Oval	Φ5/32(tube)
7V12006	1/8"	1/8"	1/8"
7V120J5/32	Oval	Oval	Φ5/32(tube)
7V120J1/4			Φ1/4(tube)
7V120J5/16			Φ5/16(tube)
7V22008	1/4"	1/8"	1/4"
7V220J5/16	Oval	Oval	Φ5/16(tube)
7V22008J3/8			Φ3/8(tube)
7V32010	3/8"	1/4"	3/8"

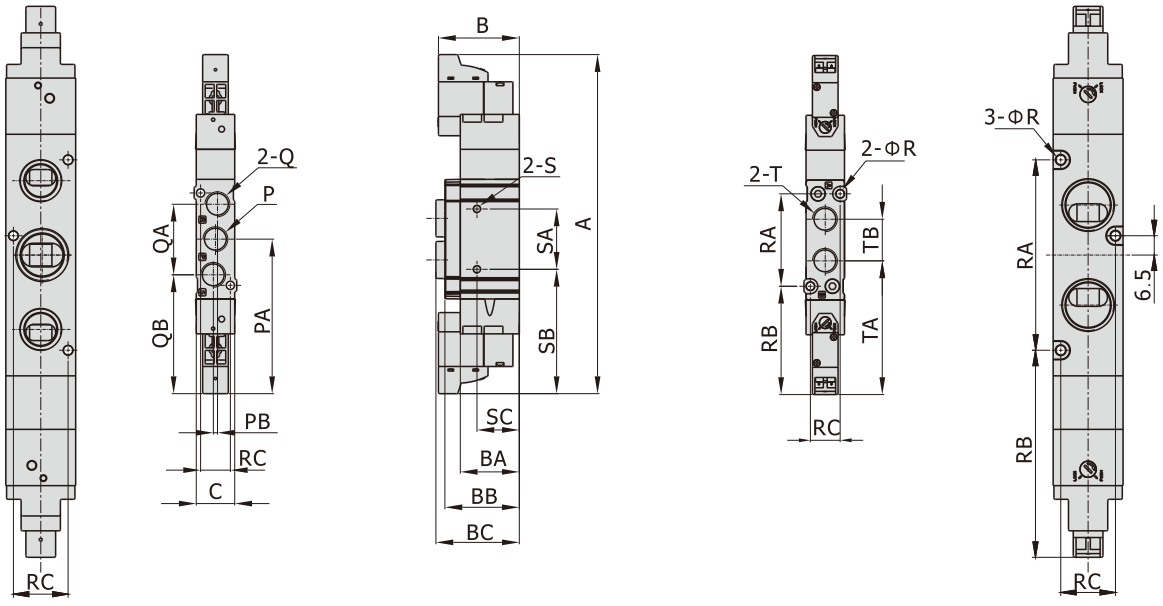
[Unit: mm]

Model\Item	A	B	BA	BB	BC	C	PA	PB	QA	QB	TA	TB	R	RA	RB	RC	S	SA	SB	SC
7V0520M5	101.5	30.5	18.5	23	23.5	10	50.5	1	19	41	45.5	10.5	2.1	21.4	12	8.6	M3X0.5dp3	9.5	17.8	4
7V0520J5/32					32.5												–	–	–	–
7V12006	120.5	32	23	29	32.5	15	60.5	1.6	27.2	46.5	52	16.2	3.2	36	14.5	11.6	M3X0.5dp3	23.5	48.5	16.5
7V120J5/32					38.2												–	–	–	–
7V120J1/4					40															
7V120J5/16					41.5															
7V22008	134	33.5	28	34	40.5	18	67	3	36	49	57	20	4.3	42	18	13.6	M4X0.7dp5	20	57	7
7V220J5/16					46.5												–	–	–	–
7V22008J3/8					49															
7V32010	167	46	–	–	46	23.5	83.5	0.5	50	58.5	67	33.5	3.2	64	51.5	18.4	Φ4.3	25	71	8

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

7V Series

7V0530
7V130
7V230
7V330



7V330 **7V330**

Port size [Unit: inch]

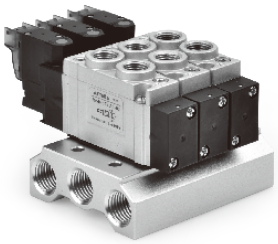
Model\Item	P	Q	T
7V0530M5	M5X0.8	M5X0.8	M5X0.8
7V0530J5/32	Oval	Oval	Φ5/32(tube)
7V13006	1/8"	1/8"	1/8"
7V130J5/32	Oval	Oval	Φ5/32(tube)
7V130J1/4			Φ1/4(tube)
7V130J5/16			Φ5/16(tube)
7V23008	1/4"	1/8"	1/4"
7V230J5/16	Oval	Oval	Φ5/16(tube)
7V230J3/8			Φ3/8(tube)
7V33010	3/8"	1/4"	3/8"

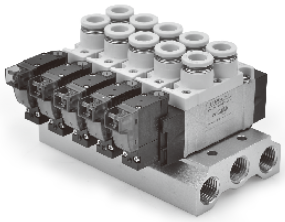
[Unit: mm]

Model\Item	A	B	BA	BB	BC	C	PA	PB	QA	QB	TA	TB	R	RA	RB	RC	S	SA	SB	SC
7V0530M5	110	30.5	18.5	23	23.5	10	50.5	1	19	41	45.5	10.5	2.1	21.4	12	8.6	M3X0.5dp3	9.5	45.8	4
7V0530J5/32					32.5												–	–	–	–
7V13006	132	32	23	29	32.5	15	60.5	1.6	27.2	46.5	52	16.2	3.2	36	14.5	11.6	M3X0.5dp3	23.5	48.5	16.5
7V130J5/32					38.2												–	–	–	–
7V130J1/4					40															
7V130J5/16					41.5															
7V23008	147	33.5	28	34	40.5	18	67	3	36	49	57	20	4.3	42	18	13.6	M4X0.7dp5	20	57	7
7V230J5/16					46.5												–	–	–	–
7V230J3/8					49															
7V33010	185	46	–	–	46	23.5	101.5	0.5	50	76.5	85	33.5	3.2	64	69.5	18.4	Φ4.3	25	89	8

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

Manifold for 7V series





Ordering code

Ordering code for manifold

7V100M 5F T

① ② ③

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	T: NPT			

Ordering code for blank plate

P-7V100M-R2

① ②

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.

Specification

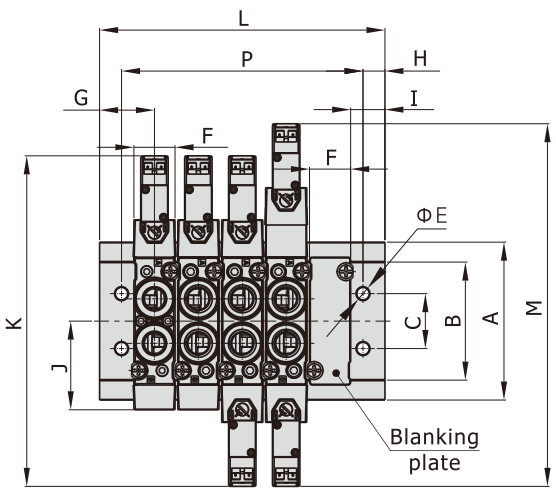
Item\Manifold Model	7V0500M	7V100M	7V200M	7V300M
Fluid	Air(to be filtered by 40μm filter element)			
Temperature	-20~70℃			
Adaptable valve's series	7V0500 Series	7V100 Series	7V200 Series	7V300 Series

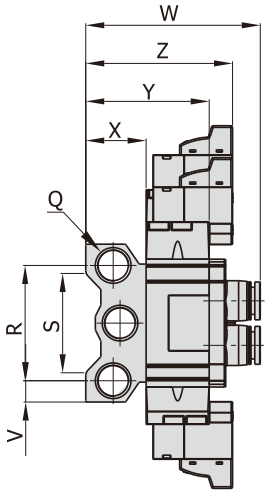
Product feature

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.

Manifold for 7V series

Dimensions





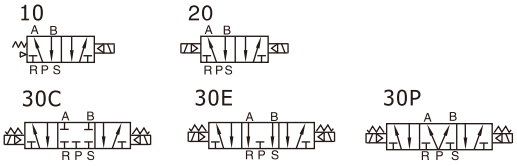
[Unit: mm]

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	7.5	12.5	22.5	102	110	1/8"	32	26	7	36.2(M5)	50.5(J5/32)		17	35.5	47.5
7V100M	57.5	43	20	4.5	15	20	8	12.5	32	121	132	1/4"	40	36	9	55(06)	62.5(J5/32) 64(J1/4)	65.5(J5/16)	22	45	53.5
7V200M	60	52	21	4.5	18	22	8.5	13	39	134	147	1/4"	42	38	9	58.5(08)	76.5(J5/16)	78.5(J3/8)	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	35	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	40	50	66	82	98	114	130	146	162	178	194	210	226	242	258	247	290	306	322	338
7V200M	44	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

4V100 Series



Ordering code

4V 1 10 06 A □ T

1 2 3 4 5 6 7

①Model	②Code	③Valve type	④Port size	⑤Voltage
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

⑥Electrical entry	⑦Thread type
Blank: Terminal I: Grommet	No this code(M5) T: NPT

Please refer to 84 for manifold specification and the order way.

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 40μm filter element)			
Acting	Internal pilot or external pilot			
Port size [Note1]	In=Out=M5		In=Out=1/8"	
Orifice size	5.5mm² (Cv=0.31)	5.0mm² (Cv=0.28)	12.0mm² (Cv=0.67)	9.0mm² (Cv=0.50)
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
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] NPT 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.

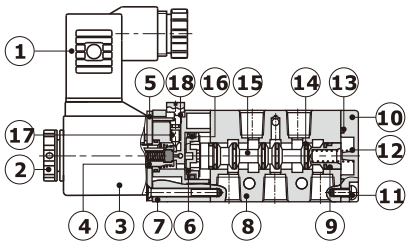
4V100 Series

Coil specification

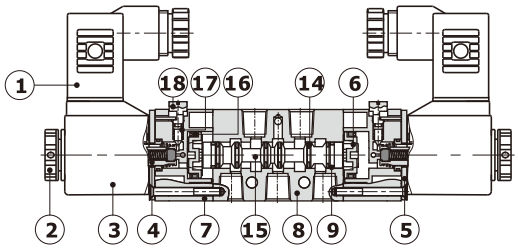
Item	specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	3.5VA	3.5VA	4.0VA	2.5W	2.5W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				

Inner structure

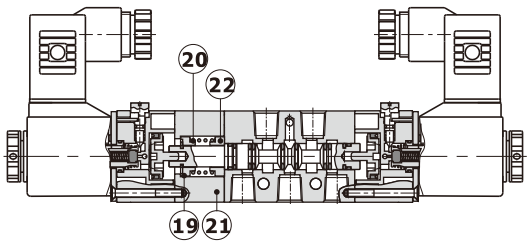
4V110



4V120



4V130C

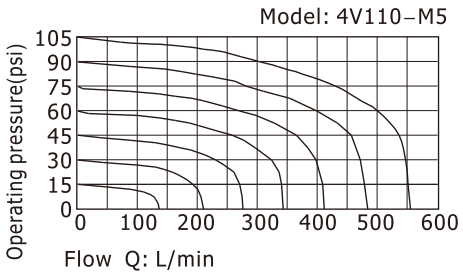


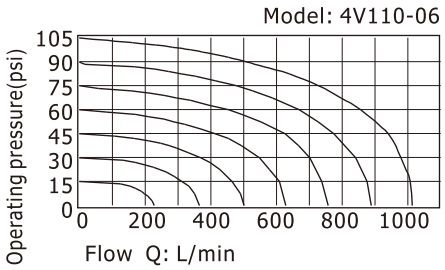
No.	Item	No.	Item	No.	Item
1	Connector	9	Wear ring	17	Override spring
2	Coil net	10	Bottom cover	18	Manual override
3	Coil	11	Fixed screw	19	Spring holder
4	Armature	12	Spool spring	20	Return spring
5	Fixed plate	13	Bottom cover gasket	21	Side cover
6	Piston	14	Spool O-ring	22	Spring holder
7	Pilot kit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

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.

Flow chart



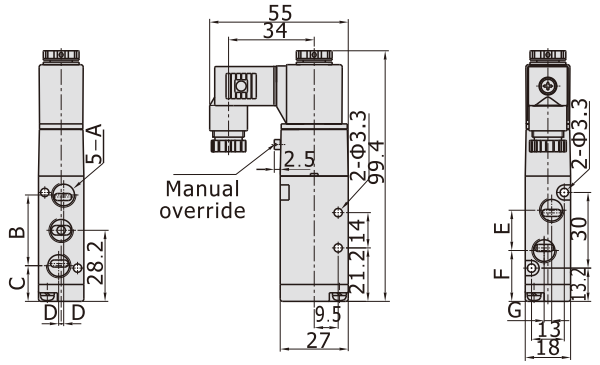


4V100 Series

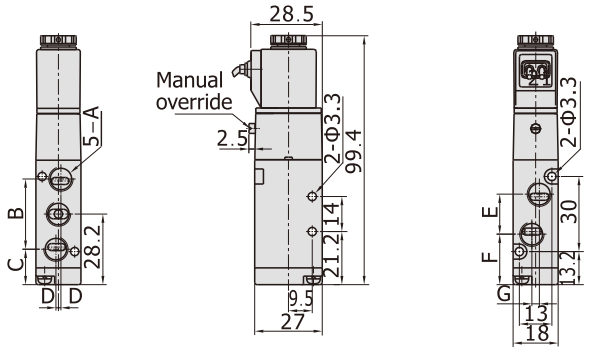
Dimensions

[Unit: mm]

4V110(Terminal)

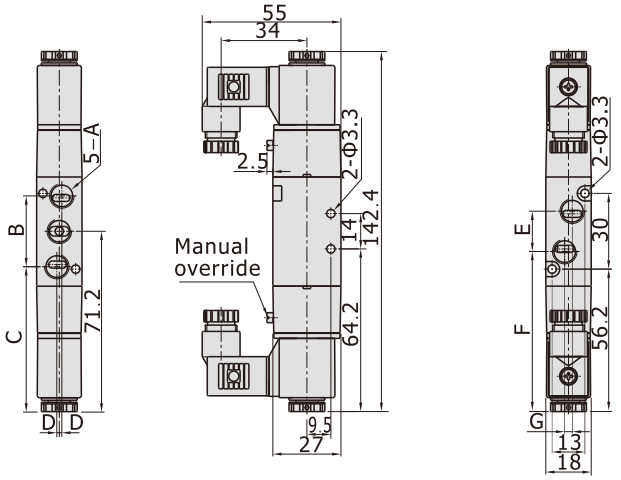


4V110(Grommet)

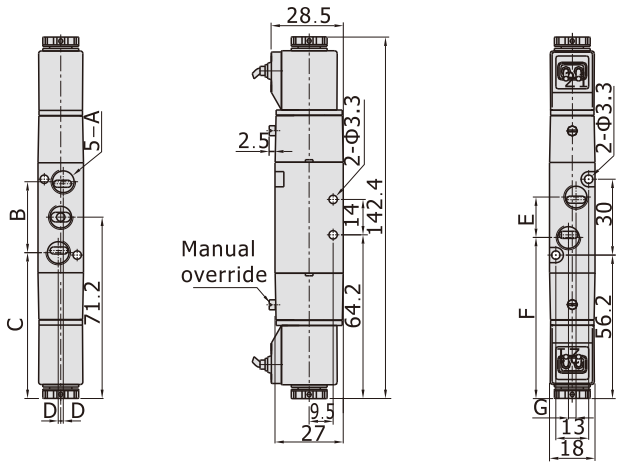


Model\Item	A	B	C	D	E	F	B
4V110-M5	M5x0.8	27	14.7	0	14	21.2	0
4V110-06	1/8"	28	14.2	1	16	20.2	3

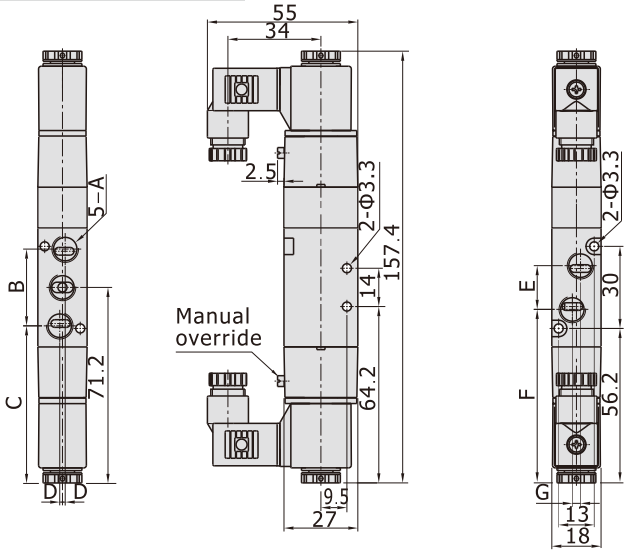
4V120(Terminal)



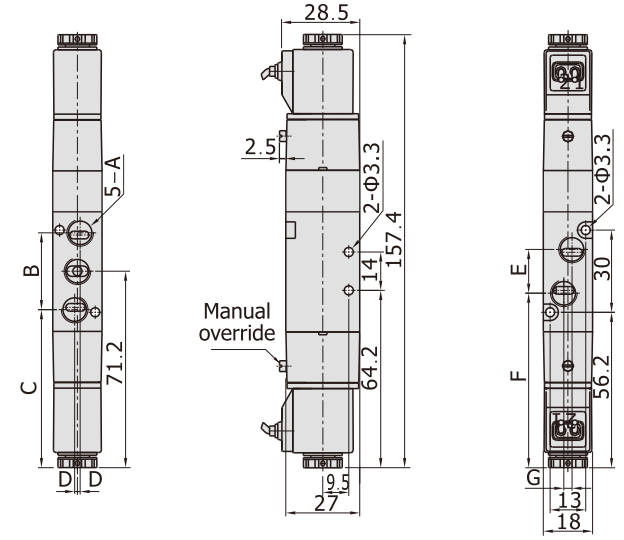
4V120(Grommet)



4V130(Terminal)

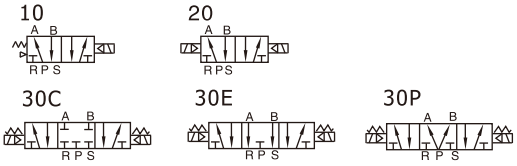


4V130(Grommet)



Model\Item		A	B	C	D	E	F	G
4V120-M5	4V130-M5	M5x0.8	27	57.7	0	14	64.3	0
4V120-06	4V130-06	1/8"	28	57.2	1	16	63.2	3

4V200 Series



Ordering code

4V 2 10 08 A □ T

1 2 3 4 5 6 7

①Model	②Code	③Valve type	④Port size	⑤Voltage
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

⑥Electrical entry	⑦Thread type
Blank: Terminal I: Grommet	T: NPT

Please refer to 84 for manifold specification and the order way.

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 40μm 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	14.0mm² (Cv=0.78)	12.0mm² (Cv=0.67)	16.0mm² (Cv=0.89)	12.0mm² (Cv=0.67)
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	21~114psi(0.15~0.8MPa)			
Operating pressure	175psi(1.2MPa)			
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] NPT 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.

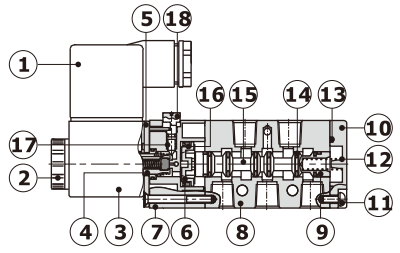
4V200 Series

Coil specification

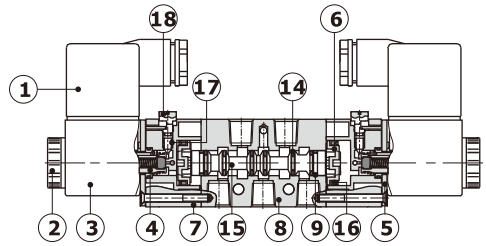
Item	specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	4.5VA	4.5VA	5.0VA	3.0W	3.0W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				

Inner structure

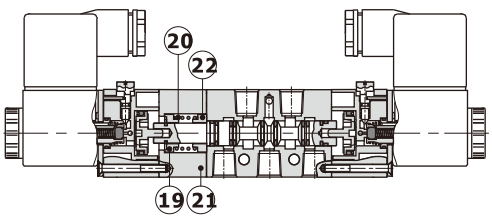
4V210



4V220



4V230C

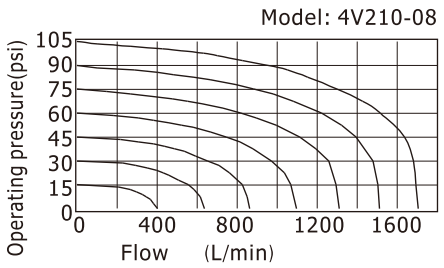


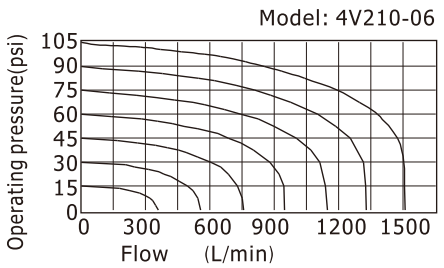
No.	Item	No.	Item	No.	Item
1	Connector	9	Wear ring	17	Override spring
2	Coil net	10	Bottom cover	18	Manual override
3	Coil	11	Fixed screw	19	Spring holder
4	Armature	12	Spool spring	20	Return spring
5	Fixed plate	13	Bottom cover gasket	21	Side cover
6	Piston	14	Spool O-ring	22	Spring holder
7	Pilot kit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

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.

Flow chart



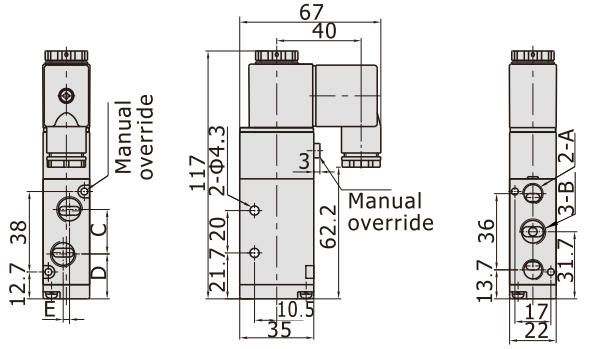


4V200 Series

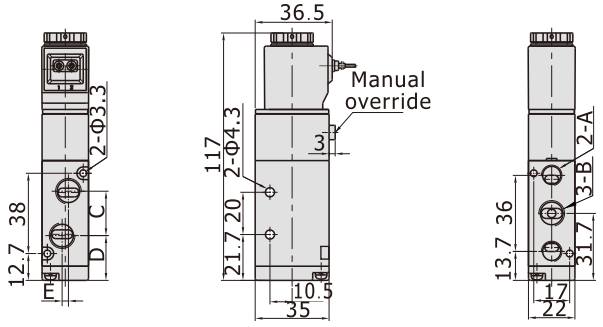
Dimensions

[Unit: mm]

4V210(Terminal)

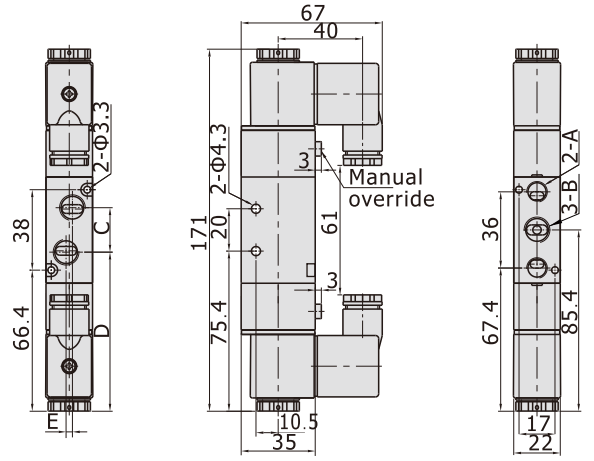


4V210(Grommet)

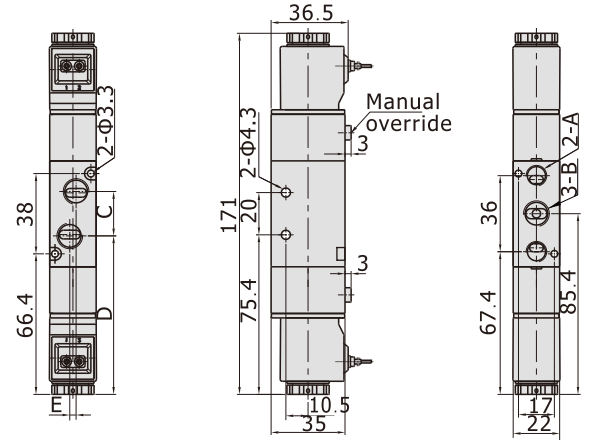


Model\Item	A	B	C	D	E
4V210-06	1/8"	1/8"	18	22.7	0
4V210-08	1/8"	1/4"	21	21.2	3

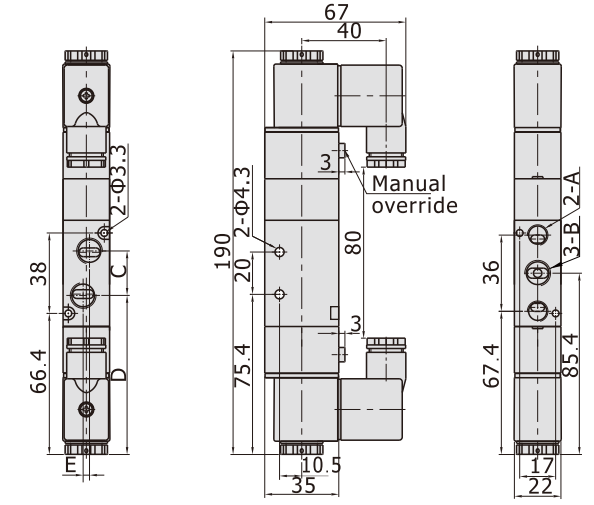
4V220(Terminal)



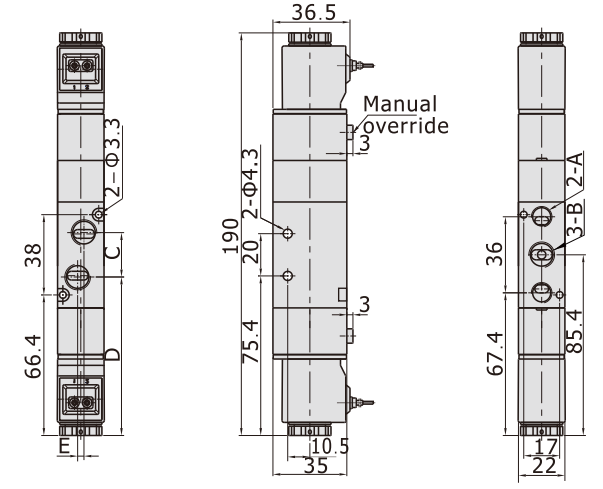
4V220(Grommet)



4V230(Terminal)

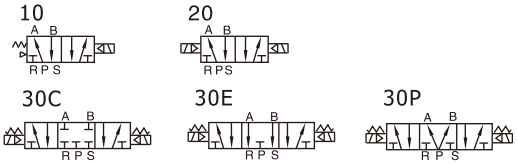


4V230(Grommet)



Model\Item		A	B	C	D	E
4V220-06	4V230-06	1/8"	1/8"	18	76.4	0
4V220-08	4V230-08	1/8"	1/4"	21	74.9	3

4V300 Series



Ordering code

4V 3 10 10 A □ T

1 2 3 4 5 6 7

①Model
4V: Solenoid valve (5/2, 5/3 way)

②Code
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 size
08: 1/4"
10: 3/8"

⑤Voltage
A: AC220V
B: DC24V
C: AC110V
E: AC24V
F: DC12V

⑥Electrical entry
Blank: Terminal
I: Grommet

⑦Thread type
T: NPT

Please refer to 84 for manifold specification and the order way.

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 40μm 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	25.0mm² (Cv=1.40)	18.0mm² (Cv=1.00)	30.0mm² (Cv=1.68)	18.0mm² (Cv=1.00)
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
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] NPT 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.

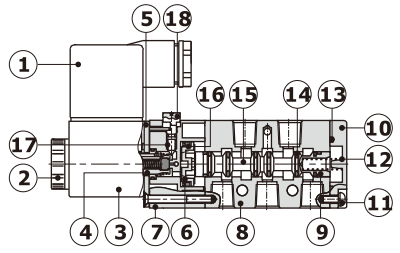
4V300 Series

Coil specification

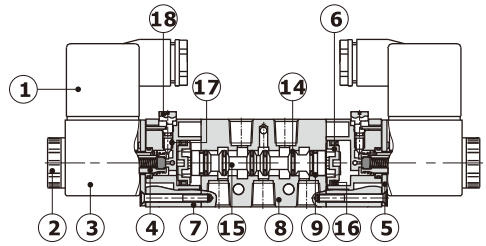
Item	specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	4.5VA	4.5VA	5.0VA	3.0W	3.0W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				

Inner structure

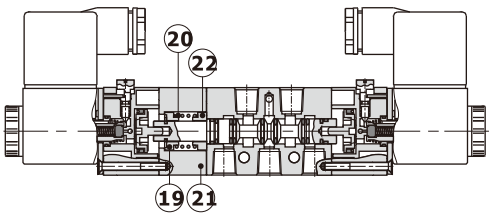
4V310



4V320



4V330C

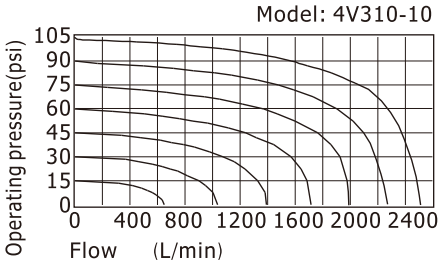


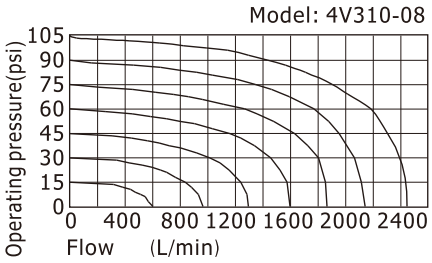
No.	Item	No.	Item	No.	Item
1	Connector	9	Wear ring	17	Override spring
2	Coil net	10	Bottom cover	18	Manual override
3	Coil	11	Fixed screw	19	Spring holder
4	Armature	12	Spool spring	20	Return spring
5	Fixed plate	13	Bottom cover gasket	21	Side cover
6	Piston	14	Spool O-ring	22	Spring holder
7	Pilot kit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

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.

Flow chart



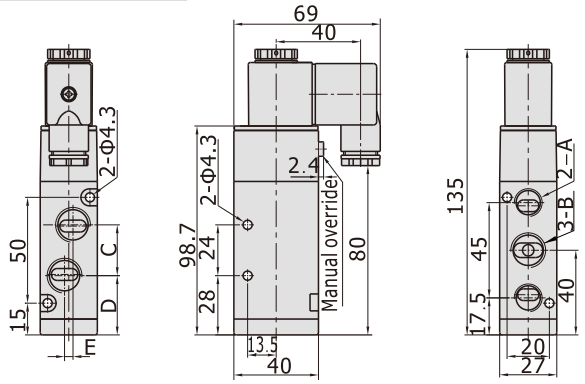


4V300 Series

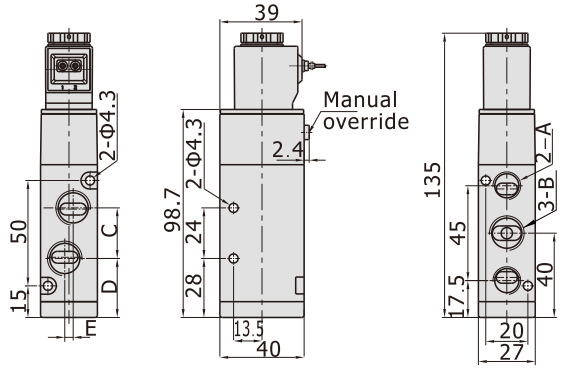
Dimensions

[Unit: mm]

4V310(Terminal)

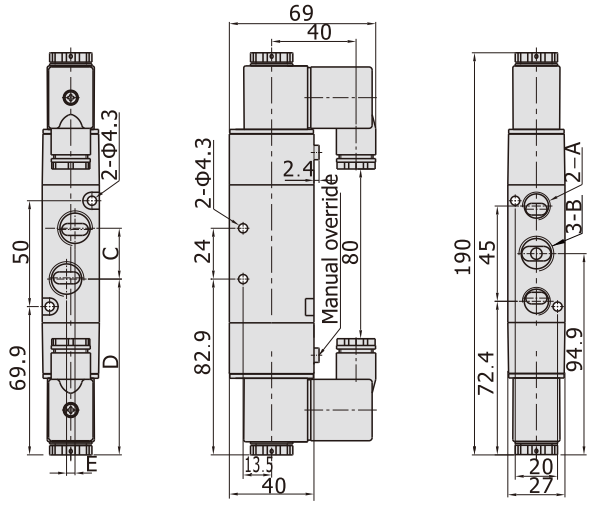


4V310(Grommet)

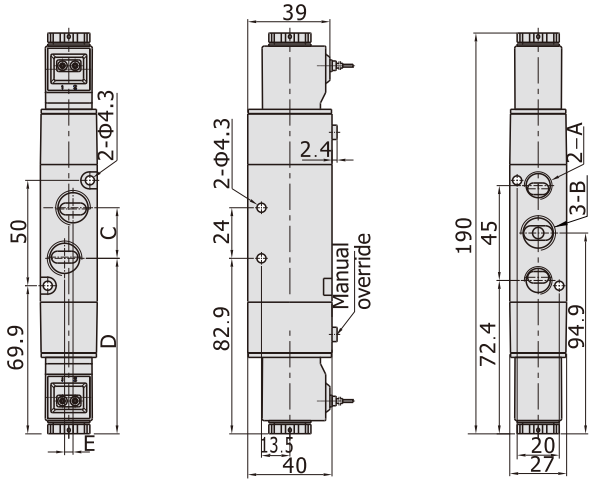


Model\Item	A	B	C	D	E
4V310-08	1/4"	1/4"	22	29	0
4V310-10	1/4"	3/8"	24	28	4

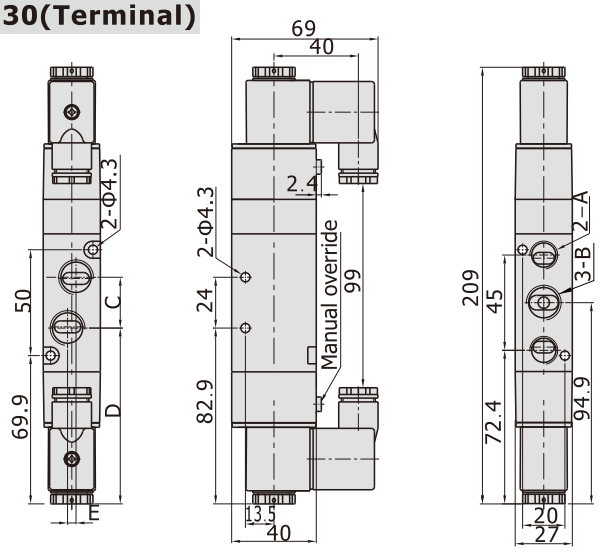
4V320(Terminal)



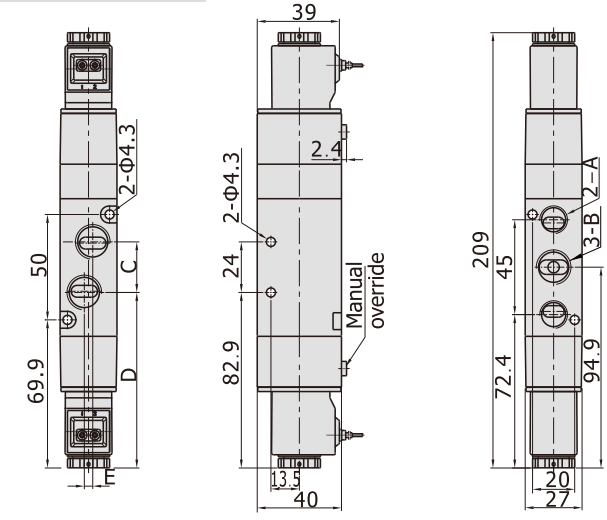
4V320(Grommet)



4V330(Terminal)

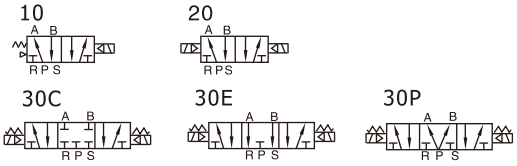


4V330(Grommet)



Model\Item		A	B	C	D	E
4V320-08	4V330-08	1/4"	1/4"	22	83.9	0
4V320-10	4V330-10	1/4"	3/8"	24	82.9	4

4V400 Series



Ordering code

4V	4	10	15	A	□	T
①	②	③	④	⑤	⑥	⑦

①Model
4V: Solenoid valve (5/2, 5/3 way)

②Code
4: 400 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
15: 1/2"

⑤Voltage
A: AC220V
B: DC24V
C: AC110V
E: AC24V
F: DC12V

⑥Electrical entry
Blank: Terminal
I: Grommet

⑦Thread type
T: NPT

Please refer to 84 for manifold specification and the order way.

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	50.0mm²(Cv=2.79)		30.0mm²(Cv=1.68)		
Valve type	5 port 2 position		5 port 3 position		
Operating pressure	21~114psi(0.15~0.8MPa)				
Proof pressure	175psi(1.2MPa)				
Temperature	-20~70℃				
Material of body	Aluminum alloy				
Lubrication [Note2]	Not required				
Max. frequency [Note3]	3 cycle/sec				
Weight (g)	590	720	770		

[Note1] NPT 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.

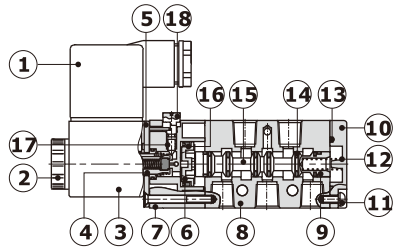
4V400 Series

Coil specification

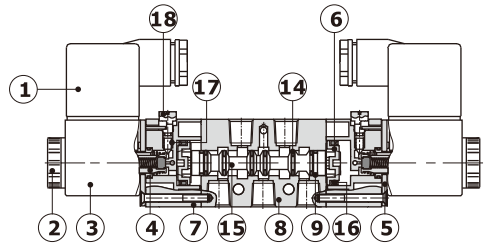
Item	specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	4.5VA	4.5VA	5.0VA	3.0W	3.0W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				

Inner structure

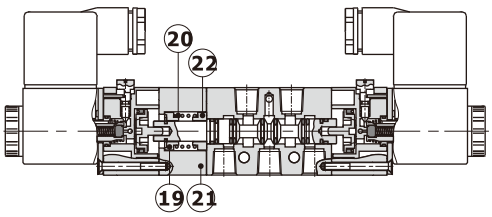
4V410



4V420



4V430C

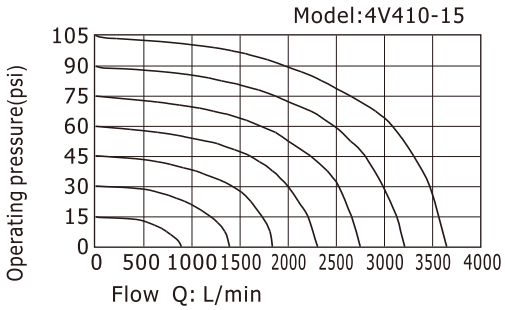


No.	Item	No.	Item	No.	Item
1	Connector	9	Wear ring	17	Override spring
2	Coil net	10	Bottom cover	18	Manual override
3	Coil	11	Fixed screw	19	Spring holder
4	Armature	12	Spool spring	20	Return spring
5	Fixed plate	13	Bottom cover gasket	21	Side cover
6	Piston	14	Spool O-ring	22	Spring holder
7	Pilot kit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

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.

Flow chart

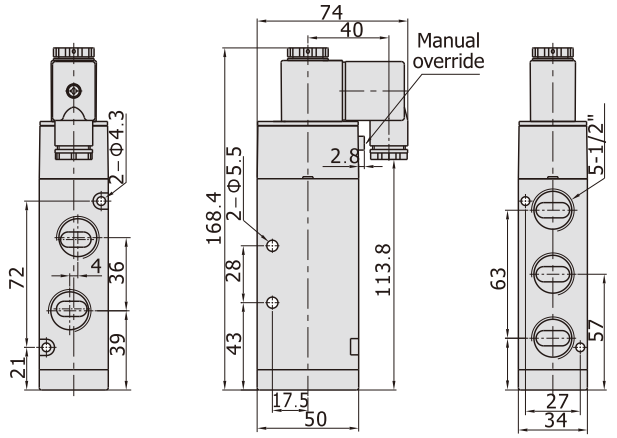


4V400 Series

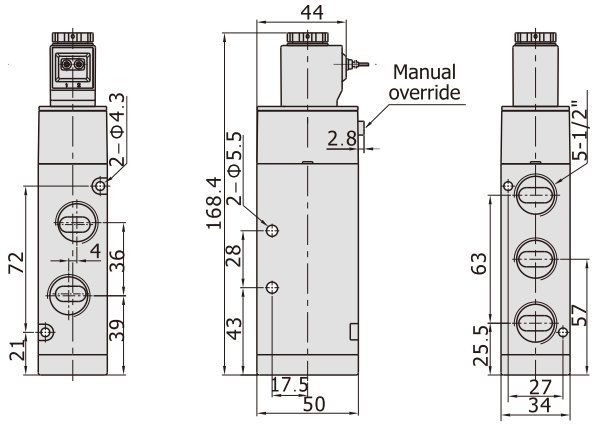
Dimensions

[Unit: mm]

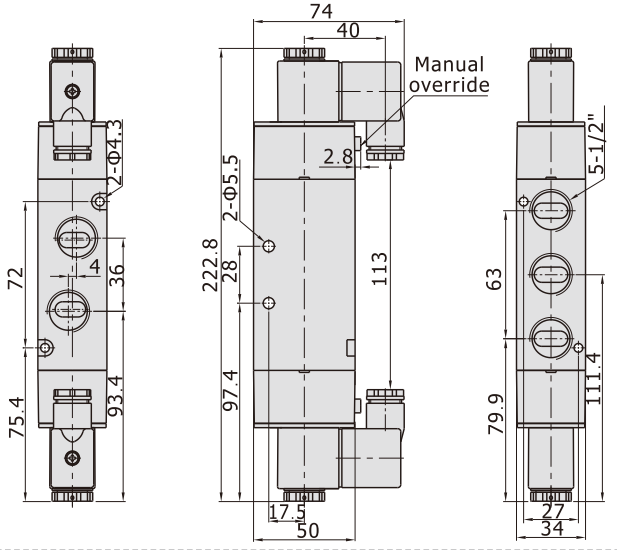
4V410(Terminal)



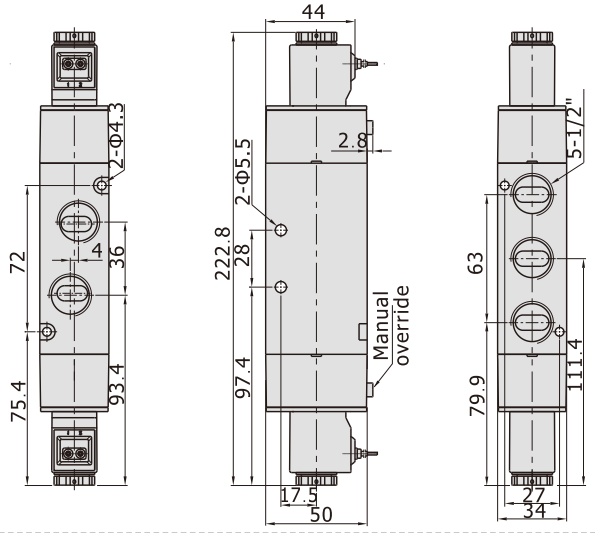
4V410(Grommet)



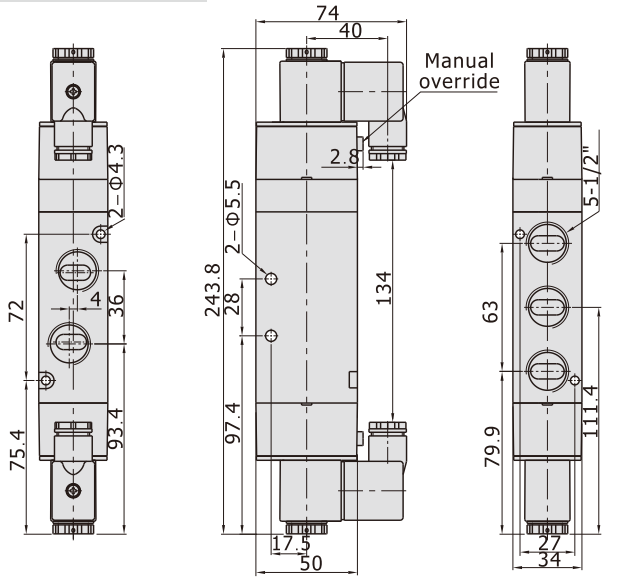
4V420(Terminal)



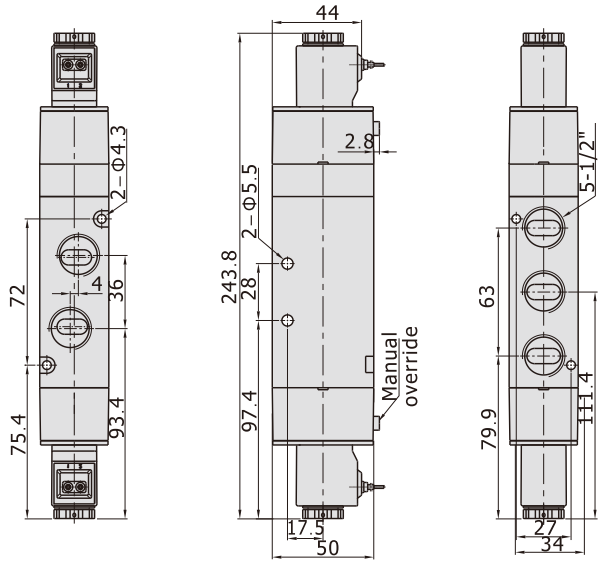
4V420(Grommet)



4V430(Terminal)



4V430(Grommet)



Manifold

Ordering code

Ordering code for manifold

100M 5F T

1 2 3

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

Ordering code for blank plate

P–100M–R2

1 2 3

①Kits	②Model	③Code
P: Kits	100M: 100 Series manifold	R2: Blank plate for manifold
	200M: 200 Series manifold	
	300M: 300 Series manifold	
	400M: 400 Series 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 the two parts of the manifold's and the blank plate's.
2. Manifold kits contains manifold, seal and screw;
3. Blank plate kits contains blank plate and screw.

Specification

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

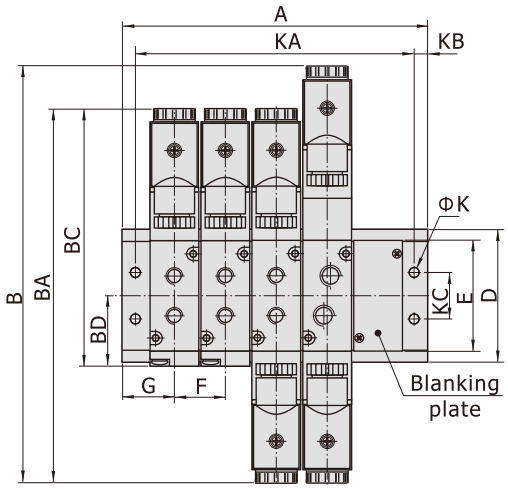
Product feature

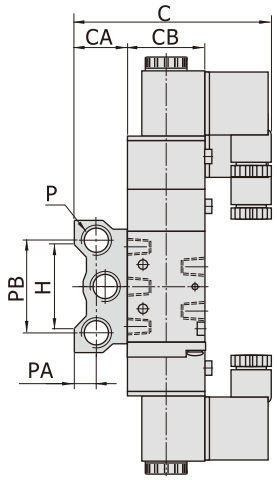
1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost.
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring.
3. Flexible combination and strong expansion capability can make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

Manifold

Dimensions

With 4V solenoid valve





[Unit: mm]

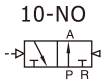
Model\Item	B	BA	BC	BD	C	CA	CB	D	E	F	G	H	K	KB	KC	P	PA	PB
100M□F	154.5	142.5	99.5	28	78	23	27	57.5	43	19	19	36	4.5	5	20	1/4"	10	40
200M□F	189	171	117	31.7	92	25	35	60	52	23	22	38	4.5	5	21	1/4"	10	42
300M□F	208	190	135	40	98	29	40	75	64	28	26	54	4.5	5	26	3/8"	13.5	53
400M□F	243	223	168.5	57	108	34	50	100	94	35	30.5	75	5.5	6	32	1/2"	15	68

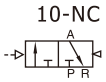
Model\Item	A															
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
100M□F	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323
200M□F	44	67	90	113	136	159	182	205	228	251	274	297	320	343	366	389
300M□F	52	80	108	136	164	192	220	248	276	304	332	360	-	-	-	-
400M□F	61	96	131	166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

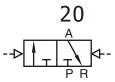
Model\Item	KA															
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
100M□F	28	47	66	85	104	123	142	161	180	199	218	237	256	275	294	313
200M□F	34	57	80	103	126	149	172	195	218	241	264	287	310	333	356	379
300M□F	42	70	98	126	154	182	210	238	266	294	322	350	-	-	-	-
400M□F	49	84	119	154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

Air valve(3/2 way)

6TA Series







Ordering code

6TA 2 10 08 NC T

1 2 3 4 5 6

①Model	6TA：Air valve (3/2 way)					
②Code	05：0500 Series	1：100 Series		2：200 Series		3：300 Series
③Valve type	10：Single air control 3/2 way			20：Double air control 3/2 way		
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 don't acting type]	
⑥Thread type	–		T: NPT			

Specification

Model	**6TA0510**	**6TA0520**	**6TA110**	**6TA120**
Port size [Note1]	In=Out=Exh=M5		In=Out=Exh=M5(or=1/8")	
Orifice size(Cv)	5.0mm²(0.28)		M5：5.0mm²(0.28)	
			06：10.0mm²(0.58)	
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)	06：10.0mm²(0.58)		36.0mm²(2.00)	
	08：18.0mm²(1.06)			
Weight (g)	96	121	200	240
Fluid	Air(to be filtered by 40μm filter element)			
Acting	External air control			
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Lubrication [Note2]	Not required			
Max.frequency [Note3]	5 cycle/sec			

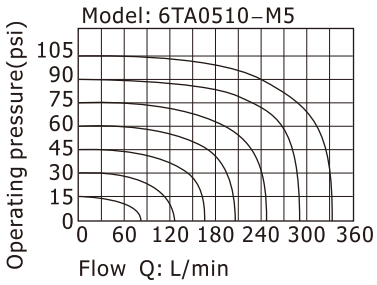
[Note1] NPT thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span.
Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.

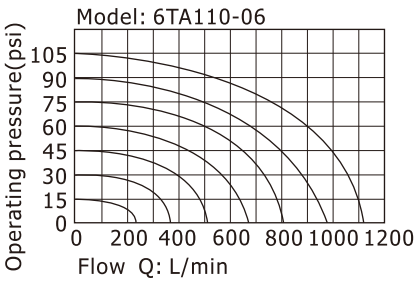
Product feature

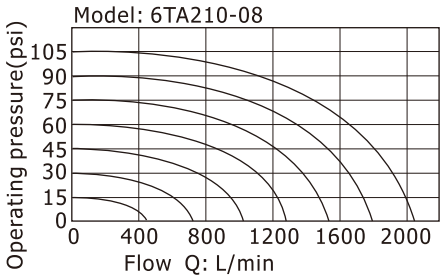
1.Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
2. Can integrate manifold to form valve group to save space.

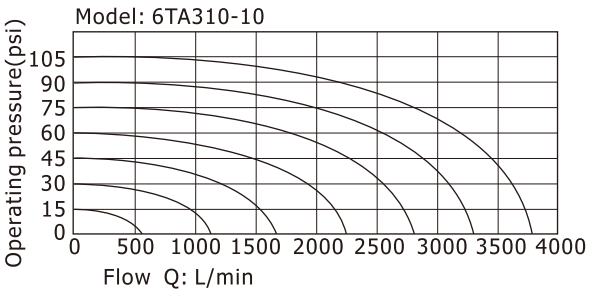
6TA Series

Flow chart



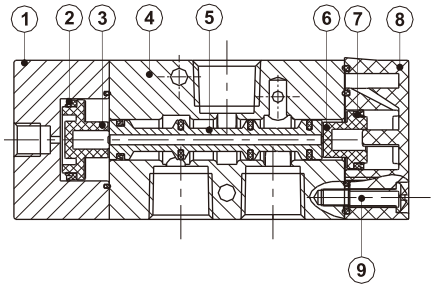




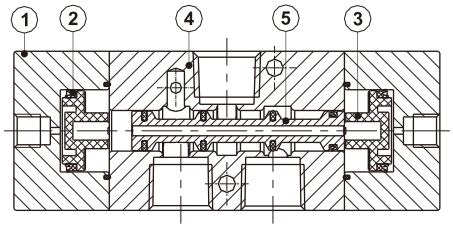


Inner structure

6TA110



6TA120NC

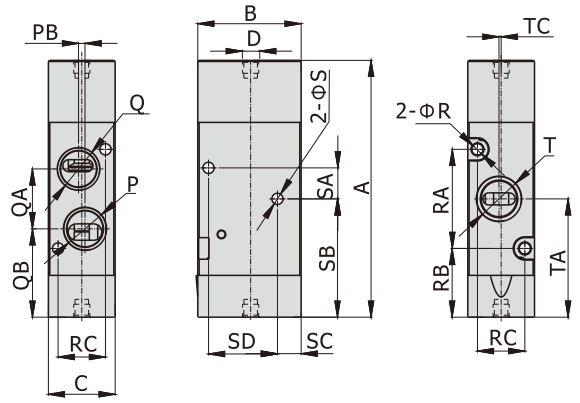


No.	Item	No.	Item	No.	Item
1	Pilot valve	4	Body	7	Gasket
2	Gasket	5	Spool	8	Bottom cover
3	Big piston	6	Small piston	9	Bolt

6TA Series

Dimensions

6TA0510
6TA110
6TA210
6TA310



Port size [Unit: inch]

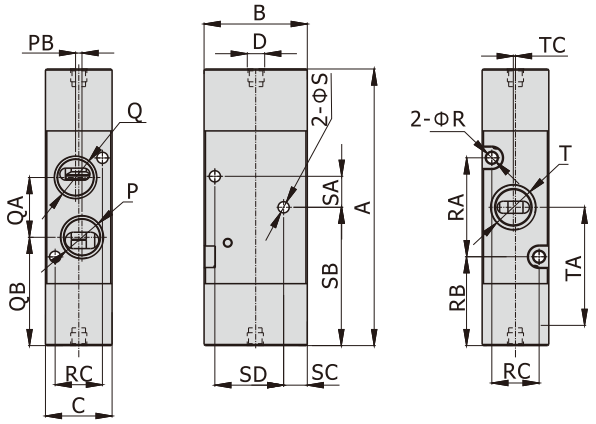
Model\Item	D	P	Q	T
6TA0510M5	M5X0.8	M5X0.8	M5X0.8	M5X0.8
6TA110M5	M5X0.8	M5X0.8	M5X0.8	M5X0.8
6TA11006	M5X0.8	1/8"	1/8"	1/8"
6TA21006	1/8"	1/8"	1/8"	1/8"
6TA21008	1/8"	1/4"	1/8"	1/4"
6TA31010	1/8"	3/8"	1/4"	3/8"

[Unit: mm]

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

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

6TA0520
6TA120
6TA220
6TA320



Port size [Unit: inch]

Model\Item	D	P	Q	T
6TA0520M5	M5X0.8	M5X0.8	M5X0.8	M5X0.8
6TA120M5	M5X0.8	M5X0.8	M5X0.8	M5X0.8
6TA12006	M5X0.8	1/8"	1/8"	1/8"
6TA22006	1/8"	1/8"	1/8"	1/8"
6TA22008	1/8"	1/4"	1/8"	1/4"
6TA32010	1/8"	3/8"	1/4"	3/8"

[Unit: mm]

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

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

Manifold for 6TA series

Ordering code

Ordering code for manifold

6TV100M 5F T

1 2 3

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	T: NPT			

Ordering code for blank plate

P-6TV100M-R2

1 2

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.

Specification

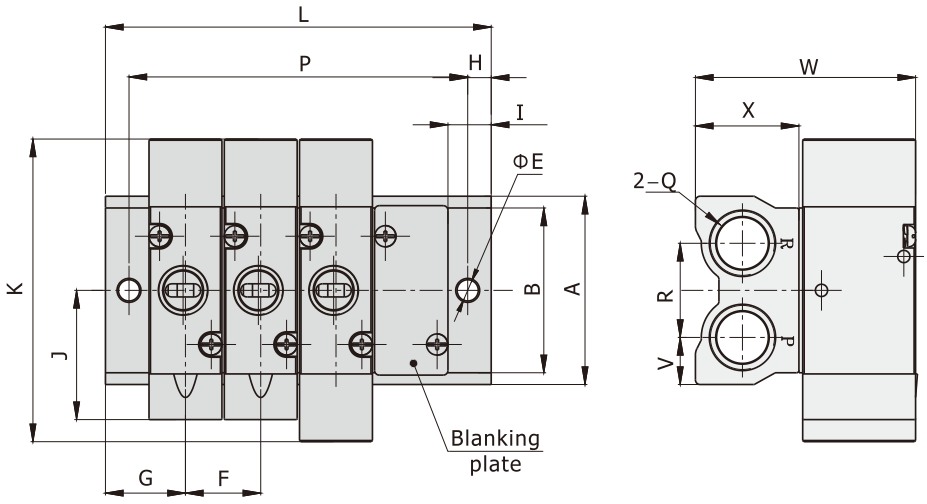
Item\Manifold Model	6TV0500M	6TV100M	6TV200M	6TV300M
Fluid	Air(to be filtered by 40μm filter element)			
Temperature	-20~70℃			
Adaptable valve's series	6TA0500 Series	6TA100 Series	6TA200 Series	6TA300 Series

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.

Manifold for 6TA series

Dimensions



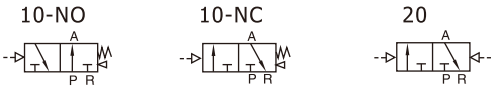
[Unit: mm]

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

3A100 Series



Ordering code

3A	1	10	06	NO	T
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	NC: Normally closed	T: NPT
		20: Double air control	06: 1/8"	NO: Normally opened	

Please refer to 97 for manifold specification and the order way.

Specification

Model	3A110-M5	3A120-M5	3A110-06	3A120-06
Fluid	Air(to be filtered by 40μm filter element)			
Acting	Exterior control			
Port size [Note1]	M5		1/8"	
Orifice size	5.5mm²(Cv=0.31)		12.0mm²(Cv=0.67)	
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Max. frequency [Note3]	5 cycle/sec			

[Note 1] NPT 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.

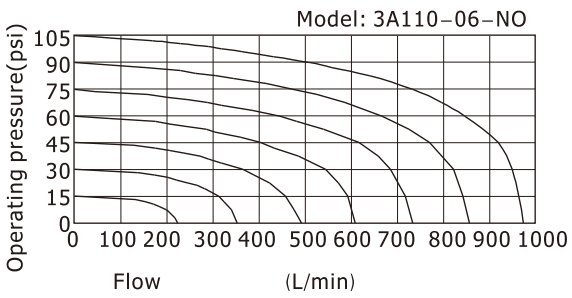
[Note3] The maximum actuation frequency is in the no-load state.

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.

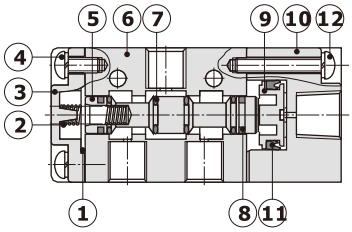
3A100 Series

Flow chart

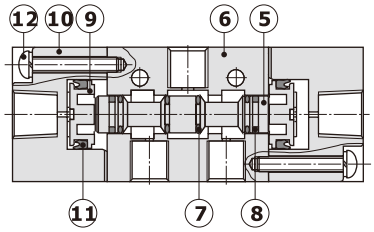


Inner structure

3A110



3A120

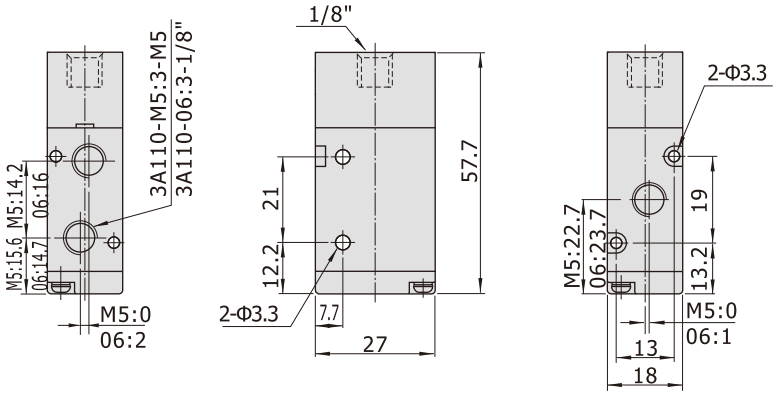


No.	Item	No.	Item	No.	Item
1	Bottom cover gasket	5	Spool	9	Piston
2	Spring	6	Body	10	Pilot body
3	Bottom cover	7	O-ring	11	Piston O-ring
4	Bottom cover screw	8	Wear ring	12	Piston screw

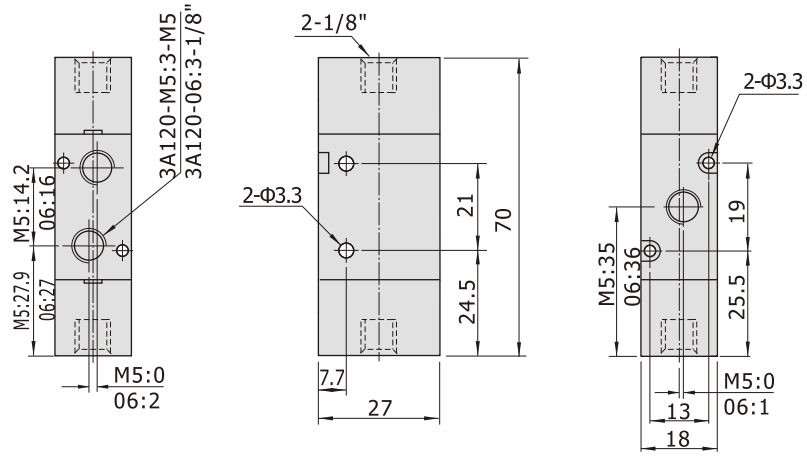
Dimensions

[Unit: mm]

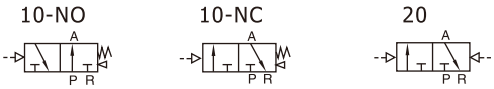
3A110



3A120



3A200 Series



Ordering code

3A	2	10	08	NO	T
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"	NC: Normally closed	T: NPT
		20: Double air control	08: 1/4"	NO: Normally opened	

Please refer to 97 for manifold specification and the order way.

Specification

Model	3A210-06	3A220-06	3A210-08	3A220-08
Fluid	Air(to be filtered by 40μm filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=1/8"		In=Out=1/4"	
Orifice size	14.0mm²(Cv=0.78)		16.0mm²(Cv=0.89)	
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Max. frequency [Note3]	5 cycle/sec			

[Note 1] NPT 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.

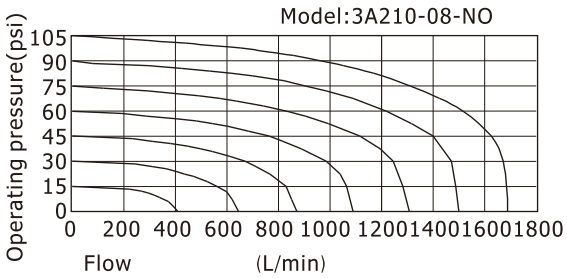
[Note3] The maximum actuation frequency is in the no-load state.

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.

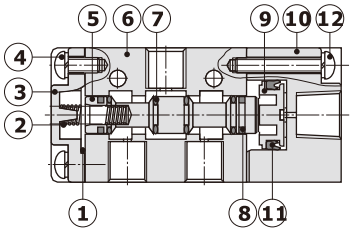
3A200 Series

Flow chart

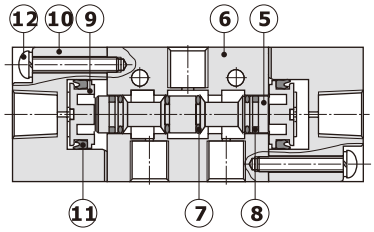


Inner structure

3A210



3A220

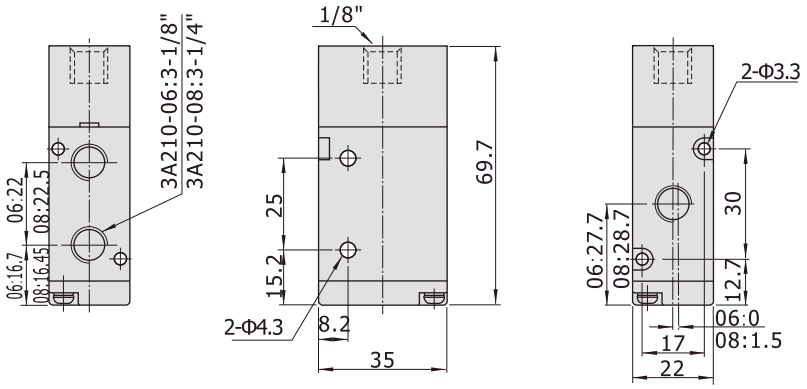


No.	Item	No.	Item	No.	Item
1	Bottom cover gasket	5	Spool	9	Piston
2	Spring	6	Body	10	Pilot body
3	Bottom cover	7	O-ring	11	Piston O-ring
4	Bottom cover screw	8	Wear ring	12	Piston screw

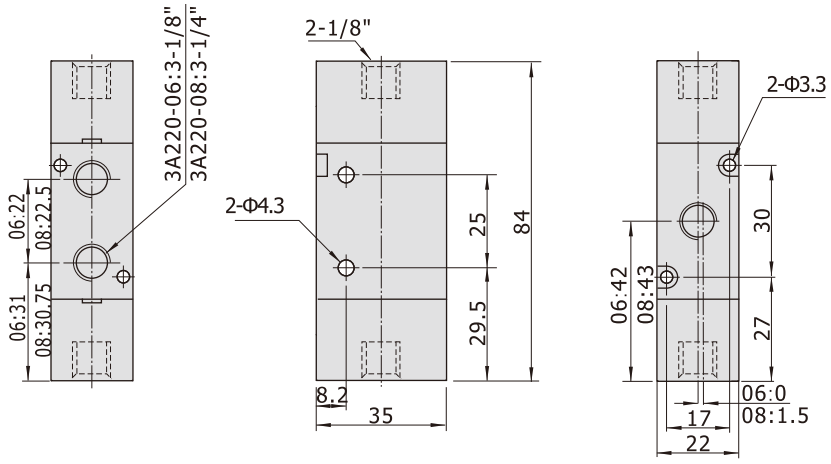
Dimensions

[Unit: mm]

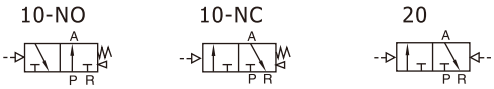
3A210



3A220



3A300 Series



Ordering code

3A	3	10	10	NO	T
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"	NC: Normally closed	T: NPT
		20: Double air control	10: 3/8"	NO: Normally opened	

Please refer to 97 for manifold specification and the order way.

Specification

Model	3A310-08	3A320-08	3A310-10	3A320-10
Fluid	Air(to be filtered by 40μm filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=1/4"		In=Out=3/8"	
Orifice size	25.0mm²(Cv=1.39)		30.0mm²(Cv=1.67)	
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
Temperature	-20~70℃			
Material of body	Aluminum alloy			
Max. frequency [Note3]	5 cycle/sec			

[Note 1] NPT 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.

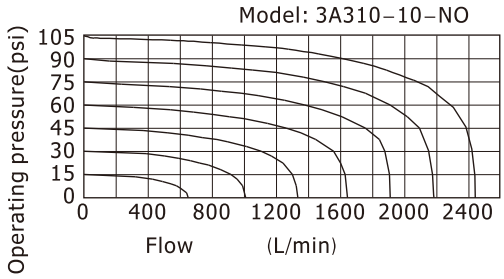
[Note3] The maximum actuation frequency is in the no-load state.

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.

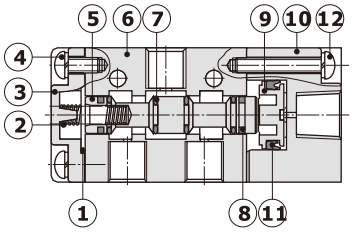
3A300 Series

Flow chart

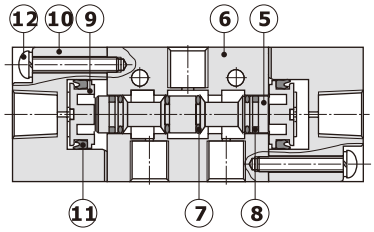


Inner structure

3A310



3A320

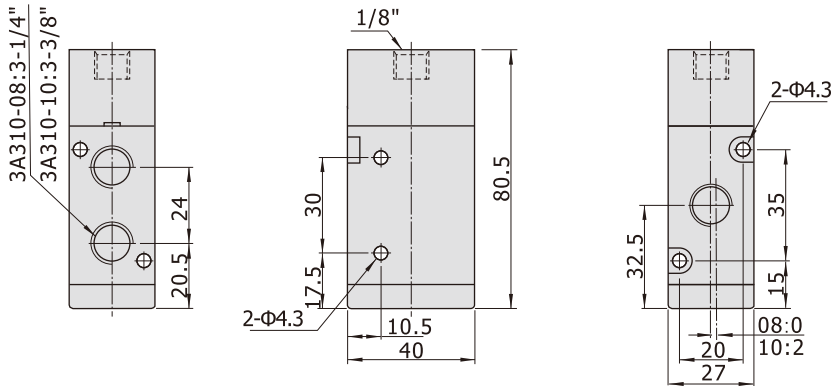


No.	Item	No.	Item	No.	Item
1	Bottom cover gasket	5	Spool	9	Piston
2	Spring	6	Body	10	Pilot body
3	Bottom cover	7	O-ring	11	Piston O-ring
4	Bottom cover screw	8	Wear ring	12	Piston screw

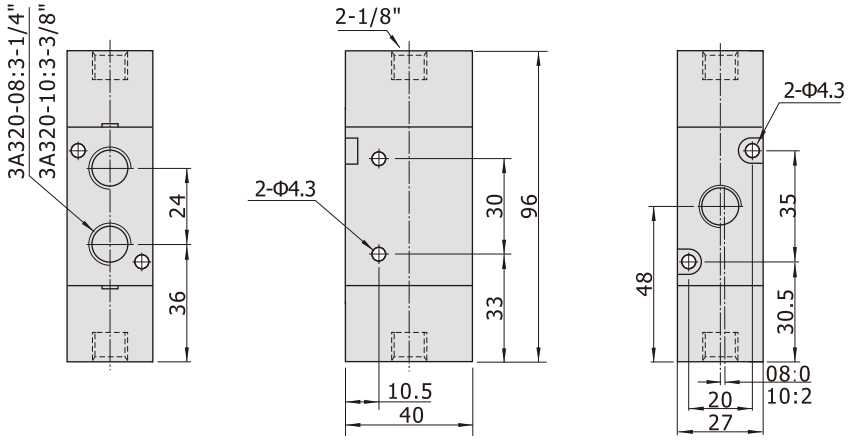
Dimensions

[Unit: mm]

3A310



3A320



Manifold

Ordering code

Ordering code for manifold

3V100M 5F T

1 2 3

①Model	②Number of stations [Note1]	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	T: NPT

Ordering code for blank plate

P–3V100M–R2

1 2 3

①Kits	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 the two parts of the manifold's and the blank plate's.
2. Manifold kits contains manifold, seal and screw.
3. Blank plate kits contains blank plate, and screw.

Specification

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

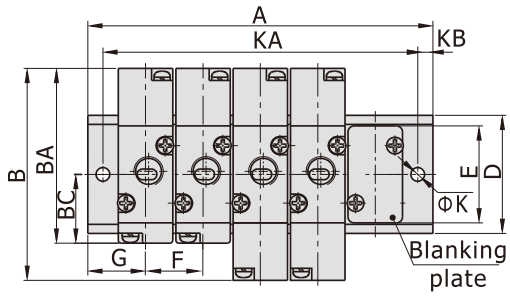
Product feature

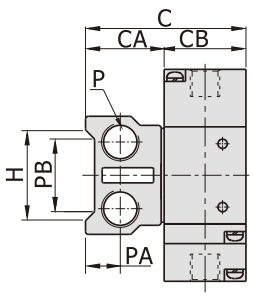
1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost;
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring;
3. Flexible combination and strong expansion capability can make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

Manifold

Dimensions

With 3A air valve





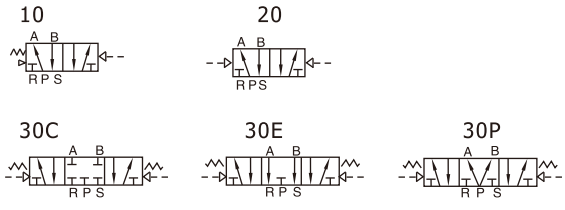
[Unit: mm]

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

4A100 Series



Ordering code

4A 1 10 06 T

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 06: 1/8"	No this code(M5) T: NPT

Please refer to P111 for manifold specification and the order way.

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 40μm filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=M5		In=Out=1/8"	
Orifice size	5.5mm² (Cv=0.31)	5.0mm² (Cv=0.28)	12.0mm² (Cv=0.67)	9.0mm² (Cv=0.50)
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
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)	4A110-M5:85 4A120-M5:140	165	4A110-06:85 4A120-06:140	165

[Note1] NPT 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.

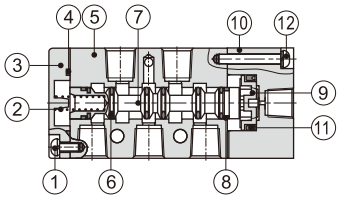
4A100 Series

Product feature

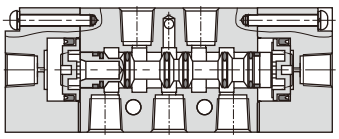
1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Three position air valves have three kinds of central function for your choice.
3. Double air control valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction,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

Inner structure

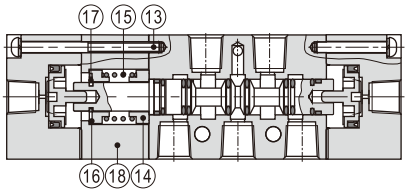
4A110



4A120



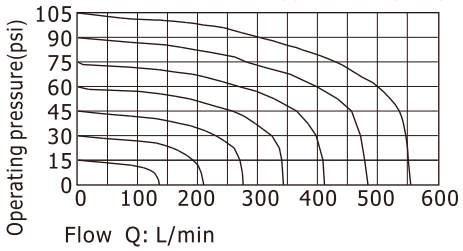
4A130C



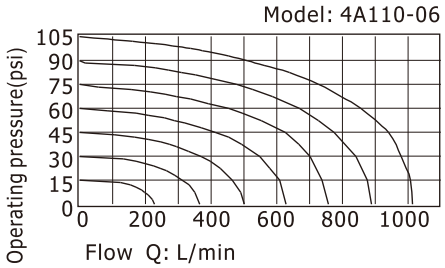
No.	Item	No.	Item	No.	Item
1	Screw	7	Spool	13	Screw
2	Spring	8	Wear ring	14	Spring holder
3	Bottom cover	9	Piston	15	Return Spring
4	Bottom cover gasket	10	Pilot body	16	Spring holder
5	Body	11	O-ring	17	E Clip
6	O-ring	12	Screw	18	Side cover

Flow chart

Model: 4A110–M5



Model: 4A110-06

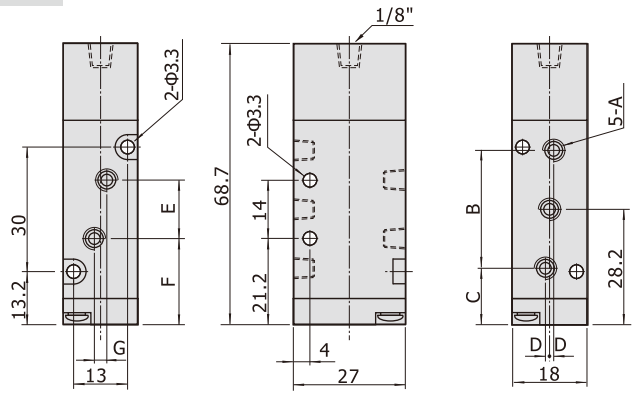


4A100 Series

Dimensions

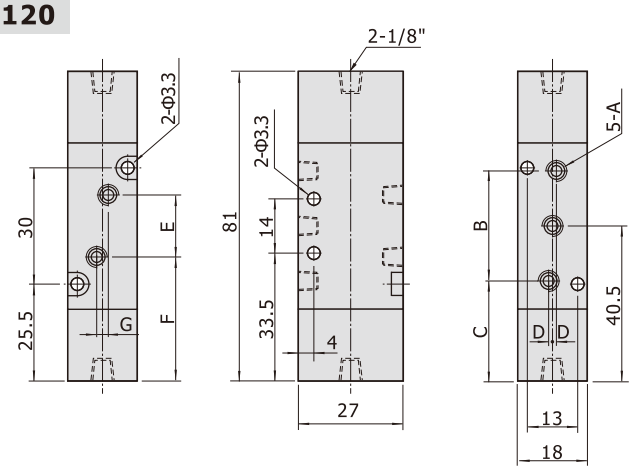
4A110

[Unit: mm]



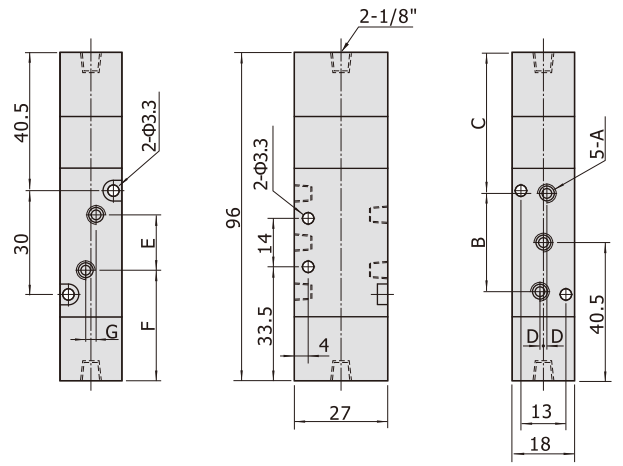
Model\Item	A	B	C	D	E	F	G
4A110-M5	M5x0.8	27	14.7	0	14	21.2	0
4A110-06	1/8"	28	14.2	1	16	20.2	3

4A120



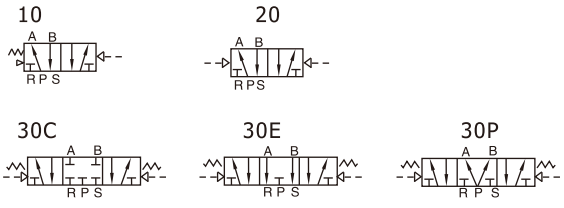
Model\Item	A	B	C	D	E	F	G
4A120-M5	M5x0.8	27	27	0	14	33.5	0
4A120-06	1/8"	28	26.5	1	16	32.5	3

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

4A200 Series



Ordering code

4A 2 10 08 T

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"	T: NPT

Please refer to P111 for manifold specification and the order way.

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 40μm filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=Exhaust=1/8"		In=Out=1/4" Exhaust=1/8"	
Orifice size	14.0mm² (Cv=0.78)	12.0mm² (Cv=0.67)	16.0mm² (Cv=0.89)	12.0mm² (Cv=0.67)
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
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] NPT 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.

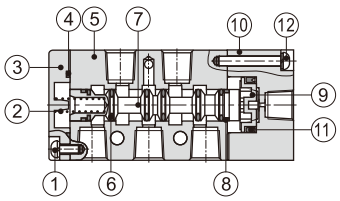
4A200 Series

Product feature

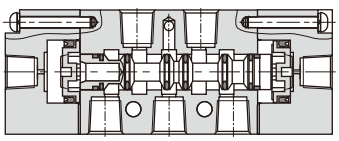
1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Three position air valves have three kinds of central function for your choice.
3. Double air control valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction,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

Inner structure

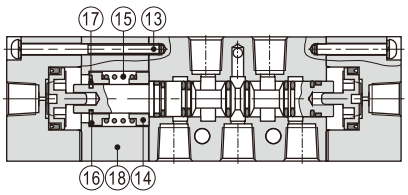
4A210



4A220



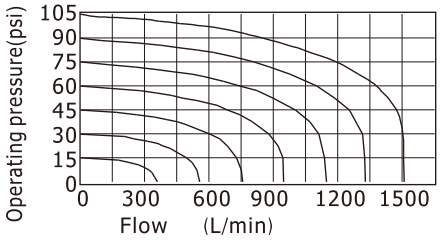
4A230C



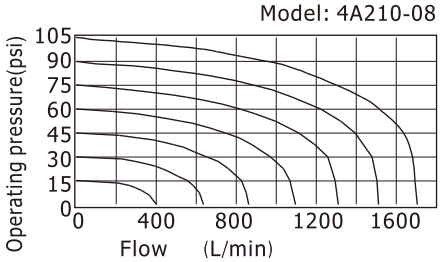
No.	Item	No.	Item	No.	Item
1	Screw	7	Spool	13	Screw
2	Spring	8	Wear ring	14	Spring holder
3	Bottom cover	9	Piston	15	Return Spring
4	Bottom cover gasket	10	Pilot body	16	Spring holder
5	Body	11	O-ring	17	E Clip
6	O-ring	12	Screw	18	Side cover

Flow chart

Model: 4A210-06



Model: 4A210-08

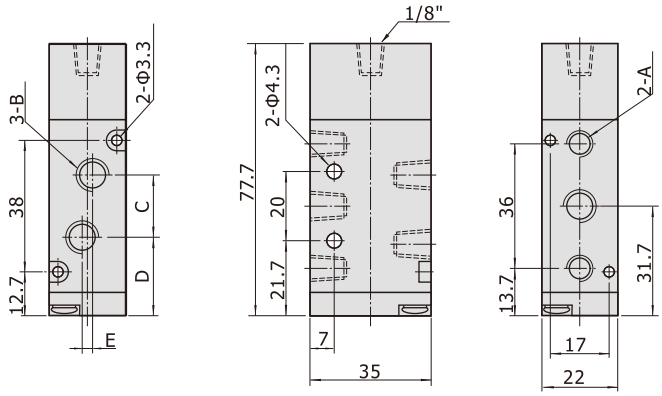


4A200 Series

Dimensions

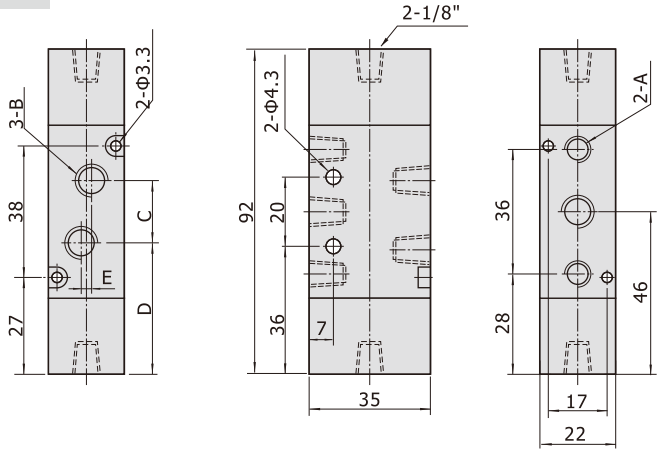
4A210

[Unit: mm]



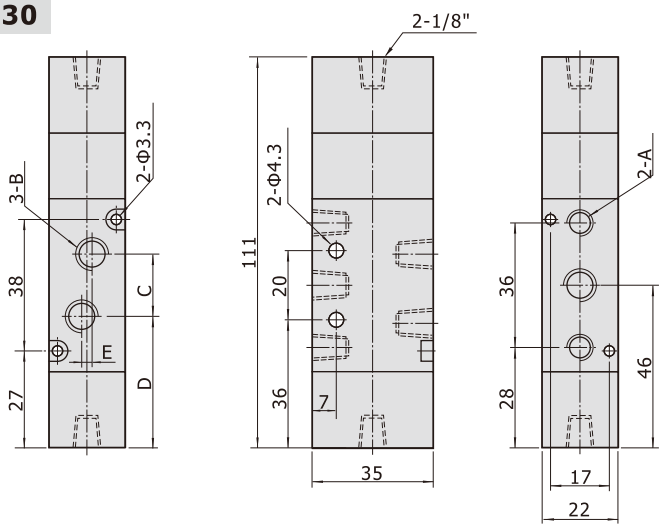
Model\Item	A	B	C	D	E
4A210-06	1/8"	1/8"	18	22.7	0
4A210-08	1/8"	1/4"	21	21.2	3

4A220



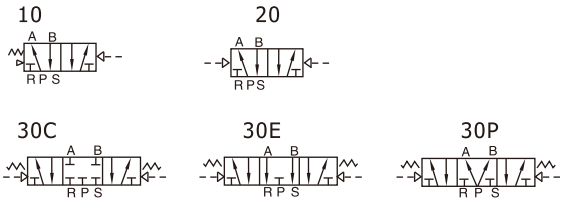
Model\Item	A	B	C	D	E
4A220-06	1/8"	1/8"	18	37	0
4A220-08	1/8"	1/4"	21	35.5	3

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

4A300 Series



Ordering code

4A 3 10 10 T

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"	T: NPT

Please refer to P111 for manifold specification and the order way.

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 40μm filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=Exhaust=1/4"		In=Out=3/8" Exhaust=1/4"	
Orifice size	25.0mm² (Cv=1.40)	18.0mm² (Cv=1.00)	30.0mm² (Cv=1.68)	18.0mm² (Cv=1.00)
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	21~114psi(0.15~0.8MPa)			
Proof pressure	175psi(1.2MPa)			
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] NPT 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.

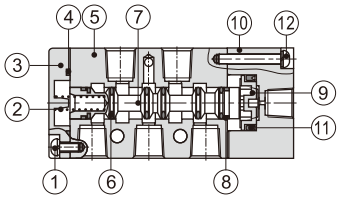
4A300 Series

Product feature

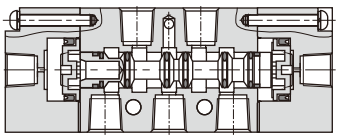
1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Three position air valves have three kinds of central function for your choice.
3. Double air control valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction,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

Inner structure

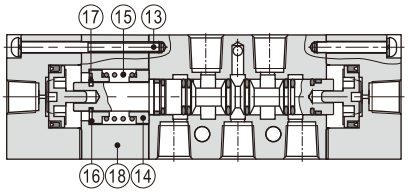
4A310



4A320



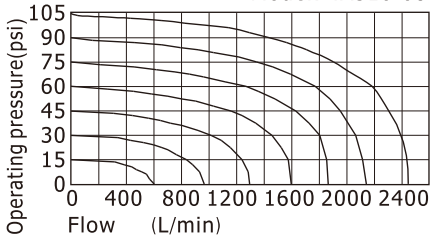
4A330C



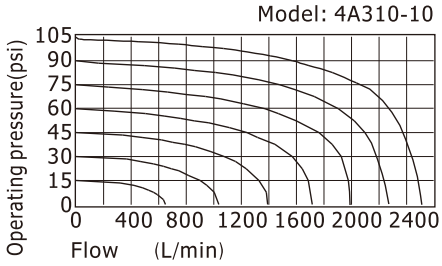
No.	Item	No.	Item	No.	Item
1	Screw	7	Spool	13	Screw
2	Spring	8	Wear ring	14	Spring holder
3	Bottom cover	9	Piston	15	Return Spring
4	Bottom cover gasket	10	Pilot body	16	Spring holder
5	Body	11	O-ring	17	E Clip
6	O-ring	12	Screw	18	Side cover

Flow chart

Model: 4A310-08



Model: 4A310-10

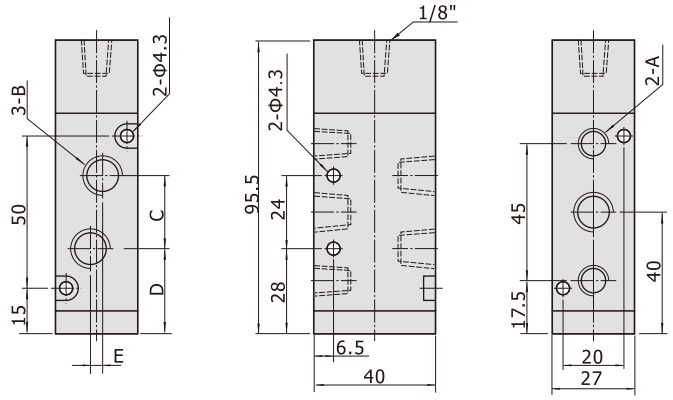


4A300 Series

Dimensions

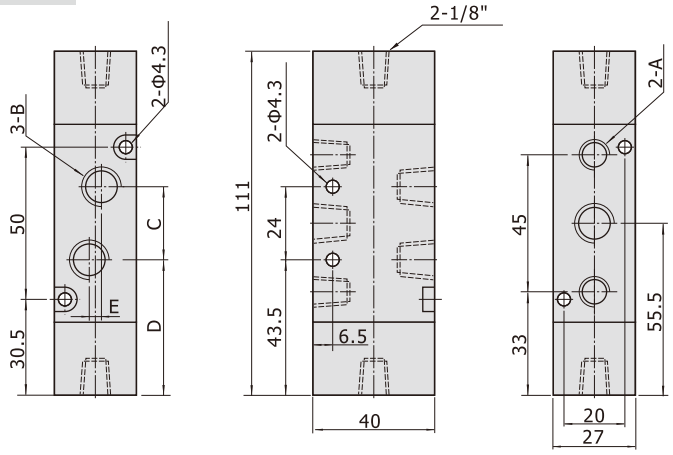
4A310

[Unit: mm]



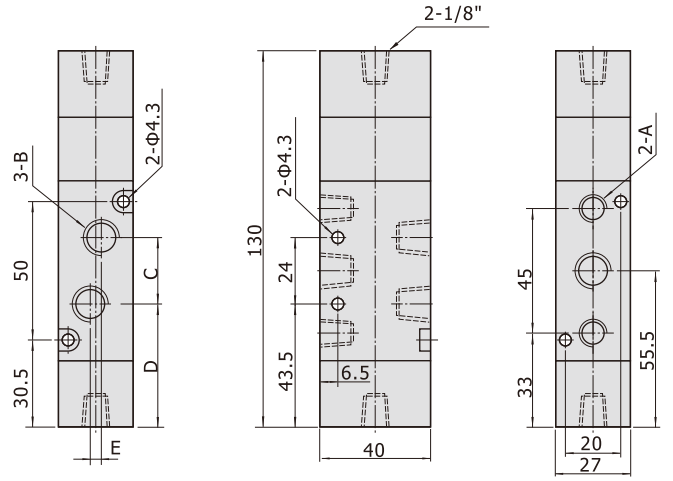
Model\Item	A	B	C	D	E
4A310-08	1/4"	1/4"	22	29	0
4A310-10	1/4"	3/8"	24	28	4

4A320



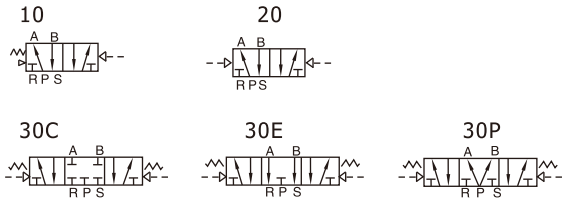
Model\Item	A	B	C	D	E
4A320-08	1/4"	1/4"	22	44.5	0
4A320-10	1/4"	3/8"	24	43.5	4

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

4A400 Series



Ordering code

4A 4 10 15 T

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"	T: NPT

Please refer to P111 for manifold specification and the order way.

Specification

Model	4A410-15	4A420-15	4A430C-15	4A430E-15	4A430P-15
Fluid	Air(to be filtered by 40μm filter element)				
Acting	Exterior control				
Port size [Note1]	In=Out=Exhaust=1/2"				
Orifice size	50.0mm²(Cv=2.79)		30.0mm²(Cv=1.68)		
Valve type	5 port 2 position		5 port 3 position		
Operating pressure	21~114psi(0.15~0.8MPa)				
Proof pressure	175psi(1.2MPa)				
Temperature	-20~70 ℃				
Material of body	Aluminum alloy				
Lubrication [Note2]	Not required				
Max. frequency [Note3]	3 cycle/sec				
Weight (g)	555	685	735		

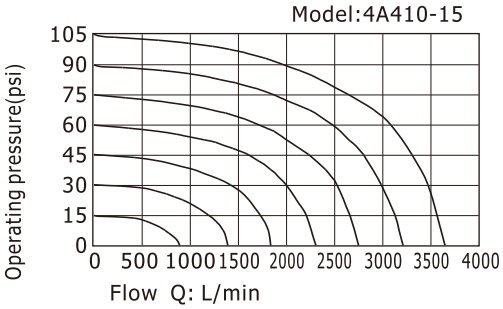
[Note1] NPT thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimize valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.

4A400 Series

Product feature

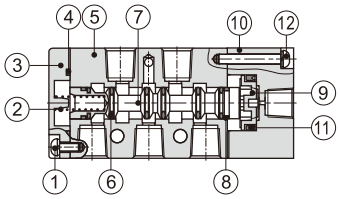
1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Three position air valves have three kinds of central function for your choice.
3. Double air control valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction,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

Flow chart

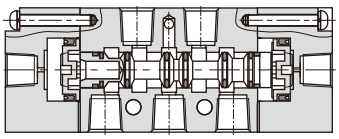


Inner structure

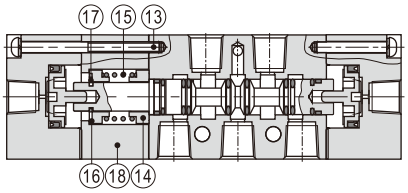
4A410



4A420



4A430C



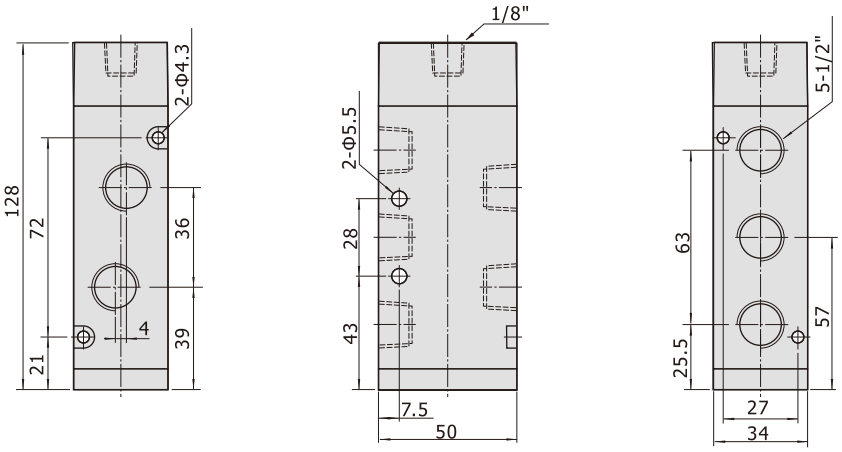
No.	Item	No.	Item	No.	Item
1	Screw	7	Spool	13	Screw
2	Spring	8	Wear ring	14	Spring holder
3	Bottom cover	9	Piston	15	Return Spring
4	Bottom cover gasket	10	Pilot body	16	Spring holder
5	Body	11	O-ring	17	E Clip
6	O-ring	12	Screw	18	Side cover

4A400 Series

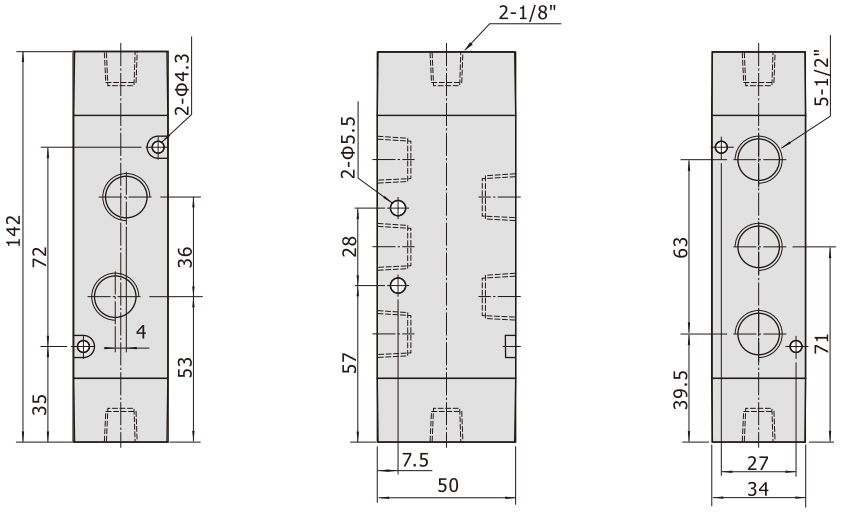
Dimensions

[Unit: mm]

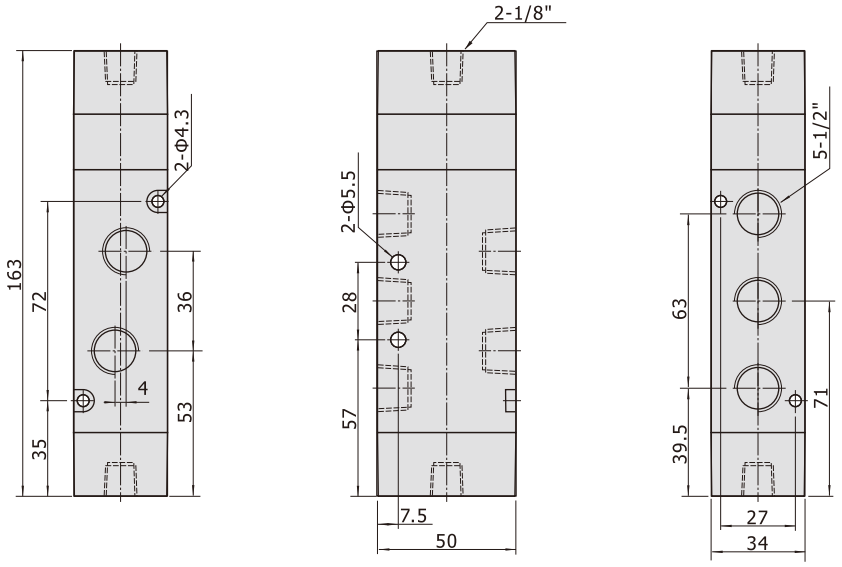
4A410



4A420



4A430



Manifold

Ordering code

Ordering code for manifold

100M 5F T

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	T: NPT

Ordering code for blank plate

P–100M–R2

1 2 3

①Kits	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 the two parts of the manifold's and the blank plate's.
2. Manifold kits contains manifold, seal and screw;
3. Blank plate kits contains blank plate and screw.

Specification

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

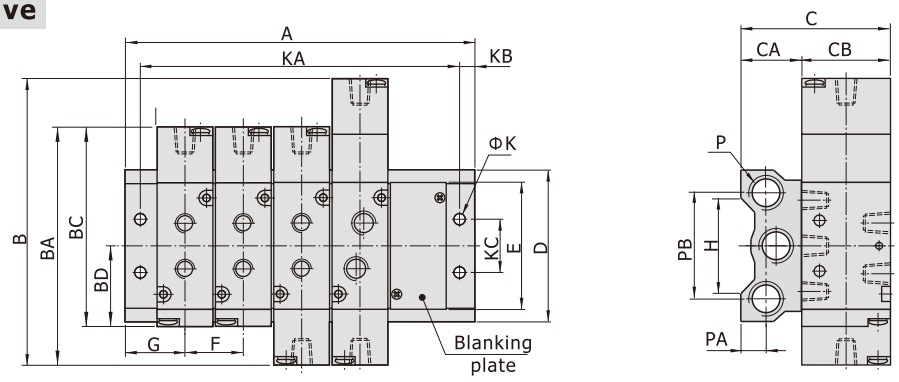
Product feature

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.

Manifold

Dimensions

With 4A air valve



[Unit: mm]

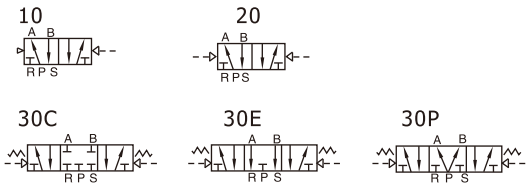
Model\Item	B	BA	BC	BD	C	CA	CB	D	E	F	G	H	K	KB	KC	P	PA	PB
100M□F	96	81	68.7	28	50	23	27	57.5	43	19	19	36	4.5	5	20	1/4"	10	40
200M□F	111	92	77.7	31.7	60	25	35	60	52	23	22	38	4.5	5	21	1/4"	10	42
300M□F	130	111	95.5	40	69	29	40	75	64	28	26	54	4.5	5	26	3/8"	13.5	53
400M□F	163	142	128	57	84	34	50	100	94	35	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	-	-	-	-	-	-	-	-

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

6A Series



Ordering code

6A 2 10 08 T

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
③Valve 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	–		T: NPT			

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)		5.0mm²(0.28)		4.5mm²(0.25)	M5:5.5mm²(0.3)		
					06:10.0mm²(0.58)		06:8.5mm²(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)		06:14.0mm²(0.78)		14.0mm²(0.82)	36.0mm²(2.00)		21.6mm²(1.20)
		08:18.0mm²(1.06)					
Weight		120g	125g	135g	250g	290g	320g
Fluid		Air(to be filtered by 40μm filter element)					
Acting		External air control					
Operating pressure	5/3 way	29~114psi(0.2~0.8MPa)					
	5/2 way	21~114psi(0.15~0.8MPa)					
Proof pressure		175psi(1.2MPa)					
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

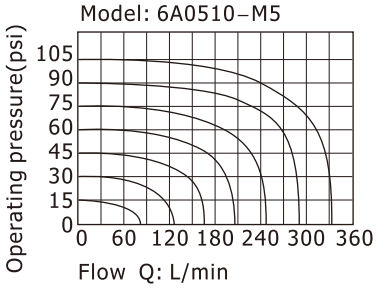
[Note1] NPT thread is available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span.
Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.

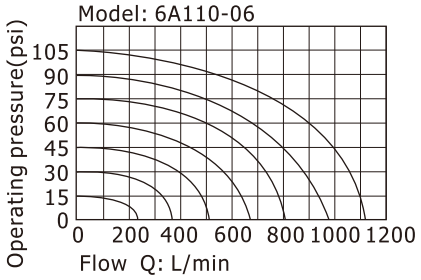
6A Series

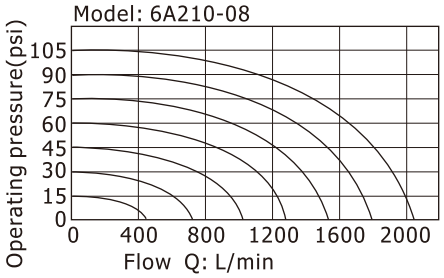
Product feature

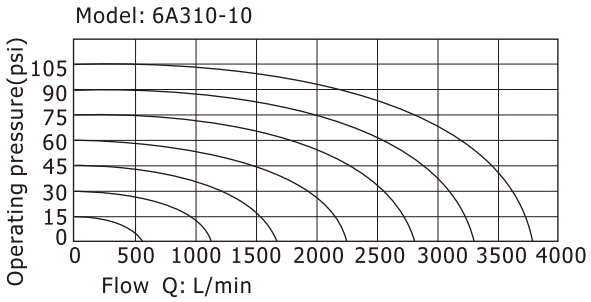
1. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
2. Can integrate manifold to form valve group to save space.

Flow chart



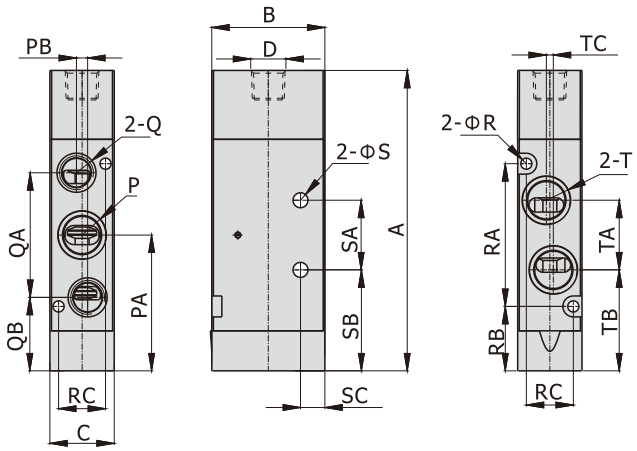






Dimensions

6A0510
6A110
6A210
6A310



Port size [Unit: inch]

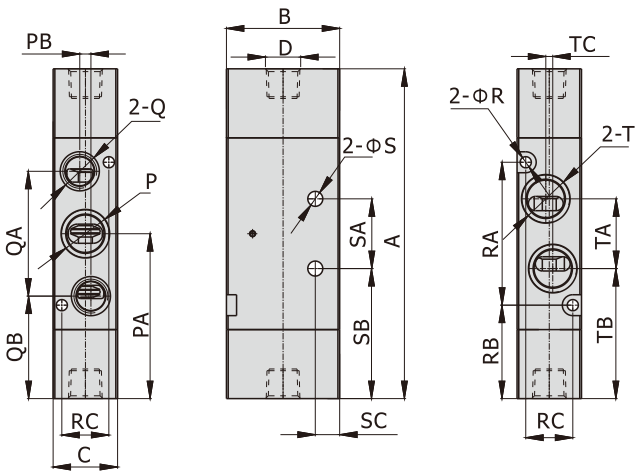
Model\Item	D	P	Q	T
6A0510M5	M5x0.8	M5x0.8	M5x0.8	M5x0.8
6A110M5	M5x0.8	M5x0.8	M5x0.8	M5x0.8
6A11006	M5x0.8	1/8"	1/8"	1/8"
6A21006	1/8"	1/8"	1/8"	1/8"
6A21008	1/8"	1/4"	1/8"	1/4"
6A31010	1/4"	3/8"	1/4"	3/8"

[Unit: mm]

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

6A Series

6A0520
6A120
6A220
6A320



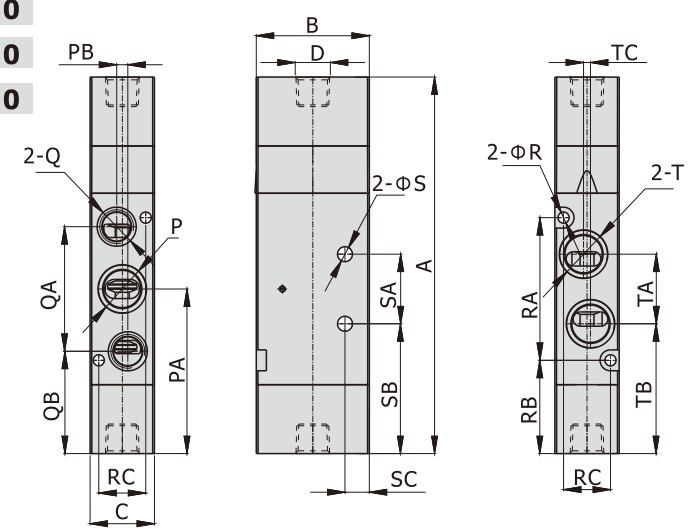
Port size [Unit: inch]

Model\Item	D	P	Q	T
6A0520M5	M5x0.8	M5x0.8	M5x0.8	M5x0.8
6A120M5	M5x0.8	M5x0.8	M5x0.8	M5x0.8
6A12006	M5x0.8	1/8"	1/8"	1/8"
6A22006	1/8"	1/8"	1/8"	1/8"
6A22008	1/8"	1/4"	1/8"	1/4"
6A32010	1/4"	3/8"	1/4"	3/8"

[Unit: mm]

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

6A0530
6A130
6A230
6A330



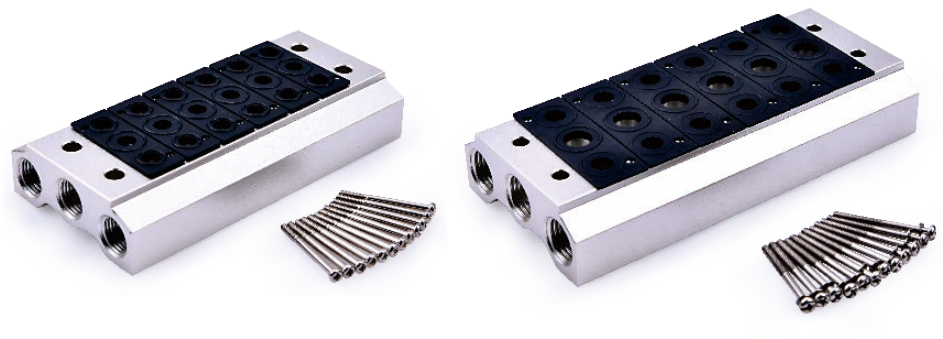
Port size [Unit: inch]

Model\Item	D	P	Q	T
6A0530M5	M5x0.8	M5x0.8	M5x0.8	M5x0.8
6A130M5	M5x0.8	M5x0.8	M5x0.8	M5x0.8
6A13006	M5x0.8	1/8"	1/8"	1/8"
6A23006	1/8"	1/8"	1/8"	1/8"
6A23008	1/8"	1/4"	1/8"	1/4"
6A33010	1/4"	3/8"	1/4"	3/8"

[Unit: mm]

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

Manifold for 6A series



Ordering code

Ordering code for manifold

6V100M 5F T

1 2 3

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	T: NPT			

Ordering code for blank plate

P-6V100M-R2

1 2

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.

Specification

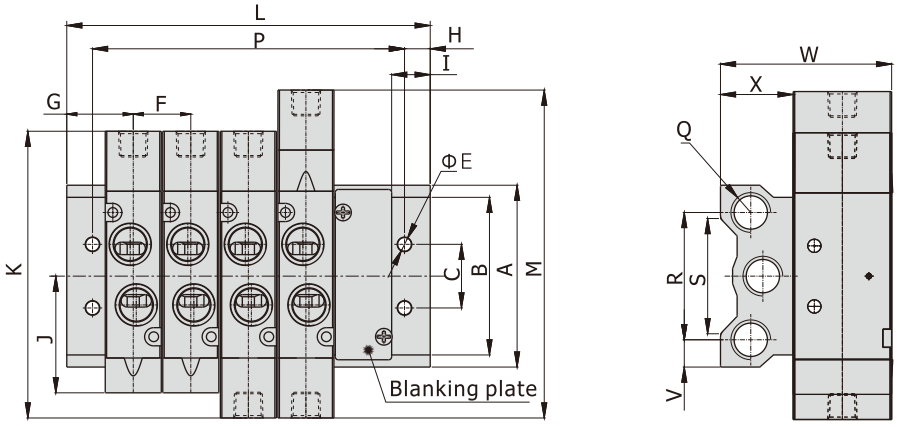
Item\Manifold Model	6V0500M	6V100M	6V200M	6V300M
Fluid	Air(to be filtered by 40μm filter element)			
Temperature	-20~70℃			
Adaptable valve's series	6A0500 Series	6A100 Series	6A200 Series	6A300 Series

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.

Manifold for 6A series

Dimensions



[Unit: mm]

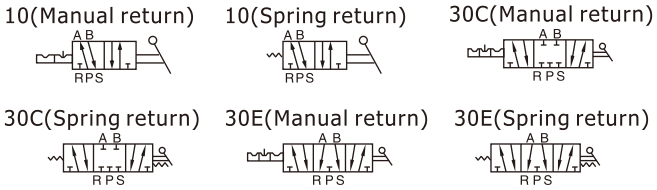
Model\Item	A	B	C	E	F	G	H	I	J	K	M	Q	R	S	V	W	X
6V0500M	46	32	16	4.5	11	15	5	9.5	22.5	55.5	64	1/8"	32	26	7	38	17
6V100M	57.5	43	20	4.5	16	17	5	9.5	33	75	87	1/4"	40	36	9	46	22
6V200M	60	52	21	4.5	19	18.5	5	9.5	38.5	94.5	108	1/4"	42	38	9	56.5	24
6V300M	85	75	26	4.5	23.5	24	5	12	54	124	142	3/8"	57	58	14	74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

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

4H Series



Ordering code

4H 2 30C 08 T

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"	T: NPT
	3: 300 Series		08: 1/4" 10: 3/8"	

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	14.0mm² (Cv=0.78)	12.0mm² (Cv=0.67)	16.0mm² (Cv=0.89)	12.0mm² (Cv=0.67)	25.0mm² (Cv=1.39)	18.0mm² (Cv=1.00)	30.0mm² (Cv=1.67)	18.0mm² (Cv=1.00)
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	0~145psi(0~1.0MPa)							
Proof pressure	215psi(1.5MPa)							
Temperature	-20~70℃							
Material body	Aluminum alloy							
Operating angle	± 15°	± 8.5°	± 15°	± 8.5°	± 18°	± 10°	± 18°	± 10°

[Note1] NPT 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.

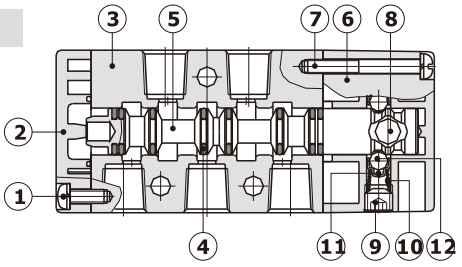
4H Series

Product feature

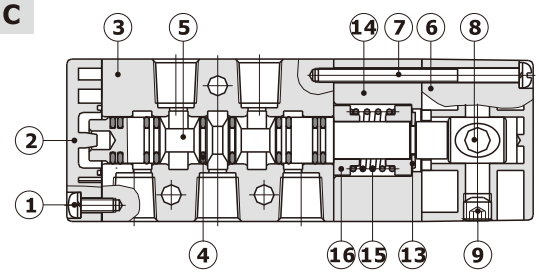
1. Manual operation, smooth actuation, and exact and reliable orientation.
2. Sliding column structure has good tightness and light weight and is easy to install and dismount.
3. Internal hole adopts special processing technology which has little attrition friction, long service life.
4. No need to add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

Inner structure

4H210



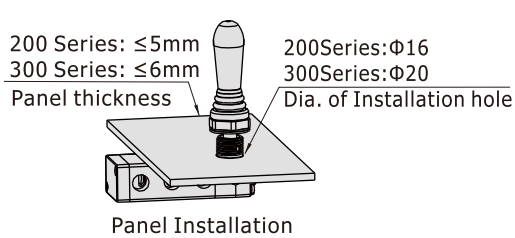
4HA230C



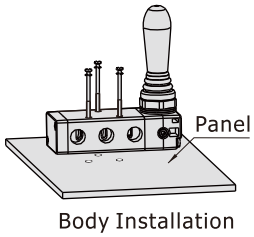
No.	Item	No.	Item
1	Round head screw	9	Stop screw
2	Bottom cover	10	Spring
3	Body	11	Steel ball jacket
4	O-ring	12	Steel ball
5	Spool	13	E clip
6	Top cover	14	Side cover
7	Round head cover	15	Spring
8	Axle	16	Spring holder

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.

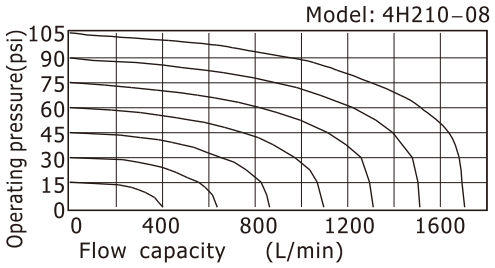


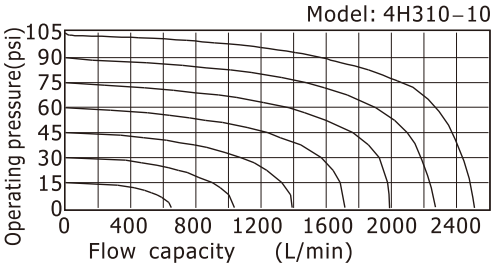
Panel Installation



Body Installation

Flow chart



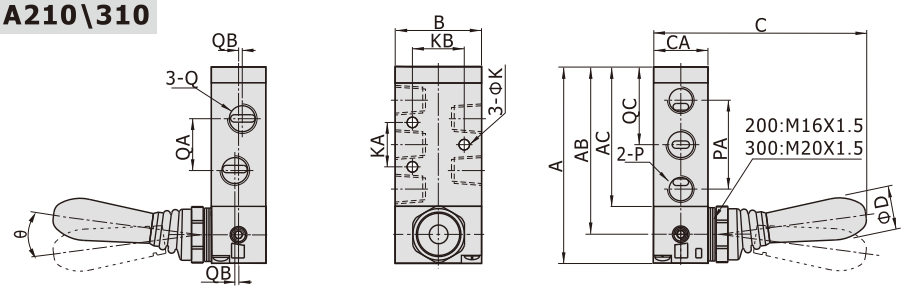


4H Series

Dimensions

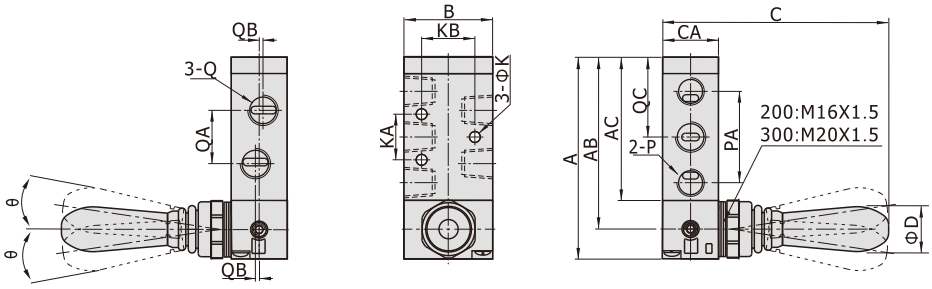
4H210\310、4HA210\310

[Unit: mm]



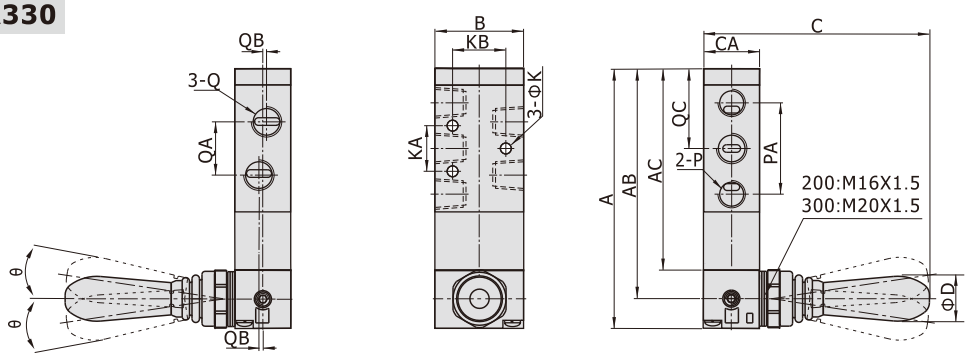
Model\Item	A	AB	AC	B	C	CA	D	K	KA	KB	P	PA	Q	QA	QB	QC	Θ
4H210-06\4HA210-06	81.5	69.5	57.5	35	90	22	18	4.3	20	23.5	1/8"	36	1/8"	18	-	32.5	15
4H210-08\4HA210-08	81.5	69.5	57.5	35	90	22	18	4.3	20	23.5	1/8"	36	1/4"	21	1.5	32.5	15
4H310-08\4HA310-08	101	87	73	40	93.5	27	18	4.3	24	27.5	1/4"	45	1/4"	22	-	40.5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



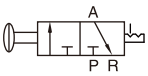
Model\Item	A	AB	AC	B	C	CA	D	K	KA	KB	P	PA	Q	QA	QB	QC	Θ
4H230C-06\4H230E-06	81.5	69.5	57.5	35	90.5	22	18	4.3	20	23.5	1/8"	36	1/8"	18	-	32.5	8.5
4H230C-08\4H230E-08	81.5	69.5	57.5	35	90.5	22	18	4.3	20	23.5	1/8"	36	1/4"	21	1.5	32.5	8.5
4H330C-08\4H330E-08	101	87	73	40	94	27	18	4.3	24	27.5	1/4"	45	1/4"	22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

3L Series



Ordering code

3L 2 10 08 T

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"	T: NPT
	2: 200 Series		06: 1/8" 08: 1/4"	
	3: 300 Series		08: 1/4" 10: 3/8"	

Specification

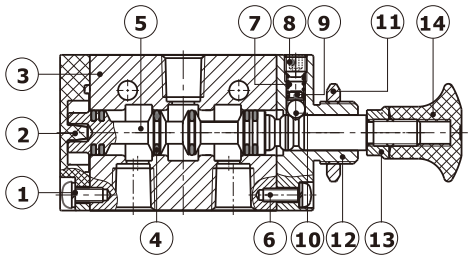
Model	3L110-06	3L210-06	3L210-08	3L310-08	3L310-10
Fluid	Air (to be filtered by 40 μm filter element)				
Operating	Manual control direct acting type)				
Port size[Note1]	1/8"		1/4"		3/8"
Orifice size	12.0mm² (Cv=0.67)	14.0mm² (Cv=0.78)	16.0mm² (Cv=0.89)	25.0mm² (Cv=1.39)	30.0mm² (Cv=1.67)
Valve type	3/2 Way				
Lubrication [Note2]	Not required				
Pressure range	0~145psi(0~1.0MPa)				
Proof pressure	215psi(1.5MPa)				
Temperature	-20~70℃				
Material body	Aluminum alloy				

[Note1] NPT 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.

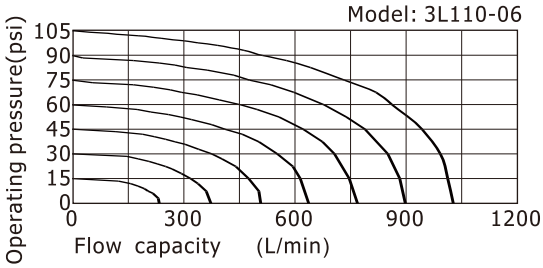
3L Series

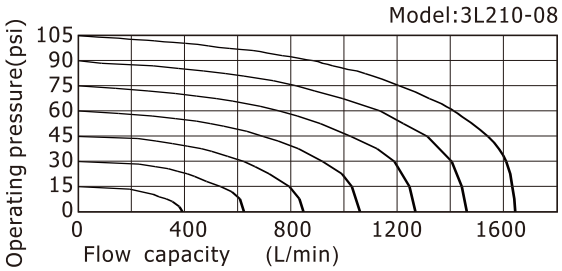
Inner structure

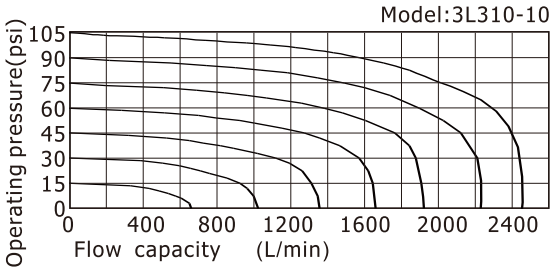


No.	Item	No.	Item	No.	Item
1	Round head screw	6	Round head screw	11	Hexagon nut
2	Bottom cover	7	Spring	12	Top cover
3	Body	8	Stop screw	13	Safety nut
4	O-ring	9	Spring base	14	Hand grip
5	Spool	10	Steel ball		

Flow chart

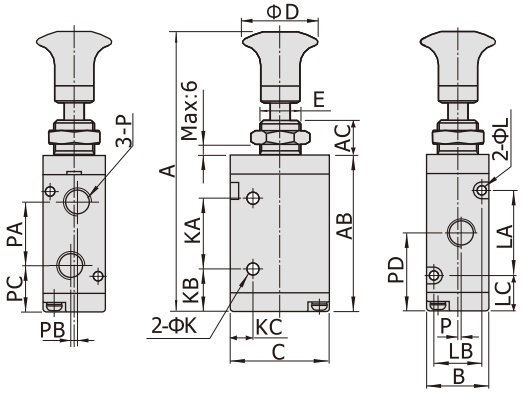






Dimensions

[Unit: mm]



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

Ordering code

4L 2 10 08 T

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"	T: NPT
	2: 200 Series		06: 1/8" 08: 1/4"	
	3: 300 Series		08: 1/4" 10: 3/8"	

Specification

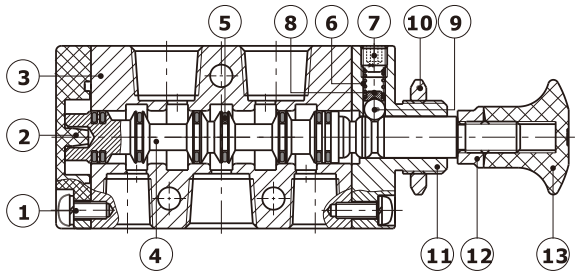
Model	4L110-06	4L210-06	4L210-08	4L310-08	4L310-10
Fluid	Air (to be filtered by 40 μm filter element)				
Operating	Manual control direct acting type)				
Port size[Note1]	1/8"		1/4"		3/8"
Orifice size	12.0mm² (Cv=0.67)	14.0mm² (Cv=0.78)	16.0mm² (Cv=0.89)	25.0mm² (Cv=1.39)	30.0mm² (Cv=1.67)
Valve type	5/2 Way				
Lubrication [Note2]	Not required				
Pressure range	0~145psi(0~1.0MPa)				
Proof pressure	215psi(1.5MPa)				
Temperature	-20~70℃				
Material body	Aluminum alloy				

[Note1] NPT 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.

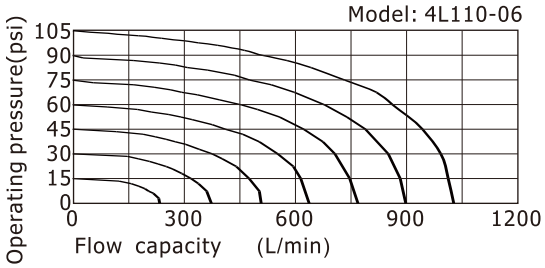
4L Series

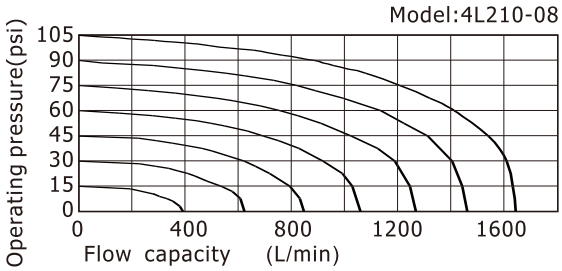
Inner structure

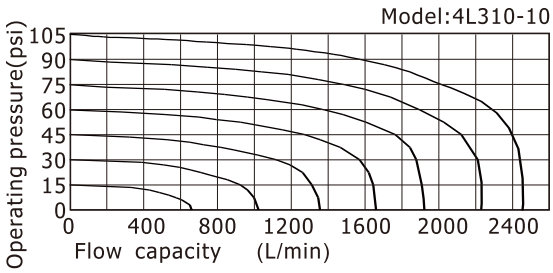


No.	Item	No.	Item	No.	Item
1	Round head screw	6	Spring	11	Top cover
2	Bottom cover	7	Stop screw	12	Safety nut
3	Body	8	Spring base	13	Hand grip
4	Spool	9	Steel ball		
5	O-ring	10	Hexagon nut		

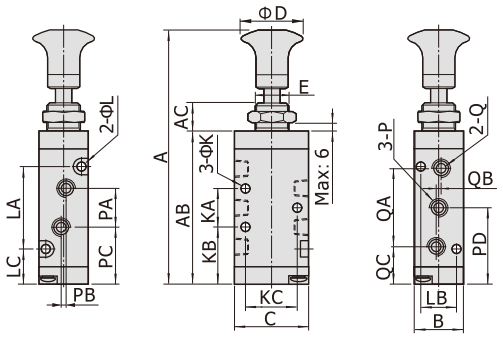
Flow chart







Dimensions

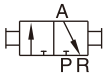


[Unit: mm]

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"	1/4"
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"	3/8"
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



Ordering code

HSV 08 SS T

1 2 3 4

①Model	②Port size	③Dovt thread	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	T: NPT

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	0~145psi(0~1.0MPa)					
Proof pressure	215psi(1.5MPa)					
Temperature	-20~70℃					
Material body	Aluminum alloy					

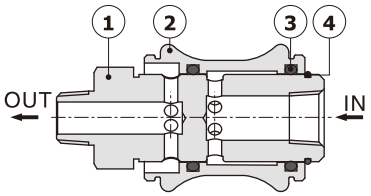
[Note1] NPT thread is available.

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 spool surface is treated with acid washing passivation, and the surface of valve body is oxidized to keep the color for a long time.

HSV Series

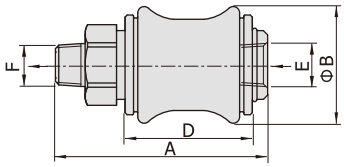
Inner structure



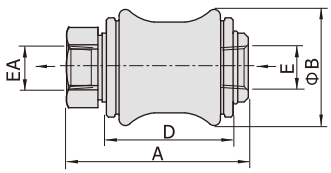
No.	Item
1	Valve plug
2	Body
3	O -ring
4	Clip

Dimensions

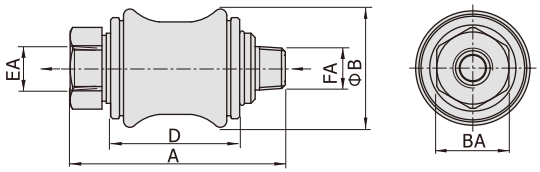
Standard



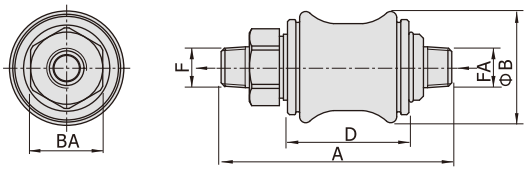
Double female thread(FF)



Male and female thread(SF)



Double male thread (SS)

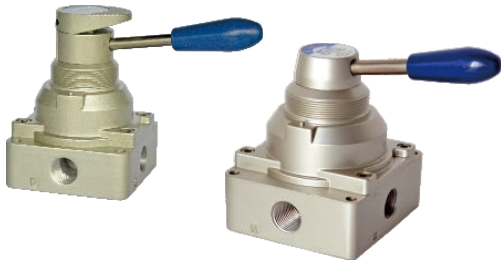


[Unit: mm]

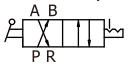
Model\Item	A				B	BA	D	E	EA	F	FA
	Standard	FFtype	SFtype	SStype							
HSV06	50	43	50	57	27.5	17	30	1/8"	1/8"	1/8"	1/8"
HSV08	58	47	58	69	30	19	32.5	1/4"	1/4"	1/4"	1/4"
HSV10	68.5	55.5	68.5	81.5	35.5	22	39	3/8"	3/8"	3/8"	3/8"
HSV15	85.5	70.5	85.5	100.5	44	30	50	1/2"	1/2"	1/2"	1/2"
HSV20	96.5	79.5	96.5	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)

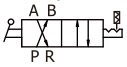
4HV, 4HVL Series



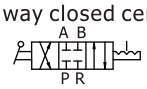
4/2 way



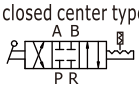
4/2 way with lock



4/3 way closed center



4/3 way closed center type with lock



Ordering code

4HV 2 30 06 S L T

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	T: NPT
	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.

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	0~145psi(0~1.0MPa)					
Proof pressure	215psi(1.5MPa)					
Temperature	-20~70℃					
Operating angle	90°(4/3 Way: 45°)					

[Note1] NPT thread is available.

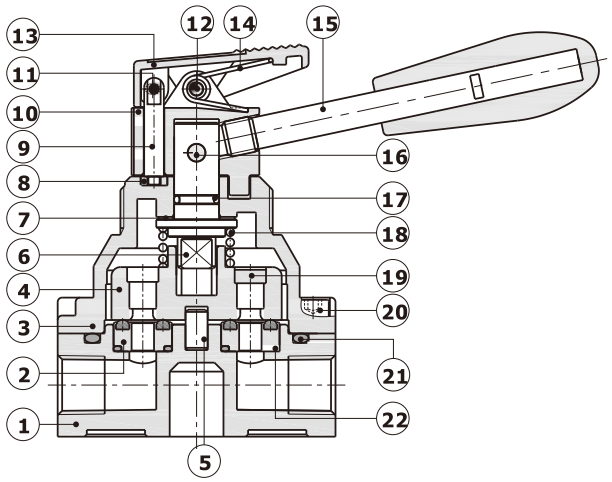
4HV, 4HVL Series

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.

Inner structure

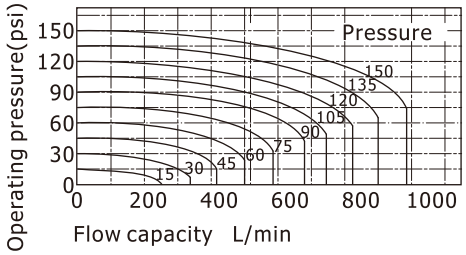
4HVL



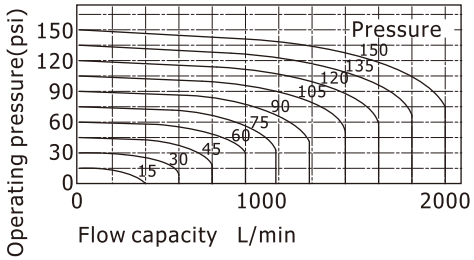
No.	Item	No.	Item
1	Body	12	Pin one
2	Seal base	13	Front cover
3	Valve cover	14	Spring
4	Valve plug	15	Handle
5	Column pin	16	Pin two
6	Shaft	17	Shaft O-ring
7	Washer	18	Spring
8	Fixing plate	19	Iron plate
9	Lock pin	20	Fixing screw
10	Valve cap	21	Body O-ring
11	Spring pin	22	Seal base O-ring

Flow chart

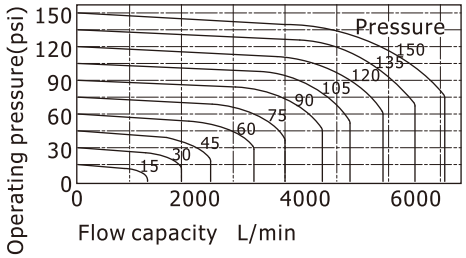
Model:2 Series



Model:3 Series



Model:4 Series

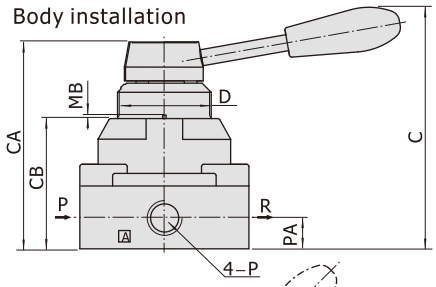


4HV, 4HVL Series

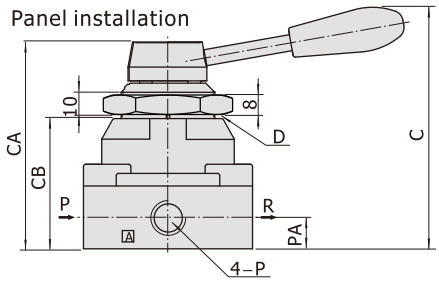
Dimensions

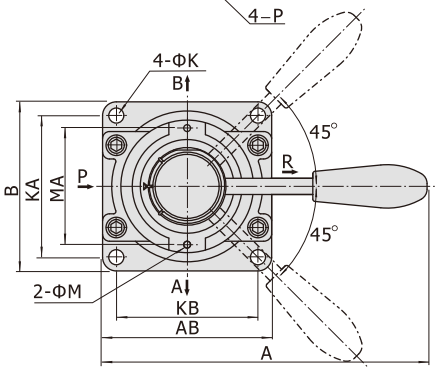
4HV

Body installation



Panel installation



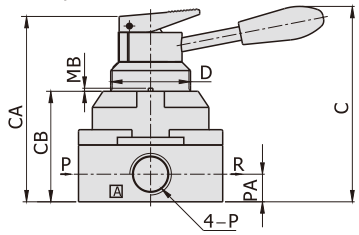


[Unit: mm]

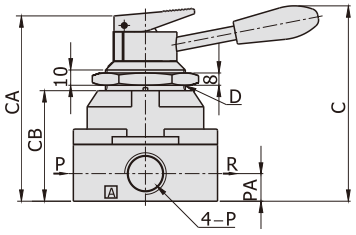
Model\Item	A	AB	B	C	CA	CB	D	K	KA	KB	M	MA	MB	P	PA
4HV2□□-06	120	62	62	92.5	73	45	M34×1.5	5.5	49	49	3	40	1.5	1/8"	11.5
4HV2□□-08	120	62	62	92.5	73	45	M34×1.5	5.5	49	49	3	40	1.5	1/4"	11.5
4HV3□□-08	140	74	74	104	88.5	56	M40×1.5	6.5	62	62	3	51	1.5	1/4"	13.5
4HV3□□-10	140	74	74	104	88.5	56	M40×1.5	6.5	62	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

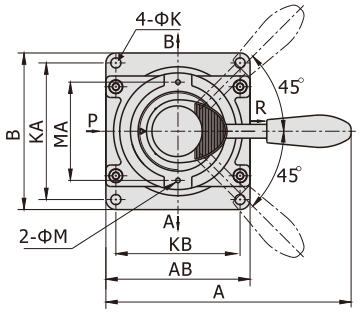
4HVL

Body installation



Panel installation





[Unit: mm]

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

Control valve(3/2way)

S3 Series

Ordering code

S3	PM	06	R	T
1	2	3	4	5

①Valve's type	②Model	③Port size	④Button color	⑤Thread type	
S3: S type 3/2 Way	B:Basic type	05:M5 06:1/8" 08:1/4"	No this code	M5	1/8" 1/4"
	C:Long handle type			No this code	T: NPT
	D:Short handle type				
	Y:Lever type				
	R:Roller type				
	L:Roller with free return type				
	V:Vertical type				
	PL:Latching type		R:Red		
	PP:Protruding type		R:Red G:Green B:Black		
	PF:Flat type				
	PM:Mushroom type				
	HS:Selector type				

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]	05:M5 06:1/8" 08:1/4"											
Orifice size	05:2.5 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	0~145psi(0~1.0MPa)											
Proof pressure	215psi(1.5MPa)											
Temperature ℃	-20~70											
Material body	Aluminum alloy											

[Note1] NPT 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.

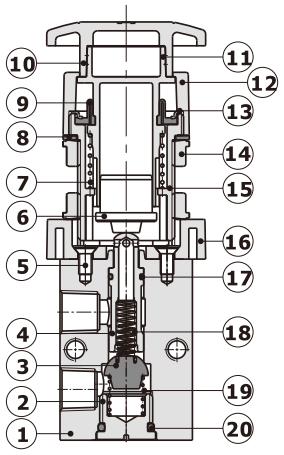
S3 Series

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 limit 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.

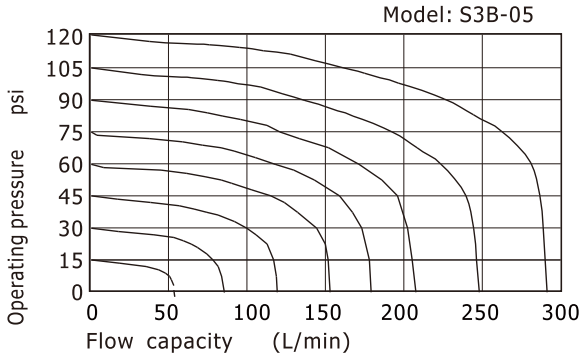
Inner structure

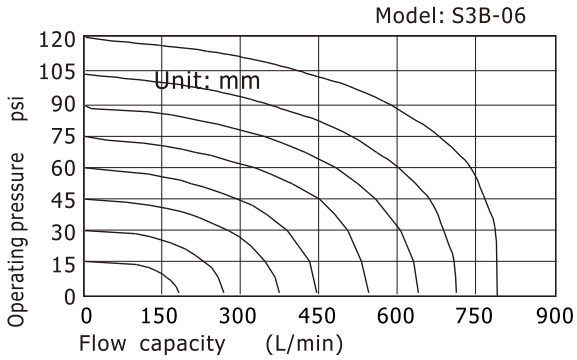
S3PM

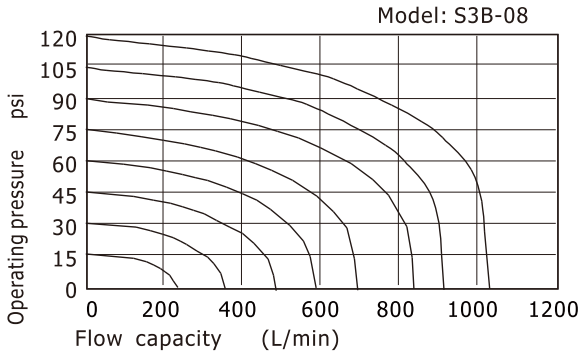


No.	Item	No.	Item	No.	Item
1	Body	8	Clamping gasket	15	Button body
2	Bottom cover	9	Dust cover	16	Connector
3	Stopper plug	10	Button cap	17	O-ring
4	Valve core	11	Main body of button	18	Spring
5	Screw	12	Top cover	19	Spring
6	Button pressing buckle	13	Button ring	20	O-ring
7	Spring	14	Clamping nut		

Flow chart







Reversal stroke

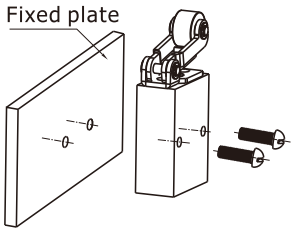
Type	Spool stroke	Button stroke	Type	Spool stroke	Roller(handle) stroke
S3B	2.4~4.0	–	S3R	2.4~3.4	5.5~7.8
S3PF	2.4~4.0	3.8~5.4	S3L	2.4~3.4	6.0~8.6
S3PP	2.4~4.0	3.8~5.4	S3V	2.4~3.8	3.4~4.8
S3PM	2.4~4.0	3.8~5.4	S3C	2.4~3.8	14.4~18.4
S3PL	2.4~4.0	5.9~7.5	S3D	2.4~3.8	7.4~9.4
S3HS	2.4~4.0	5.1~6.7			

S3 Series

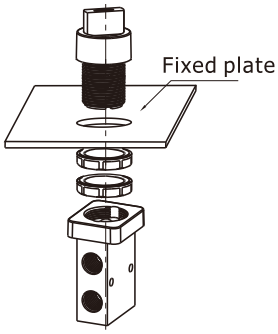
Installation and Application

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 table on the right for order details.

Fixation way of body



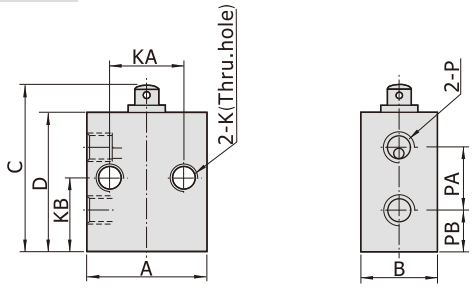
Fixation way of panel



Dimensions

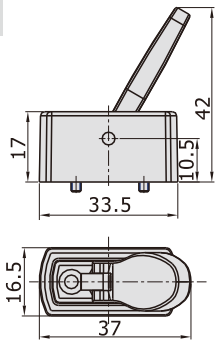
[Unit: mm]

Body(S3B)



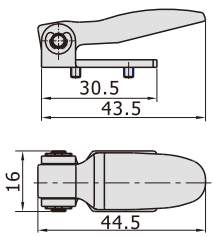
Model\Item	A	B	C	D	K	KA	KB	P	PA	PB
05	26	16.5	36	30	M5x0.8	16	15	M5x0.8	13	9
06	30	16.5	47	41	M5x0.8	23	20.5	1/8"	17.5	11.5
08	34	17.5	52	46	M5x0.8	24	22.5	1/4"	21	12

Lever type(Y)



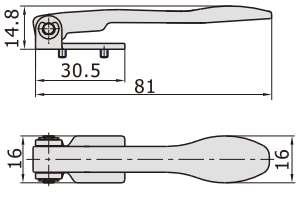
Model		Lever type(Y)
How to order	Ordering code	M3Y210-P13A
	Type	M3Y210Lever type control set
Applicable products		S3Y05,S3Y06,S3Y08

Short handle type(D)



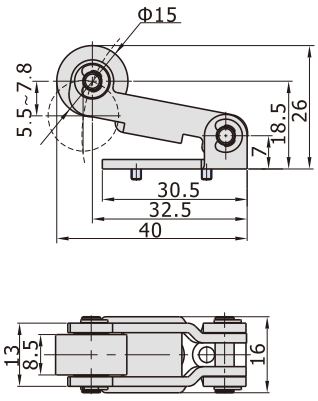
Model		Short handle type(D)
How to order	Ordering code	M3D210-P13A
	Type	M3D210 Short handle type control set
Applicable products		S3D05,S3D06,S3D08

Long handle type(C)



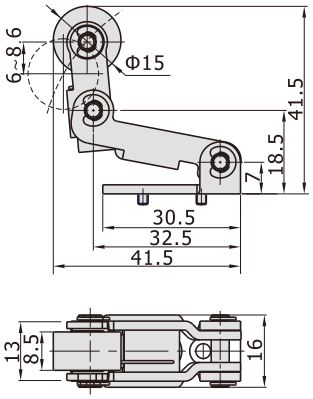
Model		Long handle type(C)
How to order	Ordering code	M3C210-P13A
	Type	M3C210 Long handle type control set
Applicable products		S3C05,S3C06,S3C08

Roller type(R)



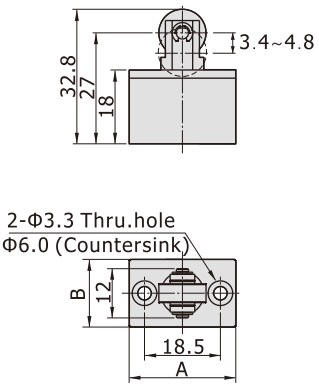
Model		Roller type(R)
How to order	Ordering code	M3R210-P14A
	Type	M3R210 Roller type control set
Applicable products		S3R05,S3R06,S3R08

Roller with free return type(L)



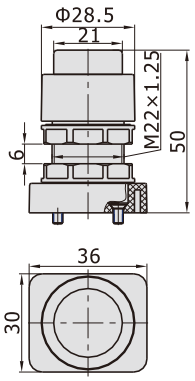
Model		Roller with free return type(L)
How to order	Ordering code	M3L210-P14A
	Type	M3L210 Roller with free return type control set
Applicable products		S3L05,S3L06,S3L08

Vertical type(V)



Model		Vertical type(V)	
How to order	Ordering code	S3V05(06/08)-P14A	
	Type	S3V05(06. 08) Vertical type control set	
Applicable products		S3V05,S3V06,S3V08	
Model\Item		A	B
05		26	16.5
06		30	16.5
08		34	17.5

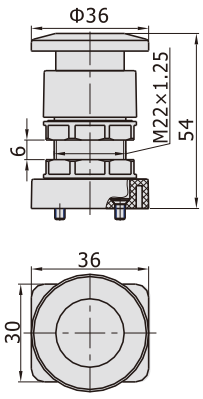
Protruding type(PP)



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		S3PP05,S3PP06,S3PP08

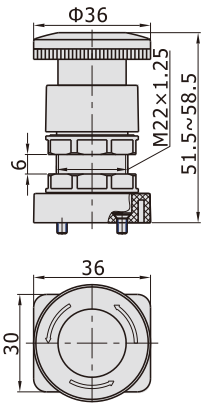
S3 Series

Mushroom type(PM)



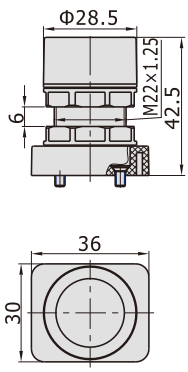
Model		Mushroom type(PM)
How to order	Ordering code	S3PM05-P11A
	Type	S3PM mushroom type control set (Green)
	Ordering code	S3PM05-P12A
	Type	S3PM mushroom type control set (Red)
	Ordering code	S3PM05-P13A
	Type	S3PM mushroom type control set (Black)
Applicable products		S3PM05,S3PM06,S3PM08

Latching type(PL)



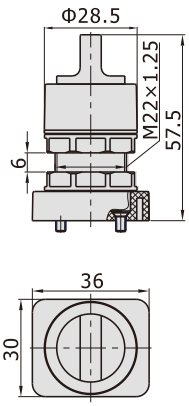
Model		Latching type (only red)(PL)
How to order	Ordering code	S3PL05-P12A
	Type	S3PL Latching type control set (Red)
Applicable products		S3PL05,S3PL06,S3PL08

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		S3PF05,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		S3HS05,S3HS06,S3HS08

M3 Series

Ordering code

Common type

M3 PM 210 06 R T

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	T: NPT
	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"	R: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

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		0~145psi(0~1.0MPa)										
Proof pressure		215psi(1.5MPa)										
Temperature		-20~70℃										
Material body		Aluminum alloy										

[Note1] NPT 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.

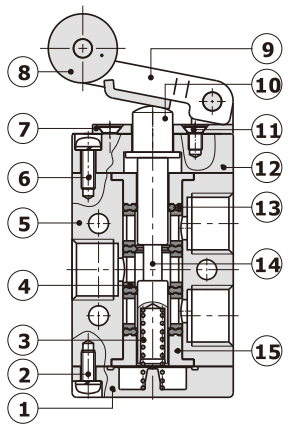
M3 Series

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 limit 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.

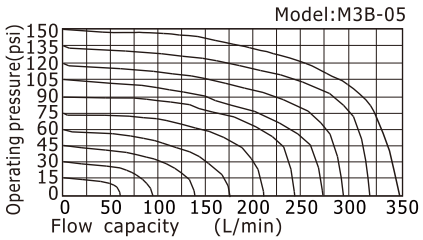
Inner structure

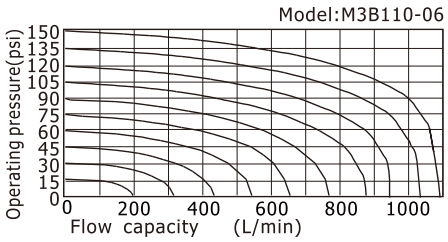
M3R210

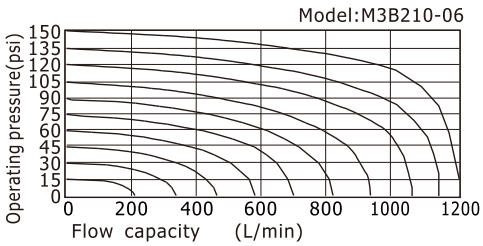


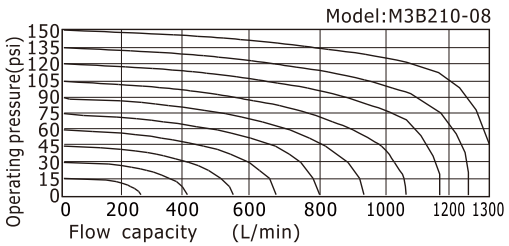
No.	Item	No.	Item	No.	Item
1	Botton cover	6	Screw	11	Screw
2	Screw	7	Roller holder	12	Fore cover
3	Spring	8	Roller	13	Piston O-ring
4	Spacer	9	Rotating block	14	Spool
5	Body	10	Axle	15	Positioning block

Flow chart









Reversal stroke

Unit:mm

Common type						Mini type		
Type	Spool troke	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						

M3 Series

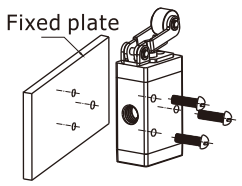
Installation and Application

1) Body and panel installation（picture at right）:

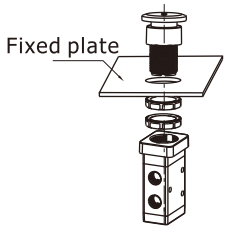
2)The control set is made of engineering plastic which only allows manual operation and switching valves through metal impact is forbidden.

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.

Fixation way of body



Fixation way of panel



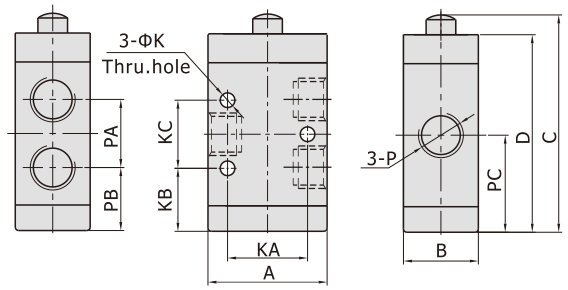
4) Pay attention to the reversing stroke. The reversing stroke can not surpass its stroke stipulated in stroke control table when the direction-change of the valve is forced by any external forces, otherwise it will cause the damage of the valve.

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 table on the right for order details.

Dimensions

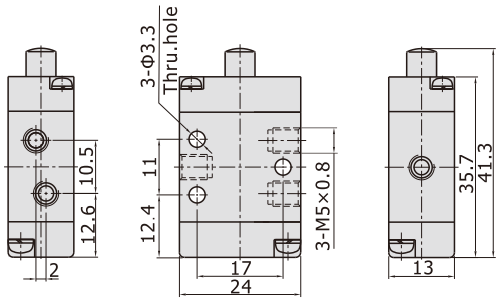
Common type



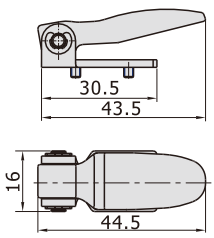
Model\Item	A	B	C	D	K	KA	KB	KC	P	PA	PB	PC
M3B11006	27	18	52	46.5	3.3	18	15.5	16	1/8"	16	15.5	23.5
M3B21006	35	22	64	58	4.3	23.5	18.5	20	1/8"	20	18.5	28.5
M3B21008									1/4"			

Mini type

[Unit: mm]

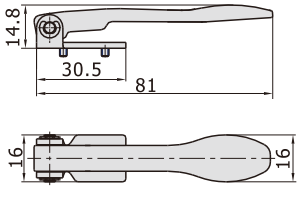


Short handle type(D)



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)

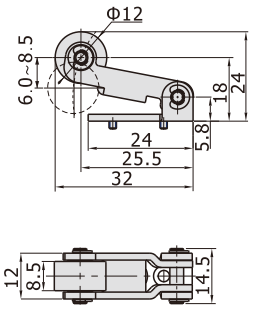


Model		Long handle type(C)
How to order	Ordering code	M3C210-P13A
	Type	M3C210 Long handle type control set
Applicable products		M3C110, M3C210

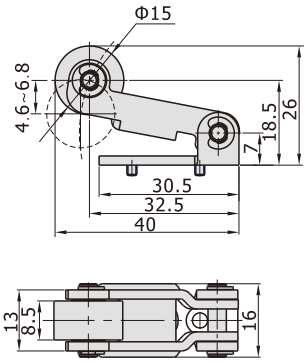
M3 Series

Roller type(R)

Mini type



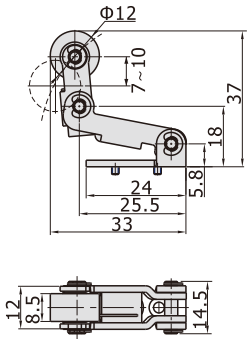
Common type



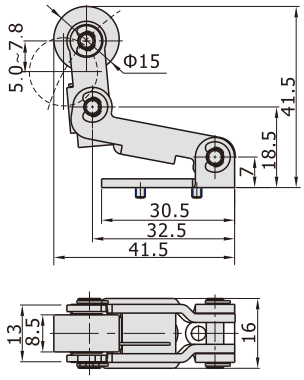
Model		Roller type(R)
How to order	Ordering code	M3R05-P14A
	Type	M3R05 Roller type control set
Applicable products		M3R05
How to order	Ordering code	M3R210-P14A
	Type	M3R210 Roller type control set
Applicable products		M3R110, M3R210

Roller with free return type(L)

Mini type

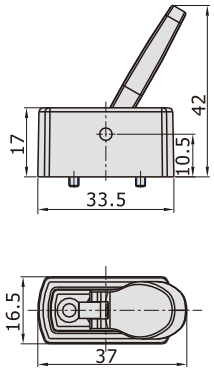


Common type



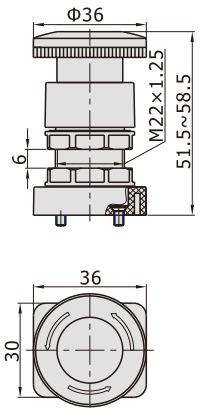
Model		Roller with free return type(L)
How to order	Ordering code	M3L05-P14A
	Type	M3L05 Roller with free return type control set
Applicable products		M3L05
How to order	Ordering code	M3L210-P14A
	Type	M3L210 Roller with free return type control set
Applicable products		M3L110,M3L210

Lever type(Y)



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

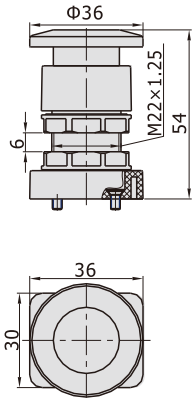
Latching type(PL)



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

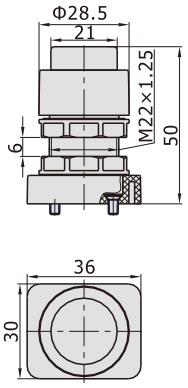
M3 Series

Mushroom type(PM)



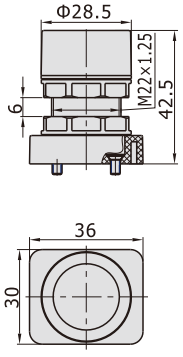
Model		Mushroom type(PM)
How to order	Ordering code	S3PM05-P11A
	Type	S3PM mushroom type control set (Green)
	Ordering code	S3PM05-P12A
	Type	S3PM mushroom type control set (Red)
	Ordering code	S3PM05-P13A
	Type	S3PM mushroom type control set (Black)
Applicable products		M3PM110, M3PM210

Protruding type(PP)



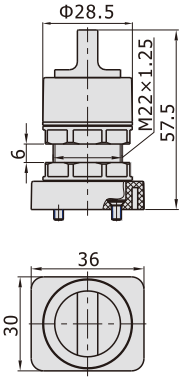
Model		Protruding type(PP)
How to order	Ordering code	S3PP05-P11A
	Type	S3PP protruding type control set (Green)
	Ordering code	S3PP05-P12A
	Type	S3PP protruding type control set (Red)
	Ordering code	S3PP05-P13A
	Type	S3PP protruding type control set (Black)
Applicable products		M3PP110, M3PP210

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

Control valve(5/2way)

M5 Series

Ordering code

Common type

M5 PM 210 06 R T

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	T: NPT
	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"	R:Red	
	PL:Latching type				
	PP:Protruding type			R:Red G:Green B:Black	
	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

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		0~145psi(0~1.0MPa)										
Proof pressure		215psi(1.5MPa)										
Temperature		-20~70℃										
Material body		Aluminum alloy										

[Note1] NPT 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.

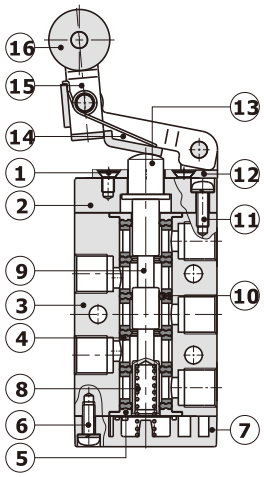
M5 Series

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 limit 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. No need to add oil for lubrication.
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 long service life and more reliable and steady performance.

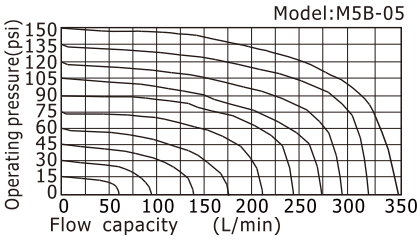
Inner structure

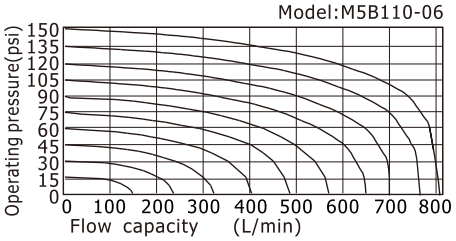
M5L210

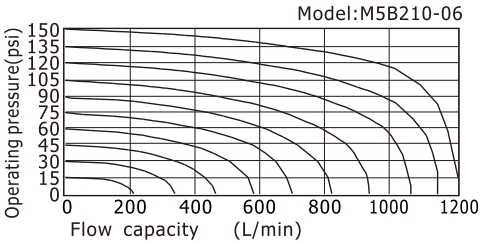


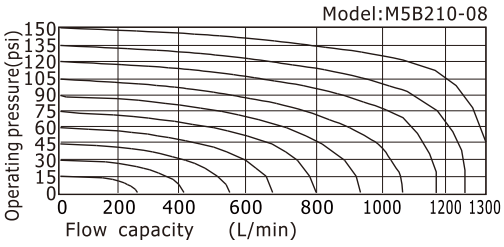
No.	Item	No.	Item	No.	Item
1	Screw	7	Botton cover	13	Axle
2	Fore cover	8	Spring	14	Rotating block
3	Body	9	Spool	15	Rocker
4	Spacer	10	Piston O-ring	16	Roller
5	Positioning block	11	Screw		
6	Screw	12	Roller holder		

Flow chart









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						

M5 Series

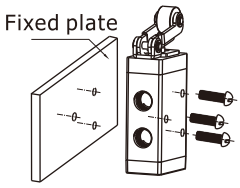
Installation and Application

1) Body and panel installation（picture at right）:

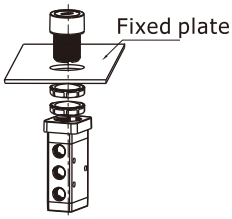
2)The control set is made of engineering plastic which only allows manual operation and switching valves through metal impact is forbidden.

3)The series of 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.

Fixation way of body



Fixation way of panel



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.

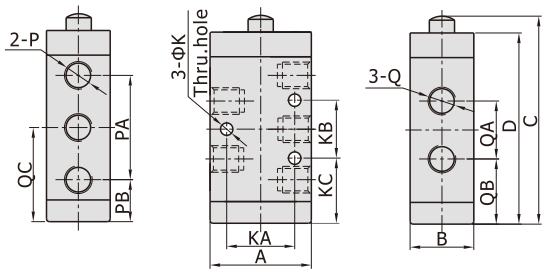
5) The M3L can only switch the valve in single direction (impact from right to left). The impact from the other direction is invalid (from left to right).

6) Control joint combination can be ordered individually. Please refer to the table on the right for order details.

Dimensions

Common type

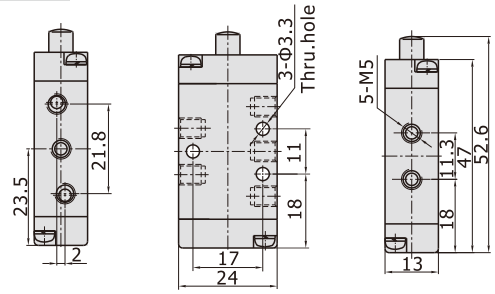
[Unit: mm]



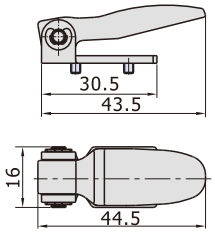
Model\Item	A	B	C	D	K	KA	KB	KC
M5B11006	27	18	63	57.5	3.3	18	14	22
M5B21006	35	22	72	66	4.3	23.5	20	22.5
M5B21008								

Model\Item	P	PA	PB	Q	QA	QB	QC
M5B11006	1/8"	28	15	1/8"	16	21	29
M5B21006	1/8"	36	14.5	1/8"	20	22.5	32.5
M5B21008	1/4"			1/4"			

Mini type

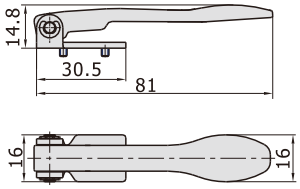


Short handle type(D)



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)

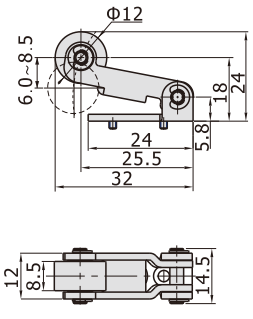


Model		Long handle type(C)
How to order	Ordering code	M3C210-P13A
	Type	M3C210 Long handle type control set
Applicable products		M5C110, M5C210

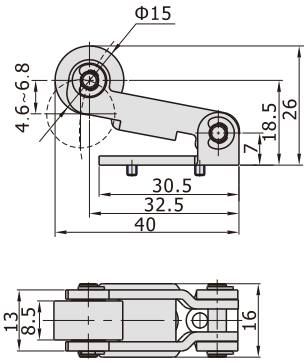
M5 Series

Roller type(R)

Mini type



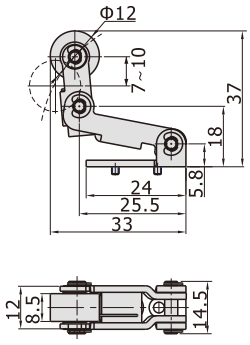
Common type



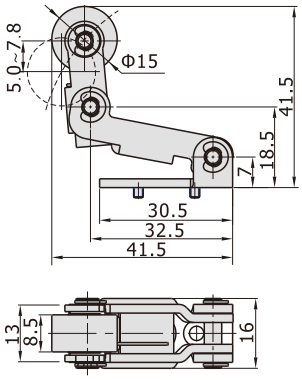
Model		Roller type(R)
How to order	Ordering code	M3R05-P14A
	Type	M3R05 Roller type control set
Applicable products		M5R05
How to order	Ordering code	M3R210-P14A
	Type	M3R210 Roller type control set
Applicable products		M5R110, M5R210

Roller with free return type(L)

Mini type

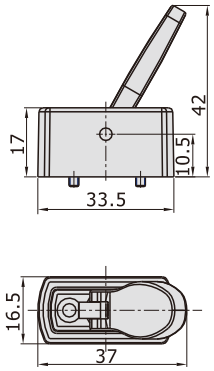


Common type



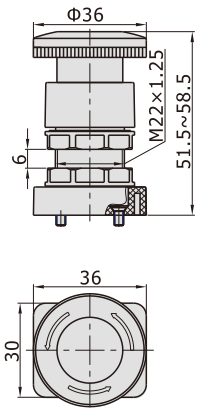
Model		Roller with free return type(L)
How to order	Ordering code	M3L05-P14A
	Type	M3L05 Roller with free return type control set
Applicable products		M5L05
How to order	Ordering code	M3L210-P14A
	Type	M3L210 Roller with free return type control set
Applicable products		M5L110,M5L210

Lever type(Y)



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

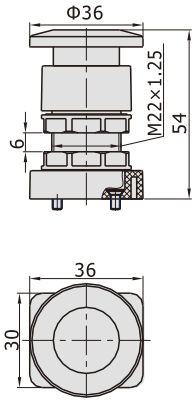
Latching type(PL)



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

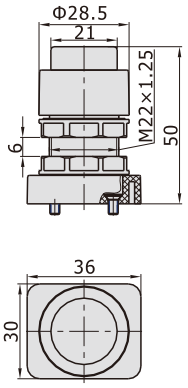
M5 Series

Mushroom type(PM)



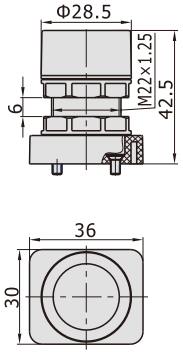
Model		Mushroom type(PM)
How to order	Ordering code	S3PM05-P11A
	Type	S3PM mushroom type control set (Green)
	Ordering code	S3PM05-P12A
	Type	S3PM mushroom type control set (Red)
	Ordering code	S3PM05-P13A
	Type	S3PM mushroom type control set (Black)
Applicable products		M5PM110, M5PM210

Protruding type(PP)



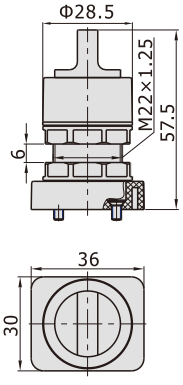
Model		Protruding type(PP)
How to order	Ordering code	S3PP05-P11A
	Type	S3PP protruding type control set (Green)
	Ordering code	S3PP05-P12A
	Type	S3PP protruding type control set (Red)
	Ordering code	S3PP05-P13A
	Type	S3PP protruding type control set (Black)
Applicable products		M5PP110, M5PP210

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

Ordering code

CM3	PP	06	B	T
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	T: NPT
	L: Roller with free return type				
	V: Vertical type				
	Y: Lever typer				
	PL: Latching type		R: 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				

Specification

Model	CM3□-05	CM3□-06	CM3□-08
Operating	External control		
Fluid	Air (to be filtered by 40 μm filter element)		
Pressure range	0~145psi(0~1.0MPa)		
Proof pressure	215psi(1.5MPa)		
Temperature	-20~70℃		
Valve type [Note1]	3 port 2 position		
Orifice size	2.0mm^2	2.5mm^2	15.0mm^2
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] NPT thread is available.

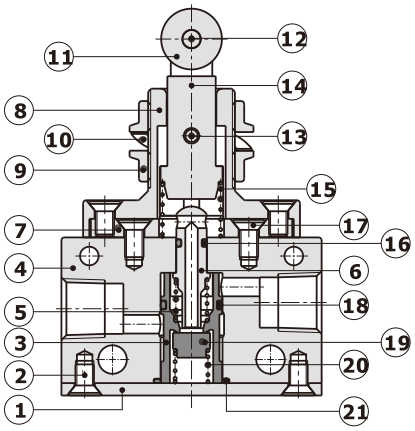
CM3 Series

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.

Inner structure

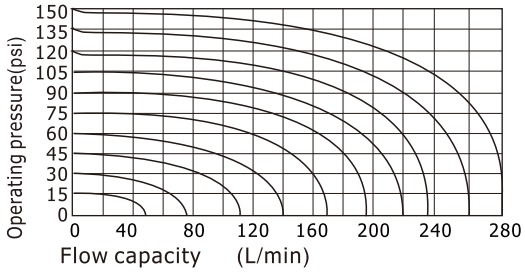
CM3V



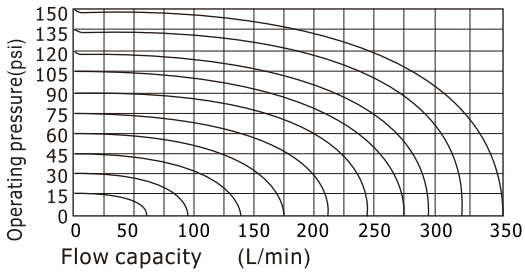
No.	Item	No.	Item	No.	Item
1	Fixing plate	8	Connecting holder	15	Spring
2	Screw	9	Clamping nut	16	O-ring
3	Spacer	10	Spring gasket	17	Screw
4	Body	11	Roller	18	O-ring
5	Spring	12	Shaft	19	Bottom cover gasket
6	Spool	13	Lock pin	20	Spring
7	Connerting gasket	14	Roller bracket	21	O-ring

Flow chart

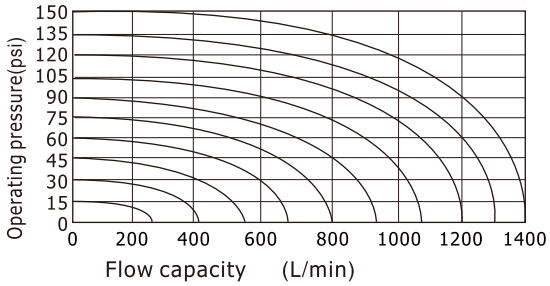
Model: CM3B-05



Model: CM3B-06



Model: CM3B-08

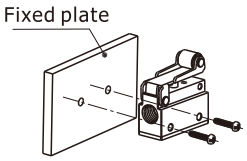


CM3 Series

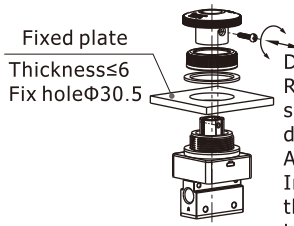
Installation and Application

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

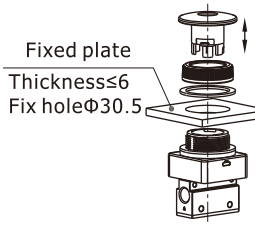


Latching type



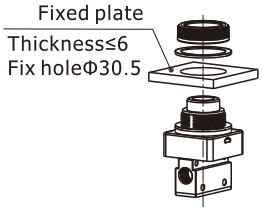
Disassembly: Remove the screw, then to draw the button.
Assembly: Install the button, then to tighten the screw.

Mushroom type

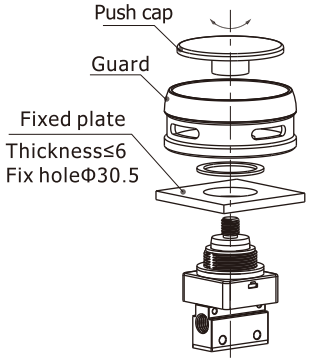


The button can be drew upward, or be pressed downward.

Fixation way of panel I

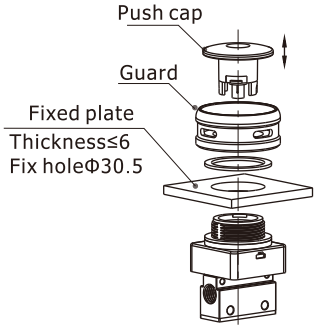


Big mushroom type(With guard)



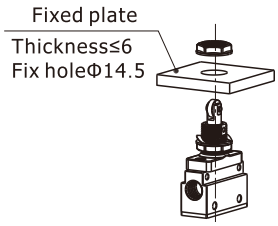
Disassembly: Remove the push cap, then remove the guard.
Assembly: Install the guard, then to tighten the push cap.

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.

Fixation way of panel II



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

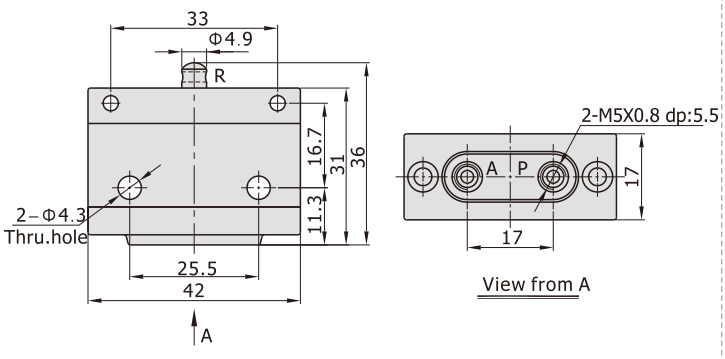
5. The CM3L can only switch the valve in single direction(impact from left to right). The impact from the other direction (from right to left) is invalid .
6. Control joint combination can be ordered individually. Please refer to external specification.

CM3 Series

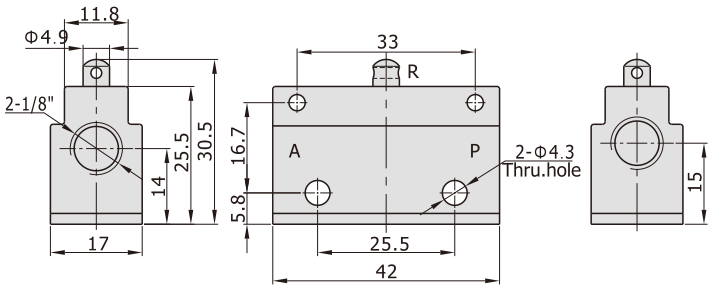
Dimension (Basic type)

[Unit: mm]

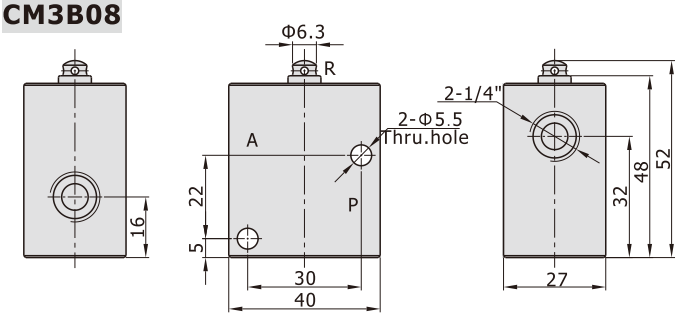
CM3B05



CM3B06



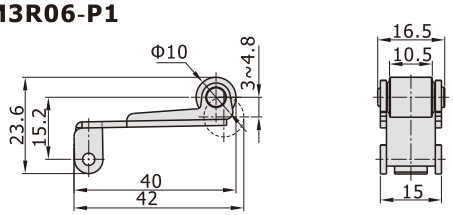
CM3B08



Control set dimension

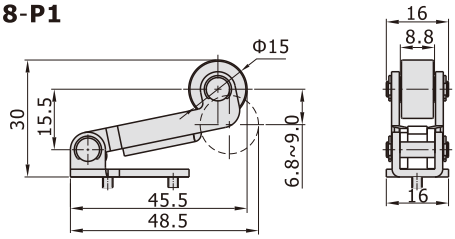
Roller type(R)

CM3R06-P1



Note: CM3R06 control joint, which used in CM3R05 and CM3R06, can not be ordered individually. It should be matched with basic type.

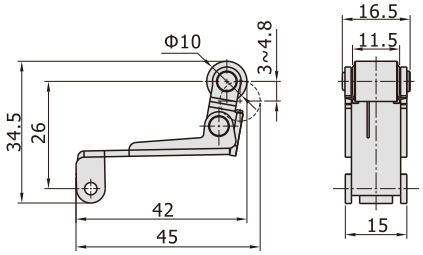
CM3R08-P1



Model		Roller type(R)
How to order	Ordering code	CM3R08-P1
	Type	CM3R08 roller type control set
Applicable products		CM3R08

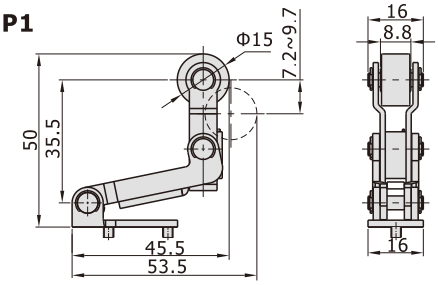
Roller with free return type(L)

CM3L06-P1



Note: CM3L06 control joint, which used in CM3L05 and CM3L06, can not be ordered individually. It should be matched with basic type.

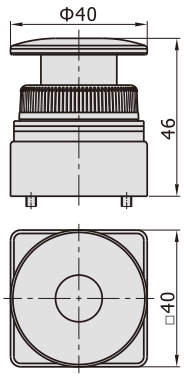
CM3L08-P1



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

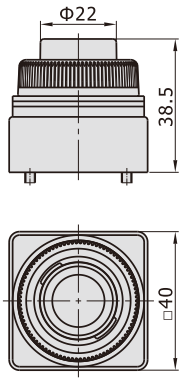
CM3 Series

Mushroom type(PM)



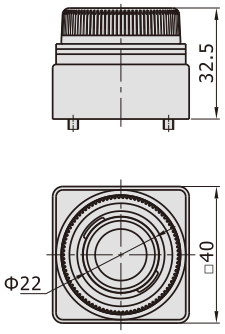
Model		Mushroom type (PM)
How to order	Ordering code	CM3PM06-P1
	Type	CM3PM mushroom type control set(green)
	Ordering code	CM3PM06-P2
	Type	CM3PM mushroom type control set(red)
	Ordering code	CM3PM06-P3
	Type	CM3PM mushroom type control set(black)
	Ordering code	CM3PM06-P4
	Type	CM3PM mushroom type control set(yellow)
Applicable products		CM3PM05 CM3PM06 CM3PM08

Protruding type(PP)



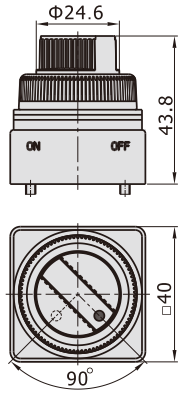
Model		Protruding type (PP)
How to order	Ordering code	CM3PP06-P1
	Type	CM3PP protruding type control set(green)
	Ordering code	CM3PP06-P2
	Type	CM3PP protruding type control set(red)
	Ordering code	CM3PP06-P3
	Type	CM3PP protruding type control set(black)
	Ordering code	CM3PP06-P4
	Type	CM3PP protruding 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

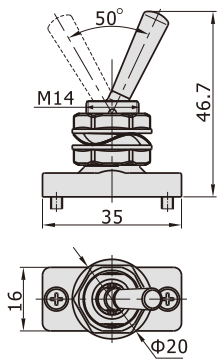
Selector type(HS)



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

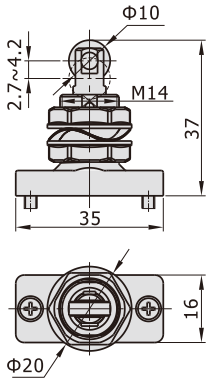
CM3 Series

Lever type(Y)



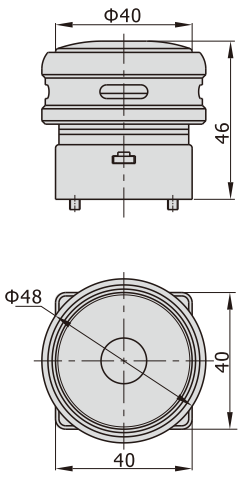
Model		Lever type(Y)
How to order	Ordering code	CM3Y06-P1
	Type	CM3Y lever type control set
Applicable products		CM3Y05 CM3Y06 CM3Y08

Vertical type(V)



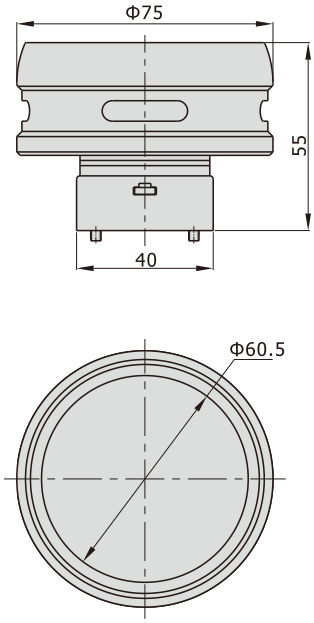
Model		Vertical type（V）
How to order	Ordering code	CM3V06-P1
	Type	CM3V vertical type control set
Applicable products		CM3V05 CM3V06 CM3V08

Mushroom type(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

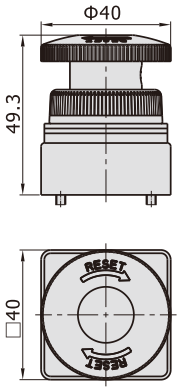
Big mushroom type(with guard)(PMX)



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

CM3 Series

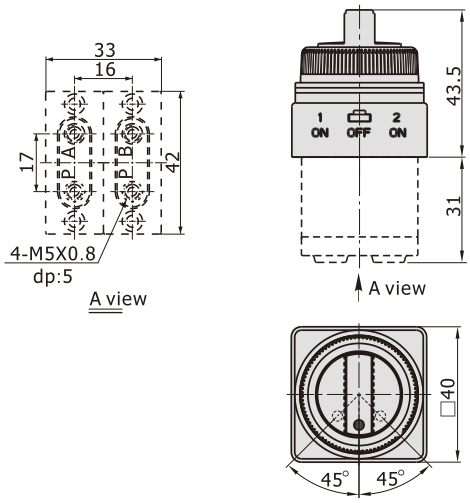
Latching type(PL)



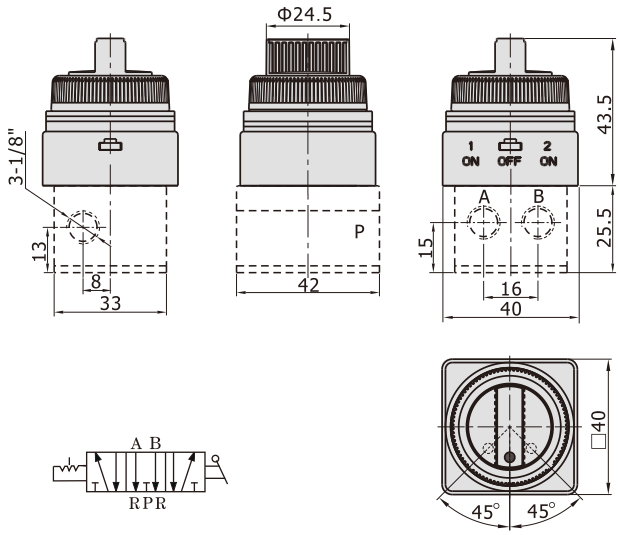
Model		Latching type(PL)
How to order	Ordering code	CM3PL06-P2
	Type	CM3PL latching type control set(red)
Applicable products		CM3PL05 CM3PL06 CM3PL08

Double-selector type(HD)

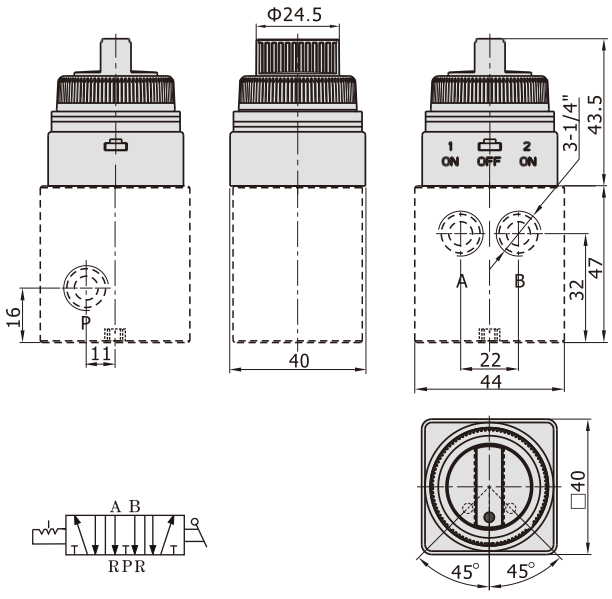
CM3HD05



CM3HD06



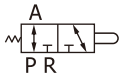
CM3HD08

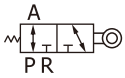


Model		Double-selector type（HD）
How to order	Ordering code	CM3HD06-P1
	Type	CM3HD double-selector type control set(green)
	Ordering code	CM3HD06-P2
	Type	CM3HD double-selector type control set(red)
	Ordering code	CM3HD06-P3
	Type	CM3HD double-selector type control set(black)
	Ordering code	CM3HD06-P4
	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.

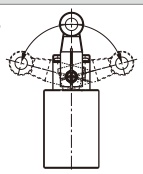
ZM3 Series





Ordering code

ZM3	R	06	W	T
1	2	3	4	5

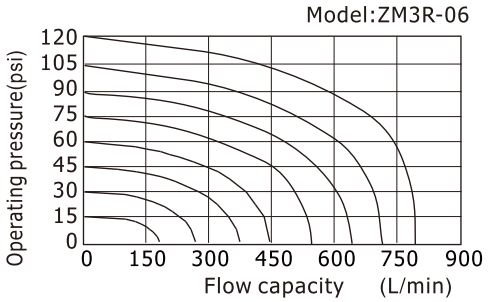
①Valve's type	②Model	③Port size	④Extreme angle of opening and closing of control head	⑤Thread type
ZM3: ZM type 3/2 Way	R: Roller type J: Adjustable roller type P: Contact pin adjustable roller type	06: 1/8"	Blank: Standard type W: Large angle type 	T: NPT

Specification

Model	ZM3R	ZM3J	ZM3P
Operating	External control direct acting type		
Fluid	Air (to be filtered by 40 μm filter element)		
Pressure range	−15~145psi(-0.1~1.0MPa)		
Proof pressure	215psi(1.5MPa)		
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 body	Aluminum alloy		

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

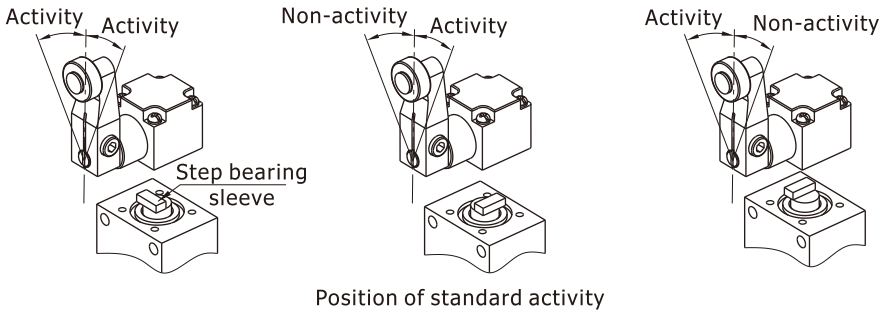
Flow chart



ZM3 Series

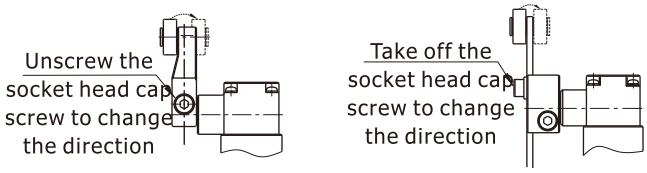
Product feature

1. The activity direction could be changed(Only adapt to standard type, large angle type unavailable)

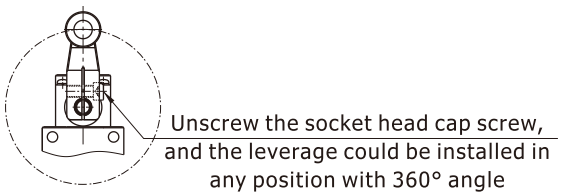


Position of standard activity

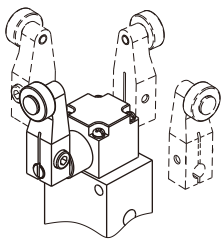
2. The rolling wheel could be installed at the inside of leverage



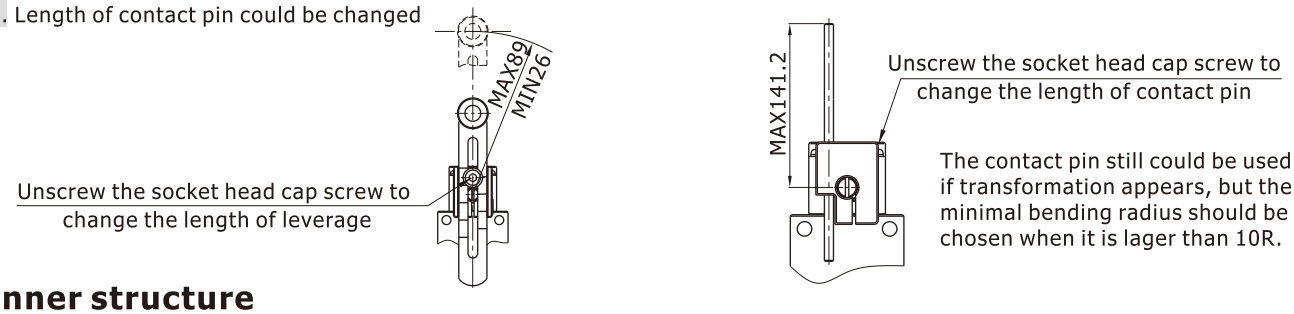
3. Installation position of leverage could be changed



4. Direction of head part could be changed

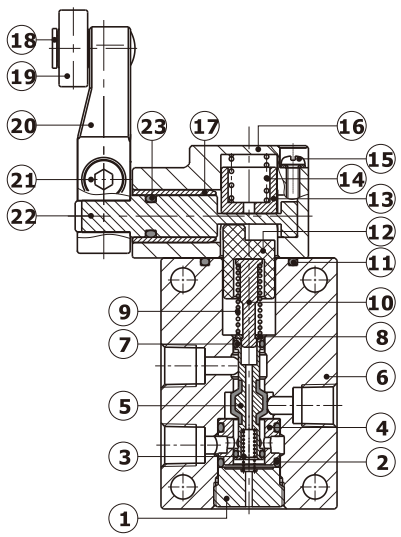


5. Length of contact pin could be changed



Inner structure

ZM3R

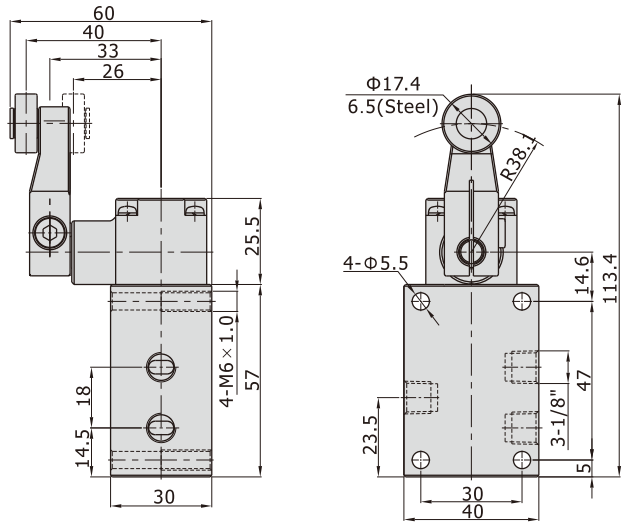


No.	Item	No.	Item
1	Bottom cover	13	Spring holder
2	O-ring	14	Spring
3	Spring	15	Screw
4	Spacer	16	Front cover
5	Spool	17	Bushing
6	Body	18	Shaft
7	O-ring	19	Roller
8	Spring washer	20	Rocker arm
9	Spring	21	Screw
10	Man drill	22	Rotation axis
11	O-ring	23	O-ring
12	Bushing		

ZM3 Series

Dimensions

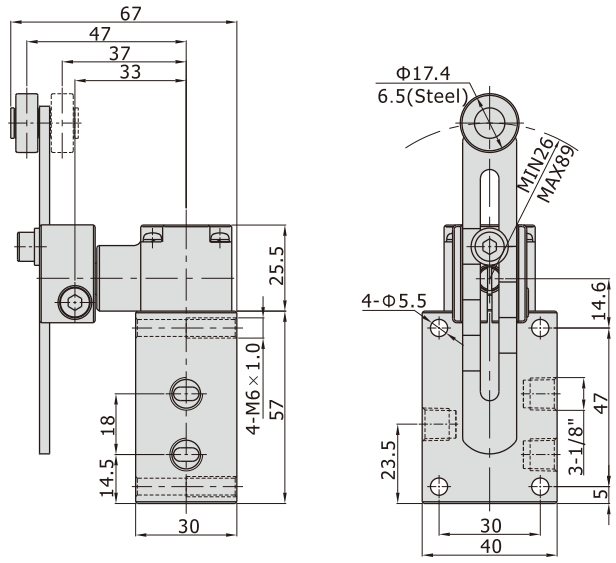
ZM3R



Model\Item	F.O.F	P.T.	O.T.	T.T.
ZM3R06	20N	20°	30°	50°
ZM3R06-W	20N	25°	50°	75°

ZM3J

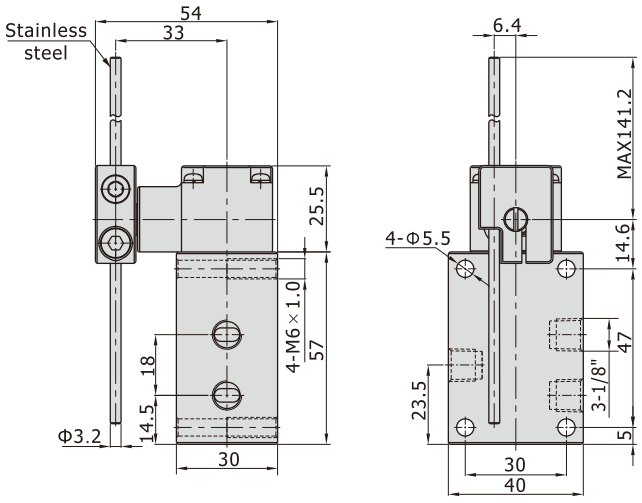
[Unit: mm]



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

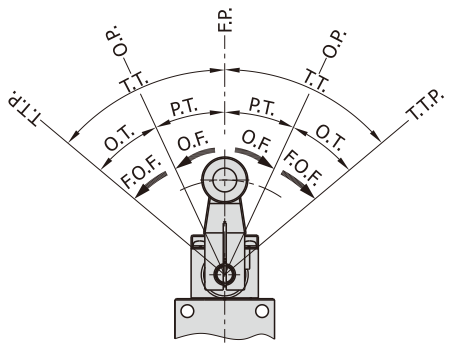
ZM3P



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(5/2way)

4F Series

Without lock

With lock

Ordering code

4F210 08 L T

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	T: NPT

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	0~145psi(0~1.0MPa)			
Proof pressure	215psi(1.5MPa)			
Temperature	-20~70℃			
Material body	Aluminum alloy			
Lubrication	Not required			

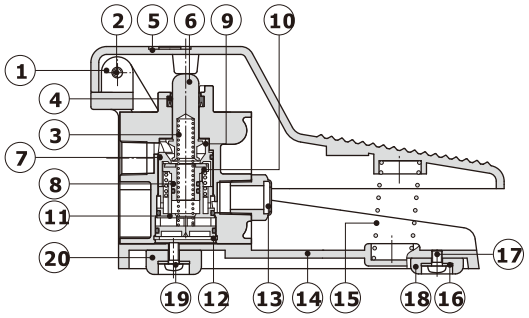
[Note1] NPT thread is available.

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.

4F Series

Inner structure



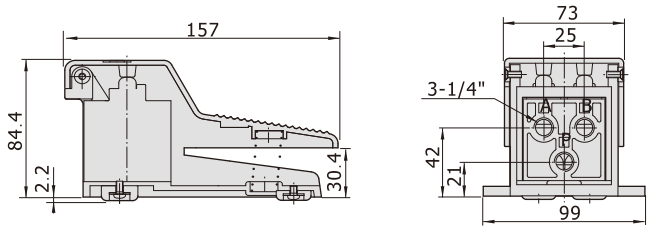
No.	Item	No.	Item	No.	Item	No.	Item
1	Pin	6	Spool	11	Bottom cover	16	Washer
2	Screw	7	O-ring	12	C clip	17	Screw
3	Spring	8	O-ring	13	Silencer	18	Base pad
4	E clip	9	Front cover	14	Base	19	Screw
5	Pedal	10	Piston	15	Pedal spring	20	Base pad

Note Lockable type should be added grease periodically to ensure the machine can work regularly.

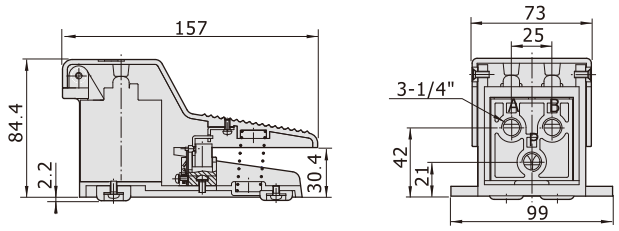
Dimensions

[Unit: mm]

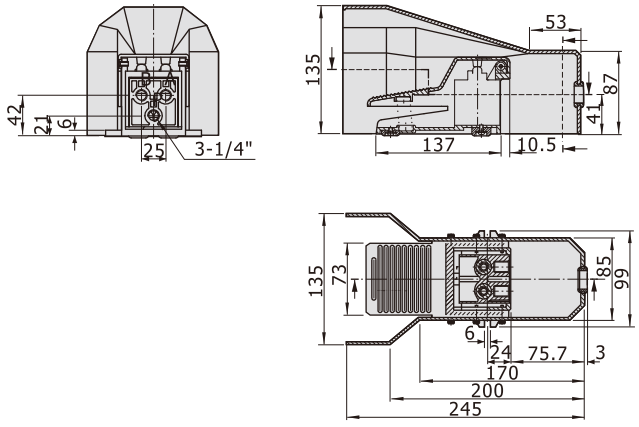
4F210



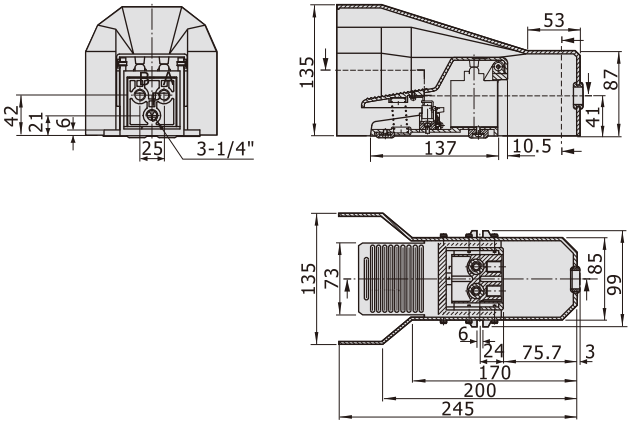
4F210L



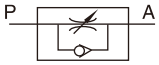
4F210F



4F210LF



ASC Series



Ordering code

ASC 300 10 T

1 2 3 4

①Model	②Code	③Port size	④Thread type
ASC: Flow control valve	100: 100 series	06: 1/8"	T: NPT
	200: 200 series	08: 1/4"	
	300: 300 series	10: 3/8"	
		15: 1/2"	

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		7~135psi(0.05~0.95MPa)			
Proof pressure		215psi(1.5MPa)			
Temperature		-20~70℃			
Material body		Aluminum alloy			
Flow (L/min)	Control flow	200	450	1250	1650
	Free flow	400	800	1500	2500

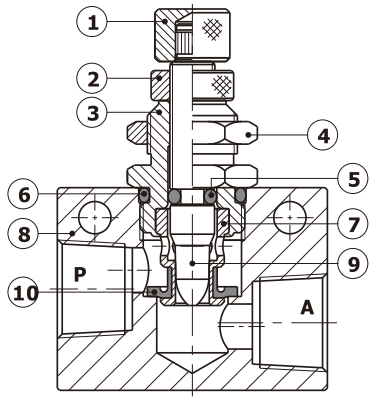
[Note1] NPT thread is available.

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.

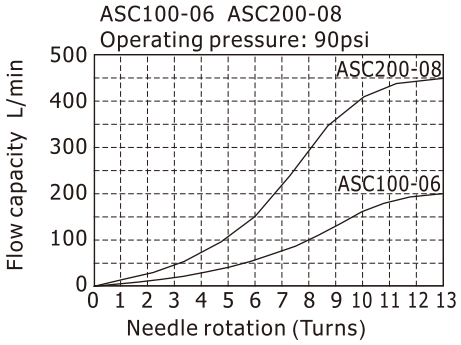
ASC Series

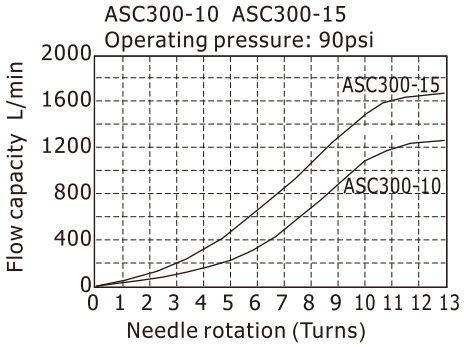
Inner structure



No.	Item	No.	Item	No.	Item
1	Adjustment cap	5	O-ring	9	Throttle column
2	Clamping cap	6	O-ring	10	Spool O-ring
3	Throttle body	7	Throttle sheath		
4	Hexagon nut	8	Body		

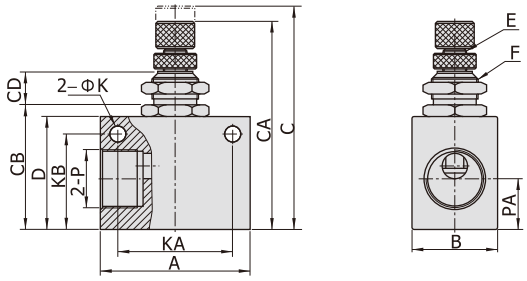
Flow chart



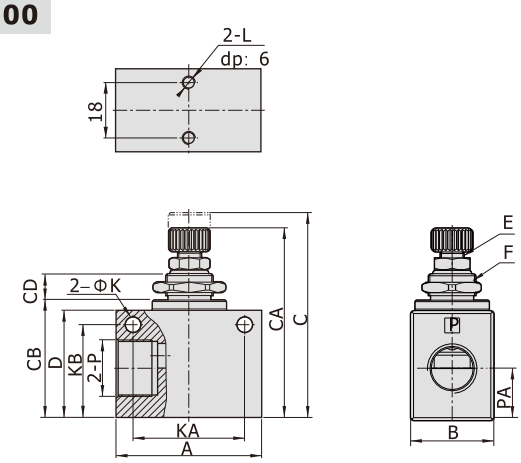


Dimensions

ASC100\ASC200



ASC300

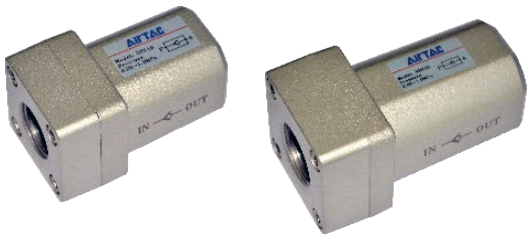


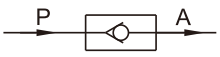
[Unit: mm]

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





Ordering code

NRV 08 T

1 2 3

①Model	②Port size			③Thread type
NRV: Non-return valve	06: 1/8"	10: 3/8"	20: 3/4"	T: NPT
	08: 1/4"	15: 1/2"	25: 1"	

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	2.9~145psi(0.02~1.0MPa)					
Proof pressure	215psi(1.5MPa)					
Temperature	-20~70℃					
Material of body	Aluminum alloy					

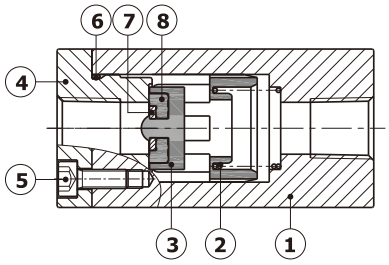
[Note1] NPT thread is available.

Product feature

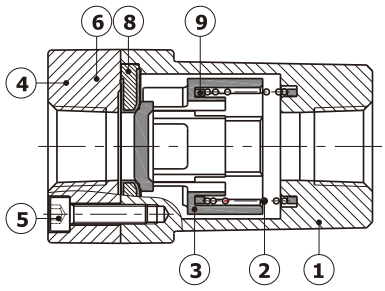
1. There are many port sizes: 1/8", 1/4", 3/8", 1/2", 3/4", 1".
2. It allows the fluid to flow in one direction **ONLY**.
3. It is prevent backflow due to sudden drop in pressure or decrease in air consumption .
4. There is large valid area of section.
5. The spool is made of POM, valve's core sealed with rubber, and it has a compact structure.

Inner structure

NRV06\NRV08

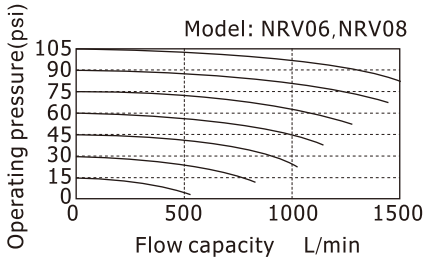


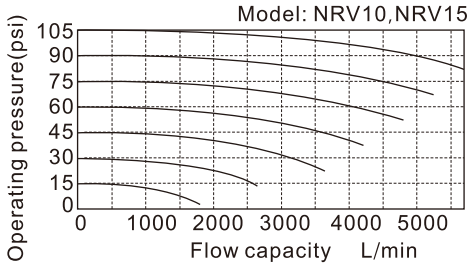
NRV10~25

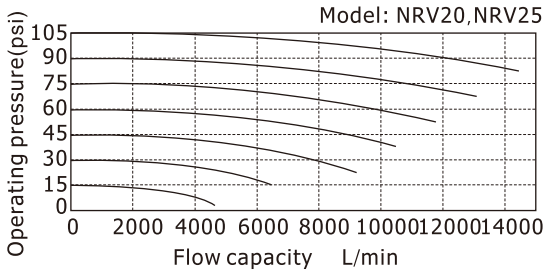


No.	Item
1	Body
2	Spring
3	Spool
4	End cover
5	Screw
6	O-ring
7	Washer
8	Gasker washer
9	Bumper

Flow chart

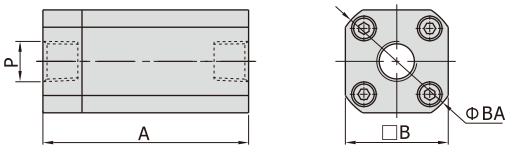






Dimensions

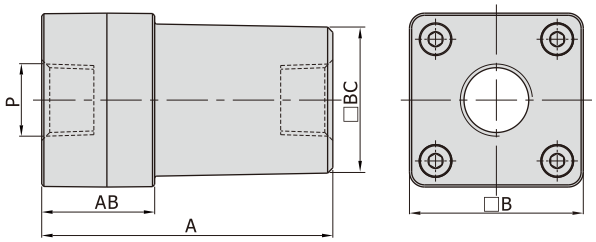
NRV06\NRV08



[Unit: mm]

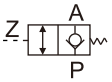
Model\Item	A	AB	B	BA	BC	P
NRV06	50	-	25	30	-	1/8"
NRV08	50	-	25	30	-	1/4"
NRV10	67	26	40	-	33.6	3/8"
NRV15	67	26	40	-	33.6	1/2"
NRV20	95	31.5	52	-	46.7	3/4"
NRV25	95	31.5	52	-	46.7	1"

NRV10~25



Pilot no-return valve

PCV series



Ordering code

PCV 06 □ T

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"	T: NPT
			1/8"	1/4"	
			1/4"	3/8", 1/2"	

Specification

Model	PCV06	PCV08	PCV10	PCV15
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure range	22~145psi(0.15~1.0MPa)			
Proof pressure	215psi(1.5MPa)			
Temperature	-20~70(℃)			
Operating frequency	60(Cycle/minute)		40(Cycle/minute)	
Port size [Note1]	1/8"	1/4"	3/8"	1/2"
Pilot port size	M5X0.8	1/8"	1/4"	1/4"
Weight(g)	53.2	94.8	142.8	189.6

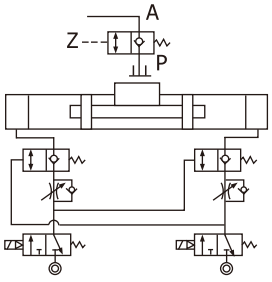
[Note1] NPT thread is available.

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.

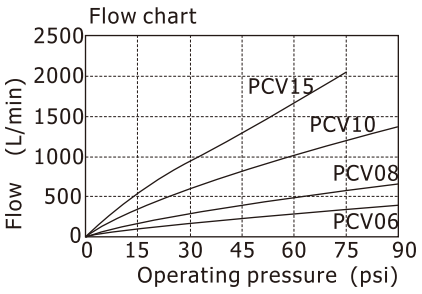
Typical application

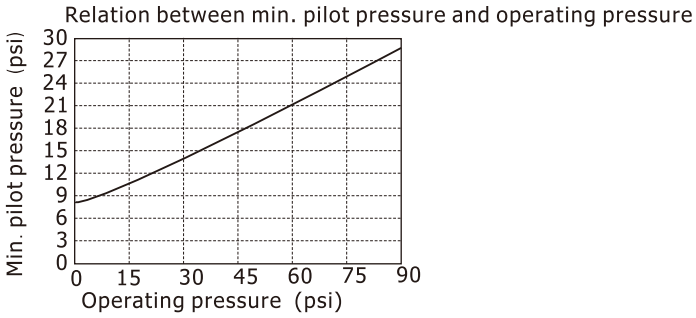
Accurate orientation



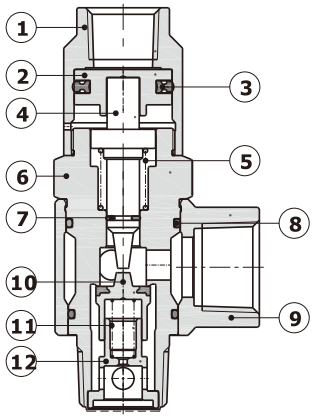
PCV series

Flow chart, Relation between min. pilot pressure and operating pressure



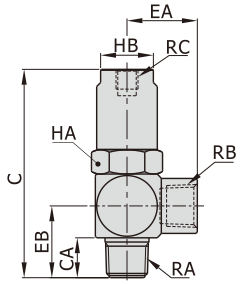


Inner structure



No.	Item
1	Pilot body
2	Piston
3	Gasket
4	Spool
5	Spring
6	Body
7	Spool O-ring
8	O-ring
9	Conversion fitting
10	Pluger
11	Spring
12	Pedestal

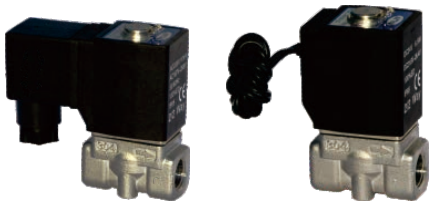
Dimensions

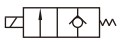


[Unit: mm]

Model\Item	C	CA	EA	EB	HA	HB	RA	RB	RC
PCV06	48.5	7.5	16	16.5	14	12	1/8"	1/8"	M5X0.8
PCV08	59	10	20.3	21	17	14	1/4"	1/4"	1/8"
PCV10	74.5	11	25	26	22	17	3/8"	3/8"	1/4"
PCV15	79.5	14	28	29.5	24	19	1/2"	1/2"	1/4"

2S Series (Direct-acting and normally closed)





Ordering code

Ordering code of valves 2S L 030 08 A □ T

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	T: NPT
		050: 050 Series	10: 3/8" 15: 1/2"			

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

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] NPT thread is available.

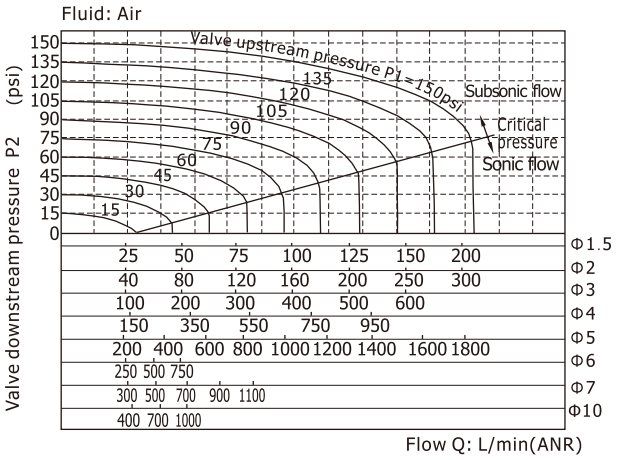
[Note2] The weight in the table is the terminal valve's weight, 2S030 series grommet valve's weight is 10g less than terminal's. 2S050series grommet valve's weight is 20g less than terminal's.

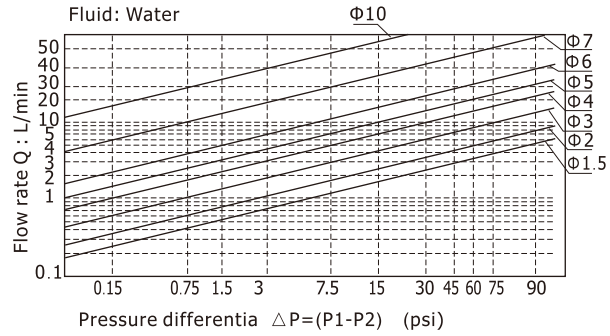
2S Series (Direct-acting and normally closed)

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 .

Flow chart





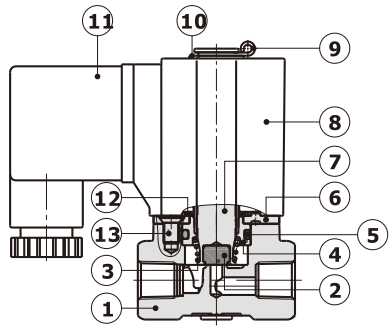
Valve's specification

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.

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		

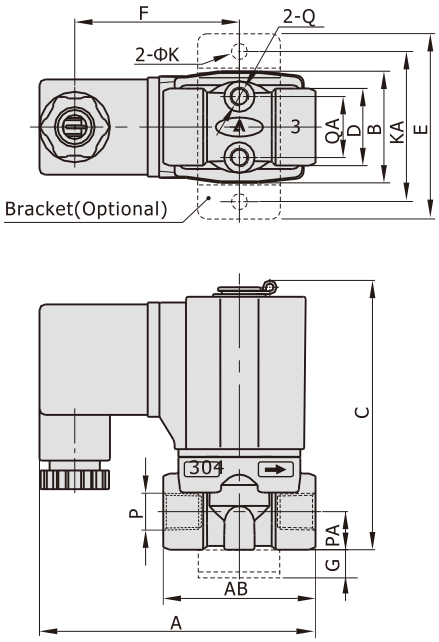
Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Power Consumption (VA/W)	Electrical entry	Insulation	Temp.rise (℃)
2S□030	CDA116 CLA116	AC	50	±15%	10.0VA	Terminal (CDA) Grommet (CLA)	Class B	35
			60		8.0VA			30
		DC	–	±10%	6.5W			30
2S□050	CDA170 CLA170	AC	50	±15%	25.0VA			60
			60		22.0VA			55
		DC	–	±10%	10.5W			40

2S Series (Direct-acting and normally closed)

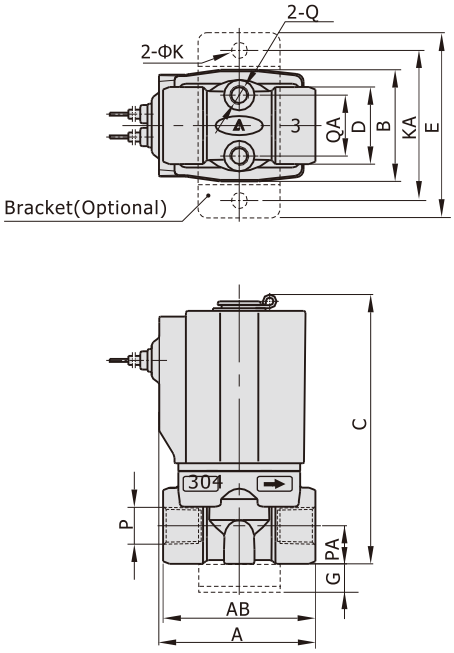
Dimensions

2S□030 (Terminal)

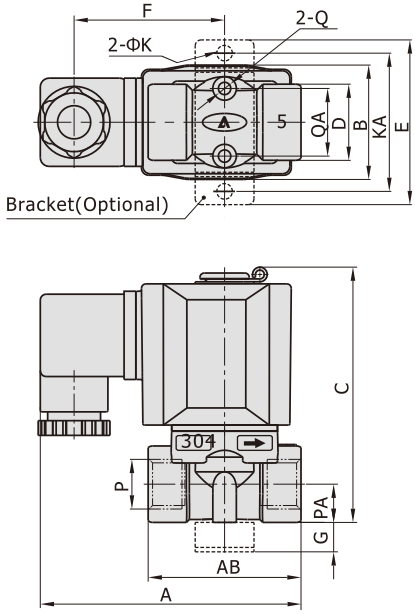


2S□030(Grommet)

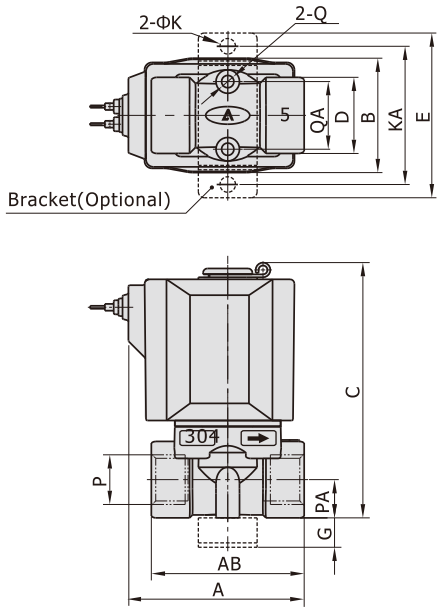
[Unit: mm]



2S□050 (Terminal)



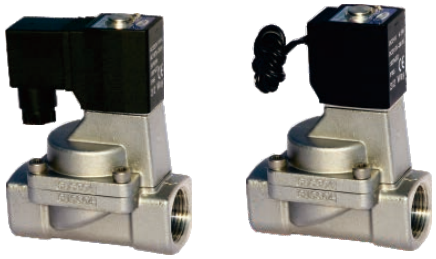
2S□050(Grommet)



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

2S Series (Internally piloted and normally closed)



Ordering code

Ordering code of valves

2S 150 15 A □ T

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	T: NPT
	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"			

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.

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] NPT 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.

Fluid control valve(2/2way)

2S Series (Internally piloted and normally closed)

Product feature

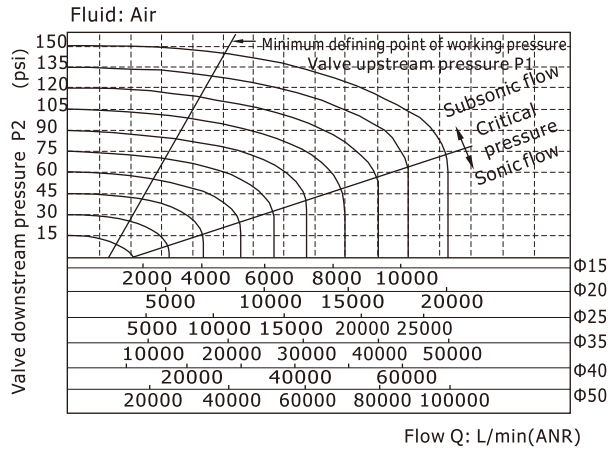
1. Indirect acting(Internal pilot) and normally closed type 2/2 way solenoid valve. Its can change direction quickly and has large flow.
2. It is compact, small and light weight. It is easy to install and dismantle;
3. The valve body is made of SUS304 . The coil has a Heat resistance classification of 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 .

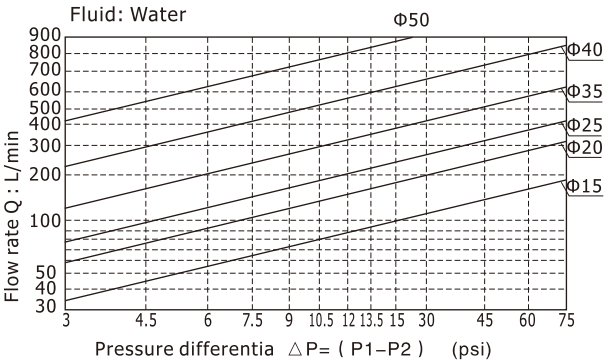
Valve's specification

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.

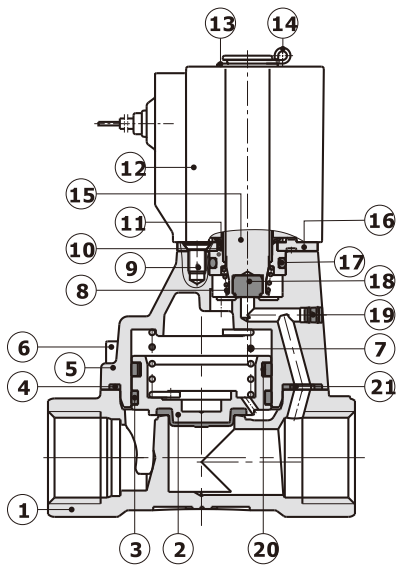
Flow chart





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

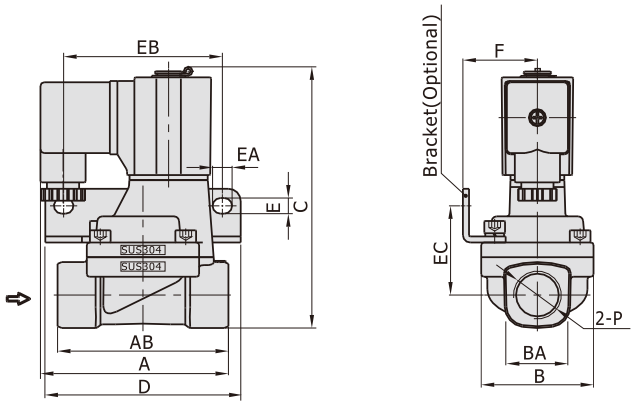
Specification of coil

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)	10.0VA	Class B	35
			60			8.0VA		30
		DC	–	±10%		6.5W		30
2S320 2S400 2S500	CDA170 CLA170	AC	50	±15%	Grommet (CLA)	25.0VA		60
			60			22.0VA		55
		DC	–	±10%		10.5W		40

2S Series (Internally piloted and normally closed)

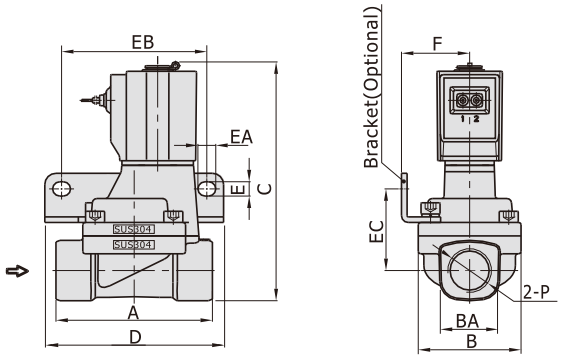
Dimensions

2S150~250 (Terminal)

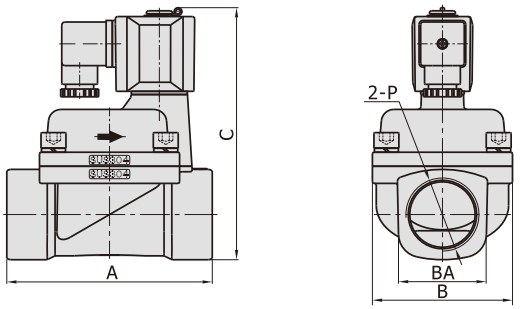


2S150~250(Grommet)

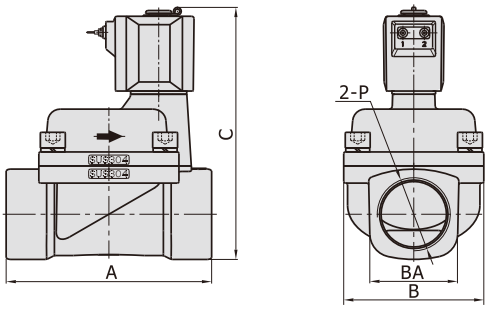
[Unit: mm]



2S320~500 (Terminal)



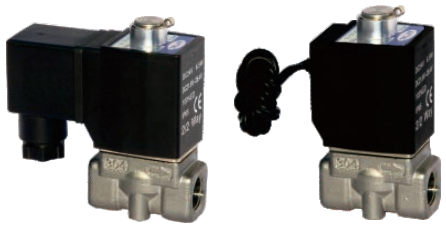
2S320~500(Grommet)

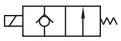


Model\Item	A	AB	B	BA	C	D	E	EA	EB	EC	F	P
2S150-15	77	70	46	27.5	107	80	6.4	8	65	36.5	30.5	1/2"
2S200-20	78.5	82	53	33.5	115.5	90	6.4	8	75	40	34	3/4"
2S250-25	81	92	59	40.5	124	95	6.4	8	80	44.5	36	1"
2S320-32	125	-	80	52	154.5	–	–	–	–	–	–	1 1/4"
2S400-40	132	-	90	58	162	–	–	–	–	–	–	1 1/2"
2S500-50	150	-	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"

2KS Series (Direct-acting and normally opened)





Ordering code

Ordering code of valves

2KS	H	030	08	A	□	T
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	T: NPT
		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 P163 for details of ordering code.

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] NPT 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.

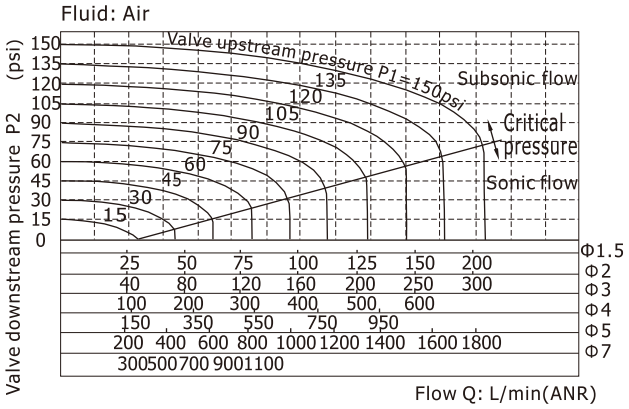
Fluid control valve(2/2way)

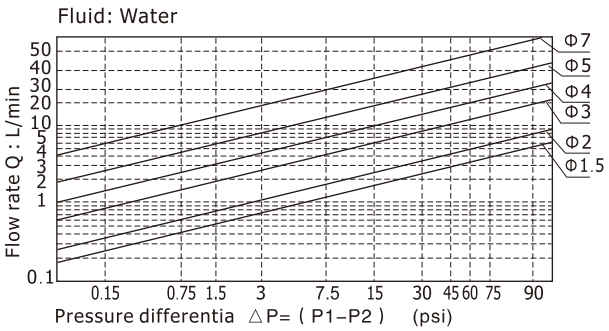
2KS Series (Direct-acting and normally opened)

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 .

Flow chart





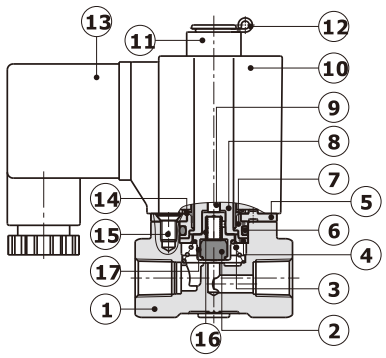
Valve's specification

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.

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	Man drill		

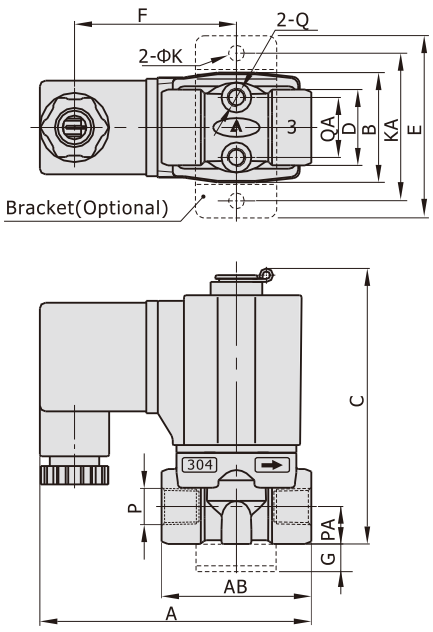
Specification of coil

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)	15.0VA	Class B	50
			60			11.0VA		40
		DC	–	±10%		6.5W		30
2KS□050	CDA170 CLA170	AC	50	±15%	Grommet (CLA)	35.0VA		65
			60			30.0VA		60
		DC	–	±10%		10.5W		40

2KS Series (Direct-acting and normally opened)

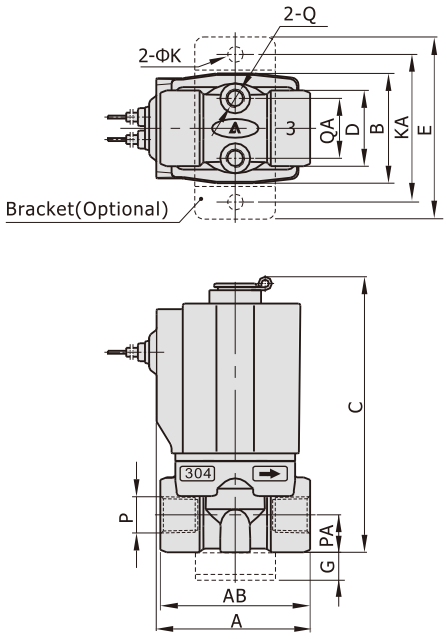
Dimensions

2KS□030 (Terminal)

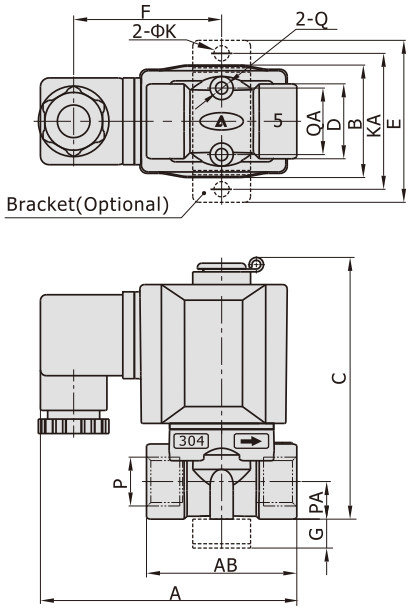


2KS□030(Grommet)

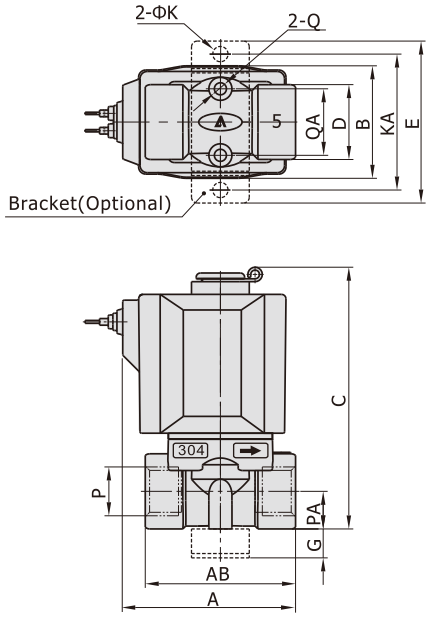
[Unit: mm]



2KS□050 (Terminal)



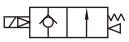
2KS□050(Grommet)



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

2KS Series (Internally piloted and normally opened)



Ordering code

Ordering code of valves

2KS 150 15 A □ T

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	T: NPT
	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"			

Ordering code of accessories

Ordering code of accessories is the same as 2S series valve's,please refer to P166 for details of ordering code.

[Note] 320\400\500 series valves do not have mounting accessories.

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] NPT 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.

Fluid control valve(2/2way)

2KS Series (Internally piloted and normally opened)

Product feature

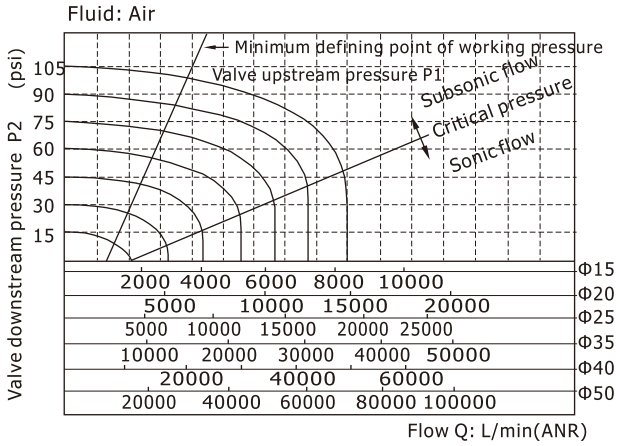
1. Indirect acting(Internal pilot) and normally opened type 2/2 way solenoid valve. Its can change direction quickly and has large flow.
2. It is compact, small and light weight. It is easy to install and dismantle;
3. The valve body is made of SUS304 . The coil has a Heat resistance classification of 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 .

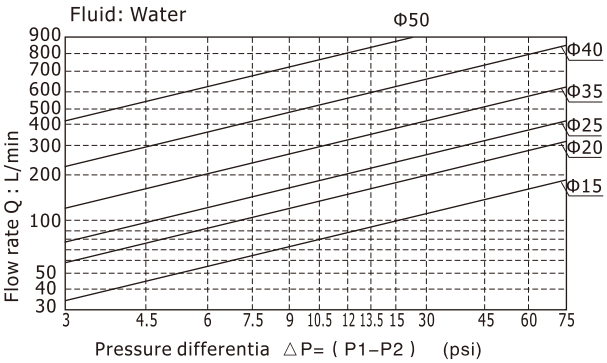
Valve's specification

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.

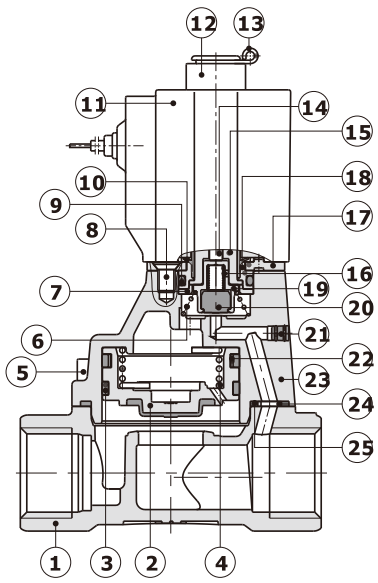
Flow chart





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	Man drill
15	Movable core
16	Spring
17	Fixed plate
18	Fixed cap
19	Airtight bushing
20	Airtight ring
21	Plug
22	Spring
23	Cover
24	Bushing
25	O-ring

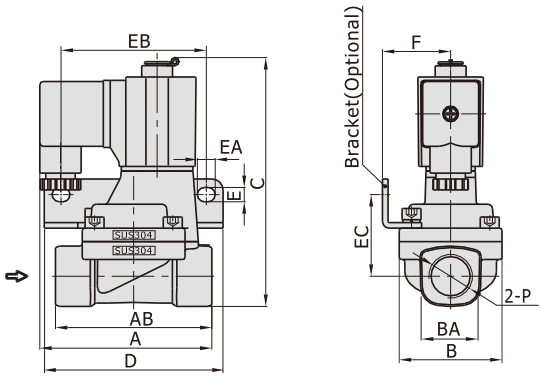
Specification of coil

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%		10.5W		40

2KS Series (Internally piloted and normally opened)

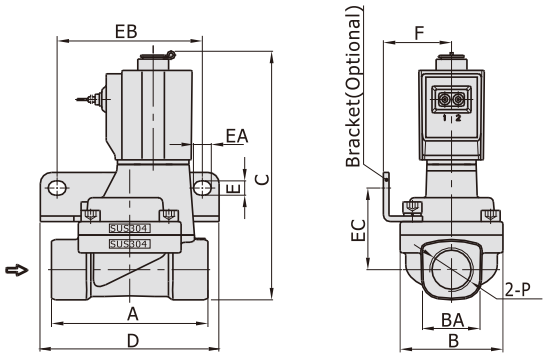
Dimensions

2KS150~250 (Terminal)

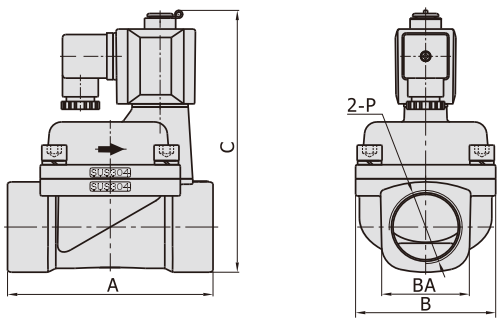


2KS150~250(Grommet)

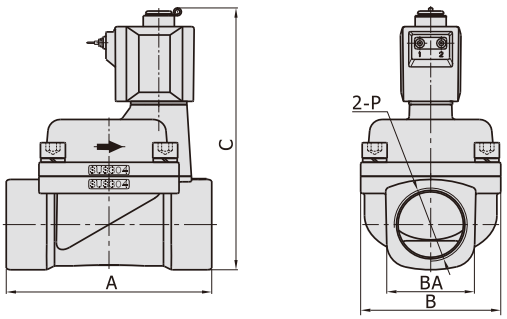
[Unit: mm]



2KS320~500 (Terminal)



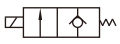
2KS320~500(Grommet)



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)



Ordering code

Ordering code of valves 2W L 030 08 A □ T

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	T: NPT
		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 P166 for details of ordering code.

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] NPT 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.

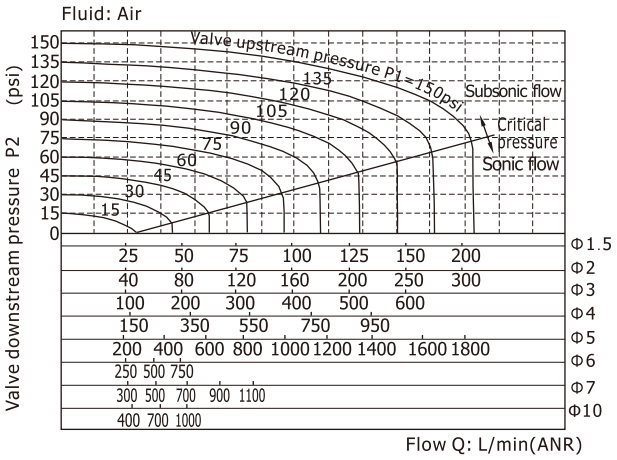
Fluid control valve(2/2way)

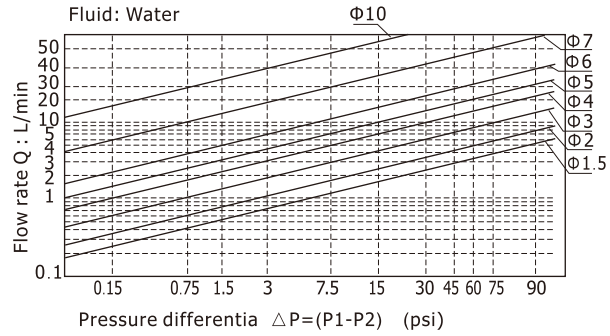
2W Series (Direct-acting and normally closed)

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 .

Flow chart





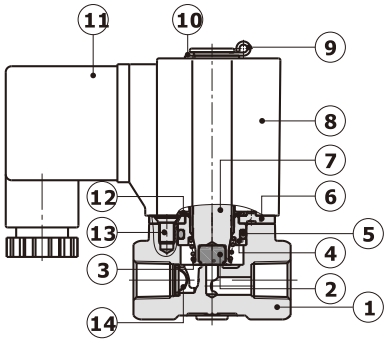
Valve's specification

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.

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.

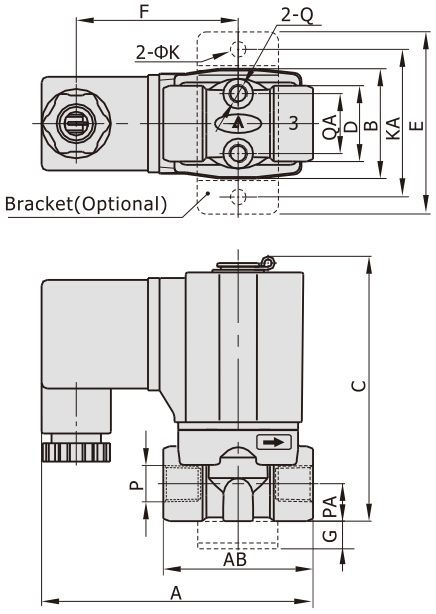
Specification of coil

Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Power Consumption (VA/W)	Electrical entry	Insulation	Temp.rise (℃)
2W□030	CDA116 CLA116	AC	50	±15%	10.0VA	Terminal (CDA) Grommet (CLA)	Class B	35
			60		8.0VA			30
		DC	–	±10%	6.5W			30
2W□050	CDA170 CLA170	AC	50	±15%	25.0VA			60
			60		22.0VA			55
		DC	–	±10%	10.5W			40

2W Series (Direct-acting and normally closed)

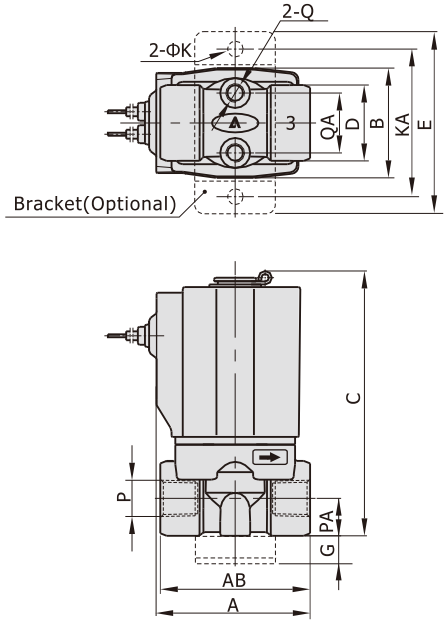
Dimensions

2W□030 (Terminal)

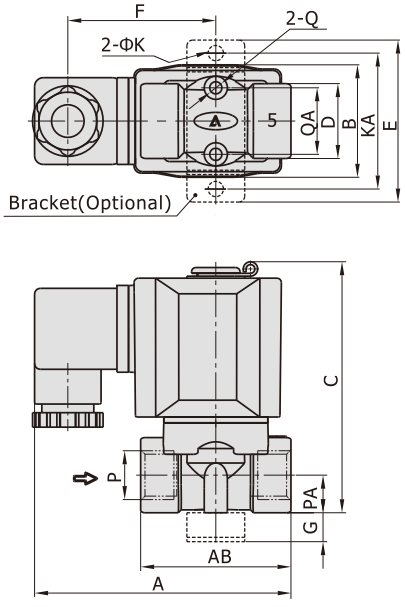


2W□030(Grommet)

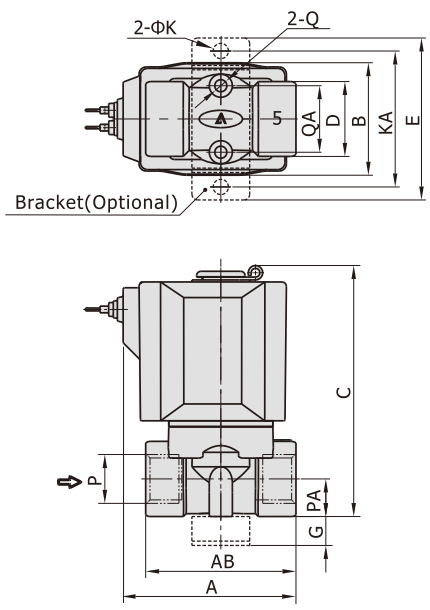
[Unit: mm]



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)

Ordering code

Ordering code of valves 2W 150 15 A □ T

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	T: NPT
	200: Φ20mm	20: 3/4"			
	250: Φ25mm	25: 1"			

Ordering code of accessories

Ordering code of accessories is the same as 2S series valve's, Please refer to P169 for details of ordering code.

[Note] 320\400\500 series valves do not have mounting accessories.

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	12.50	220.0	1200				

[Note1] NPT 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

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 .

Fluid control valve(2/2way)

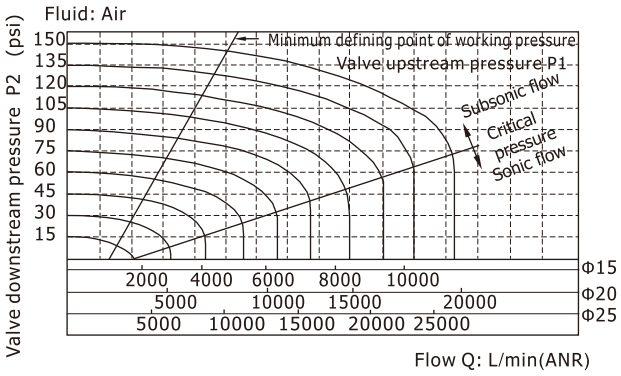
2W Series (Internally piloted and normally closed)

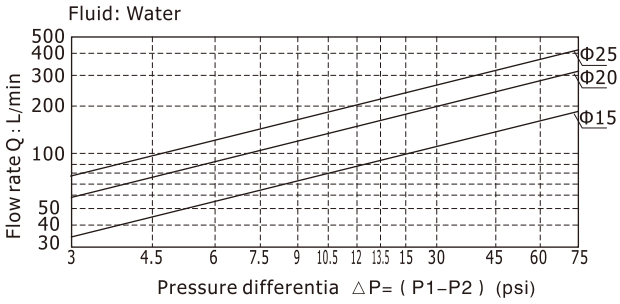
Valve's specification

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.

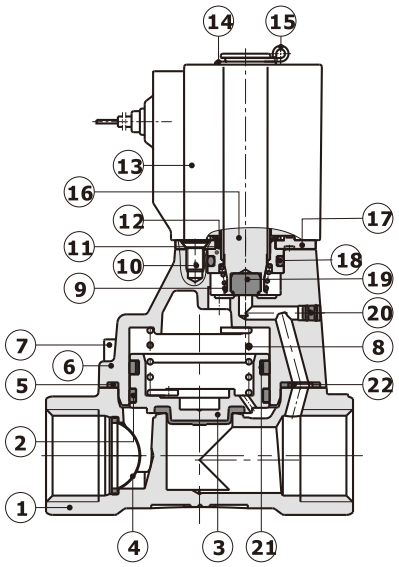
Flow chart





Inner structure

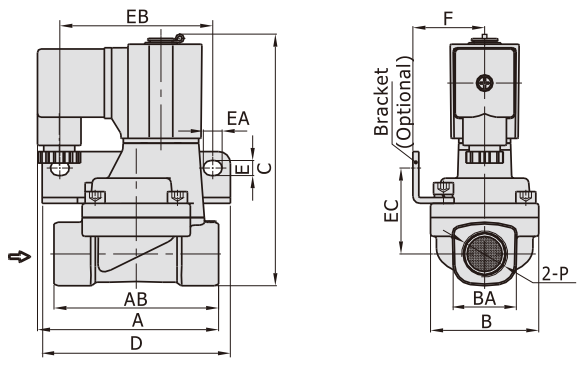
2W150 (Grommet)



No.	Item
1	Body
2	Filter
3	Piston
4	Wear ring
5	O-ring
6	Cover
7	Screw
8	Spring
9	Spring
10	Screw
11	Fixed cap
12	Washer
13	Coil assembly
14	Washer
15	E Clip
16	Movable core
17	Fixed plate
18	O-ring
19	Airtight ring
20	Plug
21	Spring
22	Spacer

Dimensions

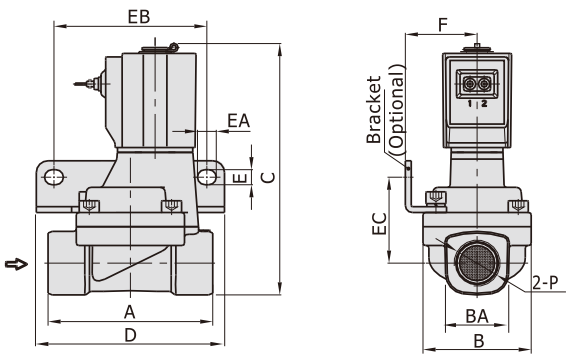
2W150~250 (Terminal)



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"

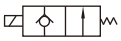
2W150~250(Grommet)

[Unit: mm]



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"

2KW Series (Direct-acting and normally opened)



Ordering code

Ordering code of valves

2KW	H	030	08	A	□	T
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	T: NPT
		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 P166 for details of ordering code.

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] NPT 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.

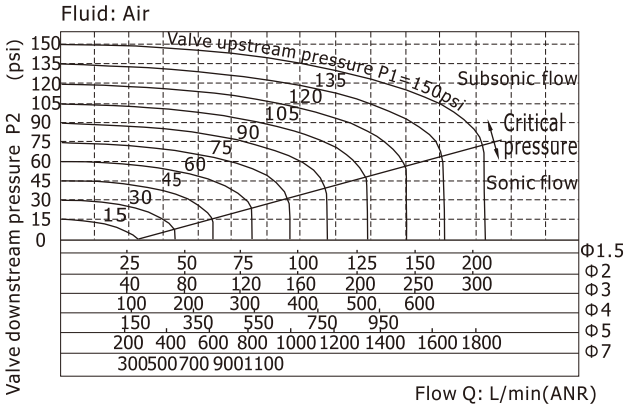
Fluid control valve(2/2way)

2KW Series (Direct-acting and normally opened)

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 .

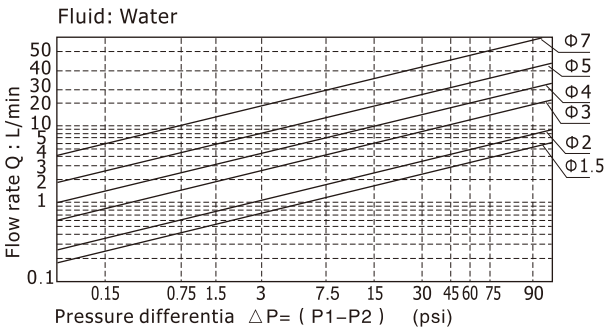
Flow chart



Valve's specification

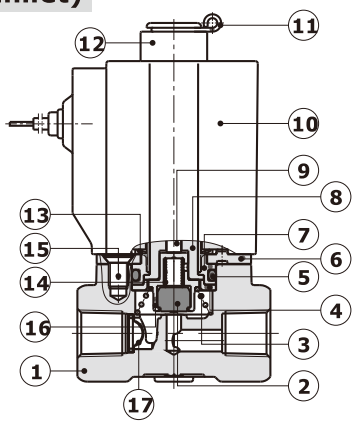
Acting	Direct acting				
Initial state	Normally opened				
Adaptable fluid	Air, Water, Oil				
Viscosity limit	Under 20CST				
Ambient and fluid temperature (℃)		Water	Air	Oil	Ambient
	Max.	80	90	80	70
	Min.	1	-20 [Note1]	-10 [Note2]	-20

[Note1] Dew point: -20(℃) or less; [Note2] 50CST or less.



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	Man dril		

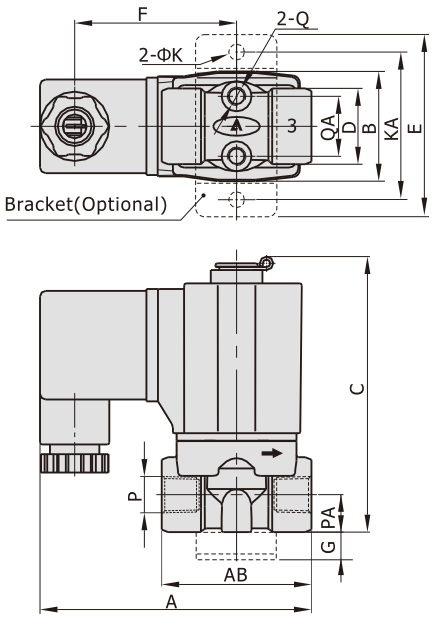
Specification of coil

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%		10.5W		40

2KW Series (Direct-acting and normally opened)

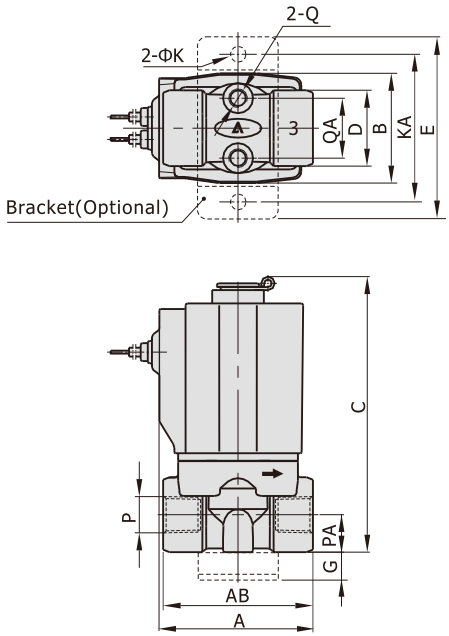
Dimensions

2KW□030 (Terminal)

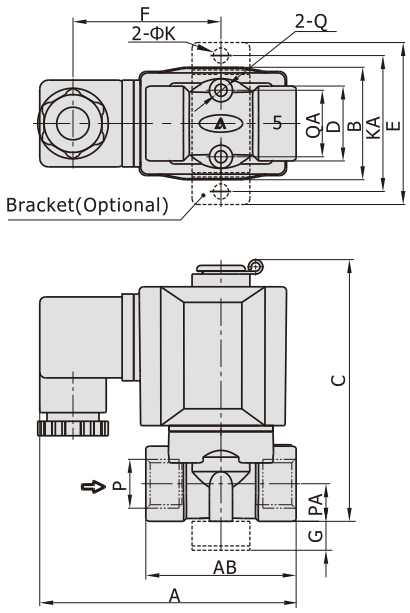


2KW□030(Grommet)

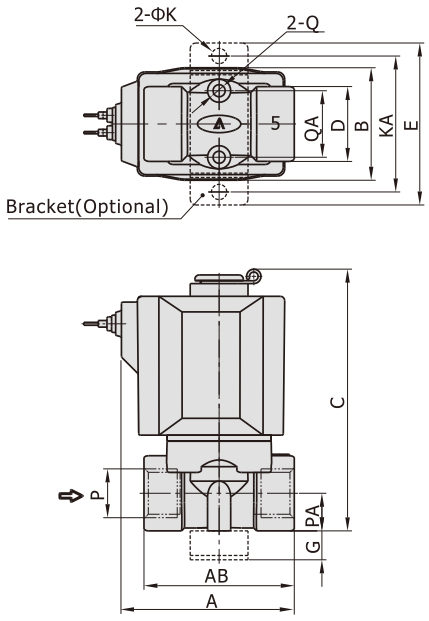
[Unit: mm]



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)

Ordering code

Ordering code of valves 2KW 150 15 A □ T

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	T: NPT
	200: Φ20mm	20: 3/4"			
	250: Φ25mm	25: 1"			

Ordering code of accessories

Ordering code of accessories is the same as 2S series valve's, Please refer to P169 for details of ordering code.

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	12.50	220.0	1210				

[Note1] NPT 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(℃)
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 .

Fluid control valve(2/2way)

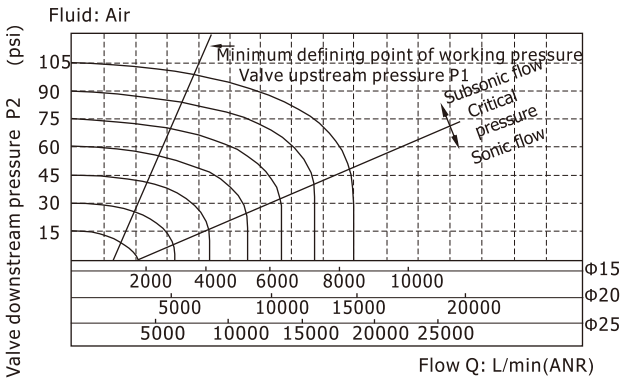
2KW Series (Internally piloted and normally opened)

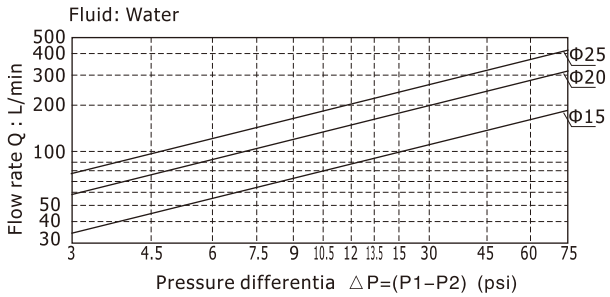
Valve's specification

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.

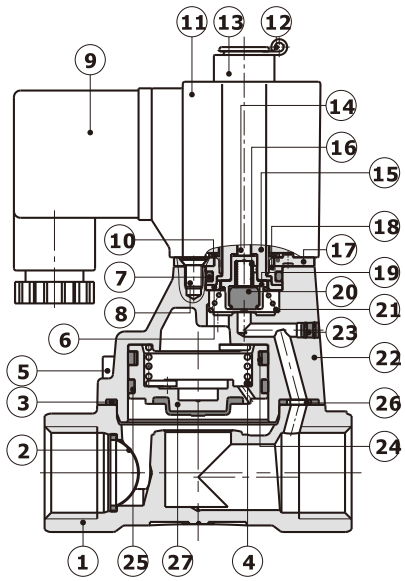
Flow chart





Inner structure

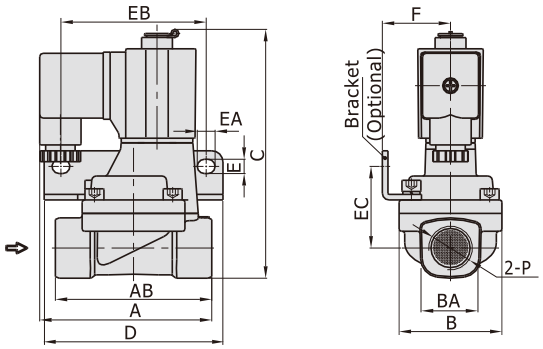
2KW150 (Terminal)



No.	Item
1	Body
2	Filter
3	O-ring
4	Spring
5	Screw
6	Clip
7	O-ring
8	Screw
9	Connector
10	Washer
11	Coil assembly
12	E Clip
13	Position ring
14	Man drill
15	Movable core
16	Spring
17	Fixed plate
18	Fixed cap
19	Airtight bushing
20	Airtight ring
21	Spring
22	Cover
23	Plug
24	Bonnet spring
25	Wear ring
26	Bushing
27	Piston

Dimensions

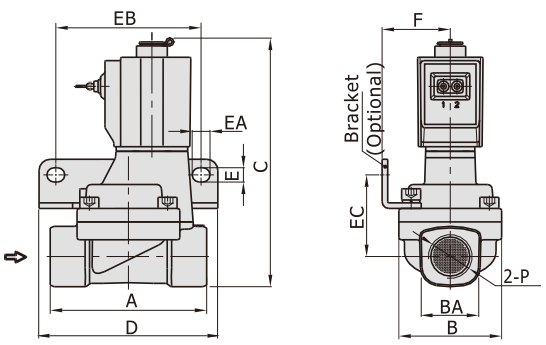
2KW150~250 (Terminal)



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"

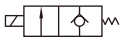
2KW150~250(Grommet)

[Unit: mm]



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"

2L Series (Direct-acting and normally closed)



Ordering code

Ordering code of valves

2L	H	030	08	A	□	T
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	T: NPT
		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 P166 for details of ordering code.

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] NPT thread is available.

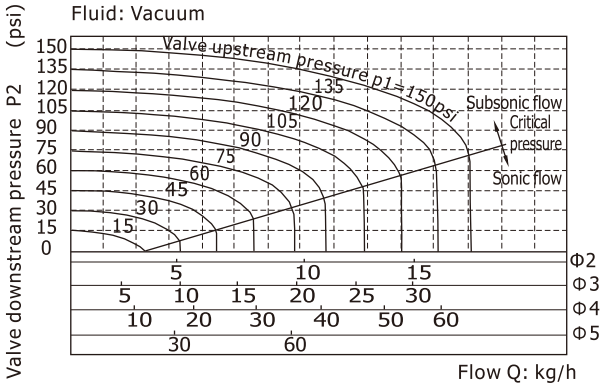
[Note2] The weight in the table is the terminal valve's weight, 2L030 series grommet valve's weight is 10g less than terminal's. 2L050series grommet valve's weight is 20g less than terminal's.

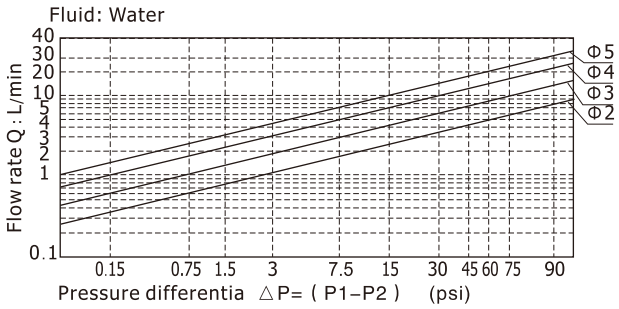
2L Series (Direct-acting and normally closed)

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 .

Flow chart





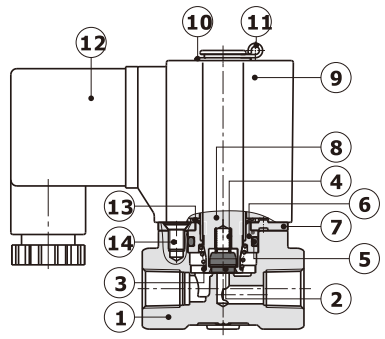
Valve's specification

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.

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	Bead flange
4	Spring	9	Coil assembly	14	Screw
5	O-ring	10	Washer		

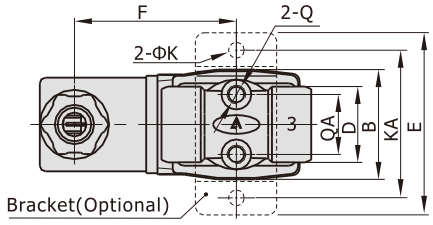
Specification of coil

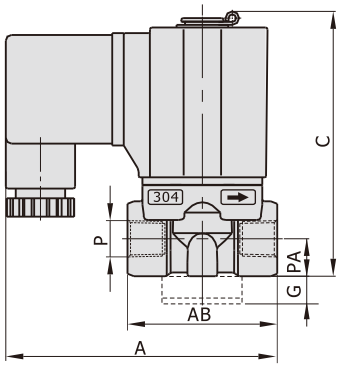
Valve type	Coil type	Power type	Frequency (Hz)	Voltage range	Power Consumption (VA/W)	Electrical entry	Insulation	Temp.rise (℃)
2L□030	CDA116 CLA116	AC	50	±15%	10.0VA	Terminal (CDA) Grommet (CLA)	Class H	35
			60		8.0VA			30
		DC	–	±10%	6.5W			30
2L□050	CDA170 CLA170	AC	50	±15%	25.0VA			60
			60		22.0VA			55
		DC	–	±10%	10.5W			40

2L Series (Direct-acting and normally closed)

Dimensions

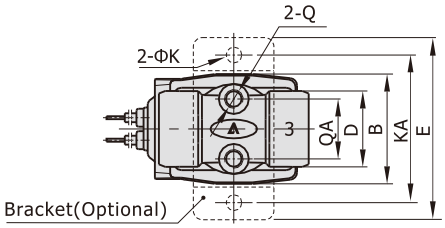
2L□030 (Terminal)

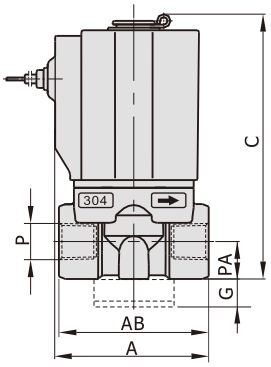




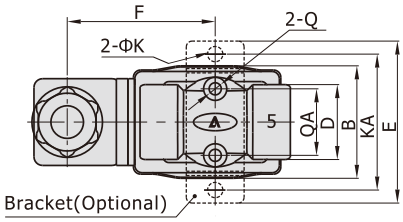
2L□030(Grommet)

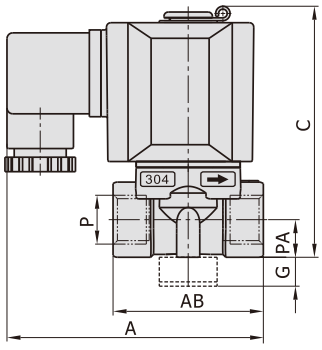
[Unit: mm]



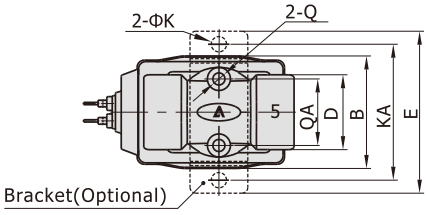


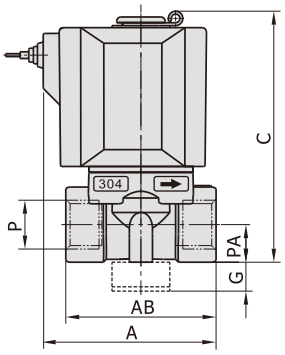
2L□050 (Terminal)





2L□050(Grommet)



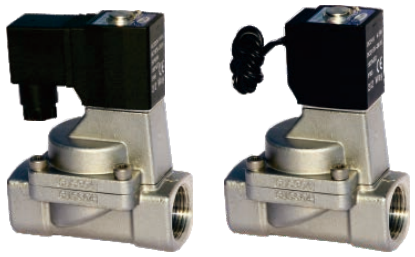


Model\Item	A	AB	B	C	D	E	F	G	K	KA	P	PA	Q	QA
2L□030-06	72.5	40	29.5	71	20	49	43.5	10	5.3	40	1/8"	10	M5	16
2L□030-08	72.5	40	29.5	71	20	49	43.5	10	5.3	40	1/4"	10	M5	16
2L□050-10	89.5	52	39	87	26	56	51	10	5.3	48	3/8"	13	M5	23
2L□050-15	89.5	52	39	87	26	56	51	10	5.3	48	1/2"	13	M5	23

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(2/2way)

2L Series (Internally piloted and normally closed)



Ordering code

Ordering code of valves 2L 150 15 A □ T

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	T: NPT
	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"			

Ordering code of accessories

Ordering code of accessories is the same as 2S series valve's, please refer to P169 for details of ordering code.
[Note] 320\400\500 series valves do not have mounting accessories.

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] NPT thread is available.
[Note2] The weight in the table is the terminal valve's weight, 2L150~250 series grommet valve's weight is 10g less than terminal's. 2L320~500 series grommet valve's weight is 20g less than terminal's.

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 .

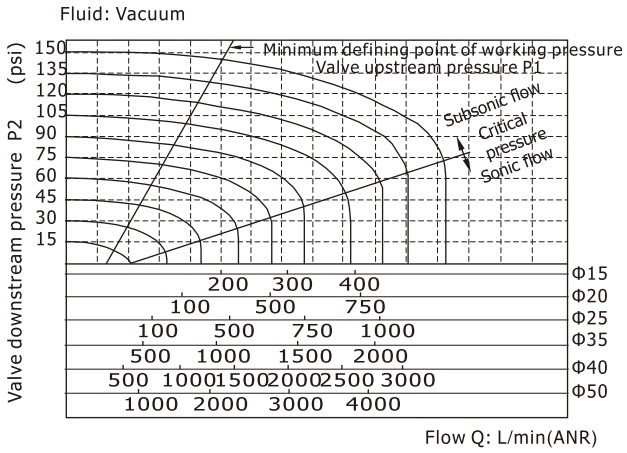
2L Series (Internally piloted and normally closed)

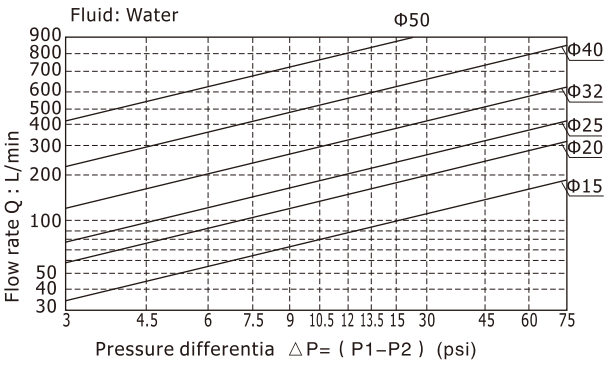
Valve's specification

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.

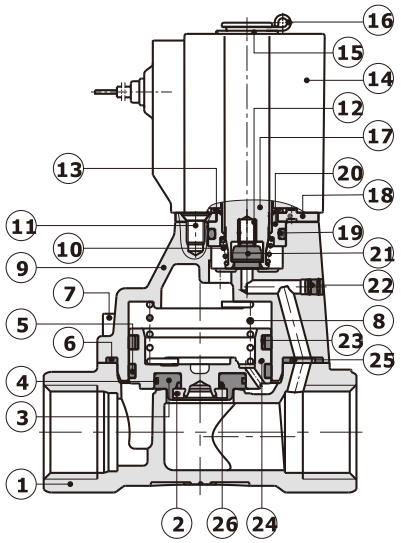
Flow chart





Inner structure

2L150 (Grommet)



No.	Item
1	Body
2	Fixed ring
3	Airtight bush
4	O-ring
5	Wear ring
6	Gasket
7	Screw
8	Spring
9	Cover
10	Spring
11	Screw
12	Spring
13	Bead flange
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	Bushing
26	O-ring

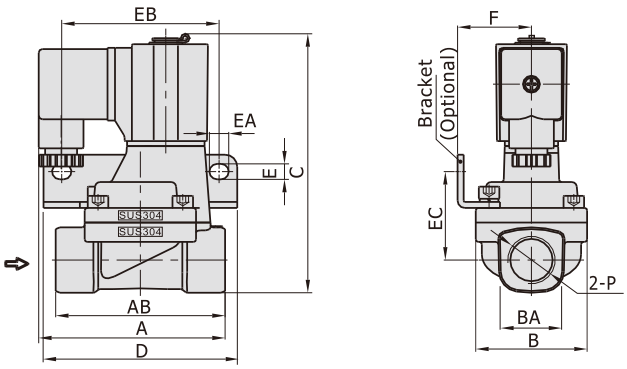
Specification of coil

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)	10.0VA	Class H	35
			60			8.0VA		30
		DC	–	±10%		6.5W		30
2L320 2L400 2L500	CDA170 CLA170	AC	50	±15%	Grommet (CLA)	25.0VA		60
			60			22.0VA		55
		DC	–	±10%		10.5W		40

2L Series (Internally piloted and normally closed)

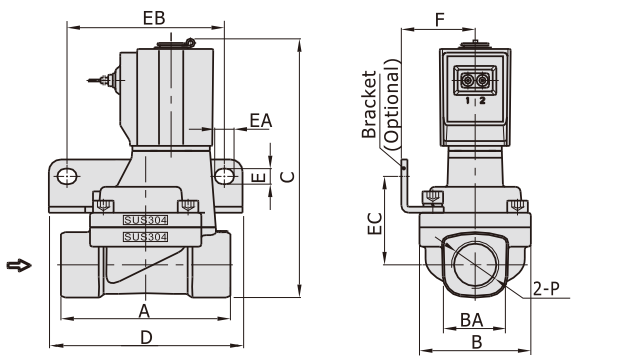
Dimensions

2L150~250 (Terminal)

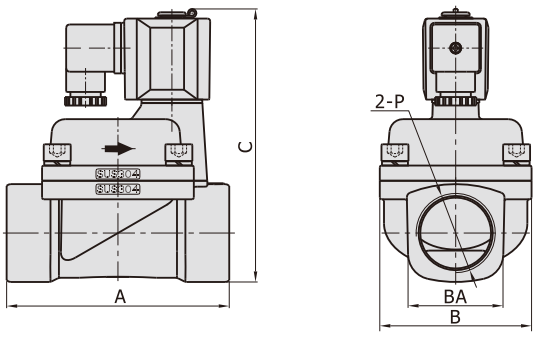


2L150~250(Grommet)

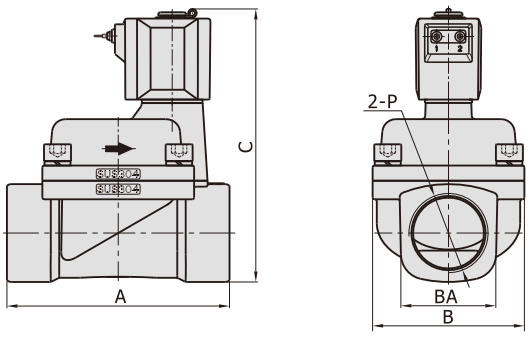
[Unit: mm]



2L320~500 (Terminal)



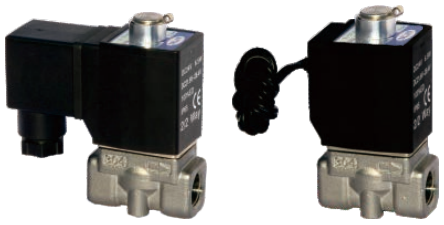
2L320~500(Grommet)

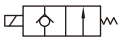


Model\Item	A	AB	B	BA	C	D	E	EA	EB	EC	F	P
2L150-15	77	70	46	27.5	107	80	6.4	8	65	36.5	30.5	1/2"
2L200-20	78.5	82	53	33.5	115.5	90	6.4	8	75	40	34	3/4"
2L250-25	81	92	59	40.5	124	95	6.4	8	80	44.5	36	1"
2L320-32	125	-	80	52	154.5	–	–	–	–	–	–	1 1/4"
2L400-40	132	-	90	58	162	–	–	–	–	–	–	1 1/2"
2L500-50	150	-	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"

2KL Series (Direct-acting and normally opened)





Ordering code

Ordering code of valves

2KL	H	030	08	A	□	T
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	T: NPT
		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 P166 for details of ordering code.

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] NPT 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.

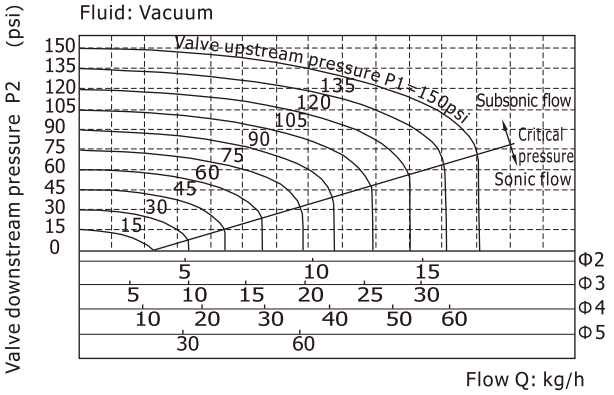
Fluid control valve(2/2way)

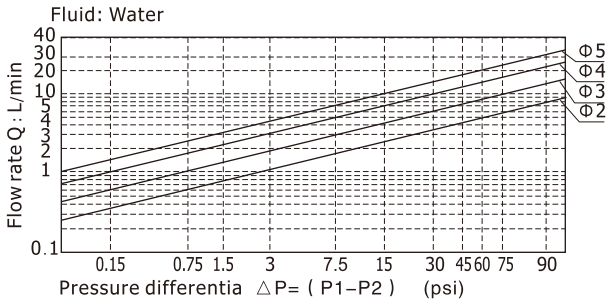
2KL Series (Direct-acting and normally opened)

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 .

Flow chart





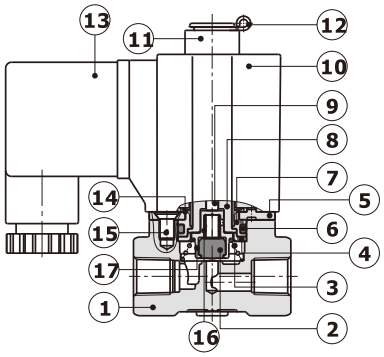
Valve's specification

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.

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	Man dril	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		

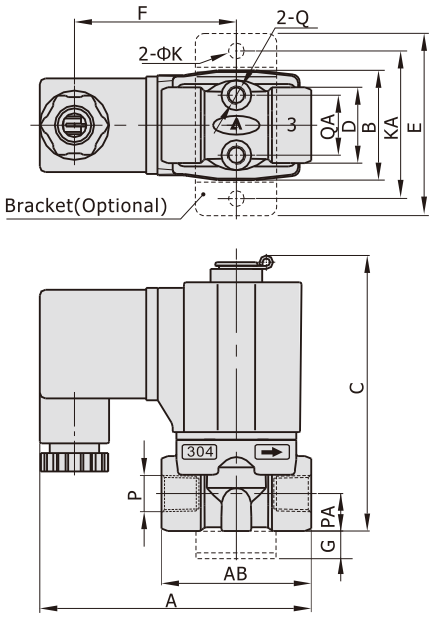
Specification of coil

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)	15.0VA	Class H	50
			60			11.0VA		40
		DC	–	±10%		6.5W		30
2KL□050	CDA170 CLA170	AC	50	±15%	Grommet (CLA)	35.0VA		65
			60			30.0VA		60
		DC	–	±10%		10.5W		40

2KL Series (Direct-acting and normally opened)

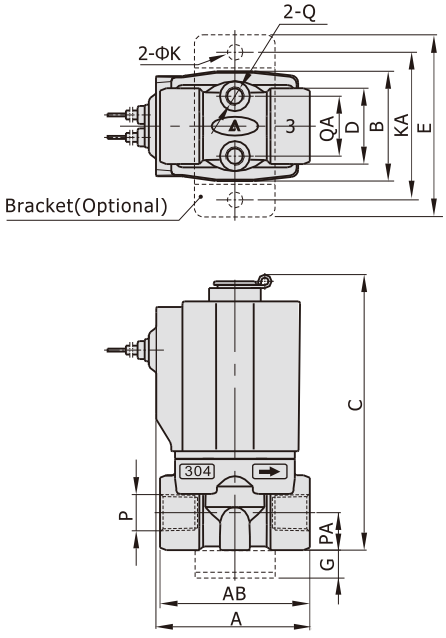
Dimensions

2KL□030 (Terminal)

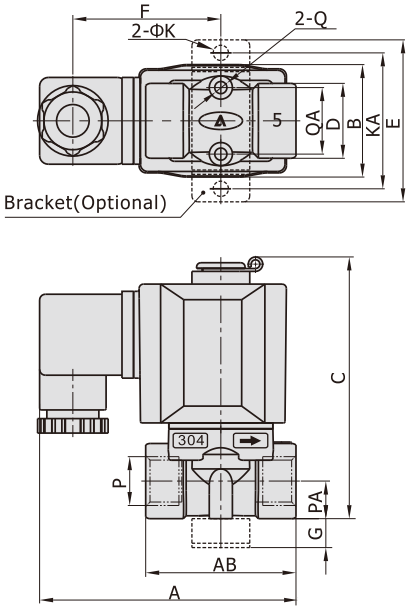


2KL□030(Grommet)

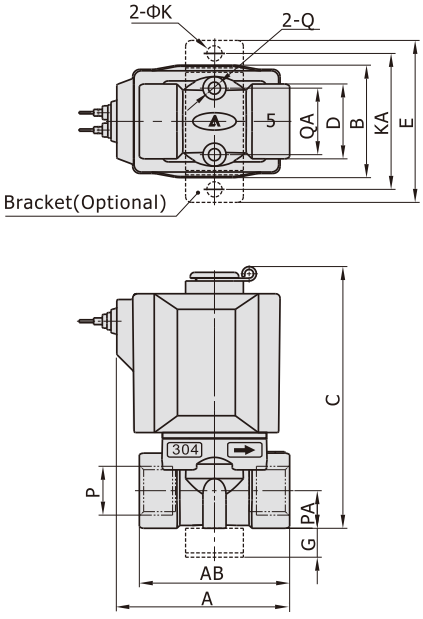
[Unit: mm]



2KL□050 (Terminal)



2KL□050(Grommet)

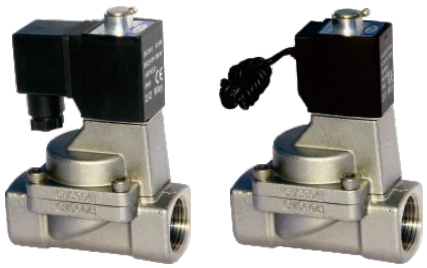


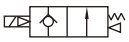
Model\Item	A	AB	B	C	D	E	F	G	K	KA	P	PA	Q	QA
2KL□030-06	72.5	40	29.5	76	20	49	43.5	10	5.3	40	1/8"	10	M5	16
2KL□030-08	72.5	40	29.5	76	20	49	43.5	10	5.3	40	1/4"	10	M5	16
2KL□050-10	89.5	52	39	92	26	56	51	10	5.3	48	3/8"	13	M5	23
2KL□050-15	89.5	52	39	92	26	56	51	10	5.3	48	1/2"	13	M5	23

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

Fluid control valve(2/2way)

2KL Series (Internally piloted and normally opened)





Ordering code

Ordering code of valves 2KL 150 15 A □ T

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	T: NPT
	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"			

Ordering code of accessories

Ordering code of accessories is the same as 2S series valve's,please refer to P169 for details of ordering code.
[Note] 320\400\500 series valves do not have mounting accessories.

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] NPT thread is available.
[Note2] The weight in the table is the terminal valve's weight, 2KL150~250 series grommet valve's weight is 10g less than terminal's.
2KL320~500 series grommet valve's weight is 20g less than terminal's.

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 .

Fluid control valve(2/2way)

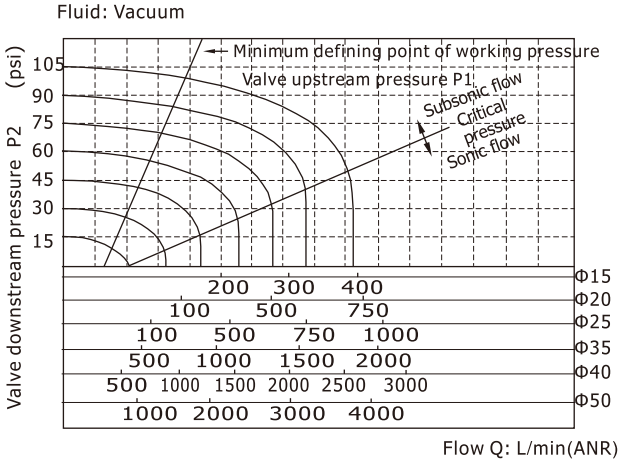
2KL Series (Internally piloted and normally opened)

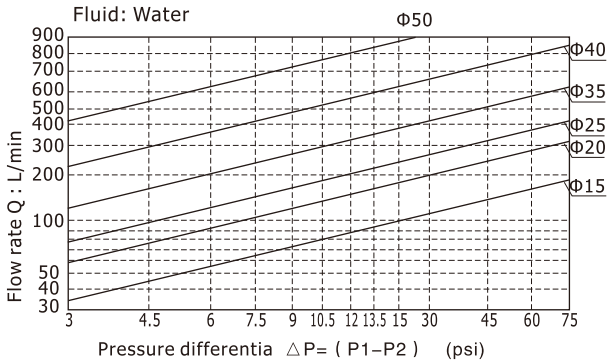
Valve's specification

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.

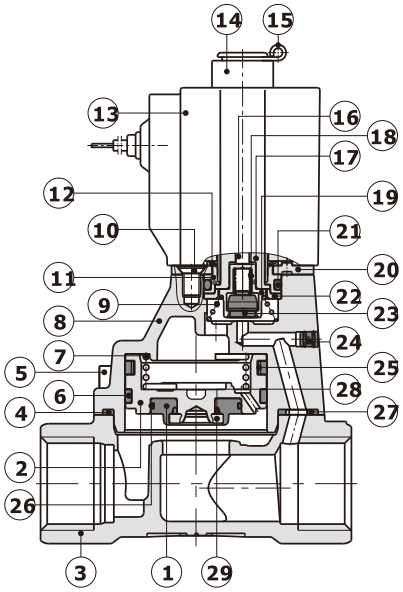
Flow chart





Inner structure

2KL150 (Grommet)



No.	Item
1	Gasket
2	Piston
3	Body
4	Gasket
5	Screw
6	Wear ring
7	Spring
8	Cover
9	Spring
10	Screw
11	Fixed cap
12	Bead flange
13	Coil assembly
14	Position ring
15	E Clip
16	Man drill
17	Electromagnet
18	Spring
19	Airtight bush
20	Fixed plate
21	O-ring
22	Fixed ring
23	Airtight ring
24	Plug
25	Spring
26	O-ring
27	Bush
28	O-ring
29	Fixed ring

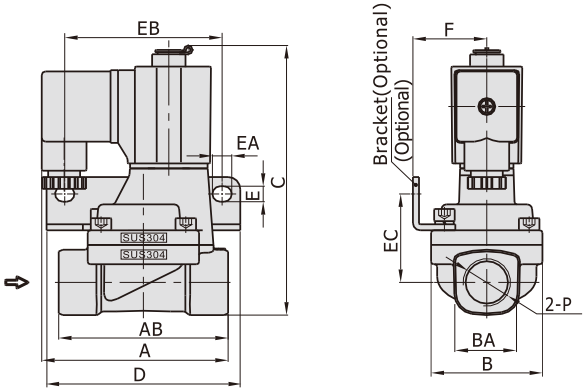
Specification of coil

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%		10.5W		40

2KL Series (Internally piloted and normally opened)

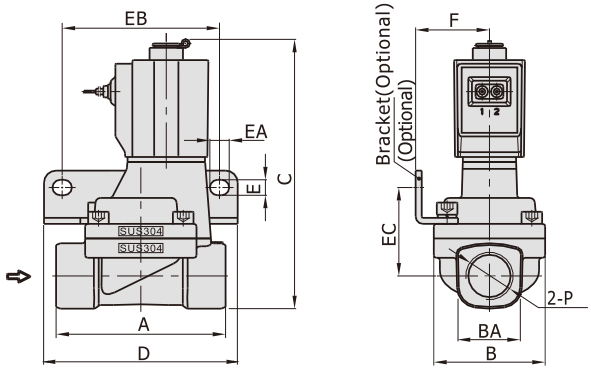
Dimensions

2KL150~250 (Terminal)

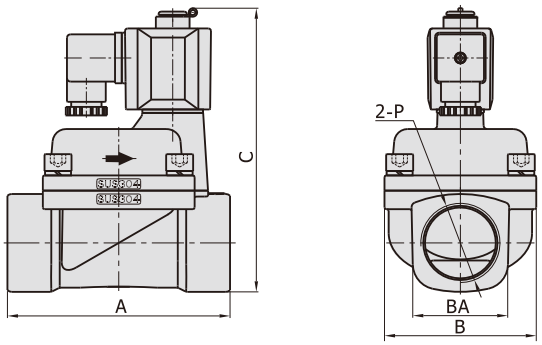


2KL150~250(Grommet)

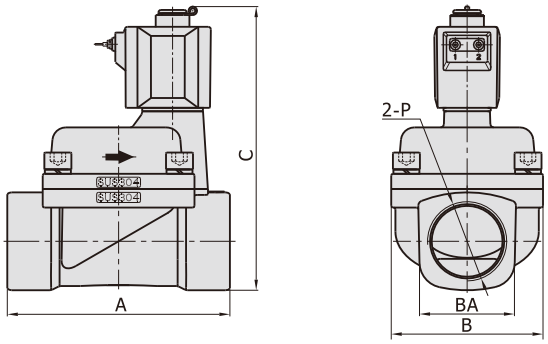
[Unit: mm]



2KL320~500 (Terminal)



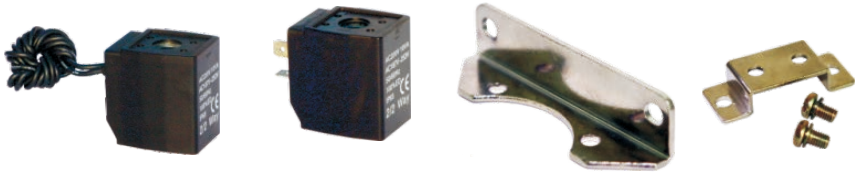
2KL320~500(Grommet)



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



Ordering code of coil

CD A116 A □

① ② ③ ④

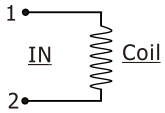
①Coil type	②Coil's bore	③Voltage	④Temperature resistance class of coil
CD: Terminal CL: Grommet	A116: Coil Specification (Bore sizeΦ11.6mm) A170: Coil Specification (Bore sizeΦ17.0mm)	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: B Class H: H Class

Specification

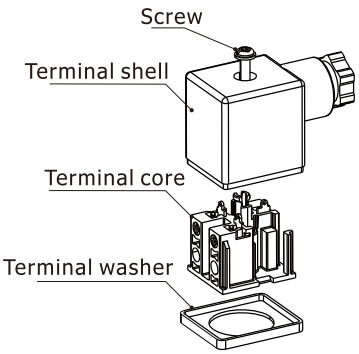
Model\Item	Power type	Voltage (V)	Frequency (Hz)	Voltage range	Electrical entry	Power Consumption (VA/W)		Insulation	Temp.rise(℃)	
						For NC	For NO		NC	NO
116 Series	AC	220	50	±15%	DIN Terminal	10.0VA	15.0VA	Class B	35	50
			60			8.0VA	11.0VA		30	40
		110	50			10.0VA	15.0VA		35	50
			60			8.0VA	11.0VA		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%		10.5W			40	40
		12								

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



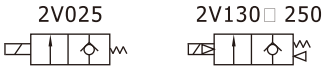
How to select coil

Valve type\Coil type		116 Series		170 Series	
		Class B	Class H	Class B	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		×	×	×	×	×

2V Series



Ordering code

Ordering code of valves 2V 025 08 A □ T

1 2 3 4 5 6

①Model	②Orifice size	③Port size	④Voltage	⑤Electrical entry	⑥Thread type
2V: 2 port 2 position solenoid valve	025: Φ2.5mm	06: 1/8" 08: 1/4"	A: AC220V B: DC24V C: AC110V E: AC24V F: DC12V	Blank: Terminal I: Grommet	Blank: PT G: G T: NPT
	130: Φ13mm	10: 3/8" 15: 1/2"			
	250: Φ25mm	20: 3/4" 25: 1"			

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 [Note]	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	1/8"	1/4"	3/8"	1/2"	3/4"	1"
Viscosity limit	Under 20CST					
Pressure range	0~145psi(0~1.0MPa)		7~145psi(0.05~1.0MPa)			
Proof pressure	215psi(1.5MPa)					
Material body	Brass with zinc plated		Brass			
Seal material	VITON		NBR			
Activating time	0.05 sec and below					

[Note1] NPT thread is available.

Specification of coil

Valve type	Power type	Frequency(Hz)	Voltage range	Electrical entry	Power Consumption	Insulation	Temp.rise(℃)
2V025 2V130 2V250	AC	50	±15%	Terminal Grommet	7.0VA	Class B	35
		60					
	DC	–	±10%		7.0W		45

Fluid control valve(2/2way)

2V Series

Product feature

2V025 series

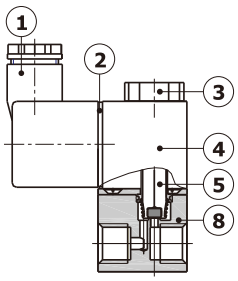
1. Direct acting and normally closed type 2/2 way solenoid valve. Its high sensitivity allows it to change direction quickly.
2. The structure is small and compact.
3. The valve body is made of brass which is heat resistance and the coil conforms to Class B classification. The seals are made of fluorine rubber (VITON) which is suitable for several types of working medium.

2V130 and 250 series

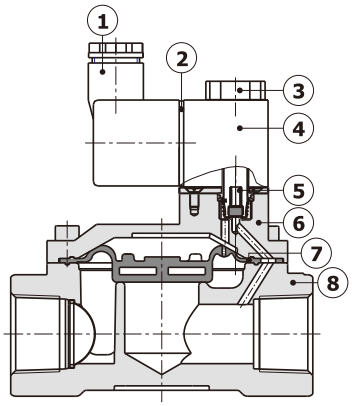
1. This 2/2 way diaphragm piloted solenoid valve has low energy consumption and large air flow .
2. The starting pressure is low and the operational differential pressureis < 0.05MPa.
3. The valve body is made of brass which is heat resistance and the coil conforms to Class B classification . The seals are made of NBR.

Inner structure

2V025 (Terminal)

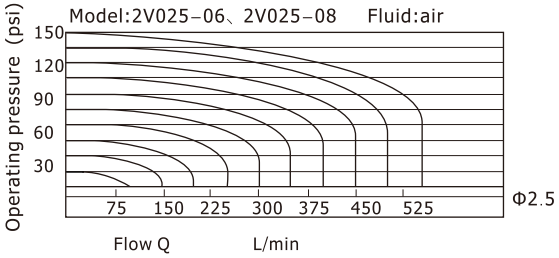


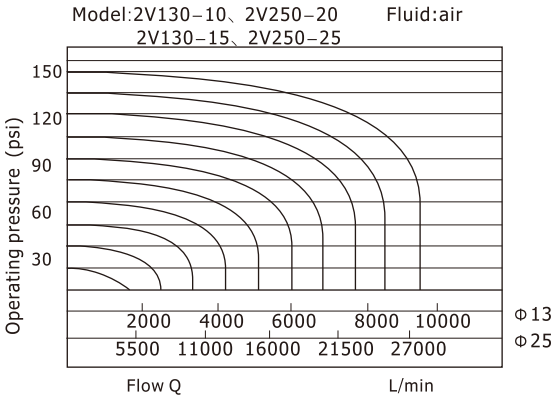
2V250(Terminal)

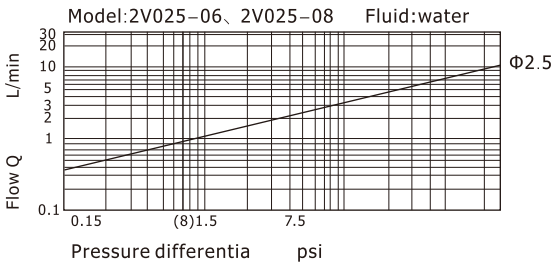


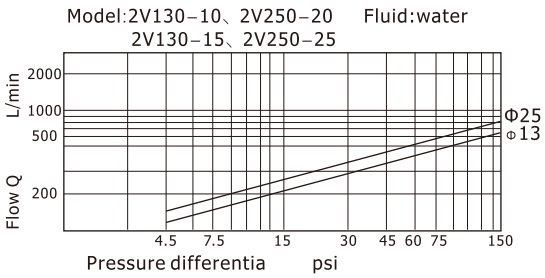
No.	Item	No.	Item	No.	Item
1	Connector	4	Coil	7	Diaphragm
2	Connector gasket	5	Armature assembly	8	Body
3	Nut	6	Body cover		

Flow chart









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).

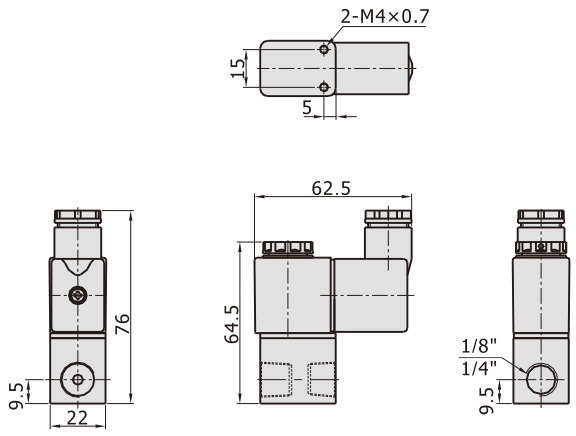
Note 2: "*"means inflammable and explosive dangerous fluid. Please use the relative explosion proof coil.

Note 3: Please consult the technical department before using fluid that has not been shown in the above table.

2V Series

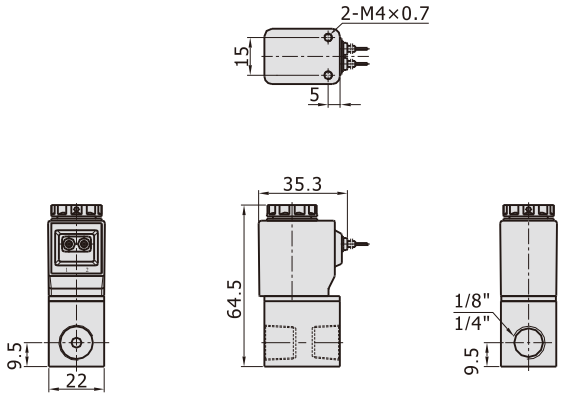
Dimensions

2V025 (Terminal)

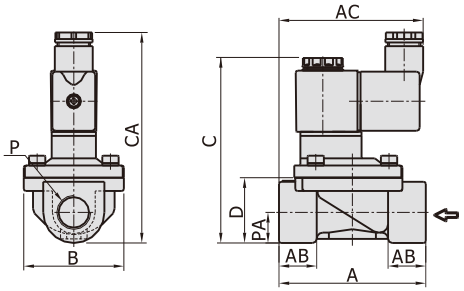


2V025(Grommet)

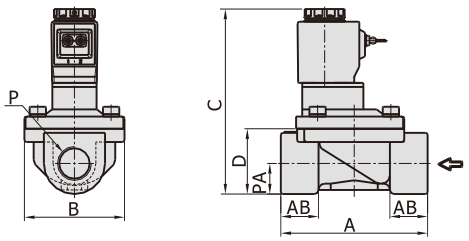
[Unit: mm]



2V130\250 (Terminal)



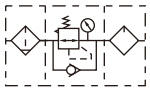
2V130\250(Grommet)



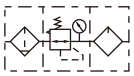
Model\Item	A	AB	AC	B	C	CA	D	P	PA
2V130-10	72	18.5	71	49	91	103	32	3/8"	15
2V130-15	72	18.5	71	49	91	103	32	1/2"	15
2V250-20	102	23	74	77.5	107.5	120	45	3/4"	21
2V250-25	102	23	74	77.5	107.5	120	45	1"	21

GAC Series F.R.L. combination

Reflux valve is attached



No reflux valve is attached



Ordering code

GAC300 □ 10 □ S □ W T K

1 2 3 4 5 6 7 8 9

①Model	②Material of bowl	③Port size	④Drain type	⑤Type code
GAC200:GA200 Series F.R.L unit	Blank: PC N: Nylon C: Metal	06: 1/8" 08: 1/4"	Blank: Semi-auto drain A: Automatic drain	S: Standard L: Lower pressure [Note1]
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	20: 3/4" 25: 1"		S: Standard

⑥Pressure gauge	⑦Filtering grade	⑧Thread type	⑨Reflux valve
Blank: Circular with clip N: No pressure gauge [Note2]	Blank: 40μm W: 5μm	T: NPT (Scale: bar/psi)	Blank: Without reflux valve K: with reflux valve [Note2]

[Note1] The maximum work pressure of lower pressure type is 58psi(0.4MPa);
[Note2] Please refer to page 224 for details of sealing plate Installation and reflux valve.

Product feature

1. Oil dripping adopts gap seal structure, 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 taking on linear distribution. The quantity of oil supply can be generally calculated according to the position of graduation ring.
3. Filling of oil while the lubricator is under pressure is made possible.
4. Special drip nozzle structure will produce negative pressure in oil dripping outlet and the mist flow is minimal.
5. Quick and reliable mounting clamps makes it convenient to install and use.
6. The performance of pressure adjustment is reliable with high precision.
7. The efficiency of eliminating moisture and solid grain is high.
8. Two drain types are available: semi-auto drain and automatic drain.
9. Three material of bowl are available: PC, Nylon and metal.

GAC Series F.R.L. combination

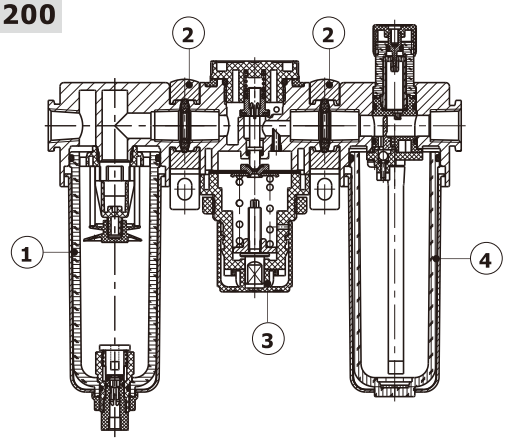
Specification

Model		GAC20006	GAC20008	GAC30008	GAC30010	GAC30015	GAC40010	GAC40015	GAC50020	GAC60020	GAC60025
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		20~130psi(0.15~0.9MPa)									
Max. pressure		145psi(1.0MPa)									
Proof pressure		215psi(1.5MPa)									
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 32or equivalent									
Weight		750g		1300g			2390g		2460g	4600g	
Constitute	Filter	GAF20006	GAF20008	GAF30008	GAF30010	GAF30015	GAF40010	GAF40015	GAF50020	GAF60020	GAF60025
	Regulator	GAR20006	GAR20008	GAR30008	GAR30010	GAR30015	GAR40010	GAR40015	GAR50020	GAR60020	GAR60025
	Lubricator	GAL20006	GAL20008	GAL30008	GAL30010	GAL30015	GAL40010	GAL40015	GAL50020	GAL60020	GAL60025

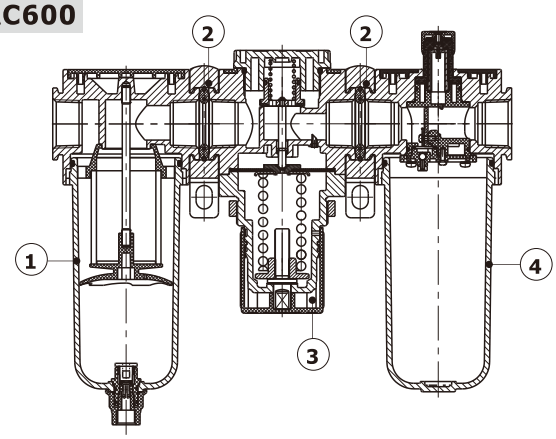
[Note1] NPT thread is available.

Inner structure

GAC200

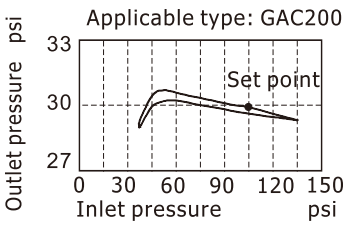


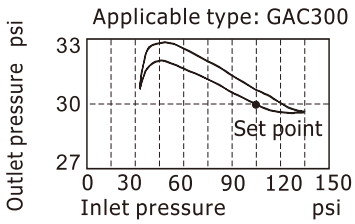
GAC600

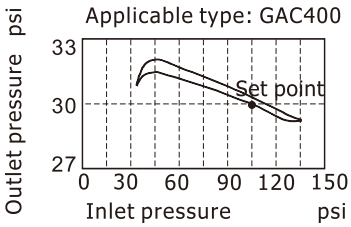


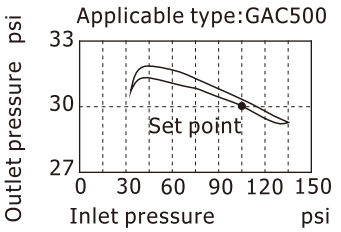
No.	Item	No.	Item
1	GA series filter	3	GA series regulator
2	Bracket	4	GA series lubricator

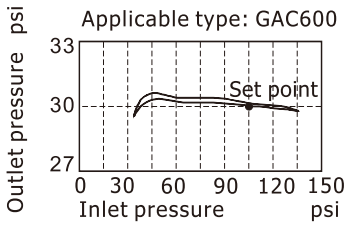
Pressure chart





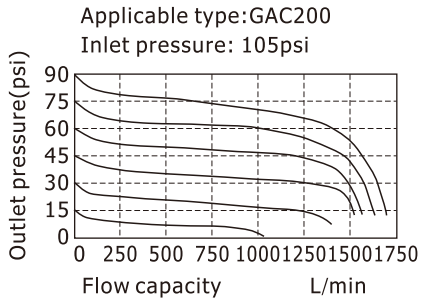


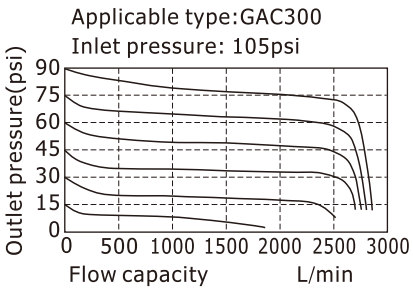


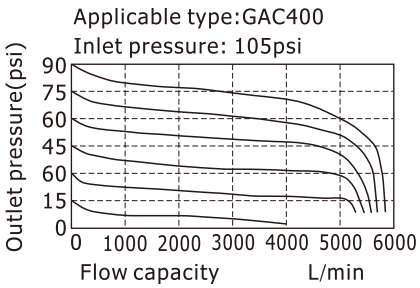


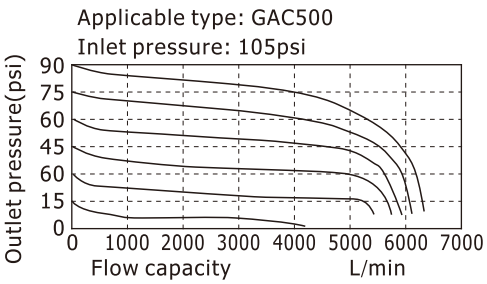
GAC Series F.R.L. combination

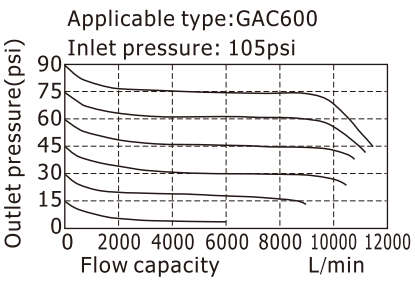
Flow chart



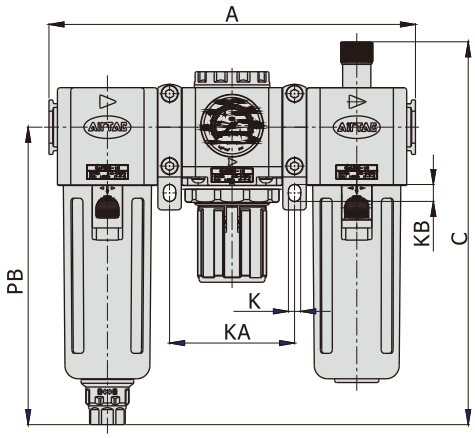


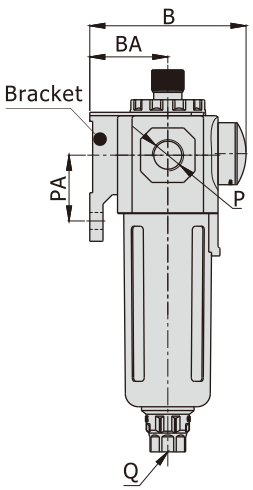


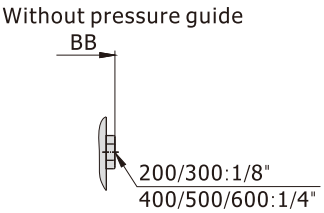




Dimensions





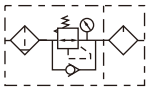


[Unit: mm]

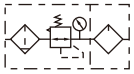
Model\Item	A	B	BA	BB	C	K	KA	KB	P	PA	PB	Q
GAC200-06	163.5	69	30	55.5	160	5.5	55.5	8.5	1/8"	25	120	M5X0.8
GAC200-08	163.5	69	30	55.5	160	5.5	55.5	8.5	1/4"	25	120	M5X0.8
GAC300-08	195	83	41.5	71.5	203.5	6.5	66.5	9	1/4"	35	158	G1/4
GAC300-10	195	83	41.5	71.5	203.5	6.5	66.5	9	3/8"	35	158	G1/4
GAC300-15	195	83	41.5	71.5	203.5	6.5	66.5	9	1/2"	35	158	G1/4
GAC400-10	248	99	50	88	227	8.6	84	12	3/8"	40	177.5	G1/4
GAC400-15	248	99	50	88	227	8.6	84	12	1/2"	40	177.5	G1/4
GAC500-20	254	100	50	89	241	8.6	86	12	3/4"	40	191.5	G1/4
GAC600-20	312	128	70	117	267.5	11	106	16	3/4"	50	205	G1/4
GAC600-25	312	128	70	117	267.5	11	106	16	1"	50	205	G1/4

GAFC Series F.R.L. combination

Reflux valve is attached



No reflux valve is attached



Ordering code

GAFC300 □ 10 □ S □ W T K

1 2 3 4 5 6 7 8 9

①Model	②Material of bowl	③Port size	④Drain type	⑤Type code
GAFC200:GA200 Series FR.L unit	Blank: PC N: Nylon C: Metal	06: 1/8" 08: 1/4"	Blank: Semi-auto drain A: Automatic drain	S: Standard L: Lower pressure [Note1]
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	20: 3/4" 25: 1"		S: Standard

⑥Pressure gauge	⑦Filtering grade	⑧Thread type	⑨Reflux valve
Blank: Circular with clip N: No pressure gauge [Note2]	Blank: 40μm W: 5μm	T: NPT (Scale: bar/psi)	Blank: Without reflux valve K: with reflux valve [Note2]

[Note1] The maximum work pressure of lower pressure type is 58psi(0.4MPa);
[Note2] Please refer to page 224 for details of sealing plate Installation and reflux valve.

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: semi-auto drain and automatic drain.
5. Three material of bowl are available: PC, Nylon and metal.

GAFC Series F.R.L. combination

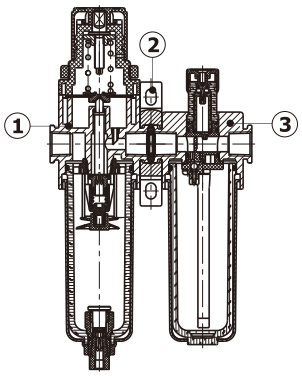
Specification

Model		GAFC20006	GAFC20008	GAFC30008	GAFC30010	GAFC30015	GAFC40010	GAFC40015	GAFC50020	GAFC60020	GAFC60025
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		20~130psi(0.15~0.9MPa)									
Max. pressure		145psi(1.0MPa)									
Proof pressure		215psi(1.5MPa)									
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 32or equivalent									
Weight		590g		1020g			1810g		1910g	3430g	
Constitute	Filter-Regulator	GAFR20006	GAFR20008	GAFR30008	GAFR30010	GAFR30015	GAFR40010	GAFR40015	GAFR50020	GAFR60020	GAFR60025
	Lubricator	GAL20006	GAL20008	GAL30008	GAL30010	GAL30015	GAL40010	GAL40015	GAL50020	GAL60020	GAL60025

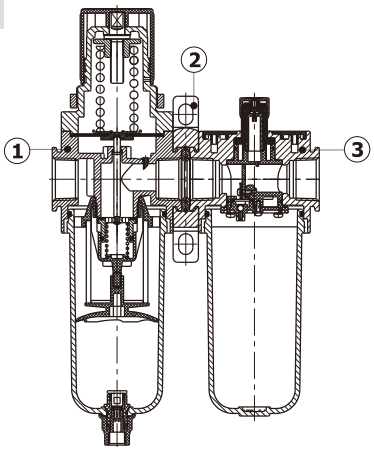
[Note1] NPT thread is available.

Inner structure

GAFC200

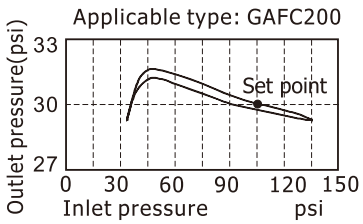


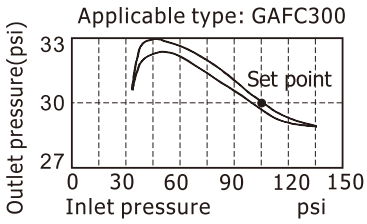
GAFC600

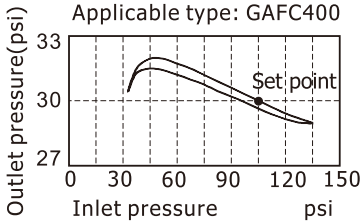


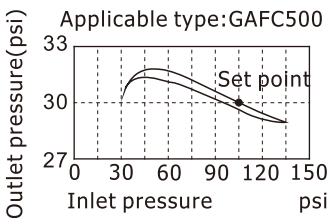
No.	Item
1	GA series filter & regulator
2	Bracket
3	GA series lubricator

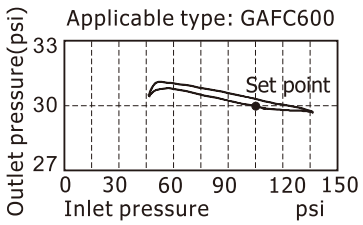
Pressure chart







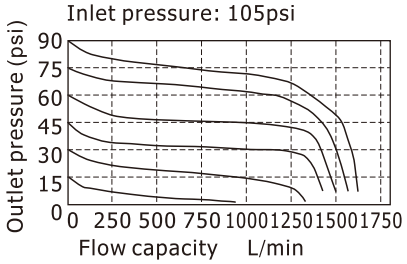




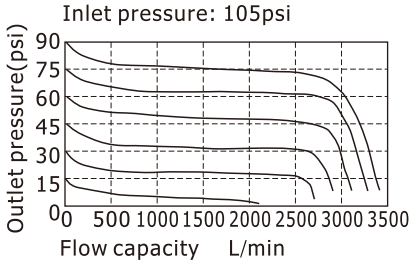
GAFC Series F.R.L. combination

Flow chart

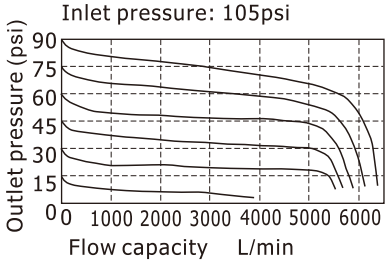
Applicable type: GAFC200
Inlet pressure: 105psi



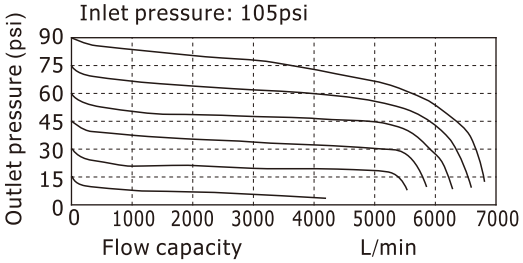
Applicable type: GAFC300
Inlet pressure: 105psi



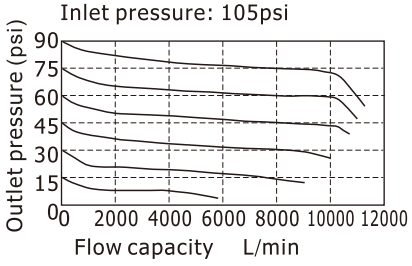
Applicable type: GAFC400
Inlet pressure: 105psi



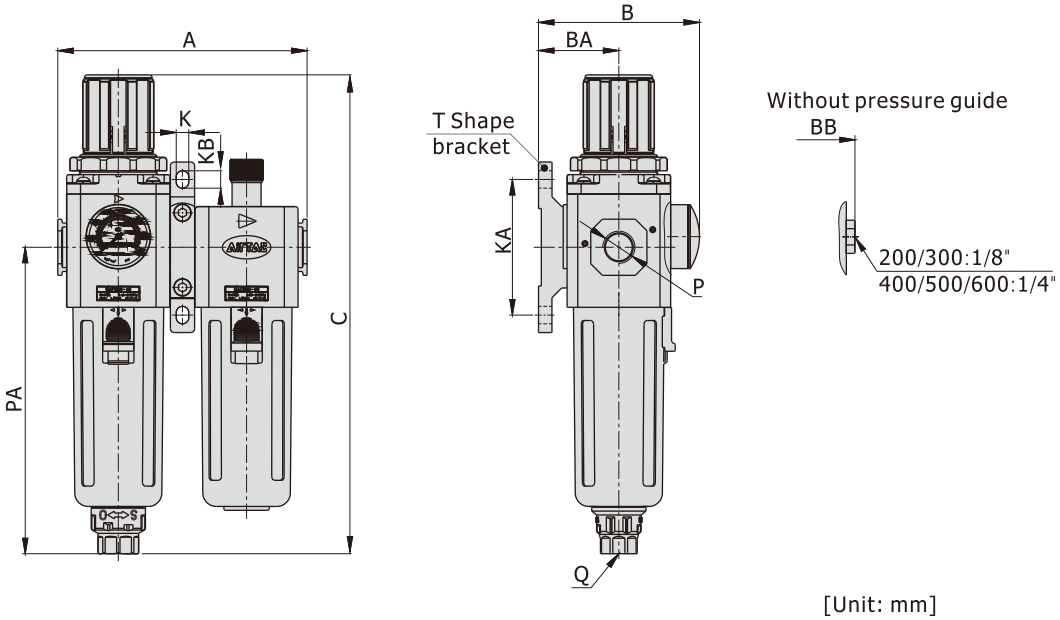
Applicable type: GAFC500
Inlet pressure: 105psi



Applicable type: GAFC600
Inlet pressure: 105psi



Dimensions

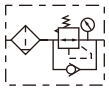


[Unit: mm]

Model\Item	A	B	BA	BB	C	K	KA	KB	P	PA	Q
GAFC200-06	107.5	69	30	55.5	192.5	5.5	50	8.5	1/8"	120	M5X0.8
GAFC200-08	107.5	69	30	55.5	192.5	5.5	50	8.5	1/4"	120	M5X0.8
GAFC300-08	128.5	83	41.5	71.5	247	6.5	70	9	1/4"	158	G1/4
GAFC300-10	128.5	83	41.5	71.5	247	6.5	70	9	3/8"	158	G1/4
GAFC300-15	128.5	83	41.5	71.5	247	6.5	70	9	1/2"	158	G1/4
GAFC400-10	164	99	50	88	285.5	8.6	80	12	3/8"	177.5	G1/4
GAFC400-15	164	99	50	88	285.5	8.6	80	12	1/2"	177.5	G1/4
GAFC500-20	168	100	50	89	299.5	8.6	80	12	3/4"	191.5	G1/4
GAFC600-20	206	128	70	117	336.5	11	100	16	3/4"	205	G1/4
GAFC600-25	206	128	70	117	336.5	11	100	16	1"	205	G1/4

GAFR Series Filter & regulator

Reflux valve is attached



No reflux valve is attached

Ordering code

GAFR300 □ 10 □ S □ □ W T K

1 2 3 4 5 6 7 8 9 10

①Model	②Material of bowl	③Port size	④Drain type	⑤Type code
GAFR200:GA200 Series filter-regulator	Blank: PC N: Nylon C: Metal	06: 1/8" 08: 1/4"	Blank: Semi-auto drain A: Automatic drain	S: Standard L: Lower pressure [Note1]
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	20: 3/4" 25: 1"		S: Standard

⑥Accessories	⑦Pressure gauge	⑧Filtering grade	⑨Thread type	⑩Reflux valve
Blank: Bracket J: No bracket	Blank: Circular with clip N: No pressure gauge [Note2]	Blank: 40μm W: 5μm	T: NPT (Scale: bar/psi)	Blank: Without reflux valve K: with reflux valve [Note2]

[Note1] The maximum work pressure of lower pressure type is 58psi(0.4MPa);
[Note2] Please refer to page 224 for details of sealing plate Installation and reflux valve.

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.

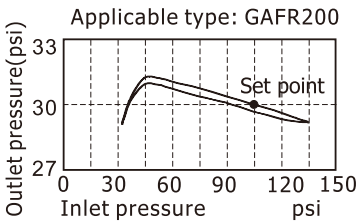
GAFR Series Filter & regulator

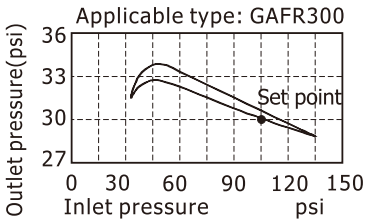
Specification

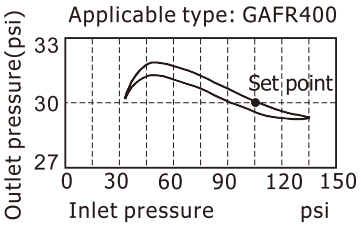
Model	GAFR20006	GAFR20008	GAFR30008	GAFR30010	GAFR30015	GAFR40010	GAFR40015	GAFR50020	GAFR60020	GAFR60025
Fluid	Air									
Port size [Note1]	1/8"	1/4"	1/4"	3/8"	1/2"	3/8"	1/2"	3/4"	3/4"	1"
Filtering grade	40μm or 5μm									
Pressure range	20~130psi(0.15~0.9MPa)									
Max. pressure	145psi(1.0MPa)									
Proof pressure	215psi(1.5MPa)									
Temperature range	-5~70°C(Unfreeze)									
Capacity of drain bowl	25CC		60CC			100CC		108CC	205CC	
Weight	290g		500g			880g		950g	1880g	

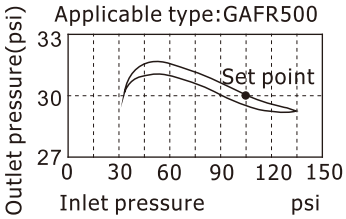
[Note1] NPT thread is available.

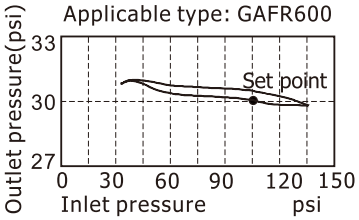
Pressure chart





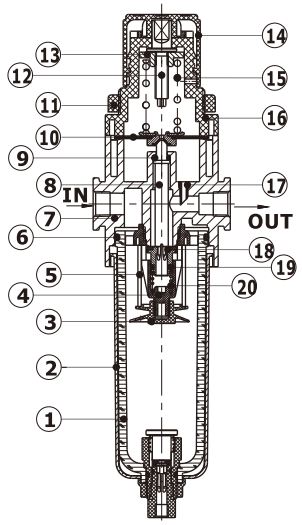




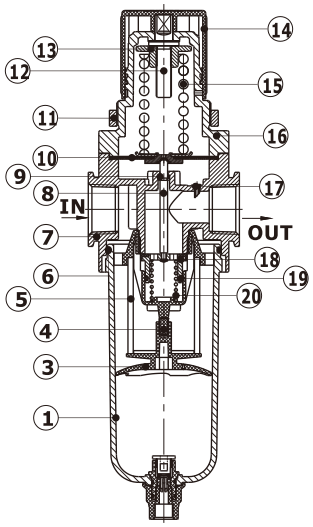


Inner structure

GAFR200



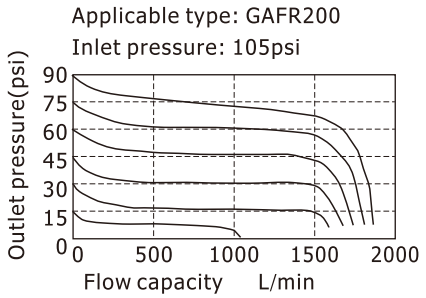
GAFR600

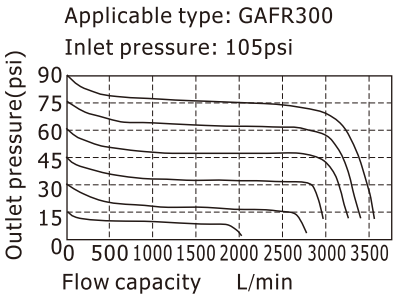


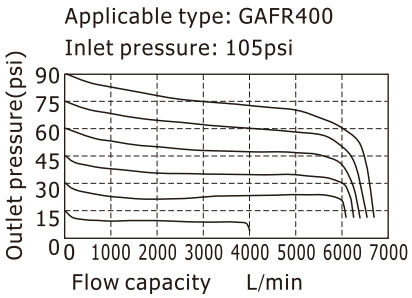
No.	Item
1	Drain bowl
2	Meter cover
3	Umbrella baffle
4	Air guider
5	Filter core
6	O-ring
7	Body of filter-regulator
8	Adjusting spool
9	O-ring
10	Diaphragm
11	Fixation ring cap
12	Adjusting spindle
13	Regulator nut
14	Pressure knob
15	Spring
16	Adjusting seat
17	Feedback tube
18	Adjusting plug
19	O-ring
20	Spring

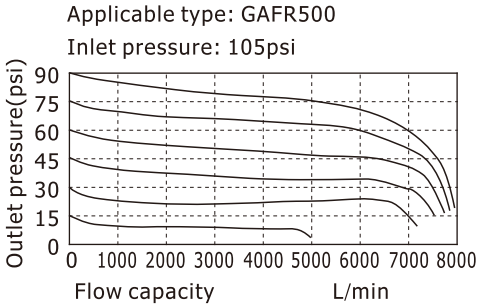
GAFR Series Filter & regulator

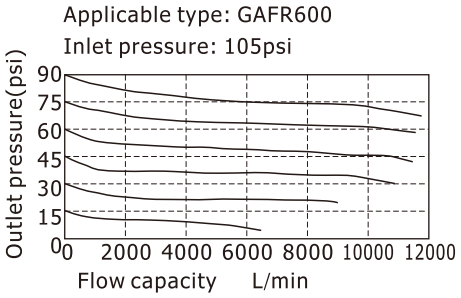
Flow chart



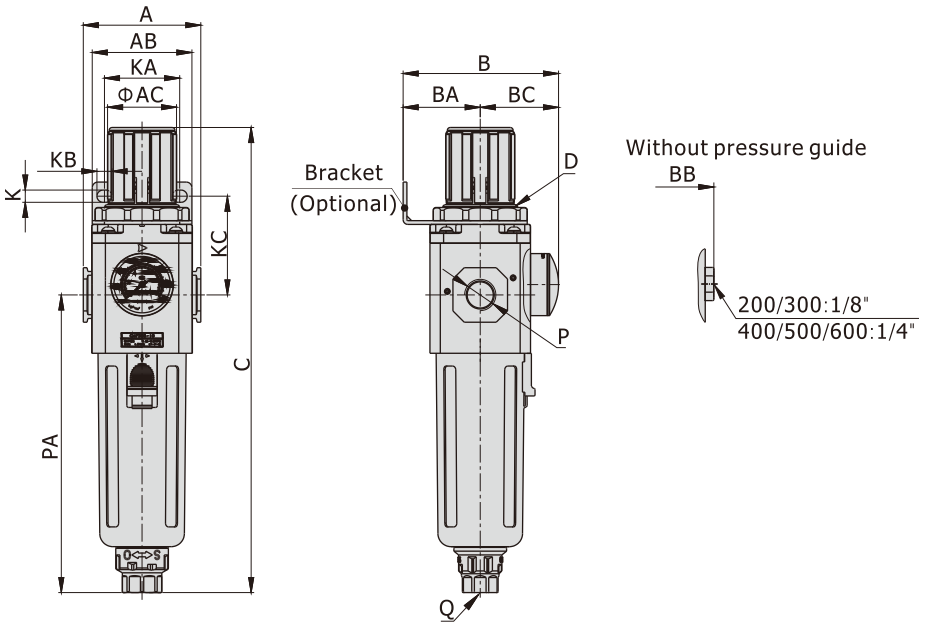








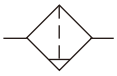
Dimensions



[Unit: mm]

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	55.5	39	192.5	M33x1.5	5.4	34	15.4	52	1/8"	120	M5X0.8
GAFR200-08	52.5	55	31	69	30	55.5	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	71.5	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	71.5	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	71.5	41.5	247	M40x1.5	6.5	40	8	52.5	1/2"	158	G1/4
GAFR400-10	80	72	52	99	50	88	49	285.5	M55x2.0	8.5	55	11	57	3/8"	177.5	G1/4
GAFR400-15	80	72	52	99	50	88	49	285.5	M55x2.0	8.5	55	11	57	1/2"	177.5	G1/4
GAFR500-20	82	72	52	100	50	89	50	299.5	M55x2.0	8.5	55	11	57	3/4"	191.5	G1/4
GAFR600-20	100	90	59	128	70	117	58	336.5	M62x1.5	11	66	13	76	3/4"	205	G1/4
GAFR600-25	100	90	59	128	70	117	58	336.5	M62x1.5	11	66	13	76	1"	205	G1/4

GAF Series Filter



Ordering code

GAF300 □ 10 □ □ W T

1 2 3 4 5 6 7

①Model	②Material of bowl	③Port size	④Drain type
GAF200: GA200 Series Filter	Blank: PC N: Nylon C: Metal	06: 1/8" 08: 1/4"	Blank: Semi-auto drain A: Automatic drain
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	20: 3/4" 25: 1"	

⑤Accessories	⑥Filtering grade	⑦Thread type
Blank: Bracket J: No bracket	Blank: 40μm W: 5μm	T: NPT

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.

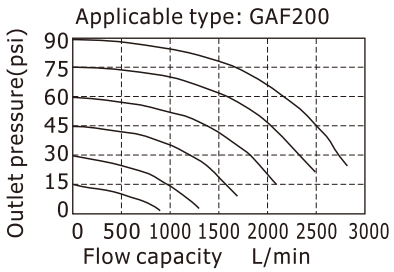
GAF Series Filter

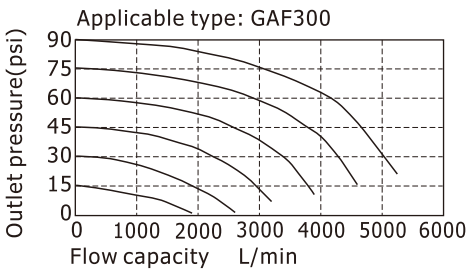
Specification

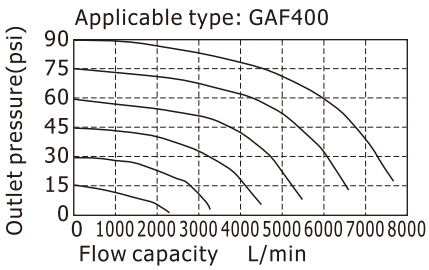
Model	GAF20006	GAF20008	GAF30008	GAF30010	GAF30015	GAF40010	GAF40015	GAF50020	GAF60020	GAF60025
Fluid	Air									
Port size [Note1]	1/8"	1/4"	1/4"	3/8"	1/2"	3/8"	1/2"	3/4"	3/4"	1"
Filtering grade	40μm or 5μm									
Pressure range	20~145psi(0.15~1.0MPa)									
Proof pressure	215psi(1.5MPa)									
Temperature range	−5~70°C(Unfreeze)									
Capacity of drain bowl	25CC		60CC			100CC		108CC	205CC	
Weight	200g		360g			640g		680g	1040g	

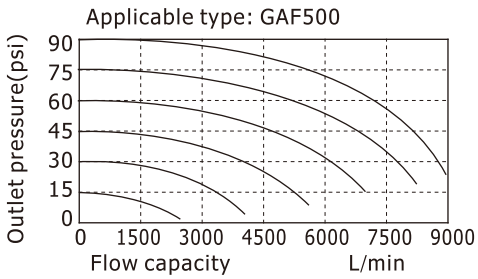
[Note1] NPT thread is available.

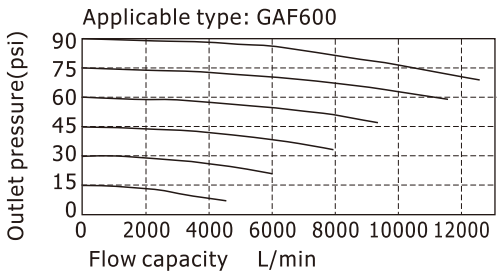
Flow chart





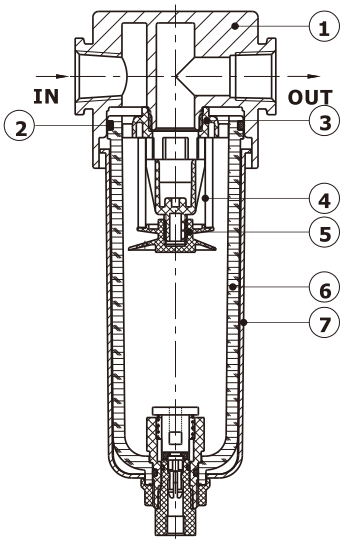




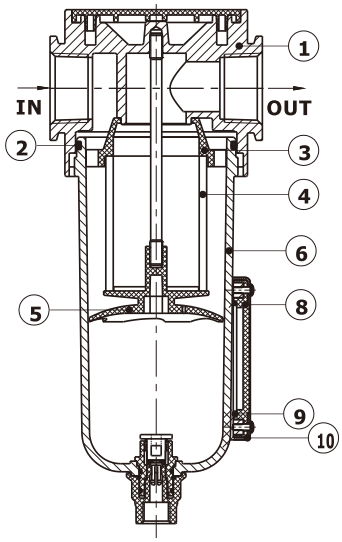


Inner structure

GAF200



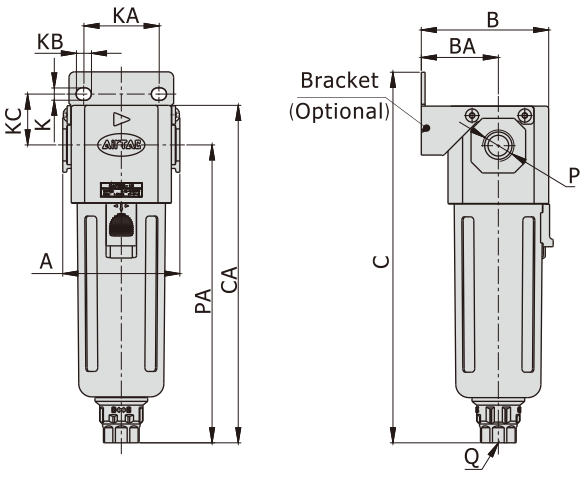
GAF600



No.	Item
1	Body
2	O-ring
3	Air guide
4	Filter core
5	Umbrella baffle
6	Drain bowl
7	Meter cover
8	Liquid meter inside cover
9	Liquid meter seal
10	Liquid meter cover

GAF Series Filter

Dimensions



[Unit: mm]

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

GAR Series Regulator

Reflux valve is attached

No reflux valve is attached

Ordering code

GAR300 10 S □ □ T K

1 2 3 4 5 6 7

①Model	②Port size	③Type code	④Accessories
GAR200: GA200 Series Regulator	06: 1/8" 08: 1/4"	S: Standard L: Lower pressure [Note1]	Blank: Bracket J: No bracket (standard configuration)
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	

⑤Pressure gauge	⑥Thread type	⑦Reflux valve
Blank: Circular with clip N: No pressure gauge [Note2]	T: NPT (Scale: bar/psi)	Blank: Without reflux valve K: with reflux valve [Note2]

[Note1] The maximum work pressure of lower pressure type is 58psi(0.4MPa);
[Note2] Please refer to page 224 for details of sealing plate Installation and reflux valve.

Specification

Model	GAR20006	GAR20008	GAR30008	GAR30010	GAR30015	GAR40010	GAR40015	GAR50020	GAR60020	GAR60025
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	145psi(1.0MPa)									
Proof pressure	215psi(1.5MPa)									
Temperature range	−20~70°C									
Weight	170g		300g			570g		580g	1390g	

[Note1] NPT thread is available.

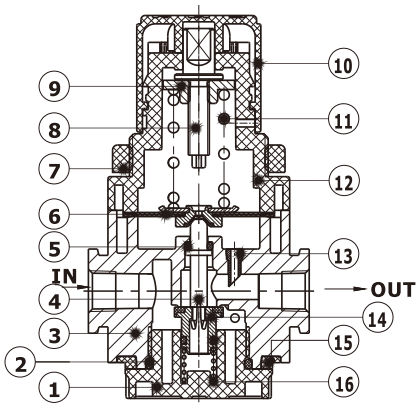
Product feature

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.

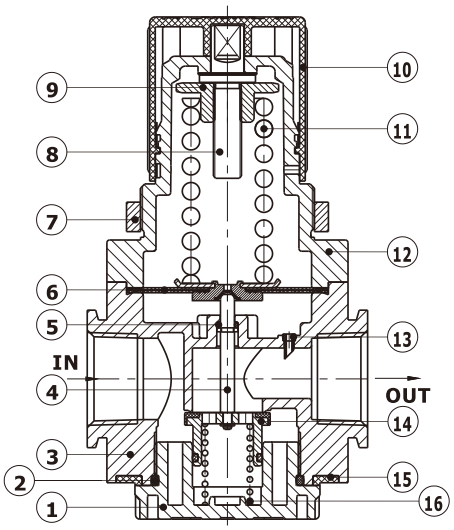
GAR Series Regulator

Inner structure

GAR200

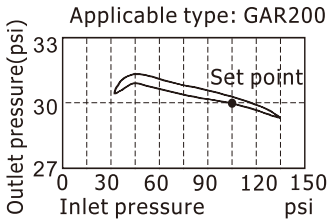


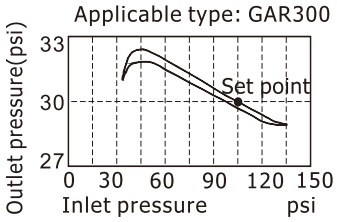
GAR600

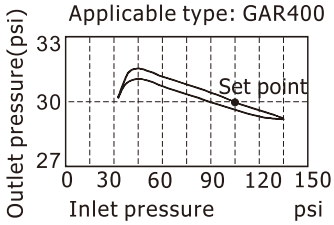


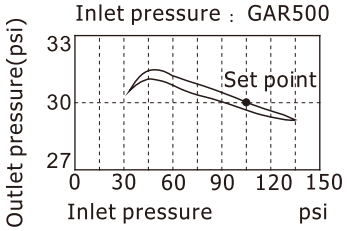
No.	Item
1	Valve cap
2	O-ring
3	Body
4	Spool
5	O-ring
6	Diaphragm
7	Fixed ring
8	Adjusting spindle
9	Regulator nut
10	Pressure knob
11	Pressure spring
12	Adjusting seat
13	Feed back tuble
14	Pressure plug
15	Bottom cover
16	Spring

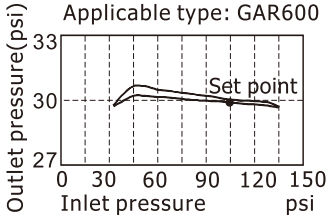
Pressure chart







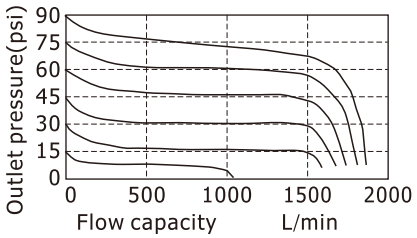




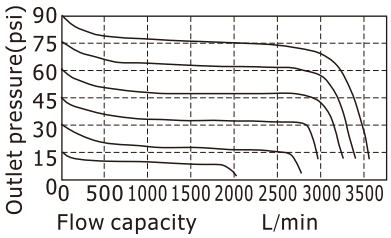
GAR Series Regulator

Flow chart

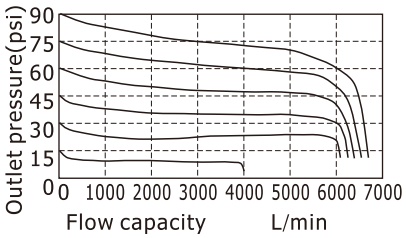
Applicable type: GAR200
Inlet pressure: 105psi



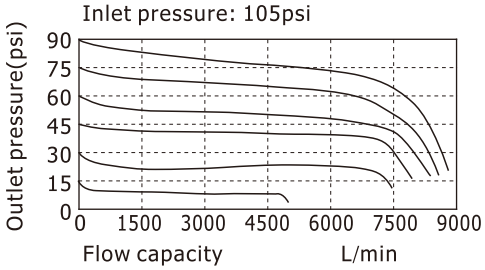
Applicable type: GAR300
Inlet pressure: 105psi



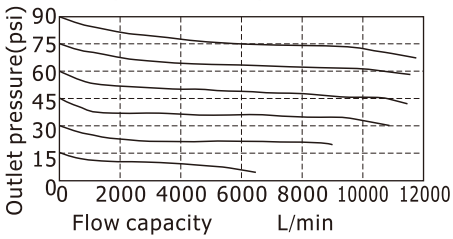
Applicable type: GAR400
Inlet pressure: 105psi



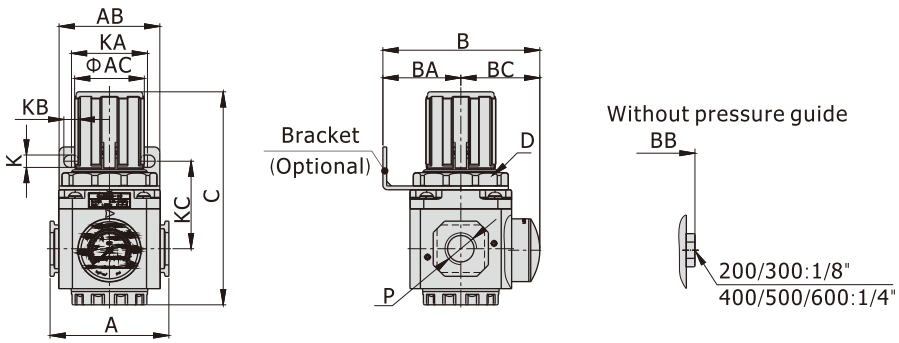
Applicable type:GAR500
Inlet pressure: 105psi



Applicable type: GAR600
Inlet pressure: 105psi



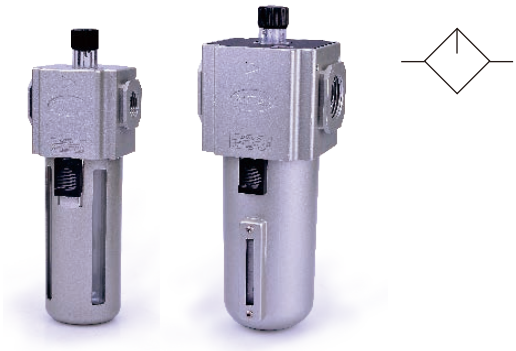
Dimensions



[Unit: mm]

Model\Item	A	AB	AC	B	BA	BB	BC	C	D	K	KA	KB	KC	P
GAR200-06	52.5	55	31	69	30	55.5	39	91	M33x1.5	5.4	34	15.4	45	1/8"
GAR200-08	52.5	55	31	69	30	55.5	39	91	M33x1.5	5.4	34	15.4	45	1/4"
GAR300-08	62.5	53	38	82.5	41	71.5	41.5	112	M40x1.5	6.5	40	8	46	1/4"
GAR300-10	62.5	53	38	82.5	41	71.5	41.5	112	M40x1.5	6.5	40	8	46	3/8"
GAR300-15	62.5	53	38	82.5	41	71.5	41.5	112	M40x1.5	6.5	40	8	46	1/2"
GAR400-10	80	72	52	99	50	88	49	140.5	M55x2.0	8.5	55	11	53	3/8"
GAR400-15	80	72	52	99	50	88	49	140.5	M55x2.0	8.5	55	11	53	1/2"
GAR500-20	82	72	52	100	50	89	50	140.5	M55x2.0	8.5	55	11	53	3/4"
GAR600-20	100	90	59	128	70	117	58	179.5	M62x1.5	11	66	13	73.5	3/4"
GAR600-25	100	90	59	128	70	117	58	179.5	M62x1.5	11	66	13	73.5	1"

GAL Series Lubricator



Ordering code

GAL300 □ 10 □ T

1 2 3 4 5

①Model	②Material of bowl	③Port size	④Accessories	⑤Thread type
GAL200: GA200 Series Lubricator	Blank: PC N: Nylon C: Metal	06: 1/8" 08: 1/4"	Blank: Bracket J: No bracket (standard configuration)	T: NPT
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	20: 3/4" 25: 1"		

Specification

Model	GAL20006	GAL20008	GAL30008	GAL30010	GAL30015	GAL40010	GAL40015	GAL50020	GAL60020	GAL60025
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	7~145psi(0.05~1.0MPa)									
Proof pressure	215psi(1.5MPa)									
Temperature range	−5~70°C(Unfreeze)									
Recommended lubricant	ISO VG32or equivalent									
Capacity of oil bowl	36CC		98CC			185CC		225CC	410CC	
Weight	200g		370g			660g		700g	1040g	

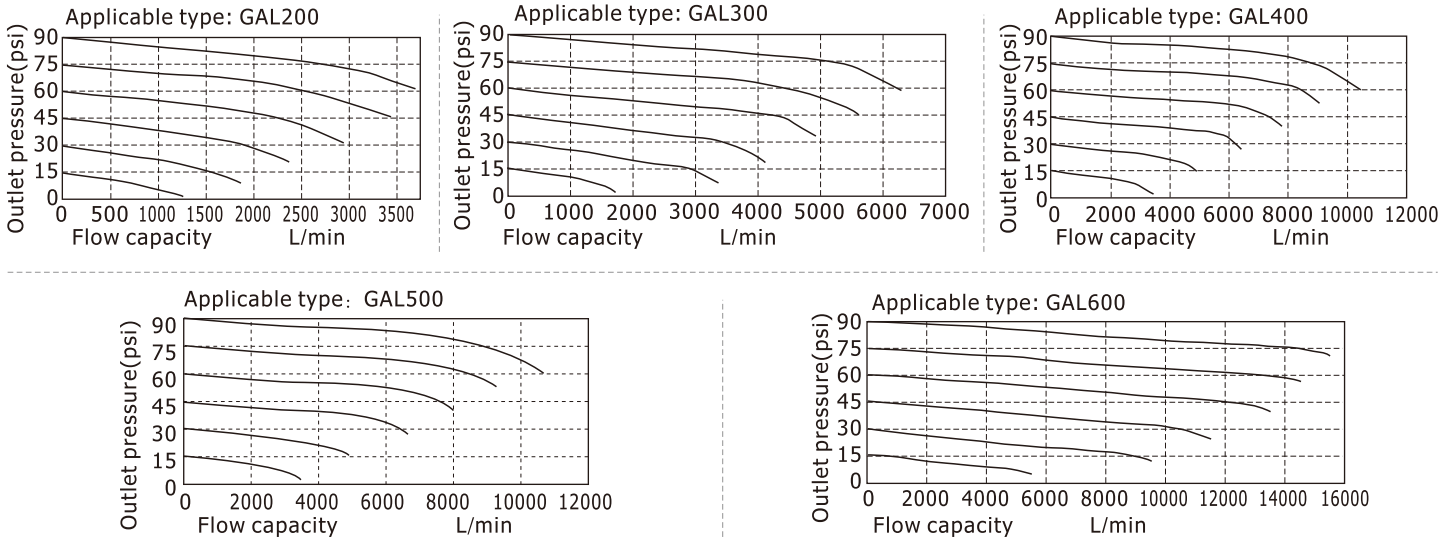
[Note1] NPT thread is available.

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.

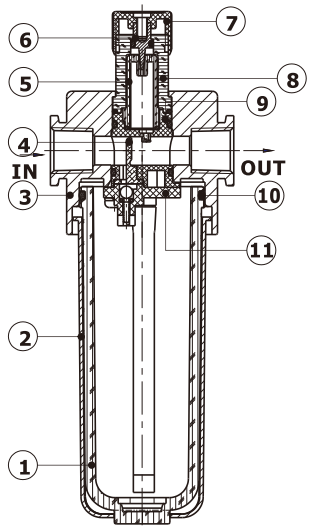
GAL Series Lubricator

Flow chart

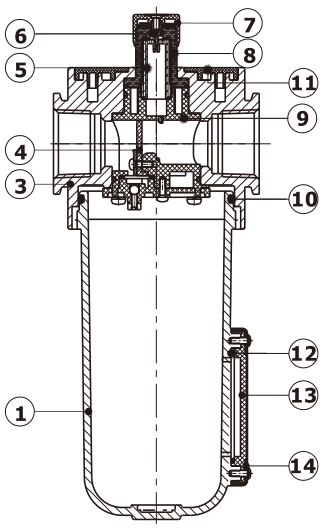


Inner structure

GAL200

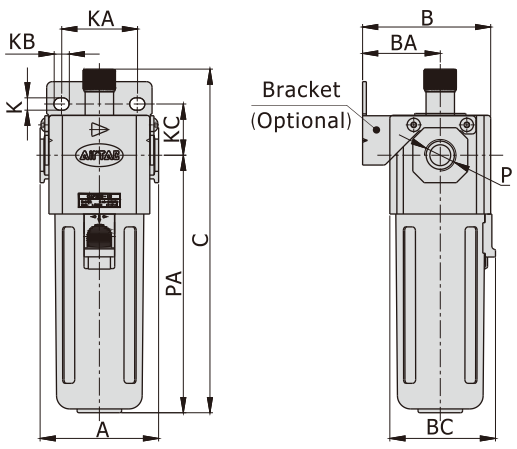


GAL600



No.	Item
1	Oil bowl
2	Meter cover
3	Body of lubricator
4	Distance block
5	Drip pipe
6	Ejector pin
7	Adjusting ring
8	Adjusting looker
9	Sprayer body
10	O-ring
11	Sprayer bottom cap
12	Liquid meter seal
13	Liquid meter inside cover
14	Liquid meter cover

Dimensions



[Unit: mm]

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

Preparation unit——GT Series(Short PC bowl type)

GTC, GTFC, GTFR, GTF, GTL Series

Product feature

1. The short PC bowl type is upgraded GA200 series. Besides its speciality are the same as GA200 series, it's below speciality:
2. The bowl is made of PC and is short which allows for litter space application.
3. Two drain types are available: semi-auto drain, and automatic drain.

Ordering code

GTC200 08 S □ W T K

GTFC200 08 S □ W T K

GTFR200 08 S □ □ W T K

1 2 3 4 5 6 7 8

①Model	②Port size	③Type code	④Accessories
GTC200C: GT200 Series F.R.Lunit (Short PC bowl type)	06: 1/8" 08: 1/4"	S: Standard L: Lower pressure [Note1]	No this code
GTFC200C: GT200 Series F.R.L unit (Short PC bowl type)			
GTFR200C: GT200 Series filter-regulator (Short PC bowl type)			Blank: Bracket J: No bracket

⑤Pressure gauge	⑥Filtering grade	⑦Thread type	⑧Reflux valve
Blank: Pressure gauge N: No pressure gauge [Note2]	Blank: 40μm W: 5μm	T: NPT (Scale: bar/psi)	Blank: Without reflux valve K: With reflux valve [Note2]

[Note1] The maximum work pressure of lower pressure type is 58psi(0.4MPa);
[Note2] Please refer to page 224 for details of sealing plate Installation and reflux valve.

GTF200 08 □ W T

1 2 3 4 5

①Model	②Port size	③Accessories	④Filtering grade	⑤Thread type
GTF200: GT200 Series Filter (Short PC bowl type)	06: 1/8" 08: 1/4"	Blank: Bracket J: No bracket	Blank: 40μm W: 5μm	T: NPT

GTL200 08 □ T

1 2 3 4

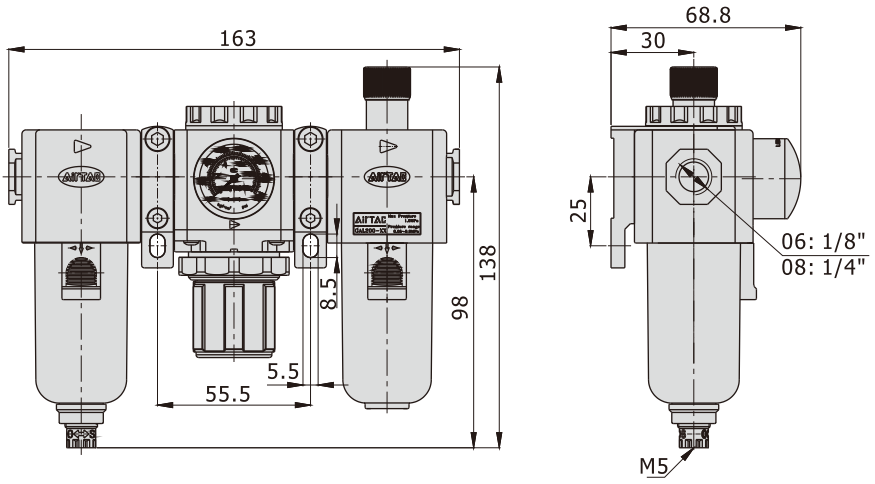
①Model	②Port size	③Accessories	④Thread type
GTL200: GT200 Series Lubricator (Short PC bowl type)	06: 1/8" 08: 1/4"	Blank: Bracket J: No bracket	T: NPT

GTC, GTFC, GTFR, GTF, GTL Series

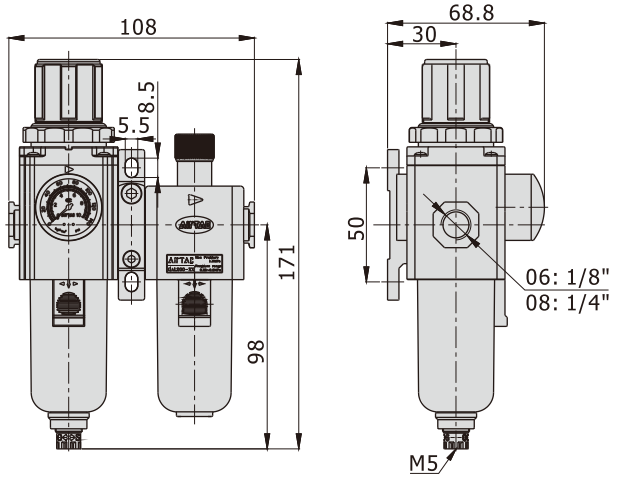
Dimensions

[Unit: mm]

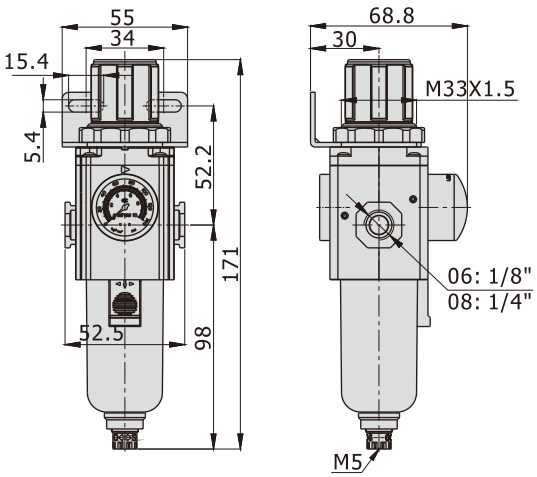
GTC200



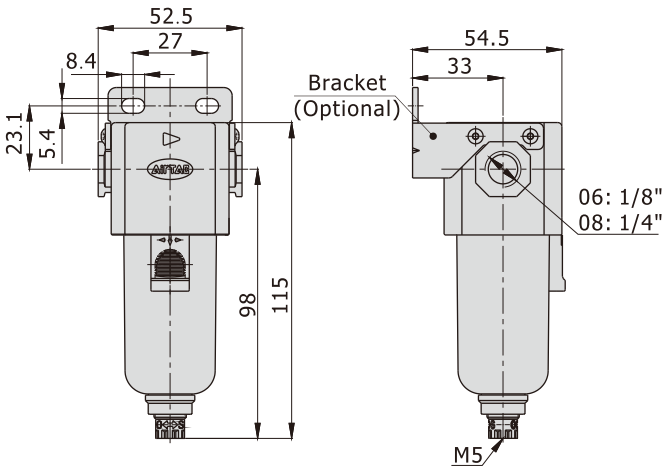
GTFC200



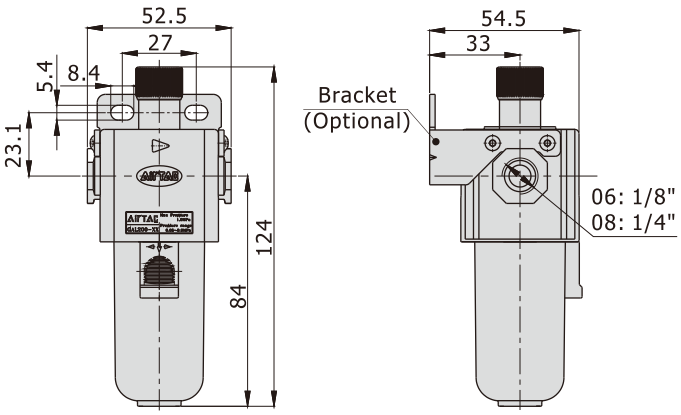
GTFR200



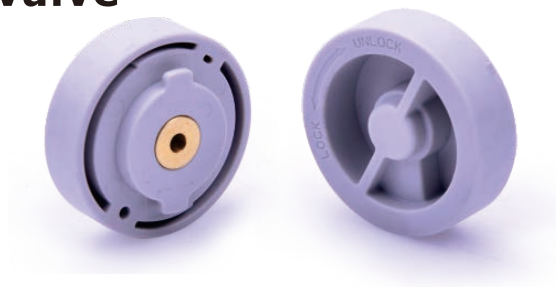
GTF200



GTL200



GA Series Reflux valve



Ordering code

When GA series regulator is assembled with the reflux 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.

Product feature

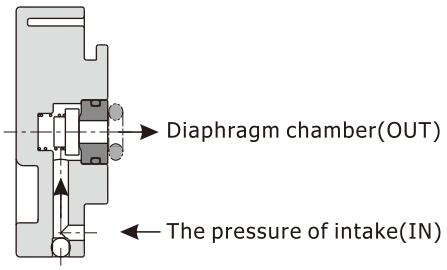
1. This reflux valve can be used with GA series regulator but can not be ordered individually.
2. When it is used with GA series regulator, one only needs to change the seal board in the back of regulator for the reflux valve. It is convenient to install and won't change the external dimension of regulator.

Applicable products

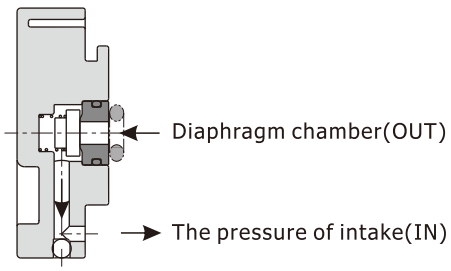
Reflux valve type\Applicable products's type	GA F.R.L Comtination	GA FR.L Comtination	GA Filter & regulator	GA Regulator
GAR200-P1	GAC200	GAFC200	GAFR200	GAR200
GAR300-P1	GAC300/400/500/600	GAFC300/400/500/600	GAFR300/400/500/600	GAR300/400/500/600

Working principle

Normally



Exhaust



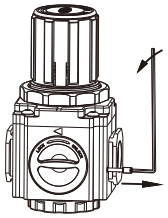
Normally, as the pressure of intake (IN) is higher than the set valve(pressure of outlet), the reflux valve closed; if the pressure of intake(IN) is cut off and starts exhaust, reflux valve opens. The pressure of diaphragm chamber is exhausted from IN orifice.
At this moment, the pressure of diaphragm 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.

GA Series Reflux valve

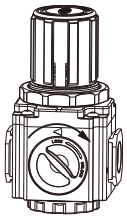
Example for assemble the reflux valve

1. Reflux valve installation steps:

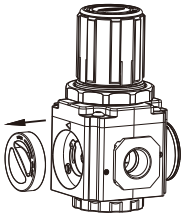
a Disassembly sealing plate



1 Remove the hexagonal stop screw →

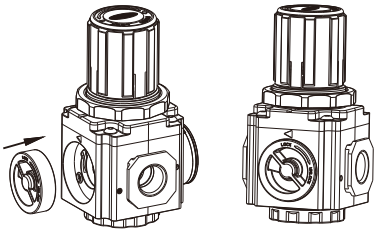


2 Press the sealingplate inward and turn it 45° clockwise →

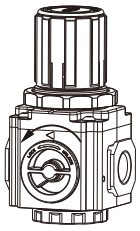


3 Remove the sealing plate(reflux valve)

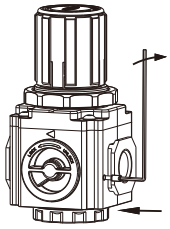
b Reflux valve installation



1 The reflux valve hook is aligned with the card slot and placed in (the reflux valve can only be installed as shown direction) →



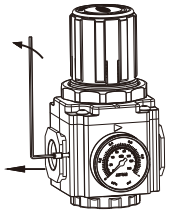
2 Press the reflux valve inward and turn it 45° counterclockwise →



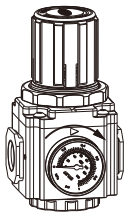
3 Lock the hexagonal stop screw

2. Sealing plate (used when no pressure gauge is attached) Installation steps:

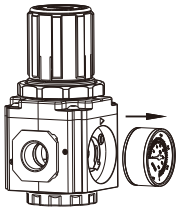
a Disassembly pressure gauge



1 Remove the hexagonal stop screw →

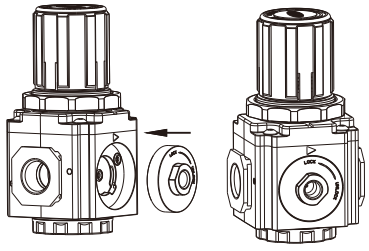


2 Press the pressure gauge inward and turn it 45° clockwise →

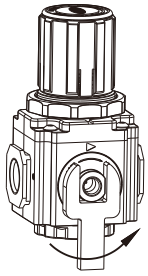


3 Remove the pressure gauge

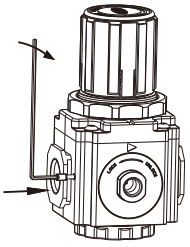
b Sealing plate installation



1 The sealing plate hook is aligned with the card slot and placed in →

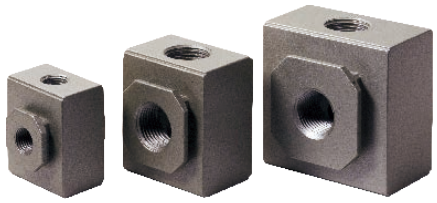


2 Press the sealing plate inward and turn it 45° counterclockwise →



3 Lock the hexagonal stop screw

GA series of gas-distribution block



Ordering code

GA200 08 T

1 2 3

①Model	②Port size		③Thread type
GA200: 200 Series gas-distribution block	06: 1/8"	08: 1/4"	T: NPT
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"	

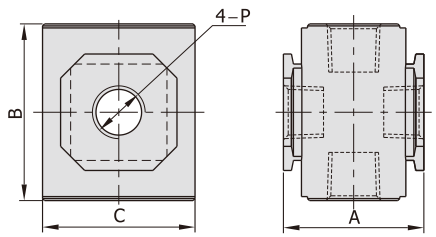
Note : When it is used with F.R.L. combination, extra mounting bracket needed.
Please refer to P181 for order detail.

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	0~145psi(0~1.0MPa)							
Proof pressure	215psi(1.5MPa)							
Temperature range	–20~70°C							

[Note1] NPT thread is available.

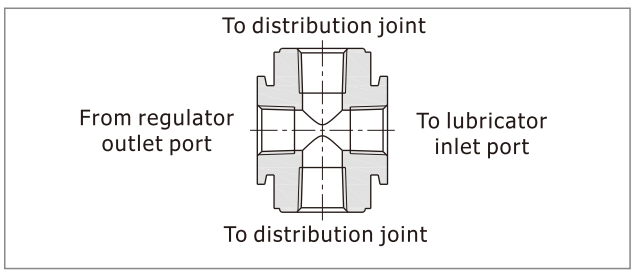
Dimensions



[Unit: mm]

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"

Inner structure



Product feature

1. It is installed between G series regulator (or filter & regulator) and GA 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.

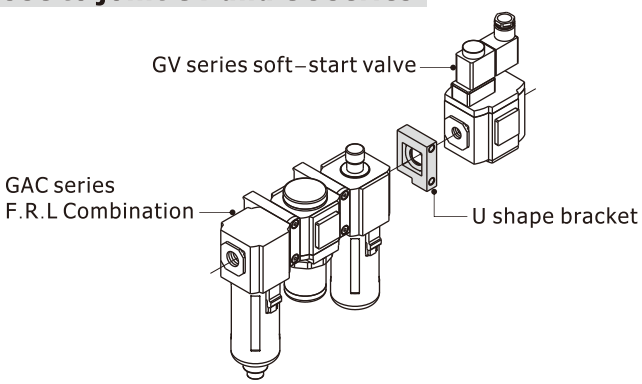
Joint accessories——Bracket

How to select the bracket

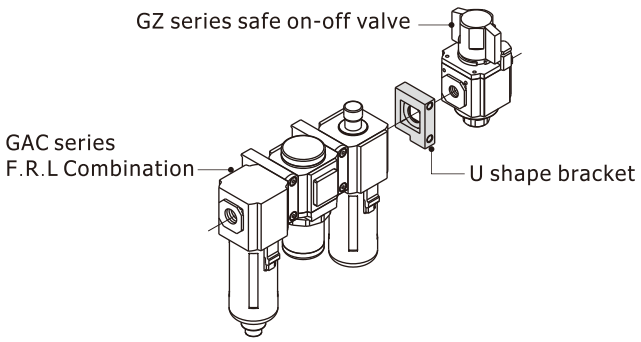
Bracket name	Code	Photo	Adapt accessories model		
T shape bracket	GA200T-P1		GV200	GZ200	GA200/GT200
	GA300T-P1		GV300	GZ300	GA300
	GA400T-P1		GV400	GZ400	GA400/GA500
	GA600T-P1		-	–	GA600
L shape bracket	GA200L-P1		GV200	GZ200	GA200/GT200
	GA300L-P1		GV300	GZ300	GA300
	GA400L-P1		GV400	GZ400	GA400/GA500
	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

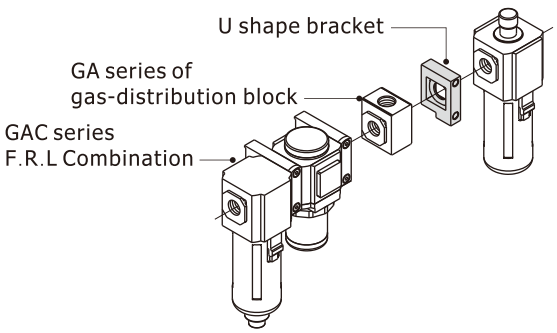
Use to joint GV and GC series



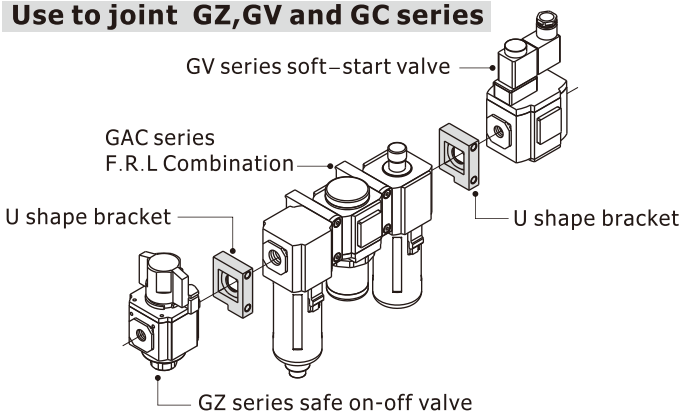
Use to joint GZ and GC series



Use to joint GA and GC series



Use to joint GZ,GV and GC series



GPF Series Oil mist filter

Ordering code

GPF300 □ 08 □ □ M T

1 2 3 4 5 6 7

①Model	②Bowl Material	③Port size
GPF200: 200 Series Oil mist filter	Blank: PC N: Nylon C: Metal	06: 1/8" 08: 1/4"
GPF300: 300 Series Oil mist filter		08: 1/4" 10: 3/8"
GPF400: 400 Series Oil mist filter		10: 3/8" 15: 1/2"

④Drain type	⑤Accessories	⑥Filtering grade	⑦Thread type
Blank: Semi-auto drain A: Automatic drain	Blank: Bracket J: No bracket	M: 0.3μm D: 0.01μm	T: NPT

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		20~145psi(0.15~1.0MPa)					
Proof pressure		215psi(1.5MPa)					
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] NPT thread is available.

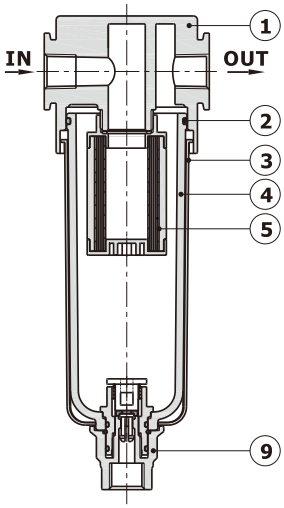
Product feature

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: 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.

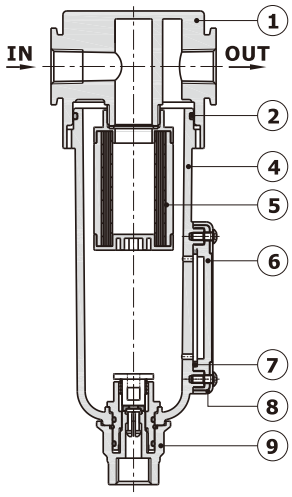
GPF Series Oil mist filter

Inner structure

GPF300



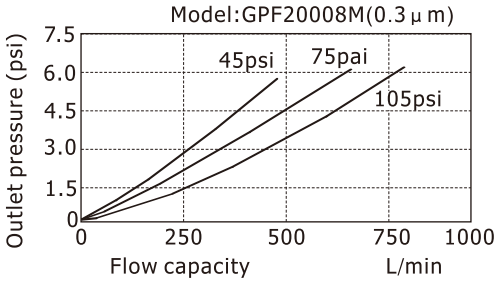
PC bowl+Metallic bowl guard

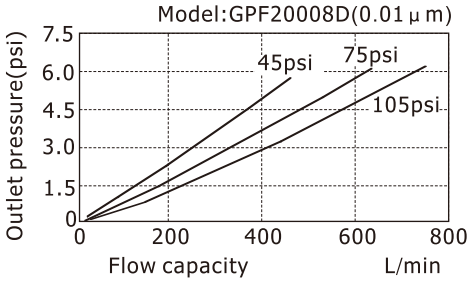


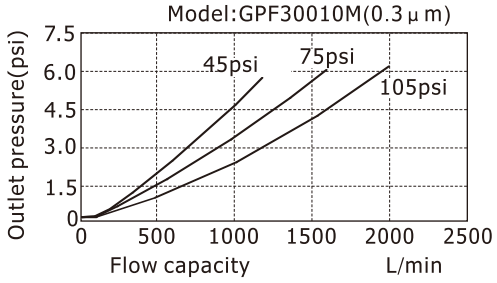
Metallic bowl

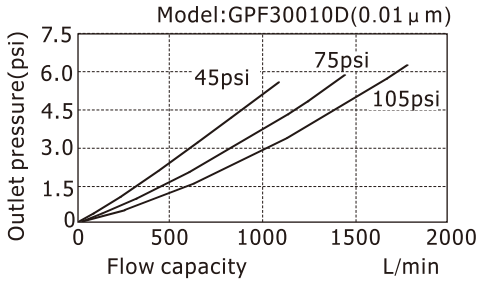
No.	Item
1	Body
2	O-ring
3	Meter cover
4	Drain bowl
5	Filter core
6	Liquid meter inside cover
7	Liquid meter seal
8	Liquid meter cover
9	Drain connection

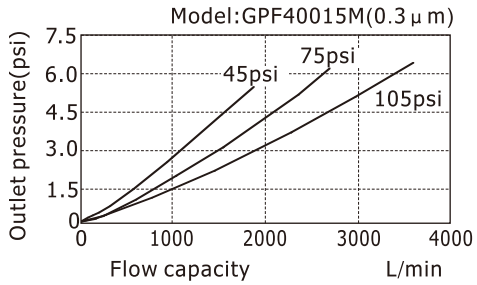
Flow chart

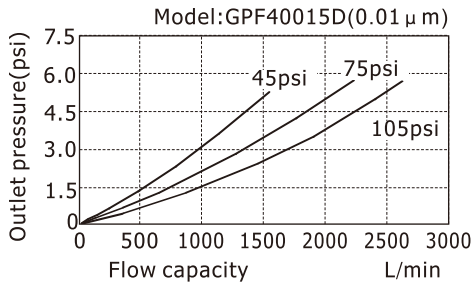








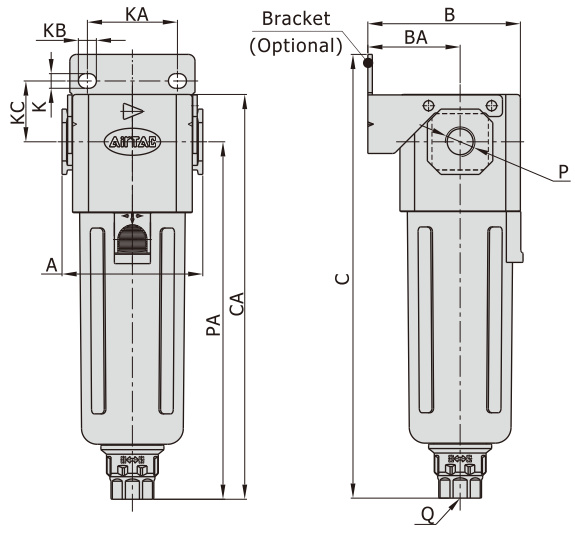




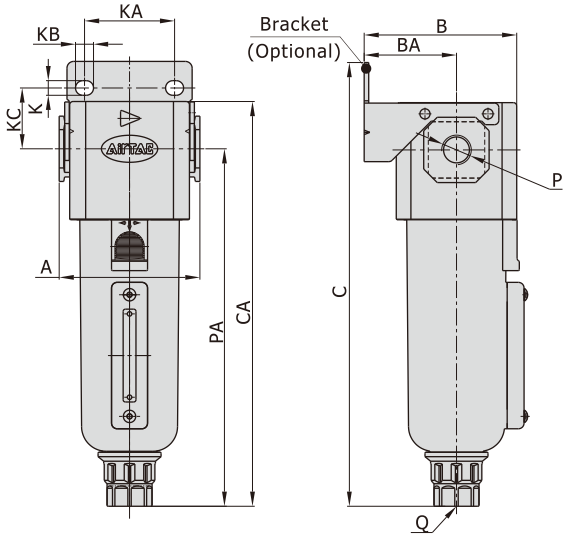
GPF Series Oil mist filter

Dimensions

PC bowl+Metallic bowl guard



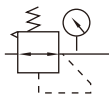
Metallic bowl



[Unit: mm]

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	67.8	41	197	179	6.5	40	8	27	1/4"	158	G1/4
GPF300(C/N)10	62.5	67.8	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



Ordering code

GPR300 08 H □ □ T

1 2 3 4 5 6

①Model	②Port size	③Regulating pressure range
GPR200: 00 Series Precision Regulator	06: 1/8"	L: 0.005~0.2MPa M: 0.01~0.4MPa H: 0.01~0.8MPa
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 M: 0.01~0.4MPa H: 0.01~0.8MPa

④Accessories	⑤Pressure gauge	⑥Thread type [Note1]
Blank: Bracket J: No bracket	Blank: With pressure gauge N: Without pressure gauge	T: NPT(Scale:bar/psi)

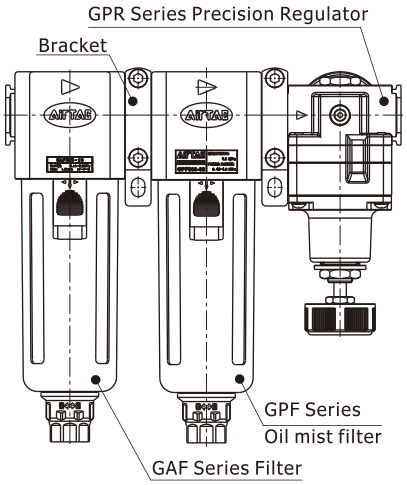
[Note1] Please consult us for special correspondence.

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				
Operating pressure	Lower pressure	0.005~0.2MPa		0.01~0.2MPa		
	Medium pressure	1.5~58psi(0.01~0.4MPa)				
	High pressure	1.5~116psi(0.01~0.8MPa)				
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] NPT thread is available.

Combination example:



Product feature

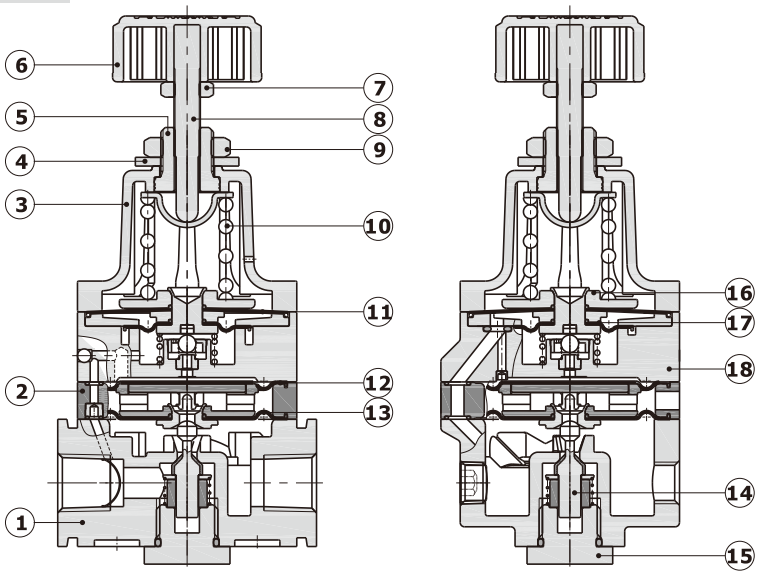
1. High pressure regulating accuracy and rapid-response.
2. Good pressure and flow chart.
3. Easy installation, it can be installed independently by bracket or directly with existing filter combination components of module type[Note1].
4. In addition to high pressure type, the type of medium pressure and lower pressure can be selected.

[Note1] Condensate or dust, etc. in the supply pressure line can cause malfunctions. In addition to an air filter(AirTAC GAF series),please use a mist separator (AirTAC GPF series) depending on the conditions.

GPR Series Precision Regulator

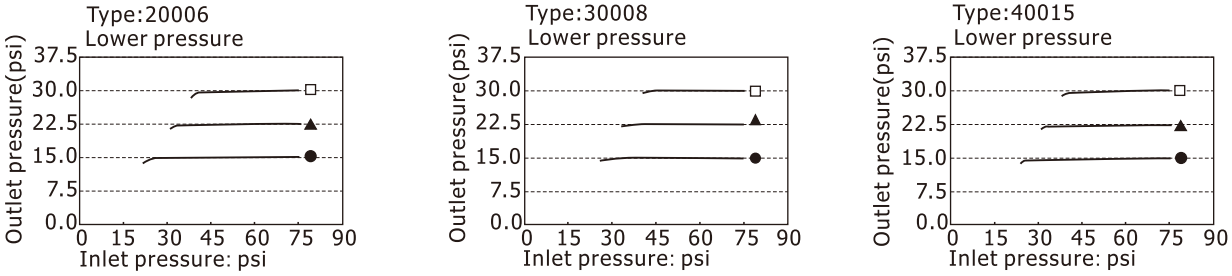
Inner structure

GPR300

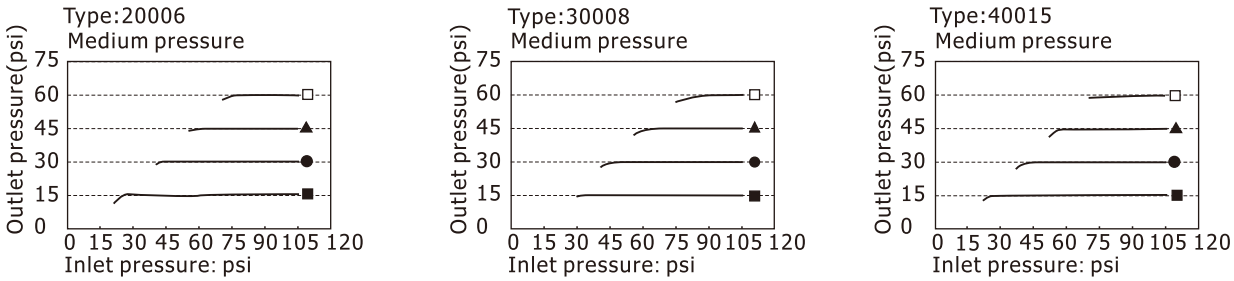


No.	Item
1	Regulator body
2	Pilot body
3	Regulator seat
4	Bracket gasket
5	Adjusting nut
6	Regulator knob
7	Nut
8	Regulator spindle
9	Nut
10	Spring
11	Pilot upper diaphragm
12	Regulator upper diaphragm
13	Regulator lower diaphragm
14	Main valve
15	Bonnet
16	Pilot diaphragm upper hard core
17	Pilot lower diaphragm
18	Nozzle body

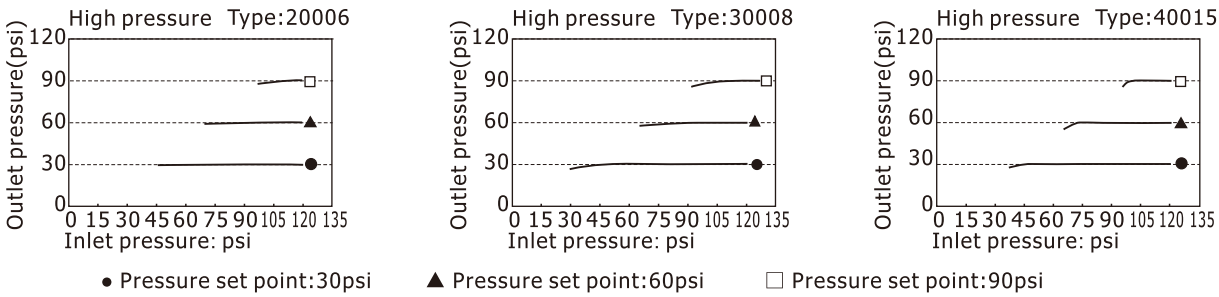
Pressure chart



● Pressure set point:15.0psi ▲ Pressure set point:22.5psi □ Pressure set point:30.0psi



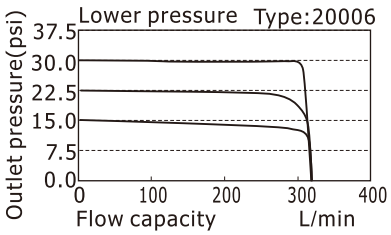
■ Pressure set point:15psi ● Pressure set point:30psi ▲ Pressure set point:45psi □ Pressure set point:60psi

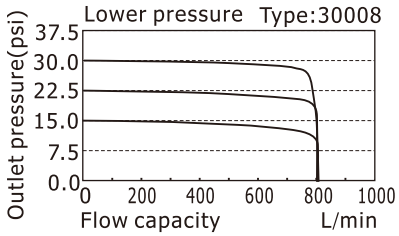


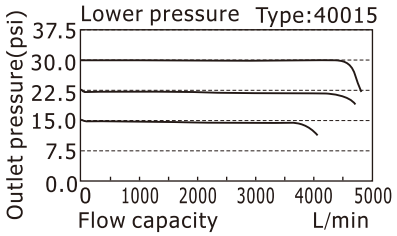
● Pressure set point:30psi ▲ Pressure set point:60psi □ Pressure set point:90psi

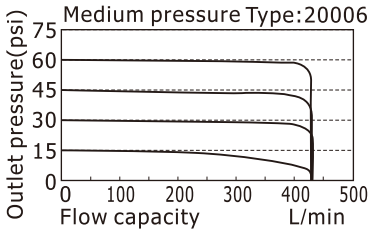
GPR Series Precision Regulator

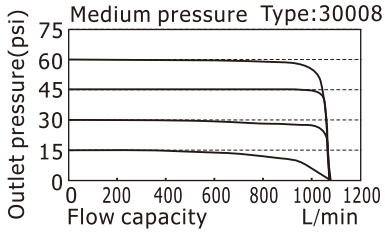
Flow chart

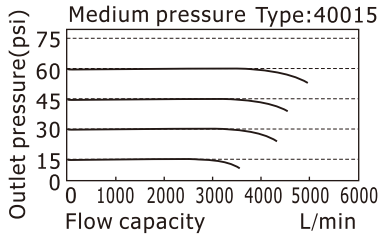


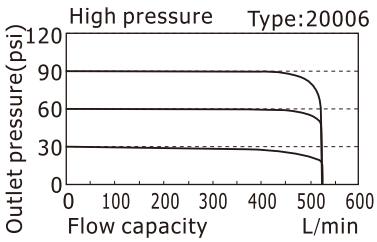


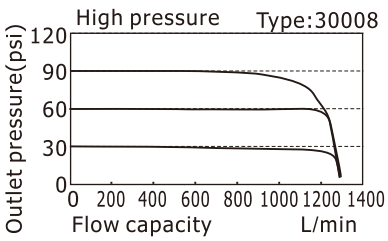


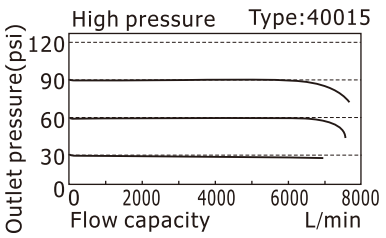




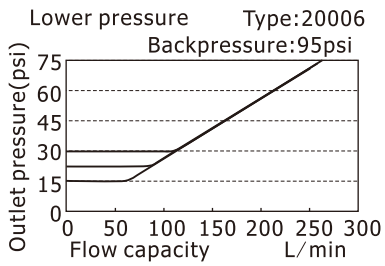


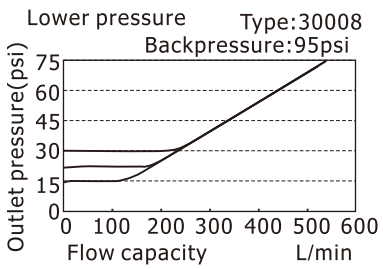


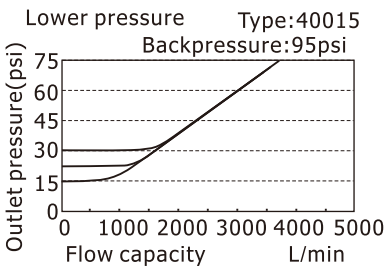


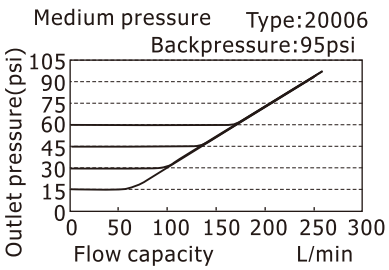


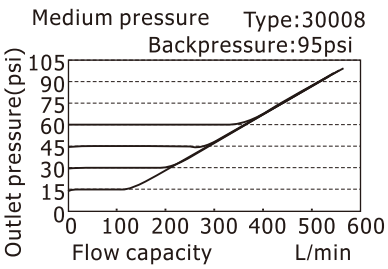
Overflow chart

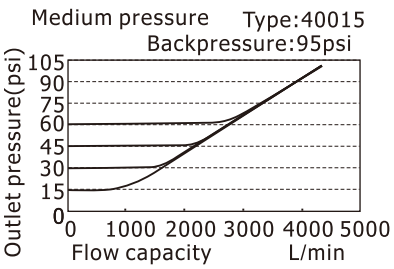


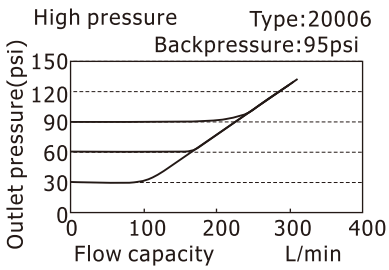


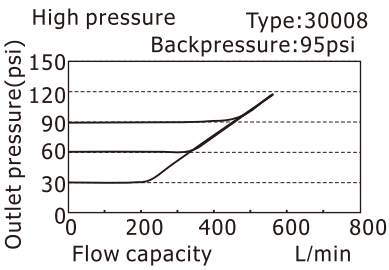


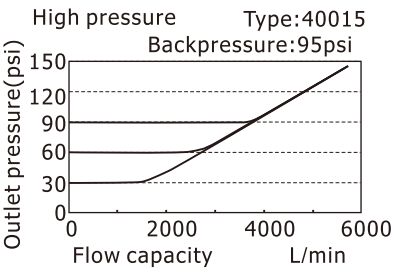








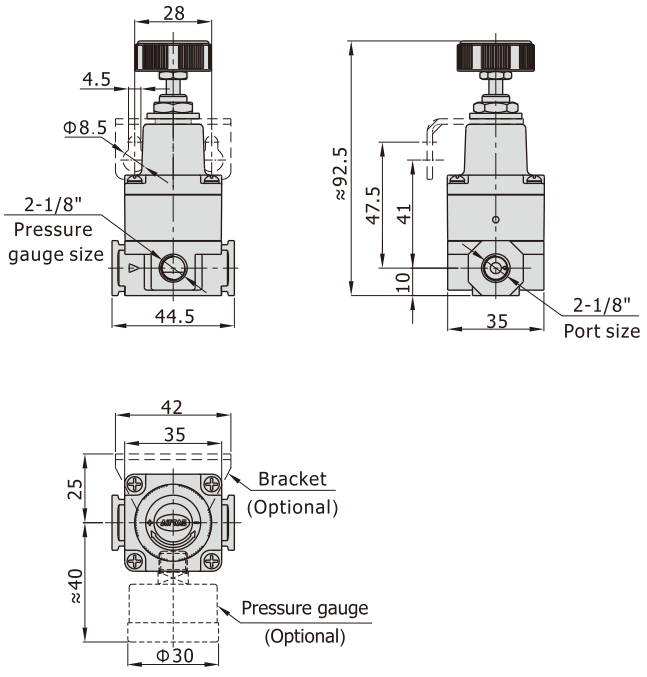




GPR Series Precision Regulator

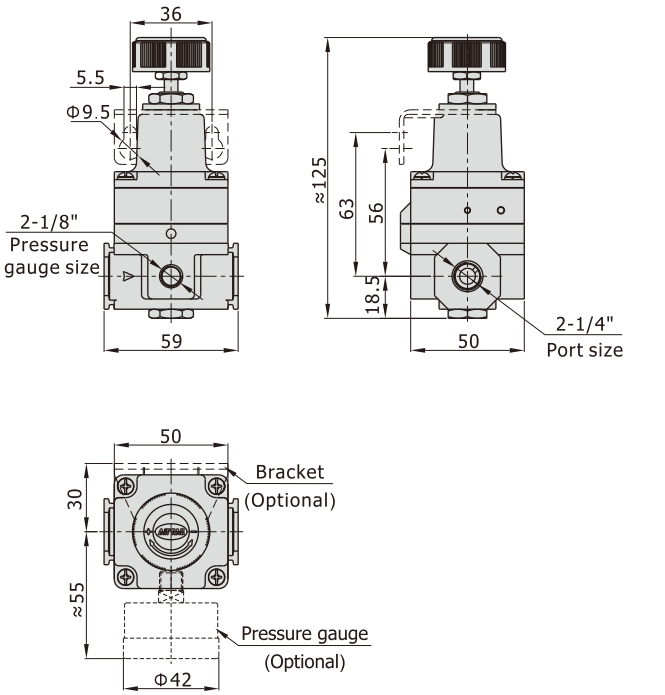
Dimensions

GPR200

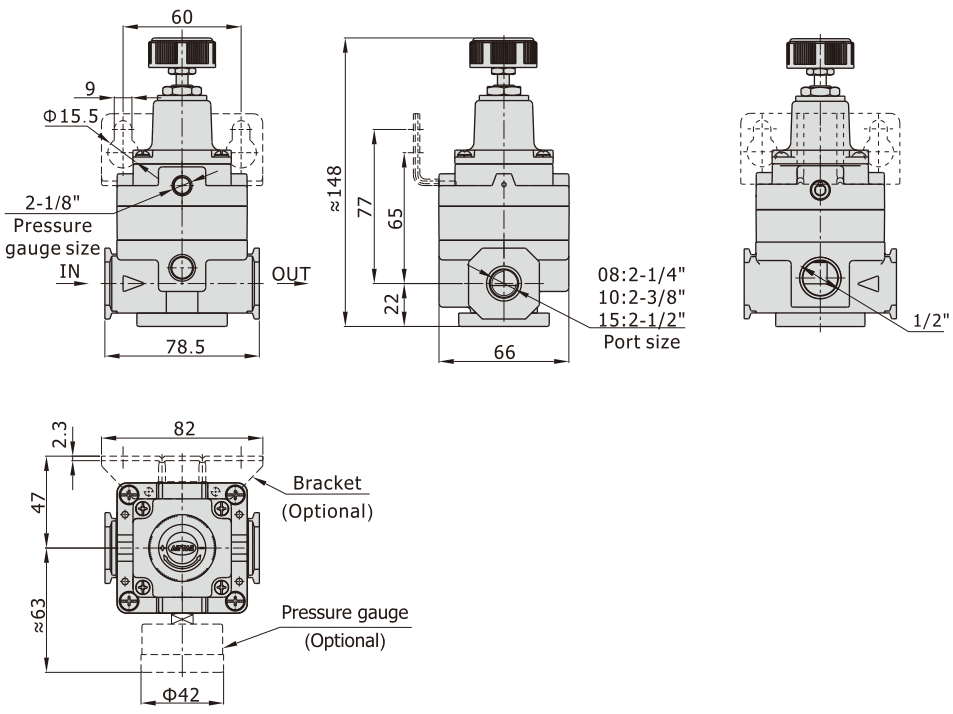


GPR300

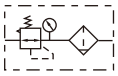
[Unit: mm]



GPR400



GPFR Series Precision Filter & Regulator



Ordering code

GPFR300 □ 10 □ S □ □ M T

1 2 3 4 5 6 7 8 9

①Model	②Material of bowl	③Port size	④Drain type	⑤Type code
GPFR200:GP200 Series Precision filter-regulator	Blank: PC N: Nylon C: Metal	06: 1/8" 08: 1/4"	Blank: Semi-auto drain A: Automatic drain	S: Standard L: Lower pressure [Note1]
GPFR300:GP300 Series Precision filter-regulator		08: 1/4" 10: 3/8"		
GPFR400:GP400 Series Precision filter-regulator		10: 3/8" 15: 1/2"		

⑥Accessories	⑦Pressure gauge	⑧Filtering grade	⑨Thread type
Blank: Bracket J: No bracket	Blank: Circular with clip N: No pressure gauge	M: 0.3μm D: 0.01μm	T: NPT(Scale: bar/psi)

[Note1] The maximum work pressure of lower pressure type is 58psi(0.4MPa).

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		0.3μm or 0.01μm					
Pressure range		20~130psi(0.15~0.9MPa)					
Max. pressure		145psi(1.0MPa)					
Proof pressure		215psi(1.5MPa)					
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	

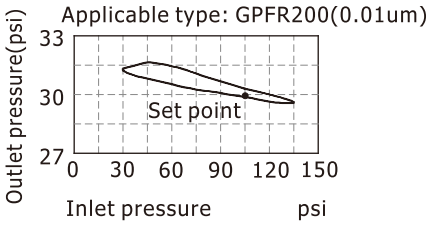
[Note1] NPT thread is available.

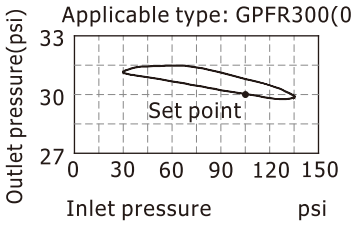
Product feature

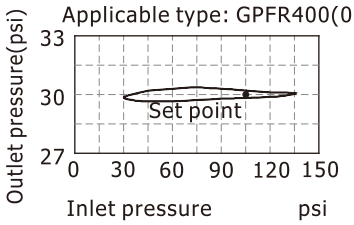
1. Circular square pressure gauge which with clip and magnifier is used to save installation space.
2. The pressed-in self-locking mechanism can prevent the abnormal movement of the set pressure caused by external interfere.
3. Balanced design is adopted for the pressure adjustment mechanism.
4. Unique 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.

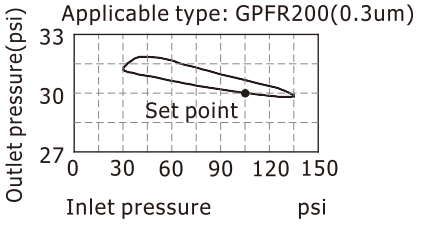
GPFR Series Precision Filter & Regulator

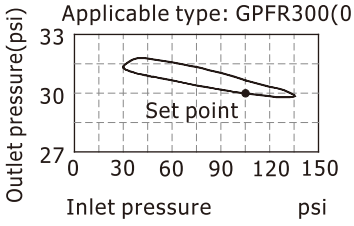
Pressure chart

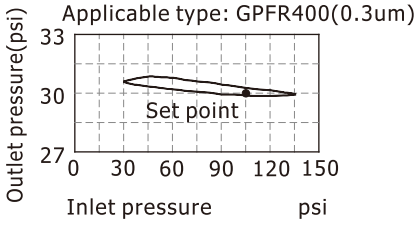




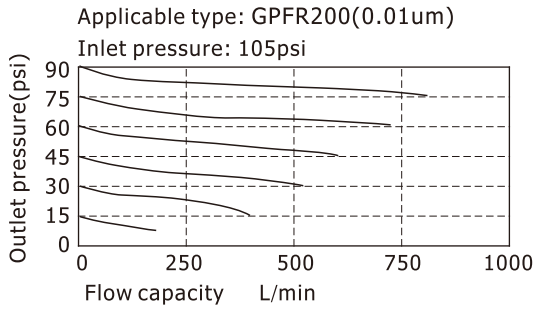


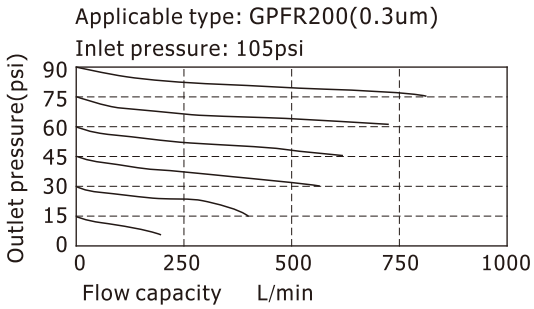


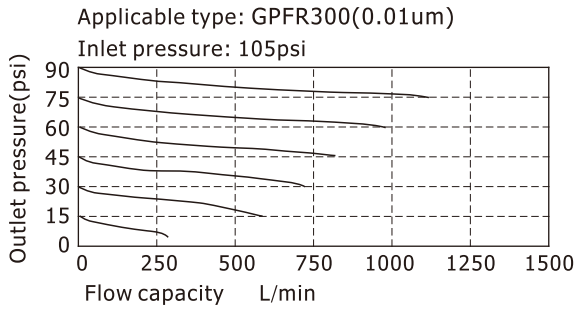


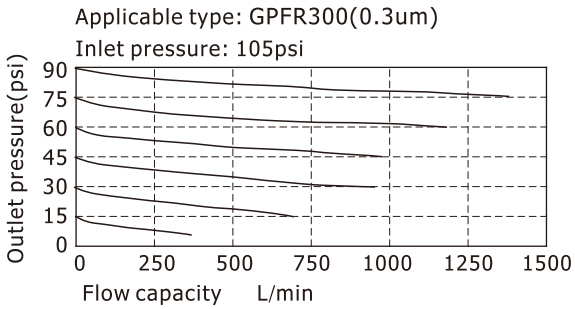


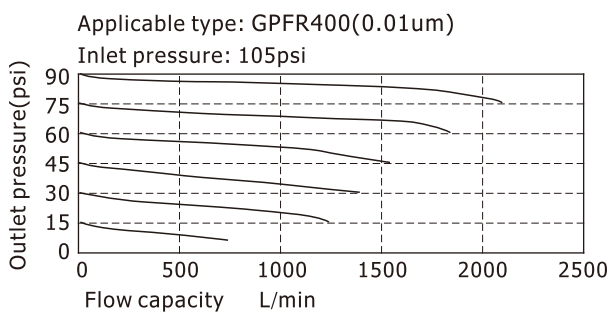
Flow chart

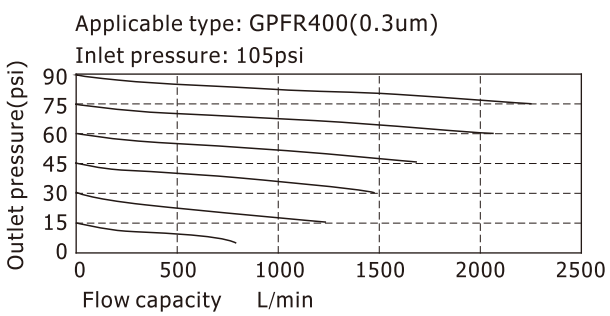








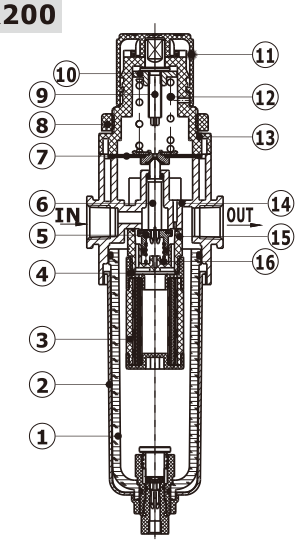




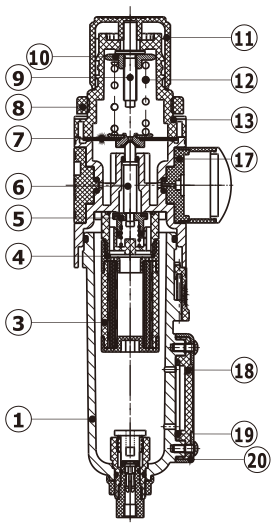
GPFR Series Precision Filter & Regulator

Inner structure

GPFR200



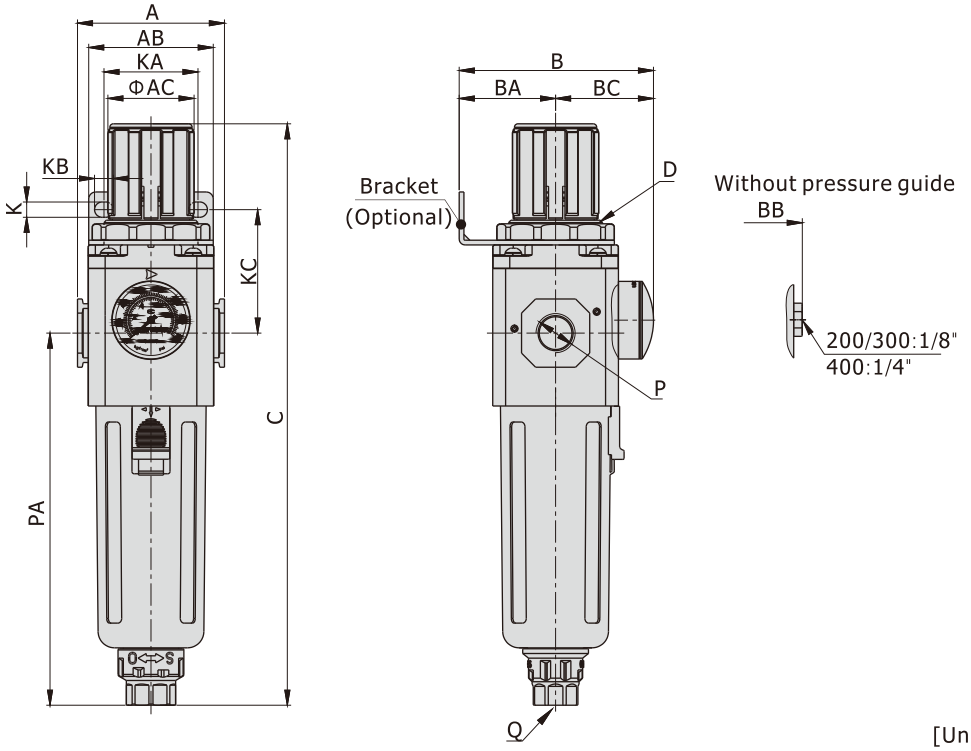
PC bowl+Metallic bowl guard



Metallic bowl

No.	Item
1	Drain bowl
2	Meter cover
3	Filter core
4	Gasket
5	Adjusting plug
6	Adjusting spool
7	Diaphragm
8	Fixation ring cap
9	Adjusting spindle
10	Regulator nut
11	Pressure knob
12	Spring
13	Adjusting seat
14	Body of filter-regulator
15	Gas distribution
16	Spring
17	Gauge
18	Liquid meter inside cover
19	Liquid meter seal
20	Liquid meter cover

Dimensions



[Unit: mm]

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	55.5	39	192.5	M33x1.5	5.4	34	15.4	52	1/8"	120	M5X0.8
GPFR200-08	52.5	55	31	69	30	55.5	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	71.5	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	71.5	41.5	247	M40x1.5	6.5	40	8	52.5	3/8"	158	G1/4
GPFR400-10	80	72	52	99	50	88	49	285.5	M55x2.0	8.5	55	11	57	3/8"	177.5	G1/4
GPFR400-15	80	72	52	99	50	88	49	285.5	M55x2.0	8.5	55	11	57	1/2"	177.5	G1/4

SDR Series regulator

Ordering code

SDR	200	08	L	□	□	2	T
①	②	③	④	⑤	⑥	⑦	⑧

①Model	②Series code	③Port size	④Type code
SDR: SDR series regulator	100: 100 series	M5: M5 06: 1/8"	Blank: Standard L: Lower pressure
	200: 200 series	06: 1/8" 08: 1/4"	

⑤Accessories	⑥Pressure gauge	⑦Scale	⑧Thread type
Blank: Bracket J: No bracket	Blank: Pressure gauge N: No pressure gauge	2: psi	T: NPT(Scale: psi)

Specification

Model	SDR100M5	SDR10006	SDR20006	SDR20008	SDR100LM5	SDR100L06	SDR200L06	SDR200L08
Fluid	Air							
Pressure range	7~130psi(0.05~0.9MPa)				4~57psi(0.03~0.4MPa)			
Max. pressure	145psi(1.0MPa)							
Proof pressure	215psi(1.5MPa)							
Temperature range	-20~70℃							
Port size [Note1]	M5	1/8"		1/4"	M5	1/8"		1/4"

[Note1] NPT thread is available.

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.

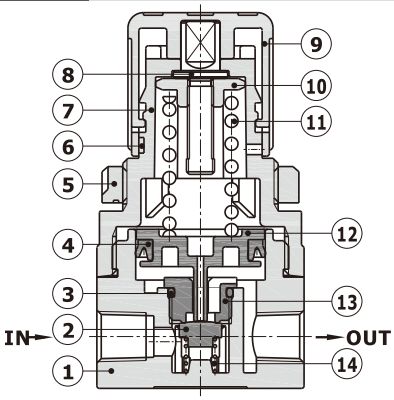
Attentions of application

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.

SDR Series regulator

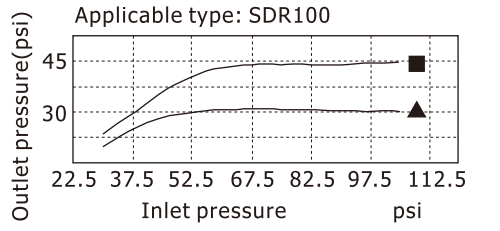
Inner structure



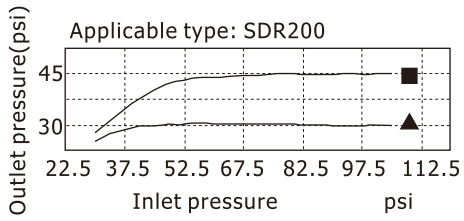
No.	Item	No.	Item
1	Body	8	Adjusting pillar
2	Needle gasket	9	Adjusting button
3	O-ring	10	Adjusting nut
4	O-ring	11	Adjusting spring
5	Fixed ring	12	Piston rode
6	Identification ring	13	Adjusting seat
7	Adjusting seat	14	Return spring

Pressure and feature of flow

Pressure chart

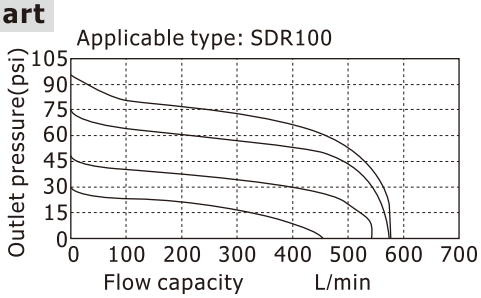


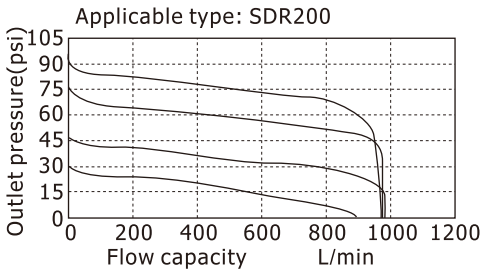
▲Inlet pressure 30psi ■Inlet pressure 45psi



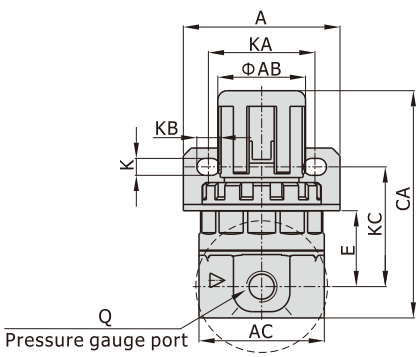
▲Inlet pressure 30psi ■Inlet pressure 45psi

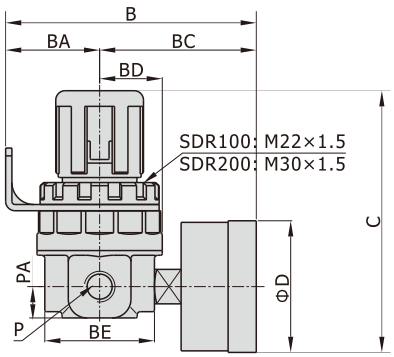
Flow chart





Dimensions





[Unit: mm]

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.

DPS Series digital display pressure switch

Ordering code

DPS N1 □–01 020 T

1 2 3 4 5 6

①Model	②Output type	③Electrical entry	④Measurement range	⑤Lead wire length	⑥Piping specifications
DPS: Digital Display Pressure Switch	N1: NPN P1: PNP	Space: Plug-in connector B: Pre-wired type [Note]	01: -15psi~15psi 10: -15psi~150psi	020: Length 2m 030: Length 3m 050: Length 5m C08:150mm with M8 plug connector[Note2]	T: Male thread NPT1/8, female thread: 10-32UNF

[Note1] The safety grade of pre-wired type is IP63.
[Note2] There is no plug-in connector type for C08.
The sockets of C08 need additional order.
Please check on the right.

Ordering code of Socket F - DPS C08 4 020

Catagory code	F: Accessory
Specification code	DPS: Digital Display Pressure Switch
Socket type	C08:M8 socket
Wire type	4: 4-wire type
Wire length	020: 2 meters/030:3meters/050:5meters

Specification

Input power	**Voltage**	**12~24 VDC ± 10% Ripple(p-p)＜10%**
Pressure range	Fluid	Non-corrosive gas
	Measurement range	DPSN1(P1)-01：−15psi~15psi
		DPSN1(P1)-10：−15psi~150psi
	Withstand pressure	DPSN1(P1)-01：30psi
		DPSN1(P1)-10：225psi
	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)

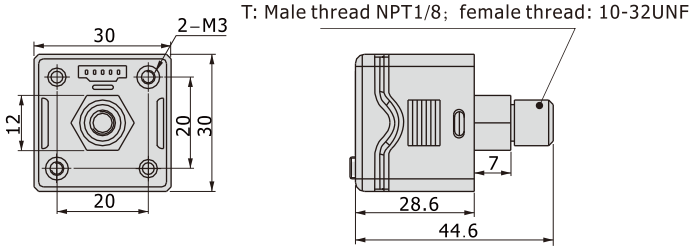
DPS Series digital display pressure switch

Dimensions

[Unit: mm]

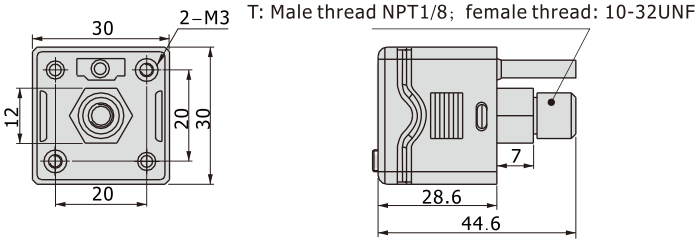
Plug-in connector

Piping specifications:
T: Male thread NPT1/8；female thread: 10-32UNF

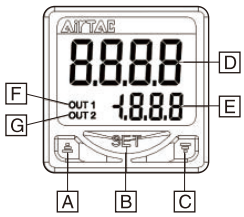


Pre-wired type

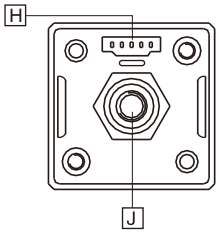
Piping specifications:
T: Male thread NPT1/8；female thread: 10-32UNF



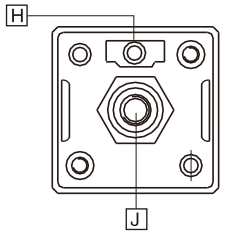
User interface Instruction



Terminal



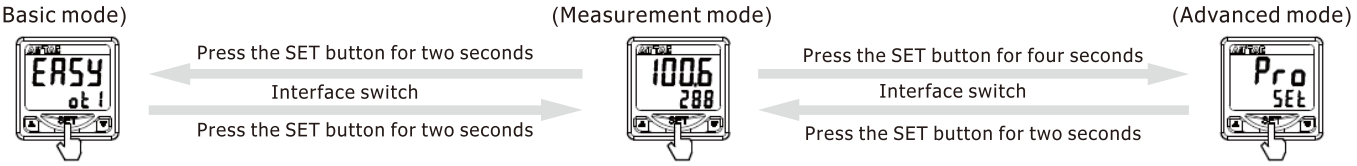
Grommet



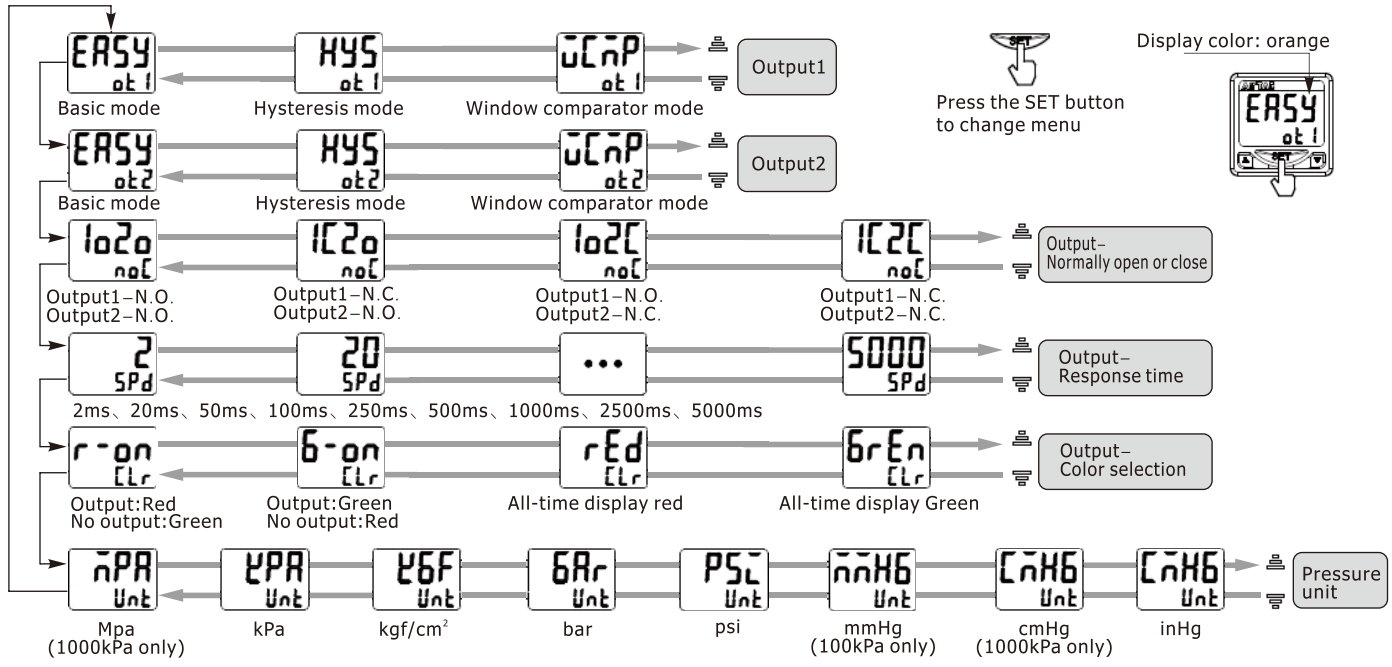
No.	Item
A	Value up button
B	Setting button
C	Value Down button
D	Pressure display area
E	Set pressure display area
F	Output 1 indicator light
G	Output 2 indicator light
H	Power and signal connector
J	Pressure input

User Interface Instructions

1. Mode switch

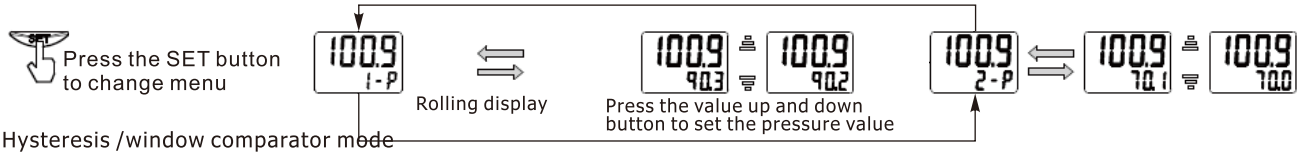


2. Basic mode

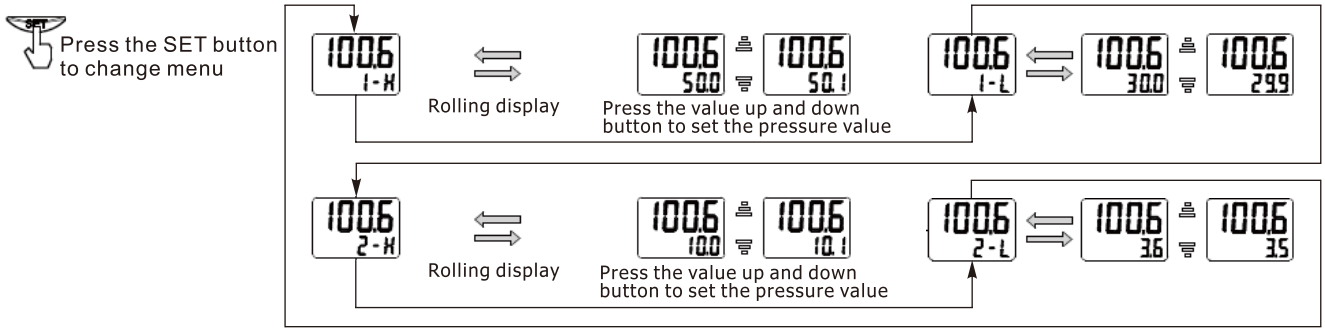


DPS Series digital display pressure switch

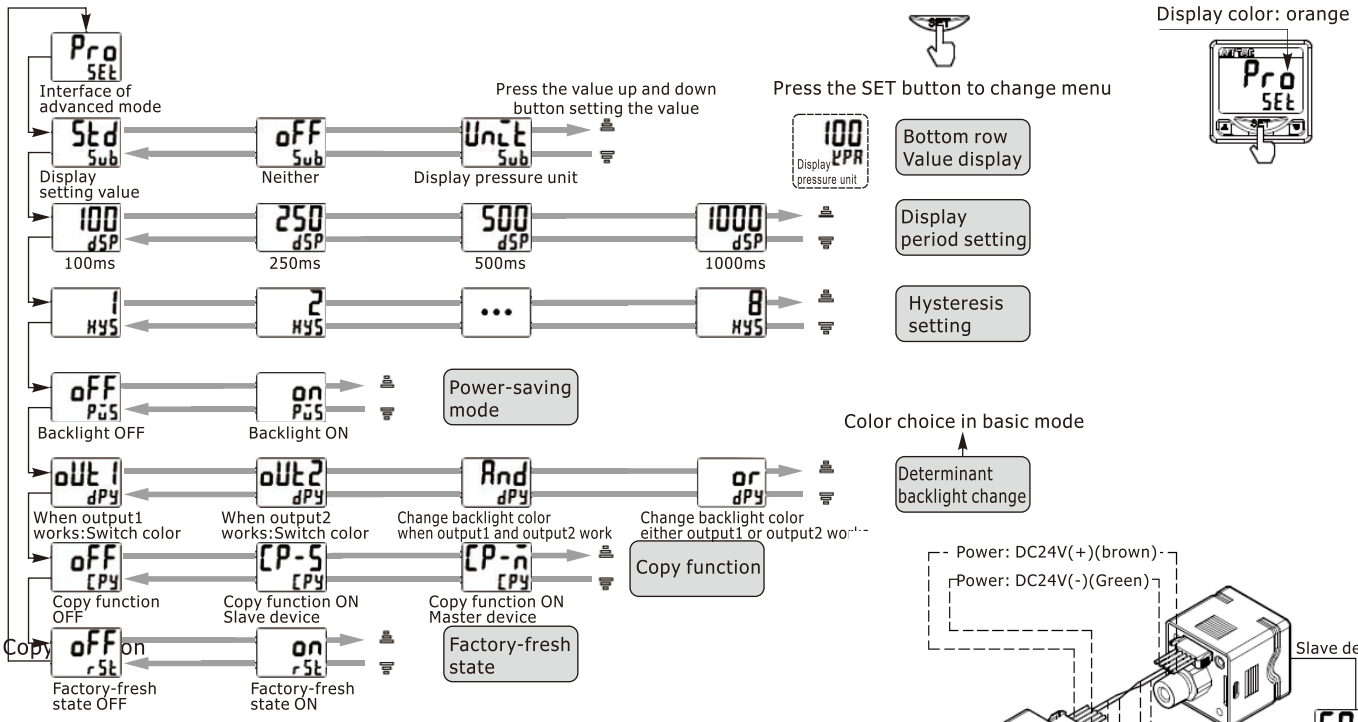
3. Base mode pressure setting



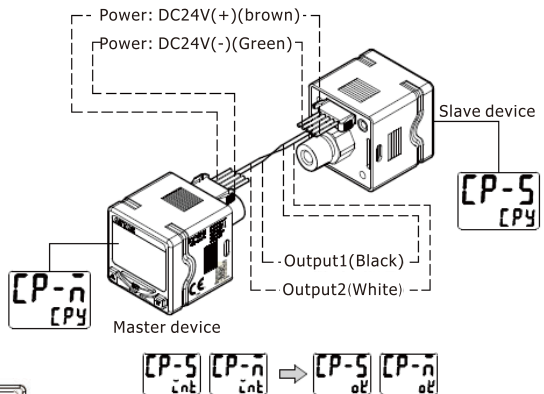
4. Hysteresis /window comparator mode



5. Interface of advanced mode



6. Copy function



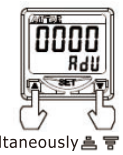
6.1. Hardware:Connect the second pin of master device with the third pin of slave device, then power on after connecting

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

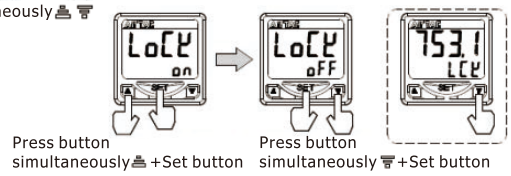


8. Key lock Function

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".

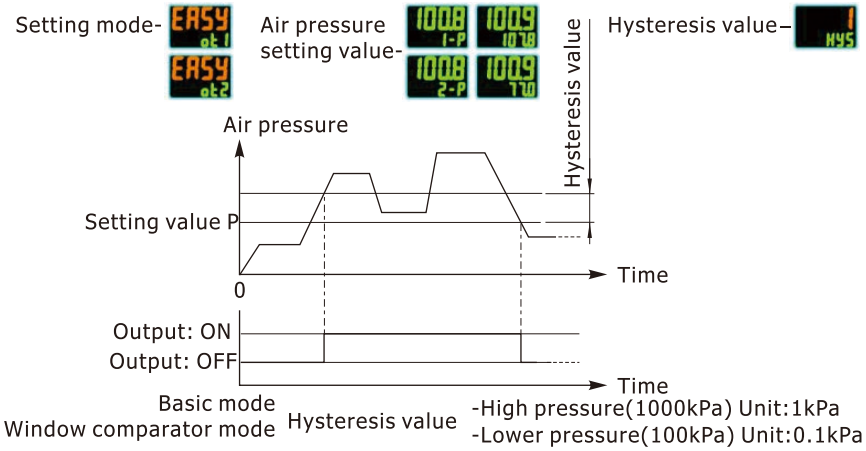
8.3. Press any button will display "LCK" in lock on mode.



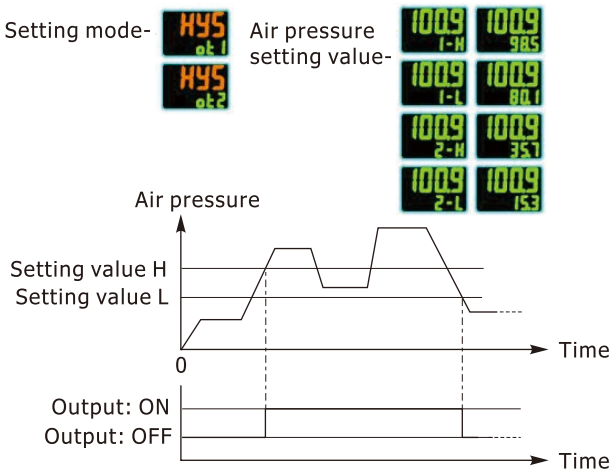
DPS Series digital display pressure switch

Output mode

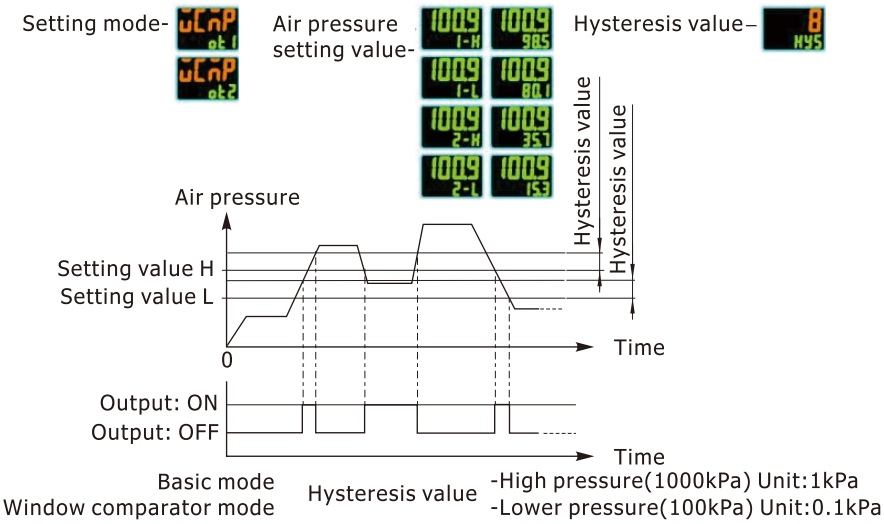
1. Basic mode: Air pressure setting value 'P'. When air pressure large then (Setting value P+Hysteresis value), the output is 'NO'. When air pressure less than setting value 'P' , the output is 'OFF'.



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'.



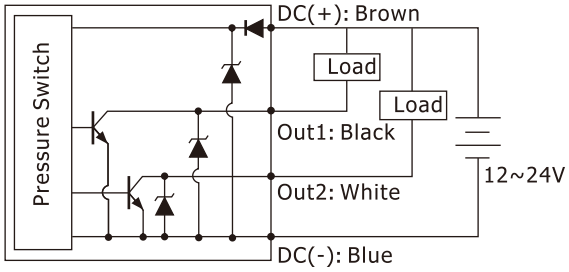
3. Window comparator mode: Air pressure setting value 'H/L'. When air pressure large then value 'H' or less then value 'L' , the output is 'OFF'. When air pressure large then value 'L' and less than value 'H' , the output is 'ON'.



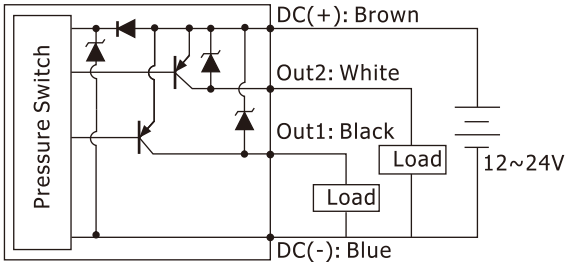
DPS Series digital display pressure switch

Connection Example

NPN Output



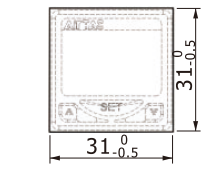
PNP Output



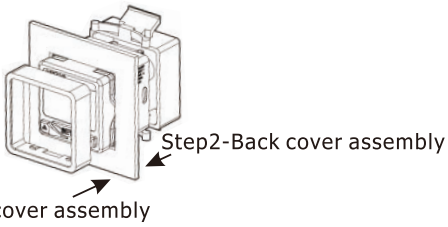
Dimensions/Assembly Instruction

Panel mount adapter + Front protective cover

Order the Install accessories (Ordering code: F-DPSEB)

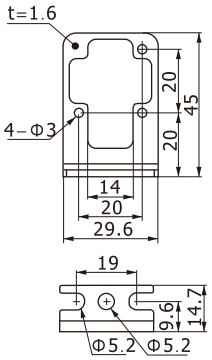


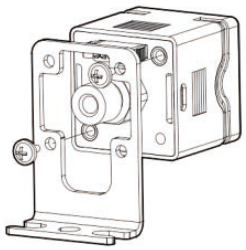
Panel frame dimension



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.

DPH Series digital display pressure sensor(Analog output)

Ordering code

DPH N2□-01 020 T

1 2 3 4 5 6

①Model	②Output type	③Electrical entry
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 type B: Grommet type [Note]

④Measurement range	⑤Lead wire length	⑥Piping specifications
01: -15psi~15psi 10: -15psi~150psi	020: Length 2m 030: Length 3m 050: Length 5m	T: NPT1/8 with 10-32UNF female thread

[Note] The safety grade of grommet type is IP63.

Specification

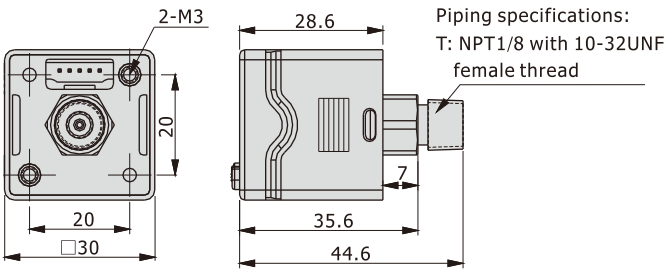
Model	DPHN2(3)(B)-01 / DPHP2(3)(B)-01 / DPHN2(3)(B)-10 / DPHP2(3)(B)-10	
Input power	Voltage	12~24 VDC ± 10% Ripple(p-p)＜10%
	Current Consumption	40mA or less
Pressure range	Fluid	Non-corrosive gas
	Measurement range	DPHN2(3)(B)-01/DPHP2(3)(B)-01：−15psi~15psi
		DPHN2(3)(B)-01/DPHP2(3)(B)-10：−15psi~150psi
	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)

DPH Series digital display pressure sensor(Analog output)

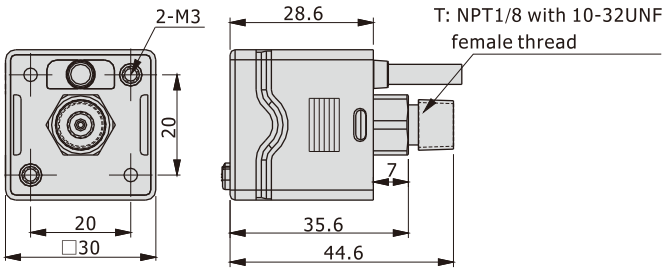
Dimensions

[Unit: mm]

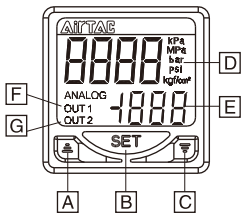
Terminal



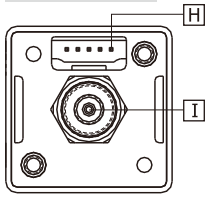
Grommet



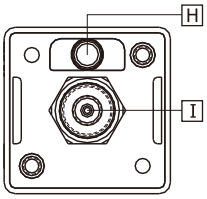
User interface Instruction

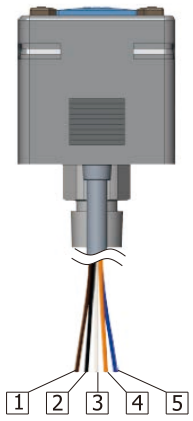


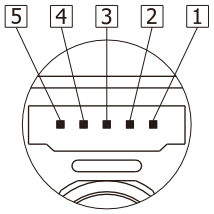
Terminal



Grommet



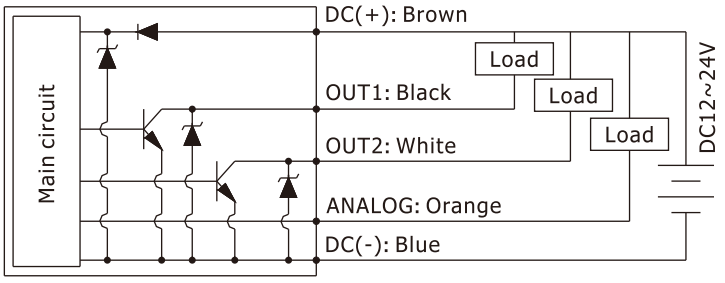




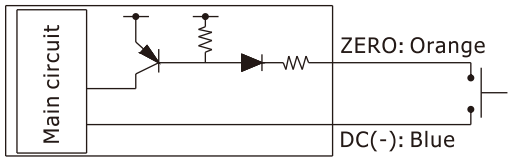
No.	Item
A	Value up button
B	Setting button
C	Value Down button
D	Pressure display area
E	Set pressure display area
F	Output 1 indicator light
G	Output 2 indicator light
H	Power and signal connector
I	Pressure input
1	DC(+) input (Brown)
2	OUT1 (Black)
3	OUT2 (White)
4	Analog/Zero (Orange)
5	DC(-) input (Blue)

Connection Example

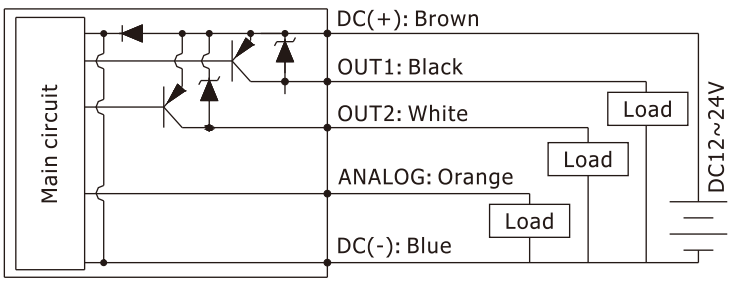
NPN Output



Zero-shift Input



PNP Output

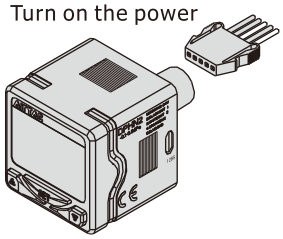


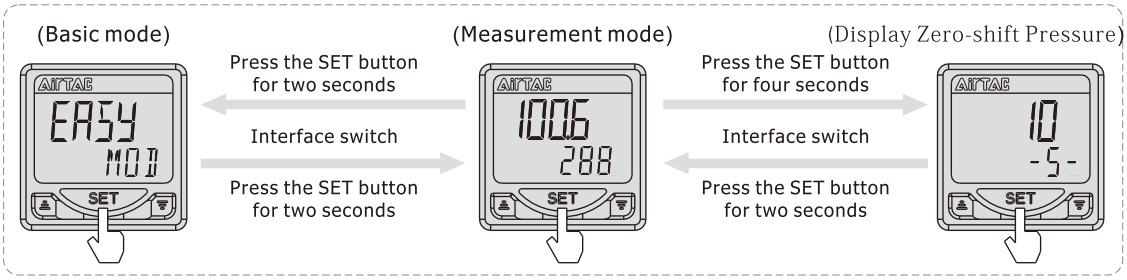
DPH Series digital display pressure sensor(Analog output)

User Interface Instructions

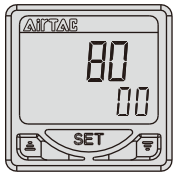
1. Mode switch

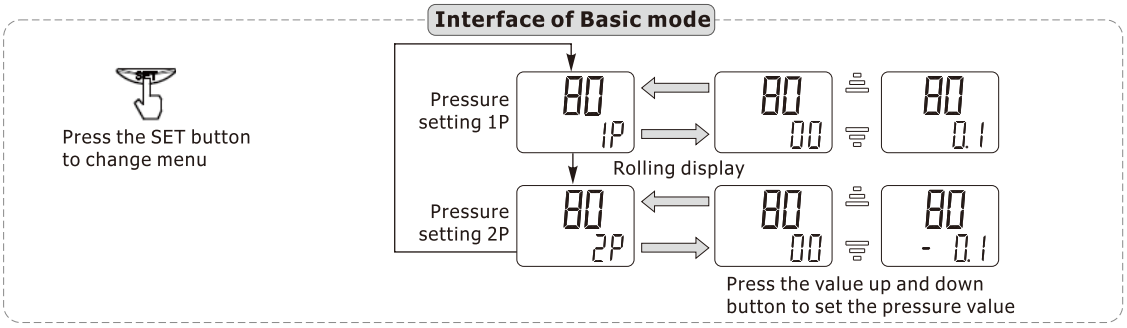
Install the connector
Turn on the power

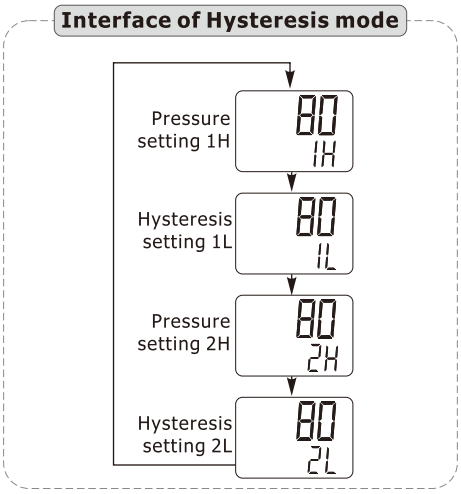


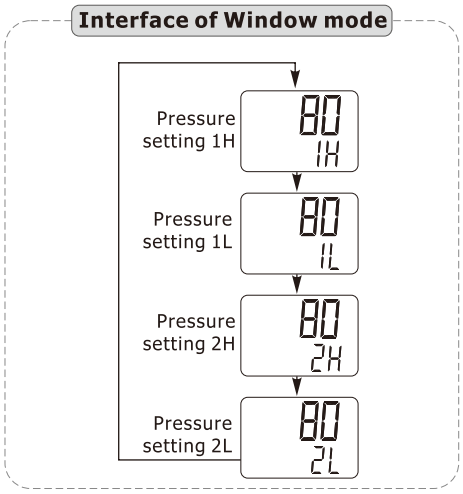


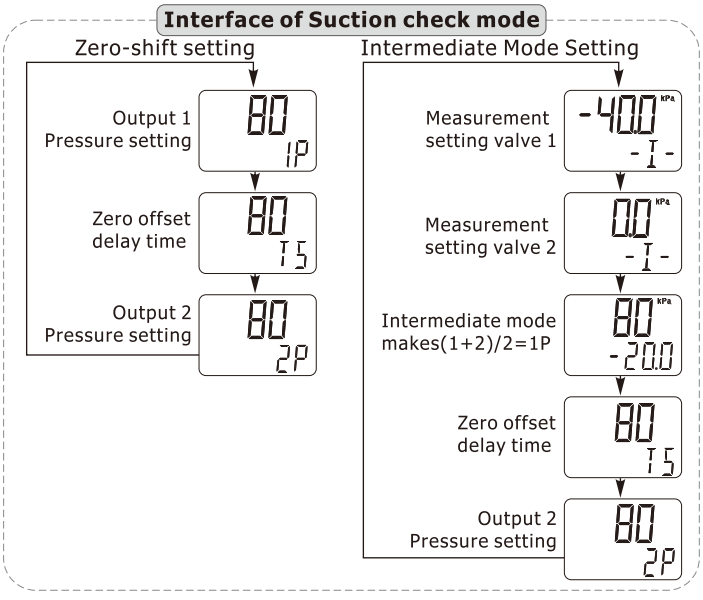
2. Measurement mode

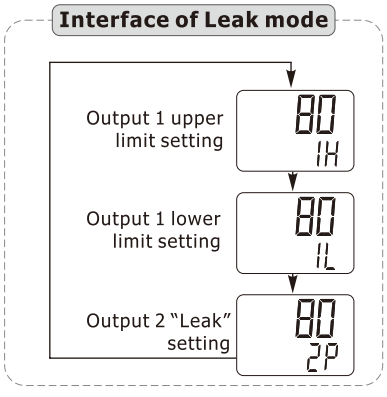






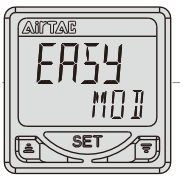






DPH Series digital display pressure sensor(Analog output)

3. Basic mode



Interface of Basic mode

Press the value up and down button setting the value

Measurement mode

Basic mode | Hysteresis mode | Window comparator mode | Suction check mode | Leakage mode

Analog voltage output/Zero-shift input
(Displayed in Basic,Hysteresis,Window mode only)

Analog voltage output | Zero-shift input

Zero-shift input/Intermediate mode
(Displayed in Suction check mode only)

Zero-shift input | Intermediate mode

Output-N.O./N.C.

Output1-N.O. Output2-N.O. | Output1-N.C. Output2-N.O. | Output1-N.O. Output2-N.C. | Output1-N.C. Output2-N.C.

Output delay time

2ms | 20ms | 100ms | 500ms | 1s | 2s

Pressure unit

kPa | MPa | bar | psi | kgf/cm^2 | mmHg (100kPa only) | cmHg (1000kPa only) | inHg

Output color selection

Output: Red
No output: Green | Output: Green
No output: Red | All-time display red | All-time display green

Setting/Peak /Bottom hold

Setting | Peak hold | Bottom hold | Interactive display Peak/Bottom hold

Display period setting

100ms | 250ms | 500ms | 1000ms

Power saving mode
(without pressing more than 2 minutes)

Power saving mode off | Power saving mode on

Reply to the original setting

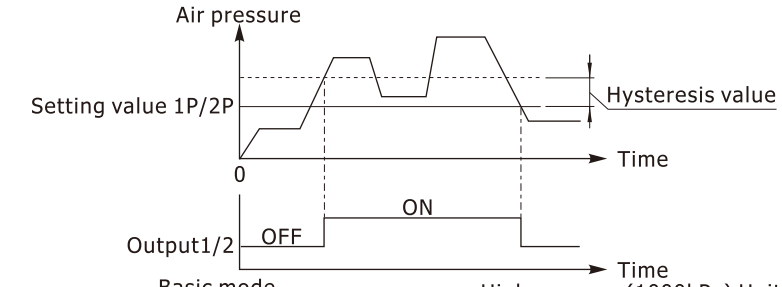
Don't reply to the original setting | Reply to the original setting

Back to measurement mode

DPH Series digital display pressure sensor(Analog output)

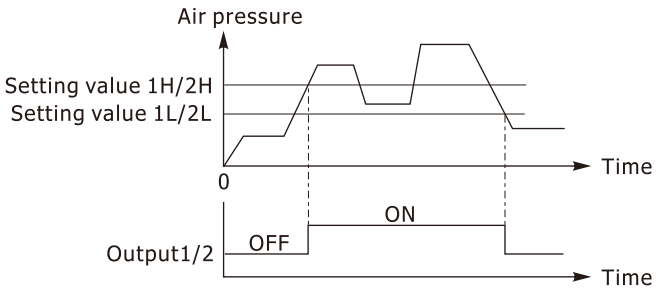
Output mode description

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.

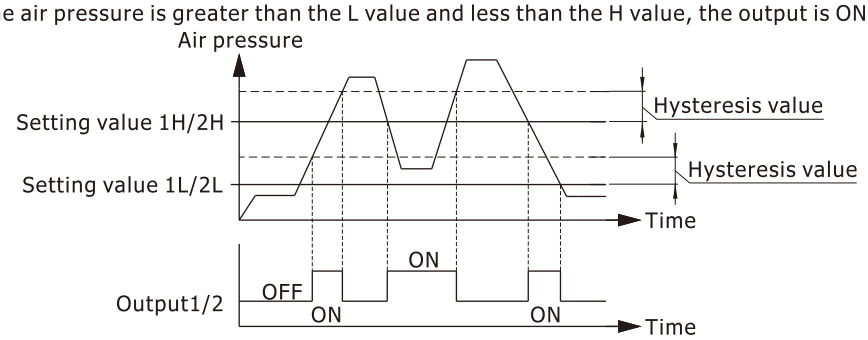


Basic mode
Window comparator mode Hysteresis value -High pressure(1000kPa) Unit:2kPa
-Lower pressure(100kPa) Unit:0.5kPa

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.



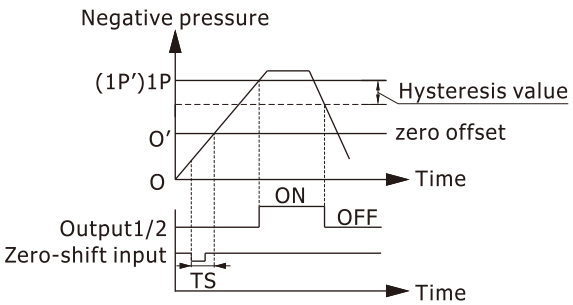
3. Window comparator mode: Set the pressure value H/L. When the pressure is greater than the H value or less than the L value, the output is OFF; when the air pressure is greater than the L value and less than the H value, the output is ON.

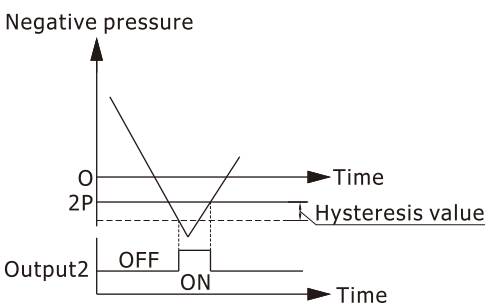


4. Suction check mode: Generally used for suction check detection applications. After the zero-shift signal is triggered, the zero-shift is completed after the TS time.

- 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.

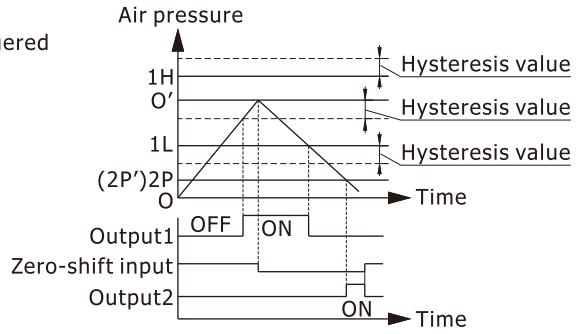
☐Output 1: Suction pressure detection,
In (N.O.) mode, the output 1 is ON when the measured pressure value is less than the setting value 1P (1P');
Without zero-shift input, output 1 ON/OFF judgment based on 1P, which is the suction pressure setting value relative to atmospheric pressure.
With a zero-shift 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)

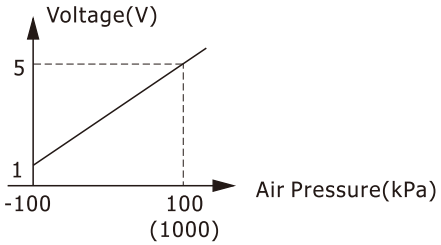
5. Leakage Mode: Generally used for leak detection applications.
The zero-shitf is completed after the zero-shift signal is triggered



◇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 ').

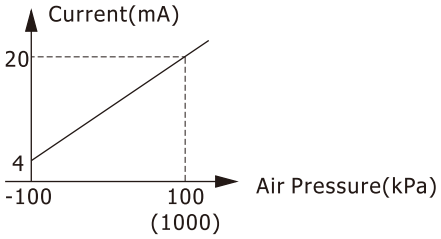
6. Analog output

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.

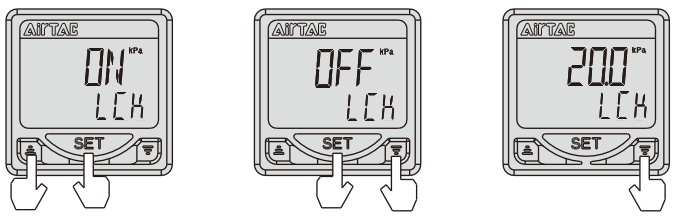
6.2) Analog Current Output (4-20mA)



◆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.

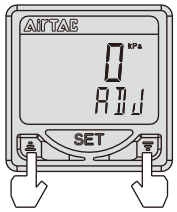
7. Key lock Function

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.



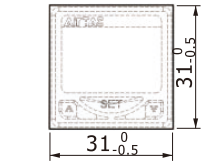
Press and simultaneously.

DPH Series digital display pressure sensor(Analog output)

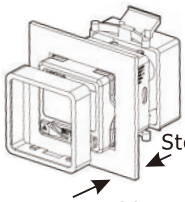
Dimensions/Assembly Instruction

Panel mount adapter + Front protective cover

Order the Install accessories (Ordering code: F-DPSEB)



Panel frame dimension

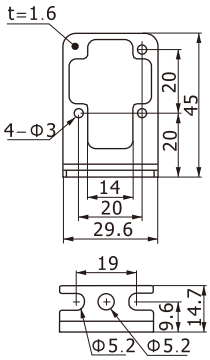


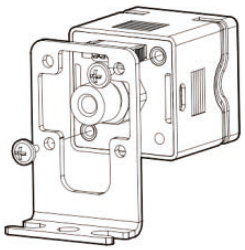
Step2-Back cover assembly

Step1-Front cover assembly

Bracket

Order the Install accessories (Ordering code: F-DPSLB)

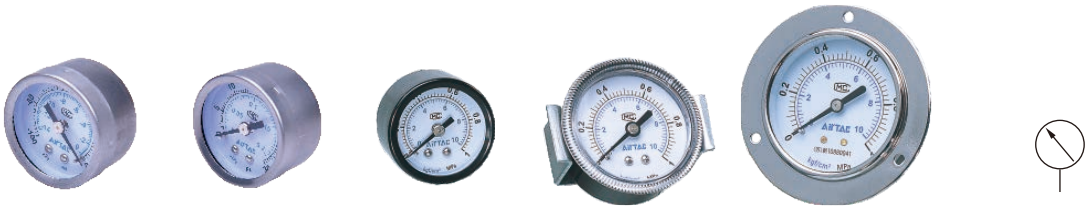




Notes

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



Ordering code

F-G S 40 10 P

1 2 3 4 5 6

① Accessories code	② Model	③Mount Type Code
F: Accessories	G: Pressure gause	S: Standard Mount F: Flange Mount U: Pannel Mount

④Dial diameter	⑤Max.pressure scale	⑥Scale and thread type
30: OD 30mm 40: OD 40mm 50: OD 50mm 60: OD 60mm	04: 60psi 10: 150psi	P: psi(NPT)

F-G P 40 10 T

1 2 3 4 5 6

① Accessories code	② Model
F: Accessories	G: Pressure gause

③Mount Type Code	④Dial diameter	⑤Max.pressure scale	⑥Scale and thread type
P: Stainless Steel Shell	30: OD 30mm 40: OD 40mm	02: 30psi 04: 60psi 10: 150psi	T: bar&psi(NPT)
V: Vacuum Type	40: OD 40mm	10: -0.15psi	T: kPa&psi(NPT)

Specification

Model	GS40, GF40,GU40	GS50, GF50,GU50	GF60,GU60
Fluid	Air		
Port size	1/8"	1/4"	1/4"
Temperature range	-20~70℃		
Accuracy grade	2.5		
The pressure range of units and instructions	0~140psi(Standard type); 0~60psi(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	-20~70℃		
Accuracy grade	2.5		
The pressure range of units and instructions	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		

GS/GF/GU/GP/GV Series pressure gauge

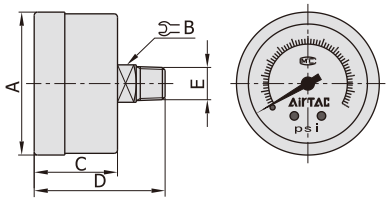
Product feature

1. It has sensitive reaction and can work under low pressure.
2. The displayed words in the dial are clear.
3. There are several installation ways and installing accessories to be selected.
4. Various dimensions of screw thread are available.

Dimensions

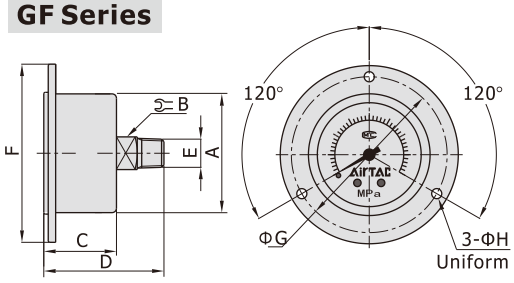
[Unit: mm]

GS Series



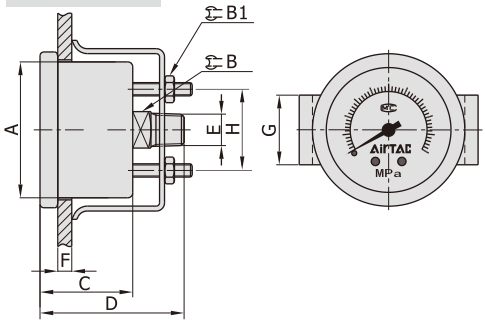
Model	A	B	C	D	E
GS-30	33	11	21	31	1/16"
GS-40	42	11	24.5	38.5	1/8"
GS-50	52	14	26.5	44.5	1/4"

GF Series



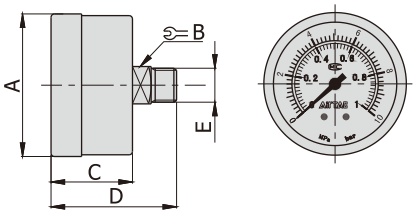
Model	A	B	C	D	E	F	G	H
GF-40	42	11	21	37	1/8"	60	52.5	3.4
GF-50	52	14	26	47	1/4"	71	62	4.4
GF-60	62	14	25	46	1/4"	82	71.5	4.4

GU Series



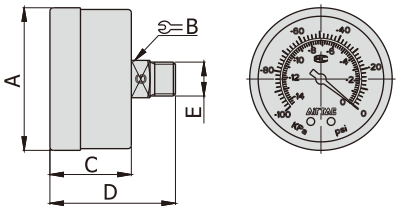
Model	A	B	B1	C	D	E	F(max)	G	H
GU-40	42	11	7	28	44	1/8"	5	21	24.5
GU-50	52	14	8	30.5	50	1/4"	7	24	35
GU-60	62	14	8	30.5	50	1/4"	7	25	35

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

Ordering code

GVF300 □ 10 □ W T

1 2 3 4 5 6

①Model	②Bowl material	③Port size	□ Accessories	⑤Filtering grade	□ Thread 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	Blank: PT G: G T: NPT
GVF300：GVF300 Series Vacuum Filter		08: 1/4" 10: 3/8" 15: 1/2"			

Specification

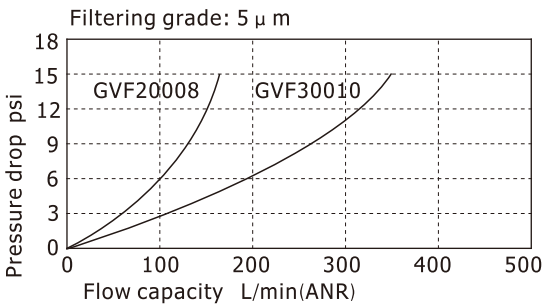
Model		GVF200-06	GVF200-08	GVF300-08	GVF300-10	GVF300-15
Fluid		Air				
Port size [Note1]		1/8"	1/4"	1/4"	3/8"	1/2"
Filtering grade		40μm or 5μm				
Pressure range		−100~0KPa				
Proof pressure		0.5MPa				
Temperature range		−5~70°C(Unfreeze)				
Capacity of drain bowl		25CC		45CC		
Material of bowl		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	

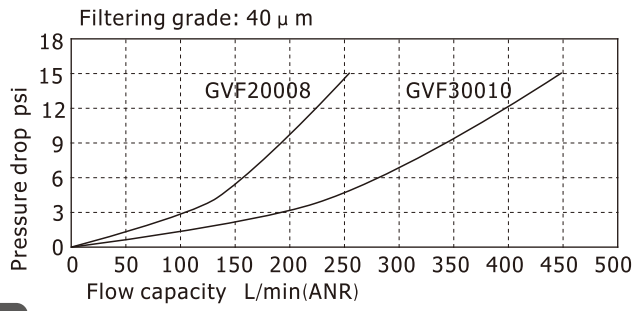
[Note1] NPT thread is available. [Note2] The flow capacity at the inlet pressure loss of 4 Kpa.

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.

Pressure chart

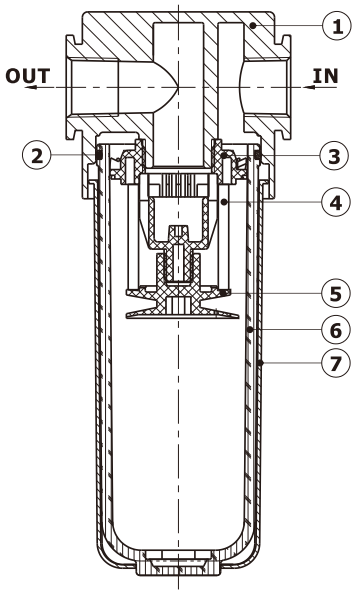




GVF Series

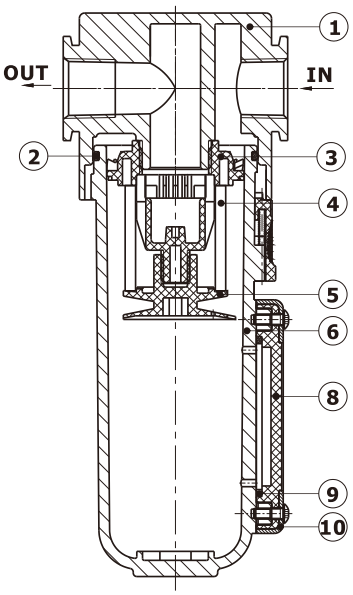
Inner structure

GVF300



PC bowl(Nylon bowl)+Metal cover

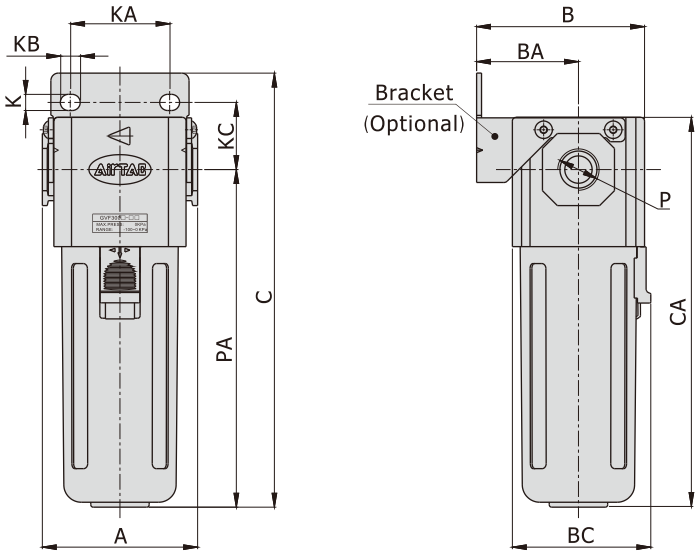
GVF300



Metal bowl

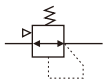
No.	Item
1	Body
2	O-ring
3	Air guide
4	Filter core
5	Umbrella baffle
6	Drain bowl
7	Meter cover
8	Liquid meter inside cover
9	Liquid meter seal
10	Liquid meter cover

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

GVR Series



Ordering code

GVR 300 10 □ □ T

1 2 3 4 5 6

①Model	②Series code	③Port size	④Accessories	⑤Pressure gauge	⑥Thread type
GVR: GVR series vacuum regulator	200: 200 series	06: 1/8" 08: 1/4"	Blank: Bracket J: No bracket	Blank: Pressure gauge N: No pressure gauge	T: NPT (kPa / psi)
	300: 300 series	08: 1/4" 10: 3/8"			

Specification

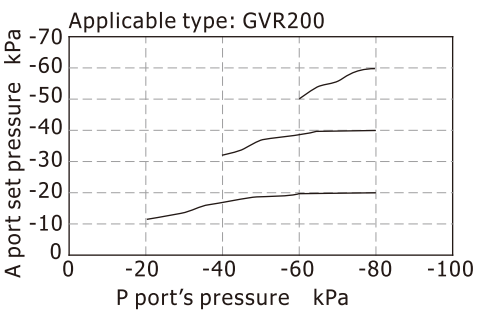
Model	GVR20006	GVR20008	GVR30008	GVR30010
Fluid	Air			
Port size [Note1]	1/8"	1/4"	1/4"	3/8"
Pressure range	-100~-1.3kPa			
Max. pressure	-1.0kPa			
Air inhalation consumption	0.6 L/min(ANR) and below			
Temperature range	-20~70℃			
Weight g	204	198	342	336

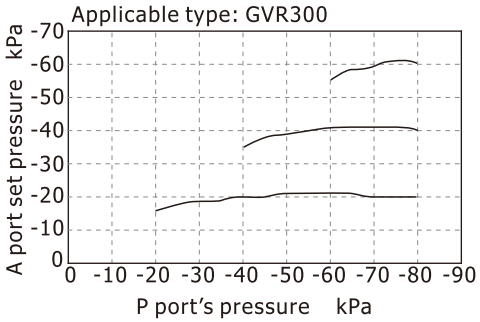
[Note1] NPT thread is available.

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.

Pressure chart



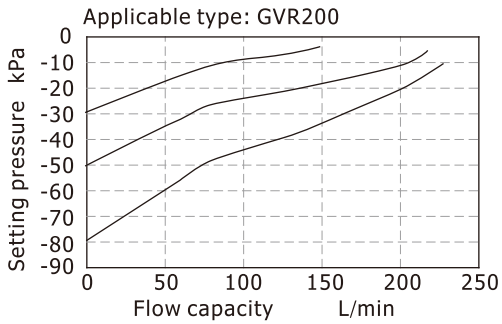


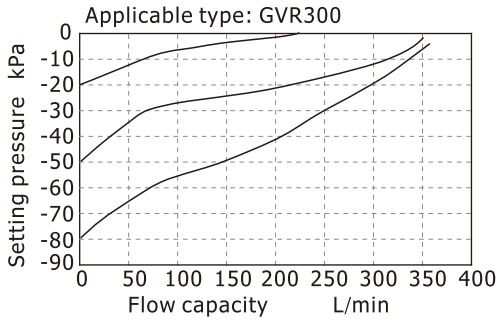
GVR Series

Installation and Application

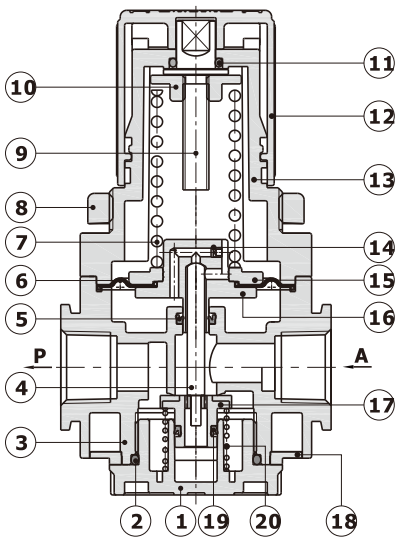
1.Please be used with safety circuit to avoid accidents when power failure, vacuum pump and vacuum regulator fail.
2.When checking, please set the pressure to 0 (atmospheric pressure) and completely cut off the pressure of the vacuum pump before pulling down the tube of the regulator.
3.The vacuum regulator 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.

Flow chart



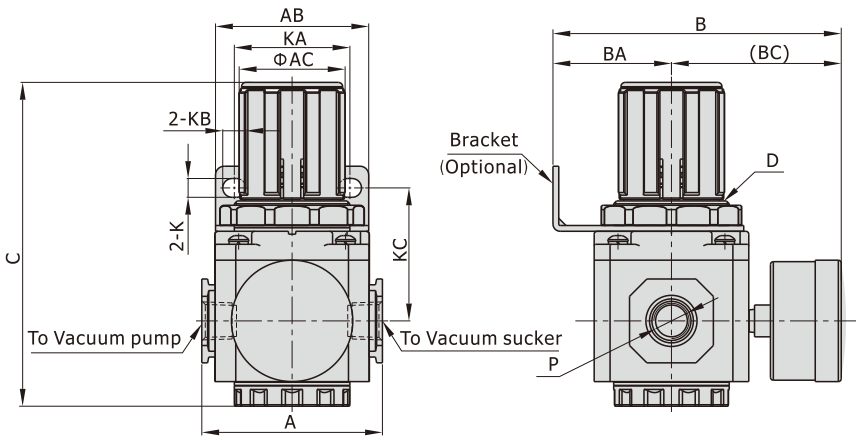


Inner structure



No.	Item
1	Valve cap
2	O-ring
3	Body
4	Spool
5	O-ring
6	Diaphragm
7	Spring
8	Fixed ring
9	Adjusting spindle
10	Regulator nut
11	O-ring
12	Pressure knob
13	Adjusting seat
14	Gas resistance
15	Diaphragm up core
16	Diaphragm down core
17	Pressure plug
18	Bottom cover
19	O-ring
20	Spring

Dimensions



[Unit: mm]

Model\Item	A	AB	AC	B	BA	BC	C
GVR20006	52.5	55	31	83	30	53	89
GVR20008	52.5	55	31	83	30	53	89
GVR30008	62.5	53	38	99.5	41	58.5	112
GVR30010	62.5	53	38	99.5	41	58.5	112

Model\Item	D	K	KA	KB	KC	P
GVR20006	M33X1.5	5.4	34	15.4	43	1/8"
GVR20008	M33X1.5	5.4	34	15.4	43	1/4"
GVR30008	M40X1.5	6.5	40	8	46	1/4"
GVR30010	M40X1.5	6.5	40	8	46	3/8"

Compendium of NSU Series

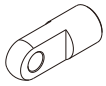
NFPA Standard cylinder

Bore size: 1-1/2", 2", 2-1/2", 3-1/4", 4", 5"

No tie rod cylinder

The cylinder barrel is "Mickey Mouse" shape,and have good corrosion.

Four kinds of cylinder joints



I Knuckle

Y Knuckle

Multi-type cylinder

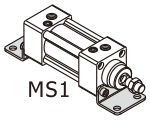
NSU: Double acting type

NSUD: Double rod type

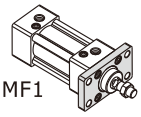
Convenient and fast fix sensor switch

Sensor can be directly fixed onto the groover of the cylinder, which is convenient and fast. the counterpart sensor type is: CMSG、DMSG(S)

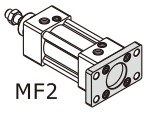
Multi-mounting accessories



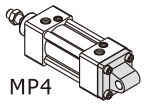
MS1



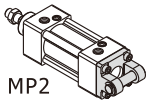
MF1



MF2



MP4



MP2

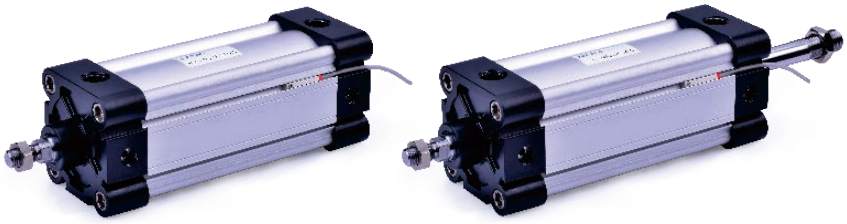
Adjustable air buffer

With adjustable air buffer on the front and back cover

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.

NSU Series



NSU-S NSUD-S

Ordering code

NSU 1–1/2 × 4 S □ T

1 2 3 4 5 6

①Model	② Bore size	③ Stroke	④ Magnet	⑤ Mounting ype[Note1]		Model	⑥ Thread type
NSU: Double acting type	1-1/2"	Refer to stroke table for details	S: With magnet	Blank		NSU	T: NPT
NSUD: Double rod type	2"			MS1			
	2-1/2"			MF1			
	3-1/4"			MF2			
	4"			MP2			
	5"			MP4			
				Blank		NSUD	
				MS1			
				MF1			

[Note1] Please refer to page 261~263 for details of the accessories.

Stroke

Bore size(in)	Standard stroke (in)	Max.std stroke (in)	Max.stroke (in)
1-1/2"	1 2 3 4 5 6 8 10 12 14 16 18 20 24 28 32	48	72
2"	1 2 3 4 5 6 8 10 12 14 16 18 20 24 28 32 36 40	48	72
2-1/2"	1 2 3 4 5 6 8 10 12 14 16 18 20 24 28 32 36 40	60	72
3-1/4"	1 2 3 4 5 6 8 10 12 14 16 18 20 24 28 32 36 40	60	72
4"	1 2 3 4 5 6 8 10 12 14 16 18 20 24 28 32 36 40	60	72
5"	1 2 3 4 5 6 8 10 12 14 16 18 20 24 28 32 36 40	60	72

[Note] Consult us for non-standard stroke.

Specification

Bore size(in)		1-1/2	2	2-1/2	3-1/4	4	5
Acting type		Double acting					
Fluid		Air(to be filtered by 40μm filter element)					
Mounting type	NSU	Basic MF1 MF2 MP2 MP4 MS1					
	NSUD	Basic MF1 MS1					
Operating pressure		22~145psi(0.15~1.0MPa)					
Proof pressure		215psi(1.5MPa)					
Temperature		-5°F~160°F(-20℃~70℃)					
Speed range in/s		1~32					
Stroke tolerance in		$^{+0.08}_{0}$					
Cushion type		Bumper+Variable cushion					
Adjustable cushion stroke in		15/16			1-1/16		1-1/8
Port size [Note1]		NPT3/8			NPT1/2		

[Note1] NPT thread is available. Add) Refer to P475 for detail of sensor.

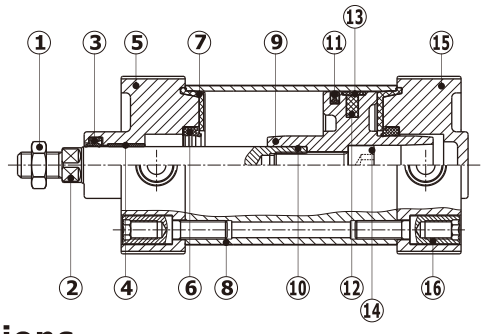
NSU Series

Product feature

1. Standard cylinder manufactured by NFPA Standard.
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. It is no tie rod cylinder. The cylinder barrel is "Mickey Mouse" shape ,and have good corrosion.
4. The buffer adjustment of cylinder is smooth and steady.
5. Various specifications of cylinder and cylinder installation accessories are available for customers to choose.

Inner structure

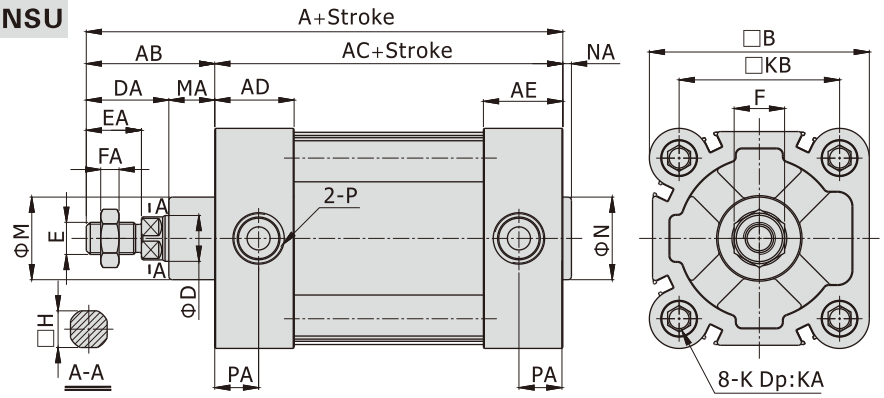
NSU



NO.	Item	NO.	Item	NO.	Item
1	Rod nut	7	Cushion gasket	13	Wear ring
2	Piston rod	8	Barrel	14	Bolt
3	Front cover packing	9	Piston	15	Back cover
4	Bushing	10	Piston rod O-ring	16	Tie-rod nut
5	Front cover	11	Piston seal		
6	Cushing O-ring	12	Magnet		

Dimensions

NSU

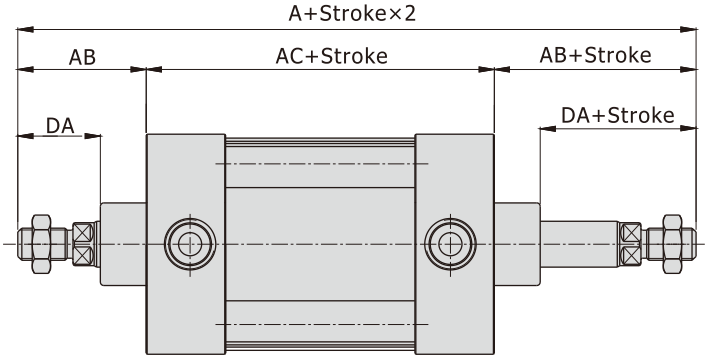


[Unit:inch]

Bore size\Item	A	AB	AC	AD	AE
1-1/2	5-3/8	1-3/4	3-5/8	1.08	1.08
2	5-3/8	1-3/4	3-5/8	1.08	1.08
2-1/2	5-1/2	1-3/4	3-3/4	1.08	1.08
3-1/4	6-3/4	2-1/2	4-1/4	1.28	1.28
4	6-3/4	2-1/2	4-1/4	1.28	1.28
5	7	2-1/2	4-1/2	1.44	1.44

Bore size\Item	B	D	DA	E	EA	F	FA	M	MA	H	K	KA	KB	N	NA	P	PA
1-1/2	2	5/8	1-1/8	7/16-20	3/4	11/16	1/4	1-1/8	5/8	1/2	1/4-28	0.59	1.43	1-1/8	0.12	NPT3/8	0.59
2	2-1/2	5/8	1-1/8	7/16-20	3/4	11/16	1/4	1-1/8	5/8	1/2	5/16-24	0.59	1.84	1-1/8	0.12	NPT3/8	0.59
2-1/2	3	5/8	1-1/8	7/16-20	3/4	11/16	1/4	1-1/8	5/8	1/2	5/16-24	0.59	2.19	1-1/8	0.12	NPT3/8	0.59
3-1/4	3-3/4	1	1-5/8	3/4-16	1-1/8	1-1/8	27/64	1-1/2	7/8	7/8	3/8-24	0.67	2.76	1-1/2	0.20	NPT1/2	0.69
4	4-1/2	1	1-5/8	3/4-16	1-1/8	1-1/8	27/64	1-1/2	7/8	7/8	3/8-24	0.67	3.32	1-1/2	0.20	NPT1/2	0.69
5	5-1/2	1	1-5/8	3/4-16	1-1/8	1-1/8	27/64	1-1/2	7/8	7/8	1/2-20	0.83	4.1	1-1/2	0.20	NPT1/2	0.85

NSUD



[Unit:inch]

Bore size\Item	A	AB	AC	DA
1-1/2	7-1/8	1-3/4	3-5/8	1-1/8
2	7-1/8	1-3/4	3-5/8	1-1/8
2-1/2	7-1/4	1-3/4	3-3/4	1-1/8
3-1/4	9-1/4	2-1/2	4-1/4	1-5/8
4	9-1/4	2-1/2	4-1/4	1-5/8
5	9-1/2	2-1/2	4-1/2	1-5/8

Remark：The unmarked dimension is the same as NSU standard type.

NSU Series——Accessories

List for ordering code of accessories

Accessories / Bore size	Mounting accessories			
	MS1	MF1\MF2	MP2	MP4
1-1/2	F-NSU1-1/2MS1	F-NSU1-1/2MF1	F-NSU1-1/2MP2	F-NSU1-1/2MP4
2	F-NSU2MS1	F-NSU2MF1	F-NSU2MP2	F-NSU2MP4
2-1/2	F-NSU2-1/2MS1	F-NSU2-1/2MF1	F-NSU2-1/2MP2	F-NSU2-1/2MP4
3-1/4	F-NSU3-1/4MS1	F-NSU3-1/4MF1	F-NSU3-1/4MP2	F-NSU3-1/4MP4
4	F-NSU4MS1	F-NSU4MF1	F-NSU4MP2	F-NSU4MP4
5	F-NSU5MS1	F-NSU5MF1	F-NSU5MP2	F-NSU5MP4

Accessories / Bore size	Knuckle		Sensor switch	
	I：I Knuckle	Y：Y Knuckle	CMSG	DMSG(S)
1-1/2	F-NSU1-1/2I	F-NSU1-1/2Y	CMSG	DMSG(S)
2	F-NSU1-1/2I	F-NSU1-1/2Y		
2-1/2	F-NSU1-1/2I	F-NSU1-1/2Y		
3-1/4	F-NSU3-1/4I	F-NSU3-1/4Y		
4	F-NSU3-1/4I	F-NSU3-1/4Y		
5	F-NSU3-1/4I	F-NSU3-1/4Y		

Accessory selection

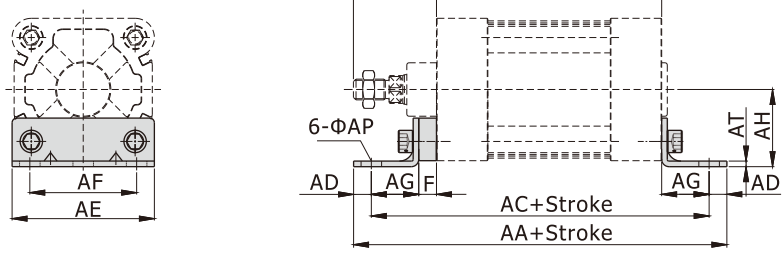
Accessories / Cylinder model	Mounting accessories					Knuckle		Sensor switch	
	MS1	MF1	MF2	MP2	MP4	I	Y	CMSG	DMSG(S)
NSU	●	●	●	●	●	●	●	●	●
NSUD	●	●	×	×	×	●	●	●	●

Material of accessories

Accessories / Bore size	Mounting accessories					Knuckle	
	MS1	MF1	MF2	MP2	MP4	I	Y
1-1/2~5	□	□	□	□	□	□	□
□——Steel							

Dimensions

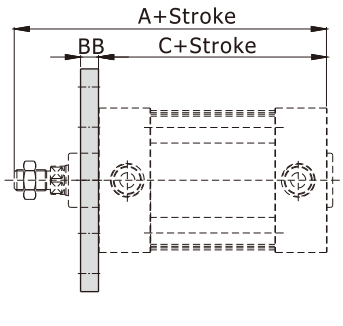
MS1

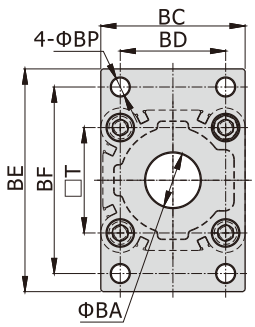


[Unit:inch]

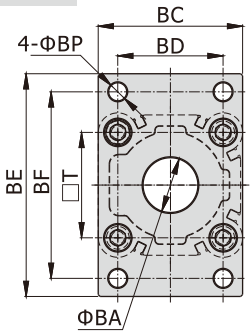
Bore size\Item	A	C	AA	AC	AD	AE	AF	AG	AH	AP	AT	F
1-1/2	5-3/8	3-5/8	6-3/4	6	3/8	2	1-1/4	1	1.19	0.43	0.12	3/8
2	5-3/8	3-5/8	6-3/4	6	3/8	2-1/2	1-3/4	1	1.44	0.43	0.12	3/8
2-1/2	5-1/2	3-3/4	6-7/8	6-1/8	3/8	3	2-1/4	1	1.63	0.43	0.12	3/8
3-1/4	6-3/4	4-1/4	8-3/8	7-3/8	1/2	3-3/4	2-3/4	1-1/4	1.94	0.57	0.16	5/8
4	6-3/4	4-1/4	8-3/8	7-3/8	1/2	4-1/2	3-1/2	1-1/4	2.25	0.57	0.16	5/8
5	7	4-1/2	9-1/8	7-7/8	5/8	5-1/2	4-1/4	1-3/8	2.75	0.69	0.24	5/8

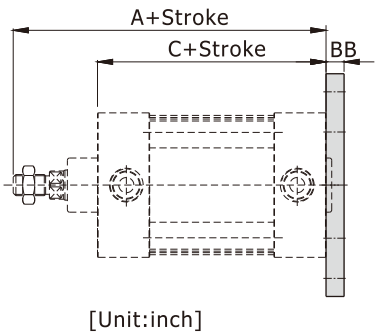
MF1





MF2

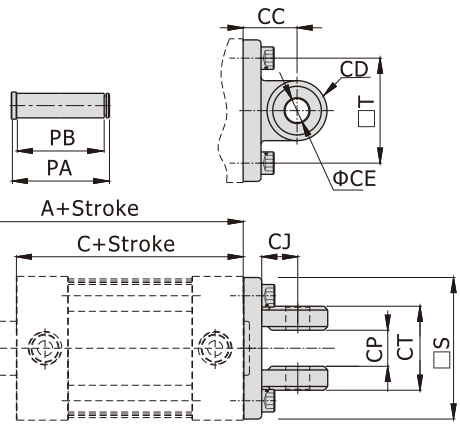




[Unit:inch]

Bore size\Item	A	C	BA	BB	BC	BD	BE	BF	BP	T
1-1/2	5-3/8	3-5/8	1-1/8	3/8	2	1.43	3-3/8	2.75	0.28	1.43
2	5-3/8	3-5/8	1-1/8	3/8	2-1/2	1.84	4-1/8	3.38	0.35	1.84
2-1/2	5-1/2	3-3/4	1-1/8	3/8	3	2.19	4-5/8	3.88	0.35	2.19
3-1/4	6-3/4	4-1/4	1-1/2	5/8	3-3/4	2.76	5-1/2	4.69	0.41	2.76
4	6-3/4	4-1/4	1-1/2	5/8	4-1/2	3.32	6-1/4	5.44	0.41	3.32
5	7	4-1/2	1-1/2	5/8	5-1/2	4.1	7-5/8	6.63	0.55	4.1

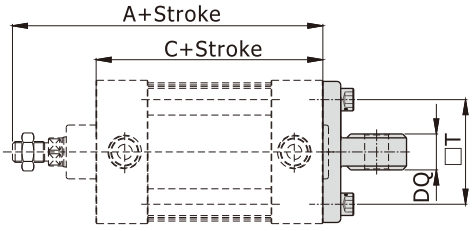
MP2



[Unit:inch]

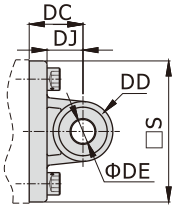
Bore size\Item	A	C	CC	CD	CE	CJ	CP	CT	PA	PB	S	T
1-1/2	5-3/8	3-5/8	1-1/8	1/2	1/2	3/4	3/4	1-3/4	2	1.78	1.97	1.43
2	5-3/8	3-5/8	1-1/8	5/8	1/2	3/4	3/4	1-3/4	2	1.78	2.46	1.84
2-1/2	5-1/2	3-3/4	1-1/8	5/8	1/2	3/4	3/4	1-3/4	2	1.78	2.95	2.19
3-1/4	6-3/4	4-1/4	1-7/8	7/8	3/4	1-1/4	1-1/4	2-1/2	2-7/8	2.54	3.7	2.76
4	6-3/4	4-1/4	1-7/8	7/8	3/4	1-1/4	1-1/4	2-1/2	2-7/8	2.54	4.45	3.32
5	7	4-1/2	1-7/8	7/8	3/4	1-1/4	1-1/4	2-1/2	2-7/8	2.54	5.43	4.1

MP4



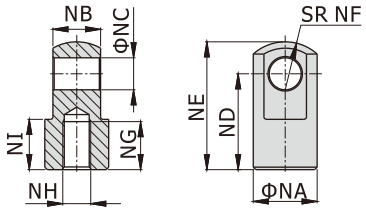
[Unit:inch]

Bore size\Item	A	C	DC	DD	DE	DJ	DQ	S	T
1-1/2	5-3/8	3-5/8	1-1/8	5/8	1/2	3/4	3/4	1.97	1.43
2	5-3/8	3-5/8	1-1/8	5/8	1/2	3/4	3/4	2.46	1.84
2-1/2	5-1/2	3-3/4	1-1/8	5/8	1/2	3/4	3/4	2.95	2.19
3-1/4	6-3/4	4-1/4	1-7/8	7/8	3/4	1-1/4	1-1/4	3.7	2.76
4	6-3/4	4-1/4	1-7/8	7/8	3/4	1-1/4	1-1/4	4.45	3.32
5	7	4-1/2	1-7/8	7/8	3/4	1-1/4	1-1/4	5.43	4.1



NSU Series——Accessories

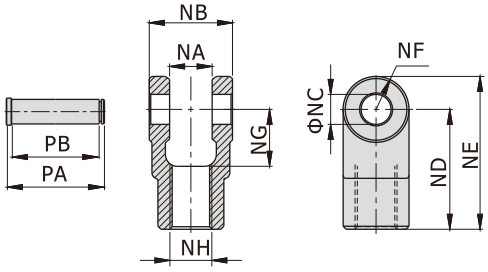
I Knuckle



[Unit:inch]

Type\Item	NA	NB	NC	ND	NE	NF	NG	NH	NI
F-NSU1-1/2I	1	3/4	1/2	1-1/2	2	0.79	3/4	7/16-20UNF	0.79
F-NSU3-1/4I	1-1/2	1-1/4	3/4	2-1/16	2-13/16	1.18	1-1/8	3/4-16UNF	0.98

Y Knuckle



[Unit:inch]

Type\Item	NA	NB	NC	ND	NE	NF	NG	NH	PA	PB
F-NSU1-1/2Y	3/4	1-3/4	1/2	1-1/2	2	1/2	3/4	7/16-20UNF	2	1.78
F-NSU3-1/4Y	1-1/4	2-1/2	3/4	2-3/8	3-1/8	3/4	1-1/4	3/4-16UNF	2-7/8	2.54

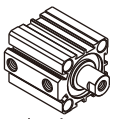
Compendium of NACQ Series

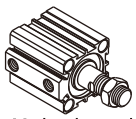
In accordance with JIS standard

Magnetic switch slots around the cylinder body

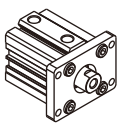
There are magnetic switch slots around the cylinder body convenient to install inducting switch.

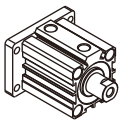
Two kinds of rod type

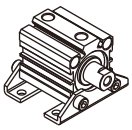

Female thread

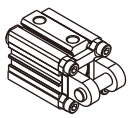

Male thread

Multi-mounting accessories


FA Type

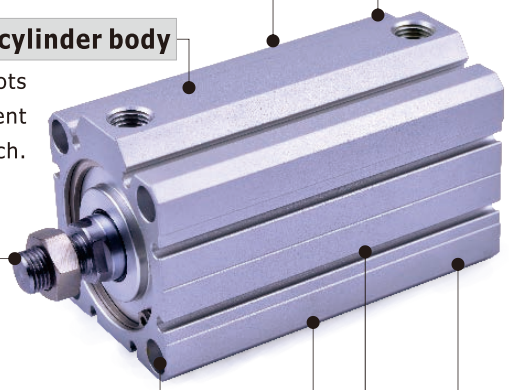

FB Type


LB Type


CB Type

Ten bore size are available

Bore size: 12\16\20\25\32\40\50\63\80\100mm



Multi-type cylinder

NACQ: Compact cylinder (Double acting)	
NASQ: Compact cylinder (Single acting-push)	
NATQ: Compact cylinder (Single acting-pull)	
NACQD: Compact cylinder (Double rod)	

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.

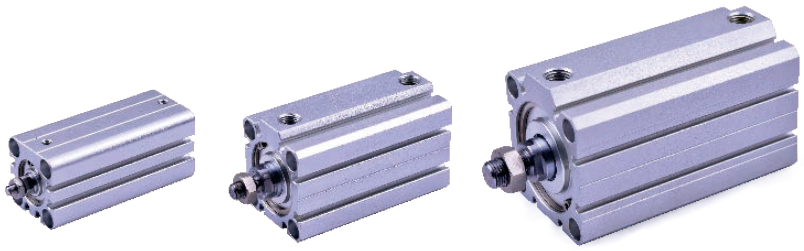
Convenient and fast fix sensor switch

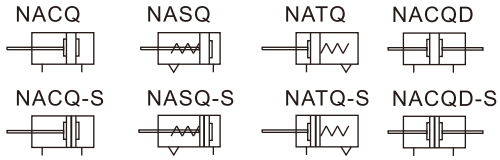
Sensor can be directly fixed onto the groover of the cylinder, which is convenient and fast.
the counterpart sensor type is: CMSH、DMSH(S)

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.

NACQ Series





Ordering code

NACQ 20X30 S B □ T

1 2 3 4 5 6 7

①Model	②Bore size	③Stroke	④Magnet	⑤Rod type	⑥Mounting type[Note1]	⑦Thread type
NACQ: Compact cylinder (Double acting)	12 16 20 25 32 40 50 63 80 100	Refer to stroke table for details	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	T: NPT [Note2]
NASQ: Compact cylinder (Single acting-push)	12 16 20 25 32 40 50					
NATQ: Compact cylinder (Single acting-pull)						
NACQD: 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	

[Note1]Please refer to page 271~273 for accessory parts. [Note2]Φ12~Φ25 thread is #10-32UNF and is blank here.

Stroke

Bore size (mm)		Standard stroke (mm)
12 16	Double acting	5 10 15 20 25 30
	Single acting	5 10
20 25	Double acting	5 10 15 20 25 30 35 40 45 50
	Single acting	5 10
32 40	Double acting	5 10 15 20 25 30 35 40 45 50 75 100
	Single acting	5 10
50	Double acting	10 15 20 25 30 35 40 45 50 75 100
	Single acting	10 20
63 80 100	Double acting	10 15 20 25 30 35 40 45 50 75 100

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.

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: 22~145psi(0.15~1.0MPa) Single acting: 28~145psi(0.2~1.0MPa)									
Proof pressure	215psi(1.5MPa)									
Temperature	-5°F~160°F(-20℃~70℃)									
Speed range mm/s	Double acting: 30~500 Single acting: 50~500									
Stroke tolerance mm	$^{+1.0}_{0}$									
Cushion type	Bumper									
Port size	#10-32UNF				NPT1/8		NPT1/4		NPT3/8	

Add) Refer to P475 for detail of sensor switch.

NACQ Series

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.

Criteria for selection: Cylinder thrust

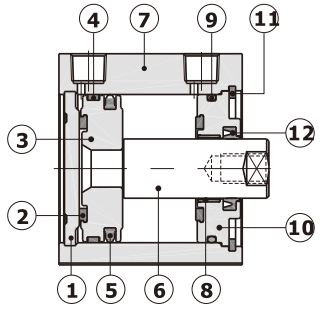
Unit: Newton(N)

Bore size(mm)	Rod size(mm)	Acting type		Pressure area(mm^2)	Operating pressure(psi)						
					15	30	45	60	75	90	105
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	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

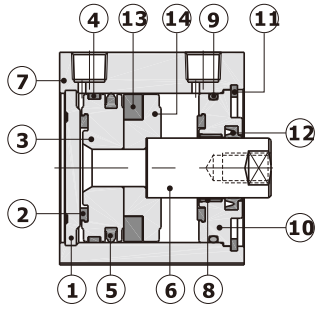
NACQ Series

Inner structure

NACQ



NACQ-S

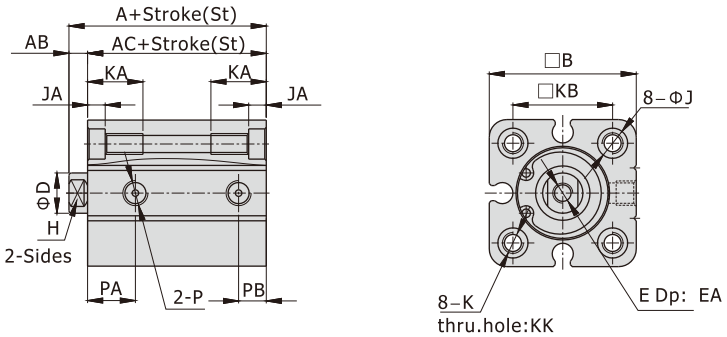


NO.	Item	NO.	Item
1	Back cover	8	Bushing
2	Bumper	9	O-ring
3	Piston	10	Front cover
4	Wear ring	11	C clip
5	Piston seal	12	Front cover packing
6	Piston rod	13	Magnet
7	Body	14	Magnet holder

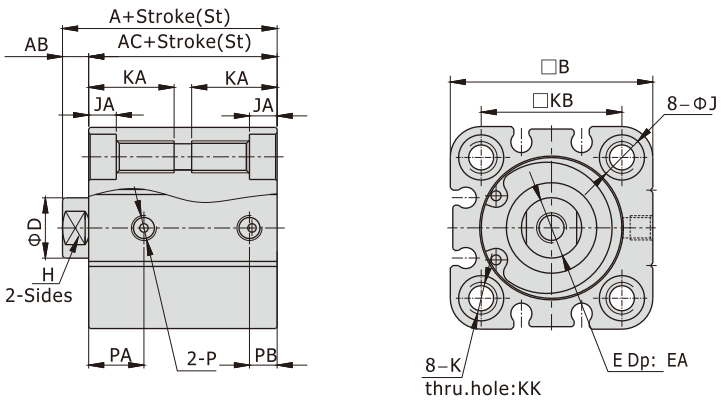
Dimensions

NACQ

Φ12, Φ16



Φ20, Φ25



[Unit: mm]

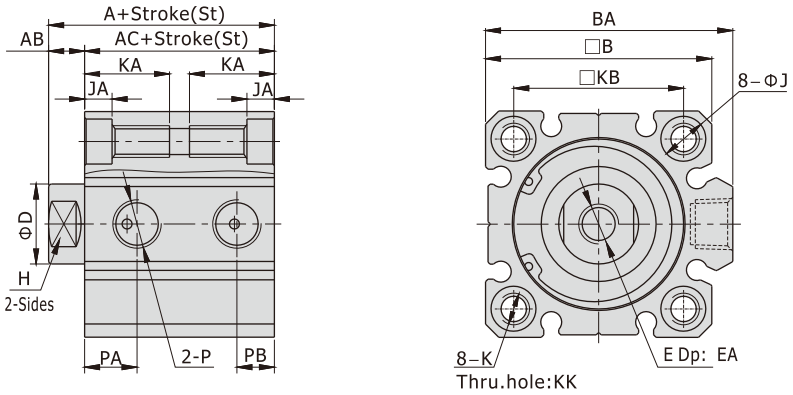
Type	Without magnet		With magnet		AB	B	D	EA	J	JA	KK	KA	KB	PA	PB
Bore size\Item	A	AC	A	AC											
12	20.5	17	30.5	27	3.5	25	6	6	6	3.5	Φ3.4	11	15.5	7.5	5
16	22	18.5	32	28.5	3.5	29	8	6	6	3.5	Φ3.4	11	20	8	5.5
20	24	19.5	34	29.5	4.5	36	10	8	9	5.5	Φ5.2	17	25.5	9	5.5
25	27.5	22.5	37.5	32.5	5	40	12	10	9	5.5	Φ5.2	17	28	11	5.5

[Unit: Inch]

Bore size(mm)\Item	E	K	P	H
12	#8-32 UNC	#8-32 UNC	#10-32 UNF	3/16
16	#8-32 UNC	#8-32 UNC	#10-32 UNF	1/4
20	#10-32 UNF	1/4-20 UNC	#10-32 UNF	5/16
25	1/4-28 UNF	1/4-20 UNC	#10-32 UNF	3/8

NACQ Series

Φ32~Φ100 (Stroke≤100)



[Unit: mm]

Item / Bore size	A(Without magnet) St≤50	A(Without magnet) St≥75	A (With magnet)	AB	AC(Without magnet) St≤50	AC(Without magnet) St≥75	AC (With magnet)	B	BA	D	EA	J	JA	KK	KA	KB
32	30	40	40	7	23	33	33	45	49.5	16	13	9	5.5	Φ5.2	17	34
40	36.5	46.5	46.5	7	29.5	39.5	39.5	53	57	16	15	9	5.5	Φ5.2	17	40
50	38.5	48.5	48.5	8	30.5	40.5	40.5	64	71	20	18	10.5	6.5	Φ6.7	22.5	50
63	44	54	54	8	36	46	46	77	84	20	18	14	9	Φ8.5	28.5	60
80	53.5	63.5	63.5	10	43.5	53.5	53.5	98	104	25	20	17	11	Φ10.4	35.5	77
100	65	75	75	12	53	63	63	117	123.5	32	26	17	11	Φ10.4	35.5	94

Item / Bore size		Without magnet PA	Without magnet PB	With magnet PA	With magnet PB
32	St=5	7.5	6.5	10.5	7.5
	St>5	10.5	7.5		
40		11	8	11	8
50		10.5	10.5	10.5	10.5
63		15	10.5	15	10.5
80		16	14	16	14
100		20	17.5	20	17.5

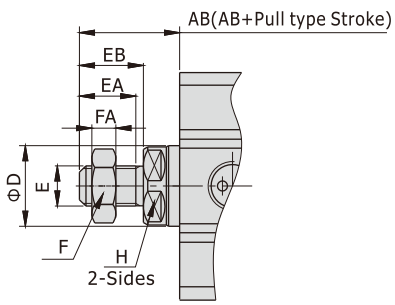
[Unit: Inch]

Item / Bore size(mm)	E	K	P	H
32	5/16-24 UNF	1/4-20 UNC	NPT1/8	9/16
40	3/8-24 UNF	1/4-20 UNC	NPT1/8	9/16
50	1/2-20 UNF	5/16-18 UNC	NPT1/4	11/16
63	1/2-20 UNF	7/16-14 UNC	NPT1/4	11/16
80	5/8-18 UNF	1/2-13 UNC	NPT3/8	7/8
100	3/4-16 UNF	1/2-13 UNC	NPT3/8	1-1/16

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.

Male thread

(Bore size: Φ12~Φ100, Stroke≤100)



[Unit: mm]

Bore size\Item	AB	D	EA	EB
12	11.5	6	6.5	7.5
16	11.5	8	6.5	7.5
20	12.5	10	6.5	7.5
25	14.5	12	7.5	9
32	19.5	16	12	13
40	23	16	14	16
50	27.5	20	19	20
63	27.5	20	19	20
80	35.5	25	25	26
100	40.5	32	27.5	29

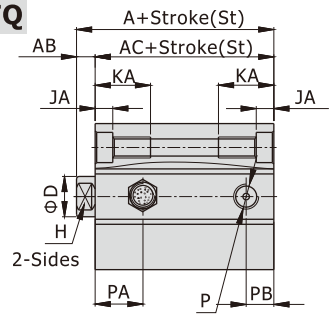
[Unit: Inch]

Item / Bore size(mm)	E	F	FA	H
12	#8-32 UNC	11/32	0.13	3/16
16	#8-32 UNC	11/32	0.13	1/4
20	#10-32 UNF	3/8	0.13	5/16
25	1/4-28 UNF	7/16	0.16	3/8
32	5/16-24 UNF	1/2	0.19	9/16
40	3/8-24 UNF	9/16	0.22	9/16
50	1/2-20 UNF	3/4	0.31	11/16
63	1/2-20 UNF	3/4	0.31	11/16
80	5/8-18 UNF	15/16	0.38	7/8
100	3/4-16 UNF	1-1/8	0.42	1-1/16

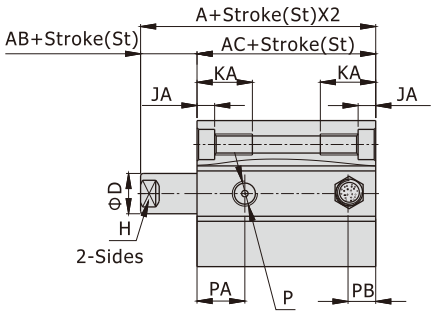
NACQ Series

NASQ **NATQ**

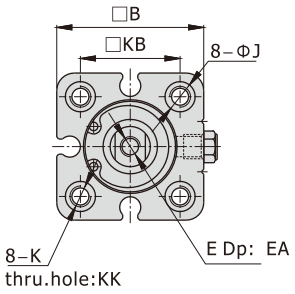
Φ12, Φ16



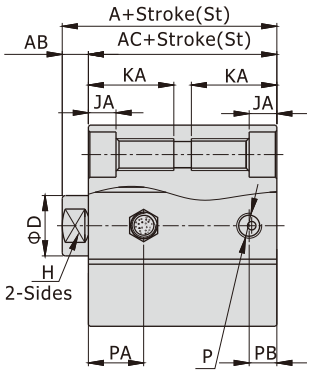
NASQ



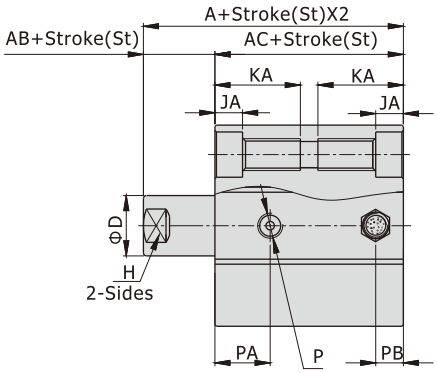
NATQ



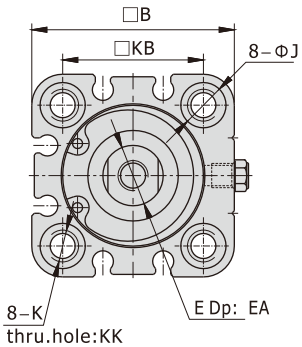
Φ20, Φ25



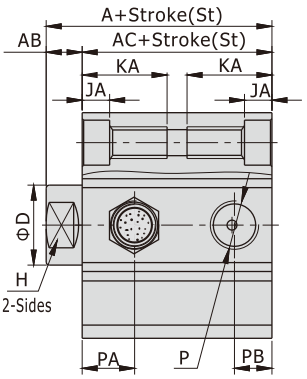
NASQ



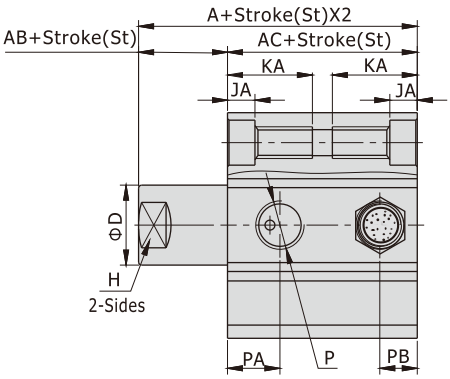
NATQ



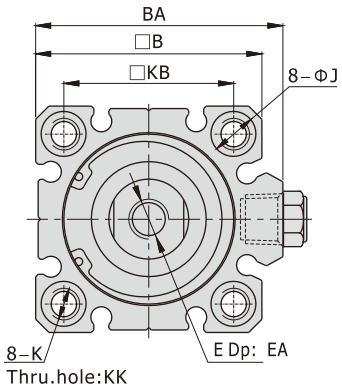
Φ32~Φ50



NASQ



NATQ



[Unit: mm]

Bore size\Item	A(Without magnet)			A(With magnet)			AB	AC(Without magnet)			AC(With magnet)			B	BA	D	EA	J	JA
Stroke	5	10	20	5	10	20		5	10	20	5	10	20						
12	25.5	25.5	-	35.5	35.5	-	3.5	22	22	-	32	32	-	25	-	6	6	6	3.5
16	27	27	-	37	37	-	3.5	23.5	23.5	-	33.5	33.5	-	29	-	8	6	6	3.5
20	29	29	-	39	39	-	4.5	24.5	24.5	-	34.5	34.5	-	36	-	10	8	9	5.5
25	32.5	32.5	-	42.5	42.5	-	5	27.5	27.5	-	37.5	37.5	-	40	-	12	10	9	5.5
32	35	35	-	45	45	-	7	28	28	-	38	38	-	45	49.5	16	13	9	5.5
40	41.5	41.5	-	51.5	51.5	-	7	34.5	34.5	-	44.5	44.5	-	53	57	16	15	9	5.5
50	-	48.5	53.5	-	58.5	63.5	8	-	40.5	45.5	50.5	50.5	55.5	64	71	20	18	10.5	6.5

Bore size\Item	KK	KA	KB	PA	PB
12	Φ3.4	11	15.5	7.5	5
16	Φ3.4	11	20	8	5.5
20	Φ5.2	17	25.5	9	5.5
25	Φ5.2	17	28	11	5.5
32	Φ5.2	17	34	10.5	7.5
40	Φ5.2	17	40	11	8
50	Φ6.6	22.5	50	10.5	10.5

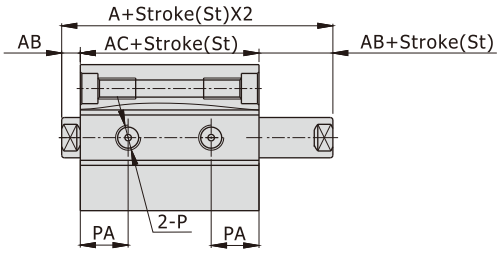
[Unit: Inch]

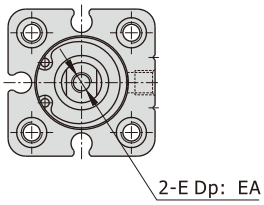
Bore size(mm)\Item	E	K	P	H
12	#8-32 UNC	#8-32 UNC	#10-32 UNF	3/16
16	#8-32 UNC	#8-32 UNC	#10-32 UNF	1/4
20	#10-32 UNF	1/4-20 UNC	#10-32 UNF	5/16
25	1/4-28 UNF	1/4-20 UNC	#10-32 UNF	3/8
32	5/16-24 UNF	1/4-20 UNC	NPT1/8	9/16
40	3/8-24 UNF	1/4-20 UNC	NPT1/8	9/16
50	1/2-20 UNF	5/16-18 UNC	NPT1/4	11/16

NACQ Series

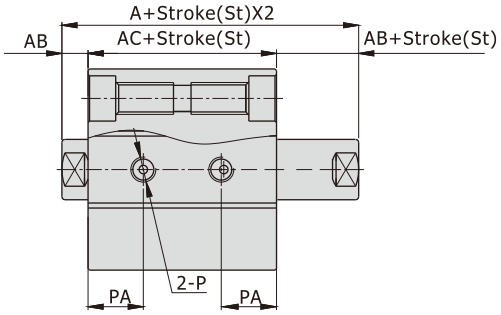
NACQD

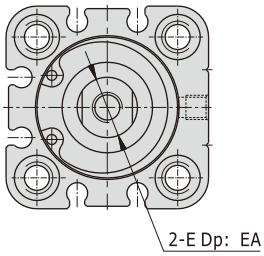
Φ12, Φ16



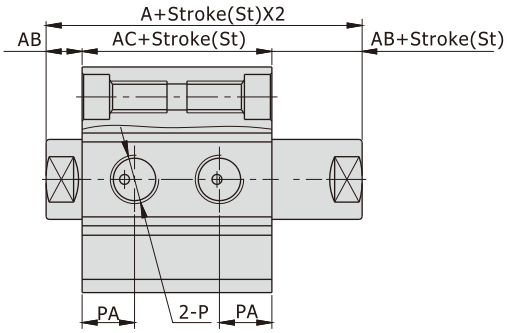


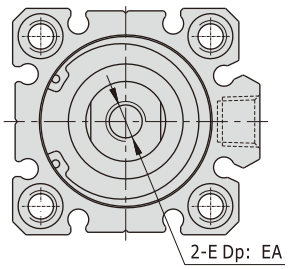
Φ20, Φ25





Φ32~Φ100





[Unit: mm]

Item / Bore size	Without magnet A	Without magnet AC	With magnet A	With magnet AC	AB	AF	EA	PA
12	32.2	25.2	42.2	35.2	3.5	17	6	9
16	33	26	43	36	3.5	21	6	9.5
20	35	26	45	36	4.5	25	8	9.5
25	39	29	49	39	5	27	9.5(St=5)/10(St>5)	11
32	44.5	30.5	54.5	40.5	7	28	9(St≤10)/13(St>10)	10
40	54	40	64	50	7	28	11(St≤10)/15(St>10)	13
50	56.5	40.5	66.5	50.5	8	29	12(St≤10)/18(St>10)	13.5
63	58	42	68	52	8	29	12(St≤10)/18(St>10)	16
80	71	51	81	61	10	35.5	14(St≤15)/20(St>15)	16
100	84.5	60.5	94.5	70.5	12	42.5	20(St=20)/26(St>20)	21

[Unit: Inch]

Item / Bore size(mm)	E
12	#8-32 UNC
16	#8-32 UNC
20	#10-32 UNF
25	1/4-28 UNF
32	5/16-24 UNF
40	3/8-24 UNF
50	1/2-20 UNF
63	1/2-20 UNF
80	5/8-18 UNF
100	3/4-16 UNF

Remark) The unmarked dimension is the same as NACQ standard type.

NACQ Series——Accessories

List for ordering code of accessories

Accessories / Bore size	Mounting accessories			Knuckle		Sensor switch
	LB	FA/FB	CB	I	Y	
12	F-NACQ12LB	F-NACQ12FA	F-NACQ12CB	F-NACQ12I	F-NACQ12Y	CMSH DMSH DMSHS
16	F-NACQ16LB	F-NACQ16FA	F-NACQ16CB	F-NACQ16I	F-NACQ16Y	
20	F-NACQ20LB	F-NACQ20FA	F-NACQ20CB	F-NACQ20I	F-NACQ20Y	
25	F-NACQ25LB	F-NACQ25FA	F-NACQ25CB	F-NACQ25I	F-NACQ25Y	
32	F-NACQ32LB	F-NACQ32FA	F-NACQ32CB	F-NACQ32I	F-NACQ32Y	CMSH DMSH DMSHS
40	F-NACQ40LB	F-NACQ40FA	F-NACQ40CB	F-NACQ40I	F-NACQ40Y	
50	F-NACQ50LB	F-NACQ50FA	F-NACQ50CB	F-NACQ50I	F-NACQ50Y	
63	F-NACQ63LB	F-NACQ63FA	F-NACQ63CB			
80	F-NACQ80LB	F-NACQ80FA	F-NACQ80CB	F-NACQ80I	F-NACQ80Y	
100	F-NACQ100LB	F-NACQ100FA	F-NACQ100CB	F-NACQ100I	F-NACQ100Y	

Accessory selection

Cylinder model\Accessories			Mounting accessories				Knuckle		Sensor switch	
			LB	FA	FB	CB [1]	I	Y	CMSH	DMSH(S)
NACQ	Female thread	Without magnet	●	●	●	●	×	×	×	×
		With magnet							●	●
	Male thread	Without magnet					●	●	×	×
		With magnet							●	●
NASQ NATQ	Female thread	Without magnet	●	●	●	●	×	×	×	×
		With magnet							●	●
	Male thread	Without magnet					●	●	×	×
		With magnet							●	●
NACQD	Female thread	Without magnet	●	●	×	×	×	×	×	×
		With magnet							●	●
	Male thread	Without magnet					●	●	×	×
		With magnet							●	●

[Note1] CB is attached with relevant PIN.

Material of accessories

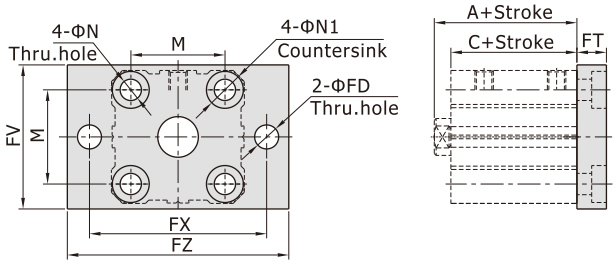
Accessories / Bore size(mm)	Mounting accessories				Knuckle	
	LB	FA	FB	CB	I	Y
12, 15	■	●	●	●	■	■
20, 25	■	●	●	●	■	■
32~100	■	●	●	■	■	■

●——Aluminum alloy, ■——Steel

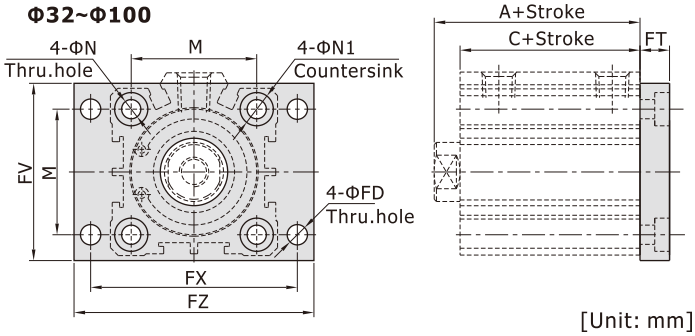
Dimensions

FA/FB

Φ12~Φ25



Φ32~Φ100



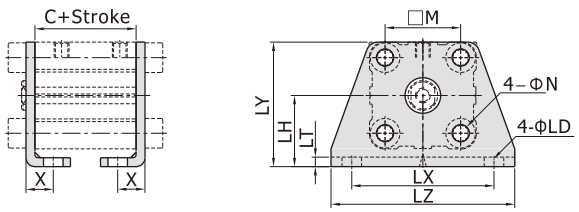
[Unit: mm]

Item / Bore size	A [Note1]			C			M	N	N1	FD	FT	FV	FX	FZ
	Without magnet		With magnet	Without magnet		With magnet								
Stroke	≤50	≥75		≤50	≥75									
12	20.5	-	30.5	17	-	27	15.5	4.6	7.5	4.6	5.5	25	45	55
16	22	-	32	18.5	-	28.5	20	4.6	7.5	4.6	5.5	30	45	55
20	24	-	34	19.5	-	29.5	25.5	6.8	10	6.8	8	39.5	48	60
25	27.5	-	37.5	22.5	-	32.5	28	6.8	10	6.8	8	42	52	64
32	30	40	40	23	33	33	34	6.8	10	5.5	8	48	56	65
40	36.5	46.5	46.5	29.5	39.5	39.5	40	6.8	10	5.5	8	54	62	72
50	38.5	48.5	48.5	30.5	40.5	40.5	50	8.5	11.5	6.8	9	67	76	89
63	44	54	54	36	46	46	60	11.6	16.5	9	10	80	92	108
80	53.5	63.5	63.5	43.5	53.5	53.5	77	13.2	19.5	11	12	99	116	134
100	65	75	75	53	63	63	94	13.2	19.5	11	12	117	136	154

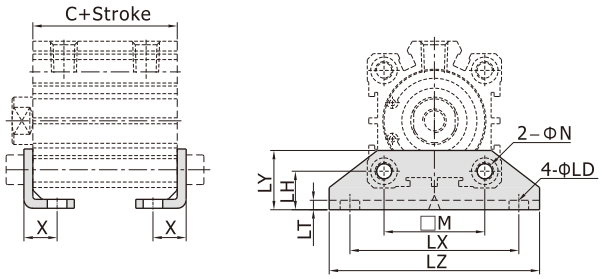
[Note] Valve A and C in the above table are only for NACQ series.
Please refer to relevant content for valve A and C of other series.

LB

Φ12~Φ25



Φ32~Φ100



[Unit: mm]

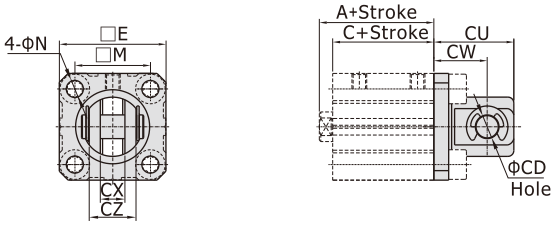
Bore size\Item	C [Note]			M	N	X	LD	LH	LT	LX	LY	LZ
	Without magnet		With magnet									
Stroke	≤50	≥75										
12	17	-	27	15.5	4.6	8	4.6	17	2	34	29.5	44
16	18.5	-	28.5	20	4.6	8	4.6	19	2	38	33.5	48
20	19.5	-	29.5	25.5	6.8	9.2	6.8	24	3	48	42	62
25	22.5	-	32.5	28	6.8	10.7	6.8	26	3	52	46	66
32	23	33	33	34	6.8	11.2	6.8	13	3	57	20	71
40	29.5	39.5	39.5	40	6.8	11.2	6.8	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	11.6	13.7	11.6	16	3	95	26	113
80	43.5	53.5	53.5	77	13.5	16.5	13.5	20.5	4.5	118	32	140
100	53	63	63	94	13.5	23	13.5	24	6	137	36	162

[Note] Valve C in the above table is only for NACQ series. Please refer to relevant content for valve C of other series.

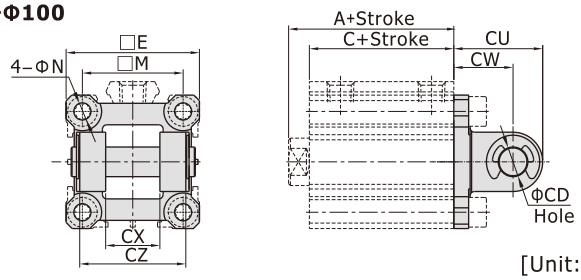
NACQ Series——Accessories

CB

Φ12~Φ25



Φ32~Φ100

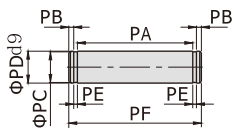


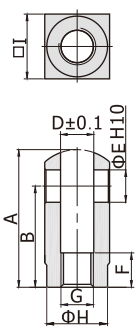
[Unit: mm]

Item / Bore size / Stroke	A [Note] Without magnet ≤50	A [Note] Without magnet ≥75	A [Note] With magnet	C Without magnet ≤50	C Without magnet ≥75	C With magnet	E	M	N	CD (inch)	CU	CW	CX	CZ
12	20.5	-	30.5	17	-	27	25	15.5	4.6	3/16	20	14	5.3	9.8
16	22	-	32	18.5	-	28.5	29	20	4.6	3/16	21	15	6.8	11.8
20	24	-	34	19.5	-	29.5	36	25.5	6.8	5/16	27	18	8.3	15.8
25	27.5	-	37.5	22.5	-	32.5	40	28	6.8	3/8	30	20	10.3	19.8
32	30	40	40	23	33	33	45.5	34	6.8	3/8	30	20	18.3	35.8
40	36.5	46.5	46.5	29.5	39.5	39.5	53.5	40	6.8	3/8	32	22	18.3	35.8
50	38.5	48.5	48.5	30.5	40.5	40.5	64.5	50	8.5	1/2	42	28	22.3	43.8
63	44	54	54	36	46	46	77.5	60	11.6	1/2	44	30	22.3	43.8
80	53.5	63.5	63.5	43.5	53.5	53.5	98.5	77	13.2	3/4	56	38	28.3	55.8
100	65	75	75	53	63	63	117.5	94	13.2	7/8	67	45	32.3	63.8

[Note] Valve A and C in the above table are only for NACQ series.
Please refer to relevant content for valve A and C of other series.

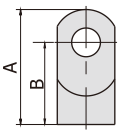
Y Knuckle

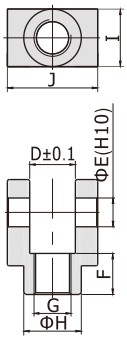




F-NACQ12Y
F-NACQ16Y
F-NACQ20Y
F-NACQ25Y

F-NACQ32Y
F-NACQ40Y
F-NACQ50Y
F-NACQ80Y
F-NACQ100Y



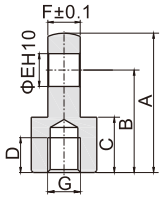


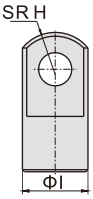
[Unit: mm]

Type\Item	A	B	D	E(inch)	F	G	H	I	J	PA	PB	PC	PD(inch)	PE	PF
F-NACQ12Y	22	16	5.3	3/16	6	#8-32UNC	9	10	-	10.2	1.5	4	3/16	0.7	14.6
F-NACQ16Y	28	21	6.6	3/16	11	#8-32UNC	11	12	-	12.4	1.5	4	3/16	0.7	16.8
F-NACQ20Y	34	25	8.3	5/16	8.5	#10-32UNF	15	16	-	16.2	1.5	7	5/16	0.9	21
F-NACQ25Y	41	30	10.3	3/8	10.5	1/4-28UNF	19	20	-	20.2	2	8	3/8	1.1	26.4
F-NACQ32Y	42	30	18.4	3/8	16	5/16-24UNF	22	22	36	36.2	2	8	3/8	1.1	42.4
F-NACQ40Y	42	30	18.4	3/8	16	3/8-24UNF	22	22	36	36.2	2	8	3/8	1.1	42.4
F-NACQ50Y	56	40	22.4	1/2	20	1/2-20UNF	28	28	44	44.2	2	12	1/2	1.1	50.4
F-NACQ80Y	71	50	28.4	3/4	23	5/8-18UNF	38	38	56	56.2	2	15	3/4	1.7	63.6
F-NACQ100Y	79	55	32.4	7/8	24	3/4-16UNF	44	44	64	64.2	2.5	19	7/8	1.7	72.6

[Unit: mm]

I Knuckle





Type\Item	A	B	C	D	E(inch)	F	G	H	I
F-NACQ12I	21.5	16	9	6	3/16	4.7	#8-32UNC	6.3	10
F-NACQ16I	32	25	11	6	3/16	6.2	#8-32UNC	8.1	12
F-NACQ20I	34	25	13.5	6	5/16	7.7	#10-32UNF	10.3	16
F-NACQ25I	41	30	16	8	3/8	9.7	1/4-28UNF	12.8	20
F-NACQ32I	42	30	16	14	3/8	17.6	5/16-24UNF	12	22
F-NACQ40I	42	30	16	14	3/8	17.6	3/8-24UNF	12	22
F-NACQ50I	56	40	20	18	1/2	21.6	1/2-20UNF	16	28
F-NACQ80I	71	50	23	21	3/4	27.6	5/8-18UNF	21	38
F-NACQ100I	79	55	24	22	7/8	31.6	3/4-16UNF	24	44

Compendium of NACF Series

Convenient and fast fix sensor switch

Sensor can be directly fixed onto the groover of the cylinder, which is convenient and fast.
the counterpart sensor type is: CMSH、DMSH(S)

Two kinds of rod type

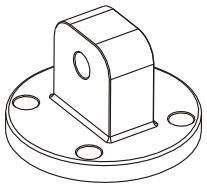
Female thread

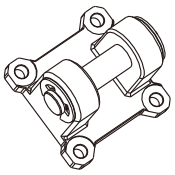
Male thread

Imperial cylinder

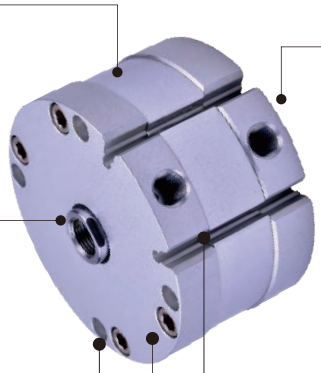
Bore size: 9/16"、3/4"、1-1/16"、
1-1/2"、2"、2-1/2"、3"、4"

Multi-mounting accessories


CA Type


CB Type

I Knuckle



Multi-type cylinder

NACF: Round compact cylinder (Double acting)	
NASF: Round compact cylinder (Single acting-push)	
NATF: Round compact cylinder (Single acting-pull)	
NACFD: Round compact cylinder (Double rod)	

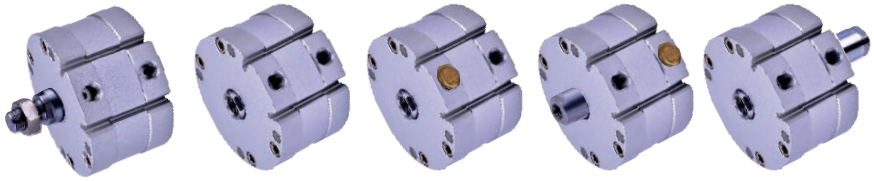
Convenient and fast fix sensor switch

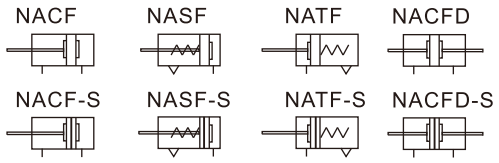
Sensor can be directly fixed onto the groover of the cylinder, which is convenient and fast.
the counterpart sensor type is: CMSH、DMSH(S)

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.

NACF Series





Ordering code

NACF 3/4X3/8 S B □ T

1 2 3 4 5 6 7

①Model	②Bore size	③Stroke	④Magnet	⑤Rod type	⑥Mounting type	⑦Thread type
NACF: Round compact cylinder (Double acting)	9/16" 3/4" 1-1/16" 1-1/2" 2" 2-1/2" 3" 4"	Refer to stroke table for details	Blank: Without magnet S: With magnet	Blank: Female thread B: Male thread	Blank: No accessories CA: CA type	T: NPT [Note1]
NASF: Round compact cylinder (Single acting-push)						
NATF: Round compact cylinder (Single acting-pull)						
NACFD: Round compact cylinder (Double rod)					Blank: No accessories	

[Note1]Φ9/16" and Φ3/4" thread are #10-32UNF and is blank here.

Stroke

Bore size (inch)		Standard stroke (inch)
9/16",3/4" , 1-1/16",1-1/2" , 2",2-1/2" ,3",4"	Double acting	1/4 3/8 1/2 5/8 3/4 7/8 1 1-1/4 1-1/2 1-3/4 2 2-1/2 3 3-1/2 4
	Single acting	1/4 3/8 1/2 5/8 3/4 7/8 1 1-1/4 1-1/2 1-3/4 2

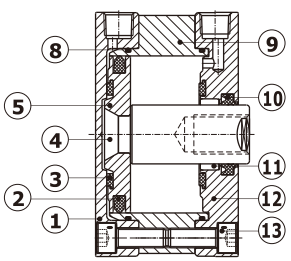
Specification

Bore size(inch)	9/16"	3/4"	1-1/16"	1-1/2"	2"	2-1/2"	3"	4"
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: 22~145psi(0.15~1.0MPa) Single acting: 28~145psi(0.2~1.0MPa)							
Proof pressure	215psi(1.5MPa)							
Temperature	-5°~160°F(-20~70°C)							
Speed range inch/s	Double acting: 1.2~20 Single acting: 2~20							
Stroke tolerance inch	$^{+0.04}_{0}$							
Cushion type	Bumper							
Port size	#10-32UNF		NPT1/8			NPT1/4		NPT3/8

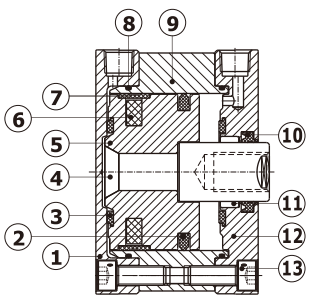
Add) Refer to P475 for detail of sensor switch.

Inner structure

NACF



NACF-S

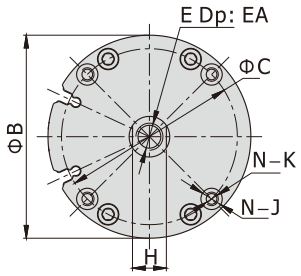


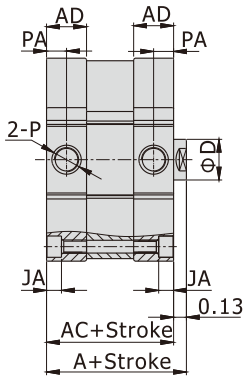
NO.	Item	NO.	Item
1	Back cover	8	O-ring
2	Piston seal	9	Body
3	Bumper	10	Front cover packing
4	Piston rod	11	Bushing
5	Piston	12	Front cover
6	Magnet	13	Bolt
7	Wear ring		

NACF Series

Dimensions

NACF





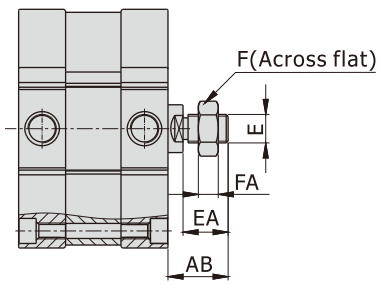
Item / Bore size	A		AC	
	No magnet	With magnet	No magnet	With magnet
9/16"	0.69	1.57	0.56	1.44
3/4"	0.69	1.57	0.56	1.44
1-1/16"	1.01	1.89	0.88	1.76
1-1/2"	1.01	1.89	0.88	1.76
2"	1.07	1.95	0.94	1.82
2-1/2"	1.32	2.2	1.19	2.07
3"	1.38	2.26	1.25	2.13
4"	1.69	2.57	1.56	2.44

[Unit: Inch]

Bore size\Item	AD		B	C	D	E	EA		H	J	JA	K	N	P	PA	
Stroke	1/4	≥3/8					≤3/8	≥1/2							1/4	≥3/8
9/16"	0.39		1.12	0.88	1/4	#8-32 UNC	0.24		7/32	0.20	0.13	#8-32 UNC	2	#10-32 UNF	0.22	
3/4"	0.39		1.50	1.22	5/16	#10-32 UNF	0.31		1/4	0.24	0.15	#10-24 UNC	4	#10-32 UNF	0.22	
1-1/16"	0.55		1.99	1.69	1/2	5/16-24 UNF	0.37		7/16	0.24	0.15	#10-24 UNC	4	NPT1/8	0.30	
1-1/2"	0.55		2.62	2.19	5/8	3/8-24 UNF	0.59		1/2	0.34	0.22	1/4-20 UNC	4	NPT1/8	0.30	
2"	0.55		3.12	2.69	3/4	1/2-20 UNF	0.60	0.70	5/8	0.34	0.22	1/4-20 UNC	4	NPT1/8	0.30	
2-1/2"	0.70	0.75	3.75	3.25	3/4	1/2-20 UNF	0.60	0.70	5/8	0.40	0.27	5/16-18 UNC	4	NPT1/4	0.33	0.41
3"	0.75	0.75	4.25	3.78	7/8	5/8-18 UNF	0.63	0.79	3/4	0.40	0.27	5/16-18 UNC	4	NPT1/4	0.33	0.41
4"	0.89	0.93	5.50	4.94	1	3/4-16 UNF	0.70	1.02	7/8	0.49	0.33	3/8-16 UNC	4	NPT3/8	0.40	0.51

Male thread

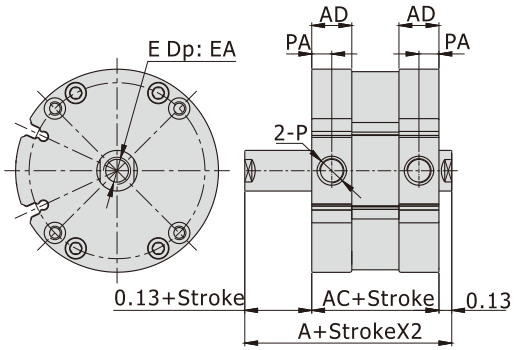
[Unit: Inch]



Bore size\Item	AB	E	EA	F	FA
9/16"	0.51	#8-32 UNC	0.38	11/32	0.13
3/4"	0.51	#10-32 UNF	0.38	3/8	0.13
1-1/16"	0.63	5/16-24 UNF	0.50	1/2	0.19
1-1/2"	0.63	3/8-24 UNF	0.50	9/16	0.22
2"	0.76	1/2-20 UNF	0.63	3/4	0.31
2-1/2"	0.76	1/2-20 UNF	0.63	3/4	0.31
3"	0.88	5/8-18 UNF	0.75	15/16	0.38
4"	0.88	3/4-16 UNF	0.75	1-1/8	0.42

NACFD

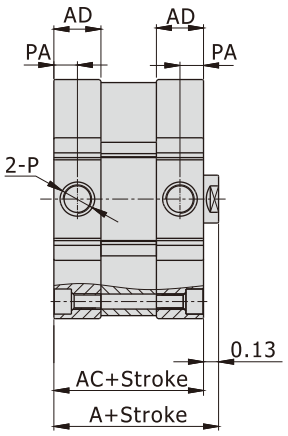
[Unit: Inch]



Item / Bore size	A		AC		AD	E	EA	PA	P
	No magnet	With magnet	No magnet	With magnet					
9/16"	1.08	1.96	0.82	1.70	0.39	#8-32 UNC	0.24	0.22	#10-32 UNF
3/4"	1.08	1.96	0.82	1.70	0.39	#10-32 UNF	0.30	0.22	#10-32 UNF
1-1/16"	1.4	2.28	1.14	2.02	0.55	5/16-24 UNF	0.37(S≤3/8)/0.5(S>3/8)	0.30	NPT1/8
1-1/2"	1.52	2.4	1.26	2.14	0.55	3/8-24 UNF	0.43(S≤3/8)/0.59(S>3/8)	0.30	NPT1/8
2"	1.58	2.46	1.32	2.2	0.55	1/2-20 UNF	0.30(S=1/4,3/8) 0.47(S=1/2,5/8) 0.70(S>5/8)	0.30	NPT1/8
2-1/2"	1.83	2.71	1.57	2.45	0.75	1/2-20 UNF	0.42(S=1/4,3/8) 0.55(S=1/2) 0.70(S>1/2)	0.41	NPT1/4
3"	1.89	2.77	1.63	2.51	0.75	5/8-18 UNF	0.45(S=1/4,3/8) 0.55(S=1/2) 0.79(S>1/2)	0.41	NPT1/4
4"	2.2	3.08	1.94	2.82	0.93	3/4-16 UNF	0.40(S=1/4,3/8) 0.63(S=1/2~7/8) 1.02(S>7/8)	0.51	NPT3/8

NACF Series

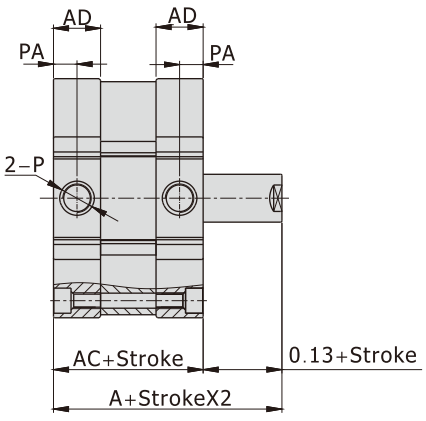
NASF



[Unit: Inch]

Bore size\Item	A(No magnet)		A(With magnet)		AC(No magnet)		AC(With magnet)		AD	P	PA
Stroke	1/4~1	1.001~2	1/4~1	1.001~2	1/4~1	1.001~2	1/4~1	1.001~2			
9/16"	1.19	1.69	2.07	2.57	1.06	1.56	1.94	2.44	0.39	#10-32 UNF	0.22
3/4"	1.19	1.69	2.07	2.57	1.06	1.56	1.94	2.44	0.39	#10-32 UNF	0.22
1-1/16"	1.50	2.00	2.38	2.88	1.38	1.88	2.25	2.75	0.55	NPT1/8	0.30
1-1/2"	1.50	2.00	2.38	2.88	1.38	1.88	2.25	2.75	0.55	NPT1/8	0.30
2"	1.57	2.07	2.45	2.95	1.44	1.94	2.32	2.82	0.55	NPT1/8	0.30
2-1/2"	1.82	2.32	2.70	3.58	1.69	2.19	2.57	3.07	0.75	NPT1/4	0.41
3"	1.88	2.38	2.75	3.63	1.75	2.25	2.63	3.13	0.75	NPT1/4	0.41
4"	2.19	2.69	3.07	3.95	2.06	2.56	2.94	3.44	0.93	NPT3/8	0.51

NATF



[Unit: Inch]

Bore size\Item	A(No magnet)		A(With magnet)		AC(No magnet)		AC(With magnet)		AD	P	PA
Stroke	1/4~1	1.001~2	1/4~1	1.001~2	1/4~1	1.001~2	1/4~1	1.001~2			
9/16"	1.19	1.69	2.07	2.57	1.06	1.56	1.94	2.44	0.39	#10-32 UNF	0.22
3/4"	1.19	1.69	2.07	2.57	1.06	1.56	1.94	2.44	0.39	#10-32 UNF	0.22
1-1/16"	1.50	2.00	2.38	2.88	1.38	1.88	2.25	2.75	0.55	NPT1/8	0.30
1-1/2"	1.50	2.00	2.38	2.88	1.38	1.88	2.25	2.75	0.55	NPT1/8	0.30
2"	1.57	2.07	2.45	2.95	1.44	1.94	2.32	2.82	0.55	NPT1/8	0.30
2-1/2"	1.82	2.32	2.70	3.58	1.69	2.19	2.57	3.07	0.75	NPT1/4	0.41
3"	1.88	2.38	2.75	3.63	1.75	2.25	2.63	3.13	0.75	NPT1/4	0.41
4"	2.19	2.69	3.07	3.95	2.06	2.50	2.94	3.44	0.93	NPT3/8	0.51

NACF Series——Accessories

List for ordering code of accessories

Accessories / Bore size	Mounting accessories		Knuckle	Sensor switch
	CA	CB	I	
9/16"	F-NACF9/16CA	F-NACF9/16CB	F-NACF9/16I	CMSH DMSH DMSHS
3/4"	F-NACF3/4CA		F-NACF3/4I	
1-1/16"	F-NACF1-1/16CA		F-NACF1-1/16I	
1-1/2"	F-NACF1-1/2CA	F-NACF1-1/2CB	F-NACF1-1/2I	
2"	F-NACF2CA		F-NACF2I	
2-1/2"	F-NACF2-1/2CA		F-NACF2I	
3"	F-NACF3CA	F-NACF3CB	F-NACF3I	
4"	F-NACF4CA		F-NACF4I	

Accessory selection

Cylinder model\Accessories			Mounting accessories		Knuckle	Sensor switch	
			CA	CB [1]	I	CMSH	DMSH(S)
NACF	Female thread	Without magnet	●	●	●	×	×
		With magnet				●	●
	Male thread	Without magnet			×	×	×
		With magnet				●	●
NASF NATF	Female thread	Without magnet	●	●	●	×	×
		With magnet				●	●
	Male thread	Without magnet			×	×	×
		With magnet				●	●
NACFD	Female thread	Without magnet	×	●	●	×	×
		With magnet				●	●
	Male thread	Without magnet			×	×	×
		With magnet				●	●

[Note1] CB is attached with relevant PIN.

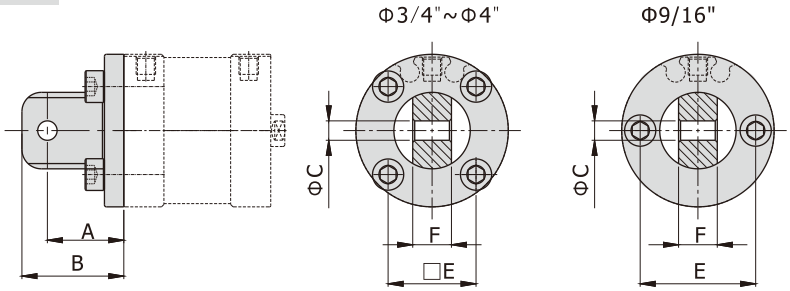
Material of accessories

Accessories / Bore size	Mounting accessories		Knuckle
	CA	CB	I
9/16"~2-1/2"	●	●	□
3", 4"	□	□	□

●——Aluminum alloy; □——Steel

Dimensions

CA

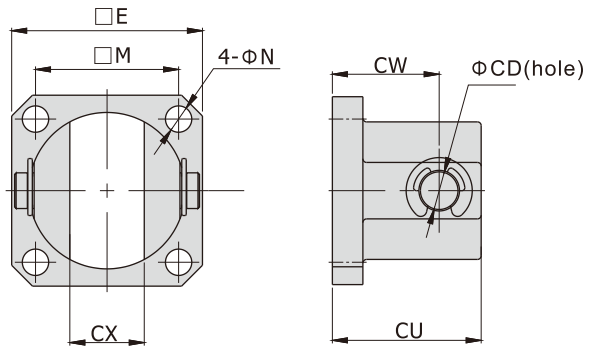


[Unit: Inch]

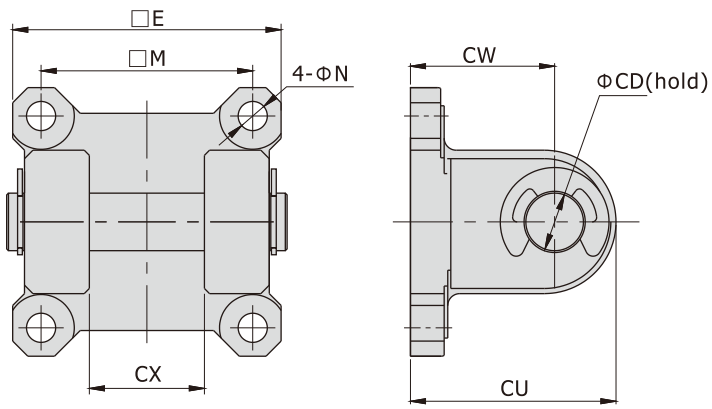
Bore size\Item	A	B	C	E	F
9/16"	0.75	1.00	3/16	0.88	3/8
3/4"	0.75	1.00	3/16	0.84	3/8
1-1/16"	0.81	1.06	3/16	1.19	3/8
1-1/2"	1.19	1.63	3/8	1.55	3/4
2"	1.25	1.69	3/8	1.90	3/4
2-1/2"	1.31	1.75	3/8	2.30	3/4
3"	1.69	2.25	5/8	2.67	1
4"	1.75	2.31	5/8	3.49	1

CB

Φ9/16"~Φ1-1/16"



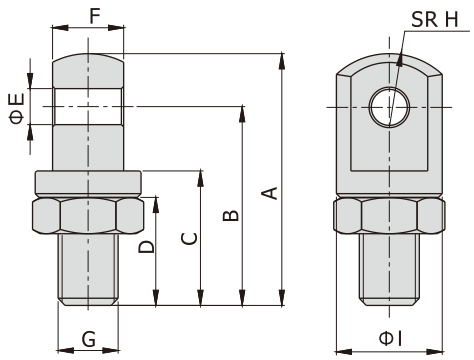
Φ1-1/2"~Φ4"



[Unit: Inch]

Type\Item	Bore size	E	CX	CD	CW	CU	M	N
F-NACF9/16CB	9/16"	1.00	25/64	3/16	0.56	0.78	0.75	0.16
	3/4"							
	1-1/16"							
F-NACF1-1/2CB	1-1/2"	1.75	3/4	3/8	0.94	1.34	1.38	0.21
	2"							
	2-1/2"							
F-NACF3CB	3"	2.50	1	5/8	1.25	1.81	2.00	0.27
	4"							

I Knuckle

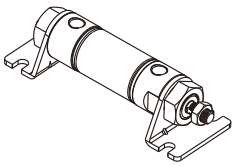


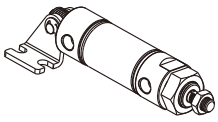
[Unit: Inch]

Bore size\Item	A	B	C	D	E	F	G	H	I
9/16"	1.13	0.85	0.51	0.38	3/16	3/8	#8-32 UNC	0.41	0.55
3/4"	1.13	0.85	0.51	0.38	3/16	3/8	#10-32 UNF	0.41	0.55
1-1/16"	1.38	1.00	0.77	0.63	3/16	3/8	5/16-24 UNF	0.41	0.55
1-1/2"	1.89	1.35	0.77	0.63	3/8	3/4	3/8-24 UNF	0.59	0.98
2"	2.01	1.47	0.88	0.75	3/8	3/4	1/2-20 UNF	0.59	0.98
2-1/2"	2.01	1.47	0.88	0.75	3/8	3/4	1/2-20 UNF	0.59	0.98
3"	2.68	1.88	1.08	0.88	5/8	1	5/8-18 UNF	0.79	1.50
4"	2.68	1.88	1.08	0.88	5/8	1	3/4-16 UNF	0.79	1.50

Compendium of NPB Series

Multi-mounting accessories


LB Type


SDB Type

Multi-type cylinder

NPB: Mini cylinder(Double acting)

NPSB: Mini cylinder(Single acting_push)

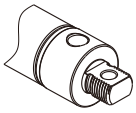
NPTB: Mini cylinder (Single acting_pull)

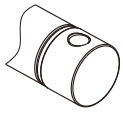
NPBD: Mini cylinder(Double rod)

Eleven bore size are available

Bore size: 5/16", 7/16", 9/16", 3/4", 7/8", 1-1/16", 1-1/4", 1-1/2", 1-3/4", 2", 2-1/2"

Two kinds of back cover type


CA: Pivot type

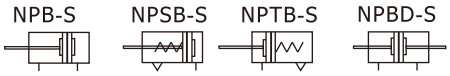

U: Flat–end type

Multi-kinds of stroke

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.

NPB Series



Ordering code

NPB 1–1/2 × 4 S □ □ T

1 2 3 4 5 6 7

①Model
NPB: Mini cylinder(Double acting)
NPSB: Mini cylinder(Single acting_push)
NPTB: Mini cylinder (Single acting_pull)
NPBD: Mini cylinder(Double rod)

② Bore size	
5/16"	NPB NPSB NPTB
7/16" 9/16" 3/4" 7/8" 1-1/16" 1-1/4" 1-1/2" 1-3/4" 2"	NPB NPBD NPSB NPTB
2-1/2"	NPB NPBD

③ Stroke
Refer to stroke table for details

④ Magnet
S: With magnet

⑤ Back cover	
CA: Pivot type	NPB/NPSB/NPTB
U: Flat–end type	
CM: Round-end type	NPB1-1/2
No this code	NPBD

⑥ Mounting type	
Blank: No accessories	NPB/NPSB/NPTB
LB: LB type	
SDB: SDB typecode	
Blank: No accessories	NPBD
LB: LB type	

⑦ Thread type	
No this code [Note]	5/16" 7/16" 9/16"
T: NPT	Others

[Note] Φ5/16"~Φ9/16" thread are #10–32 UNF.

Stroke

Bore size(in)		Standard stroke (in)	Max.Std stroke (in)	Max. stroke (in)
NPB	5/16"	1/2 1 1-1/2 2 2-1/2 3 4 5 6	6	8
	7/16"	1/2 1 1-1/2 2 2-1/2 3 4 5 6 7 8	8	8
	9/16"	1/2 1 1-1/2 2 2-1/2 3 4 5 6 7 8 9 10 11 12	12	12
	3/4" ~ 2-1/2"	1/2 1 1-1/2 2 2-1/2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	20	32
NPBD	7/16"	1/2 1 1-1/2 2 2-1/2 3 4	4	-
	9/16"	1/2 1 1-1/2 2 2-1/2 3 4 5 6 7 8	8	-
	3/4" ~ 1-1/16"	1/2 1 1-1/2 2 2-1/2 3 4 5 6 7 8 9 10 11 12	12	-
	1-1/4" ~ 2-1/2"	1/2 1 1-1/2 2 2-1/2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	20	-
NPSB NPTB	5/16"~9/16"	1/2 1 1-1/2 2	-	-
	3/4" ~ 2"	1/2 1 1-1/2 2 2-1/2 3 4	-	-

[Note] Consult us for non-standard stroke.

Product feature

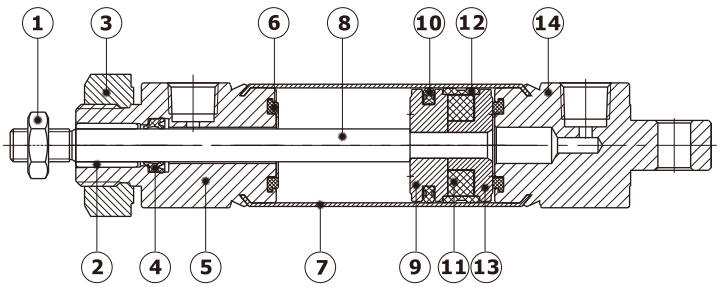
1. It belongs to mini cylinder that has compact structure, small volume and light weight.
2. The guide precision of piston rod is high and no additional lubricant is needed.
3. Piston rod stainless steel barrel make the cylinder adapt general corrosive working environment.
4. There are cylinders and accessories with several specifications for installation for your choice.
5. It has small cylinder diameter and quick reaction, suitable for the working environment with higher frequency.

NPB Series

Specification

Bore size(in)		5/16	7/16	9/16	3/4	7/8	1-1/16	1-1/4	1-1/2	1-3/4	2	2-1/2
Acting type	NPSB/NPTB	Single acting										-
	NPB	Double acting										
	NPBD	-	Double acting									
Fluid		Air(to be filtered by 40μm filter element)										
Operating pressure	Double acting	22~145psi(0.15~1.0MPa)										
	Single acting	28~145psi(0.2~1.0MPa)										
Proof pressure		215psi(1.5MPa)										
Temperature		-5℉~160℉(-20℃~70℃)										
Speed range inch/s		2~32										
Stroke tolerance inch		0~6 $^{+0.04}_{0}$ >6 $^{+0.06}_{0}$										
Cushion type		Bumper										
Port size		#10-32UNF			NPT1/8					NPT1/4		

Inner structure

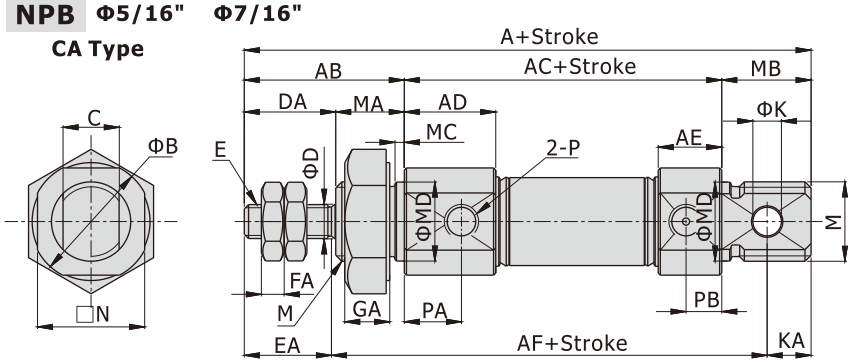


NO.	Item	NO.	Item
1	Rod nut	8	Piston rod
2	Bushing	9	Piston
3	Front cover nut	10	Piston seal
4	Front cover O-ring	11	Magnet
5	Front cover	12	Wear ring
6	Bumper	13	Magnet holder
7	Barrel	14	Back cover

Dimensions

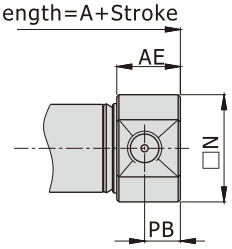
NPB Φ5/16" Φ7/16"

CA Type



U Type

Total length=A+Stroke



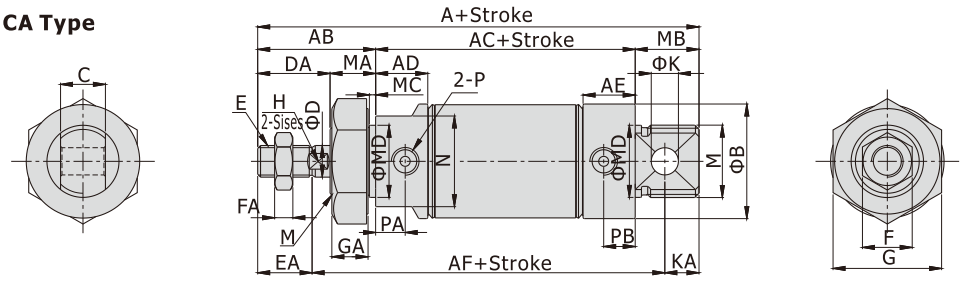
Bore size\Item	A		AB	AC	AD	AE	AF	B	C	D	DA	E	EA	F	FA	G	GA	H
Back cover type	CA	U																
5/16"	2.57	2.22	0.69	1.53	0.38	0.31	2.03	0.58	1/4	1/8	0.38	#5-40UNC	0.38	1/4	0.11	9/16	0.22	-
7/16"	3.31	2.81	0.88	1.93	0.48	0.39	2.55	0.67	5/16	3/16	0.50	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-

Bore size\Item	K	KA	M	MA	MB	MC	MD	N	P	PA	PB
Back cover type					CA						
5/16"	1/8	0.16	3/8-24UNF	0.31	0.35	-	-	1/2	#10-32UNF	0.24	0.16
7/16"	5/32	0.25	7/16-20UNF	0.38	0.50	0.05	$0.437^{0}_{-0.004}$	3/5	#10-32UNF	0.28	0.20

NPB Series

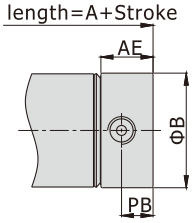
NPB Φ9/16"~Φ1-1/4" Φ1-3/4"~Φ2-1/2"

CA Type



U Type

Total length=A+Stroke



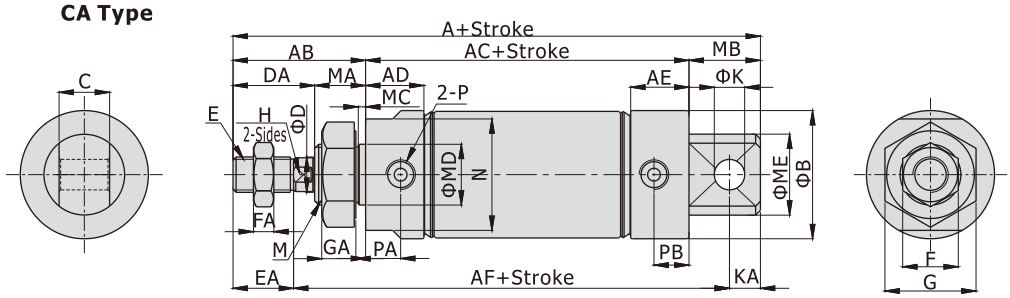
[Unit:inch]

Bore size\Item	A		AB	AC	AD	AE	AF	B	C	D	DA	E	EA	F	FA	G	GA	H
Back cover type	CA	U																
9/16"	3.25	2.81	0.88	1.93	0.47	0.38	2.55	0.67	5/16	3/16	0.50	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-
3/4"	4.53	3.91	1.00	2.91	0.69	0.69	3.75	0.86	3/8	1/4	0.50	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-
7/8"	4.34	3.72	1.00	2.72	0.66	0.66	3.56	0.95	3/8	1/4	0.50	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-
1-1/16"	4.62	4.00	1.12	2.88	0.70	0.70	3.85	1.14	3/8	5/16	0.62	5/16-24UNF	0.50	1/2	0.19	15/16	0.37	1/4
1-1/4"	5.88	5.06	1.63	3.43	0.77	0.77	4.73	1.34	1/2	7/16	1.00	7/16-20UNF	0.75	11/16	0.25	1-1/8	0.42	3/8
1-3/4"	7.13	6.13	1.94	4.19	1.02	1.02	5.74	1.83	5/8	1/2	1.19	1/2-20UNF	0.88	3/4	0.31	1-1/2	0.50	7/16
2"	6.94	5.94	2.07	3.87	0.96	0.96	5.61	2.10	3/4	5/8	1.26	1/2-20UNF	0.88	3/4	0.31	1-7/8	0.50	1/2
2-1/2"	6.94	5.94	2.07	3.87	0.96	0.96	5.61	2.60	3/4	5/8	1.26	1/2-20UNF	0.88	3/4	0.31	2-1/16	0.50	1/2

Bore size\Item	K	KA	M	MA	MB	MC	MD	N	P	PA	PB
Back cover type					CA						
9/16"	5/32	0.19	7/16-20UNF	0.38	0.44	0.06	$0.437^{0}_{-0.004}$	9/16	#10-32UNF	0.28	0.20
3/4"	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	$0.624^{0}_{-0.004}$	3/4	NPT1/8	0.37	0.37
7/8"	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	$0.624^{0}_{-0.004}$	13/16	NPT1/8	0.37	0.37
1-1/16"	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	$0.624^{0}_{-0.004}$	1	NPT1/8	0.39	0.39
1-1/4"	1/4	0.41	3/4-16UNF	0.63	0.82	0.09	$0.750^{0}_{-0.004}$	1-1/8	NPT1/8	0.43	0.43
1-3/4"	3/8	0.50	1-14UNS	0.75	1.00	0.09	$1.032^{0}_{-0.004}$	1-5/8	NPT1/4	0.51	0.51
2"	3/8	0.44	1-1/4-12UNF	0.81	1.00	0.12	$1.375^{0}_{-0.004}$	1-7/8	NPT1/4	0.51	0.51
2-1/2"	3/8	0.44	1-3/8-12UNF	0.81	1.00	0.12	$1.500^{0}_{-0.004}$	2-3/8	NPT1/4	0.51	0.51

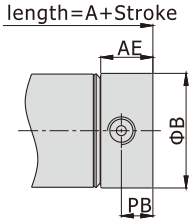
NPB Φ1-1/2"

CA Type



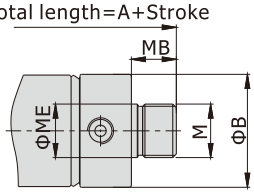
U Type

Total length=A+Stroke



CM Type

Total length=A+Stroke



[Unit:inch]

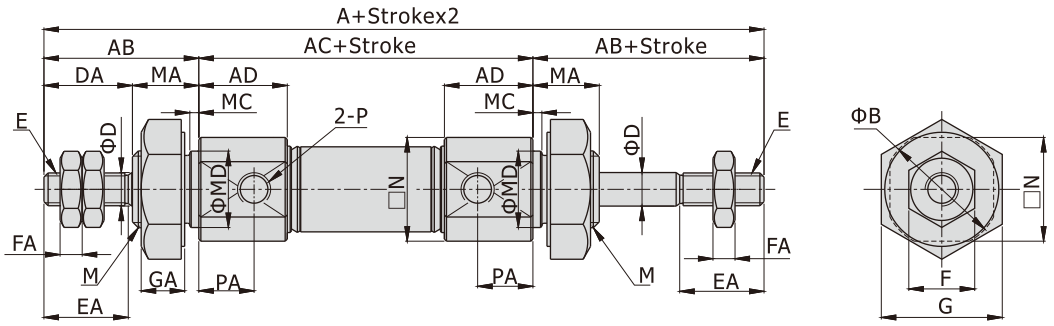
Bore size\Item	A			AB	AC	AD	AE	AF	B	C	D	DA	E	EA
Back cover type	CM	CA	U											
1-1/2"	5.26	5.51	4.63	1.63	3.00	0.72	0.72	4.39	1.58	5/8	7/16	1.00	7/16-20UNF	0.75

Bore size\Item	F	FA	G	GA	H	K	KA	M	MA
1-1/2"	11/16	0.25	1-1/8	0.42	3/8	3/8	0.38	3/4-16UNF	0.63

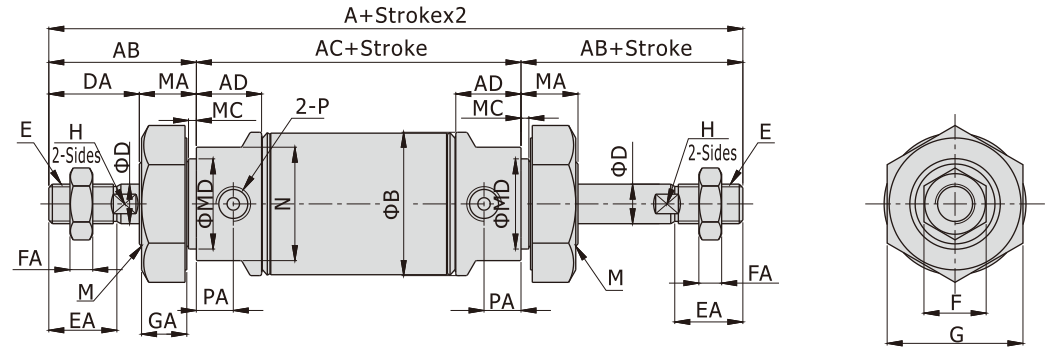
Bore size\Item	MB		MC	MD	ME		N	P	PA	PB
Back cover type	CM	CA			CM	CA				
1-1/2"	0.63	0.88	0.09	$0.75^{0}_{-0.004}$	$0.75^{0}_{-0.004}$	$1.00^{0}_{-0.004}$	1-3/8	NPT1/8	0.43	0.43

NPB Series

NPBD Φ7/16"



NPBD Φ9/16"~Φ2-1/2"



[Unit:inch]

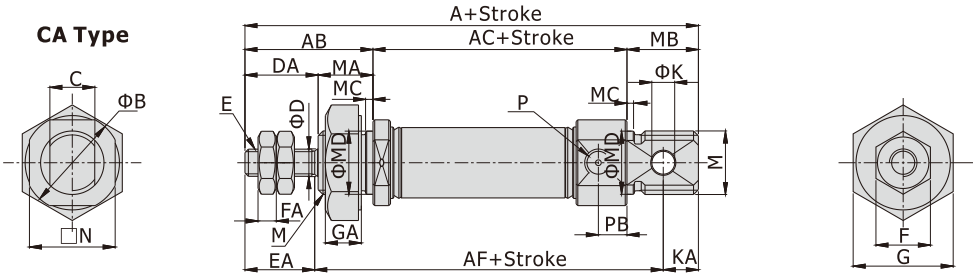
Bore size\Item	A	AB	AC	AD	B	D	DA	E	EA	F	FA	G	GA	H
7/16"	3.75	0.88	2.00	0.48	0.67	3/16	0.50	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-
9/16"	3.78	0.88	2.02	0.47	0.67	3/16	0.50	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-
3/4"	4.91	1.00	2.91	0.69	0.86	1/4	0.50	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-
7/8"	4.72	1.00	2.72	0.66	0.95	1/4	0.50	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-
1-1/16"	5.12	1.12	2.88	0.70	1.14	5/16	0.62	5/16-24UNF	0.50	1/2	0.19	15/16	0.37	1/4
1-1/4"	6.69	1.63	3.43	0.77	1.34	7/16	1.00	7/16-20UNF	0.75	11/16	0.25	1-1/8	0.42	3/8
1-1/2"	6.26	1.63	3.00	0.72	1.58	7/16	1.00	7/16-20UNF	0.75	11/16	0.25	1-1/8	0.42	3/8
1-3/4"	8.07	1.94	4.19	1.02	1.83	1/2	1.19	1/2-20UNF	0.88	3/4	0.31	1-1/2	0.50	7/16
2"	8.02	2.07	3.87	0.96	2.10	5/8	1.26	1/2-20UNF	0.88	3/4	0.31	1-7/8	0.50	1/2
2-1/2"	8.02	2.07	3.87	0.96	2.60	5/8	1.26	1/2-20UNF	0.88	3/4	0.31	2-1/16	0.50	1/2

Bore size\Item	M	MA	MC	MD	N	P	PA
7/16"	7/16-20UNF	0.38	0.05	$0.437^{0}_{-0.004}$	3/5	#10-32UNF	0.28
9/16"	7/16-20UNF	0.38	0.06	$0.437^{0}_{-0.004}$	9/16	#10-32UNF	0.28
3/4"	5/8-18UNF	0.50	0.09	$0.624^{0}_{-0.004}$	3/4	NPT1/8	0.37
7/8"	5/8-18UNF	0.50	0.09	$0.624^{0}_{-0.004}$	13/16	NPT1/8	0.37
1-1/16"	5/8-18UNF	0.50	0.09	$0.624^{0}_{-0.004}$	1	NPT1/8	0.39
1-1/4"	3/4-16UNF	0.63	0.09	$0.750^{0}_{-0.004}$	1-1/8	NPT1/8	0.43
1-1/2"	3/4-16UNF	0.63	0.09	$0.750^{0}_{-0.004}$	1-3/8	NPT1/8	0.43
1-3/4"	1-14UNS	0.75	0.09	$1.032^{0}_{-0.004}$	1-5/8	NPT1/4	0.51
2"	1-1/4-12UNF	0.81	0.12	$1.375^{0}_{-0.004}$	1-7/8	NPT1/4	0.51
2-1/2"	1-3/8-12UNF	0.81	0.12	$1.500^{0}_{-0.004}$	2-3/8	NPT1/4	0.51

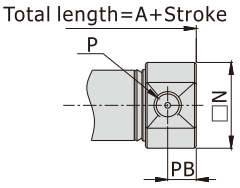
NPB Series

NPSB Φ5/16" Φ7/16"

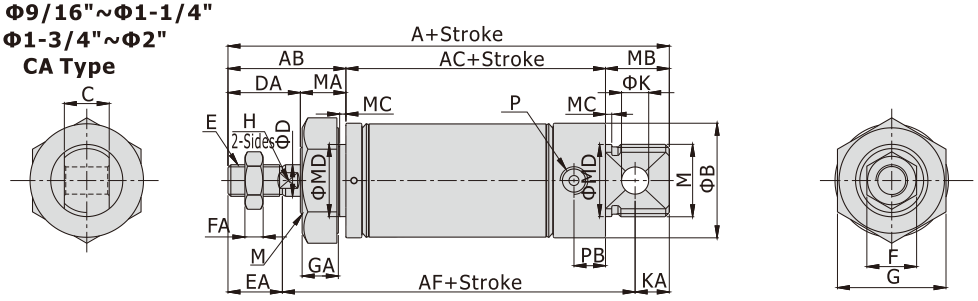
CA Type



U Type



Φ9/16"~Φ1-1/4"
Φ1-3/4"~Φ2"
CA Type



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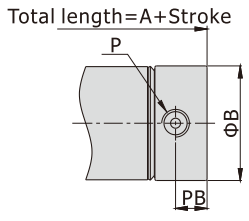
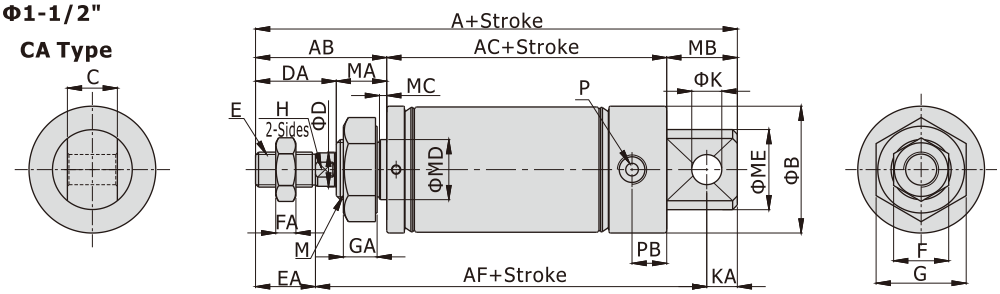


[Unit:inch]

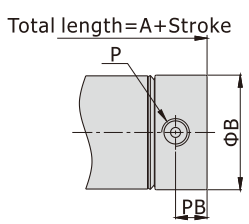
Bore size\Item	A								AB	AC				AF				B	C	D	DA
Back cover type	CA				U					-				-							
Stroke	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	-	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	-	-	-	-
5/16"	3.07	3.32	-	-	2.72	2.97	-	-	0.69	2.03	2.28	-	-	2.53	2.78	-	-	0.58	1/4	1/8	0.38
7/16"	3.81	4.06	-	-	3.31	3.56	-	-	0.88	2.43	2.68	-	-	3.06	3.31	-	-	0.67	5/16	3/16	0.50
9/16"	3.75	4.00	-	-	3.31	3.56	-	-	0.88	2.43	2.68	-	-	3.06	3.31	-	-	0.67	5/16	3/16	0.50
3/4"	4.66	4.91	5.53	5.78	4.04	4.29	4.91	5.16	1.00	3.04	3.29	3.91	4.16	3.88	4.13	4.75	5.00	0.86	3/8	1/4	0.50
7/8"	4.47	4.72	5.34	5.59	3.85	4.10	4.72	4.97	1.00	2.85	3.10	3.72	3.97	3.69	3.94	4.56	4.81	0.95	3/8	1/4	0.50
1-1/16"	4.75	5.00	5.62	5.87	4.13	4.38	5.00	5.25	1.12	3.01	3.26	3.88	4.13	3.97	4.22	4.84	5.09	1.14	3/8	5/16	0.62
1-1/4"	6.00	6.25	6.88	7.13	5.19	5.44	6.06	6.31	1.63	3.56	3.81	4.43	4.68	4.85	5.10	5.72	5.97	1.34	1/2	7/16	1.00
1-3/4"	7.26	7.51	8.13	8.38	6.26	6.51	7.13	7.38	1.94	4.32	4.57	5.19	5.44	5.88	6.13	6.75	7.00	1.83	5/8	1/2	1.19
2"	7.07	7.32	7.94	8.19	6.07	6.32	6.94	7.19	2.07	4.00	4.25	4.87	5.12	5.75	6.00	6.62	6.87	2.10	3/4	5/8	1.26

Bore size\Item	E	EA	F	FA	G	GA	H	K	KA	M	MA	MB	MC	MD	N	P	PB
5/16"	#5-40UNC	0.38	1/4	0.11	9/16	0.22	-	1/8	0.16	3/8-24UNF	0.31	0.35	-	-	1/2	#10-32UNF	0.16
7/16"	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-	5/32	0.25	7/16-20UNF	0.38	0.50	0.05	0.437 $^{0}_{-0.004}$	3/5	#10-32UNF	0.20
9/16"	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-	5/32	0.19	7/16-20UNF	0.38	0.44	0.06	0.437 $^{0}_{-0.004}$	-	#10-32UNF	0.20
3/4"	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 $^{0}_{-0.004}$	-	NPT1/8	0.37
7/8"	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 $^{0}_{-0.004}$	-	NPT1/8	0.37
1-1/16"	5/16-24UNF	0.50	1/2	0.19	15/16	0.37	1/4	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 $^{0}_{-0.004}$	-	NPT1/8	0.39
1-1/4"	7/16-20UNF	0.75	11/16	0.25	1-1/8	0.42	3/8	1/4	0.41	3/4-16UNF	0.63	0.82	0.09	0.750 $^{0}_{-0.004}$	-	NPT1/8	0.43
1-3/4"	1/2-20UNF	0.88	3/4	0.31	1-1/2	0.50	7/16	3/8	0.50	1-14UNS	0.75	1.00	0.09	1.032 $^{0}_{-0.004}$	-	NPT1/4	0.51
2"	1/2-20UNF	0.88	3/4	0.31	1-7/8	0.50	1/2	3/8	0.44	1-1/4-12UNF	0.81	1.00	0.12	1.375 $^{0}_{-0.004}$	-	NPT1/4	0.51

Φ1-1/2"
CA Type



U Type



[Unit:inch]

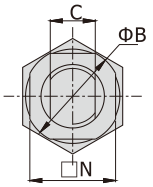
Bore size\Item	A								AB	AC				AF				B	C	D	DA
Back cover type	CA				U					-				-							
Stroke	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	-	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	-	-	-	-
1-1/2"	5.64	5.89	6.51	6.76	4.76	5.01	5.63	5.88	1.63	3.13	3.38	4.00	4.25	4.51	4.76	5.38	5.63	1.58	5/8	7/16	1.00

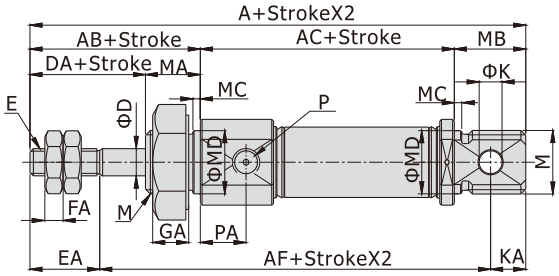
Bore size\Item	E	EA	F	FA	G	GA	H	K	KA	M	MA	MB	MC	MD	ME	P	PB
1-1/2"	7/16-20UNF	0.75	11/16	0.25	1-1/8	0.42	3/8	3/8	0.38	3/4-16UNF	0.63	0.88	0.09	0.75 $^{0}_{-0.004}$	1.00 $^{0}_{-0.004}$	NPT1/8	0.43

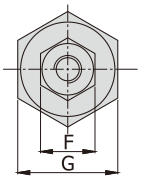
NPB Series

NPTB Φ5/16" Φ7/16"

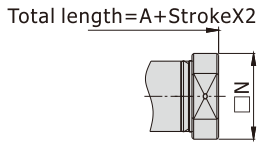
CA Type





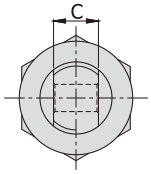


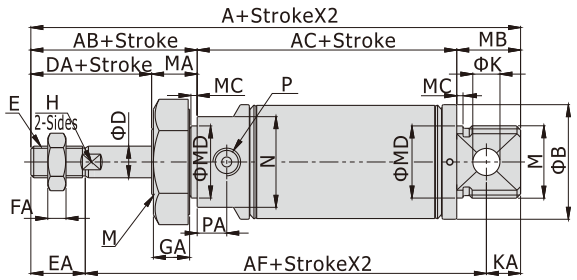
U Type

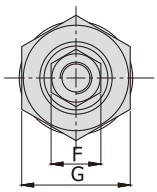


Φ9/16"~Φ1-1/4" Φ1-3/4"~Φ2"

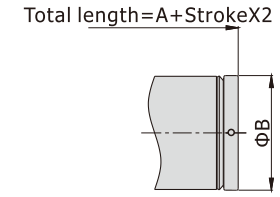
CA Type







U Type



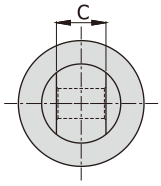
[Unit:inch]

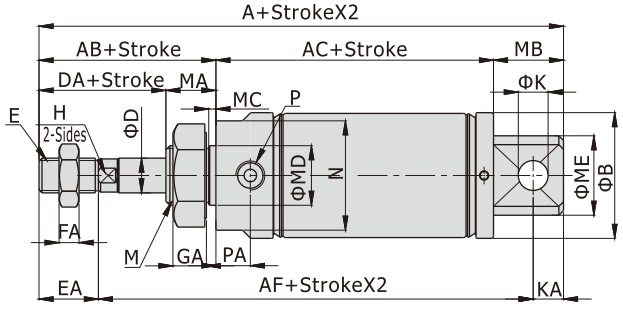
Bore size\Item	A								AB	AC				AF				B	C	D	DA
Back cover type	CA				U					-				-							
Stroke	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	-	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	-	-	-	-
5/16"	3.07	3.32	-	-	2.72	2.97	-	-	0.69	2.03	2.28	-	-	2.53	2.78	-	-	0.58	1/4	1/8	0.38
7/16"	3.81	4.06	-	-	3.31	3.56	-	-	0.88	2.43	2.68	-	-	3.06	3.31	-	-	0.67	5/16	3/16	0.50
9/16"	3.75	4.00	-	-	3.31	3.56	-	-	0.88	2.43	2.68	-	-	3.06	3.31	-	-	0.67	5/16	3/16	0.50
3/4"	4.66	4.91	5.53	5.78	4.04	4.29	4.91	5.16	1.00	3.04	3.29	3.91	4.16	3.88	4.13	4.75	5.00	0.86	3/8	1/4	0.50
7/8"	4.47	4.72	5.34	5.59	3.85	4.10	4.72	4.97	1.00	2.85	3.10	3.72	3.97	3.69	3.94	4.56	4.81	0.95	3/8	1/4	0.50
1-1/16"	4.75	5.00	5.62	5.87	4.13	4.38	5.00	5.25	1.12	3.01	3.26	3.88	4.13	3.97	4.22	4.84	5.09	1.14	3/8	5/16	0.62
1-1/4"	6.00	6.25	6.88	7.13	5.19	5.44	6.06	6.31	1.63	3.56	3.81	4.43	4.68	4.85	5.10	5.72	5.97	1.34	1/2	7/16	1.00
1-3/4"	7.26	7.51	8.13	8.38	6.26	6.51	7.13	7.38	1.94	4.32	4.57	5.19	5.44	5.88	6.13	6.75	7.00	1.83	5/8	1/2	1.19
2"	7.07	7.32	7.94	8.19	6.07	6.32	6.94	7.19	2.07	4.00	4.25	4.87	5.12	5.75	6.00	6.62	6.87	2.10	3/4	5/8	1.26

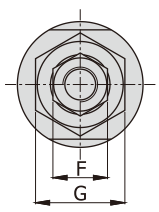
Bore size\Item	E	EA	F	FA	G	GA	H	K	KA	M	MA	MB	MC	MD	N	P	PA
5/16"	#5-40UNC	0.38	1/4	0.11	9/16	0.22	-	1/8	0.16	3/8-24UNF	0.31	0.35	-	-	1/2	#10-32UNF	0.24
7/16"	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-	5/32	0.25	7/16-20UNF	0.38	0.50	0.05	0.437 $^{0}_{-0.004}$	3/5	#10-32UNF	0.28
9/16"	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-	5/32	0.19	7/16-20UNF	0.38	0.44	0.06	0.437 $^{0}_{-0.004}$	9/16	#10-32UNF	0.28
3/4"	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 $^{0}_{-0.004}$	3/4	NPT1/8	0.37
7/8"	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 $^{0}_{-0.004}$	13/16	NPT1/8	0.37
1-1/16"	5/16-24UNF	0.50	1/2	0.19	15/16	0.37	1/4	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 $^{0}_{-0.004}$	1	NPT1/8	0.39
1-1/4"	7/16-20UNF	0.75	11/16	0.25	1-1/8	0.42	3/8	1/4	0.41	3/4-16UNF	0.63	0.82	0.09	0.750 $^{0}_{-0.004}$	1-1/8	NPT1/8	0.43
1-3/4"	1/2-20UNF	0.88	3/4	0.31	1-1/2	0.50	7/16	3/8	0.50	1-14UNS	0.75	1.00	0.09	1.032 $^{0}_{-0.004}$	1-5/8	NPT1/4	0.51
2"	1/2-20UNF	0.88	3/4	0.31	1-7/8	0.50	1/2	3/8	0.44	1-1/4-12UNF	0.81	1.00	0.12	1.375 $^{0}_{-0.004}$	1-7/8	NPT1/4	0.51

Φ1-1/2"

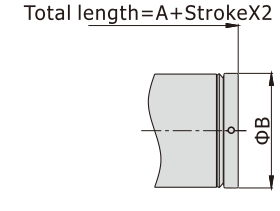
CA Type







U Type



[Unit:inch]

Bore size\Item	A								AB	AC				AF				B	C	D	DA
Back cover type	CA				U					-				-							
Stroke	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	-	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	-	-	-	-
1-1/2"	5.64	5.89	6.51	6.76	4.76	5.01	5.63	5.88	1.63	3.13	3.38	4.00	4.25	4.51	4.76	5.38	5.63	1.58	5/8	7/16	1.00

Bore size\Item	E	EA	F	FA	G	GA	H	K	KA	M	MA	MB	MC	MD	ME	N	P	PA
1-1/2"	7/16-20UNF	0.75	11/16	0.25	1-1/8	0.42	3/8	3/8	0.38	3/4-16UNF	0.63	0.88	0.09	0.75 $^{0}_{-0.004}$	1.00 $^{0}_{-0.004}$	1-3/8	NPT1/8	0.43

NPB Series——Accessories

List for ordering code of accessories

Accessories / Bore size	Mounting accessories		Knuckle	Sensor switch	
	LB	SDB	Y	CMSG	DMSG(S)
5/16"	F-NPB5/16LB	F-NPB5/16SDB	F-NPB5/16Y	CMSG	DMSG(S)
7/16"	F-NPB7/16LB	F-NPB7/16SDB	F-NPB7/16Y		
9/16"					
3/4"	F-NPB3/4LB	F-NPB3/4SDB	F-NPB3/4Y		
7/8"					
1-1/16"			F-NPB1-1/16Y		
1-1/4"	F-NPB1-1/4LB	F-NPB1-1/4SDB	F-NPB1-1/4Y		
1-1/2"		F-NPB1-1/2SDB			
1-3/4"	F-NPB1-3/4LB	F-NPB1-3/4SDB	F-NPB1-3/4Y		
2"	F-NPB2LB	F-NPB2SDB			
2-1/2"	F-NPB2-1/2LB				

Accessory selection

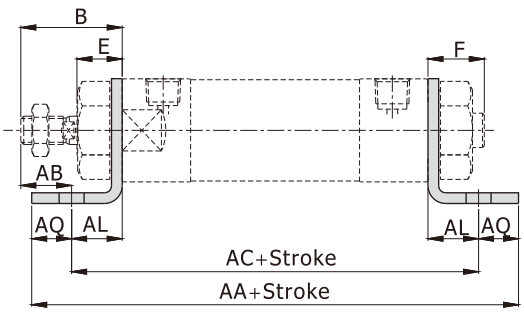
Accessories / Cylinder model	Mounting accessories		Knuckle	Sensor switch	
	LB	SDB	Y	CMSG	DMSG(S)
NPB	●	●	●	●	●
NPSB/NPTB	●	●	●	●	●
NPBD	●	×	●	●	●

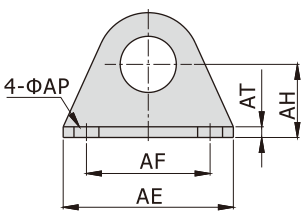
Material of accessories

Accessories / Bore size	Mounting accessories		Knuckle
	LB	SDB	Y
5/16"~2-1/2"	□	□	□
□—Steel			

Dimensions

LB





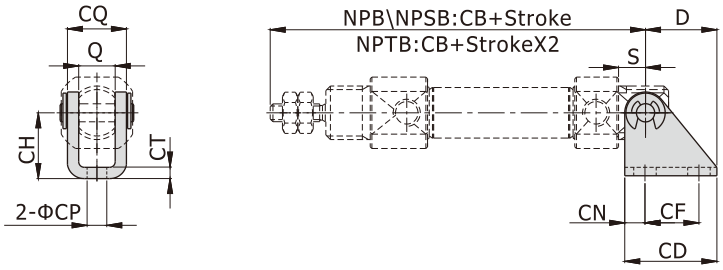
[Unit:inch]

Bore size\Item	AA	AA(NPSB)				AC	AC(NPSB)				B	E	F	AB	AE	AF	AL	AQ	AP	AT	AH
Stroke	(NPB)	1/2,1	1-1/2,2	2-1/2,3	4	(NPB)	1/2,1	1-1/2,2	2-1/2,3	4											
5/16"	2.29	2.79	3.04	-	-	2.03	2.53	2.78	-	-	0.69	0.31	0.35	0.44	1.00	0.75	0.25	0.13	0.14	0.08	0.44
7/16"	3.30	3.81	4.06	-	-	2.69	3.19	3.44	-	-	0.88	0.38	0.50	0.50	1.38	1.00	0.38	0.31	0.19	0.10	0.56
9/16"	3.30	3.81	4.06	-	-	2.69	3.19	3.44	-	-	0.88	0.38	0.44	0.50	1.38	1.00	0.38	0.31	0.19	0.10	0.56
3/4"	4.91	5.04	5.29	5.91	6.16	4.03	4.15	4.40	5.03	5.28	1.00	0.50	0.62	0.44	1.89	1.50	0.56	0.44	0.28	0.12	0.81
7/8"	4.72	4.85	5.10	5.72	5.97	3.84	3.96	4.21	4.84	5.09	1.00	0.50	0.62	0.44	1.89	1.50	0.56	0.44	0.28	0.12	0.81
1-1/16"	4.88	5.05	5.26	5.88	6.13	4.00	4.12	4.37	5.00	5.25	1.12	0.50	0.62	0.56	1.89	1.50	0.56	0.44	0.28	0.12	0.81
1-1/4"	6.44	6.56	6.81	7.44	7.69	4.93	5.06	5.31	5.93	6.18	1.63	0.63	0.82	0.88	2.50	1.88	0.75	0.75	0.28	0.14	1.00
1-1/2"	6.00	6.13	6.38	7.00	7.25	4.50	4.63	4.88	5.50	5.75	1.63	0.63	0.63	0.88	2.50	1.88	0.75	0.75	0.28	0.14	1.00
1-3/4"	7.19	7.32	7.57	8.19	8.44	5.94	6.07	6.32	6.95	7.20	1.94	0.75	1.00	1.06	3.00	2.24	0.88	0.62	0.34	0.18	1.25
2"	7.11	7.24	7.49	8.11	8.36	5.87	6.00	6.25	6.87	7.12	2.07	0.81	1.00	1.07	3.13	2.24	1.00	0.62	0.34	0.18	1.50
2-1/2"	7.11	-	-	-	-	5.87	-	-	-	-	2.07	0.81	1.00	1.07	3.75	2.87	1.00	0.62	0.34	0.18	1.75

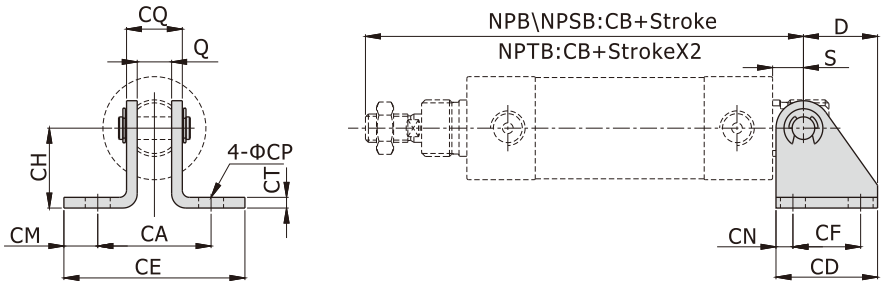
NPB Series——Accessories

SDB

Φ5/16"



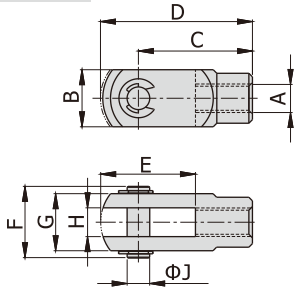
Φ7/16"~Φ2-1/2"



[Unit:inch]

Bore size\Item / Stroke	D	S	Q	CA	CB (NPB)	CB(NPSB\NPTB) 1/2,1	CB(NPSB\NPTB) 1-1/2,2	CB(NPSB\NPTB) 2-1/2,3	CB(NPSB\NPTB) 4	CD	CE	CF	CH	CM	CN	CT	CP	CQ
5/16"	0.50	0.19	1/4	-	2.41	2.91	3.16	-	-	0.63	-	0.38	0.44	-	0.13	0.08	0.14	0.42
7/16"	0.56	0.25	5/16	0.88	3.05	3.55	3.80	-	-	0.75	1.31	0.50	0.56	0.22	0.13	0.08	0.19	0.47
9/16"	0.56	0.25	5/16	0.88	3.05	3.55	3.80	-	-	0.75	1.31	0.50	0.56	0.22	0.13	0.08	0.19	0.47
3/4"	0.81	0.34	3/8	1.26	4.25	4.38	4.63	5.25	5.50	1.12	2.01	0.75	0.88	0.37	0.19	0.12	0.28	0.63
7/8"	0.81	0.34	3/8	1.26	4.06	4.19	4.44	5.06	5.31	1.12	2.01	0.75	0.88	0.37	0.19	0.12	0.28	0.63
1-1/16"	0.81	0.34	3/8	1.26	4.35	4.48	4.73	5.35	5.60	1.12	2.01	0.75	0.88	0.37	0.19	0.12	0.28	0.63
1-1/4"	0.81	0.41	1/2	1.39	5.48	5.60	5.85	6.48	6.73	1.12	2.13	0.75	0.88	0.37	0.19	0.12	0.28	0.74
1-1/2"	1.13	0.50	5/8	1.75	5.14	5.26	5.51	6.13	6.38	1.50	2.63	1.00	1.38	0.44	0.25	0.12	0.28	0.87
1-3/4"	1.13	0.50	5/8	2.00	6.62	6.75	7.00	7.62	7.87	1.50	2.88	1.00	1.38	0.44	0.25	0.16	0.28	0.95
2"	1.13	0.56	3/4	2.14	6.49	6.62	6.87	7.49	7.74	1.50	3.01	1.00	1.38	0.44	0.25	0.16	0.28	1.08
2-1/2"	1.13	0.56	3/4	2.14	6.49	-	-	-	-	1.50	3.01	1.00	1.38	0.44	0.25	0.16	0.28	1.08

Y Knuckle

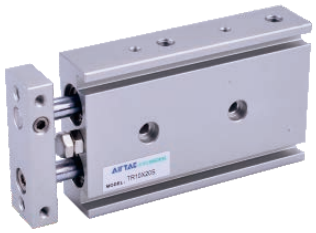


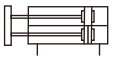
[Unit:inch]

Bore size\Item	A	B	C	D	E	F	G	H	J
F-NPB5/16Y	#5-40UNC	0.32	0.44	0.56	0.38	0.50	0.32	1/8	1/8
F-NPB7/16Y	#10-32UNF	0.38	0.75	0.94	0.56	0.56	0.38	3/16	3/16
F-NPB3/4Y	1/4-28UNF	0.50	0.94	1.19	0.69	0.69	0.50	1/4	1/4
F-NPB1-1/16Y	5/16-24UNF	0.50	0.94	1.19	0.69	0.69	0.50	1/4	1/4
F-NPB1-1/4Y	7/16-20UNF	0.75	1.31	1.69	0.94	1.02	0.75	3/8	3/8
F-NPB1-3/4Y	1/2-20UNF	0.75	1.31	1.69	0.94	1.02	0.75	3/8	3/8

Twin-rod cylinder——TR Series

Bore size: Φ6, Φ10, Φ16, Φ20, Φ25, Φ32





Ordering code

TR 20 × 50 S T

1 2 3 4 5

① Model

TR: Twin-rod cylinder
(Double acting type)

② Bore size

6 10 16 20 25 32

④ Magnet [Note1]

S: With magnet

⑤ Thread type [Note 2]

T: NPT

③ Stroke [Note3]

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

[Note1] TR Series are all with magnet.
[Note2] When the thread is standard, the code is blank.
[Note3] 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.

Specification

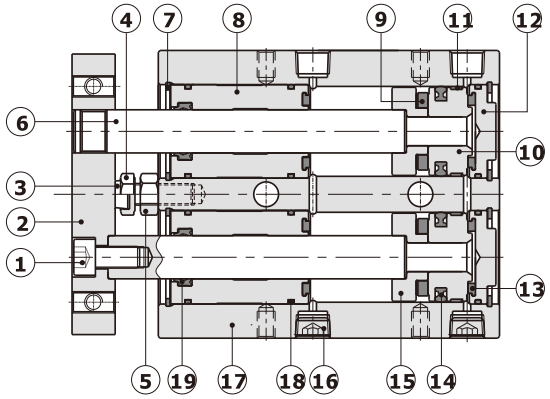
Bore size(mm)	6	10	16	20	25	32
Acting type	Double acting					
Fluid	Air(to be filtered by 40μm filter element)					
Operating pressure	22~145psi(0.15~1.0MPa)					
Proof pressure	215psi(1.5MPa)					
Temperature	-20~70℃					
Speed range mm/s	30~500					
Adjustable stroke mm	−5~0					
Stroke tolerance	$\leqslant 100\ ^{+1.0}_{0}$		$>100\ ^{+1.5}_{0}$			
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] NPT thread is available.

TR Series

Bore size: Φ6, Φ10, Φ16, Φ20, Φ25, Φ32

Inner structure



NO.	Item	NO.	Item
1	Screw	11	Wear ring
2	Fixing plate	12	Back cover
3	Bumper	13	Bumper
4	Screw	14	Piston seal
5	Nut	15	Magnet holder
6	Piston rod	16	Screw
7	C clip	17	Body
8	Front cover	18	Back cover O-ring
9	Magnet	19	Wiper seal
10	Piston		

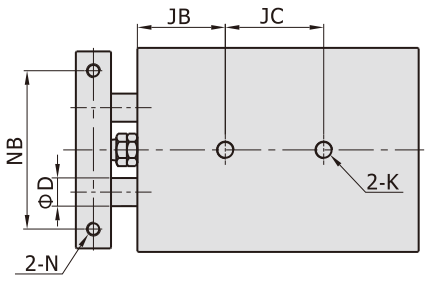
Criteria for selection: Cylinder thrust

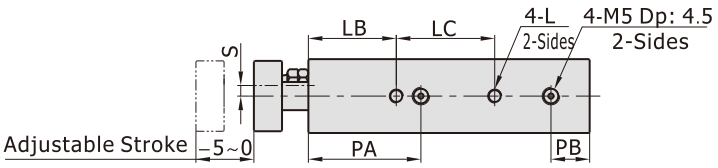
Unit:Newton(N)

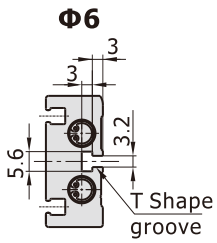
Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(psi)						
					15	30	45	60	75	90	105
6	4	Double acting	Push side	56.5	5.7	113.0	17.0	22.6	28.3	33.9	39.6
			Pull side	31.4	3.1	6.3	9.4	12.6	15.7	18.8	22.0
10	6	Double acting	Push side	157.1	15.7	31.4	47.1	62.8	78.6	94.3	110.0
			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

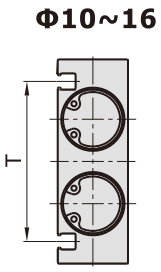
Dimensions

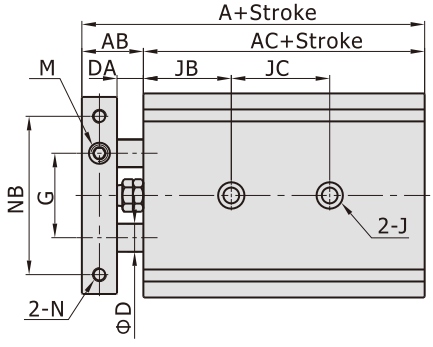
TR6~16

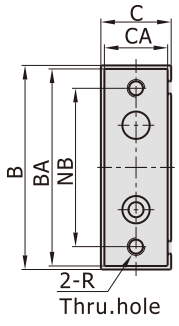












[Unit: mm]

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		-	-	-	-	-	-	23.2
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

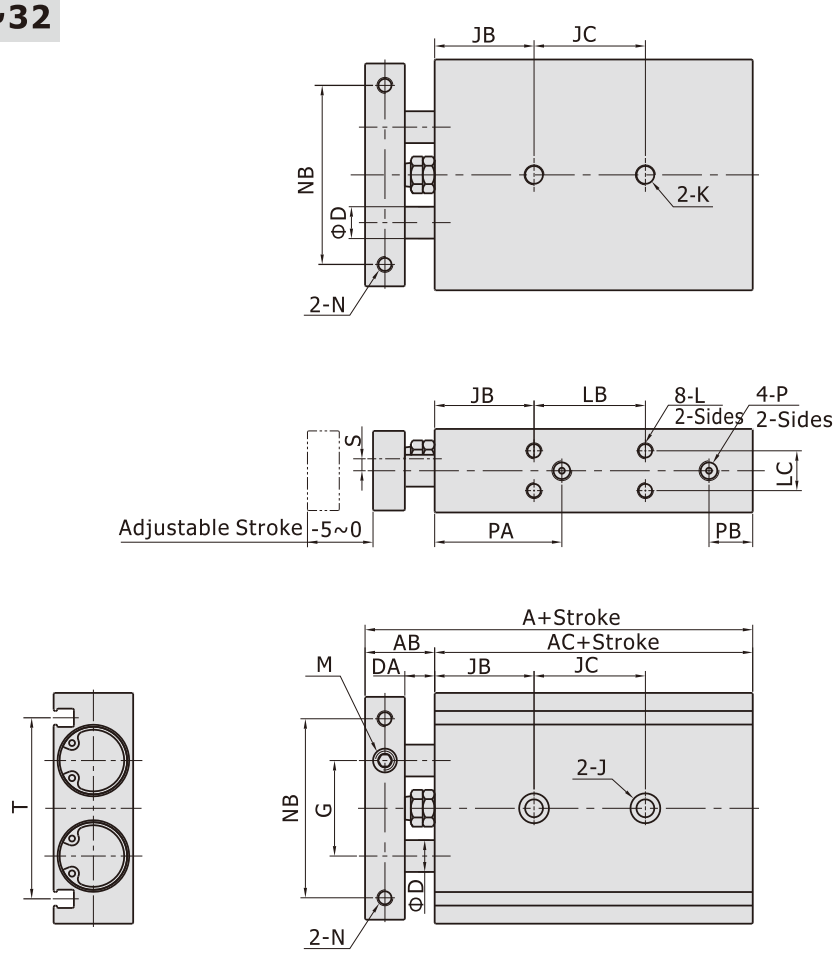
Bore size\Item	J	JB	K	L	LB	M
6	One side:Φ6.5Dp:3.3Thru.hole:Φ3.4	13	-	M3×0.5Dp:4.5	10	M3×0.5
10	One side:Φ6.5Dp:3.3Thru.hole:Φ3.4	20	M4×0.7Thru.hole	M3×0.5Dp:5	20	M5×0.8
16	One side:Φ8.0Dp:4.4Thru.hole:Φ4.5	30	M5×0.8Thru.hole	M4×0.7Dp:5	30	M6×1.0

Bore size\Item	N	NB	PA	PB	R	S
6	M3×0.5Thru.hole	28	24.5	6.5	M3×0.5	4.5
10	M3×0.5Dp:7.5	35	30	8	M4×0.7	3.5
16	M4×0.7Thru.hole	45	38	8	M5×0.8	5

TR Series

Bore size: Φ6, Φ10, Φ16, Φ20, Φ25, Φ32

TR20~32



[Unit: mm]

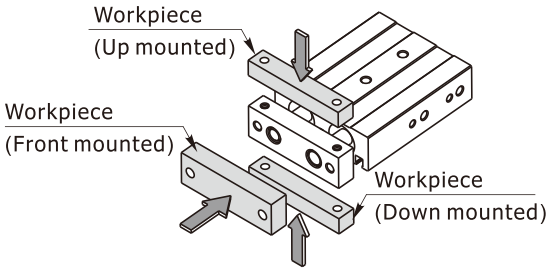
Bore size\Item / Stroke	A	AB	AC	B	BA	C	CA	D	DA	G	JB	JC LB						
												10~25	30~50	60~100	125	150	175	200
20	94	24	70	64	62	25	23	10	12	28	30	30	40	60	80	80	100	100
25	96	24	72	80	78	30	28	12	12	35	30	30	40	60	80	80	100	100
32	112	30	82	98	96	38	36	16	14	44	30	40	50	70	90	90	110	110

Bore size\Item	P	PA	PB	J	K	L	LC
20	M5×0.8	46	9	One side:Φ9.5Dp:5.3Thru.hole:Φ5.5	M6×1.0Thru.hole	M4×0.7Dp:5.5	9.5
25	1/8"	43	9	One side:Φ11Dp:6.3Thru.hole:Φ7	M8×1.25Thru.hole	M5×0.8Dp:7	13
32	1/8"	53	10	One side:Φ11Dp:6.3Thru.hole:Φ7	M8×1.25Thru.hole	M5×0.8Dp:7	20

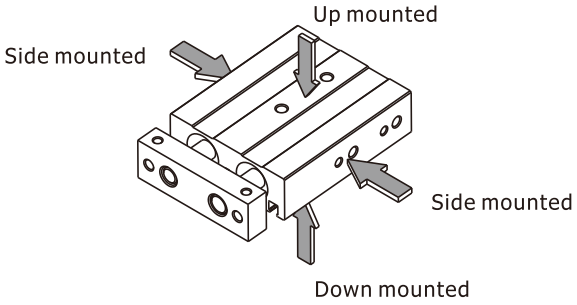
Bore size\Item	M	N	NB	R	S	T
20	M8×1.25	M4×0.7Dp:6	50	M5×0.8	6.5	52
25	M8×1.25	M5×0.8Dp:7.5	60	M6×1.0	9	61.2
32	M10×1.5	M5×0.8Dp:8	75	M6×1.0	11.5	72.7

Installation and application

1. How to mount workpiece.



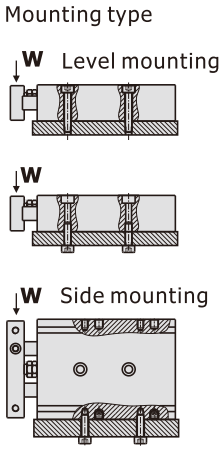
How to mount the workpiece

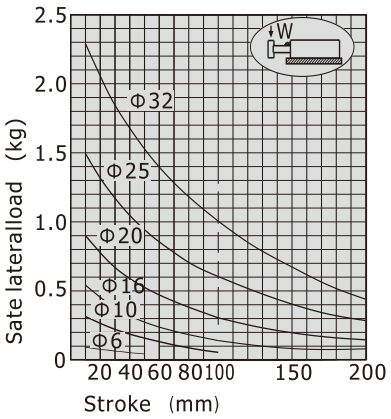


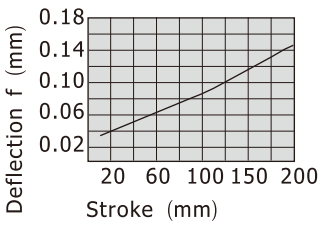
How to mount the cylinder

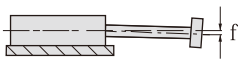
2. Max. weight of allowable side-load

3. Safe deflection





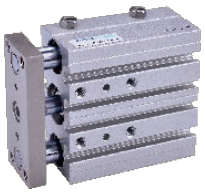


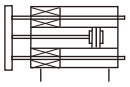


The average value of deflection of rod end of the whole series basically stays in the line showed in the chart on the left.

Tri-rod cylinder——TCL, TCM Series

Bore size: Φ6, Φ10, Φ12, Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63





Ordering code

TC	M	50×50	S	T
①	②	③	④	⑤	⑥

① **Model**
TC: Tri-rod cylinder(Double acting type)

② **Bearing type**
M: Bronze bearing
L: Linear bearing

③ **Bore size**	**Adapt bearing type**
6	Bronze bearing(M Type)
10	
12	Linear bearing(L Type) Bronze bearing(M Type)
16	
20	
25	
32	
40	
50	
63	

⑤ **Magnet** [Note1]
S: With magnet

⑥ **Thread type** [Note 2]
T:NPT

④ **Stroke** [Note3]		
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

[Note1] TC Series are all with magnet.
[Note2] When the thread is standard, the code is blank.
[Note3] 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.

Specification

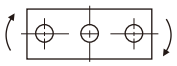
Bore size(mm)		**6**	**10**	**12**	**16**	**20**	**25**	**32**	**40**	**50**	**63**
Acting type		Double acting									
Fluid		Air(to be filtered by 40μm filter element)									
Operating pressure		22~100psi(0.15~0.7MPa)		22~145psi(0.15~1.0MPa)							
Proof pressure		175psi(1.2MPa)		215psi(1.5MPa)							
Temperature		-20~70℃									
Speed range mm/s		50~500		30~500							
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°	
	TCM	±0.1°		±0.10°		±0.09°		±0.08°		±0.06°	
Port size [Note2]		M3×0.5		M5×0.8		1/8				1/4	

[Note1] Retract position.
[Note2] NPT thread is available.

TCL, TCM Series

Bore size: Φ6, Φ10, Φ12, Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

Safe load and torque

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
Max. safe load																					**Unit: Newton(N)**
6	TCM	0.4	0.3	0.18	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	TCM	1.5	1.2	0.8	0.5	0.25	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	TCM	-	3	-	3	3	3	3	3	3	3	3	3	3	3	2	2	-	-	-	-
	TCL	-	2	-	2	2	2	2	2	2	1	1	1	1	1	1	1	-	-	-	-
16	TCM	-	7	-	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	-	-
	TCL	-	4	-	4	4	4	4	4	4	3	3	3	3	3	3	3	3	2	-	-
20	TCM	-	-	-	14	14	14	13	12	12	12	12	12	12	12	11	10	10	9	8	7
	TCL	-	-	-	7	7	7	7	6	6	6	6	6	6	6	5	5	5	5	4	4
25	TCM	-	-	-	20	20	20	18	16	19	19	19	19	19	19	18	17	16	15	14	13
	TCL	-	-	-	10	10	10	9	8	10	10	10	10	10	9	9	8	8	7	7	7
32	TCM	-	-	-	-	37	37	37	36	35	35	34	34	34	33	33	31	29	27	26	24
	TCL	-	-	-	-	19	19	19	18	17	17	17	17	17	17	16	15	15	14	13	12
40	TCM	-	-	-	-	37	37	37	36	35	35	34	34	34	33	33	31	29	27	26	24
	TCL	-	-	-	-	19	19	19	18	17	17	17	17	17	17	16	15	15	14	13	12
50	TCM	-	-	-	-	140	130	120	105	165	160	155	155	150	145	130	115	100	80	70	60
	TCL	-	-	-	-	70	65	60	50	80	80	75	75	75	70	65	55	50	40	35	30
63	TCM	-	-	-	-	140	130	120	105	165	160	155	155	150	145	130	115	100	80	70	60
	TCL	-	-	-	-	70	65	60	50	80	80	75	75	75	70	65	55	50	40	35	30
Max. safe torque																					**Unit: Newton · Meter(N · m)**
																					
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	-	0.90	-	0.79	0.71	0.65	0.77	0.72	0.65	0.53	0.50	0.47	0.41	0.36	0.31	0.27	-	-	-	-
	TCL	-	0.61	-	0.45	0.40	0.35	0.58	0.50	0.44	0.39	0.37	0.35	0.32	0.29	0.24	0.20	-	-	-	-
16	TCM	-	1.21	-	1.04	0.94	0.88	1.23	1.11	0.99	0.72	0.69	0.65	0.61	0.58	0.50	0.44	0.40	0.36	-	-
	TCL	-	0.99	-	0.74	0.66	0.59	0.99	0.86	0.77	0.69	0.65	0.61	0.57	0.52	0.43	0.37	0.32	0.28	-	-
20	TCM	-	-	-	1.57	1.42	1.31	2.39	2.15	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	-	-	-	1.26	1.14	1.03	2.17	1.94	1.79	1.59	1.52	1.46	1.33	1.25	1.34	1.17	1.03	0.93	0.88	0.76
25	TCM	-	-	-	2.40	2.22	2.01	3.66	3.35	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	-	-	-	2.11	1.96	1.75	3.37	3.02	2.71	2.42	2.38	2.33	2.19	1.97	2.05	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	-	-	-	-	5.95	5.73	5.44	4.89	5.43	5.15	5.11	5.02	4.70	4.51	6.34	5.79	5.33	4.93	4.33	4.29
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	-	-	-	-	6.55	6.21	5.77	5.39	6.17	5.67	5.62	5.58	5.33	4.96	6.98	6.38	5.87	5.43	5.00	4.72
50	TCM	-	-	-	-	13.00	12.60	11.00	10.80	13.70	12.70	12.00	11.80	11.10	10.80	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	11.60	10.70	9.83	9.12	8.95	7.95
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	17.50	14.00	11.00	10.60	10.20	9.74	13.00	11.90	11.00	10.20	9.63	8.84

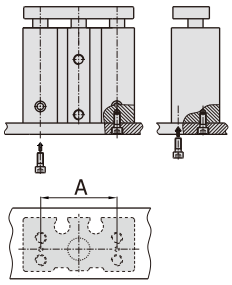
TCL, TCM Series

Bore size: Φ6, Φ10, Φ12, Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

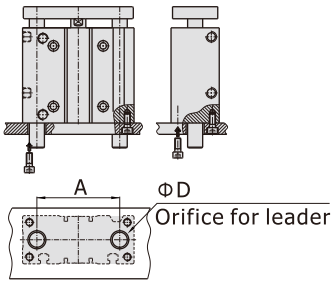
How to mount

Fixation of screw at back side(Φ6~Φ63)

Φ6\Φ10



Φ12~Φ63

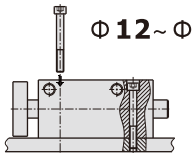


Bore size\Item		6	10	12	16	20	25	32	40	50	63
A		20.5	23	41	46	54	64	78	86	110	124
D (Min)	TCM	X	X	8	10	12	14	18	18	22	22
	TCL	–	–								

Fixation of screw on top surface(Φ6~Φ63)

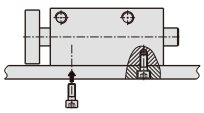
Φ6\Φ10

Φ12~Φ63



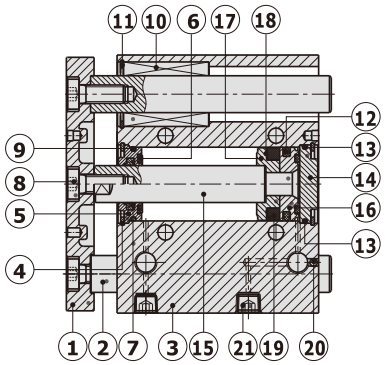
Fixation of T slot at bottom(Φ12~Φ63)

Fixation of screw at bottom surface(Φ12~Φ63)



Inner structure

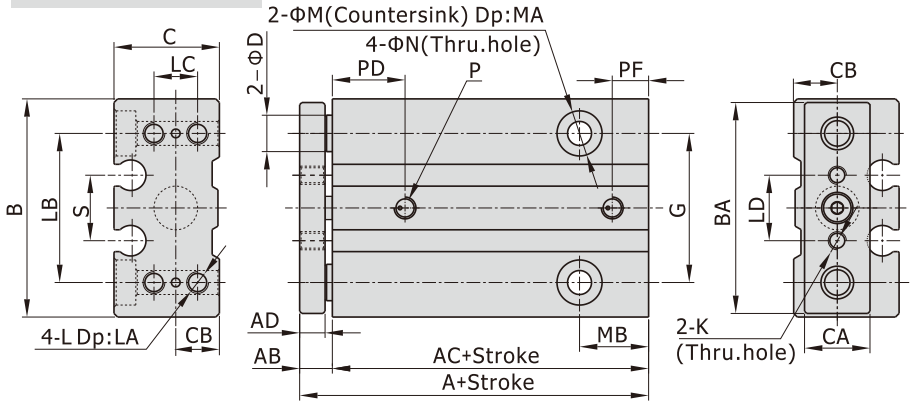
Φ12~Φ63



NO.	Item	NO.	Item
1	Fixing plate	12	Piston seal
2	Leader	13	O–ring
3	Body	14	Back cover
4	C clip	15	Piston rod
5	Front cover	16	Piston
6	Bumper	17	Magnet holder
7	Piston rod O-ring	18	Magnet washer
8	Screw	19	Magnet
9	O-ring	20	Screw
10	Bearing	21	Screw
11	C clip		

Dimensions

TCM6\TCM10



[Unit: mm]

Bore size\Item	A	AB	AC	AD	B	BA	C
6	29.5	6	23.5	5	30	29	14.5
10	32	6	26	5	34	33	18

Bore size\Item	CA	CB	D	G	K
6	9	6	5	20.5	M2.5X0.45
10	10	7.5	6	23	M3X0.5

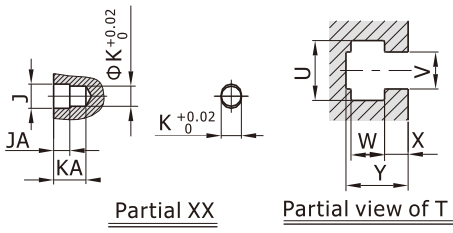
Bore size\Item	L	LA	LB	LC	LD	M
6	M3X0.5	5	20.5	6	9	6
10	M4X0.7	5	23	8	11	8

Bore size\Item	MA	MB	N	P	PD	PF
6	3	9.5	3.5	M3X0.5	9.5	5.5
10	4	8.5	4.5	M3X0.5	11.5	5

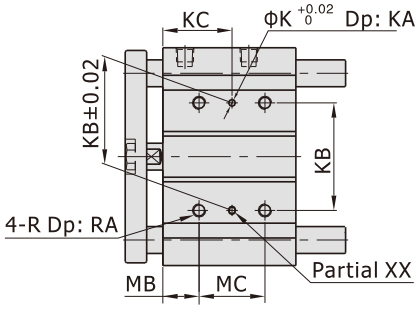
TCL, TCM Series

Bore size: Φ6, Φ10, Φ12, Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

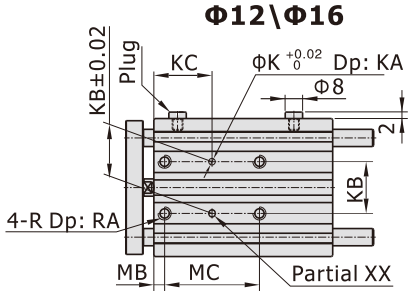
TCL/TCM12~63

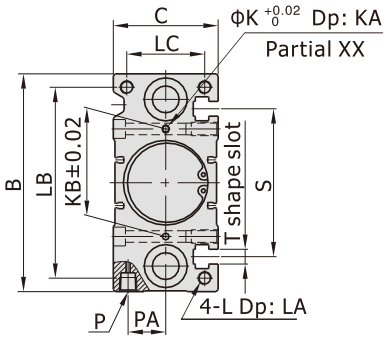


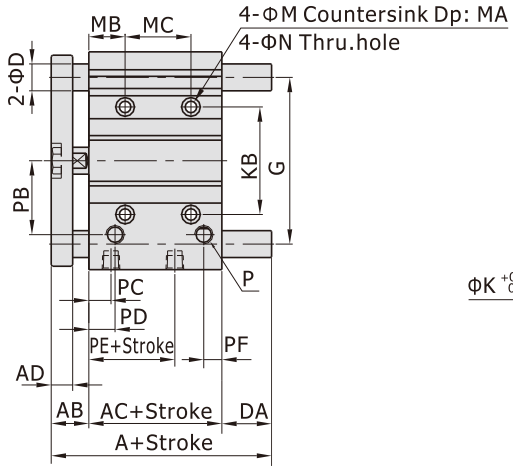
Φ20~Φ63

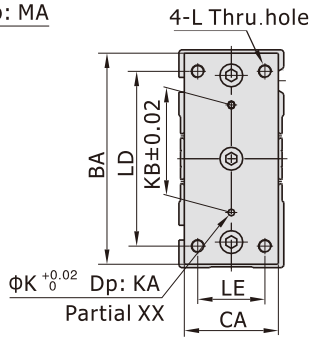


Φ12\Φ16









[Unit: mm]

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

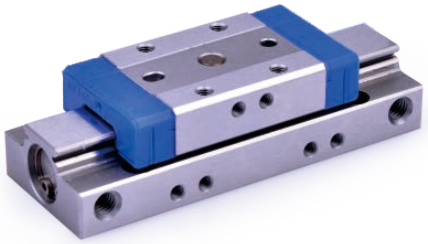
Bore size\Item	AB	AC	AD	B	BA	C	CA	D(TCL)	D(TCM)	G	J	JA	K	KA	KB	L	LA	LB	LC	LD
12	13	29	8	58	56	26	22	6	8	41	3.5	3	3	6	23	M4×0.7	10	50	18	48
16	13	33	8	64	62	30	25	8	10	46	3.5	3	3	6	24	M5×0.8	12	56	22	54
20	16	37	10	83	81	36	30	10	12	54	3.5	3	3	6	28	M5×0.8	13	72	24	70
25	16	37.5	10	93	91	42	38	12	16	64	4.5	3	4	6	34	M6×1.0	15	82	30	78
32	22	37.5	12	112	110	48	44	16	20	78	4.5	3	4	6	42	M8×1.25	20	98	34	96
40	22	44	12	120	118	54	44	16	20	86	4.5	3	4	6	50	M8×1.25	20	106	40	104
50	28	44	16	148	146	64	60	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	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	10	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	10.5	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	15	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

Slide table cylinder

HGS Series

Bore size: Φ6, Φ8, Φ10, Φ12



Ordering code

HGS 10×15 S J

1 2 3 4 5

① Model

HGS: Slide table cylinder

② Bore size

6 8 10 12

③ Stroke

Bore size (mm)	Standard stroke (mm)
6	5 10
8	5 10 15 20
10	5 10 15 20
12	5 10 15 20 25

④ Magnet

Blank: Without magnet

S: With magnet

⑤ Stroke adjustment device

Blank: Without stroke adjustment device

J: With stroke adjustment device [Note]

[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

① Model

HGS: Slide table cylinder

② Bore size

6 8 10 12

③ Stroke

Bore size (mm)	Standard stroke (mm)
6	5 10
8	5 10 15 20
10	5 10 15 20
12	5 10 15 20 25

④ Accessories type

H: Sensor fixed seat package

J: Stroke adjusting screw package

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

HGS Series

Bore size: Φ6, Φ8, Φ10, Φ12

Specification

Bore size(mm)	6	8	10	12
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	22~100psi(0.15~0.7MPa)			
Proof pressure	175psi(1.2MPa)			
Cushion type	Bumper		Bumper or shock absorber	
Temperature	-20~70℃			
Lubrication	Not required			
Speed range mm/s	50~500			
Stroke tolerance	$^{+0.5}_{0}$			
Sensor switches [Note1]	DMSH(S)			
Port size	M3×0.5	M5×0.8		

Production weight table

Unit: g

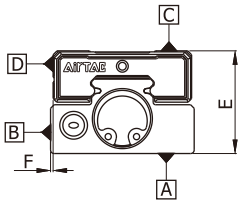
Model	Body weight	Sensor fixed seat package weight	Stroke adjusting screw package weight		
			Single adjusting screw	Single shock absorber	Other accessories
HGS6X5	116.1	14.25	2.4	–	11.61
HGS10X5	152.3	19.05	2.4	-	11.61
HGS8X5	133.01	14.05	2.4	-	10.34
HGS8X10	167.46	18.54	2.4	-	10.34
HGS8X15	207.07	23.35	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)

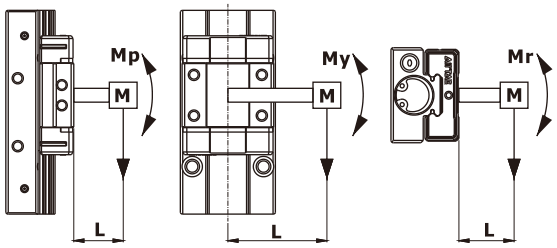
Table precision



[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 torque



Model	Max. Allowable torque (N.m)		
	Pitch moment Mp	Yaw moment My	Roll moment Mr
HGS6X5	0.42	0.42	0.87
HGS10X5			
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			

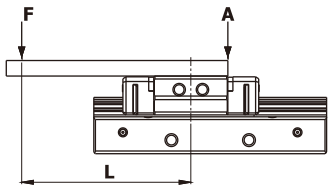
Max. allowable load

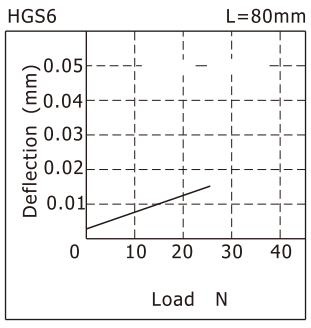
[Unit: kg]

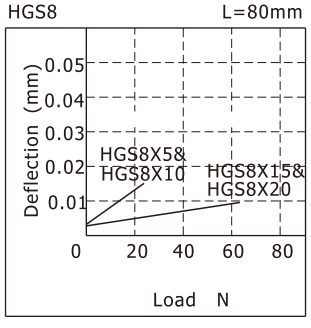
Model	HGS6	HGS8	HGS10	HGS12
No stroke adjustment device	0.3	0.3	0.8	1.2
With stroke adjustment device	0.2	0.5	0.8	1.2
With shock absorber	-	-	1.6	2.0

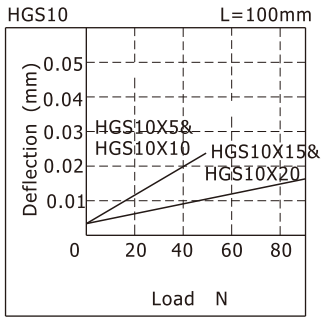
Table deflection

Table deflection due to pitch moment









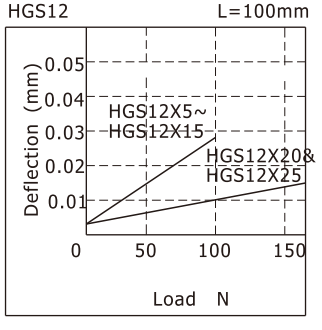
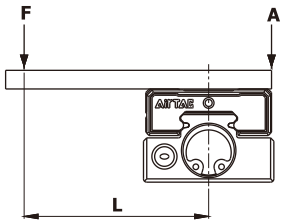
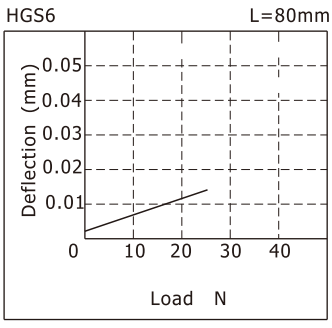
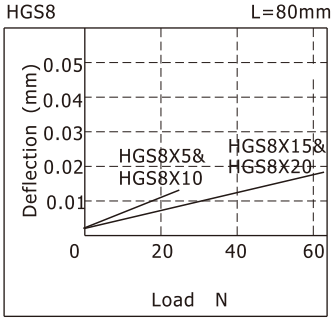
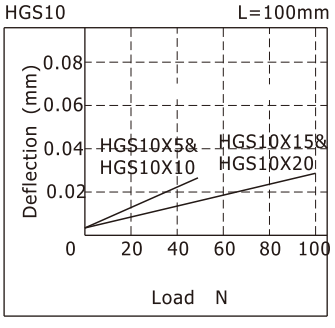


Table deflection due to yaw moment









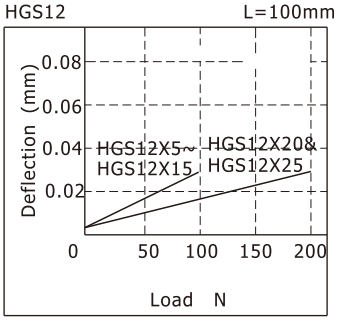
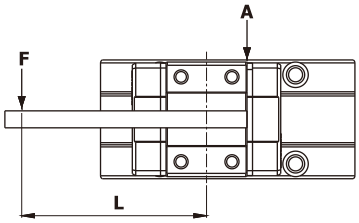
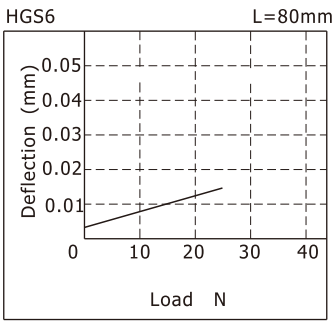
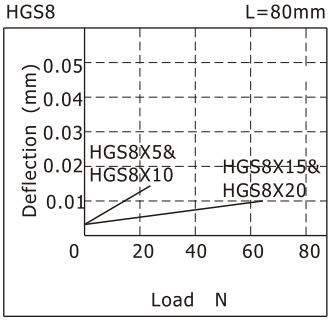
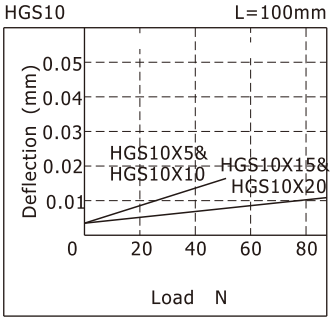


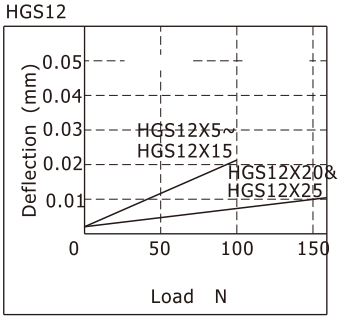
Table deflection due to roll moment





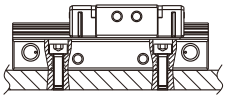




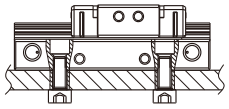


Installation and application

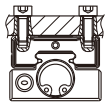
1. Cylinder can to be mounted from 4 directions
2. When mounting an compact slide cylinder, screws of appropriate length should be used and tightened properly within the maximum tightening torque. If screws are tightened beyond designed limits, malfunction may occur. If they are tightened insufficiently, it may result in sliding of falling off from its position.



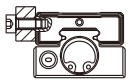
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HGS6	M3×0.5	1.1	4.5
HGS8	M3×0.5	1.1	5
HGS10	M3×0.5	1.1	5
HGS12	M4×0.7	2.5	4.5



Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HGS6	M4×0.7	2.5	4.5
HGS8	M4×0.7	2.5	5
HGS10	M4×0.7	2.5	5
HGS12	M5×0.8	5.1	4.5



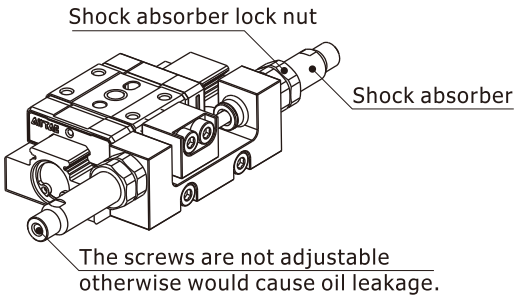
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HGS6	M3×0.5	1.1	3
HGS8	M3×0.5	1.1	3
HGS10	M3×0.5	1.1	3
HGS12	M3×0.5	1.1	4



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

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.

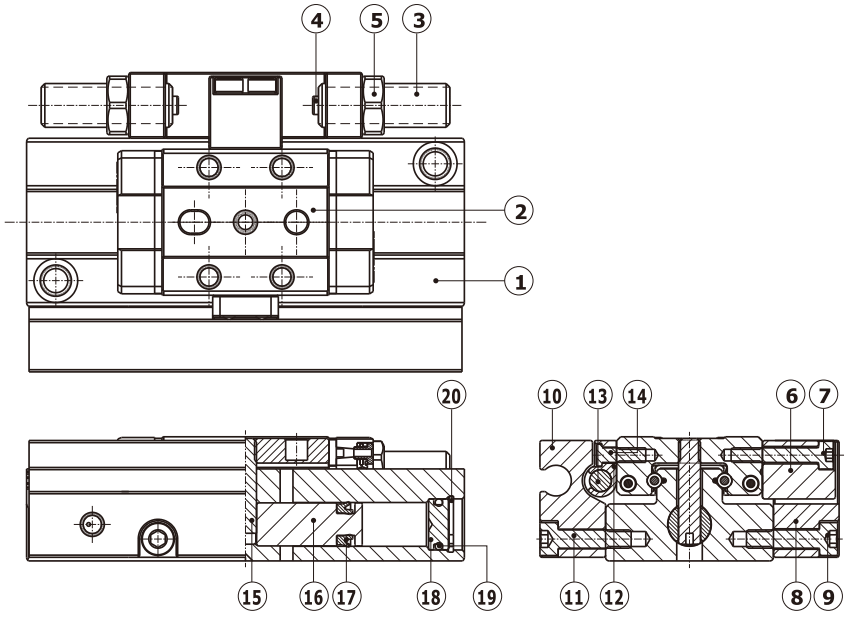


Model	Shock absorber	Tightening torque
HGS6	Without shock absorber	
HGS8		
HGS10	ACA0806-1N	1.67(N.m)
HGS12	ACA0806-1N	1.67(N.m)

HGS Series

Bore size: Φ6, Φ8, Φ10, Φ12

Inner structure

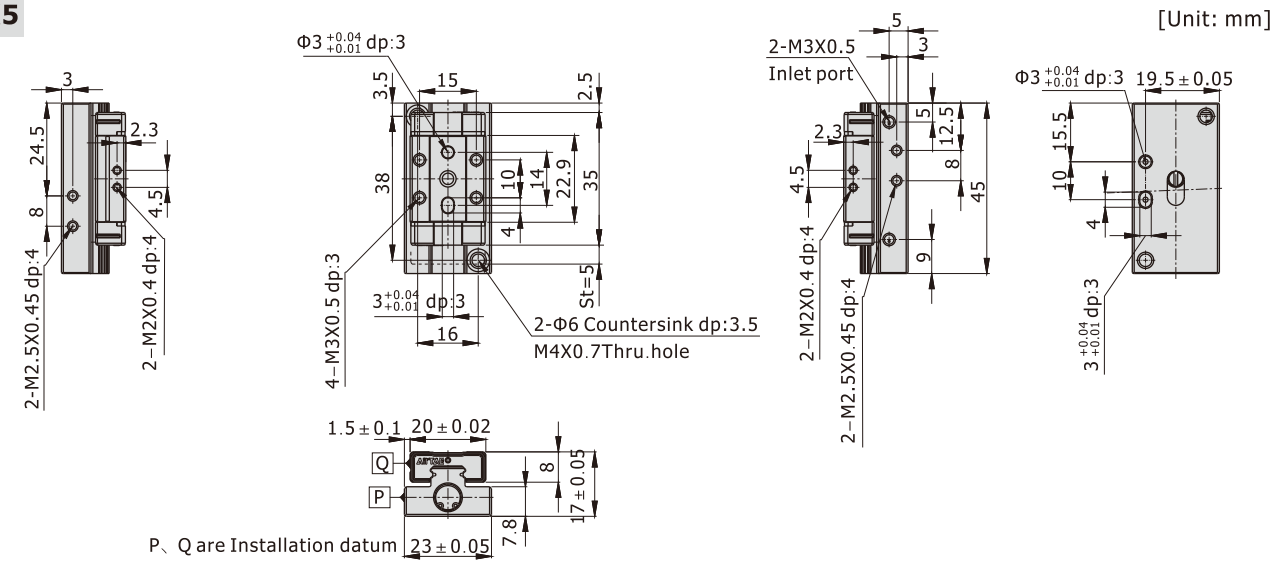


NO.	Item
1	Body
2	Slide table
3	Adjustable screw
4	Bumper
5	Hex nut
6	Middle stopping block
7	Hexagon socket head screws
8	End stopping block
9	Hexagon socket head screws
10	Sensor fixed rail
11	Hexagon socket head screws
12	Magnet holder
13	Magnet
14	Screw
15	Pin
16	Piston
17	Piston packing
18	End cover
19	O ring
20	C clip

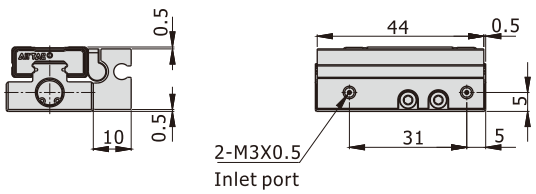
Dimensions(HGS6)

HGS6X5

[Unit: mm]

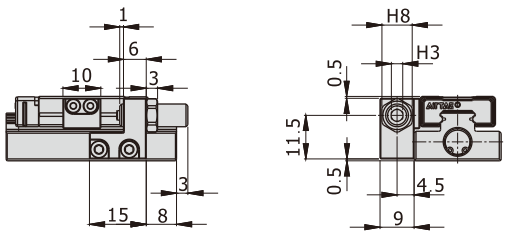


HGS6X5S

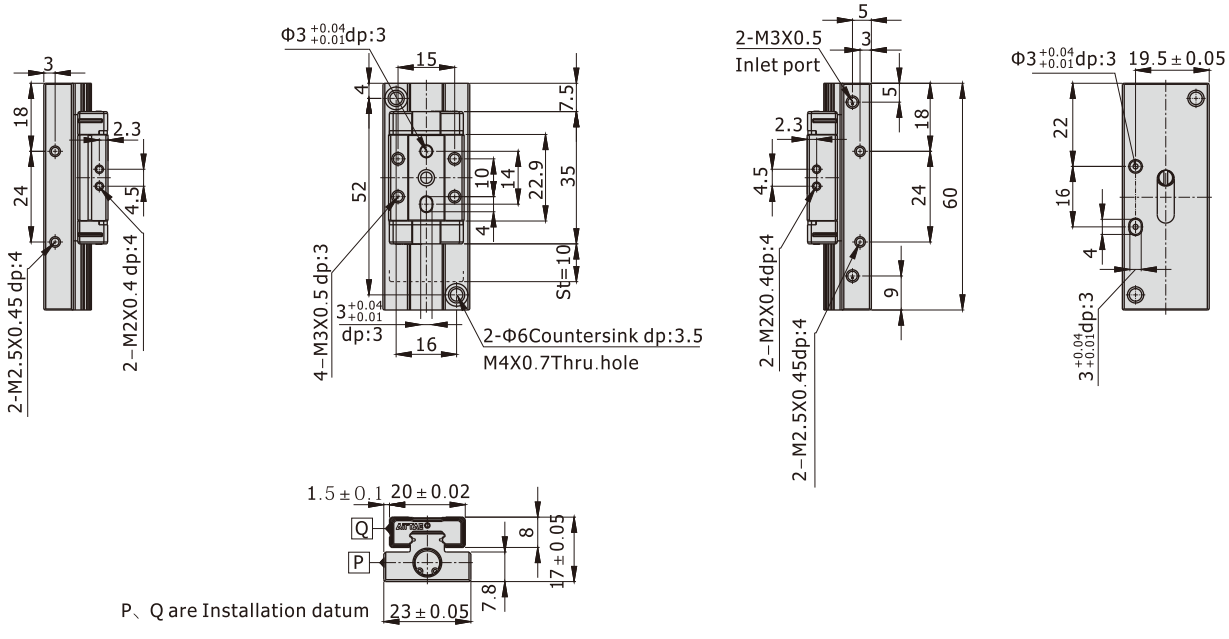


HGS6X5J

Adjustable range :5mm



HGS6X10



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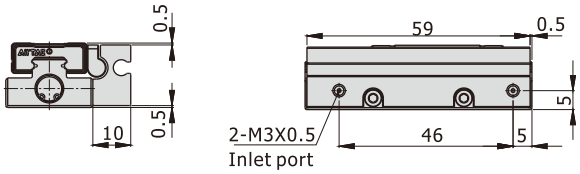
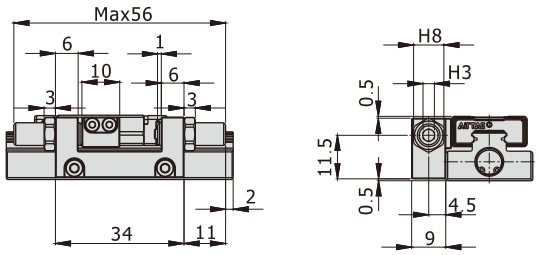


HGS6X10J

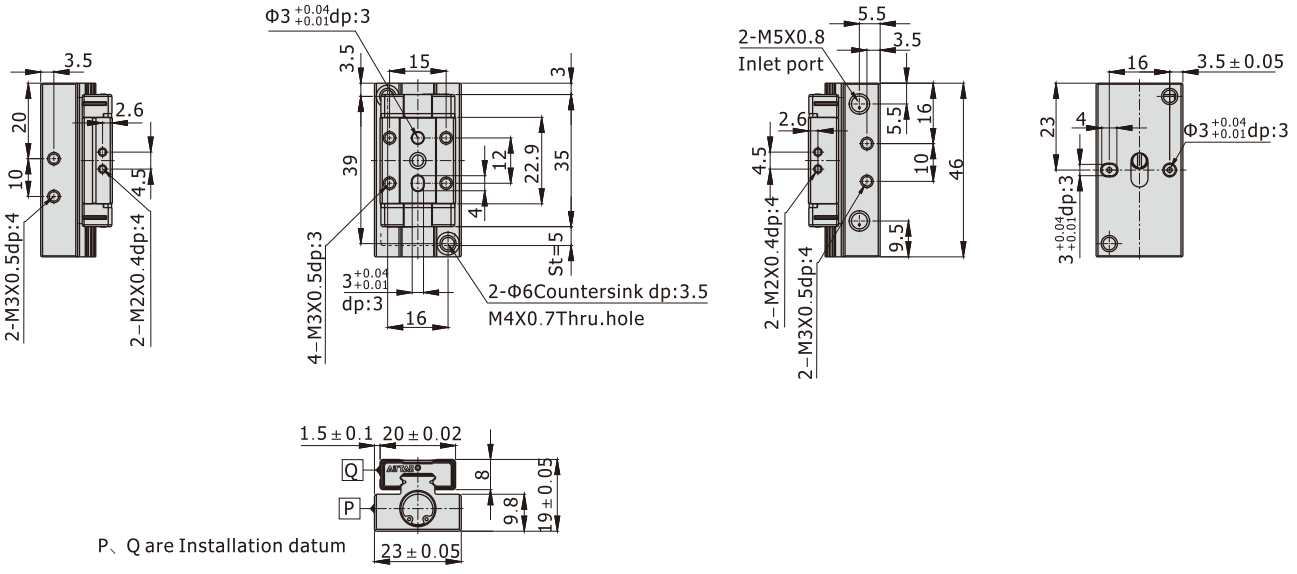
Adjustable range :5mm of each sides.



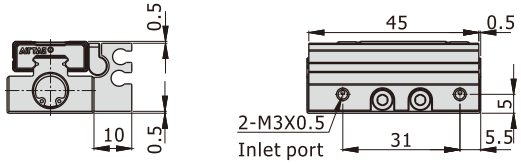
Dimensions(HGS8)

HGS8X5

[Unit: mm]

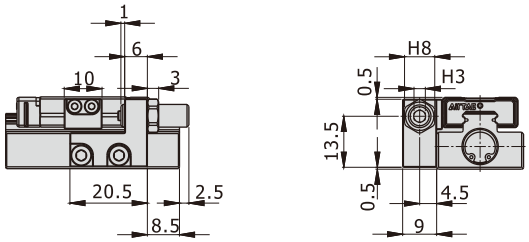


HGS8X5S

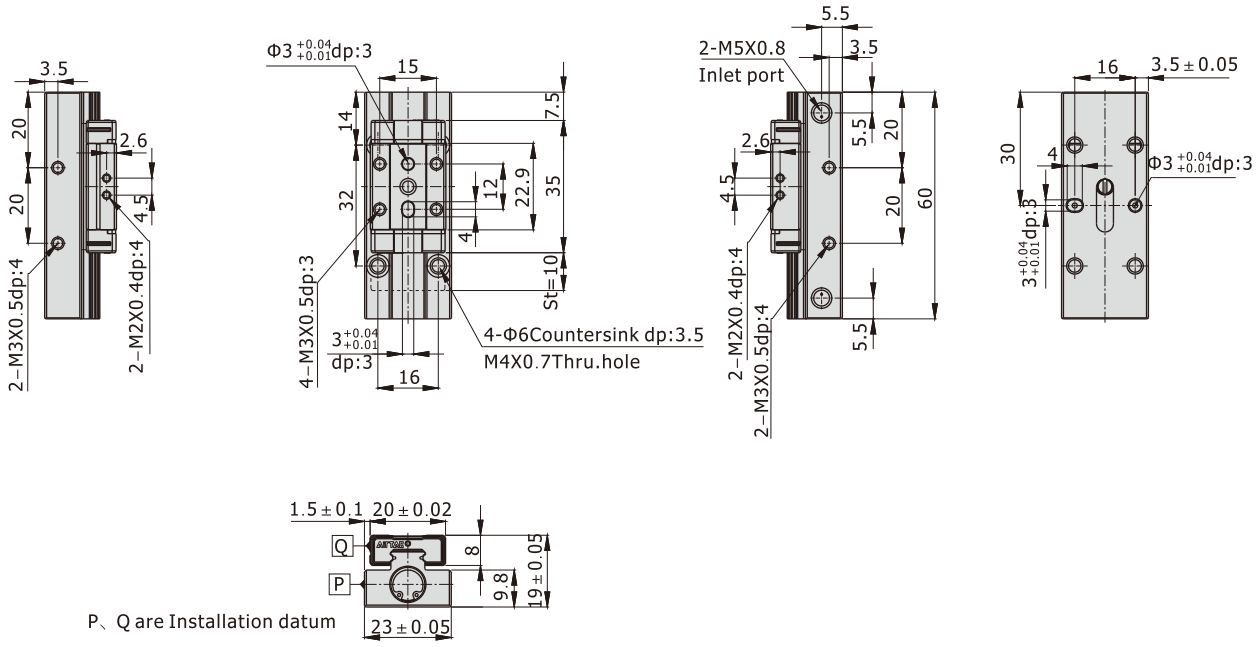


HGS8X5J

Adjustable range :5mm



HGS8X10



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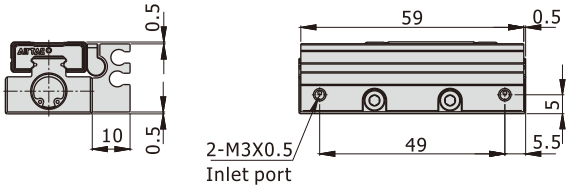
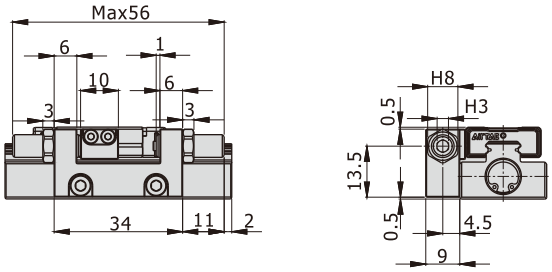
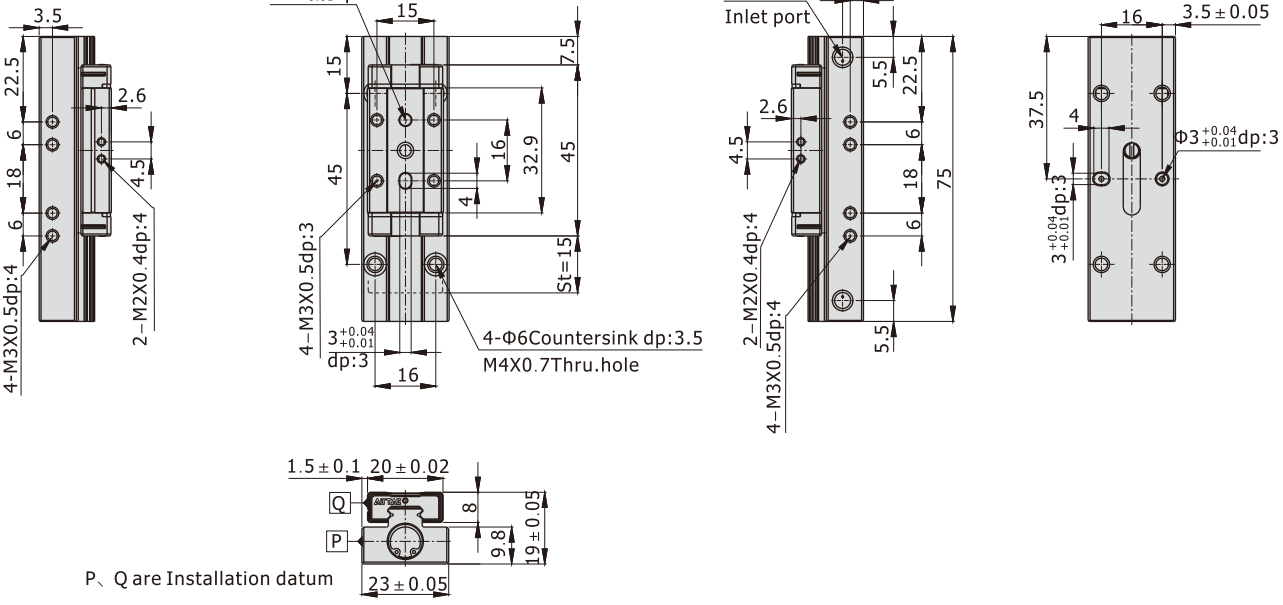


HGS8X10J

Adjustable range :5mm of each sides.



HGS8X15



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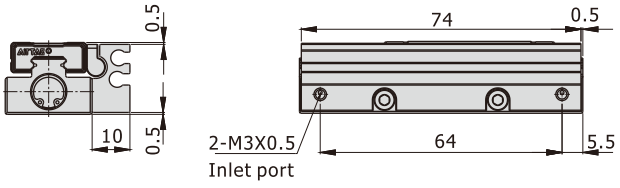
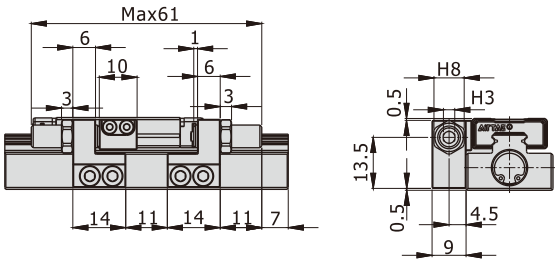
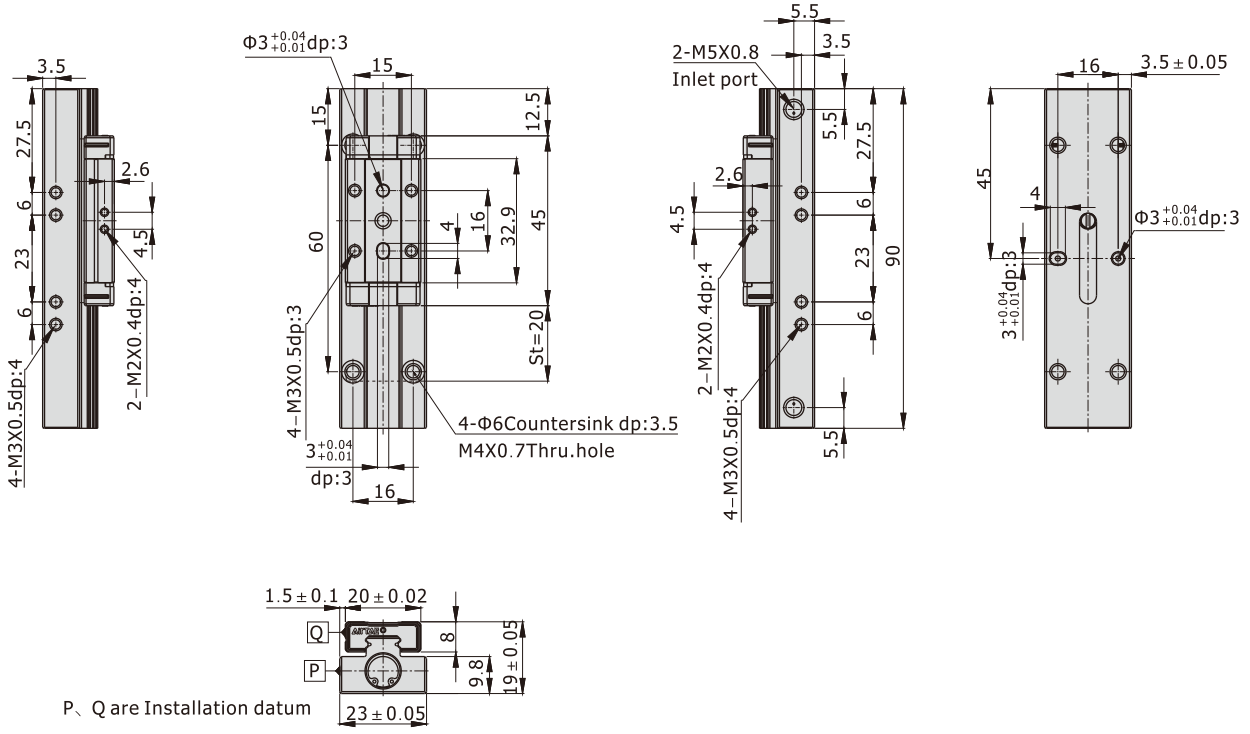


HGS8X15J

Adjustable range :5mm of each sides.



HGS8X20



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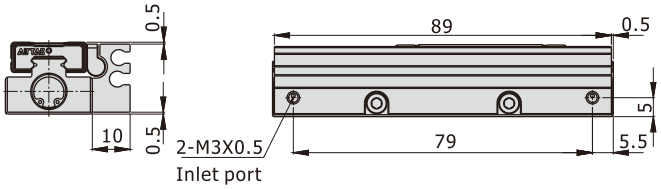
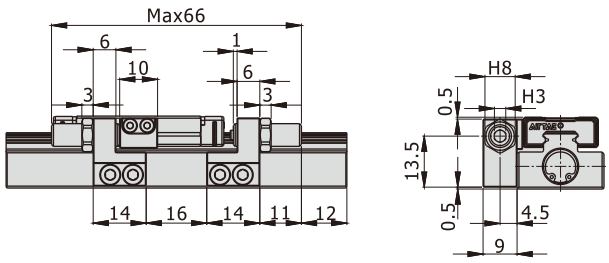


HGS8X20J

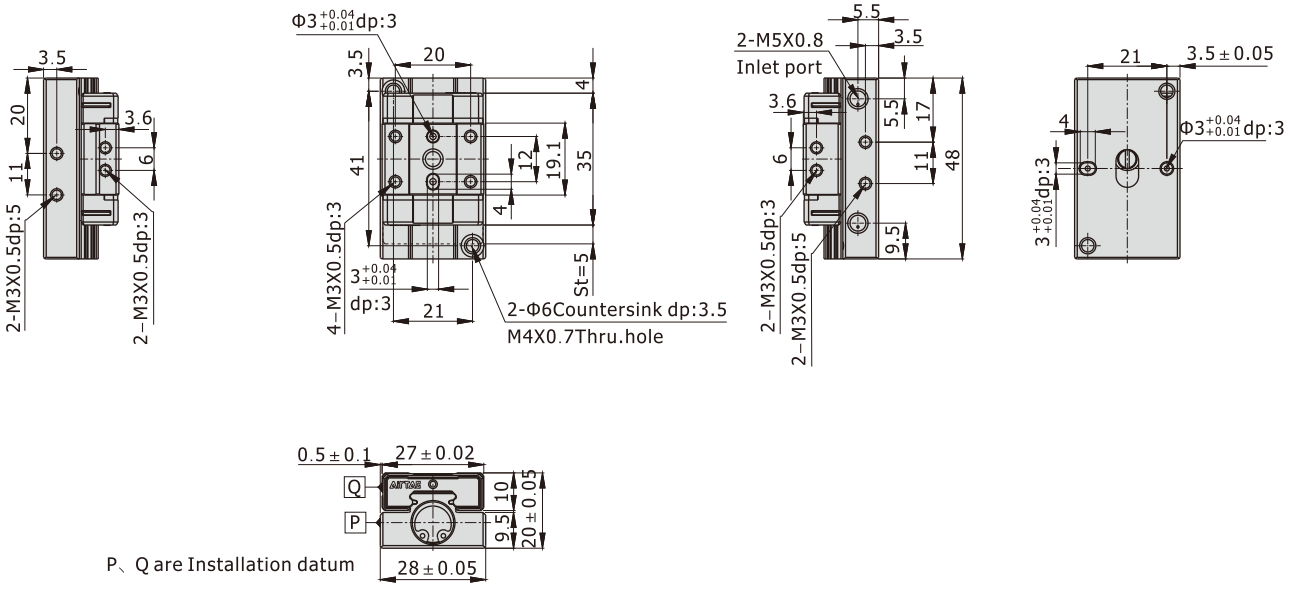
Adjustable range :5mm of each sides.



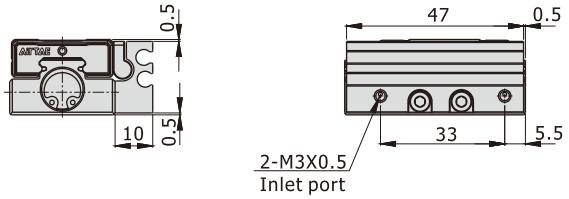
Dimensions(HGS10)

HGS10X5

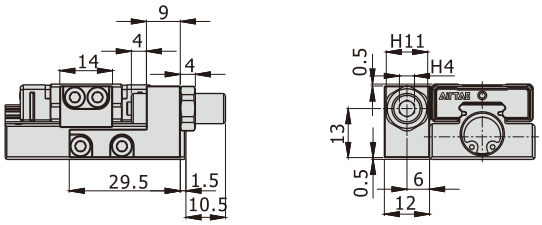
[Unit: mm]



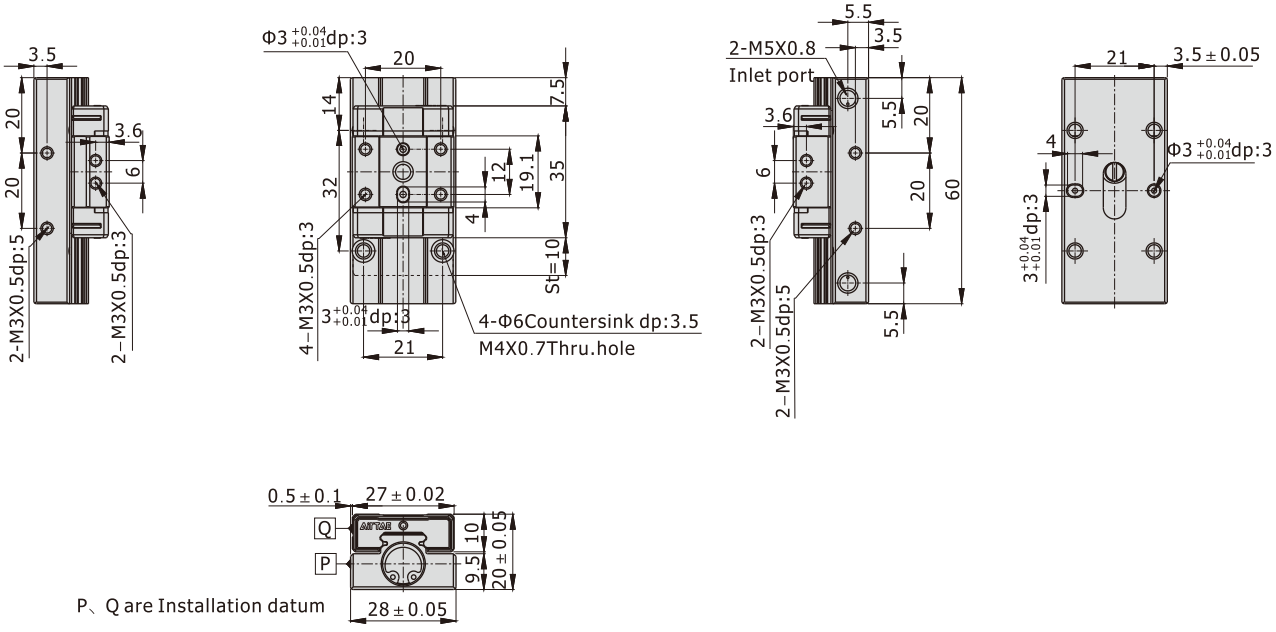
HGS10X5S



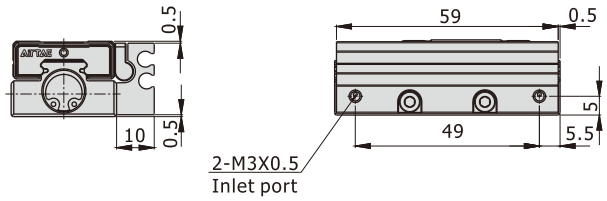
HGS10X5J Adjustable range :5mm



HGS10X10

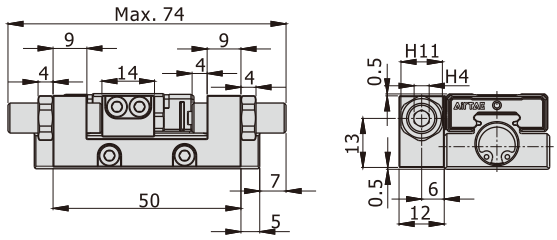


HGS10X10S

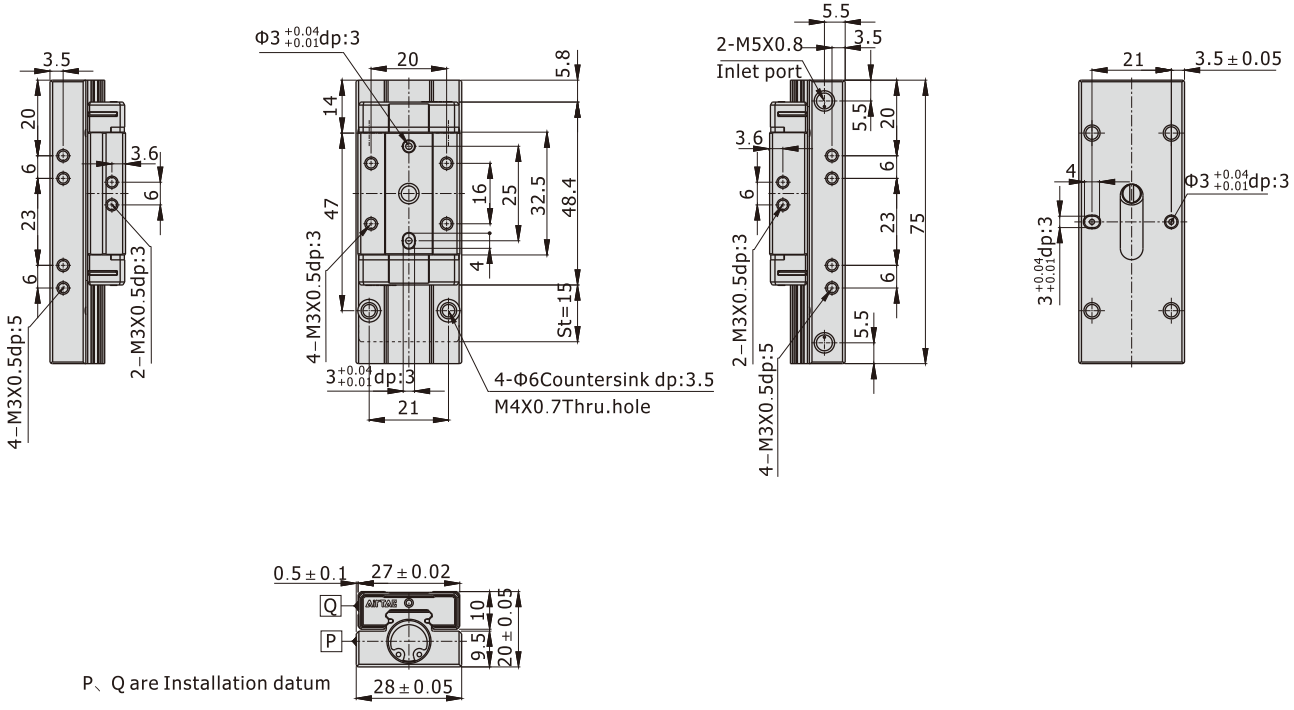


HGS10X10J

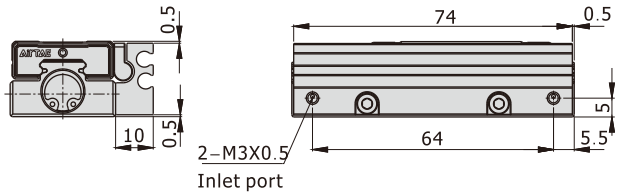
Adjustable range :5mm of each sides.



HGS10X15

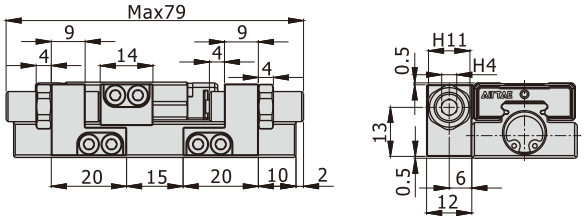


HGS10X15S

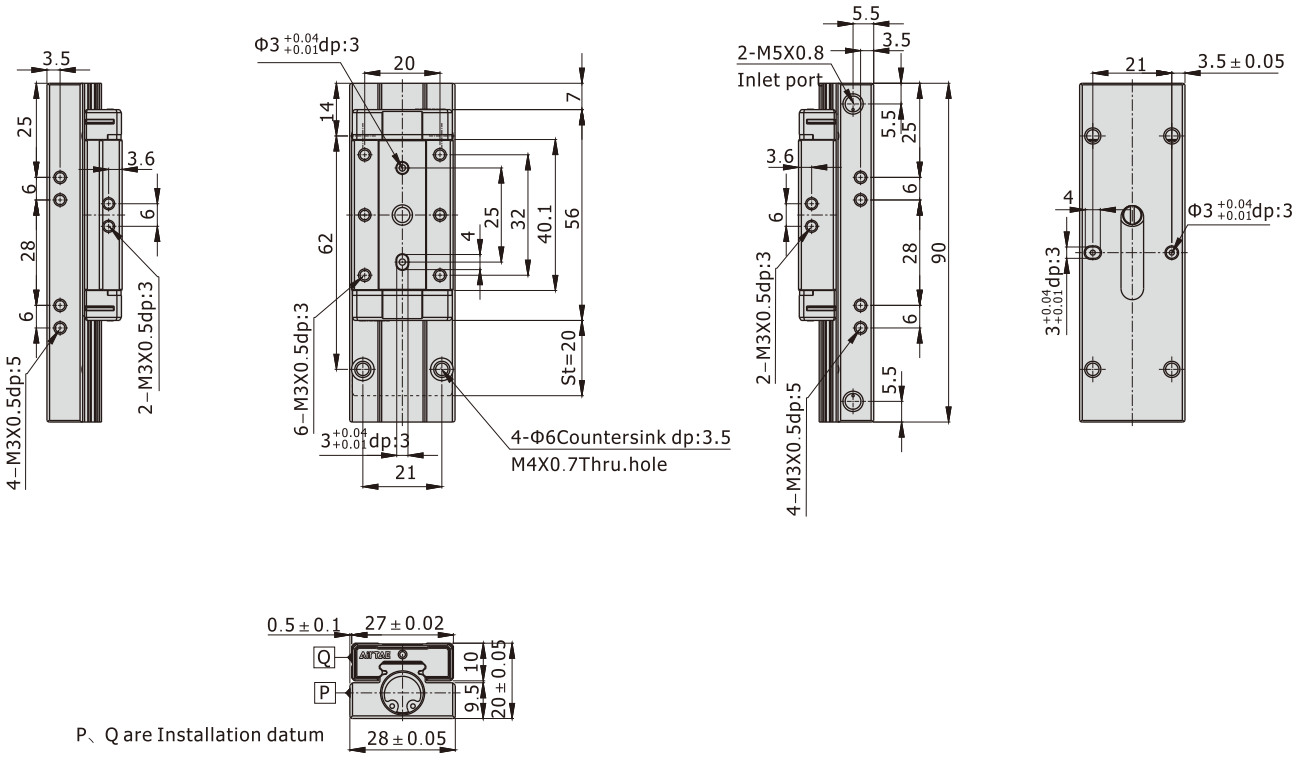


HGS10X15J

Adjustable range :5mm of each sides.



HGS10X20



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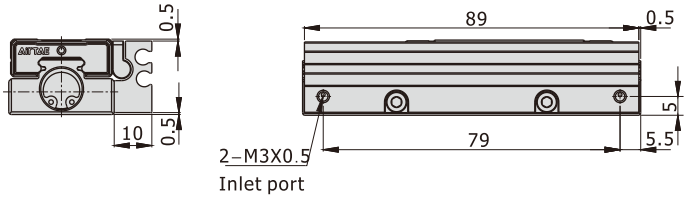
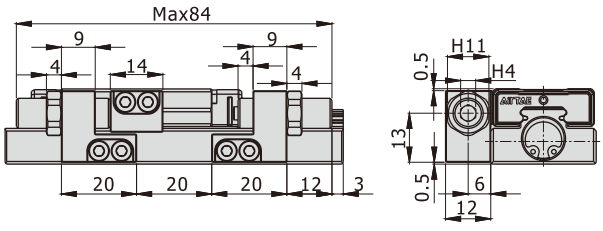


HGS10X20J

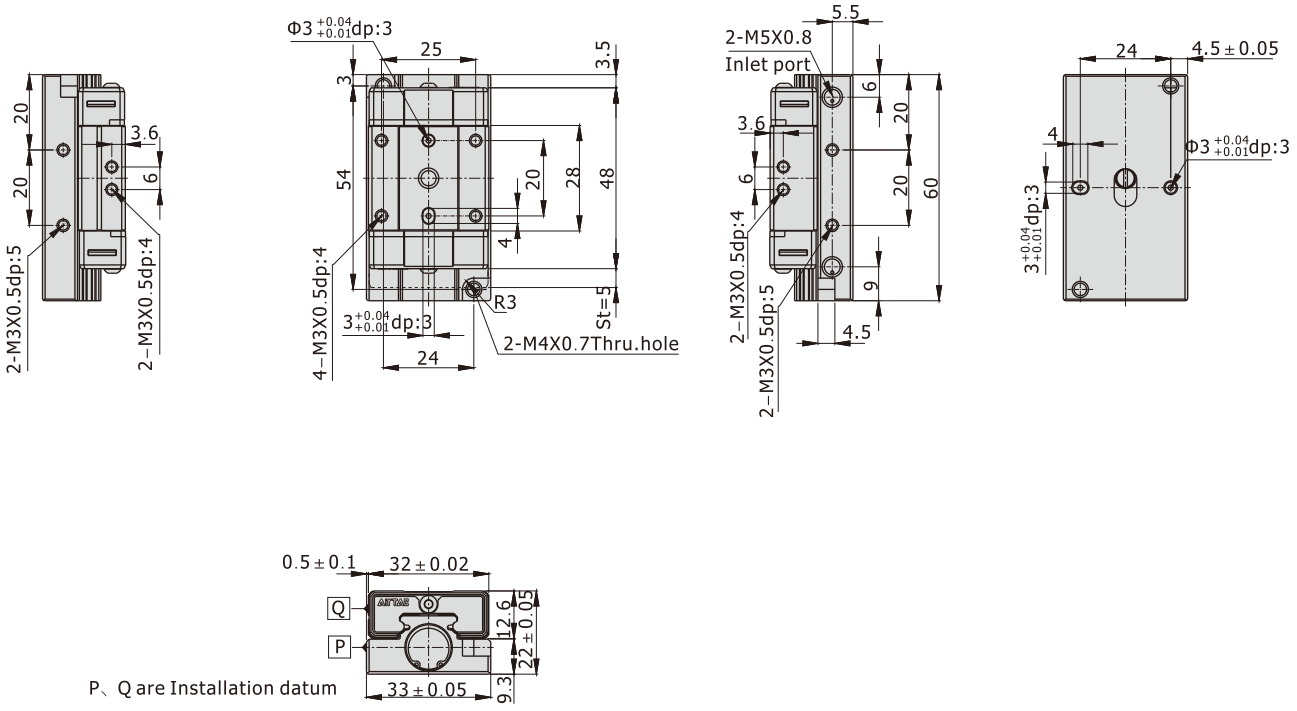
Adjustable range :5mm of each sides.



Dimensions(HGS12)

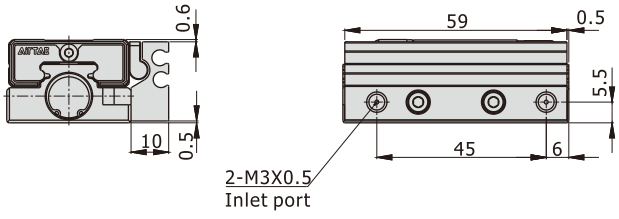
HGS12X5

[Unit: mm]



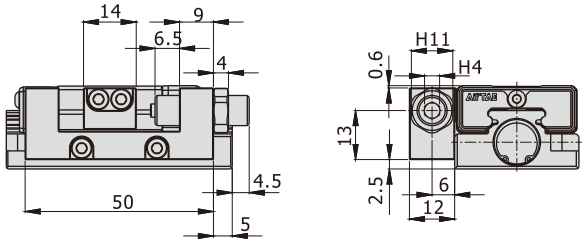
P、Q are Installation datum

HGS12X5S

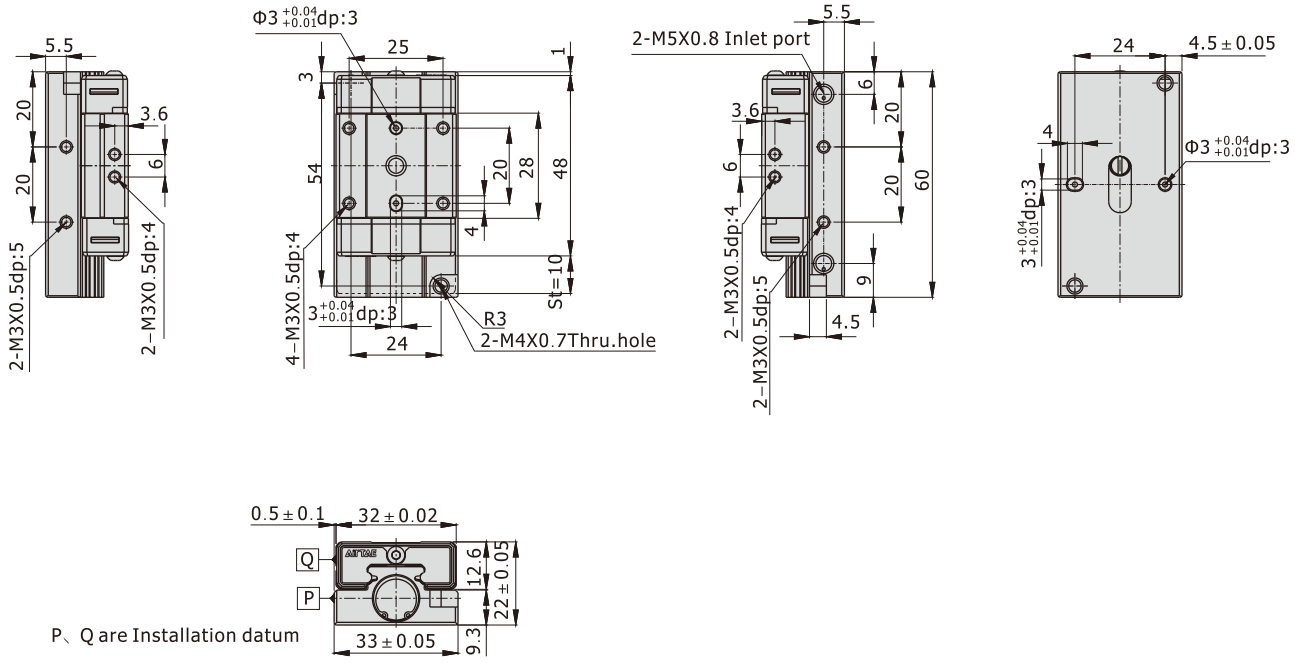


HGS12X5J

Adjustable range : 5mm



HGS12X10



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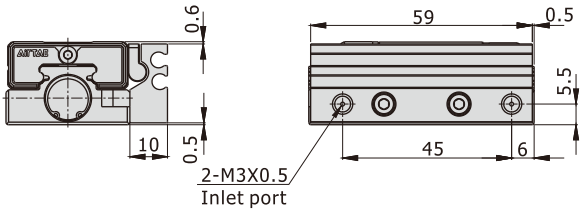

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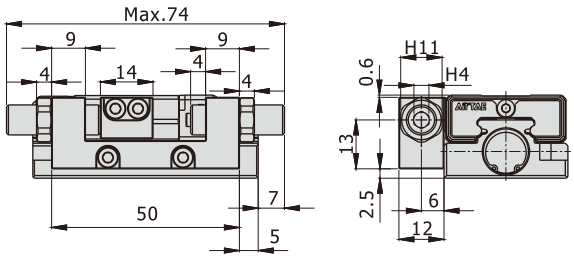
Adjustable range :5mm of each side



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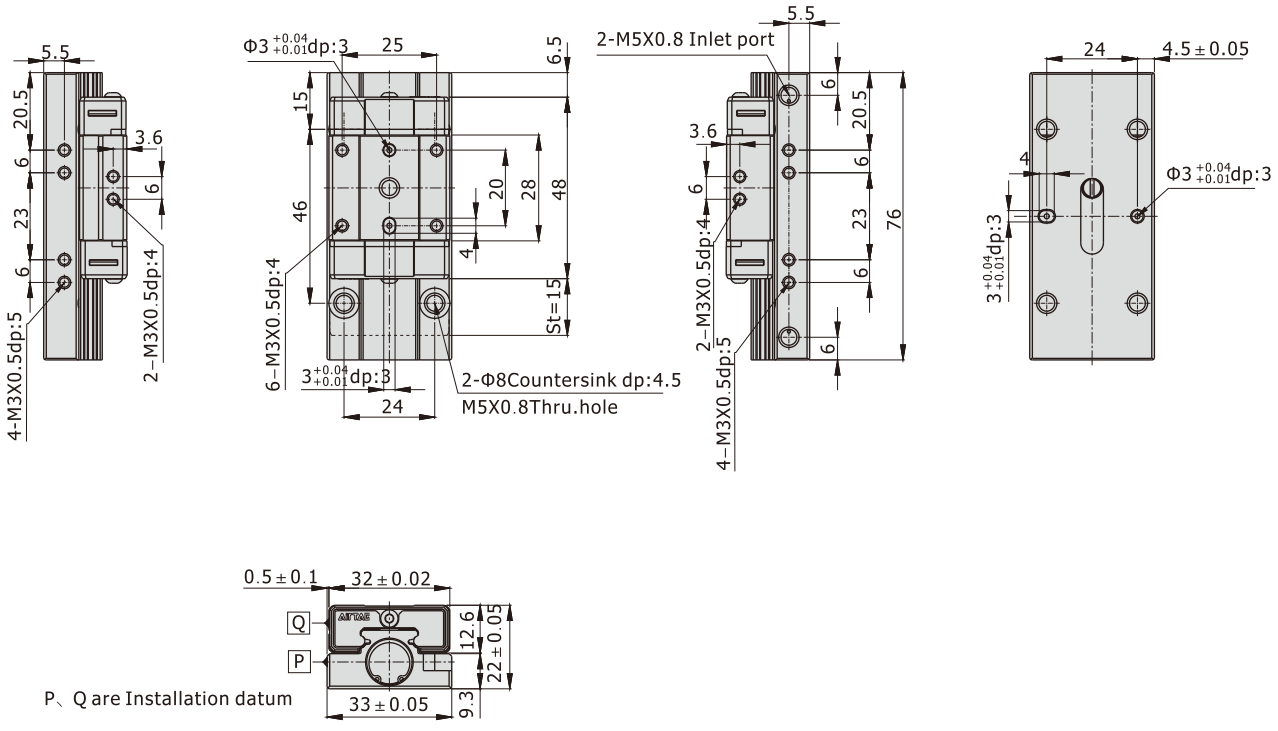

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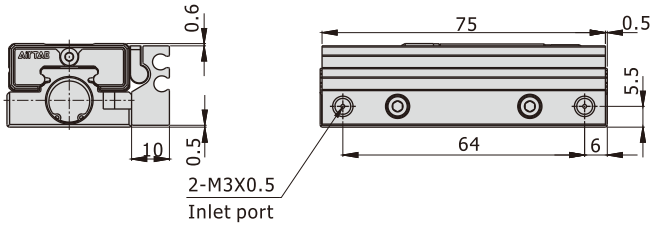

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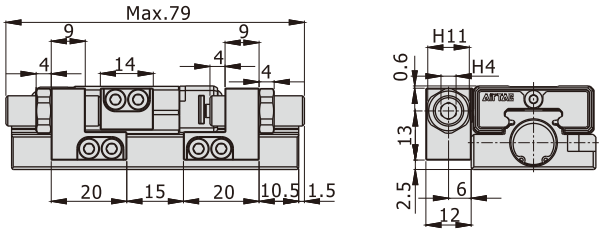

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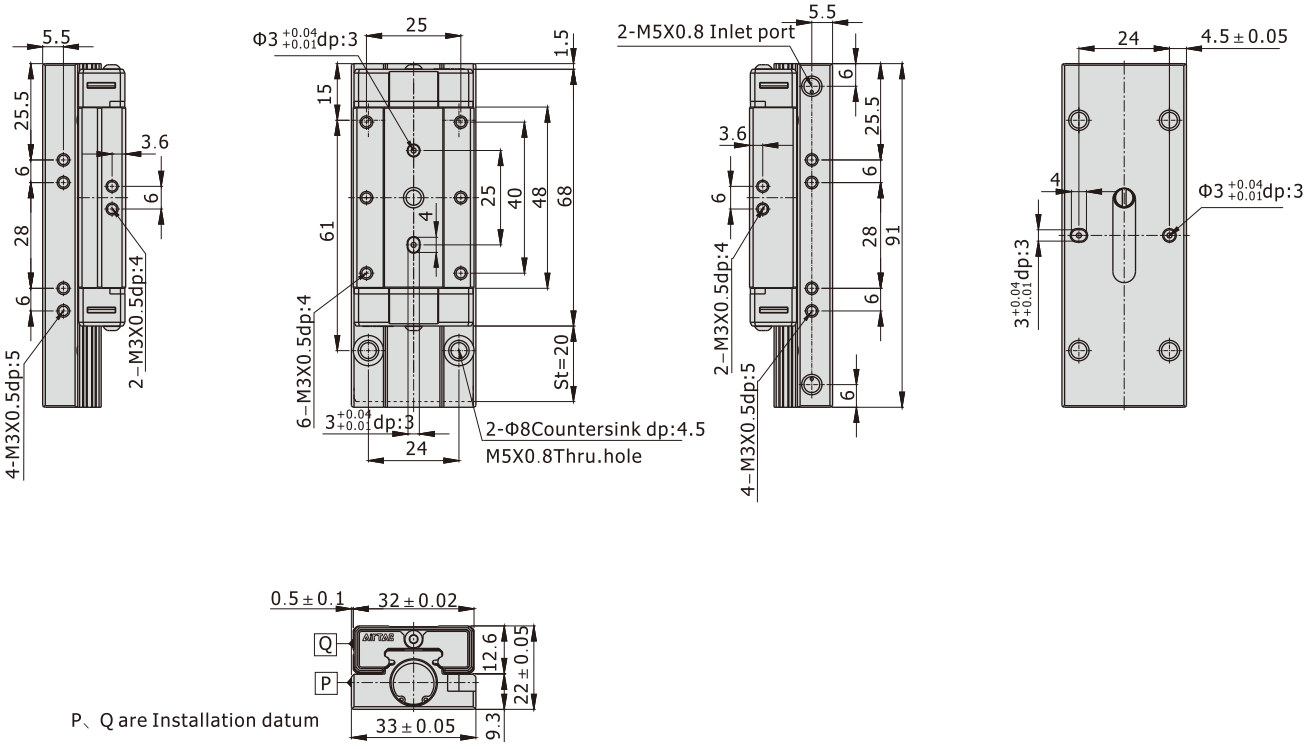

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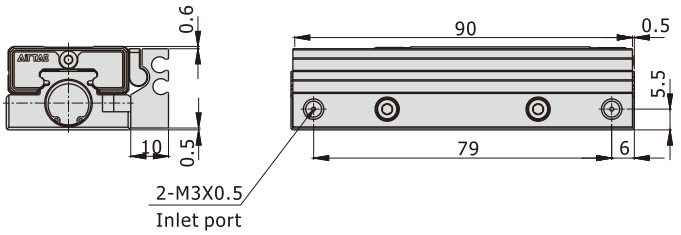
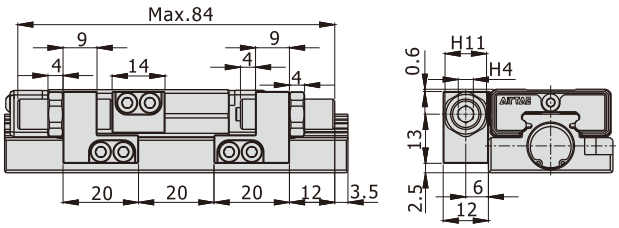


HGS12X20J

Adjustable range :5mm of each side



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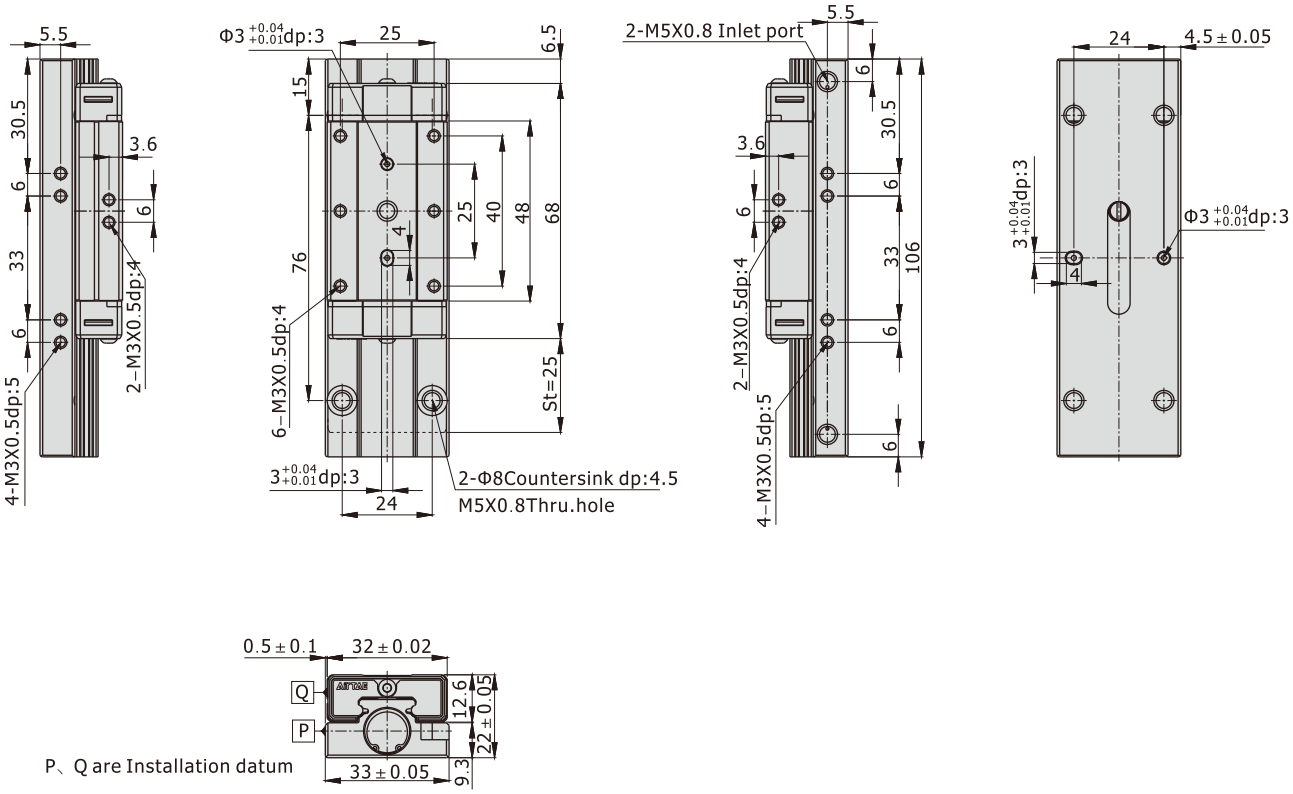
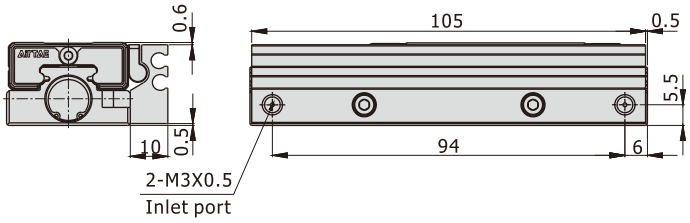
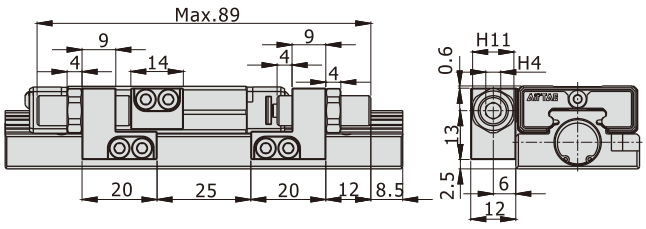


HGS12X25S



HGS12X25J

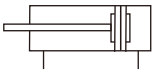
Adjustable range :5mm of each side



Slide table cylinder

HLF Series

Bore size: Φ8, Φ12, Φ16, Φ20



Ordering code

HLF 20 × 30 S

1 2 3 4

① Model
HLF: Slide table cylinder (Roller type)

② Bore Size	④ Magnet
8 12 16 20	S: With magnet

③ Stroke [Note1]		
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.

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.

Specification

Bore size(mm)	8	12	16	20
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	22~100psi(0.15~0.7MPa)			
Proof pressure	175psi(1.2MPa)			
Temperature ℃	-20~70			
Speed range mm/s	50~500			
Stroke tolerance	$^{+1.0}_{0}$			
Stroke adjustment range	Extension end 5mm/Retraction end 5mm			
Cushion type	Bumper			
Sensor switches [Note1]	DMSH(S), CMSH			
Port size	M3×0.5	M5×0.8		

[Note1] Refer to P475 for detail of sensor switch.

Criteria for selection: Cylinder thrust

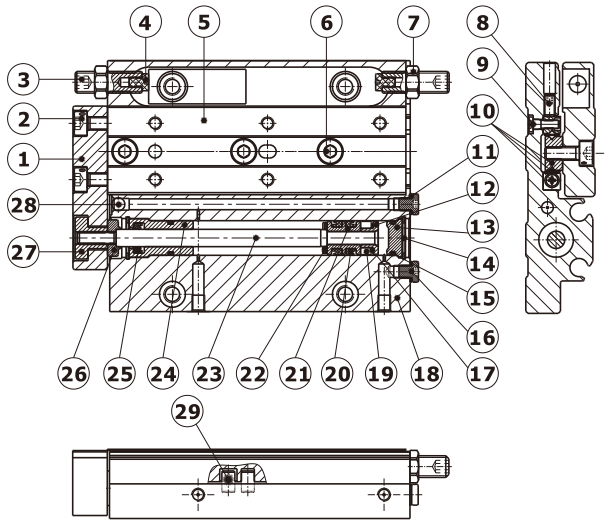
Unit: Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(psi)						
					15	30	45	60	75	90	105
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

HLF Series

Bore size: Φ8, Φ12, Φ16, Φ20

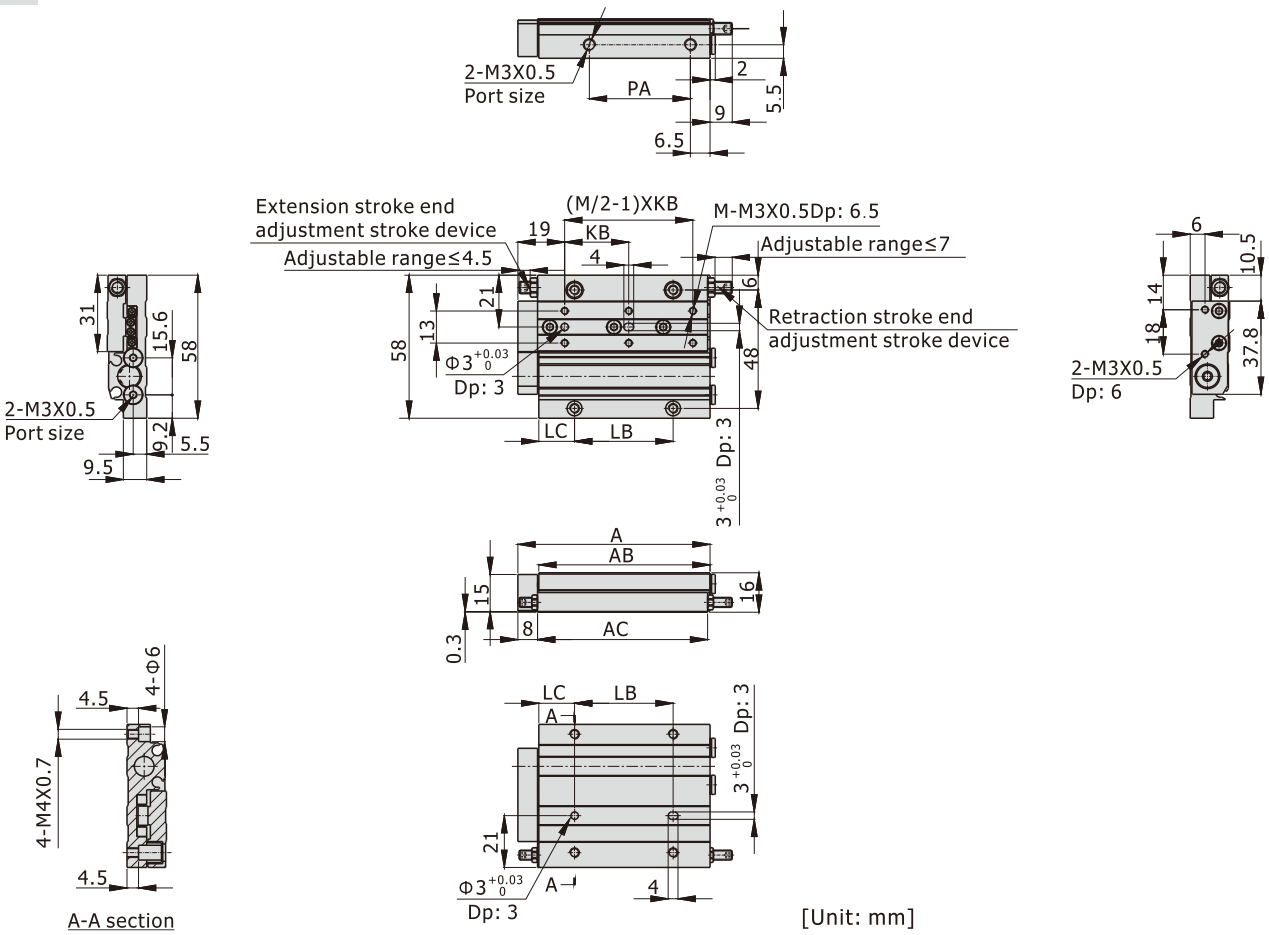
Inner structure



NO.	Item	NO.	Item
1	Fixed plate	16	Plug screw
2	Hexagon socket head screws	17	Magnet pad
3	Adjustable screw	18	Body
4	Bumper	19	Magnet
5	Slide table	20	Piston packing
6	Hexagon socket head screws	21	Piston
7	Hex nut	22	Bumper
8	Socket set screws	23	Rod
9	Hexagon socket head screws	24	Front cover
10	Roller assembly	25	Spool O ring
11	Seal	26	Floating joint 2
12	Magnet holder	27	Floating joint 1
13	Back cover	28	Φ3 steel ball
14	C clip	29	Pin
15	O ring		

Dimensions

HLF8



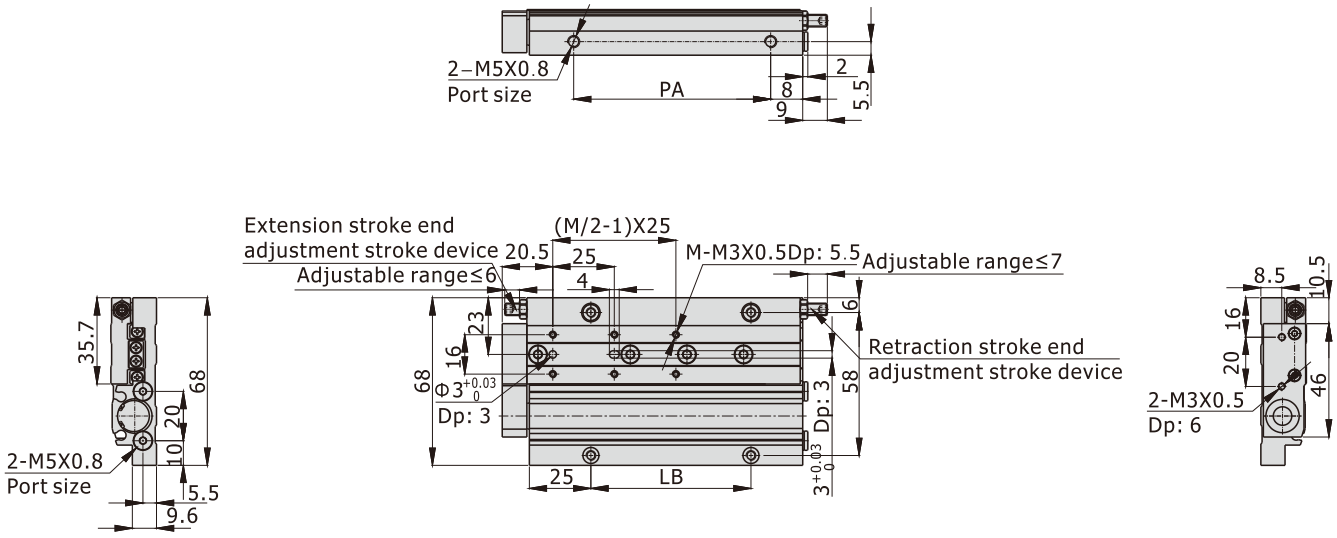
[Unit: mm]

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

HLF Series

Bore size: Φ8, Φ12, Φ16, Φ20

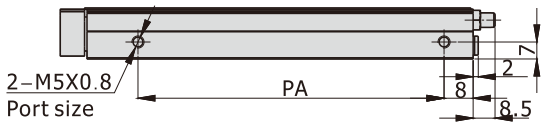
HLF12

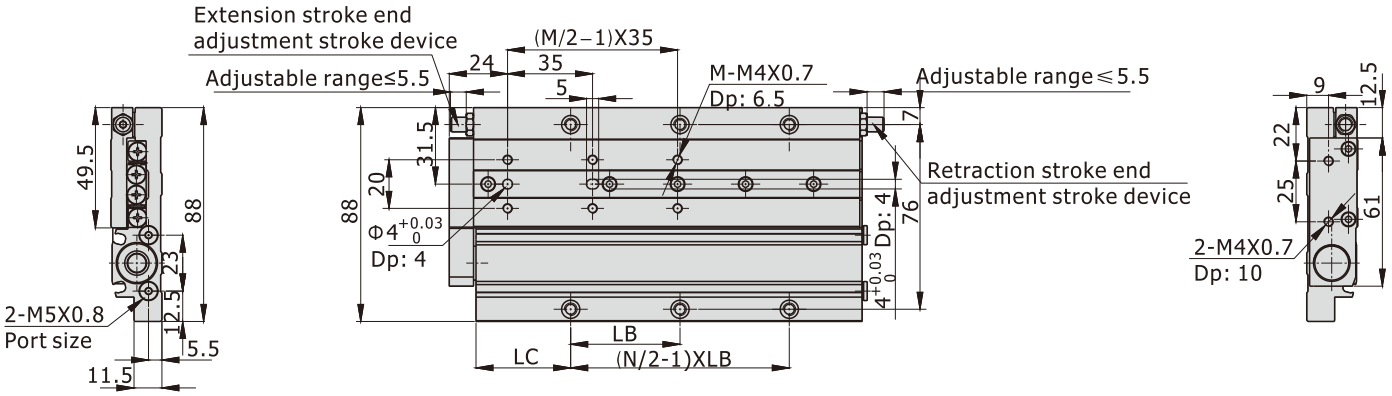


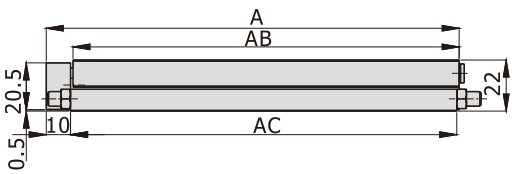
[Unit: mm]

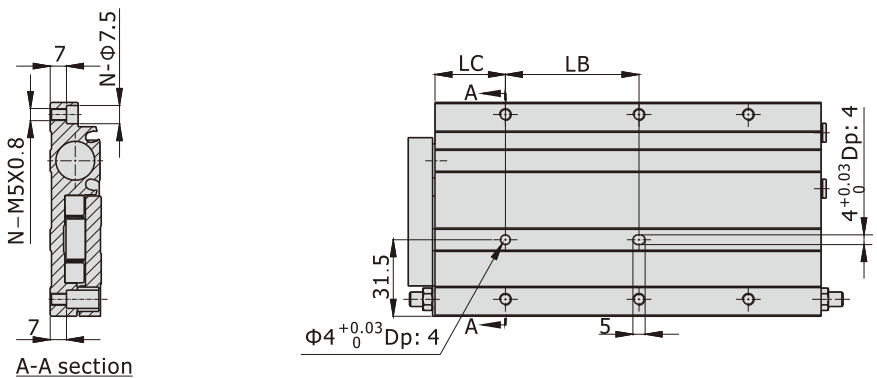
Stroke\Item	A	AB	AC	LB	M	PA
10	66	55	55	15	4	29
20	76	65	65	22	4	39
30	86	75	75	30	4	49
40	106	95	95	45	6	69
50	116	105	105	65	6	79

HLF16





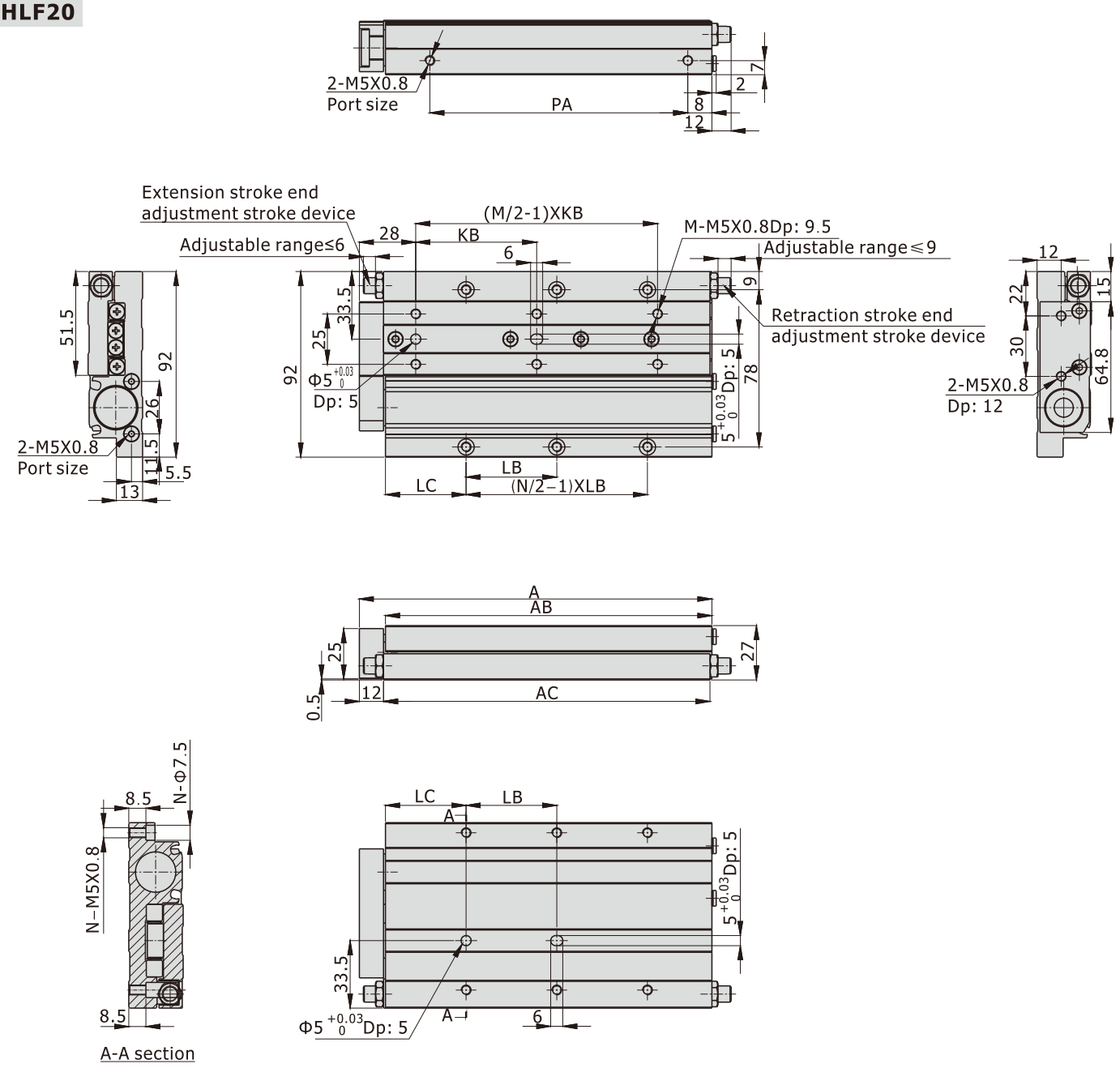




[Unit: mm]

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

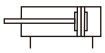


[Unit: mm]

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

Slide table cylinder——HLH Series

Bore size: Φ6, Φ10, Φ16, Φ20



Ordering code

HLH 20×30 S

1 2 3 4

① Model
HLH: Slide table cylinder(Double acting type)

② Bore size
6 10 16 20

④ Magnet
S: With magnet

③ 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.

Specification

Bore size(mm)	6	10	16	20
Guide rail width mm	5	7	9	12
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	22~100psi(0.15~0.7MPa)			
Proof pressure	175psi(1.2MPa)			
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	CMSH , DMSH(S)			
Port size	M5×0.8			

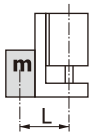
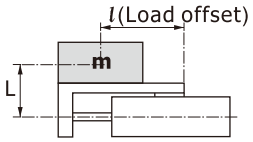
Criteria for selection: Cylinder thrust

Unit: Newton(N)

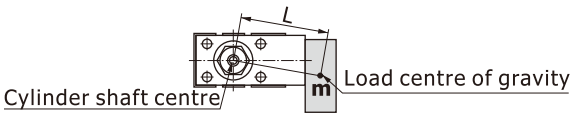
Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(psi)						
					15	30	45	60	75	90	105
6	3	Double acting	Push-side	28.3	-	5.7	8.5	11.3	14.2	17.0	19.8
			Pull-side	21.2	-	4.2	6.4	8.5	10.6	12.7	14.8
10	4	Double acting	Push-side	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
			Pull-side	66.0	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

Model Selection Method

1. Select the bore size according to the thrust and practicality. Refer to the table on page 60.
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)

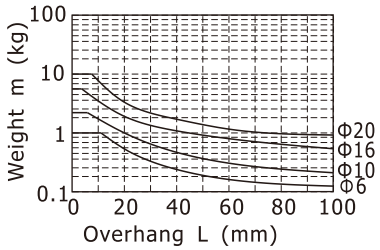
L: Overhang
(the distance from the cylinder shaft centre to the load centre of gravity)



2.1) The relation between loading and overhang(Selection graphs)

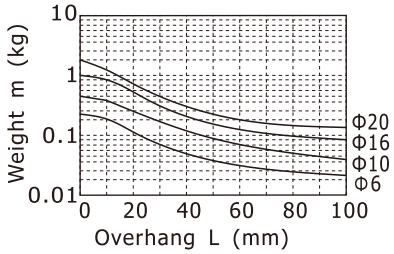
Selection Graphs(1)

Maximum speed 100(mm/s) or less



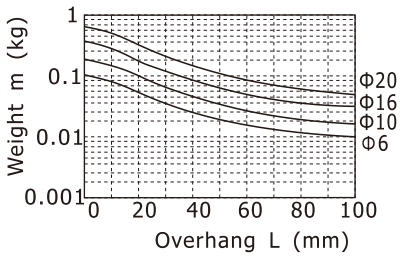
Selection Graphs(2)

Maximum speed 300(mm/s) or less



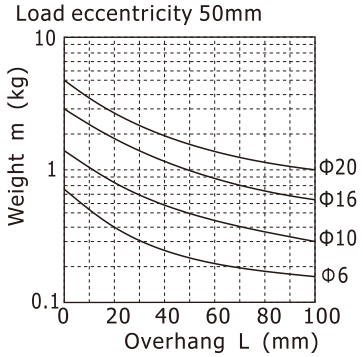
Selection Graphs(3)

Maximum speed 500(mm/s) or less



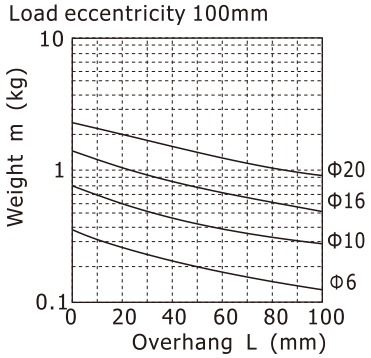
Selection Graphs(4)

Maximum speed 100(mm/s) or less
Load eccentricity 50mm



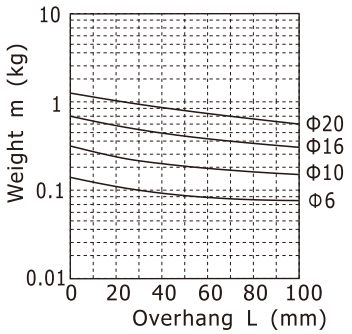
Selection Graphs(5)

Maximum speed 100(mm/s) or less
Load eccentricity 100mm



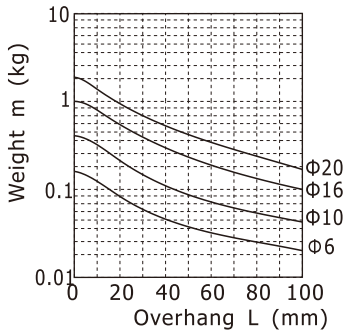
Selection Graphs(6)

Maximum speed 100(mm/s) or less
Load eccentricity 200mm



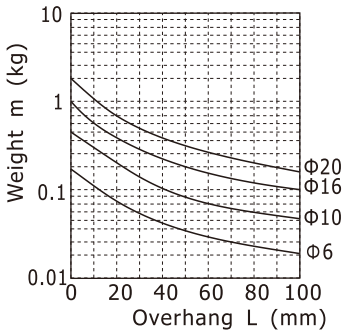
Selection Graphs(7)

Maximum speed 300(mm/s) or less
Load eccentricity 50mm



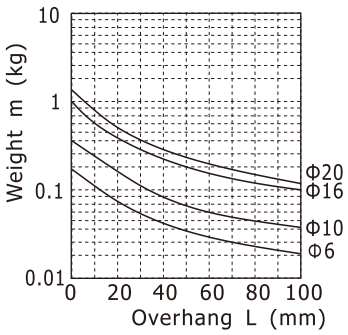
Selection Graphs(8)

Maximum speed 300(mm/s) or less
Load eccentricity 100mm



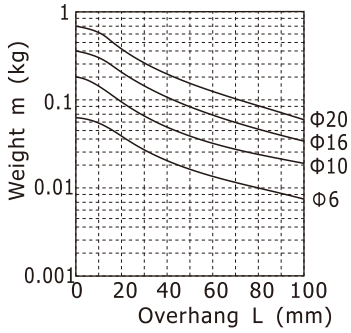
Selection Graphs(9)

Maximum speed 300(mm/s) or less
Load eccentricity 200mm



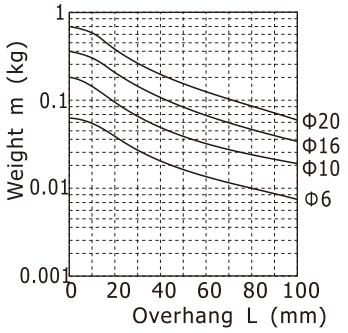
Selection Graphs(10)

Maximum speed 500(mm/s) or less
Load eccentricity 50mm



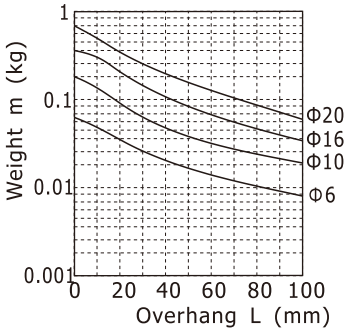
Selection Graphs(11)

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.

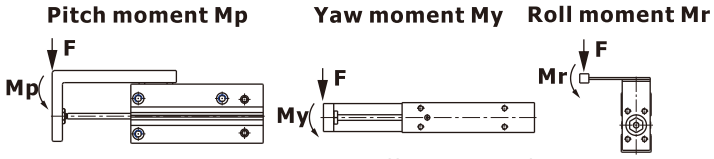
Example ②: Mounting: Horizontal
Maximum speed: 500mm/s
Load eccentricity: 50mm
Overhang: 30mm
Load weight: 0.1Kg

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

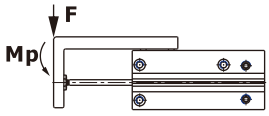


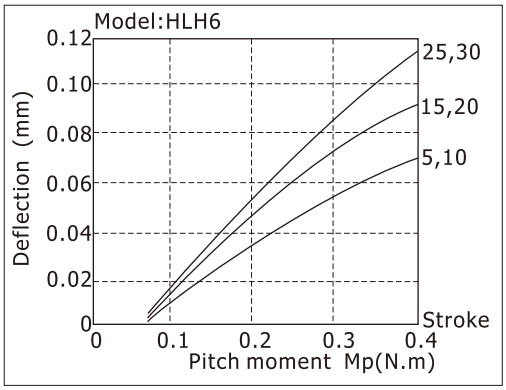
Allowable torque (Nm)	HLH6	HLH10	HLH16	HLH20
Pitch moment Mp	0.25	0.95	3.28	6.29
Yaw moment My	0.25	0.95	3.28	6.29
Roll moment Mr	0.41	1.49	3.45	6.61

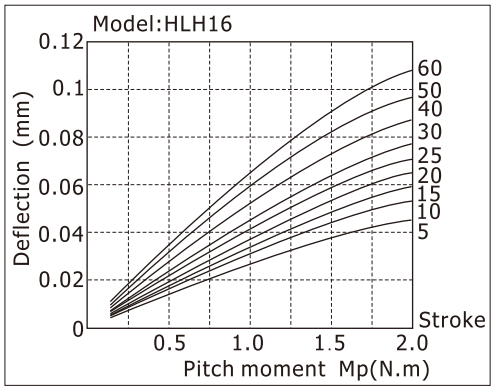
1.2) When the cylinder is subjected to different type of moment, there will be different degree of shift in performance, please refer to the following table for details.

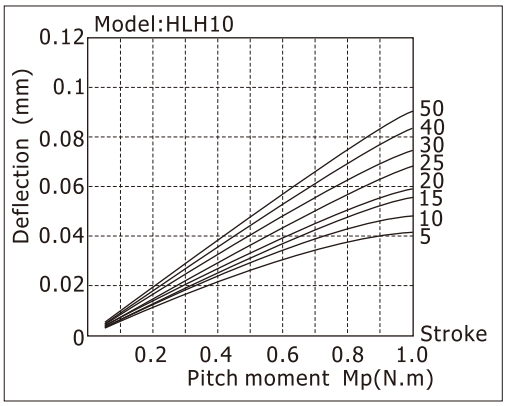
Table deflection due to pitch moment

Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.









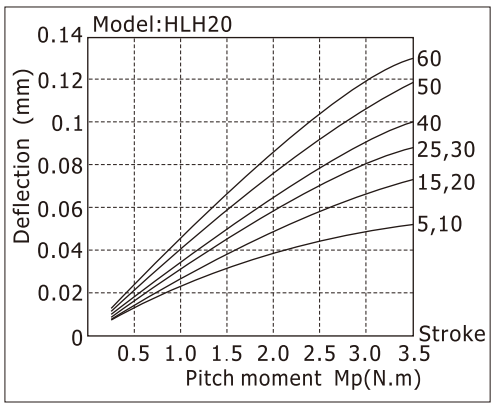
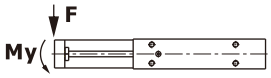
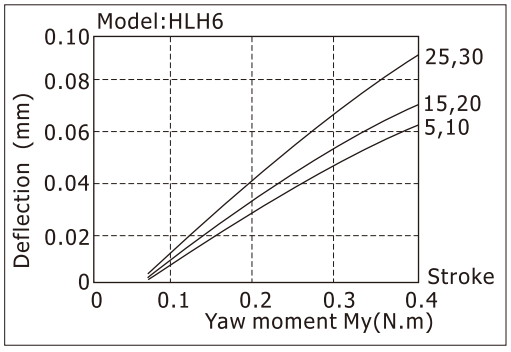
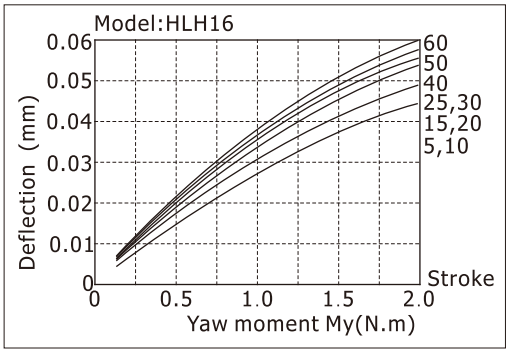


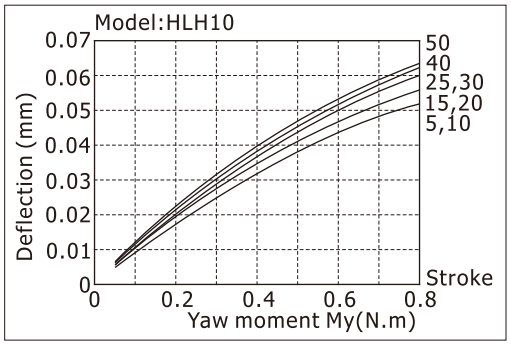
Table deflection due to yaw moment

Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.









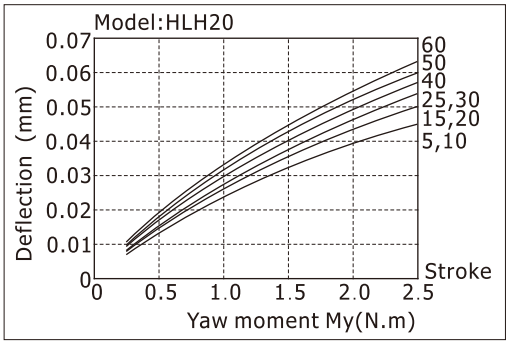
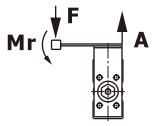
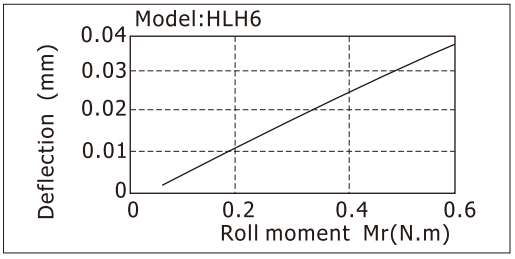
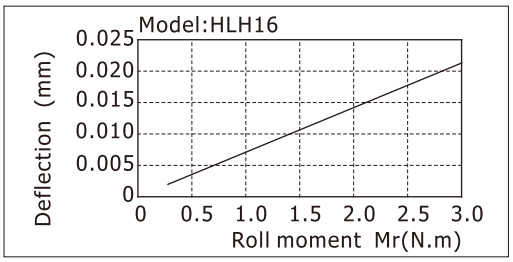


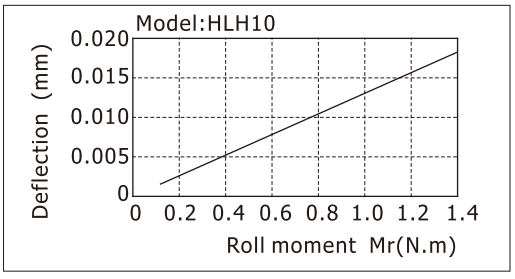
Table deflection due to roll moment

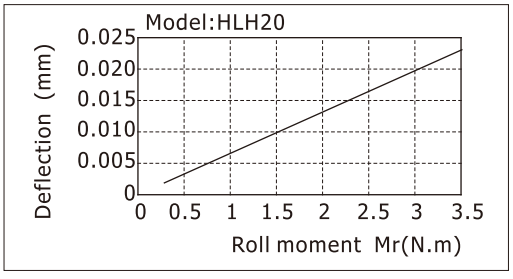
Table deflection(at A) when a load acts upon section F at the full stroke of the compact slide.



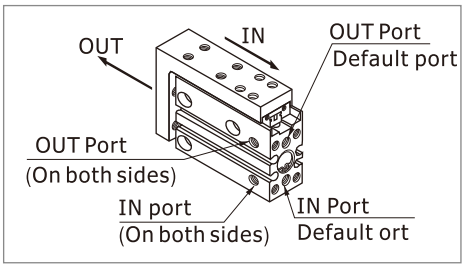




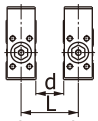




2. The compact slide can be piped from 3 directions.
Confirm the pressure ports and operating direction. (See drawing right)

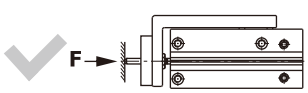


3. In compact slides with sensor switch, there is a danger of sensor switch malfunction if the mounting pitch is less than the dimensions shown in Table below. Be sure to allow at least the indicated interval.

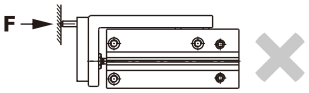


At least indicated interval (mm)/Model	HLH6	HLH10	HLH16	HLH20
d	5	5	10	15
L	21	25	35	47

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

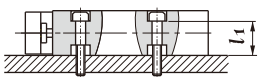


The loading and piston rod are offset

5. Be sure to use a flow control value, and adjust the speed to 500mm/s or less.

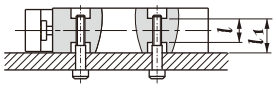
6. A compact slide can be mounted from 4 directions.
Don't exceed the max. fastering torque then frightening the mounting bolts.

Lateral Mounting(Through Holes)



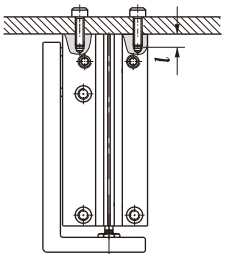
Model	Bolts	Max.fastening torque	L1
HLH6	M3×0.5	1.1(Nm)	12.7
HLH10	M4×0.7	2.5(Nm)	15.6
HLH16	M4×0.7	2.5(Nm)	20.6
HLH20	M5×0.8	5.1(Nm)	24.0

Lateral Mounting(Tapped Holes)



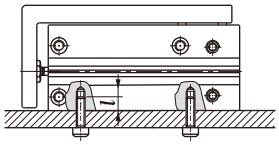
Model	Bolts	Max.fastening torque	L1	L
HLH6	M4×0.7	2.5(Nm)	12.7	9.4
HLH10	M5×0.8	5.1(Nm)	15.6	11.2
HLH16	M5×0.8	5.1(Nm)	20.6	16.2
HLH20	M6×1.0	8.1(Nm)	24.0	16.0

Axial Mounting(Tapped Holes)



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

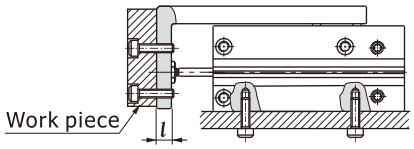
Vertical Mounting(Tapped Holes)



7. Work Piece Mounting

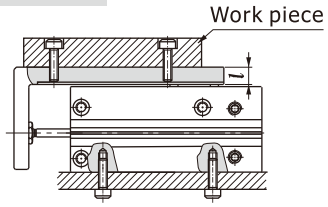
7.1) Work pieces can be mounted on 2 surfaces of the compact slide. When mounting a work piece, tighten the bolts properly at a torque value within the limiting range.

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

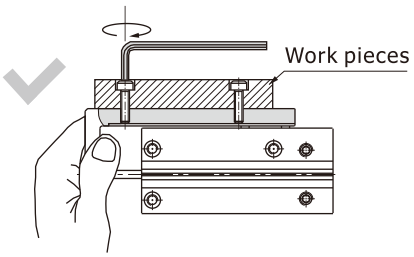
Top Mounting



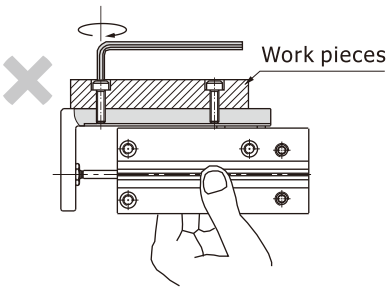
Model	Bolts	Max.fastening torque	L
HLH6	M3×0.5	1.1(Nm)	6.5
HLH10	M4×0.7	2.5(Nm)	8
HLH16	M4×0.7	2.5(Nm)	9
HLH20	M5×0.8	5.1(Nm)	9.5

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.

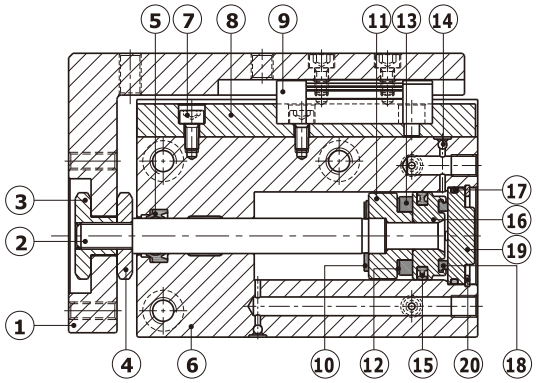


Hold the slide and fasten the bolt



Hold the body and fasten the bolt

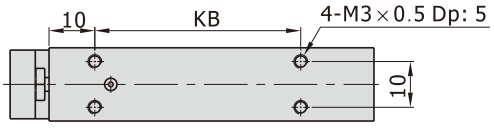
Inner structure

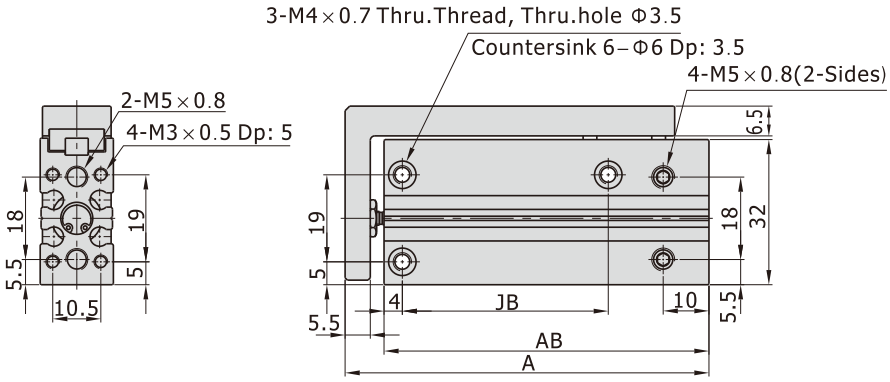


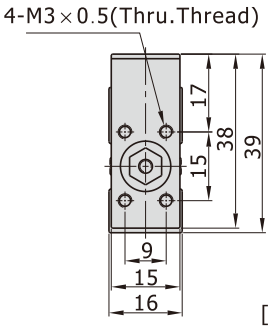
NO.	Item	NO.	Item
1	Slide table	11	Magnet holder
2	Piston rod	12	Magnet washer
3	Hexagon nut	13	Magnet
4	Hexagon nut	14	Steel ball
5	Rod seal	15	Piston seal
6	Body	16	Piston
7	Screw	17	O-ring
8	Linear guide	18	Bumper
9	Slide block	19	Back cover
10	Bumper	20	C clip

Dimensions

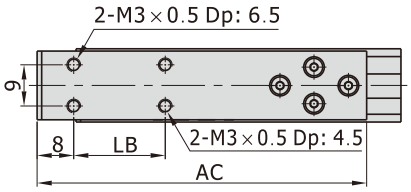
HLH6





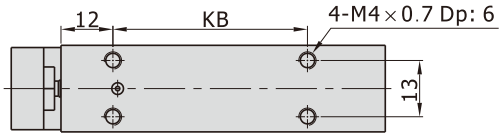


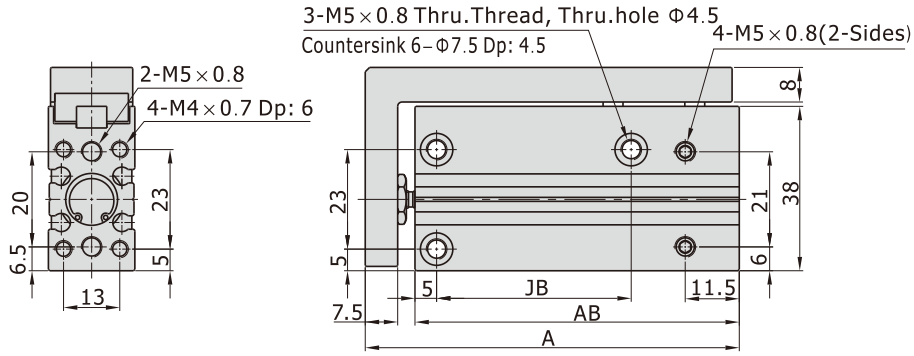
[Unit: mm]

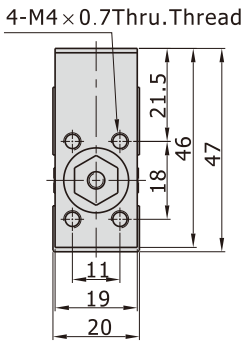


Stroke\Item	A	AB	AC	JB	KB	LB
5	44.5	36	42	14	10	10
10	49.5	41	42	14	15	10
15	54.5	46	52	24	20	20
20	59.5	51	52	24	25	20
25	64.5	56	62	30	30	30
30	69.5	61	62	30	35	30

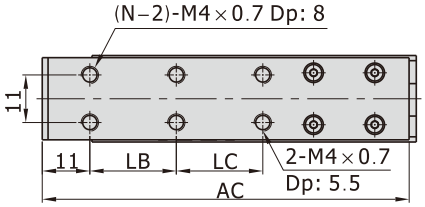
HLH10





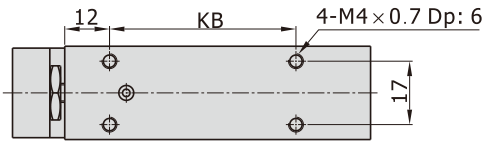


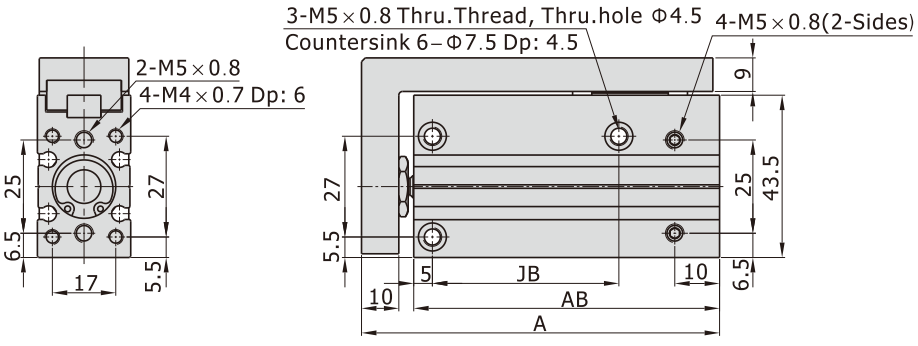
[Unit: mm]

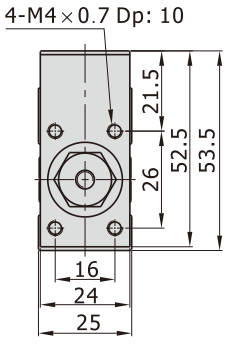


Stroke\Item	A	AB	AC	JB	KB	LB	LC	N
5	51.5	40	50	14	10	10	-	4
10	56.5	45	55	14	15	10	-	4
15	61.5	50	60.5	24	20	20	-	4
20	66.5	55	63	24	25	20	-	4
25	71.5	60	70.5	30	30	30	-	4
30	76.5	65	75.5	30	35	30	-	4
40	86.5	75	85.5	45	45	20	20	6
50	96.5	85	93	55	55	25	25	6

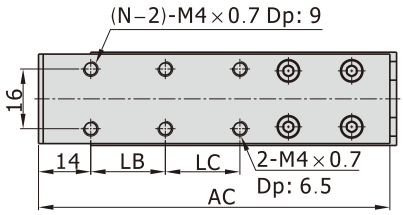
HLH16





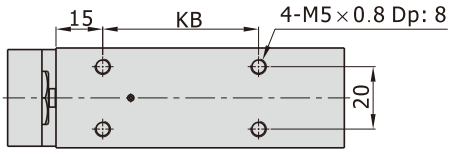


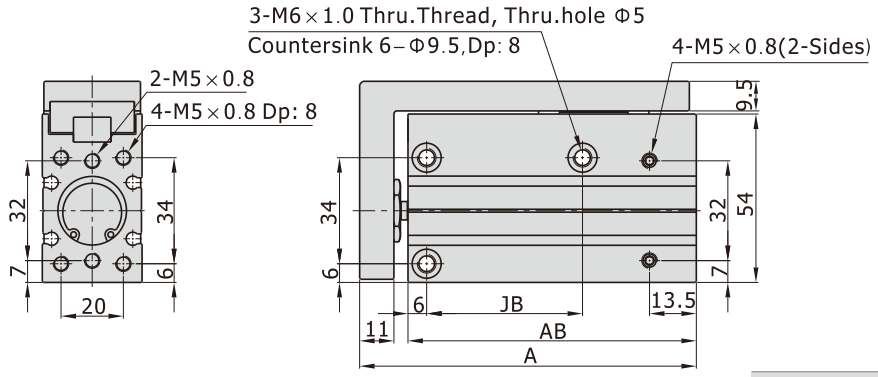
[Unit: mm]

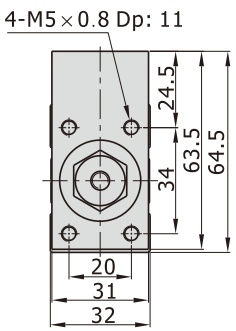


Stroke\Item	A	AB	AC	JB	KB	LB	LC	N
5	61	47	60	20	15	10	-	4
10	66	52	64.5	20	20	10	-	4
15	71	57	69.5	30	25	20	-	4
20	76	62	75	30	30	20	-	4
25	81	67	80	40	35	30	-	4
30	86	72	84.5	40	40	30	-	4
40	96	82	95	50	50	20	20	6
50	106	92	104.5	60	60	25	25	6
60	116	102	114.5	60	70	30	30	6

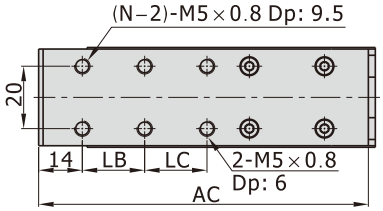
HLH20







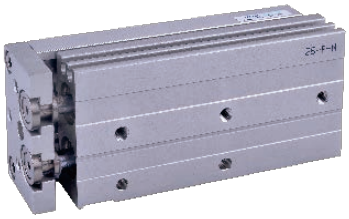
[Unit: mm]

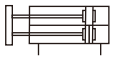


Stroke\Item	A	AB	AC	JB	KB	LB	LC	N
5	73	57.5	72	20	15	10	-	4
10	78	62.5	72	20	20	10	-	4
15	83	67.5	82	25	25	20	-	4
20	88	72.5	82	25	30	20	-	4
25	93	77.5	92	40	35	30	-	4
30	98	82.5	92	40	40	30	-	4
40	108	92.5	101.5	50	50	20	20	6
50	118	102.5	113.5	70	60	25	25	6
60	128	112.5	122.5	70	70	30	30	6

Slide table cylinder——HLQ Series

Ball bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25





Ordering code

HLQ 20 × 30 S AS T

1 2 3 4 5 6

① Model

HLQ: Slide table cylinder
(Double acting type)
(Ball bearing type)

HLQL: Symmetrical Slide table cylinder
(Double acting type)
(Ball bearing type)

② Bore Size

6 8 12 16 20 25

④ Magnet

S: With magnet

⑥ Thread type [Note3]

T: NPT

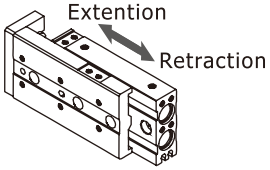
[Note1] Consult us for non–standard stroke.
[Note2] B type, BS type, BF type are unavailable for bore size of Φ6.
[Note3] When the thread is standard, the code is blank.

③ Stroke [Note1]

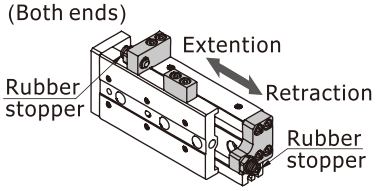
Bore size (mm)	Standard stroke (mm)	Max.std stroke
6	10 20 30 40 50	50
8	10 20 30 40 50 75	75
12	10 20 30 40 50 75 100	100
16	10 20 30 40 50 75 100 125	125
20	10 20 30 40 50 75 100 125 150	150
25	10 20 30 40 50 75 100 125 150	150

⑤ Adjuster option [Note2]

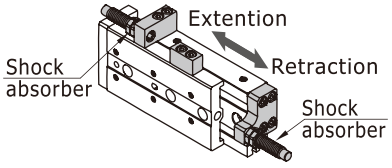
Blank: Without adjuster(Basic type)



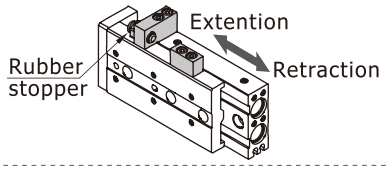
A: Adjustable rubber stopper (Both ends)



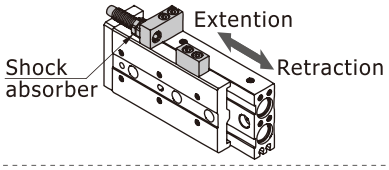
B: Shock absorber(Both ends)



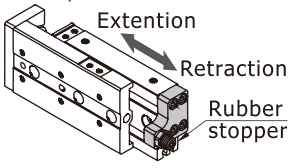
AS: Adjustable rubber topper (Extention)



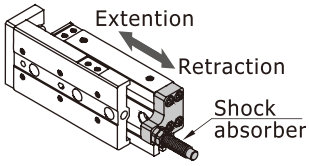
BS: Shock absorber(Extention)



AF: Adjustable rubber topper (Retraction)



BF: Shock absorber(Retraction)



HLQ, HLQL Series

Ball bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

Specification

Bore size(mm)	6	8	12	16	20	25
Guide rail width(mm)	10	10	7	9	9	12
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	22~100psi(0.15~0.7MPa)					
Proof pressure	175psi(1.2MPa)					
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(S)					
Port size [Note1]	M5×0.8				1/8	

[Note1] NPT thread is available.

Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm²)	Operating pressure(psi)					
					30	45	60	75	90	105
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

HLQ, HLQL Series

Ball bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

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 absorber)
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.

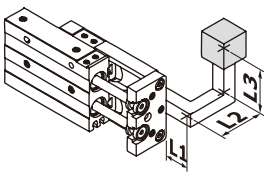
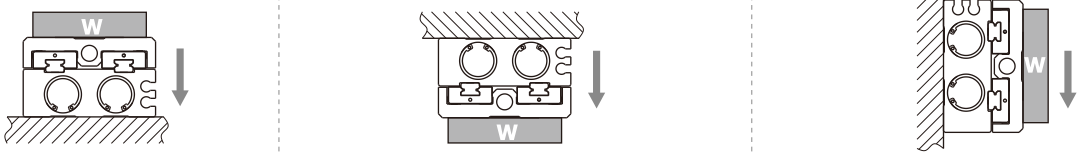


Fig. 1: Applied load



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**)

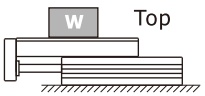
3. Check that kinetic energy of load doesn't exceed allowable kinetic energy: E≤Ea

C) Load check

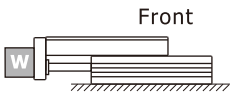
1. Calculate allowable applied load Wa (N)	$Wa = K \times \beta \times W_{max}$ K:Mounting work coefficient **(Fig 2)** W_{max}:Maximum allowable applied load**(Table 1)** β:Applied load coefficient **(Fig 3)**

2. Check that load(W) doesn't exceed allowable applied load(Wa): W≤Wa

Fig 2: Mounting work coefficient (K)

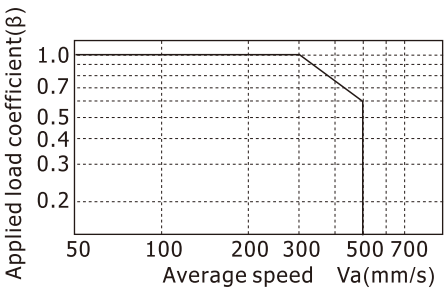


Mounting work coefficient K=1



Mounting work coefficient K=0.6

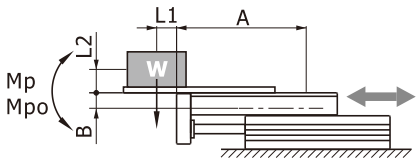
Fig 3: Applied load coefficient (β)



D) Moment check

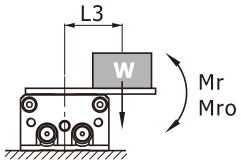
Horizontal

1. Calculate actual moment: Mp, Mpo, My, Myo, Mr, Mro (Nm)



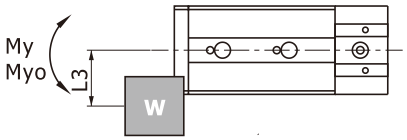
Dynamic moment:
$Mp=W\times(L1+A)/1000$

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:
$My=0$

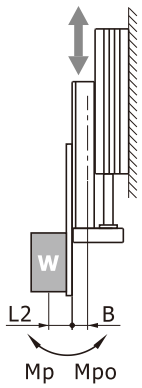
Static moment:
$Myo=(W\times a\times L3)/1000g$

2. Check

Dynamic moment:	Static moment:
$\frac{Mp}{Mp_{max}}+\frac{My}{My_{max}}+\frac{Mr}{Mr_{max}}\leqslant 1$	$\frac{Mpo}{Mpo_{max}}+\frac{Myo}{Myo_{max}}+\frac{Mro}{Mro_{max}}\leqslant 1$

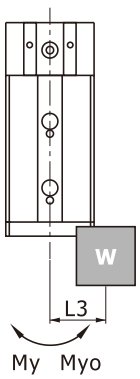
Vertical

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:	Static moment:
$\frac{Mp}{Mp_{max}}+\frac{My}{My_{max}}\leqslant 1$	$\frac{Mpo}{Mpo_{max}}+\frac{Myo}{Myo_{max}}\leqslant 1$

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).

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

HLQ, HLQL Series

Ball bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

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	

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	-

HLQ, HLQL Series

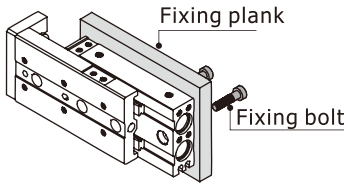
Ball bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

Installation and application

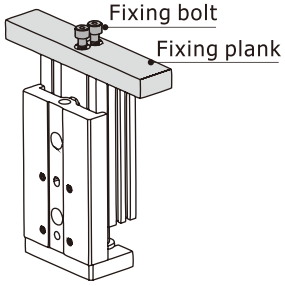
1. How to mount cylinder:

1.1) Cylinder can to be mounted from 3 directions

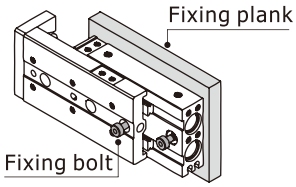
Vertical Mounting(Body thread holes)



Axial Mounting(Body thread holes)

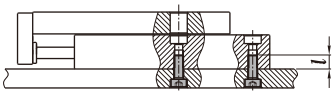


Vertical Mounting(Body through holes)



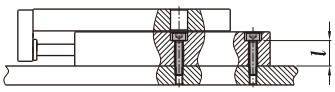
1.2) When mounting an compact slide cylinder, screws of appropriate length should be used and tightened properly within the maximum tightening torque. If screws are tightened beyond designed limits, malfunction may occur. If they are tightened insufficiently, it may result in sliding of falling off from its position.

Vertical Mounting(Body thread holes)



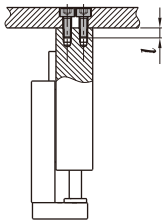
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLQ6	M4×0.7	2.1	8
HLQ8	M4×0.7	2.1	8
HLQ12	M5×0.8	4.4	10
HLQ16	M6×1.0	4.4	10
HLQ20	M6×1.0	7.4	12
HLQ25	M8×1.25	18.0	16

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)

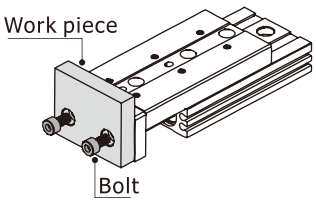


Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLQ6	M2.5×0.45	0.5	3.5
HLQ8	M3×0.5	0.9	4.0
HLQ12	M4×0.7	2.1	6.0
HLQ16	M5×0.8	4.4	7.0
HLQ20	M5×0.8	4.4	8.0
HLQ25	M6×1.0	7.4	10.0

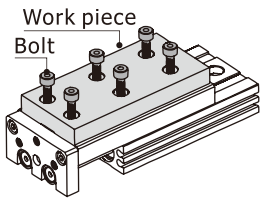
2. Work Piece Mounting:

2.1) Work pieces can be mounted on 2 surfaces of the compact slide.

Front Mounting

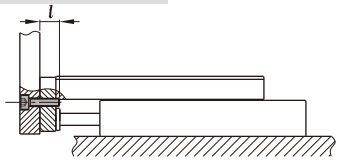


Top Mounting



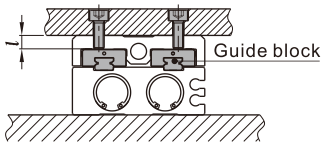
2.2) When mounting a work piece, tighten the bolts properly at a torque value within the limiting range. Use blots at least 0.5mm shorter than maximum thread depth to prevent bolts from contacting the guide block. If the bolts are too long, they hit the guide block and cause damage.

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

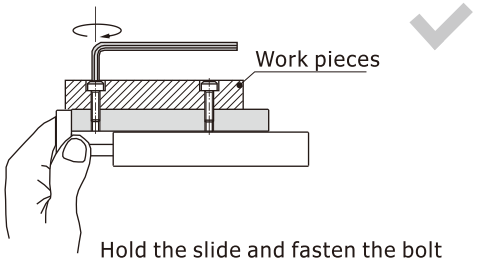
Top Mounting



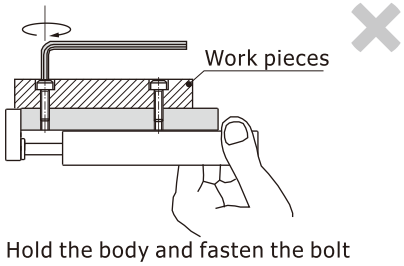
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLQ6	M3×0.5	0.9	4.7
HLQ8	M3×0.5	0.9	4.7
HLQ12	M4×0.7	2.1	5.0
HLQ16	M5×0.8	4.4	5.0
HLQ20	M5×0.8	4.4	8.0
HLQ25	M6×1.0	7.4	9.0

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.



Hold the slide and fasten the bolt



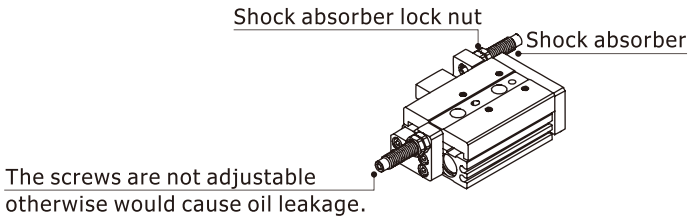
Hold the body and fasten the bolt

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.

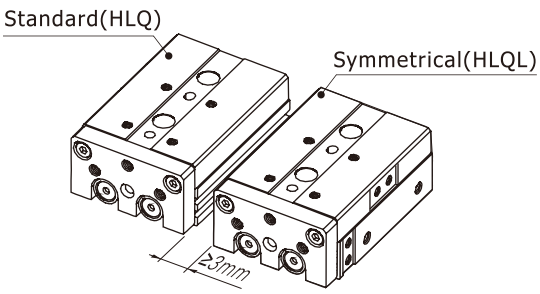


Model	Shock absorber	Tightening torque
HLQ6	Without shock absorber	
HLQ8	ACA0806-1N	1.67(Nm)
HLQ12	ACA0806-1N	1.67(Nm)
HLQ16	ACA1007-1N	3.14(Nm)
HLQ20	ACA1210-1N	3.14(Nm)
HLQ25	ACA1412-1N	10.8(Nm)

4. How to mount sensor switch:

4.1) HLQ Series are all with magnet. The matching sensor switches are DS1-H, DS1-HL 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.

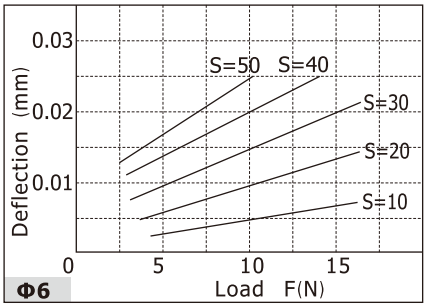


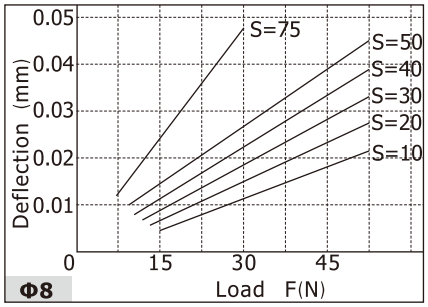
5. Make sure to connect the compact cylinder to speed controller at the meter-out side, and the speed of compact cylinder must below 500mm/s.

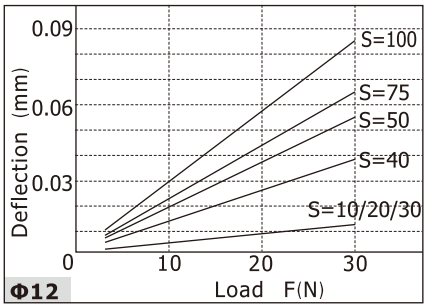
6. Don't apply a load beyond the range of the operation limits. Different load or torque will cause different deflection to table, please see below for details.

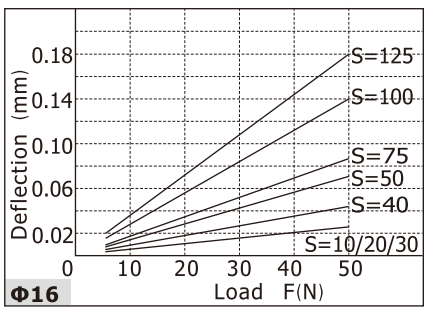
6.1) Table deflection due to pitch moment:

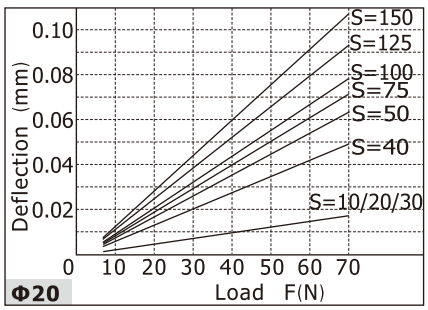
Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.

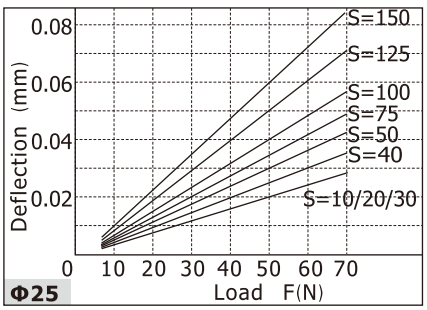






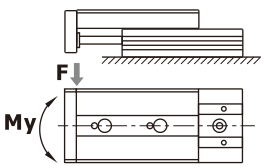


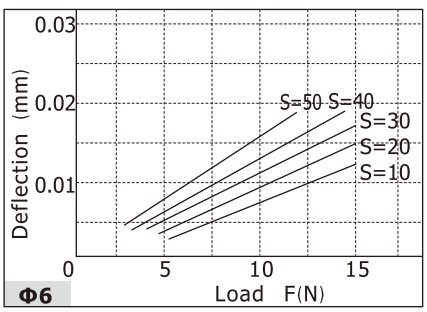


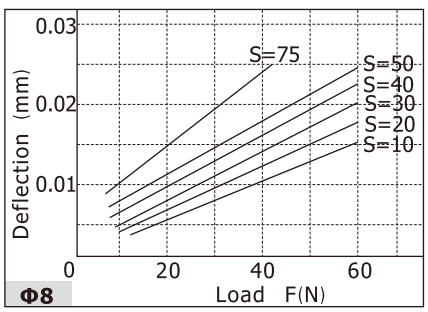


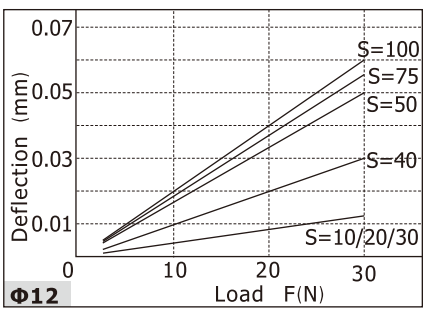
6.2) Table deflection due to yaw moment:

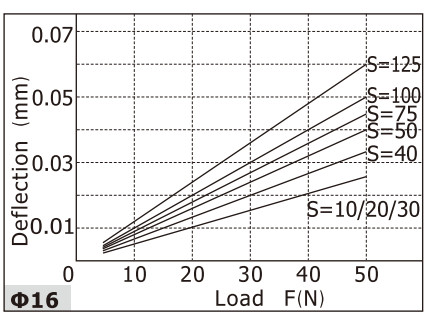
Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.

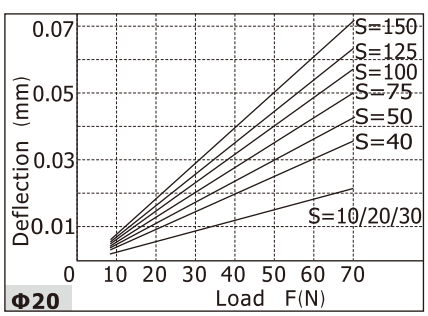


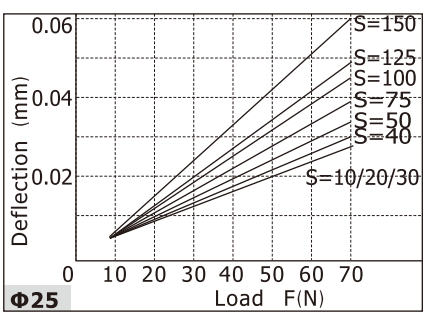






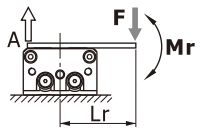


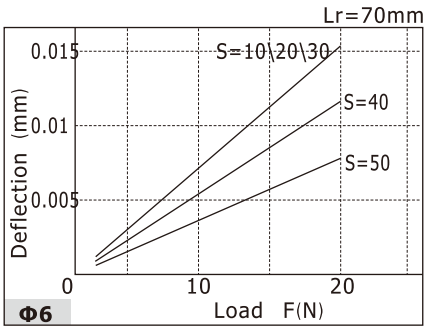


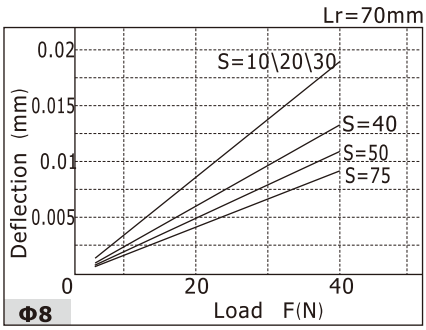


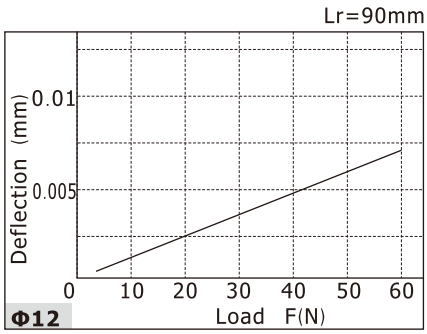
6.3) Table deflection due to roll moment:

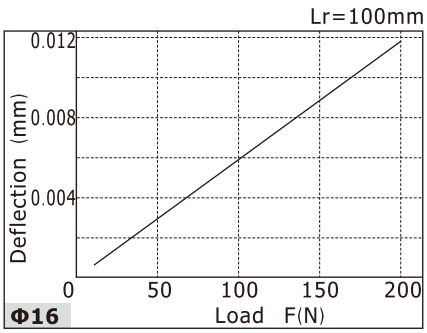
Table deflects (A) when a load acts upon section F at the full stroke of the compact slide.

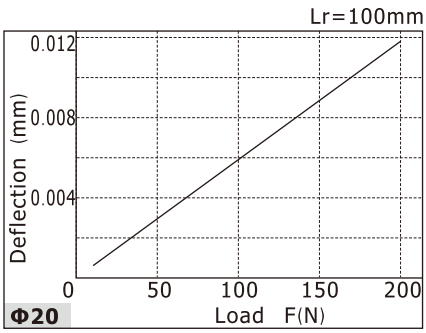


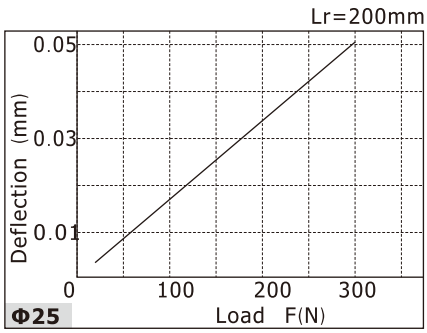






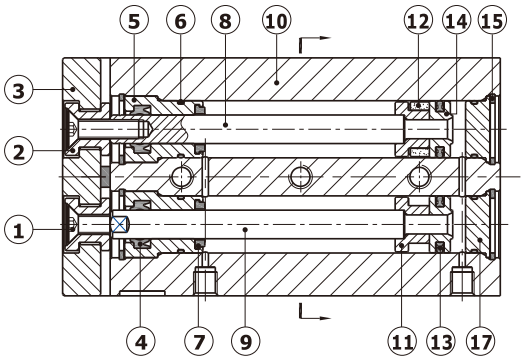






Inner structure

HLQ



NO.	Item	NO.	Item
1	Screw	10	Body
2	Floating joint	11	Magnet holder
3	Fixing plate	12	Magnet
4	Rod seal	13	Piston seal
5	Front cover	14	Piston
6	O-ring	15	C clip
7	Bumper	16	Linear guide combination
8	Piston rod A	17	Back cover
9	Piston rod B	18	Slide table

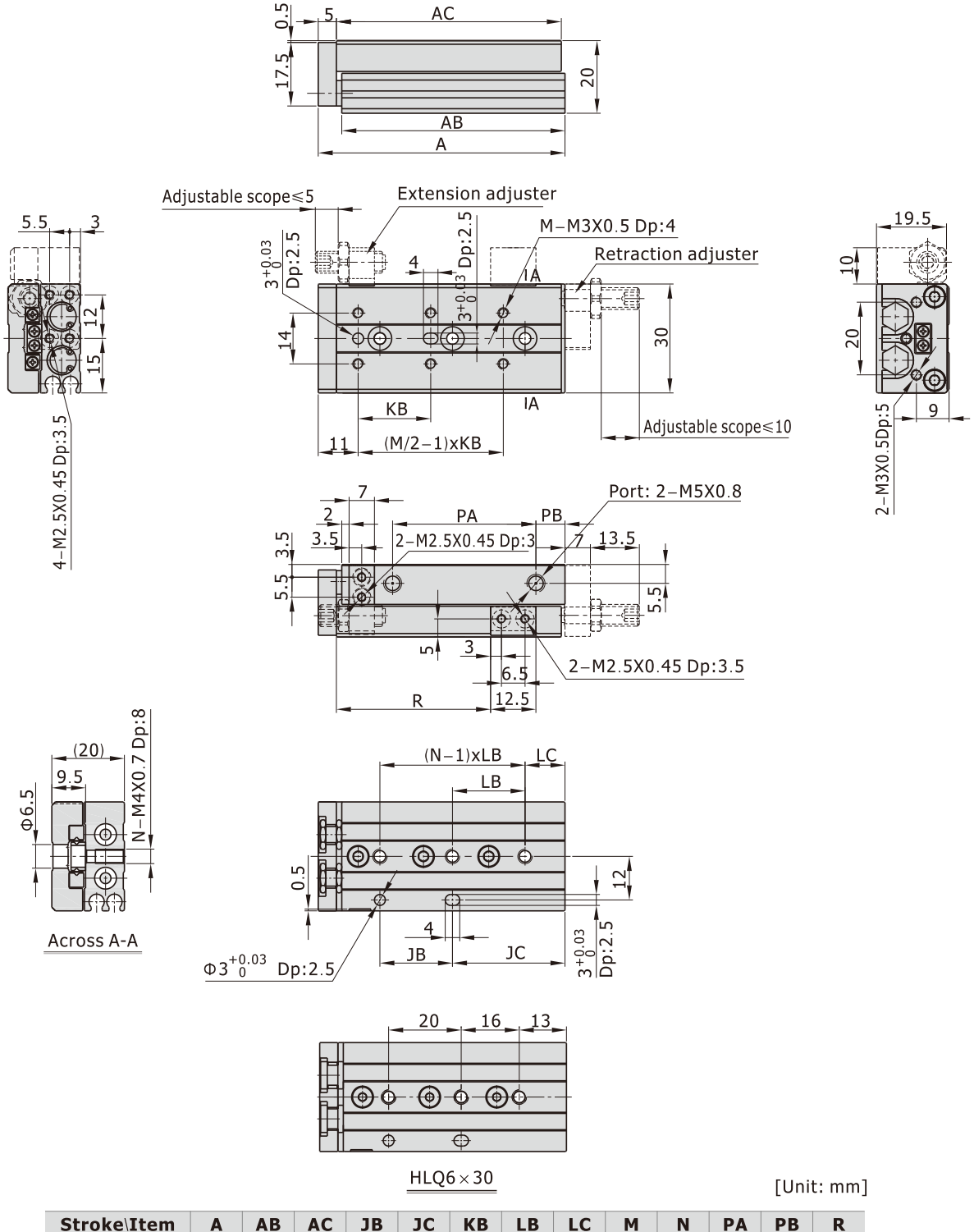
HLQ, HLQL Series

Ball bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

Dimensions

HLQ6



[Unit: mm]

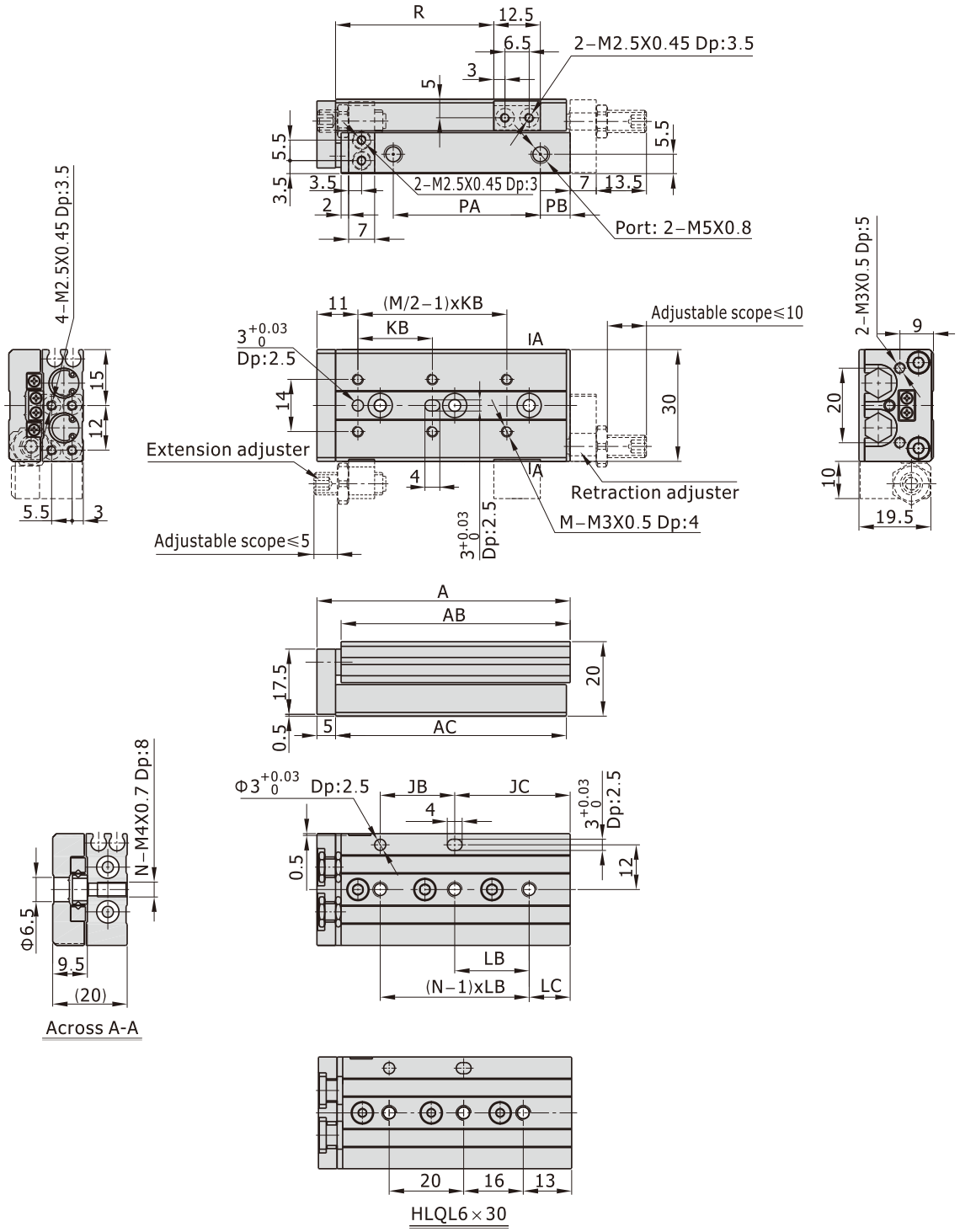
Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	48	41.5	42	16	13	22	23	6	4	2	16	9	21.5
20	58	51.5	52	26	13	25	26	13	4	2	26	9	31.5
30	68	61.5	62	20	29	21	–	–	6	3	36	9	41.5
40	86	79.5	80	28	39	26	28	11	6	3	47	16	51.5
50	96	89.5	90	28	49	27	28	21	6	3	64	9	61.5

HLQ, HLQL Series

Ball bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

HLQL6



[Unit: mm]

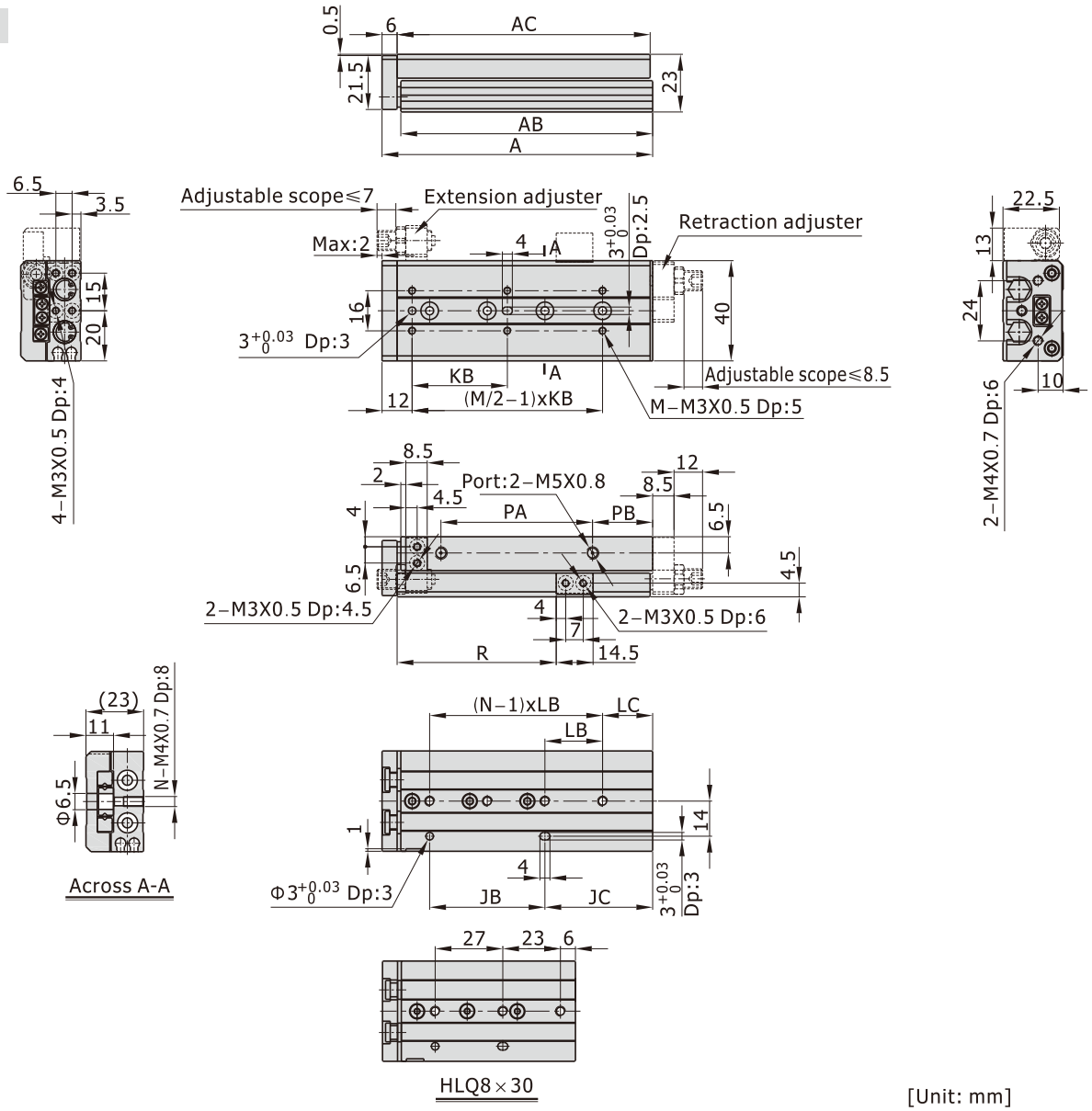
Stroke\Item	A	AB	AC	JB	JC	KB	LB	LC	M	N	PA	PB	R
10	48	41.5	42	16	13	22	23	6	4	2	16	9	21.5
20	58	51.5	52	26	13	25	26	13	4	2	26	9	31.5
30	68	61.5	62	20	29	21	–	–	6	3	36	9	41.5
40	86	79.5	80	28	39	26	28	11	6	3	47	16	51.5
50	96	89.5	90	28	49	27	28	21	6	3	64	9	61.5

HLQ, HLQL Series

Ball bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

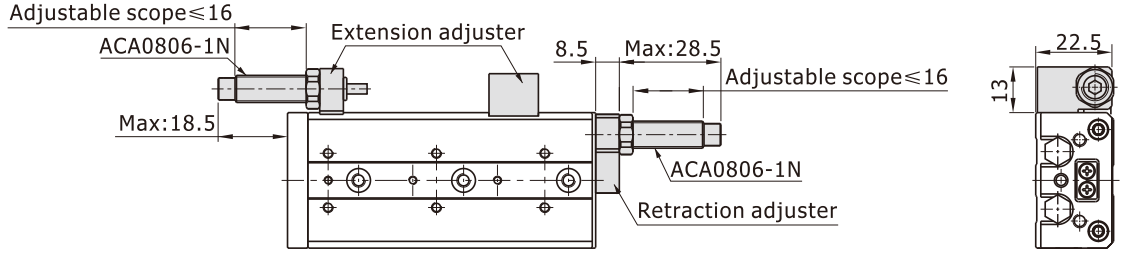
HLQ8



[Unit: mm]

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)

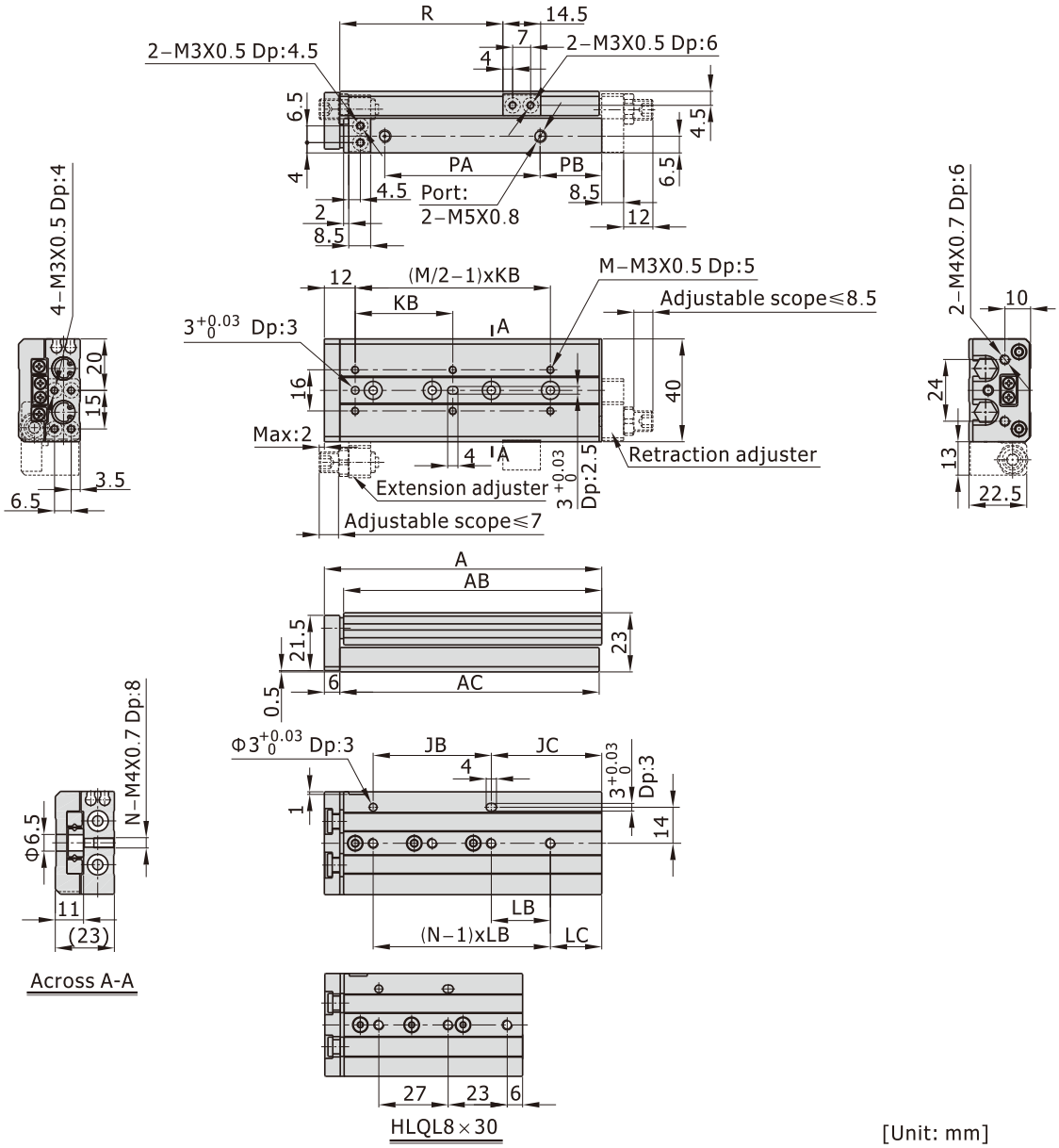


HLQ, HLQL Series

Ball bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

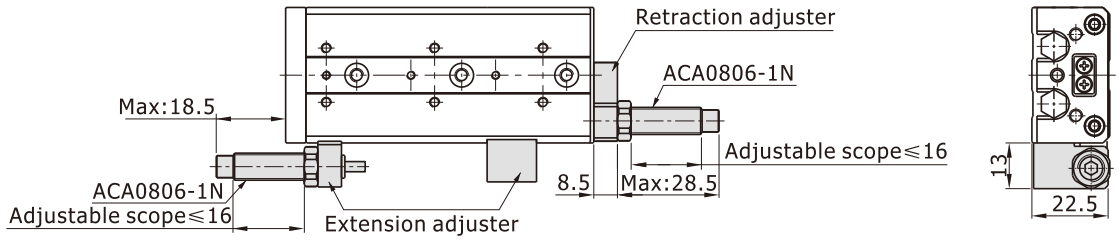
HLQL8



[Unit: mm]

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(With shock absorber)

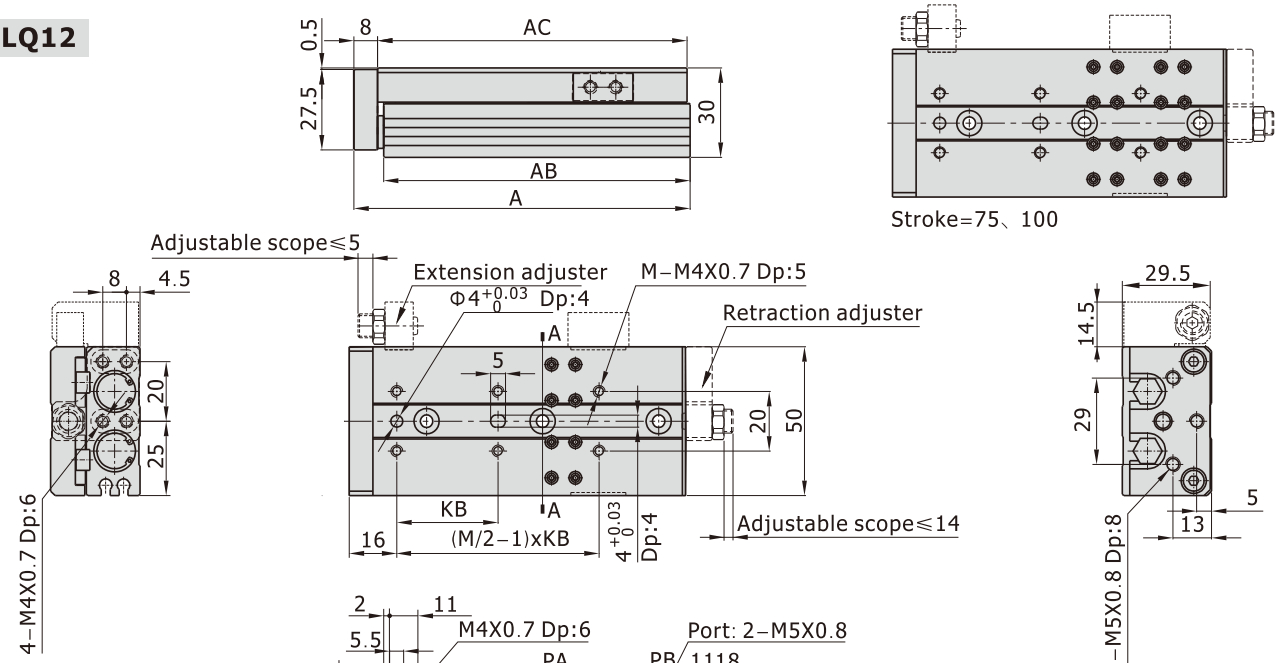


HLQ, HLQL Series

Ball bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

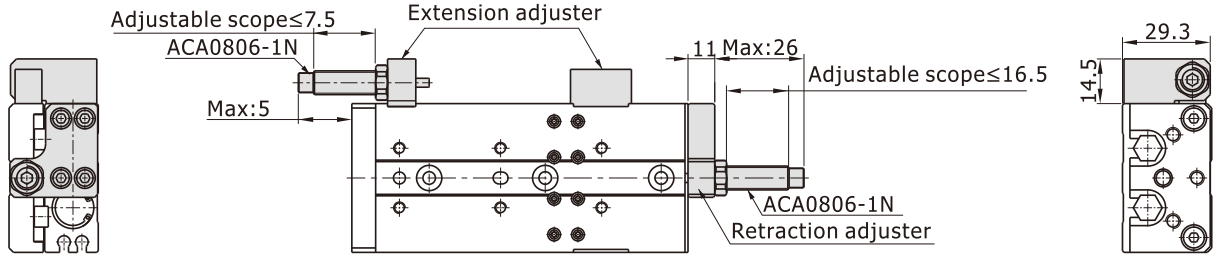
HLQ12



[Unit: mm]

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)

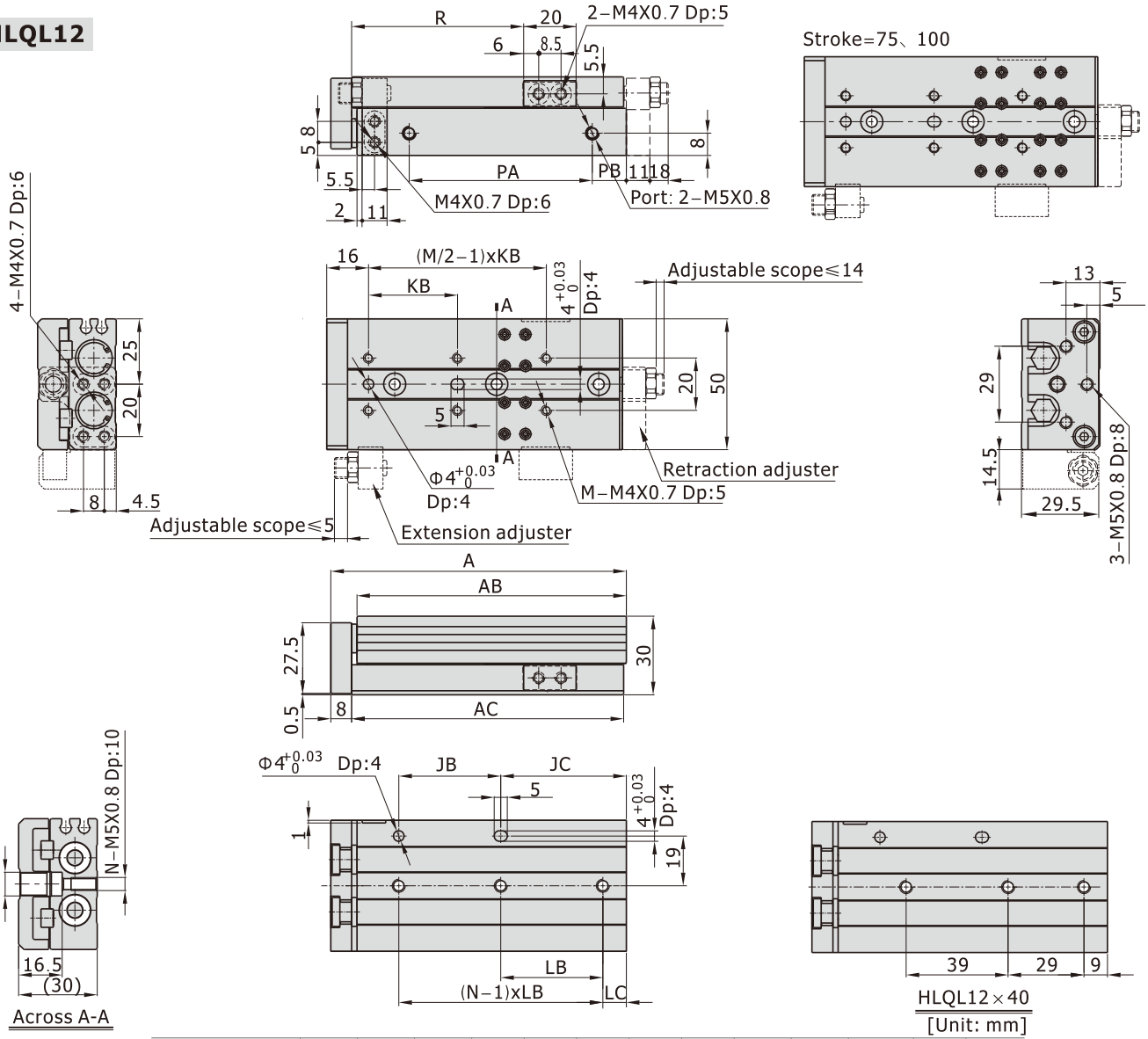


HLQ, HLQL Series

Ball bearing type

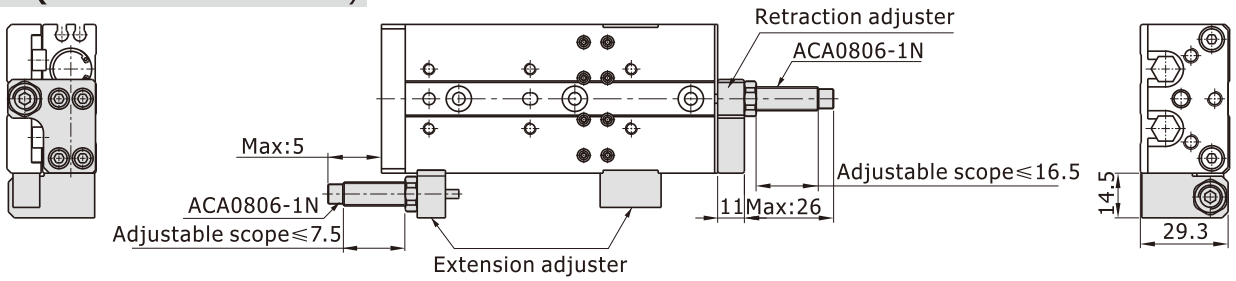
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

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)

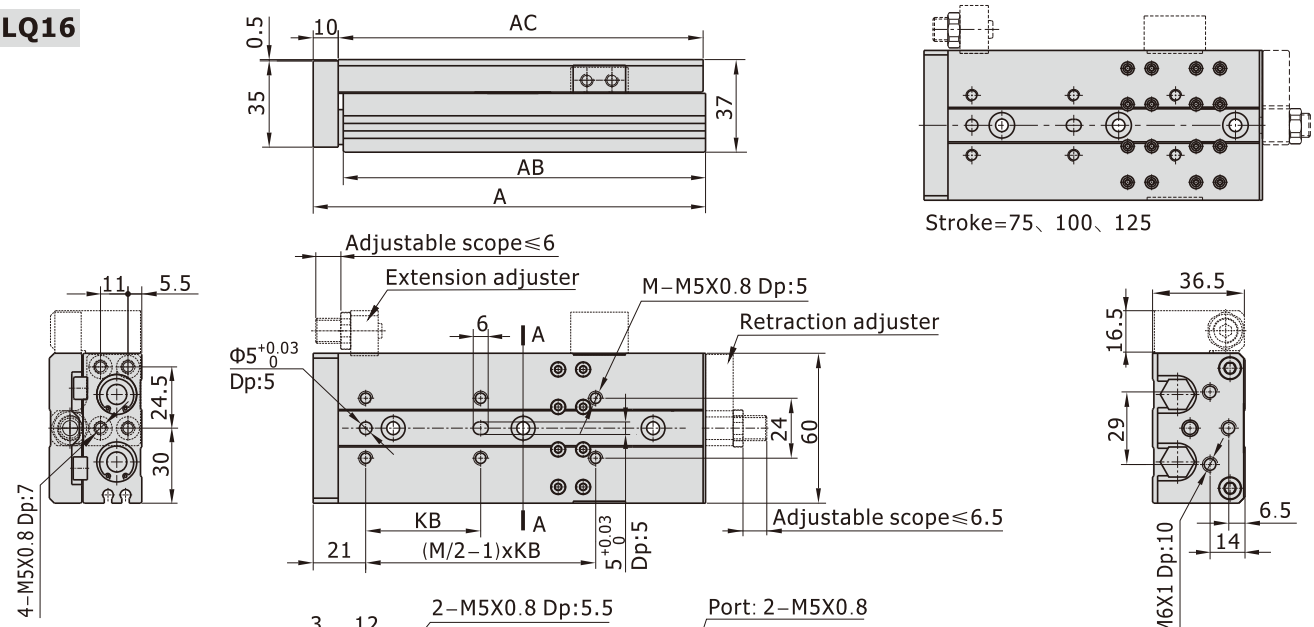


HLQ, HLQL Series

Ball bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

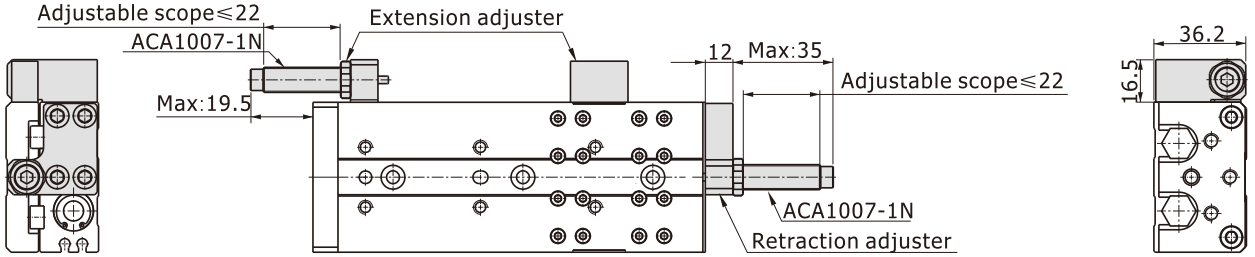
HLQ16



[Unit: mm]

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)

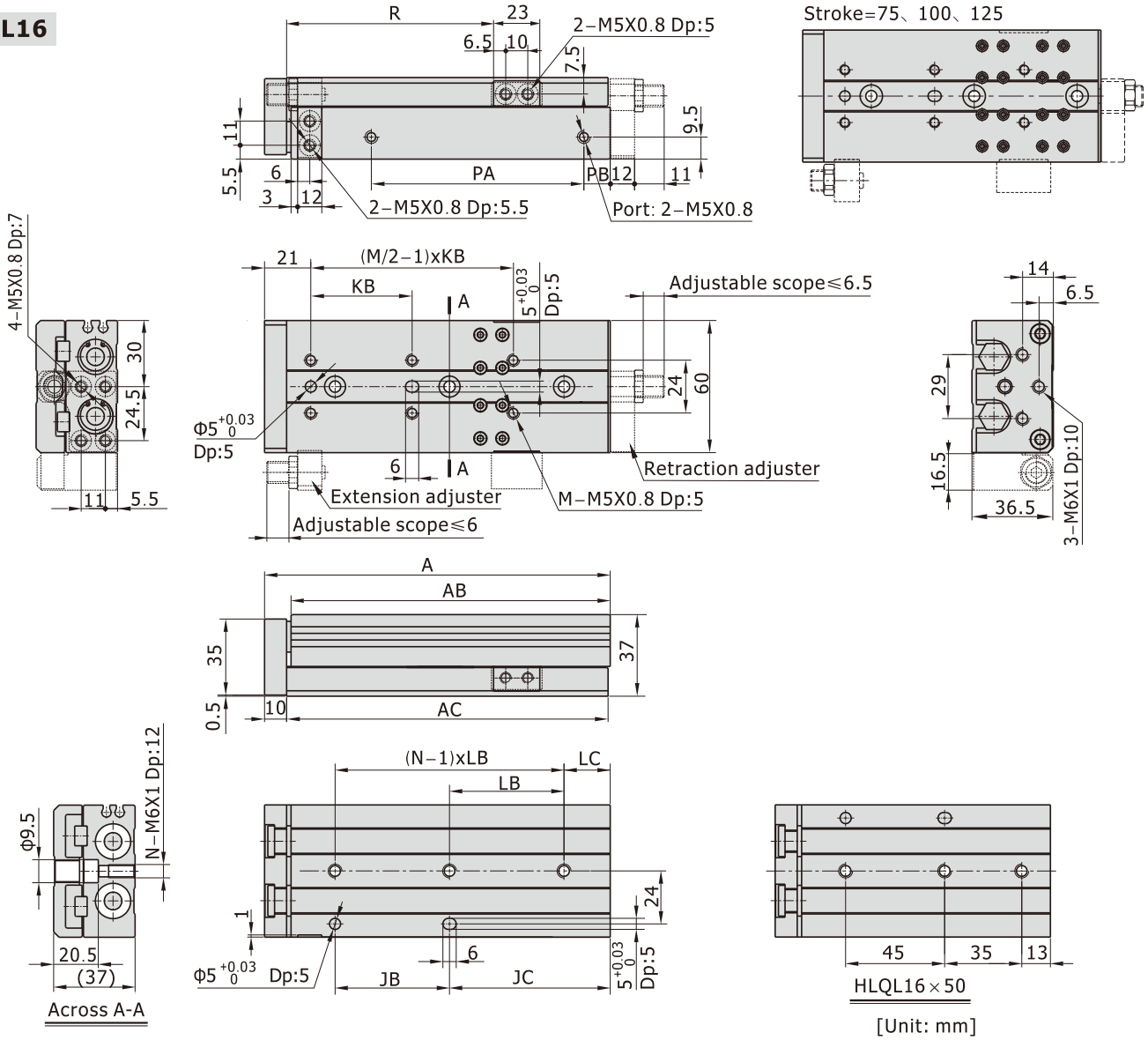


HLQ, HLQL Series

Ball bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

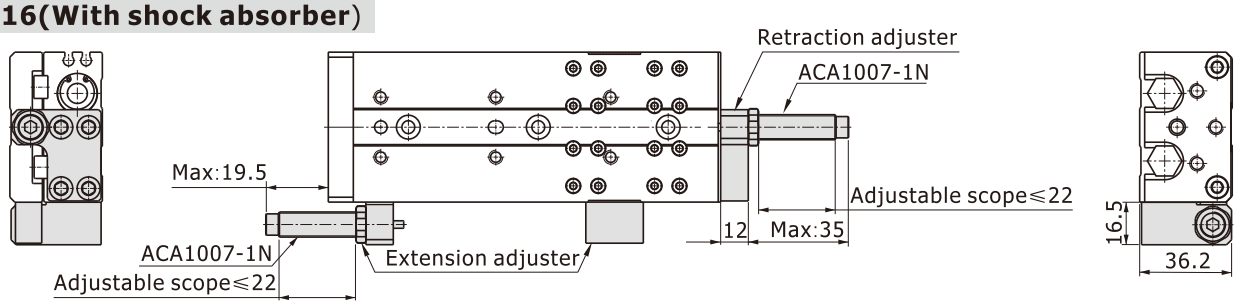
HLQL16



[Unit: mm]

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)

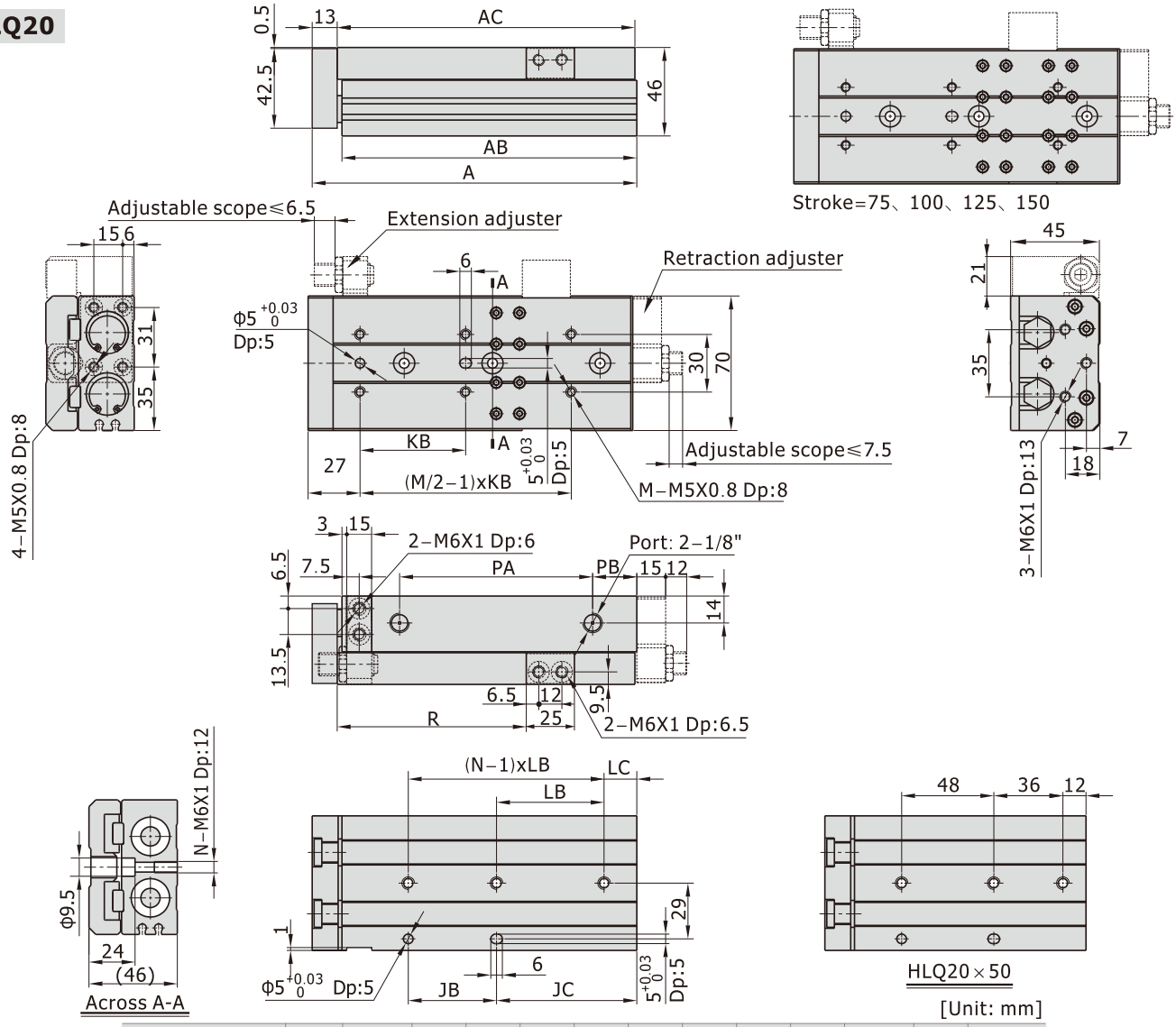


HLQ, HLQL Series

Ball bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

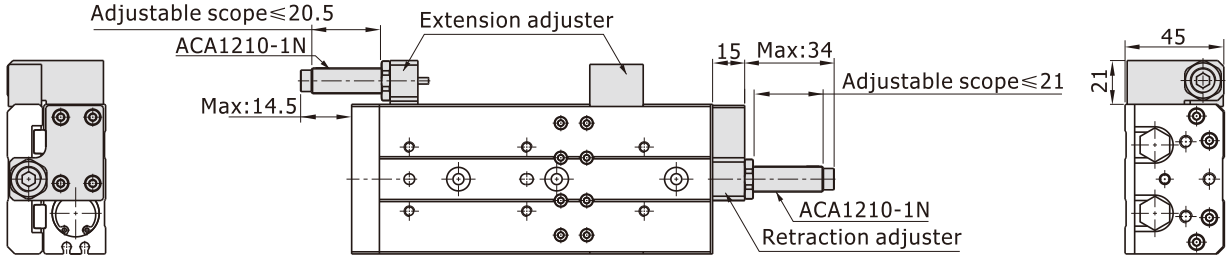
HLQ20



[Unit: mm]

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)

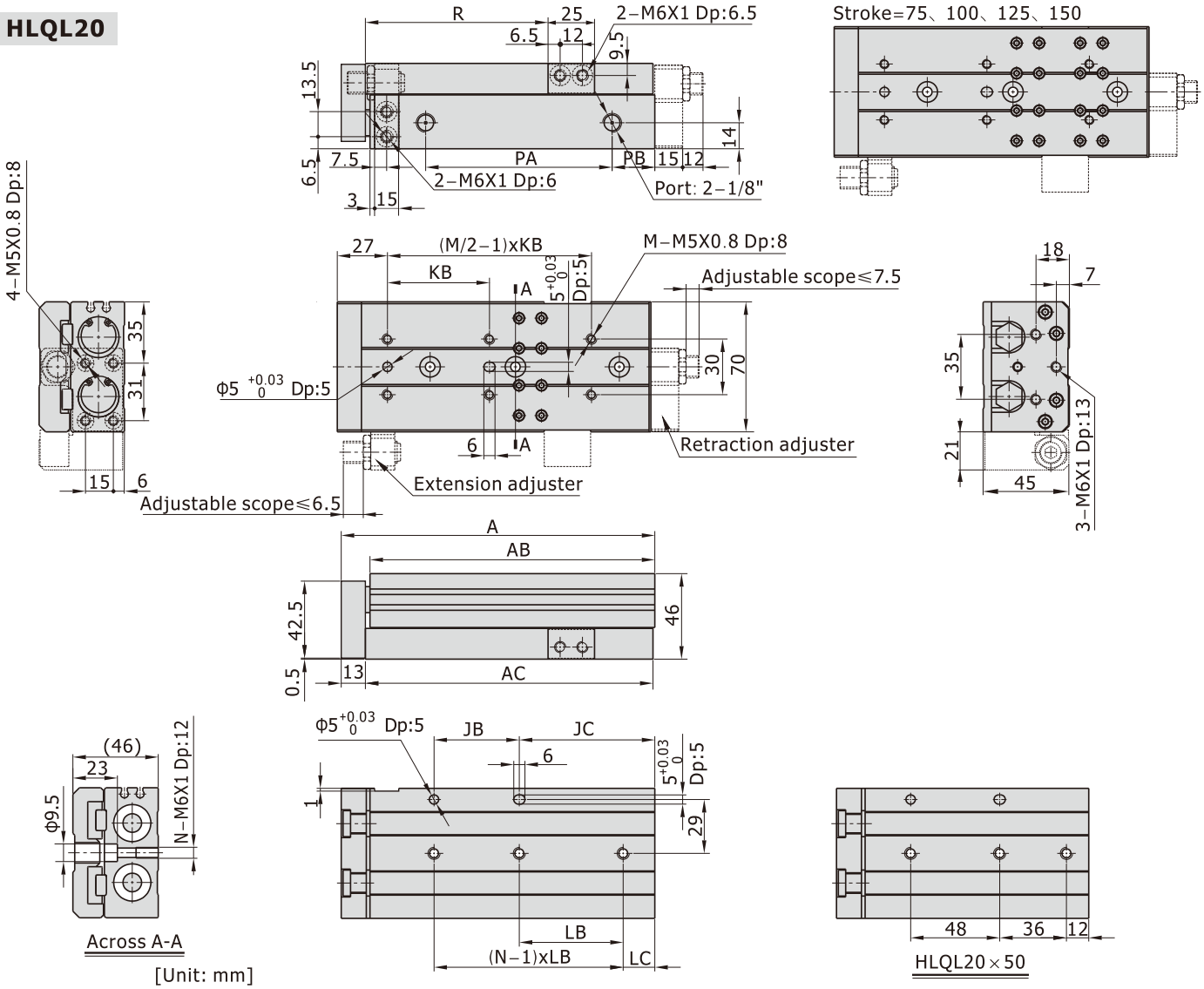


HLQ, HLQL Series

Ball bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

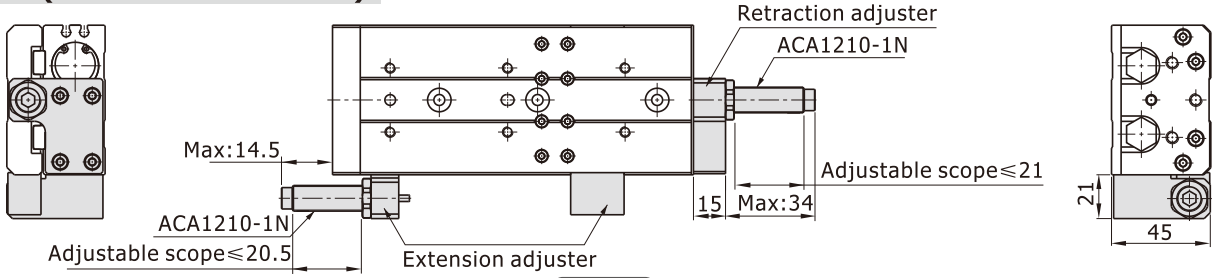
HLQL20



[Unit: mm]

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)

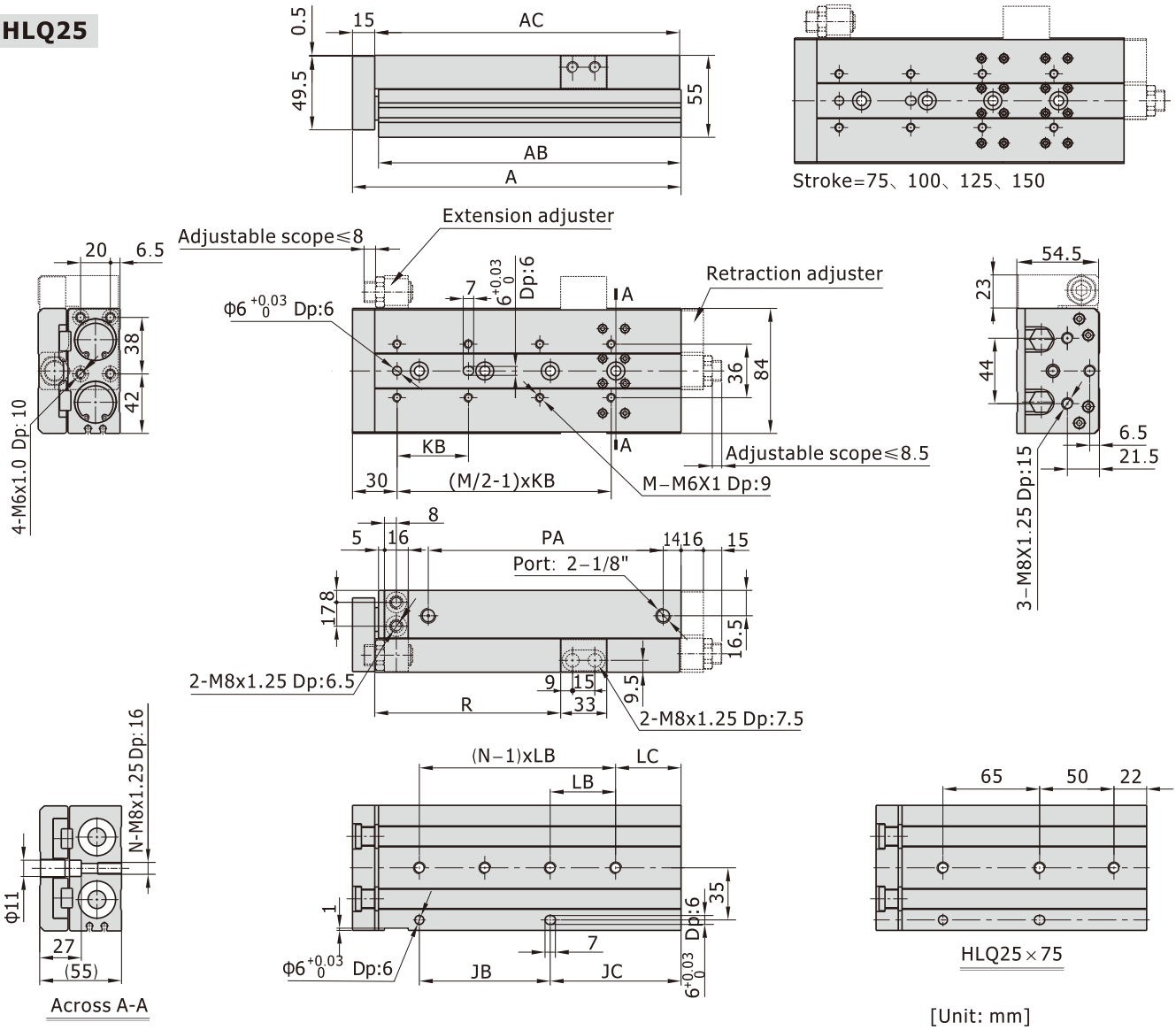


HLQ, HLQL Series

Ball bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

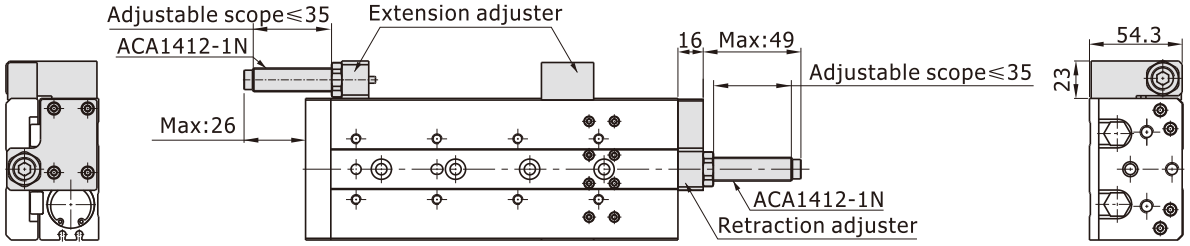
HLQ25



[Unit: mm]

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

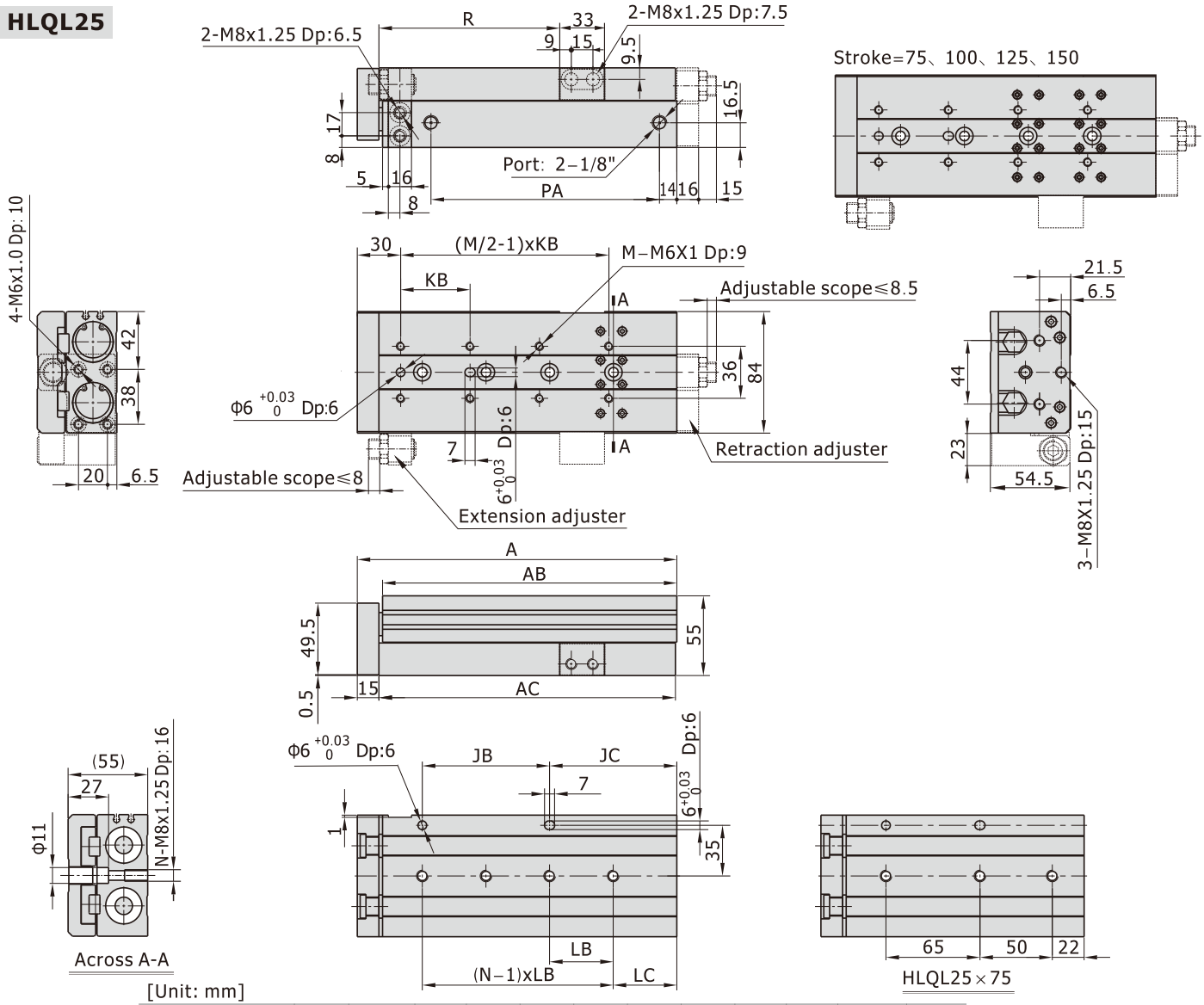
HLQ25(With shock absorber)



HLQ, HLQL Series

Ball bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

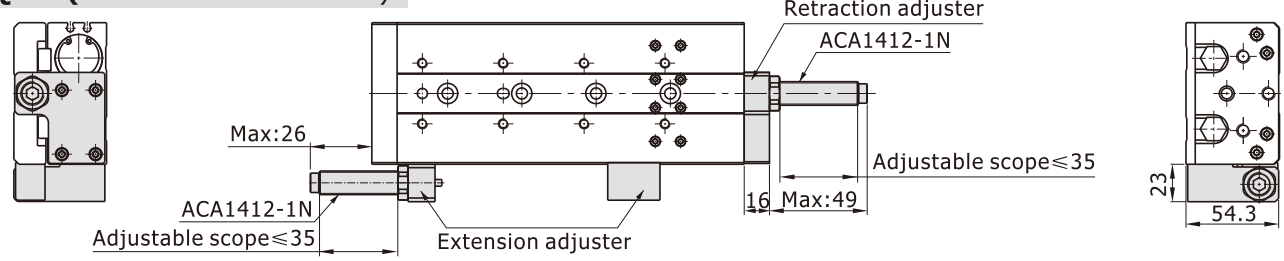
HLQL25



[Unit: mm]

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 ordering code

F - HLQ 20 AS

1 2 3 4

① Accessory

② Cylinder model

HLQ: Slide table cylinder (Double acting type)
(Ball bearing type)

HLQL: Symmetrical Slide table cylinder (Double acting type)
(Ball bearing type)

③ Bore Size

6 8 12 16 20 25

④ Accessory type

A: Adjustable rubber stopper(Both ends)
AS: Adjustable rubber stopper(Extention)
AF: Adjustable rubber stopper(Retraction)
B: Shock absorber(Both ends)
BS: Shock absorber(Extention)
BF: Shock absorber(Retraction)

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
	Extention	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
	Extention	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
	Extention	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

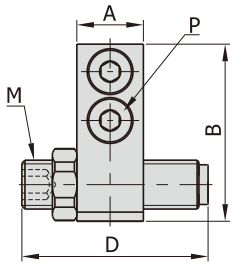
	Accessories\Bore size		16	20	25
Symmetrical (HLQL)	Both ends	A(Adjustable rubber stopper)	F-HLQL16A	F-HLQL20A	F-HLQL25A
		B(Shock absorber)	F-HLQL16B	F-HLQL20B	F-HLQL25B
	Extention	AS(Adjustable rubber stopper)	F-HLQ16AS	F-HLQ20AS	F-HLQ25AS
		BS(Shock absorber)	F-HLQ16BS	F-HLQ20BS	F-HLQ25BS
	Retraction	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.

Dimensions

AS: Adjustable rubber stopper(Extention)

Body Mounting



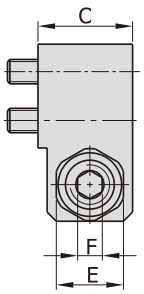
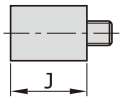
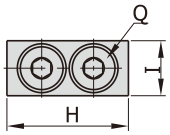


Table Mounting



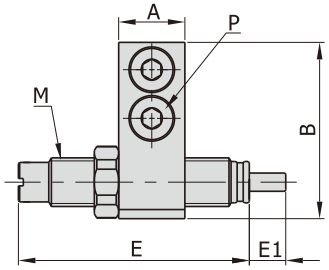


[Unit: mm]

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	M2.5Length:10	12.5	6.5	10.5	M2.5Length:10
8	5	8.5	22	14	21.5	11	4	M8×1.0	M3Length:14	14.5	8	12	M3Length:14
12	5	11	29	15.5	31.5	11	4	M8×1.0	M4Length:16	20	9	13.5	M4Length:12
16	5	12	36	17.5	24	14	5	M10×1.0	M5Length:16	23	10.5	17	M5Length:16
20	5	15	44.5	22	28	17	6	M12×1.0	M6Length:20	25	12.5	21	M6Length:20
25	5	16	54	24	32	19	6	M14×1.5	M8Length:20	33	16.5	23	M8Length:20

BS: Shock absorber(Extention)

Body Mounting



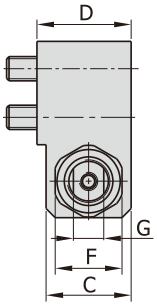
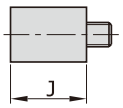
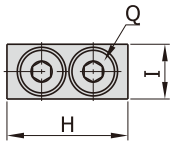


Table Mounting



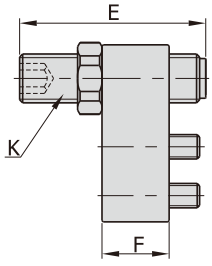


[Unit: mm]

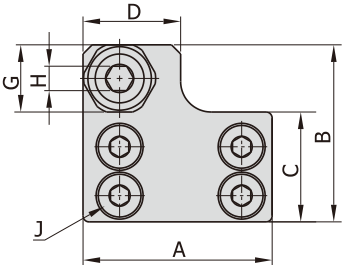
Bore size\Item	A	B	C	D	E	E1	F	G	M	P	H	I	J	Q
8	8.5	22	12.5	14	40	6	11	7	M8×1.0	M3Length:14	14.5	8	12	M3Length:14
12	11	29	14	15.5	40	6	11	7	M8×1.0	M4Length:16	20	9	13.5	M4Length:12
16	12	36	16	17.5	49	7	14	9	M10×1.0	M5Length:16	23	10.5	17	M5Length:16
20	15	44.5	20	22	53.5	10	17	11	M12×1.0	M6Length:20	25	12.5	21	M6Length:20
25	16	54	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)

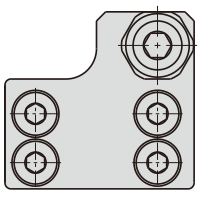
[Unit: mm]



HLQ12~25



HLQ6/HLQ8



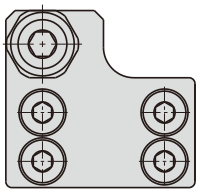
Bore size\Item	Adjusting stroke range	A	B	C	D
6	5	18	19	11	8
8	5	24	22.2	13	14
12	5	31	29	18	16
16	5	37	36	21.5	18
20	5	45.5	44	25.5	23
25	5	54	53.5	31.6	28

Bore size\Item	E	F	G	H	J	K
6	21.5	7	8	3	M2.5Length:6	M6×1.0
8	21.5	8.5	11	4	M3Length:8	M8×1.0
12	31.5	11	11	4	M4Length:12	M8×1.0
16	24	12	14	5	M5Length:12	M10×1.0
20	28	15	17	6	M5Length:16	M12×1.0
25	32	16	19	6	M6Length:18	M14×1.5

AF: Adjustable rubber stopper(Retraction, for symmetrical)

[Unit: mm]

HLQL6/HLQL8



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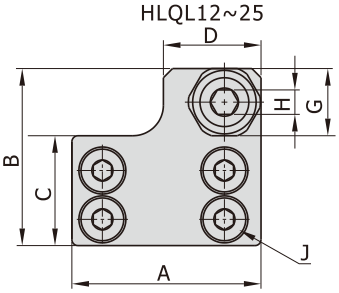
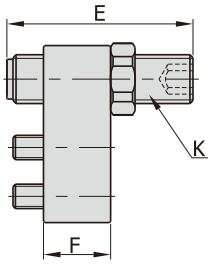


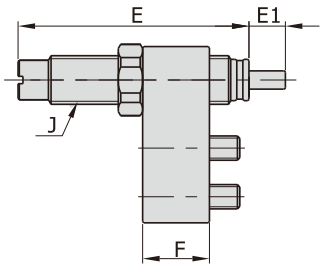


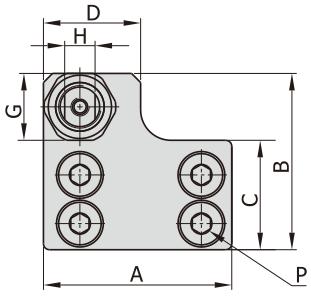
Bore size\Item	Adjusting stroke range	A	B	C	D
6	5	18	19	11	8
8	5	24	22.2	13	14
12	5	31	29	18	16
16	5	37	36	21.5	18
20	5	45.5	44	25.5	23
25	5	54	53.5	31.6	28

Bore size\Item	E	F	G	H	J	K
6	21.5	7	8	3	M2.5Length:6	M6×1.0
8	21.5	8.5	11	4	M3Length:8	M8×1.0
12	31.5	11	11	4	M4Length:12	M8×1.0
16	24	12	14	5	M5Length:12	M10×1.0
20	28	15	17	6	M5Length:16	M12×1.0
25	32	16	19	6	M6Length:18	M14×1.5

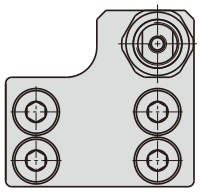
BF: Shock absorber(Retraction, for standard)

[Unit: mm]





HLQ8

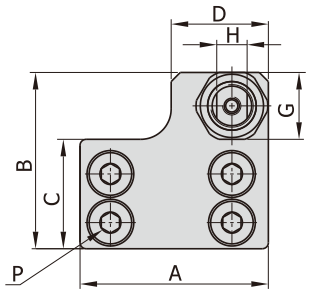


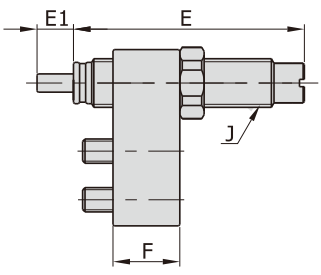
Bore size\Item	A	B	C	D	E	E1	F
8	24	23.5	13	14	40	6	8.5
12	31	29	18	16	40	6	11
16	37	36	21.5	18	49	7	12
20	45.5	44	25.5	23	53.5	10	15
25	54	53.5	31.6	28	68.5	12	16

Bore size\Item	G	H	J	P
8	11	7	M8×1.0	M3Length:8
12	11	7	M8×1.0	M4Length:12
16	14	9	M10×1.0	M5Length:12
20	17	11	M12×1.0	M5Length:16
25	19	12	M14×1.5	M6Length:18

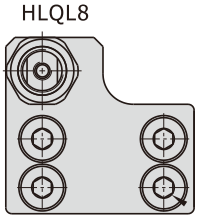
BF: Shock absorber(Retraction, for symmetrical)

[Unit: mm]





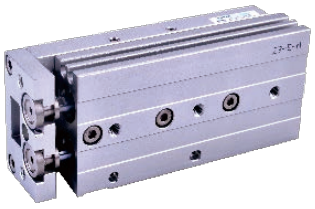
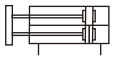
HLQL8



Bore size\Item	A	B	C	D	E	E1	F
8	24	23.5	13	14	40	6	8.5
12	31	29	18	16	40	6	11
16	37	36	21.5	18	49	7	12
20	45.5	44	25.5	23	53.5	10	15
25	54	53.5	31.6	28	68.5	12	16

Bore size\Item	G	H	J	P
8	11	7	M8×1.0	M3Length:8
12	11	7	M8×1.0	M4Length:12
16	14	9	M10×1.0	M5Length:12
20	17	11	M12×1.0	M5Length:16
25	19	12	M14×1.5	M6Length:18

Cross bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

Ordering code

HLS 20 × 30 S AS T

1 2 3 4 5 6

① Model

HLS: Slide tabe cylinder
(Double acting type)
(Cross bearing type)

HLSL: Symmetrical Slide tabe cylinder
(Double acting type)
(Cross bearing type)

② Bore Size

6 8 12 16 20 25

④ Magnet

S: With magnet

⑥ Thread type [Note3]

T: NPT

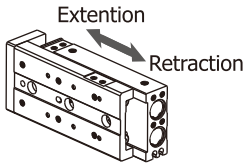
[Note1] Consult us for non–standard stroke.
[Note2] B type, BS type, BF type are unavailable for bore size of Φ6.
[Note3] When the thread is standard, the code is blank.

③ Stroke [Note1]

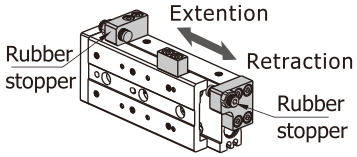
Bore size (mm)	Standard stroke (mm)	Max.std stroke
6	10 20 30 40 50	50
8	10 20 30 40 50 75	75
12	10 20 30 40 50 75 100	100
16	10 20 30 40 50 75 100 125	125
20	10 20 30 40 50 75 100 125 150	150
25	10 20 30 40 50 75 100 125 150	150

⑤ Adjuster option [Note2]

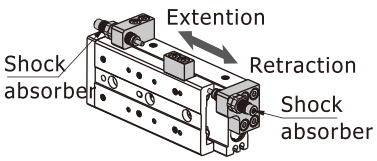
Blank: Without adjuster(Basic type)



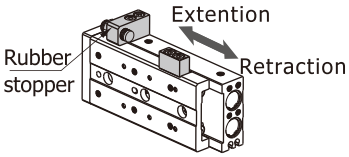
A: Adjustable rubber stopper (Both ends)



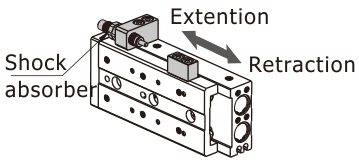
B: Shock absorber(Both ends)



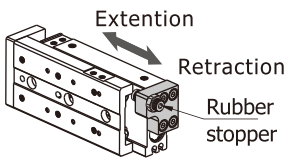
AS: Adjustable rubber topper (Extention)



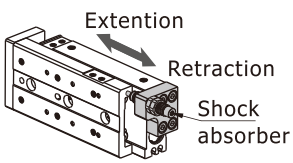
BS: Shock absorber(Extention)



AF: Adjustable rubber topper (Retraction)



BF: Shock absorber(Retraction)



HLS, HLSL Series

Cross bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

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	22~100psi(0.15~0.7MPa)					
Proof pressure	175psi(1.2MPa)					
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(S)					
Port size [Note1]	M5×0.8				1/8	

[Note1] NPT thread is available.

Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size	Rod size	Acting type		Pressure area(mm^2)	Operating pressure(psi)					
					30	45	60	75	90	105
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

HLS, HLSL Series

Cross bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

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 absorber)
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.

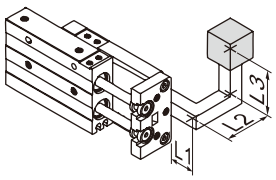
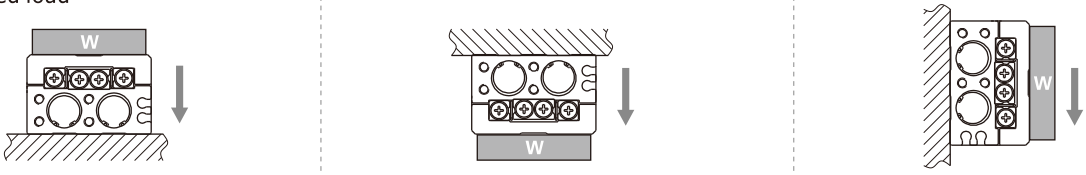


Fig. 1: Applied load



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**)

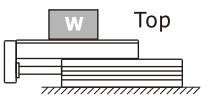
3. Check that kinetic energy of load doesn't exceed allowable kinetic energy: E≤Ea

C) Load check

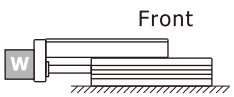
1. Calculate allowable applied load Wa (N)	$Wa = K \times \beta \times W_{max}$ K:Mounting work coefficient **(Fig 2)** W_{max}:Maximum allowable applied load **(Table 1)** β:Applied load coefficient **(Fig 3)**

2. Check that load(W) doesn't exceed allowable applied load(Wa): W≤Wa

Fig 2: Mounting work coefficient (K)

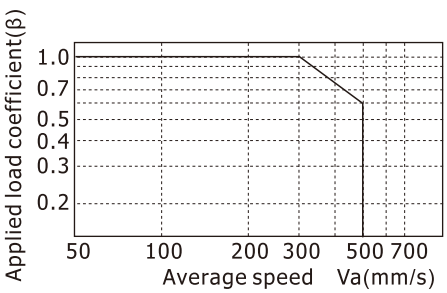


Mounting work coefficient K=1



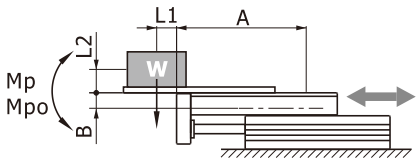
Mounting work coefficient K=0.6

Fig 3: Applied load coefficient (β)



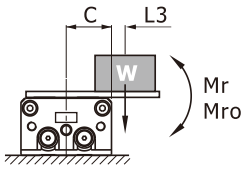
Horizontal

1. Calculate actual moment: Mp, Mpo, My, Myo, Mr, Mro (Nm)



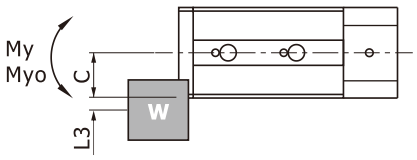
Dynamic moment:
Mp=W×(L1+A)/1000

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

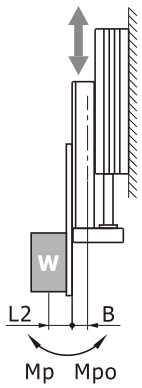
Static moment:
Myo=(W×a×(C+L3))/1000g

2. Check

Dynamic moment:	Static moment:
$\frac{Mp}{Mp_{max}}+\frac{My}{My_{max}}+\frac{Mr}{Mr_{max}}\leqslant 1$	$\frac{Mpo}{Mpo_{max}}+\frac{Myo}{Myo_{max}}+\frac{Mro}{Mro_{max}}\leqslant 1$

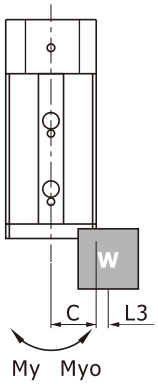
Vertical

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:	Static moment:
$\frac{Mp}{Mp_{max}}+\frac{My}{My_{max}}\leqslant 1$	$\frac{Mpo}{Mpo_{max}}+\frac{Myo}{Myo_{max}}\leqslant 1$

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).

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

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		

Note Symbol and unit

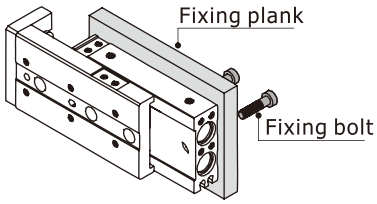
Symbol	Item	Unit
A B C	Correction value for center position distance of moment	mm
a	Acceleration of inertia	–
E	Kinetic energy	J
Ea	Allowable kinetic energy	J
Emax	Maximum allowable kinetic energy	J
g	Acceleration of gravity g=9.81	m/s^2
K	Mounting work coefficient	–
L1 L2 L3	Overhang	mm
Mp My Mr	Dynamic 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	-

Installation and application

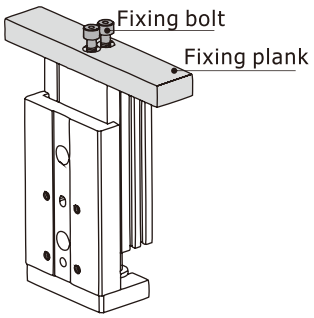
1. How to mount cylinder:

1.1) Cylinder can to be mounted from 3 directions

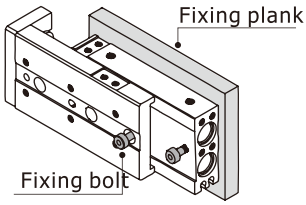
Vertical Mounting(Body thread holes)



Axial Mounting(Body thread holes)

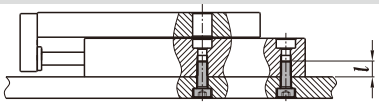


Vertical Mounting(Body through holes)



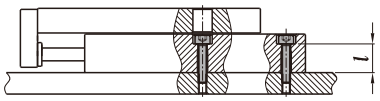
1.2) When mounting an compact slide cylinder, screws of appropriate length should be used and tightened properly within the maximum tightening torque. If screws are tightened beyond designed limits, malfunction may occur. If they are tightened insufficiently, it may result in sliding of falling off from its position.

Vertical Mounting(Body thread holes)



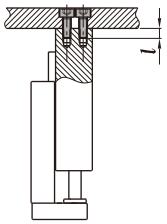
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLS6	M4×0.7	2.1	8
HLS8	M4×0.7	2.1	8
HLS12	M5×0.8	4.4	10
HLS16	M6×1.0	4.4	10
HLS20	M6×1.0	7.4	12
HLS25	M8×1.25	18.0	16

Vertical Mounting(Body through holes)



Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in 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)

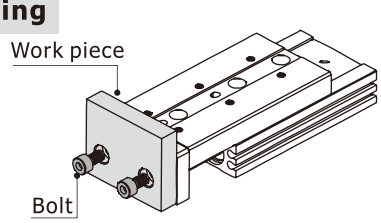


Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLS6	M2.5×0.45	0.5	3.5
HLS8	M3×0.5	0.9	4.0
HLS12	M4×0.7	2.1	6.0
HLS16	M5×0.8	4.4	7.0
HLS20	M5×0.8	4.4	8.0
HLS25	M6×1.0	7.4	10.0

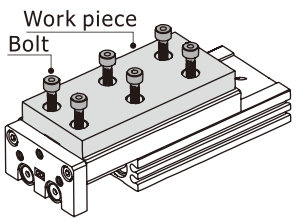
2. Work Piece Mounting:

2.1) Work pieces can be mounted on 2 surfaces of the compact slide.

Front Mounting

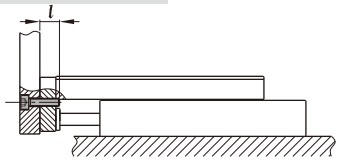


Top Mounting



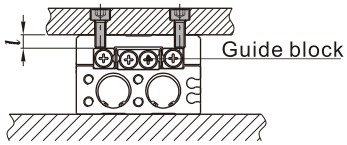
2.2) When mounting a work piece, tighten the bolts properly at a torque value within the limiting range. Use blots at least 0.5mm shorter than maximum thread depth to prevent bolts from contacting the guide block. If the bolts are too long, they hit the guide block and cause damage.

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

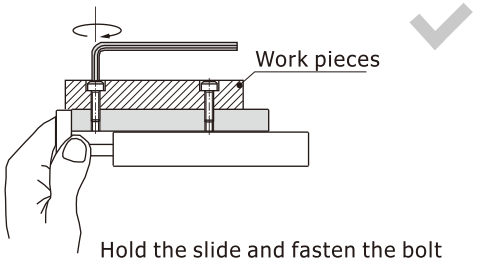
Top Mounting



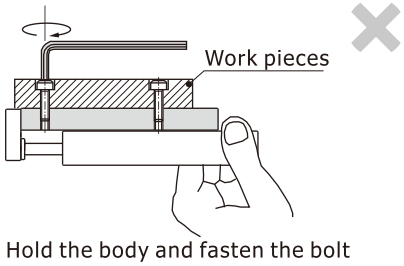
Model	Bolt used	Max. tightening torque (Nm)	Max. screw-in depth(mm)
HLS6	M3×0.5	0.9	4.0
HLS8	M3×0.5	0.9	5.0
HLS12	M4×0.7	2.1	5.5
HLS16	M5×0.8	4.4	6.0
HLS20	M5×0.8	4.4	10.0
HLS25	M6×1.0	7.4	13.0

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.



Hold the slide and fasten the bolt



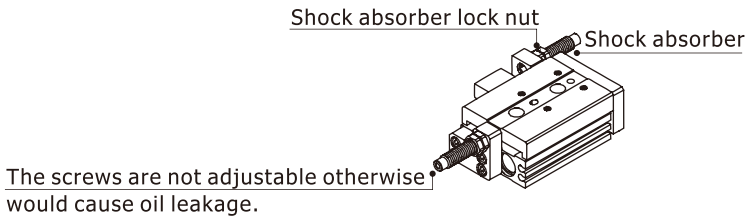
Hold the body and fasten the bolt

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.

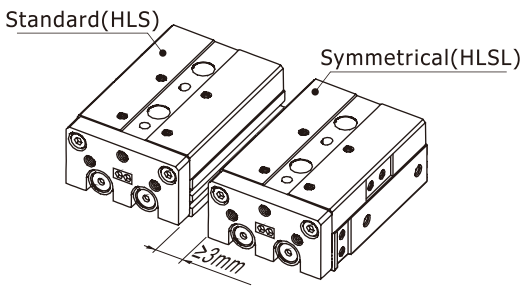


Model	Shock absorber	Tightening torque
HLS6	Without shock absorber	
HLS8	ACA0806-1N	1.67(Nm)
HLS12	ACA0806-1N	1.67(Nm)
HLS16	ACA1007-1N	3.14(Nm)
HLS20	ACA1210-1N	3.14(Nm)
HLS25	ACA1412-1N	10.8(Nm)

4. How to mount sensor switch:

4.1) HLS Series are all with magnet. The matching sensor switches are DS1-H, DS1-HL 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.

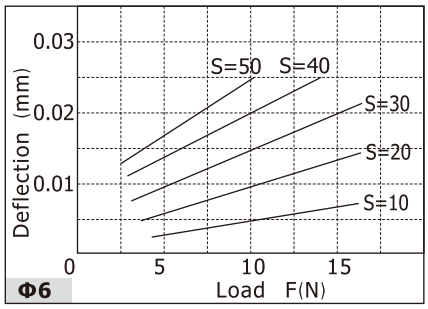


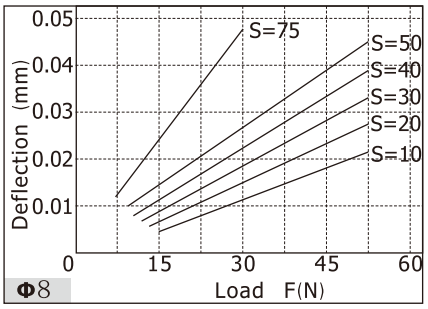
5. Make sure to connect the compact cylinder to speed controller at the meter-out side, and the speed of compact cylinder must below 500mm/s.

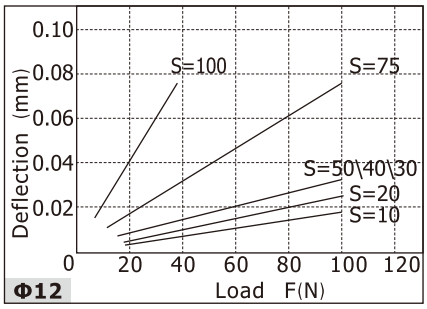
6. Don't apply a load beyond the range of the operation limits. Different load or torque will cause different deflection to table, please see below for details.

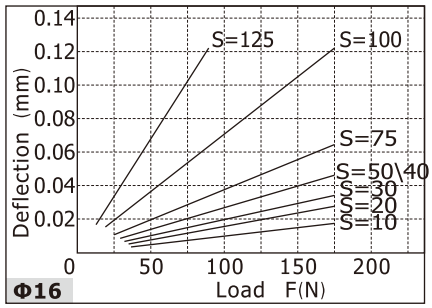
6.1) Table deflection due to pitch moment:

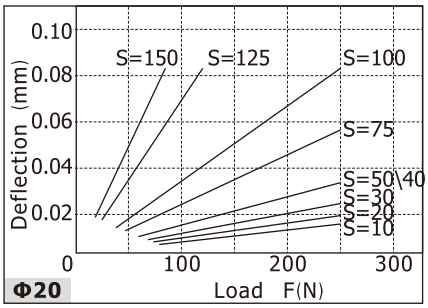
Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.

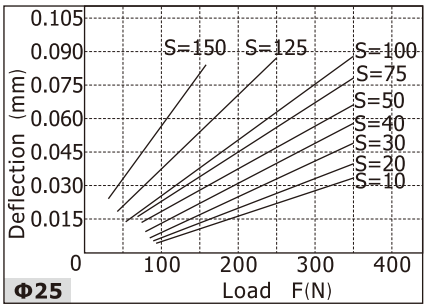






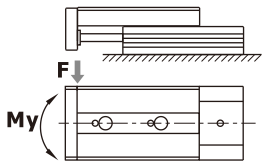


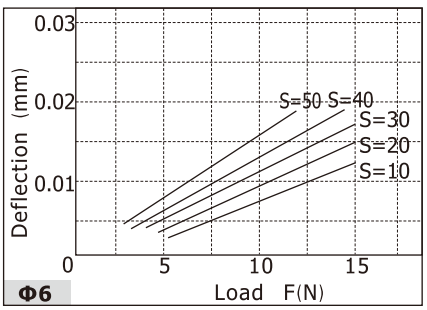


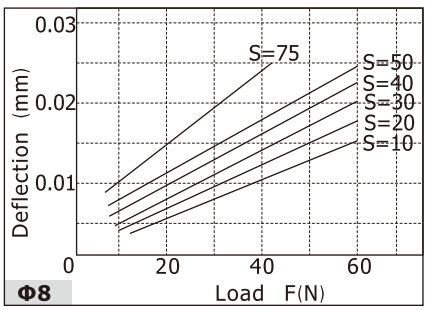


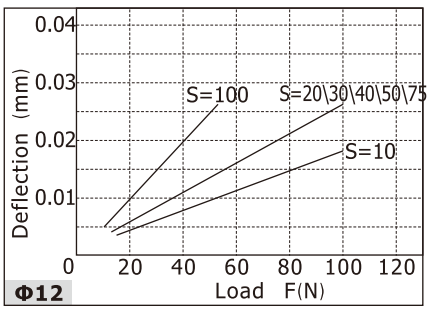
6.2) Table deflection due to yaw moment:

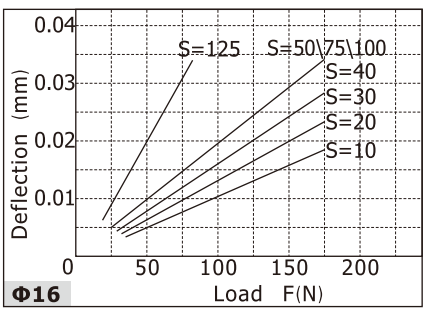
Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.

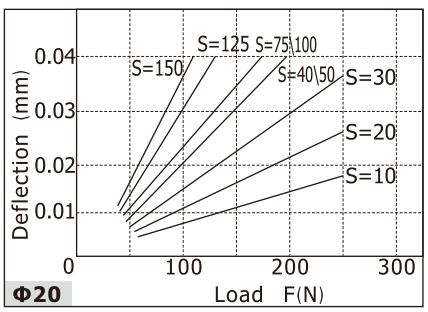


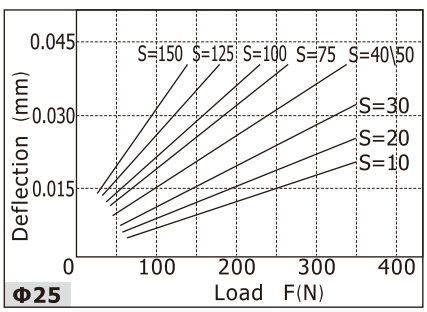






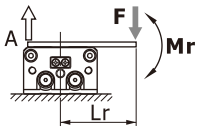


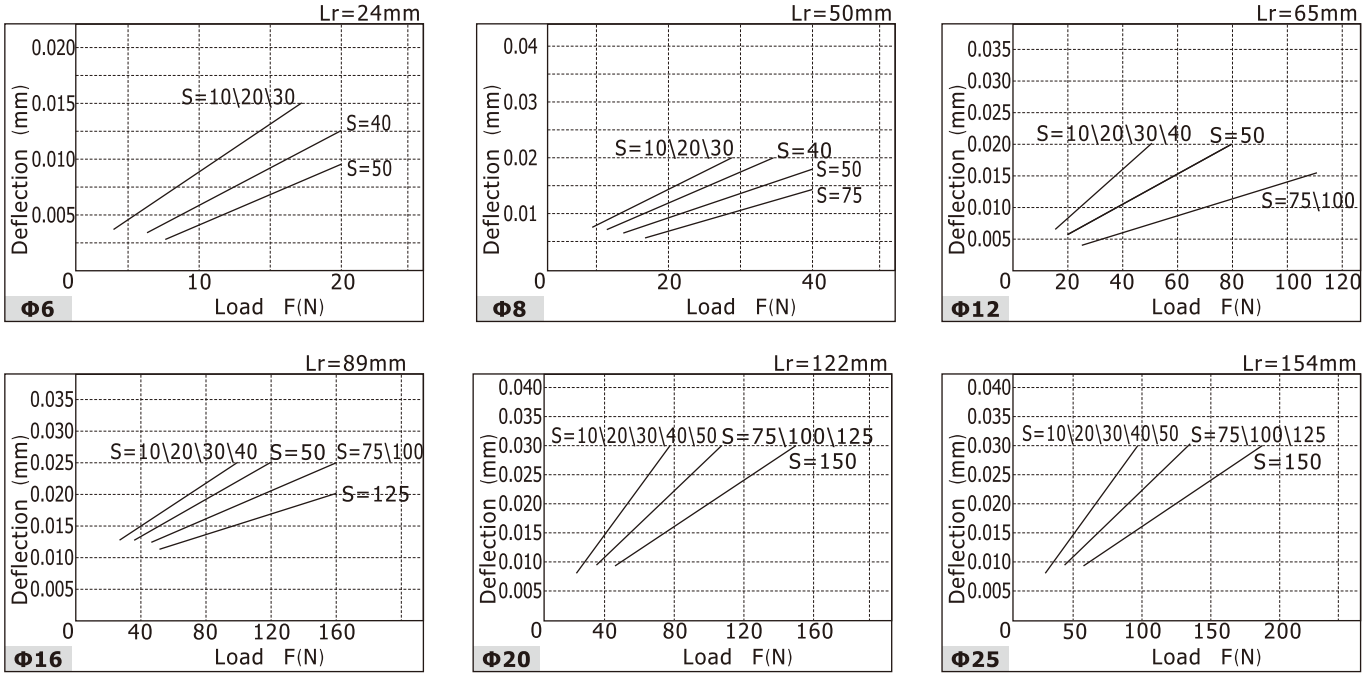




6.3) Table deflection due to roll moment:

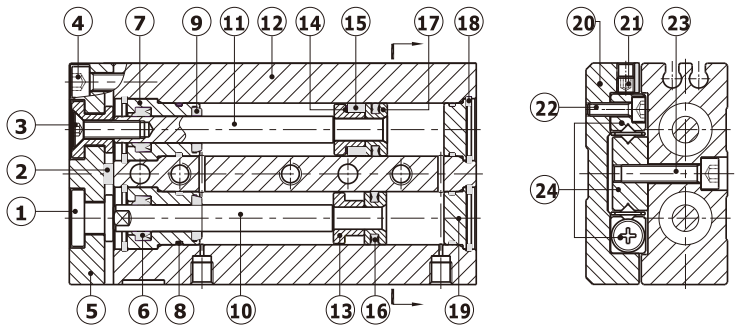
Table deflects (A) when a load acts upon section F at the full stroke of the compact slide.





Inner structure

HLS



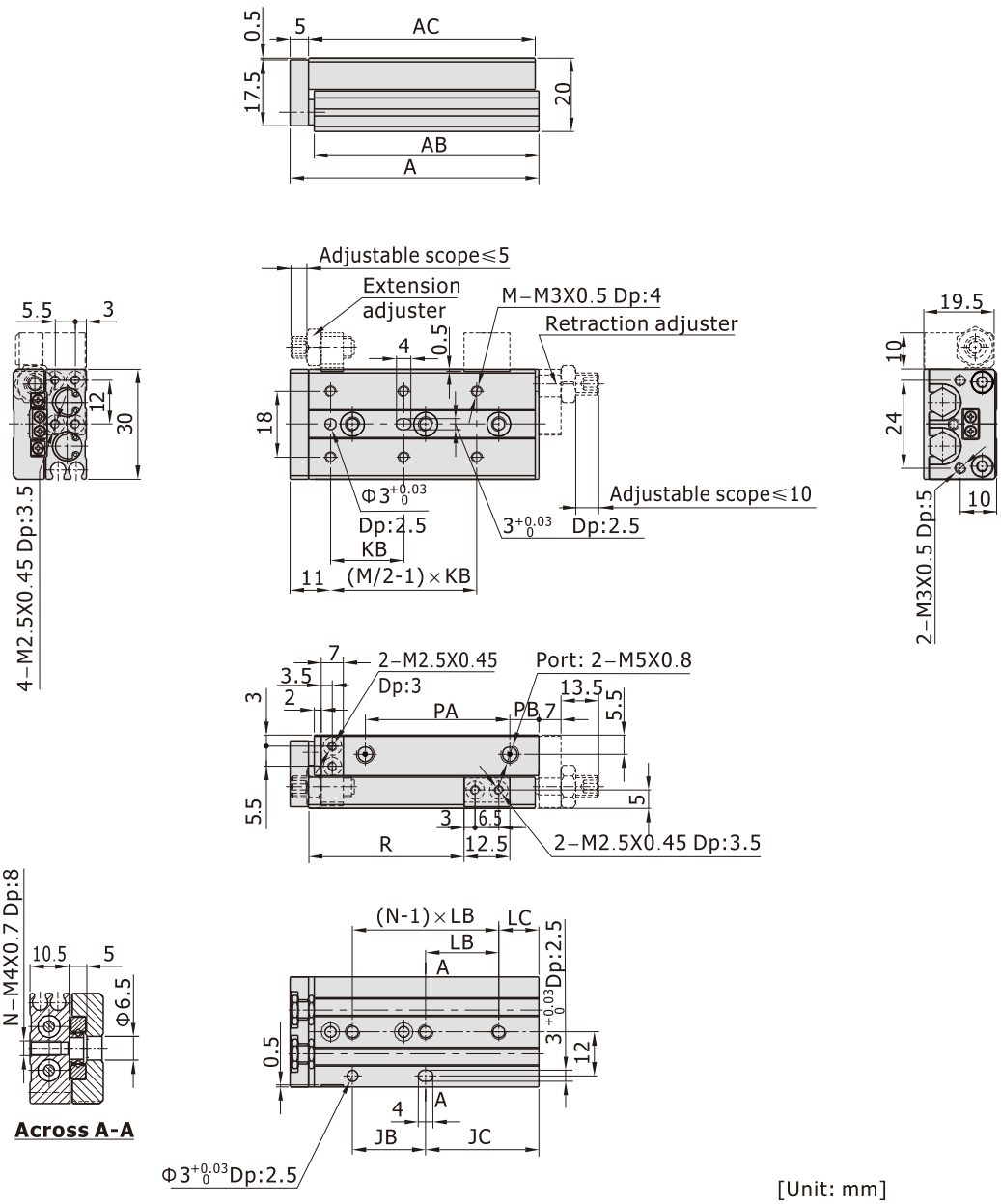
NO.	Item	NO.	Item
1	Floating joint	13	Magnet holder
2	Bumper	14	Magnet washer
3	Screw	15	Magnet
4	Screw	16	Piston seal
5	Fixing plate	17	Piston
6	Rod seal	18	C clip
7	Front cover	19	Back cover
8	O-ring	20	Slide table
9	Bumper	21	Nut
10	Piston rod A	22	Screw
11	Piston rod B	23	Screw
12	Body	24	Slide guide combination

HLS, HLSL Series

Cross bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

Dimensions

HLS6



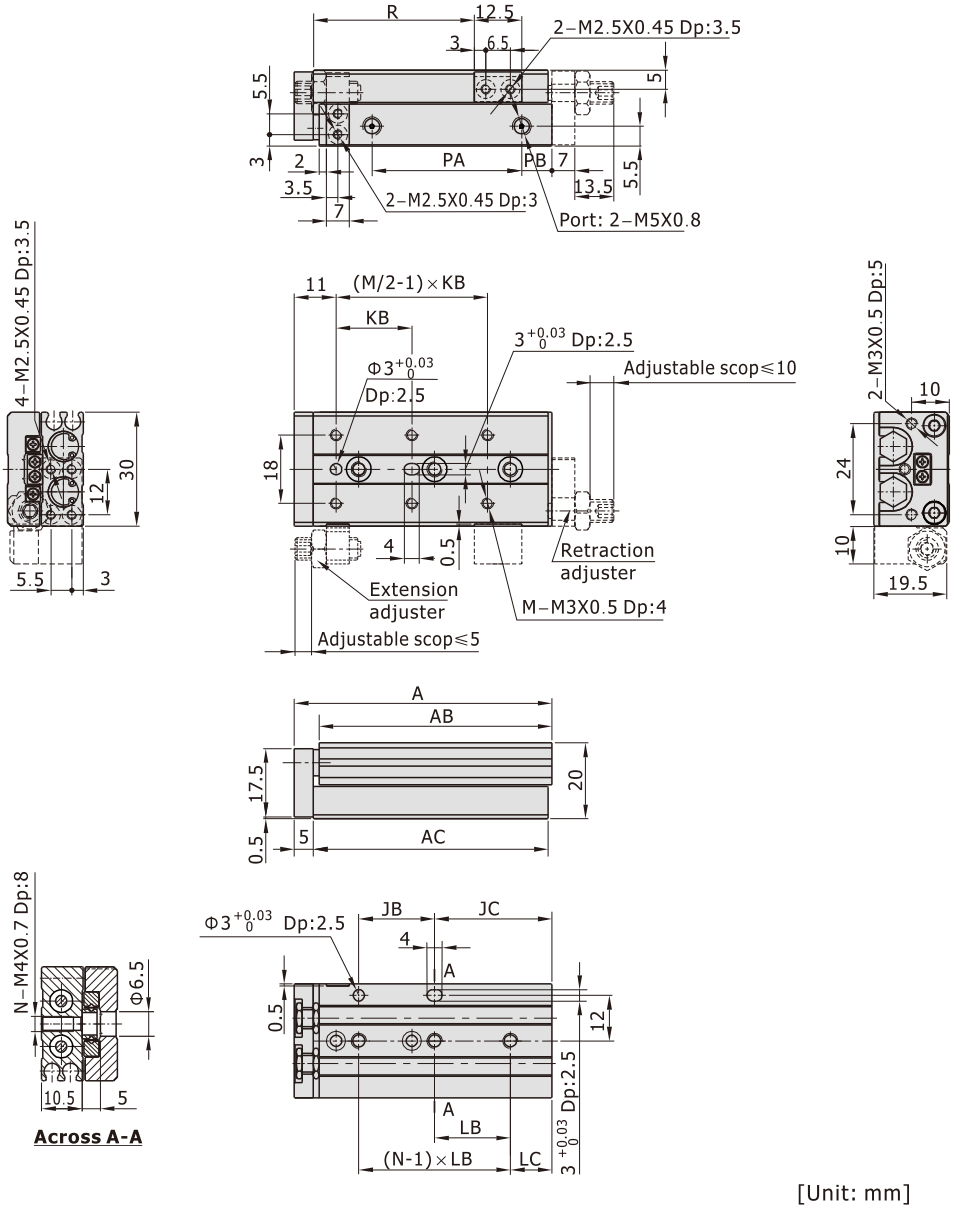
[Unit: mm]

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

HLS, HLSL Series

Cross bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

HLSL6



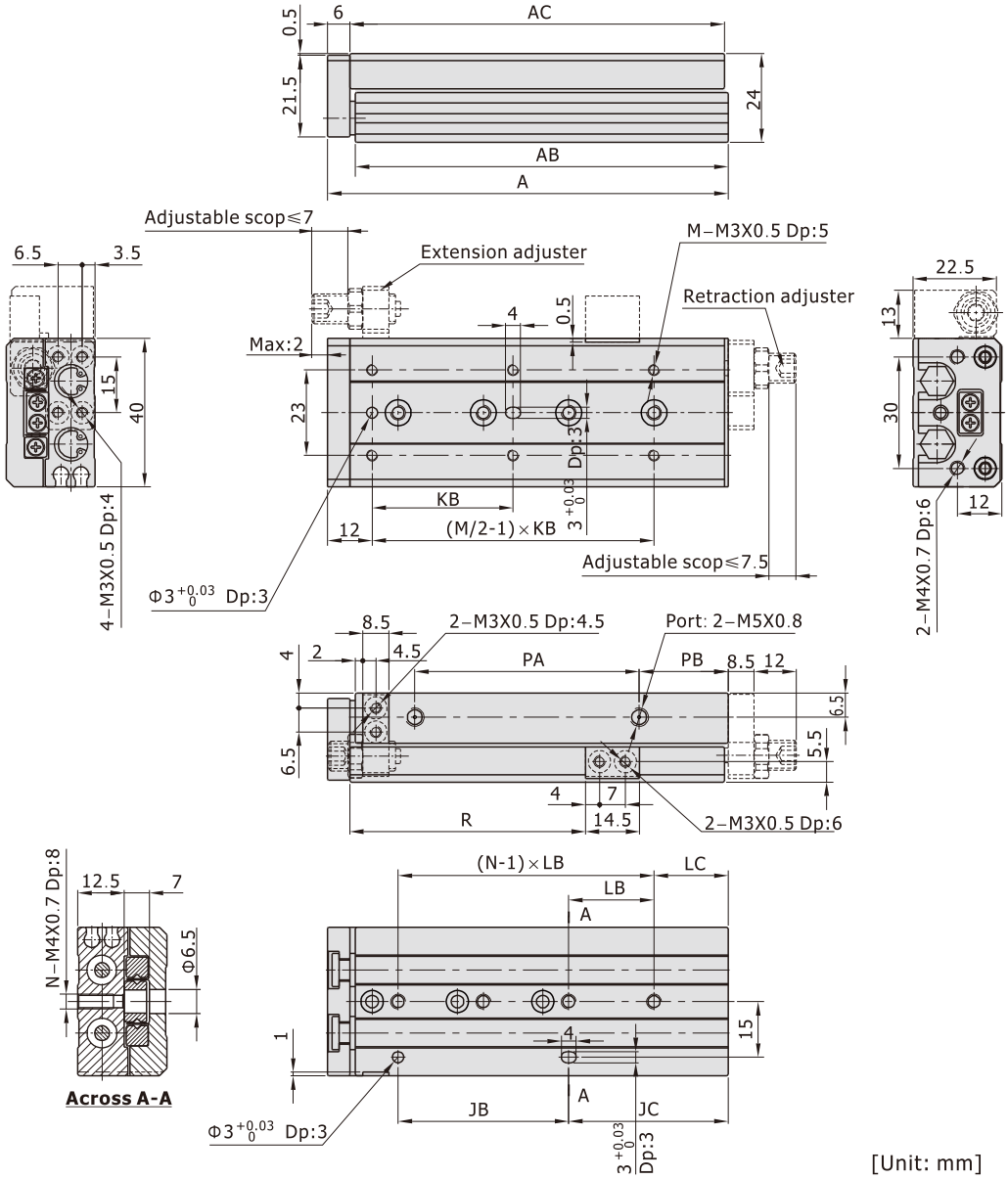
[Unit: mm]

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

HLS, HLSL Series

Cross bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

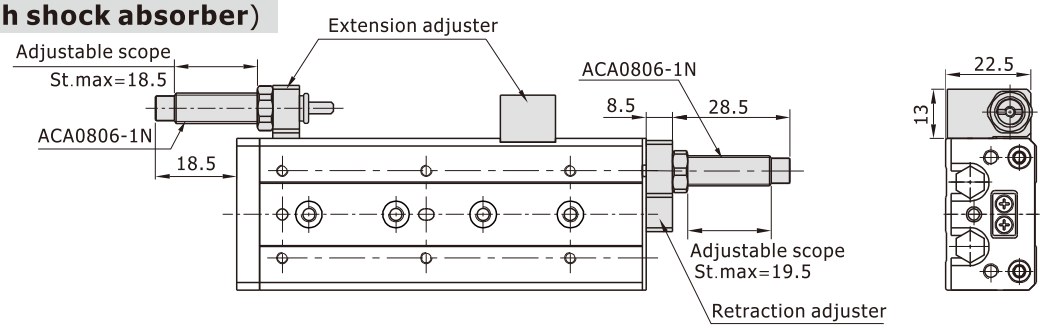
HLS8



[Unit: mm]

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)

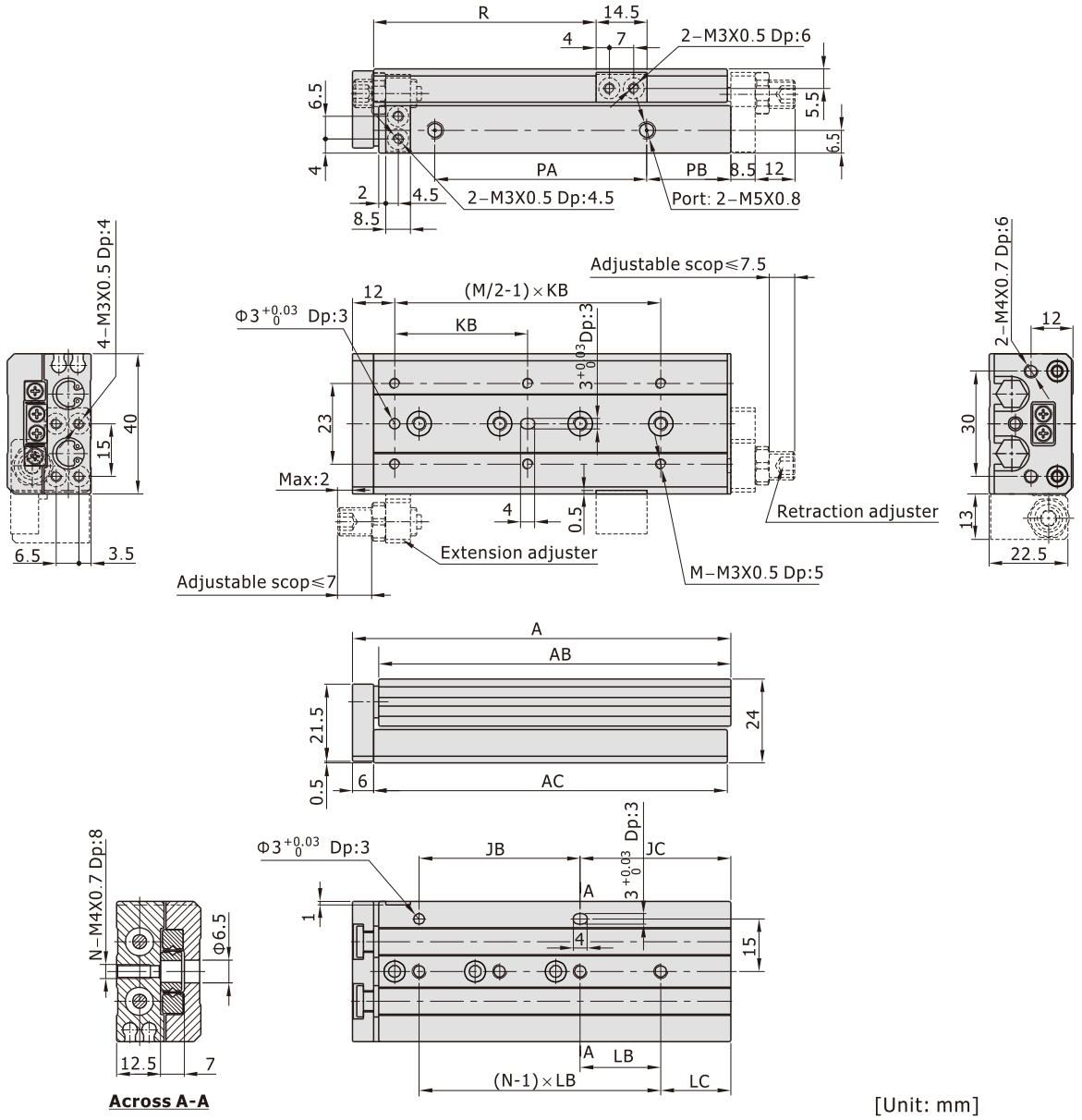


HLS, HLSL Series

Cross bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

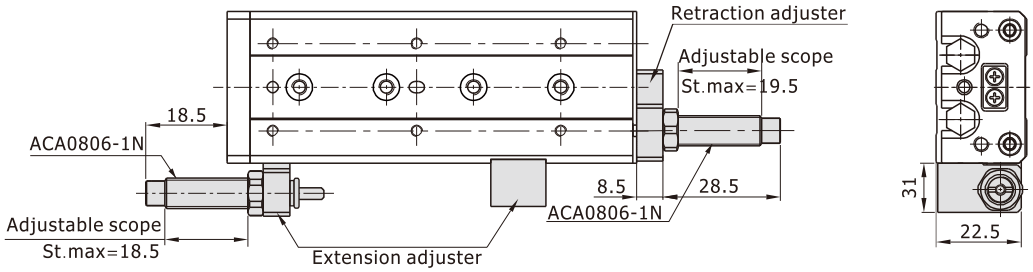
HLSL8



[Unit: mm]

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)

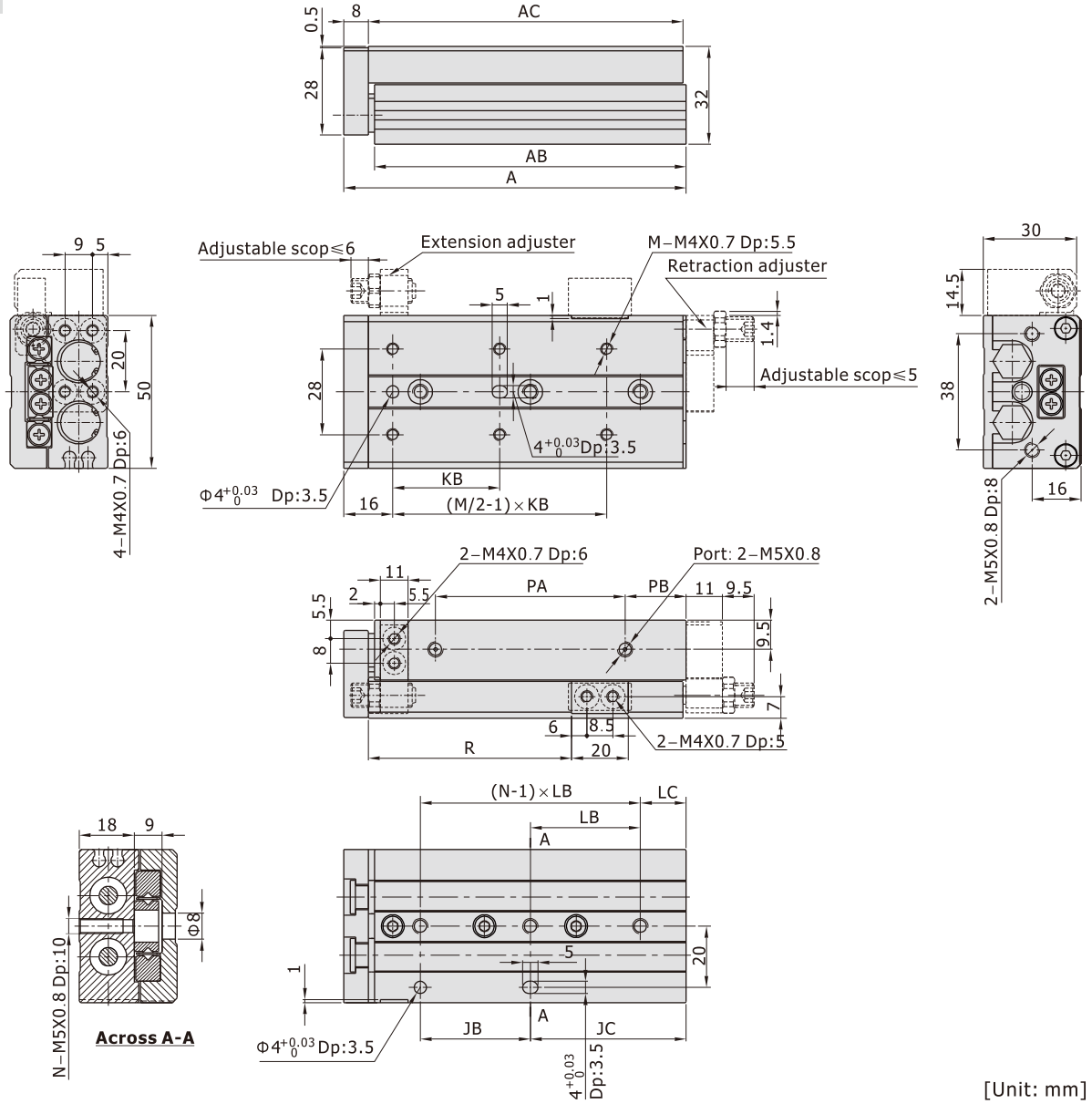


HLS, HLSL Series

Cross bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

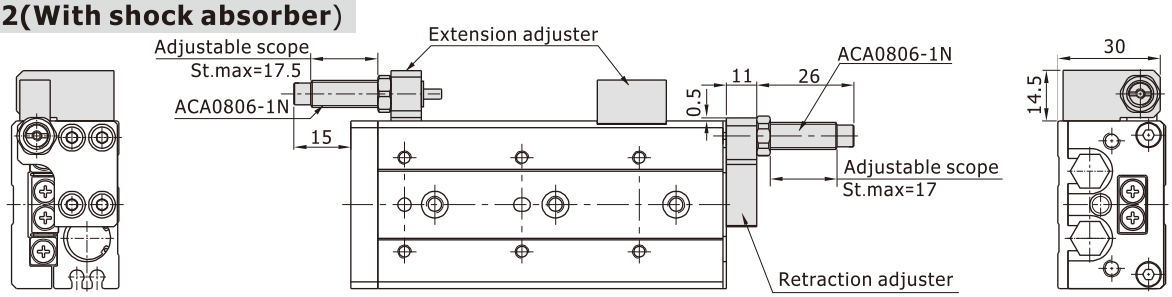
HLS12



[Unit: mm]

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)

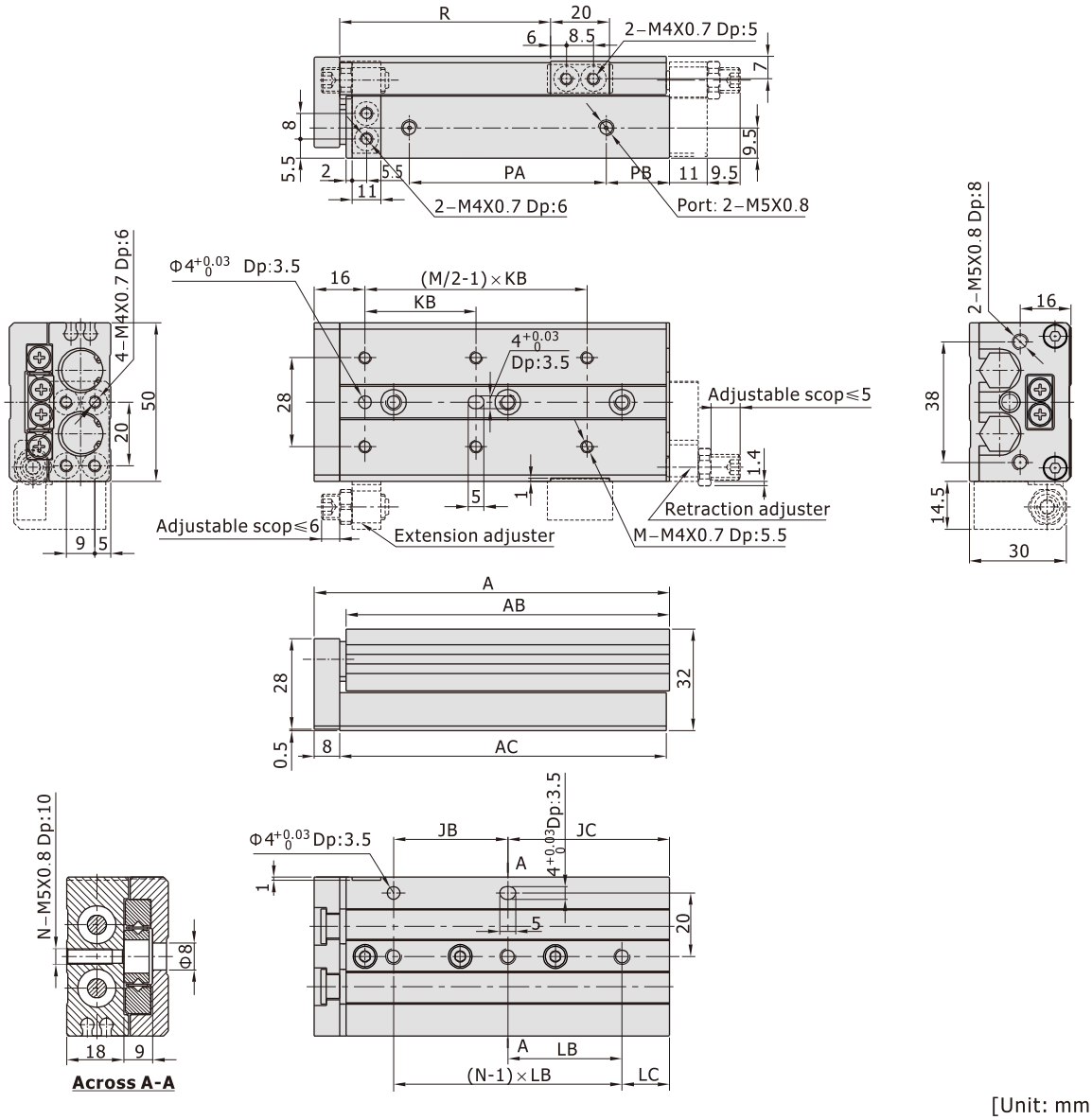


HLS, HLSL Series

Cross bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

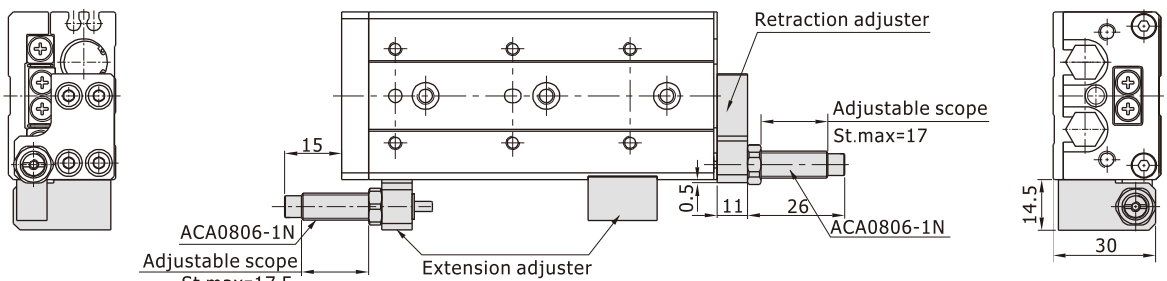
HLSL12



[Unit: mm]

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)

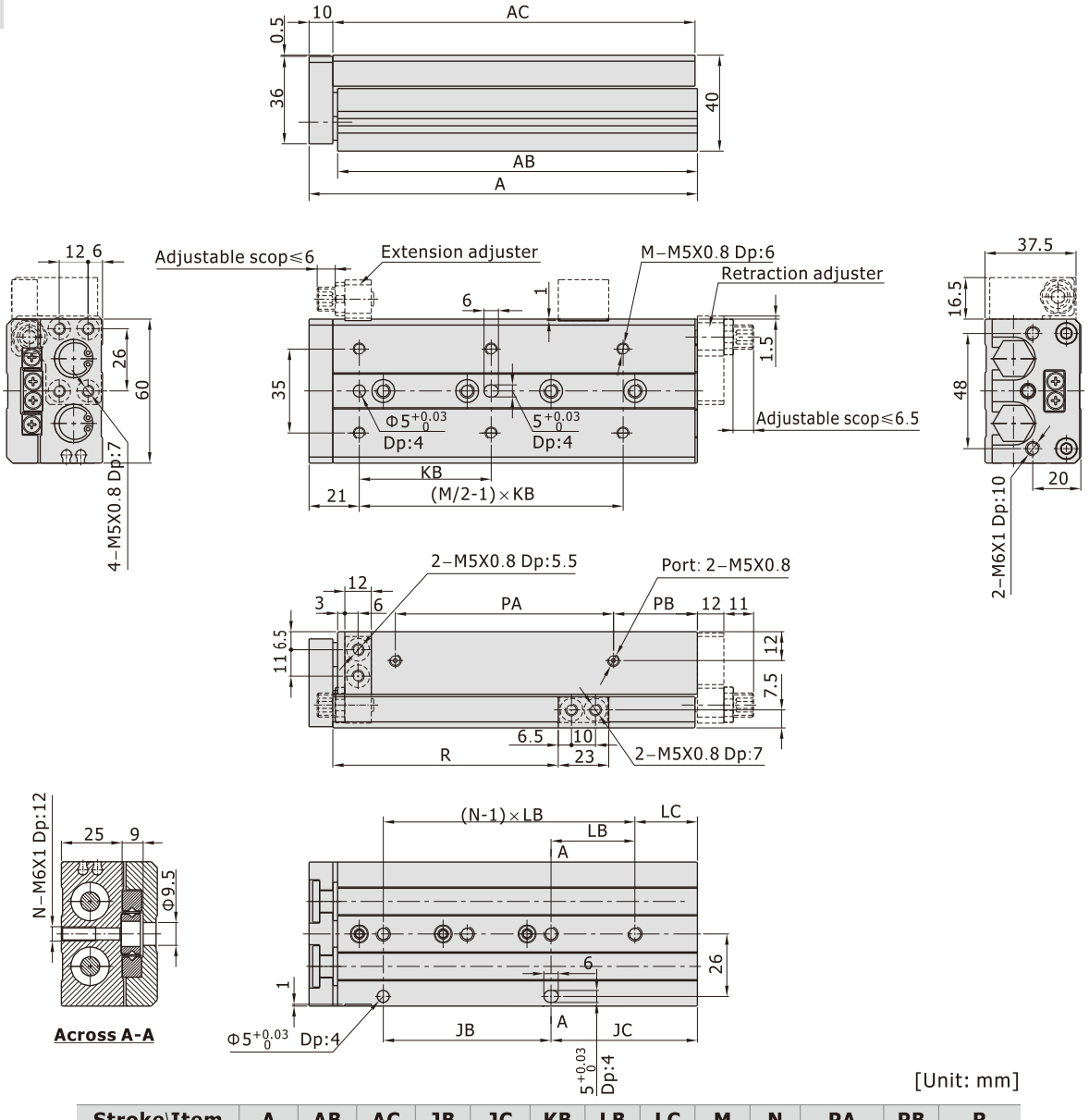


HLS, HLSL Series

Cross bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

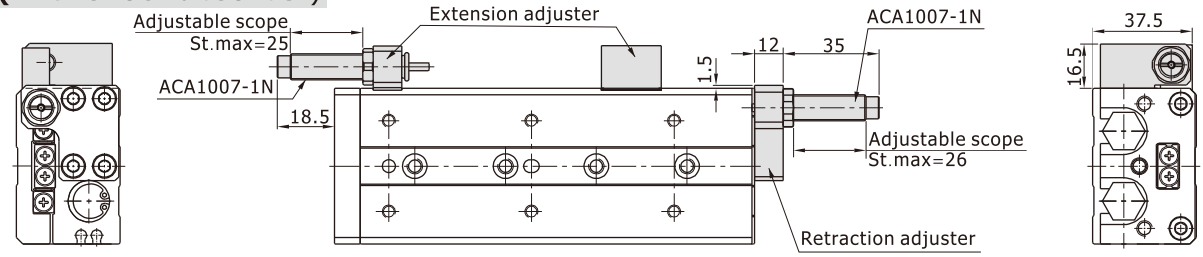
HLS16



[Unit: mm]

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)

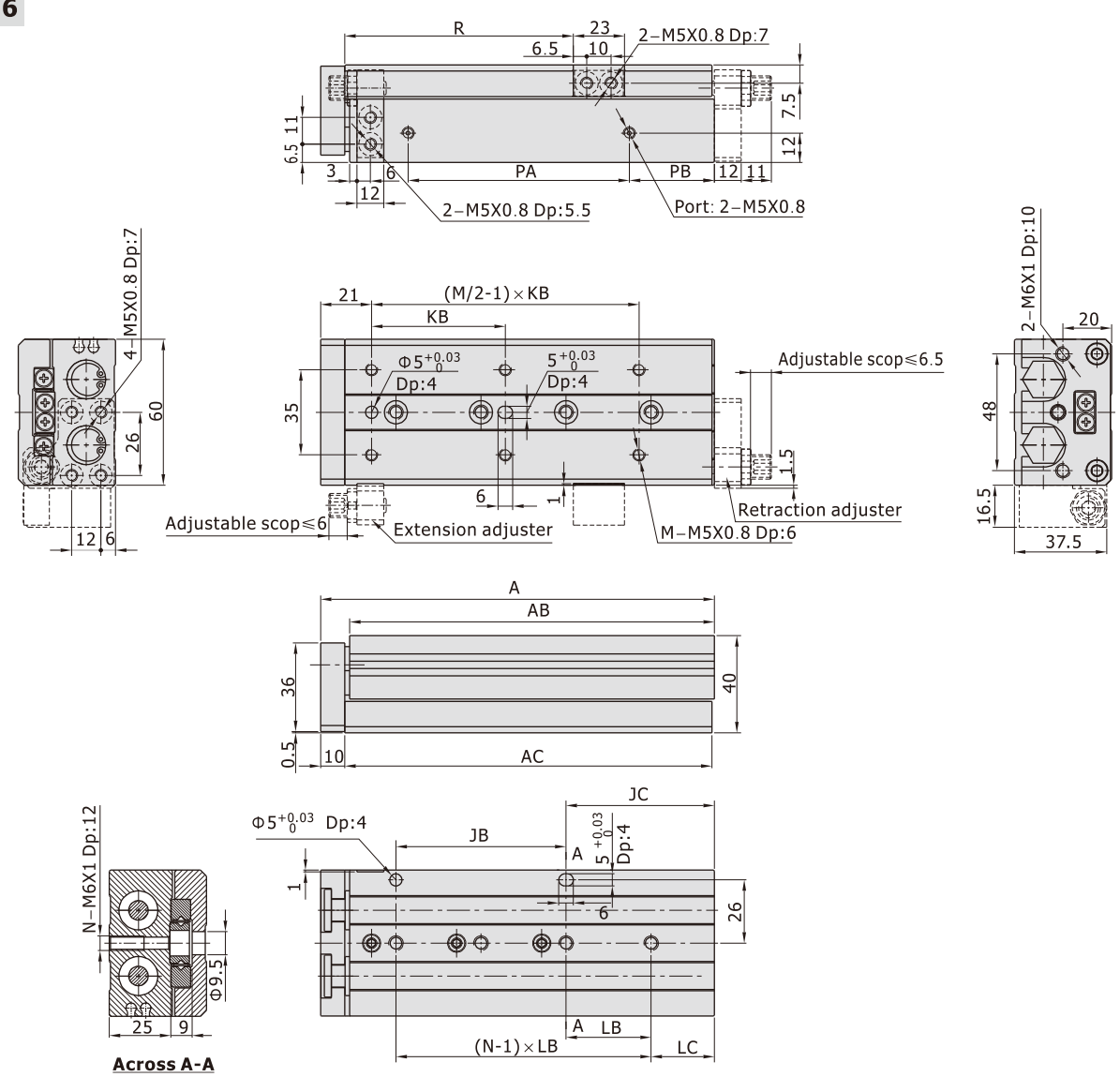


HLS, HLSL Series

Cross bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

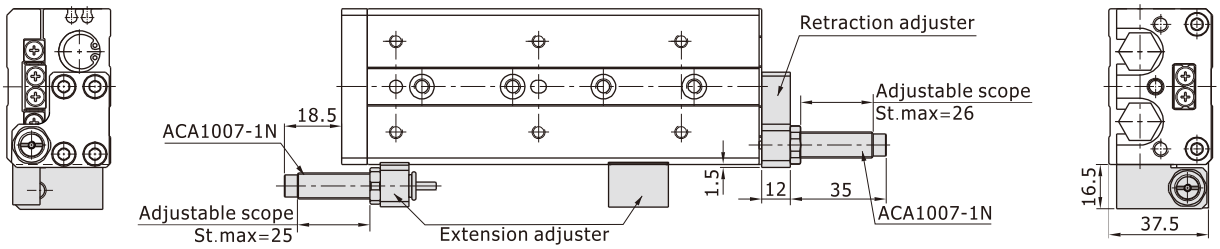
HLSL16



[Unit: mm]

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)

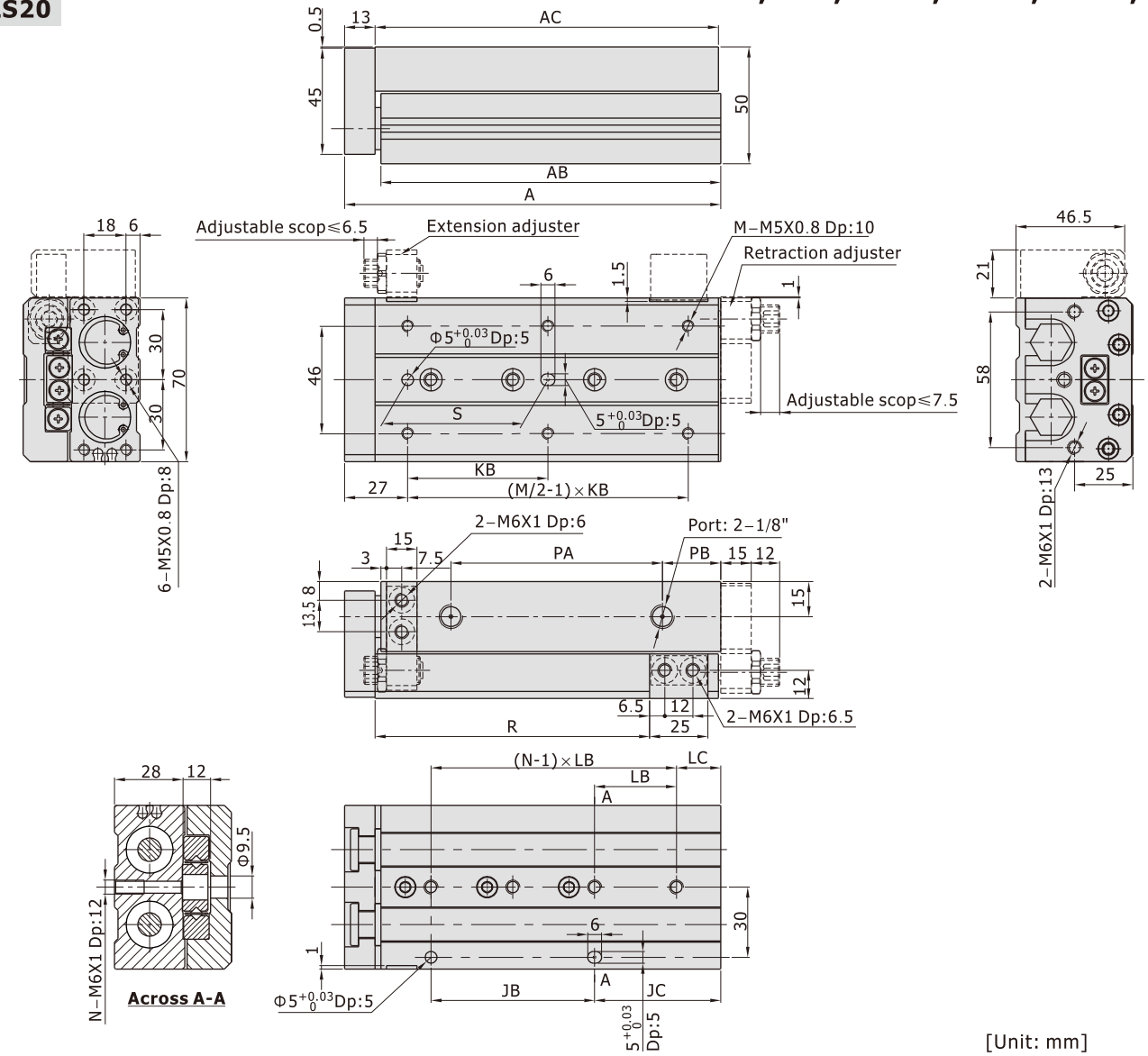


HLS, HLSL Series

Cross bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

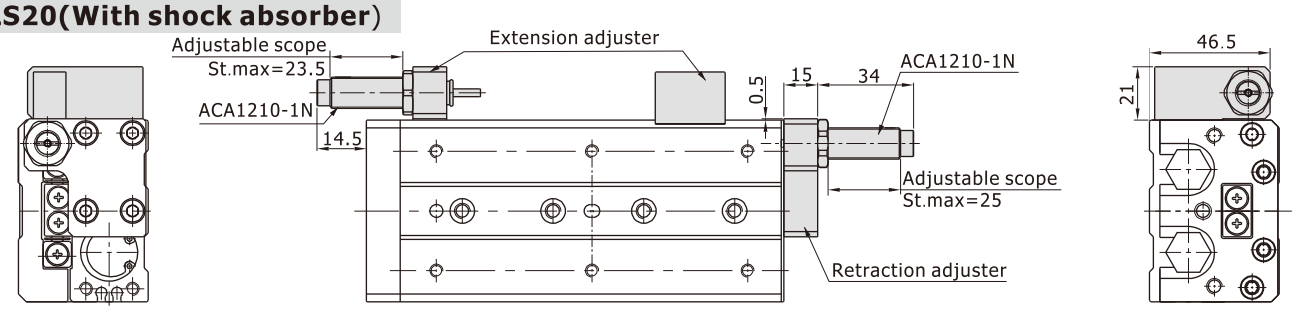
HLS20



[Unit: mm]

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

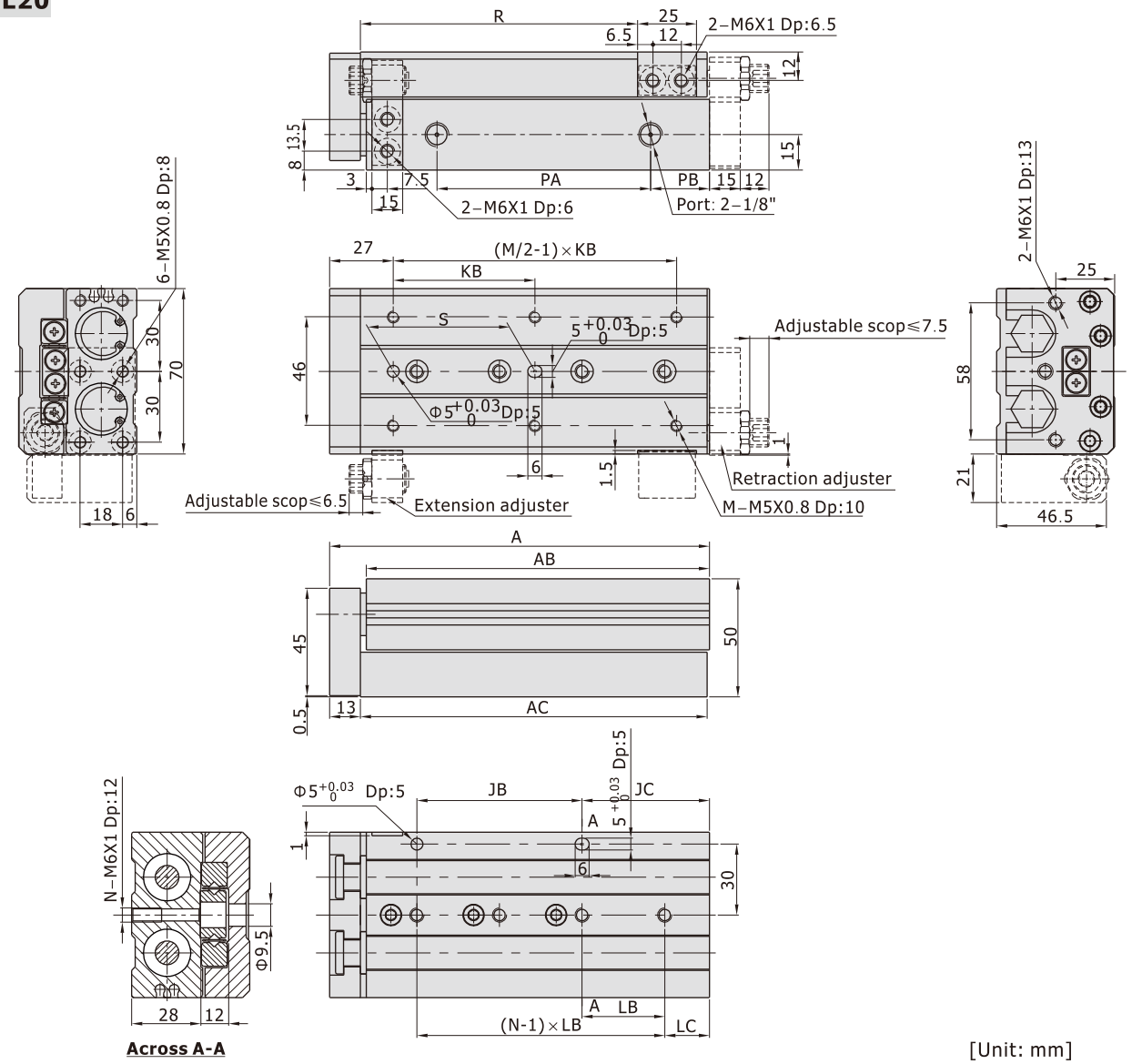
HLS20(With shock absorber)



HLS, HLSL Series

Cross bearing type
Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

HLSL20

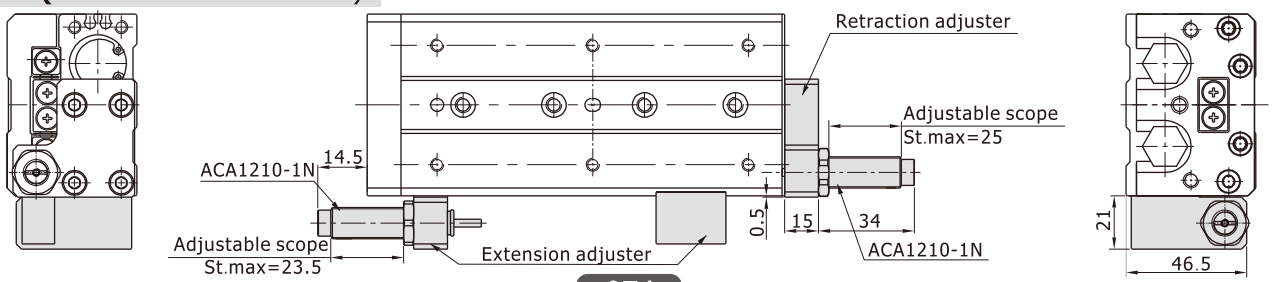


Across A-A

[Unit: mm]

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)

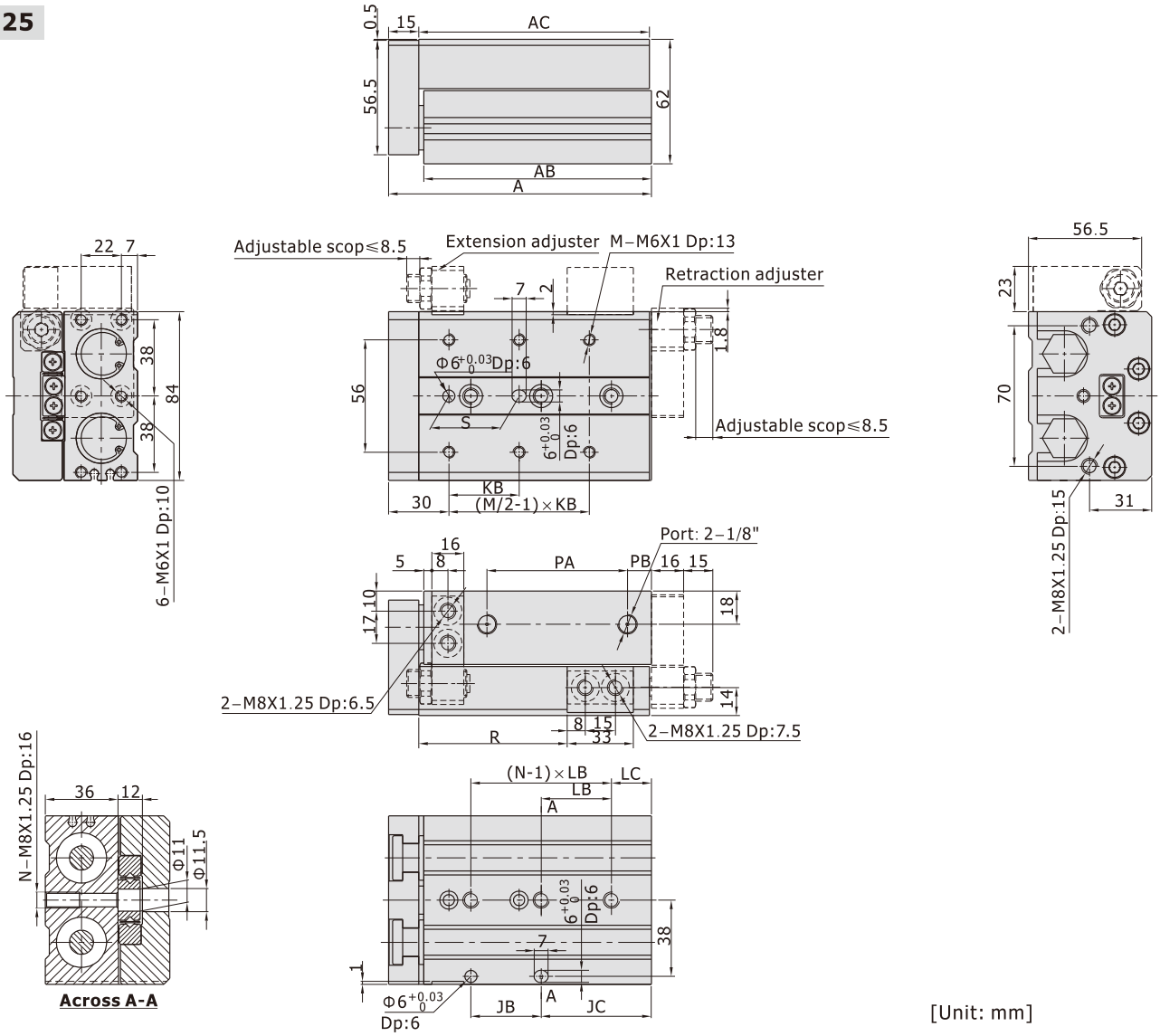


HLS, HLSL Series

Cross bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

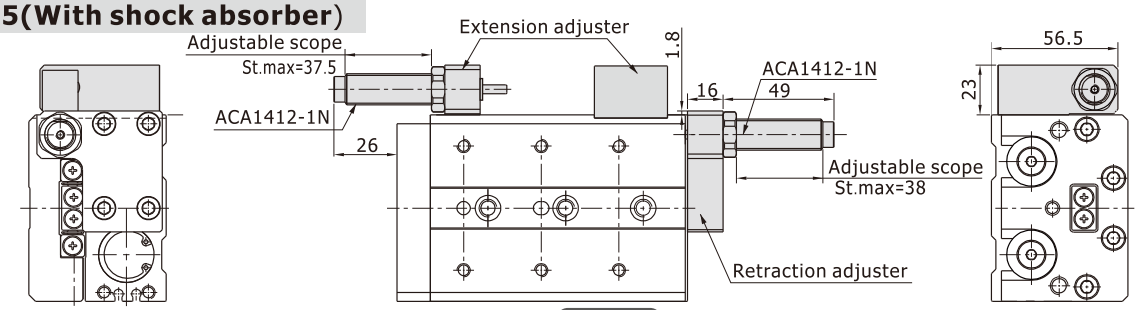
HLS25



[Unit: mm]

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)

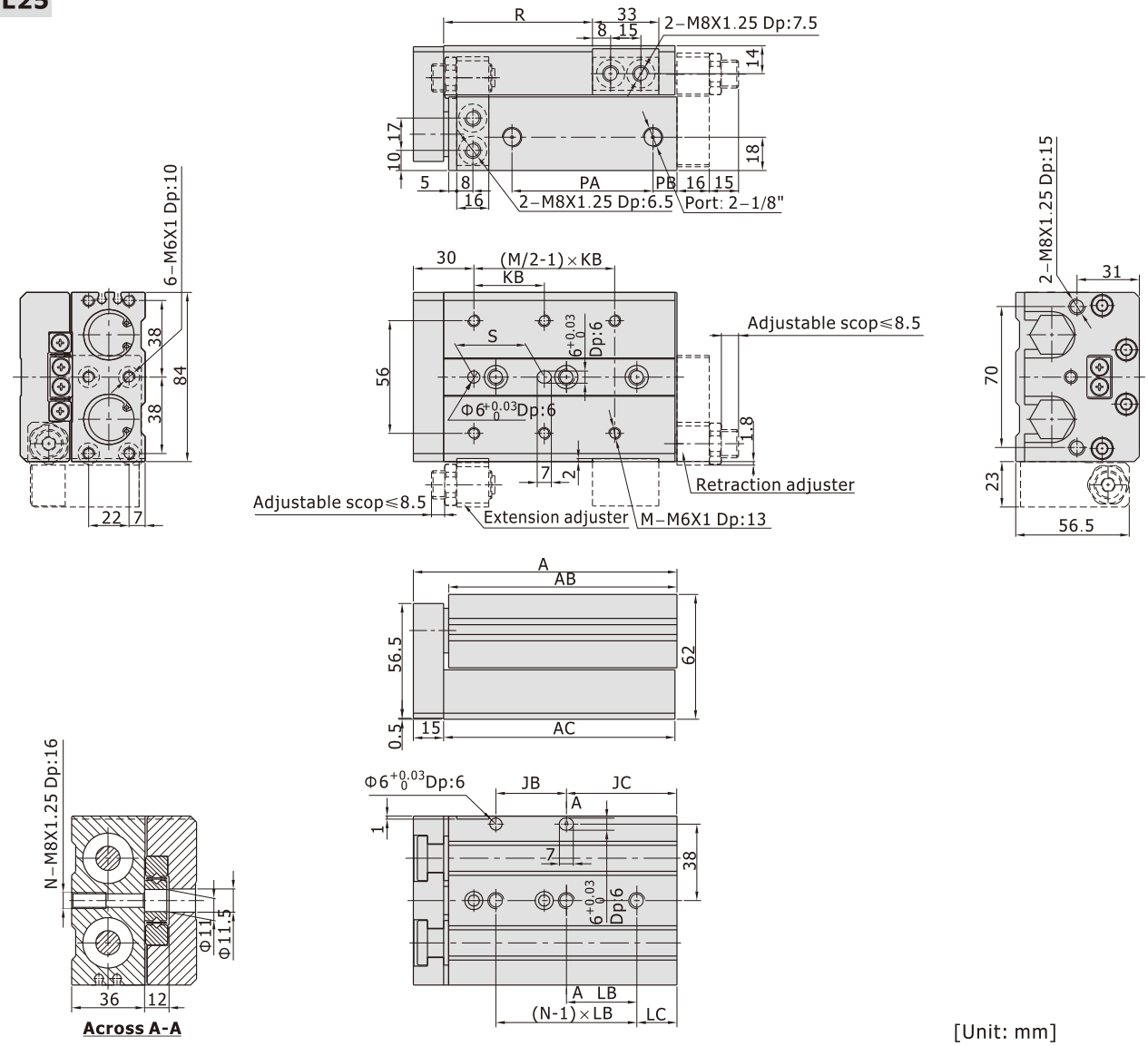


HLS, HLSL Series

Cross bearing type

Bore size: Φ6, Φ8, Φ12, Φ16, Φ20, Φ25

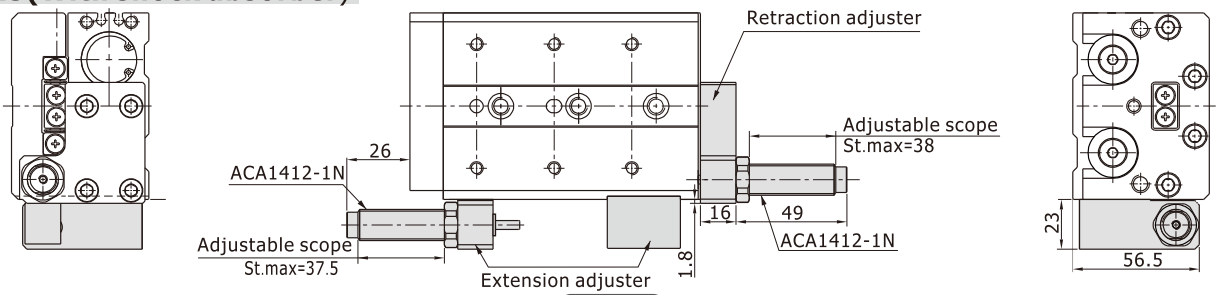
HLSL25



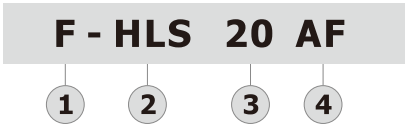
[Unit: mm]

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 ordering code



① Accessory

② Cylinder model

HLS: Slide tabe cylinder (Double acting type)
(Cross bearing type)

HLSL: Symmetrical Slide tabe cylinder (Double acting type)
(Cross bearing type)

③ Bore Size

6 8 12 16 20 25

④ Accessory type [Note]

A: Adjustable rubber stopper(Both ends)

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.

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
	Extention	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-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
	Extention	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-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
	Extention	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-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
	Extention	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-HLSL16AF	F-HLSL20AF	F-HLSL25AF
		BF(Shock absorber)	F-HLSL16BF	F-HLSL20BF	F-HLSL25BF

Note): A=AS+AF; B=BS+BF.

Dimensions

AS: Adjustable rubber stopper(Extention)

Body Mounting

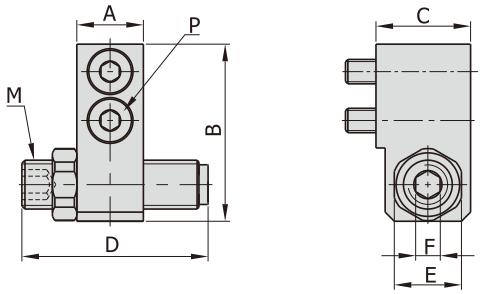
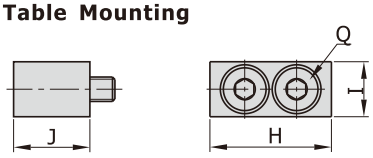


Table Mounting



[Unit: mm]

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	M2.5Length:10	12.5	6.5	10.5	M2.5Length:10
8	5	8.5	22	14	21.5	11	4	M8×1.0	M3Length:14	14.5	8	12	M3Length:14
12	5	11	29	15.5	31.5	11	4	M8×1.0	M4Length:16	20	9	13.5	M4Length:12
16	5	12	36	17.5	24	14	5	M10×1.0	M5Length:16	23	10.5	17	M5Length:16
20	5	15	44.5	22	28	17	6	M12×1.0	M6Length:20	25	12.5	21	M6Length:20
25	5	16	54	24	32	19	6	M14×1.5	M8Length:20	33	16.5	23	M8Length:20

BS: Shock absorber(Extention)

Body Mounting

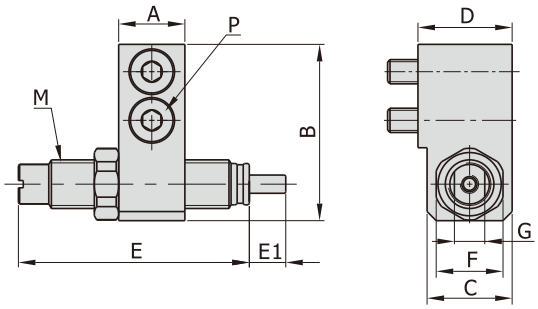
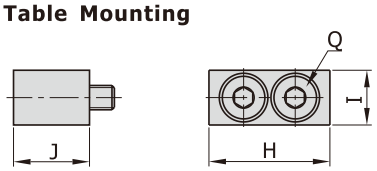


Table Mounting

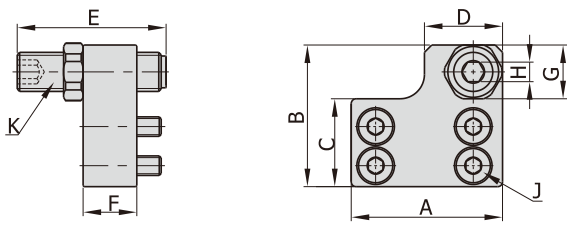


[Unit: mm]

Bore size\Item	A	B	C	D	E	E1	F	G	M	P	H	I	J	Q
8	8.5	22	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	54	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)

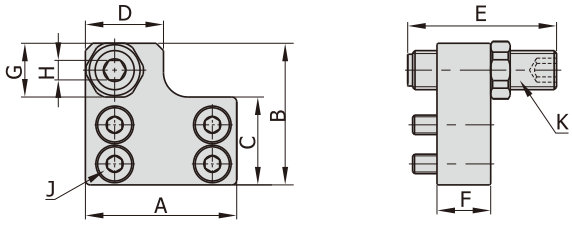
[Unit: mm]



Bore size\Item	Adjusting stroke range	A	B	C	D
6	5	18	19	11	8
8	5	24	22.5	13	14
12	5	31	29	18	16
16	5	37	37.5	23	18
20	5	45.5	47	28.5	23
25	5	54	56	34	28

Bore size\Item	E	F	G	H	J	K
6	21.5	7	8	3	M2.5Length:6	M6×1.0
8	21.5	8.5	11	4	M3Length:8	M8×1.0
12	21.5	11	11	4	M4Length:12	M8×1.0
16	24	12	14	5	M5Length:12	M10×1.0
20	28	15	17	6	M5Length:16	M12×1.0
25	32	16	19	6	M6Length:18	M14×1.5

AF: Adjustable rubber stopper(Retraction, for symmetrical)

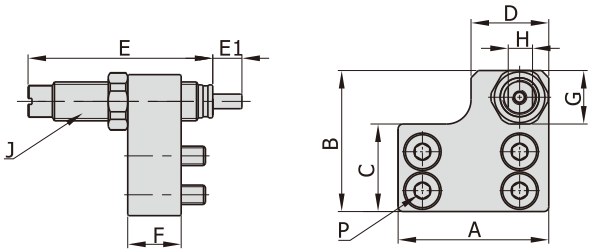


[Unit: mm]

Bore size\Item	Adjusting stroke range	A	B	C	D
6	5	18	19	11	8
8	5	24	22.5	13	14
12	5	31	29	18	16
16	5	37	37.5	23	18
20	5	45.5	47	28.5	23
25	5	54	56	34	28

Bore size\Item	E	F	G	H	J	K
6	21.5	7	8	3	M2.5Length:6	M6×1.0
8	21.5	8.5	11	4	M3Length:8	M8×1.0
12	21.5	11	11	4	M4Length:12	M8×1.0
16	24	12	14	5	M5Length:12	M10×1.0
20	28	15	17	6	M5Length:16	M12×1.0
25	32	16	19	6	M6Length:18	M14×1.5

BF: Shock absorber(Retraction, for standard)

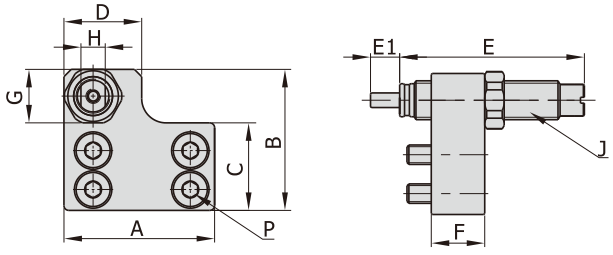


[Unit: mm]

Bore size\Item	A	B	C	D	E	E1	F
8	24	22.5	13	14	40	6	8.5
12	31	29	18	16	40	6	11
16	37	37.5	23	18	49	7	12
20	45.5	47	28.5	23	53.5	10	15
25	54	56	34	28	68.5	12	16

Bore size\Item	G	H	J	P
8	11	7	M8×1.0	M3Length:8
12	11	7	M8×1.0	M4Length:12
16	14	9	M10×1.0	M5Length:12
20	17	11	M12×1.0	M5Length:16
25	19	12	M14×1.5	M6Length:18

BF: Shock absorber(Retraction, for symmetrical)



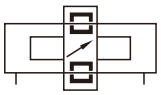
[Unit: mm]

Bore size\Item	A	B	C	D	E	E1	F
8	24	22.5	13	14	40	6	8.5
12	31	29	18	16	40	6	11
16	37	37.5	23	18	49	7	12
20	45.5	47	28.5	23	53.5	10	15
25	54	56	34	28	68.5	12	16

Bore size\Item	G	H	J	P
8	11	7	M8×1.0	M3Length:8
12	11	7	M8×1.0	M4Length:12
16	14	9	M10×1.0	M5Length:12
20	17	11	M12×1.0	M5Length:16
25	19	12	M14×1.5	M6Length:18

Rodless magnetic cylinder——RMS Series

Bore size: Φ10, Φ16, Φ20, Φ25, Φ32, Φ40



Ordering code

RMS □ 20×200 □ T

1 2 3 4 5 6

① Model

RMS: Rodless magnetic cylinder

② Version

Blank: basic version
P: P size version
F: F size version

③Bore Size

Bore size	Version
10 16 20 25 32 40	Basic version
16 20 32	P size version
16 20 25 32 40	F size version

④ Stroke [Note1]

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		2500
32		3000
40		3000

⑤ Mounting type [Note2]

Blank: non bracket
LB: LB type
FA: FA type

⑥ Thread type [Note3]

T: NPT

[Note1] Consult us for non-standard stroke. [Note2] RMSF40 series do not have FA mounting accessories.

[Note3]Blank on thread code means metric M thread. There is only metric thread for Φ16. If NPT thread is needed, please comment.

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	22~100psi(0.15~0.7MPa)								
Proof pressure	175psi(1.2MPa)								
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] NPT thread is available.

Rodless magnetic cylinder

RMS Series

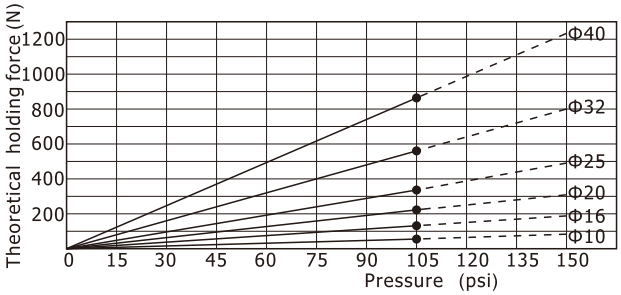
Bore size: Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

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.

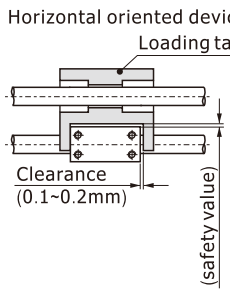
Installation and application

1. The maxi load to move must be less than the theoretical holding force.



2. How to mount load

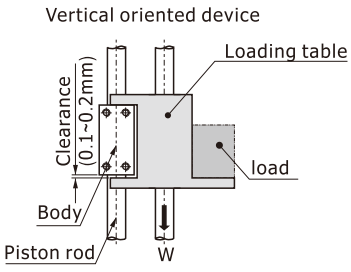
2.1. Horizontal mounting: the permissible radial load must be lower than the figures in the chart below.



Bore size	Max. Loading table Weight	Max. allowable load Weight
10	0.4kg	1.2kg
16	1.0kg	2.5kg
20	1.1kg	3kg
25	1.2kg	4kg
32	1.5kg	5kg
40	2.0kg	8kg

[Note] If Max. load be larger then the value of above table, please conform with our company.

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.

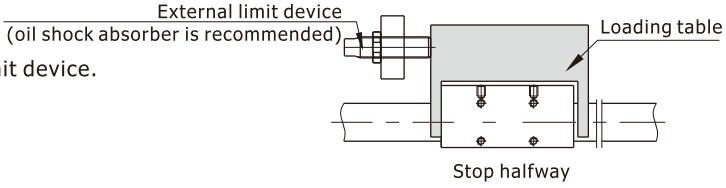


Bore size	Max. Loading table Weight	Max. allowable load Weight	Max. pressure
10	0.4kg	1.2kg	82.5psi
16	1.0kg	2.5kg	82.5psi
20	1.1kg	3kg	97.5psi
25	1.2kg	4kg	97.5psi
32	1.5kg	5kg	97.5psi
40	2.0kg	8kg	97.5psi

[Note] If pressure be larger then the max. pressure, magnetic core might disengage.

3. Use an external limit device to stop the load midway:

When the external stop device is used to stop the load midway, the operating pressure must not exceed to 0.55MPa.
It is recommended to use an oil shock absorber for the external limit device.

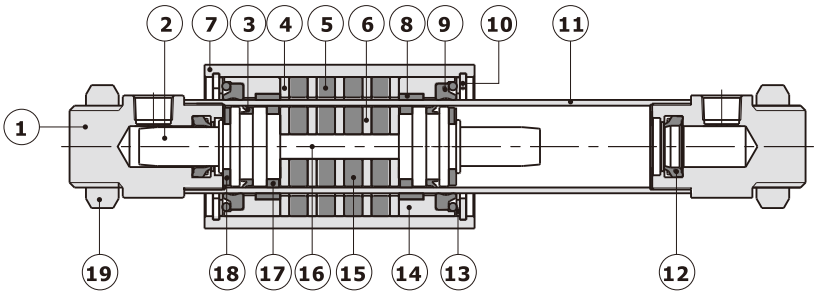


4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust jam cap shall be added in air inlet and outlet ports.

RMS Series

Bore size: Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

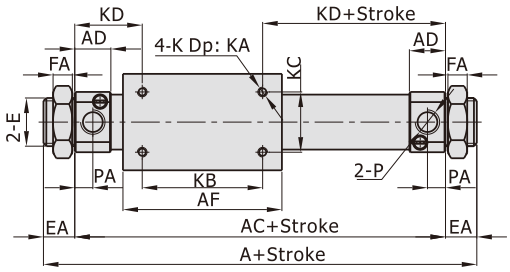
Inner structure

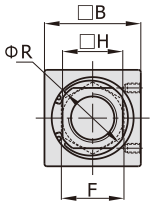


NO.	Item	NO.	Item
1	End cap	11	Barrel
2	Piston	12	Cushion O-ring
3	Piston seal	13	Washer
4	Magnet washer	14	Cover
5	Magnet	15	Magnet
6	Magnet washer	16	Connecting rod
7	Body	17	Wear ring
8	Wear ring	18	Bumper
9	Scraping dust ring	19	Nut
10	C Clip		

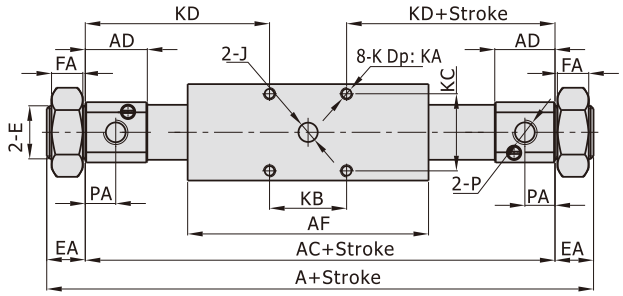
Dimensions

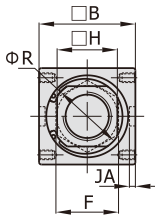
RMS **RMS-P**





RMS-F





[Unit: mm]

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	

RMS Series

Bore size: Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

List for ordering code of accessories

Accessories \ Bore size		10	16			20		
		RMS	RMS	RMSP	RMSF	RMS	RMSP	RMSF
Mounting accessories	LB	F-PB12LB	F-RMS16LB		F-RMSF16LB	F-RMS20LB		F-RMSF20LB
	FA	F-PB12FA	F-PB12FA		F-MI12FA	F-MF20FA		F-MA20FA

Accessories \ Bore size		25		32			40	
		RMS	RMSF	RMS	RMSP	RMSF	RMS	RMSF
Mounting accessories	LB	F-RMS25LB	F-RMSF25LB	F-RMS32LB		F-RMSF32LB	F-RMS40LB	F-RMSF40LB
	FA	F-MF32FA	F-MA20FA	F-MF32FA		F-MA40FA	F-MF40FA	–

Accessory selection

Accessories\Cylinder model		RMS	RMSP	RMSF
Mounting accessories	LB	●	●	●
	FA	●	●	●

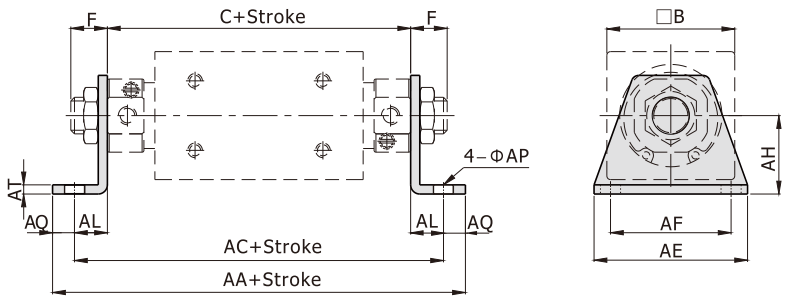
Material of accessories

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**



[Unit: mm]

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	-

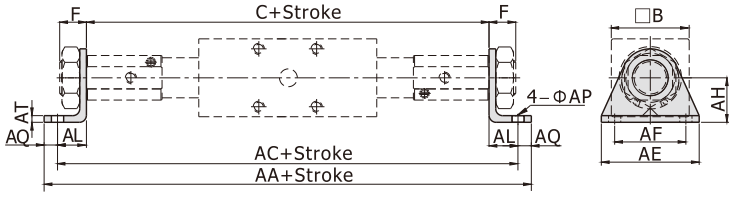
Bore size\Item	AE	AF	AH	AL	AP	AQ	AT	B
10	42	33	14	9	5.5	6	2.5	25
16	42	33	20	9	5.5	6	2.5	35
20	43	30	23	18	6.5	8	3	40
25	54	40	26	20	6.5	8	4	46
32	62	46	33	23	7	7	4	60
40	75	55	38	23	9	10	5	70

RMS Series

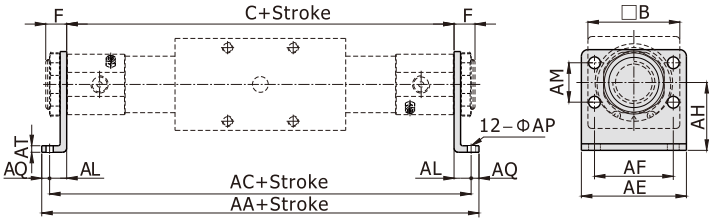
Bore size: Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

RMSF-LB

Φ16~Φ25



Φ32、Φ40



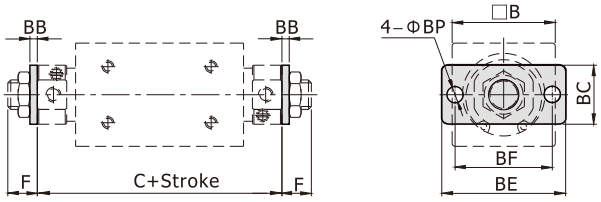
[Unit: mm]

Bore size\Item	AA	AC	AE	AF	AH	AL
16	221	209	44	32	20	14
20	235	219	54	40	23	17
25	256	240	54	40	26	17
32	280	266	66	52	33	14
40	353	333	80	60	38	19

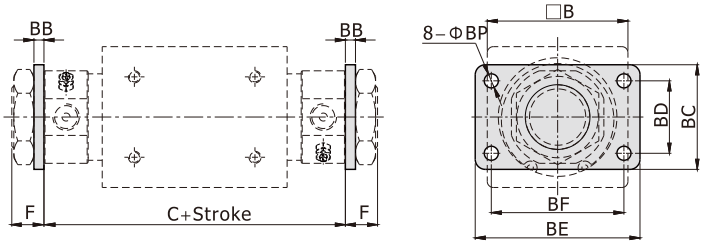
Bore size\Item	AM	AP	AQ	AT	B	C	F
16	-	5.5	6	2.5	35	181	12
20	-	6.5	8	3	40	185	16
25	-	6.5	8	4	46	206	16
32	28	7	7	4	60	238	16
40	30	9	10	5	70	295	16

RMS-FA RMSP-FA

Φ16~Φ32



Φ40



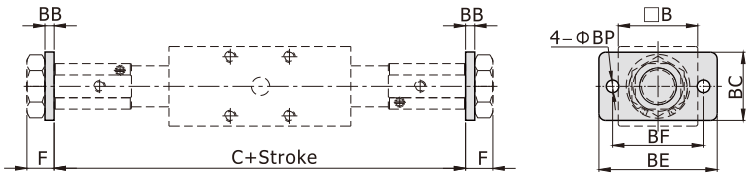
[Unit: mm]

Bore size\Item	B	BB	BC	BD	BE	BF
10	25	3	20	-	42	33
16	35	3	20	-	42	33
20	40	4	34	-	75	60
25	46	4	40	-	75	60
32	60	4	40	-	75	60
40	70	5	52	36	82	66

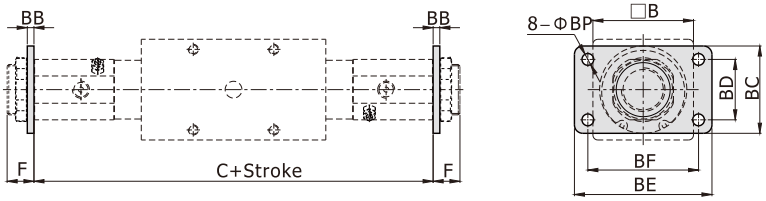
Bore size\Item	BP	C		F	
		RMS	RMSP	RMS	RMSP
10	5.5	73	-	9	-
16	5.5	83	92	10	10
20	7	106	115	13	14
25	7	111	-	13	-
32	7	124	133	16	16
40	7	150	-	16	-

RMSF-FA

Φ16~Φ25



Φ32



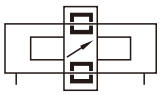
[Unit: mm]

Bore size\Item	B	BB	BC	BD
16	35	4	30	-
20	40	4	38	-
25	46	4	38	-
32	60	4	50	36

Bore size\Item	BE	BF	BP	C	F
16	52	40	5.5	181	12
20	64	50	6.5	185	16
25	64	50	6.5	206	16
32	84	70	6.5	238	16

Rodless magnetic cylinder(With guide)——RMT Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40



Ordering code

RMT 20×100 S □ T

1 2 3 4 5 6

① Model

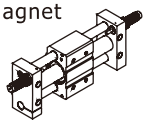
RMT: Rodless magnetic cylinder(With guide)

② Bore Size

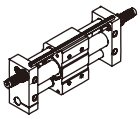
16 20 25 32 40

④Magnet

Blank: Without magnet



S: With magnet

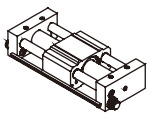


③ Stroke [Note1]

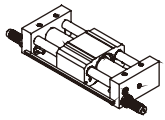
Bore size (mm)	Standard stroke (mm)	Max.std stroke
16	50 100 150 200 250 300 350 400 450 500	750
20	50 100 150 200 250 300 350 400 450 500 600 700 750 800	1000
25		1500
32		1500
40	50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000	1500

⑤ Cushion type

Blank: With two adjustable nuts



A: With two shock absorbers



⑥ Thread type [Note2]

T: NPT

[Note1] Consult us for non-standard stroke.

[Note2] Blank on thread code means metric M thread. There is only metric thread for Φ16. If NPT thread is needed, please comment.

Specification

Bore size(mm)	16	20	25	32	40
Acting type	Double acting				
Fluid	Air(to be filtered by 40μm filter element)				
Operating pressure	30~100psi(0.2~0.7MPa)	36~100psi(0.25~0.7MPa)			
Proof pressure	175psi(1.2MPa)				
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	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] NPT thread is available.

Add) Refer to P475 for detail of sensor switch.

Rodless magnetic cylinder(With guide)

RMT Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40

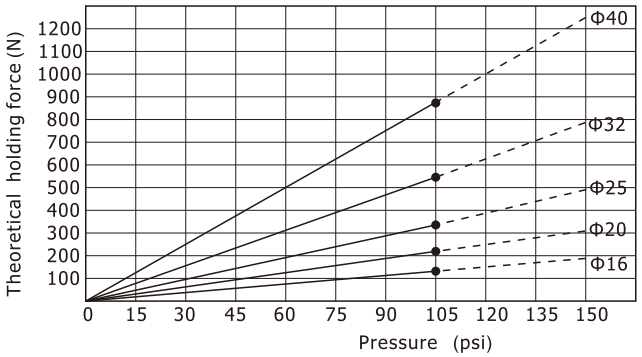
Product feature

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 prejudicial load.

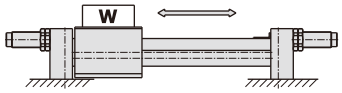
Installation and application

1. How to determine load

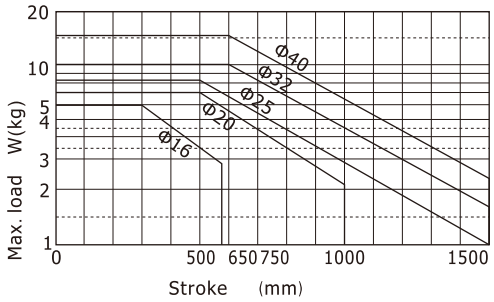
1.1) The maxi load to move must be less than the theoretical holding force.



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	~300mm
20	6	~500mm
25	8	~500mm
32	10	~600mm
40	16	~600mm

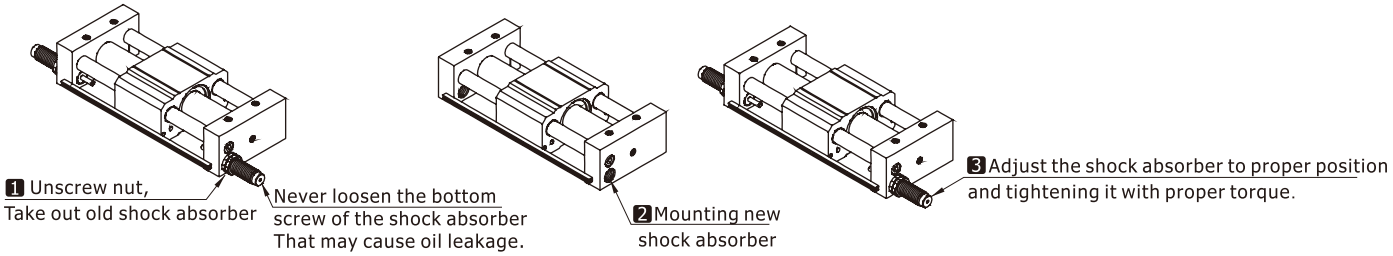


2. About shock absorber

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.

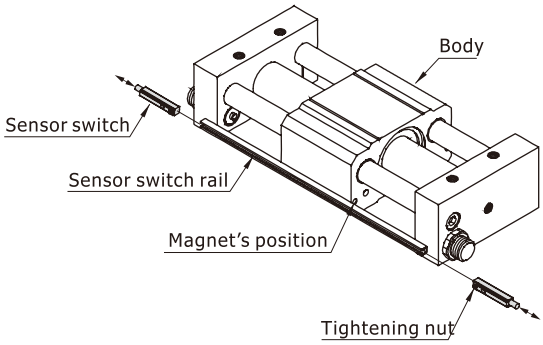
2.3) Refer to the table below for tightening torques of the shock absorber setting nut.

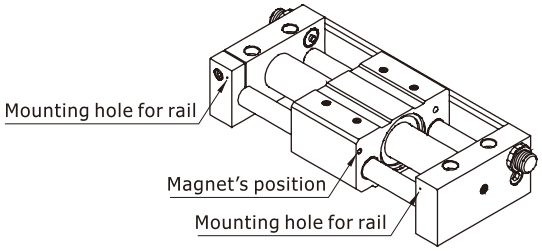


Cylinder model	RMT16	RMT20	RMT25	RMT32	RMT40
Shock absorber type	ACA1006-A	ACA1007-1N	ACA1412-1N	ACA2020-1N	ACA2020-1N
Tightening torque(Nm)	1.67	1.67	3.14	10.80	10.80

3. About sensor switch

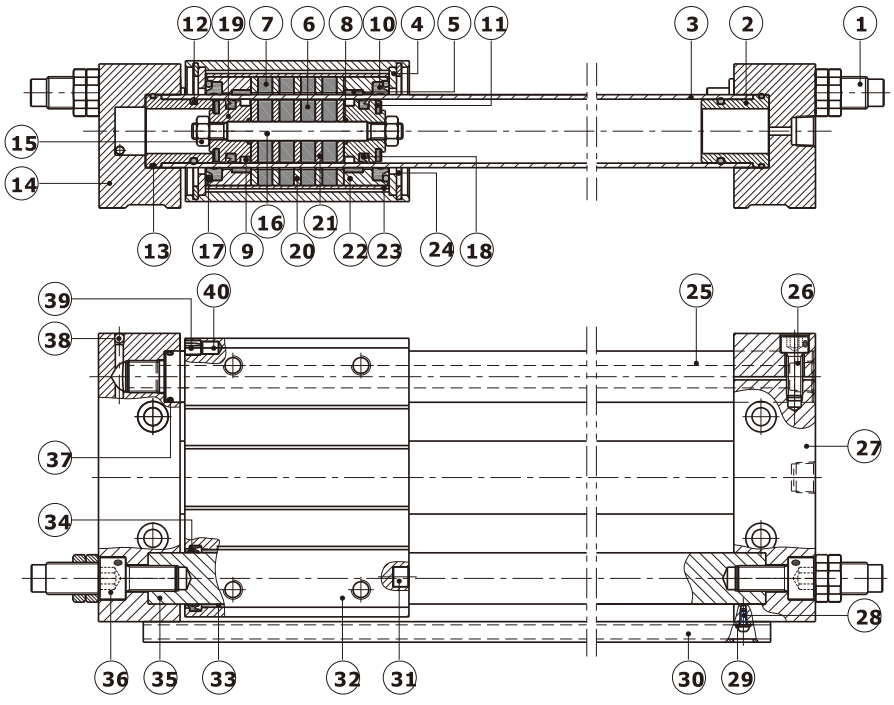
3.1) Sensor switch only can be used for the cylinder with magnet . The magnet located the four corner of body's(refer below) . The cylinder with magnet have both group mounting hole for mounting rail. please refer to below for ordering sensor switch, mounting it into the rsil's groove, adjusting it to proper position, tightening it with proper torque.





Cylinder model	RMT16	RMT20	RMT25	RMT32	RMT40
Sensor switch	CMSG/DMSG(S)				

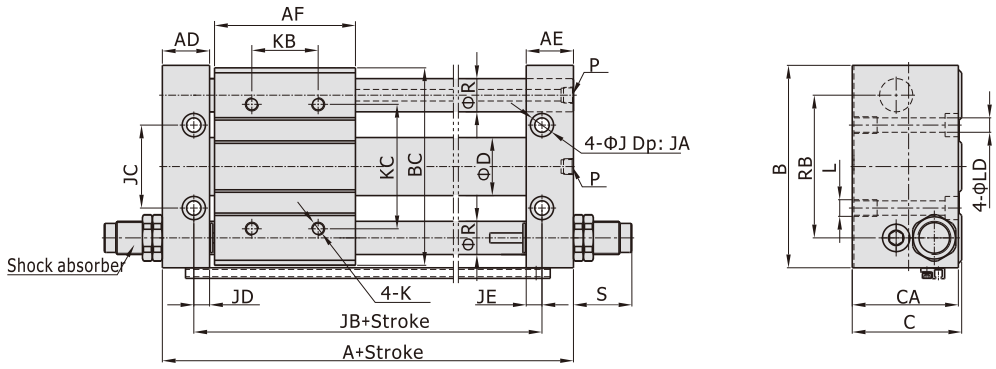
Inner structure



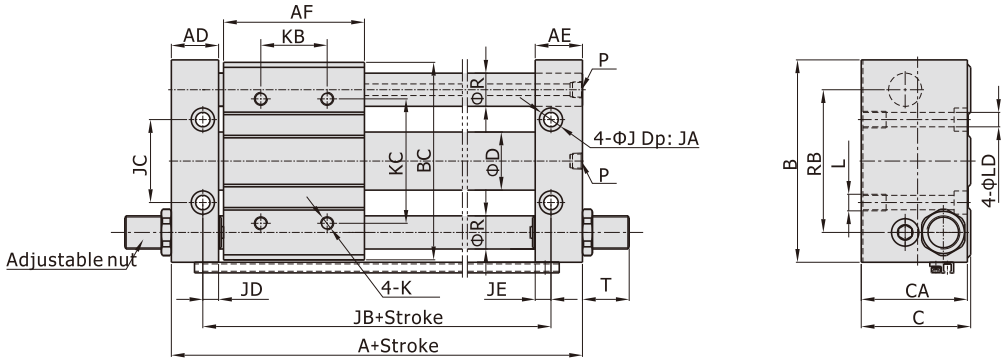
NO.	Item	NO.	Item
1	Shock absorber	21	Magnet washer
2	Washer cover	22	End cover
3	Stainless steel barrel	23	Mobility iron
4	Washer	24	C clip
5	Wearing ring	25	Guide I
6	Magnet	26	Countersink screw
7	Magnet	27	Fixing plate
8	O-ring	28	Screw
9	Wear ring	29	Spring washer
10	Scraping dust ring	30	Rail
11	Bumper	31	Bumper block
12	O-ring	32	Barrel
13	O-ring	33	Bushing
14	Fixing plate	34	Gasket
15	Nut	35	Guide II
16	Joint pole	36	Countersink screw
17	O-ring	37	O-ring
18	Piston seal	38	Steel ball
19	Magnet	39	Location washer
20	Magnet washer	40	Magnet

Dimensions

RMT-A



RMT



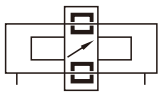
[Unit: mm]

Bore size\Item	A	AD	AE	AF	B	BC	C	CA	D	J	JA	JB	JC	JD	JE
16	107	22.5	22.5	60	75	72	40	39	18	9.5	5	75	30	6.5	6.5
20	124	25.5	25.5	70	90	87	46	45	22.8	9.5	5	90	38	8.5	8.5
25	124	25.5	25.5	70	100	97	54	53	27.8	11	6.5	90	42	8.5	8.5
32	148	28.5	28.5	85	122	119	66	64	35	14	8	110	50	9.5	9.5
40	170	35.5	35.5	95	145	142	76	74	43	14	8	120	64	10.5	10.5

Bore size\Item	K	KB	KC	L	LD	P	R	RB	S	T
16	M5×0.8Dp:10	30	50	M6×1.0Dp:9.5	5.5	M5×0.8	12	52	15.5	8.5
20	M6×1.0Dp:10	40	70	M6×1.0Dp:9.5	5.5	1/8"	16	63	22.5	10.5
25	M6×1.0Dp:10	40	70	M8×1.25Dp:10	7	1/8"	16	70	40.5	11.5
32	M8×1.25Dp:12	40	75	M10×1.5Dp:15	8.5	1/8"	20	86	57.5	17.5
40	M8×1.25Dp:12	65	105	M10×1.5Dp:15	8.5	1/4"	25	105	50.5	10.5

Rodless magnetic cylinder(With exactitude guide)——RMTL Series

Bore size: Φ10, Φ16, Φ20, Φ25, Φ32, Φ40



Ordering code

RMTL 20×100 S □ T

1 2 3 4 5 6

① Model

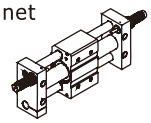
RMTL: Rodless magnetic cylinder (With exactitude guide)

② Bore Size

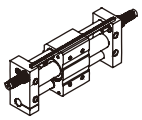
10 16 20 25 32 40

④Magnet

Blank: Without magnet



S: With magnet



⑥ Thread type [Note3]

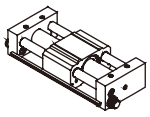
T: NPT

③ Stroke [Note1]

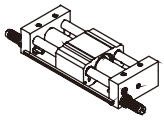
Bore size (mm)	Standard stroke (mm)	Max.std stroke
10	50 100 150 200 250 300	500
16	50 100 150 200 250 300 350 400 450 500	750
20	50 100 150 200 250 300 350 400 450 500 600 700 750 800	1000
25		1500
32		1500
40	50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000	1500

⑤ Cushion type [Note2]

Blank: With two adjustable nuts



A: With two shock absorbers



[Note1] Consult us for non-standard stroke. [Note2] When **A** type is selected, the two adjustable nuts are added too.

[Note3] Blank on thread code means metric M thread. There is only metric thread for Φ10/Φ16. If NPT thread is needed, please comment.

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	30~100psi(0.2~0.7MPa)					
Proof pressure	175psi(1.2MPa)					
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] NPT thread is available.

Add) Refer to P475 for detail of sensor switch.

Rodless magnetic cylinder(With exactitude guide)

RMTL Series

Bore size: Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

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.

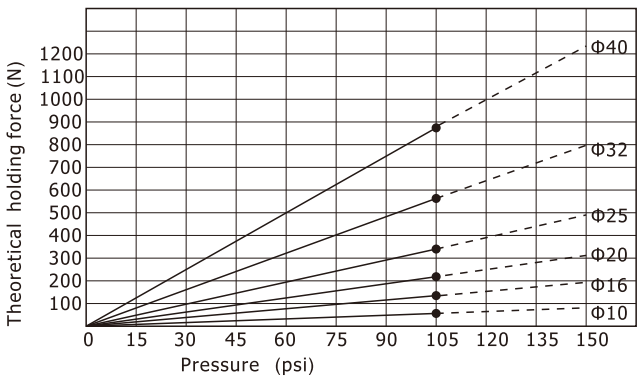
4.The non adjustable rubber bumpers and the adjustable pneumatic cushioning on both ends of the cylinder ensure the smooth action. If shock absorber be used, the cushioning effect is more perfection.

5. Double guides ensure high precision and can endure proper side load or prejudicial load.

Installation and application

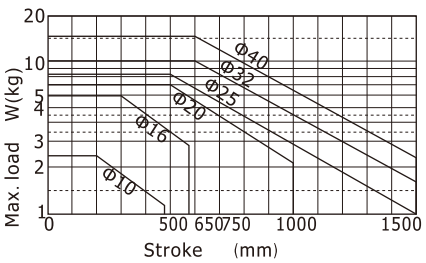
1. How to determine load

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	~300mm
20	6	~500mm
25	8	~500mm
32	10	~600mm
40	16	~600mm

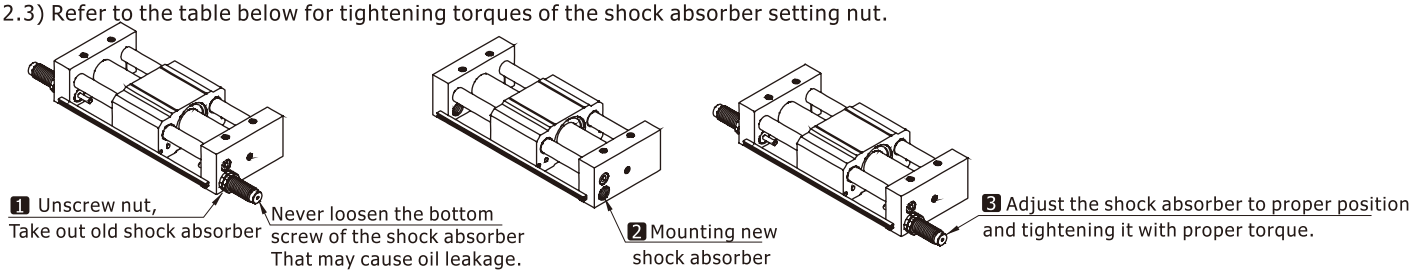


2. About shock absorber

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.

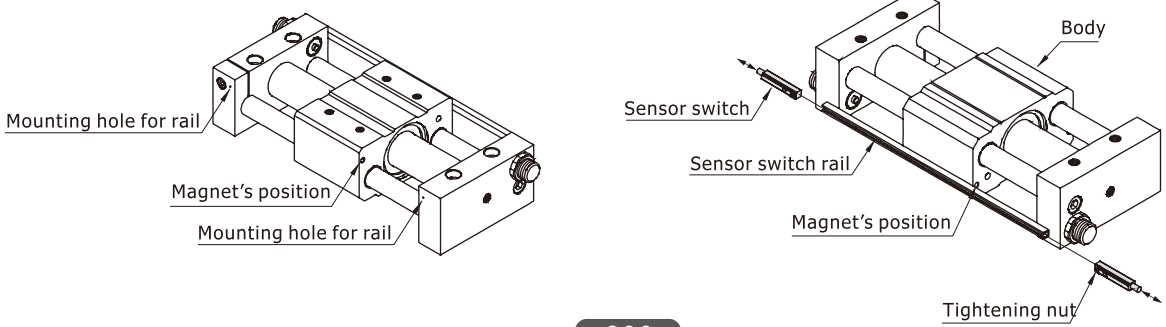
2.3) Refer to the table below for tightening torques of the shock absorber setting nut.



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

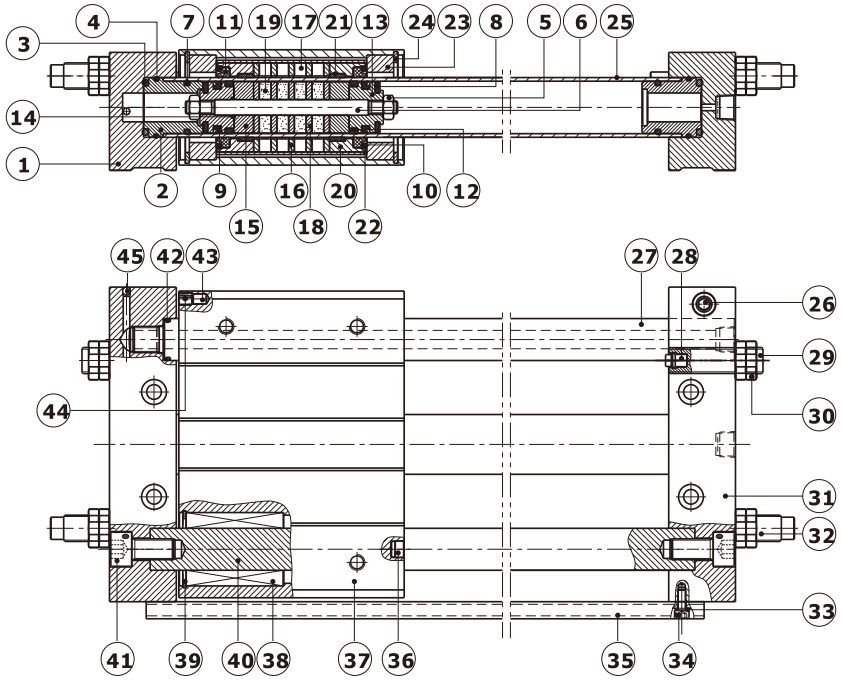
3.1) Sensor switch only can be used for the cylinder with magnet . The magnet located the four corner of body's(refer below) . The cylinder with magnet have both group mounting hole for mounting rail. please refer to below for ordering sensor switch, mounting it into the rail's groove, adjusting it to proper position, tightening it with proper torque.



RMTL Series

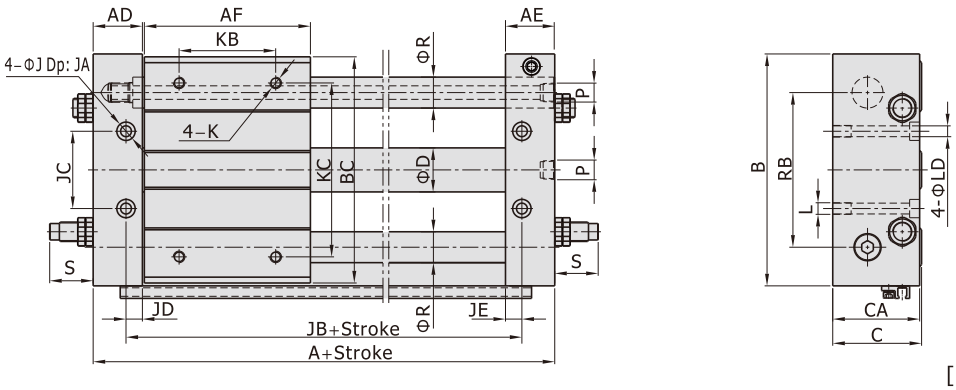
Bore size: Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

Inner structure



NO.	Item	NO.	Item
1	Fixing plate	24	C clip
2	Washer cover	25	Barrel
3	O-ring	26	Countersink screw
4	O-ring	27	Guide I
5	Nut	28	Bumper
6	Joint pole	29	Adjustable screw
7	O-ring	30	Nut
8	Bumper	31	Fixing plate
9	Piston seal	32	Shock absorber
10	O-ring	33	Spring washer
11	Scraping dust ring	34	Countersink screw
12	Wearing ring	35	Rail
13	Piston	36	Bumper block
14	O-ring	37	Body
15	Piston washer	38	Bushing
16	Magnet washer	39	C clip
17	Magnet	40	Guide II
18	Magnet washer	41	Countersink screw
19	Magnet	42	O-ring
20	Body cover	43	Magnet
21	Wearing ring	44	Location washer
22	Mobility iron	45	Steel ball
23	Washer		

Dimensions



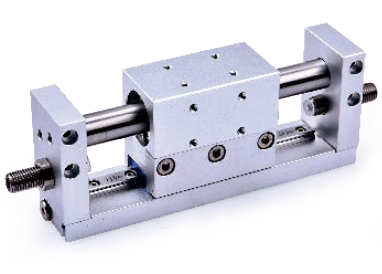
[Unit: mm]

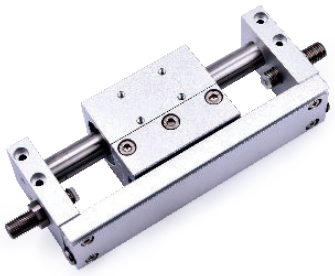
Model	A	AD	AE	AF	B	BC	C	CA	D	J	JA	JB	JC	JD	JE
RMTL10	111	20.5	20.5	68	80	77	34	33	11.2	8	4	85	26	7.5	7.5
RMTL16	122	22.5	22.5	75	95	92	40	39	18	9.5	5	90	30	6.5	6.5
RMTL20	139	25.5	25.5	86	120	117	46	45	22.8	9.5	5	105	40	8.5	8.5
RMTL25	139	25.5	25.5	86	130	127	54	53	27.8	11	6.5	105	50	8.5	8.5
RMTL32	159	28.5	28.5	100	160	157	66	64	35	14	8	121	60	9.5	9.5
RMTL40	209	35.5	35.5	136	190	187	78	74	43	14	8	159	84	10.5	10.5

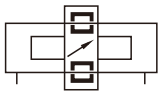
Model	K	KB	KC	L	LD	P	R	RB	S
RMTL10	M4X0.7Dp:8	30	60	M5X0.8Dp:9.5	4.5	M5X0.8	10	52	16.5
RMTL16	M5X0.8Dp:10	45	70	M6X1.0Dp:9.5	5.5	M5X0.8	12	65	14.5
RMTL20	M6X1.0Dp:10	50	90	M6X1.0Dp:10	5.5	1/8"	16	80	21.5
RMTL25	M6X1.0Dp:10	60	100	M8X1.25Dp:10	7	1/8"	16	90	39.5
RMTL32	M8X1.25Dp:12	70	120	M10X1.5Dp:15	8.5	1/8"	20	110	57.5
RMTL40	M8X1.25Dp:12	90	140	M10X1.5Dp:15	8.5	1/4"	25	130	49.5

Rodless magnetic cylinder(With Linear guide)——RMH Series

Bore size: Φ10, Φ16, Φ20, Φ25







Ordering code

RMH 20×200 S T

1 2 3 4 5

① **Model**
RMH: Rodless magnetic cylinder

②**Bore Size**
10 16 20 25

④**Magnet**
S: With magnet

⑤ **Thread type** [Note2]
T: NPT

③ **Stroke** [Note1]	
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	

[Note1] Consult us for non-standard stroke.

[Note2]Blank on thread code means metric M thread. There is only metric thread for Φ10/Φ16.

Specification

Bore size(mm)	**10**	**16**	**20**	**25**
Acting type	Double acting			
Fluid	Air(to be filtered by 40μm filter element)			
Operating pressure	22~100psi(0.15~0.7MPa)			
Proof pressure	175psi(1.2MPa)			
Temperature ℃	-20~70			
Speed range mm/s	50~400			
Stroke tolerance mm	$0\sim250\ ^{+1.0}_{0}$		$251\sim800\ ^{+1.5}_{0}$	
Cushion type	Bumper			
Port size [Note1]	M5×0.8		1/8"	
Safe holding force N	55	140	220	345

[Note1] NPT thread is available.

Rodless magnetic cylinder(With Linear guide)

RMH Series

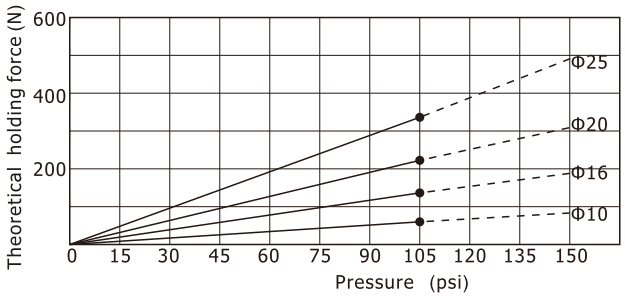
Bore size: Φ10, Φ16, Φ20, Φ25

Product feature

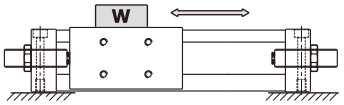
1. This magnetic cylinder is basically a pneumatic rodless cylinder featuring a mobile piston fitted with annular magnets.
   The mobile carriage is also equipped with magnets to provide magnetic coupling (carriage/piston).
   The carriage slide freely along the main tube.
2. It is dust-proof as the 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.

Installation and application

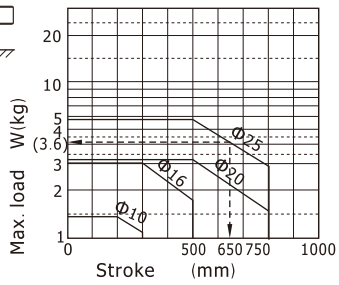
1. The maxi load to move must be less than the theoretical holding force.

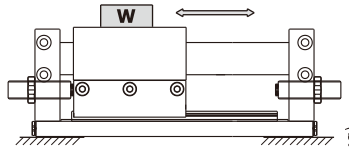


2.The relation between loading and stroke as below(Loading center and slide table center must be superposition)

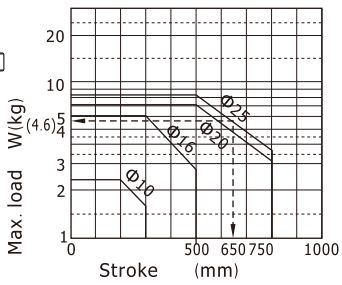


Bore size	Max.Load W(kg)	Stroke scope
10	1.4	~200mm
16	3	~300mm
20	3.6	~500mm
25	4.8	~500mm





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

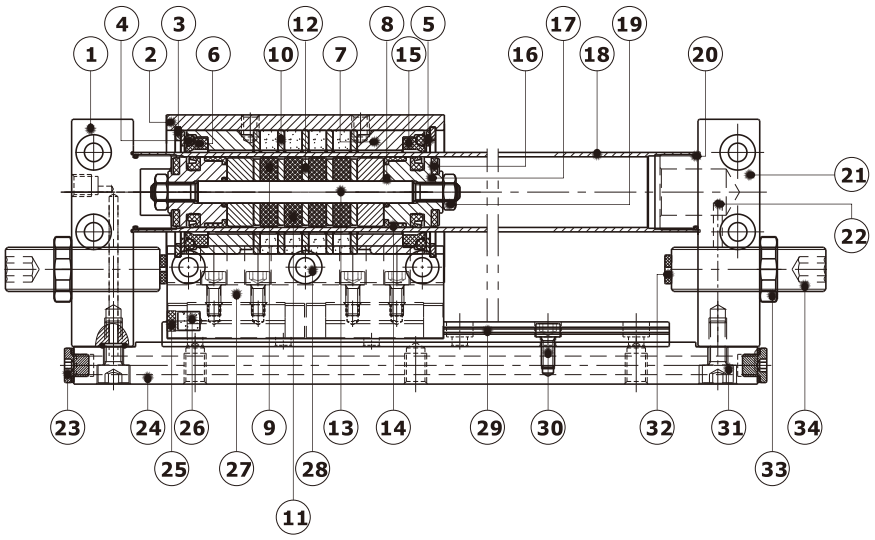
4. When use external limiter to stop load middle way: please refer to RMS series.
5. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
6. The medium used by cylinder shall be filtered to 40μm or below.
7. 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

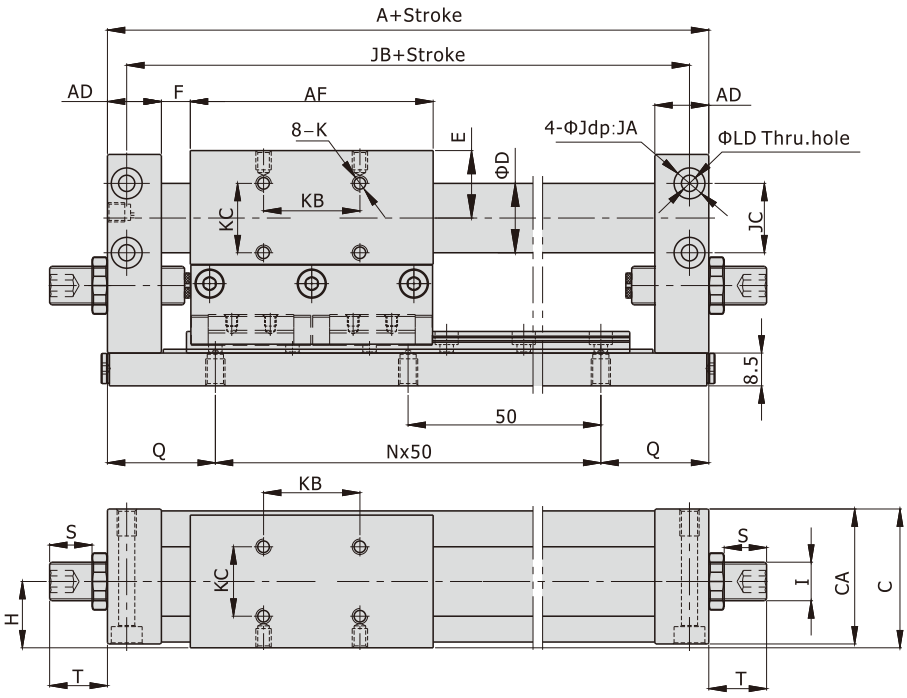
Bore size: Φ10, Φ16, Φ20, Φ25

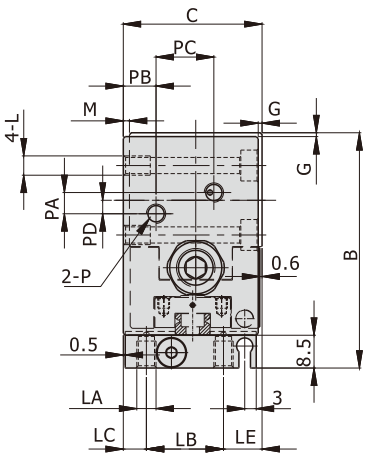
Inner structure



NO.	Item	NO.	Item
1	End cover	18	Barrel
2	Body	19	Nut
3	C Clip	20	O-ring
4	O-ring	21	End cover
5	Washer	22	Steel ball
6	Scraping dust ring	23	Pluger screw
7	Cover	24	Fixed block
8	O-ring	25	Push block
9	Magnet	26	Magnet
10	Magnet washer	27	Jointing block
11	Magnet	28	Bolt
12	Magnet washer	29	Linear rail
13	Connecting rod	30	Bolt
14	Wear ring	31	Bolt
15	Piston seal	32	Bumper
16	Bumper	33	Nut
17	Piston	34	Bolt

Dimensions





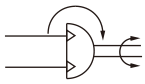
[Unit: mm]

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

Rotary table cylinder——HRQ Series

Specification: 2, 3, 7, 10, 20, 30, 50, 70, 100, 200



Ordering code

HRQ 20 A T

1 2 3 4

① Model

HRQ: Rotary Table/Rack & Pinion Style

② Specification

2 3 7 10 20 30 50 70 100 200

③ Cushion type

Specification	Cushion type
2 3 7	Blank: With adjustment bolt
10 20 30 50	Blank: With adjustment bolt
70 100 200	A: With internal shock absorber

[Note] HRQ series are all atteched with magnet.

④ Thread type

Specification	Thread type
2 3 7 10 20	No this code
30 50 70 100 200	T: NPT

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.

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	22~100psi(0.15~0.7MPa)									
	With internal shock absorber	-			22~100psi(0.15~0.7MPa)						
Proof pressure		175psi(1.2MPa)									
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] NPT thread is available.

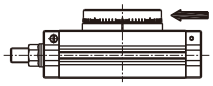
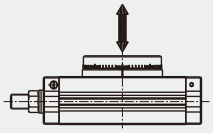
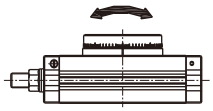
Maximum allowed movement energy and rotation times

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

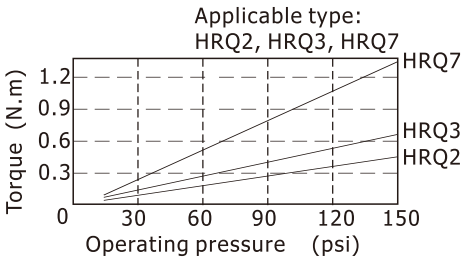
[Note] 1: The movement energy should not exceed the allowed maximum energy, or the inner accessories of product would be damaged;
2: When the rotation times of with shock absorber is larger than the allowed tolerance, he bigger effect will be lost.

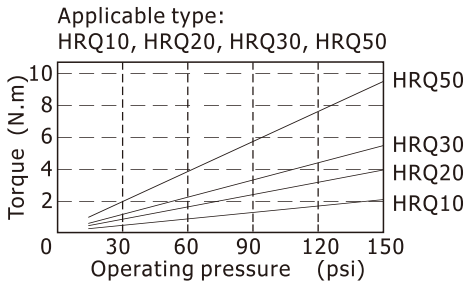
HRQ Series Specification: 2, 3, 7, 10, 20, 30, 50, 70, 100, 200

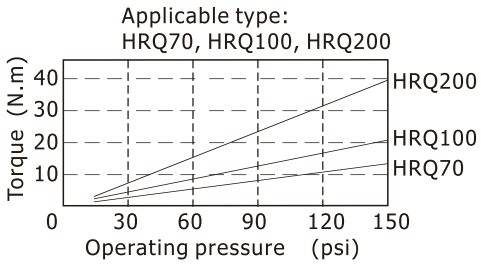
Maximum allowed loading

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

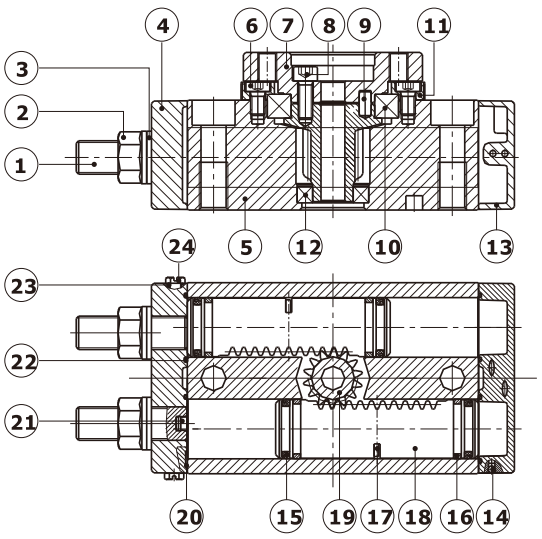
Actual torque output



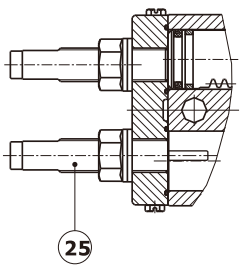




Inner structure



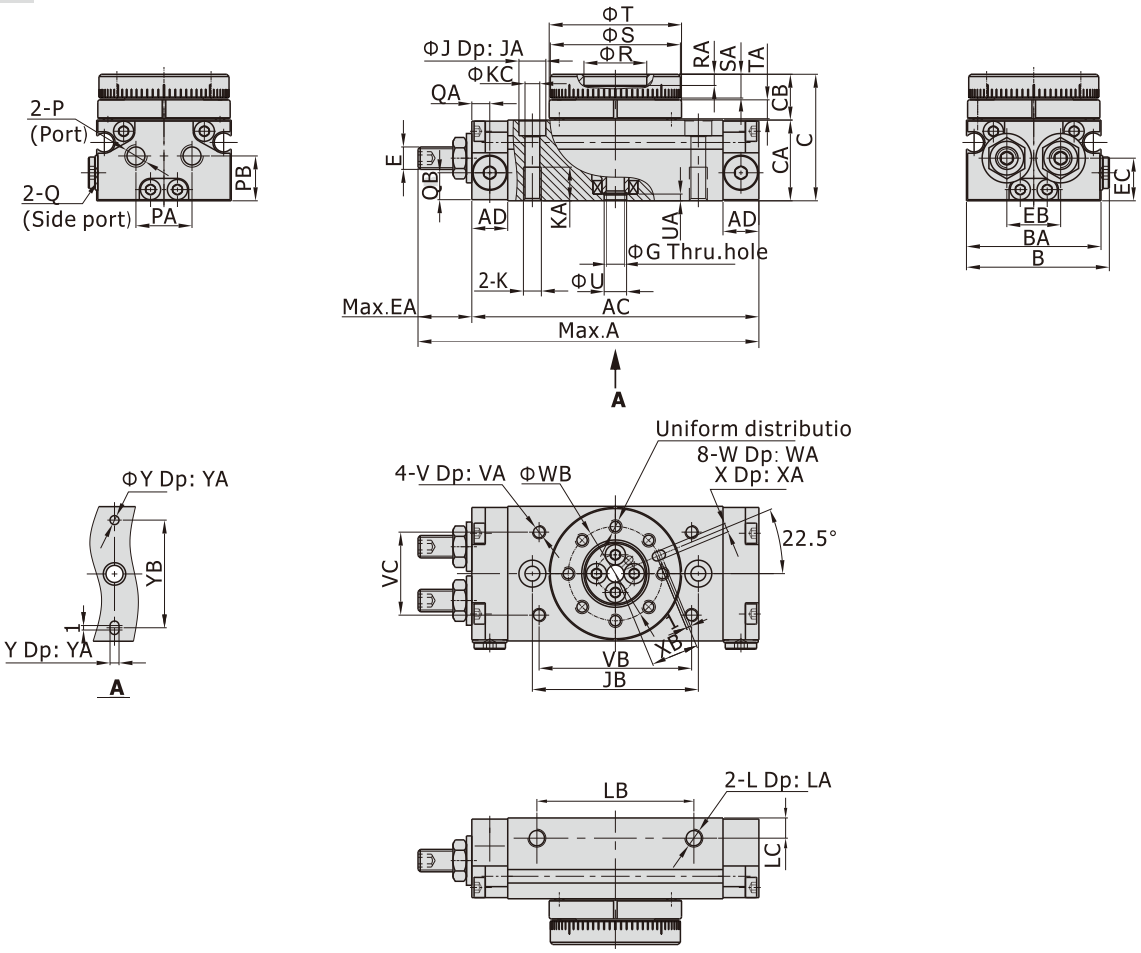
HRQ□-A
(With internal shock absorber)



NO.	Item
1	Adjustment bole
2	Hexagon nut
3	Seal washer
4	Front cover
5	Body
6	Hexagon socket head set bole
7	Table
8	Hexagon socket head set bole
9	Guide pin/flat key
10	Deep-groove bearing
11	Bearing retainer
12	Deep-groove bearing/Needle bearing
13	Back cover
14	Steel ball
15	Piston seal
16	Wear ring
17	Magnet
18	Rack
19	Pinion
20	O-ring
21	Bumper
22	O-ring
23	O-ring
24	Hexagon screw
25	Shock absorber

Dimensions

HRQ2/3/7



[Unit: mm]

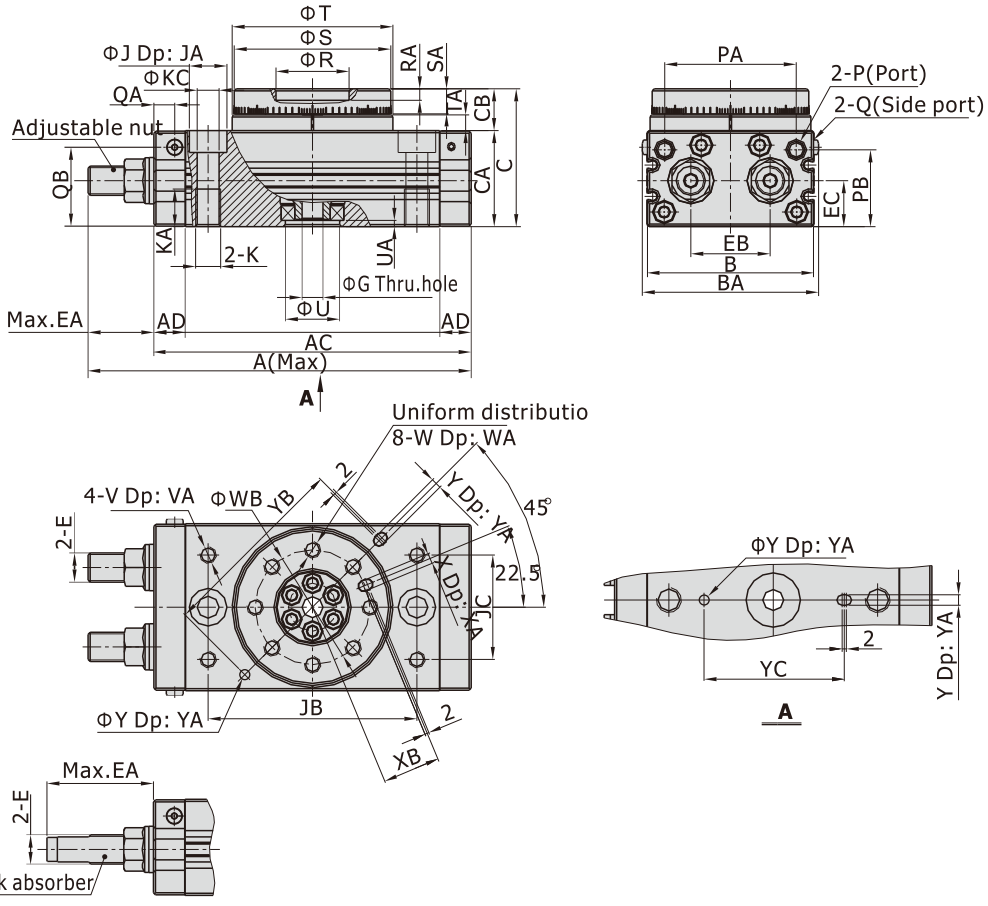
Type\Item	A	AC	AD	B	BA	C	CA	CB	E	EA	EB	EC	G
2	76	64	8	32	30	28	18	10	M5×0.8	12	12	9.5	4
3	82	70	8	36.5	34.5	30.5	20.5	10	M5×0.8	12	15.5	10.5	5
7	94.5	79.5	8	43	41	34.5	23	11.5	M6×1.0	15	18.5	12	6

Type\Item	J	JA	JB	K	KA	KC	L	LA	LB	LC	P	PA
2	6	3.5	37	M4×0.7	7.5	3.5	M4×0.7	4	35	4.5	M5×0.8	12.5
3	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	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
2	10	M5×0.8	4	6	14(H9)	2.5	29(h9)	5.5	29.5(h9)	4	5(H9)	1.5
3	12	M5×0.8	4	7.5	17(H9)	2.5	33(h9)	5.5	34(h9)	4	6(H9)	1.5
7	14	M5×0.8	4	9	20(H9)	3	39(h9)	6.5	40(h9)	4.5	7(H9)	1.5

Type\Item	V	VA	VB	VC	W	WA	WB	X	XA	XB	Y	YA	YB
2	M3×0.5	3.5	34	18.5	M3×0.5	5.5	21	2(H9)	2	10.5	2(H9)	2	24
3	M3×0.5	3.5	38	23	M3×0.5	5.5	25	2(H9)	2	12.5	2(H9)	2	28
7	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)

[Unit: mm]

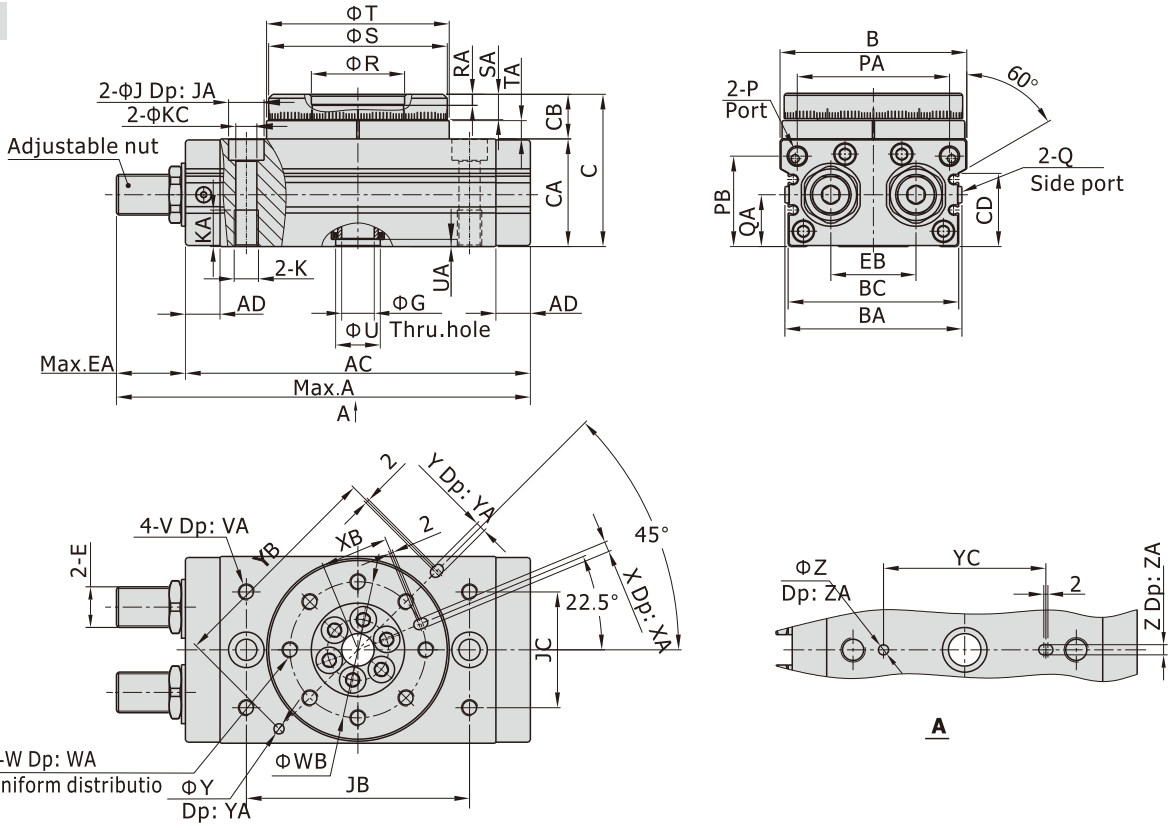
Type\Item	A(With internal shock absorber)	A(With adjustment bolt)	AC	AD	B	BA	C	CA	CB
10	123	112	92	9.5	50	54	47	34	13
20	169	145	117	11	65	69	54	37	17
30	178.5	154.5	127	11.5	70	74	57	40	17
50	212	186	152	15	80	84	66	46	20

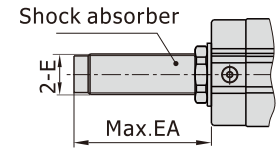
Type\Item	E	EA(With internal shock absorber)	EA(With adjustment bolt)	EB	EC	G	J	JA
10	M10×1.0	31	20	20.5	14	5	11	6.5
20	M12×1.0	52	28	27.5	16	9	14	8.5
30	M12×1.0	51.5	27.5	29	18.5	9	14	8.5
50	M14×1.5	60	34	38	22	10	17.5	12

Type\Item	JB	JC	K	KA	KC	P	PA	PB	Q	QA	QB	R	RA	S	SA
10	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	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	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	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)

[Unit: mm]

Type\Item	A(With adjustment bolt)	A(With internal shock absorber)	AC	AD	B	BA	BC	C	CA	CB
70	207	244	170	17	92	88	84	75	53	22
100	225.5	263	189	17	102	99	95	86	59	27
200	279.5	316.5	240	24	120	117	113	106	74	32

Type\Item	CD	E	EA(With adjustment bolt)	EA(With internal shock absorber)	EB	G	J	JA	JB
70	36	M20×1.5	37	74	42	16	17.5	12	110
100	42	M20×1.5	38	74	50	19	17.5	12	130
200	57	M27×1.5	39.5	76.5	60	24	20	12.5	150

Type\Item	JC	K	KA	KC	P	PA	PB	Q	QA	R	RA	S	SA	T	TA	U	UA
70	57	M12×1.75	18	10.5	1/8"	75	44.5	M5×0.8	25.5	46(h9)	5	88(h9)	12.5	90(h9)	9	22(H9)	3.5
100	66	M12×1.75	18	10.5	1/8"	85	50.5	M5×0.8	29.5	56(h9)	6	98(h9)	14.5	100(h9)	12	24(H9)	3.5
200	80	M16×2.0	25	14	1/8"	103	63	M5×0.8	36.5	64(h9)	9	116(h9)	16.5	118(h9)	15	32(H9)	5.5

Type\Item	V	VA	W	WA	WB	X	XA	XB	Y	YA	YB	YC	Z	ZA
70	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	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	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 forgue 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 forgue needed when loading rotation (T(N.m):
Calculate the necessary moment required for loading rotation according to the formula below, and combine with the forgue diagram of actual effect, to choose pneumatic cylinder with suitable forgue output.

2.1) Calculation method of moment of inertia in different conditions

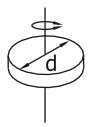
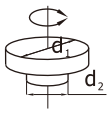
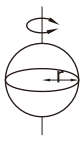
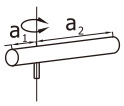
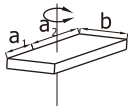
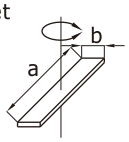
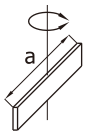
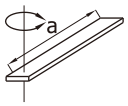
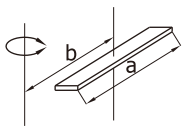
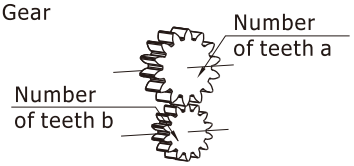
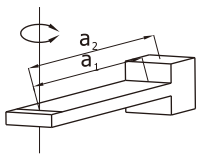
Diagram	Description	Calculation formula of moment of inertia	Rotation radius
Disk 	d:Diameter (m) m:Mass (kg)	$I=\frac{md^2}{8}$	$\frac{d^2}{8}$
		Note: no special installation direction	
Classified disk 	d_1:Diameter(m) d_2:Diameter(m) m_1:d_1 Mass(kg) m_2:d_2 Mass(kg)	$I=\frac{m_1d_1^2+m_2d_2^2}{8}$	$\frac{d_1^2+d_2^2}{8}$
		Note: compare d_1 with d_2, disregard d_1 if d_1 is extremely tiny	
Disk	d:Diameter (m) m:Mass (kg)	$I=\frac{md^2}{16}$	$\frac{d^2}{16}$
		Note: no special installation direction	
Sphere 	r:Radius(m) m:Mass(kg)	$I=\frac{2mr^2}{5}$	$\frac{2r^2}{5}$
		Note: no special installation direction	
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)	$I=\frac{m_1a_1^2+m_2a_2^2}{3}$	$\frac{a_1^2+a_2^2}{3}$
		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)	$I=\frac{m_1(4a_1^2+b^2)+m_2(4a_2^2+b^2)}{12}$	$\frac{2a_1^2+2a_2^2+b^2}{6}$
		Note: 1. horizontal installation. 2. pay attention to the change of movement time when vertical installation.	

Diagram	Description	Calculation formula of moment of inertia	Rotation radius
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	
Rectangle sheet 	a:Sheet ength (m) m:Mass (kg)	$I=\frac{ma^2}{12}$	$\frac{a^2}{12}$
		Note: no special installation direction	
Rectangle sheet 	a:Sheet ength (m) m:Mass (kg)	$I=\frac{ma^2}{3}$	$\frac{a^2}{3}$
		Note: 1. horizontal installation. 2. pay attention to the change of movement time when vertical installation.	
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: the cuboids are same too.	
Gear 	a:Tooth number of gear b:Tooth number of loading gear	$I_a=(\frac{a}{b})^2 I_b$	
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. 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 ange 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

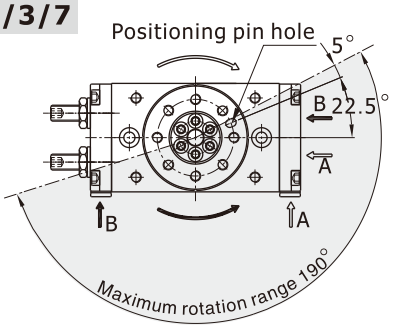
5. Determination method
It could be used only when the chosen pneumatic cylinder must meet the requirements of article 2, 3 and 4 simultaneously.

Installation and application

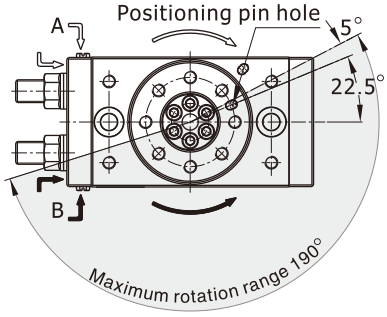
1. Rotation Direction and Rotation Angle

1.1) Rotation Direction

HRQ2/3/7



HRQ10~200



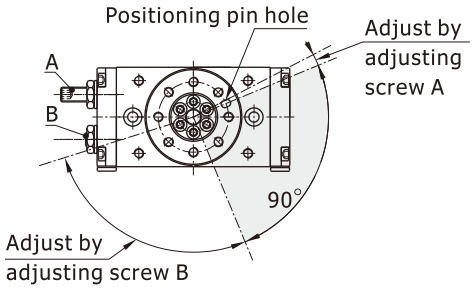
A) By adjusting the adjustment bolt, the rotation end can be set within the range shown in the up drawing: Maximum ratation is 190° ;

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.

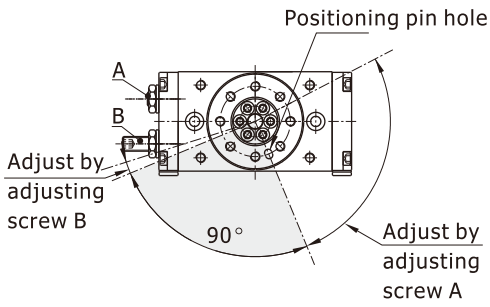
1.2) Rotation Range Example(90° Rotation)

HRQ2/3/7

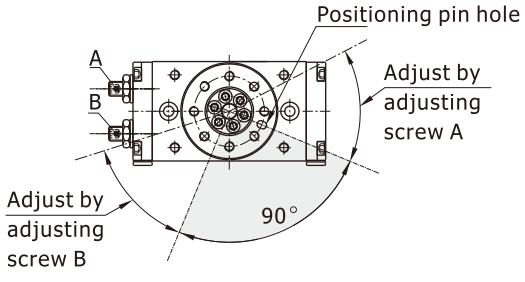
Adjustment amount by adjustment bolt B



Adjustment amount by adjustment bolt A

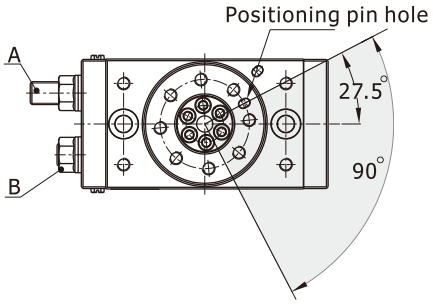


Adjustment amount by adjustment bolt A, B

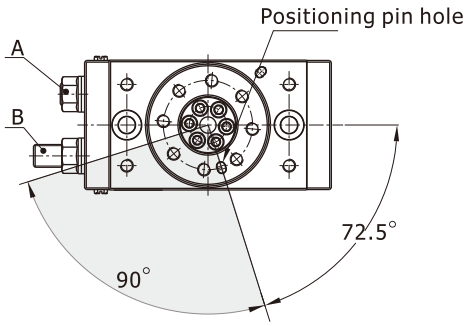


HRQ10~200

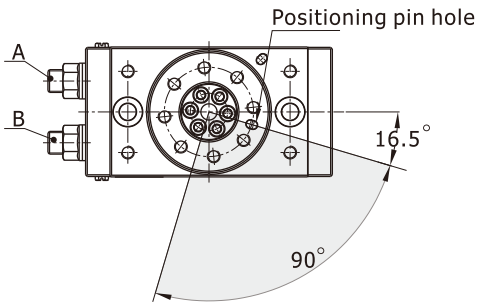
Adjustment amount by adjustment bolt B



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)
HRQ2	11.5°
HRQ3	10.9°
HRQ7	10.2°
Model	**Adjustment angle per rotation of angle(adjustment screw or shock absorber)**
HRQ10	10.2°
HRQ20	6.5°
HRQ30	6.5°
HRQ50	8.2°
HRQ70	7.0°
HRQ100	6.1°
HRQ200	4.9°

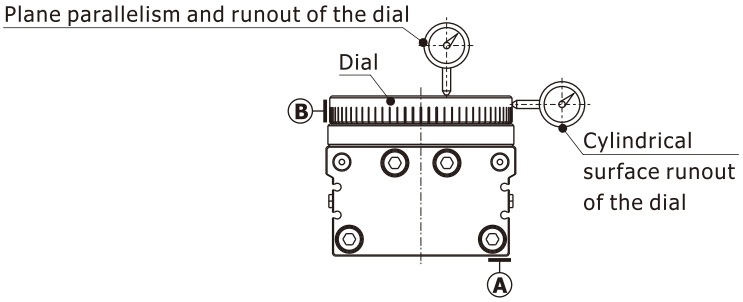
2. The range of rotation angle has been adjusted to the maximum in the factory, please do not enlarge the rotation angle any more.
3. The movement energy should not exceed the allowed maximum energy, or the inner parts will be damaged.
4. The rotary parts need no lubrication.
5. Series HRQ is equipped 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

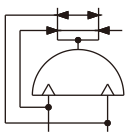
9.Strictly control run out and parallelism of the dial according to the requirements of the following table.



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	A

Compact air gripper——HFD Series

Bore size: Φ8, Φ12, Φ16, Φ20, Φ25



Ordering code

HFD 16 X 15

① ② ③

① Model
HFD: Compact air finger(Double acting)

② Bore size
8 12 16 20 25

③ Stroke	
Bore size	Stroke
8	8 15 30
12	10 25 50
16	15 30 60
20	20 40 80
25	40 80

Specification

Bore size（mm）		8	12	16	20	25
Acting type		Double acting				
Fluid		Air(to be filtered by 40μm filter element)				
Operating pressure		22~100psi(0.15~0.7MPa)				
Proof pressure		175psi(1.2MPa)				
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(S)				
Port size		M3×0.5	M5×0.8			

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

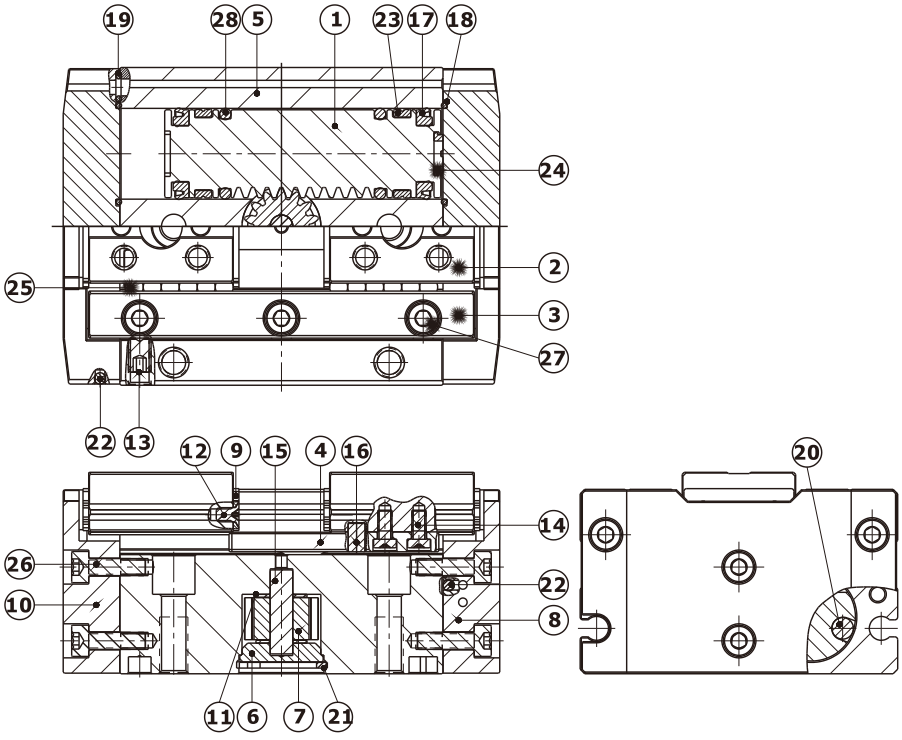
[Note] The gripping force in the above table is in the working pressure of 75psi, and with a gripping point of L=20mm.

Bore size: Φ8, Φ12, Φ16, Φ20, Φ25

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

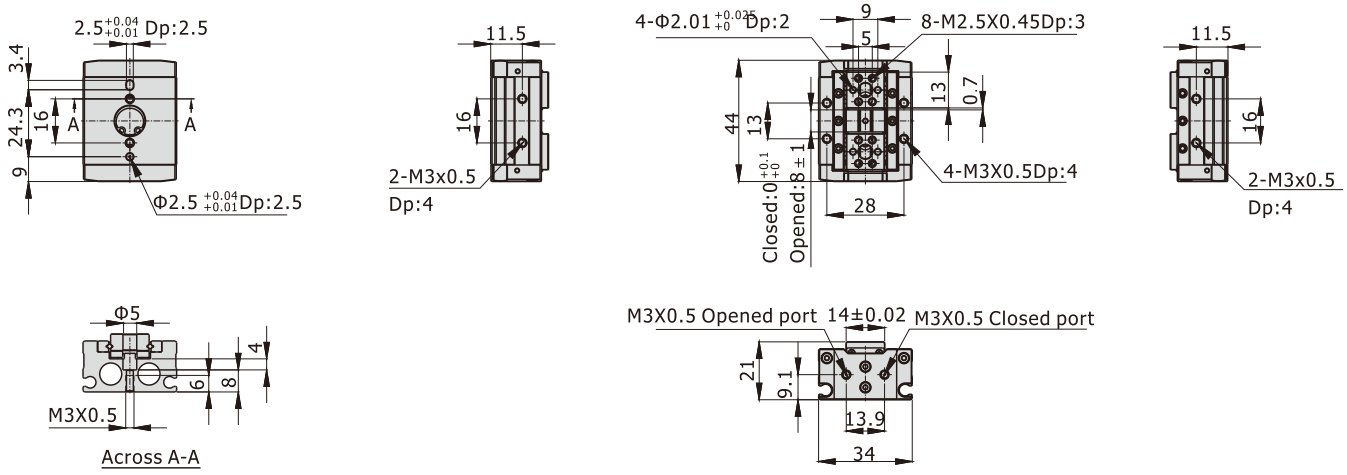


NO.	Item	NO.	Item
1	Rack	15	Pin
2	Jaws	16	Pin
3	Guide	17	Piston seal
4	Joint arm	18	O-ring
5	Body	19	O-ring
6	Rack end cap	20	Magnet
7	Gear	21	C clip
8	Back cover	22	Steel ball
9	Baffle	23	Wear ring
10	Front cover	24	Bumper
11	Plastic bearing	25	Steel ball
12	Screw	26	Bolt
13	Screw	27	Bolt
14	Screw	28	O-ring

Dimensions

[Unit: mm]

HFD8X8



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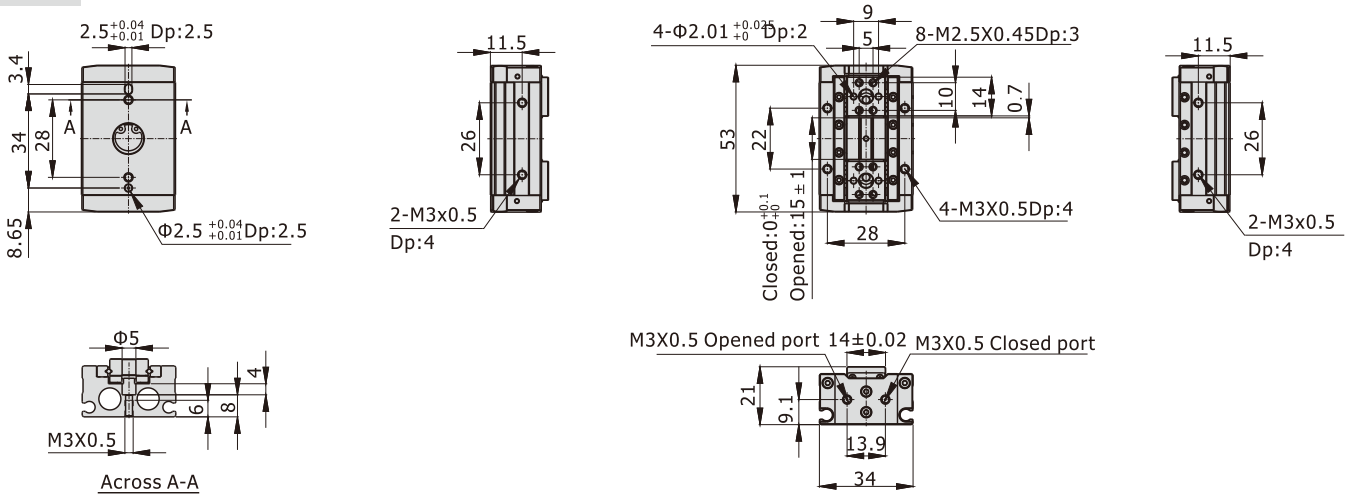

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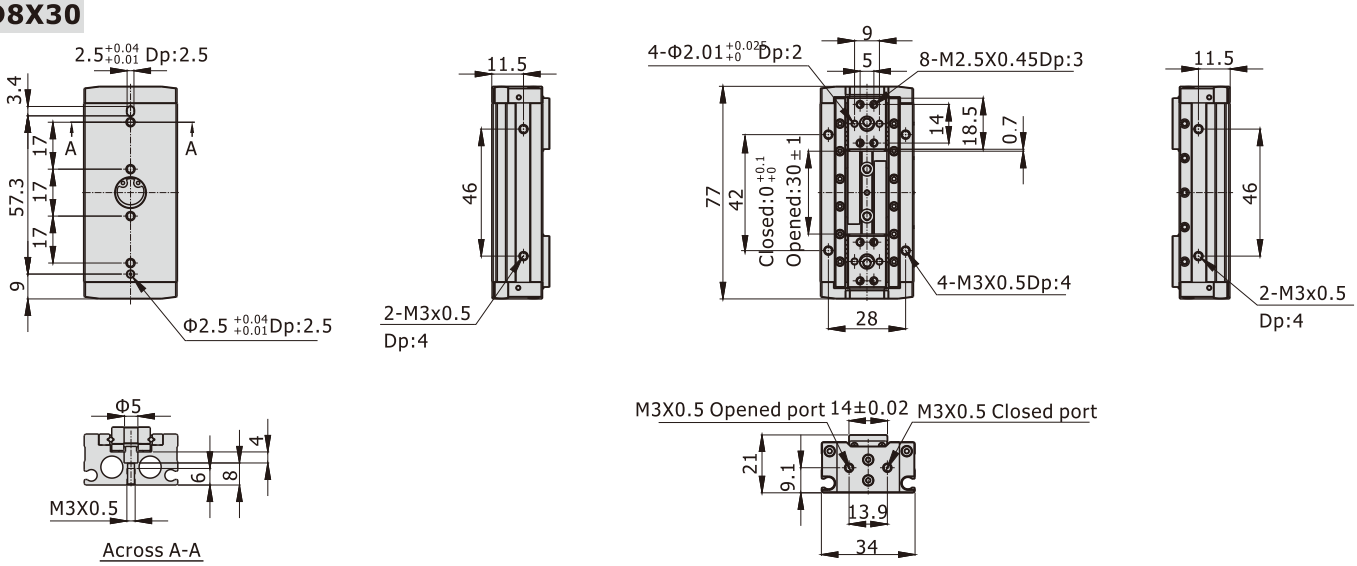

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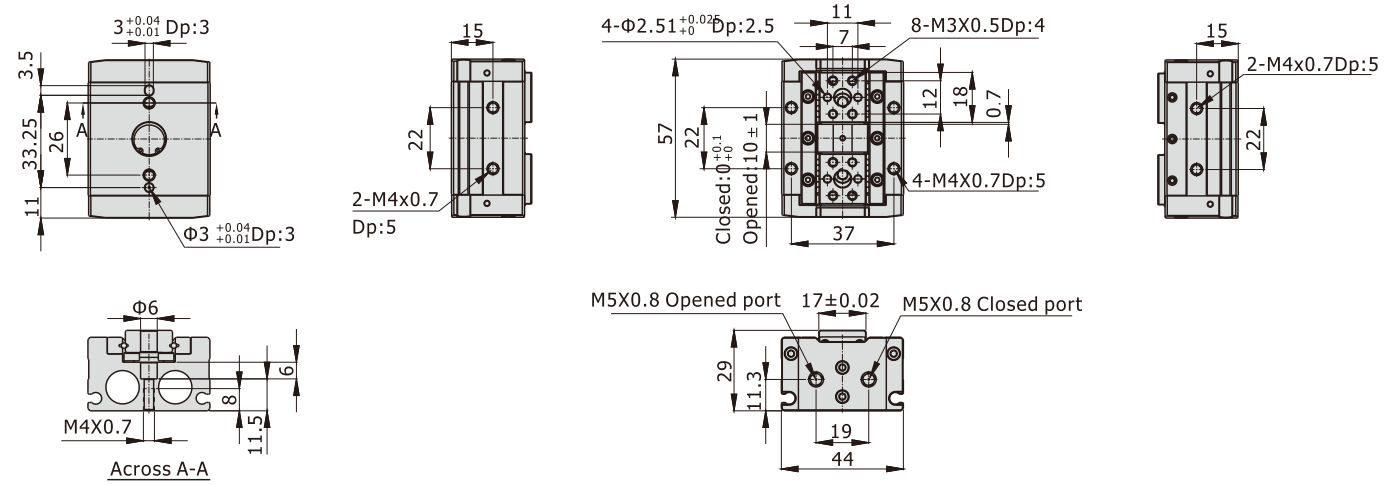

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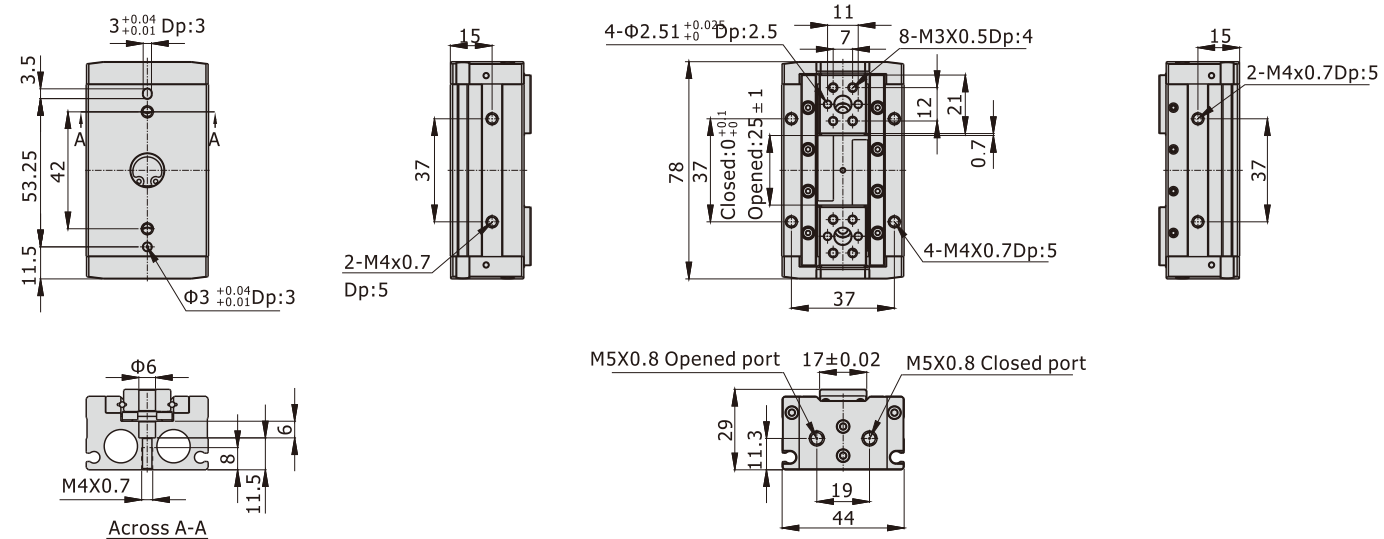

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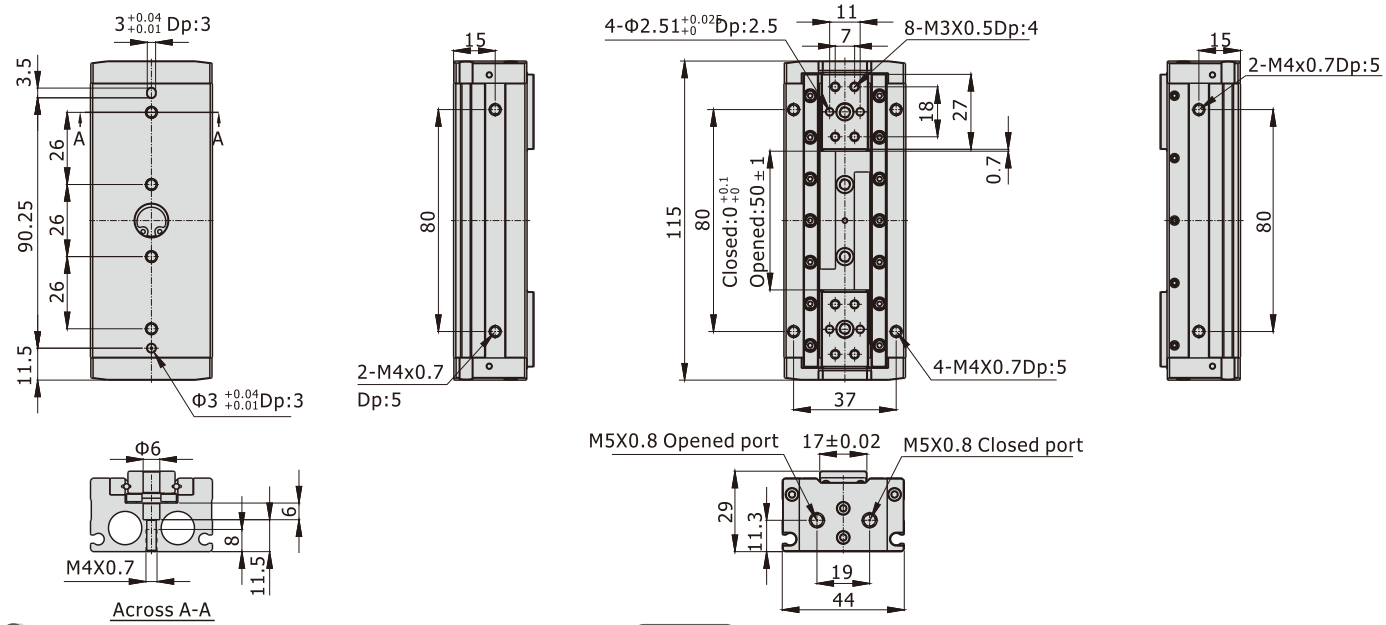

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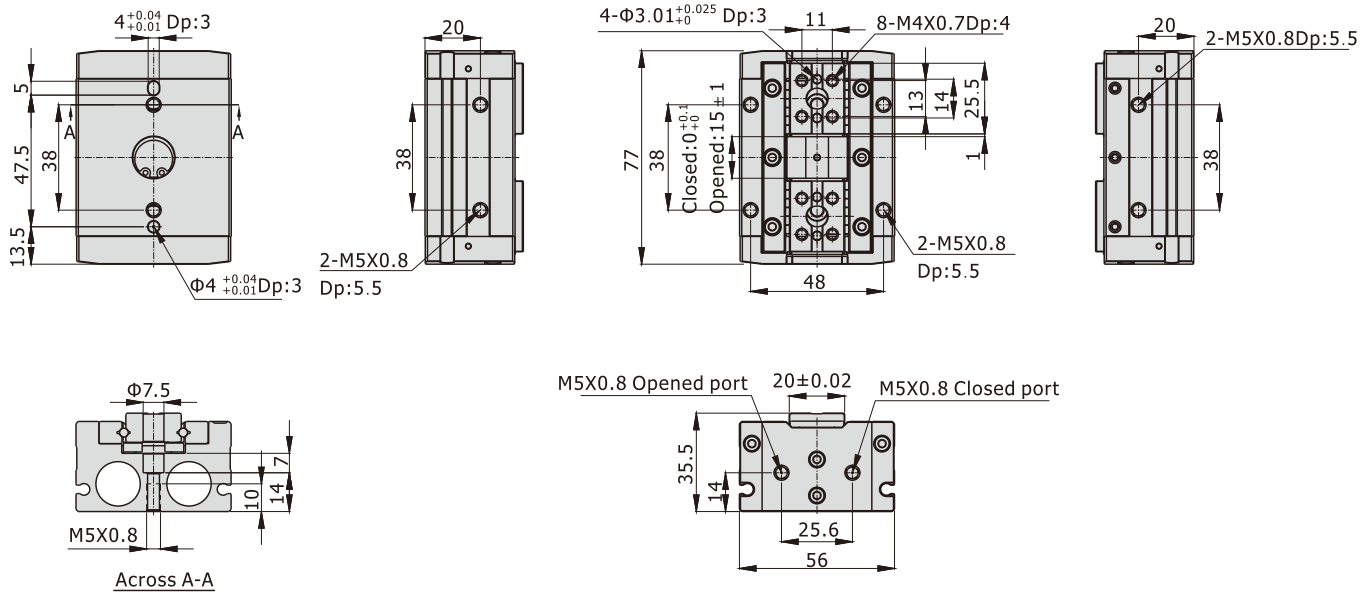

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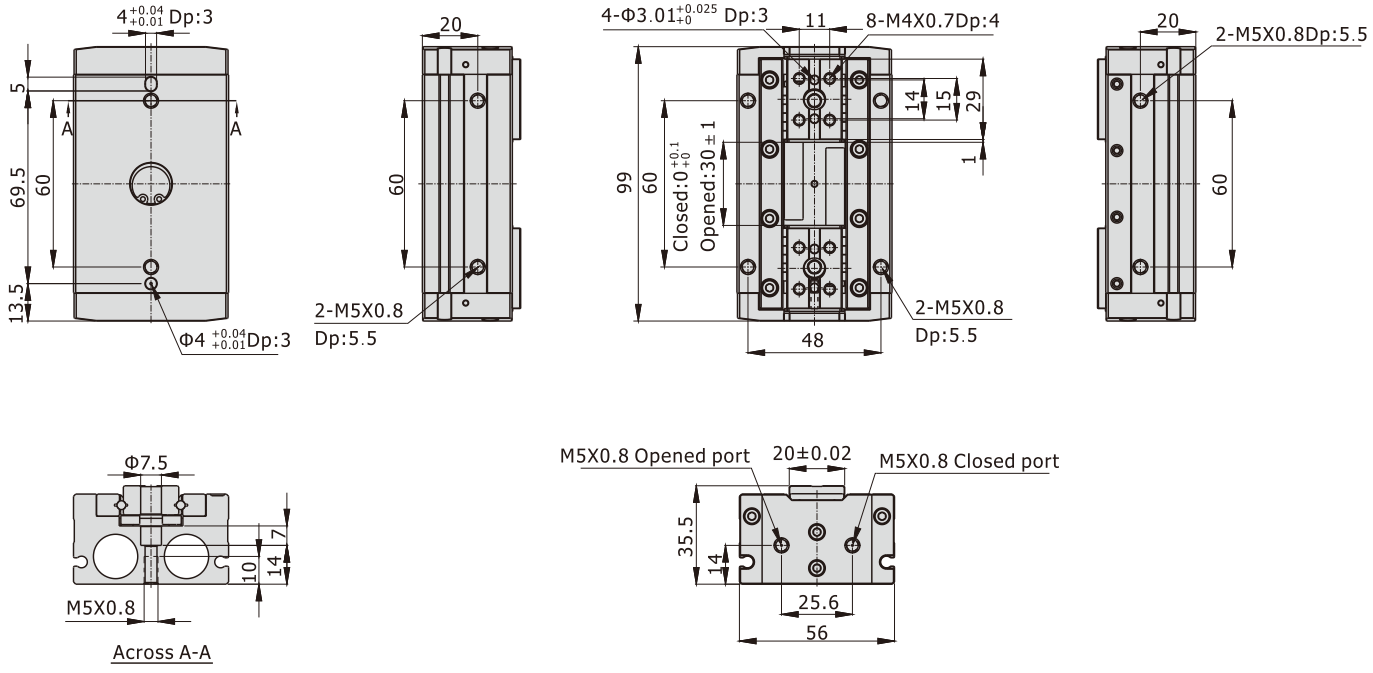

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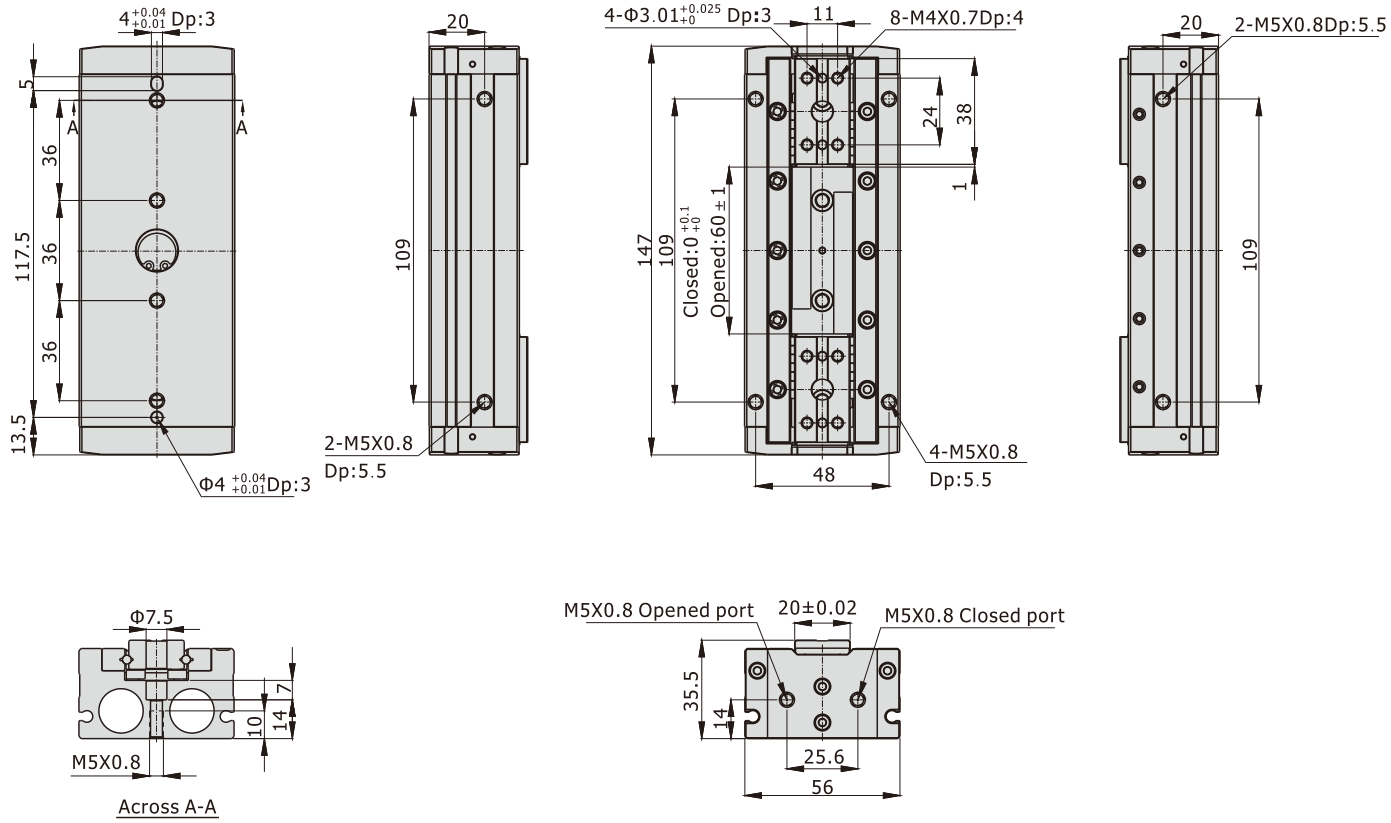

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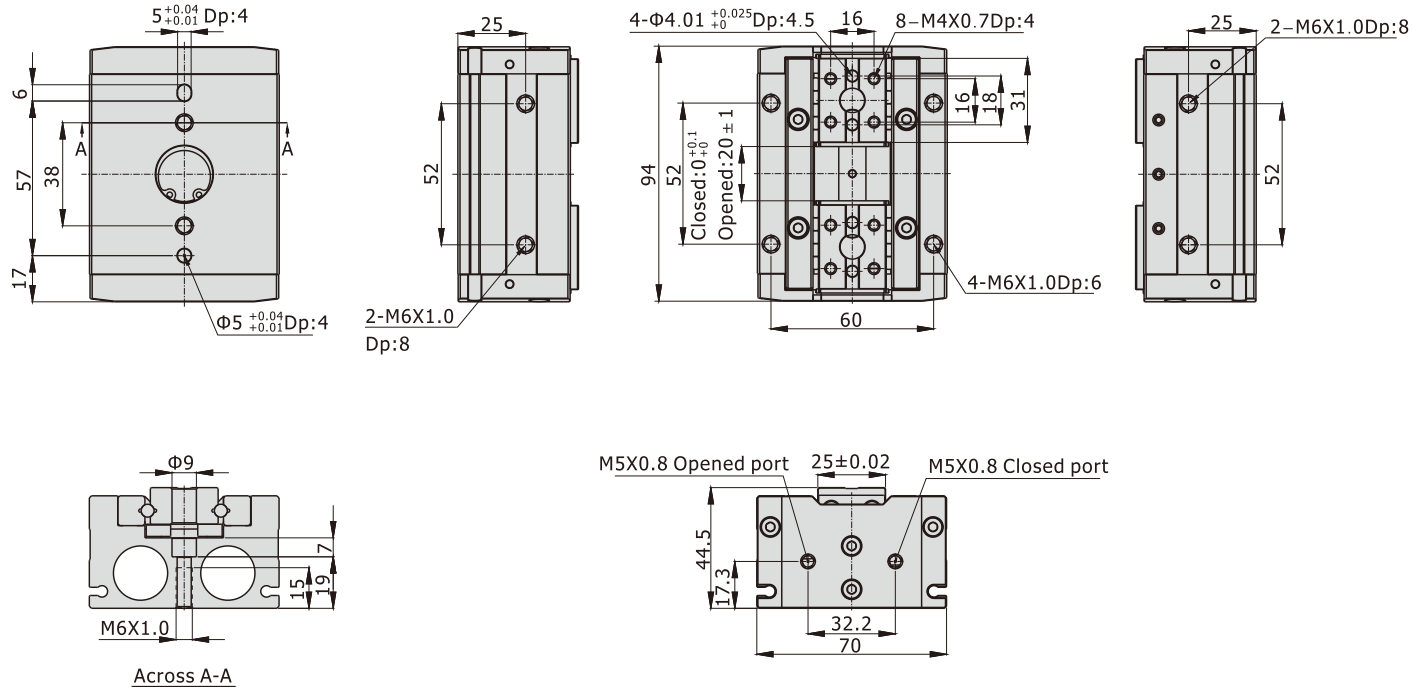

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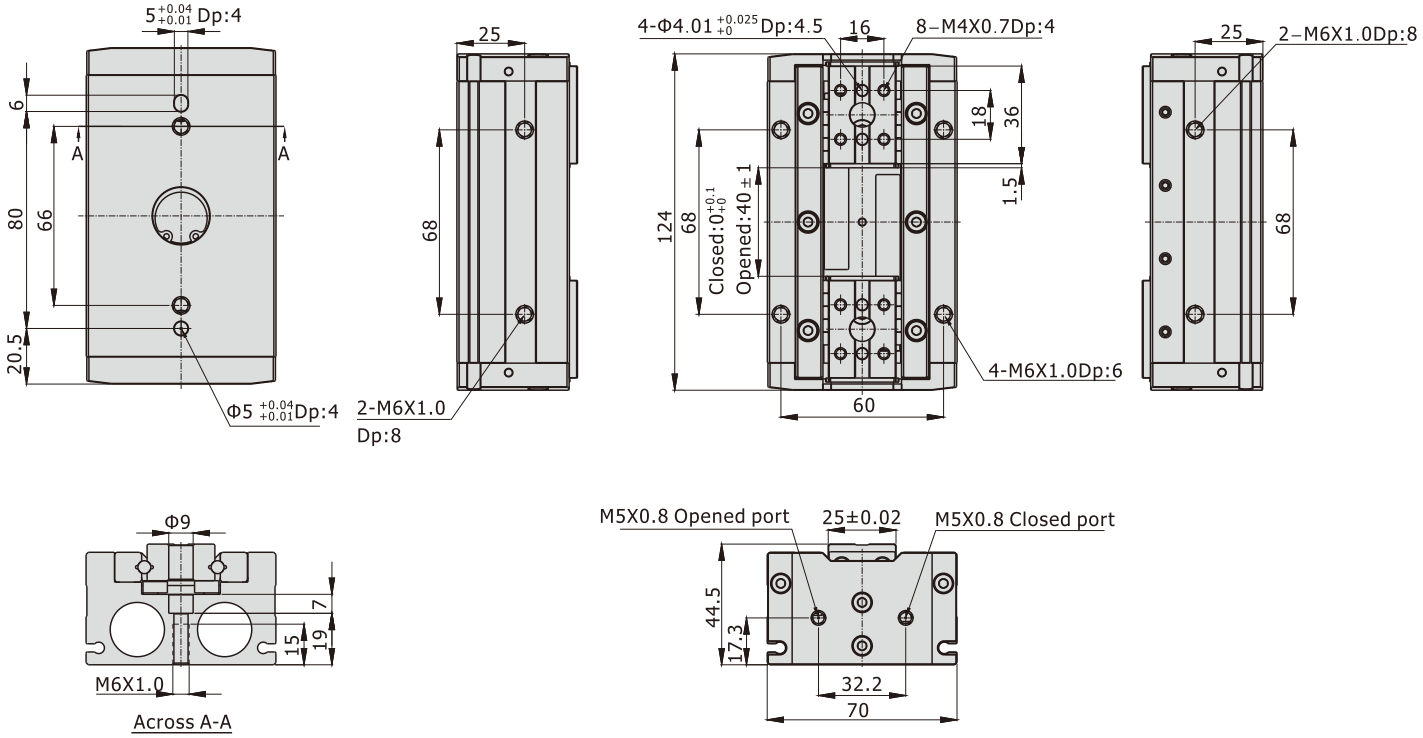

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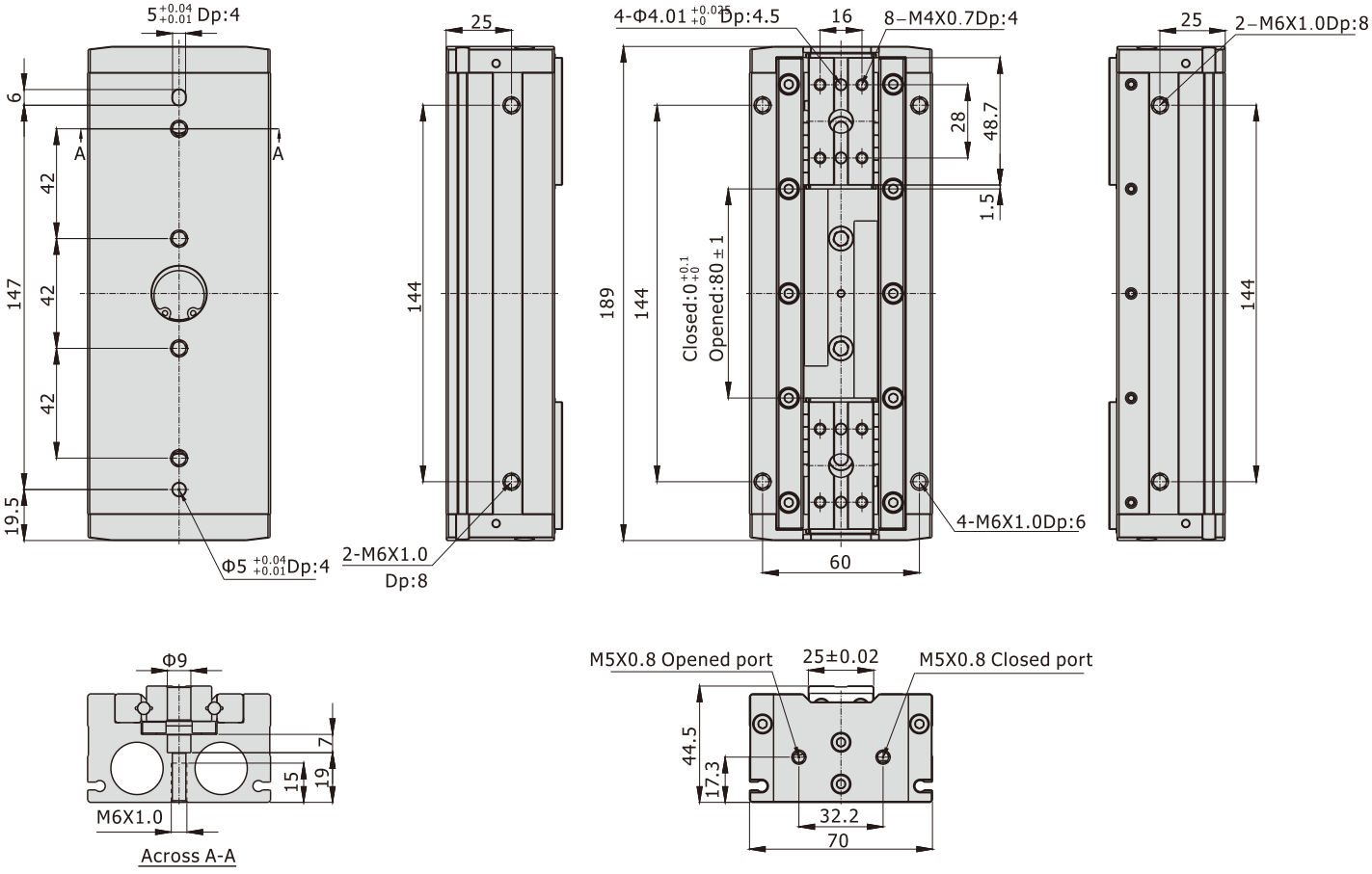

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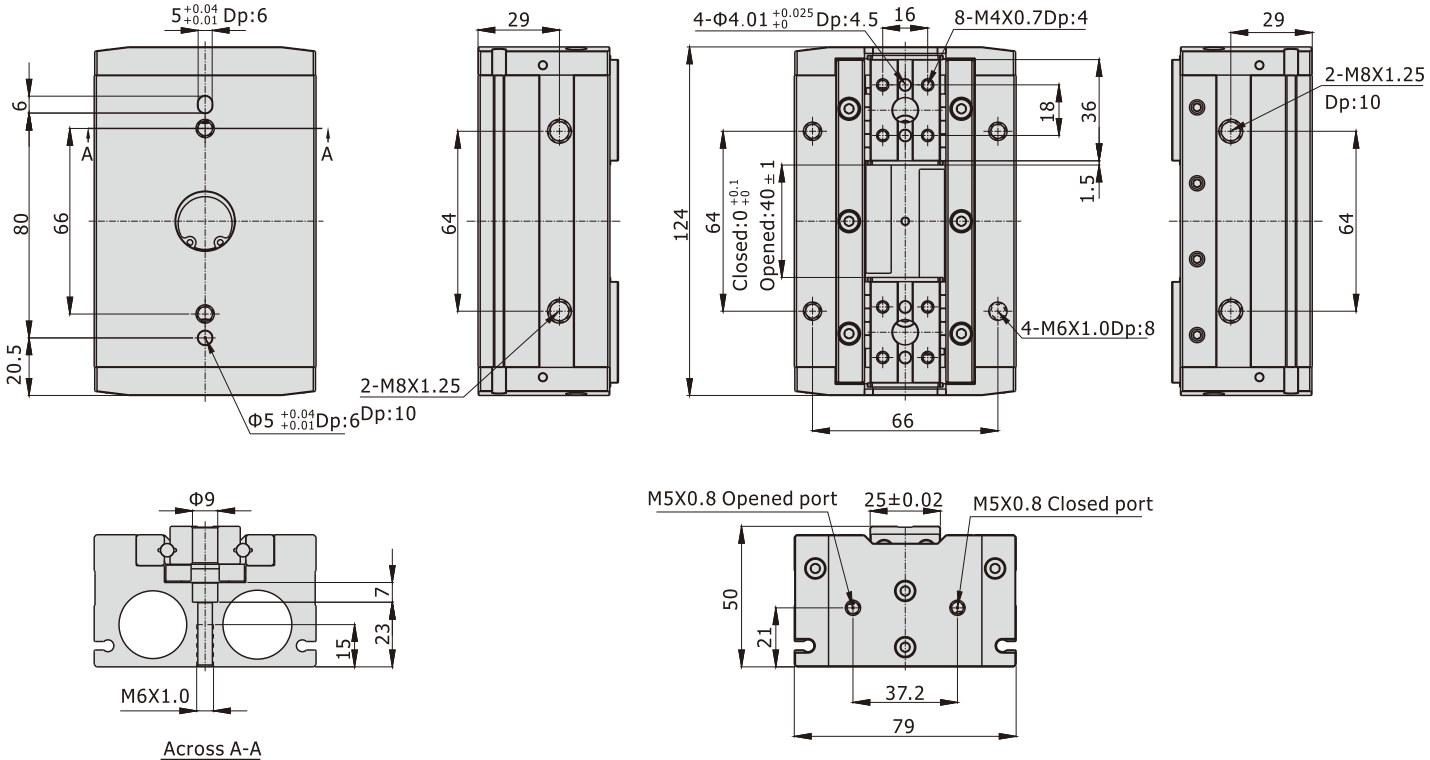

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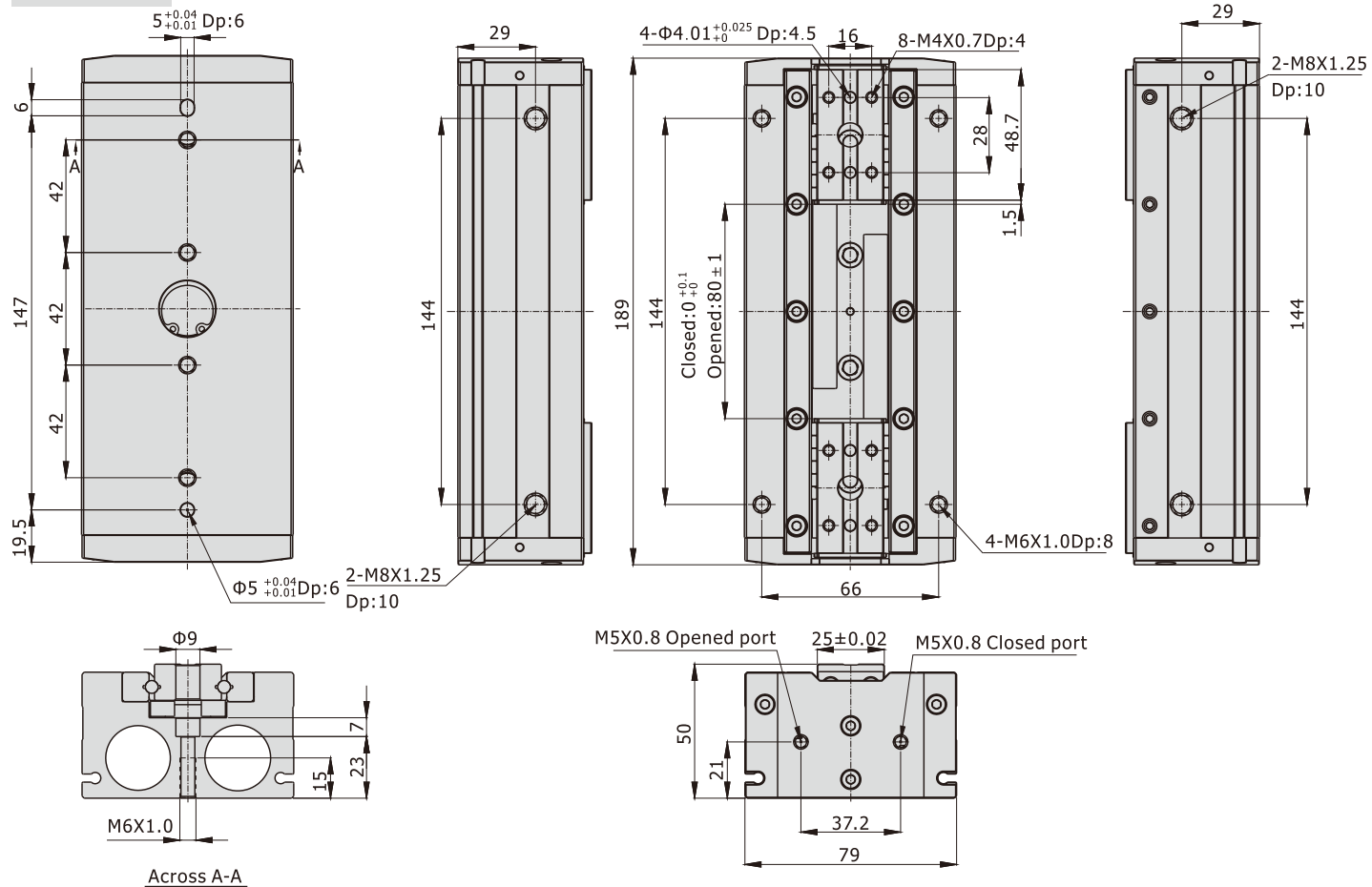


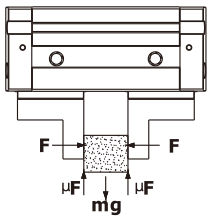
How to select product

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.

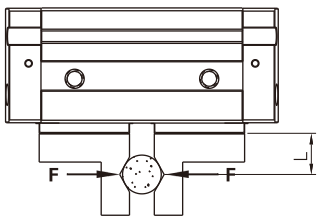


The work-pieces as shown in the left :		μ =0.2	μ =0.1
n: Number of gripping F: Gripping force (N) μ: friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity (=9.8m/s²)	The condition that the work-pieces won't drop is: n×μF>mg so: $F>\frac{mg}{n\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{n\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$ 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

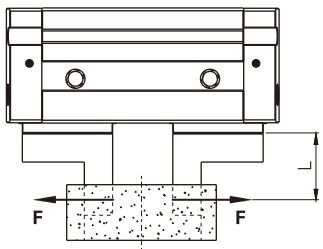
Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

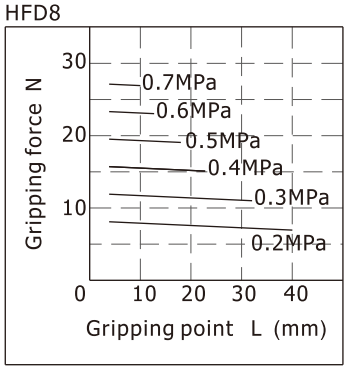
Closed gripping force



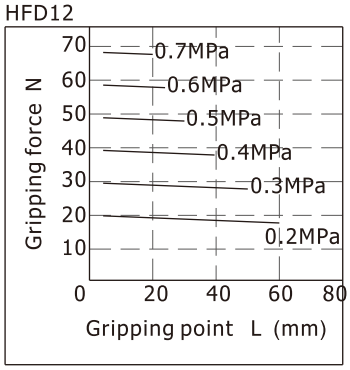
Opened gripping force



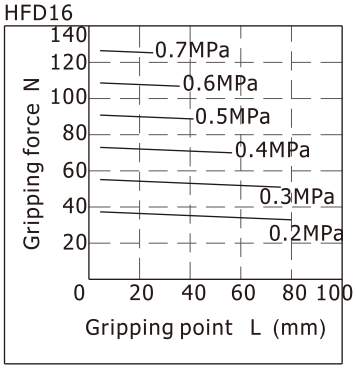
HFD8



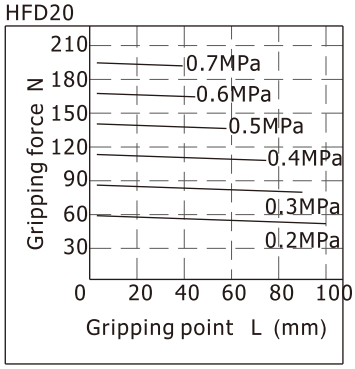
HFD12



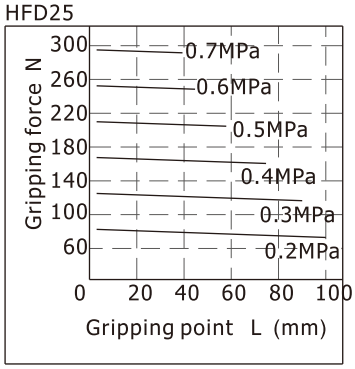
HFD16



HFD20



HFD25

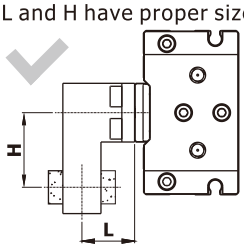


2. The selection of the gripping point

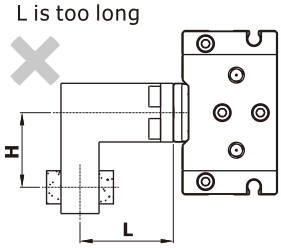
2.1) Please select the gripping point within the limited field shown below.

Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.

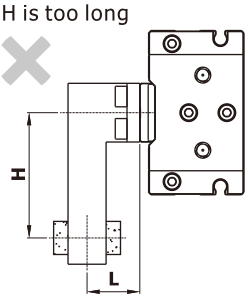
L and H have proper sizes



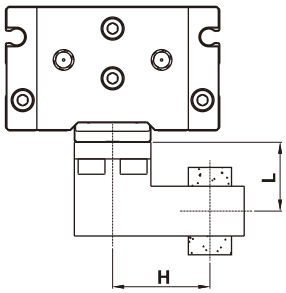
L is too long



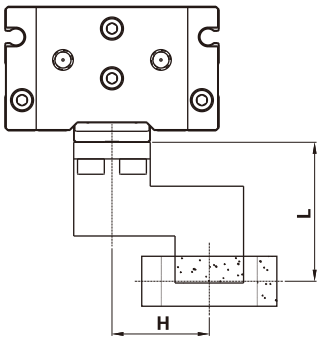
H is too long



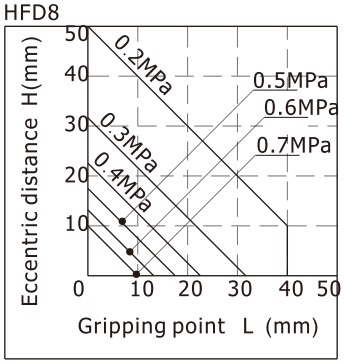
The range of the closed gripping points



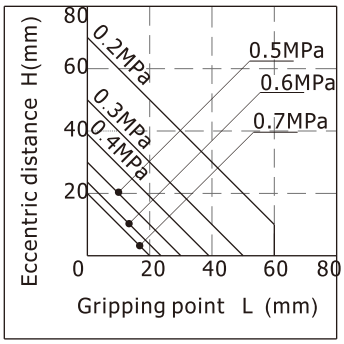
The range of the Opened clamping point



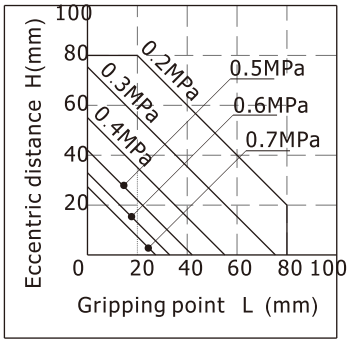
HFD8



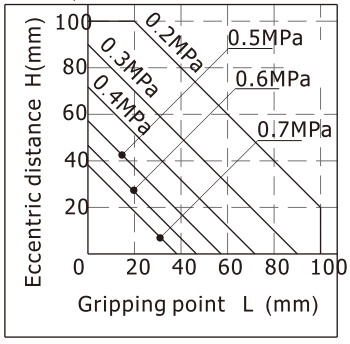
HFD12



HFD16

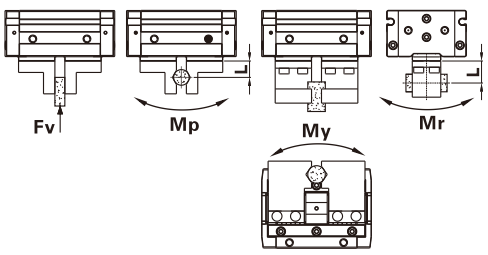


HFD20/HFD25



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.



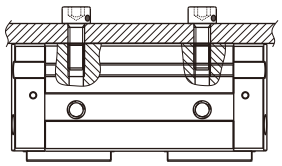
[Note]
The loads and torque values of said are all static values.
L=Distance to load point(mm)。

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

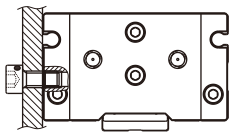
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external 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



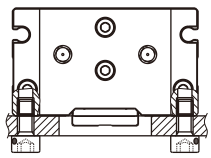
Bore size	The bolts type	Max. locking moment (N.m)	Max. screwed depth (mm)
8	M3×0.5	0.95	6
12	M4×0.7	2.2	8
16	M5×0.8	4.5	10
20	M6×1.0	7.8	15
25	M6×1.0	7.8	15

Side installation type



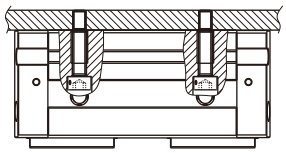
Bore size	The bolts type	Max. locking moment (N.m)	Max. screwed depth (mm)
8	M3×0.5	0.63	4
12	M4×0.7	1.5	5
16	M5×0.8	3	5.5
20	M6×1.0	5.2	8
25	M8×1.25	12	10

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

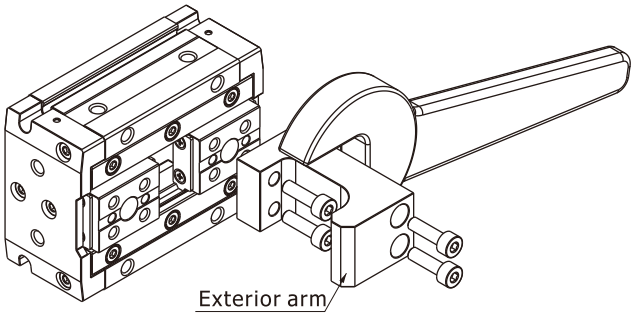
Front installation type



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

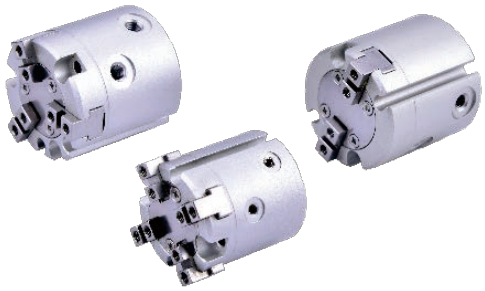
7. The installation method of the gripping jaw fittings
When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.

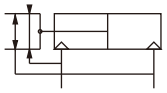
Bore size	The bolts type	Max. locking moment (N.m)
8	M2.5×0.45	0.36
12	M3×0.5	0.63
16	M4×0.7	1.5
20	M4×0.7	1.5
25	M4×0.7	1.5



Air gripper——HFC Series

Parallel open/close style



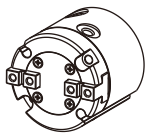
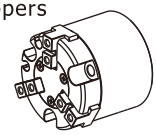
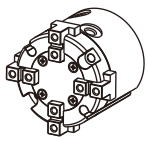


Ordering code

HFC Y 20

1 2 3

① Model
HFC: Air finger (Double acting, parallel type)

② Finger type	
I: Two grippers 	Y: Three grippers 
X: Four grippers 	

③ Bore size
16 20 25 32 40 50 63

HFC series are all attached with magnet.

Product feature

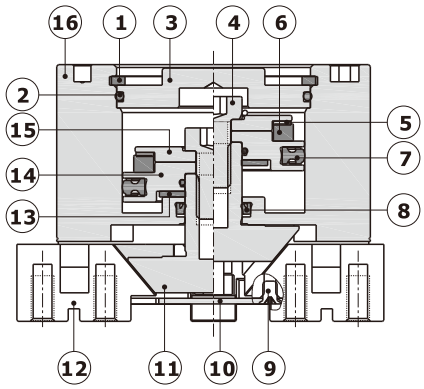
1. Cuniform block is adopted in the interior of the air gripper to afford larger gripper force.
2. The bumper is adopted in the front of piston, which can reduce the noise of metal bump.
3. A positioning hole is attached to the bottom of the body, which can improve the precision and the consistency of 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.

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	28~100psi(0.2~0.7MPa)			22~100psi(0.15~0.7MPa)			
Temperature	-10~60℃						
Lubrication	Not required						
Repeatability mm	±0.01						
Max. frequency	120(c.p.m)			60(c.p.m)			
Sensor switches	CMSH / DMSH(S)						
Port size	M3×0.5	M5×0.8					

[Note] Sensor switch should be ordered additionally.

Inner structure



NO.	Item	NO.	Item
1	C clip	9	Countersink screw
2	O-ring	10	Cover blank
3	Back cover	11	Piston rod
4	Screw	12	Gripper
5	Magnet washer	13	Bumper
6	Magnet	14	Piston
7	Piston seal	15	Magnet holder
8	Rod packing	16	Body

HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

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

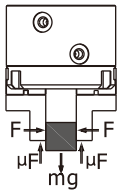
Note) The gripping force in the above table is in the working pressure of 75psi, and with a gripping point of L=20mm(Φ16~Φ25) or L=30mm(Φ32~Φ63).
Add) Please refer to page 417 for the definition of "L".

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: $n \times \mu F > mg$ 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.

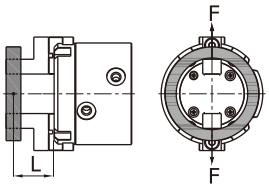
Air gripper(parallel open/close style)

AirTAC

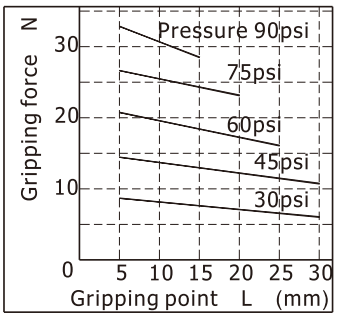
HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

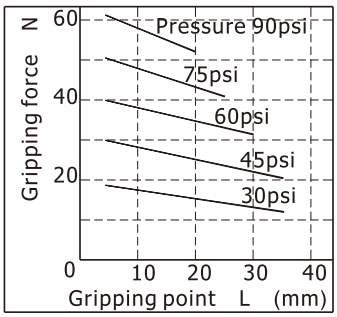
Opened gripping force(I Type)



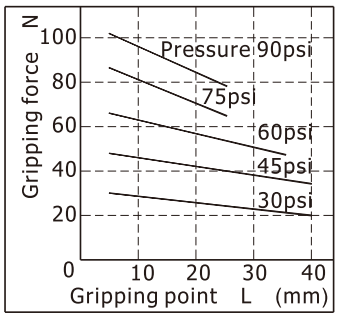
HFCI16



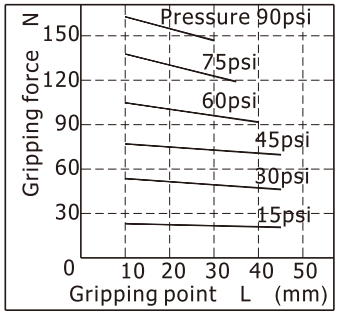
HFCI20



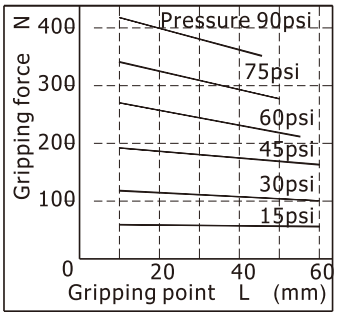
HFCI25



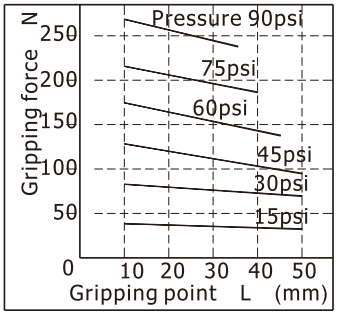
HFCI32



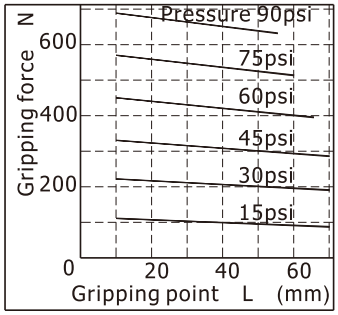
HFCI50



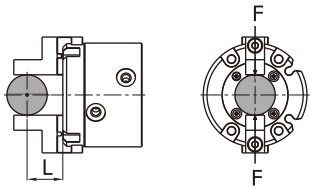
HFCI40



HFCI63



Closed gripping force(I Type)



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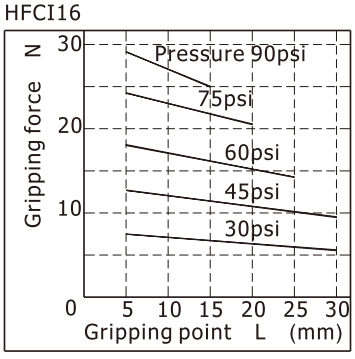
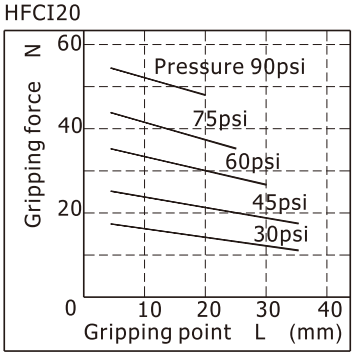
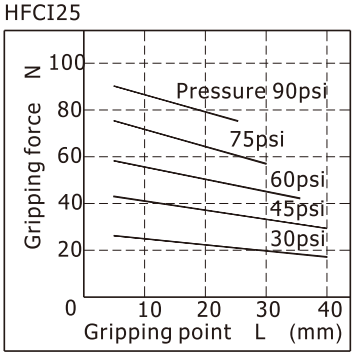


HFCI20



HFCI25



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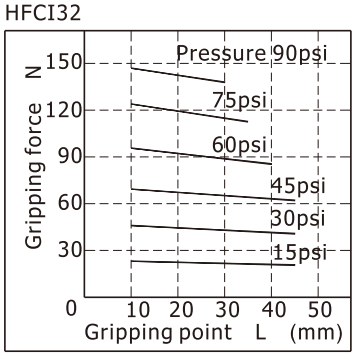
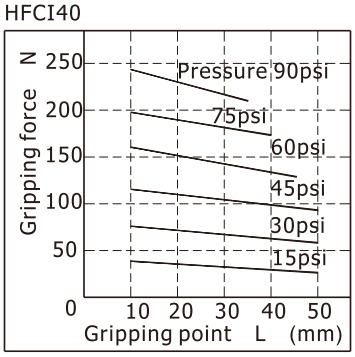
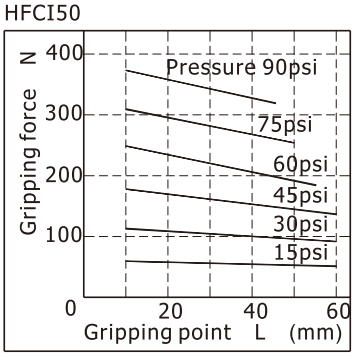


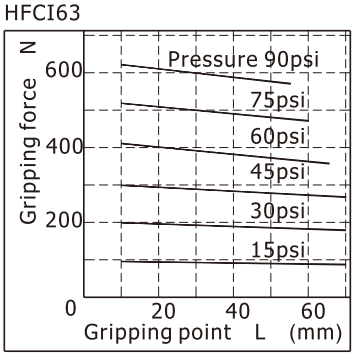
HFCI40



HFCI50



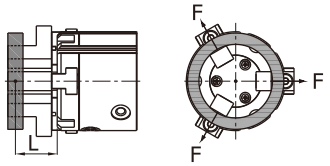
HFCI63



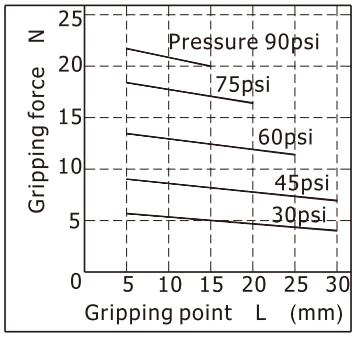
HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

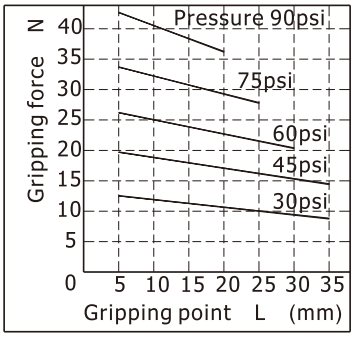
Opened gripping force(Y Type)



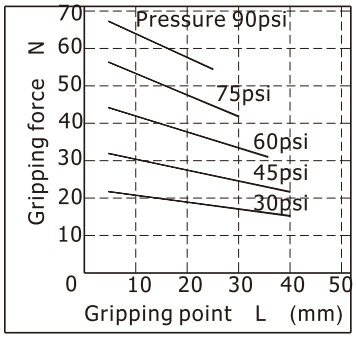
HFCY16



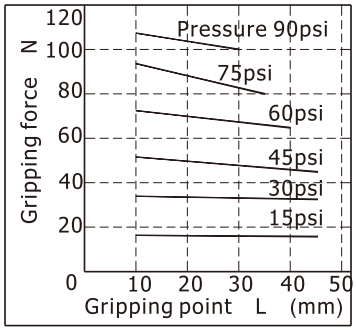
HFCY20



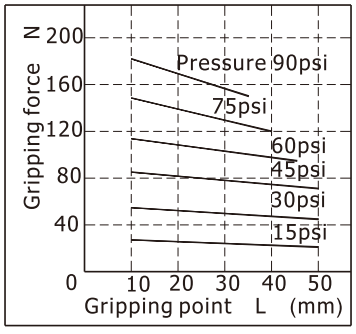
HFCY25



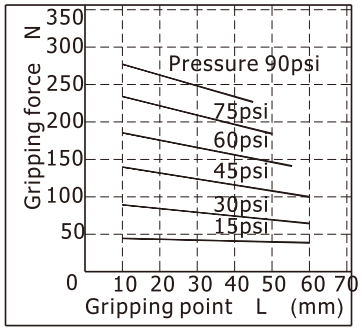
HFCY32



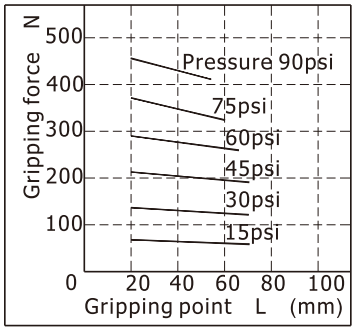
HFCY40



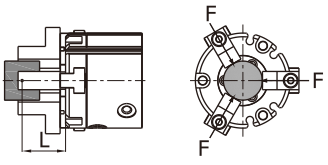
HFCY50



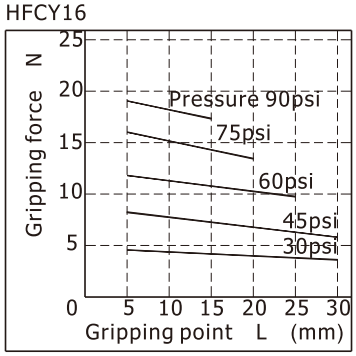
HFCY63



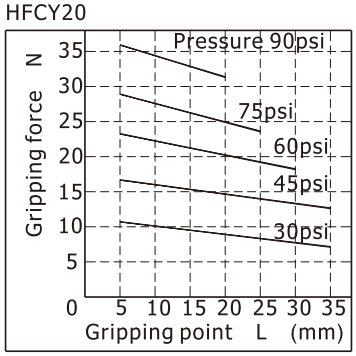
Closed gripping force(Y Type)



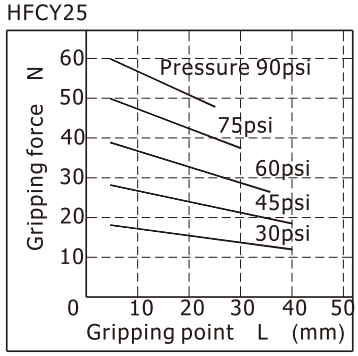
HFCY16



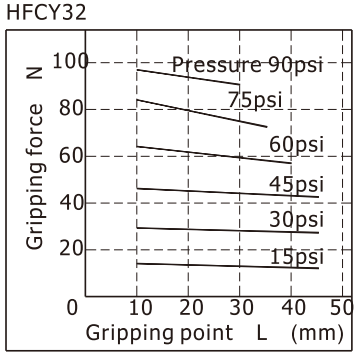
HFCY20



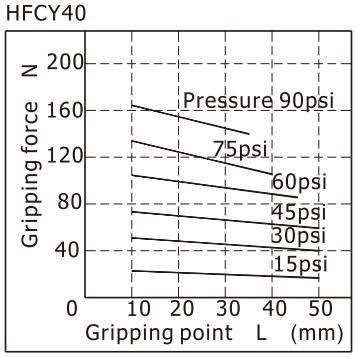
HFCY25



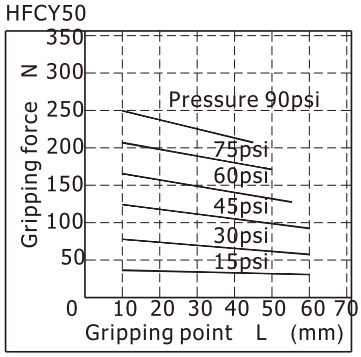
HFCY32



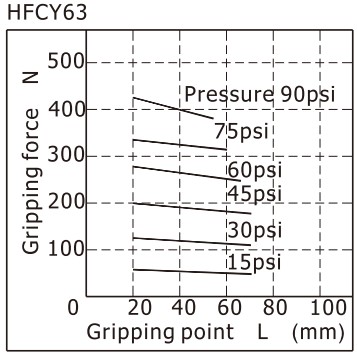
HFCY40



HFCY50



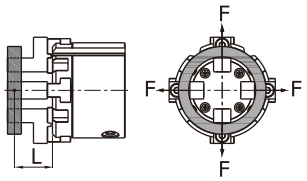
HFCY63



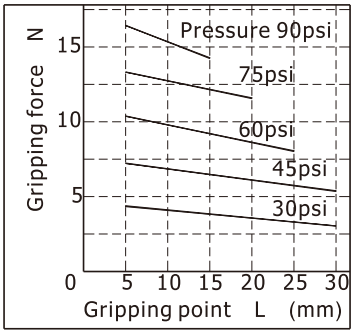
HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

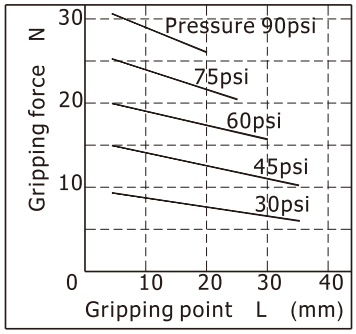
Opened gripping force(X Type)



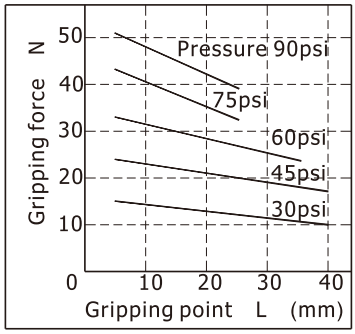
HFCX16



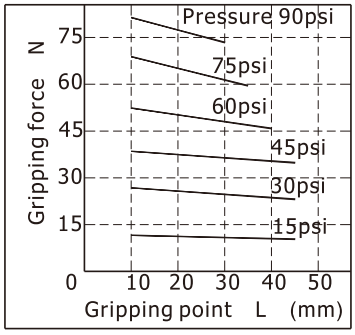
HFCX20



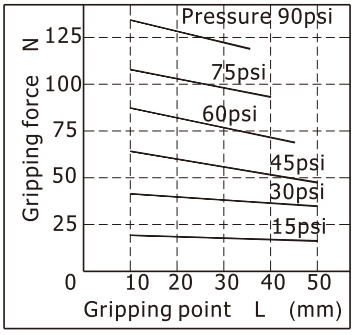
HFCX25



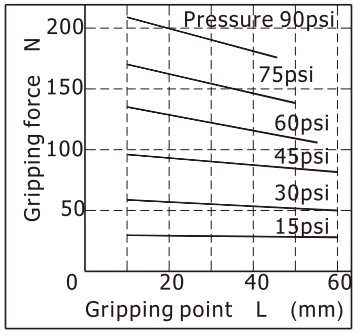
HFCX32



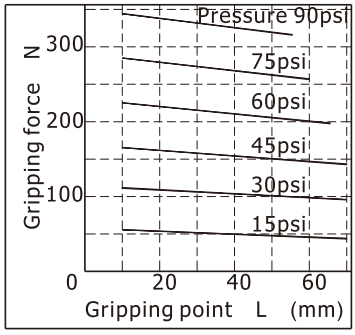
HFCX40



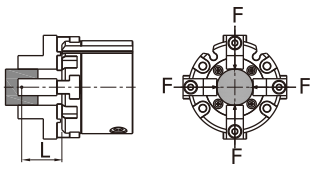
HFCX50



HFCX63



Closed gripping force(X Type)



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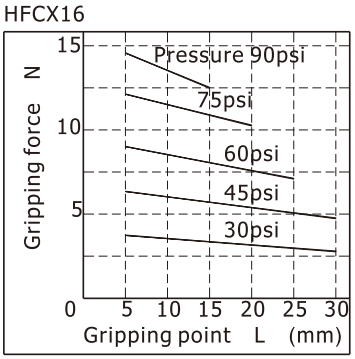
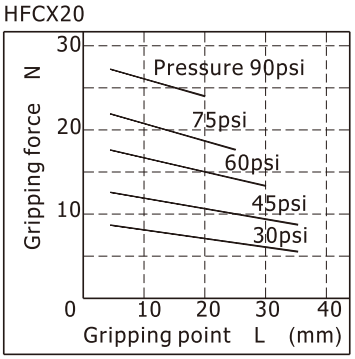
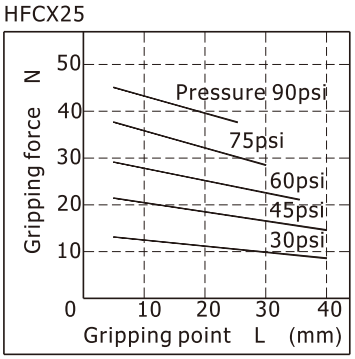


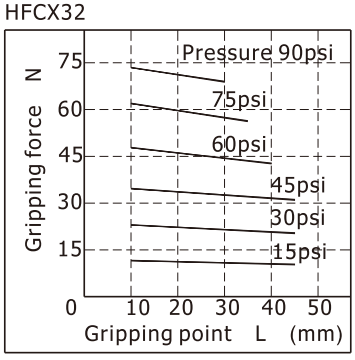
HFCX20



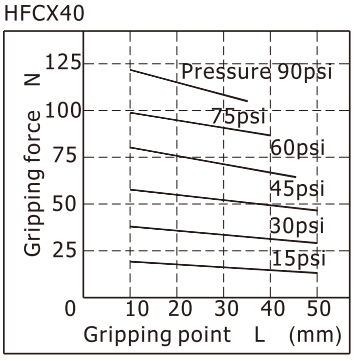
HFCX25



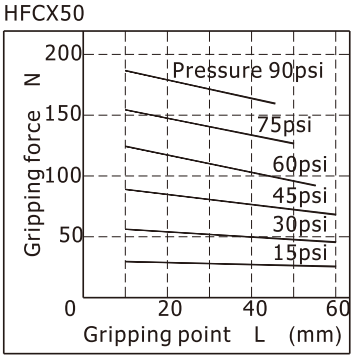
HFCX32



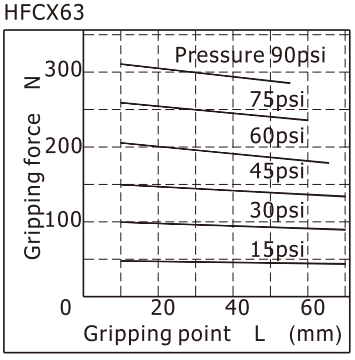
HFCX40



HFCX50



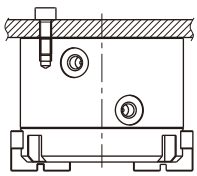
HFCX63



Installation and application

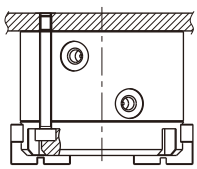
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external 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	$\Phi17^{+0.05}_{0}$	1.5
	20	M4×0.7	2.1	8	$\Phi21^{+0.05}_{0}$	1.5
	25	M4×0.7	2.1	8	$\Phi26^{+0.05}_{0}$	1.5
	32	M5×0.8	4.3	10	$\Phi34^{+0.05}_{0}$	2
	40	M6×1.0	7.3	12	$\Phi42^{+0.05}_{0}$	2
	50	M6×1.0	7.3	12	$\Phi52^{+0.05}_{0}$	2
	63	M6×1.0	7.3	12	$\Phi65^{+0.05}_{0}$	2.5
HFCY	16	M3×0.5	0.88	6	$\Phi17^{+0.05}_{0}$	1.5
	20	M3×0.5	0.88	6	$\Phi21^{+0.05}_{0}$	1.5
	25	M4×0.7	2.1	8	$\Phi26^{+0.05}_{0}$	1.5
	32	M4×0.7	2.1	8	$\Phi34^{+0.05}_{0}$	2
	40	M5×0.8	4.3	10	$\Phi42^{+0.05}_{0}$	2
	50	M5×0.8	4.3	10	$\Phi52^{+0.05}_{0}$	2
	63	M6×1.0	7.3	12	$\Phi65^{+0.05}_{0}$	2.5

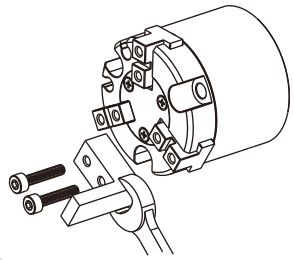
The installation of the front through hole



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

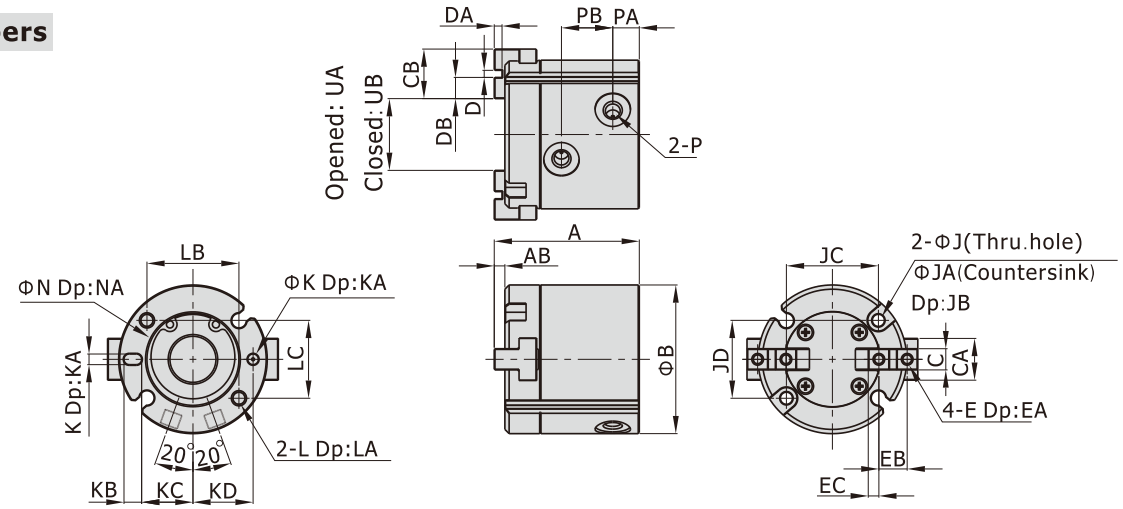
HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

Dimensions

Two grippers

Φ16~Φ25

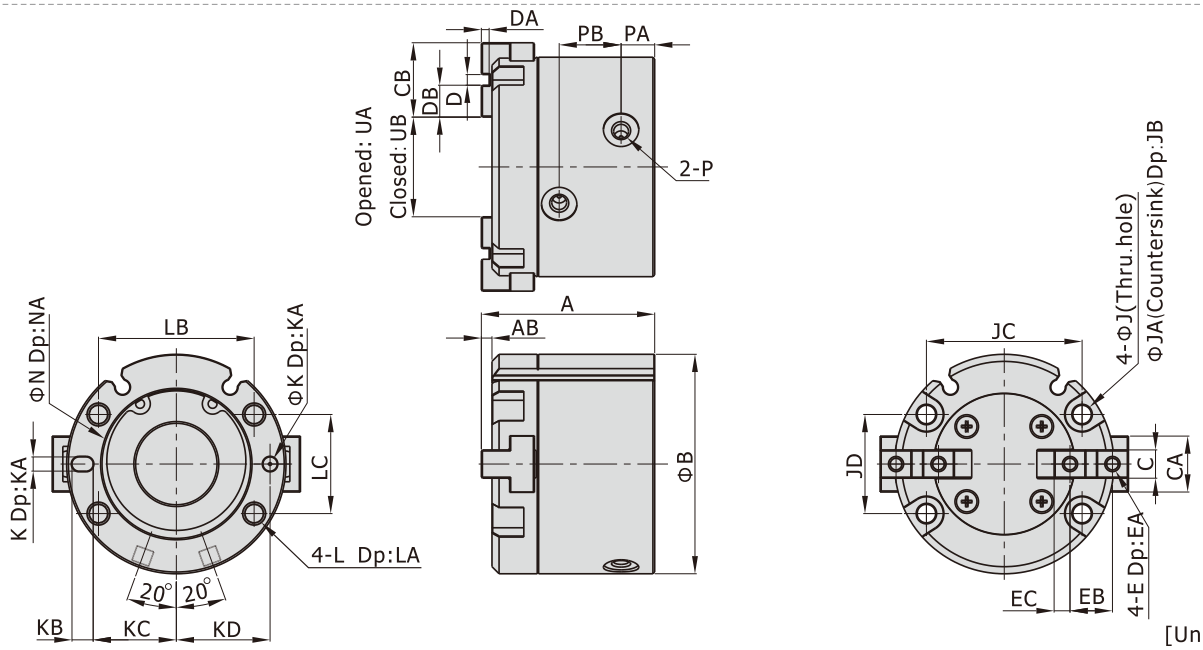


[Unit: mm]

Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	JD
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	6	2	3.4	6	6	18	16
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	7	2.5	3.4	6	6	24	18
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	8	3	3.4	6	6	26	22

Model\Item	K	KA	KB	KC	KD	L	LA	LB	LC	N	NA	P	PA	PB	UA	UB
HFCI16	$2^{+0.04}_{+0.01}$	2	3	11	12.5	M4×0.7	8	18	16	$17^{+0.05}_{0}$	1.5	M3×0.5	7	10	14	10
HFCI20	$2^{+0.04}_{+0.01}$	2	3	13	14.5	M4×0.7	8	24	18	$21^{+0.05}_{0}$	1.5	M5×0.8	7	13	16	12
HFCI25	$3^{+0.04}_{+0.01}$	3	5	14.5	17	M4×0.7	8	26	22	$26^{+0.05}_{0}$	1.5	M5×0.8	7.5	14.5	20	14

Φ32~Φ63



[Unit: mm]

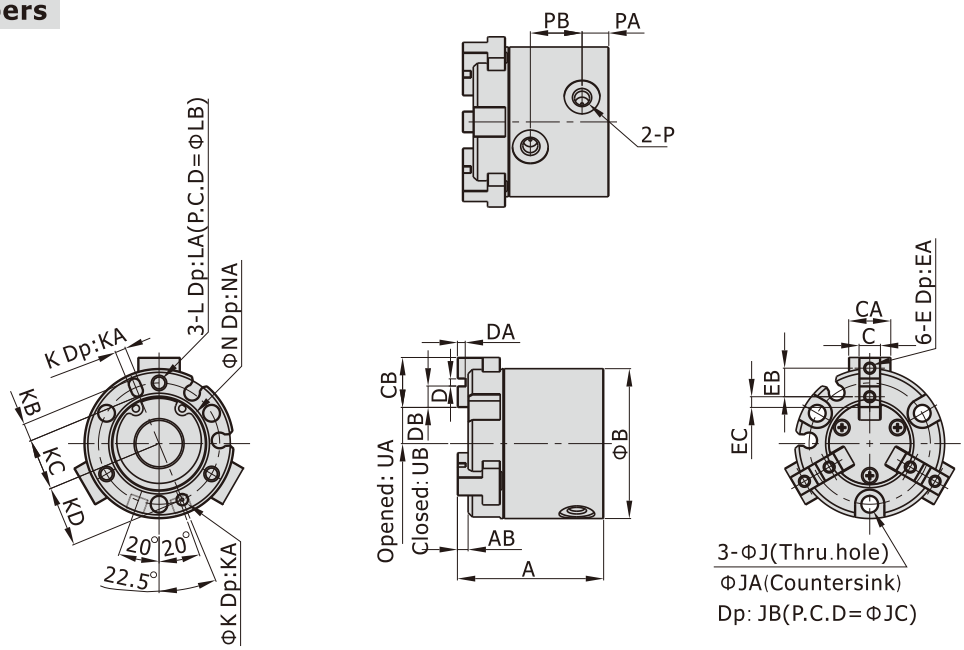
Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	JD
HFCI32	45	3	55	$8^{-0.01}_{-0.03}$	14	20	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8	11	4.5	4.2	8	9	38	25
HFCI40	49	3	62	$8^{-0.01}_{-0.03}$	16	21	$3^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8	12	4.5	5.2	9.5	9	44	28
HFCI50	57	3	70	$10^{-0.01}_{-0.03}$	18	24	$4^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	10	M5×0.8	9	14	5	5.2	9.5	12	52	34
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	17	5.5	5.2	9.5	14	66	38

Model\Item	K	KA	KB	KC	KD	L	LA	LB	LC	N	NA	P	PA	PB	UA	UB
HFCI32	$3^{+0.04}_{+0.01}$	3	5	20.5	23	M5×0.8	10	38	25	$34^{+0.05}_{0}$	2	M5×0.8	8.5	16	24	16
HFCI40	$4^{+0.04}_{+0.01}$	4	6	23.5	26.5	M6×1.0	12	44	28	$42^{+0.05}_{0}$	2	M5×0.8	9.5	17.5	28	20
HFCI50	$4^{+0.04}_{+0.01}$	4	6	28	31	M6×1.0	12	52	34	$52^{+0.05}_{0}$	2	M5×0.8	9.5	21	34	22
HFCI63	$5^{+0.04}_{+0.01}$	5	7	34.5	38	M6×1.0	12	66	38	$65^{+0.05}_{0}$	2.5	M5×0.8	12	24	46	30

HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

Three grippers



[Unit: mm]

Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC
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	6	2	3.4	6	6	25
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	7	2.5	3.4	6	6	29
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	8	3	4.5	8	9	34
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	11	4.5	4.5	8	9	44
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	12	4.5	5.5	9.5	9	53
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	14	5	5.5	9.5	12	62
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	17	5.5	6.6	11	14	76

Model\Item	K	KA	KB	KC	KD	L	LA	LB	N	NA	P	PA	PB	UA	UB
HFCY16	$2^{+0.04}_{+0.01}$	2	3	11	12.5	M3×0.5	6	25	$17^{+0.05}_{0}$	1.5	M3×0.5	7	10	7	5
HFCY20	$2^{+0.04}_{+0.01}$	2	3	13	14.5	M3×0.5	6	29	$21^{+0.05}_{0}$	1.5	M5×0.8	7	13	8	6
HFCY25	$3^{+0.04}_{+0.01}$	3	5	14.5	17	M4×0.7	8	34	$26^{+0.05}_{0}$	1.5	M5×0.8	7.5	14.5	10	7
HFCY32	$3^{+0.04}_{+0.01}$	3	5	19.5	22	M4×0.7	8	44	$34^{+0.05}_{0}$	2	M5×0.8	8.5	16	12	8
HFCY40	$4^{+0.04}_{+0.01}$	4	6	23.5	26.5	M5×0.8	10	53	$42^{+0.05}_{0}$	2	M5×0.8	9.5	17.5	14	10
HFCY50	$4^{+0.04}_{+0.01}$	4	6	28	31	M5×0.8	10	62	$52^{+0.05}_{0}$	2	M5×0.8	9.5	21	17	11
HFCY63	$5^{+0.04}_{+0.01}$	5	7	34.5	38	M6×1.0	12	76	$65^{+0.05}_{0}$	2.5	M5×0.8	12	24	23	15

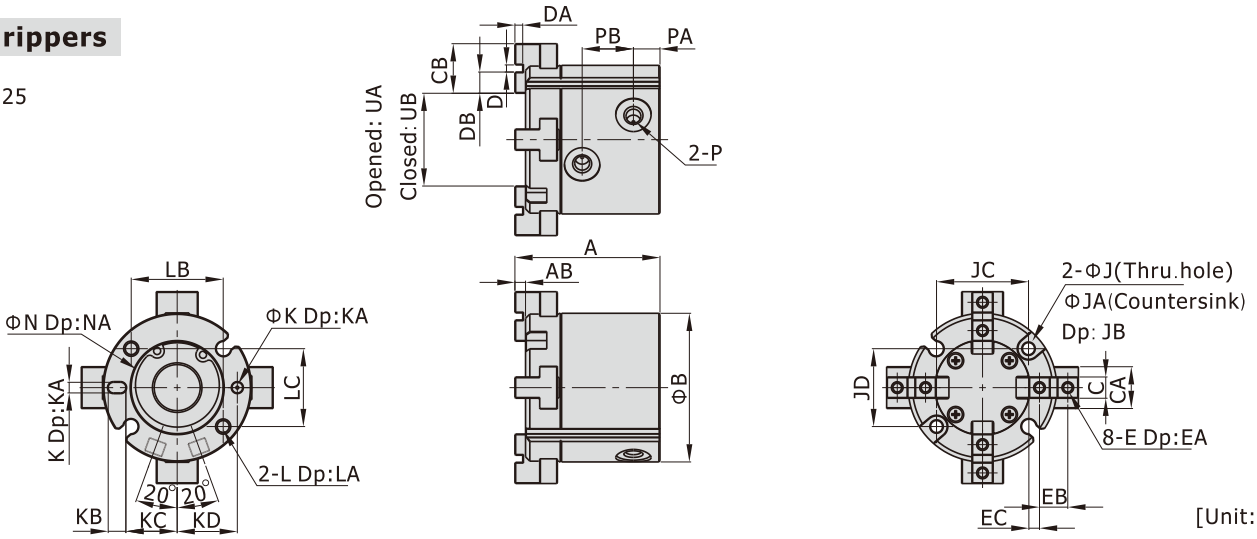
Air gripper(parallel open/close style)

HFC Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

Four grippers

Φ16~Φ25

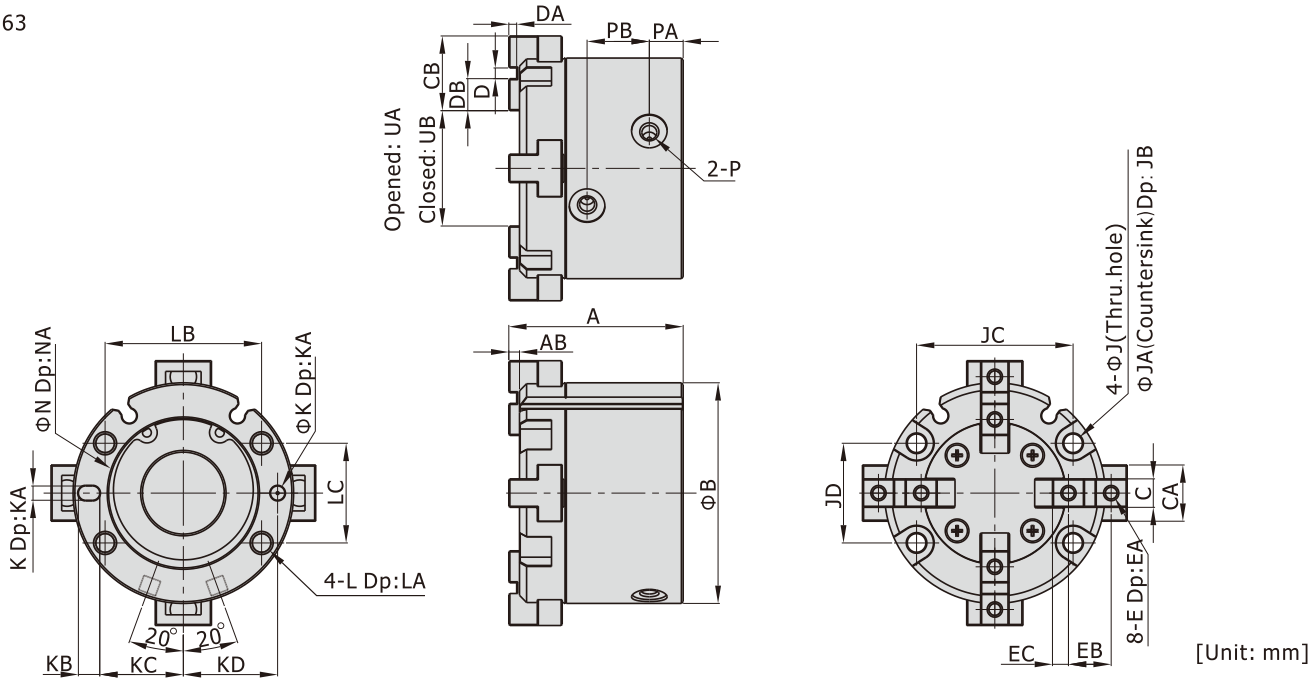


[Unit: mm]

Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	JD
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	6	2	3.4	6	6	18	16
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	7	2.5	3.4	6	6	24	18
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	8	3	3.4	6	6	26	22

Model\Item	K	KA	KB	KC	KD	L	LA	LB	LC	N	NA	P	PA	PB	UA	UB
HFCX16	$2^{+0.05}_{0}$	2	3	11	12.5	M4×0.7	8	18	16	$17^{+0.05}_{0}$	1.5	M3×0.5	7	10	17	13
HFCX20	$2^{+0.05}_{0}$	2	3	13	14.5	M4×0.7	8	24	18	$21^{+0.05}_{0}$	1.5	M5×0.8	7	13	19	15
HFCX25	$3^{+0.05}_{0}$	3	5	14.5	17	M4×0.7	8	26	22	$26^{+0.05}_{0}$	1.5	M5×0.8	7.5	14.5	26	20

Φ32~Φ63



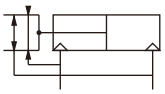
[Unit: mm]

Model\Item	A	AB	B	C	CA	CB	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	JD
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	11	4.5	4.2	8	9	38	25
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	12	4.5	5.2	9.5	9	44	28
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	14	5	5.2	9.5	12	52	34
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	17	5.5	5.2	9.5	14	66	38

Model\Item	K	KA	KB	KC	KD	L	LA	LB	LC	N	NA	P	PA	PB	UA	UB
HFCX32	$3^{+0.04}_{+0.01}$	3	5	20.5	23	M5×0.8	10	38	25	$34^{+0.05}_{0}$	2	M5×0.8	8.5	16	28	20
HFCX40	$4^{+0.04}_{+0.01}$	4	6	23.5	26.5	M6×1.0	12	44	28	$42^{+0.05}_{0}$	2	M5×0.8	9.5	17.5	32	24
HFCX50	$4^{+0.04}_{+0.01}$	4	6	28	31	M6×1.0	12	52	34	$52^{+0.05}_{0}$	2	M5×0.8	9.5	21	38	26
HFCX63	$5^{+0.04}_{+0.01}$	5	7	34.5	38	M6×1.0	12	66	38	$65^{+0.05}_{0}$	2.5	M5×0.8	12	24	51	35

Air gripper——HFCQ Series

Parallel open/close hollow style



Ordering code

HFCQ 20 E

① ② ③

① Model	② Bore size	③ Push 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

HFCQ series are all attached with magnet.

[Note] The push rod mechanism can only be used with Φ32/Φ40/Φ50/Φ63.

Push rod mechanism **F-HFCQ 32 E**

① ② ③

① Model	② Bore size	③ Push 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

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	28~100psi(0.2~0.7MPa)			22~100psi(0.15~0.7MPa)			
Temperature	-20~70℃						
Lubrication	Not required						
Repeatability mm	±0.01						
Max. frequency	120(c.p.m)			60(c.p.m)			
Sensor switches	DMSH(S)						
Port size	M3×0.5	M5×0.8					
Hollow diameter	$\Phi 3^{+0.04}_{+0}$	$\Phi 3^{+0.04}_{+0}$	$\Phi 4^{+0.048}_{+0}$	$\Phi 6^{+0.04}_{+0}$	$\Phi 10^{+0.058}_{+0}$	$\Phi 12^{+0.07}_{+0}$	$\Phi 16^{+0.07}_{+0}$
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.

HFCQ Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

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	28~100psi(0.2~0.7MPa)	22~100psi(0.15~0.7MPa)		
Temperature	-20~70 ℃			
Lubrication	Not required			
Push stroke mm	7	8	14	15
Max. frequency	60(c.p.m)			
Sensor switches	DMSH(S)			
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

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 75psi,
and with a gripping point of L=20mm(Φ16~Φ25) or L=30mm(Φ32~Φ63).
Add) Please refer to page 430 for the definition of "L".

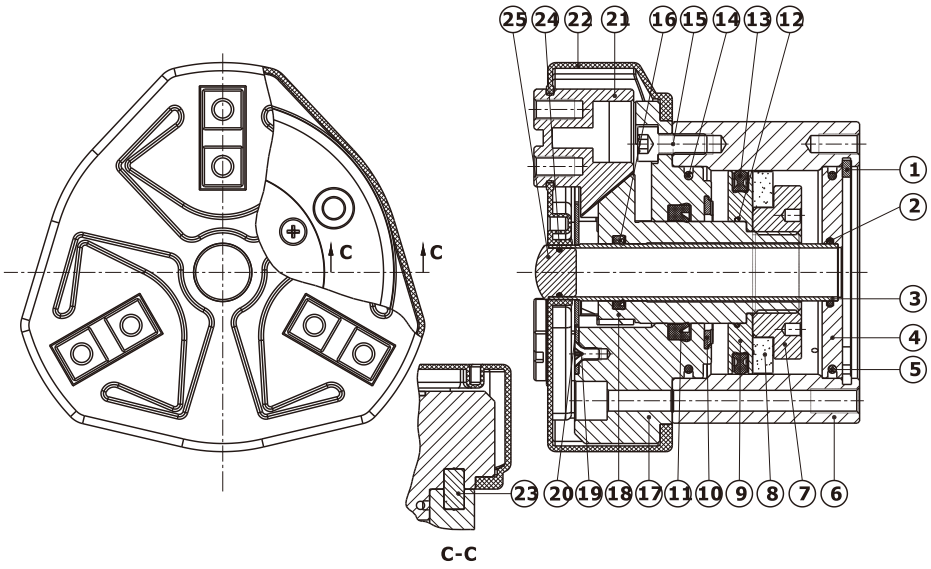
Air gripper(parallel open/close hollow style)

HFCQ Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

Inner structure

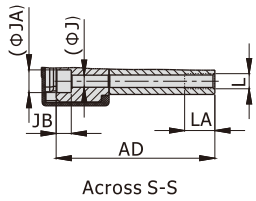
HFCQ32~63

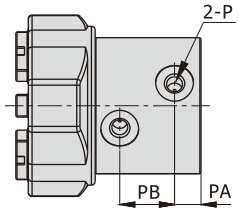


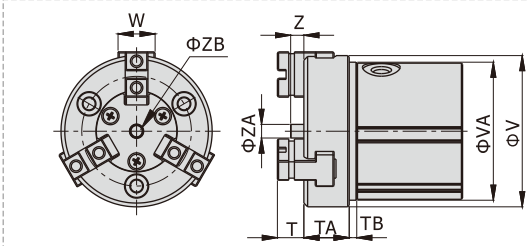
NO.	Item	NO.	Item
1	C clip	14	O-ring
2	O-ring	15	Countersink screw
3	Hollow tube	16	Rod packing
4	Back cover	17	Front cover
5	O-ring	18	Piston rod
6	Body	19	Screw
7	Magnet holder	20	Cover blank
8	Magnet	21	Jaw
9	Piston	22	Dustproof cover
10	Bumper	23	Pin
11	Rod packing	24	O-ring
12	O-ring	25	Dustproof pluger
13	Piston seal		

Dimensions

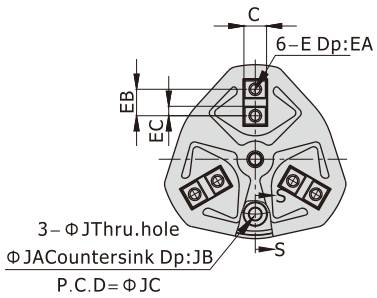
HFCQ16~25

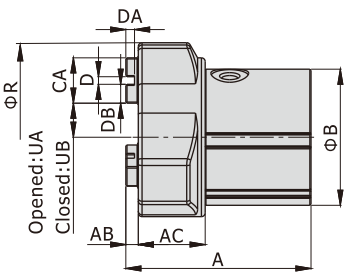


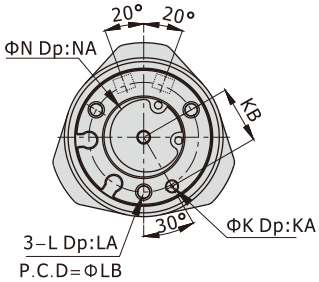




Dimensions of unused dust cover.
Other dimensions are the same as standard(used dust cover)







[Unit: mm]

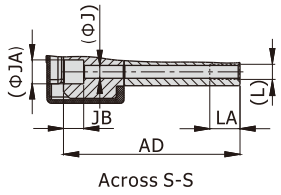
Bore size\Item	A	AB	AC	AD	B	C	CA	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	K	KA	KB	L
16	46	3	16	39	31	$5^{-0.01}_{-0.03}$	11	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	4.5	M3×0.5	5	6	2	3.2	6	4	24	$3^{+0.04}_{+0.01}$	3	12	M4×0.7
20	49	3	18	42	36	$6^{-0.01}_{-0.03}$	12	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	5	M3×0.5	5	7	2.5	3.2	6	4	29	$3^{+0.04}_{+0.01}$	3	15	M4×0.7
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

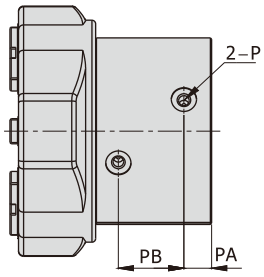
Bore size\Item	LA	LB	N	NA	P	PA	PB	R	UA	UB	T	TA	TB	V	VA	W	Z	ZA	ZB
16	8	24	$17^{+0.05}_{0}$	1.5	M3×0.5	7	14	44	9	7	7	10.5	3	34	31.5	8	3.5	3.7	$3^{+0.04}_{0}$
20	8	29	$21^{+0.05}_{0}$	1.5	M5×0.8	7	14	50	10	8	7	12	3	40	36.5	10	3.5	3.7	$3^{+0.04}_{0}$
25	8	34	$26^{+0.05}_{0}$	1.5	M5×0.8	8	17	59	12.5	9.5	8	13	3	47	42.5	12	4.5	4.7	$4^{+0.048}_{0}$

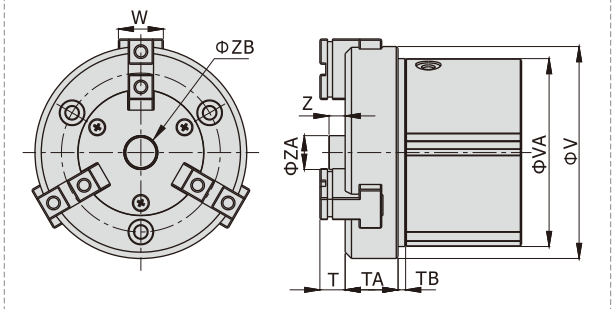
HFCQ Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

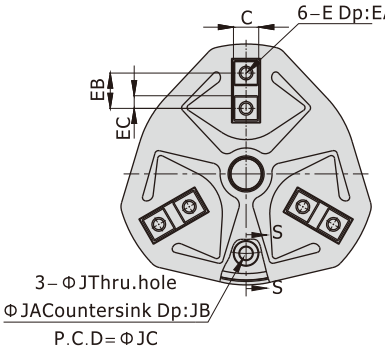
HFCQ32~63

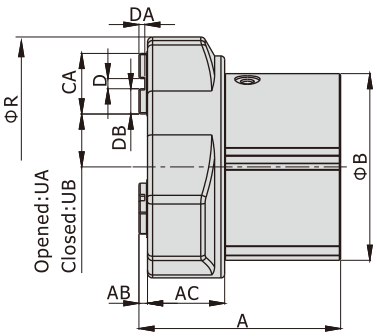


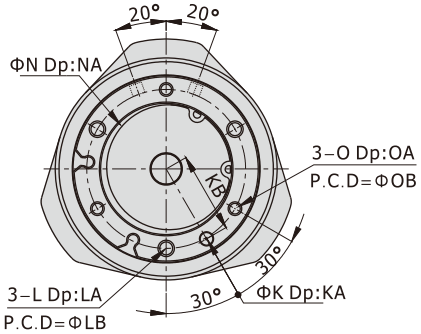




Dimensions of unused dust cover.
Other dimensions are the same as standard(used dust cover)







[Unit: mm]

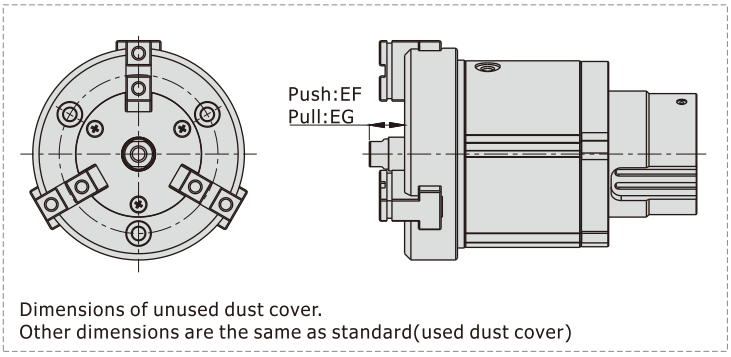
Bore size\Item	A	AB	AC	AD	B	C	CA	D	DA	DB	E	EA	EB	EC	J	JA	JB	JC	K	KA	KB	L
32	63	3	24	54	55	$8^{-0.01}_{-0.03}$	20	$2^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8	11	4.5	4.2	8	7	44	$4^{+0.04}_{+0.01}$	4	22	M5×0.8
40	66	3	26	57	62	$8^{-0.01}_{-0.03}$	21	$3^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	9	M4×0.7	8	12	4.5	4.2	8	7	52	$4^{+0.04}_{+0.01}$	4	26	M5×0.8
50	80	3	31	70	74	$10^{-0.01}_{-0.03}$	24	$4^{+0.04}_{+0.01}$	$2^{+0.2}_{0}$	10	M5×0.8	10	14	5	5.1	9.5	8	63	$5^{+0.04}_{+0.01}$	5	32	M6×1.0
63	91	4	37	79	92	$12^{-0.01}_{-0.03}$	28	$6^{+0.04}_{+0.01}$	$3^{+0.2}_{0}$	11	M5×0.8	10	17	5.5	6.6	11	8	78	$6^{+0.04}_{+0.01}$	6	40	M8×1.25

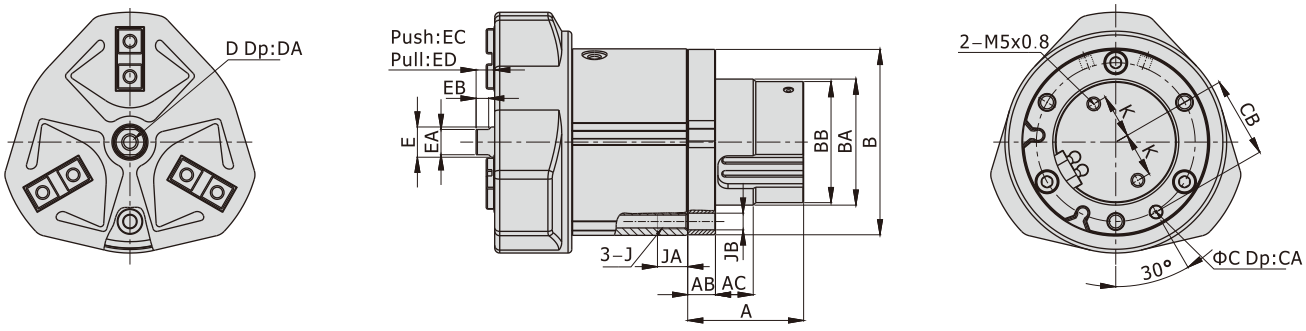
Bore size\Item	LA	LB	N	NA	O	OA	OB	P	PA	PB	R	UA	UB	T	TA	TB	V	VA	W	Z	ZA	ZB
32	10	44	$34^{+0.05}_{0}$	2	M4×0.7	8	44	M5×0.8	10	19	76	15.5	11.5	9	15.5	2.5	62	55.5	14	5	7.4	$6^{+0.048}_{0}$
40	10	52	$42^{+0.05}_{0}$	2	M4×0.7	8	52	M5×0.8	11	19	86	19	15	9	17.5	2.5	72	62.5	16	5	11.4	$10^{+0.058}_{0}$
50	12	63	$52^{+0.05}_{0}$	2	M5×0.8	10	63	M5×0.8	11	26	103	24	18	10	21	3	84	74.5	18	6	13.4	$12^{+0.07}_{0}$
63	16	78	$65^{+0.05}_{0}$	2.5	M6×1.0	12	78	M5×0.8	13	29	125	31	23	12	26	3	102	92.5	24	7	17.4	$16^{+0.07}_{0}$

HFCQ Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

HFCQ32E~63E (With Cylinder push rod mechanism)





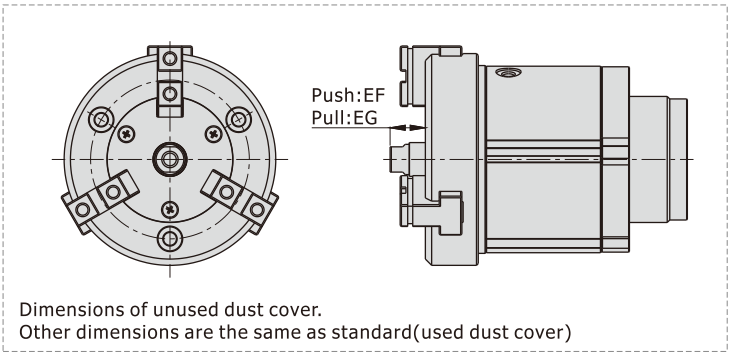
[Unit: mm]

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

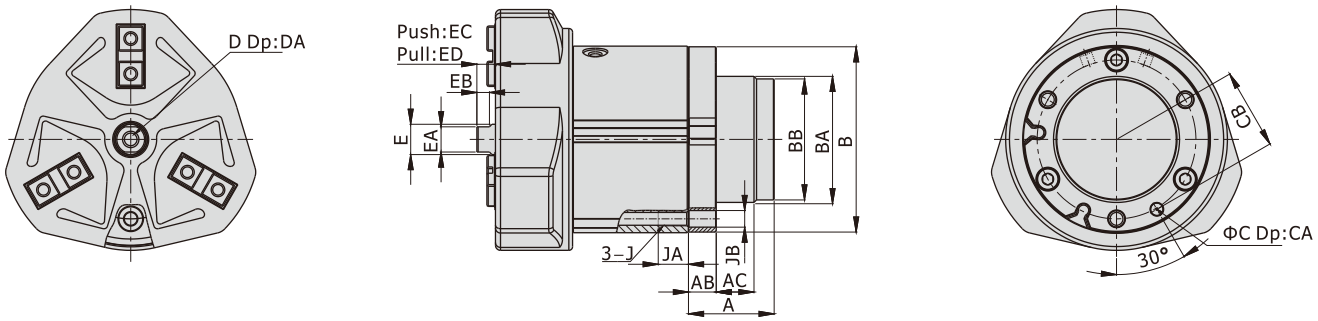
HFCQ Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

HFCQ32V~63V **(With Spring push rod mechanism)**



Dimensions of unused dust cover.
Other dimensions are the same as standard(used dust cover)



[Unit: mm]

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

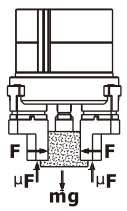
HFCQ Series Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

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**

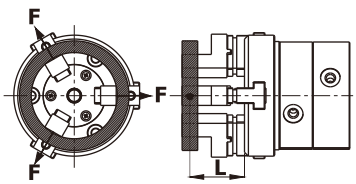
1. The selection of the gripping force
The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

	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 × μ F>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

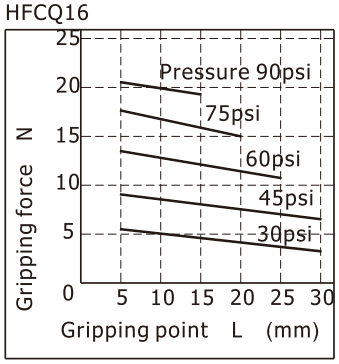
Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

Opened gripping force



HFCQ16



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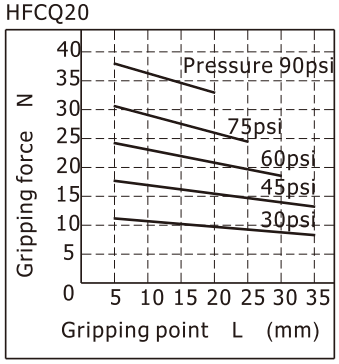

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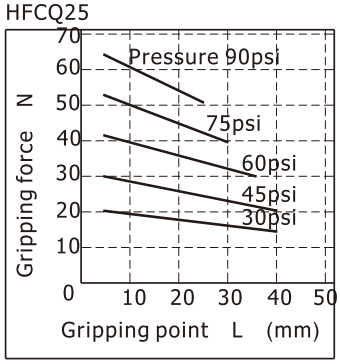

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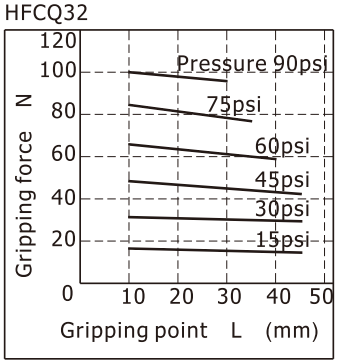

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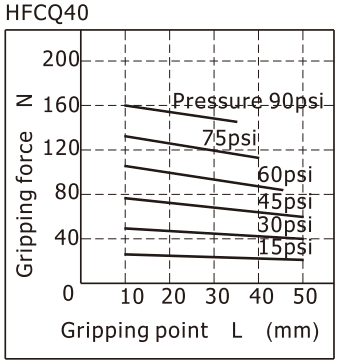

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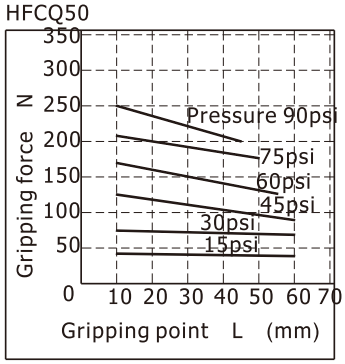
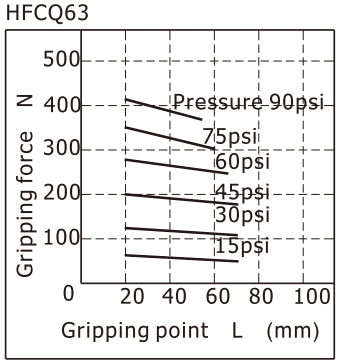


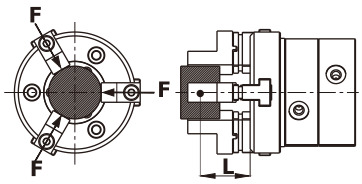
HFCQ63



HFCQ Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

Closed gripping force



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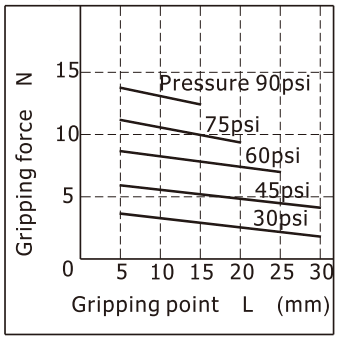
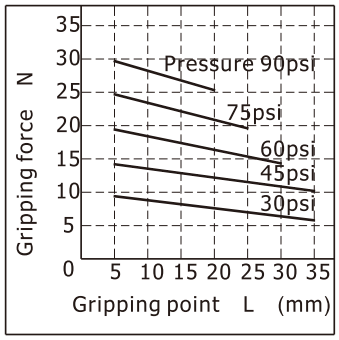
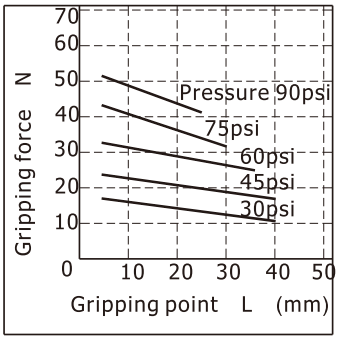


HFCQ20



HFCQ25



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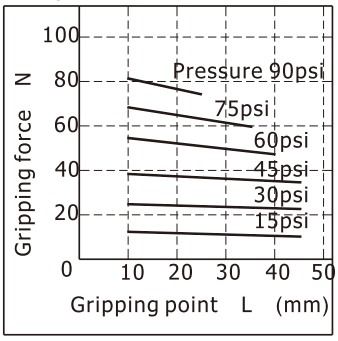

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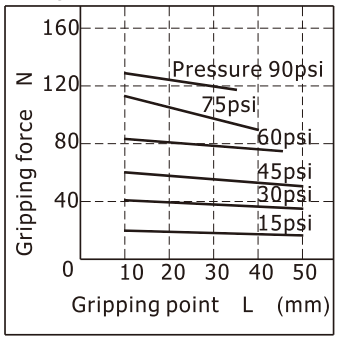

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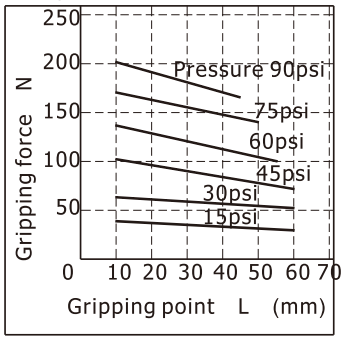

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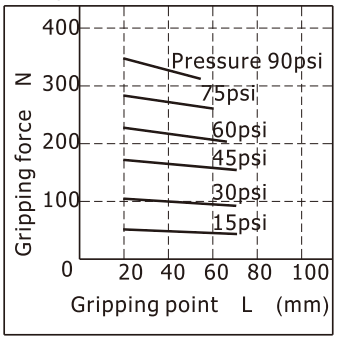
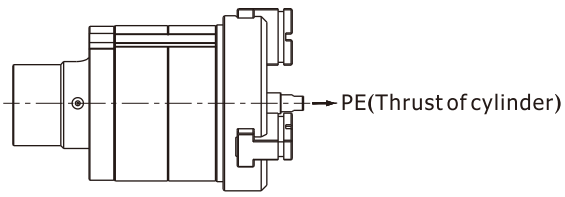
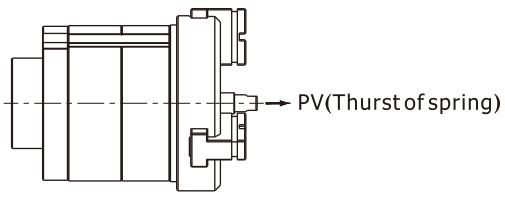


Effective thrust of Push rod mechanism





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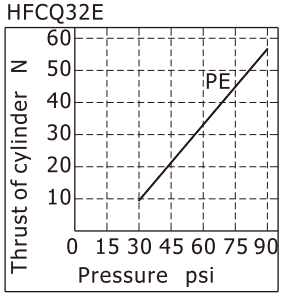

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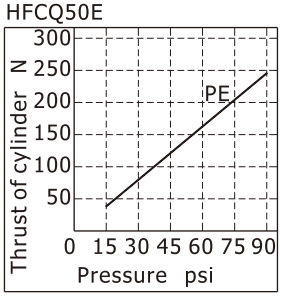
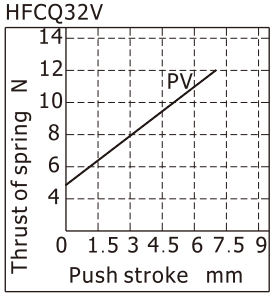


HFCQ32V



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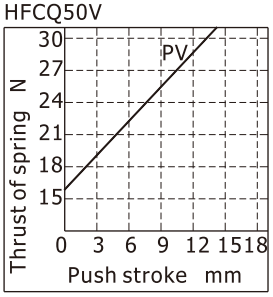

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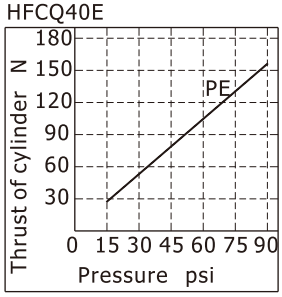

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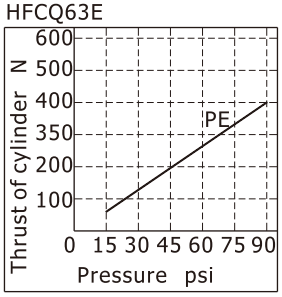

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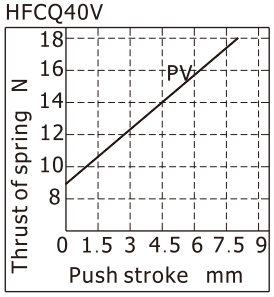

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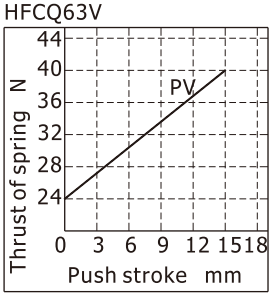


Air gripper(parallel open/close hollow style)

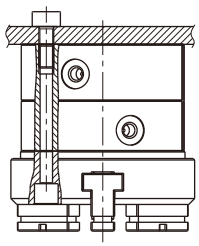
HFCQ Series

Bore size: Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63

Installation and application

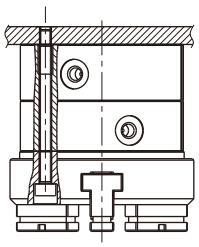
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external 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



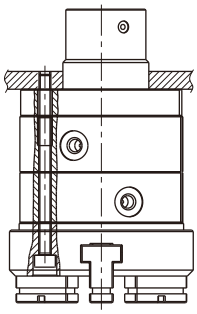
Bore size	The bolts type	Max. locking moment(N.m)	Max. screwed depth(mm)	The aperture of the positioning bore(mm)	The depth of the positioning bore(mm)
16	M4×0.7	2.1	8	$\Phi 17^{+0.05}_{0}$	1.5
20	M4×0.7	2.1	8	$\Phi 21^{+0.05}_{0}$	1.5
25	M4×0.7	2.1	8	$\Phi 26^{+0.05}_{0}$	1.5
32	M4×0.7	2.1	8	$\Phi 34^{+0.05}_{0}$	2
	M5×0.8	4.3	10	$\Phi 34^{+0.05}_{0}$	2
40	M4×0.7	2.1	8	$\Phi 42^{+0.05}_{0}$	2
	M5×0.8	4.3	10	$\Phi 42^{+0.05}_{0}$	2
50	M5×0.8	4.3	10	$\Phi 52^{+0.05}_{0}$	2
	M6×1.0	7.3	12	$\Phi 52^{+0.05}_{0}$	2
63	M6×1.0	7.3	12	$\Phi 65^{+0.05}_{0}$	2.5
	M8×1.25	18	16	$\Phi 65^{+0.05}_{0}$	2.5

The installation of the front through hole



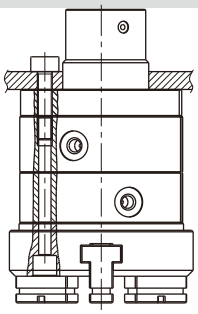
Bore size	The bolts type	Max. locking mement(N.m)
16	M3×0.5	0.88
20	M3×0.5	0.88
25	M3×0.5	0.88
32	M4×0.7	2.1
40	M4×0.7	2.1
50	M5×0.8	4.3
63	M6×1.0	7.3

The installation of the front through hole(with push rod)



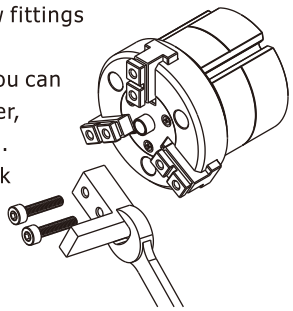
Bore size	The bolts type	Max. locking mement(N.m)
32	M4×0.7	2.1
40	M4×0.7	2.1
50	M5×0.8	4.3
63	M6×1.0	7.3

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	$\Phi 32^{0}_{-0.05}$
40	M5×0.8	4.3	10	$\Phi 40^{0}_{-0.05}$
50	M6×1.0	7.3	12	$\Phi 50^{0}_{-0.05}$
63	M8×1.25	18	16	$\Phi 60^{0}_{-0.05}$

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.

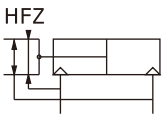


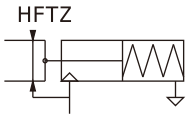
Install the gripping jaw fittings

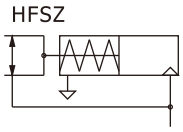
Bore size	The bolts type	Max. locking mement(N.m)
16	M3×0.5	0.59
20	M3×0.5	0.59
25	M3×0.5	0.59
32	M4×0.7	1.4
40	M4×0.7	1.4
50	M5×0.8	2.8
63	M5×0.8	2.8

Air gripper——HFZ Series

Parallel style with guide track——Ball bearing







Ordering code

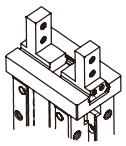
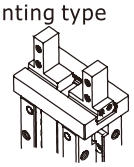
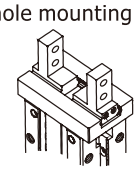
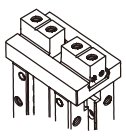
HFZ 20 □

① ② ③

① Model
HFZ: Air finger(Double acting)
HFSZ: Air finger (Single acting and nrmally closed)
HFTZ: Air finger (Single acting and normally opened)

② Bore size
6 10 16 20 25 32 40

HFZ series are all attached with magnet.

③ Finger type		
Bore size	Finger type	
6 10 16 20 25 32 40	Blank: Standard 	
6	B: Side mounting type 	N: Thru.hole mounting type 
	F: Bottom mounting type 	

Specification

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	28~100psi(0.2~0.7MPa)						
		Others	22~100psi(0.15~0.7MPa)						
	Single acting	Φ6, Φ10	50~100psi(0.35~0.7MPa)						
		Others	36~100psi(0.25~0.7MPa)						
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(S), CMSH		CMSG, DMSG(S),DMSH(S),CMSH				
Port size			M3×0.5		M5×0.8				

Air gripper(parallel style——Ball bearing)

HFZ Series

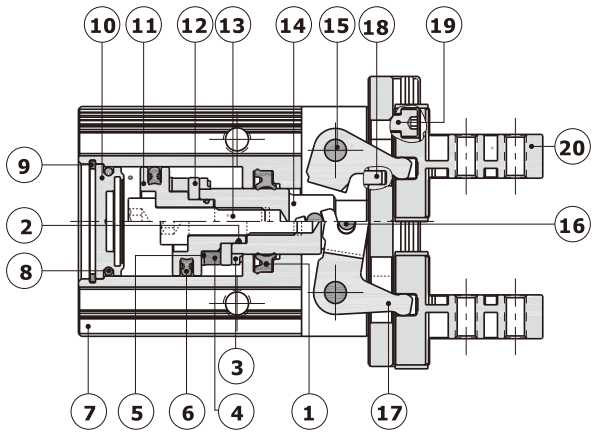
Bore size: Φ6, Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

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 75psi, and with a gripping point of L=20mm.
Add) Please refer to page 442 for the definition of "L".

Inner structure



NO.	Item
1	Rod packing
2	O-ring
3	Bumper
4	Magnet
5	Magnet washer
6	Piston seal
7	Body
8	O-ring
9	C clip
10	Back cover
11	Piston
12	Magnet fixed flake
13	Screw
14	Piston rod
15	Pin
16	Pin
17	Curved bar
18	Pin
19	Countersink screw
20	Assembly of clamping jaw and guide rail

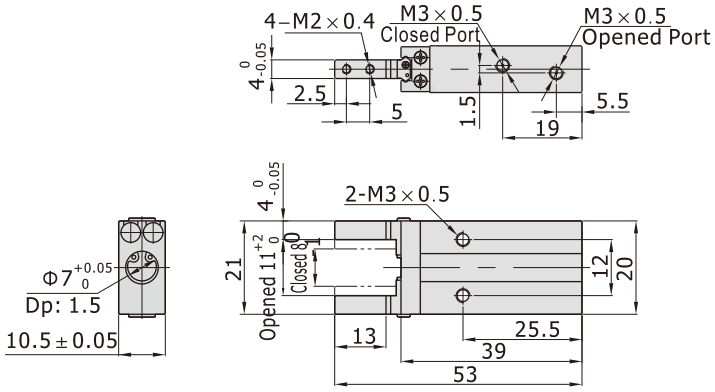
HFZ Series

Bore size: Φ6, Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

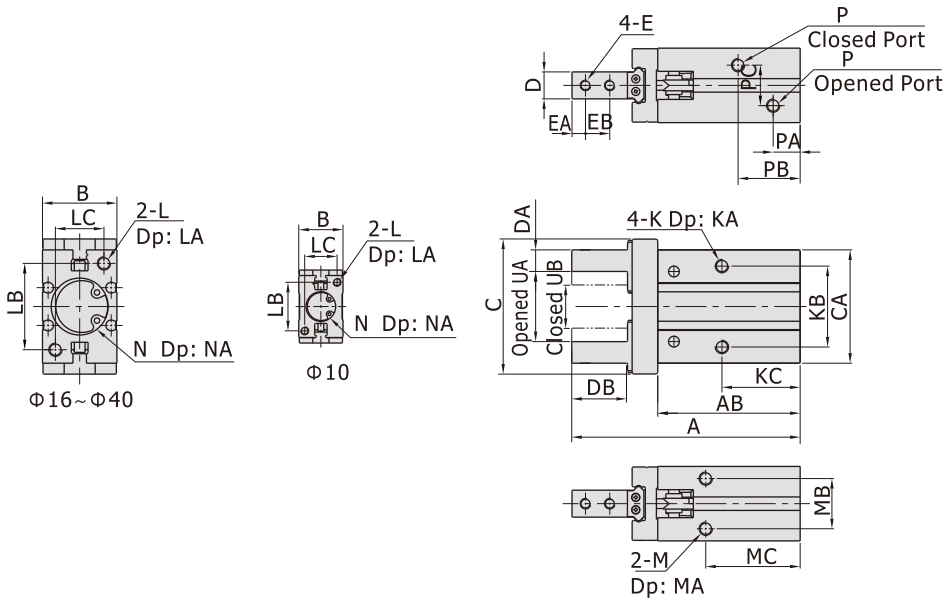
Dimensions

Standard

Φ6



Φ10~Φ40



[Unit: mm]

Model\Item	A	AB	B	C	CA	D	DA	DB	E	EA	EB	K	KA	KB	KC	L
HFZ10	57	37.5	16.5	30	23	5 $^{0}_{-0.05}$	4 $^{0}_{-0.05}$	12	M2.5×0.45	3	5.7	M3×0.5	5	16	23	M3×0.5
HFZ16	67.5	42.5	23.5	39	30.5	8 $^{0}_{-0.05}$	5 $^{0}_{-0.05}$	15	M3×0.5	4	7	M4×0.7	7	24	24.5	M4×0.7
HFZ20	85	53	27.5	53	42	10 $^{0}_{-0.05}$	8 $^{0}_{-0.05}$	20	M4×0.7	5	9	M5×0.8	8	30	29	M5×0.8
HFZ25	103	64	33.5	71	52	12 $^{0}_{-0.05}$	10 $^{0}_{-0.05}$	25	M5×0.8	6	12	M6×1.0	10	36	30	M6×1.0
HFZ32	113(122)	67(76)	40	106	60	15 $^{0}_{-0.05}$	12 $^{0}_{-0.05}$	29	M6×1.0	7	14	M6×1.0	10	46	40(49)	M6×1.0
HFZ40	139(152)	83(96)	48	132	72	18 $^{0}_{-0.05}$	14 $^{0}_{-0.05}$	36	M8×1.25	9	17	M8×1.25	12	56	49(62)	M8×1.25

Model\Item	LA	LB	LC	M	MA	MB	MC	N	NA	P	PA	PB	PC	UA(Opened)	UB(Closed)
HFZ10	6	18	12	M3×0.5	6	11.5	27	Φ11 $^{+0.05}_{0}$	1.5	M3×0.5	7	19	10	15.5 $^{+2}_{0}$	11.5 $^{0}_{-1}$
HFZ16	8	22	15	M4×0.7	4.5	16	30	Φ17 $^{+0.05}_{0}$	1.5	M5×0.8	7.5	19	13	21 $^{+2}_{0}$	15 $^{0}_{-1}$
HFZ20	10	32	18	M5×0.8	8	18.5	35	Φ21 $^{+0.05}_{0}$	2	M5×0.8	9.5	23	15	26.5 $^{+2}_{0}$	16.5 $^{0}_{-1}$
HFZ25	12	40	22	M6×1.0	10	22	36.5	Φ26 $^{+0.05}_{0}$	2	M5×0.8	9	24	20	33.5 $^{+2}_{0}$	19.5 $^{0}_{-1}$
HFZ32	12	46	26	M6×1.0	10	26	48(57)	Φ34 $^{+0.05}_{0}$	2.5	M5×0.8	9.5	31(40)	24	48 $^{+2.5}_{0}$	26 $^{0}_{-1}$
HFZ40	16	56	32	M8×1.25	12	32	58(71)	Φ42 $^{+0.05}_{0}$	2.5	M5×0.8	10.5	38(50)	28	60 $^{+2.5}_{0}$	30 $^{0}_{-1}$

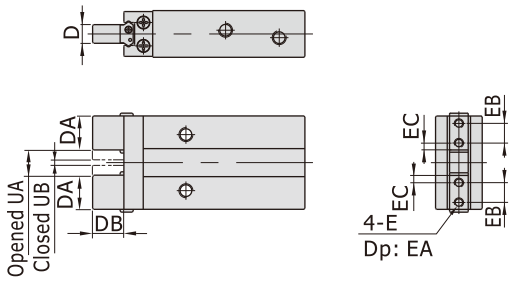
[Note]The values in "()" in the above table are single acting type sizes.

HFZ Series

Bore size: Φ6, Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

Bottom mounting type(F type)

Φ6



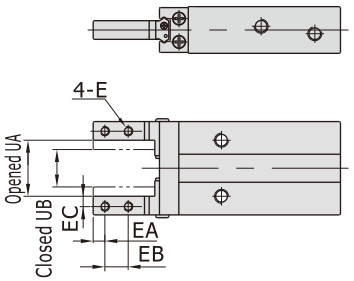
[Unit: mm]

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	$4^{+1.5}_{0}$	$1.8^{0}_{-0.5}$

Side mounting type(B type)

Φ6



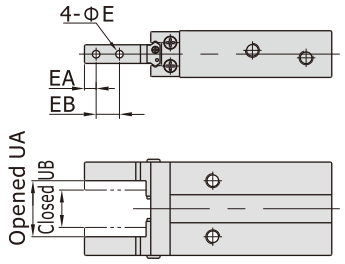
[Unit: mm]

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



[Unit: mm]

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}

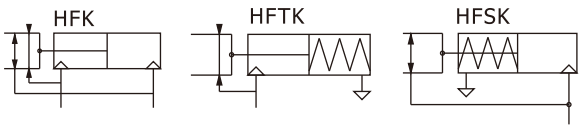
[Note] The other dimensions are the same as standard type.

How to select product \ Installation and application

Please refer to HFK series for details.

Air gripper——HFK Series

Parallel style with guide track——Roller bearing



Ordering code

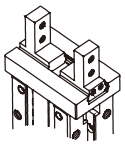
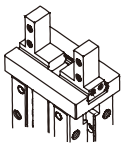
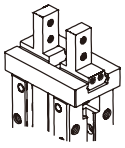
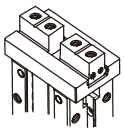
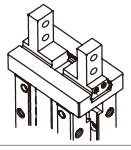
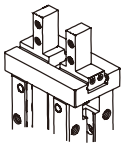
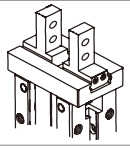
HFK 20 □

1 2 3

① Model
HFK: Air finger(Double acting)
HFSK: Air finger (Single acting and nrmally closed)
HFTK: Air finger (Single acting and normally opened)

② Bore size
10 16 20 25 32 40

HFK series are all attached with magnet.

③ Finger type		
Bore size	Finger type	
10 16 20 25 32 40	Blank: Standard 	B: Side mounting type 
	R: Narrow type 	F: Bottom mounting type 
10 16 20 25	N: Thru.hole mounting type 	W: Side mounting and arrow type 
	M: Thru.hole mounting and narrow type 	

Specification

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	28~100psi(0.2~0.7MPa)					
		Others	22~100psi(0.15~0.7MPa)					
	Single acting	Φ10	50~100psi(0.35~0.7MPa)					
		Others	36~100psi(0.25~0.7MPa)					
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(S), CMSH	CMSG, DMSG(S), DMSH(S), CMSH				
Port size			M3×0.5	M5×0.8				

Air gripper(parallel style——roller bearing)

HFK Series

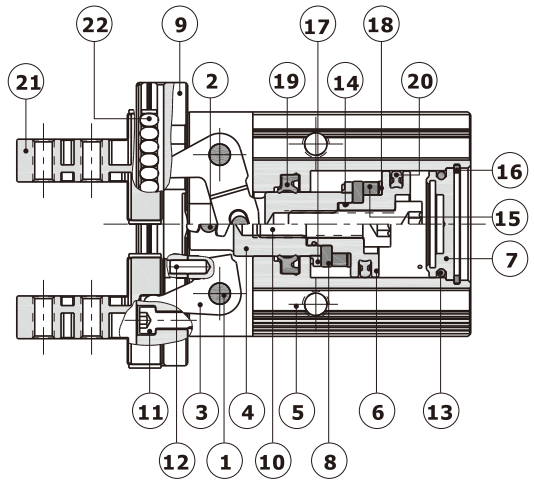
Bore size: Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

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 75psi, and with a gripping point of L=20mm.
Add) Please refer to page 442 for the definition of "L".

Inner structure



NO.	Item	NO.	Item
1	Pin	12	Pin
2	Pin	13	O-ring
3	Curved bar	14	O-ring
4	Piston rod	15	Magnet
5	Body	16	C clip
6	Piston	17	Bumper
7	Back cover	18	Magnet washer
8	Magnet fixed flake	19	Rod packing
9	Bearing steel	20	Piston seal
10	Countersink screw	21	Clamping jaw
11	Countersink screw	22	Guide roller

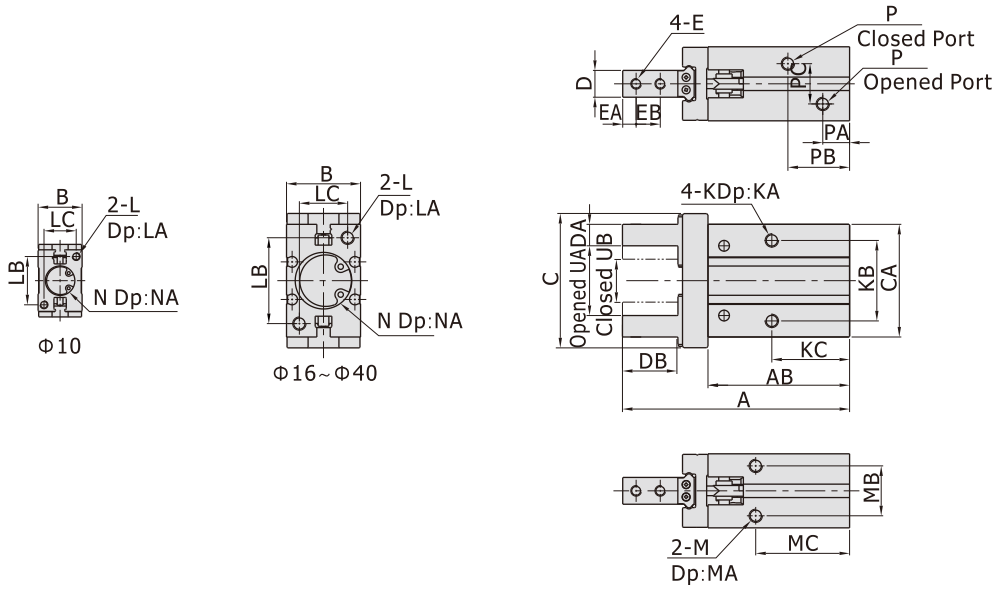
Air gripper(parallel style——roller bearing)

HFK Series

Bore size: Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

Dimensions

Standard



[Unit: mm]

Model\Item	A	AB	B	C	CA	D	DA	DB	E	EA	EB	K	KA	KB	KC
HFK10	57	37.5	16.5	30	23	$5^{0}_{-0.05}$	$4^{0}_{-0.05}$	12	M2.5×0.45	3	5.7	M3×0.5	5	16	23
HFK16	67.5	42.5	23.5	39	30.5	$8^{0}_{-0.05}$	$5^{0}_{-0.05}$	15	M3×0.5	4	7	M4×0.7	7	24	24.5
HFK20	85	53	27.5	53	42	$10^{0}_{-0.05}$	$8^{0}_{-0.05}$	20	M4×0.7	5	9	M5×0.8	8	30	29
HFK25	103	64	33.5	71	52	$12^{0}_{-0.05}$	$10^{0}_{-0.05}$	25	M5×0.8	6	12	M6×1.0	10	36	30
HFK32	113(122)	67(76)	40	106	60	$15^{0}_{-0.05}$	$12^{0}_{-0.05}$	29	M6×1.0	7	14	M6×1.0	10	46	40(49)
HFK40	139(152)	83(96)	48	132	72	$18^{0}_{-0.05}$	$14^{0}_{-0.05}$	36	M8×1.25	9	17	M8×1.25	12	56	49(62)

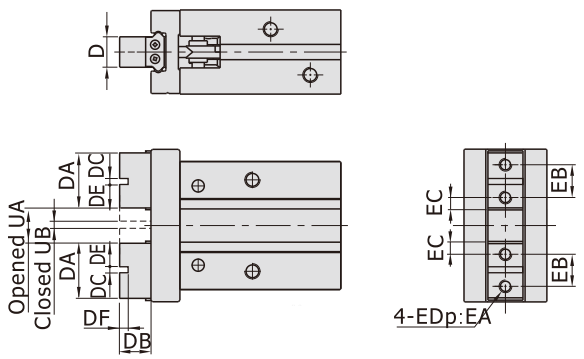
Model\Item	L	LA	LB	LC	M	MA	MB	MC	N	NA	P	PA	PB	PC	UA(Opened)	UB(Closed)
HFK10	M3×0.5	6	18	12	M3×0.5	6	11.5	27	$\Phi11^{+0.05}_{0}$	1.5	M3×0.5	7	19	10	15.5^{+2}_{0}	11.5^{0}_{-1}
HFK16	M4×0.7	8	22	15	M4×0.7	4.5	16	30	$\Phi17^{+0.05}_{0}$	1.5	M5×0.8	7.5	19	13	21^{+2}_{0}	15^{0}_{-1}
HFK20	M5×0.8	10	32	18	M5×0.8	8	18.5	35	$\Phi21^{+0.05}_{0}$	2	M5×0.8	9.5	23	15	26.5^{+2}_{0}	16.5^{0}_{-1}
HFK25	M6×1.0	12	40	22	M6×1.0	10	22	36.5	$\Phi26^{+0.05}_{0}$	2	M5×0.8	9	24	20	33.5^{+2}_{0}	19.5^{0}_{-1}
HFK32	M6×1.0	12	46	26	M6×1.0	10	26	48(57)	$\Phi34^{+0.05}_{0}$	2.5	M5×0.8	9.5	31(40)	24	$48^{+2.5}_{0}$	26^{0}_{-1}
HFK40	M8×1.25	16	56	32	M8×1.25	12	32	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)

Φ10~Φ40

[Unit: mm]



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}	$3.4^{0}_{-0.5}$

[Note] The other dimensions are the same as standard type.

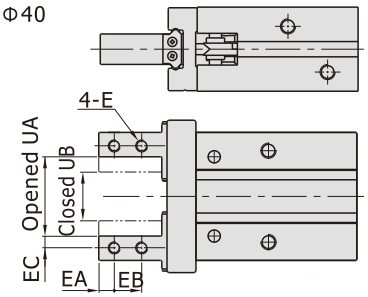
Air gripper(parallel style——roller bearing)

HFK Series

Bore size: Φ10, Φ16, Φ20, Φ25, Φ32, Φ40

Side mounting type(B type)

Φ10~Φ40

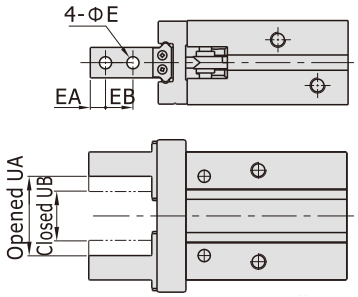


[Unit: mm]

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 $^{0}_{-1}$

Thru.hole mounting type(N type)

Φ10~Φ40

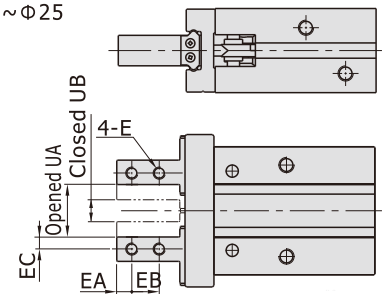


[Unit: mm]

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 $^{0}_{-1}$

Side mounting and narrow type(W type)

Φ10~Φ25

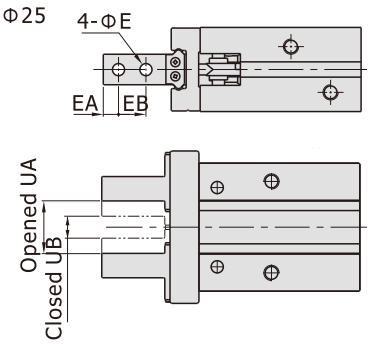


[Unit: mm]

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 and narrow type(M type)

Φ10~Φ25

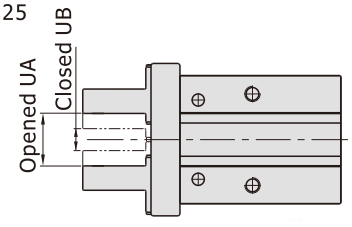


[Unit: mm]

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 $^{0}_{-1}$

Narrow type(R type)

Φ10~Φ25



[Unit: mm]

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 $^{0}_{-1}$

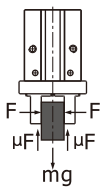
How to select product

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

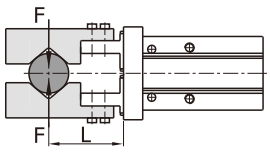
The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

	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

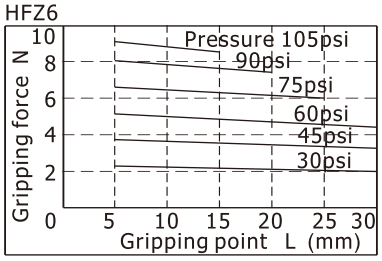
Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

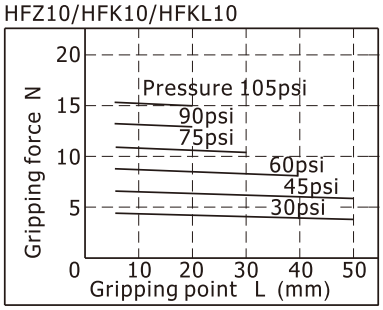
Double acting type closed gripping force



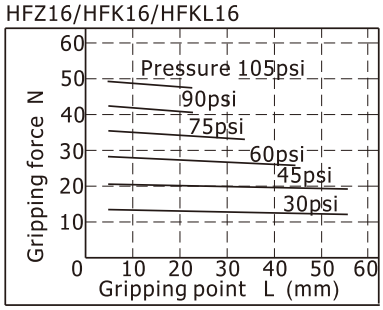
HFZ6



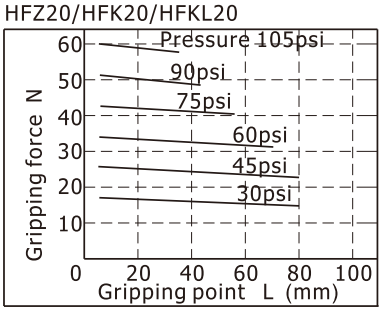
HFZ10/HFK10/HFKL10



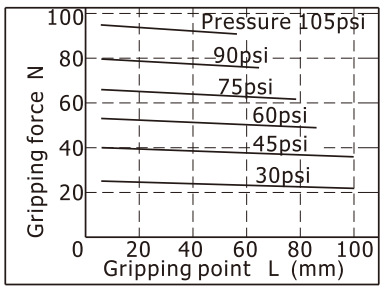
HFZ16/HFK16/HFKL16



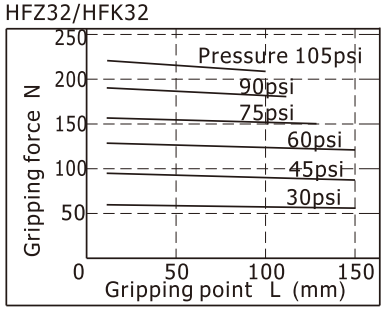
HFZ20/HFK20/HFKL20



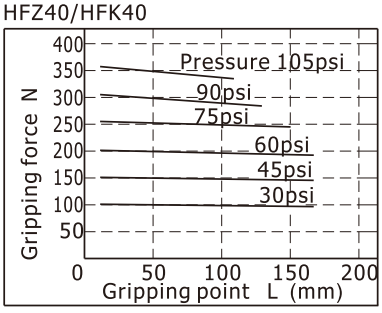
HFZ25/HFK25/HFKL25



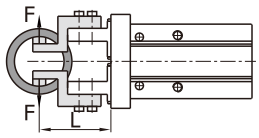
HFZ32/HFK32



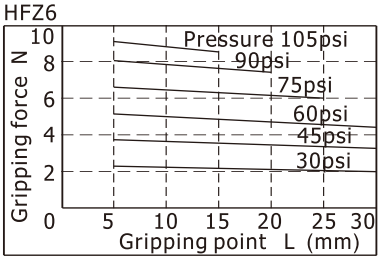
HFZ40/HFK40



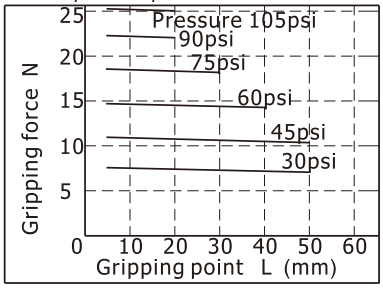
Double acting type opened gripping force



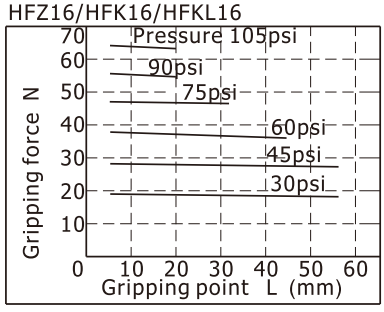
HFZ6



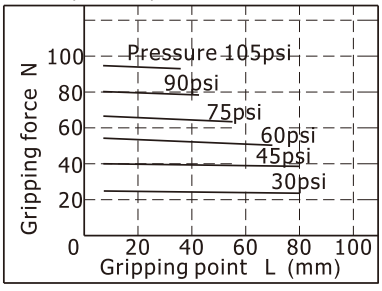
HFZ10/HFK10/HFKL10



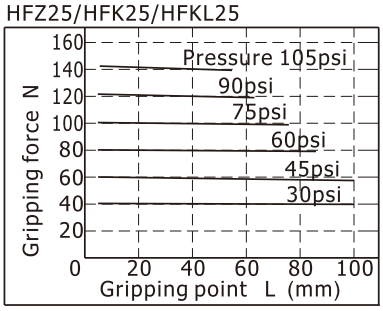
HFZ16/HFK16/HFKL16



HFZ20/HFK20/HFKL20



HFZ25/HFK25/HFKL25



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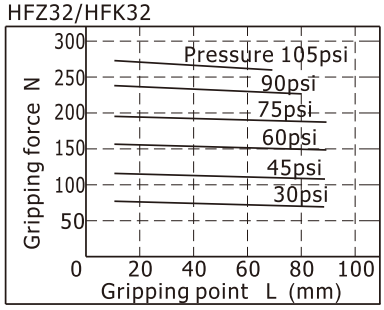
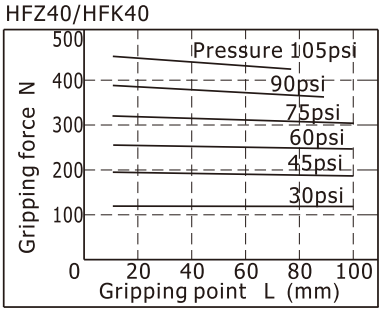
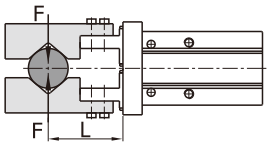


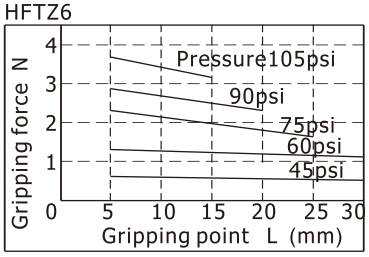
HFZ40/HFK40



Single acting normally opened gripping force



HFTZ6



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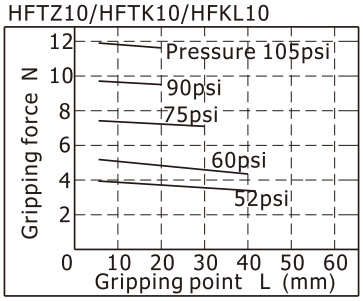
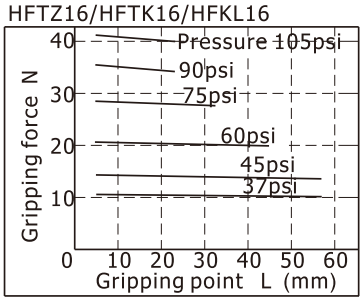


HFTZ16/HFTK16/HFKL16



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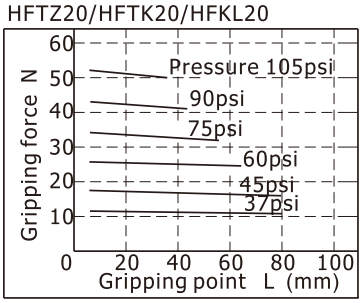
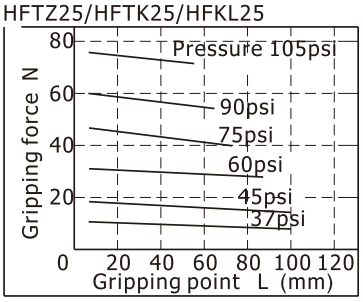


HFTZ25/HFTK25/HFKL25



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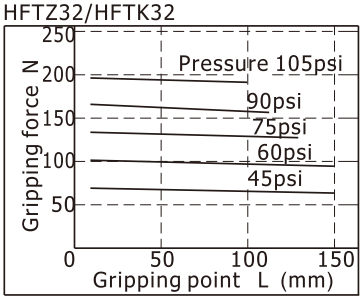
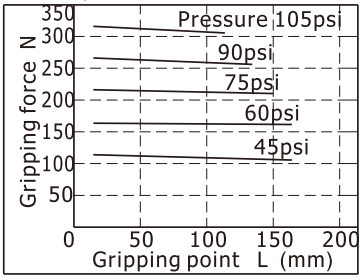
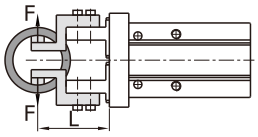


HFTZ40/HFTK40



Single acting normally closed clamping force



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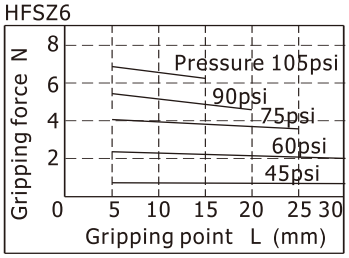

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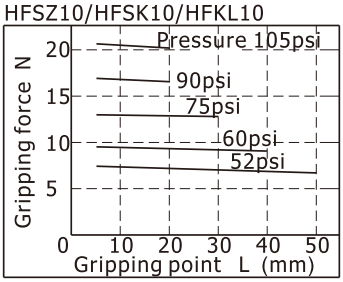
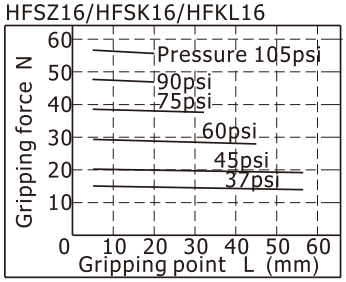
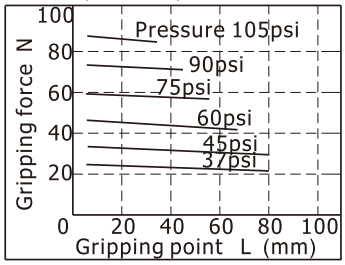


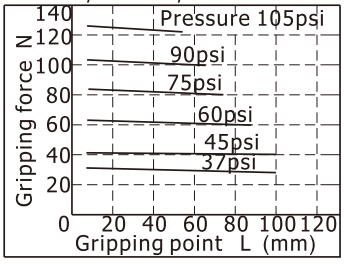
HFSZ16/HFSK16/HFKL16



HFSZ20/HFSK20/HFKL20



HFSZ25/HFSK25/HFKL25



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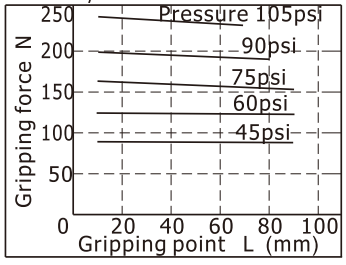
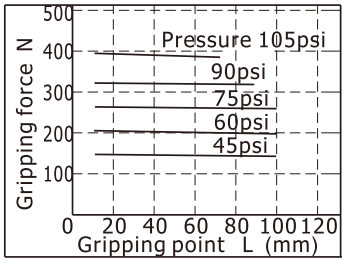
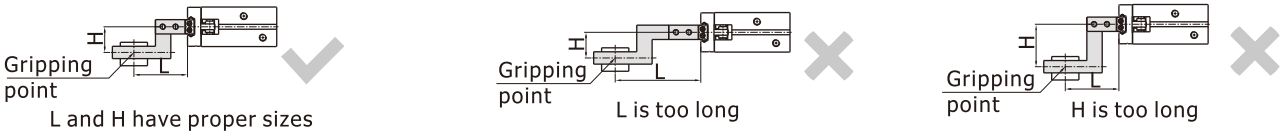


HFSZ40/HFSK40



2. The selection of the gripping point

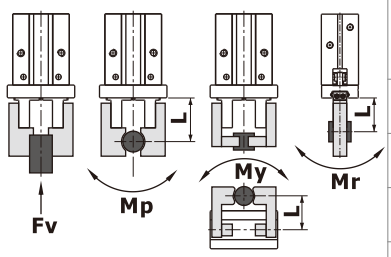
2.1) Please select the gripping point within the limited field shown below.
Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.



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)		
	HFK	HFZ	HFKL	Mp	My	Mr
6	-	10	-	0.04	0.04	0.08
10	87	58	87	0.26	0.26	0.53
16	147	98	147	0.68	0.68	1.36
20	221	147	221	1.32	1.32	2.65
25	382	255	382	1.94	1.94	3.88
32	514	343	-	3	3	6
40	735	490	-	4.5	4.5	9

The calculation of allowable forces when moment loads work

$$\text{Allowable load(N)} = \frac{\text{M(Maximum permissible moment)(N.m)}}{L \times \underbrace{10^{-3}}_{\text{Unit conversion constant}}}$$

Examples of calculation

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 $F = \frac{0.68}{30 \times 10^{-3}}$

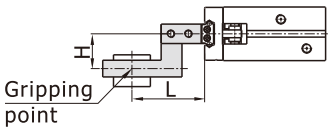
$= 22.7(N)$

Actual load f=10(N)

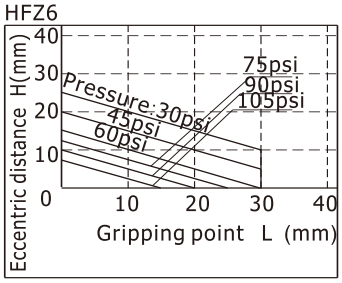
<22.7(N)

To meet the using requirements

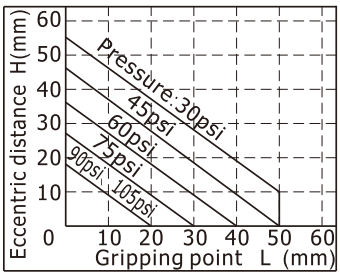
The range of the closed gripping points



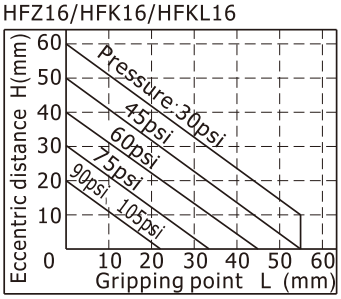
HFZ6



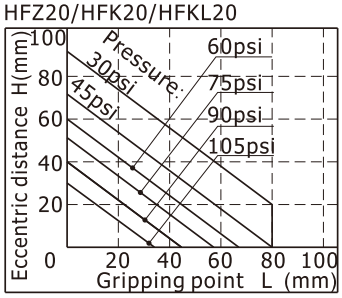
HFZ10/HFK10/HFKL10



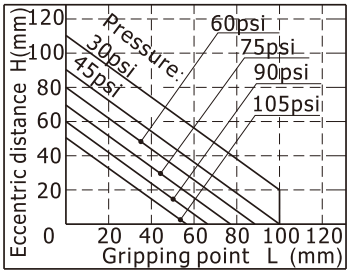
HFZ16/HFK16/HFKL16



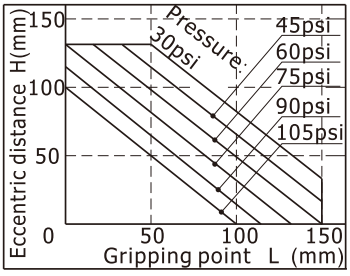
HFZ20/HFK20/HFKL20



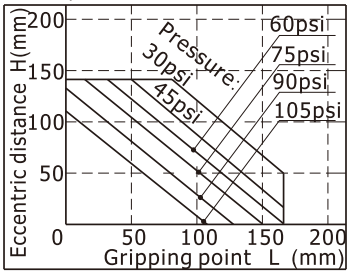
HFZ25/HFK25/HFKL25



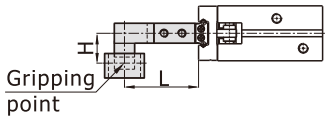
HFZ32/HFK32



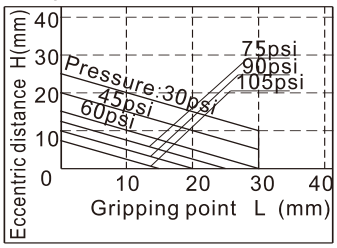
HFZ40/HFK40



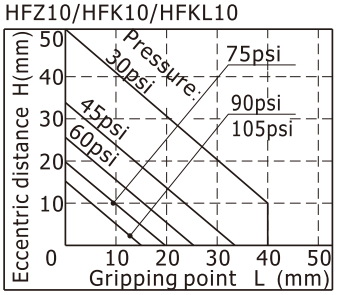
The range of the opened clamping point



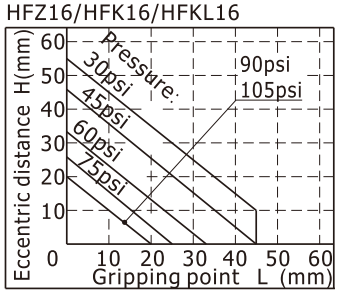
HFZ6



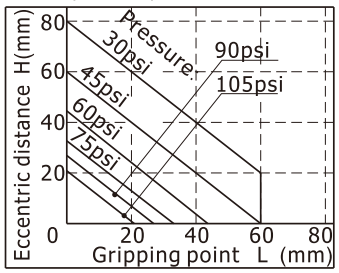
HFZ10/HFK10/HFKL10



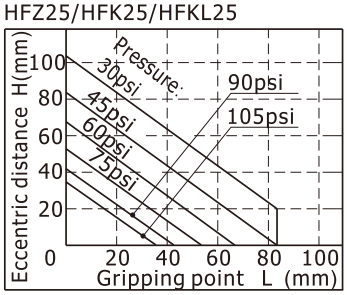
HFZ16/HFK16/HFKL16



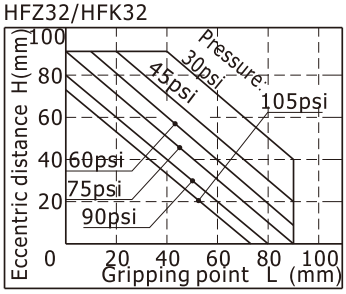
HFZ20/HFK20/HFKL20



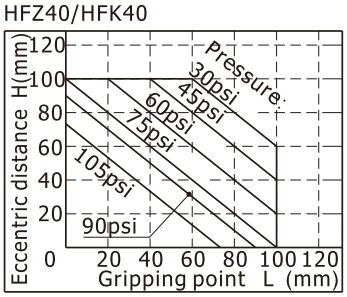
HFZ25/HFK25/HFKL25



HFZ32/HFK32



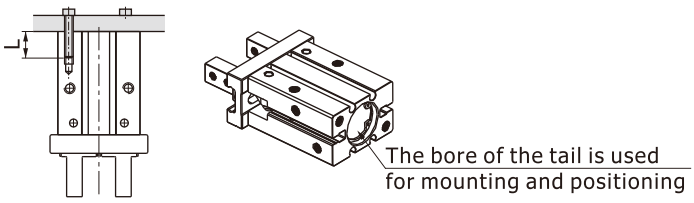
HFZ40/HFK40



Installation and application

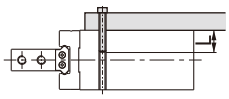
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external 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



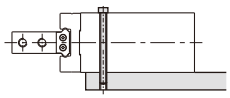
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
10	M3×0.5	0.88N.m	6mm	Φ11mm $^{+0.05}_{0}$	1.5mm
16	M4×0.7	2.1N.m	8mm	Φ17mm $^{+0.05}_{0}$	1.5mm
20	M5×0.8	4.3N.m	10mm	Φ21mm $^{+0.05}_{0}$	2mm
25	M6×1.0	7.3N.m	12mm	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



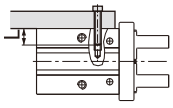
Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	M3×0.5	0.88	10
10	M3×0.5	0.69	5
16	M4×0.7	2.1	7
20	M5×0.8	4.3	8
25	M6×1.0	7.3	10
32	M6×1.0	7.9	12
40	M8×1.25	17.7	12

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	M5×0.5	4.3	12
32	M5×0.8	4.3	13
40	M6×1.0	7.3	16

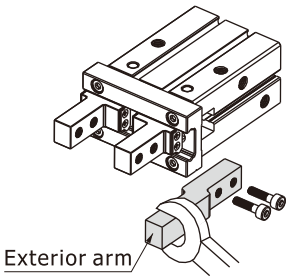
Surface installation type



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

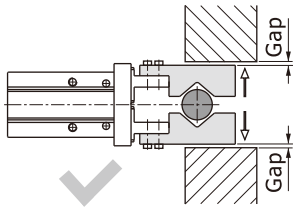
7. The installation method of the gripping jaw fittings When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise 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

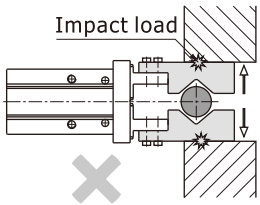


8. Confirm that there is no external forces exerted on the gripping jaw.
Transverse load acts on the gripping jaw, which will cause impact load and leads to the shaking and damage of gripping jaw. Equip with gaps so that the air gripper will not crash into work-pieces and accessories at the end of its trip.

8.1) The end of stroke under the open state of air gripper

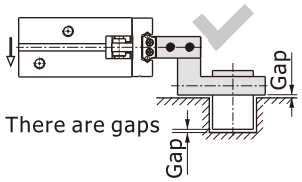


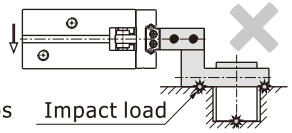
There are gaps



There aren't gaps

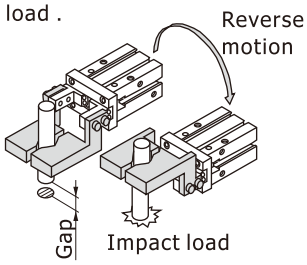
8.2) The end of stroke under the move state of air gripper



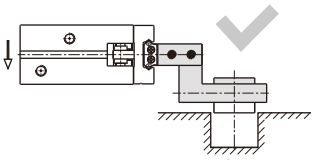


8.3) Reverse motion state

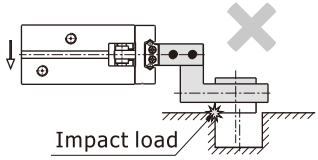
When reverse motion state, the gripping point must be precision, otherwise in the reverse motion state the air gripper maybe impact with ambience and will cause impact load .



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.



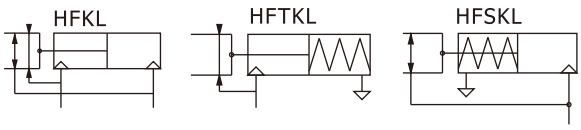
Center coaxial



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——Roller bearing and longer stroke



Ordering code

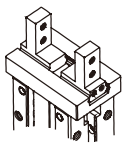
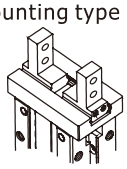
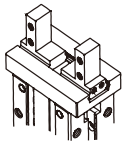
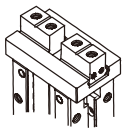
HFKL 20 □

1 2 3

① Model
HFKL: Air finger(Double acting/Longer stroke)
HFSKL: Air finger(Single acting and normally closed/Longer stroek)
HFTKL: Air finger(Single acting and normally opened/Longer stroke)

② Bore size
10 16 20 25

HFKL series are all attached with magnet.

③ Finger type	
Blank: Standard 	N: Thru.hole mounting type 
B: Side mounting type 	F: Bottom mounting type 

Specification

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	10	28~100psi(0.2~0.7MPa)			
		16/20/25	22~100psi(0.15~0.7MPa)			
	Single acting	10	50~100psi(0.35~0.7MPa)			
		16/20/25	36~100psi(0.25~0.7MPa)			
Temperature			-20~70℃			
Lubrication			Not required			
Repeatability mm			±0.01			
Max. frequency			120(c.p.m)			
Sensor switches			DMSH(S), CMSH	CMSG, DMSG(S), CMSH, DMSH(S)		
Port size			M3×0.5	M5×0.8		

HFKL Series

Bore size: Φ10, Φ16, Φ20, Φ25

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	529
	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 75psi, and with a gripping point of L=20mm.
Add) Please refer to page 442 for the definition of "L".

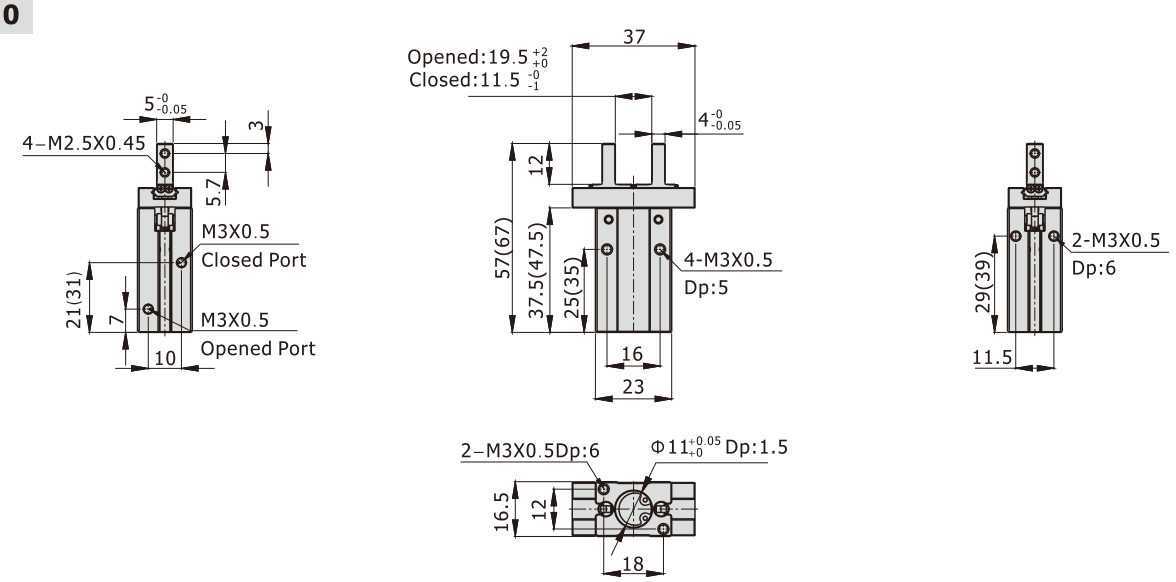
Inner structure

Inner structure is the same as "HFK series", Please refer to page 482 for details.

Dimensions

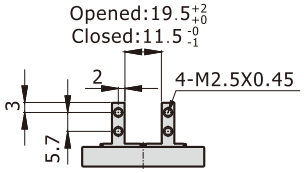
[Unit: mm]

HFKL10

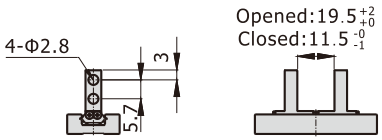


[Note]The values in "()" in the above table are single acting type sizes.

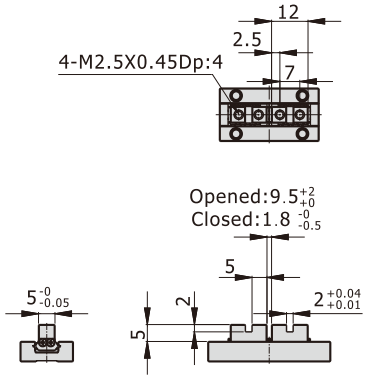
Side mounting type(B type)



Thru.hole mounting type(N type)



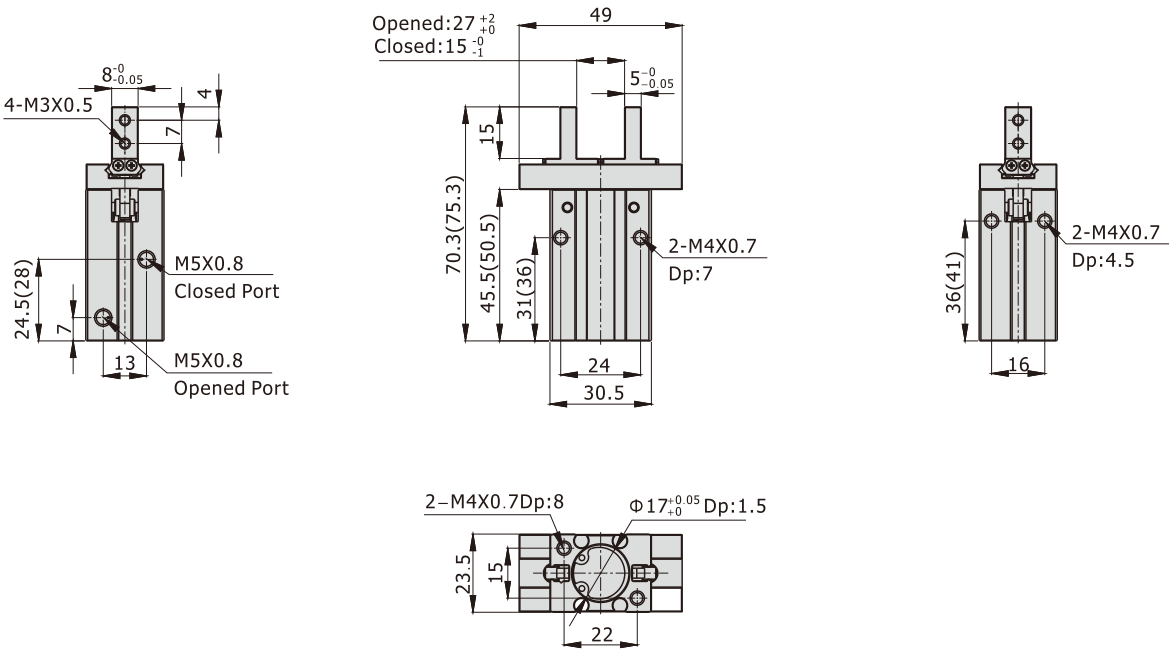
Bottom mounting type(F type)



HFKL Series

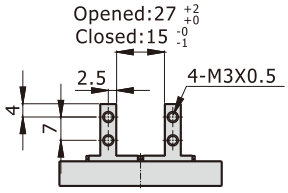
Bore size: Φ10, Φ16, Φ20, Φ25

HFKL16

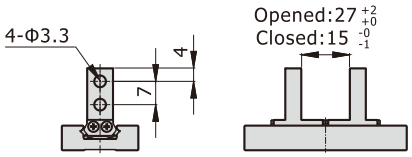


[Note]The values in "()" in the above table are single acting type sizes.

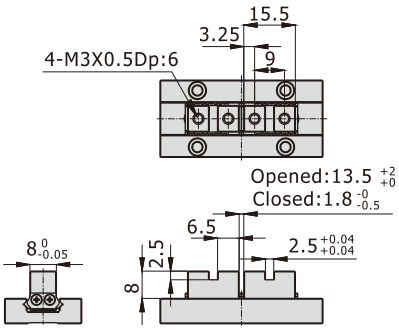
Side mounting type(B type)



Thru.hole mounting type(N type)



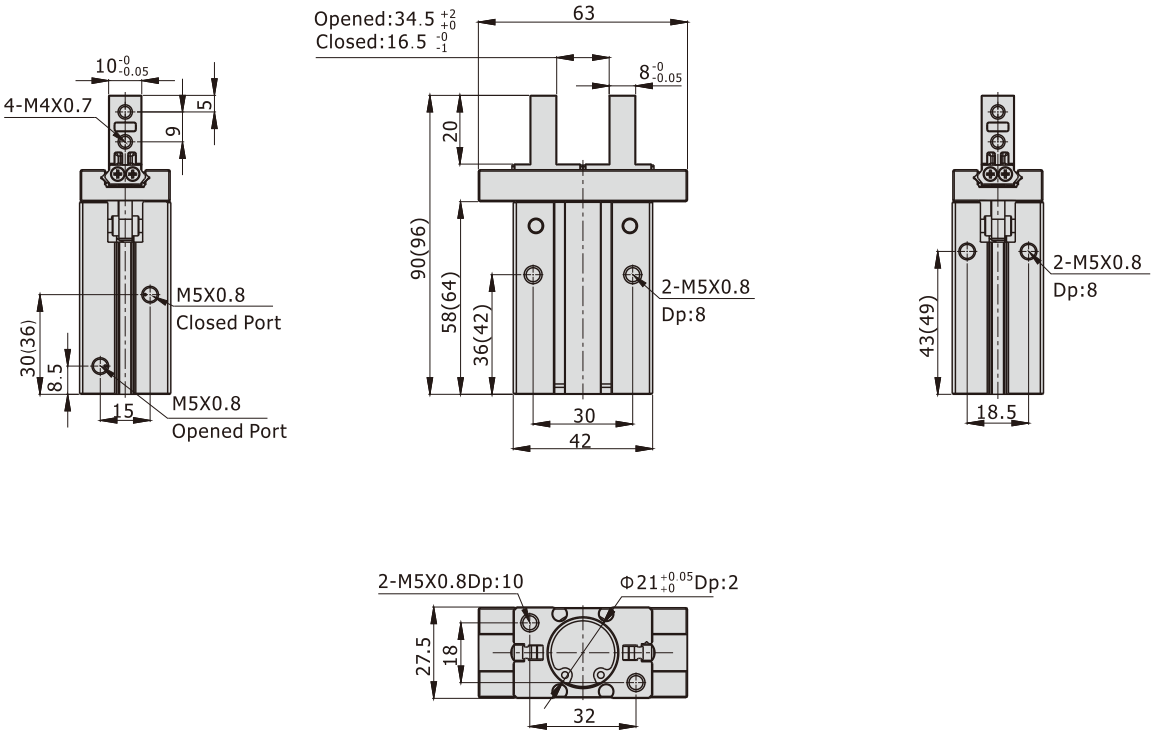
Bottom mounting type(F type)



HFKL Series

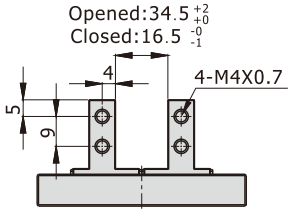
Bore size: Φ10, Φ16, Φ20, Φ25

HFKL20

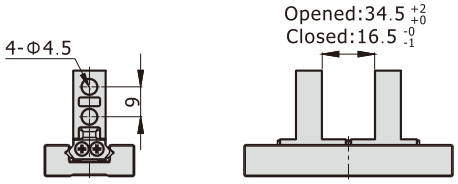


[Note]The values in "()" in the above table are single acting type sizes.

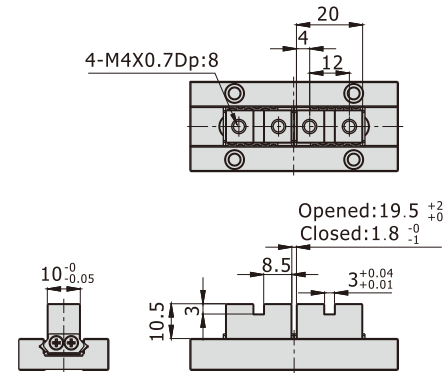
Side mounting type(B type)



Thru.hole mounting type(N type)



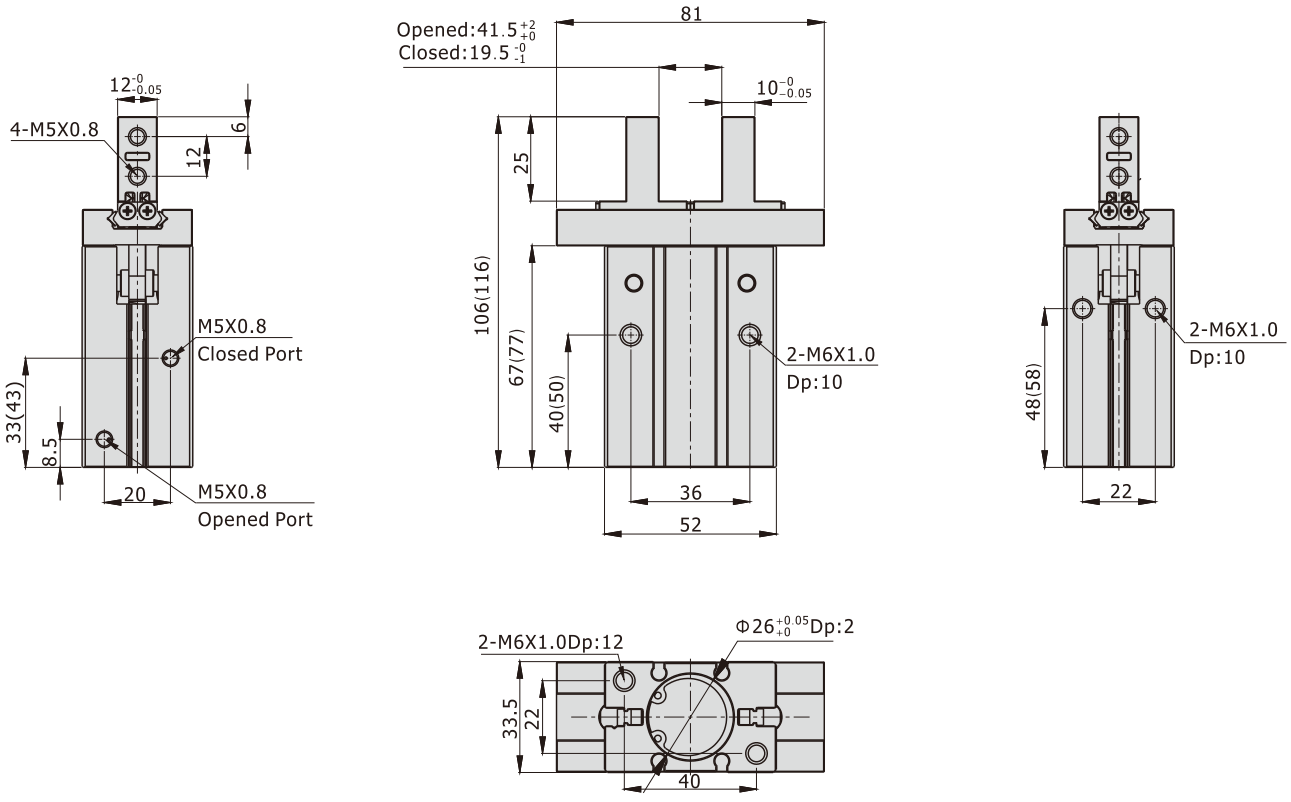
Bottom mounting type(F type)



HFKL Series

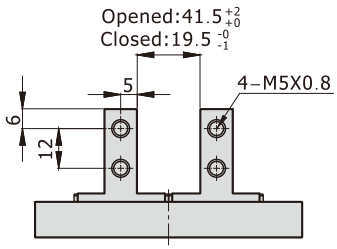
Bore size: Φ10, Φ16, Φ20, Φ25

HFKL25

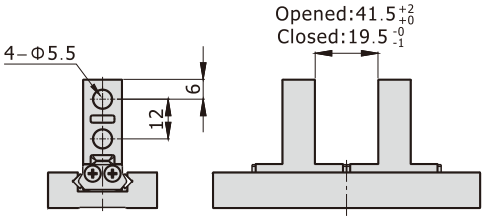


[Note]The values in "()" in the above table are single acting type sizes.

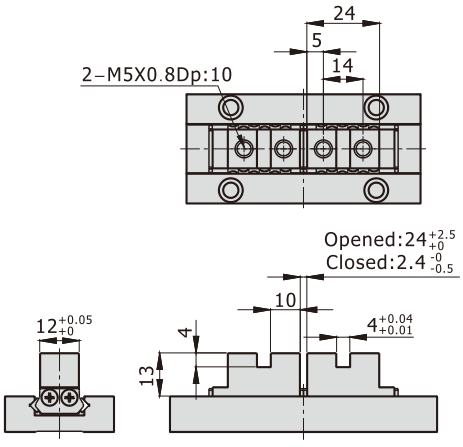
Side mounting type(B type)



Thru.hole mounting type(N type)



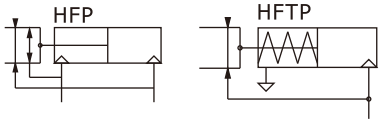
Bottom mounting type(F type)



How to select product \ Installation and application

Please refer to HFK series for details.

Mechanical parallel style



Ordering code

HFP 20 □

1 2 3

① Model

HFP: Air finger(Double acting)
(mechanical parallel style)

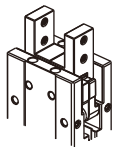
HFTP: Air finger
(Single acting and normally opened)
(mechanical parallel style)

② Bore size

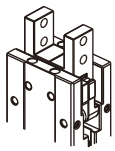
10 16 20 25 32

③ Finger type

Blank: Standard



N: Thru.hole mounting type



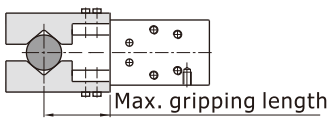
HFP series are all attached with magnet.

Specification

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	28~100psi(0.2~0.7MPa)				
		Others	22~100psi(0.15~0.7MPa)				
	Single acting	Φ10	50~100psi(0.35~0.7MPa)				
		Others	36~100psi(0.25~0.7MPa)				
Proof pressure			150psi(1.05MPa)				
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(S)			
Port size			M3×0.5	M5×0.8			

[Note1] Refer to right graph for the definition of max. gripping length.

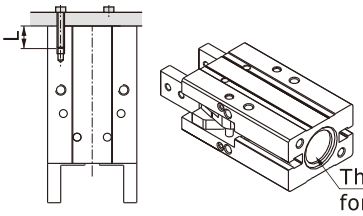
[Note2] Sensor switch should be ordered additionally.



Installation and application

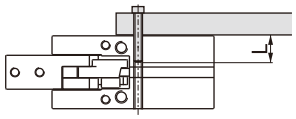
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external 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



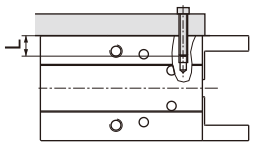
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
10	M3×0.5	1.0N.m	6mm	Φ11mm $^{+0.05}_{0}$	1.0mm
16	M4×0.7	2.0N.m	8mm	Φ17mm $^{+0.05}_{0}$	1.2mm
20	M5×0.8	4.5N.m	10mm	Φ21mm $^{+0.05}_{0}$	1.2mm
25	M6×1.0	7.0N.m	12mm	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

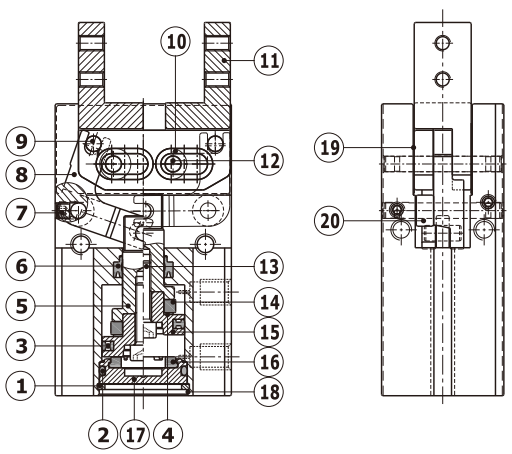
Surface installation type



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 HFK. Refer to the "Installation and Operation" instruction of HFK.

Inner structure



NO.	Item	NO.	Item
1	C clip	11	Gripping jaws
2	O-ring	12	Pin
3	Piston seal	13	Screw
4	Magnet washer	14	Magnet
5	Piston rod	15	Piston
6	Rod packing	16	Bumper
7	Countersink screw	17	Back cover
8	Curved bar	18	Body
9	Pin	19	Retaining ring
10	Guide sleeve	20	Stopper sleeve

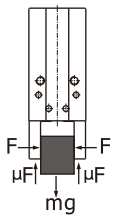
How to select product

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

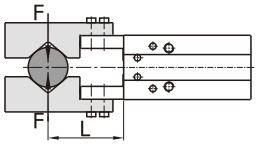
The gripping work-pieces shown below, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects.

	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: $2\times\mu F>mg$ so: $F>\frac{mg}{2\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{2\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$ 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

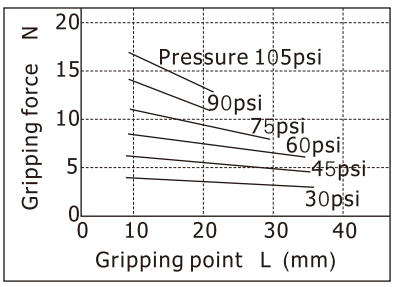
Note) If the friction coefficientμ>0.2, for safety, please also select clamping force according to the principle of 10~20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

1.1) The actual gripping force must be within the effective gripping forces of different pneumatic fingers specifications shown in the below chart.

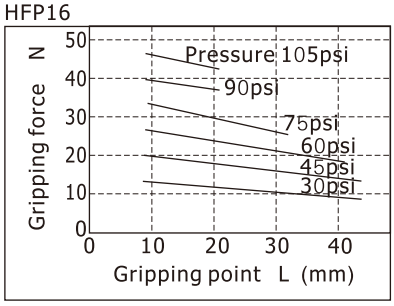
Double acting type closed gripping force



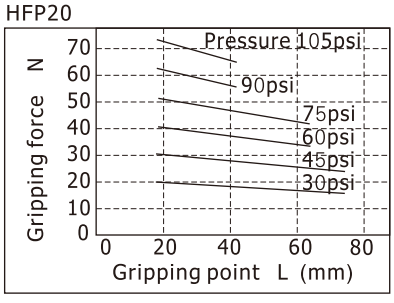
HFP10



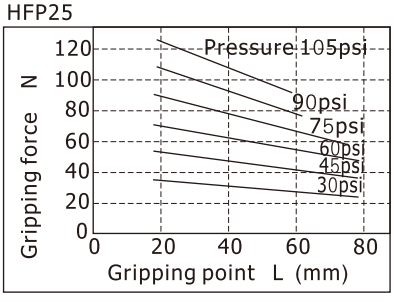
HFP16



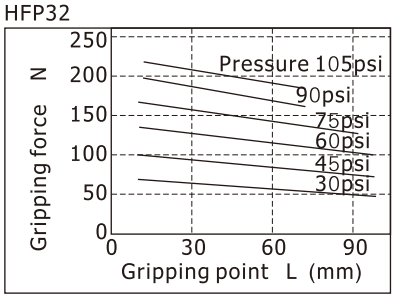
HFP20



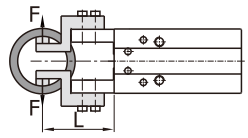
HFP25

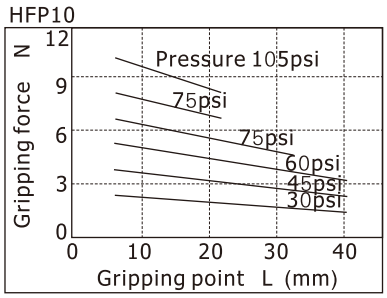


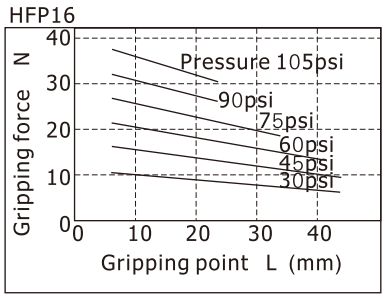
HFP32

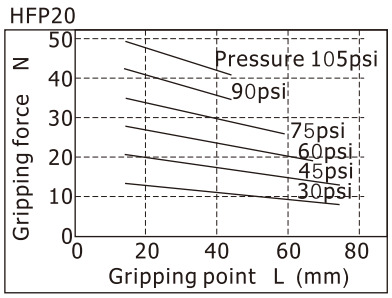


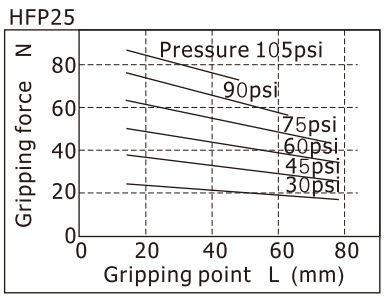
Double acting type opened gripping force

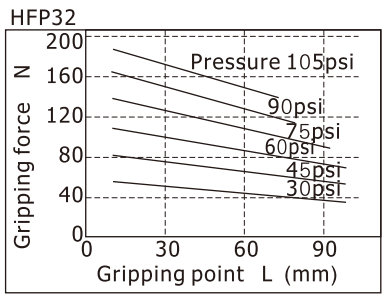






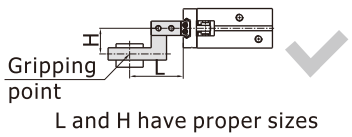




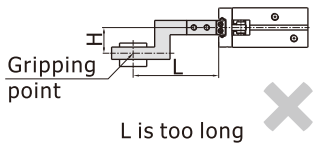


2. The selection of the gripping point

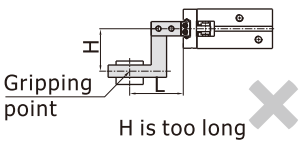
2.1) Select the gripping point within the maximum gripping length range. Over the limits, gripping jaws would be subjected to excessive torque loads, and lead to short life of the air gripper.



L and H have proper sizes



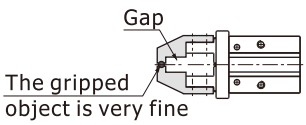
L is too long

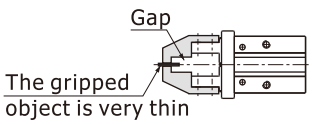


H is too long

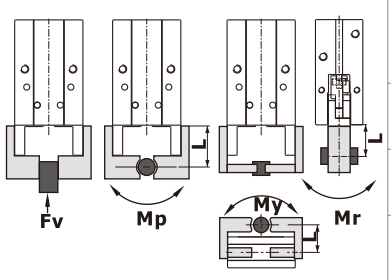
2.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.

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.





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
10	58	0.26	0.26	0.53
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

The calculation of allowable forces when moment loads work

$$\text{Allowable load(N)} = \frac{\text{M(Maximum permissible moment)(N.m)}}{L \times 10^{-3}}$$

Unit conversion constant

Examples of calculation

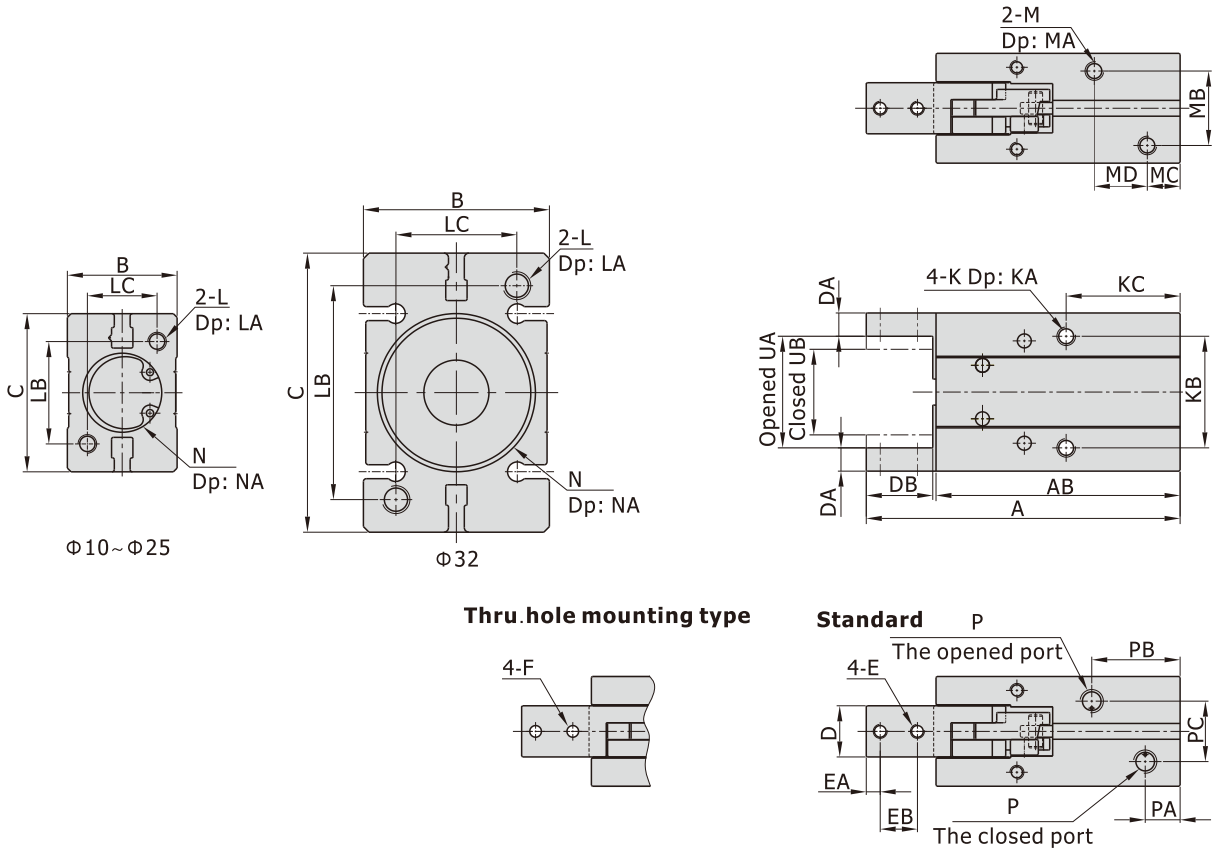
In the guide rail of HFP16, the external force of the pitching moment static loads put on the point of L=30mm is f=10 N,

Allowable load $F = \frac{0.68}{30 \times 10^{-3}} = 22.7(N)$

Actual load f=10(N) <22.7(N)

To meet the using requirements

Dimensions



[Unit: mm]

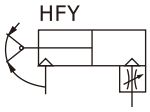
Model\Item	A	AB	B	C	D	DA	DB	E	EA	EB	F	K	KA	KB
HFP10	57(62)	44.5(49.5)	16	23	7	4	12	M2.5×0.45	3	5.5	Φ2.8	M3×0.5	5	16
HFP16	72(77)	56.5(61.5)	23.5	34	11	5	15	M3×0.5	4	7	Φ3.3	M4×0.7	8	24
HFP20	89.5(94.5)	69(74)	27.5	45	12	6	20	M4×0.7	5	9	Φ4.5	M5×0.8	10	30
HFP25	104.5(109.5)	78.5(83.5)	33.5	52	14	8	25	M5×0.8	6	12	Φ5.5	M6×1.0	12	36
HFP32	118(126)	88(96)	40	60	18	9	29	M6×1.0	7	14	Φ6.5	M6×1.0	12	46

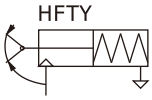
Model\Item	KC	L	LA	LB	LC	M	MA	MB	MC	MD	N	NA	P
HFP10	23(28)	M3×0.5	6	18	12	M3×0.5	6	10	6(11)	10	$\Phi11\ ^{+0.05}_{0}$	1	M3×0.5
HFP16	29(34)	M4×0.7	8	22	15	M4×0.7	8	16	6(11)	16	$\Phi17\ ^{+0.05}_{0}$	1.2	M5×0.8
HFP20	34(39)	M5×0.8	10	32	18	M5×0.8	10	18	8(13)	16	$\Phi21\ ^{+0.05}_{0}$	1.2	M5×0.8
HFP25	31.5(36.5)	M6×1.0	12	40	22	M6×1.0	12	24	8(13)	16	$\Phi26\ ^{+0.05}_{0}$	1.5	M5×0.8
HFP32	37.5(45.5)	M6×1.0	12	46	26	M6×1.0	12	30	8(16)	20	$\Phi34\ ^{+0.05}_{0}$	1.5	M5×0.8

Model\Item	PA	PB	PC	UA(Opened)	UB(Closed)
HFP10	6	16.5(23)	10	$14.5\ ^{+1.5}_{0}$	$10.5\ ^{0}_{-1}$
HFP16	7.5	20(25)	13	$23.5\ ^{+1.5}_{0}$	$15.5\ ^{0}_{-1}$
HFP20	7.5	24(29)	15	$32.5\ ^{+1.5}_{0}$	$20.5\ ^{0}_{-1}$
HFP25	8	22(29)	20	$35.5\ ^{+1.5}_{0}$	$21.5\ ^{0}_{-1}$
HFP32	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.

Angular style





Ordering code

HFY 20

① ②

① Model
HFY: Air finger(Angle style, Double acting)
HFTY: Air finger(Angle style, Single acting and normally opened)

② Bore size
6 10 16 20 25 32

[Note] HFY series are all attached with magnet.

Specification

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		22~100psi(0.15~0.7MPa)					
	Single acting	Φ6	45~100psi(0.3~0.7MPa)					
		Φ10~Φ32	36~100psi(0.25~0.7MPa)					
Temperature			-20~70℃					
Lubrication			Cylinder: Not required;Gripper jaws: Lubricate grease					
Cushion type			Bumper					
Max. frequency			180(c.p.m)					
Sensor switches [Note1]			CMSG/DMSG(S)					
Port size			M3×0.5		M5×0.8			

[Note1] Sensor switch should be ordered additionally.

Gripping force and stroke

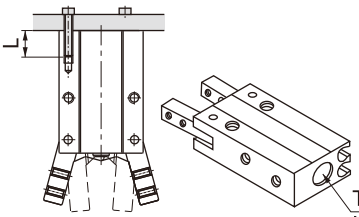
Acting type		Double acting(HFY)						Single acting Normally opened(HFTY)					
Bore size		6	10	16	20	25	32	6	10	16	20	25	32
Theoretical gripping torque (N·cm)	Closed	7.4×P	17.6×P	90×P	152×P	304×P	637×P	5.7×P	11.8×P	71.2×P	122.4×P	252×P	589×P
	Opened	10.6×P	29.4×P	129×P	252×P	473×P	904×P	-	-	-	-	-	-
Max. 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.

Installation and application

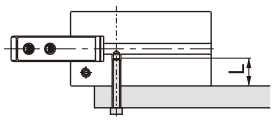
1. Due to the abrupt changes, the pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external 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



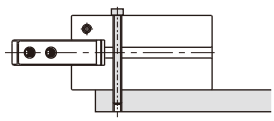
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
6	–	–	-	Φ7mm $^{+0.04}_{+0.01}$	1.5mm
10	M3×0.5	0.88N.m	6mm	Φ11mm $^{+0.04}_{+0.01}$	1.5mm
16	M4×0.7	2.1N.m	8mm	Φ17mm $^{+0.05}_{0}$	1.5mm
20	M5×0.8	4.3N.m	10mm	Φ21mm $^{+0.05}_{0}$	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



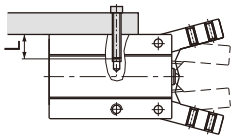
Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
6	M3×0.5	0.69	5
10	M3×0.5	0.69	5
16	M4×0.7	2.1	7
20	M5×0.8	4.3	8
25	M6×1.0	7.3	10
32	M6×1.0	7.3	10

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

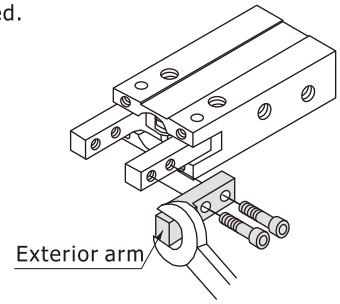
Surface installation type



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

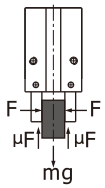


7. When gripping work-piece, the work-piece must be located in the center line of the two gripping jaws, and the two gripping jaws also need to touch the work-piece at the same time, otherwise they will be easily damaged.
8. Confirm that there is no additional external forces that are exerted on the 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.

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.

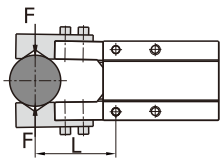
	The work-pieces as shown in the left :		μ =0.2	μ =0.1
	F: Gripping force (N) μ : friction coefficient between fittings and work-pieces. m: mass of work-pieces g: acceleration of gravity (=9.8m/s²)	The condition that the work-pieces won't drop is: $2\times\mu F>mg$ so: $F>\frac{mg}{2\times\mu}$ Safety coefficient is a, so F is: $F=\frac{mg}{2\times\mu}\times a$	$F=\frac{mg}{2\times0.2}\times4=10\times mg$ 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.

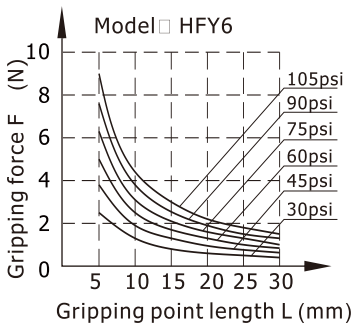
2. The selection of the gripping point

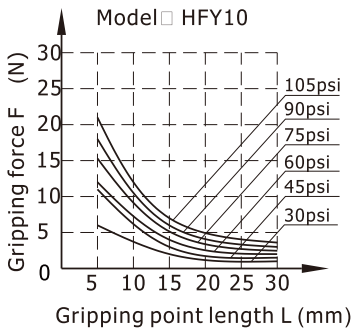
When the gripping force is determined, select the gripping point according to the limitation ranges shown in the below chart. If the gripping point is over the limit, the gripping jaw will be subjected to excessive moment load, and lead to short life of air gripper.

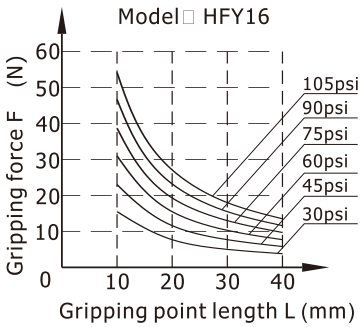
Double acting type closed gripping force

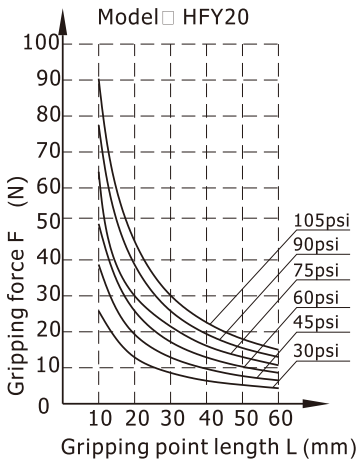


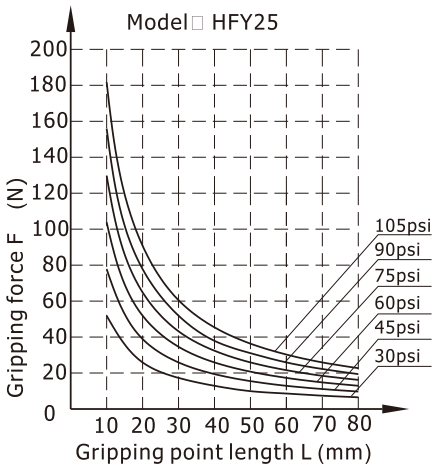
Gripping point length (mm)

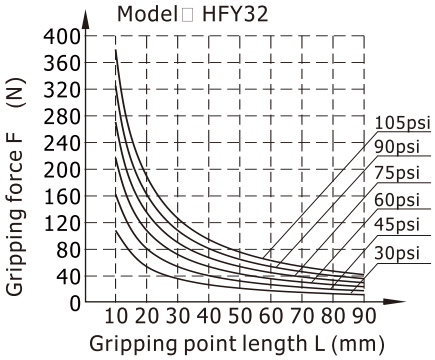




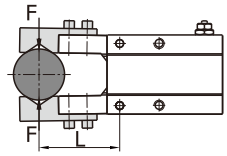




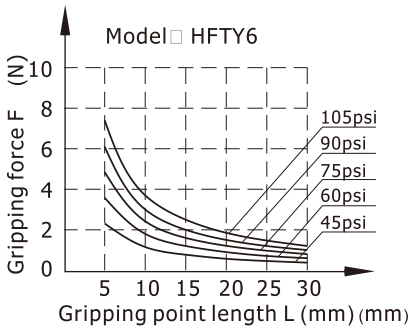


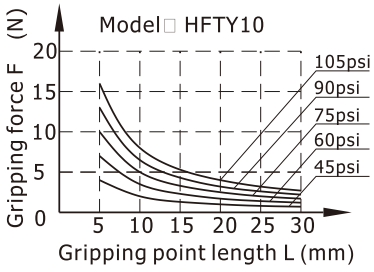


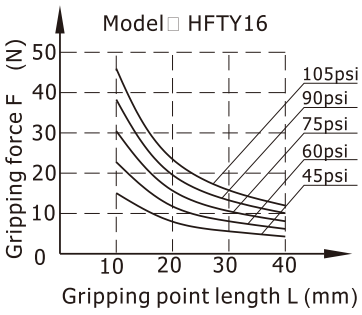
Single acting closed gripping force

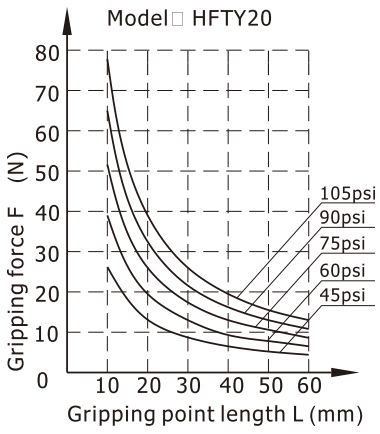


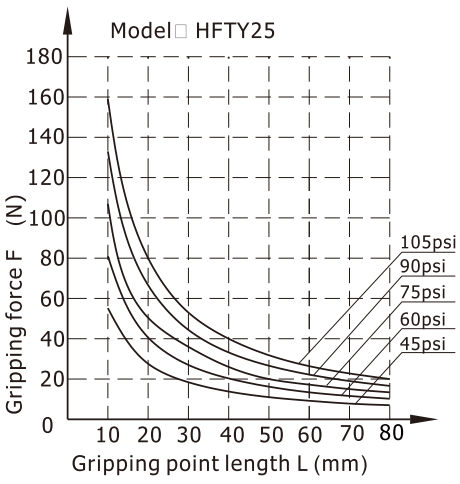
Gripping point length (mm)

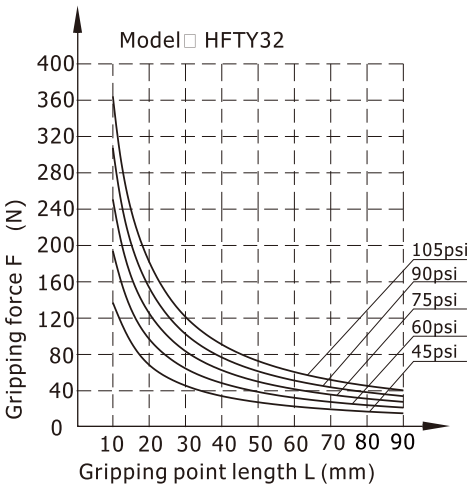










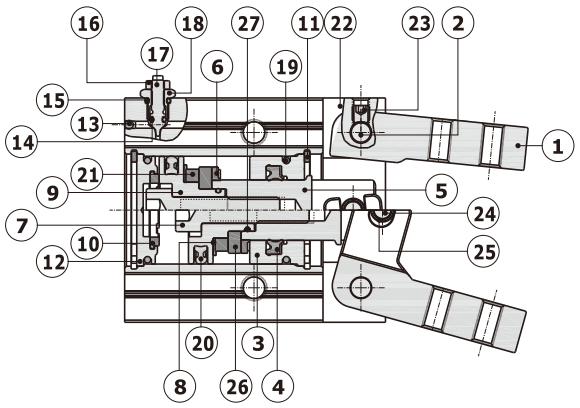


Air gripper(Angular style)

HFY Series

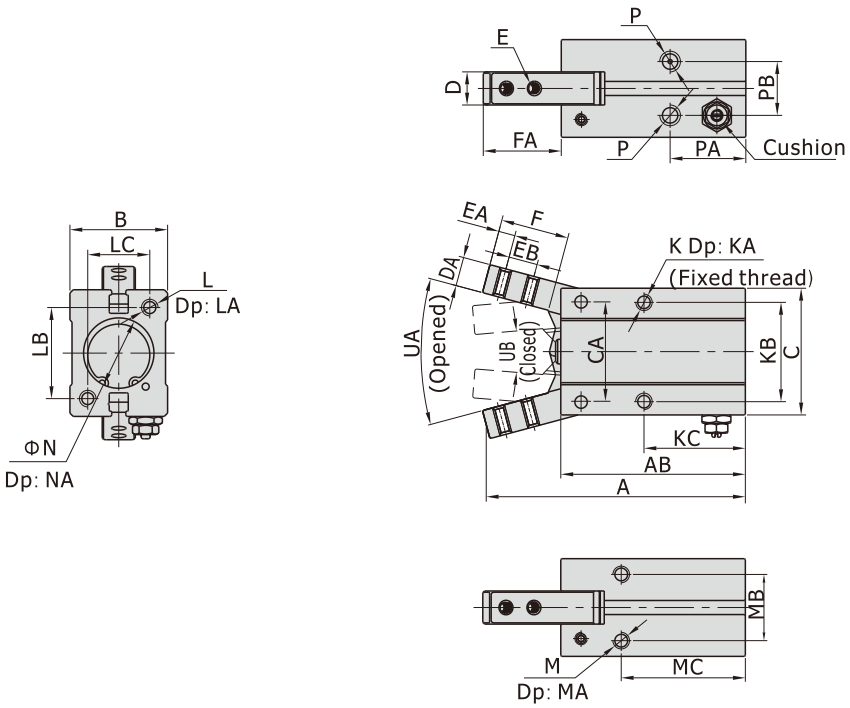
Bore size: Φ6, Φ10, Φ16, Φ20, Φ25, Φ32

Inner structure



NO.	Item	NO.	Item
1	Gripping jaws	15	O-ring
2	Pin	16	Screw cap
3	Front cover	17	Adjustable nut
4	Rod packing	18	Fixed nut
5	Piston rod	19	O-ring
6	Bumper	20	Piston seal
7	Countersink screw	21	Magnet
8	Magnet washer	22	Body
9	Piston	23	Countersink screw
10	Bumper	24	Pin
11	C clip	25	Pin sheath
12	Back cover	26	Magnet fixed flake
13	Steel ball	27	O-ring
14	O-ring		

Dimensions

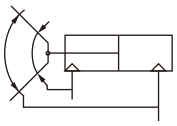


[Unit: mm]

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°

180°open/close style



Ordering code

HFR 20 □

1 2 3

① Model

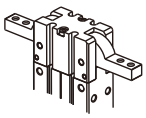
HFR: 180° open/close air gripper

② Bore size

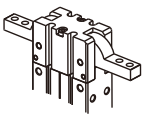
10 16 20 25 32

③ Mounting type

Blank: Mounting through tapped holes



N: Mounting through holes (tapped in open/close direction)



HFR series are all attached with magnet.

Specification

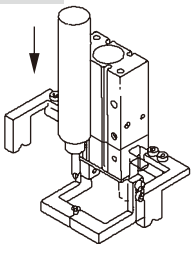
Bore size (mm)	10	16	20	25	32
Acting type	Double acting				
Fluid	Air(to be filtered by 40μm filter element)				
Operating pressure	21~100psi(0.15~0.7MPa)				
Temperature	-20~70℃				
Lubrication	Cylinder: Not required; Gripper jaws:Lubricate grease				
Cushion type	Bumper				
Max. frequency	60(c.p.m)				
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(S)				

[Note1] The gripping force is the value when the operating pressure is 75psi.

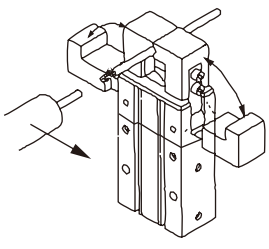
[Note2] Sensor switch should be ordered additionally.

Example

Screw down



Clamping cable



How to select product

1. Confirmation of effective gripping force

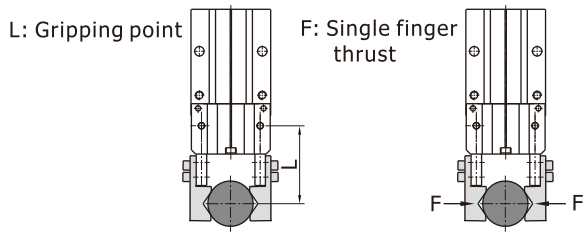
1.1) Though the coefficient of friction between the attachments and the workpiece is different, select a gripping force which is 10 to 20 times greater than the workpiece weight.

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.

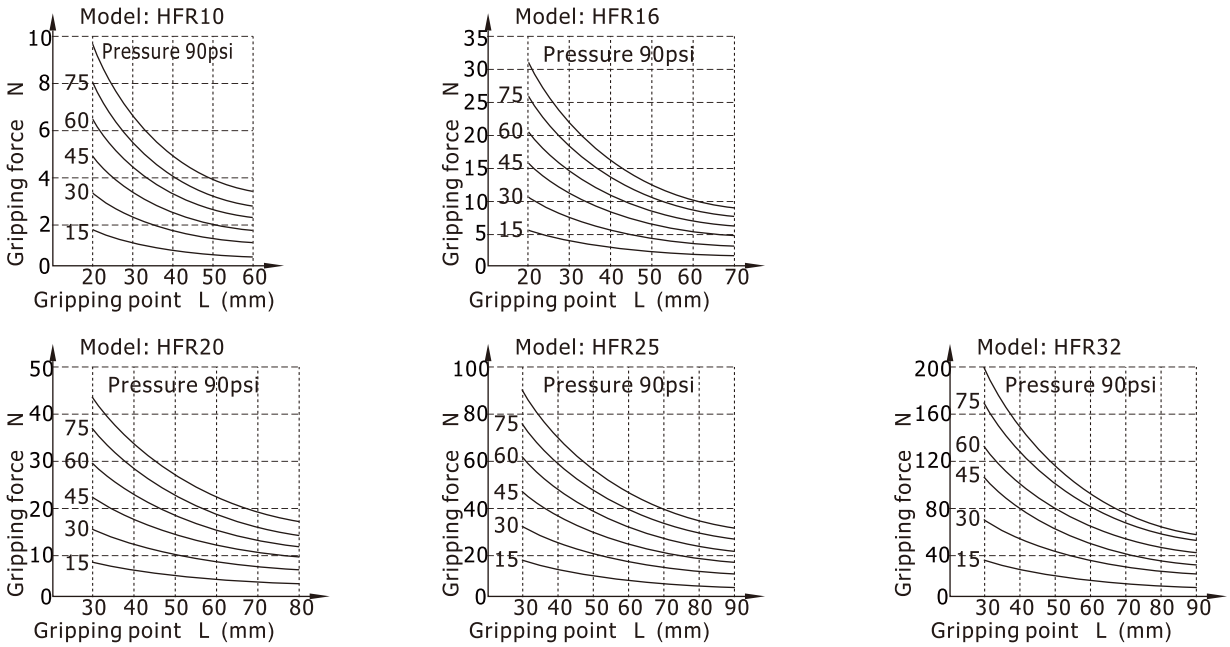
Effective gripping force=0.05kg×20 times×9.8m/s^2=more than 10N

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.

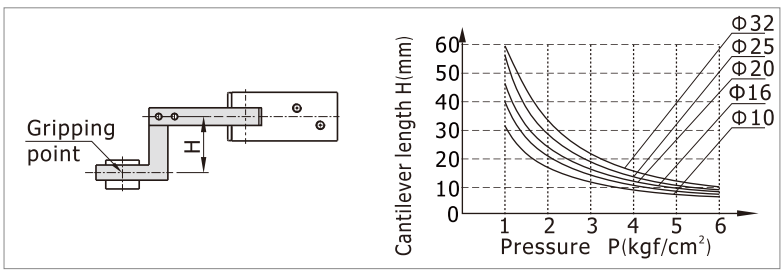
2. Connection between gripping force and gripping point distance



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.

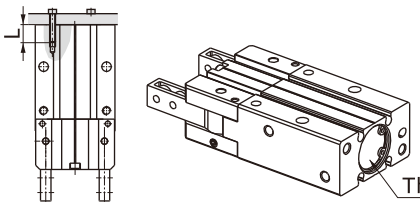
3.2) In the allowable range of gripping point, it is better to design for short and light fittings. If the fittings are long and heavy, the inertia force when the finger is open and close will become larger, and the performance of gripping jaw will be degraded, at the same time it will affect the life.



Installation and application

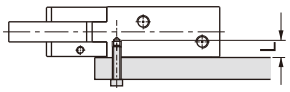
1. Due to the abrupt changes, the pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external 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



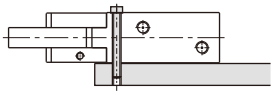
Bore size	The bolts type	Max. locking moment	Max. screwed depth	The aperture of the positioning bore	The depth of the positioning bore
10	M3×0.5	1.0N.m	6mm	Φ11mmH9	1.5mm
16	M4×0.7	2.0N.m	8mm	Φ17mmH9	1.5mm
20	M5×0.8	4.5N.m	10mm	Φ21mmH9	1.5mm
25	M6×1.0	7.0N.m	12mm	Φ26mmH9	1.5mm
32	M6×1.0	7.0N.m	14mm	Φ34mmH9	2.0mm

The installation of the front threaded hole



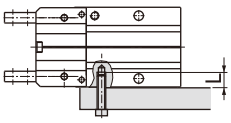
Bore size	The bolts type	Max. locking moment(Nm)	Max. screwed depth(mm)
10	M3×0.5	1.0	6
16	M4×0.7	2.0	8
20	M5×0.8	4.5	10
25	M6×1.0	7.0	12
32	M6×1.0	7.0	14

The installation of the front through hole



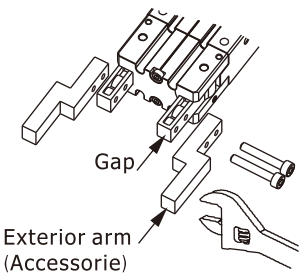
Bore size	The bolts type	Max. locking moment（Nm）
10	M3×0.5	1.0
16	M4×0.7	2.0
20	M5×0.8	4.5
25	M6×1.0	7.0
32	M6×1.0	7.0

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.



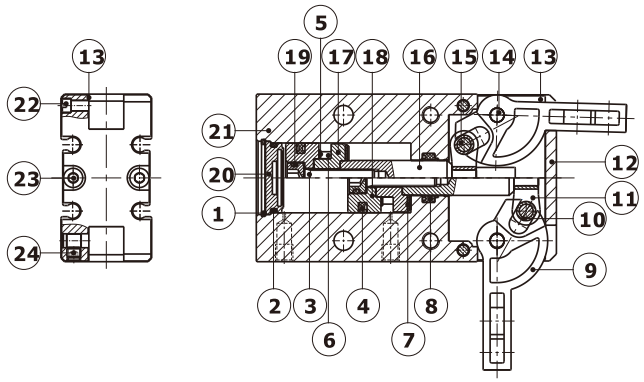
Bore size	The bolts type	Max. locking moment（Nm）
10	M3×0.5	0.6
16	M3×0.5	0.6
20	M4×0.7	0.8
25	M5×0.8	1.5
32	M6×1.0	3.0

Air gripper(180°open/close style)

HFR Series

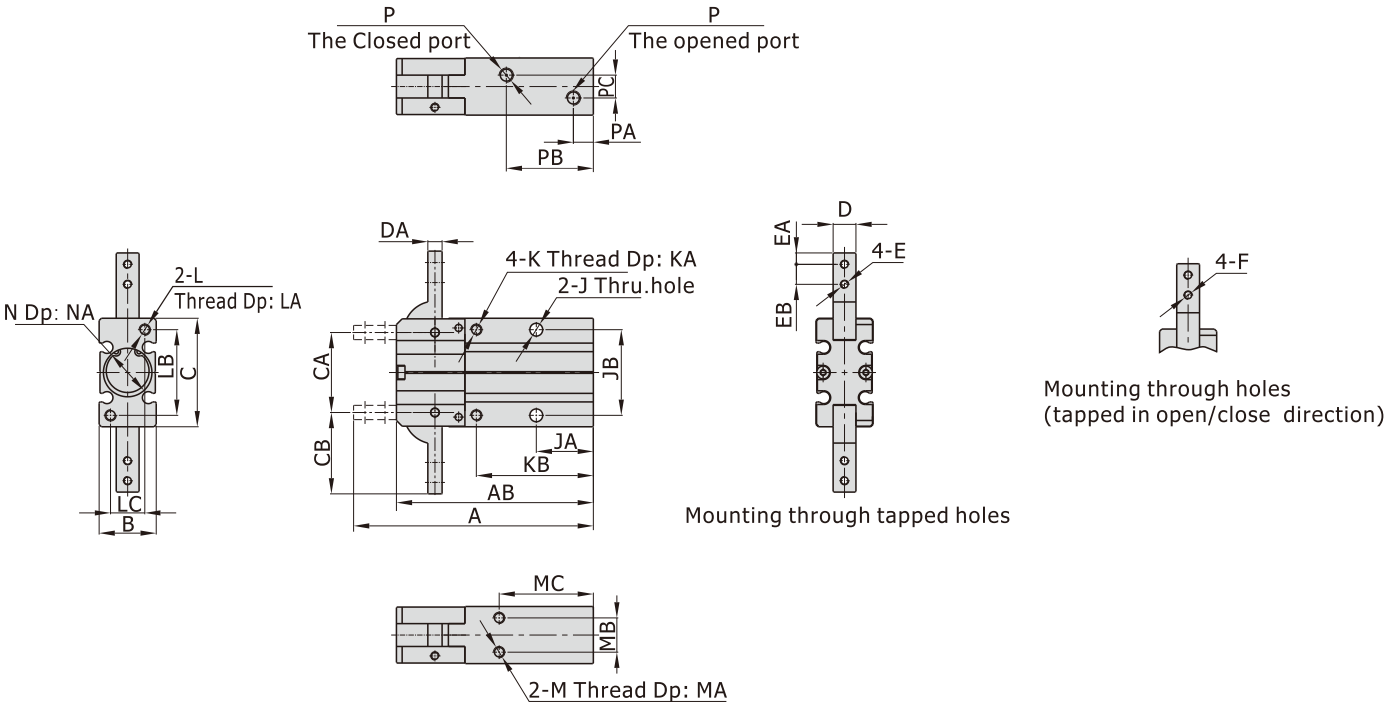
Bore size: Φ10, Φ16, Φ20, Φ25, Φ32

Inner structure



NO.	Item	NO.	Item
1	C clip	13	Sheet metal
2	O-ring	14	Pin
3	Countersink screw	15	Pin
4	Piston seal	16	Piston rod
5	Magnet washer	17	Magnet holder
6	Magnet	18	Piston
7	Bumper	19	O-ring
8	Rod packing	20	Back cover
9	Gripping jaws	21	Body
10	Pin sheath	22	Pin
11	Push block	23	Countersink screw
12	Front cover	24	Countersink screw

Dimensions



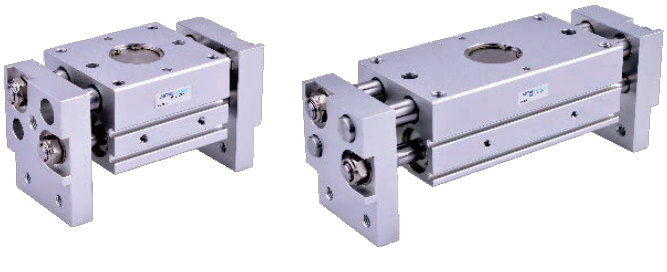
[Unit: mm]

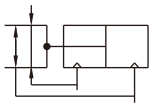
Bore size\Item	A	AB	B	C	CA	CB	D	DA	E	F	EA	EB	J	JA	JB	K	KA
10	71	58	15	30	22	23.5	6	4	M3×0.5	Φ3.3	3	6	Φ3.3	18	24	M3×0.5	6
16	84	69	20	38	28	28.5	8	5	M3×0.5	Φ3.3	4	7	Φ4.5	20	30	M4×0.7	8
20	106	86	26	48	36	37	10	8	M4×0.7	Φ4.5	5	9	Φ5.5	25	36	M5×0.8	10
25	131	107	30	58	45	45	12	10	M5×0.8	Φ5.5	6	12	Φ6.5	30	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	14	46	26	M6×1.0	12	26	59	$\Phi 34\ ^{+0.05}_{0}$	2	M5×0.8	9	56	18

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.





Ordering code

HFT 10 X 20 S T

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		T: NPT

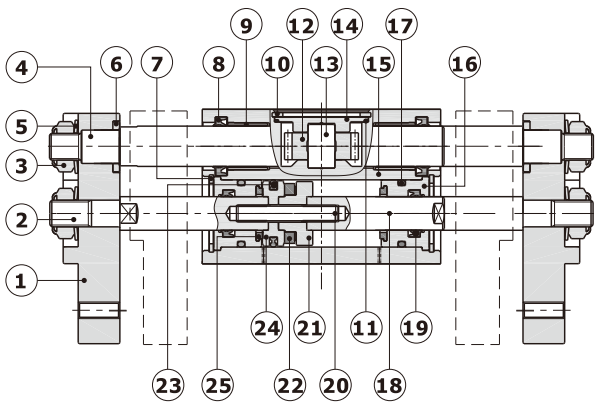
Specification

Bore size (mm)	10	16	20	25	32
Acting type	Double acting				
Fluid	Air(to be filtered by 40μm filter element)				
Operating pressure	35~100psi(0.25~1.05MPa)	22~100psi(0.15~1.05MPa)			
Proof pressure	175psi(1.2MPa)				
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 75psi and gripping length 40mm(Φ10~Φ25) or 80mm(Φ32).

Add) Refer to P475 for detail of sensor switch.

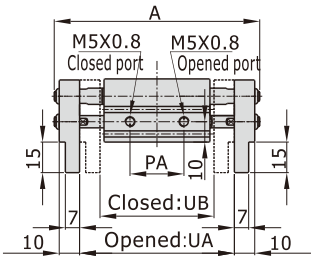
Inner structure

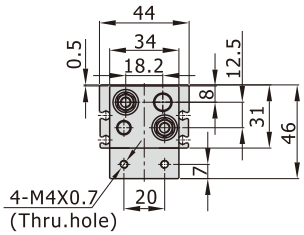


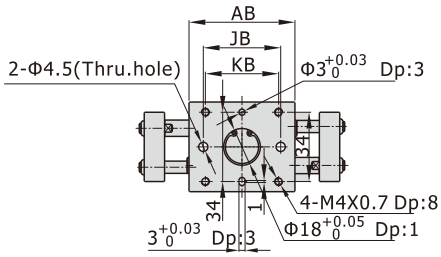
NO.	Item	NO.	Item
1	Faceplate	14	Gear cover
2	Piston rod A	15	Body
3	Locknut	16	Front cover
4	Leader	17	O-ring
5	Washer	18	Piston rod B
6	Gasket	19	O-ring
7	C clip	20	Joint bole
8	Dustproof ring	21	Magnet seat
9	Bearing	22	Magnet
10	C clip	23	Piston O-ring
11	O-ring	24	Piston
12	Gear	25	Bumper
13	Gear axes		

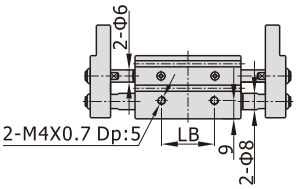
Dimensions

HFT10





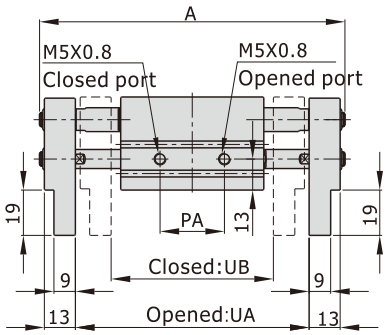


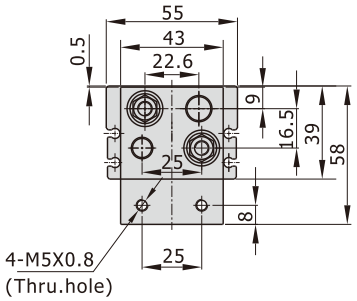


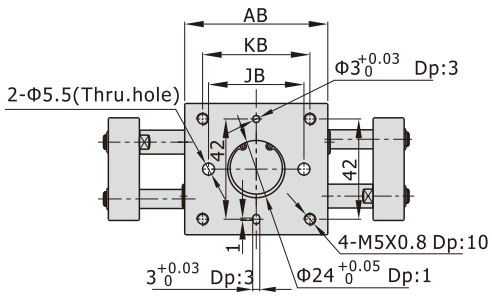
[Unit: mm]

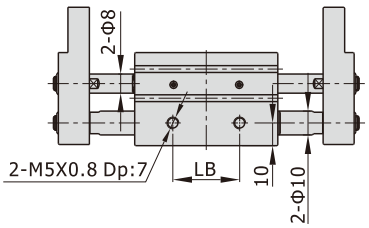
Item\Stroke	20	30	40	60
A	101	121	141	181
AB	52	60	68	86
JB	38	46	54	72
KB	36	44	52	70
LB	26	34	42	60
PA	23	30	35	45
UA(Opened)	76	96	116	156
UB(Closed)	56	66	76	96

HFT16





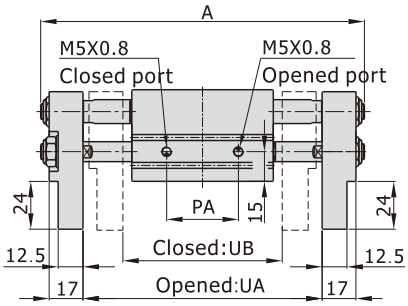


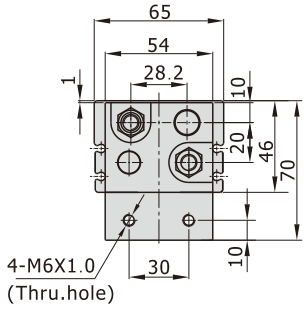


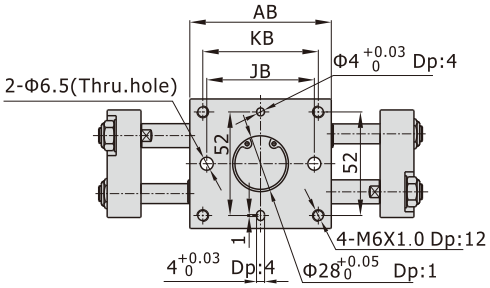
[Unit: mm]

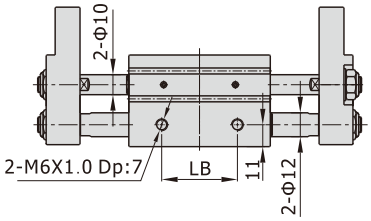
Item\Stroke	30	40	60	80
A	128	148	194	234
AB	60	70	90	110
JB	40	50	70	90
KB	45	55	75	95
LB	28	38	58	78
PA	29	34	44	54
UA(Opened)	98	118	164	204
UB(Closed)	68	78	104	124

HFT20





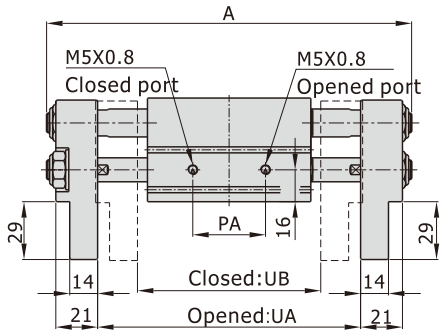


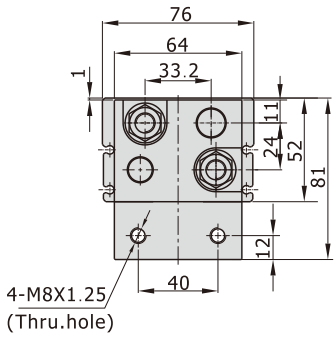


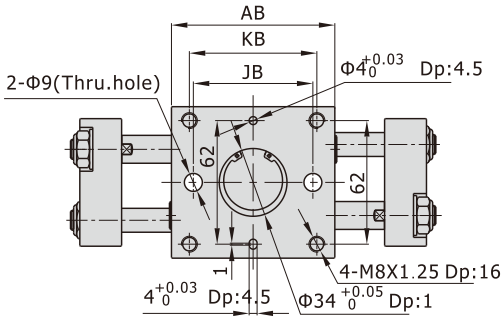
[Unit: mm]

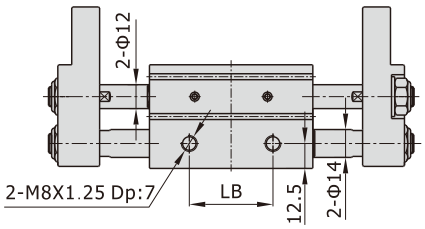
Item\Stroke	40	60	80	100
A	163	203	255	295
AB	71	91	113	133
JB	54	74	96	116
KB	58	78	100	120
LB	38	58	80	100
PA	36	46	56	66
UA(Opened)	120	160	212	252
UB(Closed)	80	100	132	152

HFT25





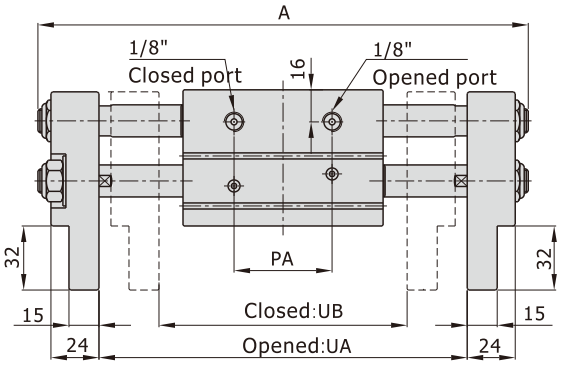


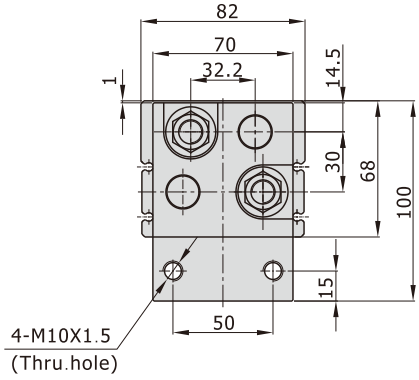


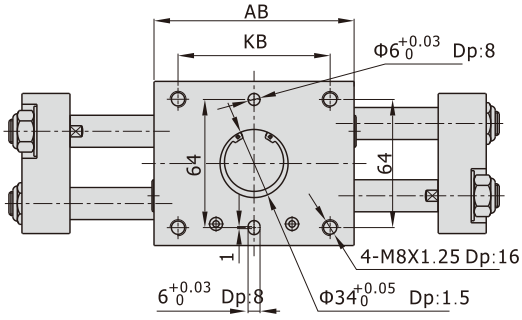
[Unit: mm]

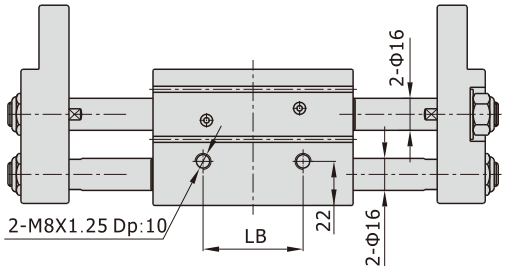
Item\Stroke	40	60	80	100
A	183	223	277	317
AB	82	102	122	142
JB	56	66	100	120
KB	60	70	104	124
LB	38	48	82	102
PA	36.5	46.5	56.5	66.5
UA(Opened)	132	172	226	266
UB(Closed)	92	112	146	166

HFT32









[Unit: mm]

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

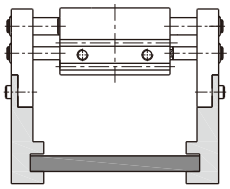
1.Please select pneumatic finger according to the following steps:

Confirmation of conditions → **Select possible type according to the work length** → **Calculation of required gripping force** → **Selection of model by gripping force graph**

Work form
Diameter x Length
200 mm x 20 mm plate

→ Work 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

Work mass: 0.3 kg

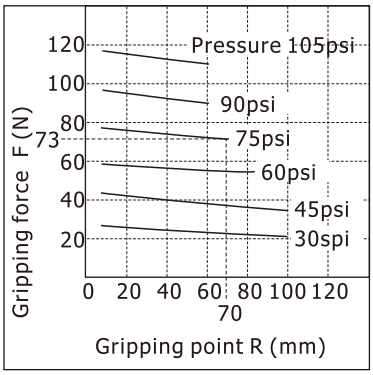


→ 1.Although conditions differ according to the workpiece shape and the coefficient of friction between the attachments and the workpiece, select a model that can provide a gripping force of 10 to 20 times the workpiece mass, or more.
2. Further allowance should be provided when great acceleration or 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

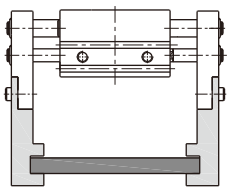


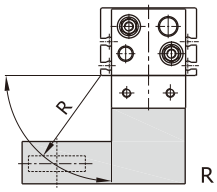
1.Selecting the HFT20×80 A gripping force of 73 N is obtained from the intersection point of gripping point position R= 70 and a pressure 0.5 MPa.
2.The gripping force is 24 times greater than the workpiece mass, and therefore satisfies a gripping force setting value of 20 times or more.

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.

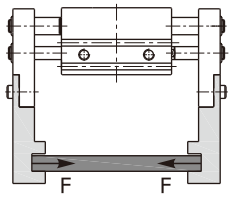




R: Gripping position (mm)

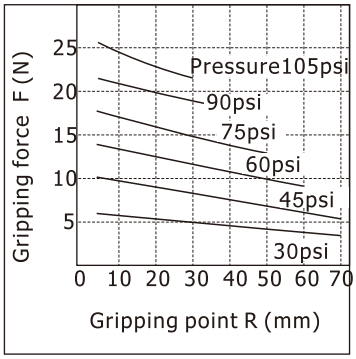
3. Effective Gripping Force

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.

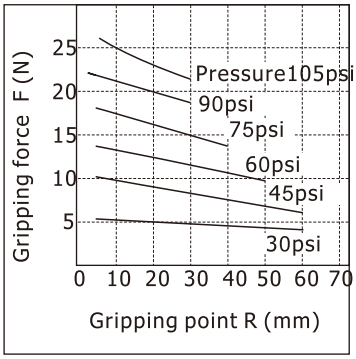


F = one finger thrust.

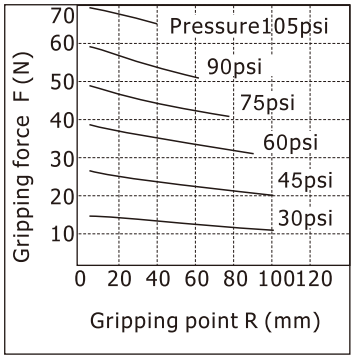
HFT10×20/HFT10×30



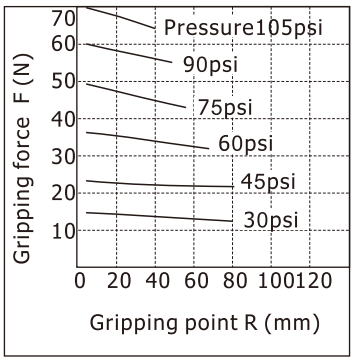
HFT10×40/HFT10×60



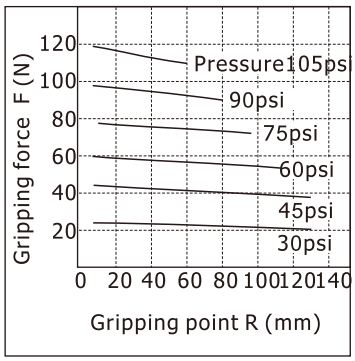
HFT16×30/HFT16×40



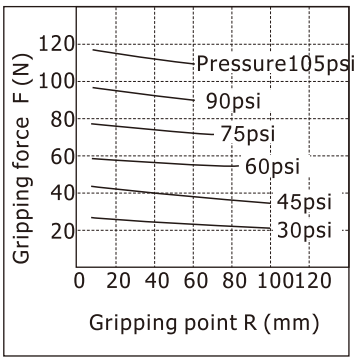
HFT16×60/HFT16×80



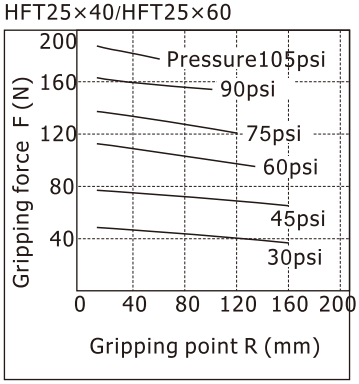
HFT20×40/HFT20×60



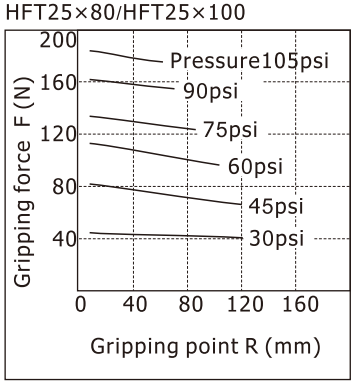
HFT20×80/HFT20×100



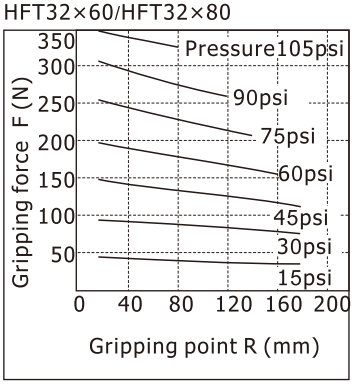
HFT25×40/HFT25×60



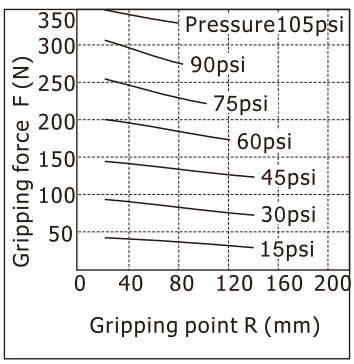
HFT25×80/HFT25×100



HFT32×60/HFT32×80

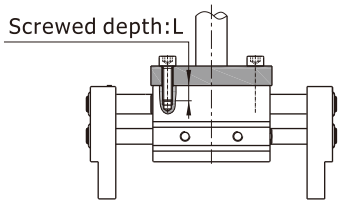


HFT32×100/HFT32×150

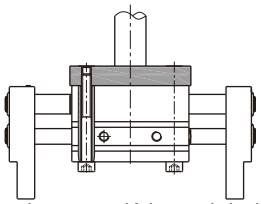


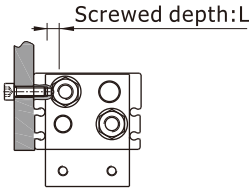
Installation and application

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)


Axial mounted(through hole)



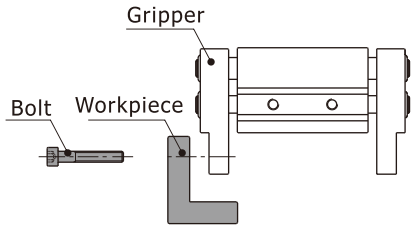
Besides mounted

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

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)	

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

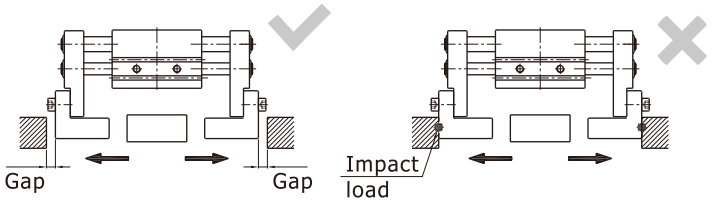
6. The installation method of the gripping jaw fittings
When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with allen wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.



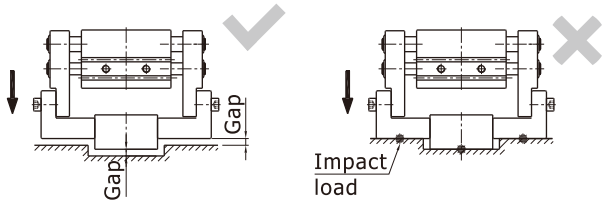
Bore size	The bolts type	Max. locking moment(Nm)
10	M4×0.7	1.4
16	M5×0.8	2.8
20	M6×1.0	4.8
25	M8×1.25	12
32	M10×1.5	24

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.

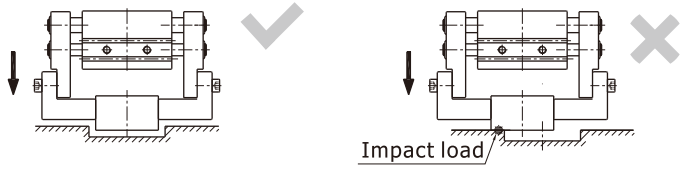
7.1) The end of stroke under the open state of air gripper



7.2) The end of stroke under the move state of air gripper

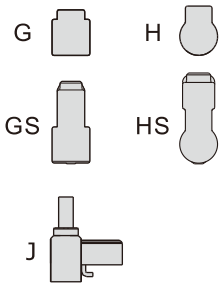


8. When the work-pieces are inserted, the center line should be coaxial, no offset, in case there are external force generated on gripping jaw. When testing, it is specially required that the manual operation should be reduced, the pressure should be used to run it at a low speed, and guarantee the safety and no impact.



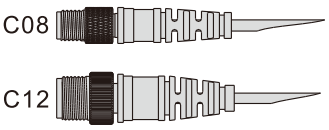
9. Please use the flow control valve to adjust the opening and closing speed of gripping jaw if too fast.
10. People can not enter the movement path of air gripper and articles can not be placed on the path too.
11. Before removing the air gripper, please confirm that it is out of working state, and then discharge of compressed air.

Ordering code for DMS



DMS G-□ 020-□

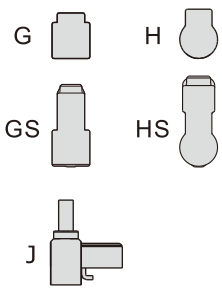
1 2 3 4 5



①**Model**	DMS: Solid State Sensor
②**Specifications**	G GS H HS E J
③**Output type**	Blank: 2 wire / N：NPN / P：PNP
④**Lead wire length**	020: 2m 030: 3m 050: 5m 100: 10m C08:150mm with M8 plug connector C12:150mm with M12 plug connector
⑤**Additional specification**	Blank: General type W:Waterproof type IP68 [note1]

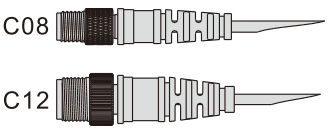
[Note 1]There is no waterproof type for C08 ,C12 & J, GS, HS. The sockets of C08 and C12 need additional order.

Ordering code for CMS



CMS G-020-□

1 2 3 4



①**Model**	CMS: Reed Sensor
②**Specifications**	G H J E
③**Lead wire length**	020: 2m 030: 3m 050: 5m 100: 10m C08:150mm with M8 plug connector C12:150mm with M12 plug connector
④**Additional specification**	Blank: General type H:Heat resistant [note2]

[Note 2]There is no heat resistant type for C08 & C12. The sockets of C08 and C12 need additional order.

Ordering code for Socket

F–DMS C08 2 020

1 2 3 4 5

①**Catagory code**	F: Accessory
②**Specification code**	DMS: Digital Magnetic Sensor
③**Socket type**	C08:M8 socket C12:M12 socket
④**Wire type**	2: 2-wire type 3:3-wire type
⑤**Wire length**	020: 2 meters 030:3meters 050:5meters 100: 10meters

Ordering code for Cylinder accessory

F - MQ □
1 2 3

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

Ordering code for NPB series Cylinder accessory

F - MQN S5/16
1 2 3

①Category	F:Accessory
②Model	MQN:NPB Series Cylinder Accessory
③Bore size	S5/16: Φ5/16 inch
	S7/16: Φ7/16 inch
	S9/16: Φ9/16 inch
	S3/4: Φ3/4 inch
	S7/8: Φ7/8 inch
	S1-1/16: Φ1-1/16 inch
	S1-1/4: Φ1-1/4 inch
	S1-1/2: Φ1-1/2 inch
	S1-3/4: Φ1-3/4 inch
	S2: Φ2 inch
	S2-1/2: Φ2-1/2 inch

Ordering code for Tie Rod Cylinder accessory

F - SC □ SH
1 2 3 4

①Category	F: Accessory		
②Model	SC:Tie Rod Cylinder Accessory		
③Cylinder	Code	For series	For bore size
	32	SC SGC	Φ32, Φ40, Φ50
	63		Φ63
	80		Φ80, Φ100
	125		Φ125
	160		Φ160, Φ200
	250		Φ250
④Attached			

DMS、CMS Series

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	2.7V 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	IP64/IP68		
Standard	CE marking, RoHS		

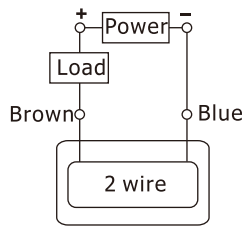
CMS Specifications

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	

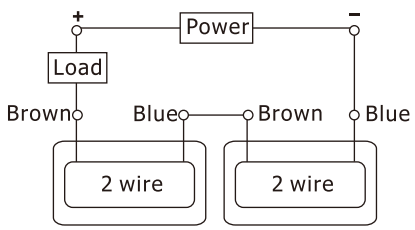
Connection method

2 wire, reed sensor connection

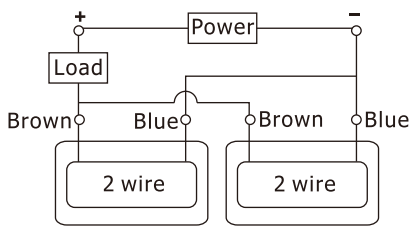
1.General connection



2.Series connection(And)



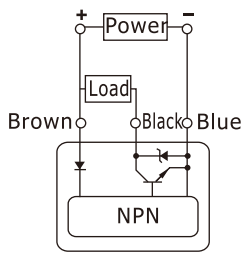
3.Parallel connection(OR)



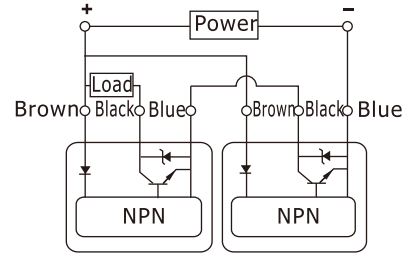
3 wire, solid state NPN connection

Note: The indicator lights will light up when both auto switches are turned NO.

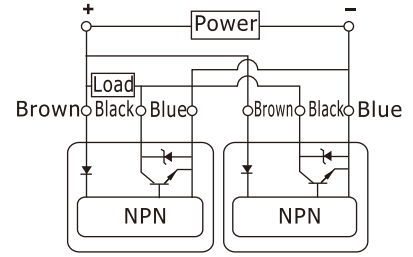
1.General connection



2.Series connection(And)



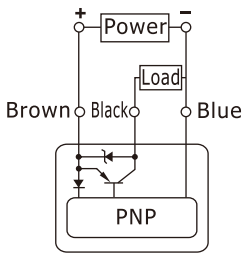
3.Parallel connection(OR)



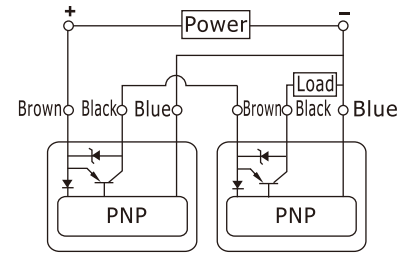
3 wire, solid state PNP connection

Note: The indicator lights will light up when both auto switches are turned NO.

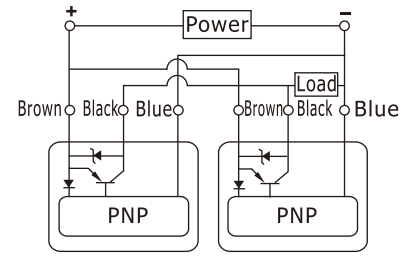
1.General connection



2.Series connection(And)



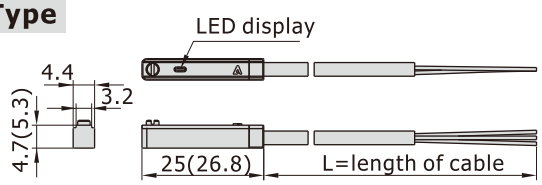
3.Parallel connection(OR)



Dimensions

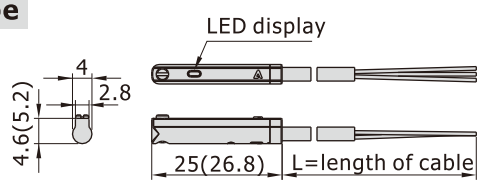
[Unit: mm]

G Type



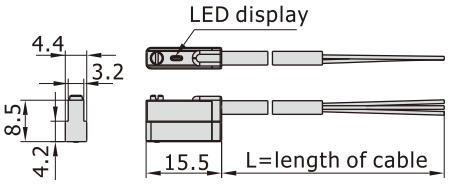
Note:a number in the bracket is the dimension of CMSG.

H Type

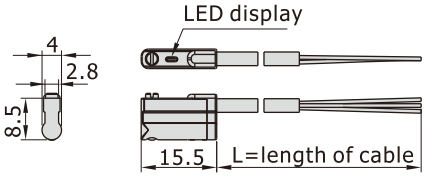


Note:a number in the bracket is the dimension of CMSH.

GS Type

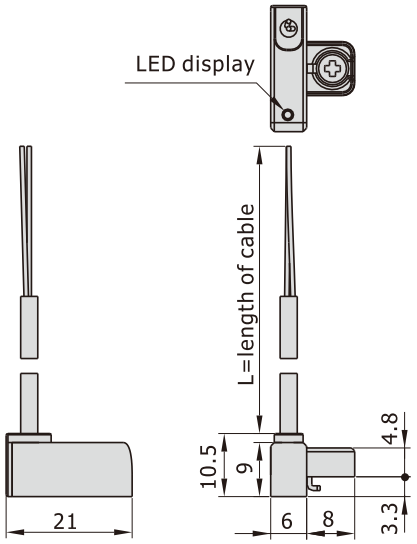


HS Type

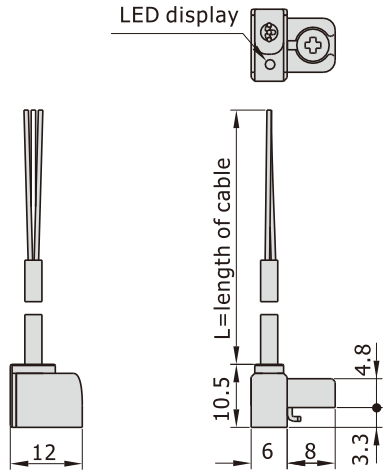


J Type

CMSJ

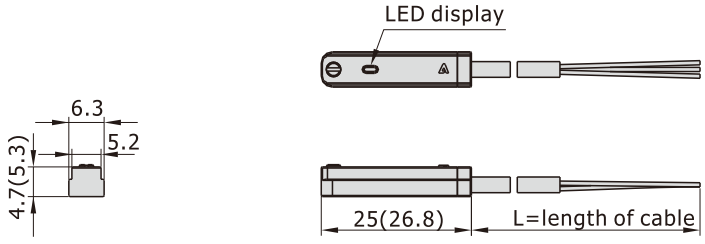


DMSJ



length of cable specification	length of cable(L)
020 Type	2000mm
030 Type	3000mm
050 Type	5000mm

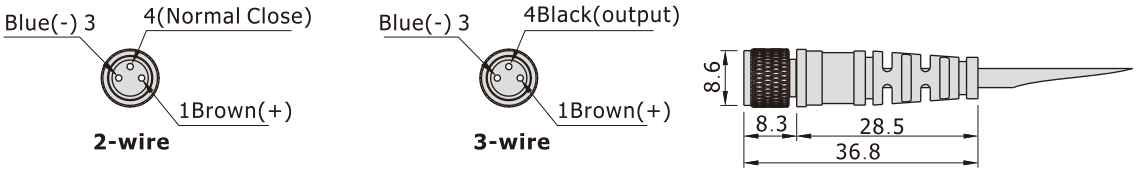
E Type



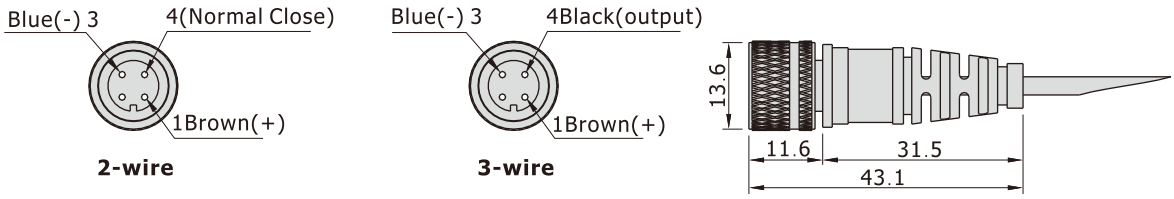
Note:a number in the bracket is the dimension of CMSE.

Socket

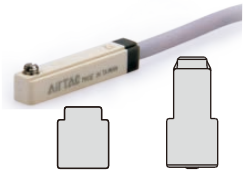
M8 socket

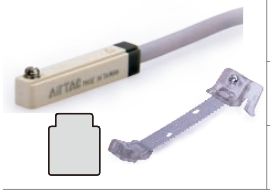


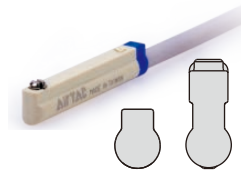
M12 socket



How to selection

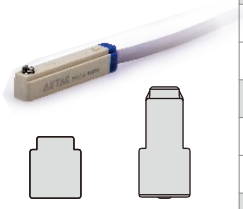
DMSG(S) CMSG	NSU						HFKP					HFKL		
	1-1/2	2	2-1/2	3-1/4	4	5	16	20	25	32	40	16	20	25
	●	●	●	●	●	●	●	●	●	●	●	●	●	●

DMSG(S) CMSG	NPB										
	5/16	7/16	9/16	3/4	7/8	1-1/16	1-1/4	1-1/2	1-3/4	2	2-1/2
	●	●	●	●	●	●	●	●	●	●	●
	It needs an accessory to mount a sense on a cylinder										

DMSH(S) CMSH	NACF								NACQ									
	9/16	3/4	1-1/16	1-1/2	2	2-1/2	3	4	12	16	20	25	32	40	50	63	80	100
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	HFD					HFKP						HFCQ						
	8	12	16	20	25	10	16	20	25	32	40	16	20	25	32	40	50	63
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	HFKL				HGS													
	10	16	20	25	6	8	10	12										
	●	●	●	●	●	●	●	●										

How to selection

DMSG(S)	CMSG	HFK						ACQ\TACQ													SDA								
		10	16	20	25	32	40	12	16	20	25	32	40	50	63	80	100	125	140	160	12	16	20	25	32	40	50	63	80	100
		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	●	●	●	●	●	●	●



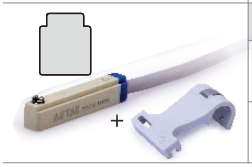
TWQ						TCL\TCM												QCK							TWH\TWM							
20	25	32	40	50	6	10	12	16	20	25	32	40	50	63	80	100	12	16	20	25	32	40	50	63	20	25	32	40	50	63	80
●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

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
●	●	●	●	●	●			●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

TR						STW				
6	10	16	20	25	32	10	16	20	25	32
●	●	●	●	●	●	●	●	●	●	●

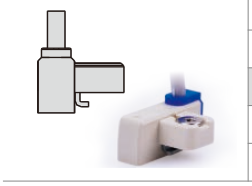
Stainless steel																												
PB\PBR						MI								MF				MG							MA\MAC					
6	8	10	12	16	8	10	12	16	20	25	32	40	20	25	32	40	20	25	32	40	50	63	16	20	25	32	40	50	63
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Aluminum alloy															Aluminum alloy (Thick type)			It needs an accessory to mount a sense on a cylinder
				MBL						MCK						TWG		
				20	25	32	40	50	63	25	32	40	50	63	80	32	40	50
				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●



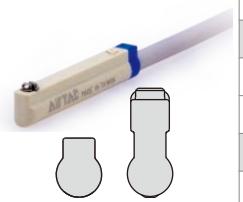
SC										SGC				It needs an accessory to mount a sense on a cylinder
32	40	50	63	80	100	125	160	200	250	125	160	200	250	
●	●	●	●	●	●	●	●	●	●	●	●	●	●	

DMSJ	CMSJ	ACQ\TACQ						SDA										TWQ			QCK				QDK				TN				
		32	40	50	63	80	100	12	16	20	25	32	40	50	63	80	100	32	40	50	32	40	50	63	20	25	32	40	10	16	20	25	32
		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●



TWH\TWM							
20	25	32	40	50	63	80	
●	●	●	●	●	●	●	

DMSH(S)	CMSH	ACQ\TACQ			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
		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

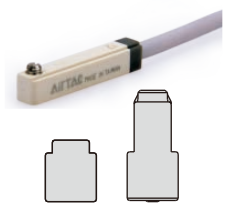
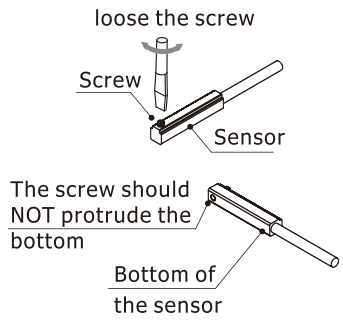
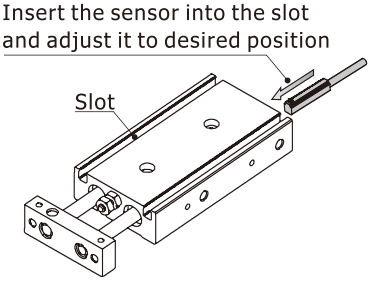
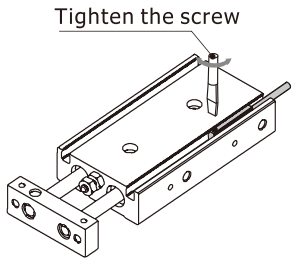
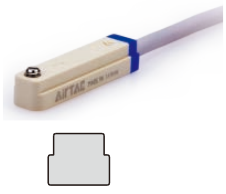
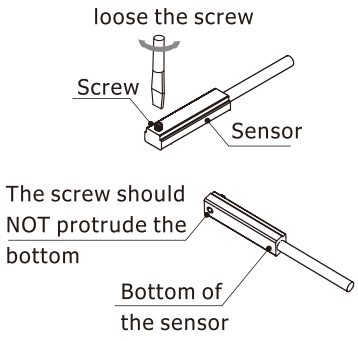
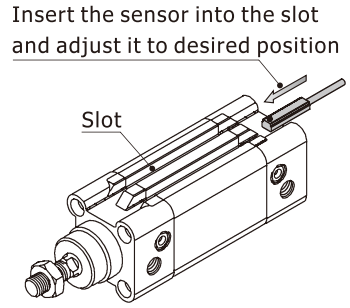
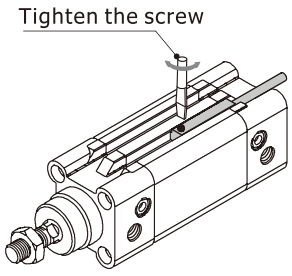
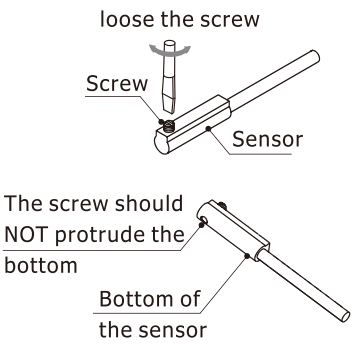
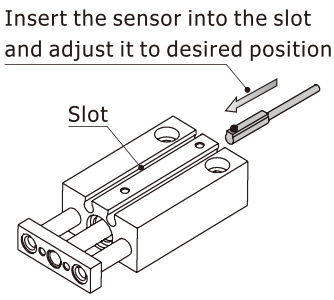
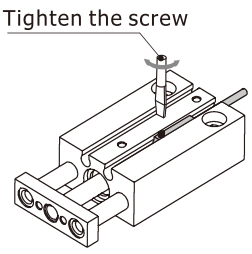
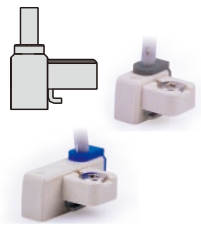
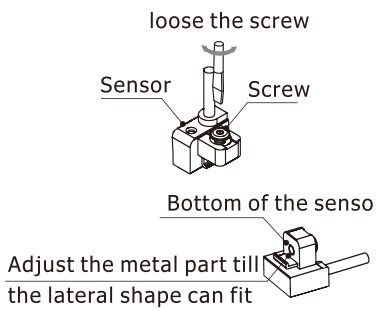
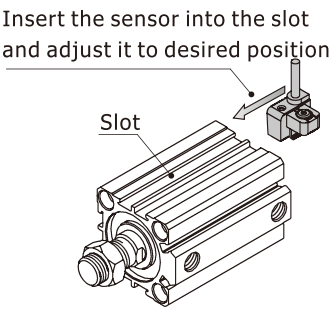
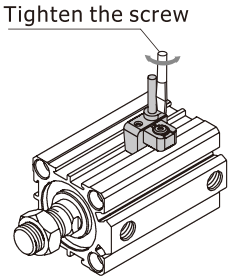


QDK				HLQ\HLQL						HLS\HLSL						MU						HLH			MPG				
20	25	32	40	6	8	12	16	20	25	6	8	12	16	20	25	6	8	10	12	16	20	6	10	16	20	6	8	10	12	16
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

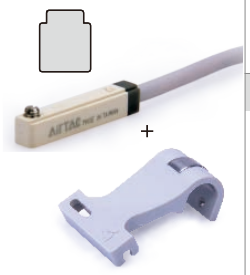
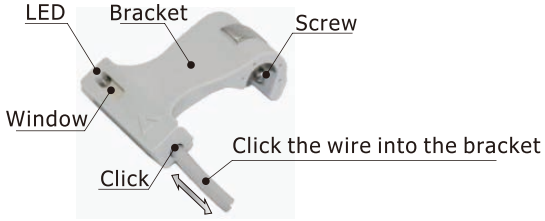
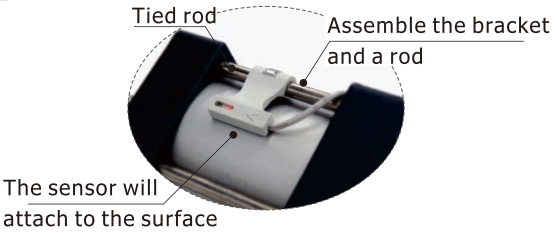
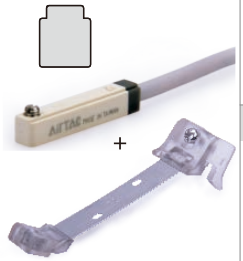
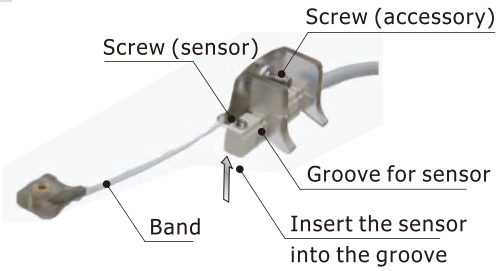
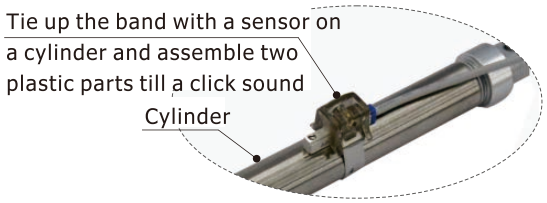
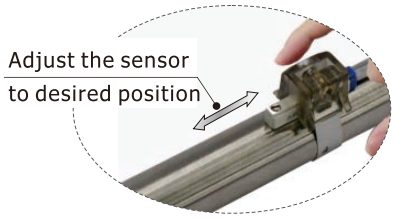
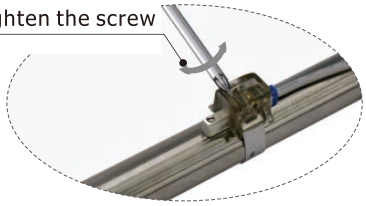
HRQ										HFK					
2	3	7	10	20	30	50	70	100	200	10	16	20	25	32	40
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

DMSE	CMSE	SE/BSE							SAI								ACE										
		32	40	50	63	80	100	125	32	40	50	63	80	100	125	160	200	12	16	20	25	32	40	50	63	80	100	125
		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

How to mounting

Sensor model	Procedure		
DMSG(S)/CMSG	1	2	3
			
DMSE/CMSE	1	2	3
			
DMSH(S)/CMSH	1	2	3
			
DMSJ/CMSJ	1	2	3
			

How to mounting

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 

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.

Ordering code

NACA 3/4X5/8 - 1 N

1 2 3 4 5

①Model	②Body male thread	③Stroke	④Impact speed	⑤Prevention crash cap
NACA: Self-compensation type shock absorber	3/8:3/8-32UNEF 1/2:1/2-20UNF 9/16:9/16-18UNF	The specification for detail	1: High speed(Light load) 2: Middle speed(Middle load) 3: Low speed(Heavy load)	Blank: Plastic cap N: No cap
	3/4:3/4-16UNF 1:1-12UNF			Blank: Plastic cap F: Iron cap N: No cap
	1-1/4:1-1/4-12UNF			Blank: Plastic cap F: Iron cap
NACJ: Adjustable type shock absorber	3/8: 3/8-32UNEF 1/2: 1/2-20UNF 9/16: 9/16-18UNF		Not this code	Blank: Plastic cap N: No cap
	3/4: 3/4-16UNF 1: 1-12UNF			Blank: Plastic cap F: Iron cap N: No cap
	1-1/4: 1-1/4-12UNF 1-3/4: 1-3/4-12UNF			Blank: Plastic cap F: Iron cap

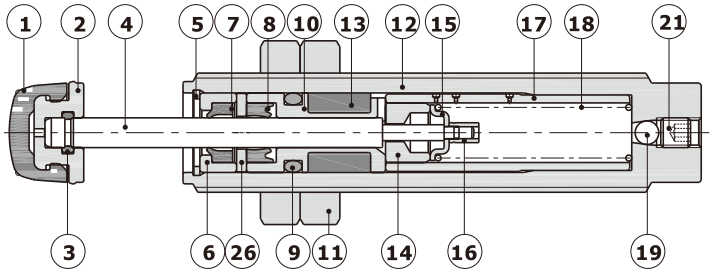
Product feature

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 dyed black , 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.

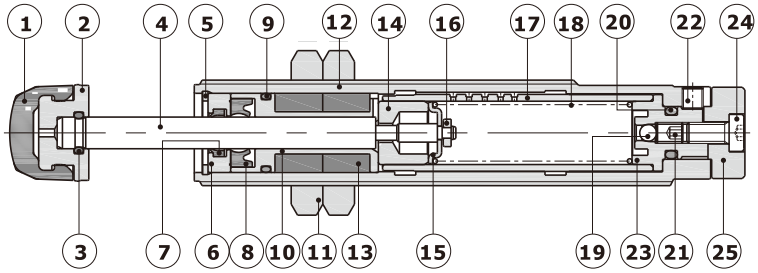
NACA, NACJ Series

Inner structure

NACA



NACJ



No.	Item	No.	Item
1	Bump cap	14	Piston
2	Bump cap(core)	15	Spring seat
3	O-ring	16	Busher
4	Piston rod	17	Inlet body
5	Clip	18	Spring
6	Front cover	19	Ball
7	Front cover gasket	20	O-ring
8	Front cover gasket	21	Set screw
9	O-ring	22	Set screw
10	Correcting body	23	Back cover
11	Nut	24	Screw
12	Body	25	Knob
13	Accumulator	26	Washer

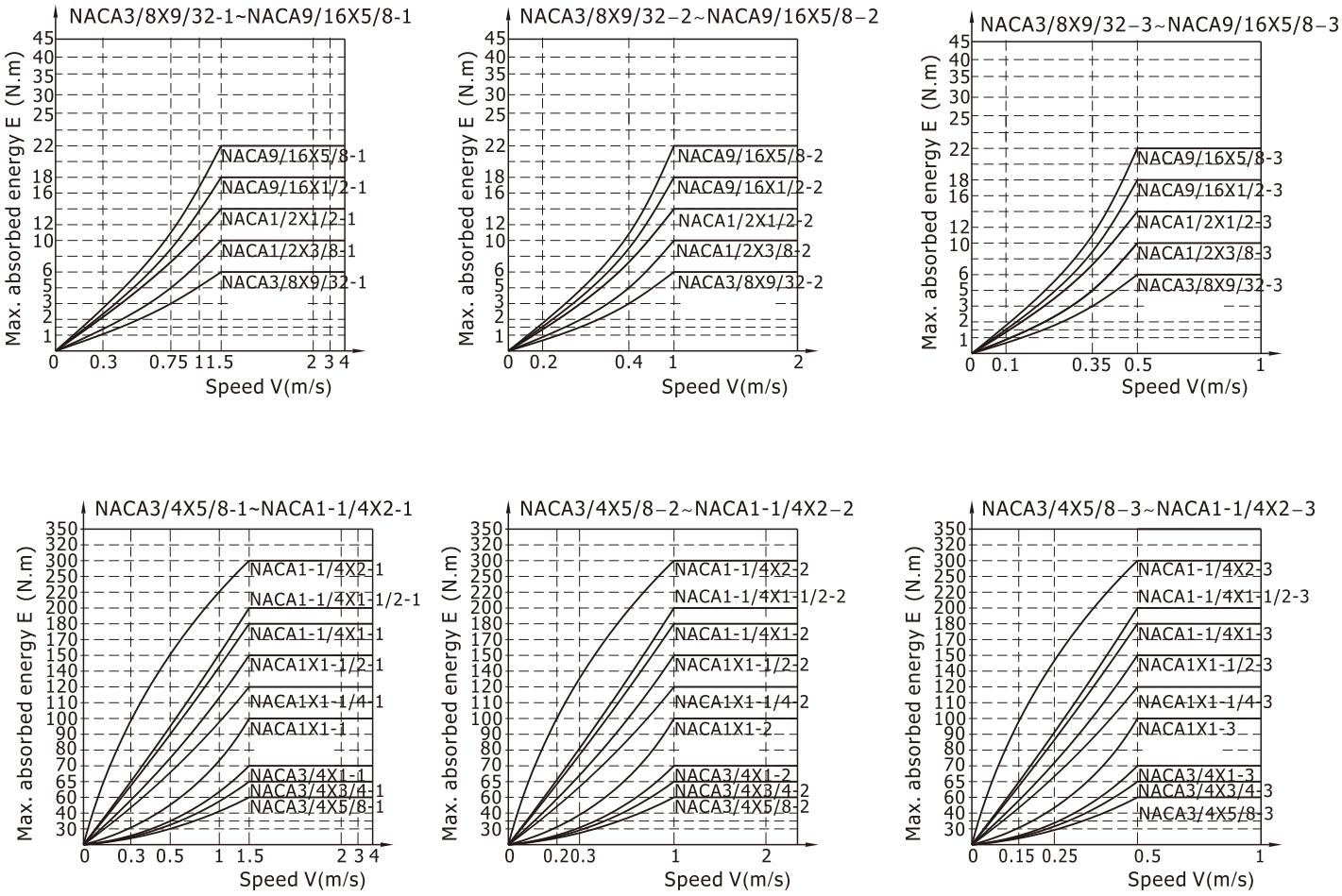
Specification

Model	Stroke (inch)	Max. energy absorbed (N.m)	Max. energy absorbed/hour(Nm/h)	Max. effective mass(lb)			Max. impact speed(m/s)			Weight (lb)
				High speed	Middle speed	Low speed	High speed	Middle speed	Low speed	
NACA3/8X9/32	9/32	6	14500	22	88	110	4	2	1	0.06
NACA1/2X3/8	3/8	10	30000	40	132	176	4	2	1	0.09
NACA1/2X1/2	1/2	14	35000	55	198	253	4	2	1	0.11
NACA9/16X1/2	1/2	18	36000	66	243	331	4	2	1	0.15
NACA9/16X5/8	5/8	22	39000	88	309	397	4	2	1	0.17
NACA3/4X5/8	5/8	55	46000	485	1322	1940	4	2	1	0.36
NACA3/4X3/4	3/4	60	50000	529	1455	2116	4	2	1	0.39
NACA3/4X1	1	65	54000	573	1653	2293	4	2	1	0.41
NACA1X1	1	100	77500	882	2425	3527	4	2	1	0.64
NACA1X1-1/4	1-1/4	112	80000	992	2723	3968	4	2	1	0.68
NACA1X1-1/2	1-1/2	125	85000	1102	3031	4409	4	2	1	0.73
NACA1-1/4X1	1	180	100000	1587	4409	6349	4	2	1	1.31
NACA1-1/4X1-1/2	1-1/2	240	110000	2116	5842	8466	4	2	1	1.48
NACA1-1/4X2	2	300	120000	2646	7175	10582	4	2	1	1.65

Model	Stroke (inch)	Max. energy absorbed (N.m)	Max. energy absorbed/hour(Nm/h)	Max. effective mass(lb)	Max. impact speed(m/s)	Weight (lb)
NACJ3/8X9/32	9/32	6	14500	110	4	0.06
NACJ1/2X3/8	3/8	10	30000	176	4	0.09
NACJ9/16X1/2	1/2	20	36000	388	4	0.17
NACJ3/4X3/4	3/4	60	50000	2116	4	0.42
NACJ1X1	1	100	75000	3527	4	0.68
NACJ1-1/4X1	1	180	100000	6349	4	1.19
NACJ1-1/4X2	2	300	110000	10582	4	1.76
NACJ1-3/4X1	1	350	150000	12346	4	2.54
NACJ1-3/4X2	2	700	180000	24691	4	3.13
NACJ1-3/4X3	3	1050	210000	37038	4	3.79

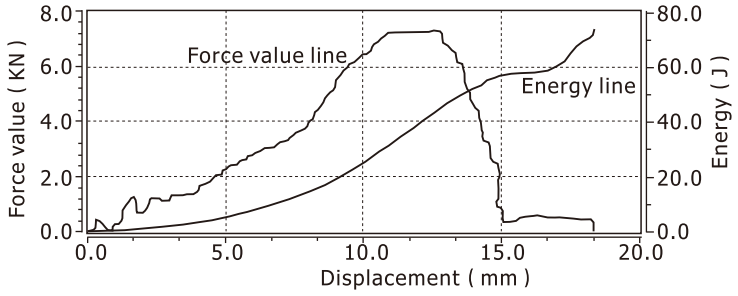
NACA, NACJ Series

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

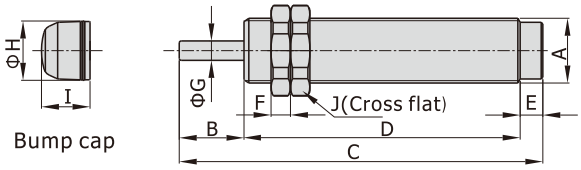


Note: As the chart shows, energy is absorbed by a lower reaction force at the beginning of the stroke, then by a smooth linear deceleration. It decelerates smoothly at last.

NACA, NACJ Series

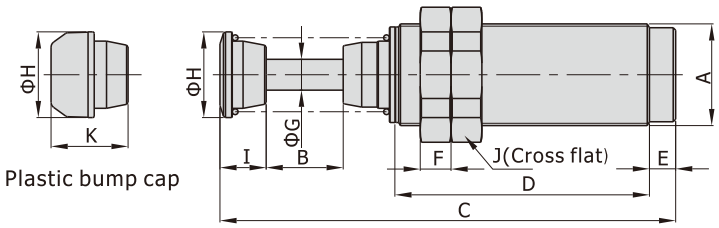
Dimensions

NACA



[Unit: inch]

Model\Item	A	B	C	D	E	F	G	H	I	J
NACA3/8X9/32	3/8-32 UNEF	9/32	2.20	1.73	0.20	0.16	0.12	0.33	0.30	7/16
NACA1/2X3/8	1/2-20 UNF	3/8	2.50	1.91	0.20	0.16	0.12	0.39	0.30	11/16
NACA1/2X1/2	1/2-20 UNF	1/2	2.91	2.22	0.20	0.16	0.12	0.39	0.30	11/16
NACA9/16X1/2	9/16-18 UNF	1/2	3.19	2.50	0.20	0.25	0.16	0.47	0.47	3/4
NACA9/16X5/8	9/16-18 UNF	5/8	3.64	2.81	0.20	0.25	0.16	0.47	0.47	3/4
NACA3/4X5/8	3/4-16 UNF	5/8	3.66	2.76	0.28	0.25	0.24	0.67	0.59	1
NACA3/4X3/4	3/4-16 UNF	3/4	4.39	3.37	0.28	0.25	0.24	0.67	0.59	1
NACA3/4X1	3/4-16 UNF	1	4.82	3.54	0.28	0.25	0.24	0.67	0.59	1
NACA1X1	1-12 UNF	1	4.84	3.52	0.31	0.25	0.24	0.91	0.63	1-1/4
NACA1X1-1/4	1-12 UNF	1-1/4	5.37	3.80	0.31	0.25	0.24	0.91	0.63	1-1/4
NACA1X1-1/2	1-12 UNF	1-1/2	5.85	4.04	0.31	0.25	0.24	0.91	0.63	1-1/4

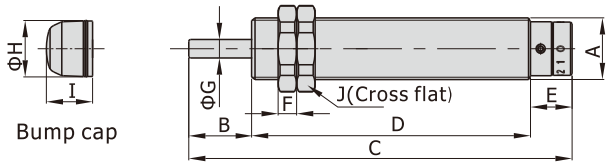


[Unit: inch]

Model\Item	A	B	C	D	E	F	G	H	I	J	K
NACA1-1/4X1	1-1/4-12 UNF	1	5.83	3.25	0.33	0.38	0.39	1.09	0.59	1-1/2	0.98
NACA1-1/4X1-1/2	1-1/4-12 UNF	1-1/2	7.17	4.09	0.33	0.38	0.39	1.09	0.59	1-1/2	0.98
NACA1-1/4X2	1-1/4-12 UNF	2	8.43	4.86	0.33	0.38	0.39	1.09	0.59	1-1/2	0.98

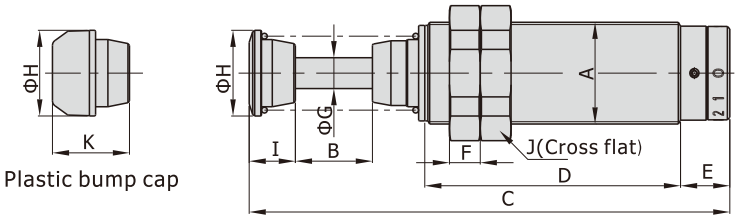
NACA, NACJ Series

NACJ



[Unit: inch]

Model\Item	A	B	C	D	E	F	G	H	I	J
NACJ3/8X9/32	3/8-32 UNEF	9/32	2.64	1.93	0.43	0.16	0.12	0.33	0.30	7/16
NACJ1/2X3/8	1/2-20 UNF	3/8	2.91	2.05	0.43	0.16	0.12	0.39	0.30	11/16
NACJ9/16X1/2	9/16-18 UNF	1/2	3.60	2.66	0.45	0.24	0.16	0.47	0.47	3/4
NACJ3/4X3/4	3/4-16 UNF	3/4	4.86	3.58	0.53	0.24	0.24	0.67	0.59	1
NACJ1X1	1-12 UNF	1	5.22	3.64	0.57	0.24	0.24	0.91	0.63	1-1/4
NACJ1X1-1/2	1-12 UNF	1-1/2	6.24	4.17	0.57	0.24	0.24	0.91	0.63	1-1/4



[Unit: inch]

Model\Item	A	B	C	D	E	F	G	H	I	J	K
NACJ1-1/4X1	1-1/4-12 UNF	1	6.14	3.27	0.63	0.37	0.39	1.09	0.59	1-1/2	0.98
NACJ1-1/4X2	1-1/4-12 UNF	2	9.13	4.88	0.63	0.37	0.39	1.09	0.59	1-1/2	0.98
NACJ1-3/4X1	1-3/4-12 UNF	1	6.36	3.41	0.63	0.50	0.47	1.37	0.59	2-1/8	0.98
NACJ1-3/4X2	1-3/4-12 UNF	2	8.92	4.98	0.63	0.50	0.47	1.37	0.59	2-1/8	0.98
NACJ1-3/4X3	1-3/4-12 UNF	3	11.93	6.59	0.63	0.50	0.47	1.37	0.59	2-1/8	0.98

NACA, NACJ Series

How to select

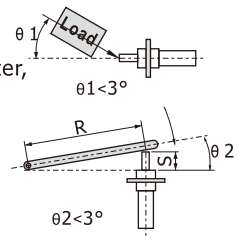
Theoretical energy parameter table for cylinders under no-load state Unit：J (N.m)

Stroke(inch)		9/32	3/8	1/2	5/8	3/4	1	1-1/4	1-1/2	2	3
Bore size (inch)	5/16	0.212	0.283	0.377	0.471	0.565	0.754	0.942	1.131	1.507	2.261
	7/16	0.415	0.554	0.739	0.923	1.108	1.477	1.847	2.216	2.955	4.432
	9/16	0.687	0.916	1.221	1.526	1.832	2.442	3.053	3.663	4.884	7.326
	3/4	1.221	1.628	2.171	2.713	3.256	4.342	5.427	6.512	8.683	13.025
	7/8	1.662	2.216	2.955	3.693	4.432	5.909	7.387	8.864	11.819	17.728
	1-1/16	2.451	3.267	4.357	5.446	6.535	8.713	10.892	13.070	17.426	26.140
	1-1/4	3.392	4.522	6.030	7.537	9.045	12.060	15.075	18.090	24.120	36.180
	1-1/2	4.884	6.512	8.683	10.854	13.025	17.366	21.708	26.049	34.732	52.099
	1-3/4	6.648	8.864	11.819	14.773	17.728	23.637	29.547	35.456	47.275	70.912
	2	8.683	11.577	15.437	19.296	23.155	30.873	38.592	46.310	61.746	92.620
	2-1/2	13.567	18.090	24.120	30.150	36.180	48.239	60.299	72.359	96.479	144.718
	3	19.537	26.049	34.732	43.415	52.099	69.465	86.831	104.197	138.930	208.394
	3-1/4	22.929	30.572	40.762	50.953	61.143	81.525	101.906	122.287	163.049	244.574
	4	34.732	46.310	61.746	77.183	92.620	123.493	154.366	185.239	246.986	370.479
	5	54.269	72.359	96.479	120.599	144.718	192.958	241.197	289.437	385.915	578.873

For example:
When the pressure is 90psi, bore size of ϕ1-1/2 under no-load state plus shock stroke of 1/2inch can produce energy of 8.68 N.m.
Refer to the specification table, you will find NACA1/2X1/2 fits.
Note: Cylinders under full-load state can produce as twice as the energy shown above.

Installation and Operation

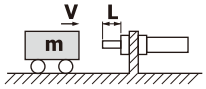
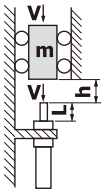
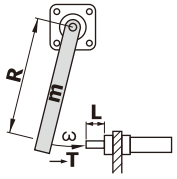
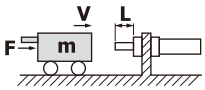
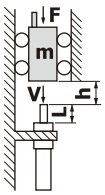
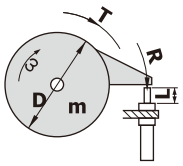
1. The scale range of adjustable shock absorbers is 0 to 9 (8). Factory set is at 6 (4) position. 0 means the softest, while 9 means the hardest;
2. Correct selection of shock absorbers can ensure a smooth deceleration and good shock absorbing properties;
3. If there exists rebounding at the beginning 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 14°F~176°F;
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)
NACA3/8X9/32、NACJ3/8X9/32	3/8-32 UNEF	3.5
NACA1/2X3/8、NACA1/2X1/2、NACJ1/2X3/8	1/2-20 UNF	8.0
NACA9/16X1/2、NACA9/16X5/8、NACJ9/16X1/2	9/16-18 UNF	11.0
NACA3/4X5/8、NACA3/4X3/4、NACA3/4X1、NACJ3/4X3/4	3/4-16 UNF	24.0
NACA1X1、NACA1X1-1/4、NACA1X1-1/2 NACJ1X1、NACJ1X1-1/2	1-12 UNF	40.0

NACA, NACJ Series

Calculation of energy under load state

Horizontal impact	Vertical impact	Rotation 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	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	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)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	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	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($\omega=2\pi N/60$) ($90°=1.57rad/s$)	rad/s
g	Gravity acceleration	9.8(m/s^2)	T	Torque	N.m			

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 10:M10 12:M12 14:M14 16:M16	The specification for detail	1: High speed(Light load) 2: Middle speed(Middle load) 3: Low speed(Heavy load)	Blank: Plastic cap N: No cap
	20:M20 25:M25 27:M27			Blank: Plastic cap F: Iron cap N: No cap
	33:M33 36:M36			Blank: Plastic cap F: Iron cap
ACJ: Adjustable type shock absorber	10:M10 12:M12 14:M14		Not this code	Blank: Plastic cap N: No cap
	20:M20 25:M25 27:M27			Blank: Plastic cap F: Iron cap N: No cap
	33:M33 36:M36 42:M42			Blank: Plastic cap F: Iron cap

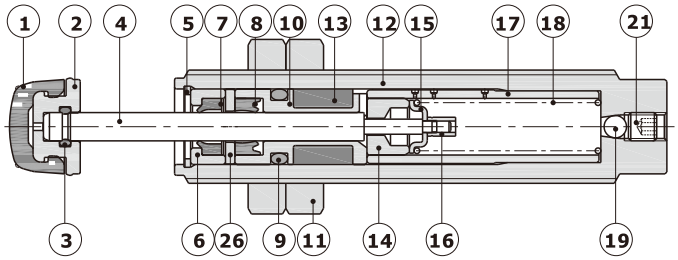
Product feature

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 dyed black , 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.

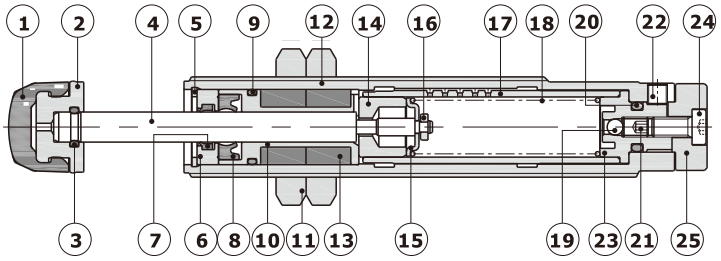
ACA, ACJ Series

Inner structure

ACA



ACJ



No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Bump cap	6	Front cover	11	Nut	16	Busher	21	Set screw	26	Washer
2	Bump cap(core)	7	Front cover gasket	12	Body	17	Inlet body	22	Set screw		
3	O-ring	8	Front cover gasket	13	Accumulator	18	Spring	23	Back cover		
4	Piston rod	9	O-ring	14	Piston	19	Ball	24	Screw		
5	Clip	10	Correcting body	15	Spring seat	20	O-ring	25	Knob		

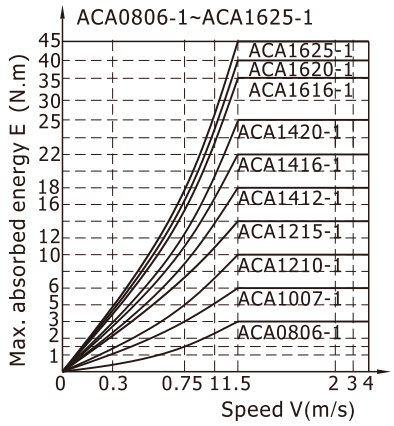
Specification

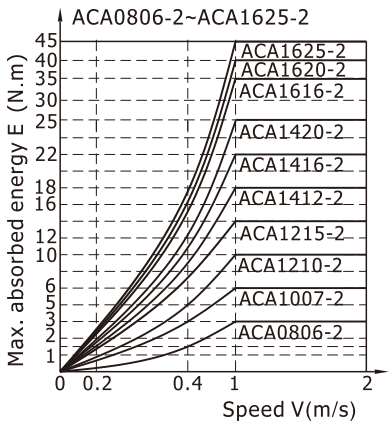
Model	Stroke (mm)	Max. energy absorbed (N.m)	Max. energy absorbed/hour(Nm/h)	Max. effective mass(kg)			Max. impact speed(m/s)			Weight (g)
				High speed	Middle speed	Low speed	High speed	Middle speed	Low speed	
ACA0806	6	3	5400	5	20	25	4	2	1	12
ACA1007	7	6	14500	10	40	50	4	2	1	26
ACA1210	10	10	30000	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

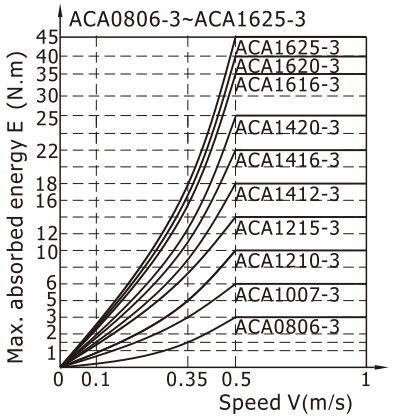
Model	Stroke (mm)	Max. energy absorbed (N.m)	Max. energy absorbed/hour(Nm/h)	Max. effective mass(kg)	Max. impact speed(m/s)	Weight (g)
ACJ1007	7	6	14500	50	4	28
ACJ1210	10	10	30000	80	4	43
ACJ1412	12	20	36000	160	4	75
ACJ2020	20	60	50000	960	4	189
ACJ2525	25	100	75000	1600	4	308
ACJ2550	50	150	85000	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

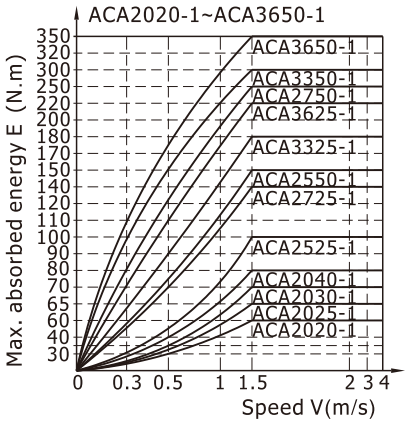
ACA, ACJ Series

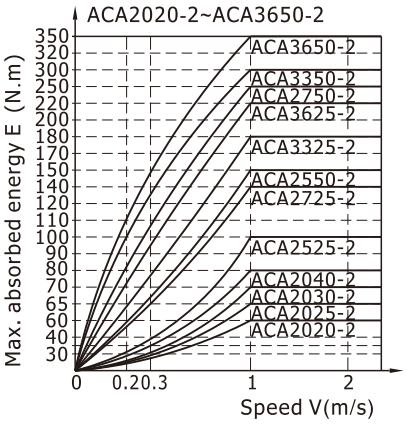
Max. absorbed energy and speed curve

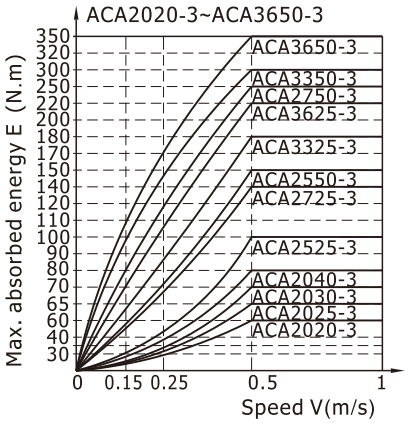






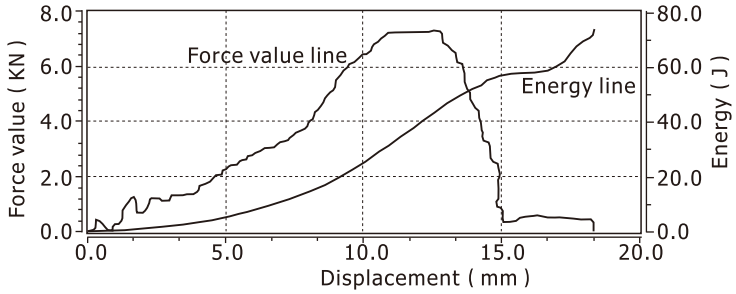






Note: 1. The interval under the red line shows the energy range absorbed by corresponding shock absorber.
2. It is better to use 20%-80% of the Max. absorbed energy.

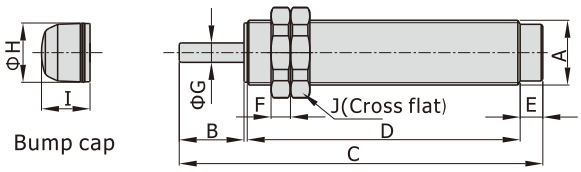
Buffer curve



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.

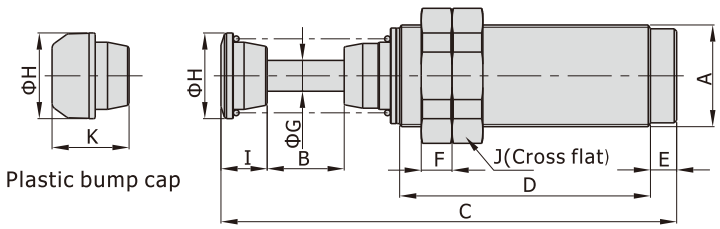
Dimensions

ACA



[Unit: mm]

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	47	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

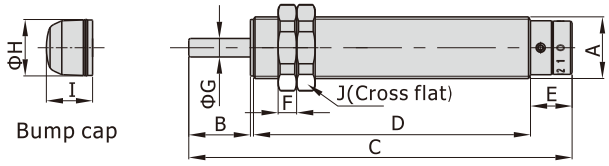


[Unit: mm]

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

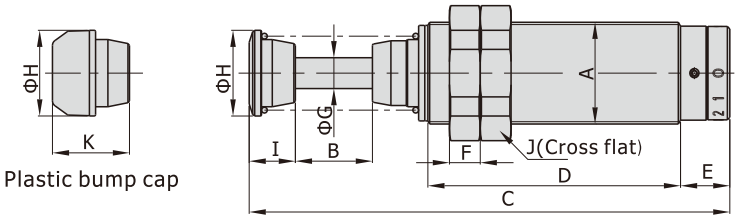
ACA, ACJ Series

ACJ



[Unit: mm]

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



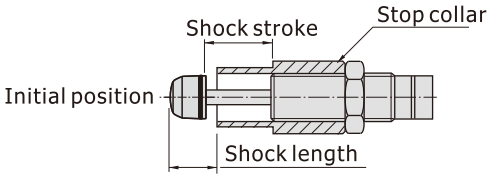
[Unit: mm]

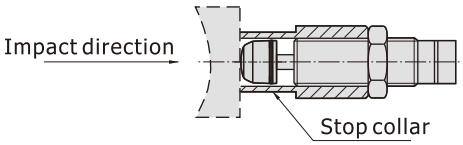
Model\Item	A	B	C	D	E	F	G	H	I	J	K
ACJ3325	M33×1.5	25	156	82	16	10	10	27.8	15	41	25
ACJ3350	M33×1.5	50	221	122	16	10	10	27.8	15	41	25
ACJ3625	M36×1.5	25	156	82	16	10	10	27.8	15	46	25
ACJ3650	M36×1.5	50	221	122	16	10	10	27.8	15	46	25
ACJ4225	M42×1.5	25	161.5	85.5	16	12	12	34.8	15	50	25
ACJ4250	M42×1.5	50	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

ACA, ACJ Series

Accessories

How to set stop coller





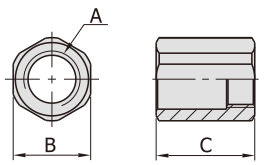
Ordering code

F - ACA 08 LM

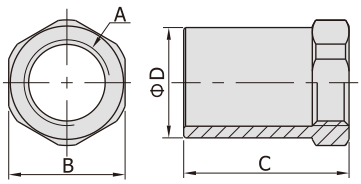
1 2 3 4

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

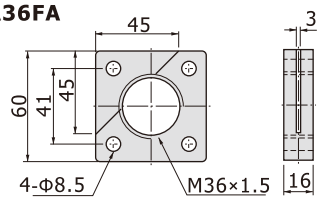


Model\Item	A	B	C
F-ACA08LM	M8×1.0	11	14
F-ACA10LM	M10×1.0	14	16
F-ACA12LM	M12×1.0	17	20

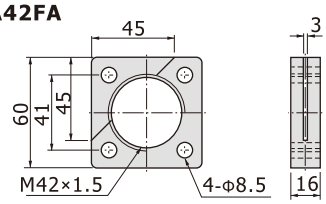


Model\Item	A	B	C	D
F-ACA14LM	M14×1.5	19	27	18
F-ACA16LM	M16×1.5	21	32	20
F-ACA20LM	M20×1.5	26	35	25
F-ACA25LM	M25×1.5	32	45	31
F-ACA27LM	M27×1.5	36	50	35
F-ACA33LM	M33×1.5	41	80	40
F-ACA36LM	M36×1.5	46	80	45

F-ACA36FA



F-ACA42FA

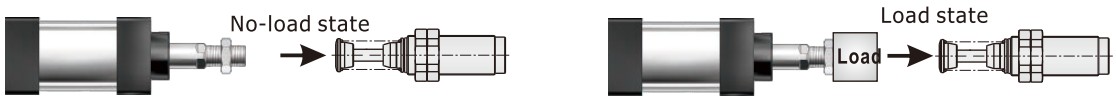


Selecting list

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

ACA, ACJ Series

How to select



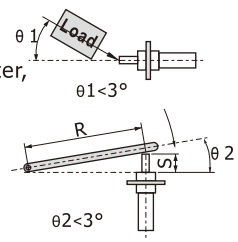
Theoretical energy parameter table for cylinders under no-load state　　Unit：J (N.m)

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.

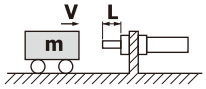
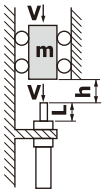
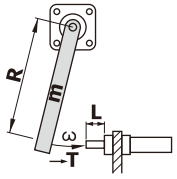
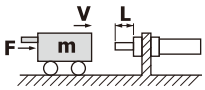
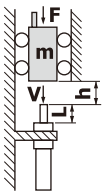
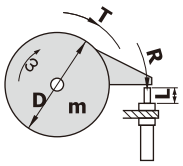
Installation and Operation

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 -10 to 80□ ;
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	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

Calculation of energy under load state

Horizontal impact	Vertical impact	Rotation 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	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	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)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	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	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($\omega=2\pi N/60$) ($90°=1.57rad/s$)	rad/s
g	Gravity acceleration	9.8(m/s^2)	T	Torque	N.m			

NUE95A, US98A, UE95A Series

Ordering code

NUE95A 1/4 X 5/32 - 250 BU

1 2 3 4 5

①Model	②Tubing OD	③Tubing ID	④Material length	⑤Standard color
NUE95A: Ether Base, Shore A95±2	1/8：Φ1/8"	5/64：Φ5/64"	100：100 ft/coil 250：250 ft/coil 500：500 ft/coil	BU: Blue BK: Black GE: Orange CR: Clear
	5/32：Φ5/32"	3/32：Φ3/32"		
	1/4：Φ1/4"	5/32：Φ5/32"		
	5/16：Φ5/16"	1/5：Φ1/5"		
	3/8：Φ3/8"	1/4：Φ1/4"		
	1/2：Φ1/2"	1/3：Φ1/3"		

US98A 060 040 100M BU

1 2 3 4 5

①Model	②Tubing OD	③Tubing ID	④Material length	⑤Standard color
US98A: Ester Base, Shore A98±2	032：Φ3.2mm	020：Φ2.0mm	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
	040：Φ4.0mm	025：Φ2.5mm		
	060：Φ6.0mm	040：Φ4.0mm		
	080：Φ8.0mm	050：Φ5.0mm	100M：100 m/coil	
	100：Φ10.0mm	065：Φ6.5mm		
	120：Φ12.0mm	080：Φ8.0mm		
	160：Φ16.0mm	0110：Φ11.0mm		
UE95A: Ether Base, Shore A95±2	032：Φ3.2mm	020：Φ2.0mm	20M：20 m/coil 100M：100 m/coil 200M：200 m/coil	
	040：Φ4.0mm	025：Φ2.5mm		
	060：Φ6.0mm	040：Φ4.0mm		
	080：Φ8.0mm	050：Φ5.0mm	20M：20 m/coil 100M：100 m/coil	
	100：Φ10.0mm	065：Φ6.5mm		
	120：Φ12.0mm	080：Φ8.0mm		

NUE95A, 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]	Tubing OD (inch)	Tubing ID (inch)	Wall Thickness (inch)	Package Length (ft)	Working Pressure at 73°F (psi)	Burst pressure at 73°F (psi)	Bend radius (mm)	Weight per 100ft (lb)	Temperature (°F)
NUE95A1/8X5/64-□□	1/8"	5/64"	3/128"	100 250 500	145	363	8	0.4	-40~158
NUE95A5/32X3/32-□□	5/32"	3/32"	1/32"		145	363	8	0.66	
NUE95A1/4X5/32-□□	1/4"	5/32"	3/64"		145	363	12	1.59	
NUE95A5/16X1/5-□□	5/16"	1/5"	9/160"		145	363	17	2.4	
NUE95A3/8X1/4-□□	3/8"	1/4"	1/16"		145	363	20	3.26	
NUE95A1/2X1/3-□□	1/2"	1/3"	1/12"		145	363	30	5.82	

[Note1] The first square of "□□" in the type column is for ordering code "unit" and the second is for "color".

Type [Note1]	Tubing OD (mm)	Tubing ID (mm)	Wall Thickness (mm)	Package Length (m)	Working Pressure at 23℃(MPa)	Burst pressure at 23℃ (MPa)	Bend radius (mm)	Weight per 100M (kg)	Temp. (℃)
US98A032020□□	3.2	2.0	0.60	100/200	1.0	3.0	10	0.76	-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	0.76	-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".

Polyurethane tubing

UCS Series

Ordering code

UCS 080 050 BU 090M A 1

1 2 3 4 5 6 7

①Model
UCS: Ester Base

②Tubing OD
060：Φ6.0mm
080：Φ8.0mm
100：Φ10.0mm
120：Φ12.0mm

③Tubing ID
040：Φ4.0mm
050：Φ5.0mm
065：Φ6.5mm
080：Φ8.0mm

④Standard color
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

⑤Material length
030M：3m
060M：6m
090M：9m
120M：12m
150M：15m

⑥Coupling type
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

⑦Coupling form
1: Without coupling
2: With female-male coupling
3: With male-male coupling

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.

Pipe end coupling

Male quick coupling PP40Φ12×Φ8	Female quick coupling Sp40Φ12×Φ8	Male quick coupling PP30Φ10×Φ6.5	Female quick coupling SP30Φ10×Φ6.5	Male quick coupling PP20Φ8×Φ5	Female quick coupling SP20Φ8×Φ5	Male quick coupling PP10Φ6×Φ4	Female quick coupling SP10Φ6×Φ4
PP40/SP40-PU tubing (12×8) quick coupling use		PP30/SP30-PU tubing (10×6.5)quick coupling use		PP20/SP20-PU tubing (8×5)quick coupling use		PP10/SP10-PU tubing (6×4)quick coupling use	

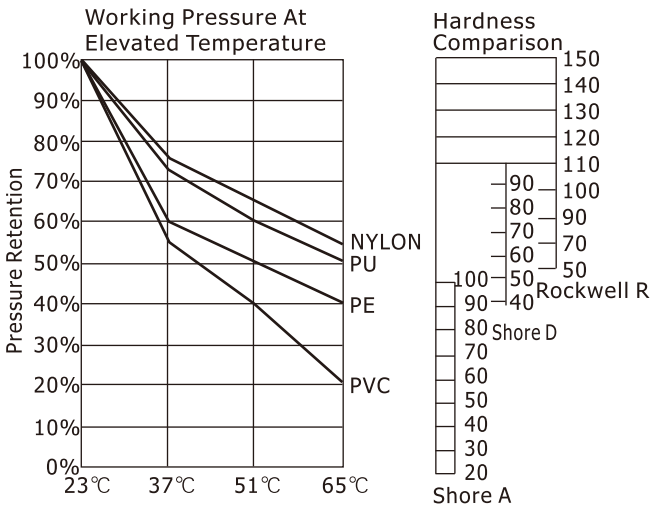
UCS Series

Specification (Standard pressure type)

Type [Note1]	Tubing OD (mm)	Tubing ID (mm)	Working Pressure at 23℃(MPa)	Burst pressure at 23℃(MPa)	Bend radius(mm)	Length(m) [Note2]	Temp. (℃)
UCS060040□030□□	6.0	4.0	1.0	3.0	38	3	-20~70
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	
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	

[Note1] "□" in the type column is for "color", and "□□" is for "coupling type" and "coupling mode".
[Note2] Material length: length of operating status=(0.8~0.9)xMaterial length.

Technical chart



Nylon tubing

PA12、PA6 Series

Ordering code

PA12 060 040 100M BU

1 2 3 4 5

①Model	②Tubing OD	③Tubing ID	④Material length	⑤Standard color
PA6：Nylon 6 PA12：Nylon 12	040：Φ4.0mm 060：Φ6.0mm 080：Φ8.0mm 100：Φ10.0mm 120：Φ12.0mm	025：Φ2.5mm 040：Φ4.0mm 060：Φ6.0mm 075：Φ7.5mm 090：Φ9.0mm	200M：200 m/coil(4X2.5) 100M：100 m/coil(Others)	BU : Blue BK : Black GE : Orange N : Clear WH : White GN : Green R : Red Y : Yellow

Product feature

1. PA12、PA6 Nylon tube has excellence capability to be used high temperature conditions widely.
2. Many kinds of colors to be choosed.
3. Steady size, Little osmotic rate.
4. Be used widely for it's aging resistant, good anti-oil,and high temperature resistant capability.

Specification

Type [Note1]	Tubing OD (mm)	Tubing 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)	Temp. (℃)
PA6040025□□	4.0	2.5	0.75	200	3.5	11.0	30	0.90	−10~70
PA6060040□□	6.0	4.0	1.00	100	3.0	10.0	45	1.80	
PA6080060□□	8.0	6.0	1.00	100	2.0	7.0	65	2.50	
PA6100075□□	10.0	7.5	1.25	100	2.0	7.0	75	3.90	
PA6120090□□	12.0	9.0	1.50	100	2.0	7.0	100	5.70	
PA12040025□□	4.0	2.5	0.75	200	2.5	7.5	25	0.80	−40~70
PA12060040□□	6.0	4.0	1.00	100	2.0	7.0	35	1.60	
PA12080060□□	8.0	6.0	1.00	100	1.5	5.0	55	2.30	
PA12100075□□	10.0	7.5	1.25	100	1.5	5.0	75	3.50	
PA12120090□□	12.0	9.0	1.50	100	1.5	5.0	75	5.10	

[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.

Relationship of operation pressure and temperature

	PA6 the percentage of work pressure reached at different temperatures					PA12 the percentage of work pressure reached at different temperatures				
Temperature	20℃	40℃	60℃	80℃	100℃	20℃	30℃	50℃	60℃	80℃
Percentage	100%	74%	57%	47%	40%	100%	83%	75%	64%	47%

Flame resistant tubing

UN54D Series

Ordering code

UN54D 120 080 100M Y

1 2 3 4 5

①Model	②Tubing OD	③Tubing 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

Product feature

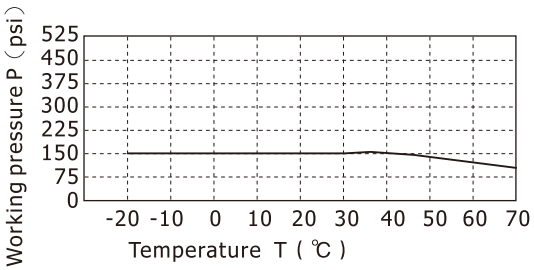
1. Monolayer tube with flame resistant.
2. Excel in elasticity: can pass compactness space with lesser bend radius.
3. Excellent water-resistant and flexility.
4. Super doughty wearable and higher intensity of stretch.

Specification

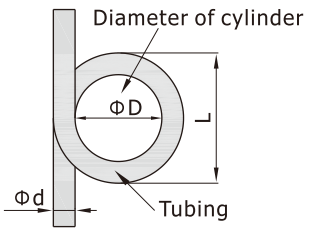
Type [Note1]	Tubing OD (mm)	Tubing ID (mm)	Wall Thickness (mm)	Package Length(m)	Working Pressure at 23℃(MPa)	Burst pressure at 23℃	Bend radius (mm)	Weight per 100M(kg)	Temp. (℃)
UN54D□060040□□	6.0	4.0	1.00	100	1.0	4.0	12	1.93	-20~70
UN54D□080050□□	8.0	5.0	1.50	100	1.0	4.0	18	3.66	
UN54D□100065□□	10.0	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"

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)

Accessories——One-Touch Fittings

NPC, PC, POC series

Ordering code

NPC

NPC 1/4 - 1/8

1 2 3

①Model	②Port size
NPC: Male connector	1/8: Φ1/8" 5/32: Φ5/32" 1/4: Φ1/4" 5/16: Φ5/16" 3/8: Φ3/8" 1/2: Φ1/2"

③Thread connection	
Thread connection	Adaptable port size
U10: #10-32UNF	Φ1/8", Φ5/32", Φ1/4"
1/8: NPT1/8 1/4: NPT1/4 3/8: NPT3/8 1/2: NPT1/2	Φ5/32", Φ1/4" Φ5/16", Φ3/8" Φ1/2"

PC, POC

PC 6 01

1 2 3

①Model	②Port size
PC: Male connector POC: Male connector	4: Φ4mm 6: Φ6mm 8: Φ8mm 10: Φ10mm 12: Φ12mm

③Thread connection	
Thread connection	Adaptable port size
M5: M5X0.8	Φ4, Φ6
01: PT1/8 02: PT1/4 03: PT3/8 04: PT1/2	Φ4, Φ6 Φ8, Φ10 Φ12

Table for interface port and tube O.D.

Product series	Thread type	Port size					
		Φ1/8"	Φ5/32"	Φ1/4"	Φ5/16"	Φ3/8"	Φ1/2"
NPC	#10-32UNF	●	●	●			
	NPT1/8		●	●	●	●	
	NPT1/4			●	●	●	●
	NPT3/8			●	●	●	●
	NPT1/2					●	●

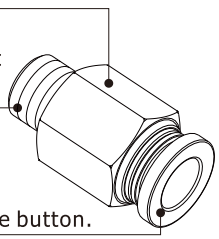
Product series	Thread type	Port size				
		Φ4	Φ6	Φ8	Φ10	Φ12
PC	M5	●	●			
	PT1/8	●	●	●	●	●
	PT1/4	●	●	●	●	●
	PT3/8		●	●	●	●
	PT1/2		●	●	●	●
POC	M5	●	●			
	PT1/8	●	●	●	●	
	PT1/4	●	●	●	●	●
	PT3/8			●	●	●
	PT1/2				●	●

Specification

Operating pressure range	0~145psi(0~1.0MPa)
Negative pressure	10Torr(-750mmHg)
Proof pressure	215psi(1.5MPa)
Ambient and fluid temperature	-5~160°F(-20~70℃)
Applicable tubing	Soft nylon or polyurethane

Product feature

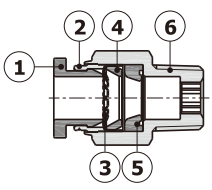
1. The compact appearance space saving.
2. The threaded portion is covered with sealant and the M5 or #10-32UNF thread is attached with a sealing gasket to prevent air leakage over the connection thread portion.



3. PC,PCO series: Grey is optional for the release button.

Inner structure

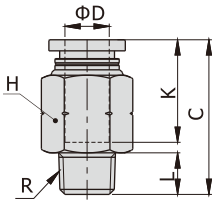
NPC,PC Series

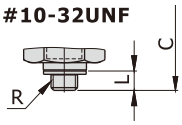


No.	Item	No.	Item
1	Release button	4	Chuck
2	Guide	5	O-ring
3	Spring gasket	6	Body

Dimensions

NPC Series

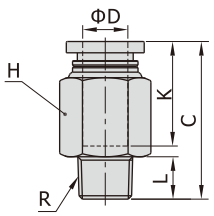


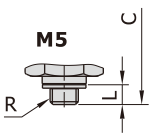


[Unit: inch]

Model\Item	ΦD	R	L	C	K	H(Across flat)	Weight(g)
NPC1/8-U10	1/8	#10-32UNF	0.14	0.63	0.45	9/32	2.0
NPC5/32-U10	5/32	#10-32UNF	0.14	0.67	0.49	5/16	2.7
NPC5/32-1/8		NPT1/8	0.30	0.69	0.53	7/16	6.4
NPC1/4-U10	1/4	#10-32UNF	0.14	0.89	0.65	1/2	10.0
NPC1/4-1/8		NPT1/8	0.30	0.87	0.65	1/2	8.6
NPC1/4-1/4		NPT1/4	0.39	0.96	0.73	9/16	16.0
NPC1/4-3/8		NPT3/8	0.43	0.89	0.73	11/16	24.7
NPC5/16-1/8	5/16	NPT1/8	0.30	1.10	0.73	9/16	14.3
NPC5/16-1/4		NPT1/4	0.39	1.06	0.79	9/16	13.6
NPC5/16-3/8		NPT3/8	0.43	0.93	0.79	11/16	21.7
NPC3/8-1/8	3/8	NPT1/8	0.30	1.18	0.83	11/16	22.4
NPC3/8-1/4		NPT1/4	0.39	1.28	0.83	11/16	25.9
NPC3/8-3/8		NPT3/8	0.43	1.10	0.83	11/16	21.8
NPC3/8-1/2		NPT1/2	0.55	1.04	0.83	7/8	38.5
NPC1/2-1/4	1/2	NPT1/4	0.39	1.38	0.91	7/8	47.9
NPC1/2-3/8		NPT3/8	0.43	1.34	0.91	7/8	33.8
NPC1/2-1/2		NPT1/2	0.55	1.28	0.91	7/8	46.4

PC Series

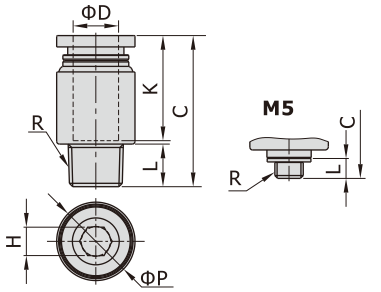




[Unit: mm]

Model\Item	ΦD	R	L	C	K	H(Across flat)	Weight(g)
PC4M5	4	M5×0.8	3.5	19.5	14	9	6.5
PC401		PT1/8	7.5	19.5	14	10	7
PC402		PT1/4	10	19.5	14	14	13.5
PC6M5	6	M5×0.8	3.5	22.5	16.5	12	8.5
PC601		PT1/8	7.5	22.0	18.5	12	7.5
PC602		PT1/4	10	24.5	18.5	14	15.5
PC603		PT3/8	11	22.5	18.5	17	24
PC604		PT1/2	14	26.0	18.5	21	46
PC801	8	PT1/8	7.5	28	18.5	14	13.5
PC802		PT1/4	10	27	18.5	14	13
PC803		PT3/8	11	23.5	18.5	17	21
PC804		PT1/2	14	27	18.5	21	43.5
PC1001	10	PT1/8	7.5	30	21	17	20.5
PC1002		PT1/4	10	32.5	21	17	24
PC1003		PT3/8	11	28	21	17	20.5
PC1004		PT1/2	14	26.5	21	21	36
PC1201	12	PT1/8	7.5	32.5	23	21	38.5
PC1202		PT1/4	10	35	23	21	40.5
PC1203		PT3/8	11	30.5	23	21	28.5
PC1204		PT1/2	14	32.5	23	21	41.5

POC Series



[Unit: mm]

Model\Item	ΦD	R	ΦP	L	C	K	H(Across flat)	Weight(g)
POC4M5	4	M5×0.8	9	3.5	18.5	14	2.5	3.6
POC401		PT1/8	10	7.5	18	14	3	5.5
POC402		PT1/4	14	10	19.5	14	3	12.6
POC6M5	6	M5×0.8	12	3.5	21.5	16.5	2	5.9
POC601		PT1/8	12	7.5	22.0	18.5	4	6.3
POC602		PT1/4	14	10	22.0	18.5	4	11.8
POC801	8	PT1/8	14	7.5	26.5	18	5	9.9
POC802		PT1/4	14	10	25	18	6	10.1
POC803		PT3/8	17	11	23.5	18	6	19.3
POC1001	10	PT1/8	17	7.5	30	21	5	16.5
POC1002		PT1/4	17	10	29	21	6	15.4
POC1003		PT3/8	17	11	28	21	8	18.7
POC1004		PT1/2	21	14	26.5	21	8	35.3
POC1202	12	PT1/4	21	10	34.5	23	6	32.3
POC1203		PT3/8	21	11	30	23	8	25.1
POC1204		PT1/2	21	14	32	23	8	37.5

Ordering code

PC 6 01 – M

1 2 3 4

①Model	②Port size	③Thread connection		④Style type
PC: Male connector	3.2: Φ3.2mm 4: Φ4mm 6: Φ6mm	Thread connection	Adaptable port size	M： Mini type
		M3: M3X0.5	Φ3.2, Φ4	
PL: Male elbow		M5: M5X0.8	Φ3.2, Φ4, Φ6	
		01: PT1/8	Φ4, Φ6	

Table for interface port and tube O.D.

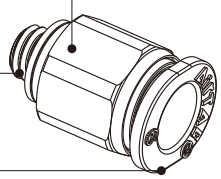
Product series	Thread type	Port size		
		Φ3.2	Φ4	Φ6
PC/PL	M3	●	●	
	M5	●	●	●
	PT1/8		●	●

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

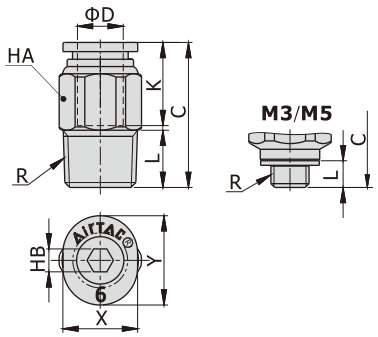
Product feature

1. The compact appearance space saving.
2. The threaded portion is covered with sealant and the M3/M5 thread is attached with a sealing gasket to prevent air leakage over the connection thread portion.
3. Grey is optional for the release button.



Dimensions

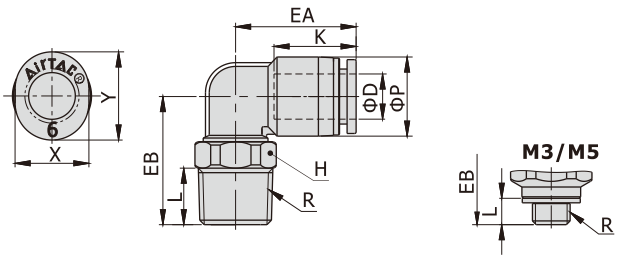
PC Series



[Unit: mm]

Model\Item	ΦD	R	L	C	K	X	Y	HA	HB	Weight(g)
PC3.2M3-M	3.2	M3×0.5	3	16	11.5	6.8	8.7	7	1.5	1.7
PC3.2M5-M		M5×0.8	13.5	16	11.5	6.8	8.7	7	2	2.0
PC4M3-M	4	M3×0.5	3	17.5	12.5	7.8	9.5	8	1.5	2.4
PC4M5-M		M5×0.8	3.5	17	12.5	7.8	9.5	8	2	2.7
PC401-M		PT1/8	7.5	17.5	13.5	7.8	9.5	10	3	5.5
PC6M5-M	6	M5X0.8	3.5	18.5	13.5	9.8	11.7	10	2	3.6
PC601-M		PT1/8	7.5	19.0	13.5	9.8	11.7	11	4	6.0

PL Series



[Unit: mm]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	X	Y	Weight(g)
PL3.2M3-M	3.2	M3×0.5	7.5	3	12	14.5	14	7	6.8	8.7	2.4
PL3.2M5-M		M5×0.8		3.5	12		14.5	7	6.8	8.7	2.7
PL4M3-M	4	M3×0.5	8.5	3	12.5	15	14	7	7.8	9.5	3.0
PL4M5-M		M5×0.8		3.5	12.5		14.5	7	7.8	9.5	3.3
PL401-M		PT1/8		7.5	12.5		16	10	7.8	9.5	6.2
PL6M5-M	6	M5X0.8	10.5	3.5	13.5	16.0	15.5	7	9.8	11.7	4.0
PL601-M		PT1/8		7.5	13.5		16.5	10	9.8	11.7	6.8

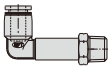
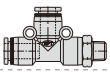
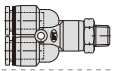
One-touch fittings—threaded type

Ordering code

Same diameter type fittings(NPT Thread)

NPL 1/4 - 1/8

1 2 3

①Model	
NPL: Male elbow	NPLL: Extended male elbow 
NPEB: Male branch tee	NPLF: Female elbow
NPED: Male run tee 	NPCF: Female connector
NPYB: Branch "Y" 	NPMF: Bulkhead connector
NPH: Universal male elbow	NPHF: Universal female elbow
NPHW: Double universal male elbow	NPZB: Threaded cross

②Port size
1/8: Φ1/8"
5/32: Φ5/32"
1/4: Φ1/4"
5/16: Φ5/16"
3/8: Φ3/8"
1/2: Φ1/2"

③Thread connection	
Thread connection	Adaptable port size
U10: #10-32UNF	Φ1/8", Φ5/32", Φ1/4"
1/8: NPT1/8 1/4: NPT1/4 3/8: NPT3/8 1/2: NPT1/2	Φ5/32", Φ1/4" Φ5/16", Φ3/8" Φ1/2"

Same diameter type fittings(PT Thread)

PL 6 01

1 2 3

①Model	
PHW: Double universal male elbow	PL: Male elbow
PHF: Universal female elbow	PLL: Extended male elbow
PEB: Male branch tee	PLF: Female elbow
PED: Male run tee	PCF: Female connector
PYB: Branch "Y"	PMF: Bulkhead connector
PZB: Threaded cross	PH: Universal male elbow

②Port size
4: Φ4mm
6: Φ6mm
8: Φ8mm
10: Φ10mm
12: Φ12mm

③Thread connection	
Thread connection	Adaptable port size
M5: M5X0.8	Φ4, Φ6
01: PT1/8 02: PT1/4 03: PT3/8 04: PT1/2	Φ4, Φ6 Φ8, Φ10 Φ12

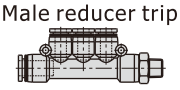
One-touch fittings—threaded type

Ordering code

Different diameter type fittings(NPT Thread)

NPKD 1/4 - 5/32 - 1/8
① ② ③ ④

①Model
NPKD: Male reducer triple branch



②Port size
1/4: Φ1/4"
5/16: Φ5/16"
3/8: Φ3/8"

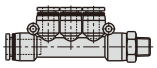
③Port size
5/32: Φ5/32"
1/4: Φ1/4"
5/16: Φ5/16"

④Thread connection
1/8: NPT1/8
1/4: NPT1/4
3/8: NPT3/8

Different diameter type fittings(PT Thread)

PKD 6 - 4 01
① ② ③ ④

①Model
PKD: Male reducer triple branch



②Port size
6: Φ6mm
8: Φ8mm
10: Φ10mm

③Port size
4: Φ4mm
6: Φ6mm
8: Φ8mm

④Thread connection
01: PT1/8
02: PT1/4
03: PT3/8

Specification

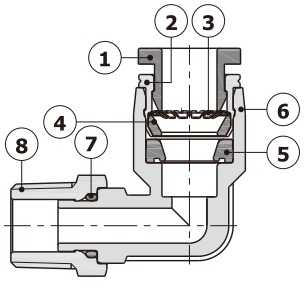
Operating pressure range	0~145psi(0~1.0MPa)
Negative pressure	10Torr(-750mmHg)
Proof pressure	215psi(1.5MPa)
Ambient and fluid temperature	-5~160°F(-20~70℃)
Applicable tubing	Soft nylon or polyurethane

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, #10-32UNF thread are 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

NPL,PL Series



No.	Item
1	Release button
2	Guide
3	Spring gasket
4	Chuck
5	O-ring
6	Body
7	O-ring
8	Stud

One-touch fittings—threaded type

Table for interface port and tube O.D.

Product series	Thread type	Port size					
		Φ1/8"	Φ5/32"	Φ1/4"	Φ5/16"	Φ3/8"	Φ1/2"
NPL	#10-32UNF	●	●	●			
	NPT1/8		●	●	●	●	
	NPT1/4			●	●	●	●
	NPT3/8			●	●	●	●
	NPT1/2					●	●
NPLL NPEB NPED NPYB	#10-32UNF		●	●			
	NPT1/8		●	●	●	●	
	NPT1/4			●	●	●	●
	NPT3/8			●	●	●	●
	NPT1/2					●	●
NPLF NPCF	#10-32UNF		●	●			
	NPT1/8		●	●	●	●	
	NPT1/4			●	●	●	●
	NPT3/8			●	●	●	●
	NPT1/2					●	●
NPH NPHF	#10-32UNF		●	●			
	NPT1/8		●	●	●		
	NPT1/4			●	●	●	
	NPT3/8			●	●	●	●
	NPT1/2					●	●
NPMF	NPT1/8		●	●	●	●	
	NPT1/4			●	●	●	●
	NPT3/8			●	●	●	●
	NPT1/2					●	●
NPZB	NPT1/8			●	●		
	NPT1/4			●	●	●	
	NPT3/8			●	●	●	●
	NPT1/2					●	●
NPHW	NPT1/8		●	●	●		
	NPT1/4			●	●	●	
	NPT3/8			●	●	●	●
	NPT1/2					●	●

Product series	Thread type	Port size				
		Φ4	Φ6	Φ8	Φ10	Φ12
PL	M5	●	●			
	PT1/8	●	●	●	●	●
	PT1/4	●	●	●	●	●
	PT3/8		●	●	●	●
	PT1/2		●	●	●	●
PLL	M5	●	●			
	PT1/8	●	●	●	●	
	PT1/4	●	●	●	●	●
	PT3/8		●	●	●	●
	PT1/2				●	●
PEB PED PYB	M5	●	●			
	PT1/8	●	●	●	●	
	PT1/4	●	●	●	●	●
	PT3/8		●	●	●	●
	PT1/2			●	●	●
PH PHF	M5	●	●			
	PT1/8	●	●	●		
	PT1/4		●	●	●	
	PT3/8		●	●	●	●
	PT1/2			●	●	●
PHW	PT1/8	●	●	●		
	PT1/4		●	●	●	
	PT3/8		●	●	●	●
	PT1/2			●	●	●
PZB	PT1/8		●	●		
	PT1/4		●	●	●	
	PT3/8		●	●	●	●
	PT1/2			●	●	●
PLF	M5	●	●			
	PT1/8	●	●	●	●	
	PT1/4	●	●	●	●	●
	PT3/8		●	●	●	●
	PT1/2			●	●	●
PCF	M5	●	●			
	PT1/8	●	●	●	●	
	PT1/4	●	●	●	●	●
	PT3/8		●	●	●	●
	PT1/2		●	●	●	●
PMF	M5					
	PT1/8	●	●	●	●	
	PT1/4	●	●	●	●	●
	PT3/8		●	●	●	●
	PT1/2			●	●	●

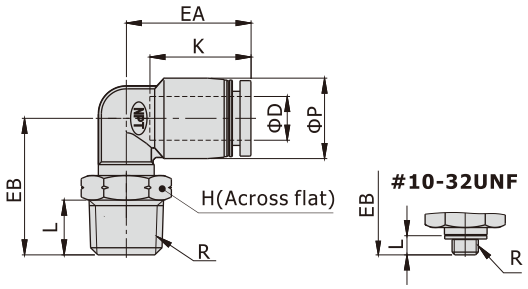
Product series	Thread type	Port size		
		Φ1/4"-Φ5/32"	Φ5/16"-Φ1/4"	Φ3/8"-Φ5/16"
NPKD	NPT1/8	●		
	NPT1/4		●	
	NPT3/8			●

Product series	Thread type	Port size		
		Φ6-Φ4	Φ8-Φ6	Φ10-Φ8
PKD	PT1/8	●		
	PT1/4		●	
	PT3/8			●

One-touch fittings—threaded type

Dimensions

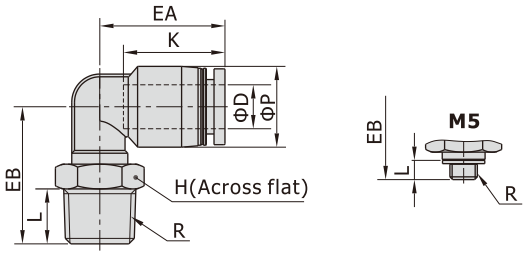
NPL Series



[Unit: inch]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)
NPL1/8-U10	1/8	#10-32UNF	0.30	0.14	0.47	0.57	0.57	9/32	2.7
NPL5/32-U10	5/32	#10-32UNF	0.33	0.14	0.49	0.57	0.57	9/32	3.3
NPL5/32-1/8		NPT1/8	0.33	0.30	0.49	0.59	0.63	7/16	6.7
NPL1/4-U10	1/4	#10-32UNF	0.49	0.14	0.67	0.79	0.67	5/16	4.5
NPL1/4-1/8		NPT1/8	0.49	0.30	0.67	0.79	0.81	7/16	6.5
NPL1/4-1/4		NPT1/4	0.49	0.39	0.67	0.79	0.94	9/16	13.8
NPL1/4-3/8		NPT3/8	0.49	0.43	0.67	0.79	1.11	11/16	21.1
NPL5/16-1/8	5/16	NPT1/8	0.59	0.30	0.73	0.91	1.02	1/2	9.1
NPL5/16-1/4		NPT1/4	0.59	0.39	0.73	0.91	0.98	9/16	13.3
NPL5/16-3/8		NPT3/8	0.59	0.43	0.73	0.91	1.04	11/16	21.6
NPL3/8-1/8	3/8	NPT1/8	0.71	0.30	0.83	1.00	1.12	5/8	15.1
NPL3/8-1/4		NPT1/4	0.71	0.39	0.83	1.00	1.20	5/8	17.6
NPL3/8-3/8		NPT3/8	0.71	0.43	0.83	1.00	1.10	11/16	21.6
NPL3/8-1/2		NPT1/2	0.71	0.55	0.83	1.00	1.28	7/8	39.5
NPL1/2-1/4	1/2	NPT1/4	0.83	0.39	0.91	1.16	1.28	11/16	22.1
NPL1/2-3/8		NPT3/8	0.83	0.43	0.91	1.16	1.30	11/16	26.5
NPL1/2-1/2		NPT1/2	0.83	0.55	0.91	1.16	1.34	7/8	39.5

PL Series

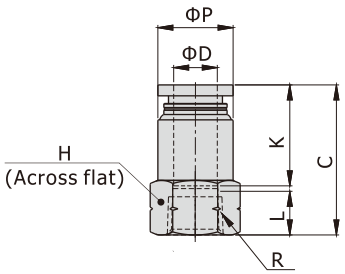


[Unit: mm]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)
PL4M5	4	M5×0.8	9	3.5	14	17	15	8	3
PL401		PT1/8	9	7.5	14	17	18.5	10	4.5
PL402		PT1/4	9	10	14	17	22.0	14	12
PL6M5	6	M5×0.8	12.5	3.5	17	20	17.0	8	4.5
PL601		PT1/8	12.5	7.5	17	20	20.5	10	6
PL602		PT1/4	12.5	10	17	20	24.0	14	13.5
PL603		PT3/8	12.5	11	17	20	25.5	17	20.5
PL604		PT1/2	12.5	14	17	20	30.0	21	36
PL801	8	PT1/8	15	7.5	18.5	23	20.5	10	7 .5
PL802		PT1/4	15	10	18.5	23	25.0	14	13
PL803		PT3/8	15	11	18.5	23	26.5	17	21
PL804		PT1/2	15	14	18.5	23	31.0	21	36
PL1001	10	PT1/8	18	7.5	21	25.5	25.0	17	16.5
PL1002		PT1/4	18	10	21	25.5	27.0	17	19
PL1003		PT3/8	18	11	21	25.5	28.0	17	21
PL1004		PT1/2	18	14	21	25.5	32.5	21	37
PL1201	12	PT1/8	21	7.5	23	28.5	26.5	17	19
PL1202		PT1/4	21	10	23	28.5	28.5	17	21.5
PL1203		PT3/8	21	11	23	29.5	33	17	25.5
PL1204		PT1/2	21	14	23	29.5	34	21	37

One-touch fittings—threaded type

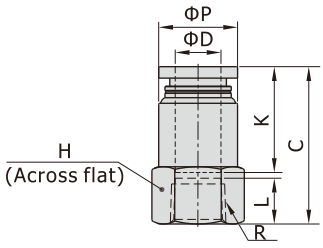
NPCF Series



[Unit: inch]

Model\Item	ΦD	R	ΦP	L	C	K	H	Weight(g)
NPCF5/32-U10	5/32	#10-32UNF	0.35	0.20	0.77	0.49	3/8	2.5
NPCF5/32-1/8		NPT1/8	0.37	0.31	0.85	0.49	9/16	4.7
NPCF1/4-U10	1/4	#10-32UNF	0.47	0.20	0.85	0.65	182	4.2
NPCF1/4-1/8		NPT1/8	0.49	0.31	1.00	0.65	9/16	5.8
NPCF1/4-1/4		NPT1/4	0.49	0.43	1.12	0.65	11/16	8.0
NPCF1/4-3/8		NPT3/8	0.51	0.47	1.16	0.65	7/8	12.4
NPCF5/16-1/8	5/16	NPT1/8	0.55	0.31	1.08	0.73	9/16	6.0
NPCF5/16-1/4		NPT1/4	0.57	0.43	1.20	0.73	11/16	8.9
NPCF5/16-3/8		NPT3/8	0.57	0.47	1.24	0.73	7/8	12.9
NPCF3/8-1/8	3/8	NPT1/8	0.67	0.31	1.14	0.83	11/16	9.9
NPCF3/8-1/4		NPT1/4	0.67	0.43	1.30	0.83	11/16	10.4
NPCF3/8-3/8		NPT3/8	0.71	0.47	1.34	0.83	7/8	15.7
NPCF3/8-1/2		NPT1/2	0.71	0.53	1.40	0.83	1	17.8
NPCF1/2-1/4	1/2	NPT1/4	0.83	0.43	1.32	0.91	7/8	19.1
NPCF1/2-3/8		NPT3/8	0.83	0.47	1.40	0.91	7/8	18.3
NPCF1/2-1/2		NPT1/2	0.83	0.53	1.46	0.91	7/8	20.4

PCF Series

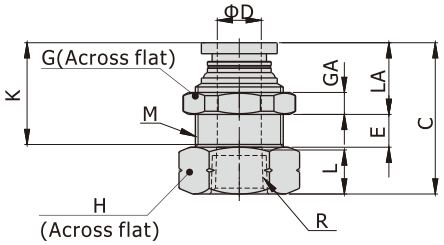


[Unit: mm]

Model\Item	ΦD	R	ΦP	L	C	K	H	Weight(g)
PCF4M5	4	M5×0.8	9	5	21	14	10	2.7
PCF401		PT1/8	9.5	8	23	14	14	4.5
PCF402		PT1/4	9.5	11	26	14	17	6.5
PCF6M5	6	M5×0.8	12	5	21.5	16.5	12	3.9
PCF601		PT1/8	12.5	8	25.5	16.5	14	5.6
PCF602		PT1/4	12.5	11	28.5	16.5	17	7.5
PCF603		PT3/8	13	12	29.5	16.5	21	10.7
PCF604		PT1/2	13	13.5	31.0	16.5	25	13.8
PCF801	8	PT1/8	14	8	27.5	18.5	14	5.8
PCF802		PT1/4	14.5	11	30.5	18.5	17	8.4
PCF803		PT3/8	14.5	12	31.5	18.5	21	11.2
PCF804		PT1/2	14.5	13.5	33	18.5	25	14.4
PCF1001	10	PT1/8	17	8	29	21	17	9.5
PCF1002		PT1/4	17	11	33	21	17	9.9
PCF1003		PT3/8	18	12	34	21	21	14
PCF1004		PT1/2	18	13.5	35.5	21	25	17.1
PCF1202	12	PT1/4	21	11	33.5	23	21	17.5
PCF1203		PT3/8	21	12	35.5	23	21	16.6
PCF1204		PT1/2	21	13.5	37	23	25	19.7

One-touch fittings—threaded type

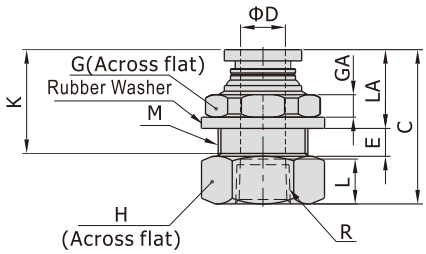
NPMF Series



[Unit: inch]

Model\Item	ΦD	R	M	L	C	K	LA	E	GA	G	H	Weight(g)
NPMF5/32-1/8	5/32	NPT1/8	1/2-20 UNF	0.31	0.96	0.53	0.45	0.16	0.22	9/16	9/16	6.6
NPMF1/4-1/8	1/4	NPT1/8	9/16-18 UNF	0.31	1.00	0.65	0.49	0.20	0.22	11/16	11/16	9.4
NPMF1/4-1/4		NPT1/4	9/16-18 UNF	0.43	1.20	0.65	0.49	0.20	0.22	11/16	11/16	11.4
NPMF1/4-3/8		NPT3/8	9/16-18 UNF	0.47	1.24	0.65	0.49	0.20	0.22	11/16	7/8	14.9
NPMF5/16-1/8	5/16	NPT1/8	5/8-18 UNF	0.31	1.08	0.73	0.53	0.22	0.22	3/4	3/4	12.8
NPMF5/16-1/4		NPT1/4	5/8-18 UNF	0.43	1.26	0.73	0.53	0.22	0.22	3/4	3/4	15.7
NPMF5/16-3/8		NPT3/8	5/8-18 UNF	0.47	1.30	0.73	0.53	0.22	0.22	3/4	7/8	16.7
NPMF3/8-1/8	3/8	NPT1/8	7/8-14 UNF	0.31	1.18	0.83	0.57	0.30	0.28	1	1	22.6
NPMF3/8-1/4		NPT1/4	7/8-14 UNF	0.43	1.38	0.83	0.57	0.30	0.28	1	1	27.7
NPMF3/8-3/8		NPT3/8	7/8-14 UNF	0.47	1.42	0.83	0.57	0.30	0.28	1	1	26.4
NPMF3/8-1/2		NPT1/2	7/8-14 UNF	0.53	1.48	0.83	0.57	0.30	0.28	1	1	23.9
NPMF1/2-1/4	1/2	NPT1/4	7/8-14 UNF	0.43	1.36	0.91	0.61	0.31	0.28	1	1	28.0
NPMF1/2-3/8		NPT3/8	7/8-14 UNF	0.47	1.48	0.91	0.61	0.31	0.28	1	1	29.3
NPMF1/2-1/2		NPT1/2	7/8-14 UNF	0.53	1.54	0.91	0.61	0.31	0.28	1	1	26.9

PMF Series

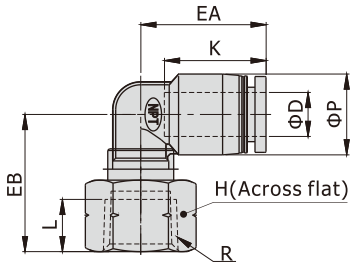


[Unit: mm]

Model\Item	ΦD	R	M	L	C	K	LA	E	GA	G	H	Weight(g)
PMF401	4	PT1/8	M12X1	8	25	14	12	4	4	14	14	6.4
PMF402		PT1/4	M12X1	11	29	14	12	4	4	14	17	9
PMF601	6	PT1/8	M14X1	8	25.5	16.5	12.5	5	4	17	17	9.1
PMF602		PT1/4	M14X1	11	30.5	16.5	12.5	5	4	17	17	10.9
PMF603		PT3/8	M14X1	12	31.5	16.5	12.5	5	4	17	21	13.2
PMF801	8	PT1/8	M16X1	8	27.5	18.5	13.5	5.5	4	19	19	12.8
PMF802		PT1/4	M16X1	11	32	18.5	13.5	5.5	4	19	19	15.7
PMF803		PT3/8	M16X1	12	33	18.5	13.5	5.5	4	19	21	15
PMF804		PT1/2	M16X1	13.5	34.5	18.5	13.5	5.5	4	19	25	18.1
PMF1001	10	PT1/8	M20X1	8	30	21	14.5	7.5	5	24	22	19.6
PMF1002		PT1/4	M20X1	11	35	21	14.5	7.5	5	24	22	22.8
PMF1003		PT3/8	M20X1	12	36	21	14.5	7.5	5	24	22	21.1
PMF1004		PT1/2	M20X1	13.5	37.5	21	14.5	7.5	5	24	25	23.2
PMF1202	12	PT1/4	M22X1	11	34.5	23	15.5	8	6	27	24	26.2
PMF1203		PT3/8	M22X1	12	37.5	23	15.5	8	6	27	24	27
PMF1204		PT1/2	M22X1	13.5	39	23	15.5	8	6	27	25	26.2

One-touch fittings—threaded type

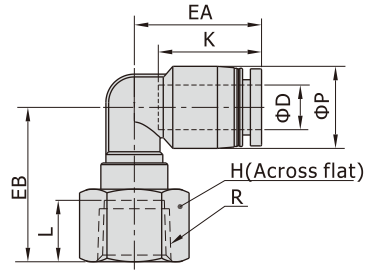
NPLF Series



[Unit: inch]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)
NPLF5/32-U10	5/32	#10-32UNF	0.33	0.20	0.49	0.59	0.63	3/8	2.7
NPLF5/32-1/8		NPT1/8	0.33	0.31	0.49	0.59	0.77	9/16	4.8
NPLF1/4-U10	1/4	#10-32UNF	0.49	0.20	0.67	0.79	0.73	3/8	6.8
NPLF1/4-1/8		NPT1/8	0.49	0.31	0.67	0.79	0.94	9/16	6.0
NPLF1/4-1/4		NPT1/4	0.49	0.43	0.67	0.79	1.06	11/16	8.5
NPLF1/4-3/8		NPT3/8	0.49	0.47	0.67	0.79	1.10	7/8	12.4
NPLF5/16-1/8	5/16	NPT1/8	0.59	0.31	0.73	0.91	1.00	9/16	6.8
NPLF5/16-1/4		NPT1/4	0.59	0.43	0.73	0.91	1.12	11/16	9.7
NPLF5/16-3/8		NPT3/8	0.59	0.47	0.73	0.91	1.16	7/8	13.6
NPLF3/8-1/8	3/8	NPT1/8	0.71	0.31	0.83	1.00	1.08	11/16	11.6
NPLF3/8-1/4		NPT1/4	0.71	0.43	0.83	1.00	1.18	11/16	11.7
NPLF3/8-3/8		NPT3/8	0.71	0.47	0.83	1.00	1.22	7/8	16.2
NPLF3/8-1/2		NPT1/2	0.71	0.53	0.83	1.00	1.28	1	18.1
NPLF1/2-1/4	1/2	NPT1/4	0.83	0.43	0.91	1.16	1.26	11/16	14.2
NPLF1/2-3/8		NPT3/8	0.83	0.47	0.91	1.16	1.30	7/8	19.1
NPLF1/2-1/2		NPT1/2	0.83	0.53	0.91	1.16	1.34	1	21.1

PLF Series

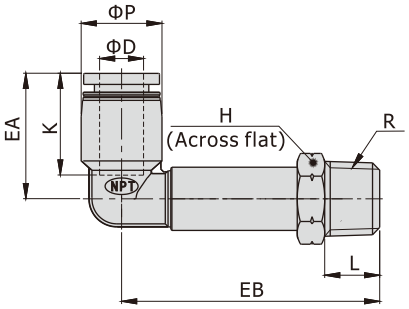


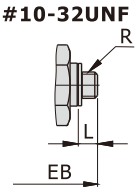
[Unit: mm]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)
PLF4M5	4	M5×0.8	9	5	14	17	16	10	2.9
PLF401		PT1/8	9	8	14	17	21	14	4.6
PLF402		PT1/4	9	11	14	17	24	17	6.8
PLF6M5	6	M5×0.8	12.5	5	17	20	18.5	10	7
PLF601		PT1/8	12.5	8	17	20	23	14	5.8
PLF602		PT1/4	12.5	11	17	20	26	17	8
PLF603		PT3/8	12.5	12	17	20	27	21	10.7
PLF801	8	PT1/8	15	8	18.5	23	20	14	6.6
PLF802		PT1/4	15	11	18.5	23	27.5	17	9.2
PLF803		PT3/8	15	12	18.5	23	28.5	21	11.9
PLF804		PT1/2	15	13.5	18.5	23	30	25	15.2
PLF1001	10	PT1/8	18	8	21	25.5	24	17	11.3
PLF1002		PT1/4	18	11	21	25.5	26.5	17	11.2
PLF1003		PT3/8	18	12	21	25.5	30	21	14.5
PLF1004		PT1/2	18	13.5	21	25.5	31.5	25	17.4
PLF1202	12	PT1/4	21	11	23	28.5	28.5	17	13.7
PLF1203		PT3/8	21	12	23	29.5	32	21	17.4
PLF1204		PT1/2	21	13.5	23	29.5	33	25	20.4

One-touch fittings—threaded type

NPLL Series

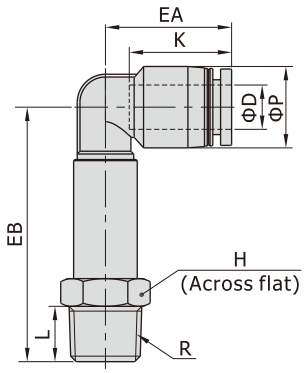


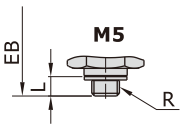


[Unit: inch]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)
NPLL5/32-U10	5/32	#10-32UNF	0.33	0.14	0.49	0.59	0.98	9/32	8.9
NPLL5/32-1/8		NPT1/8	0.33	0.30	0.49	0.59	1.12	7/16	13.1
NPLL1/4-U10	1/4	#10-32UNF	0.49	0.14	0.67	0.79	1.36	5/16	9.9
NPLL1/4-1/8		NPT1/8	0.49	0.30	0.67	0.79	1.48	7/16	13.8
NPLL1/4-1/4		NPT1/4	0.49	0.39	0.67	0.79	1.59	9/16	18.3
NPLL1/4-3/8		NPT3/8	0.49	0.43	0.67	0.79	1.69	11/16	24.0
NPLL5/16-1/8	5/16	NPT1/8	0.59	0.30	0.73	0.91	1.71	1/2	17.2
NPLL5/16-1/4		NPT1/4	0.59	0.39	0.73	0.91	1.79	9/16	23.0
NPLL5/16-3/8		NPT3/8	0.59	0.43	0.73	0.91	1.89	11/16	28.3
NPLL3/8-1/8	3/8	NPT1/8	0.71	0.30	0.83	1.00	1.99	5/8	38.6
NPLL3/8-1/4		NPT1/4	0.71	0.39	0.83	1.00	2.11	5/8	41.7
NPLL3/8-3/8		NPT3/8	0.71	0.43	0.83	1.00	2.15	11/16	41.3
NPLL3/8-1/2		NPT1/2	0.71	0.55	0.83	1.00	2.32	7/8	49.9
NPLL1/2-1/4	1/2	NPT1/4	0.83	0.39	0.91	1.16	2.19	11/16	44.1
NPLL1/2-3/8		NPT3/8	0.83	0.43	0.91	1.16	2.36	11/16	56.2
NPLL1/2-1/2		NPT1/2	0.83	0.55	0.91	1.16	2.48	7/8	59.2

PLL Series



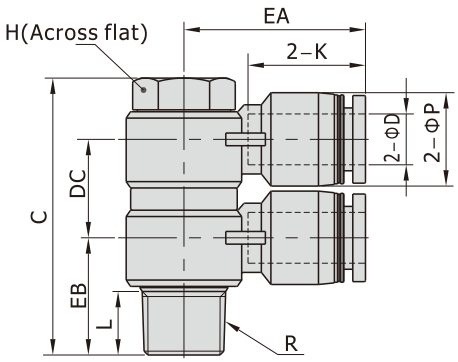


[Unit: mm]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)
PLL4M5	4	M5×0.8	9	3.5	14	17	32.5	8	8.9
PLL401		PT1/8	9	7.5	14	17	35.5	10	12.3
PLL402		PT1/4	9	10	14	17	38.5	14	16.9
PLL6M5	6	M5×0.8	12.5	3.5	17	20	34.5	8	9.9
PLL601		PT1/8	12.5	7.5	17	20	37.5	10	13
PLL602		PT1/4	12.5	10	17	20	40.5	14	18
PLL603		PT3/8	12.5	11	17	20	43	17	23.4
PLL801	8	PT1/8	15	7.5	18.5	23	43.5	12	16.6
PLL802		PT1/4	15	10	18.5	23	45.5	14	22.7
PLL803		PT3/8	15	11	18.5	23	48	17	27.7
PLL1001	10	PT1/8	18	7.5	21	25.5	50.5	15	37.5
PLL1002		PT1/4	18	10	21	25.5	53.5	15	40.6
PLL1003		PT3/8	18	11	21	25.5	54.5	17	40.7
PLL1004		PT1/2	18	14	21	25.5	59	21	47.4
PLL1202	12	PT1/4	21	10	23	28.5	55.5	15	43
PLL1203		PT3/8	21	11	23	29.5	60	17	55.4
PLL1204		PT1/2	21	14	23	29.5	63	21	56.7

One-touch fittings—threaded type

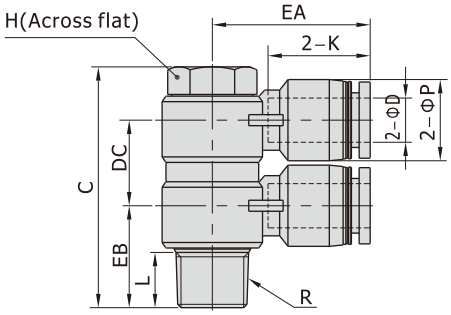
NPHW Series



[Unit: inch]

Model\Item	ΦD	R	ΦP	L	C	K	EA	EB	DC	H	Weight(g)
NPHW5/32-1/8	5/32	NPT1/8	0.35	0.30	1.50	0.52	0.78	0.57	0.51	7/16	19.0
NPHW1/4-1/8	1/4	NPT1/8	0.49	0.30	1.50	0.65	0.91	0.59	0.51	7/16	21.0
NPHW1/4-1/4		NPT1/4	0.49	0.39	1.71	0.65	0.98	0.69	0.61	9/16	40.5
NPHW1/4-3/8		NPT3/8	0.49	0.43	1.97	0.65	1.06	0.79	0.65	3/4	69.2
NPHW5/16-1/8	5/16	NPT1/8	0.59	0.30	1.59	0.73	1.04	0.65	0.61	7/16	23.6
NPHW5/16-1/4		NPT1/4	0.59	0.39	1.71	0.73	1.12	0.73	0.61	9/16	41.1
NPHW5/16-3/8		NPT3/8	0.59	0.43	1.97	0.73	1.16	0.79	0.65	3/4	70.4
NPHW3/8-1/4	3/8	NPT1/4	0.71	0.39	1.83	0.83	1.22	0.83	0.73	9/16	47.3
NPHW3/8-3/8		NPT3/8	0.71	0.43	2.17	0.83	1.30	0.98	0.87	3/4	87.5
NPHW3/8-1/2		NPT1/2	0.71	0.55	2.40	0.83	1.40	0.91	0.87	15/16	137.3
NPHW1/2-3/8	1/2	NPT3/8	0.83	0.43	2.17	0.91	1.42	0.91	0.87	3/4	84.6
NPHW1/2-1/2		NPT1/2	0.83	0.55	2.40	0.91	1.50	1.04	0.87	15/16	147.1

PHW Series

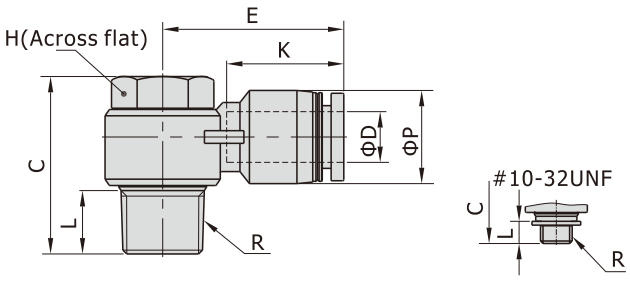


[Unit: mm]

Model\Item	ΦD	R	ΦP	L	C	K	EA	EB	DC	H	Weight(g)
PHW401	4	PT1/8	9	7.5	38	14	20.5	14.5	13	11	19
PHW601	6	PT1/8	12.5	7.5	38	16.5	23.0	15	13	11	21
PHW602		PT1/4	12.5	10	43.5	16.5	25.0	17.5	15.5	14	40.2
PHW603		PT3/8	12.5	11	50	16.5	27.0	20	16.5	19	69.2
PHW801	8	PT1/8	15	7.5	40.5	18.5	26.5	16.5	15.5	11	23.6
PHW802		PT1/4	15	10	43.5	18.5	28.5	18.5	15.5	14	40.8
PHW803		PT3/8	15	11	50	18.5	29.5	20	16.5	19	70.4
PHW804		PT1/2	15	14	61	18.5	32	24.5	22	24	134.8
PHW1002	10	PT1/4	18	10	46.5	21	31	20	18.5	14	47
PHW1003		PT3/8	18	11	55	21	33	21	22	19	87.5
PHW1004		PT1/2	18	14	61	21	35.5	25	22	24	137.7
PHW1203	12	PT3/8	21	11	55	23	36	23	22	19	86.4
PHW1204		PT1/2	21	14	61	23	38	26.5	22	24	147.5

One-touch fittings—threaded type

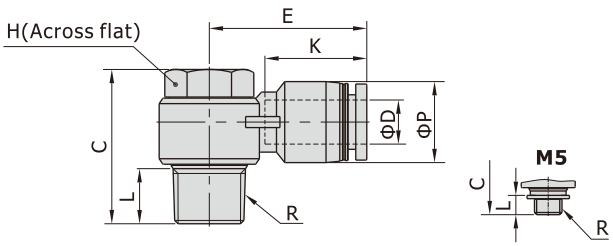
NPH Series



[Unit: inch]

Model\Item	ΦD	R	ΦP	L	C	K	E	H	Weight(g)
NPH5/32-U10	5/32	#10-32UNF	0.35	0.14	0.67	0.52	0.72	5/16	5.8
NPH5/32-1/8		NPT1/8	0.35	0.30	0.98	0.52	0.72	7/16	12.8
NPH1/4-U10	1/4	#10-32UNF	0.49	0.14	0.67	0.65	0.93	5/16	6.8
NPH1/4-1/8		NPT1/8	0.49	0.30	0.98	0.65	0.91	7/16	14.0
NPH1/4-1/4		NPT1/4	0.49	0.39	1.10	0.65	0.98	9/16	25.7
NPH1/4-3/8		NPT3/8	0.49	0.43	1.30	0.65	1.06	3/4	50.2
NPH5/16-1/8	5/16	NPT1/8	0.59	0.30	0.98	0.73	1.04	7/16	14.7
NPH5/16-1/4		NPT1/4	0.59	0.39	1.10	0.73	1.12	9/16	26.7
NPH5/16-3/8		NPT3/8	0.59	0.43	1.30	0.73	1.16	3/4	49.4
NPH3/8-1/4	3/8	NPT1/4	0.71	0.39	1.10	0.83	1.22	9/16	28.0
NPH3/8-3/8		NPT3/8	0.71	0.43	1.30	0.83	1.30	3/4	51.1
NPH3/8-1/2		NPT1/2	0.71	0.55	1.54	0.83	1.40	15/16	88.1
NPH1/2-3/8	1/2	NPT3/8	0.83	0.43	1.30	0.91	1.42	3/4	53.0
NPH1/2-1/2		NPT1/2	0.83	0.55	1.54	0.91	1.50	15/16	92.4

PH Series

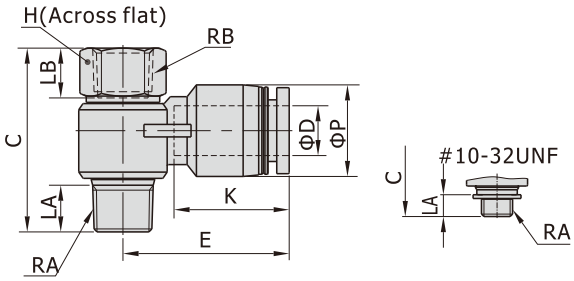


[Unit: mm]

Model\Item	ΦD	R	ΦP	L	C	K	E	H	Weight(g)
PH4M5	4	M5×0.8	9	3.5	17	14	19	8	5.8
PH401		PT1/8	9	7.5	25	14	20.5	11	12.8
PH6M5	6	M5×0.8	12.5	3.5	17	16.5	23.5	8	6.8
PH601		PT1/8	12.5	7.5	25	16.5	23	11	14
PH602		PT1/4	12.5	10	28	16.5	25	14	25.4
PH603		PT3/8	12.5	11	33	16.5	27	19	50.2
PH801	8	PT1/8	15	7.5	25	18.5	26.5	11	14.7
PH802		PT1/4	15	10	28	18.5	28.5	14	26.4
PH803		PT3/8	15	11	33	18.5	29.5	19	49.4
PH804		PT1/2	15	14	39	18.5	32	24	89
PH1002	10	PT1/4	18	10	28	21	31	14	27.7
PH1003		PT3/8	18	11	33	21	33	19	51.1
PH1004		PT1/2	18	14	39	21	35.5	24	88.5
PH1203	12	PT3/8	21	11	33	23	36	19	53
PH1204		PT1/2	21	14	39	23	38	24	92.8

One-touch fittings—threaded type

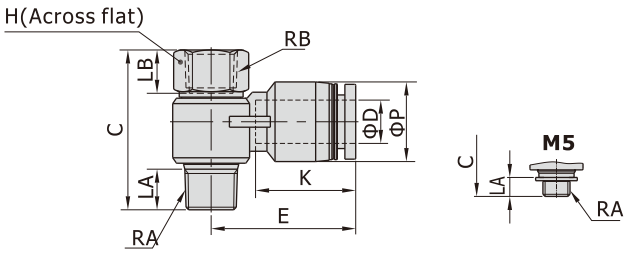
NPHF Series



[Unit: inch]

Model\Item	ΦD	RA	RB	ΦP	LA	LB	C	K	E	H	Weight(g)
NPHF5/32-U10	5/32	#10-32UNF	#10-32UNF	0.35	0.14	0.24	0.79	0.52	0.72	5/16	6.2
NPHF5/32-1/8		NPT1/8	NPT1/8	0.35	0.30	0.31	1.16	0.52	0.78	1/2	13.9
NPHF1/4-U10	1/4	#10-32UNF	#10-32UNF	0.49	0.14	0.24	0.79	0.65	0.93	5/16	7.1
NPHF1/4-1/8		NPT1/8	NPT1/8	0.49	0.30	0.31	1.16	0.65	0.91	1/2	14.9
NPHF1/4-1/4		NPT1/4	NPT1/4	0.49	0.39	0.43	1.38	0.65	0.98	11/16	31.2
NPHF1/4-3/8		NPT3/8	NPT3/8	0.49	0.43	0.47	1.57	0.65	1.06	3/4	44.2
NPHF5/16-1/8	5/16	NPT1/8	NPT1/8	0.59	0.30	0.31	1.16	0.73	1.04	1/2	16.0
NPHF5/16-1/4		NPT1/4	NPT1/4	0.59	0.39	0.43	1.38	0.73	1.12	11/16	31.6
NPHF5/16-3/8		NPT3/8	NPT3/8	0.59	0.43	0.47	1.57	0.73	1.16	3/4	44.8
NPHF3/8-1/4	3/8	NPT1/4	NPT1/4	0.71	0.39	0.43	1.38	0.83	1.22	11/16	32.9
NPHF3/8-3/8		NPT3/8	NPT3/8	0.71	0.43	0.47	1.57	0.83	1.30	3/4	46.2
NPHF3/8-1/2		NPT1/2	NPT1/2	0.71	0.55	0.53	1.87	0.83	1.40	15/16	85.1
NPHF1/2-3/8	1/2	NPT3/8	NPT3/8	0.83	0.43	0.47	1.57	0.91	1.42	3/4	48.4
NPHF1/2-1/2		NPT1/2	NPT1/2	0.83	0.55	0.53	1.87	0.91	1.50	15/16	88.7

PHF Series

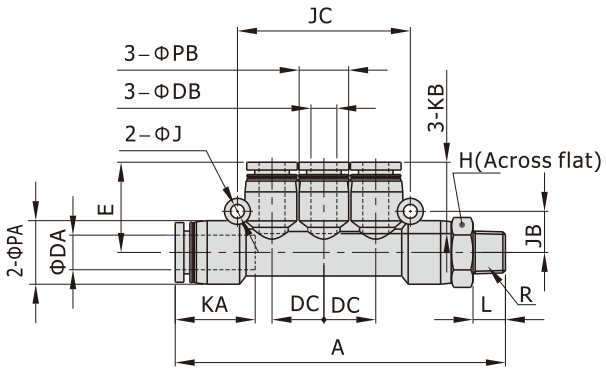


[Unit: mm]

Model\Item	ΦD	RA	RB	ΦP	LA	LB	C	K	E	H	Weight(g)
PHF4M5	4	M5×0.8	M5×0.8	9	3.5	6	20	14	19	8	6.2
PHF401		PT1/8	PT1/8	9	7.5	8	29.5	14	20.5	12	12.9
PHF6M5	6	M5×0.8	M5×0.8	12.5	3.5	6	20	16.5	23.5	8	7.1
PHF601		PT1/8	PT1/8	12.5	7.5	8	29.5	16.5	23	12	13.9
PHF602		PT1/4	PT1/4	12.5	10	11	35	16.5	25	17	30.3
PHF603		PT3/8	PT3/8	12.5	11	12	40	16.5	27	19	44.2
PHF801	8	PT1/8	PT1/8	15	7.5	8	29.5	18.5	26.5	12	15
PHF802		PT1/4	PT1/4	15	10	11	35	18.5	28.5	17	30.7
PHF803		PT3/8	PT3/8	15	11	12	40	18.5	29.5	19	44.8
PHF804		PT1/2	PT1/2	15	14	13.5	47.5	18.5	32	24	84.7
PHF1002	10	PT1/4	PT1/4	18	10	11	35	21	31	17	32
PHF1003		PT3/8	PT3/8	18	11	12	40	21	33	19	46.2
PHF1004		PT1/2	PT1/2	18	14	13.5	47.5	21	35.5	24	86.1
PHF1203	12	PT3/8	PT3/8	21	11	12	40	23	36	19	48.4
PHF1204		PT1/2	PT1/2	21	14	13.5	47.5	23	38	24	89.7

One-touch fittings—threaded type

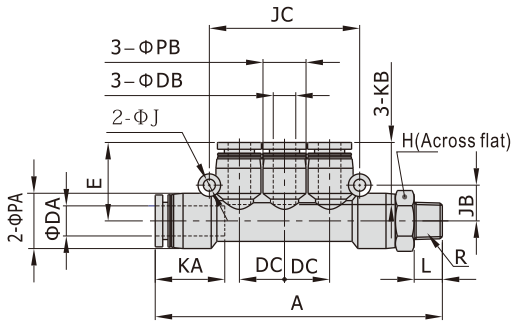
NPKD Series



[Unit: inch]

Model\Item	ΦDA	ΦDB	R	L	A	ΦPA	ΦPB	KA	KB	ΦJ	JB	JC	DC	E	H	Weight(g)
NPKD1/4-5/32-1/8	1/4	5/32	NPT1/8	0.30	2.62	0.49	0.35	0.65	0.52	0.13	0.31	1.34	0.39	0.66	1/2	16.4
NPKD5/16-1/4-1/4	5/16	1/4	NPT1/4	0.39	3.11	0.59	0.49	0.73	0.65	0.13	0.37	1.57	0.47	0.83	9/16	26.8
NPKD3/8-5/16-3/8	3/8	5/16	NPT3/8	0.43	3.60	0.71	0.59	0.83	0.73	0.17	0.43	1.89	0.57	0.94	11/16	38.8

PKD Series



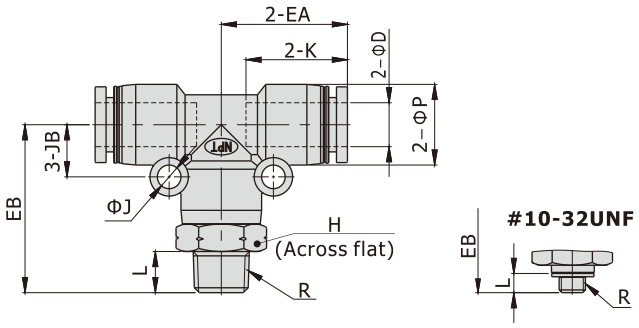
[Unit: mm]

Model\Item	ΦDA	ΦDB	R	L	A	ΦPA	ΦPB	KA
PKD6-401	6	4	PT1/8	7.5	66.5	12.5	9	16.5
PKD8-602	8	6	PT1/4	10	79	15	12.5	18.5
PKD10-803	10	8	PT3/8	11	91.5	18	15	21

Model\Item	KB	ΦJ	JB	JC	DC	E	H	Weight(g)
PKD6-401	14	3.2	8	34	10	17.5	12	15.8
PKD8-602	16.5	3.2	9.5	40	12	21	14	26.5
PKD10-803	18.5	4.3	11	48	14.5	24	17	38.2

One-touch fittings—threaded type

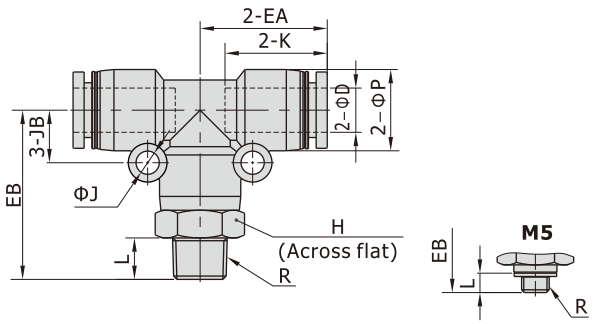
NPEB Series



[Unit: inch]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	ΦJ	JB	H	Weight(g)
NPEB5/32-U10	5/32	#10-32UNF	0.35	0.14	0.53	0.63	0.83	0.13	0.26	3/8	7.0
NPEB5/32-1/8		NPT1/8	0.35	0.30	0.53	0.63	0.98	0.13	0.26	7/16	9.5
NPEB1/4-U10	1/4	#10-32UNF	0.49	0.14	0.65	0.79	0.93	0.13	0.31	1/2	11.6
NPEB1/4-1/8		NPT1/8	0.49	0.30	0.65	0.79	1.08	0.13	0.31	1/2	14.1
NPEB1/4-1/4		NPT1/4	0.49	0.39	0.65	0.79	1.20	0.13	0.31	9/16	18.9
NPEB1/4-3/8		NPT3/8	0.49	0.43	0.65	0.79	1.26	0.13	0.31	11/16	25.9
NPEB5/16-1/8	5/16	NPT1/8	0.59	0.30	0.73	0.91	1.20	0.17	0.37	9/16	18.7
NPEB5/16-1/4		NPT1/4	0.59	0.39	0.73	0.91	1.30	0.17	0.37	9/16	21.6
NPEB5/16-3/8		NPT3/8	0.59	0.43	0.73	0.91	1.36	0.17	0.37	11/16	28.8
NPEB3/8-1/8	3/8	NPT1/8	0.71	0.30	0.83	1.04	1.34	0.17	0.43	11/16	27.3
NPEB3/8-1/4		NPT1/4	0.71	0.39	0.83	1.04	1.44	0.17	0.43	11/16	29.8
NPEB3/8-3/8		NPT3/8	0.71	0.43	0.83	1.04	1.48	0.17	0.43	11/16	32.5
NPEB3/8-1/2		NPT1/2	0.71	0.55	0.83	1.04	1.63	0.17	0.43	7/8	47.9
NPEB1/2-1/4	1/2	NPT1/4	0.83	0.39	0.91	1.18	1.61	0.17	0.51	7/8	52.1
NPEB1/2-3/8		NPT3/8	0.83	0.43	0.91	1.18	1.65	0.17	0.51	7/8	53.7
NPEB1/2-1/2		NPT1/2	0.83	0.55	0.91	1.18	1.77	0.17	0.51	7/8	59.8

PEB Series

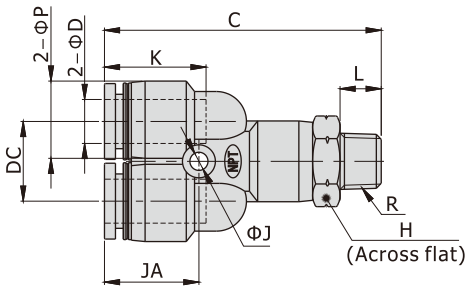


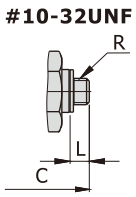
[Unit: mm]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	ΦJ	JB	H	Weight(g)
PEB4M5	4	M5×0.8	9	3.5	14	17	21	3.2	6.5	9	6.8
PEB401		PT1/8	9	7.5	14	17	25	3.2	6.5	10	8.8
PEB402		PT1/4	9	10	14	17	28	3.2	6.5	14	15.5
PEB6M5	6	M5×0.8	12.5	3.5	16.5	20	23.5	3.2	8	12	11.2
PEB601		PT1/8	12.5	7.5	16.5	20	27.5	3.2	8	12	13.5
PEB602		PT1/4	12.5	10	16.5	20	30.5	3.2	8	14	18.6
PEB603		PT3/8	12.5	11	16.5	20	32	3.2	8	17	25.3
PEB801	8	PT1/8	15	7.5	18.5	23	30.5	4.3	9.5	14	18.4
PEB802		PT1/4	15	10	18.5	23	33	4.3	9.5	14	21.3
PEB803		PT3/8	15	11	18.5	23	34.5	4.3	9.5	17	28.2
PEB804		PT1/2	15	14	18.5	23	38.5	4.3	9.5	21	41
PEB1001	10	PT1/8	18	7.5	21	26.5	34	4.3	11	17	26.7
PEB1002		PT1/4	18	10	21	26.5	36.5	4.3	11	17	29.2
PEB1003		PT3/8	18	11	21	26.5	37.5	4.3	11	17	31.9
PEB1004		PT1/2	18	14	21	26.5	41.5	4.3	11	21	45.4
PEB1202	12	PT1/4	21	10	23	30	41	4.3	13	21	49.6
PEB1203		PT3/8	21	11	23	30	42	4.3	13	21	51.2
PEB1204		PT1/2	21	14	23	30	45	4.3	13	21	57.3

One-touch fittings—threaded type

NPYB Series

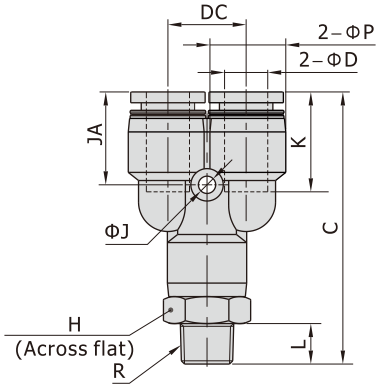


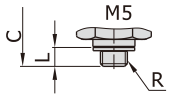


[Unit: inch]

Model\Item	ΦD	R	ΦP	L	C	K	ΦJ	JA	DC	H	Weight(g)
NPYB5/32-U10	5/32	#10-32UNF	0.35	0.14	1.36	0.53	0.13	0.47	0.39	3/8	6.9
NPYB5/32-1/8		NPT1/8	0.35	0.30	1.52	0.53	0.13	0.47	0.39	7/16	9.7
NPYB1/4-U10	1/4	#10-32UNF	0.49	0.14	1.59	0.65	0.13	0.61	0.47	1/2	11.5
NPYB1/4-1/8		NPT1/8	0.49	0.30	1.75	0.65	0.13	0.61	0.47	1/2	14.3
NPYB1/4-1/4		NPT1/4	0.49	0.39	47.5	0.65	0.13	0.61	0.47	9/16	18.5
NPYB1/4-3/8		NPT3/8	0.49	0.43	1.93	0.65	0.13	0.61	0.47	11/16	25.6
NPYB5/16-1/8	5/16	NPT1/8	0.59	0.30	1.97	0.73	0.13	0.67	0.57	9/16	20.1
NPYB5/16-1/4		NPT1/4	0.59	0.39	2.07	0.73	0.13	0.67	0.57	9/16	22.3
NPYB5/16-3/8		NPT3/8	0.59	0.43	2.13	0.73	0.13	0.67	0.57	11/16	28.3
NPYB3/8-1/8	3/8	NPT1/8	0.71	0.30	2.22	0.83	0.17	0.77	0.71	11/16	28.0
NPYB3/8-1/4		NPT1/4	0.71	0.39	2.32	0.83	0.17	0.77	0.71	11/16	30.1
NPYB3/8-3/8		NPT3/8	0.71	0.43	2.36	0.83	0.17	0.77	0.71	11/16	33.1
NPYB3/8-1/2		NPT1/2	0.71	0.55	2.52	0.83	0.17	0.77	0.71	7/8	47.9
NPYB1/2-1/4	1/2	NPT1/4	0.83	0.39	2.60	0.91	0.17	0.83	0.81	7/8	29.8
NPYB1/2-3/8		NPT3/8	0.83	0.43	2.64	0.91	0.17	0.83	0.81	7/8	54.3
NPYB1/2-1/2		NPT1/2	0.83	0.55	2.76	0.91	0.17	0.83	0.81	7/8	59.3

PYB Series



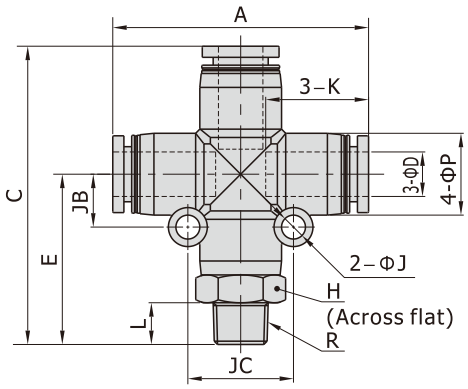


[Unit: mm]

Model\Item	ΦD	R	ΦP	L	C	K	ΦJ	JA	DC	H	Weight(g)
PYB4M5	4	M5×0.8	9	3.5	35.5	14	3.2	13	10	9	6.7
PYB401		PT1/8	9	7.5	39.5	14	3.2	13	10	10	9
PYB402		PT1/4	9	10	42.5	14	3.2	13	10	14	10.8
PYB6M5	6	M5×0.8	12.5	3.5	40.5	16.5	3.2	15.5	12	12	11.1
PYB601		PT1/8	12.5	7.5	44.5	16.5	3.2	15.5	12	12	13.7
PYB602		PT1/4	12.5	10	47.5	16.5	3.2	15.5	12	14	18.2
PYB603		PT3/8	12.5	11	49.0	16.5	3.2	15.5	12	17	25
PYB801	8	PT1/8	15	7.5	50	18.5	3.2	17	14.5	14	19.8
PYB802		PT1/4	15	10	52.5	18.5	3.2	17	14.5	14	22
PYB803		PT3/8	15	11	54	18.5	3.2	17	14.5	17	27.7
PYB804		PT1/2	15	14	58	18.5	3.2	17	14.5	21	40.8
PYB1001	10	PT1/8	18	7.5	56.5	21	4.3	19.5	18	17	27.4
PYB1002		PT1/4	18	10	59	21	4.3	19.5	18	17	29.5
PYB1003		PT3/8	18	11	60	21	4.3	19.5	18	17	32.5
PYB1004		PT1/2	18	14	64	21	4.3	19.5	18	21	45.4
PYB1202	12	PT1/4	21	10	66	23	4.3	21	20.5	21	27.3
PYB1203		PT3/8	21	11	67	23	4.3	21	20.5	21	51.8
PYB1204		PT1/2	21	14	70	23	4.3	21	20.5	21	56.8

One-touch fittings—threaded type

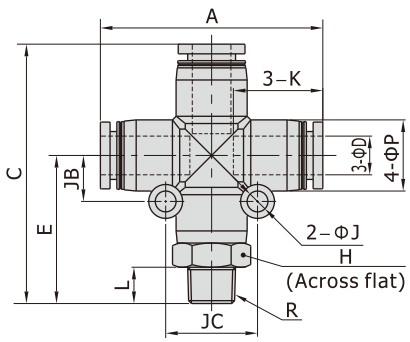
NPZB Series



[Unit: inch]

Model\Item	ΦD	R	L	A	E	C	ΦP	K	ΦJ	JB	JC	H	Weight(g)
NPZB1/4-1/8	1/4	NPT1/8	0.30	1.56	1.08	1.87	0.49	0.65	0.13	0.31	0.63	1/2	15.8
NPZB1/4-1/4		NPT1/4	0.39		1.20	1.99						9/16	20.7
NPZB1/4-3/8		NPT3/8	0.43		1.26	2.05						11/16	27.6
NPZB5/16-1/8	5/16	NPT1/8	0.30	1.81	1.20	2.11	0.59	0.73	0.17	0.37	0.75	9/16	21.2
NPZB5/16-1/4		NPT1/4	0.39		1.30	2.20						9/16	24.1
NPZB5/16-3/8		NPT3/8	0.43		1.36	2.26						11/16	30.5
NPZB3/8-1/4	3/8	NPT1/4	0.39	2.07	1.44	2.48	0.71	0.83	0.17	0.43	0.87	11/16	34.1
NPZB3/8-3/8		NPT3/8	0.43		1.48	2.52						11/16	37.1
NPZB3/8-1/2		NPT1/2	0.55		1.63	2.68						7/8	51.7
NPZB1/2-3/8	1/2	NPT3/8	0.43	2.34	1.65	2.83	0.83	0.91	0.17	0.51	1.02	7/8	59.0
NPZB1/2-1/2		NPT1/2	0.55		1.77	2.95						7/8	67.9

PZB Series

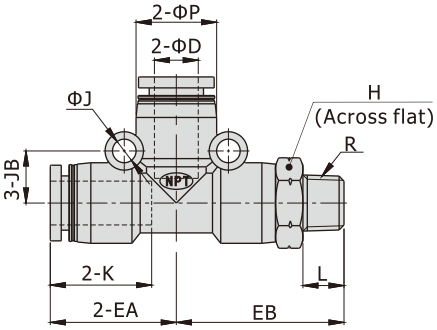


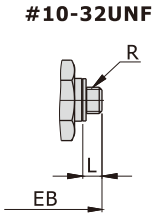
[Unit: mm]

Model\Item	ΦD	R	L	A	E	C	ΦP	K	ΦJ	JB	JC	H	Weight(g)
PZB601	6	PT1/8	7.5	39.5	27.5	47.5	12.5	16.5	3.2	8	16	12	15.2
PZB602		PT1/4	10		30.5	50.5						14	20.4
PZB603		PT3/8	11		32	52						17	27
PZB801	8	PT1/8	7.5	46	30.5	53.5	15	18.5	4.3	9.5	19	14	20.9
PZB802		PT1/4	10		33	56						14	23.8
PZB803		PT3/8	11		34.5	57.5						17	29.9
PZB804		PT1/2	14		38.5	61.5						21	43.5
PZB1002	10	PT1/4	10	52.5	36.5	63	18	21	4.3	11	22	17	33.5
PZB1003		PT3/8	11		37.5	64						17	36.5
PZB1004		PT1/2	14		41.5	68						21	49.2
PZB1203	12	PT3/8	11	59.5	42	72	21	23	4.3	13	26	21	56.5
PZB1204		PT1/2	14		45	75						21	65.4

One-touch fittings—threaded type

NPED Series

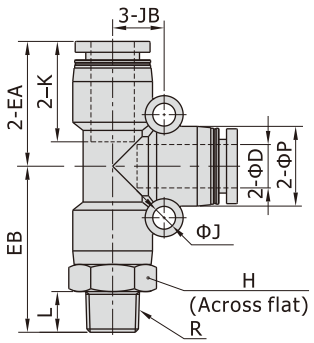


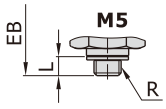


[Unit: inch]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	ΦJ	JB	H	Weight(g)
NPED5/32-U10	5/32	#10-32UNF	0.35	0.14	0.53	0.63	0.83	0.13	0.26	3/8	7.0
NPED5/32-1/8		NPT1/8	0.35	0.30	0.53	0.63	0.93	0.13	0.26	7/16	9.5
NPED1/4-U10	1/4	#10-32UNF	0.49	0.14	0.65	0.79	0.93	0.13	0.31	1/2	11.6
NPED1/4-1/8		NPT1/8	0.49	0.30	0.65	0.79	1.08	0.13	0.31	1/2	14.1
NPED1/4-1/4		NPT1/4	0.49	0.39	0.65	0.79	1.20	0.13	0.31	9/16	18.9
NPED1/4-3/8		NPT3/8	0.49	0.43	0.65	0.79	1.26	0.13	0.31	11/16	25.9
NPED5/16-1/8	5/16	NPT1/8	0.59	0.30	0.73	0.91	1.20	0.17	0.37	9/16	18.7
NPED5/16-1/4		NPT1/4	0.59	0.39	0.73	0.91	1.30	0.17	0.37	9/16	21.6
NPED5/16-3/8		NPT3/8	0.59	0.43	0.73	0.91	1.36	0.17	0.37	11/16	28.8
NPED3/8-1/8	3/8	NPT1/8	0.71	0.30	0.83	1.04	1.34	0.17	0.43	11/16	27.3
NPED3/8-1/4		NPT1/4	0.71	0.39	0.83	1.04	1.44	0.17	0.43	11/16	29.8
NPED3/8-3/8		NPT3/8	0.71	0.43	0.83	1.04	1.48	0.17	0.43	11/16	32.5
NPED3/8-1/2		NPT1/2	0.71	0.55	0.83	1.04	1.63	0.17	0.43	7/8	47.9
NPED1/2-1/4	1/2	NPT1/4	0.83	0.39	0.91	1.18	1.61	0.17	0.51	7/8	52.1
NPED1/2-3/8		NPT3/8	0.83	0.43	0.91	1.18	1.65	0.17	0.51	7/8	53.7
NPED1/2-1/2		NPT1/2	0.83	0.55	0.91	1.18	1.77	0.17	0.51	7/8	59.8

PED Series





[Unit: mm]

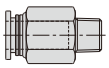
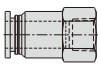
Model\Item	ΦD	R	ΦP	L	K	EA	EB	ΦJ	JB	H	Weight(g)
PED4M5	4	M5×0.8	9	3.5	14	17	21	3.2	6.5	9	6.8
PED401		PT1/8	9	7.5	14	17	25	3.2	6.5	10	8.8
PED402		PT1/4	9	10	14	17	28	3.2	6.5	14	15.5
PED6M5	6	M5×0.8	12.5	3.5	16.5	20	23.5	3.2	8	12	11.2
PED601		PT1/8	12.5	7.5	16.5	20	27.5	3.2	8	12	13.5
PED602		PT1/4	12.5	10	16.5	20	30.5	3.2	8	14	18.6
PED603		PT3/8	12.5	11	16.5	20	32	3.2	8	17	25.3
PED801	8	PT1/8	15	7.5	18.5	23	30.5	4.3	9.5	14	18.4
PED802		PT1/4	15	10	18.5	23	33	4.3	9.5	14	21.3
PED803		PT3/8	15	11	18.5	23	34.5	4.3	9.5	17	28.2
PED804		PT1/2	15	14	18.5	23	38.5	4.3	9.5	21	41
PED1001	10	PT1/8	18	7.5	21	26.5	34	4.3	11	17	26.7
PED1002		PT1/4	18	10	21	26.5	36.5	4.3	11	17	29.2
PED1003		PT3/8	18	11	21	26.5	37.5	4.3	11	17	31.9
PED1004		PT1/2	18	14	21	26.5	41.5	4.3	11	21	45.4
PED1202	12	PT1/4	21	10	23	30	41	4.3	13	21	49.6
PED1203		PT3/8	21	11	23	30	42	4.3	13	21	51.2
PED1204		PT1/2	21	14	23	30	45	4.3	13	21	57.3

Metal one-touch fittings

Ordering code

NPT Thread NBPC 1/4 - 1/8

1 2 3

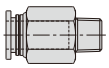
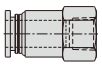
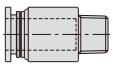
①Model	
NBPC: Metal male connector 	NBPCF: Metal female connector 
NBPMF: Metal bulkhead female connector	NBPCF: Metal female connector

②Port size
5/32: Φ5/32"
1/4: Φ1/4"
5/16: Φ5/16"
3/8: Φ3/8"
1/2: Φ1/2"

③Thread connection
U10: #10-32UNF
1/8: NPT1/8
1/4: NPT1/4
3/8: NPT3/8
1/2: NPT1/2

PT Thread BPC 6 01

1 2 3

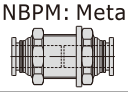
①Model	
BPC: Metal male connector 	BPCF: Metal female connector 
BPOC: Hexagon socket head metal male connector 	BPMF: Metal bulkhead female connector

②Port size
4: Φ4mm
6: Φ6mm
8: Φ8mm
10: Φ10mm
12: Φ124mm

③Thread connection
M5: M5X0.8
01: PT1/8
02: PT1/4
03: PT3/8
04: PT1/2

NPT Thread NBPM 1/4

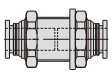
1 2

①Model
NBPM: Metal bulkhead connector 

②Port size
5/32: Φ5/32"
1/4: Φ1/4"
5/16: Φ5/16"
3/8: Φ3/8"
1/2: Φ1/2"

PT Thread BPM 6

1 2

①Model
BPM: Metal bulkhead connector 

②Port size
4: Φ4mm
6: Φ6mm
8: Φ8mm
10: Φ10mm
12: Φ12mm

Metal one-touch fittings

Specification

Operating pressure range	0~145psi(0~1.0MPa)
Negative pressure	10Torr(-750mmHg)
Proof pressure	215psi(1.5MPa)
Ambient and fluid temperature	32~302°F(0~150℃)
Applicable tubing	Soft nylon or polyurethane

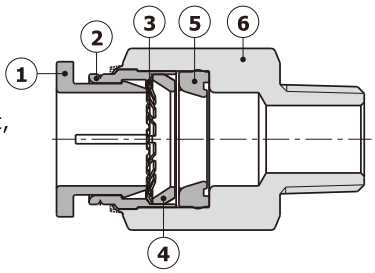
Note: The temperature resistance level of the tubing should be confirmed first when used in high temperature environments.

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.
   The M5,#10-32UNF metric thread are 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.

Inner structure

NBPC,BPC Series



NO.	Name
1	Metal connector
2	Locating ring
3	Spring gasket
4	Locating seat
5	Special shape O-ring
6	Straight connector body

Table for interface port and tube O.D.

Product series	Thread type	Port size				
		Φ5/32"	Φ1/4"	Φ5/16"	Φ3/8"	Φ1/2"
NBPC	#10-32UNF	●	●			
	NPT1/8	●	●	●	●	
	NPT1/4		●	●	●	●
	NPT3/8		●	●	●	●
	NPT1/2				●	●
NBPCF	#10-32UNF	●	●			
	NPT1/8	●	●	●		
	NPT1/4		●	●	●	
	NPT3/8				●	●
	NPT1/2					●
NBPMF	NPT1/8	●	●	●		
	NPT1/4		●	●	●	
	NPT3/8				●	●
	NPT1/2					●

Product series	Thread type	Port size				
		Φ4	Φ6	Φ8	Φ10	Φ12
BPC	M5	●	●			
	PT1/8	●	●	●	●	
	PT1/4	●	●	●	●	●
	PT3/8		●	●	●	●
	PT1/2				●	●
BPOC BPCF	M5	●	●			
	PT1/8	●	●	●		
	PT1/4		●	●	●	
	PT3/8				●	●
	PT1/2					●
BPMF	M5					
	PT1/8	●	●	●		
	PT1/4		●	●	●	
	PT3/8				●	●
	PT1/2					●

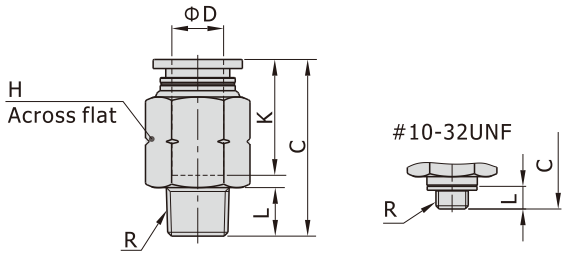
Product series	Port size				
	Φ5/32"	Φ1/4"	Φ5/16"	Φ3/8"	Φ1/2"
NBPM	●	●	●	●	●

Product series	Port size				
	Φ4	Φ6	Φ8	Φ10	Φ12
BPM	●	●	●	●	●

Metal one-touch fittings

Dimensions

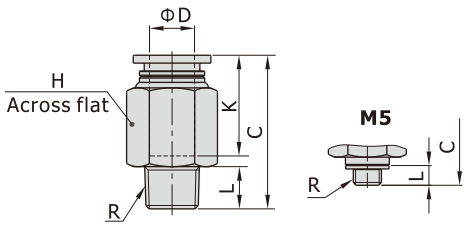
NBPC Series



[Unit: inch]

Model\Item	ΦD	R	L	C	K	H	Weight(g)
NBPC5/32-U10	5/32	#10-32UNF	0.14	0.74	0.52	5/16	5.5
NBPC5/32-1/8		NPT1/8	0.30	0.74	0.52	7/16	9.0
NBPC1/4-U10	1/4	#10-32UNF	0.14	0.87	0.63	1/2	11.6
NBPC1/4-1/8		NPT1/8	0.30	0.85	0.71	1/2	15.3
NBPC1/4-1/4		NPT1/4	0.39	0.95	0.71	9/16	19.6
NBPC1/4-3/8		NPT3/8	0.43	0.87	0.71	11/16	27.5
NBPC5/16-1/8	5/16	NPT1/8	0.30	1.08	0.70	9/16	16.9
NBPC5/16-1/4		NPT1/4	0.39	1.04	0.70	9/16	16.6
NBPC5/16-3/8		NPT3/8	0.43	0.90	0.70	11/16	26.1
NBPC3/8-1/8	3/8	NPT1/8	0.30	1.15	0.80	11/16	26.4
NBPC3/8-1/4		NPT1/4	0.39	1.25	0.80	11/16	29.9
NBPC3/8-3/8		NPT3/8	0.43	1.07	0.80	11/16	35.5
NBPC3/8-1/2		NPT1/2	0.55	1.02	0.80	7/8	41.8
NBPC1/2-1/4	1/2	NPT1/4	0.39	1.35	0.88	7/8	51.9
NBPC1/2-3/8		NPT3/8	0.43	1.17	0.88	7/8	39.5
NBPC1/2-1/2		NPT1/2	0.55	1.25	0.88	7/8	51.9

BPC Series

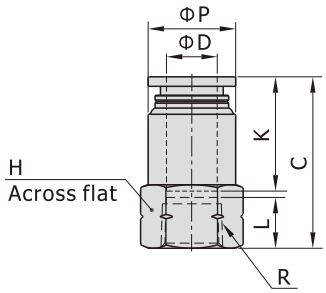


[Unit: mm]

Model\Item	ΦD	R	L	C	K	H	Weight(g)
BPC4M5	4	M5X0.8	3.5	19.5	14	9	5.5
BPC401		PT1/8	7.5	19.5	14	10	7.9
BPC402		PT1/4	10	19	14	14	8.7
BPC6M5	6	M5X0.8	3.5	22	16	12	10.1
BPC601		PT1/8	7.5	21.5	18	12	14.2
BPC602		PT1/4	10	24	18	14	19.1
BPC603		PT3/8	11	22.5	18	17	26.8
BPC801	8	PT1/8	7.5	27.5	18	14	16.1
BPC802		PT1/4	10	26.5	18	14	16
BPC803		PT3/8	11	23	18	17	25.4
BPC1001	10	PT1/8	7.5	29.5	20.5	17	24.5
BPC1002		PT1/4	10	32	20.5	17	28
BPC1003		PT3/8	11	27.5	20.5	17	34.6
BPC1004		PT1/2	14	25.5	20.5	21	39.3
BPC1202	12	PT1/4	10	34.5	22	21	44.5
BPC1203		PT3/8	11	30	22	21	34.2
BPC1204		PT1/2	14	32	22	21	47

Metal one-touch fittings

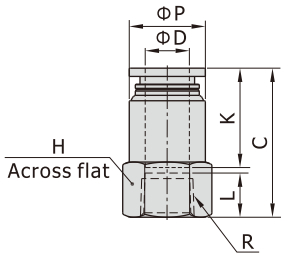
NBPCF Series



[Unit: inch]

Model\Item	ΦD	R	ΦP	L	C	K	H	Weight(g)
NBPCF5/32-U10	5/32	#10-32UNF	0.35	0.20	0.80	0.52	3/8	3.3
NBPCF5/32-1/8		NPT1/8	0.37	0.31	0.87	0.52	9/16	5.5
NBPCF1/4-U10	1/4	#10-32UNF	0.47	0.20	0.83	0.63	1/2	5.9
NBPCF1/4-1/8		NPT1/8	0.49	0.31	0.99	0.63	9/16	7.4
NBPCF1/4-1/4		NPT1/4	0.49	0.43	1.11	0.63	11/16	9.7
NBPCF5/16-1/8	5/16	NPT1/8	0.55	0.31	1.06	0.70	9/16	7.3
NBPCF5/16-1/4		NPT1/4	0.57	0.43	1.18	0.70	11/16	11.1
NBPCF3/8-1/4	3/8	NPT1/4	0.67	0.43	1.27	0.80	11/16	14.0
NBPCF3/8-3/8		NPT3/8	0.71	0.47	1.31	0.80	7/8	19.2
NBPCF1/2-3/8	1/2	NPT3/8	0.83	0.47	1.29	0.88	7/8	23.7
NBPCF1/2-1/2		NPT1/2	0.83	0.53	1.43	0.88	1	25.6

BPCF Series

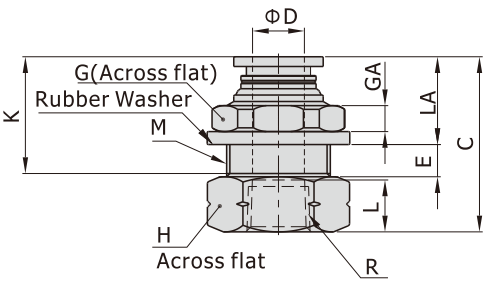


[Unit: mm]

Model\Item	ΦD	R	ΦP	L	C	K	H	Weight(g)
BPCF4M5	4	M5X0.8	9	5	21	14	10	3.5
BPCF401		PT1/8	9.5	8	23	14	14	5.3
BPCF6M5	6	M5X0.8	12	5	21	16	12	5.6
BPCF601		PT1/8	12.5	8	25	16	14	7.2
BPCF602		PT1/4	12.5	11	28	16	17	9.2
BPCF801	8	PT1/8	14	8	27	18	14	7.1
BPCF802		PT1/4	14.5	11	30	18	17	10.6
BPCF1002	10	PT1/4	17	11	32.5	20.5	17	13.5
BPCF1003		PT3/8	18	12	33.5	20.5	21	17.5
BPCF1203	12	PT3/8	21	12	35	22	21	22
BPCF1204		PT1/2	21	13.5	36.5	22	25	24.9

Metal one-touch fittings

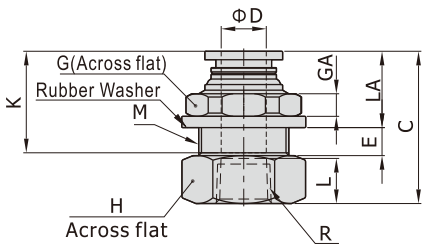
NBPMF Series



[Unit: inch]

Model\Item	ΦD	R	M	L	C	K	LA	E	GA	G	H	Weight(g)
NBPMF5/32-1/8	5/32	NPT1/8	1/2-20UNF	0.31	0.95	0.52	0.47	0.16	0.16	9/16	9/16	7.8
NBPMF1/4-1/8	1/4	NPT1/8	9/16-18UNF	0.31	0.95	0.63	0.47	0.20	0.16	11/16	11/16	10.7
NBPMF1/4-1/4		NPT1/4	9/16-18UNF	0.43	1.19	0.63	0.47	0.20	0.16	11/16	11/16	12.7
NBPMF5/16-1/8	5/16	NPT1/8	5/8-18UNF	0.31	1.06	0.70	0.51	0.22	0.16	3/4	3/4	13.9
NBPMF5/16-1/4		NPT1/4	5/8-18UNF	0.43	1.24	0.70	0.51	0.22	0.16	3/4	3/4	15.3
NBPMF3/8-1/4	3/8	NPT1/4	7/8-14UNF	0.43	1.35	0.80	0.55	0.30	0.20	1	1	31.1
NBPMF3/8-3/8		NPT3/8	7/8-14UNF	0.47	1.39	0.80	0.55	0.30	0.20	1	1	29.7
NBPMF1/2-3/8	1/2	NPT3/8	7/8-14UNF	0.47	1.45	0.88	0.59	0.31	0.24	1	1	34.9
NBPMF1/2-1/2		NPT1/2	7/8-14UNF	0.53	1.51	0.88	0.59	0.31	0.24	1	1	32.5

BPMF Series

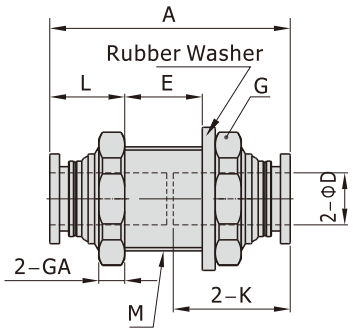


[Unit: mm]

Model\Item	ΦD	R	M	L	C	K	LA	E	GA	G	H	Weight(g)
BPMF401	4	PT1/8	M12X1	8	25	14	12	4	4	14	14	7.6
BPMF601	6	PT1/8	M14X1	8	25	16	12	5	4	17	17	10.4
BPMF602		PT1/4	M14X1	11	30	16	12	5	4	17	17	12.2
BPMF801	8	PT1/8	M16X1	8	27	18	13	5.5	4	19	19	13.9
BPMF802		PT1/4	M16X1	11	31.5	18	13	5.5	4	19	19	15.3
BPMF1002	10	PT1/4	M20X1	11	34.5	20.5	14	7.5	5	24	22	26.2
BPMF1003		PT3/8	M20X1	12	35.5	20.5	14	7.5	5	24	22	24.4
BPMF1203	12	PT3/8	M22X1	12	37	22	15	8	6	27	24	32.6
BPMF1204		PT1/2	M22X1	13.5	38.5	22	15	8	6	27	25	31.8

Metal one-touch fittings

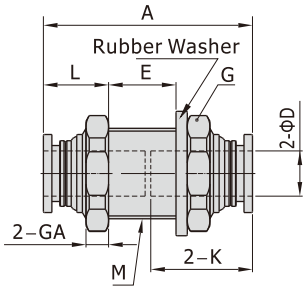
NBPM Series



[Unit: inch]

Model\Item	ΦD	M	A	K	L	E	GA	G	Weight(g)
NBPM5/32	5/32	1/2-20UNF	1.12	0.55	0.39	0.28	0.16	9/16	6.4
NBPM1/4	1/4	9/16-18UNF	1.28	0.61	0.39	0.43	0.16	11/16	16.4
NBPM5/16	5/16	5/8-18UNF	1.43	0.69	0.43	0.51	0.16	3/4	15.8
NBPM3/8	3/8	7/8-14UNF	1.61	0.78	0.47	0.63	0.20	1	28.9
NBPM1/2	1/2	7/8-14UNF	1.74	0.84	0.51	0.69	0.24	1	40.3

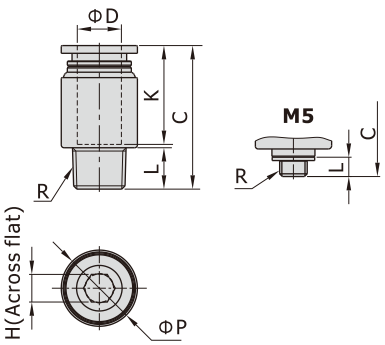
BPM Series



[Unit: mm]

Model\Item	ΦD	M	A	K	L	E	G(Across flat)	GA	Weight(g)
BPM4	4	M12X1	28.5	14	10	7	14	4	6.4
BPM6	6	M14X1	33	16	10	11	17	4	16.4
BPM8	8	M16X1	37	18	11	13	19	4	15.8
BPM10	10	M20X1	41.5	20.5	12	16	24	5	28.9
BPM12	12	M22X1	45	22	13	17.5	27	6	40.3

BPOC Series



[Unit: mm]

Model\Item	ΦD	R	ΦP	L	C	K	H	Weight(g)
BPOC4M5	4	M5X0.8	9	3.5	18.5	14	2	4.4
BPOC401		PT1/8	10	7.5	17.5	14	2.5	6.6
BPOC6M5	6	M5X0.8	12	3.5	21	16	2	7.1
BPOC601		PT1/8	12	7.5	21.5	18	4	8.4
BPOC602		PT1/4	14	10	21.5	18	4	13.6
BPOC801	8	PT1/8	14	7.5	26	17.5	5	12.3
BPOC802		PT1/4	14	10	24.5	17.5	6	12.7
BPOC1002	10	PT1/4	17	10	28.5	20.5	6	18.5
BPOC1003		PT3/8	17	11	27.5	20.5	8	24.9
BPOC1203	12	PT3/8	21	11	29.5	22	8	30.4
BPOC1204		PT1/2	21	14	31.5	22	8	42.4

One-touch fittings—tube-tube type

Ordering code

Same diameter type fittings

NPE 1/4

1 2

①Model		②Port size
NPM: Bulkhead union	NPE: Union tee	5/32: Φ5/32"
NPLM: Bulkhead male elbow	NPY: Union "Y"	1/4: Φ1/4"
NPP: Plug	NPV: Union elbow	5/16: Φ5/16"
NPZ: Cross	PU: Straight union	3/8: Φ3/8"
		1/2: Φ1/2"

PE 6

1 2

①Model		②Port size
PM: Bulkhead union	PE: Union tee	4: Φ4mm
PLM: Bulkhead male elbow	PY: Union "Y"	6: Φ6mm
PP: Plug	PV: Union elbow	8: Φ8mm
PZ: Cross	PU: Straight union	10: Φ10mm
		12: Φ12mm

Different diameter type fittings

NPG 1/4 - 5/32

1 2 3

①Model		②Port size	③Port size
NPG: Different diameter straight	NPZG: Different diameter cross	1/4: Φ1/4"	5/32: Φ5/32"
NPEW: Different diameter tee	NPYW: Different diameter union "Y"	5/16: Φ5/16"	1/4: Φ1/4"
NPGJ: Plug-in reducer	NPEG: Different diameter tee	3/8: Φ3/8"	5/16: Φ5/16"
NPKG: Reducer triple branch union	NPHK: Universal reducer triple branch union	1/2: Φ1/2"	3/8: Φ3/8"
NPHD: Universal reducer four branch union			

PEG 6 - 4

1 2 3

①Model		②Port size	③Port size
PG: Different diameter straight	PZG: Different diameter cross	4: Φ4mm	4: Φ4mm
PEW: Different diameter tee	PYW: Different diameter union "Y"	6: Φ6mm	6: Φ6mm
PGJ: Plug-in reducer	PEG: Different diameter tee	8: Φ8mm	8: Φ8mm
PKG: Reducer triple branch union	PHK: Universal reducer triple branch union	10: Φ10mm	10: Φ10mm
PHD: Universal reducer four branch union		12: Φ12mm	

One-touch fittings—tube-tube type

Table for interface port and tube O.D.

Product series	Port size				
	Φ5/32"	Φ1/4"	Φ5/16"	Φ3/8"	Φ1/2"
NPE、NPY、NPV、NPU NPM、NPLM、NPP、NPZ	●	●	●	●	●

Product series	Port size				
	Φ4	Φ6	Φ8	Φ10	Φ12
PE、PY、PV、PU PM、PLM、PP、PZ	●	●	●	●	●

Product series	Port size I	Port size II			
		Φ5/32"	Φ1/4"	Φ5/16"	Φ3/8"
NPG NPGJ	Φ1/4"	●			
	Φ5/16"		●		
	Φ3/8"		●	●	
	Φ1/2"			●	●
NPEG NPEW NPYW	Φ1/4"	●			
	Φ5/16"		●		
	Φ3/8"			●	
	Φ1/2"			●	●
NPZG	Φ1/4"	●			
	Φ5/16"		●		
	Φ3/8"			●	
	Φ1/2"				●
NPKG	Φ1/4"	●			
	Φ5/16"		●		
	Φ3/8"			●	
NPHK NPHD	Φ5/16"		●		
	Φ3/8"			●	

Product series	Port size I	Port size II			
		Φ4	Φ6	Φ8	Φ10
PG PGJ	Φ4				
	Φ6	●			
	Φ8	●	●		
	Φ10		●	●	
	Φ12			●	●
PEG PEW PYW	Φ4				
	Φ6	●			
	Φ8		●		
	Φ10			●	
	Φ12			●	●
PZG	Φ4				
	Φ6	●			
	Φ8		●		
	Φ10			●	
	Φ12				●
PKG	Φ4				
	Φ6	●			
	Φ8		●		
	Φ10			●	
	Φ12				
PHK PHD	Φ4				
	Φ6				
	Φ8		●		
	Φ10			●	
	Φ12				

Specification

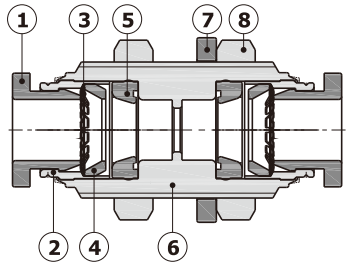
Operating pressure range	0~145psi(0~1.0MPa)
Negative pressure	10Torr(-750mmHg)
Proof pressure	215psi(1.5MPa)
Ambient and fluid temperature	-5~160°F(-20~70℃)
Applicable tubing	Soft nylon or polyurethane

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.

Inner structure

NPM,PM Series

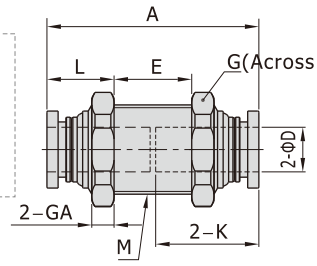


No.	Item
1	Release button
2	Guide
3	Spring gasket
4	Chuck
5	O-ring
6	Body
7	Rubber washer
8	Nut

One-touch fittings—tube-tube type

Dimensions

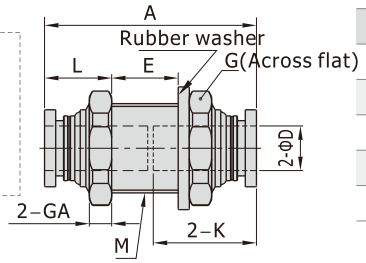
NPM Series



[Unit: inch]

Model\Item	ΦD	M	A	K	L	E	G	GA	Weight(g)
NPM5/32	5/32	1/2-20 UNF	1.08	0.53	0.37	0.28	9/16	0.22	6.2
NPM1/4	1/4	9/16-18 UNF	1.34	0.65	0.41	0.43	11/16	0.22	9.5
NPM5/16	5/16	5/8-18 UNF	1.50	0.73	0.49	0.43	3/4	0.22	15.7
NPM3/8	3/8	7/8-14 UNF	1.69	0.83	0.49	0.63	1	0.28	22.5
NPM1/2	1/2	7/8-14 UNF	1.83	0.91	0.53	0.69	1	0.28	29.5

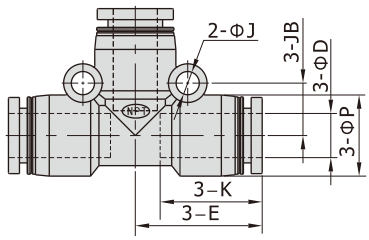
PM Series



[Unit: mm]

Model\Item	ΦD	M	A	K	L	E	G	GA	Weight(g)
PM4	4	M12X1	29	14	10	7	14	4	6.2
Pm6	6	M14X1	34	16.5	10.5	11	17	4	9.5
PM8	8	M16X1	38	18.5	11.5	13	19	4	15.7
PM10	10	M20X1	43	21	12.5	16	24	5	22.5
PM12	12	M22X1	46.5	23	13.5	17.5	27	6	29.5

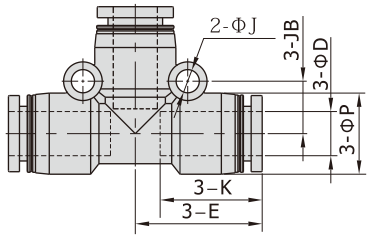
NPE Series



[Unit: inch]

Model\Item	ΦD	ΦP	K	E	ΦJ	JB	Weight(g)
NPE5/32	5/32	0.35	0.53	0.63	0.13	0.26	3.1
NPE1/4	1/4	0.49	0.65	0.79	0.13	0.31	6.1
NPE5/16	5/16	0.59	0.73	0.91	0.17	0.37	8.8
NPE3/8	3/8	0.71	0.83	1.04	0.17	0.43	13.8
NPE1/2	1/2	0.83	0.91	1.18	0.17	0.51	21.0

PE Series

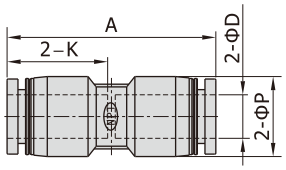


[Unit: mm]

Model\Item	ΦD	ΦP	K	E	ΦJ	JB	Weight(g)
PE4	4	9	14	17	3.2	6.5	3.1
Pe6	6	12.5	16.5	20	3.2	8	6.1
PE8	8	15	18.5	23	4.3	9.5	8.8
PE10	10	18	21	26.5	4.3	11	13.8
PE12	12	21	23	30	4.3	13	21

One-touch fittings—tube-tube type

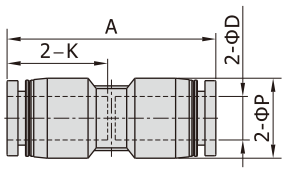
NPU Series



[Unit: inch]

Model\Item	ΦD	ΦP	K	A	Weight(g)
NPU5/32	5/32	0.35	0.53	1.08	1.7
NPU1/4	1/4	0.49	0.65	1.34	3.6
NPU5/16	5/16	0.59	0.73	1.52	5.0
NPU3/8	3/8	0.71	0.83	1.69	8.1
NPU1/2	1/2	0.83	0.91	1.85	12.0

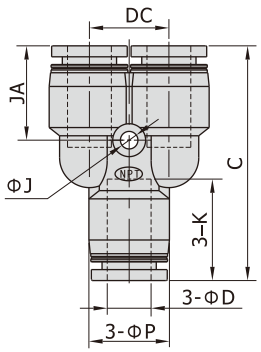
PU Series



[Unit: mm]

Model\Item	ΦD	ΦP	K	A	Weight(g)
PU4	4	9	14	29.5	1.7
PU6	6	12.5	16.5	34	3.6
PU8	8	15	18.5	38.5	5
PU10	10	18	21	43	8.1
PU12	12	21	23	47	12

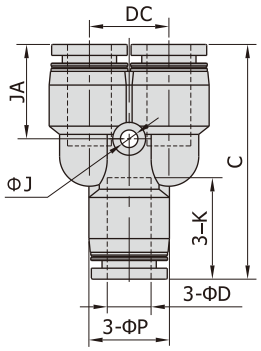
NPY Series



[Unit: inch]

Model\Item	ΦD	ΦP	C	K	ΦJ	JA	DC	Weight(g)
NPY5/32	5/32	0.35	1.16	0.53	0.13	0.47	0.39	3.0
NPY1/4	1/4	0.49	1.46	0.65	0.13	0.61	0.47	6.0
NPY5/16	5/16	0.59	1.67	0.73	0.13	0.67	0.57	8.6
NPY3/8	3/8	0.71	1.91	0.83	0.17	0.77	0.71	14.0
NPY1/2	1/2	0.83	2.15	0.91	0.17	0.83	0.81	21.2

PY Series

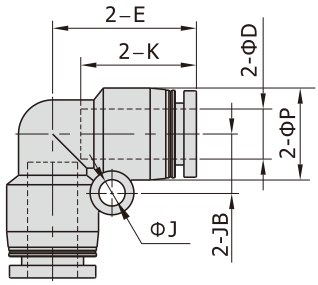


[Unit: mm]

Model\Item	ΦD	ΦP	C	K	ΦJ	JA	DC	Weight(g)
PY4	4	9	31.5	14	3.2	13	10	3
PY6	6	12.5	37	16.5	3.2	15.5	12	6
PY8	8	15	42.5	18.5	3.2	17	14.5	8.6
PY10	10	18	48.5	21	4.3	19.5	18	14
PY12	12	21	54.5	23	4.3	21	20.5	21.2

One-touch fittings—tube-tube type

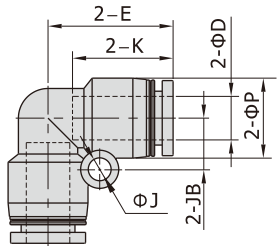
NPV Series



[Unit: inch]

Model\Item	ΦD	ΦP	K	E	ΦJ	JB	Weight(g)
NPV5/32	5/32	0.35	0.52	0.64	0.13	0.26	1.9
NPV1/4	1/4	0.49	0.65	0.79	0.13	0.31	4.2
NPV5/16	5/16	0.59	0.73	0.91	0.17	0.37	6.0
NPV3/8	3/8	0.71	0.83	1.04	0.17	0.43	9.3
NPV1/2	1/2	0.83	0.91	1.18	0.17	0.51	14.6

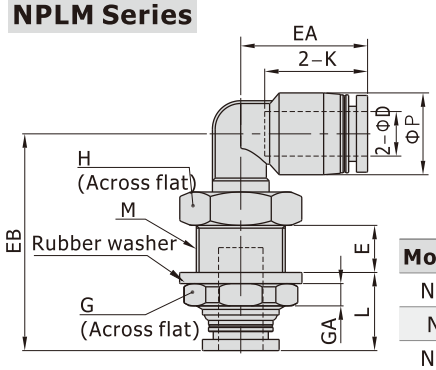
PV Series



[Unit: mm]

Model\Item	ΦD	ΦP	K	E	ΦJ	JB	Weight(g)
PV4	4	9	14	17	3.2	6.5	1.9
PV6	6	12.5	16.5	20	3.2	8	4.2
PV8	8	15	18.5	23	4.3	9.5	6
PV10	10	18	21	26.5	4.3	11	9.3
PV12	12	21	23	30	4.3	13	14.6

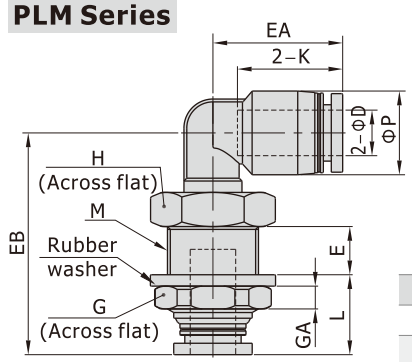
NPLM Series



[Unit: inch]

Model\Item	ΦD	ΦP	M	L	E	K	EA	EB	GA	G	H	Weight(g)
NPLM5/32	5/32	0.35	1/2-20UNF	0.47	0.30	0.52	0.64	1.19	0.16	9/16	9/16	7.6
NPLM1/4	1/4	0.49	9/16-18UNF	0.49	0.33	0.67	0.79	1.40	0.16	11/16	11/16	12.3
NPLM5/16	5/16	0.59	5/8-18UNF	0.53	0.35	0.73	0.91	1.54	0.16	3/4	3/4	16.6
NPLM3/8	3/8	0.71	7/8-14UNF	0.57	0.43	0.83	1.00	1.75	0.20	1	1	29.0
NPLM1/2	1/2	0.83	7/8-14UNF	0.61	0.43	0.91	1.16	1.89	0.24	1	1	35.3

PLM Series

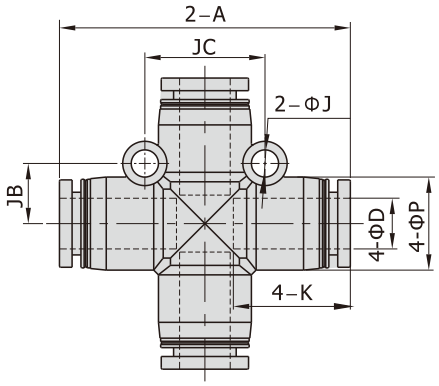


[Unit: mm]

Model\Item	ΦD	ΦP	M	L	E	K	EA	EB	GA	G	H	Weight(g)
PLM4	4	9	M12X1	12	7.5	14	17	31	4	14	14	7.5
PLM6	6	12.5	M14X1	12.5	8.5	17	20	35.5	4	17	17	12.1
PLM8	8	15	M16X1	13.5	9	18.5	23	39	4	19	19	16.6
PLM10	10	18	M20X1	14.5	11	21	25.5	44.5	5	24	22	26.2
PLM12	12	21	M22X1	15.5	11	23	29.5	48	6	27	24	34

One-touch fittings—tube-tube type

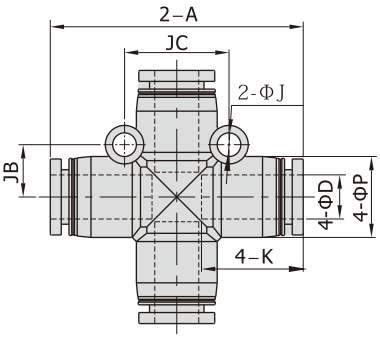
NPZ Series



[Unit: inch]

Model\Item	ΦD	A	ΦP	K	ΦJ	JB	JC	Weight(g)
NPZ5/32	5/32	1.28	0.35	0.52	0.13	0.26	0.51	3.9
NPZ1/4	1/4	1.56	0.49	0.65	0.13	0.31	0.63	7.9
NPZ5/16	5/16	1.81	0.59	0.73	0.17	0.37	0.75	11.1
NPZ3/8	3/8	2.07	0.71	0.83	0.17	0.43	0.87	17.5
NPZ1/2	1/2	2.34	0.83	0.91	0.17	0.51	1.02	26.6

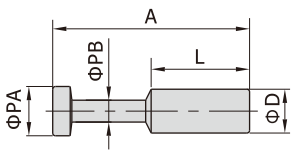
PZ Series



[Unit: mm]

Model\Item	ΦD	A	ΦP	K	ΦJ	JB	JC	Weight(g)
PZ4	4	34	9	14	3.2	6.5	13	3.9
Pz6	6	39.5	12.5	16.5	3.2	8	16	7.9
PZ8	8	46	15	18.5	4.3	9.5	19	11.1
PZ10	10	52.5	18	21	4.3	11	22	17.5
PZ12	12	59.5	21	23	4.3	13	26	26.6

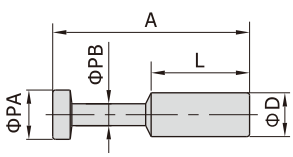
NPP Series



[Unit: inch]

Model\Item	ΦD	ΦPA	ΦPB	L	A	Weight(g)
NPP5/32	5/32	0.20	0.12	0.59	1.08	0.7
NPP1/4	1/4	0.28	0.12	0.67	1.26	0.9
NPP5/16	5/16	0.35	0.16	0.71	1.42	1.6
NPP3/8	3/8	0.35	0.16	0.79	1.50	2.5
NPP1/2	1/2	0.51	0.24	0.91	1.73	4.3

PP Series

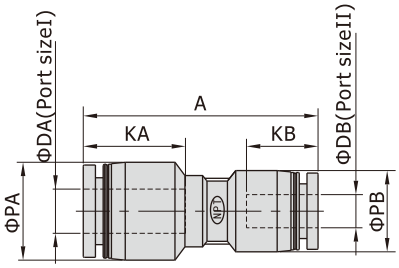


[Unit: mm]

Model\Item	ΦD	ΦPA	ΦPB	L	A	Weight(g)
PP4	4	5	3	15	27.5	0.7
Pp6	6	7	3	17	32	0.9
PP8	8	9	4	18	36	1.6
PP10	10	11	5	20	42	2.5
PP12	12	13	6	23	44	4.3

One-touch fittings—tube-tube type

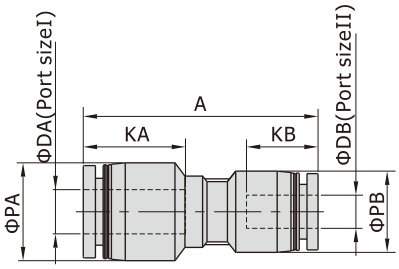
NPG Series



[Unit: inch]

Model\Item	ΦDA	ΦDB	ΦPA	ΦPB	KA	KB	A	Weight(g)
NPG1/4-5/32	1/4	5/32	0.49	0.35	0.65	0.53	1.30	2.7
NPG5/16-1/4	5/16	1/4	0.59	0.49	0.73	0.65	1.50	4.5
NPG3/8-1/4	3/8	1/4	0.71	0.59	0.83	0.65	1.65	6.9
NPG3/8-5/16	3/8	5/16	0.71	0.59	0.83	0.73	1.67	6.7
NPG1/2-5/16	1//2	5/16	0.83	0.71	0.91	0.73	1.83	10.3
NPG1/2-3/8	1/2	3/8	0.83	0.71	0.91	0.83	1.85	10.2

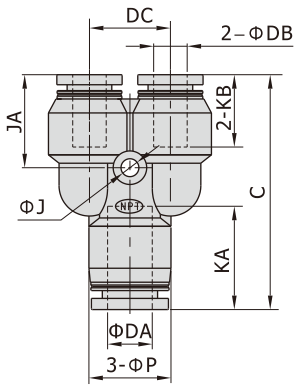
PG Series



[Unit: mm]

Model\Item	ΦDA	ΦDB	ΦPA	ΦPB	KA	KB	A	Weight(g)
PG6-4	6	4	12.5	9	16.5	14	33.5	2.7
PG8-4	8	4	15	12.5	18.5	14	37.5	4.5
PG8-6	8	6	15	12.5	18.5	16.5	38	4.5
PG10-6	10	6	18	15	21	16.5	42	6.9
PG10-8	10	8	18	15	21	18.5	42.5	6.7
PG12-8	12	8	21	18	23	18.5	46.5	10.3
PG12-10	12	10	21	18	23	21	47	10.2

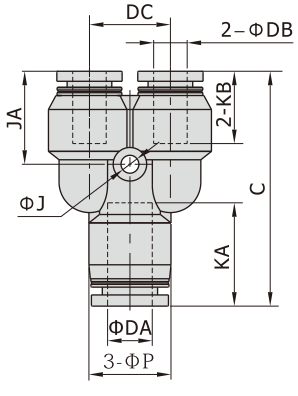
NPYW Series



[Unit: inch]

Model\Item	ΦDA	ΦDB	C	ΦP	KA	KB	ΦJ	JA	DC	Weight(g)
NPYW1/4-5/32	1/4	5/32	1.40	0.49	0.65	0.53	0.13	0.55	0.47	5.8
NPYW5/16-1/4	5/16	1/4	1.65	0.59	0.73	0.65	0.13	0.65	0.57	9.1
NPYW3/8-5/16	3/8	5/16	1.91	0.71	0.83	0.73	0.17	0.75	0.71	14.1
NPYW1/2-5/16	1/2	5/16	2.13	0.83	0.91	0.73	0.17	0.81	0.81	22.3
NPYW1/2-3/8	1/2	3/8	2.15	0.83	0.91	0.83	0.17	0.83	0.81	21.7

PYW Series

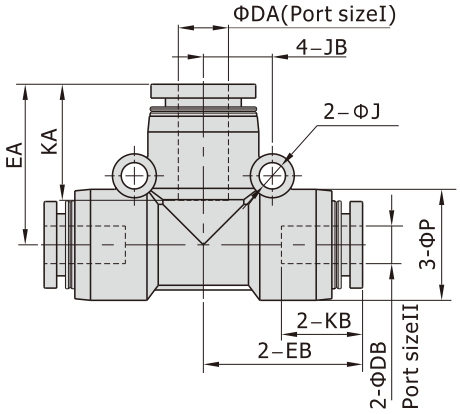


[Unit: mm]

Model\Item	ΦDA	ΦDB	C	ΦP	KA	KB	ΦJ	JA	DC	Weight(g)
PYW6-4	6	4	36.5	12.5	16.5	14	3.2	15	12	5.8
PYW8-6	8	6	42	15	18.5	16.5	3.2	16.5	14.5	9.1
PYW10-8	10	8	48.5	18	21	18.5	4.3	19	18	14.1
PYW12-8	12	8	54	21	23	18.5	4.3	20.5	20.5	22.3
PYW12-10	12	10	54.5	21	23	21	4.3	21	20.5	21.7

One-touch fittings—tube-tube type

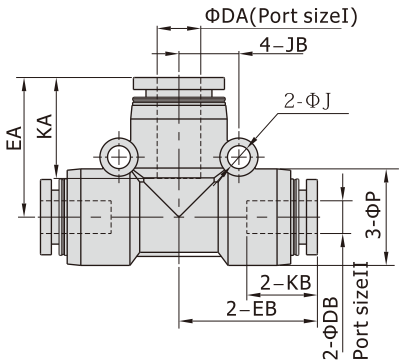
NPEW Series



[Unit: inch]

Model\Item	ΦDA	ΦDB	ΦP	KA	KB	EA	EB	ΦJ	JB	Weight(g)
NPEW1/4-5/32	1/4	5/32	0.49	0.65	0.52	0.79	0.74	0.13	0.31	7.0
NPEW5/16-1/4	5/16	1/4	0.59	0.73	0.65	0.89	0.87	0.17	0.37	22.8
NPEW3/8-5/16	3/8	5/16	0.71	0.83	0.73	1.00	1.00	0.17	0.43	15.1
NPEW1/2-5/16	1/2	5/16	0.83	0.91	0.73	1.14	1.12	0.17	0.51	22.0
NPEW1/2-3/8	1/2	3/8	0.83	0.91	0.83	1.14	1.14	0.17	0.51	21.5

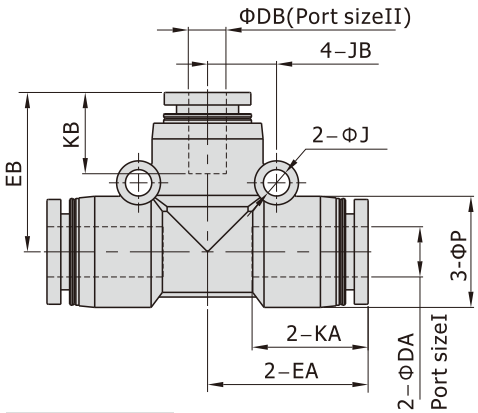
PEW Series



[Unit: mm]

Model\Item	ΦDA	ΦDB	ΦP	KA	KB	EA	EB	ΦJ	JB	Weight(g)
PEW6–4	6	4	12.5	16.5	14	20	19.5	3.2	8	7.0
PEW8–6	8	6	15	18.5	16.5	22.5	22	4.3	9.5	22.8
PEW10–8	10	8	18	21	18.5	25.5	25.5	4.3	11	15.1
PEW12–8	12	8	21	23	18.5	29	28.5	4.3	13	22.0
PEW12–10	12	10	21	23	21	29	29	4.3	13	21.5

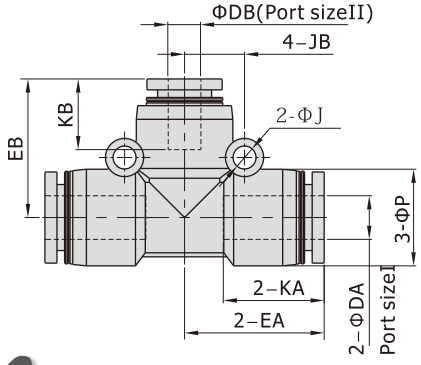
NPEG Series



[Unit: inch]

Model\Item	ΦDA	ΦDB	ΦP	KA	KB	EA	EB	ΦJ	JB	Weight(g)
NPEG1/4-5/32	1/4	5/32	0.49	0.65	0.52	0.79	0.74	0.13	0.31	7.0
NPEG5/16-1/4	5/16	1/4	0.59	0.73	0.65	0.89	0.87	0.17	0.37	22.8
NPEG3/8-5/16	3/8	5/16	0.71	0.83	0.73	1.00	1.00	0.17	0.43	15.1
NPEG1/2-5/16	1/2	5/16	0.83	0.91	0.73	1.14	1.12	0.17	0.51	22.0
NPEG1/2-3/8	1/2	3/8	0.83	0.91	0.83	1.14	1.14	0.17	0.51	21.5

PEG Series

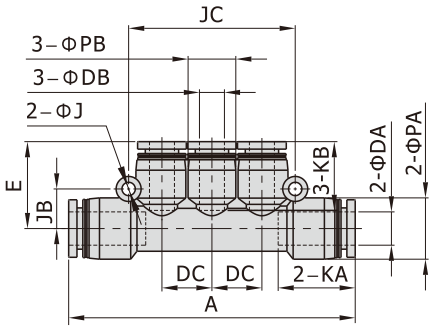


[Unit: mm]

Model\Item	ΦDA	ΦDB	ΦP	KA	KB	EA	EB	ΦJ	JB	Weight(g)
PEG6–4	6	4	12.5	16.5	14	20.0	19.5	3.2	8	7.0
PEG8–6	8	6	15	18.5	16.5	22.5	22	4.3	9.5	22.8
PEG10–8	10	8	18	21	18.5	25.5	25.5	4.3	11	15.1
PEG12–8	12	8	21	23	18.5	29	28.5	4.3	13	22.0
PEG12–10	12	10	21	23	21	29	29	4.3	13	21.5

One-touch fittings—tube-tube type

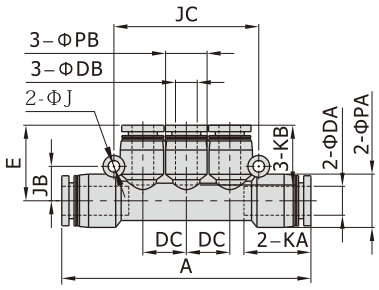
NPKG Series



[Unit: inch]

Model\Item	ΦDA	ΦDB	A	ΦPA	ΦPB	KA	KB	ΦJ	JB	JC	DC	E	Weight(g)
NPKG1/4-5/32	1/4	5/32	2.30	0.49	0.35	0.65	0.52	0.13	0.31	1.34	0.39	0.66	8.6
NPKG5/16-1/4	5/16	1/4	2.72	0.59	0.49	0.73	0.65	0.13	0.37	1.57	0.47	0.83	13.5
NPKG3/8-5/16	3/8	5/16	3.15	0.71	0.59	0.83	0.73	0.17	0.43	1.89	0.57	0.94	20.7

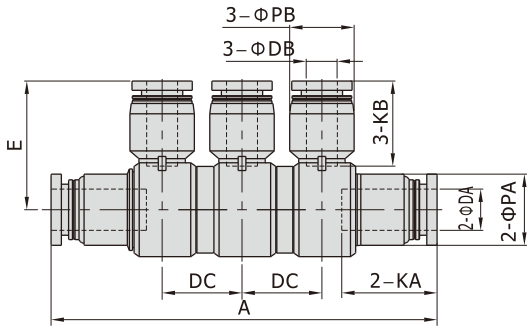
PKG Series



[Unit: mm]

Model\Item	ΦDA	ΦDB	A	ΦPA	ΦPB	KA	KB	ΦJ	JB	JC	DC	E	Weight(g)
PKG6-4	6	4	58.5	12.5	9	16.5	14	3.2	8	34	10	17.5	8.6
PKG8-6	8	6	69	15	12.5	18.5	16.5	3.2	9.5	40	12	21	13.5
PKG10-8	10	8	80	18	15	21	18.5	4.3	11	48	14.5	24	20.7

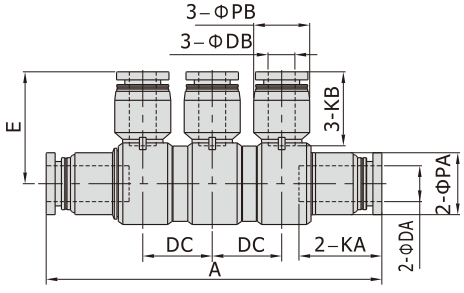
NPHK Series



[Unit: inch]

Model\Item	ΦDA	ΦDB	A	ΦPA	ΦPB	KA	KB	DC	E	Weight(g)
NPHK5/16-1/4	5/16	1/4	2.95	0.55	0.49	0.73	0.65	0.61	0.98	28.4
NPHK3/8-5/16	3/8	5/16	3.37	0.67	0.59	0.83	0.73	0.65	1.16	45.0

PHK Series

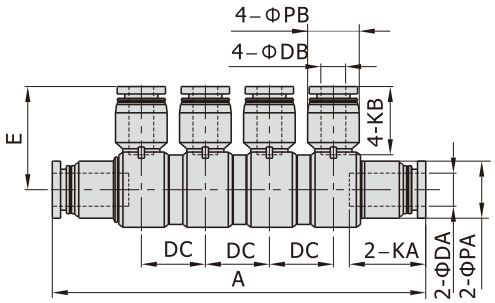


[Unit: mm]

Model\Item	ΦDA	ΦDB	A	ΦPA	ΦPB	KA	KB	DC	E	Weight(g)
PHK8-6	8	6	75	14	12.5	18.5	16.5	15.5	25	28.4
PHK10-8	10	8	85.5	17	15	21	18.5	16.5	29.5	45.0

One-touch fittings—tube-tube type

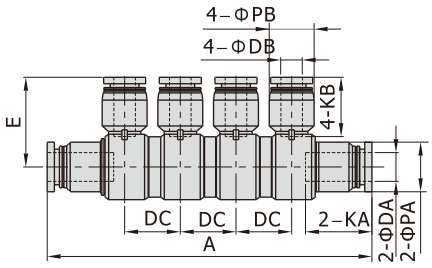
NPHD Series



[Unit: inch]

Model\Item	ΦDA	ΦDB	A	ΦPA	ΦPB	KA	KB	DC	E	Weight(g)
NPHD5/16-1/4	5/16	1/4	3.56	0.55	0.49	0.73	0.65	0.61	0.98	18.7
NPHD3/8-5/16	3/8	5/16	4.04	0.67	0.59	0.83	0.73	0.65	1.16	52.7

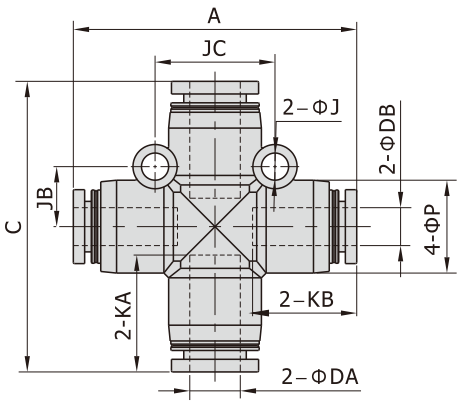
PHD Series



[Unit: mm]

Model\Item	ΦDA	ΦDB	A	ΦPA	ΦPB	KA	KB	DC	E	Weight(g)
PHD8-6	8	6	90.5	14	12.5	18.5	16.5	15.5	25	18.7
PHD10-8	10	8	102.5	17	15	21	18.5	16.5	29.5	52.7

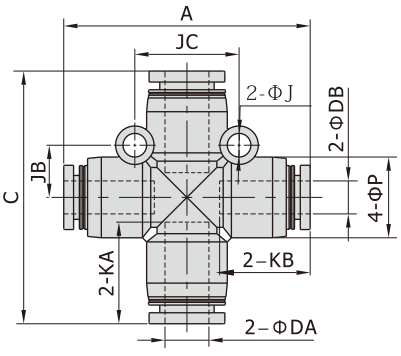
NPZG Series



[Unit: inch]

Model\Item	ΦDA	ΦDB	A	C	ΦP	KA	KB	ΦJ	JB	JC	Weight(g)
NPZG1/4-5/32	1/4	5/32	1.47	1.56	0.49	0.65	0.52	0.13	0.31	0.63	8.2
NPZG5/16-1/4	5/16	1/4	1.77	1.81	0.59	0.73	0.65	0.17	0.37	0.75	12.0
NPZG3/8-5/16	3/8	5/16	2.05	2.07	0.71	0.83	0.73	0.17	0.43	0.87	18.1
NPZG1/2-3/8	1/2	3/8	2.32	2.34	0.83	0.91	0.83	0.17	0.51	1.02	29.0

PZG Series

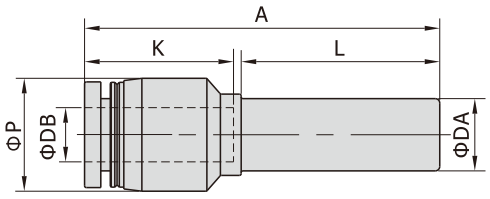


[Unit: mm]

Model\Item	ΦDA	ΦDB	A	C	ΦP	KA	KB	ΦJ	JB	JC	Weight(g)
PZG6-4	6	4	39	39.5	12.5	16.5	14	3.2	8	16	8.2
PZG8-6	8	6	45	46	15	18.5	16.5	4.3	9.5	19	12.0
PZG10-8	10	8	52	52.5	18	21	18.5	4.3	11	22	18.1
PZG12-10	12	10	59	59.5	21	23	21	4.3	13	26	29.0

One-touch fittings—tube-tube type

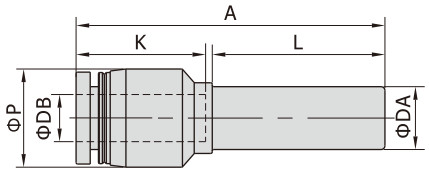
NPGJ Series



[Unit: inch]

Model\Item	ΦDA	ΦDB	ΦP	K	L	A	Weight(g)
NPGJ1/4-5/32	1/4	5/32	0.35	0.55	0.83	1.42	1.5
NPGJ5/16-1/4	5/16	1/4	0.49	0.65	0.87	1.56	3.2
NPGJ3/8-1/4	3/8	1/4	0.59	0.65	0.98	1.73	4.1
NPGJ3/8-5/16	3/8	5/16	0.59	0.73	0.98	1.75	3.9
NPGJ1/2-5/16	1/2	5/16	0.71	0.73	1.02	1.91	6.2
NPGJ1/2-3/8	1/2	3/8	0.71	0.83	1.02	1.93	6.0

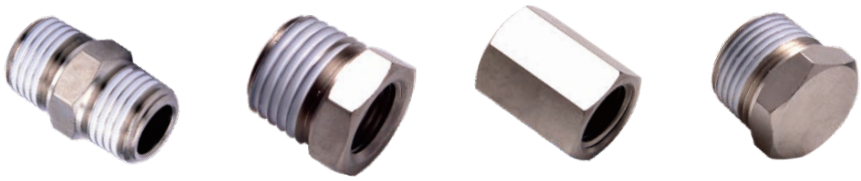
PGJ Series



[Unit: mm]

Model\Item	ΦDA	ΦDB	ΦP	K	L	A	Weight(g)
PGJ6-4	6	4	9	14	21	35	1.5
PGJ8-4	8	4	12.5	14	22	39	2.6
PGJ8-6	8	6	12.5	16.5	22	39.5	3.2
PGJ10-6	10	6	15	16.5	25	44	4.1
PGJ10-8	10	8	15	18.5	25	44.5	3.9
PGJ12-8	12	8	18	18.5	26	48.5	6.2
PGJ12-10	12	10	18	21	26	49	6.0

One-touch fittings—threaded type



Ordering code

NBB 1/8 - 1/8

1 2 3

BB 01 01

1 2 3

①Model	
NBB: Male connector Thread connectionI — Thread connectionII	NBD: Male & female connector [Note1] Thread connectionI — Thread connectionII
NBU: Double female connector Thread connectionI — Thread connectionII	NBZ: Hexagon head cap plug [Note2] Thread connectionI

②Thread connection I	③Thread connection II
1/8: NPT1/8	1/8: NPT1/8
1/4: NPT1/4	1/4: NPT1/4
3/8: NPT3/8	3/8: NPT3/8
1/2: NPT1/2	1/2: NPT1/2

①Model	
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

②Thread connection I	③Thread connection II
01: PT1/8	01: PT1/8
02: PT1/4	02: PT1/4
03: PT3/8	03: PT3/8
04: PT1/2	04: PT1/2

[Note1] For NBD series, Thread I is Female thread, Thread II is male thread;
[Note2] For NBZ series, no thread II and thread I is male thread.

Table for interface port and tube O.D.

Product series	Thread connection I	Thread connection II			
		NPT1/8	NPT1/4	NPT3/8	NPT1/2
NBB	NPT1/8	●	●	●	
	NPT1/4		●	●	●
	NPT3/8			●	●
	NPT1/2				●
NBU	NPT1/8	●			
	NPT1/4		●		
	NPT3/8			●	
	NPT1/2				●
NBD	NPT1/8		●	●	●
	NPT1/4			●	●
	NPT3/8				●
	NPT1/2				

Product series	Thread connection I	Thread connection II			
		PT1/8	PT1/4	PT3/8	PT1/2
BB	PT1/8	●	●	●	
	PT1/4		●	●	●
	PT3/8			●	●
	PT1/2				●
BD	PT1/8		●	●	●
	PT1/4			●	●
	PT3/8				●
	PT1/2				
BU	PT1/8	●			
	PT1/4		●		
	PT3/8			●	
	PT1/2				●

Product series	Thread connection			
	NPT1/8	NPT1/4	NPT3/8	NPT1/2
NBZ	●	●	●	●

Product series	Thread connection			
	PT1/8	PT1/4	PT3/8	PT1/2
BZ	●	●	●	●

Specification

Operating pressure range	0~145psi(0~1.0MPa)
Negative pressure	10Torr(-750mmHg)
Proof pressure	215psi(1.5MPa)
Ambient and fluid temperature	32~302°F(0~150℃)

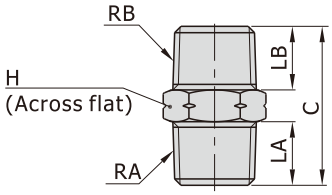
Product feature

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 inner diamater.
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.

One-touch fittings—threaded type

Dimensions

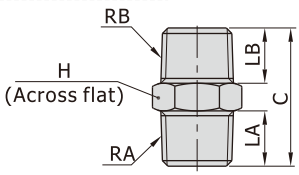
NBB Series



[Unit: inch]

Model\Item	RA	RB	LA	LB	C	H	Weight(g)
NBB1/8-1/8	NPT1/8	NPT1/8	0.30	0.30	0.77	7/16	7.3
NBB1/8-1/4	NPT1/4	NPT1/8	0.39	0.30	0.89	9/16	12.4
NBB1/8-3/8	NPT3/8	NPT1/8	0.43	0.30	0.94	11/16	18.9
NBB1/4-1/4	NPT1/4	NPT1/4	0.39	0.39	0.98	9/16	14.9
NBB1/4-3/8	NPT3/8	NPT1/4	0.43	0.39	1.04	11/16	20.9
NBB1/4-1/2	NPT1/2	NPT1/4	0.55	0.39	1.18	7/8	36.6
NBB3/8-3/8	NPT3/8	NPT3/8	0.43	0.43	1.08	11/16	23.8
NBB3/8-1/2	NPT1/2	NPT3/8	0.55	0.43	1.22	7/8	38.5
NBB1/2-1/2	NPT1/2	NPT1/2	0.55	0.55	1.34	7/8	45.1

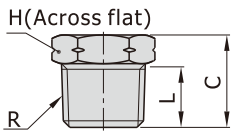
BB Series



[Unit: mm]

Model\Item	RA	RB	LA	LB	C	H	Weight(g)
BB0101	PT1/8	PT1/8	7.5	7.5	19.5	10	6.6
Bb0102	PT1/4	PT1/8	10	7.5	22.5	14	12.1
BB0103	PT3/8	PT1/8	11	7.5	24	17	18.3
BB0202	PT1/4	PT1/4	10	10	25	14	14.6
BB0203	PT3/8	PT1/4	11	10	26.5	17	20.3
BB0204	PT1/2	PT1/4	14	10	30	21	34.3
BB0303	PT3/8	PT3/8	11	11	27.5	17	23.2
BB0304	PT1/2	PT3/8	14	11	31	21	36.2
BB0404	PT1/2	PT1/2	14	14	34	21	42.8

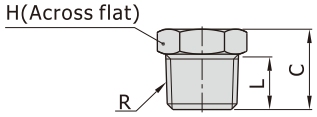
NBZ Series



[Unit: inch]

Model\Item	R	L	C	H	Weight(g)
NBZ1/8	NPT1/8	0.30	0.43	7/16	5.1
NBZ1/4	NPT1/4	0.39	0.57	9/16	11.1
NBZ3/8	NPT3/8	0.43	0.63	11/16	18.0
NBZ1/2	NPT1/2	0.55	0.77	7/8	35.2

BZ Series

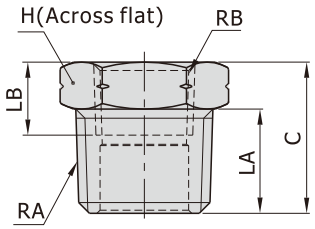


[Unit: mm]

Model\Item	R	L	C	H	Weight(g)
BZ01	PT1/8	7.5	11	10	4.6
BZ02	PT1/4	10	14.5	14	10.8
BZ03	PT3/8	11	16	17	17.4
BZ04	PT1/2	14	19.5	21	33

One-touch fittings—threaded type

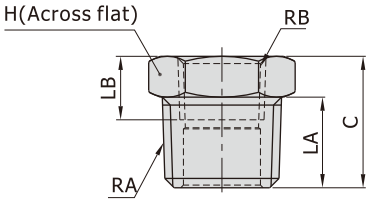
NBD Series



[Unit: inch]

Model\Item	RA	RB	LA	LB	C	H	Weight(g)
NBD1/8-1/4	NPT1/4	NPT1/8	0.39	0.31	0.57	9/16	9.1
NBD1/8-3/8	NPT3/8	NPT1/8	0.43	0.31	0.63	11/16	17.7
NBD1/8-1/2	NPT1/2	NPT1/8	0.55	0.31	0.77	7/8	35.3
NBD1/4-3/8	NPT3/8	NPT1/4	0.43	0.43	0.63	11/16	13.3
NBD1/4-1/2	NPT1/2	NPT1/4	0.55	0.43	0.77	7/8	32.1
NBD3/8-1/2	NPT1/2	NPT3/8	0.55	0.47	0.77	7/8	24.7

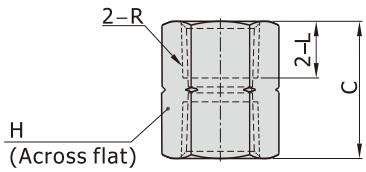
BD Series



[Unit: mm]

Model\Item	RA	RB	LA	LB	C	H	Weight(g)
BD0102	PT1/4	PT1/8	10	8	14.5	14	8.8
Bd0103	PT3/8	PT1/8	11	8	16	17	17.1
BD0104	PT1/2	PT1/8	14	8	19.5	21	33.1
BD0203	PT3/8	PT1/4	11	11	16	17	12.7
BD0204	PT1/2	PT1/4	14	11	19.5	21	29.9
BD0304	PT1/2	PT3/8	14	12	19.5	21	22.5

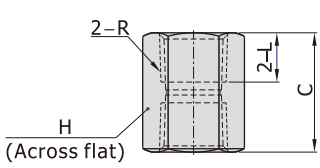
NBU Series



[Unit: inch]

Model\Item	R	L	C	H	Weight(g)
NBU1/8-1/8	NPT1/8	0.31	0.67	7/16	5.1
NBU1/4-1/4	NPT1/4	0.43	0.91	9/16	8.9
NBU3/8-3/8	NPT3/8	0.47	0.98	11/16	15.8
NBU1/2-1/2	NPT1/2	0.53	1.10	7/8	19.3

BU Series



[Unit: mm]

Model\Item	R	L	C	H	Weight(g)
BU0101	PT1/8	8	17	14	4.7
Bu0202	PT1/4	11	23	17	8.1
BU0303	PT3/8	12	25	21	12.7
BU0404	PT1/2	13.5	28	25	18.0

One-touch fittings—threaded type

Ordering code

NBKC 1/4 - 1/8

1 2 3

①Model

NBKC: Straight locknut connector

②Tubing outer diameter

5/32: Φ5/32
1/4: Φ1/4
5/16: Φ5/16
3/8: Φ3/8
1/2: Φ1/2

③Thread connection

U10: #10-32UNF
1/8: NPT1/8
1/4: NPT1/4
3/8: NPT3/8
1/2: NPT1/2

BKC 06 04 - 01

1 2 3 4

①Model

BKC: Straight locknut connector

②Tubing outer diameter

04: Φ4mm
06: Φ6mm
08: Φ8mm
10: Φ10mm
12: Φ12mm

③Tubing inner diameter

25: Φ2.5mm
04: Φ4mm
05: Φ5mm
06: Φ6mm
65: Φ6.5mm
75: Φ7.5mm
08: Φ8mm
09: Φ9mm

④Thread connection

M3: M3X0.5
M5: M5X0.8
01: PT1/8
02: PT1/4
03: PT3/8
04: PT1/2

Note: When using the tubing Φ8×Φ5.5, the straight lock nut connector of BKC0806can be used.

Table for interface port and tube O.D.

Product series	Tubing O.D.	Tubing I.D.	Thread connection				
			#10-32UNF	NPT1/8	NPT1/4	NPT3/8	NPT1/2
NBKC	5/32	5/32	●	●			
	1/4	5/32		●	●	●	
	5/16	1/5		●	●	●	
	3/8	1/4			●	●	●
	1/2	1/3			●	●	●

Product series	Tubing outer diameter	Tubing inner diameter	Thread connection					
			M3	M5	PT1/8	PT1/4	PT3/8	PT1/2
BKC	04	25	●	●	●			
	06	04			●	●	●	
	08	05			●	●	●	
		06			●	●	●	
	10	65				●	●	●
		75				●	●	●
	12	08				●	●	●
		09				●	●	●

Specification

Operating pressure range	0~145psi(0~1.0MPa)
Negative pressure	10Torr(-750mmHg)
Proof pressure	435psi(3.0MPa)
Ambient and fluid temperature	32~302°F(0~150℃)

Note: The temperature resistance level of the tubing should be confirmed first when used in high temperature environments.

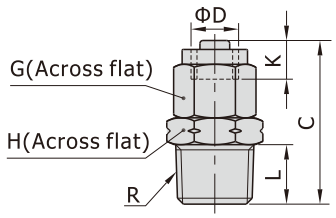
Product feature

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 inner diamater.
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.

One-touch fittings—threaded type

Dimensions

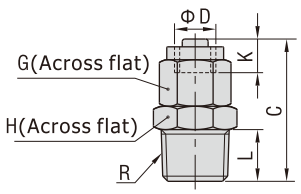
NBKC Series



[Unit: inch]

Model\Item	Tube dim. ΦD		R	L	C	K	G	H	Weight(g)
	O.D.	I.D.							
NBKC5/32-U10	5/32	3/32	#10-32UNF	0.14	0.69	0.20	5/16	5/16	4.8
NBKC5/32-1/8			NPT1/8	0.30	0.81			7/16	8.2
NBKC1/4-1/8	1/4	5/32	NPT1/8	0.30	0.87	0.22	7/16	7/16	11.0
NBKC1/4-1/4			NPT1/4	0.39	1.00			9/16	16.3
NBKC1/4-3/8			NPT3/8	0.43	1.06			11/16	23.7
NBKC5/16-1/8	5/16	1/5	NPT1/8	0.30	0.94	0.26	1/2	1/2	13.7
NBKC5/16-1/4			NPT1/4	0.39	1.08			9/16	17.7
NBKC5/16-3/8			NPT3/8	0.43	1.14			11/16	24.9
NBKC3/8-1/4	3/8	1/4	NPT1/4	0.39	1.18	0.30	5/8	5/8	27.1
NBKC3/8-3/8			NPT3/8	0.43	1.24			11/16	30.3
NBKC3/8-1/2			NPT1/2	0.55	1.40			7/8	48.7
NBKC1/2-1/4	1/2	1/3	NPT1/4	0.39	1.18	0.30	11/16	11/16	31.6
NBKC1/2-3/8			NPT3/8	0.43	1.24			11/16	33.3
NBKC1/2-1/2			NPT1/2	0.55	1.40			7/8	51.4

BKC Series



[Unit: mm]

Model\Item	Tubing diameterΦD		R	L	C	K	G	H	Weight(g)
	O.D	I.D							
BKC0425-M3	4	2.5	M3×0.5	3	17	5	8	8	4.4
BKC0425-M5			M5×0.8	3.5	17.5			8	4.8
BKC0425-01			PT1/8	7.5	20.5			10	7.1
BKC0604-01	6	4	PT1/8	7.5	22	5.5	10	10	9.9
BKC0604-02			PT1/4	10	25.5			14	15.8
BKC0604-03			PT3/8	11	27			17	22.5
BKC0805-01	8	5	PT1/8	7.5	24	6.5	12	12	12.8
BKC0805-02			PT1/4	10	27.5			14	17.2
BKC0805-03			PT3/8	11	29			17	23.7
BKC0806-01		5.5or6	PT1/8	7.5	24			12	13.1
BKC0806-02			PT1/4	10	27.5			14	17.2
BKC0806-03			PT3/8	11	29			17	23.6
BKC1065-02	10	6.5	PT1/4	10	30	7.5	15	15	25.3
BKC1065-03			PT3/8	11	31.5			17	29.1
BKC1065-04			PT1/2	14	35.5			21	44
BKC1075-02		7.5 or 8	PT1/4	10	30			15	24.1
BKC1075-03			PT3/8	11	31.5			17	28.9
BKC1075-04			PT1/2	14	35.5			21	43.6
BKC1208-02	12	8	PT1/4	10	30	7.5	17	17	30.5
BKC1208-03			PT3/8	11	31.5			17	32.1
BKC1208-04			PT1/2	14	35.5			21	46.7
BKC1209-02		9 or 10	PT1/4	10	30			17	30.6
BKC1209-03			PT3/8	11	31.5			17	31.9
BKC1209-04			PT1/2	14	35.5			21	46.4

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.

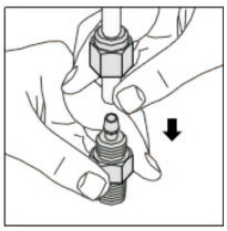


Figure 1

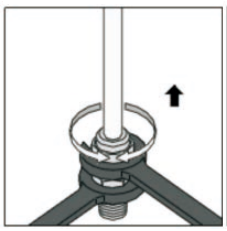


Figure 2

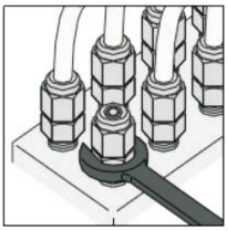
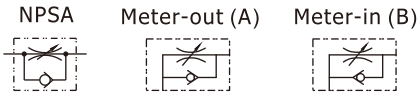


Figure 3

NPSA, NPSS, PSA, PSS, PSL series



Ordering code

NPSS 1/4 - 1/8 A

1 2 3 4

① Model

NPSS: Universal speed controller

②Port size

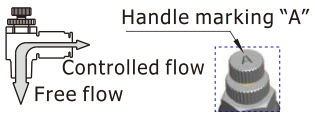
5/32: Φ5/32"
1/4: Φ1/4"
5/16: Φ5/16"
3/8: Φ3/8"
1/2: Φ1/2"

③Thread connection

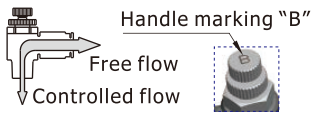
Thread	Adaptable port size
U10: #10-32UNF	Φ5/32"
1/8: NPT1/8	Φ1/4" Φ5/16"
1/4: NPT1/4	Φ1/4" Φ5/16" Φ3/8"
3/8: NPT3/8	Φ3/8" Φ1/2"
1/2: NPT1/2	Φ1/2"

④Control method

A: Meter-out



B: Meter-in



PSS 6 01 A

1 2 3 4

① Model

PSL: Speed controller

PSS: Universal speed controller

②Port size

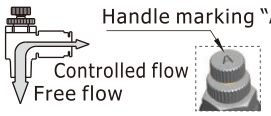
4: Φ4mm
6: Φ6mm
8: Φ8mm
10: Φ10mm
12: Φ12mm

③Thread connection

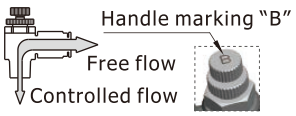
Thread	Adaptable port size
M5: M5X0.8	Φ4, Φ6
01: PT1/8 02: PT1/4 03: PT3/8 04: PT1/2	Φ4, Φ6 Φ8, Φ10 Φ12

④Control method

A: Meter-out



B: Meter-in



NPSA 1/4

1 2

① Model

NPSA: Straight speed controller

②Port size

5/32: Φ5/32"
1/4: Φ1/4"
5/16: Φ5/16"
3/8: Φ3/8"
1/2: Φ1/2"

PSA 6

1 2

① Model

PSA: Straight speed controller

②Port size

4: Φ4mm
6: Φ6mm
8: Φ8mm
10: Φ10mm
12: Φ12mm

Table for interface port and tube O.D.

Product series	Thread type	Port size Φ5/32"	Φ1/4"	Φ5/16"	Φ3/8"	Φ1/2"
NPSS	#10-32UNF	●				
	NPT1/8		●	●		
	NPT1/4		●	●	●	
	NPT3/8				●	●
	NPT1/2					●
NPSA		●	●	●	●	●

Product series	Thread type	Port size Φ4	Φ6	Φ8	Φ10	Φ12
PSS	M5	●				
	PT1/8		●	●		
	PT1/4		●	●	●	
	PT3/8				●	●
	PT1/2					●

Product series	Thread type	Port size Φ4	Φ6	Φ8	Φ10	Φ12
PSL	M5	●	●			
	PT1/8	●	●	●		
	PT1/4		●	●	●	
	PT3/8		●	●	●	●
	PT1/2			●	●	●
PSA	–	●	●	●	●	●

NPSA, NPSS, PSA, PSS, PSL series

Product feature

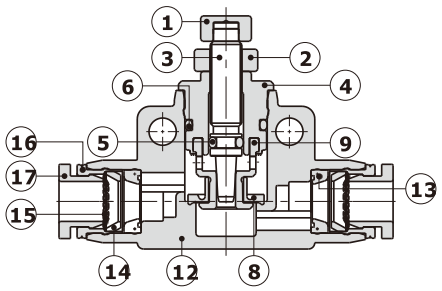
1. The silencer is small size, and light weight with small installation space.
2. Excellent flow charatentics, high sensitivity and easy to adjust.
3. The silencer brass body adopts a special nickel-plating process, which has good corrosion resistance and anti-pollution property.
4. Anti-drop structure is designed on the regulating rod.
5. The sealant being coated on threaded portion can ensure no leakage of the threaded connection part.
6. The inserting direction of universal speed controller can be adjusted in 360° .

Specification

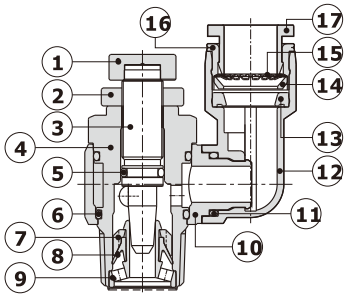
Operating pressure range	0~145psi(0~1.0MPa)
Negative pressure	10Torr(-750mmHg)
Proof pressure	215psi(1.5MPa)
Ambient and fluid temperature	-5~160℉(-20~70℃)
Applicable tubing	Soft nylon or polyurethane

Inner structure

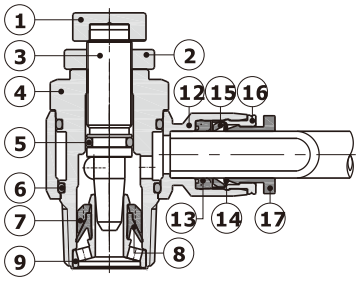
NPSA, PSA Series



NPSS, PSS Series



PSL Series

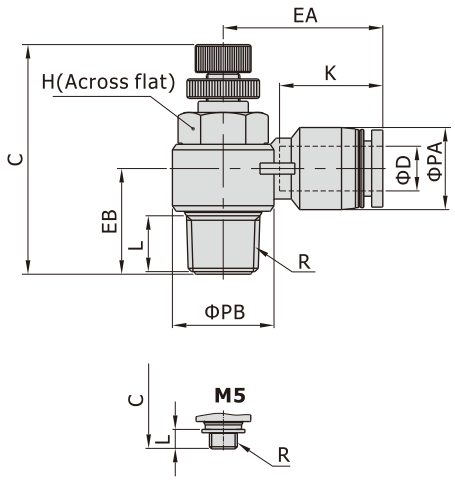


NO.	Name	NO.	Name	NO.	Name	NO.	Name	NO.	Name	NO.	Name
1	Adjusting cap	4	Throttling body	7	Holder	10	Plastic body	13	O-ring	16	Locating ring
2	Locking cap	5	O-ring	8	O-ring	11	O-ring	14	Locating seat	17	Plastic interface
3	Throttling column	6	O-ring	9	Throttling sleeve	12	Plastic body	15	Spring gasket		

Dimensions

PSL Series

[Unit: mm]

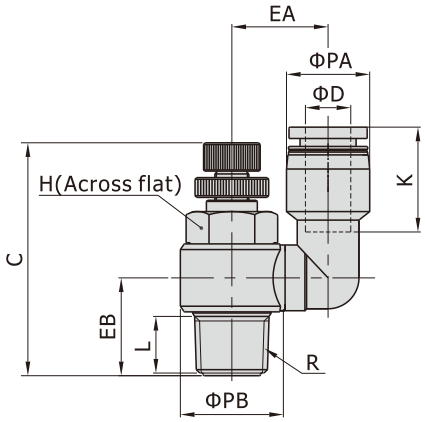


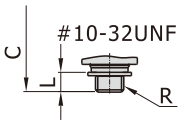
Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)
						max	min					
PSL4M5□	4	M5×0.8	9	10	3.5	30	27.5	14	19	9.5	8	6.5
PSL401□		PT1/8	9	14	7.5	41.5	35	14	20.5	15	11	16.5
PSL6M5□	6	M5×0.8	12.5	10	3.5	30	27.5	16.5	23.5	11.5	8	8
PSL601□		PT1/8	12.5	14	7.5	41.5	35	16.5	23	15.5	11	17.5
PSL602□		PT1/4	12.5	18	10	47.5	41	16.5	25	18	14	32
PSL603□		PT3/8	12.5	22.5	11	52.5	45.5	16.5	27	20	19	59.5
PSL801□	8	PT1/8	15	14	7.5	41.5	35	18.5	26.5	16.5	11	18
PSL802□		PT1/4	15	18	10	47.5	41	18.5	28.5	19	14	33
PSL803□		PT3/8	15	22.5	11	52.5	45.5	18.5	29.5	20	19	60
PSL804□		PT1/2	15	28	14	58.5	51.5	18.5	32	25	24	96.5
PSL1002□	10	PT1/4	18	18	10	47.5	41	21	31	20.5	14	34.5
PSL1003□		PT3/8	18	22.5	11	52.5	45.5	21	33	21.5	19	62
PSL1004□		PT1/2	18	28	14	58.5	51.5	21	35.5	25.5	24	98
PSL1203□	12	PT3/8	21	22.5	11	52.5	45.5	23	36	23.5	19	64
PSL1204□		PT1/2	21	28	14	58.5	51.5	23	38	27	24	100

[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.

NPSA, NPSS, PSA, PSS, PSL series

NPSS Series

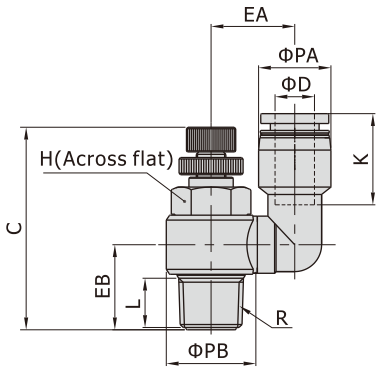


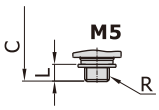


[Unit: inch]

Model\Item	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)
						max	min					
NPSS5/32-U10□	5/32	#10-32UNF	0.35	0.39	0.14	1.18	1.08	0.52	0.49	0.37	5/16	8.1
NPSS1/4-1/8□	1/4	NPT1/8	0.49	0.55	0.30	1.63	1.38	0.67	0.67	0.59	7/16	19.0
NPSS1/4-1/4□		NPT1/4	0.49	0.71	0.39	1.87	1.61	0.67	0.75	0.69	9/16	35.0
NPSS5/16-1/8□	5/16	NPT1/8	0.59	0.55	0.30	1.63	1.38	0.73	0.67	0.59	7/16	20.2
NPSS5/16-1/4□		NPT1/4	0.59	0.71	0.39	1.87	1.61	0.73	0.75	0.69	9/16	40.1
NPSS3/8-1/4□	3/8	NPT1/4	0.71	0.71	0.39	1.87	1.61	0.83	0.81	0.69	9/16	37.5
NPSS3/8-3/8□		NPT3/8	0.71	0.89	0.43	2.07	1.79	0.83	0.94	0.79	3/4	66.0
NPSS1/2-3/8□	1/2	NPT3/8	0.83	0.89	0.43	2.07	1.79	0.91	1.02	0.79	3/4	69.2
NPSS1/2-1/2□		NPT1/2	0.83	1.10	0.55	2.30	2.03	0.91	1.10	0.98	15/16	105.4

PSS Series





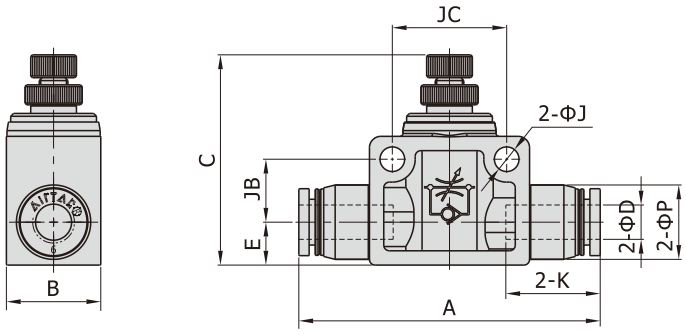
[Unit: mm]

Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)
						max	min					
PSS4M5□	4	M5×0.8	9	10	3.5	30	27.5	14	12.5	9.5	8	8.1
PSS601□	6	PT1/8	12.5	14	7.5	41.5	35	17	17	15	11	19
PSS602□		PT1/4	12.5	18	10	47.5	41	17	19	17.5	14	34.7
PSS801□	8	PT1/8	15	14	7.5	41.5	35	18.5	17	15	11	20.2
PSS802□		PT1/4	15	18	10	47.5	41	18.5	19	17.5	14	39.8
PSS1002□	10	PT1/4	18	18	10	47.5	41	21	20.5	17.5	14	37.2
PSS1003□		PT3/8	18	22.5	11	52.5	45.5	21	24	20	19	66
PSS1203□	12	PT3/8	21	22.5	11	52.5	45.5	23	25.5	20	19	69.2
PSS1204□		PT1/2	21	28	14	58.5	51.5	23	28	25	24	105.8

[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.

NPSA, NPSS, PSA, PSS, PSL series

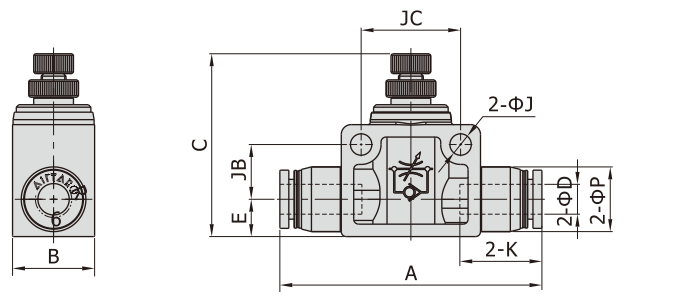
NPSA Series



[Unit: inch]

Model\Item	ΦD	A	B	C		ΦP	E	K	ΦJ	JB	JC	Weight (g)
				max	min							
NPSA5/32	5/32	1.55	0.43	1.14	1.04	0.37	0.28	0.52	0.13	0.24	0.55	7.85
NPSA1/4	1/4	2.07	0.65	1.71	1.44	0.51	0.30	0.65	0.17	0.43	0.79	18.3
NPSA5/16	5/16	2.34	0.65	1.85	1.57	0.59	0.33	0.73	0.17	0.43	0.87	23.5
NPSA3/8	3/8	2.72	0.83	2.11	1.83	0.71	0.41	0.83	0.17	0.57	1.02	42.4
NPSA1/2	1/2	3.09	1.02	2.30	2.01	0.85	0.47	0.91	0.17	0.69	1.26	67.5

PSA Series



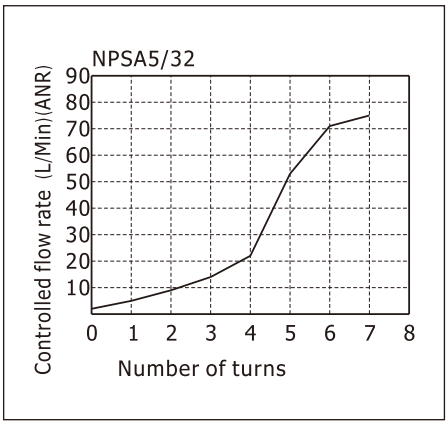
[Unit: mm]

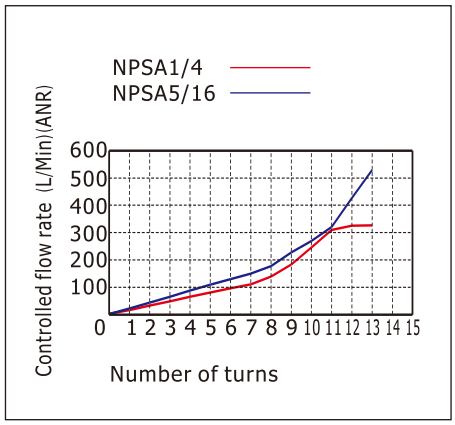
Model\Item	ΦD	A	B	C		ΦP	E	K	ΦJ	JB	JC	Weight(g)
				max	min							
PSA4	4	41	11	29	26.5	9.5	7	14	3.2	6	14	7.85
PSA6	6	52.5	16.5	43.5	36.5	13	7.5	16.5	4.3	11	20	18.3
PSA8	8	59.5	16.5	47	40	15	8.5	18.5	4.3	11	22	23.5
PSA10	10	69	21	53.5	46.5	18	10.5	21	4.3	14.5	26	42.4
PSA12	12	78.5	26	58.5	51	21.5	12	23	4.3	17.5	32	67.5

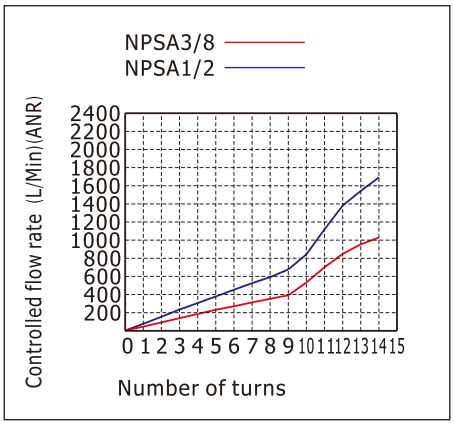
NPSA, NPSS, PSA, PSS, PSL series

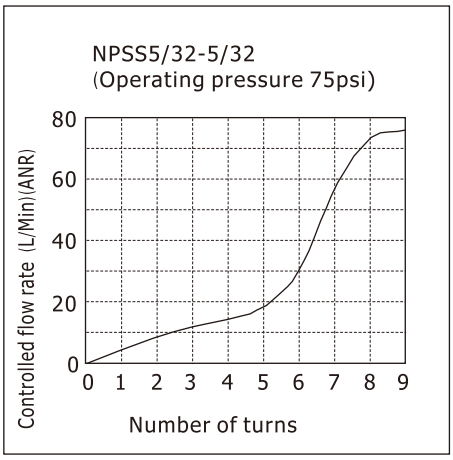
Flowrate characteristic

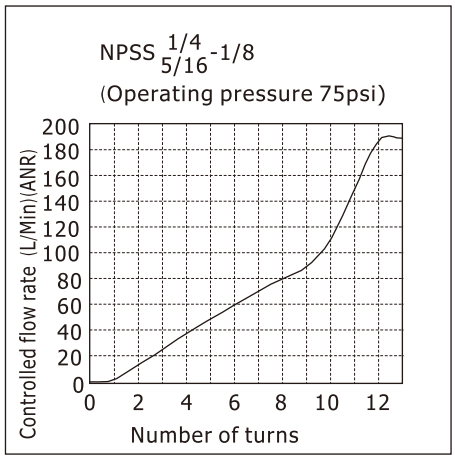
Controlled flow rate

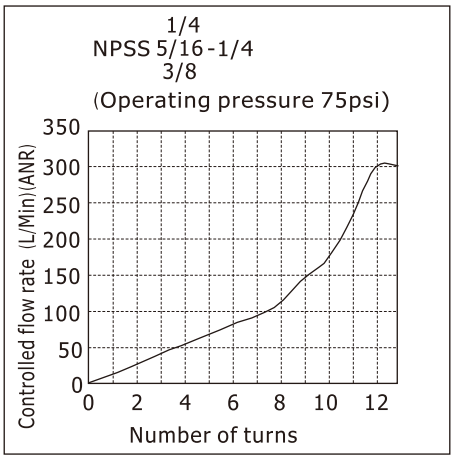


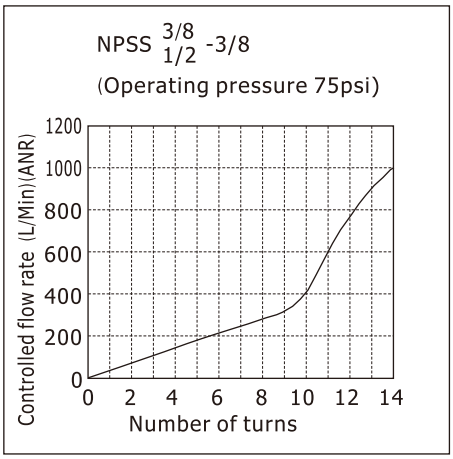


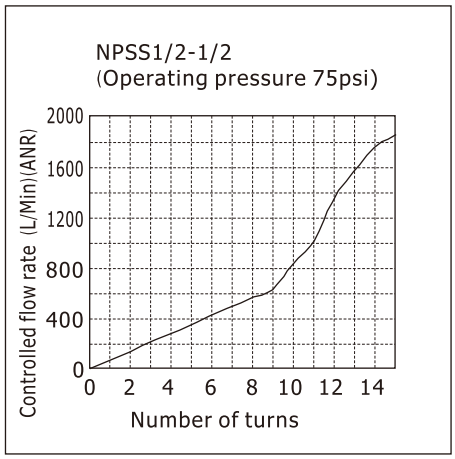






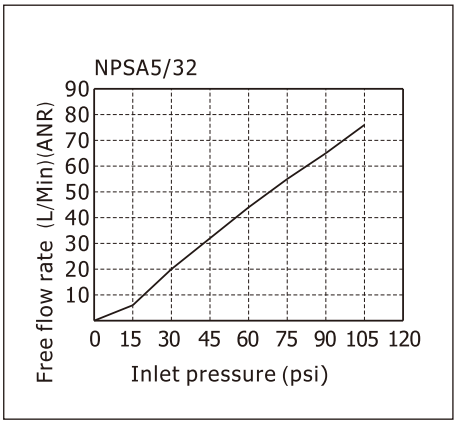


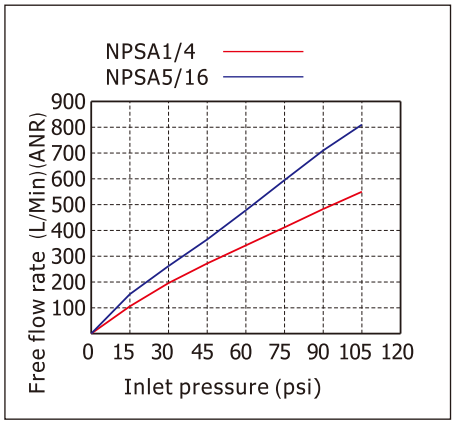


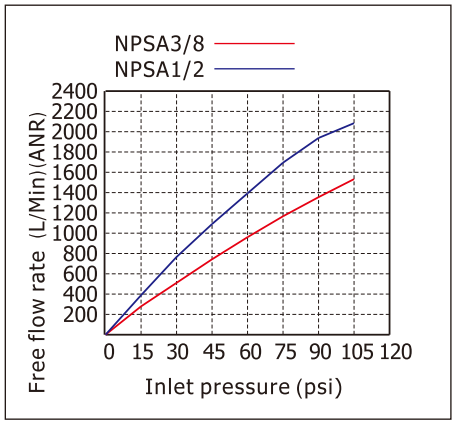


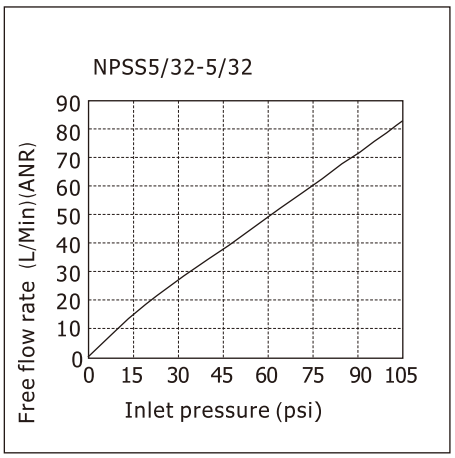
NPSA, NPSS, PSA, PSS, PSL series

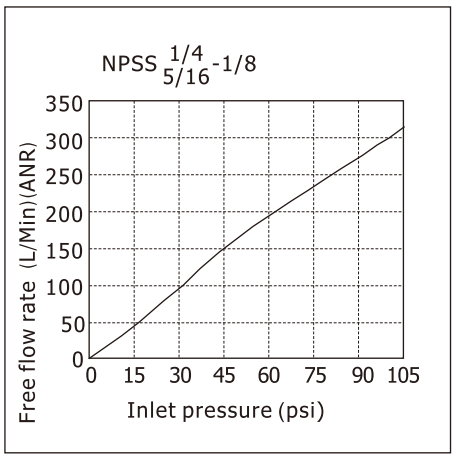
Free flow rate

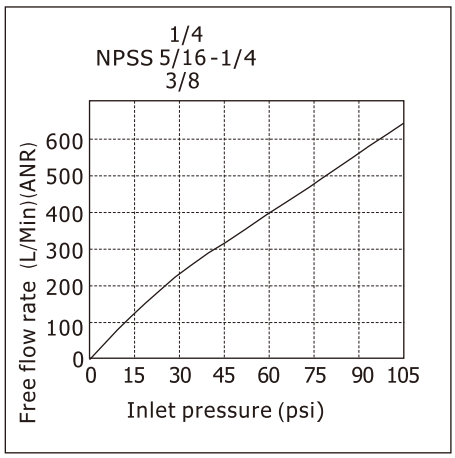


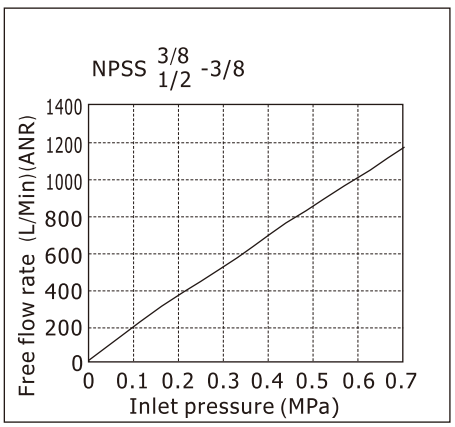


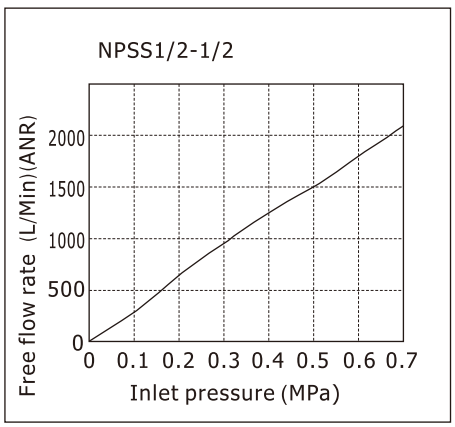








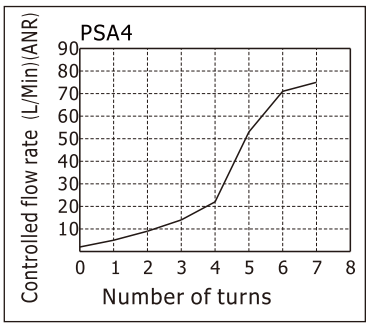


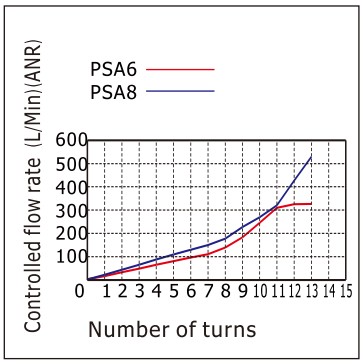


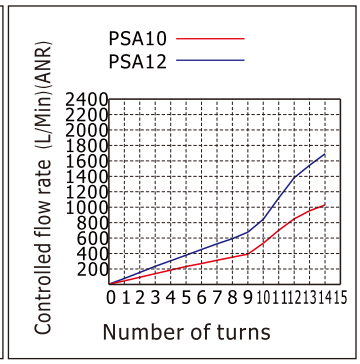
NPSA, NPSS, PSA, PSS, PSL series

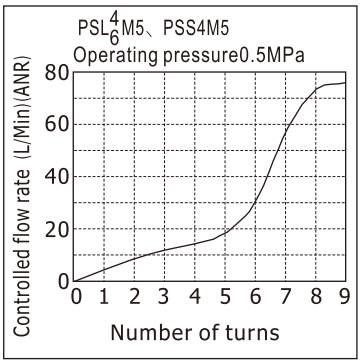
Flowrate characteristic

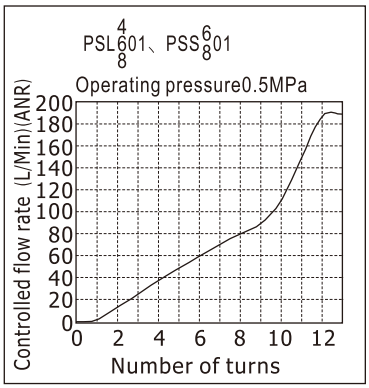
Controlled flow rate

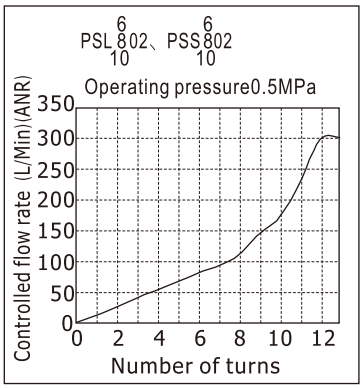


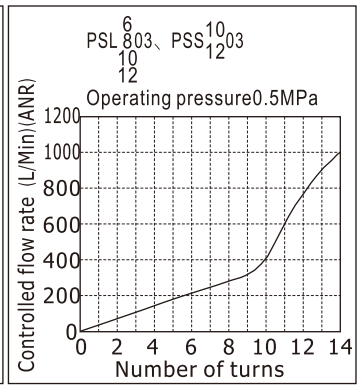


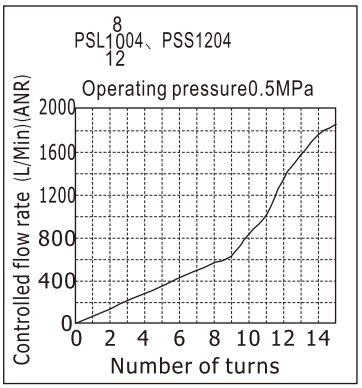




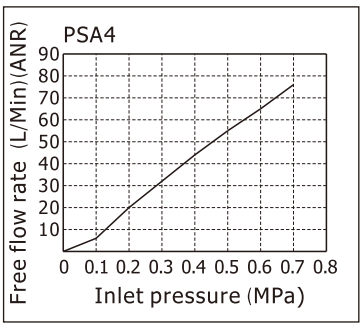


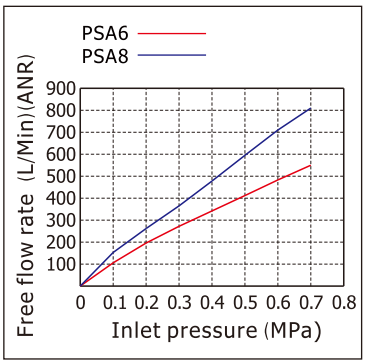


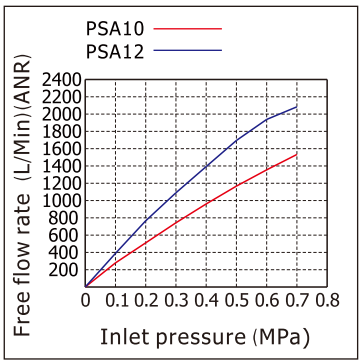


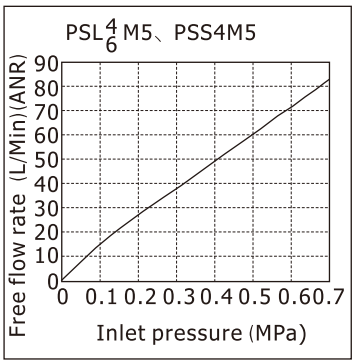


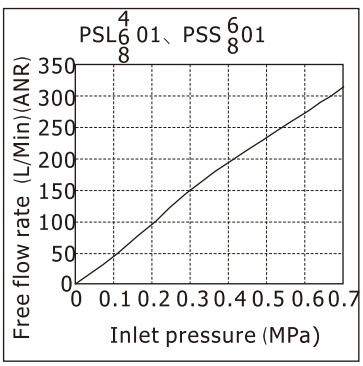
Free flow rate

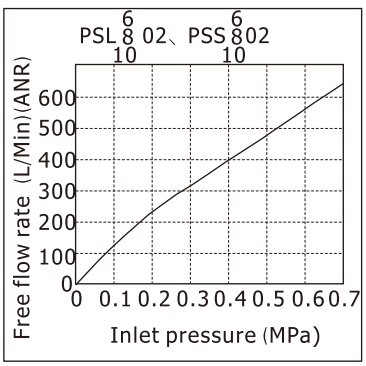


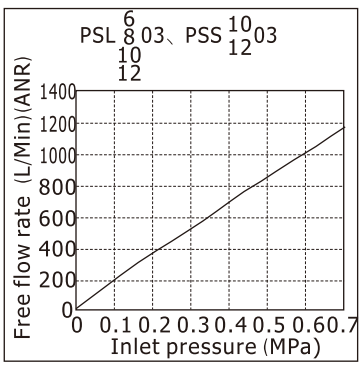


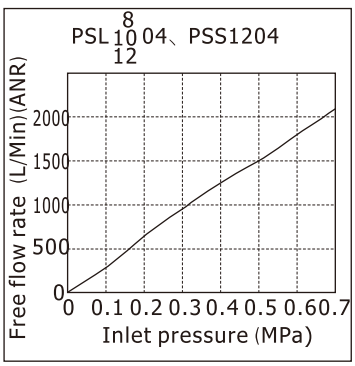












NPSA, NPSS, PSA, PSS, PSL series

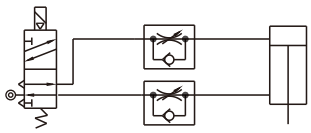
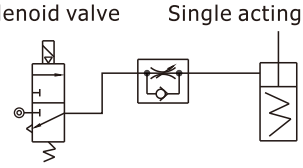
Selection, Installation and Operation

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
Solenoid valve Double acting cylinder  Meter-out speed controller	Solenoid valve Single acting cylinder  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

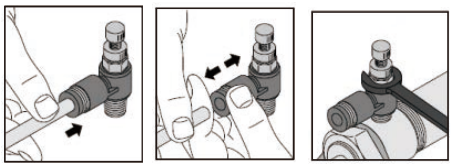
Push the release button to open the spring gasket so that the tubing can be released.

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.

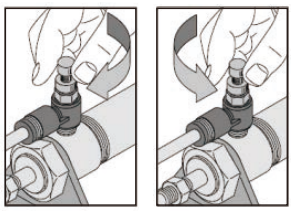


Operation

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.

NPTL, PTL series

Meter-out (A)

Meter-in (B)

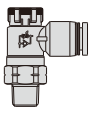
Ordering code

NPTL 1/4 - 1/8 A

1 2 3 4

① Model

NPTL: Speed controller (Push lock)



②Port size

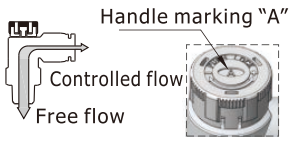
5/32: Φ5/32"
1/4: Φ1/4"
5/16: Φ5/16"
3/8: Φ3/8"
1/2: Φ1/2"

③Thread connection

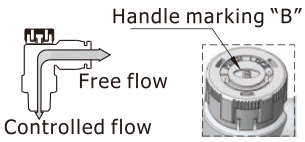
Thread	Adaptable port size
U10: #10-32UNF	Φ5/32" Φ1/4"
1/8: NPT1/8	Φ5/32" Φ1/4" Φ5/16"
1/4: NPT1/4	Φ1/4" Φ5/16" Φ3/8"
3/8: NPT3/8	Φ1/4" Φ5/16" Φ3/8" Φ1/2"
1/2: NPT1/2	Φ5/16" Φ3/8" Φ1/2"

④Control method

A: Meter-out



B: Meter-in

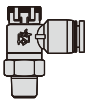


PTL 6 01 A

1 2 3 4

① Model

PTL: Speed controller (Push lock)



②Port size

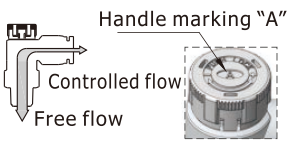
6: Φ6mm
8: Φ8mm
10: Φ10mm
12: Φ12mm

③Thread connection

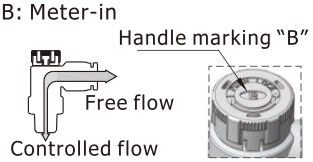
Thread	Adaptable port size
01: PT1/8	Φ6, Φ8
02: PT1/4	Φ6, Φ8, Φ10
03: PT3/8	Φ6, Φ8, Φ10, Φ12
04: PT1/2	Φ8, Φ10, Φ12

④Control method

A: Meter-out



B: Meter-in



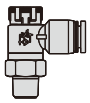
Mini type

PTL 6 M5 A – M

1 2 3 4 5

① Model

PTL: Speed controller (Push lock)



②Port size

4: Φ4mm
6: Φ6mm

③Thread connection

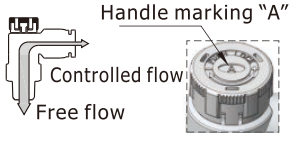
M5: M5X0.8
01: PT1/8

⑤Style type

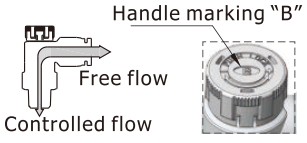
M: Mini type

④Control method

A: Meter-out



B: Meter-in



NPTL, PTL series

Table for interface port and tube O.D.

Product series	Thread type	Port size				
		Φ5/32"	Φ1/4"	Φ5/16"	Φ3/8"	Φ1/2"
NPTL	#10-32UNF	●	●			
	NPT1/8	●	●	●		
	NPT1/4		●	●	●	
	NPT3/8		●	●	●	●
	NPT1/2			●	●	●

Product series	Thread type	Port size				
		Φ4	Φ6	Φ8	Φ10	Φ12
PTL	M5	●	●			
	PT1/8	●	●	●		
	PT1/4		●	●	●	
	PT3/8		●	●	●	●
	PT1/2			●	●	●

Specification

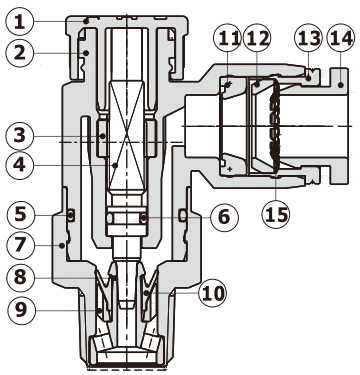
Operating pressure range	0~145psi(0~1.0MPa)
Negative pressure	10Torr(-750mmHg)
Proof pressure	215psi(1.5MPa)
Ambient and fluid temperature	-5~160°F(-20~70℃)
Applicable tubing	Soft nylon or polyurethane

Product feature

1. Compare with traditional 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.

Inner structure

NPTL ,PTL Series



NO.	Name	NO.	Name
1	Adjusting cap	9	Holder
2	Plastic body	10	O-ring
3	Locating ring	11	O-ring
4	Throttling column	12	Locating seat
5	O-ring	13	Locating ring
6	O-ring	14	Plastic interface
7	Throttling body	15	Spring gasket
8	Throttling sleeve		

Selection, Installation and Operation

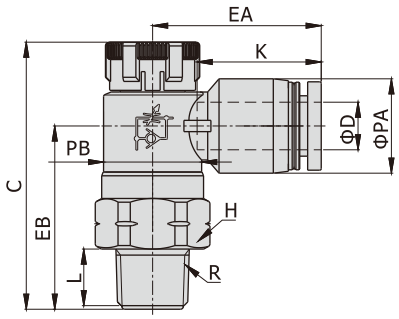
1. This product rotates in the direction of the finite position mechanism, the rotation torque can not be too large, so as not to cause damage.
   The maximum allowable torque is shown right.
2. Push-lock speed controller installation instructions is the same as traditional one. Please refer to traditional type for specific content.

Thread type	Max. allowable torque(N.m)
#10-32UNF/M5	0.05
NPT1/8, PT1/8	0.08
NPT1/4, PT1/4	0.16
NPT3/8, PT3/8	0.24
NPT1/2, PT1/2	0.32

NPTL, PTL series

Dimensions

NPTL Series

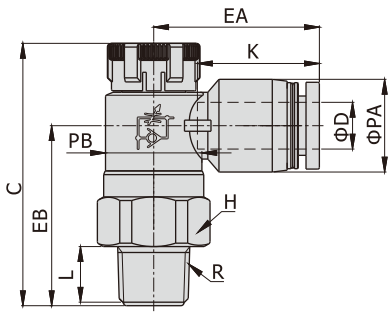


[Unit: inch]

Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)
						Pull	Push					
NPTL5/32-U10□	5/32	#10-32UNF	0.33	0.35	0.14	1.14	1.10	0.5	0.65	0.75	3/8	5.6
NPTL5/32-1/8□		NPT1/8	0.33	0.35	0.33	1.14	1.10	0.5	0.65	0.79	7/16	11.8
NPTL1/4-U10□	1/4	#10-32UNF	0.49	0.35	0.14	1.14	1.10	0.65	0.91	0.73	3/8	6.8
NPTL1/4-1/8□		NPT1/8	0.49	0.49	0.33	1.42	1.36	0.65	0.89	0.87	1/2	14.2
NPTL1/4-1/4□		NPT1/4	0.49	0.65	0.43	1.59	1.54	0.65	0.94	1.10	11/16	20.2
NPTL1/4-3/8□		NPT3/8	0.49	0.75	0.46	1.73	1.67	0.65	1.00	1.22	3/4	28.5
NPTL5/16-1/8□	5/16	NPT1/8	0.59	0.51	0.33	1.42	1.36	0.73	0.96	0.89	9/16	13.4
NPTL5/16-1/4□		NPT1/4	0.59	0.65	0.43	1.59	1.54	0.73	1.02	1.06	11/16	21.2
NPTL5/16-3/8□		NPT3/8	0.59	0.75	0.46	1.73	1.67	0.73	1.06	1.18	3/4	29.0
NPTL5/16-1/2□		NPT1/2	0.59	0.94	0.58	2.07	2.01	0.73	1.16	1.48	15/16	48.4
NPTL3/8-1/4□	3/8	NPT1/4	0.71	0.65	0.43	1.59	1.54	0.83	1.22	1.02	11/16	22.7
NPTL3/8-3/8□		NPT3/8	0.71	0.75	0.46	1.73	1.67	0.83	1.14	1.14	3/4	30.5
NPTL3/8-1/2□		NPT1/2	0.71	0.94	0.58	2.07	2.01	0.83	1.24	1.44	15/16	49.9
NPTL1/2-3/8□	1/2	NPT3/8	0.83	0.75	0.46	1.73	1.67	0.89	1.36	1.10	3/4	32.5
NPTL1/2-1/2□		NPT1/2	0.83	0.94	0.58	2.07	2.01	0.89	1.34	1.42	15/16	52.4

[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

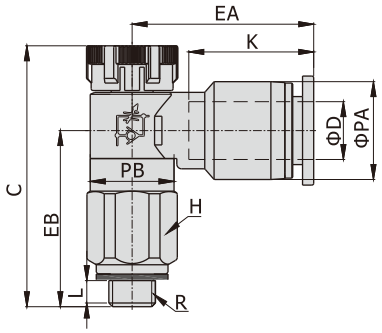


[Unit: mm]

Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)
						Pull	Push					
PTL601□	6	PT1/8	12.5	13	8.5	36	34.5	16.5	22.5	23.5	14	12.5
PTL602□		PT1/4	12.5	16.5	11	40.5	39	16.5	24	28	17	19.5
PTL603□		PT3/8	12.5	19	12	44	42.5	16.5	25.5	31	19	28.5
PTL801□	8	PT1/8	15	13	8.5	36	34.5	18.5	24.5	22.5	14	13
PTL802□		PT1/4	15	16.5	11	40.5	39	18.5	26	27	17	20.5
PTL803□		PT3/8	15	19	12	44	42.5	18.5	27	30	19	29
PTL804□		PT1/2	15	24	15	52.5	51	18.5	29.5	37.5	24	49
PTL1002□	10	PT1/4	18	16.5	11	40.5	39	21	31	26	17	22
PTL1003□		PT3/8	18	19	12	44	42.5	21	29	29	19	30.5
PTL1004□		PT1/2	18	24	15	52.5	51	21	31.5	36.5	24	50.5
PTL1203□	12	PT3/8	21	19	12	44	42.5	23	34.5	28	19	32.5
PTL1204□		PT1/2	21	24	15	52.5	51	23	34	36	24	53

[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 Mini Series



[Unit: mm]

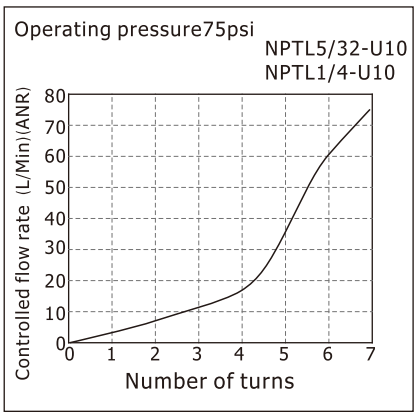
Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)
						Pull	Push					
PTL4M5□-M	4	M5×0.8	8.5	9	3.5	29.5	28	12.5	16.5	19	9	5
PTL401□-M		PT1/8	8.5	9	3.5	29.5	28	12.5	16.5	19	10	11
PTL6M5□-M	6	M5×0.8	10.5	9	3.5	29.5	28	13.5	19.5	19	9	6.2
PTL601□-M		PT1/8	10.5	9	3.5	29.5	28	13.5	19.5	19	10	12

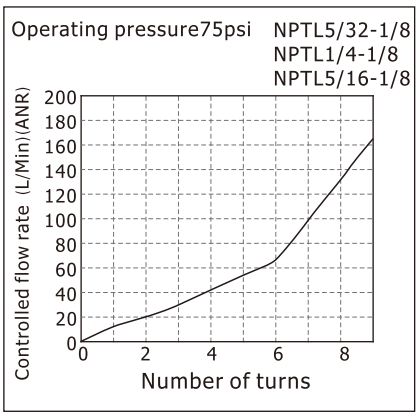
[Note1] "□" stands for A or B. A indicates meter-out type while B indicates meter-in type.
The two types are with the same overall dimension.

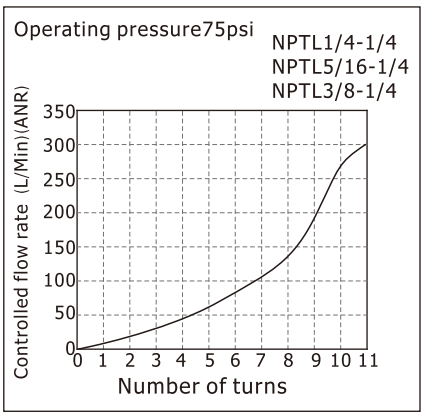
NPTL, PTL series

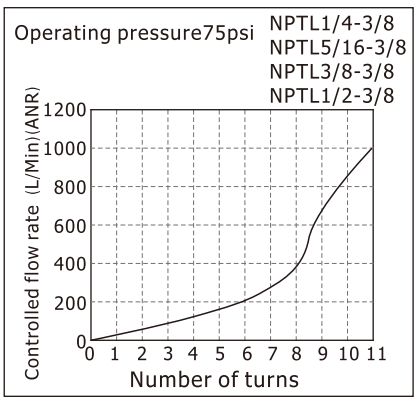
Flowrate characteristic

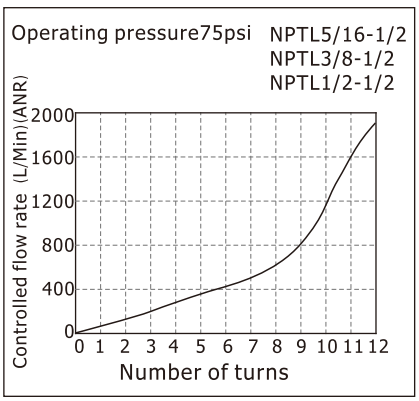
Controlled flow rate



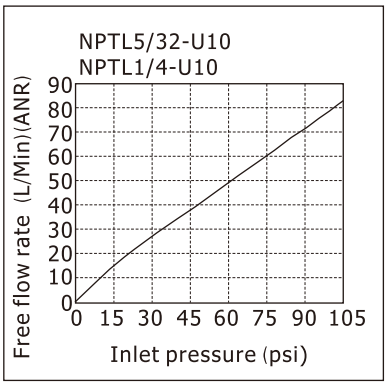


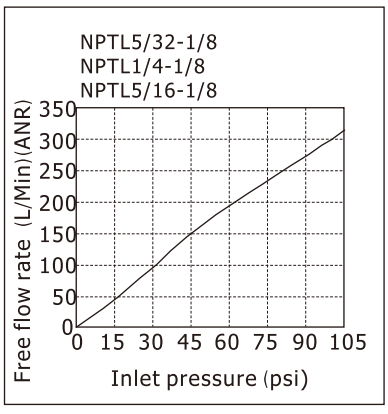


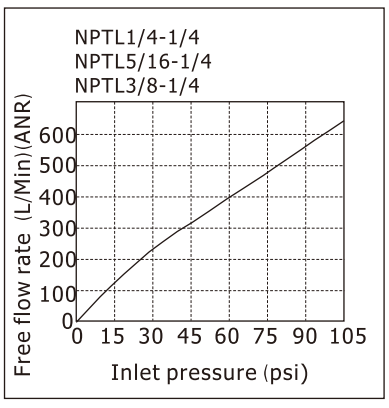


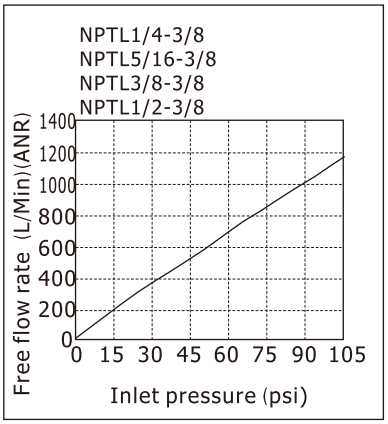


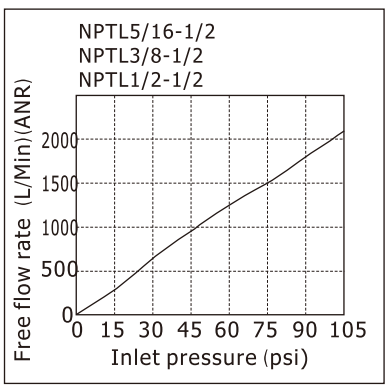
Free flow rate







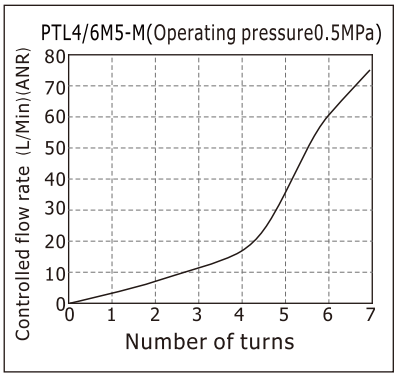


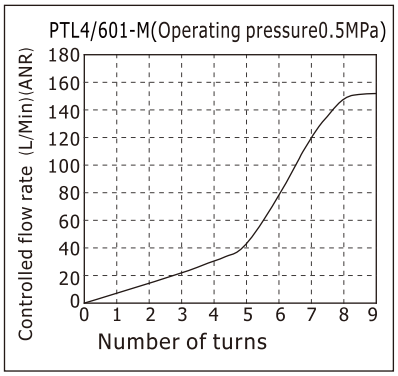


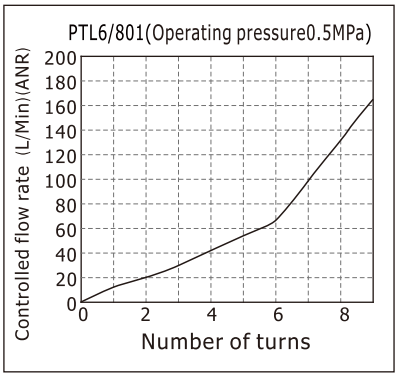
NPTL, PTL series

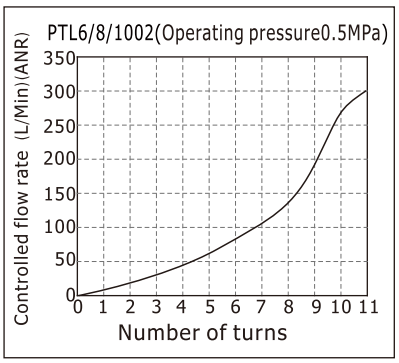
Flowrate characteristic

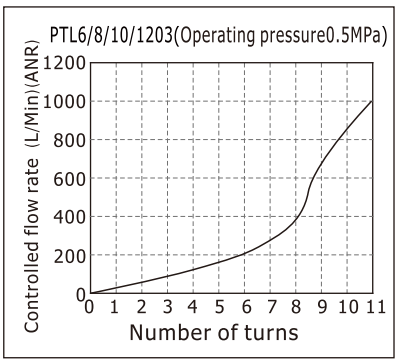
Controlled flow rate

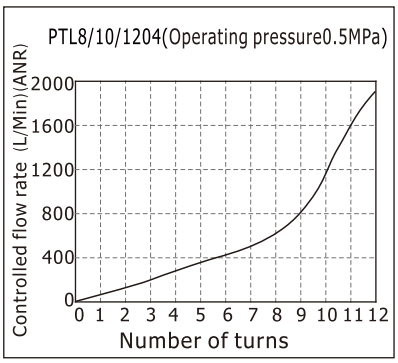




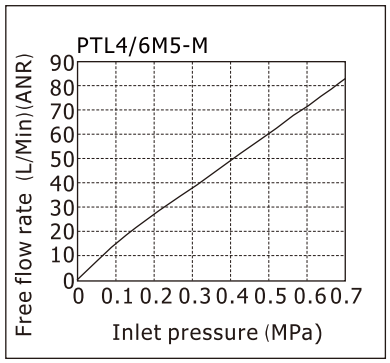


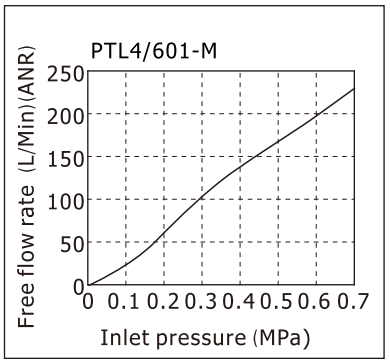


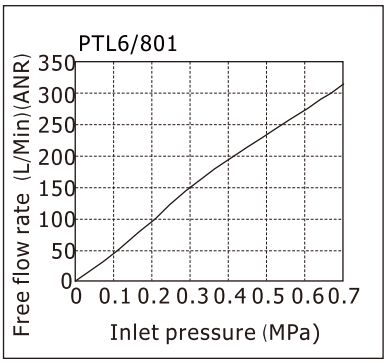


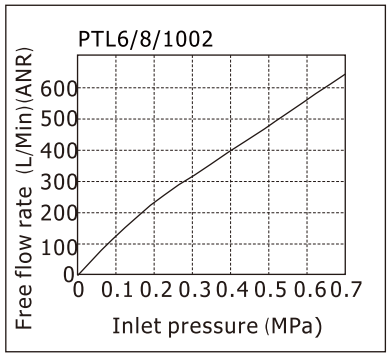


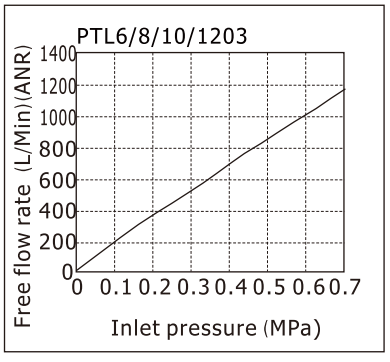
Free flow rate

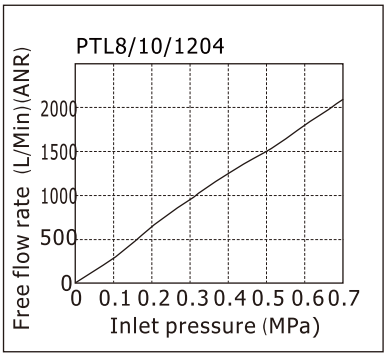




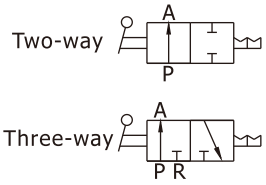








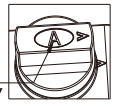
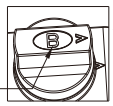
NPHV, PHV series



Ordering code

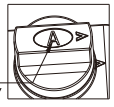
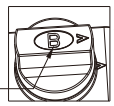
NPHV 1/4 A

1 2 3

① Model	②Port size	③Valve specification
NPHV: Finger valve	1/4: Φ1/4" 5/16: Φ5/16" 3/8: Φ3/8" 1/2: Φ1/2"	A: Three-way Knob identifier "A"  B: Two-way Knob identifier "B" 

PHV 6 A

1 2 3

① Model	②Port size	③Valve specification
PHV: Finger valve	6: Φ6mm 8: Φ8mm 10: Φ10mm 12: Φ12mm	A: Three-way Knob identifier "A"  B: Two-way Knob identifier "B" 

Specification

Operating pressure range	0~145psi(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	215psi(1.5MPa)
Ambient and fluid temperature (℃)	-5~160℉(-20~70℃)
Applicable tubing	Soft nylon or polyurethane

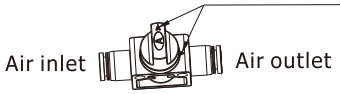
Product feature

1. NPHV 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.

Diagram of finger valve in the open and closed states

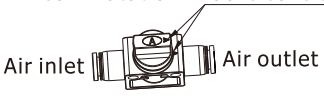
Closed state

Valve is closed, when the angle between the arrow on knob and the arrow on valve body is 90 degree.

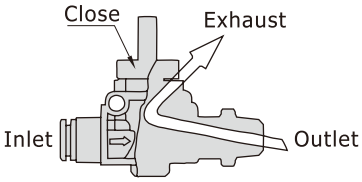


Opened state

Valve is open, when the direction of the arrow on commutation knob is consistent with that on valve body.

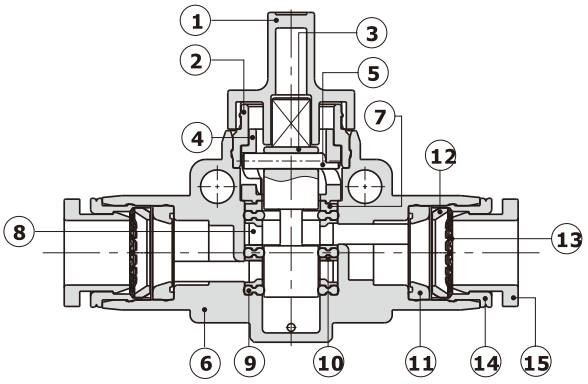


When the three-way valve is closed, the outlet pressure is released, which facilitates in commissioning and maintenance. (as figure below)



NPHV, PHV series

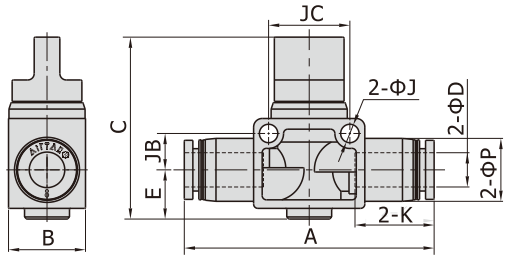
Inner structure



NO.	Name	NO.	Name
1	Knob	9	Special shape O-ring
2	Fixing ring	10	Spacer ring
3	Spool	11	Special shape O-ring
4	Cam groove block	12	Locating seat
5	Pin	13	Spring gasket
6	Plastic body	14	Locating ring
7	Locating block	15	Plastic interface
8	Spacer		

Dimensions

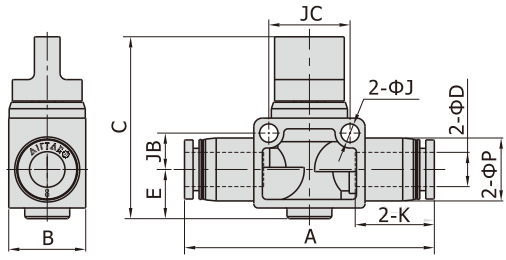
NPHV Series



[Unit: inch]

Model\Item	ΦD	A	B	C	ΦP	K	E	ΦJ	JB	JC	Weight(g)
NPHV1/4A(B)	1/4	2.03	0.67	1.59	0.49	0.65	0.39	0.17	0.31	0.71	14.3
NPHV5/16A(B)	5/16	2.30	0.71	1.67	0.59	0.73	0.45	0.17	0.33	0.75	17.5
NPHV3/8A(B)	3/8	2.60	0.83	1.65	0.71	0.83	0.43	0.17	0.43	0.94	25.1
NPHV1/2A(B)	1/2	2.80	0.87	1.81	0.83	0.91	0.51	0.17	0.43	0.94	31.4

PHV Series



[Unit: mm]

Model\Item	ΦD	A	B	C	ΦP	K	E	ΦJ	JB	JC	Weight(g)
PHV6□	6	51.5	17	40.5	12.5	16.5	10	4.3	8	18	14.3
PHV8□	8	58.5	18	42.5	15	18.5	11.5	4.3	8.5	19	17.5
PHV10□	10	66	21	42	18	21	11	4.3	11	24	25.1
PHV12□	12	71	22	46	21	23	13	4.3	11	24	31.4

Note: "□" indicates "A" or "B", "A" indicates three-way, and "B" indicates two-way.
The two kinds of valve have same dimensions.

Accessories——Silencers

NBSL, NBSLM, NBESL, BSL, BSLM, BESL, PAL, PALM series

Ordering code

NBSL 1/4

① ②

①Silencer Type
NBSL: Universal silencer
NBSLM: Mini Silencer
NBESL: Mini Silencer

②Thread connection
U10: #10-32 UNF
1/8: NPT1/8
1/4: NPT1/4
3/8: NPT3/8
1/2: NPT1/2

BSL 01

① ②

①Silencer Type
BSL: Universal silencer
BSLM: Mini Silencer
BESL: Throttling silencer
PAL: Plastic silencer
PALM: Mini plastic Silencer

②Thread connection
M5: M5X0.8
01: PT1/8
02: PT1/4
03: PT3/8
04: PT1/2

Configuration table of tubing thread

Product series	Thread connection				
	#10–32 UNF	NPT1/8	NPT1/4	NPT3/8	NPT1/2
NBSL/NBSLM	●	●	●	●	●
NBESL		●	●	●	●

Product series	Thread connection				
	M5	PT1/8	PT1/4	PT3/8	PT1/2
BSL/BSLM	●	●	●	●	●
BESL/PAL		●	●	●	●
PALM		●	●		

Specification

Model	NBSLU10	NBSL1/8	NBSL1/4	NBSL3/8	NBSL1/2	NBSLMU10	NBSLM1/8	NBSLM1/4	NBSLM3/8	NBSLM1/2
Thread connection	#10-32 UNF	NPT1/8	NPT1/4	NPT3/8	NPT1/2	#10-32 UNF	NPT1/8	NPT1/4	NPT3/8	NPT1/2
Silencing effect(dB)(0.5MPa)	15	20	20	20	12	15	20	20	20	20
Model							**NEBSL1/8**	**NEBSL1/4**	**NEBSL3/8**	**NEBSL1/2**
Thread connection							NPT1/8	NPT1/4	NPT3/8	NPT1/2
Silencing effect(dB)(75psi)							20	20	20	20
Operating pressure	0~10kgf/cm²(0~1.0MPa)									
Negative pressure	-750mmHg(10Torr)									
Proof pressure	215psi(1.5MPa)									
Temperature range	-5~160°F(-20~70℃)									

Model	BSLM5	BSL01	BSL02	BSL03	BSL04	BSLMM5	BSLM01	BSLM02	BSLM03	BSLM04
Thread connection	M5×0.8	PT1/8	PT1/4	PT3/8	PT1/2	M5×0.8	PT1/8	PT1/4	PT3/8	PT1/2
Silencing effect(dB)(0.5MPa)	15	20	20	20	12	15	20	20	20	20
Model	**BESL01**	**BESL02**	**BESL03**	**BESL04**	**PAL01**	**PAL02**	**PAL03**	**PAL04**	**PALM01**	**PALM02**
Thread connection	PT1/8	PT1/4	PT3/8	PT1/2	PT1/8	PT1/4	PT3/8	PT1/2	PT1/8	PT1/4
Silencing effect(dB)(0.5MPa)	20	20	20	20	25	25	25	25	25	25
Operating pressure	0~10kgf/cm²(0~1.0MPa)									
Negative pressure	-750mmHg(10Torr)									
Proof pressure	1.5MPa									
Temperature range	-20~70℃									

NBSL, NBSLM, NBESL, BSL, BSLM, BESL, PAL, PALM series

Product feature

NBSL, NBSLM, NBESL, BSL, BSLM, BESL Series:

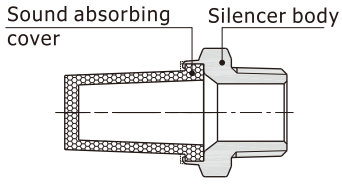
1. This silencers have excellent noise silencing performance.
2. The installation of the silencer is simple and convenient, and the connecting portion is reliable and durable.
3. It is easy to adjust the exhaust flow of the throttling type silencer.

PAL Series, PALM Series:

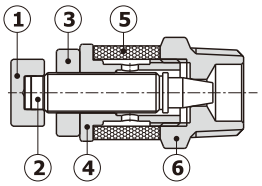
1. The silencer body is made of plastic.
2. The mini type silencer has the characteristics of small volume and compact structure.

Inner structure

NBSL, BSL Series

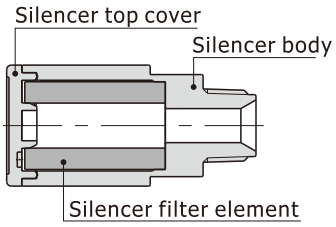


NBESL, BESL Series



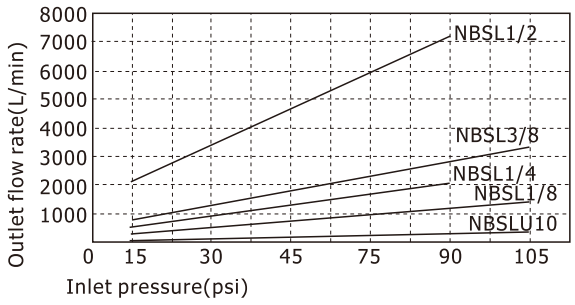
NO.	Name	NO.	Name
1	Adjusting cap	4	Locking ring
2	Throttling column	5	Silencer ring
3	Locking cap	6	Silencer body

PAL Series

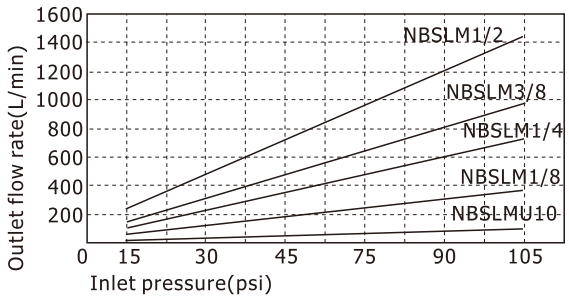


Flowrate characteristic

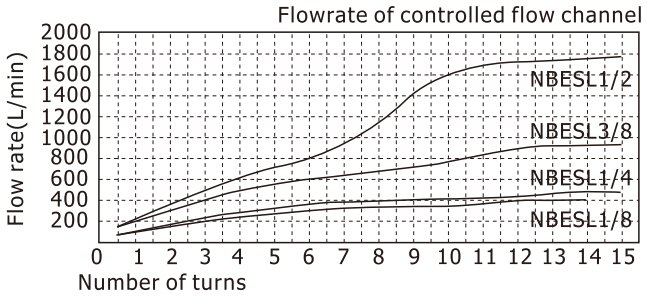
NBSL Series



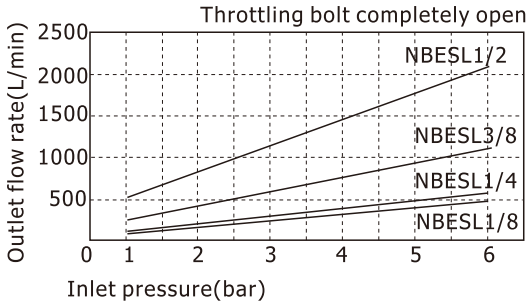
NBSLM Series



NBESL Series



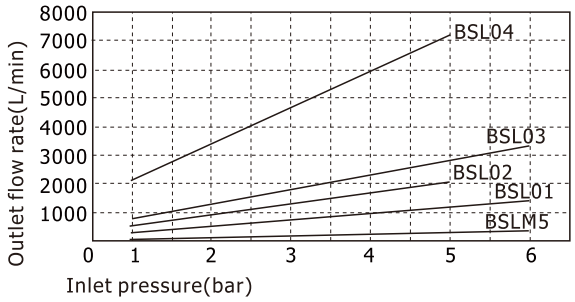
NBESL Series (Inlet pressure and outlet flow rate)



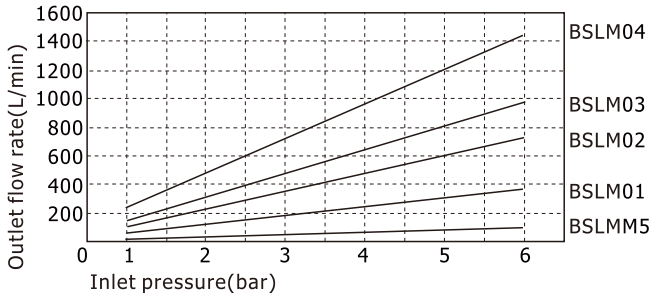
NBSL, NBSLM, NBESL, BSL, BSLM, BESL, PAL, PALM series

Flowrate characteristic

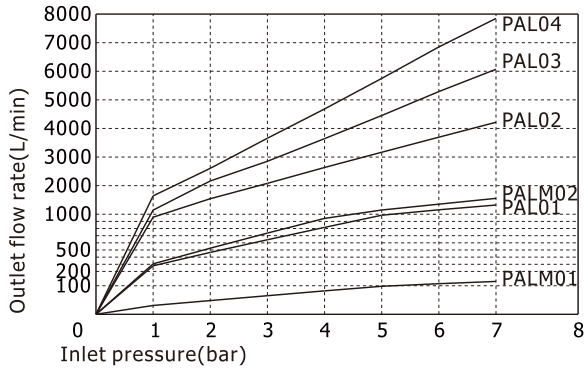
BSL Series



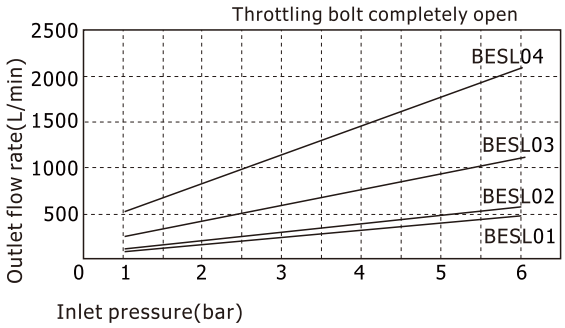
BSLM Series



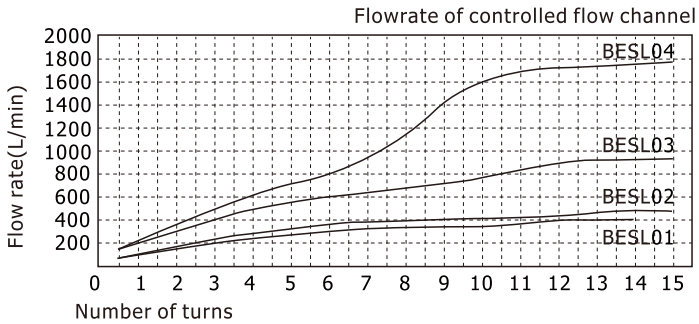
PAL, PALM Series



BESL Series (Inlet pressure and outlet flow rate)

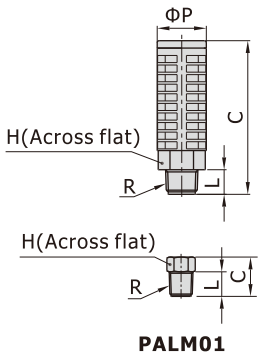


BESL Series



Dimensions

PAL, PALM Series



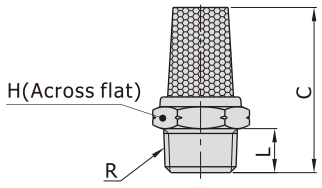
PALM01

[Unit: mm]

Model\Item	R	ΦP	L	C	H	Weight(g)
PAL01	PT1/8	16	7	33	14	4.2
PALM01	PT1/8	/	10	16	10	0.9
PAL02	PT1/4	20	10	62.5	17	10.7
PALM02	PT1/4	16	10	36	14	5.1
PAL03	PT3/8	26	12	68	24	20
PAL04	PT1/2	28	12	73	24	23.1

NBSL, NBSLM, NBESL, BSL, BSLM, BESL, PAL, PALM series

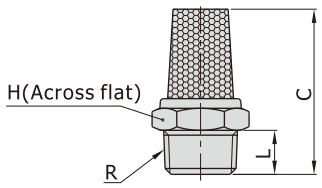
NBSL Series



[Unit: inch]

Model\Item	R	L	C	H	Weight(g)
NBSLU10	#10-32 UNF	0.14	0.77	5/16	2.9
NBSL1/8	NPT1/8	0.24	0.94	1/2	7.1
NBSL1/4	NPT1/4	0.31	1.18	5/8	12.4
NBSL3/8	NPT3/8	0.35	1.52	3/4	22.0
NBSL1/2	NPT1/2	0.41	1.87	7/8	35.3

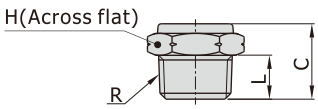
BSL Series



[Unit: mm]

Model\Item	R	L	C	H	Weight(g)
BSLM5	M5×0.8	3.5	19.5	8	2.9
BSL01	PT1/8	6	24	12	6.7
BSL02	PT1/4	8	30	15	11.6
BSL03	PT3/8	9	38.5	19	22
BSL04	PT1/2	10.5	46	22	35

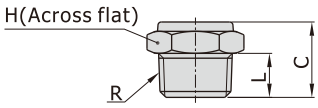
NBSLM Series



[Unit: inch]

Model\Item	R	L	C	H	Weight(g)
NBSLMU10	#10-32 UNF	0.14	0.37	5/16	2.3
NBSLM1/8	NPT1/8	0.24	0.43	7/16	4.3
NBSLM1/4	NPT1/4	0.31	0.53	5/8	9.2
NBSLM3/8	NPT3/8	0.35	0.61	3/4	15.8
NBSLM1/2	NPT1/2	0.41	0.81	7/8	26.3

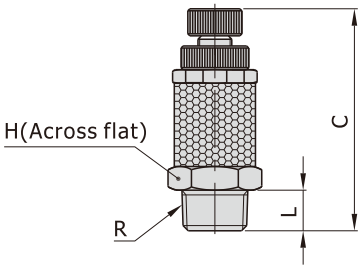
BSLM Series



[Unit: mm]

Model\Item	R	L	C	H	Weight(g)
BSLMM5	M5×0.8	3.5	9.5	8	2.3
BSLM01	PT1/8	6	11	12	4.3
BSLM02	PT1/4	8	13.5	15	8.4
BSLM03	PT3/8	9	15.5	19	15.8
BSLM04	PT1/2	10.5	19	22	25.9

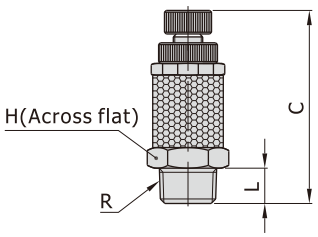
NBESL Series



[Unit: inch]

Model\Item	R	L	C	H	Weight(g)
NBESL1/8	NPT1/8	0.24	0.94	1/2	10.4
NBESL1/4	NPT1/4	0.31	1.18	9/16	18.4
NBESL3/8	NPT3/8	0.35	1.52	11/16	31.7
NBESL1/2	NPT1/2	0.41	1.81	15/16	69.4

BESL Series



[Unit: mm]

Model\Item	R	L	C		H	Weight(g)
			max	min		
BESL01	PT1/8	6	40.5	33	12	10
BESL02	PT1/4	8	42.5	35	14	18.1
BESL03	PT3/8	9	49	41.5	17	31.1
BESL04	PT1/2	10.5	59.5	52	24	69.8

PC, POC series

Ordering code

PC 6 01 – S

1 2 3 4

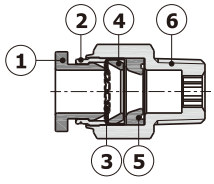
①Model	②Port size	③Thread connection		④Material
PC: Male connector	4: Φ4mm 6: Φ6mm 8: Φ8mm 10: Φ10mm 12: Φ12mm	Thread connection	Adaptable port size	S: Stainless steel 304
		M5: M5X0.8	Φ4, Φ6	
POC: Male connector		01: PT1/8 02: PT1/4 03: PT3/8 04: PT1/2	Φ4, Φ6 Φ8, Φ10 Φ12	

Table for interface port and tube O.D.

Product series	Thread type	Port size				
		Φ4	Φ6	Φ8	Φ10	Φ12
PC	M5	●	●			
	PT1/8	●	●	●	●	●
	PT1/4	●	●	●	●	●
	PT3/8		●	●	●	●
	PT1/2		●	●	●	●
POC	M5	●	●			
	PT1/8	●	●	●	●	
	PT1/4	●	●	●	●	●
	PT3/8			●	●	●
	PT1/2				●	●

Inner structure

PC Series



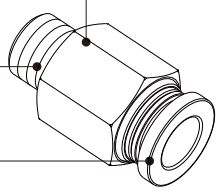
No.	Item	No.	Item
1	Release button	4	Chuck
2	Guide	5	O-ring
3	Spring gasket	6	Body

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

Product feature

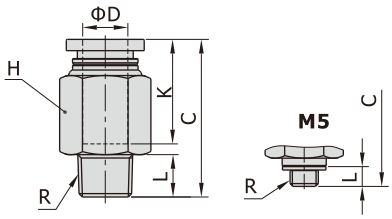
1. Body material is stainless steel, and all parts don't contain copper.
2. The threaded portion is covered with sealant and the M5 thread is attached with a sealing gasket to prevent air leakage over the connection thread portion.
3. Grey is optional for the release button.



PC, POC series

Dimensions

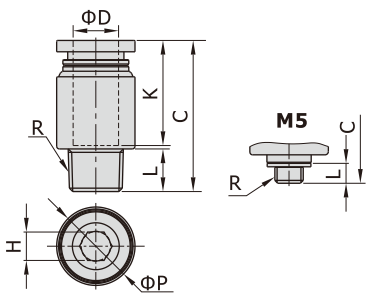
PC Series



[Unit: mm]

Model\Item	ΦD	R	L	C	K	H(Across flat)	Weight(g)
PC4M5-S	4	M5×0.8	3.5	19.5	14	9	6
PC401-S		PT1/8	7.5	19.5	14	10	6.5
PC402-S		PT1/4	10	19.5	14	14	12.5
PC6M5-S	6	M5×0.8	3.5	22.5	16.5	12	8
PC601-S		PT1/8	7.5	22.0	18.5	12	7
PC602-S		PT1/4	10	24.5	18.5	14	14.5
PC603-S		PT3/8	11	22.5	18.5	17	22
PC604-S		PT1/2	14	26.0	18.5	21	42
PC801-S	8	PT1/8	7.5	28	18.5	14	12.5
PC802-S		PT1/4	10	27	18.5	14	12
PC803-S		PT3/8	11	23.5	18.5	17	19.5
PC804-S		PT1/2	14	27	18.5	21	40
PC1001-S	10	PT1/8	7.5	30	21	17	19
PC1002-S		PT1/4	10	32.5	21	17	22
PC1003-S		PT3/8	11	28	21	17	19
PC1004-S		PT1/2	14	26.5	21	21	33
PC1201-S	12	PT1/8	7.5	32.5	23	21	35.5
PC1202-S		PT1/4	10	35	23	21	37.5
PC1203-S		PT3/8	11	30.5	23	21	26.5
PC1204-S		PT1/2	14	32.5	23	21	38.5

POC Series



[Unit: mm]

Model\Item	ΦD	R	ΦP	L	C	K	H(Across flat)	Weight(g)
POC4M5-S	4	M5×0.8	9	3.5	18.5	14	2.5	3.5
POC401-S		PT1/8	10	7.5	18	14	3	5
POC402-S		PT1/4	14	10	19.5	14	3	11.5
POC6M5-S	6	M5×0.8	12	3.5	21.5	16.5	2.5	5.5
POC601-S		PT1/8	12	7.5	22.0	18.5	4	6
POC602-S		PT1/4	14	10	22.0	18.5	4	11
POC801-S	8	PT1/8	14	7.5	26.5	18	5	9
POC802-S		PT1/4	14	10	25	18	6	9.5
POC803-S		PT3/8	17	11	23.5	18	6	18
POC1001-S	10	PT1/8	17	7.5	30	21	5	15.5
POC1002-S		PT1/4	17	10	29	21	6	14.5
POC1003-S		PT3/8	17	11	28	21	8	17.5
POC1004-S		PT1/2	21	14	26.5	21	8	32.5
POC1202-S	12	PT1/4	21	10	34.5	23	6	30
POC1203-S		PT3/8	21	11	30	23	8	23
POC1204-S		PT1/2	21	14	32	23	8	34.5

One-touch fittings—threaded type

Ordering code

Same diameter type fittings PL 6 01 – S

1 2 3 4

①Model		②Port size	③Thread connection		④Material
PHW: Double universal male elbow	PL: Male elbow	4: Φ4mm 6: Φ6mm 8: Φ8mm 10: Φ10mm 12: Φ12mm	Thread connection	Adaptable port size	S: Stainless steel 304
PHF: Universal female elbow	PLL: Extended male elbow		M5: M5X0.8	Φ4, Φ6	
PEB: Male branch tee	PZB: Threaded cross		01: PT1/8 02: PT1/4 03: PT3/8 04: PT1/2	Φ4, Φ6 Φ8, Φ10 Φ12	
PED: Male run tee	PH: Universal male elbow				
PYB: Branch "Y"					

Different diameter type fittings PKD 6 - 4 01 – S

1 2 3 4 5

①Model	②Port size	③Port size	④Thread connection	⑤ Material
PKD: Male reducer triple branch	6: Φ6mm 8: Φ8mm 10: Φ10mm	4: Φ4mm 6: Φ6mm 8: Φ8mm	01: PT1/8 02: PT1/4 03: PT3/8	S: Stainless steel 304

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

One-touch fittings—threaded type

Table for interface port and tube O.D.

Product series	Thread type	Port size				
		Φ4	Φ6	Φ8	Φ10	Φ12
PL	M5	●	●			
	PT1/8	●	●	●	●	●
	PT1/4	●	●	●	●	●
	PT3/8		●	●	●	●
	PT1/2		●	●	●	●
PLL	M5	●	●			
	PT1/8	●	●	●	●	
	PT1/4	●	●	●	●	●
	PT3/8		●	●	●	●
	PT1/2				●	●
PEB PED PYB	M5	●	●			
	PT1/8	●	●	●	●	
	PT1/4	●	●	●	●	●
	PT3/8		●	●	●	●
	PT1/2			●	●	●
PH PHF	M5	●	●			
	PT1/8	●	●	●		
	PT1/4		●	●	●	
	PT3/8		●	●	●	●
	PT1/2			●	●	●
PHW	PT1/8	●	●	●		
	PT1/4		●	●	●	
	PT3/8		●	●	●	●
	PT1/2			●	●	●
PZB	PT1/8		●	●		
	PT1/4		●	●	●	
	PT3/8		●	●	●	●
	PT1/2			●	●	●

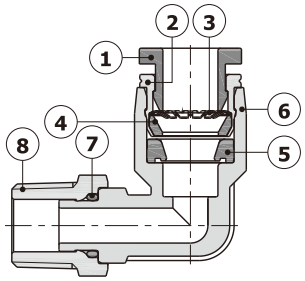
Product series	Thread type	Port size		
		Φ6-Φ4	Φ8-Φ6	Φ10-Φ8
PKD	PT1/8	●		
	PT1/4		●	
	PT3/8			●

Product feature

1. Stainless steel 304 material can be used for forbidding copper condition.
2. Variable models can be widely used in every kind of pneumatic systems.
3. High circulation performance: bear the same flow with the volume of the tubing inside diameter.
4. Connect tubing easily and conveniently. The tubing connection portion is safe and durable.
5. 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

PL Series

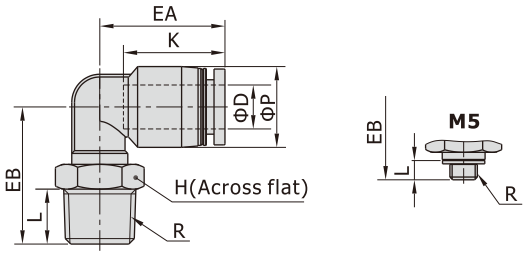


No.	Item
1	Release button
2	Guide
3	Spring gasket
4	Chuck
5	O-ring
6	Body
7	O-ring
8	Stud

One-touch fittings—threaded type

Dimensions

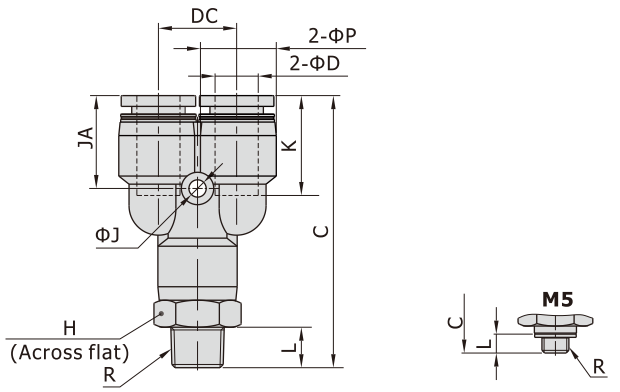
PL Series



[Unit: mm]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)
PL4M5-S	4	M5×0.8	9	3.5	14	17	15	8	3
PL401-S		PT1/8	9	7.5	14	17	18.5	10	4.5
PL402-S		PT1/4	9	10	14	17	22.0	14	11
PL6M5-S	6	M5×0.8	12.5	3.5	17	20	17.0	8	4.5
PL601-S		PT1/8	12.5	7.5	17	20	20.5	10	6
PL602-S		PT1/4	12.5	10	17	20	24.0	14	12.5
PL603-S		PT3/8	12.5	11	17	20	25.5	17	19
PL604-S		PT1/2	12.5	14	17	20	30.0	21	33
PL801-S	8	PT1/8	15	7.5	18.5	23	20.5	10	7
PL802-S		PT1/4	15	10	18.5	23	25.0	14	12
PL803-S		PT3/8	15	11	18.5	23	26.5	17	19.5
PL804-S		PT1/2	15	14	18.5	23	31.0	21	33
PL1001-S	10	PT1/8	18	7.5	21	25.5	25.0	17	15.5
PL1002-S		PT1/4	18	10	21	25.5	27.0	17	18
PL1003-S		PT3/8	18	11	21	25.5	28.0	17	20
PL1004-S		PT1/2	18	14	21	25.5	32.5	21	34.5
PL1201-S	12	PT1/8	21	7.5	23	28.5	26.5	17	18
PL1202-S		PT1/4	21	10	23	28.5	28.5	17	20.5
PL1203-S		PT3/8	21	11	23	29.5	33	17	24
PL1204-S		PT1/2	21	14	23	29.5	34	21	34.5

PYB Series

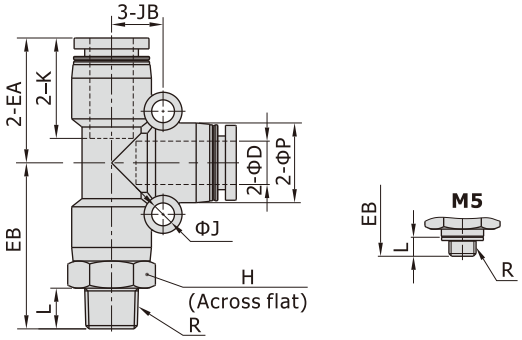


[Unit: mm]

Model\Item	ΦD	R	ΦP	L	C	K	ΦJ	JA	DC	H	Weight(g)
PYB4M5-S	4	M5×0.8	9	3.5	35.5	14	3.2	13	10	9	6.5
PYB401-S		PT1/8	9	7.5	39.5	14	3.2	13	10	10	8.5
PYB402-S		PT1/4	9	10	42.5	14	3.2	13	10	14	10
PYB6M5-S	6	M5×0.8	12.5	3.5	40.5	16.5	3.2	15.5	12	12	10.5
PYB601-S		PT1/8	12.5	7.5	44.5	16.5	3.2	15.5	12	12	13
PYB602-S		PT1/4	12.5	10	47.5	16.5	3.2	15.5	12	14	17
PYB603-S		PT3/8	12.5	11	49.0	16.5	3.2	15.5	12	17	23.5
PYB801-S	8	PT1/8	15	7.5	50	18.5	3.2	17	14.5	14	19
PYB802-S		PT1/4	15	10	52.5	18.5	3.2	17	14.5	14	21
PYB803-S		PT3/8	15	11	54	18.5	3.2	17	14.5	17	26
PYB804-S		PT1/2	15	14	58	18.5	3.2	17	14.5	21	38
PYB1001-S	10	PT1/8	18	7.5	56.5	21	4.3	19.5	18	17	26
PYB1002-S		PT1/4	18	10	59	21	4.3	19.5	18	17	28
PYB1003-S		PT3/8	18	11	60	21	4.3	19.5	18	17	31
PYB1004-S		PT1/2	18	14	64	21	4.3	19.5	18	21	42.5
PYB1202-S	12	PT1/4	21	10	66	23	4.3	21	20.5	21	26.5
PYB1203-S		PT3/8	21	11	67	23	4.3	21	20.5	21	49
PYB1204-S		PT1/2	21	14	70	23	4.3	21	20.5	21	53.5

One-touch fittings—threaded type

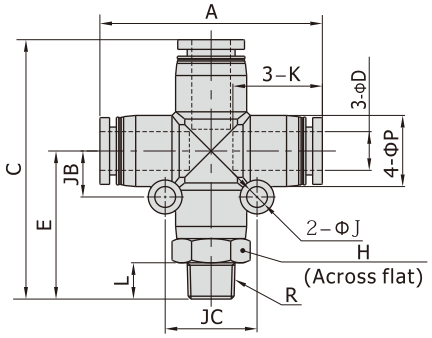
PED Series



[Unit: mm]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	ΦJ	JB	H	Weight(g)
PED4M5-S	4	M5×0.8	9	3.5	14	17	21	3.2	6.5	9	6.5
PED401-S		PT1/8	9	7.5	14	17	25	3.2	6.5	10	8.5
PED402-S		PT1/4	9	10	14	17	28	3.2	6.5	14	14.5
PED6M5-S	6	M5×0.8	12.5	3.5	16.5	20	23.5	3.2	8	12	10.5
PED601-S		PT1/8	12.5	7.5	16.5	20	27.5	3.2	8	12	13
PED602-S		PT1/4	12.5	10	16.5	20	30.5	3.2	8	14	17.5
PED603-S		PT3/8	12.5	11	16.5	20	32	3.2	8	17	23.5
PED801-S	8	PT1/8	15	7.5	18.5	23	30.5	4.3	9.5	14	17.5
PED802-S		PT1/4	15	10	18.5	23	33	4.3	9.5	14	20
PED803-S		PT3/8	15	11	18.5	23	34.5	4.3	9.5	17	26.5
PED804-S		PT1/2	15	14	18.5	23	38.5	4.3	9.5	21	38
PED1001-S	10	PT1/8	18	7.5	21	26.5	34	4.3	11	17	25.5
PED1002-S		PT1/4	18	10	21	26.5	36.5	4.3	11	17	27.5
PED1003-S		PT3/8	18	11	21	26.5	37.5	4.3	11	17	30
PED1004-S		PT1/2	18	14	21	26.5	41.5	4.3	11	21	42.5
PED1202-S	12	PT1/4	21	10	23	30	41	4.3	13	21	47
PED1203-S		PT3/8	21	11	23	30	42	4.3	13	21	48.5
PED1204-S		PT1/2	21	14	23	30	45	4.3	13	21	54

PZB Series

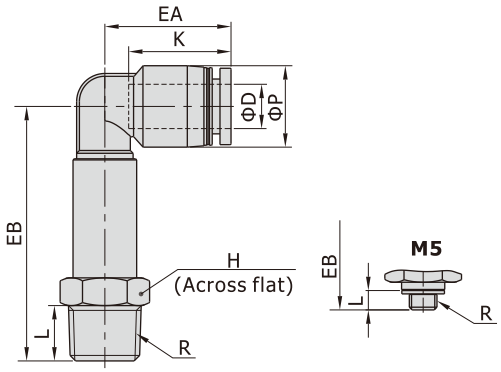


[Unit: mm]

Model\Item	ΦD	R	L	A	E	C	ΦP	K	ΦJ	JB	JC	H	Weight(g)
PZB601-S	6	PT1/8	7.5	39.5	27.5	47.5	12.5	16.5	3.2	8	16	12	14.5
PZB602-S		PT1/4	10		30.5	50.5						14	19.5
PZB603-S		PT3/8	11		32	52						17	25.5
PZB801-S	8	PT1/8	7.5	46	30.5	53.5	15	18.5	4.3	9.5	19	14	20
PZB802-S		PT1/4	10		33	56						14	22.5
PZB803-S		PT3/8	11		34.5	57.5						17	28
PZB804-S		PT1/2	14		38.5	61.5						21	40.5
PZB1002-S	10	PT1/4	10	52.5	36.5	63	18	21	4.3	11	22	17	32
PZB1003-S		PT3/8	11		37.5	64						17	35
PZB1004-S		PT1/2	14		41.5	68						21	46.5
PZB1203-S	12	PT3/8	11	59.5	42	72	21	23	4.3	13	26	21	53.5
PZB1204-S		PT1/2	14		45	75						21	62

One-touch fittings—threaded type

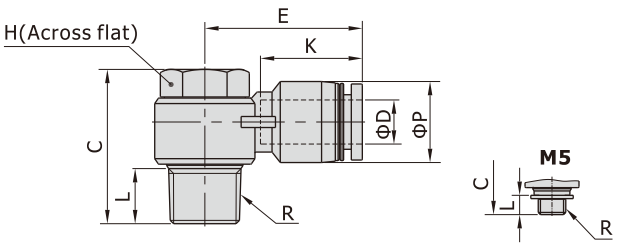
PLL Series



[Unit: mm]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	H	Weight(g)
PLL4M5-S	4	M5×0.8	9	3.5	14	17	32.5	8	8
PLL401-S		PT1/8	9	7.5	14	17	35.5	10	11.5
PLL402-S		PT1/4	9	10	14	17	38.5	14	15.5
PLL6M5-S	6	M5×0.8	12.5	3.5	17	20	34.5	8	9.5
PLL601-S		PT1/8	12.5	7.5	17	20	37.5	10	12
PLL602-S		PT1/4	12.5	10	17	20	40.5	14	16.5
PLL603-S		PT3/8	12.5	11	17	20	43	17	21.5
PLL801-S	8	PT1/8	15	7.5	18.5	23	43.5	12	15.5
PLL802-S		PT1/4	15	10	18.5	23	45.5	14	21
PLL803-S		PT3/8	15	11	18.5	23	48	17	25.5
PLL1001-S	10	PT1/8	18	7.5	21	25.5	50.5	15	35
PLL1002-S		PT1/4	18	10	21	25.5	53.5	15	37.5
PLL1003-S		PT3/8	18	11	21	25.5	54.5	17	38
PLL1004-S		PT1/2	18	14	21	25.5	59	21	44
PLL1202-S	12	PT1/4	21	10	23	28.5	55.5	15	40
PLL1203-S		PT3/8	21	11	23	29.5	60	17	51.5
PLL1204-S		PT1/2	21	14	23	29.5	63	21	52.5

PH Series

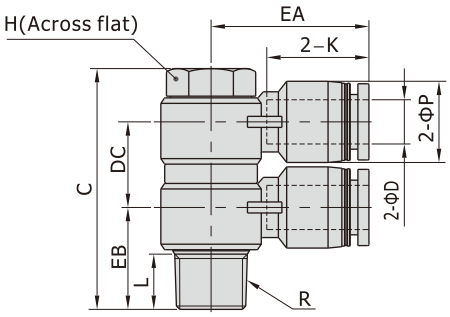


[Unit: mm]

Model\Item	ΦD	R	ΦP	L	C	K	E	H	Weight(g)
PH4M5-S	4	M5×0.8	9	3.5	17	14	19	8	5.5
PH401-S		PT1/8	9	7.5	25	14	20.5	11	12
PH6M5-S	6	M5×0.8	12.5	3.5	17	16.5	23.5	8	6.5
PH601-S		PT1/8	12.5	7.5	25	16.5	23	11	13
PH602-S		PT1/4	12.5	10	28	16.5	25	14	23.5
PH603-S		PT3/8	12.5	11	33	16.5	27	19	46.5
PH801-S	8	PT1/8	15	7.5	25	18.5	26.5	11	14
PH802-S		PT1/4	15	10	28	18.5	28.5	14	24.5
PH803-S		PT3/8	15	11	33	18.5	29.5	19	45.5
PH804-S		PT1/2	15	14	39	18.5	32	24	82
PH1002-S	10	PT1/4	18	10	28	21	31	14	26
PH1003-S		PT3/8	18	11	33	21	33	19	47.5
PH1004-S		PT1/2	18	14	39	21	35.5	24	81.5
PH1203-S	12	PT3/8	21	11	33	23	36	19	49.5
PH1204-S		PT1/2	21	14	39	23	38	24	86

One-touch fittings—threaded type

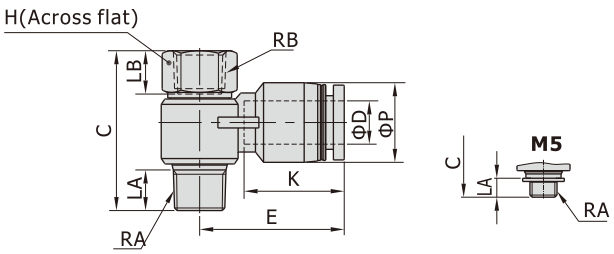
PHW Series



[Unit: mm]

Model\Item	ΦD	R	ΦP	L	C	K	EA	EB	DC	H	Weight(g)
PHW401-S	4	PT1/8	9	7.5	38	14	20.5	14.5	13	11	17.5
PHW601-S	6	PT1/8	12.5	7.5	38	16.5	23.0	15	13	11	19.5
PHW602-S		PT1/4	12.5	10	43.5	16.5	25.0	17.5	15.5	14	37.5
PHW603-S		PT3/8	12.5	11	50	16.5	27.0	20	16.5	19	64
PHW801-S	8	PT1/8	15	7.5	40.5	18.5	26.5	16.5	15.5	11	22.5
PHW802-S		PT1/4	15	10	43.5	18.5	28.5	18.5	15.5	14	38
PHW803-S		PT3/8	15	11	50	18.5	29.5	20	16.5	19	65
PHW804-S		PT1/2	15	14	61	18.5	32	24.5	22	24	133.5
PHW1002-S	10	PT1/4	18	10	46.5	21	31	20	18.5	14	44
PHW1003-S		PT3/8	18	11	55	21	33	21	22	19	81.5
PHW1004-S		PT1/2	18	14	61	21	35.5	25	22	24	127.5
PHW1203-S	12	PT3/8	21	11	55	23	36	23	22	19	80.5
PHW1204-S		PT1/2	21	14	61	23	38	26.5	22	24	137.5

PHF Series

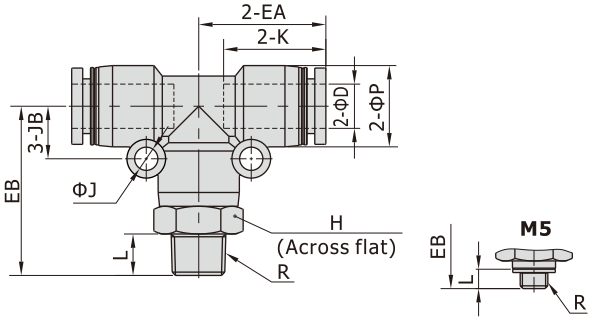


[Unit: mm]

Model\Item	ΦD	RA	RB	ΦP	LA	LB	C	K	E	H	Weight(g)
PHF4M5-S	4	M5×0.8	M5×0.8	9	3.5	6	20	14	19	8	6
PHF401-S		PT1/8	PT1/8	9	7.5	8	29.5	14	20.5	12	12
PHF6M5-S	6	M5×0.8	M5×0.8	12.5	3.5	6	20	16.5	23.5	8	7
PHF601-S		PT1/8	PT1/8	12.5	7.5	8	29.5	16.5	23	12	13
PHF602-S		PT1/4	PT1/4	12.5	10	11	35	16.5	25	17	28
PHF603-S		PT3/8	PT3/8	12.5	11	12	40	16.5	27	19	41
PHF801-S	8	PT1/8	PT1/8	15	7.5	8	29.5	18.5	26.5	12	14
PHF802-S		PT1/4	PT1/4	15	10	11	35	18.5	28.5	17	28.5
PHF803-S		PT3/8	PT3/8	15	11	12	40	18.5	29.5	19	41.5
PHF804-S		PT1/2	PT1/2	15	14	13.5	47.5	18.5	32	24	78
PHF1002-S	10	PT1/4	PT1/4	18	10	11	35	21	31	17	30
PHF1003-S		PT3/8	PT3/8	18	11	12	40	21	33	19	43
PHF1004-S		PT1/2	PT1/2	18	14	13.5	47.5	21	35.5	24	79.5
PHF1203-S	12	PT3/8	PT3/8	21	11	12	40	23	36	19	45
PHF1204-S		PT1/2	PT1/2	21	14	13.5	47.5	23	38	24	83

One-touch fittings—threaded type

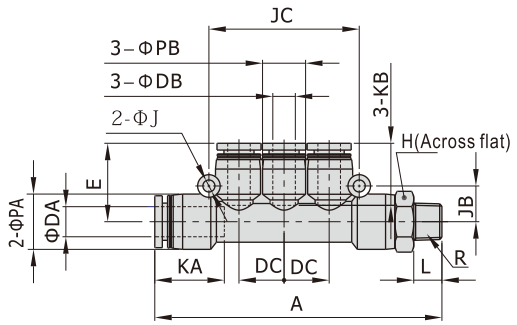
PEB Series



[Unit: mm]

Model\Item	ΦD	R	ΦP	L	K	EA	EB	ΦJ	JB	H	Weight(g)
PEB4M5-S	4	M5×0.8	9	3.5	14	17	21	3.2	6.5	9	6.5
PEB401-S		PT1/8	9	7.5	14	17	25	3.2	6.5	10	8.5
PEB402-S		PT1/4	9	10	14	17	28	3.2	6.5	14	14.5
PEB6M5-S	6	M5×0.8	12.5	3.5	16.5	20	23.5	3.2	8	12	10.5
PEB601-S		PT1/8	12.5	7.5	16.5	20	27.5	3.2	8	12	13
PEB602-S		PT1/4	12.5	10	16.5	20	30.5	3.2	8	14	17.5
PEB603-S		PT3/8	12.5	11	16.5	20	32	3.2	8	17	23.5
PEB801-S	8	PT1/8	15	7.5	18.5	23	30.5	4.3	9.5	14	17.5
PEB802-S		PT1/4	15	10	18.5	23	33	4.3	9.5	14	20
PEB803-S		PT3/8	15	11	18.5	23	34.5	4.3	9.5	17	26.5
PEB804-S		PT1/2	15	14	18.5	23	38.5	4.3	9.5	21	38
PEB1001-S	10	PT1/8	18	7.5	21	26.5	34	4.3	11	17	25.5
PEB1002-S		PT1/4	18	10	21	26.5	36.5	4.3	11	17	27.5
PEB1003-S		PT3/8	18	11	21	26.5	37.5	4.3	11	17	30
PEB1004-S		PT1/2	18	14	21	26.5	41.5	4.3	11	21	42.5
PEB1202-S	12	PT1/4	21	10	23	30	41	4.3	13	21	47
PEB1203-S		PT3/8	21	11	23	30	42	4.3	13	21	48.5
PEB1204-S		PT1/2	21	14	23	30	45	4.3	13	21	54

PKD Series



[Unit: mm]

Model\Item	ΦDA	ΦDB	R	L	A	ΦPA	ΦPB	KA	KB	ΦJ	JB	JC	DC	E	H	Weight(g)
PKD6-401-S	6	4	PT1/8	7.5	66.5	12.5	9	16.5	14	3.2	8	34	10	17.5	12	15
PKD8-602-S	8	6	PT1/4	10	79	15	12.5	18.5	16.5	3.2	9.5	40	12	21	14	25.5
PKD10-803-S	10	8	PT3/8	11	91.5	18	15	21	18.5	4.3	11	48	14.5	24	17	36.5

One-touch fittings—threaded type

Ordering code

BB 01 01 – S

1 2 3 4

①Model	②Thread connection I	③Thread connection II	④Material
BB: Male connector Thread connectionI — Thread connectionII	01: PT1/8 02: PT1/4 03: PT3/8 04: PT1/2	01: PT1/8 02: PT1/4 03: PT3/8 04: PT1/2	S: Stainless steel 304
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			

[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.

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	●	●	●	●

Specification

Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	3.0MPa
Ambient and fluid temperature (℃)	0~150

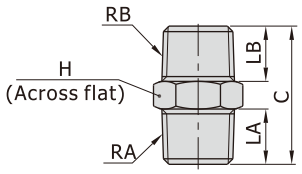
Product feature

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 inner diamater.
3. Metal fittings can be used in high temperature environment.

One-touch fittings—threaded type

Dimensions

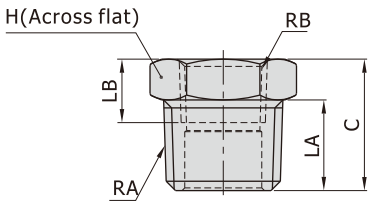
BB Series



[Unit: mm]

Model\Item	RA	RB	LA	LB	C	H	Weight(g)
BB0101-S	PT1/8	PT1/8	7.5	7.5	19.5	10	6
BB0102-S	PT1/4	PT1/8	10	7.5	22.5	14	11
BB0103-S	PT3/8	PT1/8	11	7.5	24	17	17
BB0202-S	PT1/4	PT1/4	10	10	25	14	13.5
BB0203-S	PT3/8	PT1/4	11	10	26.5	17	19
BB0204-S	PT1/2	PT1/4	14	10	30	21	31.5
BB0303-S	PT3/8	PT3/8	11	11	27.5	17	21.5
BB0304-S	PT1/2	PT3/8	14	11	31	21	33
BB0404-S	PT1/2	PT1/2	14	14	34	21	39.5

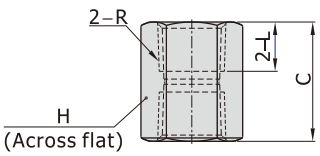
BD Series



[Unit: mm]

Model\Item	RA	RB	LA	LB	C	H	Weight(g)
BD0102-S	PT1/4	PT1/8	10	8	14.5	14	8
BD0103-S	PT3/8	PT1/8	11	8	16	17	15.5
BD0104-S	PT1/2	PT1/8	14	8	19.5	21	31
BD0203-S	PT3/8	PT1/4	11	11	16	17	11.5
BD0204-S	PT1/2	PT1/4	14	11	19.5	21	28
BD0304-S	PT1/2	PT3/8	14	12	19.5	21	20.5

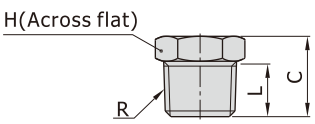
BU Series



[Unit: mm]

Model\Item	R	L	C	H	Weight(g)
BU0101-S	PT1/8	8	17	12	8
BU0202-S	PT1/4	11	23	17	23.5
BU0303-S	PT3/8	12	25	21	36.5
BU0404-S	PT1/2	13.5	28	24	42.5

BZ Series



[Unit: mm]

Model\Item	R	L	C	H	Weight(g)
BZ01-S	PT1/8	7.5	11	10	4
BZ02-S	PT1/4	10	14.5	14	10
BZ03-S	PT3/8	11	16	17	16.5
BZ04-S	PT1/2	14	19.5	21	30

One-touch fittings—threaded type

Ordering code

BKC 06 04 - 01 – S

1 2 3 4 5

①Model	②Tubing outer diameter	③Tubing inner diameter	④Thread connection	⑤Material
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	M3: M3X0.5 M5: M5X0.8 01: PT1/8 02: PT1/4 03: PT3/8 04: PT1/2	S: Stainless steel 304

Note: When using the tubing Φ8×Φ5.5, the straight lock nut connector of BKC0806can be used.

Configuration table of tubing and tubing thread

Product series	Tubing outer diameter	Tubing inner diameter	Thread connection					
			M3	M5	01	02	03	04
BKC	04	25	●	●	●			
	06	04			●	●	●	
	08	05			●	●	●	
		06			●	●	●	
	10	65				●	●	●
		75				●	●	●
	12	08				●	●	●
		09				●	●	●

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.

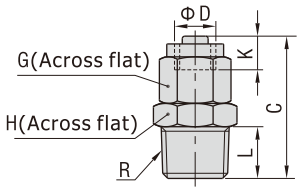
Product feature

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. Metal fittings can be used in high temperature environments.

One-touch fittings—threaded type

Dimensions

BKC Series



[Unit: mm]

Model\Item	Tubing diameterΦD		R	L	C	K	G	H	Weight(g)
	O.D	I.D							
BKC0425-M3-S	4	2.5	M3×0.5	3	17	5	8	8	4
BKC0425-M5-S			M5×0.8	3.5	17.5			8	4.5
BKC0425-01-S			PT1/8	7.5	20.5			10	6.5
BKC0604-01-S	6	4	PT1/8	7.5	22	5.5	10	10	9
BKC0604-02-S			PT1/4	10	25.5			14	14.5
BKC0604-03-S			PT3/8	11	27			17	20.5
BKC0805-01-S	8	5	PT1/8	7.5	24	6.5	12	12	11.5
BKC0805-02-S			PT1/4	10	27.5			14	16
BKC0805-03-S			PT3/8	11	29			17	21.5
BKC0806-01-S		5.5or6	PT1/8	7.5	24			12	12
BKC0806-02-S			PT1/4	10	27.5			14	15.5
BKC0806-03-S			PT3/8	11	29			17	21.5
BKC1065-02-S	10	6.5	PT1/4	10	30	7.5	15	15	22
BKC1065-03-S			PT3/8	11	31.5			17	26.5
BKC1065-04-S			PT1/2	14	35.5			21	40.5
BKC1075-02-S		7.5 or 8	PT1/4	10	30			15	22
BKC1075-03-S			PT3/8	11	31.5			17	26.5
BKC1075-04-S			PT1/2	14	35.5			21	40
BKC1208-02-S	12	8	PT1/4	10	30	7.5	17	17	28
BKC1208-03-S			PT3/8	11	31.5			17	29.5
BKC1208-04-S			PT1/2	14	35.5			21	42.5
BKC1209-02-S		9 or 10	PT1/4	10	30			17	28
BKC1209-03-S			PT3/8	11	31.5			17	29
BKC1209-04-S			PT1/2	14	35.5			21	42.5

Installation and application

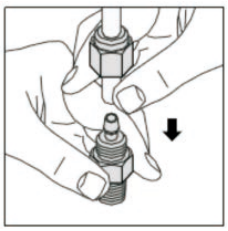


Figure 1

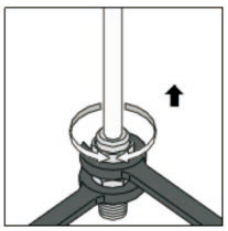


Figure 2

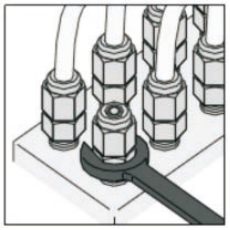


Figure 3

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.

PTL Mini series(Stainless steel)

Meter-out (A)

Meter-in (B)

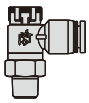
Ordering code

PTL 6 M5 A – M S

1 2 3 4 5 6

① Model

PTL: Speed controller (Push lock)



②Port size

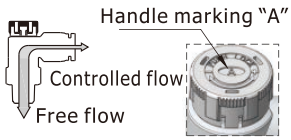
4: Φ4mm
6: Φ6mm

③Thread connection

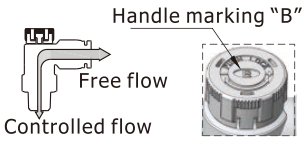
M5: M5X0.8
01: PT1/8

④Control method

A: Meter-out



B: Meter-in



⑤Style type

M： Mini type

⑥ Material

S: SUS304

Table for interface port and tube O.D.

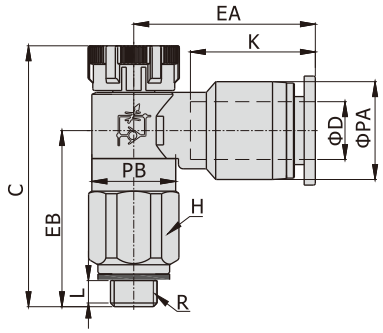
Product series	Thread type	Port size	
		Φ4	Φ6
PTL	M5	●	●
	PT1/8	●	●

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

Dimensions

PTL Mini Series



[Unit: mm]

Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)
						Pull	Push					
PTL4M5□-MS	4	M5×0.8	8.5	9	3.5	29.5	28	12.5	16.5	19	9	5
PTL401□-MS		PT1/8	8.5	9	3.5	29.5	28	12.5	16.5	19	10	11
PTL6M5□-MS	6	M5×0.8	10.5	9	3.5	29.5	28	13.5	19.5	19	9	6.2
PTL601□-MS		PT1/8	10.5	9	3.5	29.5	28	13.5	19.5	19	10	12

[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(Stainless steel)

Meter-out (A)

Meter-in (B)

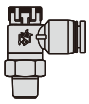
Ordering code

PTL 6 01 A – S

1 2 3 4 5

① Model

PTL: Speed controller (Push lock)



②Port size

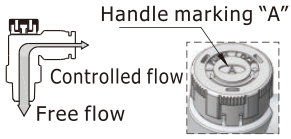
6: Φ6mm
8: Φ8mm
10: Φ10mm
12: Φ12mm

③Thread connection

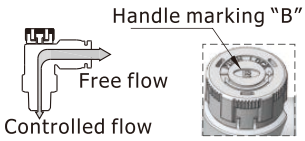
Thread	Adaptable port size
01: PT1/8	Φ6, Φ8
02: PT1/4	Φ6, Φ8, Φ10
03: PT3/8	Φ6, Φ8, Φ10, Φ12
04: PT1/2	Φ8, Φ10, Φ12

④Control method

A: Meter-out



B: Meter-in



⑤Material

S: SUS304

Table for interface port and tube O.D.

Product series	Thread type	Port size			
		Φ6	Φ8	Φ10	Φ12
PTL	PT1/8	●	●		
	PT1/4	●	●	●	
	PT3/8	●	●	●	●
	PT1/2		●	●	●

Specification

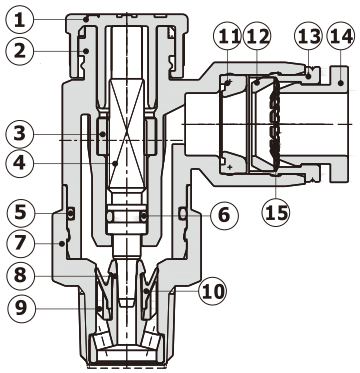
Operating pressure range	0~10kgf/cm²(0~1.0MPa)
Negative pressure	-750mmHg(10Torr)
Proof pressure	1.5MPa
Ambient and fluid temperature (℃)	-20~70
Applicable tubing	Soft nylon or polyurethane

Product feature

1. Stainless steel 304 material can be used in prohibiting copper condition.
2. Compare with traditional speed controller, smaller size, lighter weight, suitable for more occasions.
3. Effectively control the action speed and the pressure signal transmission from pneumatic device.
4. Simple push-lock, operation.
5. Adjust quickly, easily and accurately.
6. Excellent flow rate characteristic, high sensitivity and easy to adjust.
7. Options of Meter-out and meter-in, applicable for every type actuator.
8. The sealant being coated on threaded portion can ensure no leakage of the threaded connection part.

PTL series(Stainless steel)

Inner structure

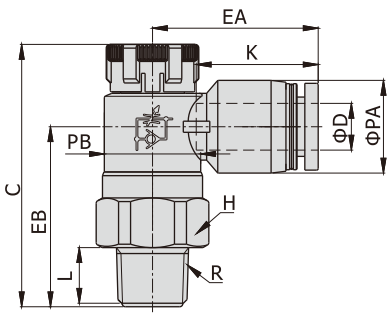


NO.	Name	NO.	Name
1	Adjusting cap	9	Holder
2	Plastic body	10	O-ring
3	Locating ring	11	O-ring
4	Throttling column	12	Locating seat
5	O-ring	13	Locating ring
6	O-ring	14	Plastic interface
7	Throttling body	15	Spring gasket
8	Throttling sleeve		

Dimensions

PTL Series

[Unit: mm]



Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)
						Pull	Push					
PTL601□-S	6	PT1/8	12.5	13	8.5	36	34.5	16.5	22.5	23.5	14	12.5
PTL602□-S		PT1/4	12.5	16.5	11	40.5	39	16.5	24	28	17	19.5
PTL603□-S		PT3/8	12.5	19	12	44	42.5	16.5	25.5	31	19	28.5
PTL801□-S	8	PT1/8	15	13	8.5	36	34.5	18.5	24.5	22.5	14	13
PTL802□-S		PT1/4	15	16.5	11	40.5	39	18.5	26	27	17	20.5
PTL803□-S		PT3/8	15	19	12	44	42.5	18.5	27	30	19	29
PTL804□-S		PT1/2	15	24	15	52.5	51	18.5	29.5	37.5	24	49
PTL1002□-S	10	PT1/4	18	16.5	11	40.5	39	21	31	26	17	22
PTL1003□-S		PT3/8	18	19	12	44	42.5	21	29	29	19	30.5
PTL1004□-S		PT1/2	18	24	15	52.5	51	21	31.5	36.5	24	50.5
PTL1203□-S	12	PT3/8	21	19	12	44	42.5	23	34.5	28	19	32.5
PTL1204□-S		PT1/2	21	24	15	52.5	51	23	34	36	24	53

[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.

Selection, Installation and Operation

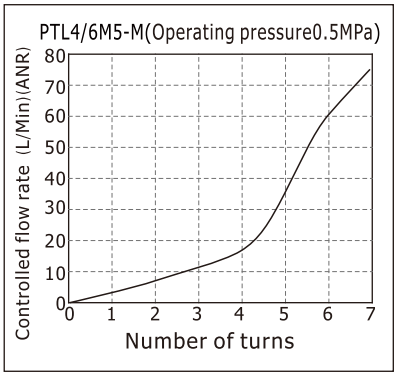
1. This product rotates in the direction of the finite position mechanism, the rotation torque can not be too large, so as not to cause damage. The maximum allowable torque is shown right.
2. Push-lock speed controller installation instructions is the same as traditional one. Please refer to general type for specific content.

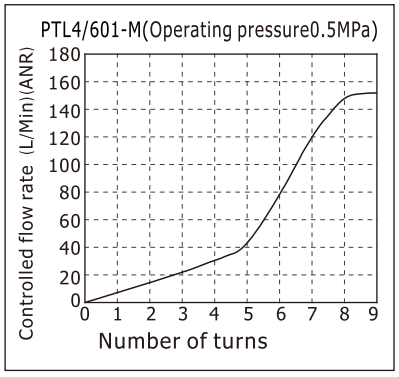
Thread type	Max. allowable torque(N.m)
M5	0.05
PT1/8	0.08
PT1/4	0.16
PT3/8	0.24
PT1/2	0.32

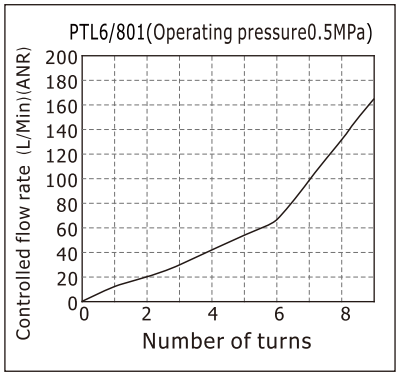
PTL series(Stainless steel)

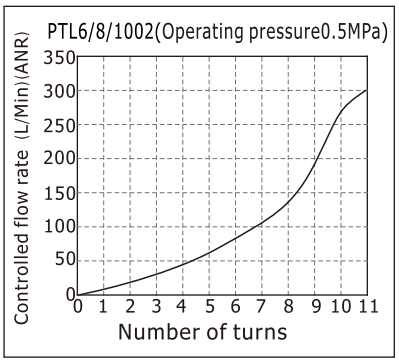
Flowrate characteristic

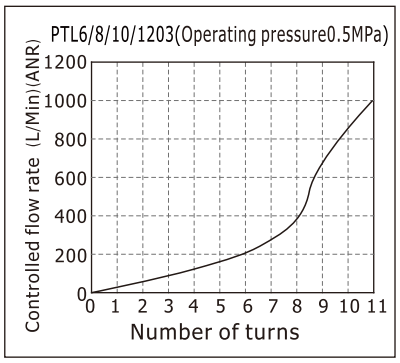
Controlled flow rate

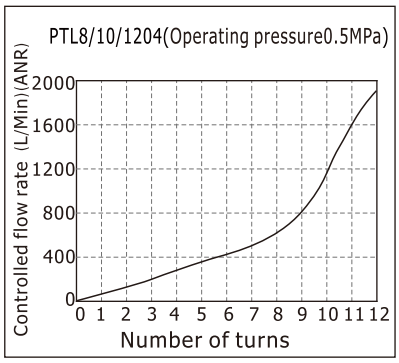




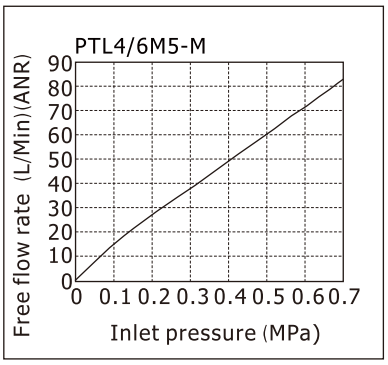


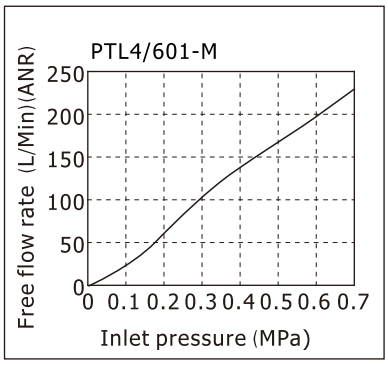


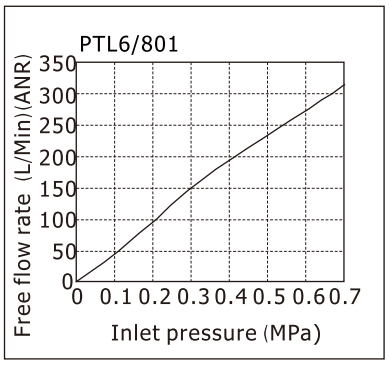


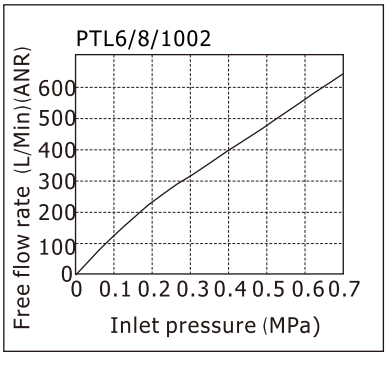


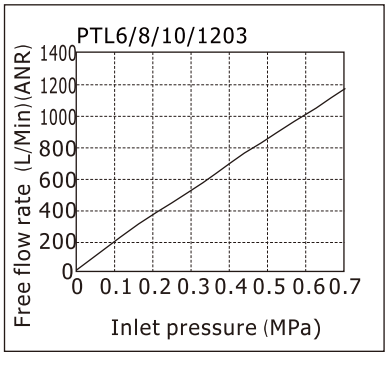
Free flow rate

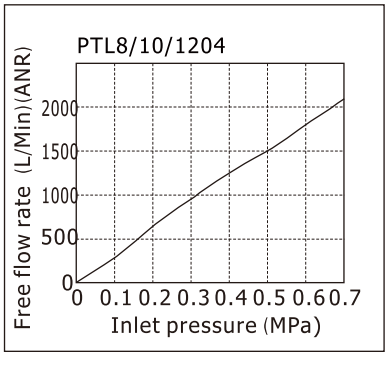




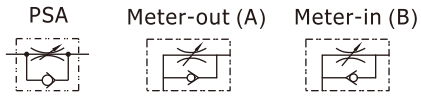








PSA, PSL, PSS series



Ordering code

PSL 6 01 A – S

1 2 3 4 5

① Model

PSL: Speed controller

PSS: Universal speed controller

②Port size

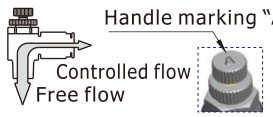
4: Φ4mm
6: Φ6mm
8: Φ8mm
10: Φ10mm
12: Φ12mm

③Thread connection

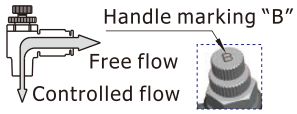
Thread	Adaptable port size
M5: M5X0.8	Φ4, Φ6
01: PT1/8 02: PT1/4 03: PT3/8 04: PT1/2	Φ4, Φ6 Φ8, Φ10 Φ12

④Control method

A: Meter-out



B: Meter-in



⑤ Material

S: SUS304

PSA 6 – S

1 2 3

① Model

PSA: Straight speed controller

②Port size

4: Φ4mm
6: Φ6mm
8: Φ8mm
10: Φ10mm
12: Φ12mm

③Material

S: SUS304

Product feature

1. Stainless steel 304 material can be used in prohibiting copper condition.
2. The silencer is small size, and light weight with small installation space.
3. Excellent flow charatentics, high sensitivity and easy to adjust.
4. The silencer brass body adopts a special nickel-plating process, which has good corrosion resistance and anti-pollution property.
5. Anti-drop structure is designed on the regulating rod.
6. The sealant being coated on threaded portion can ensure no leakage of the threaded connection part.
7. 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
PSS	M5	●				
	PT1/8		●	●		
	PT1/4		●	●	●	
	PT3/8				●	●
	PT1/2					●

Product series	Thread type	Port size Φ4	Φ6	Φ8	Φ10	Φ12
PSA	–	●	●	●	●	●
PSL	M5	●	●			
	PT1/8	●	●	●		
	PT1/4		●	●	●	
	PT3/8		●	●	●	●
	PT1/2			●	●	●

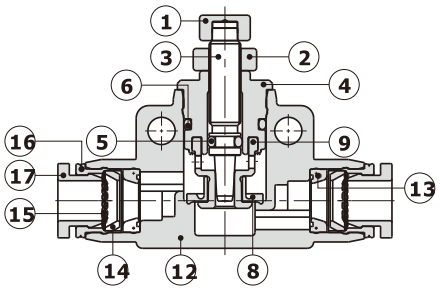
Specification

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

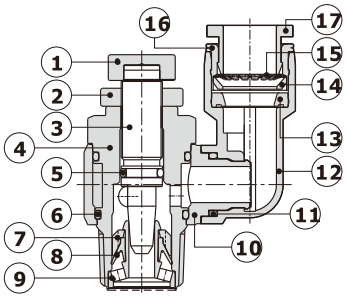
PSA, PSL, PSS series

Inner structure

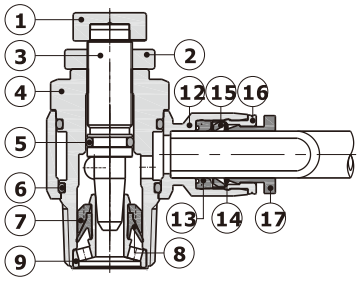
PSA Series



PSS Series



PSL Series

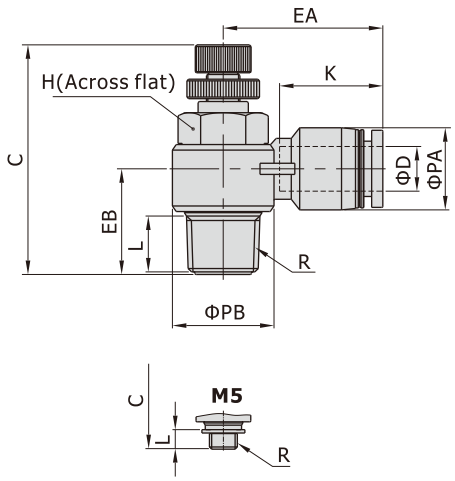


NO.	Name	NO.	Name
1	Adjusting cap	10	Plastic body
2	Locking cap	11	O-ring
3	Throttling column	12	Plastic body
4	Throttling body	13	O-ring
5	O-ring	14	Locating seat
6	O-ring	15	Spring gasket
7	Holder	16	Locating ring
8	O-ring	17	Plastic interface
9	Throttling sleeve		

Dimensions

PSL Series

[Unit: mm]

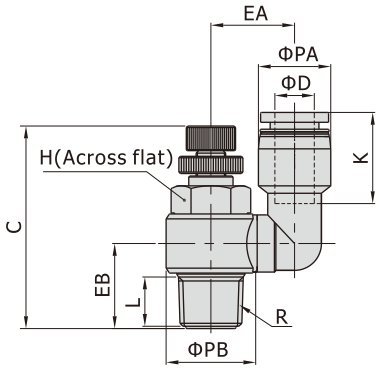


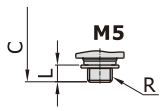
Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)
						max	min					
PSL4M5□-S	4	M5×0.8	9	10	3.5	30	27.5	14	19	9.5	8	6
PSL401□-S		PT1/8	9	14	7.5	41.5	35	14	20.5	15	11	15.5
PSL6M5□-S	6	M5×0.8	12.5	10	3.5	30	27.5	16.5	23.5	11.5	8	7.5
PSL601□-S		PT1/8	12.5	14	7.5	41.5	35	16.5	23	15.5	11	16.5
PSL602□-S		PT1/4	12.5	18	10	47.5	41	16.5	25	18	14	30
PSL603□-S		PT3/8	12.5	22.5	11	52.5	45.5	16.5	27	20	19	55
PSL801□-S	8	PT1/8	15	14	7.5	41.5	35	18.5	26.5	16.5	11	17
PSL802□-S		PT1/4	15	18	10	47.5	41	18.5	28.5	19	14	31
PSL803□-S		PT3/8	15	22.5	11	52.5	45.5	18.5	29.5	20	19	55.5
PSL804□-S		PT1/2	15	28	14	58.5	51.5	18.5	32	25	24	89
PSL1002□-S	10	PT1/4	18	18	10	47.5	41	21	31	20.5	14	32.5
PSL1003□-S		PT3/8	18	22.5	11	52.5	45.5	21	33	21.5	19	57.5
PSL1004□-S		PT1/2	18	28	14	58.5	51.5	21	35.5	25.5	24	90.5
PSL1203□-S	12	PT3/8	21	22.5	11	52.5	45.5	23	36	23.5	19	59.5
PSL1204□-S		PT1/2	21	28	14	58.5	51.5	23	38	27	24	92.5

[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.

PSA, PSL, PSS series

PSS Series



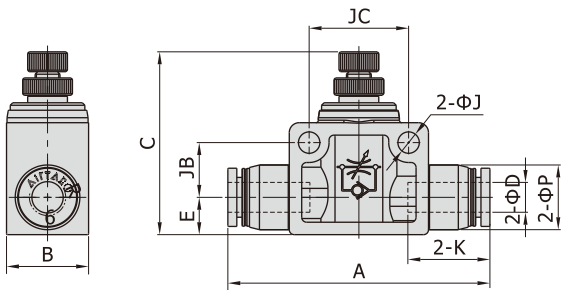


[Unit: mm]

Model\Item [Note1]	ΦD	R	ΦPA	ΦPB	L	C		K	EA	EB	H	Weight (g)
						max	min					
PSS4M5□-S	4	M5×0.8	9	10	3.5	30	27.5	14	12.5	9.5	8	7.5
PSS601□-S	6	PT1/8	12.5	14	7.5	41.5	35	17	17	15	11	18
PSS602□-S		PT1/4	12.5	18	10	47.5	41	17	19	17.5	14	32.5
PSS801□-S	8	PT1/8	15	14	7.5	41.5	35	18.5	17	15	11	19
PSS802□-S		PT1/4	15	18	10	47.5	41	18.5	19	17.5	14	37.5
PSS1002□-S	10	PT1/4	18	18	10	47.5	41	21	20.5	17.5	14	35
PSS1003□-S		PT3/8	18	22.5	11	52.5	45.5	21	24	20	19	61.5
PSS1203□-S	12	PT3/8	21	22.5	11	52.5	45.5	23	25.5	20	19	65
PSS1204□-S		PT1/2	21	28	14	58.5	51.5	23	28	25	24	98.5

[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.

PSA Series



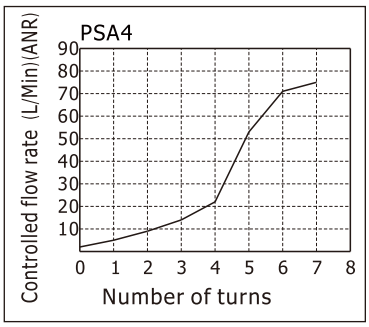
[Unit: mm]

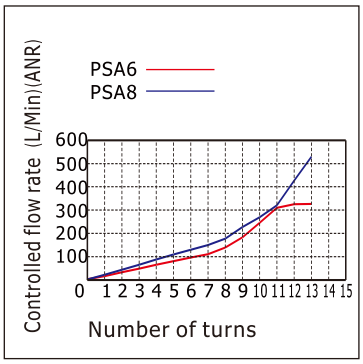
Model\Item	ΦD	A	B	C		ΦP	E	K	ΦJ	JB	JC	Weight (g)
				max	min							
PSA4-S	4	41	11	29	26.5	9.5	7	14	3.2	6	14	7.5
PSA6-S	6	52.5	16.5	43.5	36.5	13	7.5	16.5	4.3	11	20	18
PSA8-S	8	59.5	16.5	47	40	15	8.5	18.5	4.3	11	22	23
PSA10-S	10	69	21	53.5	46.5	18	10.5	21	4.3	14.5	26	41.5
PSA12-S	12	78.5	26	58.5	51	21.5	12	23	4.3	17.5	32	66

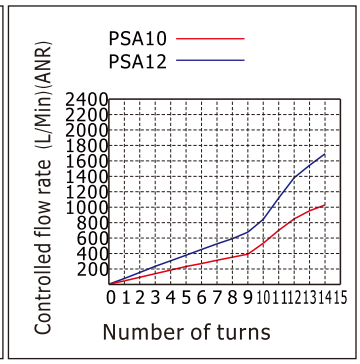
PSA, PSL, PSS series

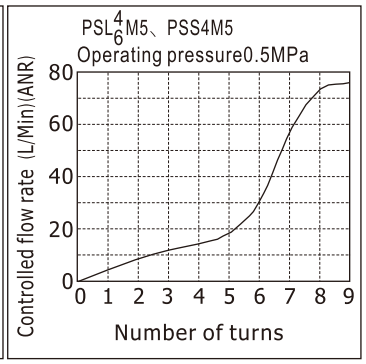
Flowrate characteristic

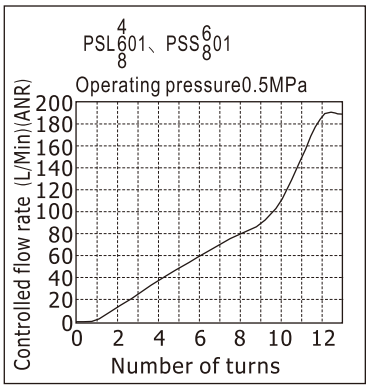
Controlled flow rate

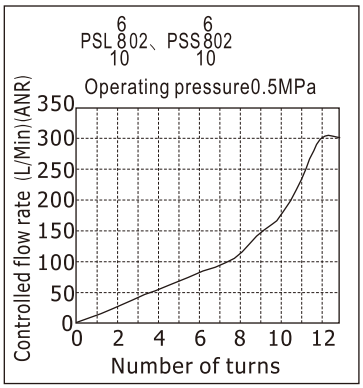


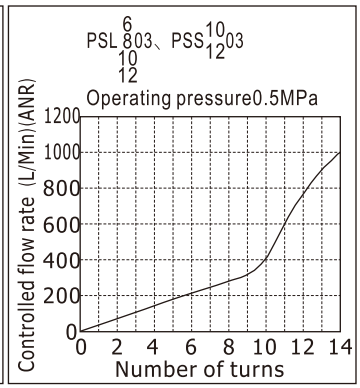


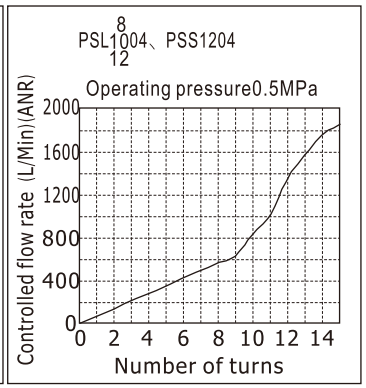




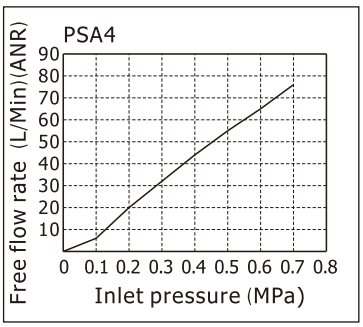


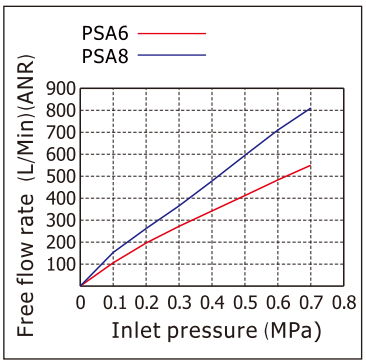


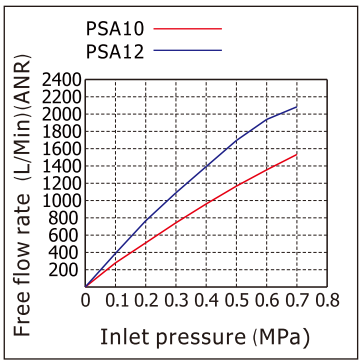


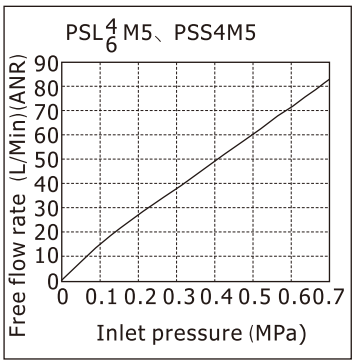


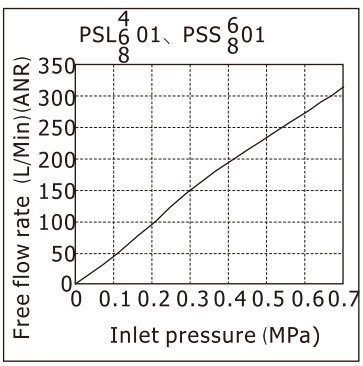
Free flow rate

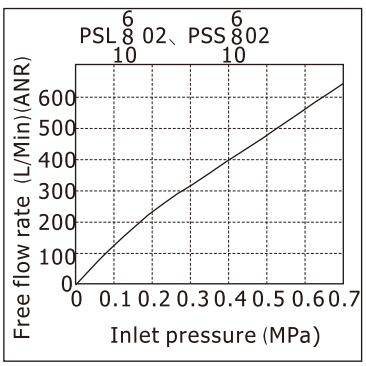


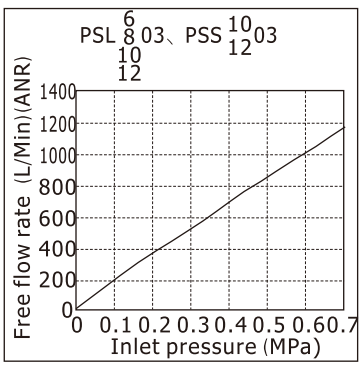


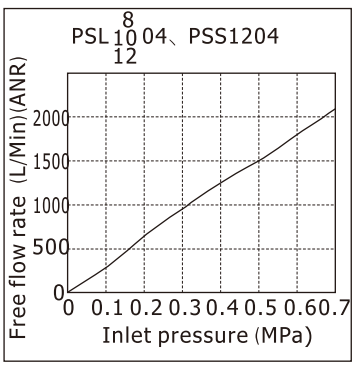












PSA, PSL, PSS series

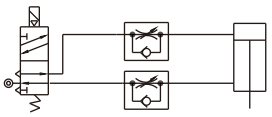
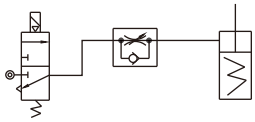
Selection, Installation and Operation

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
Solenoid valve Double acting cylinder  Meter-out speed controller	Solenoid valve Single acting cylinder  Meter-in speed controller

Installation

1. Installation and removal of tubing:

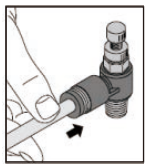
1.1. Installation of tubing

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.

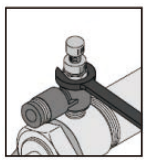
Note:When remove the tubing, make sure the pressure in the tubing is Zero.



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.

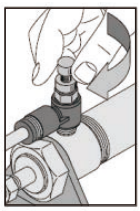
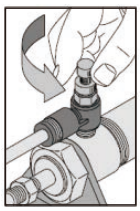


Operation

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.

BSL, BSLM, BESL series

Ordering code

BSL 01 - S

1 2 3

①Silencer Type	②Thread connection	③Material
BSL: Universal silencer BSLM: Mini Silencer BESL: Throttling silencer	M5: M5X0.8 01: PT1/8 02: PT1/4 03: PT3/8 04: PT1/2	S: Stainless steel 304

Configuration table of tubing thread

Product series	Thread connection				
	M5	01	02	03	04
BSL	●	●	●	●	●
BSLM	●	●	●	●	●
BESL		●	●	●	●

Product feature

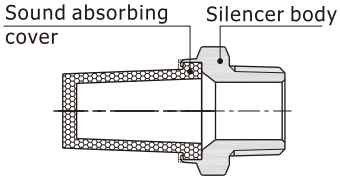
1. Stainless steel 304 material can be used in prohibiting copper condition.
2. This silencers have excellent noise silencing performance.
3. The installation of the silencer is simple and convenient, and the connecting portion is reliable and durable.
4. It is easy to adjust the exhauct flow of the throttling type silencer.

Specification

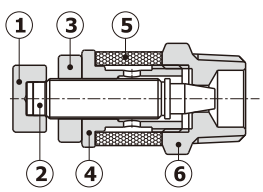
Model	BSLM5	BSL01	BSL02	BSL03	BSL04	BSLMM5	BSLM01	BSLM02	BSLM03	BSLM04
Thread connection	M5×0.8	PT1/8	PT1/4	PT3/8	PT1/2	M5×0.8	PT1/8	PT1/4	PT3/8	PT1/2
Silencing effect(dB)(0.5MPa)	15	20	20	20	20	15	20	20	20	20
Model	**BESL01**	**BESL02**	**BESL03**	**BESL04**						
Thread connection	PT1/8	PT1/4	PT3/8	PT1/2						
Silencing effect(dB)(0.5MPa)	20	20	20	20						
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

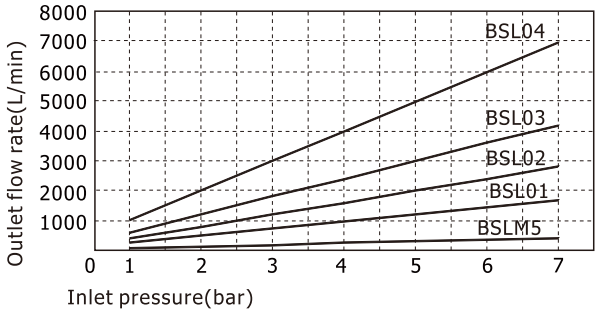


NO.	Name	NO.	Name
1	Adjusting cap	4	Locking ring
2	Throttling column	5	Silencer ring
3	Locking cap	6	Silencer body

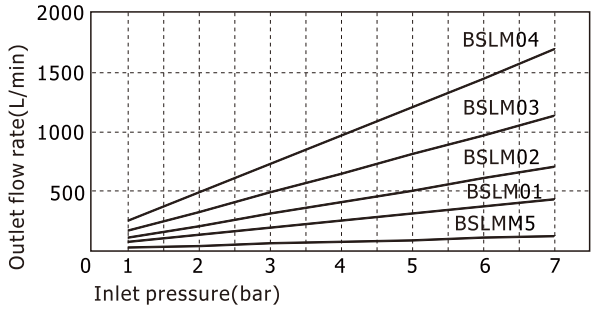
BSL, BSLM, BESL series

Flowrate characteristic

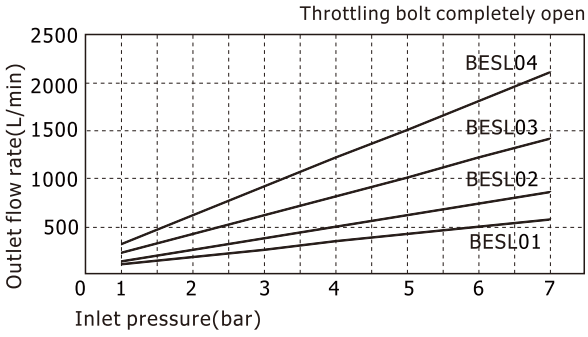
BSL Series



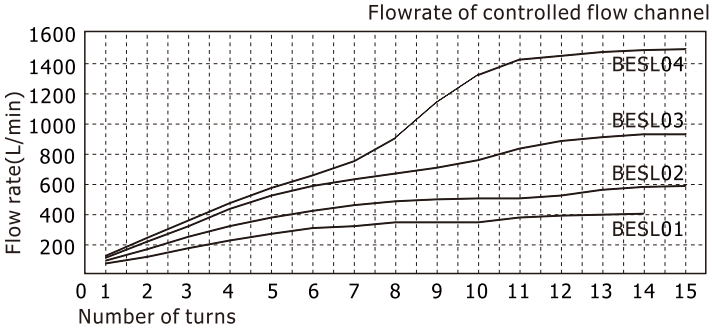
BSLM Series



BESL Series (Inlet pressure and outlet flow rate)

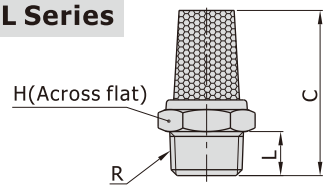


BESL Series



Dimensions

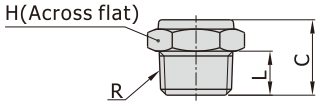
BSL Series



[Unit: mm]

Model\Item	R	L	C	H	Weight(g)
BSLM5-S	M5×0.8	3.5	19.5	8	2.5
BSL01-S	PT1/8	6	24	12	7
BSL02-S	PT1/4	8	30	15	14
BSL03-S	PT3/8	9	38.5	19	24.5
BSL04-S	PT1/2	10.5	46	22	37.5

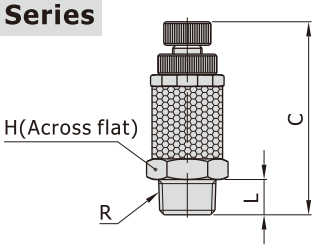
BSLM Series



[Unit: mm]

Model\Item	R	L	C	H	Weight(g)
BSLMM5-S	M5×0.8	3.5	9.5	8	2.5
BSLM01-S	PT1/8	6	11	12	5
BSLM02-S	PT1/4	8	13.5	15	9
BSLM03-S	PT3/8	9	15.5	19	15
BSLM04-S	PT1/2	10.5	19	22	25.5

BESL Series



[Unit: mm]

Model\Item	R	L	C		H	Weight(g)
			max	min		
BESL01-S	PT1/8	6	40.5	33	12	11.5
BESL02-S	PT1/4	8	42.5	35	14	17
BESL03-S	PT3/8	9	49	41.5	17	30
BESL04-S	PT1/2	10.5	59.5	52	24	66

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 ＜50μm;
  - ◆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.

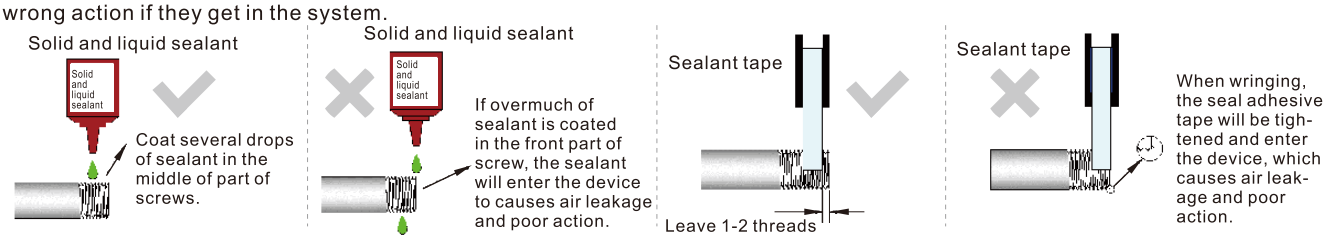
Danger

- 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	5.0~8.0	6~9	8~11	12~16	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/cm²)

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	kN

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							

1	100M	Manifold	P87
2	200M	Manifold	P87
	2KL	Solenoid Valve	P194
	2L	Solenoid Valve	P188
	2KS	Solenoid Valve	P172
	2S	Solenoid Valve	P166
	2V	Solenoid Valve	P202
	2KW	Solenoid Valve	P183
	2W	Solenoid Valve	P178
3	300M	Manifold	P87
	3A100	Air control Valve	P94
	3A200	Air control Valve	P96
	3A300	Air control Valve	P98
	3L	Push-Pull Valve	P124
	3V1	Solenoid Valve	P24
	3V100	Solenoid Valve	P42
	3V200	Solenoid Valve	P45
	3V300	Solenoid Valve	P48
	3V2	Solenoid Valve	P27
	3V2M	Solenoid Valve	P30
	3V3	Solenoid Valve	P34
4	400M	Manifold	P87
	4A100	Air control Valve	P102
	4A200	Air control Valve	P105
	4A300	Air control Valve	P108
	4A400	Air control Valve	P111
	4F	Foot Pedal Valve	P158
	4H	Hand Lever Valve	P121
	4HV	Hand Lever Valve	P130
	4HVL	Hand Lever Valve	P130
	4L	Push-Pull Valve	P126
	4V100	Solenoid Valve	P75
	4V200	Solenoid Valve	P78
	4V300	Solenoid Valve	P81
	4V400	Solenoid Valve	P84
6	6A	Air control Valve	P116
	6HV	Solenoid Valve	P60
	6TA	Air control Valve	P89
	6TV	Solenoid Valve	P37
	6V	Solenoid Valve	P53
7	7V	Solenoid Valve	P68
A	ACA	Shock Absorber	P491
	ACJ	Shock Absorber	P491
	ASC	Flow Control Valve	P160
B	BB	One-Touch Fittings	P544
	BB-S	Stainless Steel One-Touch Fittings	P577
	BD	One-Touch Fittings	P545
	BD-S	Stainless Steel One-Touch Fittings	P577
	BESL	Silencers	P563
	BESL-S	Stainless Steel Silencers	P589
	BKC	One-Touch Fittings	P546
	BKC-S	Stainless Steel One-Touch Fittings	P578
	BPC	Metal One-Touch Fittings	P528
	BPCF	Metal One-Touch Fittings	P529
	BPM	Metal One-Touch Fittings	P531
	BPMF	Metal One-Touch Fittings	P530
	BPOC	Metal One-Touch Fittings	P531
	BSL	Silencers	P563
	BSL-S	Stainless Steel Silencers	P589
	BSLM	Silencers	P563
	BSLM-S	Stainless Steel Silencers	P589
	BU	One-Touch Fittings	P545
	BU-S	Stainless Steel One-Touch Fittings	P577
	BZ	One-Touch Fittings	P544
	BZ-S	Stainless Steel One-Touch Fittings	P577
C	CM3	Control Valve	P148
	CMS	Sensor	P475
	CPV10	Solenoid Valve	P9
	CPV15	Solenoid Valve	P15
D	DMS	Sensor	P475
	DPH	Digital Display Pressure Sensor(Analog output)	P245
	DPS	Digital Display Pressure Switch	P240
G	GA	Gas-distribution block	P226
	GAC	F.R.L combination	P205
	GAF	Filter	P214
	GAFC	FR.L combination	P208
	GAFR	Filter & regulator	P211
	GAL	Lubricator	P220
	GAR	Regulator	P217
	GF	Pressure Gauge	P252
	GP	Pressure Gauge	P252
	GPF	Oil Mist Filter	P228
	GPFR	Precision Filter & Regulator	P235
	GPR	Precision Regulator	P231
	GS	Pressure Gauge	P252
	GT200	Short PC bowl type F.R.L combination	P222
	GU	Pressure Gauge	P252
	GV	Pressure Gauge	P252
	GVF	Vacuum Filter	P254
	GVR	Vacuum Regulator	P256

H	HFC	Air Gripper(Parallel Open/Close Style)	P415
	HFCQ	Air Gripper(Hollow Type)	P424
	HFD	Compact Air Gripper	P404
	HFK	Air Gripper(Roller Bearing)	P437
	HFKL	Air Gripper(Longer Stroke)	P448
	HFP	Air Gripper(Mechanical Parallel Style)	P453
	HFR	Air Gripper(180° Open/Close Style)	P464
	HFT	Wide Air Gripper	P468
	HFY	Air Gripper(Angualar Style)	P458
	HFZ	Air Gripper(Ball Bearing)	P433
	HGS	Compact Slide Cylinder	P298
	HLF	Slide Table Cylinder	P318
	HLH	Strict Slide Table Cylinder	P323
	HLQ	Strict Slide Table Cylinder	P332
	HLQL	Strict Slide Table Cylinder	P332
	HLS	Strict Slide Table Cylinder	P356
	HLSL	Strict Slide Table Cylinder	P356
	HRQ	Rotary Table Cylinder	P495
	HSV	Hand slide valve(3/2 Way)	P128
M	M3	Control Valve	P138
	M5	Control Valve	P143
N	NACA	Shock Absorber	P484
	NACF	Round Compact Cylinder	P274
	NACJ	Shock Absorber	P484
	NACQ	Compact Cylinder	P264
	NBB	One-Touch Fittings	P544
	NBD	One-Touch Fittings	P545
	NBESL	Silencers	P563
	NBKC	One-Touch Fittings	P546
	NBPC	One-Touch Fittings	P528
	NBPCF	One-Touch Fittings	P529
	NBPMF	One-Touch Fittings	P530
	NBPM	One-Touch Fittings	P531
	NBSL	Silencers	P563
	NBSLM	Silencers	P563
	NBU	One-Touch Fittings	P545
	NBZ	One-Touch Fittings	P544
	NPB	Mini Cylinder	P280
	NPC	One-Touch Fittings	P505
	NPCF	One-Touch Fittings	P514
	NPE	One-Touch Fittings	P534
	NPEB	One-Touch Fittings	P522
	NPED	One-Touch Fittings	P525
	NPEG	One-Touch Fittings	P539
	NPEW	One-Touch Fittings	P539
	NPG	One-Touch Fittings	P538
	NPGJ	One-Touch Fittings	P542
	NPH	One-Touch Fittings	P519
	NPHD	One-Touch Fittings	P541
	NPHF	One-Touch Fittings	P520
N	NPHK	One-Touch Fittings	P540
	NPHW	One-Touch Fittings	P518
	NPHV	Finger Valve	P561
	NPKD	One-Touch Fittings	P521
	NPKG	One-Touch Fittings	P540
	NPL	One-Touch Fittings	P513
	NPLF	One-Touch Fittings	P516
	NPLL	One-Touch Fittings	P517
	NPLM	One-Touch Fittings	P536
	NPM	One-Touch Fittings	P534
	NPMF	One-Touch Fittings	P515
	NPP	Plug	P537
	NPSA	Speed Controllers	P548
	NPSS	Speed Controllers	P548
	NPTL	Speed Controllers(Push-Lock)	P556
	NPU	One-Touch Fittings	P535
	NPV	One-Touch Fittings	P536
	NPY	One-Touch Fittings	P535
	NPYB	One-Touch Fittings	P523
	NPYW	One-Touch Fittings	P538
	NPZ	One-Touch Fittings	P537
	NPZB	One-Touch Fittings	P524
	NPZG	One-Touch Fittings	P541
	NRV	Non-Return Valve	P162
	NSU	Standard Cylinder	P258
	NUE95A	PU Tube	P499
P	PA6	Nylon Tube	P503
	PA12	Nylon Tube	P503
	PAL	Silencers	P563
	PALM	Silencers	P563
	PC	One-Touch Fittings	P505
	PC-S	Stainless Steel One-Touch Fittings	P567
	PCF	One-Touch Fittings	P514
	PCV	Pilot no-return valve	P164
	PE	One-Touch Fittings	P534
	PEB	One-Touch Fittings	P522
	PEB-S	Stainless Steel One-Touch Fittings	P572
	PED	One-Touch Fittings	P525
	PED-S	Stainless Steel One-Touch Fittings	P572
	PEG	One-Touch Fittings	P539
	PEW	One-Touch Fittings	P539
	PG	One-Touch Fittings	P538
	PGJ	One-Touch Fittings	P542
	PH	One-Touch Fittings	P519
	PH-S	Stainless Steel One-Touch Fittings	P573
	PHD	One-Touch Fittings	P541
	PHF	One-Touch Fittings	P520
	PHF-S	Stainless Steel One-Touch Fittings	P574
	PHK	One-Touch Fittings	P540
	PHV	Finger Valve	P561
	PHW	One-Touch Fittings	P578

P	PHW-S	Stainless Steel One-Touch Fittings	P574
	PKD	One-Touch Fittings	P521
	PKD-S	Stainless Steel One-Touch Fittings	P575
	PKG	One-Touch Fittings	P540
	PL	One-Touch Fittings	P513
	PL-S	Stainless Steel One-Touch Fittings	P571
	PLF	One-Touch Fittings	P516
	PLL	One-Touch Fittings	P517
	PLL-S	Stainless Steel One-Touch Fittings	P573
	PLM	One-Touch Fittings	P536
	PM	One-Touch Fittings	P534
	PMF	One-Touch Fittings	P515
	POC	One-Touch Fittings	P505
	POC-S	Stainless Steel One-Touch Fittings	P567
	PP	Plug	P537
	PSA	Speed Controllers	P548
	PSA-S	Stainless Steel Speed Controllers	P584
	PSL	Speed Controllers	P548
	PSL-S	Stainless Steel Speed Controllers	P584
	PSS	Speed Controllers	P548
	PSS-S	Stainless Steel Speed Controllers	P584
	PTL	Speed Controllers(Push-Lock)	P556
	PTL-S	Stainless Steel Speed Controllers(Push-Lock)	P580
	PU	One-Touch Fittings	P535
	PV	One-Touch Fittings	P536
	PY	One-Touch Fittings	P535
	PYB	One-Touch Fittings	P523
	PYB-S	Stainless Steel One-Touch Fittings	P571
	PYW	One-Touch Fittings	P538
	PZ	One-Touch Fittings	P537
	PZB	One-Touch Fittings	P524
	PZB-S	Stainless Steel One-Touch Fittings	P575
	PZG	One-Touch Fittings	P541
R	RMH	Rodless Magnetic Cylinder(With Linear Guide)	P392
	RMT	Rodless Magnetic Cylinder(With Guide)	P385
	RMTL	Rodless Magnetic Cylinder(With Exactitude Guide)	P389
	RMS	Rodless Magnetic Cylinder	P380
S	S3	Control Valve	P133
	SDR	Regulator	P238
T	TCL	Tri-Rod Cylinder	P338
	TCM	Tri-Rod Cylinder	P294
	TR	Tri-Rod Cylinder	P289
U	UCS	PU Tube	P501
	UE95A	PU Tube	P499
	UN54D	Flame Resistant Tube	P504
	US98A	PU Tube	P499
Z	ZM3	Control Valve	P155