



Pneumatic Cylinders

With the aid of state-of-the-art precision machining technology, we meticulously craft the components of our cylinders, fundamentally overcoming the technical challenges such as creeping that are traditionally associated with cylinder operation. This is a testament to the exquisite quality and exceptional performance of E · MC cylinders. As a leader in the manufacturing of cylinders within the industry, E · MC has, over three decades, relentlessly pursued exploration and innovation, supplying a wide array of top-tier level enterprises across various industries with a rich selection of products that boast superior performance. Moreover, with unparalleled product advantages, E · MC has gained extensive acclaim in the market.





Air Cylinder Theory (Repeat Action Type) – Force Table

F = P x A

Actual piston working area (mm²)
Working pressure(Mpa)
Spring reset force (N)

Air Cylinder Theory – Force Table

Bore Size(mm)	32		40		50		63		80		100		125		160		200	
OD of rod(mm)	12		16		20		20		25		25		32		40		40	
Acting type	Double acting		Double acting		Double acting		Double acting		Double acting		Double acting		Double acting		Double acting		Double acting	
	Push force	Pull force	Push force	Pull force	Push force	Pull force	Push force	Pull force	Push force	Pull force	Push force	Pull force	Push force	Pull force	Push force	Pull force	Push force	Pull force
Actual working area (mm ²)	804	690	1256	1055	1963	1649	3117	2803	5026	4536	7853	7362	12272	11468	20106	18849	31416	30157
Working pressure (Mpa)	0.1	80.4	69.0	125.6	105.5	196.3	164.9	311.7	280.3	502.6	453.6	785.3	736.2	1227.2	1146.8	2010.6	1884.9	3141.6
	0.2	160.8	138.0	251.2	211.0	392.6	329.8	623.4	560.6	1005.2	907.2	1570.6	1472.4	2454.4	2293.6	4021.2	3769.8	6283.2
	0.3	241.2	207.0	376.8	316.5	588.9	494.7	935.1	840.9	1507.8	1360.8	2355.9	2208.6	3681.6	3440.4	6031.8	5654.7	9424.8
	0.4	321.6	276.0	502.4	422.0	785.2	659.6	1246.8	1121.2	2010.4	1814.4	3141.2	2944.8	4908.8	4587.2	8042.4	7539.6	12566.4
	0.5	402.0	345.0	628.0	527.5	981.5	824.5	1558.5	1401.5	2513.0	2268.0	3926.5	3681.0	6136.0	5734.0	10053.0	9424.5	15708.0
	0.6	482.4	414.0	753.6	633.0	1177.8	989.4	1870.2	1681.8	3015.6	2721.6	4711.8	4417.2	7363.2	6880.8	12063.6	11309.4	18849.6
	0.7	562.8	483.0	879.2	738.5	1374.1	1154.3	2181.9	1962.1	3518.2	3175.2	5497.1	5153.4	8590.4	8027.6	14074.2	13194.3	21991.2
	0.8	643.2	552.0	1004.8	844.0	1570.4	1319.2	2493.6	2242.4	4020.8	3628.8	6282.4	5889.6	9817.6	9174.4	16084.8	15079.2	25132.8
	0.9	723.6	621.0	1130.4	949.5	1766.7	1484.1	2805.3	2522.7	4523.4	4082.4	7067.7	6625.8	11044.8	10321.2	18095.4	16964.1	28274.4

Theoretical cylinder force calculation method (single-acting type)

F = P x A - F₀

Spring reset force (N)
Actual piston working area (mm²)
Working pressure(Mpa)
Theoretical force of cylinder (N)

Air Cylinder Theory – Force Table

Bore Size(mm)	8		10		12		16		20		25	
OD of rod(mm)	4		4		6		6		8		10	
Acting type	Double acting		Double acting		Double acting		Double acting		Double acting		Double acting	
	Push force	Pull force	Push force	Pull force	Push force	Pull force	Push force	Pull force	Push force	Pull force	Push force	Pull force
Actual working area (mm ²)	50.2	37.7	78.5	65.9	113	84.8	201	172.7	314	263.8	490.6	412.1
Working pressure (Mpa)	0.1	5.02	3.77	7.85	6.59	11.30	8.48	20.10	17.27	31.40	26.38	49.06
	0.2	10.04	7.54	15.70	13.18	22.60	16.96	40.20	34.54	62.80	52.76	98.12
	0.3	15.06	11.31	23.55	19.77	33.90	25.44	60.30	51.81	94.20	79.14	147.18
	0.4	20.08	15.08	31.40	26.36	45.20	33.92	80.40	69.08	125.60	105.52	196.24
	0.5	25.10	18.85	39.25	32.95	56.50	42.40	100.50	86.35	157.00	131.90	245.30
	0.6	30.12	22.62	47.10	39.54	67.80	50.88	120.60	103.62	188.40	158.28	294.36
	0.7	35.14	26.39	54.95	46.13	79.10	59.36	140.70	120.89	219.80	184.66	343.42
	0.8	40.16	30.16	62.80	52.72	90.40	67.84	160.80	138.16	251.20	211.04	392.48
	0.9	45.18	33.93	70.65	59.31	101.70	76.32	180.90	155.43	282.60	237.42	441.54

Installation and Use

- 1.To ensure the component has not been damaged during transport please inspect the device prior to installation.
- 2. Confirm the pneumatic cylinder selected aligns with the loader.
- 3. If using a pneumatic cylinder supporting high temperatures or cold environments, utilize anti–freezing measures or cooling accessories.
- 4. Before connecting tubing to your pneumatic cylinder, make sure all lines are clean and free of debris. We recommend cleaning your working medium with a minimum 25um filtration prior to installation.
- 5. Applying lateral load may limit the life cycle of your pneumatic cylinder if not installed properly. Please ensure you are installing on a clean, level surface.
- 6. If storing your pneumatic cylinder for future use, always ensure the device is treated with an anti–rust treatment and keep all air ports covered.

Attention Points

- 1. Place filter near the direction control valve to remove any possible iron rust, particles or water which may have accumulated in the tube.
- 2. When using your cylinder in corrosive environments always use appropriate tubing materials in conjunction with the device.
- 3. Ensure the cross section of tube between the cylinder and directional control valve has the appropriate selection based on your stated piston speed.
- 4. Remove all particulates, iron rust etc. prior to installation or repair.
- 5. Always use appropriate seals and lubricants to connect your component.
- 6. Piston rods should be chosen for use based on actual load. Varying load rates may adversely affect the performance of the component.

After Use

- 1. When installing the cylinder in temperatures below 5°C or above 60°C, use the appropriate sealing materials. Ex: Viton, Teflon tape etc.
- 2. If using pneumatic cylinders in corrosive or dangerous environments, take appropriate protective measures. We recommend you contact us if you intended use extends into harsh environments.
- 3. The compressed air entering the component but be free of particles and moisture.
- 4. The air cushion is designed to absorb the impact of the piston at the end of the stroke.
- 5. The cushion positioning is pre–set with your device. Adjusting the cushion can be done by adjusting the needle valve to the right to strengthen the buffer, or left to weaken it.
- 6. For best results avoid using the pneumatic cylinder directly under cutting compounds, refrigerants, rust and corrosive spatter.

Please Note

- 1. Always use the correct cylinder for the appropriate amount of force for your objective.
- 2. Applying excessive force causing damage to the cylinder barrel may create scaring within the barrel resulting in poor performance.
- 3. Please ensure you are installing your cylinder on a level surface to avoid shifting which could result in poor performance of your component.
- 4. Always use the appropriate cylinder for your specific project. Installing the incorrect cylinder for your project can result in damage to your device.

Product Selection

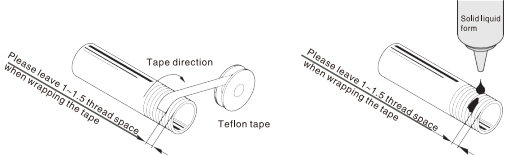
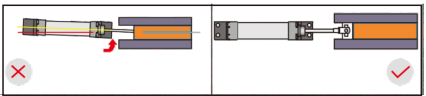
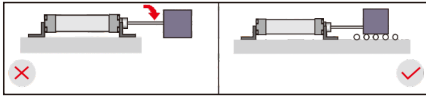
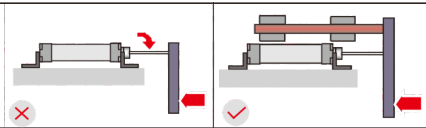
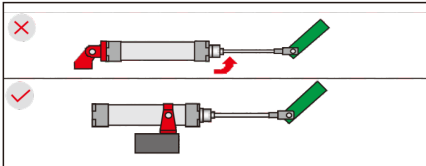
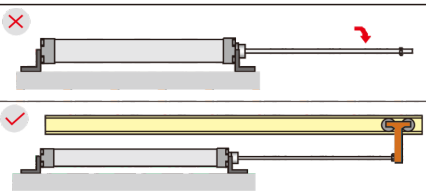
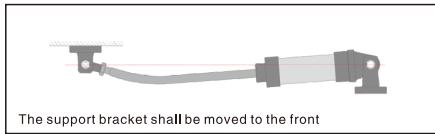
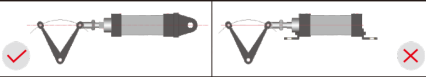
- 1、Confirm the internal diameter of the cylinder
 - ① Axial load thrust of the cylinder shall be confirmed according to actual load situation of the required cylinder;
 - ② Load rate η of the cylinder shall be confirmed according to the action situation of the load:
Load rate has relationship with action speed of the cylinder, which is generally recommended as:
Under static load or low speed: $\eta \leq 0.7$
Speed 50–50mm /s: $\eta \leq 0.5$
When speed >500mm /s: $\eta \leq 0.3$
 - ③ Working pressure of the cylinder shall be confirmed according to the condition of air supply.
- 2、Confirm the cylinder stroke
 - The stroke of cylinder is pre–selected according to the ratio of cylinder operation distance and stroke of transmission mechanism. To facilitate installing and debugging, there shall be proper allowance left for the stroke calculated. Standard strokes guaranteed with quick supply are advised to be chosen as possible as one can, which can help to cut down your cost.
- 3、Confirm the cylinder type
 - The type of the cylinder shall be selected according to the specific requirements of application and installation of the cylinder.
- 4、Selection of buffer way of the cylinder
 - There are different buffer devices equipped to the cylinders made by our company. Customer shall choose them according to the action situation of actual load. If both of the load and speed are higher, it is difficult to absorb the impact only by the buffer of the cylinder itself. Therefore, buffer circuit must be designed or use external buffer to release the impact.
- 5、Confirm whether the cylinder has magnet
 - Whether the cylinder has sensor switch shall be confirmed according to the actual situation.And relative magnetic switch shall be chosen to use together.
- 6、Selection of installation mode of the cylinder
 - Installation mode of the cylinder shall be selected according to the application and installation requirements of the cylinder.
- 7、Selection of connecting mode of piston rod of the cylinder
 - After the cylinder is pre–selected, it is necessary to check the stability of piston rod (especially the piston is thinner, longer and larger) of the cylinder according to different installation modes and the air consumption under actual application condition shall be checked.

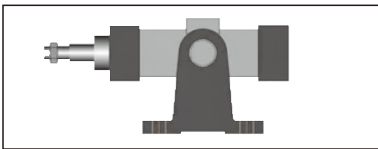
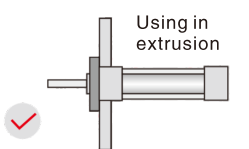
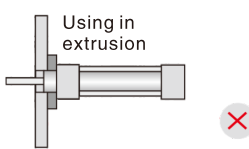
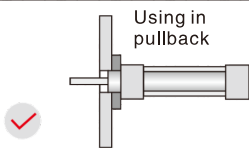
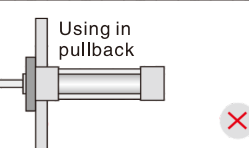
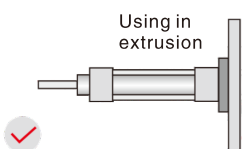
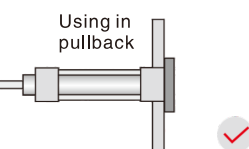
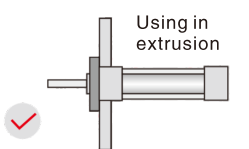
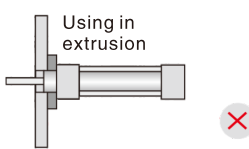
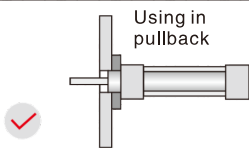
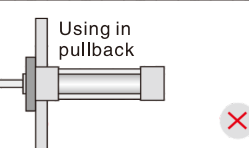
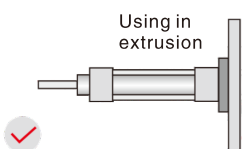
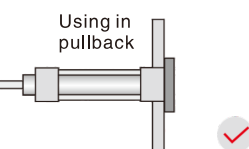
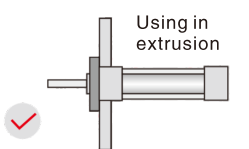
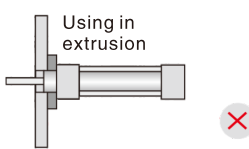
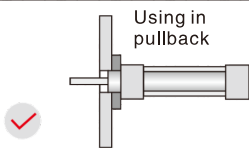
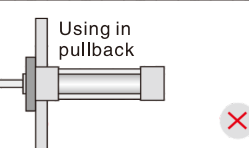
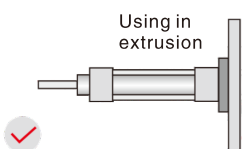
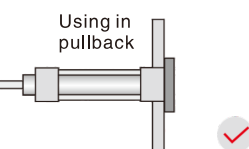
Maintenance and Service

- 1、Maintenance should be done under safety condition, please turn off the power and air source first; makeing sure there is no air leaving in the tube;
- 2、Before attaching/removing rod end attachments, the cylinder must be fully retracted. The rod should never be pulled out, or be rotated when attaching/removing the rod end attachments.The rod end attachment should be screwed tightly on the rod end, with balanced locking force. Before usage, make sure no interference is present by manually checking the cylinder and attachment. After that, air can be supplied to the cylinder for use;
- 3、There should be no damage in the sliding parts between the cylinder and piston rod to prevent the air leakage caused by poor action of the cylinder and damage of seal parts of piston rod;
- 4、If the cylinder is not used for a long time, it shall be regularly actuated and shall be coated with oil to prevent it get rusted;
- 5、Please read the relevant content in this manual for the requirement of the cylinder about the air quality, application condition, tube connection and cylinder lubrication.

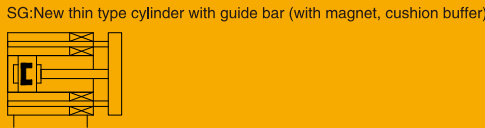
Debugging

- 1、Speed control valve shall be installed at the two sides of the cylinder.
 - Check valve shall be opened gradually from completely closed state when the cylinder is debugged and the drive speed of the cylinder shall be gradually and slowly adjusted to the required speed.
 - There are two ways for installing check valve, including exhaust throttle and inlet throttle. Exhaust throttle is mostly adopted in pneumatic system because the cylinder will produce back pressure during work through exhaust throttle and ensuring relatively stable moving speed or speed adjustment, which will help avoid impact on cylinder cover caused by sudden and quick propulsion of piston rod when starting.
- 2、When the cylinder with buffer function is debugged, according to the load and speed, the flow control valve mounted on the cylinder cover shall be adjusted gradually from low to high level to ensure the cylinder will have no rebounding. What shall be noticed is not to adjust the buffer to the end state in debugging the stroke, otherwise there will be poor buffer or damage of seals caused by piston under high–speed situation.

Installation and Use	
1、 Prevent debris and dirt and other impurities into the cylinder before connect with pipe. 1~1.5 thread pitch should be reserved for wrapping tape. Don't wrap the tape around . 	2、 To avoid overusing or inflowing of the liquid glue into the body when using liquid fixing glue (anaerobic adhesive) to lock the fitting, or it will get the parts stuck, leading not good performance.
3、 The axes of piston rod shall corresponde with the moving direction of load (coaxial). Piston rod and cylinder will produce opposite force which can easily damage the internal, The internal surface of the cylinder, guide sleeve, the surface of piston rod and seals. 	4、 Avoid direct connection of piston rod, or it will suffer vertical gravity: it shall add idler wheels under the load bottom to support the guide rail(as in below right photo).It is wrong installation as in below left photo, because the piston rod and cylinder will produce opposite force which can easily bend piston rod and damage the internal surface of the cylinder, guide sleeve, the surface of piston rod and seals. 
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7、 Long-stroke cylinder shall set middle guide support to prevent natural drop of piston rod and to prevent the damage on piston rod caused by the droop of piston rod, bend of the cylinder, vibration and external load. 	8、 It tends to bend at long stroke, thus the installation bracket shall be moved to the front cover. 
9、 The fixed cylinder shall not be connected with the rocker carrying out circular action (fixed with LB). At this time, it shall be connected with swing cylinder (fixed with CA/ CB/TC) 	

Installation and Use							
10、 If the height (H) between installation surface of bearing bracket and the position of bearing is too great, when cylinder works, the installation part of the support will produce great torque force, Which may cause damage to installing bolt and other parts. 	11、 Proper installation shall be adopted considering the direction of load (flange type installation). <table><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table>						
							
							
							

SG Compact Guide Cylinder



Specifications



Bore(mm)	6	10	12	16	20	25	32	40	50	63
Acting type	Double acting									
Working medium	Clean Air(after 40 μ m filtration)									
Working pressure (MPa)	0.2~0.7		0.1~1.0		0.15~1.0					
Guaranteed pressure (MPa)	1.5									
Working temperature (°C)	-20~70(No freezing)									
Piston speed (mm/s)	30~500									
Cushion	Rubber cushion									
Stroke tolerance(mm)	+1.0 0									
No-rotating precision ★	SGL	—		± 0.08°		± 0.07°		± 0.06°		± 0.05°
	SGM	± 0.10°			± 0.09°		± 0.08°		± 0.06°	
Port Size	M3 × 0.5		M5 × 0.8		G1/8 ①				G1/4 ①	

★ Retract position. ① PT、NPT port size is optional.

How to Order?

Series No	Type No	Type	Bore	X	Stroke	Adjustable Stroke	Magnet No	Thread Type
SG	L: Linear bearing M: Slide bearing	Blank: Standard type J: Adjuster type	6 10 12 ... 63	5 10 15 20 ...	10 20 30 40 50 75 100		S : With magnet	Blank: G P : PT T : NPT

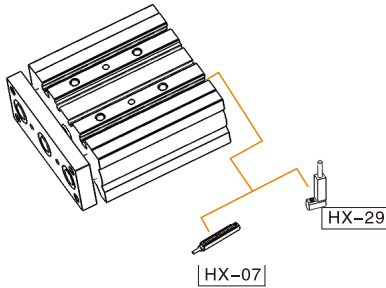
Order Example:
SG series, linear bearing, bore 16mm, stroke 30mm, EPR code is: SGL16X30-S
Cylinders with cylinder bore of Ø6 and Ø10 are available in non-adjustable types and cylinders without linear bearings

Stroke

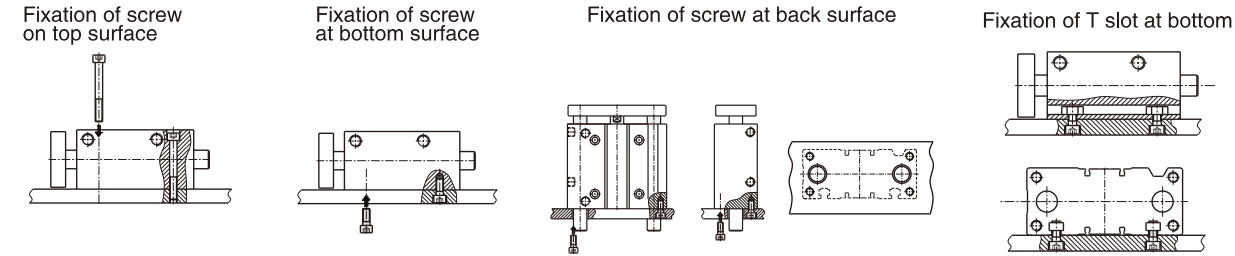
Bore (mm)	Standard Stroke (mm)	Max. Stroke (mm)
6	5 10 15 20	20
10	5 10 15 20 25 30	30
12	10 20 25 30 40 50 60 70 75 80 90 100 125 150	150
16	10 20 25 30 40 50 60 70 75 80 90 100 125 150 175 200	200
20/25	20 25 30 40 50 60 70 75 80 90 100 125 150 175 200 225 250	250
32~63	25 30 40 50 60 70 75 80 90 100 125 150 175 200 225 250	250

Note: the middle non-standard stroke is made by adding a pad in the cylinder of standard stroke; The Ø12~Ø32 cylinder diameter corresponds to every 1mm stroke, and the Ø40~Ø63 cylinder diameter corresponds to every 5mm stroke;
For example, order SGL20*47 non-standard travel cylinder, it is made from SGL20*50 standard travel cylinder with 3mm gasket, its external size, installation size and SGL20*50 the same

Optional Accessories

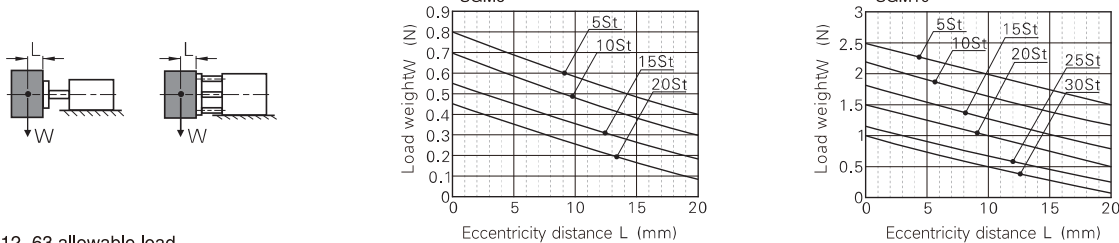


How to Mount ?

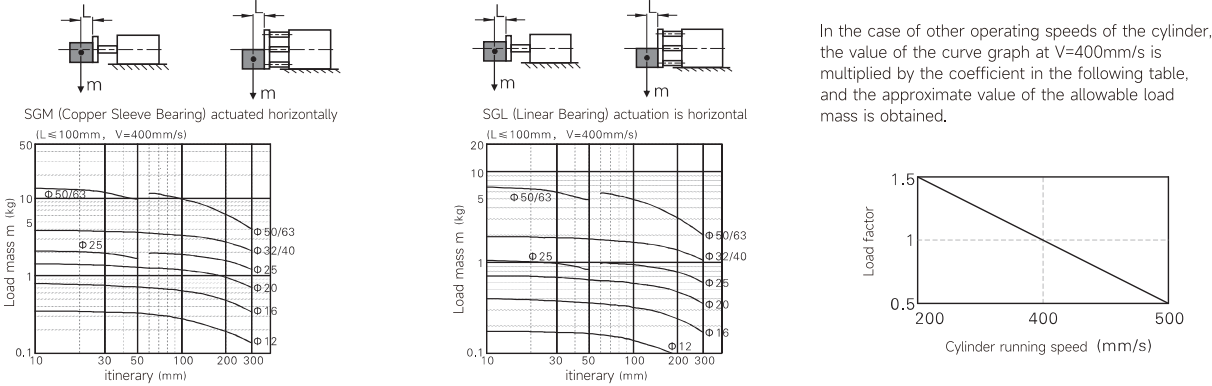


Allowable load and torque

SGM6 and SGM10 allow load

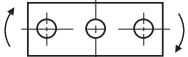


SG12~63 allowable load



Allowable load and torque

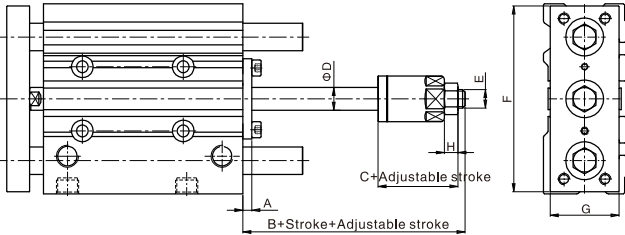
Inside diameter	Formality	5	10	15	20	25	30	40	50	60	70	75	80	90	100	125	150	175	200	225	250
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																							Unit (N·m)
6	SGM	0.008	0.007	0.006	0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10	SGM	0.045	0.039	0.033	0.028	0.024	0.021	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12	SGM	—	0.39	—	0.32	0.29	0.27	0.24	0.21	0.49	0.46	0.43	0.42	0.39	0.36	0.31	0.27	—	—	—	—	—	
	SGL	—	0.35	—	0.29	0.26	0.24	0.22	0.19	0.44	0.39	0.37	0.35	0.32	0.29	0.24	0.20	—	—	—	—	—	
16	SGM	—	0.69	—	0.58	0.54	0.49	0.43	0.38	0.75	0.72	0.69	0.65	0.61	0.58	0.50	0.44	0.40	0.36	—	—	—	
	SGL	—	0.62	—	0.52	0.49	0.44	0.39	0.34	0.68	0.65	0.62	0.59	0.55	0.52	0.43	0.37	0.32	0.28	—	—	—	
20	SGM	—	—	—	1.05	0.99	0.93	0.83	0.75	1.97	1.90	1.88	1.86	1.72	1.63	1.44	1.28	1.16	1.06	1.01	0.90	—	
	SGL	—	—	—	0.95	0.89	0.84	0.75	0.68	1.77	1.59	1.52	1.46	1.33	1.25	1.30	1.15	1.03	0.93	0.88	0.76	—	
25	SGM	—	—	—	1.76	1.65	1.55	1.38	1.25	3.17	3.06	2.96	2.91	2.77	2.57	2.26	2.02	1.83	1.67	1.57	1.42	—	
	SGL	—	—	—	1.58	1.49	1.40	1.24	1.13	2.71	2.42	2.38	2.33	2.19	1.97	2.03	1.78	1.58	1.41	1.22	1.16	—	
32	SGM	—	—	—	—	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	—	
	SGL	—	—	—	—	5.72	5.40	5.16	4.62	5.38	5.15	5.11	5.02	4.60	4.47	3.98	3.58	3.25	2.98	2.67	2.56	—	
40	SGM	—	—	—	—	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	—	
	SGL	—	—	—	—	6.30	5.94	5.50	5.09	5.99	5.67	5.62	5.58	5.27	4.93	4.30	3.94	3.58	3.29	3.01	2.82	—	
50	SGM	—	—	—	—	13.00	12.60	11.00	10.80	13.70	12.70	12.00	11.80	11.10	10.60	9.50	8.60	7.86	7.24	6.80	6.24	—	
	SGL	—	—	—	—	9.17	8.75	8.30	7.62	10.30	9.94	9.83	9.77	8.82	8.74	8.55	7.74	7.07	6.52	6.12	5.62	—	
63	SGM	—	—	—	—	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	—	
	SGL	—	—	—	—	10.20	9.74	9.20	8.48	17.46	14.00	11.00	10.60	10.20	9.74	9.63	8.72	7.97	7.34	6.77	6.34	—	

Main Dimension

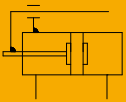
E04-SGJ



Bore\Sign	A	B	C	D	E	F	G	H
12	3	20	17	6	M5X0.5	56	22	4
16	3	24	21	8	M6X1.0	62	25	5
20	4	29	25	10	M8X1.25	81	30	6
25	5	32	29	12	M10X1.25	91	38	6
32	6	35	29	16	M14X1.5	110	44	8
40	6	35	29	16	M14X1.5	118	44	8
50	8	40	32	20	M18X1.5	146	60	11
63	8	40	32	20	M18X1.5	158	70	11

JSG

Compact Triaxial Shaft Cylinder



Specification

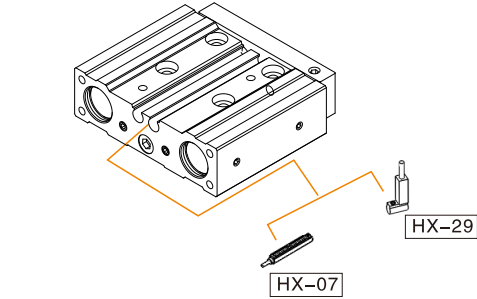
Bore(mm)	12	16
Acting type	Double Acting	
Working medium	Clean Air(40 μ m filtration)	
Working pressure(MPa)	0.15~0.7(MPa)	
Garanteed pressure(MPa)	1.05(MPa)	
Working temperature℃	5~60	
Speed range(mm/s)	50 ~ 300	
Stroke tolerance(mm)	+1.5 0	
Cushion type	Rubber cushion	

How to Order

Series No	Bore	X	Stroke	—	Magnet No
JSG	12 16		10 20 30 50 100		S:With magnet

How to Order:
JSG series cylinder, 16mm bore, 50mm stroke, with magnet,ERP code is:JSG16X50-S

Optional Accessories



Note: Short stroke please use HX-29 series due to limited space

Weight

Bore(mm)	Stroke(mm)					unit(g)
	10	20	30	50	100	
12	93	117	141	189	309	
16	101	126	152	203	330	

Products Features

- 1. The cylinder has 4 mounting surfaces to choose;
- 2. Compact design, can save more installation space;
- 3. The inner hole adopts hard oxidation process, good resistance and durability;
- 4. Various installation positions, 3 installation methods, convenient for customers to install.

Stroke

Bore(mm)	Standard Stroke(mm)
12(2-Ø10)	10 20 30 50 100
16(2-Ø12)	

Note: The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder.e.g. JSG16X28-S has th same dimensions of JSG16X30-S stroke cylinder.

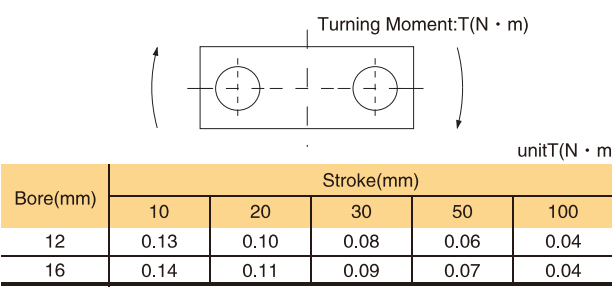
Theoretical Output Force

Bore (mm)	Stroke (mm)	Acting direction	Compression area(mm²)	Working pressure(MPa)						
				0.2	0.3	0.4	0.5	0.6	0.7	
12	6	OUT	157	31	47	63	79	94	110	
		IN	101	20	30	40	50	60	70	
16	6	OUT	226	45	68	90	113	136	158	
		IN	170	34	51	68	85	102	119	

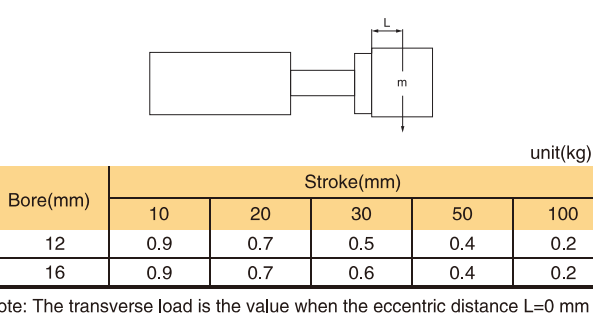
Noted:Output Force(N)=Working pressure(MPa) x Compression area(mm²)



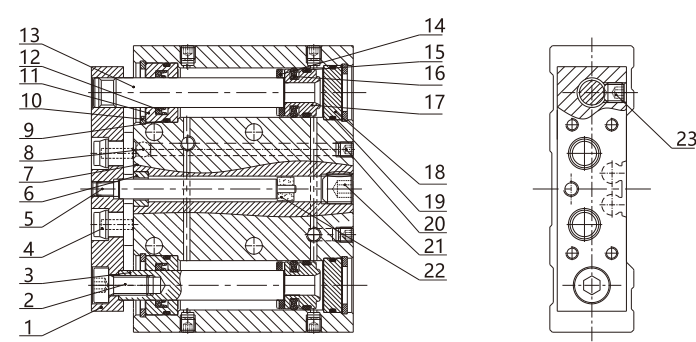
End Plate Allows Turning Moment



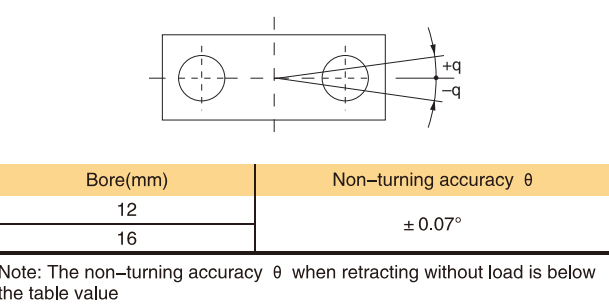
Allowable Lateral Load



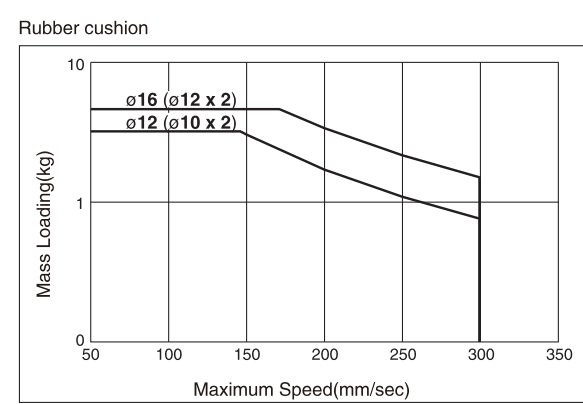
Internal Structure



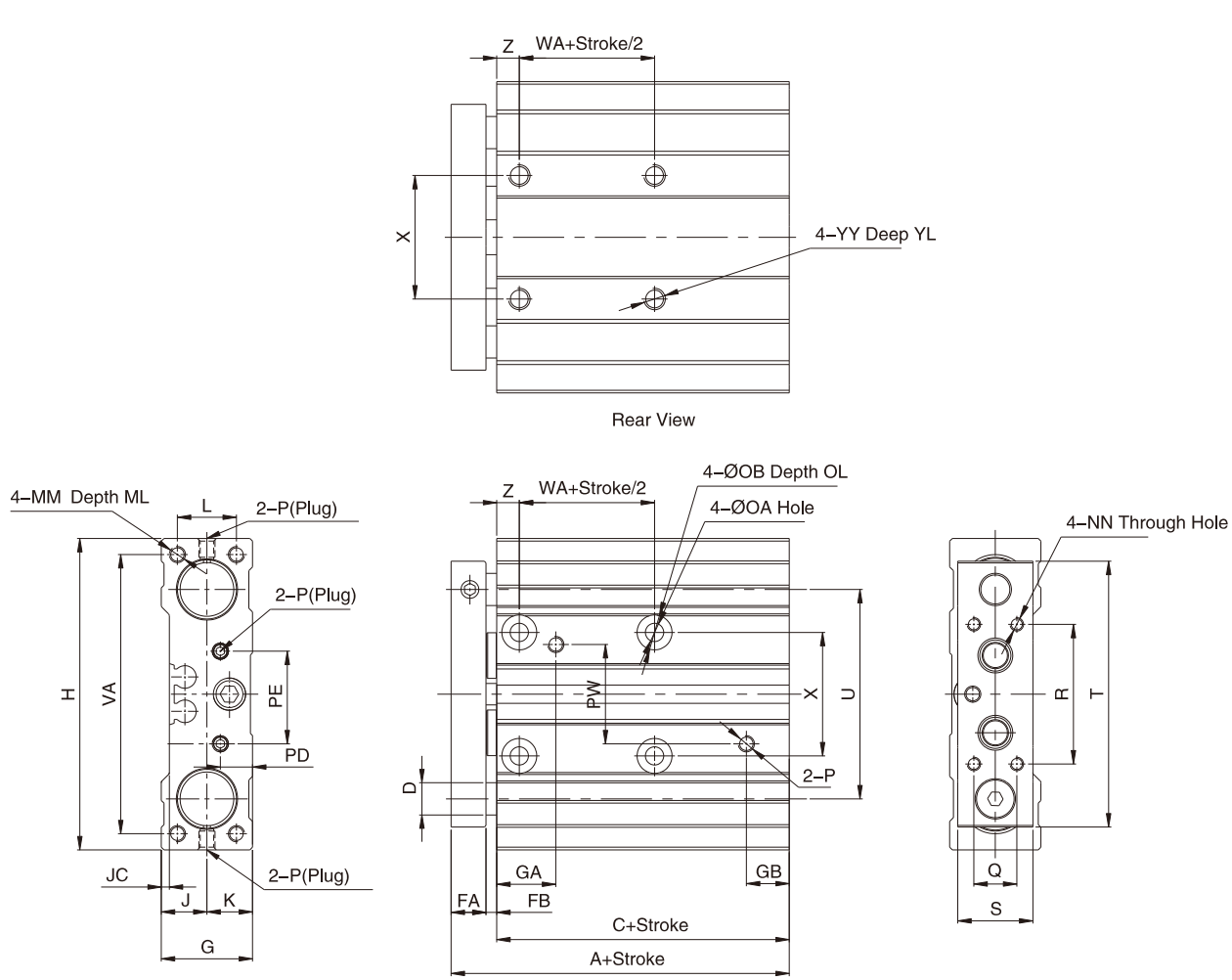
End Plate Non-turning Accuracy



Allowable Energy of Motion



Main Dimension



Bore/Sign	A	C	D	FA	FB	G	GA	GB	H	J	K	JC	L	MM	ML	NN	OA
12	33	24.5	6	6.5	2	17	11	8	58	8.5	8.5	1.5	11	M3X0.5	7.5	M2.5X0.45	3.4
16	33	24.5	6	6.5	2	18	11	7.5	64	9	9	2.5	11	M4X0.7	10	M3X0.5	3.4
Bore/Sign	OB	OL	P	PD	PE	PW	Q	R	S	T	U	VA	WA	X	YY	YL	Z
12	6.5	2.5	M3X0.5	6	17.2	18.5	8	26	14	49.5	39	52	10.2	23	M4X0.7	6	4.2
16	6.5	2	M3X0.5	6.5	17.2	18.5	8	28	14	53	42	57	10.2	24	M4X0.7	6	4.3

EN

Double Shaft Cylinder

EN: Dual-axis double-action type (with magnetic and cushion buffer)

Specifications

Bore(mm)	10	16	20	25	32
Acting type	Double acting				
Working medium	Clean Air(after 40 μ m filtration)				
Working pressure (MPa)	0.1~1.0				
Guaranteed pressure (MPa)	1.5				
Working temperature (°C)	-20~70(No freezing)				
Speed range (mm/s)	30~500				
Cushion type	Rubber cushion				
Stroke tolerance(mm)	+1.0 0				
Adjusting stroke (mm)	-8~0 -5~0				
No-return precision	± 0.4° ± 0.3°				
Port Size	M5 x 0.8 G1/8 ①				

① PT、NPT port size is optional.

How to Order?

Series No	Bore X	Stroke	Magnet No	Thread Type
EN	10	25	S : With magnet	Blank: G
	16	50		P : PT
	20	75		T : NPT
	...	...		
	32			

Order Example:
EN series double shaft cylinder, Bore 32mm, stroke 30mm, with magnet, PT thread. ERP code is: EN32X30-S-P

Products Features

1. Double piston rod design for high anti-bending and anti-torsion strength, ensuring long service life and excellent guiding performance.
2. High non-rotation accuracy and minimal rod end deflection.
3. No additional lubrication required; good guiding performance.
4. Multiple position loading and various mounting options.
5. Magnetic switch slots for easy installation, fixing, and position adjustment.
6. Embedded installation to save space.
7. Simple assembly for easy disassembly and maintenance.

Optional Accessories

Internal Structure

NO.	Part Name	Material
1	Fixing plate	Aluminum alloy
2	Nut	Carbon steel
3	Bumper	POM
4	Adjustable nut	Carbon steel
5	Screw	Carbon steel
6	Piston rod	S45C hard chrome carbon steel
7	C clip	Carbon Steel
8	Wiper seal	NBR
9	Head cover	Aluminum alloy
10	Body	Aluminum alloy
11	O-ring	NBR
12	Anti-bump cushion	TPU(EN10 is POM)
13	Magnet holder	Aluminum alloy
14	Magnet	NdFeB
15	Piston	Aluminum alloy
16	Piston seal	NBR
17	Wear ring	PTFE
18	Rear cover	Aluminum alloy

Main Dimension

EN Φ10

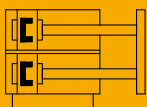
Bore\Sign	10	20	30	40	50	60	70	80	90	100
F	30	30	35	40	45	50	55	60	65	70

EN Φ16~25

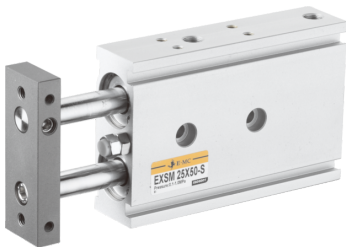
Bore\Sign	A	B	C	D	E	F																G	H	I	K																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
16	68	15	53	20	8	10	20	30	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405	410	415	420	425	430	435	440	445	450	455	460	465	470	475	480	485	490	495	500	505	510	515	520	525	530	535	540	545	550	555	560	565	570	575	580	585	590	595	600	605	610	615	620	625	630	635	640	645	650	655	660	665	670	675	680	685	690	695	700	705	710	715	720	725	730	735	740	745	750	755	760	765	770	775	780	785	790	795	800	805	810	815	820	825	830	835	840	845	850	855	860	865	870	875	880	885	890	895	900	905	910	915	920	925	930	935	940	945	950	955	960	965	970	975	980	985	990	995	1000	1005	1010	1015	1020	1025	1030	1035	1040	1045	1050	1055	1060	1065	1070	1075	1080	1085	1090	1095	1100	1105	1110	1115	1120	1125	1130	1135	1140	1145	1150	1155	1160	1165	1170	1175	1180	1185	1190	1195	1200	1205	1210	1215	1220	1225	1230	1235	1240	1245	1250	1255	1260	1265	1270	1275	1280	1285	1290	1295	1300	1305	1310	1315	1320	1325	1330	1335	1340	1345	1350	1355	1360	1365	1370	1375	1380	1385	1390	1395	1400	1405	1410	1415	1420	1425	1430	1435	1440	1445	1450	1455	1460	1465	1470	1475	1480	1485	1490	1495	1500	1505	1510	1515	1520	1525	1530	1535	1540	1545	1550	1555	1560	1565	1570	1575	1580	1585	1590	1595	1600	1605	1610	1615	1620	1625	1630	1635	1640	1645	1650	1655	1660	1665	1670	1675	1680	1685	1690	1695	1700	1705	1710	1715	1720	1725	1730	1735	1740	1745	1750	1755	1760	1765	1770	1775	1780	1785	1790	1795	1800	1805	1810	1815	1820	1825	1830	1835	1840	1845	1850	1855	1860	1865	1870	1875	1880	1885	1890	1895	1900	1905	1910	1915	1920	1925	1930	1935	1940	1945	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070	2075	2080	2085	2090	2095	2100	2105	2110	2115	2120	2125	2130	2135	2140	2145	2150	2155	2160	2165	2170	2175	2180	2185	2190	2195	2200	2205	2210	2215	2220	2225	2230	2235	2240	2245	2250	2255	2260	2265	2270	2275	2280	2285	2290	2295	2300	2305	2310	2315	2320	2325	2330	2335	2340	2345	2350	2355	2360	2365	2370	2375	2380	2385	2390	2395	2400	2405	2410	2415	2420	2425	2430	2435	2440	2445	2450	2455	2460	2465	2470	2475	2480	2485	2490	2495	2500	2505	2510	2515	2520	2525	2530	2535	2540	2545	2550	2555	2560	2565	2570	2575	2580	2585	2590	2595	2600	2605	2610	2615	2620	2625	2630	2635	2640	2645	2650	2655	2660	2665	2670	2675	2680	2685	2690	2695	2700	2705	2710	2715	2720	2725	2730	2735	2740	2745	2750	2755	2760	2765	2770	2775	2780	2785	2790	2795	2800	2805	2810	2815	2820	2825	2830	2835	2840	2845	2850	2855	2860	2865	2870	2875	2880	2885	2890	2895	2900	2905	2910	2915	2920	2925	2930	2935	2940	2945	2950	2955	2960	2965	2970	2975	2980	2985	2990	2995	3000	3005	3010	3015	3020	3025	3030	3035	3040	3045	3050	3055	3060	3065	3070	3075	3080	3085	3090	3095	3100	3105	3110	3115	3120	3125	3130	3135	3140	3145	3150	3155	3160	3165	3170	3175	3180	3185	3190	3195	3200	3205	3210	3215	3220	3225	3230	3235	3240	3245	3250	3255	3260	3265	3270	3275	3280	3285	3290	3295	3300	3305	3310	3315	3320	3325	3330	3335	3340	3345	3350	3355	3360	3365	3370	3375	3380	3385	3390	3395	3400	3405	3410	3415	3420	3425	3430	3435	3440	3445	3450	3455	3460	3465	3470	3475	3480	3485	3490	3495	3500	3505	3510	3515	3520	3525	3530	3535	3540	3545	3550	3555	3560	3565	3570	3575	3580	3585	3590	3595	3600	3605	3610	3615	3620	3625	3630	3635	3640	3645	3650	3655	3660	3665	3670	3675	3680	3685	3690	3695	3700	3705	3710	3715	3720	3725	3730	3735	3740	3745	3750	3755	3760	3765	3770	3775	3780	3785	3790	3795	3800	3805	3810	3815	3820	3825	3830	3835	3840	3845	3850	3855	3860	3865	3870	3875	3880	3885	3890	3895	3900	3905	3910	3915	3920	3925	3930	3935	3940	3945	3950	3955	3960	3965	3970	3975	3980	3985	3990	3995	4000	4005	4010	4015	4020	4025	4030	4035	4040	4045	4050	4055	4060	4065	4070	4075	4080	4085	4090	4095	4100	4105	4110	4115	4120	4125	4130	4135	4140	4145	4150	4155	4160	4165	4170	4175	4180	4185	4190	4195	4200	4205	4210	4215	4220	4225	4230	4235	4240	4245	4250	4255	4260	4265	4270	4275	4280	4285	4290	4295	4300	4305	4310	4315	4320	4325	4330	4335	4340	4345	4350	4355	4360	4365	4370	4375	4380	4385	4390	4395	4400	4405	4410	4415	4420	4425	4430	4435	4440	4445	4450	4455	4460	4465	4470	4475	4480	4485	4490	4495	4500	4505	4510	4515	4520	4525	4530	4535	4540	4545	4550	4555	4560	4565	4570	4575	4580	4585	4590	4595	4600	4605	4610	4615	4620	4625	4630	4635	4640	4645	4650	4655	4660	4665	4670	4675	4680	4685	4690	4695	4700	4705	4710	4715	4720	4725	4730	4735	4740	4745	4750	4755	4760	4765	4770	4775	4780	4785	4790	4795	4800	4805	4810	4815	4820	4825	4830	4835	4840	4845	4850	4855	4860	4865	4870	4875	4880	4885	4890	4895	4900	4905	4910	4915	4920	4925	4930	4935	4940	4945	4950	4955	4960	4965	4970	4975	4980	4985	4990	4995	5000	5005	5010	5015	5020	5025	5030	5035	5040	5045	5050	5055	5060	5065	5070	5075	5080	5085	5090	5095	5100	5105	5110	5115	5120	5125	5130	5135	5140	5145	5150	5155	5160	5165	5170	5175	5180	5185	5190	5195	5200	5205	5210	521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EXS
Double Shaft Cylinder

EXS: Dual-axis double-action type (with magnet and cushion buffer)



Specifications



Bore(mm)	6	10	16	20	25	32
Acting type	Double acting					
Working Medium	Clean Air(after 40 μ m filtration)					
Working Pressure (MPa)	0.1~1.0					
Guaranteed Pressure (MPa)	1.5					
Working Temperature (°C)	-20~70(No freezing)					
Speed range (mm/s)	30~500					
Cushion type	Rubber cushion					
Stroke tolerance(mm)	$\begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$					
Adjustable stroke(mm)	-5~0					
No-rotating precision	$\pm 0.2^{\circ}$	$\pm 0.15^{\circ}$				$\pm 0.1^{\circ}$
Port Size	M5 × 0.8				G1/8①	

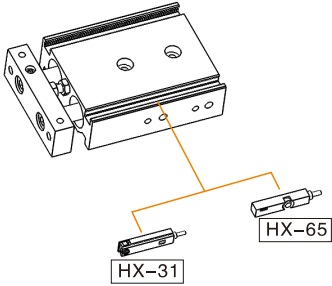
① PT、NPT port size is optional.

How to Order?

Series No	Type No	Bore X	Stroke	Magnet No	Thread Type
EXS	M: Slide bearing	6 10 12 16 20 ...	25 50 75 ...	S : With magnet	Blank: G P : PT T : NPT

Order Example:
EXS series, Slide Bearing type, Bore 6mm, stroke 30mm ERP code is: EXSM6X30-S
Note: The cylinder's bore and stroke, mounting accessories details according to drawings.

Optional Accessories

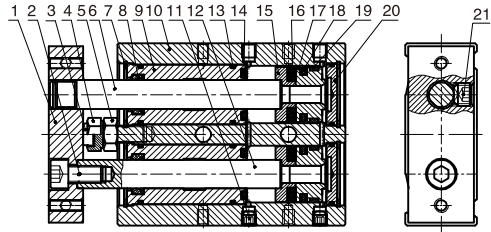


Stroke

Bore (mm)	Standard Stroke (mm)	Max. Stroke (mm)
6	10 20 30 40 50	50
10	10 20 25 30 40 50 60 70 75 80 90 100	100
16~32	10 20 25 30 40 50 60 70 75 80 90 100 125 150 175 200	200

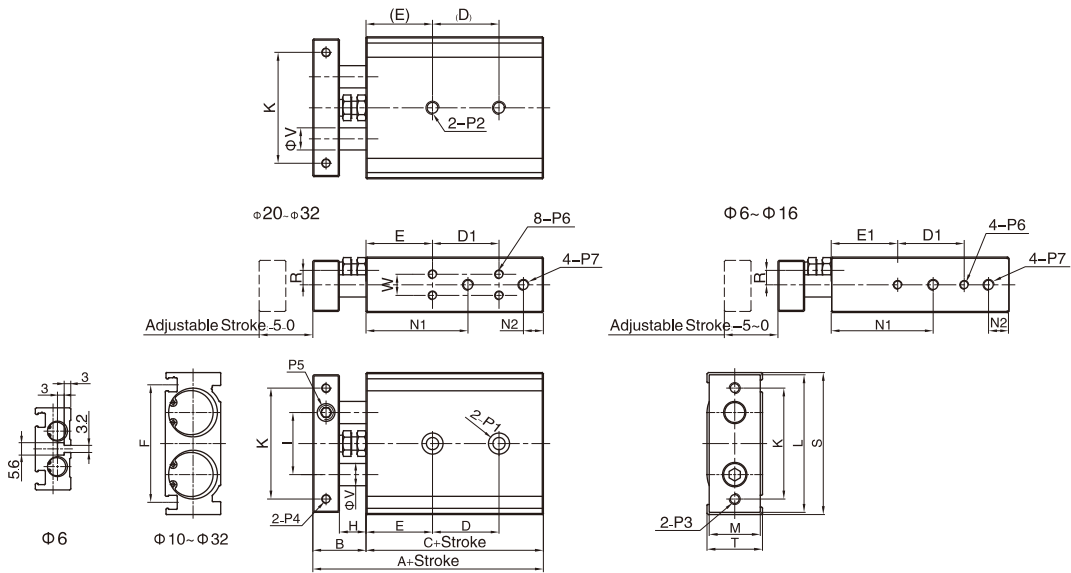
Note:The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder.
e.g. 27mm stroke cylinder has the same dimensions of 30 std. stroke cylinder.

Internal Structure



No.	Part Name	Material
1	Fixing plate	Aluminum alloy
2	Nut	Carbon steel
3	Bumper	POM
4	Adjustable nut	Carbon steel
5	Screw	Carbon steel
6	Piston rod	S45C hard chrome carbon steel
7	C clip	Carbon steel
8	Wiper seal	NBR
9	Head cover	Aluminum alloy
10	Body	Aluminum alloy
11	Hex fix screw	Cu
12	Piston rod	S45C hard chrome carbon steel
13	O-ring	NBR
14	Anti-bump cushion	TPU(EN10 is POM)
15	Magnet holder	Aluminum alloy
16	Magnet	NdFeB
17	Piston	Aluminum alloy
18	Piston seal	NBR
19	Wear ring	PTFE
20	Rear cover	Aluminum alloy
21	Hex fix screw	Cu

Main Dimension

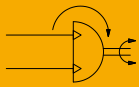


Bore/Sign	A	B	C	D D1								E	E1	F	H	I	K	L	M	N1	N2	R
				10~25	30~50	60~80	90~100	125	150	175	200											
6	58.5	13.5	45	$\begin{smallmatrix} D=10+Stroke/2 \\ D1=13+Stroke \end{smallmatrix}$	30	40	50	60	-	-	-	13	10	25.8	8	16	28	35	14	24.5	6.5	4.5
10	72	17	55	30	40	50	60	-	-	-	-	20	20	36.5	9	20	35	44	15	30	8	3.5
16	79	19	60	25	35	45	55	65	75	145	145	30	30	47.5	9	25	45	56	18	38	8	5
20	94	24	70	30	40	60	60	80	80	100	100	30	-	53	12	28	50	62	23	46	9	6.5
25	96	24	72	30	40	60	60	80	80	100	100	30	-	64	12	35	60	78	28	43	9	9
32	112	30	82	40	50	70	70	90	90	110	110	30	-	76	14	44	75	96	36	53	10	11.5

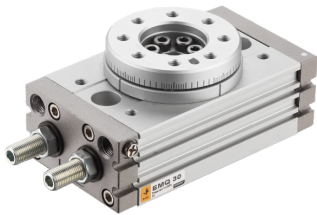
Bore/Sign	S	T	V	W	P1	P2	P3	P4	P5	P6	P7
6	37	16	4	-	φ6.5 Dp:3.3;Thru.hole:φ3.4	-	M3X0.5	M3X0.5	M3X0.5	M3X0.5 Dp:4.5	M5X0.8
10	46	17	6	-	φ6.5 Dp:3.3;Thru.hole:φ3.4	M4X0.7 Dp:7	M4X0.7	M3X0.5	M5X0.8	M3X0.5 Dp:5	M5X0.8
16	58	20	8	-	φ8 Dp:4.4;Thru.hole:φ4.3	M5X0.8 Dp:8	M5X0.8	M4X0.7	M6X1.0	M4X0.7 Dp:5	M5X0.8
20	64	25	10	9.5	φ9.5 Dp:5.3;Thru.hole:φ5.2	M6X1.0 Dp:10	M5X0.8	M4X0.7 Dp:6	M8X1.25	M4X0.7 Dp:5.5	M5X0.8
25	80	30	12	13	φ11 Dp:6.3;Thru.hole:φ6.8	M8X1.25 Dp:12	M6X1.0	M5X0.8 Dp:7.5	M8X1.25	M5X0.8 Dp:7	1/8"
32	98	38	16	20	φ11 Dp:6.3;Thru.hole:φ6.8	M8X1.25 Dp:12	M6X1.0	M5X0.8 Dp:8	M10X1.5	M5X0.8 Dp:7	1/8"

EMQ

Rotary Cylinder



Specifications



Specifications		7	10	20	30	50
Acting type		Double Cylinder,Rack & Pinion Style,Double Acting				
Working medium		Clean Air(40um filtration or better)				
Working pressure range	With angle adjustable screw	0.15~0.7MPa				
	With shock absorber	None	0.15~0.7MPa			
Proof pressure(MPa)		1.5MPa				
Working temperature (℃)		-20~70(No freezing)				
Angle adjustable range		0~190°				
Repeat Accuracy	With angle adjustable screw	0.2°				
	With shock absorber	None	0.05°			
Theoretical Torque(NM)(0.5Mpa)		0.63	1.1	2.2	2.8	5.0
Cushion	With angle adjustable screw	Rubber bumper(Standard)				
	With shock absorber	None	Shock absorber(Optional)			
Port size	Front port	M5x0.8			G1/8①	
	Side port				M5x0.8	
Weight(g)	With angle adjustable screw	270	530	1020	1310	2130
	With shock absorber	None	540	1020	1310	2140

Note: When setting the rotation angle for rotary tables with shock absorbers, following the above table. Failing to follow the guide may result in a decrease in energy absorption capacity.

① PT、NPT port size is optional

Bore Size(mm)	10	20	30	50
Minimum rotation angle that will not allow decrease of energy absorption ability	61°	52°	46°	66°

Products Features

1. Rack and pinion structure for smooth operation.
2. Low backlash for excellent dynamic performance.
3. Dual-cylinder structure to achieve double the output force.
4. Special materials and heat treatment processes for the rack and pinion extend cylinder service life.
5. High machining accuracy of the worktable, with convenient load installation and precise positioning.
6. A through-hole in the center of the worktable allows for piping.
7. Positioning holes on both sides of the cylinder barrel for easy installation and use.
8. Two types of cushioning options: adjustable screw-fixed cushion and hydraulic cushion. The hydraulic cushion has 3 to 5 times the maximum cushioning capacity of the adjustable screw-fixed cushion, providing superior cushioning effect.

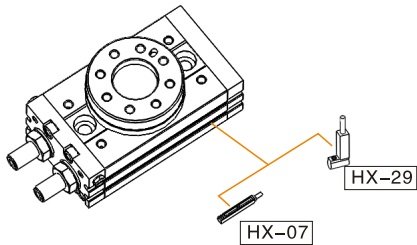
How to Order?

Series No	Specifications	Magnet No	Cushion Type	Thread Type
EMQ	7 10 20 30 50	S: With magnet (Magnet is standard)	A: With adjustment bolt R: With shock absorber (7 series no shock absorber is optional)	Blank: G P : PT T : NPT

Order Example:

EMQ Series Rotary Cylinder, Specifications 30, with adjustment bolt, G Thread, ERP code is: EMQ30-S-A
Note: Specific Bore and Stroke of the cylinder subject to the drawing.

Optional Accessories



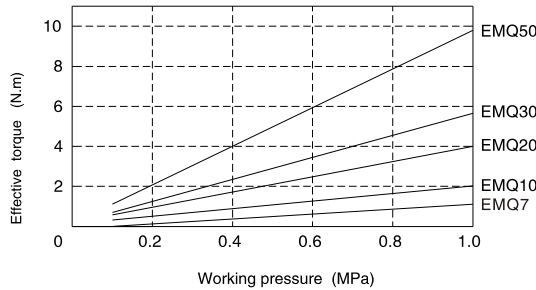
Note:Short stroke please use HX-29 series due to limited space.

Allowable Kinetic Energy and Rotation Time Adjustment Range

Model	Allowable kinetic energy (J)		Rotation time adjustment range for stable operation (s/90°)	
	With adjutment bolt	With shock absorber	With adjutment bolt	With shock absorber
EMQ7	0.006	None	0.2~1.0	None
EMQ10	0.01	0.04	0.2~1.0	0.2~0.7
EMQ20	0.025	0.12	0.2~1.0	0.2~0.7
EMQ30	0.05	0.12	0.2~1.0	0.2~0.7
EMQ50	0.08	0.30	0.2~1.0	0.2~0.7

Note 1. If operated where the kinetic energy exceeds the allowable value, this may cause damage to the internal parts and result in product failure. Please pay special attention to the kinetic energy levels when designing and during operation to avoid exceeding the allowable limit.
2. When the rotation time of the type with an internal absorber is set longer than the time shown in the table above, energy absorption of the shock absorber greatly decreases.

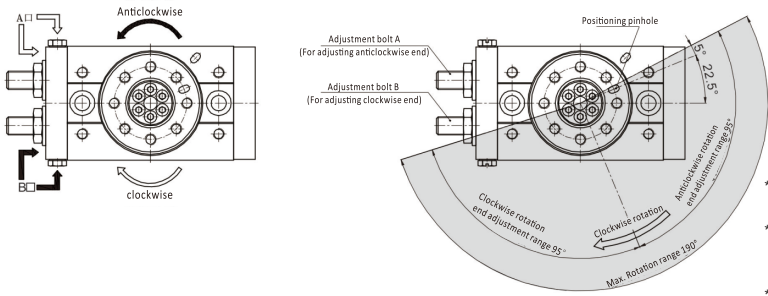
Effective Output Torque



Installation and Use

1. Rotation direction and rotation angle

- 1.1 When pressurized from port A, the shaft rotates clockwise and counter-clockwise when pressurized from port B.
- 1.2 To obtain the desired rotation angle, the rotation ends can be set within the range shown in the diagram by regulating the adjustment bolt.
- 1.3 Rotary table with a shock absorber is available to adjust the rotation angle.

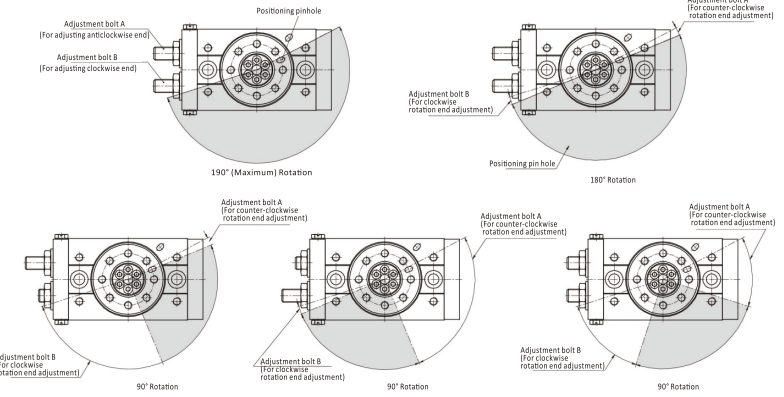


Note:

- * The figure above shows the rotation range of from the positioning pinhole.
- * Position of the pinhole in the figure above shows a counter-clockwise rotation where the rotation angle is set at 180° by equally tightening the A & B adjustment bolts.
- * The adjustment bolt of the shock absorber is factory set to the maximum output. Please adjust inward for first use if necessary.

2. Rotation range example:

- 2.1 Rotation can be set by adjusting the A & B adjuster bolts.
- 2.2 Rotary tables with shock absorbers can be set to various angles.



3. Adjustment angle per rotation (Adjustment bolt or shock absorber)
The adjustment angle of the turntable for each turn is as follows:

Bore size	Adjustment angle per rotation
7	10.2°
10	10.2°
20	7.4°
30	6.5°
50	8.2°

4. The rotation angle has been adjusted to the maximum output at the factory. Please do not extend the rotation angle beyond the maximum factory setting.
5. The movement energy should not exceed the maximum allowable energy, or the inner components can be damaged.
6. The rotary parts do not require lubrication.
7. Minimum operation pressure for a rotary table with a shock absorber is no less than 0.1Mpa.

8. Refer to the table below for tightening torques of the shock absorber setting nut.

Shook absorber size	Max. tightening torque (Nm)
M8X1.0	2.5
M10X1.0	3.5
M14X1.5	11

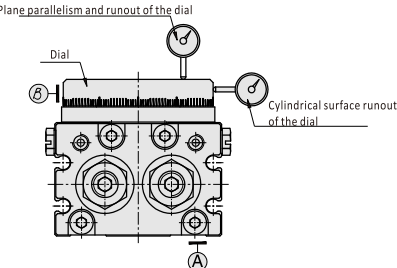
9. Never loosen the bottom screw of the shock absorber.

That may cause oil leakage.

10. Shock absorbers are consumable parts. When a decrease in energy absorption capacity is noticed, it must be replaced.

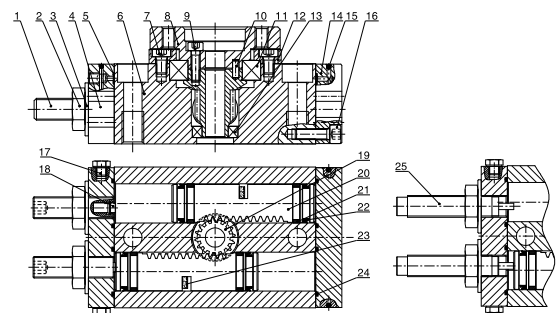
Series	Shook Absorber Type and Ordering code	Thread Type
EMQ10	AC0806-SN	M8X1.0
EMQ20	AC1007-SN	M10X1.0
EMQ30	AC1007-SN	M10X1.0
EMQ50	AC1412-SN	M14X1.5

11. Control the runout and parallelism of the dial according to the requirements of the following table:



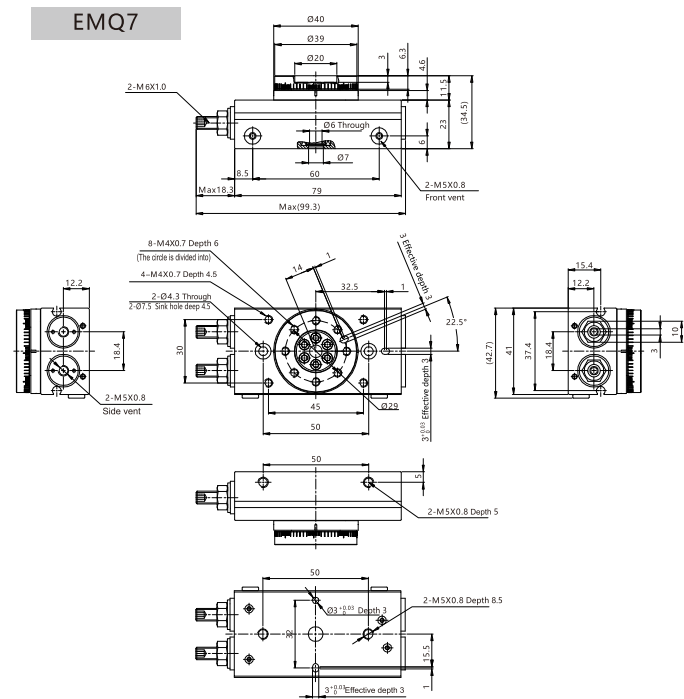
Items	Specific Requirements (mm)	Relative Datum
Plane parallelism of the dial	0.1	A
Plane runout of the dial	0.1	A
Cylindrical surface runout of the dial	0.1	B

Internal Structure

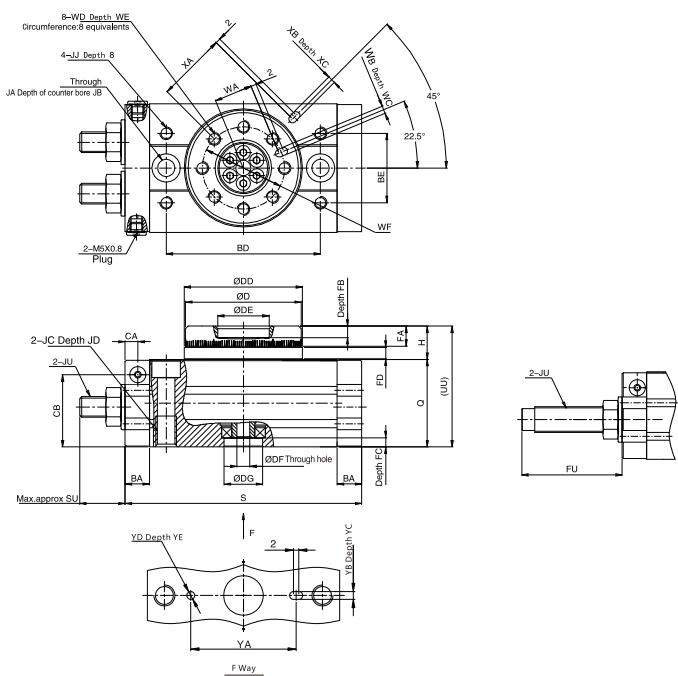


No.	Part Name	Material	No.	Part Name	Material
1	Adjustment screw	Carbon steel	14	Rear cover	Aluminum alloy
2	Hexagon nut	Carbon steel	15	Steel ball	Stainless steel
3	Seal washer	Carbon steel rubber coating	16	Hexagon socket head set screw	Carbon steel
4	Head cover	Aluminum alloy	17	Plug	Carbon steel
5	O-ring	NBR	18	Cushion pad	NBR
6	Barrel	Aluminum alloy	19	Pinion	Alloy steel
7	Hexagon socket head set screw	Carbon steel	20	Rack	Alloy steel
8	Dial	Aluminum alloy	21	Wear ring	PTFE
9	Hexagon socket head set screw	Carbon steel	22	Piston seal	NBR
10	Positioning pin	Stainless steel	23	Magnet	Sintered NdFeB
11	Deep groove ball bearing	Subassembly	24	O-ring	NBR
12	Plate	Aluminum alloy	25	Shock absorber	Subassembly
13	Deep groove ball bearing	Subassembly			

Main Dimension



EMQ10~50



Model	AA	A	AV	AW	AY	BA	BB	BC	BD	BE	CA	CB	D	DD	DE	DF	DG	FA	FB	FC	FD	H	J	JA	JB	JC	FU
10	52.8	50	20	15.5	4	9.5	34.5	28	60	27	5	28	45 ^{+0.062} _{-0.062}	46 ^{+0.062} _{-0.062}	20 ^{+0.052} _{-0.052}	5	15 ^{+0.043} _{-0.043}	7.8	4.5	3.5	4.5	13	6.8	11	6.5	M8X1.25	30.9
20	67.8	65	27.5	16	5	12	47	30	76	34	6.5	30	60 ^{+0.094} _{-0.094}	61 ^{+0.094} _{-0.094}	28 ^{+0.092} _{-0.092}	9	17 ^{+0.043} _{-0.043}	9.8	6.5	3	6.5	17	8.6	14	8.5	M10X1.5	34.8
30	72.4	70	29	18.5	5	12	50	32.5	84	37	7	33.5	65 ^{+0.094} _{-0.094}	67 ^{+0.094} _{-0.094}	32 ^{+0.062} _{-0.062}	10	22 ^{+0.052} _{-0.052}	9.8	5	3.5	6.5	17	8.6	14	8.5	M10X1.5	34.8
50	82.4	80	38	22	6	15.5	63	37.5	100	50	10	37.5	75 ^{+0.074} _{-0.074}	77 ^{+0.074} _{-0.074}	35 ^{+0.062} _{-0.062}	11	26 ^{+0.052} _{-0.052}	11.8	5.5	3.5	7.5	20	10.3	18	10.5	M12X1.75	54.3
Model	JD	JJ	JU	P	Q	S	SD	SE	SF	SU	UU	WA	WB	WC	WD	WE	WF	XA	XB	XC	YA	YB	YC	YD	YE		
10	12	M5X0.8	M8X1	M5X0.8	34	92	9	13	45	17.3	47	15	3 ^{+0.025} _{-0.025}	3.5	M5X0.8	8	32	27	3 ^{+0.03} _{-0.03}	3.5	40	3 ^{+0.03} _{-0.03}	3.5	Ø3 ^{+0.03} _{-0.03}	3.5		
20	15	M6X1	M10X1	M5X0.8	37	117	10	12	59.7	24.8	54	20.5	4 ^{+0.03} _{-0.03}	4.5	M6X1	10	43	36	4 ^{+0.03} _{-0.03}	4.5	50	4 ^{+0.03} _{-0.03}	4.5	Ø4 ^{+0.03} _{-0.03}	4.5		
30	15	M6X1	M10X1	1/8"	40	127	11.5	14	64.7	24.8	57	23	4 ^{+0.03} _{-0.03}	4.5	M6X1	10	48	39	4 ^{+0.03} _{-0.03}	4.5	58	4 ^{+0.03} _{-0.03}	4.5	Ø4 ^{+0.03} _{-0.03}	4.5		
50	18	M8X1.25	M14X1.5	1/8"	46	152	14.5	15	74.7	31.3	66	26.5	5 ^{+0.03} _{-0.03}	5.5	M8X1.25	12	55	45	5 ^{+0.03} _{-0.03}	5.5	68	5 ^{+0.03} _{-0.03}	5.5	Ø5 ^{+0.03} _{-0.03}	5.5		

SHY

Air Gripper

SHYSA: Magnetic, single-acting normally open type



SHY: Magnetic, double-acting type, with its own throttle valve



Specifications

Bore size(mm)			10	16	20	25
Acting type			Double Acting/Single Acting			
Working medium			Clean Air(40 μ m filtration)			
Applicable pressure range	Double acting	Φ 10	0.15~0.7MPa(22~100psi)(1.5~7.0bar)			
		Φ 16~Φ 25	0.1~0.7MPa(15~100psi)(1.0~7.0bar)			
	Single acting	Φ 10	0.3~0.7MPa(45~100psi)(3.0~7.0bar)			
		Φ 16~Φ 25	0.25~0.7MPa(36~100psi)(2.5~7.0bar)			
Working temperature			-20~70℃(No freezing)			
Oil			Not required			
Maximum frequency			180(C.P.M)			
Port size			M3X0.5	M5X0.8		
Weight(g)			42	94	174	303

How to Order?

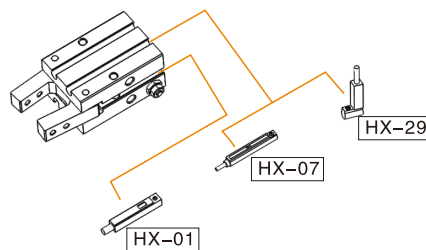
Series	Type No.	Bore	Magnet No.
SHY:Y type gripper	Blank: Basic type SA: Single acting (N.O.)	10 16 20 25	S: With magnet (Magnet is standard)

Order Example:
SHY Series Air Gripper,Bore25,with magnet,ERP code is:SHY25-S

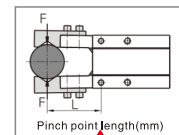
Product Features

1. Single piston structure, large gripping torque.
2. Integrated with variable throttle valve, easy to adjust the gripping jaw opening & closing speed.
3. Reasonable gripping angle, wide range of application.
4. Accurate positioning accuracy, it is more accurate and reliable when gripping workpiece.
5. Multi mounting type, convenient for use in different application.
6. All series with magnet, easy to control.

Optional Accessories



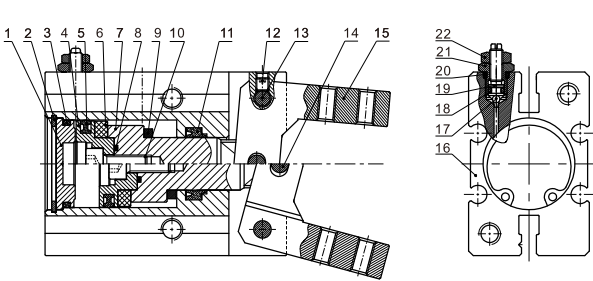
Theoretical Clamping Torque



Acting type	Type	Theoretical clamping moment(N · cm)		Max pinch point length (L)(mm)	Open angle	Closure angle
		Closure clamping torque	Open clamping torque			
Double acting	SHY10	17.6XP	29.4XP	30	30°	~10°
	SHY16	90XP	129XP	40		
	SHY20	152XP	252XP	60		
	SHY25	304XP	473XP	70		
Single acting (N.O.)	SHYSA10	11.8XP	-	30	30°	~10°
	SHYSA16	71.2XP	-	40		
	SHYSA20	122.4XP	-	60		
	SHYSA25	252XP	-	70		

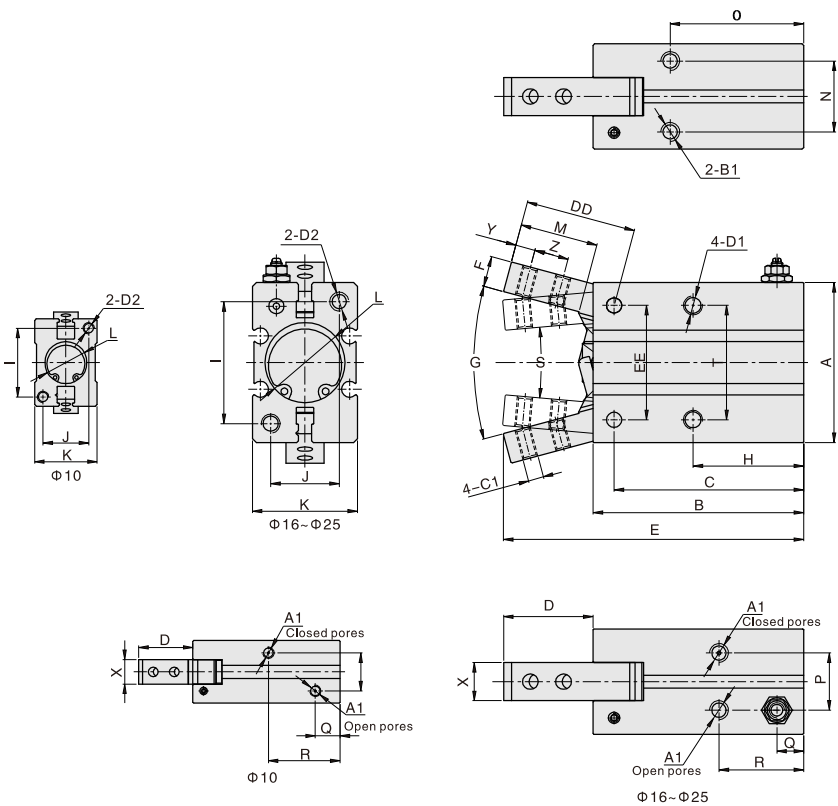
Note: In the above table, "P" represents the actual use of pneumatic pressure, "P" unit: Mpa

Internal Structure



No.	Part Name	Material	No.	Part Name	Material
1	Rear cover	Aluminum alloy	12	Hexagon socket set screw	Carbon steel
2	C type retainer ring	Spring steel	13	Pin	Stainless steel
3	O-ring	NBR	14	Pin	Stainless steel
4	Piston	Aluminum alloy/Stainless steel (Φ10)	15	Claw	Cast steel
5	Piston seal	NBR	16	Barrel	Aluminum alloy
6	Magnet	Plastic	17	Steel ball	Stainless steel
7	Piston rod	Aluminum alloy/Stainless steel (Φ10, Φ16)	18	O-ring	NBR
8	O-ring	NBR	19	Buffer screw	Brass
9	Anti-bump cushion	PTEE	20	O-ring	NBR
10	Hexagon socket cap screw	Carbon steel	21	Buffer fixing screw	Brass
11	Piston rod seal	TPU/NBR(Φ25)	22	Hexagon nut	Carbon steel

Main Dimension

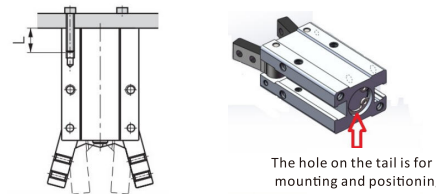


Bore/Sign	A	A1	B			B1	C	C1	D	DD	D1		D2	E	EE			
SHY10	23	M3X0.5	38.6	M3X0.5Depth6			35.8	M2.5X0.45	14.2	17.2	M3X0.5Depth6		M3X0.5Depth6	52.8	14			
SHY16	30.6	M5X0.8	44.6	M4X0.7Depth5.5			39.7	M3X0.5	18.9	23.6	M4X0.7Depth9.5		M4X0.7Depth8	63.5	24			
SHY20	42	M5X0.8	55.2	M5X0.8Depth8			49.7	M4X0.7	23.5	29	M5X0.8Depth11.5		M5X0.8Depth10	78.7	30			
SHY25	52	M5X0.8	60.4	M6X1.0Depth10			54.8	M5X0.8	32.8	38.5	M6X1.0Depth14.5		M6X1.0Depth12	93.2	36			
Bore/Sign	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	X	Y	Z
SHY10	4	30°	23	18	12	16.4	Φ11Depth1.5	12.5	11.4	27	10	6.5	18.8	10°	16	7.4	3	5.7
SHY16	7	30°	24.5	22	15	23.6	Φ17Depth1.5	16.5	16	30	13	6.5	18.3	10°	24	10	4	7
SHY20	8	30°	29	32	18	27.6	Φ21Depth1.5	20.5	18.6	35	15	7	22.2	10°	30	12	5.2	9
SHY25	10	30°	30	40	22	33.6	Φ26Depth1.5	27.5	22	36.5	19.5	7.4	23.5	10°	36	12	8	12

Installation and Use

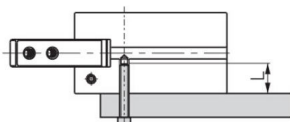
1. Installing a fall prevention device is recommended when applying a lowering clamping force. In the case of a sudden pressure decrease due to emergency stop, these prevention devices can help to avoid personal or equipment injuries.
2. Air grippers are not intended for use under strong external or heavy impact forces.
3. When installing or repairing your air gripper take precautions to safely use your component.
4. Don't reverse the clamping gripper when installing clamping parts.
5. The locking torque of the fastening screw must be within the prescribed torque range shown in the chart below. If the locking torque is not set properly the unit will not perform correctly.

Tail Mounting Type



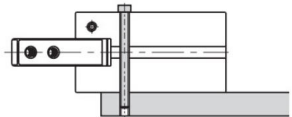
Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth (mm)	Tail Positioning Bore Dia(mm)	Tail positioning Depth(mm)
10	M3X0.5	0.88	6	Φ 11H9	1.5
16	M4X0.7	2.1	8	Φ 17H9	1.5
20	M5X0.8	4.3	10	Φ 21H9	1.5
25	M6X1.0	7.3	12	Φ 26H9	1.5

Front Tapped Hole Mounting



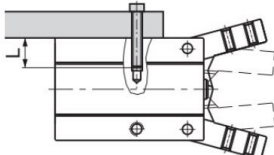
Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth (mm)
10	M3X0.5	0.69	5
16	M4X0.7	2.1	8
20	M5X0.8	4.3	10
25	M6X1.0	7.3	12

Through Hole Mounting



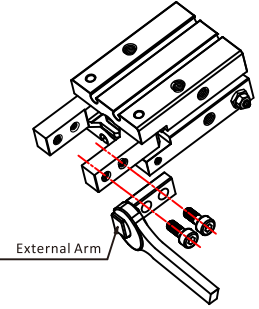
Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth (mm)
10	M2.5X0.45	0.49	5
16	M3X0.5	0.88	8
20	M4X0.7	2.1	10
25	M5X0.8	4.3	12

Side Tapped Hole Mounting



Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth (mm)
10	M3X0.5	0.88	6
16	M4X0.7	1.6	6.5
20	M5X0.8	3.3	8
25	M6X1.0	5.9	10

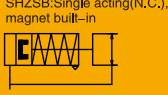
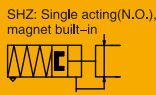
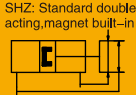
6. Clamping Jaw Installation:
Never clamp the body directly and then lock the screws. The gripping jaw should be held by the spanner and the screw should be locked using a hex wrench.



Bore	Bolt Size	Max.Locking Torque (Nm)
10	M2.5X0.45	0.31
16	M3X0.5	0.59
20	M4X0.7	1.4
25	M5X0.8	2.8

7. When gripping an object, the item must be placed in the centre of the two gripping jaws, and the two gripping jaws should touch the object at the same time.
8. Avoid applying external forces to the gripping jaw. Always leave enough space to adequately grip and place your object. The gripper should be free moving.
9. When gripping an object the item should always be centred. When testing, you must reduce the pressure for low speed running, to guarantee the safety and no impact.
10. Please use the flow control valve to adjust the opening and closing speed of your gripper.
11. Always ensure the gripper path is clear of obstruction.
12. Before removing your air gripper, please make sure all power is disconnected and you've discharged residual compressed air.

SHZ
Air Gripper



Specifications

Bore size(mm)			10	16	20	25	32	40
Acting type			Double Acting/Single Acting					
Working medium			Clean Air(40 μ m filtration)					
Applicable pressure range	Double acting	Φ 10	0.15~0.7MPa(22~100psi)(1.5~7.0bar)					
		Φ 16~Φ 40	0.1~0.7MPa(15~100psi)(1.0~7.0bar)					
	Single acting	Φ 10	0.3~0.7MPa(45~100psi)(3.0~7.0bar)					
		Φ 16~Φ 25	0.25~0.7MPa(36~100psi)(2.5~7.0bar)					
Working temperature			-20~70℃(No freezing)					
Oil			Not required					
Maximum frequency			180(C.P.M)					
Port size			M3X0.5		M5X0.8			
Weight(g)			52	120	236	430	765	1364



How to Order?

Series	Type No.	Bore	Magnet No.
SHZ:	Blank: Basic type	10 25	S : With magnet (Magnet is standard)
Parallel air gripper	SA: Single acting (N.O.)	16 32	
	SB: Single acting (N.C.)	20 40	

Order Example:Parallel air gripper,Bore 20,with magnet,ERP code is:SHZ20-S

Product Features

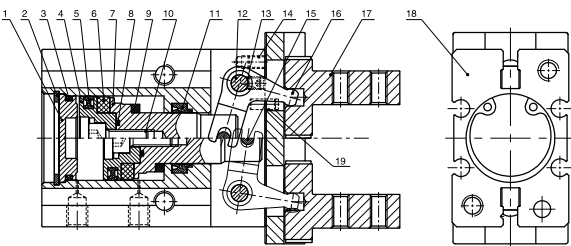
1. Integrated design of linear guide rail,high rigidity,high precision;
2. Positioning pin at the bottom of the linear guide rail, efficiently preventing deviation of guide rail from the body;
3. Deeper attached fixing benchmark centering hole, improving fixing accuracy, and improving consistency after repeated dismounting and fixing
4. According to the actual requirements of the customer , the initial position of the claw can be customized to meet the different needs under different working conditions.

Clamping Force and Stroke

Acting Type	Type	Clamping force effective value of single air finger(N)		Stroke(two sides) (L) (mm)
		Closure clamping torque	Open clamping torque	
Double acting	SHZ10	11	17	4
	SHZ16	34	45	6
	SHZ20	45	68	10
	SHZ25	69	102	14
	SHZ32	160	195	22
Single acting (N.O.)	SHZ40	255	320	30
	SHZSA10	7	-	4
	SHZSA16	27	-	6
	SHZSA20	35	-	10
	SHZSA25	55	-	14
	SHZSA32	133	-	22
	SHZSA40	220	-	30
	SHZSB10	-	13	4
	SHZSB16	-	38	6
	SHZSB20	-	59	10
	SHZSB25	-	87	14
	SHZSB32	-	163	22
	SHZSB40	-	270	30

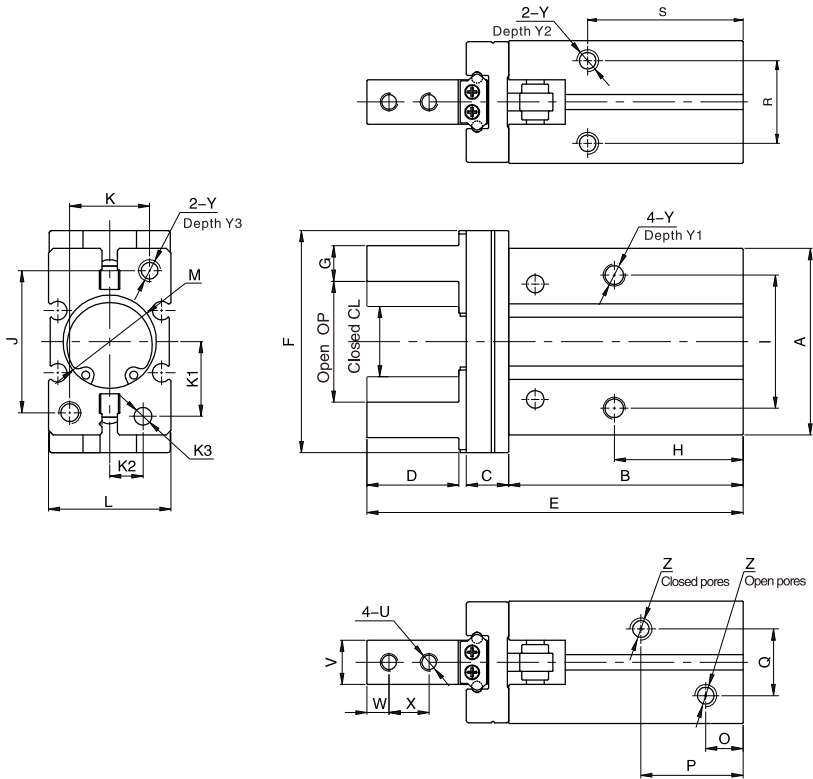
Note: The value of the clamping force in above table is when the working pressure is 0.5Mpa and the L value of the clamping point is 20mm.

Internal Composition



No.	Part Name	Material	No.	Part Name	Material
1	Rear cover	Aluminum alloy	10	Hexagon socket cheese head screws	Carbon Steel
2	C type retainer ring	Spring steel			
3	O-ring	NBR	11	Front cover dust ring	TPU/ NBR(Φ25,Φ32)
4	Piston	Aluminum alloy/ Stainless steels(Φ10)	12	Pins	Stainless Steel
5	Piston Seal	NBR	13	Hexagon socket set screws	Carbon Steel
6	Magnet	Synthetic resin	14	Hexagon socket cheese head screws	Carbon Steel
7	Piston rod	Aluminum alloy/ Stainless steels(Φ10)	15	Pins	Stainless Steel
8	O-Ring	NBR	16	Crank rods	Alloy Steel
9	Bumper	PTEE	17	Claw assembly	Components
			18	Cylinder	Aluminum
			19	Pins	Stainless steel

Main Dimension



Bore/Sign	A	B	C	D	E	F	G	H	I	J	K	L	M	O	P	Q
SHZ10	23	37.6	6	12.3	57	29	4.8 ^{+0.05} _{-0.05}	23	16	18	12	16.4	11 ^{+0.05} _{-0.05} Depth2	7	18.8	10
SHZ16	30.6	42.5	7.5	15.5	67.3	38	5.8 ^{+0.05} _{-0.05}	24.5	24	22	15	23.6	17 ^{+0.05} _{-0.05} Depth2	7.1	18.5	13
SHZ20	42	52.8	9.5	20.7	84.7	50	8.8 ^{+0.05} _{-0.05}	29	30	32	18	27.6	21 ^{+0.05} _{-0.05} Depth3	8.4	23	15
SHZ25	52	63.6	11	25.5	102.7	63	10.8 ^{+0.05} _{-0.05}	30	36	40	22	33.6	26 ^{+0.05} _{-0.05} Depth3.5	9.5	23.5	19.5
SHZ32	60	67	12	29.7	113	106	12.8 ^{+0.05} _{-0.05}	40	46	46	26	40	34 ^{+0.05} _{-0.05} Depth2.5	9.5	31	24
SHZ40	72	83	15	36	139	132	14.8 ^{+0.05} _{-0.05}	49	56	56	32	48	42 ^{+0.05} _{-0.05} Depth2.5	10.5	38	28
Bore/Sign	K1	K2	K3	R	S	U	W	V	X	Y	Y1	Y2	Y3	Z	OP	CL
SHZ10	7.6	5.2	2 ^{+0.05} _{-0.05} Depth3	11.4	27	M2.5X0.45	3	5.8 ^{+0.05} _{-0.05}	5.7	M3X0.5	6	6	6	M3X0.5	14.8 ^{+0.05} _{-0.05}	11.4 ^{+0.05} _{-0.05}
SHZ16	11	6.5	3 ^{+0.05} _{-0.05} Depth3	16	30	M3X0.5	4	8.8 ^{+0.05} _{-0.05}	7	M4X0.7	9.5	5.5	8	M5X0.8	20.8 ^{+0.05} _{-0.05}	14.8 ^{+0.05} _{-0.05}
SHZ20	16.8	7.5	4 ^{+0.05} _{-0.05} Depth4	18.6	35	M4X0.7	5	10.8 ^{+0.05} _{-0.05}	9	M5X0.8	11.5	8	10	M5X0.8	26 ^{+0.05} _{-0.05}	16.2 ^{+0.05} _{-0.05}
SHZ25	21.8	10	4 ^{+0.05} _{-0.05} Depth4	22	36.5	M5X0.8	6	12.8 ^{+0.05} _{-0.05}	12	M6X1.0	14.5	10	12	M5X0.8	33.5 ^{+0.05} _{-0.05}	19.2 ^{+0.05} _{-0.05}
SHZ32	23	12	5 ^{+0.05} _{-0.05} Depth5	26	48	M6X1.0	7	15.8 ^{+0.05} _{-0.05}	14	M6X1.0	10	10	12	M5X0.8	48 ^{+0.05} _{-0.05}	26.1
SHZ40	29	14	5 ^{+0.05} _{-0.05} Depth5	32	58	M8X1.25	9	18.8 ^{+0.05} _{-0.05}	17	M8X1.25	12	12	16	M5X0.8	60 ^{+0.05} _{-0.05}	30.1

Product Selection

Please select the Air Gripper as below steps

① Confirm effective gripping force

② Confirm gripping point

③ Confirm the external force applied to the fingers

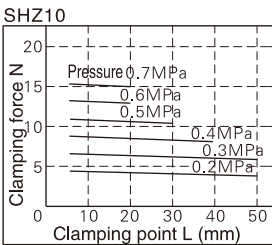
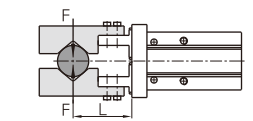
1. Selection of gripping force: When clamping the workpiece as below photo and the impact is generated in the normal handling condition, the clamping force is 10~20 times more than the mass of the clamped object when the safety factor a = 4.

	When gripping the workpiece as shown on the left		μ=0.2	μ=0.1
	F: Clamping force (N) μ : Friction coefficient between fittings and workpiece m: Mass of workpiece g: Gravitational acceleration (=9.8m/s)	The condition that the workpiece does not fall is: $2\mu F > mg$, $F > \frac{mg}{2\mu}$ Safety factor of a, $F = \frac{mg}{2\mu} \times a$	$F = \frac{mg}{2 \times 0.2} \times 4 = 10 \times mg$	$F = \frac{mg}{2 \times 0.1} \times 4 = 20 \times mg$
			10 times the mass of the clamped object	20 times the mass of the clamped object
			Note: When the coefficient of friction > 0.2, please select the clamping force 10~20 times of the mass of the object for the sake of safety; for huge acceleration and impact, it is necessary to select a bigger safety factor.	

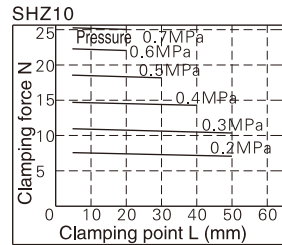
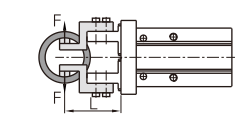
Product Selection

1.1 The actual gripping force must falls within the range of the effective gripping force of the Air Gripper as in the table below.

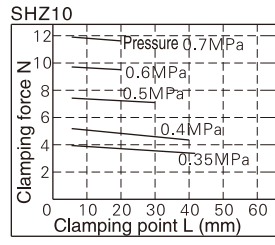
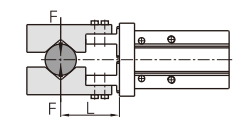
Double acting Closed Gripping Force



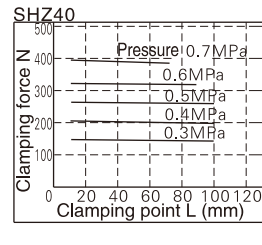
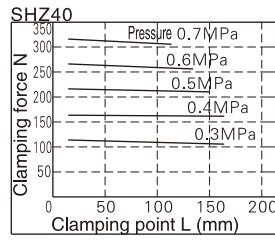
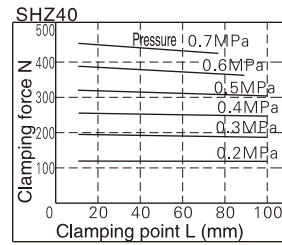
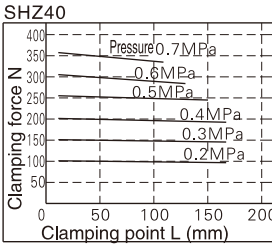
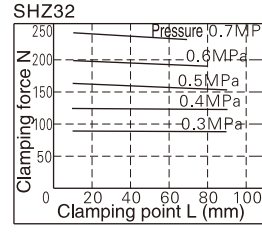
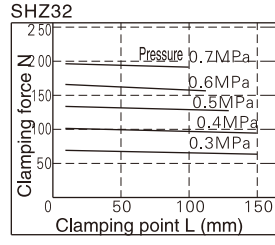
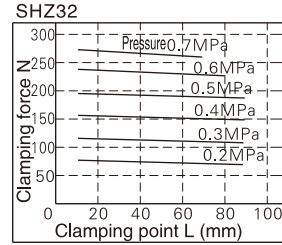
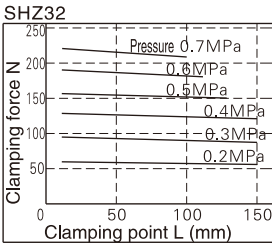
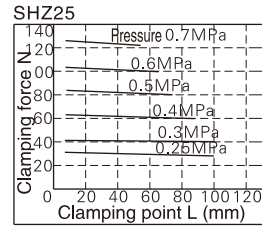
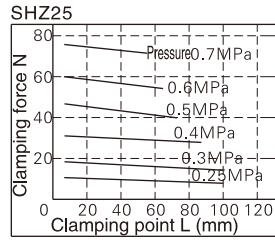
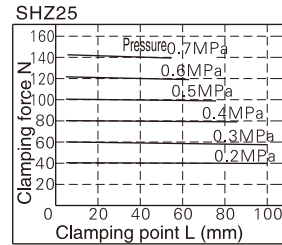
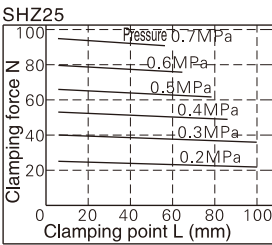
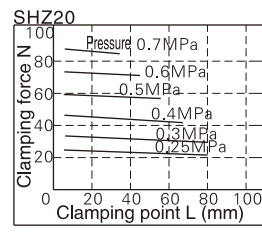
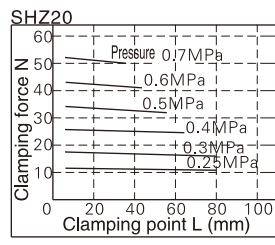
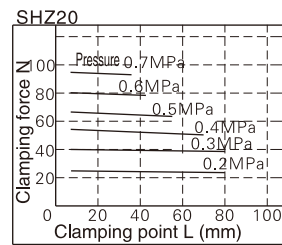
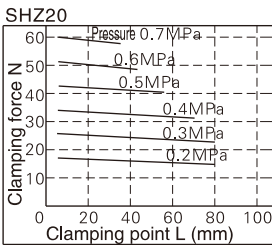
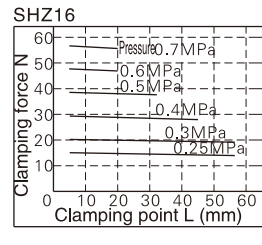
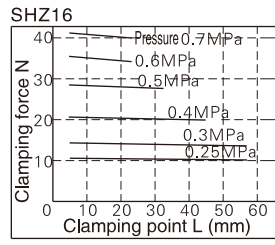
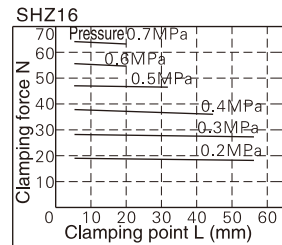
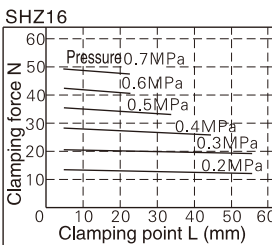
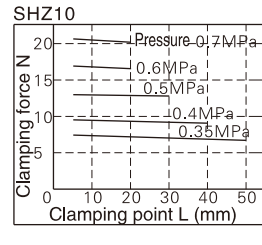
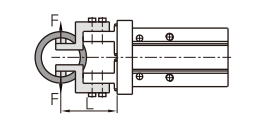
Double Acting Opened Gripping Force



Single acting N.O. gripping force

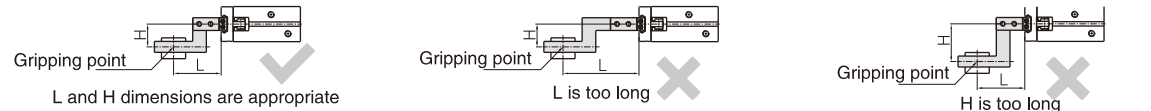


Single acting N.C.gripping force

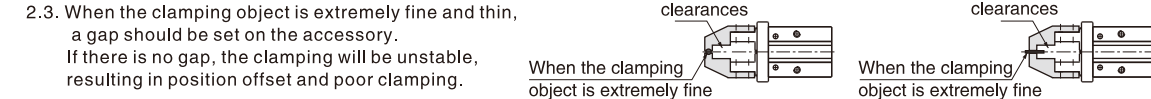


Product Selection

2. Selection of gripping point
2.1. Select a gripping point within the range as the table below. If exceeding the limit, the fingers will be subjected to excessive torque loads, which will shorten the life of the air gripper.



2.2 Within the range allowed of the gripping point, try to design the accessories to be as short and light as possible. When the accessories are long and heavy, the inertia force when the fingers are switched on and off becomes larger, which reduces the effectiveness of the gripper and affects its service life.



2.3. When the clamping object is extremely fine and thin, a gap should be set on the accessory.

	Bore	Vertical load Fv (N)	Maximum torque (Nm)			Calculation of permissible external forces when moment loads are applied	
SHZ		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		
40		490	4.5	4.5	9		

Note: The values of load and moment in the table indicate static values.

Permissible load (N)

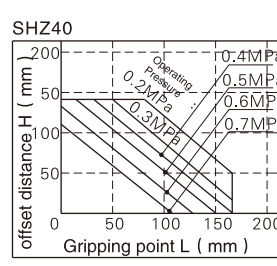
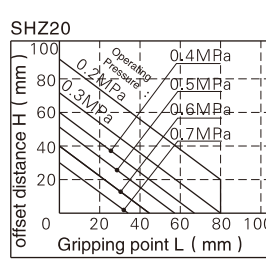
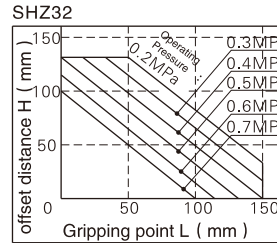
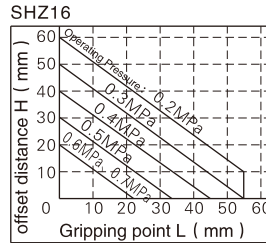
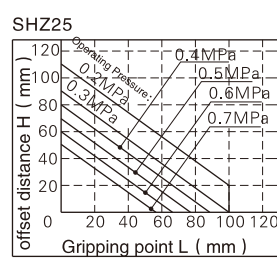
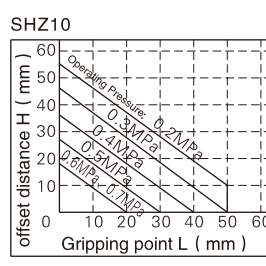
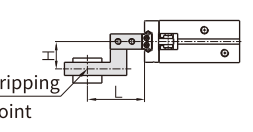
$$= \frac{M_{\text{Maximum permissible torque}} (N.M)}{L \times 10^{-3} \frac{\text{unit conversion constant}}{\text{unit}}}$$

The size of the external force acting on the static load that gives the pitching moment at the point L=30mm on the guiderail of SHZ16 is: f=10N.

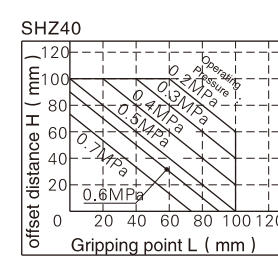
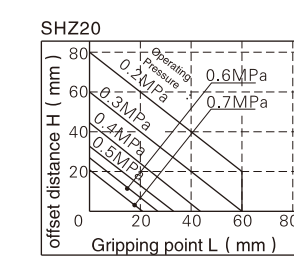
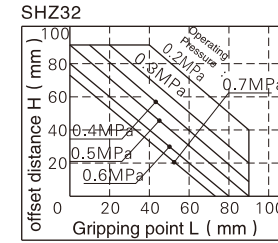
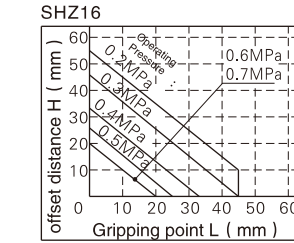
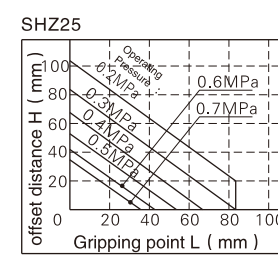
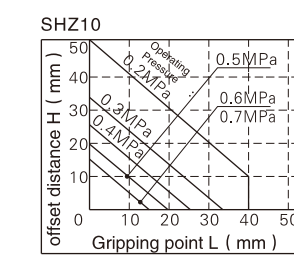
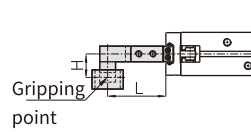
Permissible load (N) = $\frac{0.68}{30 \times 10^{-3}}$ =22.7 (N)

The actual load f=10 (N)<22.7 (N) meets the usage requirements.

Range of closed gripping points



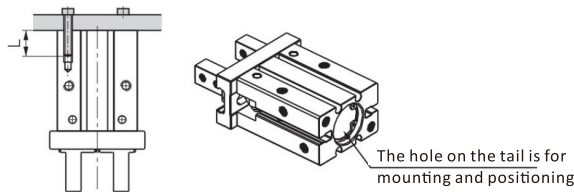
Range of opened gripping points



Installation and Use

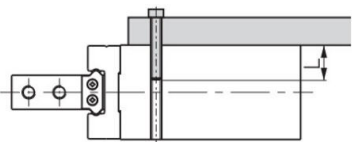
- 1.Installing a fall prevention device is recommended when applying a lowering clamping force. In the case of a sudden pressure decrease due to emergency stop, these prevention devices can help to avoid personal or equipment injuries.
- 2.Don't use air gripper upon strong external force and impact force. Air grippers are not intended for use under external or impact forces.
- 3.When installing or repairing your air gripper take precautions to safely use your component.
- 4.Please contact with us when using the single acting type gripper for specific spring action force information.
- 5.Don't reverse the clamping gripper when installing clamping parts.
- 6.The locking torque of the fastening screw must be within the prescribed torque range shown in the chart below. If the locking torque is not set properly the unit will not perform correctly.

Tail Mounting Type



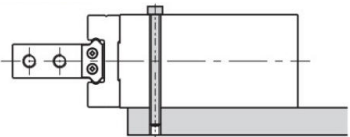
Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth (mm)	Tail Positioning Bore Dia.(mm)	Tail positioning Depth.(mm)
10	M3X0.5	0.88	6	$\phi 11^{+0.05}_0$	2
16	M4X0.7	2.1	8	$\phi 17^{+0.05}_0$	2
20	M5X0.8	4.3	10	$\phi 21^{+0.05}_0$	3
25	M6X1.0	7.3	12	$\phi 26^{+0.05}_0$	3.5
32	M6X1.0	7.9	12	$\phi 34^{+0.05}_0$	2.5
40	M8X1.25	17.7	16	$\phi 42^{+0.05}_0$	2.5

Front Tapped Hole Mounting



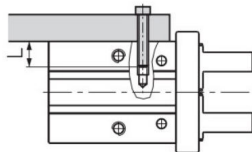
Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth (mm)
10	M3X0.5	0.69	5
16	M4X0.7	2.1	8
20	M5X0.8	4.3	10
25	M6X1.0	7.3	12
32	M6X1.0	7.9	10
40	M8X1.25	17.7	12

Through Hole Mounting



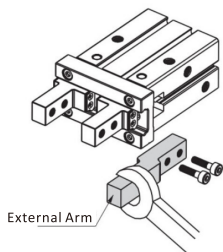
Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth (mm)
10	M2.5X0.45	0.49	5
16	M3X0.5	0.88	8
20	M4X0.7	2.1	10
25	M5X0.8	4.3	12
32	M5X0.8	4.3	13
40	M6X1.0	7.3	16

Side Tapped Hole Mounting



Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth (mm)
10	M3X0.5	0.9	6
16	M4X0.7	1.6	4.5
20	M5X0.8	3.3	8
25	M6X1.0	5.9	10
32	M6X1.0	5.9	10
40	M8X1.25	13.7	12

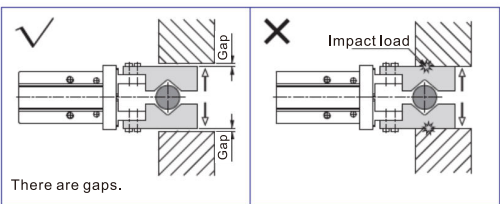
- 7. Clamping Jaw Installation:
Never clamp the body directly and then lock the screws.
The gripping jaw should be held by the spanner and the screw should be locked using a hex wrench.



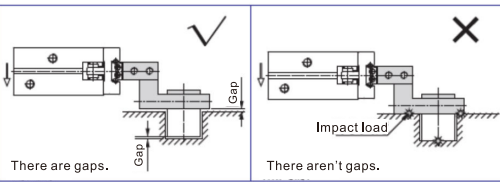
Bore	Bolt Size	Max.Locking Torque (Nm)
10	M2.5X0.45	0.31
16	M3X0.5	0.59
20	M4X0.7	1.4
25	M5X0.8	2.8
32	M6X1.0	4.9
40	M8X1.25	11.8

- 8. Avoid applying external forces to the gripping jaw.

8.1 The air gripper end of stroke in open status.

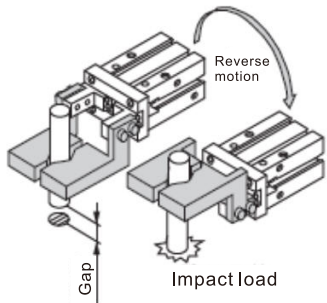


8.2 The air gripper end of stroke in moving status.

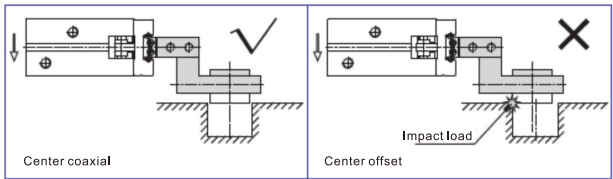


Installation and Use

8.3 When reversing your loaded air gripper make sure the object being gripped is centred.



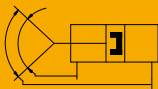
- 9. When ripping an object the item should always be centred. When testing, you must reduce the pressure for low speed running, to guarantee the safety and no impact.



- 10. Please use the flow control valve to adjust the opening and closing speed of your gripper.
- 11. Always ensure the gripper path is clear of obstruction.
- 12. Before removing your air gripper, please make sure all power is disconnected and you've discharged residual compressed air.

SHR
Air gripper

SHR: Standard double acting,magnet built-in



Specifications

Bore size(mm)	10	16	20	25
Action type	Double Acting			
Working medium	Clean Air(40 μ m filtration)			
Operating pressure	0.15~0.7MPa(22~100psi)(1.5~7.0bar)			
Ambient and fluid temperature(°C)	-20~70(No freezing)			
Lubrication	Cylinder: Not required Gripper: Fingers: grease required			
Theoretical gripping force (N.m)①	0.16	0.55	1.10	2.30
Max. operating frequency	60(C.P.M)			
Opening/Closing angle (°)	Open:180±2, Close:-2~5			
Repeatability (mm)	±0.2			
Cushion type	Rubber cushion			
Port size	M5X0.8			
Weight(g)	67	142	312	552

① The indicated gripping forces were measured at room temperature at an operating pressure of 0.5Mpa

How to Order?

Series	Bore	Magnet No.
SHR:180° Open/Close Style Air gripper	10 16 20 25	S : With magnet (Magnet is standard)

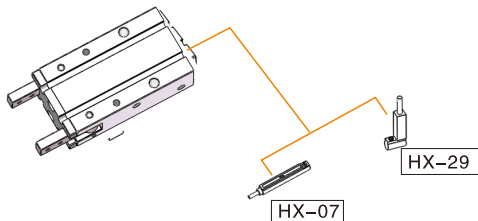
Order Example:

SHR Series 180°Open/Close Style Air gripper,
Bore25,with magnet,ERP code is:SHR25-S

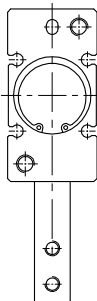
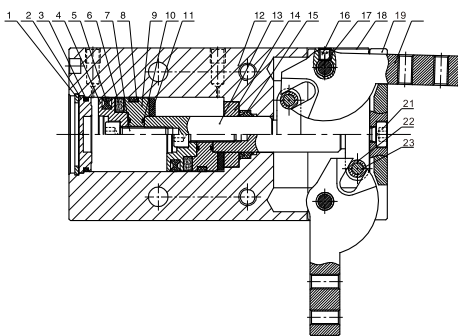
Product Features

1. Unique design for the opening and closing, effectively preventing foreign objects from entering
2. Special shutter used between fingers and body, reducing wearing and extending lifetime
3. 180° opening and closing type, simplify gripping and releasing, avoid workpiece motion space, wider applications
4. Built-in sensor switch groove, easy for mounting
5. Multi mounting types, convenient for using under different conditions
6. All sizes are built with magnet, easy for controlling

Optional Acce

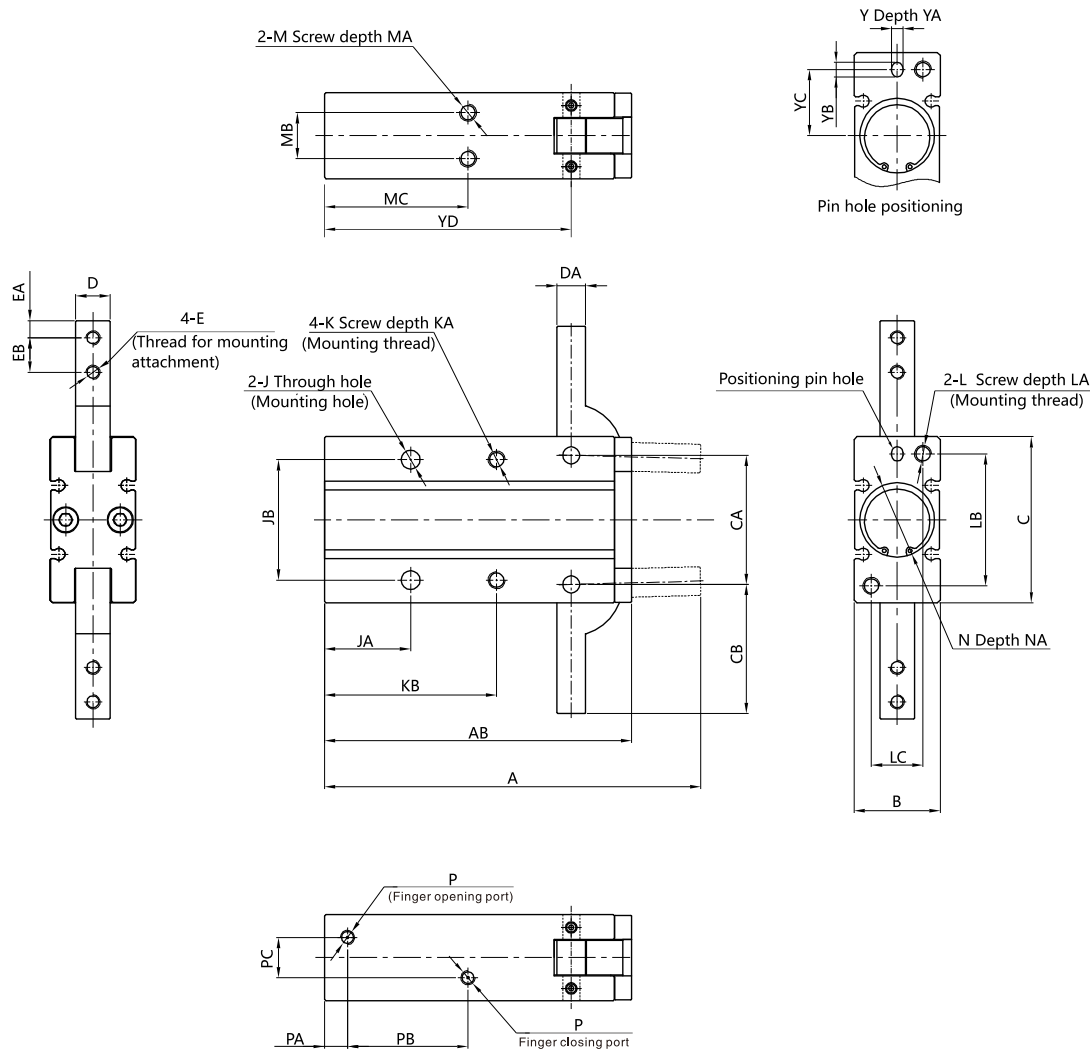


Internal Structure



No.	Part Name	Material	No.	Part Name	Material
1	Type C retaining ring	Spring steel	13	Joint	Stainless steel
2	Rear cover	Aluminum alloy	14	Dust baffle	Brass
3	O-ring	NBR	15	Piston rod seal	NBR
4	Piston	Aluminum alloy	16	Hexagon socket set screw	Carbon steel
5	Piston seal	NBR	17	Pin	Stainless steel
6	Rutie Boron	Rutie Boron	18	Blade	Stainless steel (φ16, φ20, φ25)
7	Hexagon socket cap screw	Comment 1: φ16, φ20, φ25 φ10 Cross recessed countersunk head screws	19	Cover plate	Aluminum alloy
8	Wear ring	PTFE	20	Gripper	Stainless steel
9	Magnet	Aluminum alloy	21	Hexagon socket cap screw	Carbon steel
10	O-ring	NBR (φ16, φ20, φ25) φ10φ2	22	Pin sleeve	Stainless steel (φ20, φ25) φ10, φ16φ2
11	Anti-bump cushion	TPU (φ10, φ16, φ20) NBR (φ25)	23	Pin	Stainless steel
12	Body	Aluminum alloy			

Main Dimension

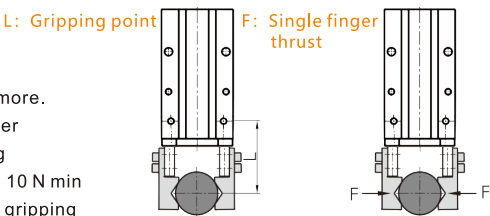


Bore/Sign	A	AB	B	C	CA	CB	D	DA	E	EA	EB	J	JA	JB	K	KA	KB	L	LA	LB	LC
SHR10	71	58	15	30	22	23.5	6	4	M3X0.5	3	6	Ø3.4	18	24	M3X0.5	6	35	M3X0.5	6	24	9
SHR16	84	69	20	38	28	28.5	8	5	M3X0.5	4	7	Ø4.5	20	30	M4X0.7	8	41	M4X0.7	8	30	12
SHR20	106	86	26	48	36	37	10	8	M4X0.7	5	9	Ø5.5	25	36	M5X0.8	10	50	M5X0.8	10	38	16
SHR25	131	107	30	58	45	45	12	10	M5X0.8	6	12	Ø6.6	30	42	M6X1.0	12	60	M6X1.0	12	46	18
Bore/Sign	M	MA	MB	MC	N	NA	P	PA	PB	PC	Y	YA	YB	YC	YD						
SHR10	M3X0.5	4	9	30	Ø11 ^{+0.05} ₀	1.7	M5X0.8	7	23	3	3 ^{+0.03} ₀	3	4	9	47.5						
SHR16	M4X0.7	5	12	33	Ø17 ^{+0.05} ₀	2	M5X0.8	7	25	8	3 ^{+0.03} ₀	3	4	15	55.5						
SHR20	M5X0.8	8	14	42	Ø21 ^{+0.05} ₀	2	M5X0.8	8	32	12	4 ^{+0.03} ₀	4	5	19	69						
SHR25	M6X1.0	10	16	50	Ø26 ^{+0.05} ₀	2	M5X0.8	8	42	14	4 ^{+0.03} ₀	4	5	23	86						

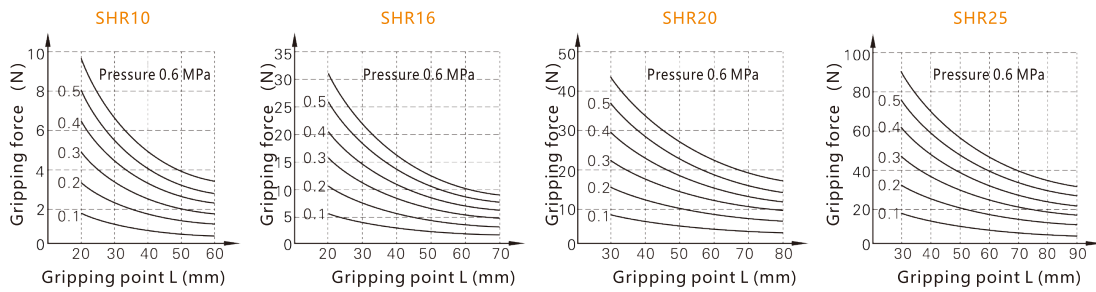
How to select product

1、Confirmation of effective gripping force

- 1.1 Although the coefficient of friction between the attachments and the workpiece differ, select a model that can provide a gripping force of 10 to 20 times the workpiece mass, or more.
- 1.2 If high acceleration, deceleration or impact forces are encountered during motion, a further margin of safety should be considered.Example) givenworkpiece mass: 0.05kgs, gripping point L: 30mm, the pressure:5kgf/cm2 Required gripping force = 0.05 kg x 20 x 9.8 m/s2 = 10 N min Model selection: HFR16 is recommended. The gripping force is 17N, therefore satisfies a gripping force setting value of 20 times or more
- 1.3 The effective gripping force shown in the graphs to the right is expressed as F, when both fingers and attachments are in full contact with the workpiece.

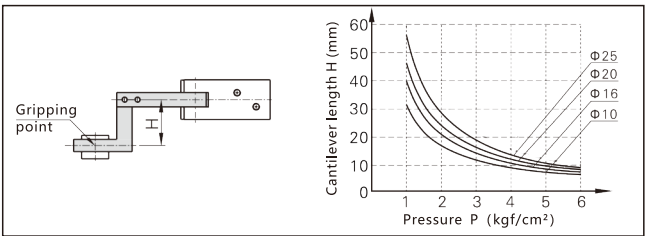


2. Connection between gripping force and gripping point distance



3. The selection of the gripping point

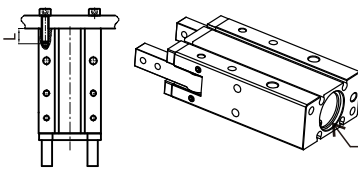
- 3.1 Workpiece should be held at a point within the range of overhanging distance (H) for a given pressure indicated in the tables below. When the workpiece is held at a point outside of the recommended range for a given pressure, it may cause adverse effect on the product life.
- 3.2 Within the allowable range of gripping point, the fixture shall be shore and light; when it is long and heavy, the inertia force when finger open and close, it will influence the performance and lifetime of the fingers at the same time.



Installation and application

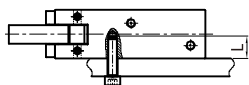
- 1. Due to the abrupt changes, the pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
- 2. Don't use the air gripper under strong external 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 Mounting Type



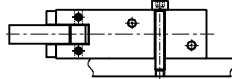
Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth L (mm)	Tail Positioning Bore Dia.(mm)	Tail positioning Depth.(mm)
10	M3X0.5	1	6	φ 11	1.5
16	M4X0.7	2	8	φ 17	2
20	M5X0.8	4.5	10	φ 21	2
25	M6X1.0	7	12	φ 26	2

Mounting by front tapped hole



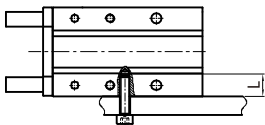
Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth L (mm)
10	M3X0.5	0.9	6
16	M4X0.7	1.6	8
20	M5X0.8	3.3	10
25	M6X1.0	5.9	12

Mounting by front through hole



Bore	Bolt Size	Max.Locking Torque (Nm)
10	M3X0.5	1
16	M4X0.7	2
20	M5X0.8	4.5
25	M6X1.0	7

Mounting by side tapped hole

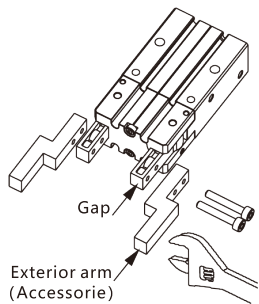


Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth L (mm)
10	M3X0.5	0.6	4
16	M4X0.7	1.5	5
20	M5X0.8	3.5	8
25	M6X1.0	6	10

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. Please refer to below chart for the locking torque.

Bore	Bolt Size	Max.Locking Torque (Nm)
10	M3X0.5	0.6
16	M3X0.5	0.6
20	M4X0.7	0.8
25	M5X0.8	1.5



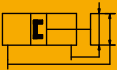
- 7. When gripping, the workpiece must be located in the center line between fingers, and the two fingers shall touch the workpiece at the same time, otherwise they could easily get broken.
- 8. Confirm that there is no additional external forces exerted on the fingers. Transverse load acts on the fingers, which will cause impact load, leading 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 workpieces inserted, the center line should be coaxial, no offset, in case there are additional external force generated on the jaw. When testing, it is specially required that the manual operation should be reduced and 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 cannot enter the movement path of air gripper and articles cannot 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.



SHL

Wide Type Parallel Style Air Gripper

SHL: Standard double acting type,magnet built-in



Specification

Bore Size(mm)	16	20	25	32
Acting Type	Double acting			
Fluid	Air(to be filtered by 40 μm or better)			
Operating pressure	0.15~0.7MPa(22~100psi)(1.5~7bar)			
Temperature°C	-20~70(No freezing)			
Lubrication	Cylinder:No necessary			
Max.frequency	40 cycle/minute			20 cycle/minute
Gripping force(N) ①	45	74	131	228
Proof pressure	1.2MPa(175psi)			
Repeatability(mm)	± 0.1			
Cushion type	Bumper			
Port Size	M5X0.8			G1/8②

- ① Gripping point distance is 40mm(φ16~φ25) or 80mm(φ32) at 0.5 MPa
② G、PT、NPT thread Optional

Product feature

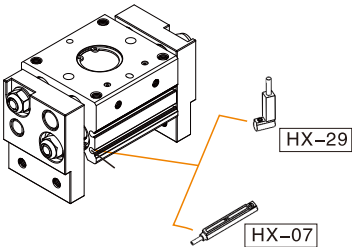
- 1.The gripper opening or closing can be precisely synchronized with the rack & pinion mechanism.
2. Two round and two square Slots on the barrel, Multiple magnet switch are available.
- 3.Multiple bore size and stroke are available.
- 4.Double pistons design to increase the clamping force.
- 5.Multiple options for installing and fixing .
- 6.Convenience to mount workpiece.
- 7.Design for large workpiece.
- 8.Magnet is included in the standard configuration.

How to order?

Series	Bore	X	Stroke	—	Magnet No	□ (Bore32)
SHL: Wide air gripper (Double acting)	16 20 25 32		Listed below		S:With magnet (Magnet is standard)	Blank: G P: PT T: NPT

Order Example:
SHL Series air gripper,Bore 25mm,Stroke 60mm,With magnet,
ERP code is:SHL25X60-S

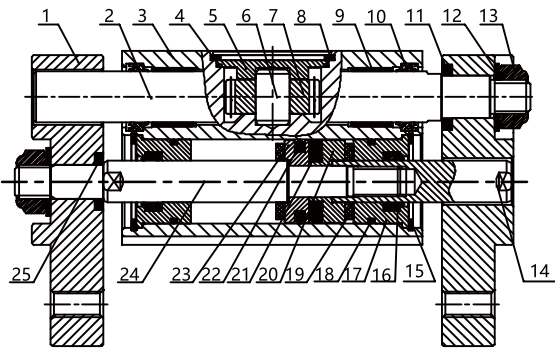
Accessories



Stroke

Bore(mm)	Standard Stroke(mm)					Max.Stroke(mm)
16	30	40	60	80		80
20	40	60	80	100		100
25	40	60	80	100		100
32	60	80	100	150		150

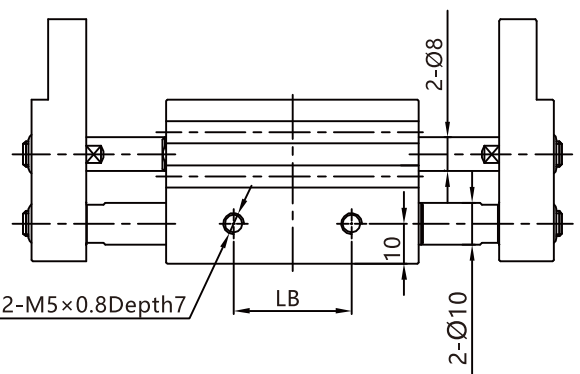
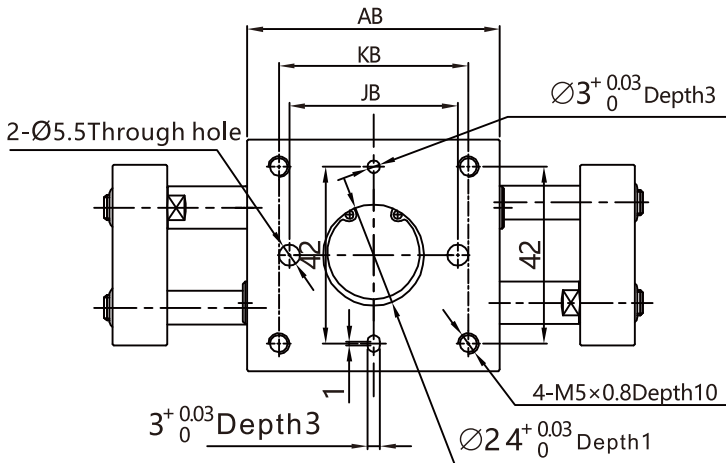
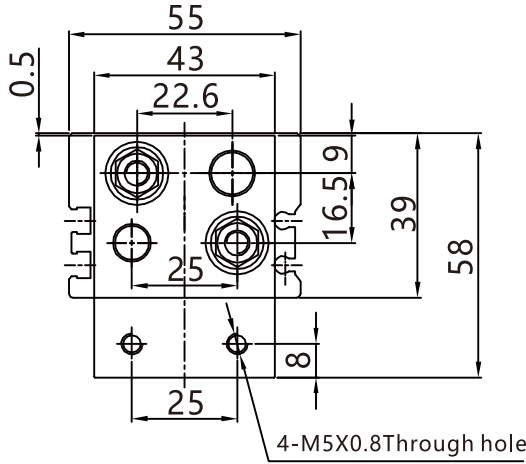
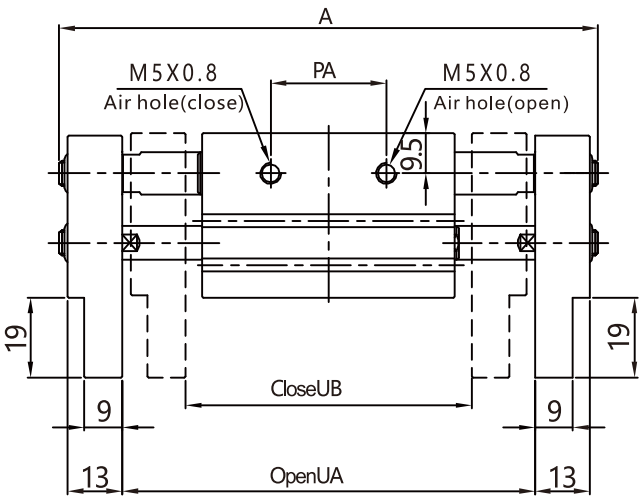
Internal Structure



No.	Part Name	Material	No.	Part Name	Material
1	Face plate	Aluminum alloy	14	Piston rod B	Stainless steel
2	Rack	Stainless steel	15	C Type retaining ring	Spring steel
3	Bore	Aluminum alloy	16	Piston rod seal	NBR
4	O-ring	NBR	17	Head cover	Aluminum alloy
5	Gear cover	Aluminum alloy	18	O-ring	NBR
6	Gear axes	Stainless steel	19	Bumper	TPU
7	Gear	Mould steel	20	Magnet seat	Aluminum alloy
8	C Type retaining ring	Spring steel	21	Magnet	Sintered metal (Neodymium-iron-boron)
9	Bearing	Wear resistant material			
10	Piston rod seal	NBR	22	Piston seal	NBR
11	Washer	Carbon steel	23	Piston	Aluminum alloy
12	Washer	Stainless steel	24	Piston rod A	Stainless steel
13	Nut	Stainless steel	25	Washer	Carbon steel

External Dimensions

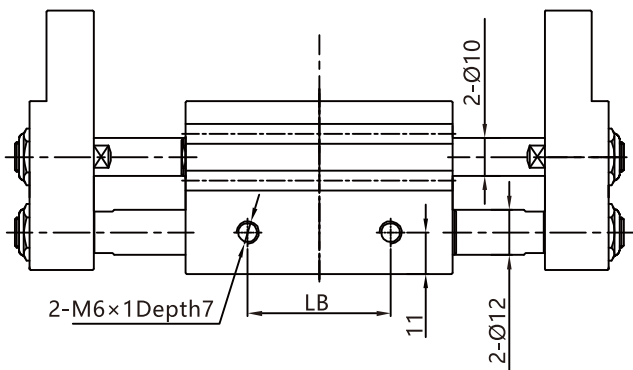
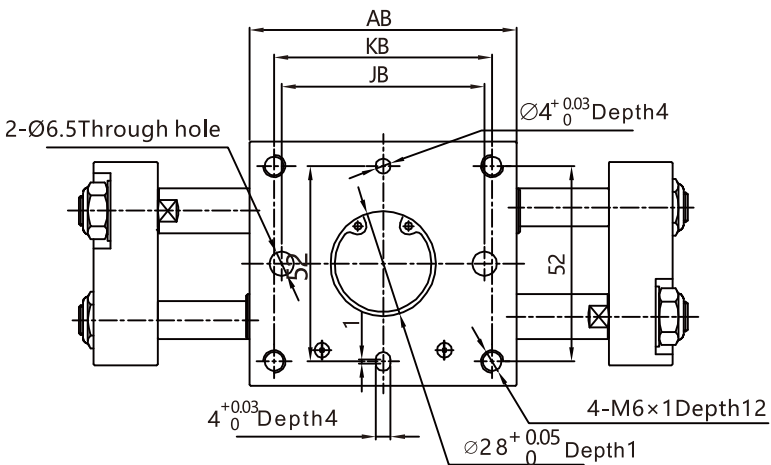
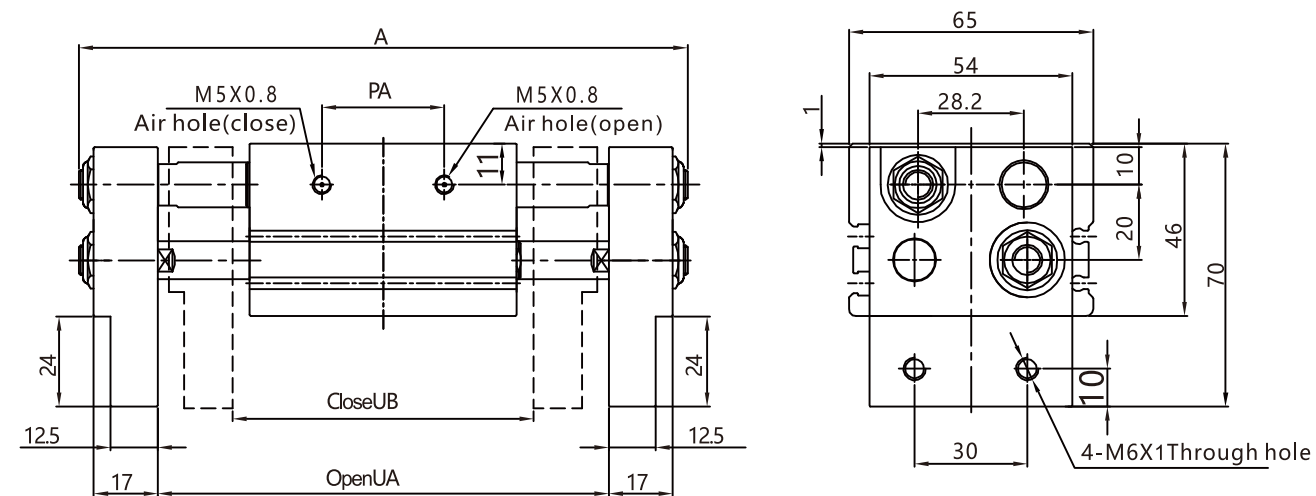
SHL16



Sign/Bore	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	25	30	40	51.6
UA(Open)	98	118	164	204
UB (Close)	68	78	104	124

Main Dimension

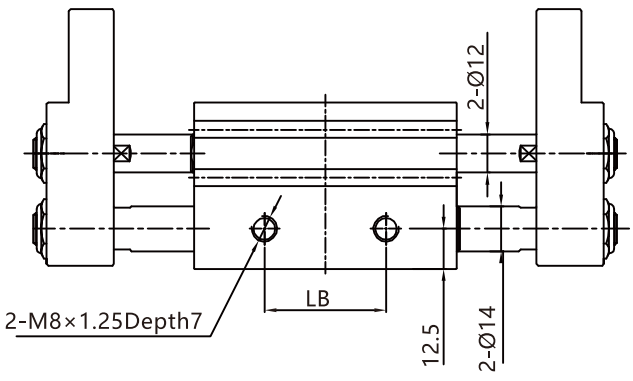
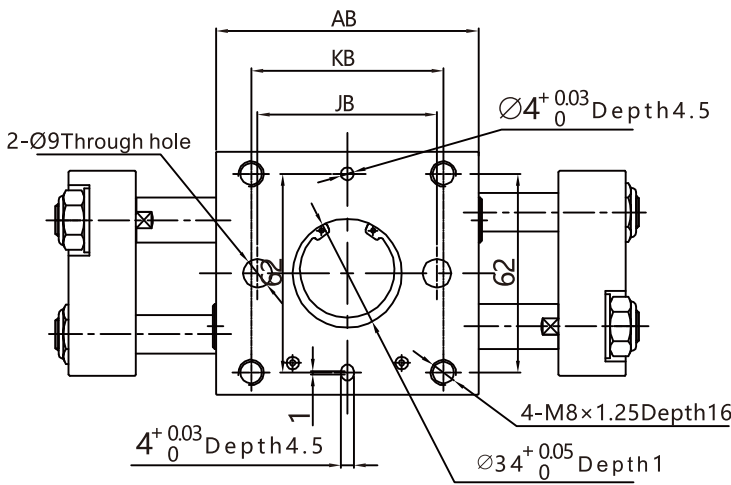
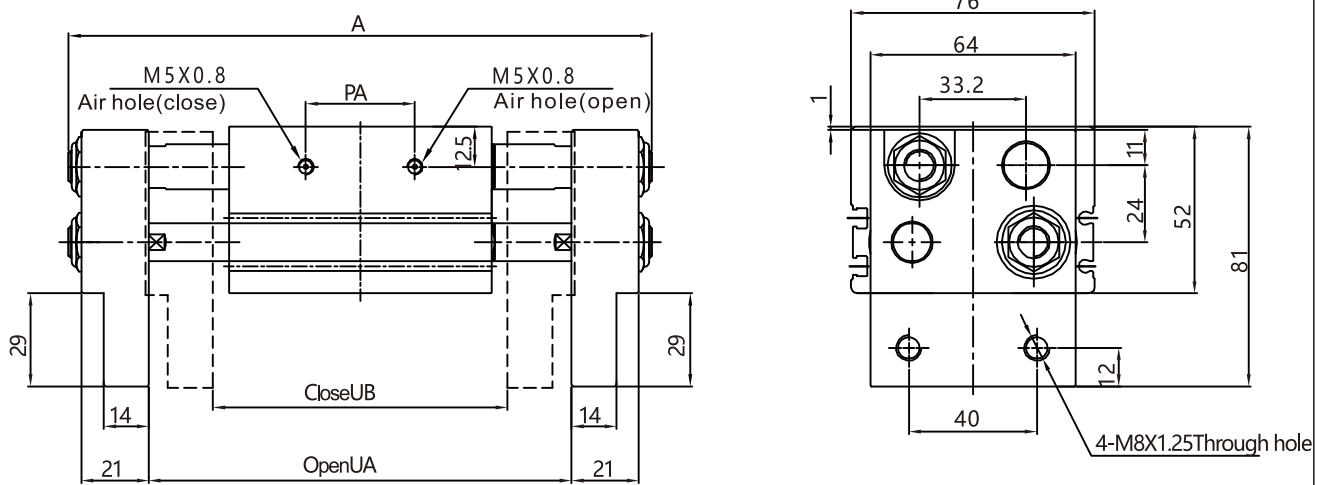
SHL20



Sign/Bore	40	60	80	100
A	162	202	254	294
AB	71	91	113	133
JB	54	74	96	116
KB	58	78	100	120
LB	38	58	80	100
PA	32.6	42.6	52.6	64
UA(Open)	120	160	212	252
UB (Close)	80	100	132	152

Main Dimension

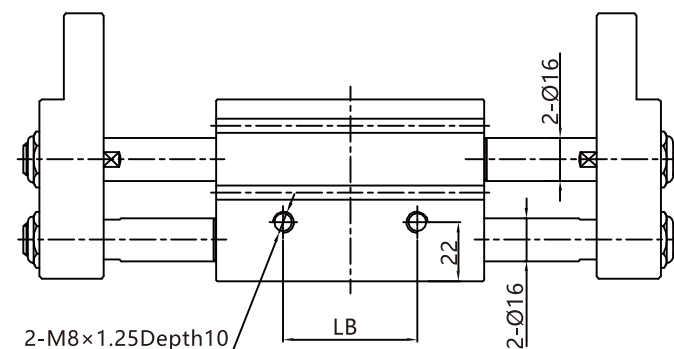
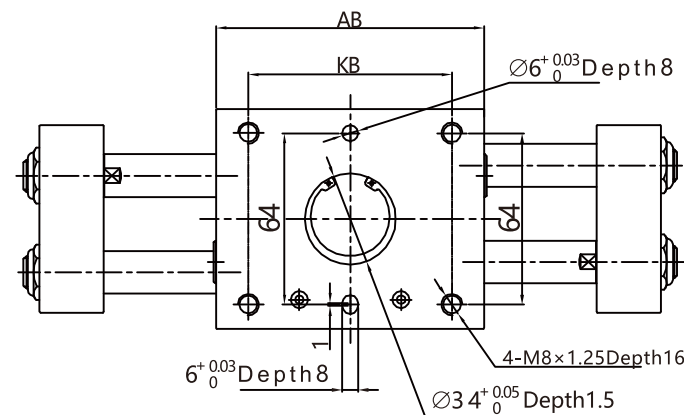
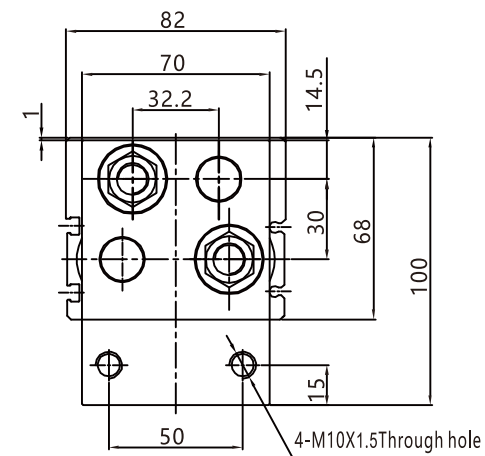
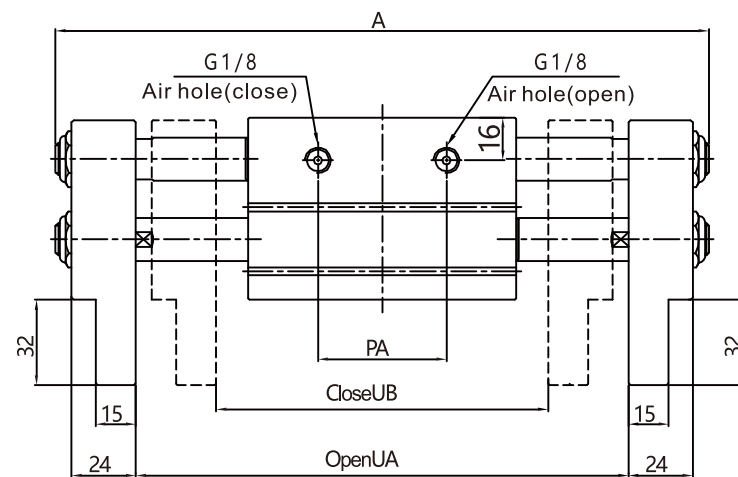
SHL25



Sign/Bore	40	60	80	100
A	182	222	276	316
AB	82	102	122	142
JB	56	66	100	120
KB	60	70	104	124
LB	38	48	82	102
PA	34	44	54	64
UA(Open)	132	172	226	266
UB (Close)	92	112	146	166

© Main Dimension

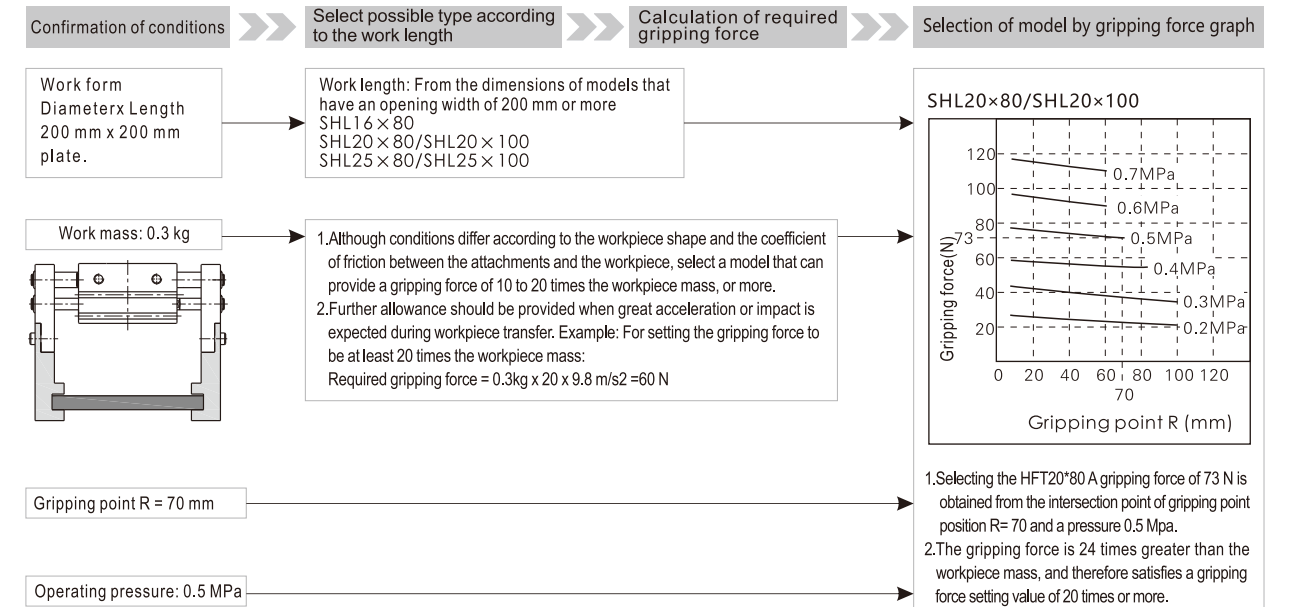
SHL32



Sign/Bore	60	80	100	150
A	244	284	342	442
AB	100	120	158	208
KB	76	86	134	184
LB	50	60	108	158
PA	45	55	65	90
UA(Open)	184	224	282	382
UB (Close)	124	144	182	232

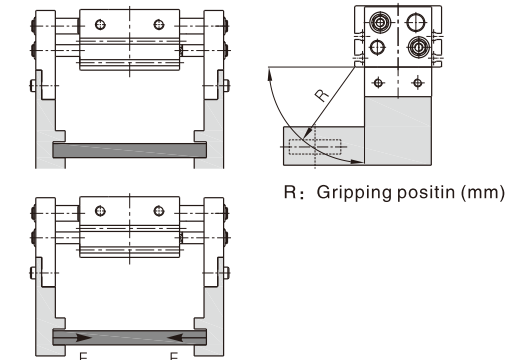
© Product type

- 1、 Please select pneumatic finger according to the following steps



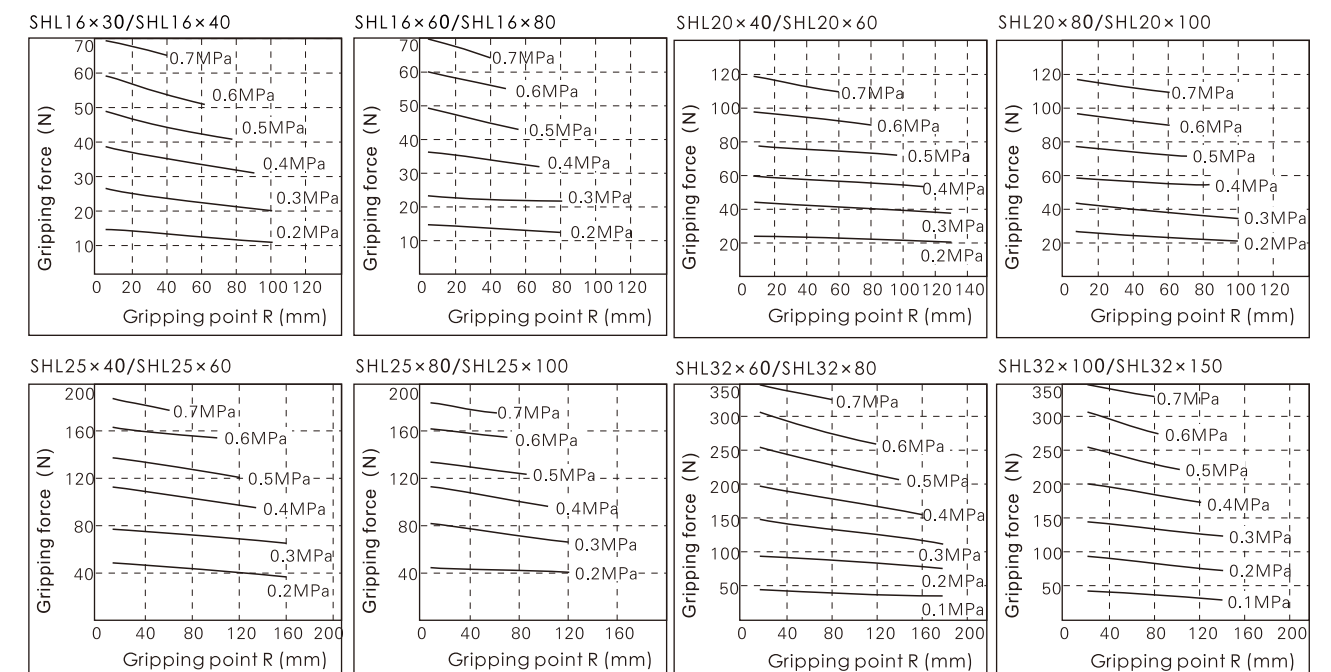
2、Gripping Point

- 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.



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.



Installation and application

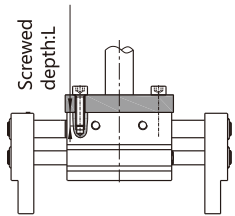
1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.

2. Don't use the air gripper under strong external force and impact force.

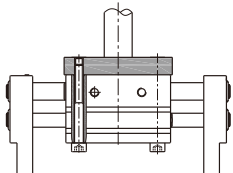
3. When install and fix the air gripper, avoid falling down, collision and damage.

4. When fixing the gripping jaw parts, don't twist the gripping jaw.

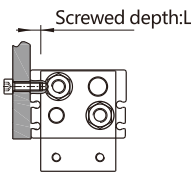
5. There are several kinds of installation method, and the locking torque of fastening screw must be within the prescribed torque range shown in the below chart. If the locking torque is too large, it will cause the dysfunctional. If the locking torque is too small, it will cause the position deviation and fall.



Axial mounted(thread hole)



Axial mounted(through hole)



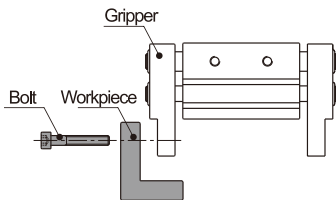
Beside mounted

Bore size	The bolts type	Max.locking moment (Nm)	Max.screwed depth (mm)
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)
16	M5 × 0.8	4.3
20	M6 × 1.0	7.3
25	M8 × 1.25	17.7
Note:Not available for Ø32		

Bore size	The bolts type	Max.locking moment (Nm)	Max.screwed depth (mm)
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

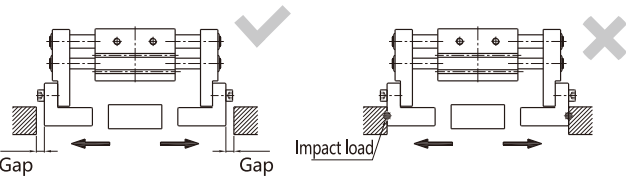
6. The installation method ofthe gripping jaw fittings:
When install the gripping jaw fittings, you have to pay particular attention that you can only hold the gripping jaw by using spanner, and then lock the screws with alien wrench. Never clamp the body directly and then lock the screws, otherwise the parts will be easily damaged.



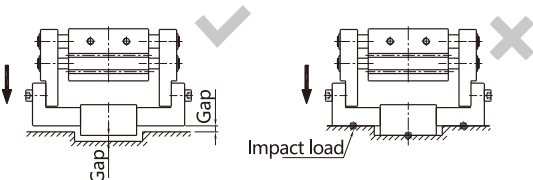
Bore size	The bolts type	Max.locking moment (Nm)
16	M5 × 0.8	2.8
20	M6 × 1.0	4.8
25	M8 × 1.25	12
32	M10 × 1.5	24

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.

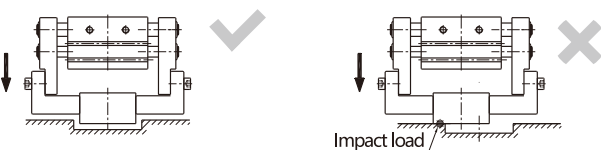
7.1. The end of stroke under the open state of air gripper



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.

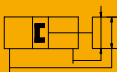
10. People can not enter the movement path of air gripper and articles can not be placed on the path too.

11. Before removing the air gripper, please confirm that it is out of working state, and then discharge of compressed air.

SHF

Low Profile Air Gripper

SHF:Double Acting, with magnet

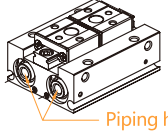
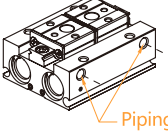


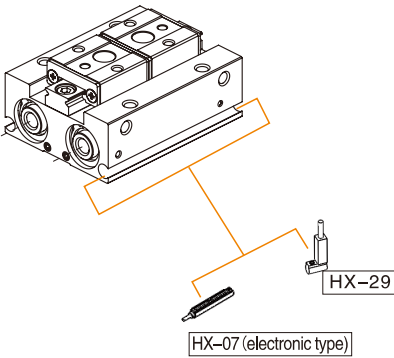
Specification

Bore Size		8	12	16	20
Acting Type		Double Acting			
Working Medium		Clean air(40 μ m filtration)			
Applicable Pressure Reage		0.15~0.7MPa	0.1~0.7MPa		
Working Temperature		-20~70 (No freezing)			
Oil		Not required			
Repetition accuracy ①		± 0.05mm			
Maximum Frequency	Short Stroke	120c.p.m			
	Medium Stroke	120c.p.m			
	Long Stroke	60c.p.m			
Port Size		M3X0.5	M5X0.8		

① Is the value of the gripper without the role of bias load state; conversely, affected by the tooth gap between the rack and gear, the maximum value is 15mm

How to Order?

Series No.	Bore Size	Double Acting	Stroke	Connecting Type	Magnet No
SHF:Low Profile Air Gripper	8 12 16 20	D	Blank 1 Short Stroke 2 Medium Stroke 3 Long Stroke	Blank:Axial Ported R:Side ported	Blank:With magnet
				Blank:Axial Ported	R:Side Ported
					



Note:Short stroke please use HX-29 series due to limited space.

Order Example: SHF Compact air gripper,Bore12,Medium stroke,Side air intake, with magnet,ERP code is:SHF12D1R

Products Features

1. Stainless steel gripper & linear ball guide design, high precision, good rigidity,good corrosion resistance for longer life spans.

2. Double piston structure design can provide bigger damping force.

3. The bottom of the body is equipped with positioning pin holes to effectively enhance the installation accuracy and improve the consistency of repeated disassembly and positioning.

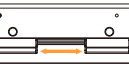
4. The Gripper can be installed from four directions freely.

5. Compared with the parallel air gripper with the same clamping force, this thin body design reduces the overall height by 50%, which effectively reduces the installation space and shaking torque, reduces the deviation, and improves the accuracy.

6. The body is designed with a buried induction switch slot to reduce the space.

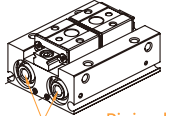
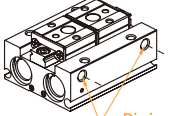
7. All series are with magnetic.

Standrad Stroke

Stroke/Bore(mm)	Ø8	Ø12	Ø16	Ø20	
Short Stroke		8mm	12mm	16mm	20mm
Medium Stroke		16mm	24mm	32mm	40mm
Long Stroke		32mm	48mm	64mm	80mm

Note: The short, medium and long strokes are standardized for each bore, and the most suitable stroke can be selected to be easier matched.

How to Order? (Adjustable)

Series No.	Bore Size	Double Acting	Stroke	Connecting Type	Magnet No	Adjustment Method	Adjustment Length
SHFJ:	8	D					
Adjustable Low	12		Blank	Blank:Axial Ported	Blank:With magnet	A: Open and Close Adjustment	
Profile Air Gripper	16		1	R:Side ported		B: Open Adjustment	
	20		2			C: Close Adjustment	
							1: Short Adjustment 2: Long Adjustment
				Blank:Axial Ported	R:Side Ported		
							
				Piping hole	Piping hole		

Order Example: The SHFJ adjustable thin–type pneumatic gripper has a cylinder diameter of 12 mm, medium stroke, side air inlet, with magnet, and features long adjustment on the open side. Its ERP code is: SHFJ12D1R–B2.

Standard Stroke

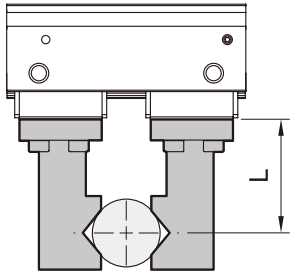
Bore Size (mm)	Short Stroke		Medium Stroke		Long Stroke	
	Full Stroke	Stroke Adjustment Width	Full Stroke	Stroke Adjustment Width	Full Stroke	Stroke Adjustment Width
Φ8	8mm	Short Adjuster 4mm	16mm	Short Adjuster 6mm	32mm	Short Adjuster 12mm
		Long Adjuster 8mm		Long Adjuster 10mm		Long Adjuster 22mm
Φ12	12mm	Short Adjuster 8mm	24mm	Short Adjuster 8mm	48mm	Short Adjuster 18mm
		Long Adjuster 12mm		Long Adjuster 14mm		Long Adjuster 28mm
Φ16	16mm	Short Adjuster 10mm	32mm	Short Adjuster 8mm	64mm	Short Adjuster 16mm
		Long Adjuster 14mm		Long Adjuster 18mm		Long Adjuster 36mm
Φ20	20mm	Short Adjuster 8mm	40mm	Short Adjuster 10mm	80mm	Short Adjuster 20mm
		Long Adjuster 18mm		Long Adjuster 20mm		Long Adjuster 40mm

Specification

Bore Size (mm)		8	12	16	20
Action Type		Double-acting type			
Working Medium		Air (filtered through a mesh of 40 μm or finer);			
Operating Pressure Range		0.15~0.7MPa	0.1~0.7MPa		
Working Temperature (° C)		-20~70(non-freezing)			
Lubrication		NO			
Repeatability ①		± 0.05mm			
Maximum operating frequency	Short Stroke	120c.p.m			
	Medium Stroke	120c.p.m			
	Long Stroke	60c.p.m			
Piping diameter		M3X0.5	M5X0.8		

① The value is for the condition where there is no eccentric load on the fingers; otherwise, due to the backlash between the rack and pinion, the maximum value is ± 0.15 mm.

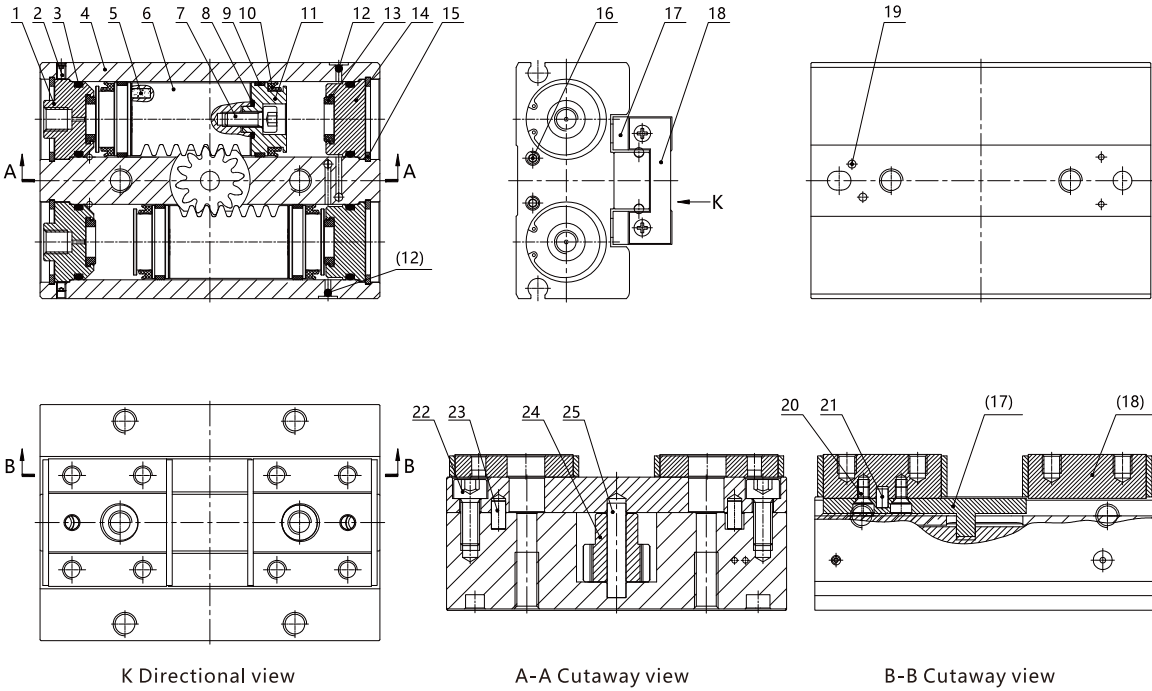
Gripping Force Table



Model Number	Effective clamping force of a single gripper(N)(*)	Weight(g)
SHF8D	19	59
SHF8D1		78
SHF8D2		110
SHF12D	48	145
SHF12D1		185
SHF12D2		270
SHF16D	90	344
SHF16D1		441
SHF16D2		642
SHF20D	141	659
SHF20D1		847
SHF20D2		1221

*Pressure 0.5MPa,clamping point L=20mm,and the value at the center of the stroke.

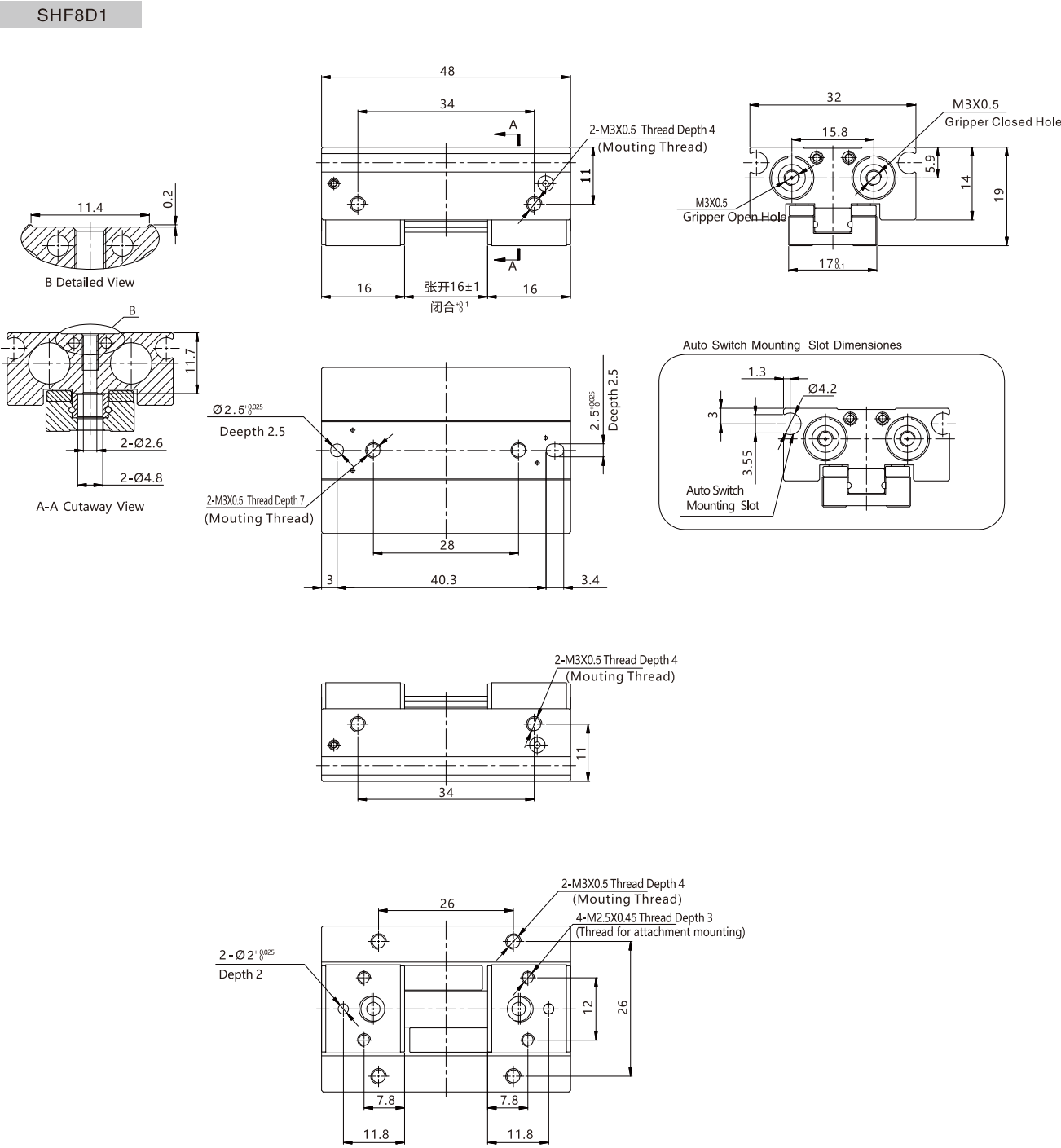
Internal Structure



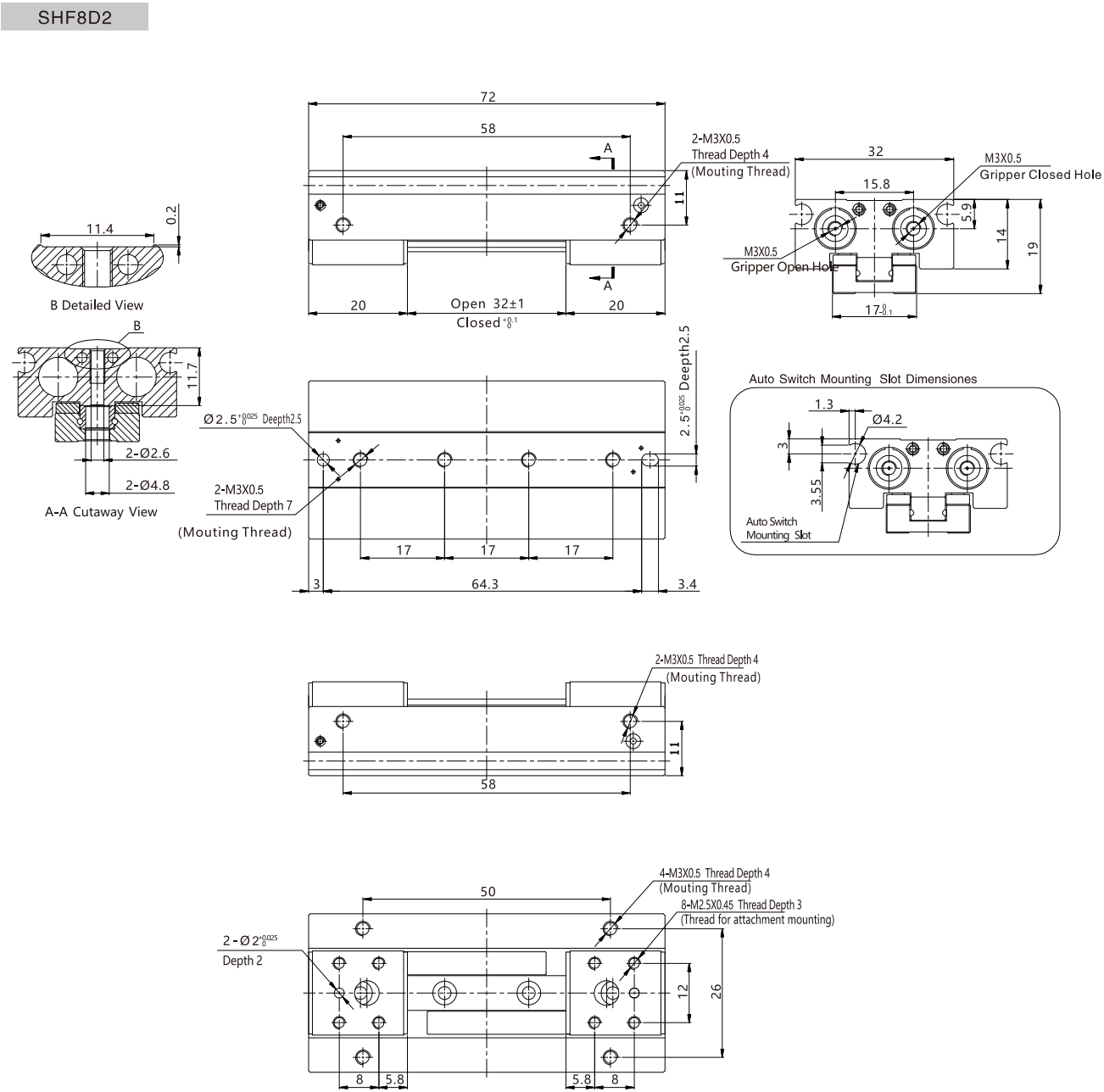
No.	Part Name	Material	No.	Part Name	Material	No.	Part Name	Material
1	Front cover	Aluminum alloy	10	Piston seal	NBR	19	Steel ball	Stainless steel
2	Hexagon socket set screw	Q235	11	Piston	Aluminum alloy	20	Screws	Stainless steel
3	O-ring	NBR	12	Steel ball	Stainless steel	21	Pin	Bearing Steel
4	Barrel	Aluminum alloy	13	Anti-bump cushion	TPU	22	Hexagon socket cap screw	Stainless steel
5	Magnet	Sintered NdFeB	14	Rear cover	Aluminum alloy	23	Positioning pins	Stainless steel
6	Rack	Stainless steel	15	C type ring	Spring steel	24	Gear	Carbon Steel
7	Hexagon socket cap screw	Stainless steel	16	Hexagon socket set screw	Q235	25	Pin	Bearing Steel
8	O-ring	NBR	17	Connector	Stainless steel			
9	Wear ring	PTFE	18	Linear ball sliding guide	Combined parts			

Note:1. Commercially available socket cap screws are sufficient when E04–SHF12, 16 compact air grippers are used for body through–hole mounting.
2. In the above table, SE04–HF12D short stroke without wear ring.

Clamping Force

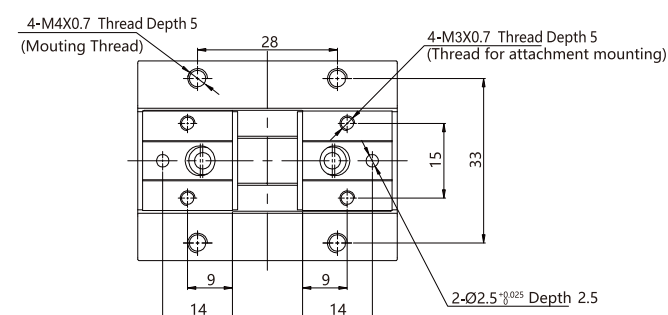
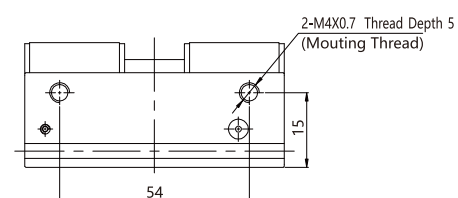
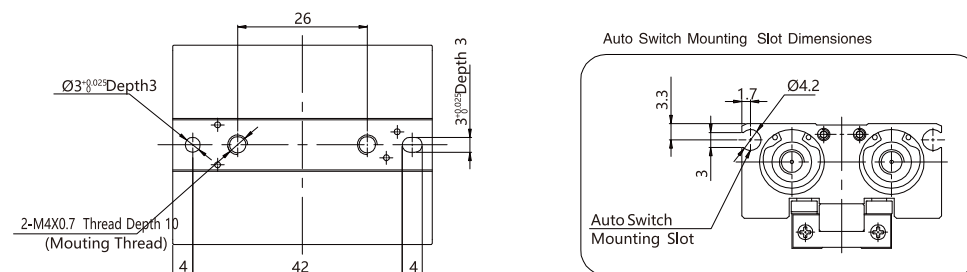
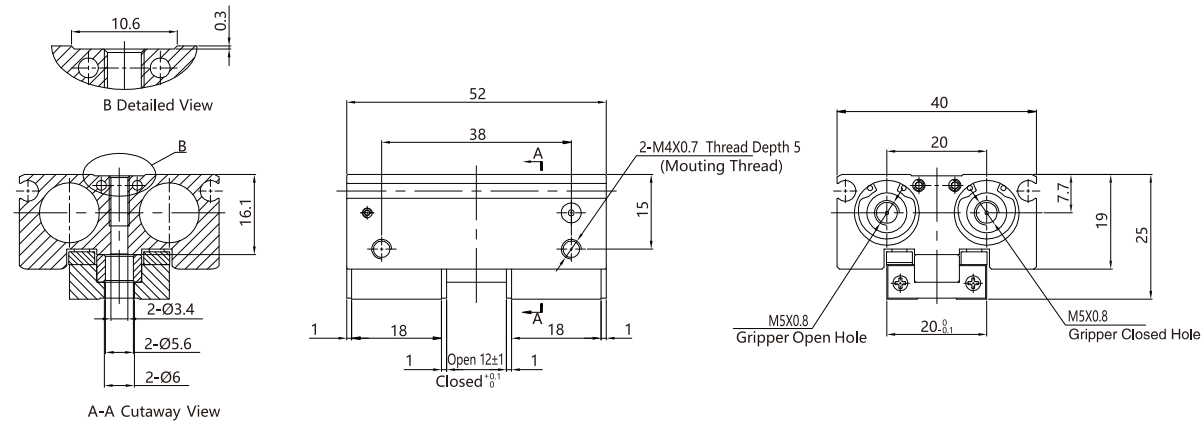


Main Dimension



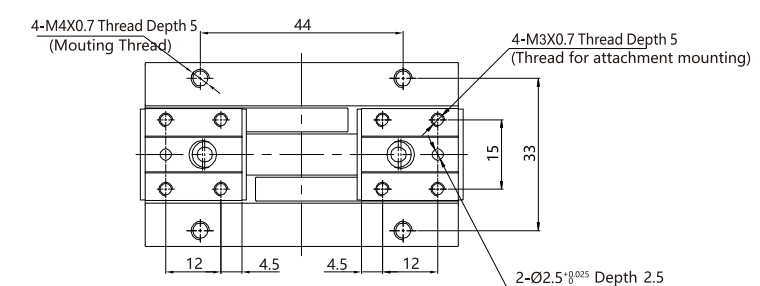
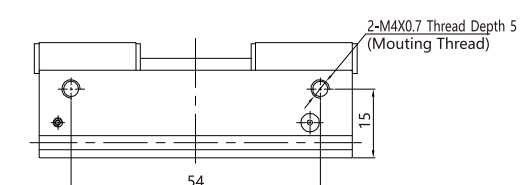
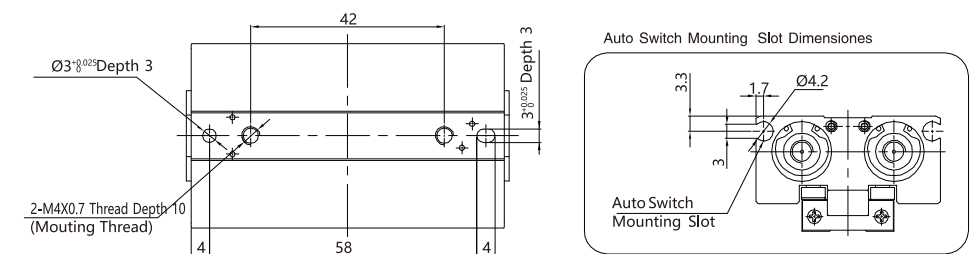
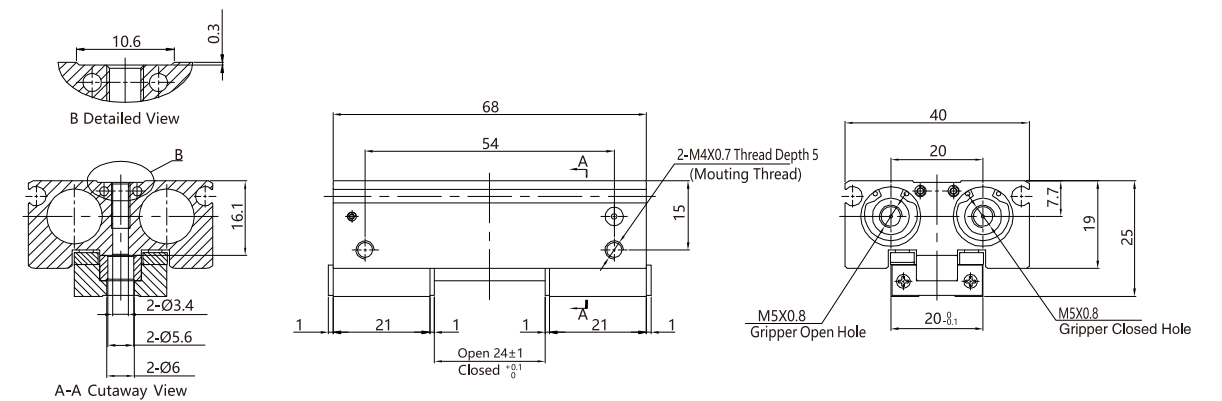
© Main Dimension

SHF12D



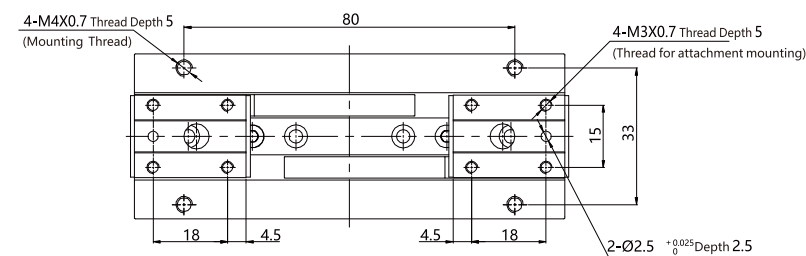
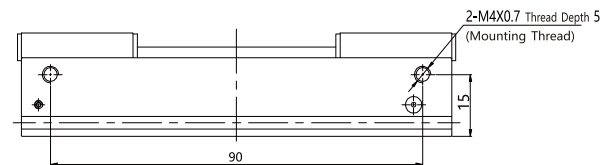
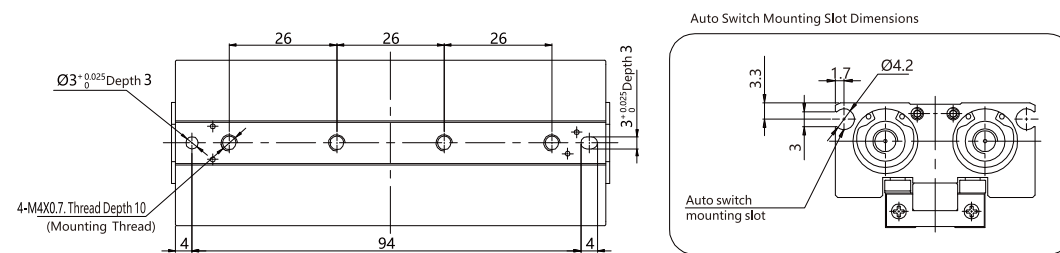
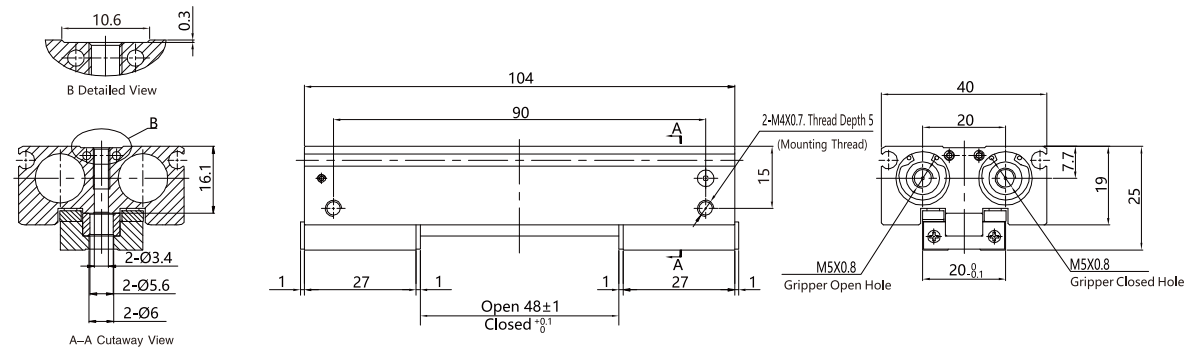
© Main Dimension

SHF12D1



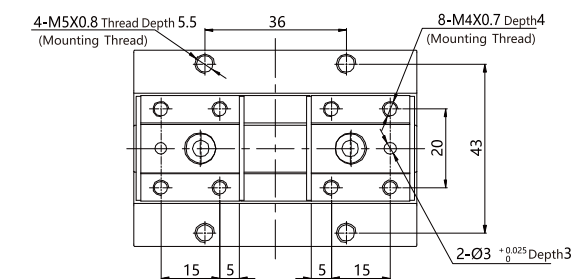
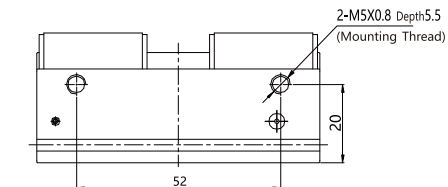
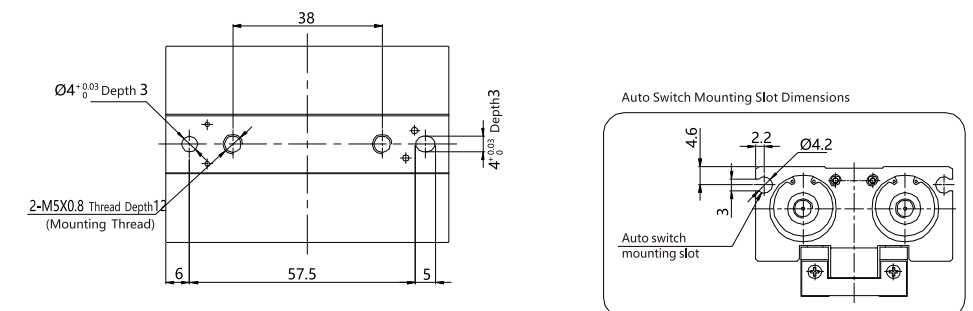
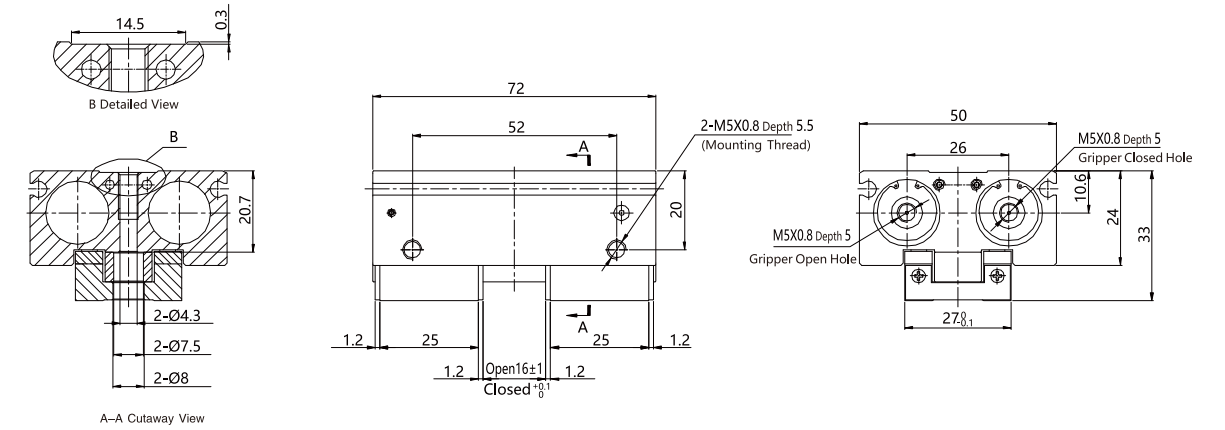
© Main Dimension

SHF12D2



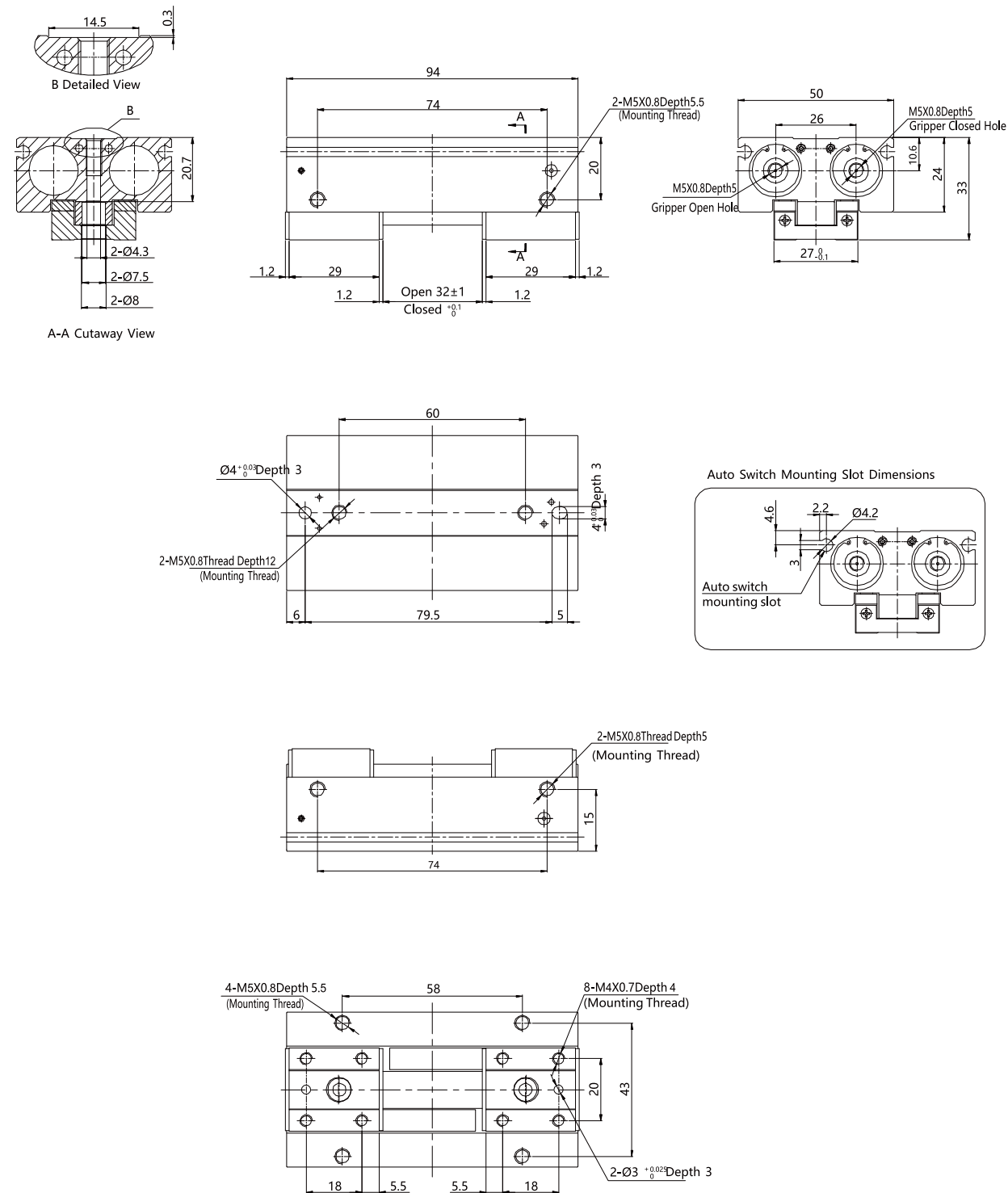
◎ Main Dimension

SHF16D



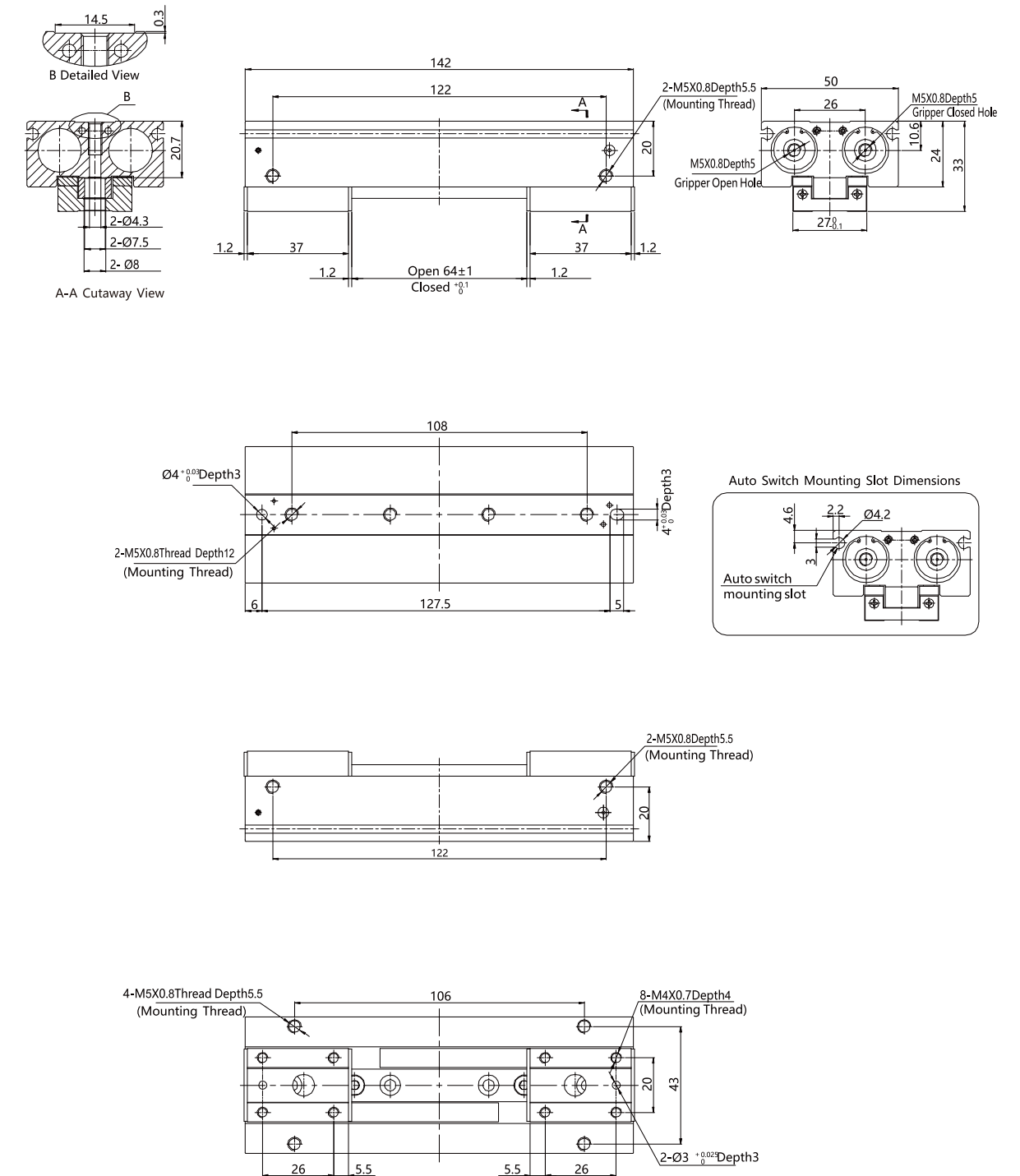
© Main Dimension

SHF16D1



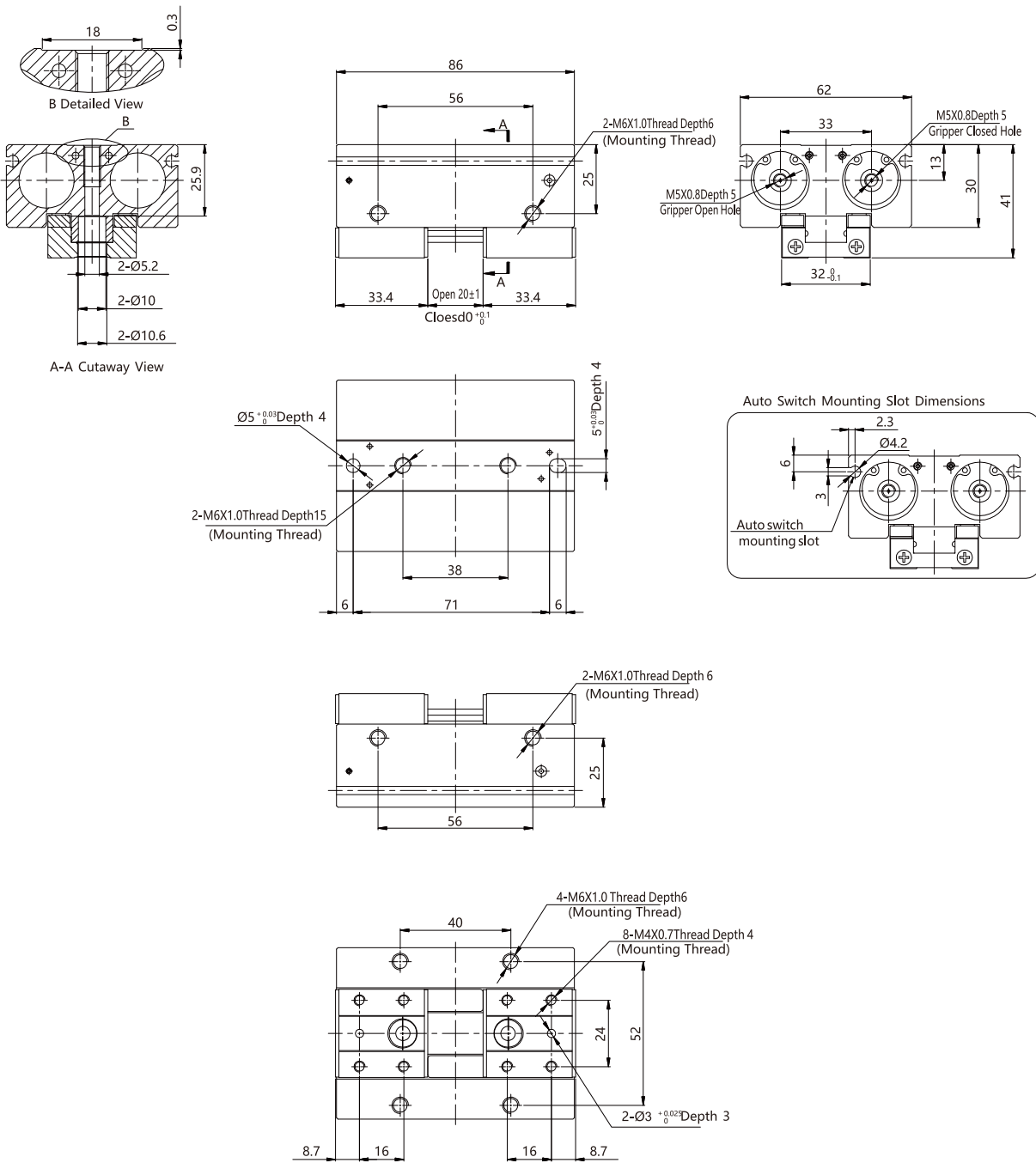
◎ Main Dimension

SHF16D2



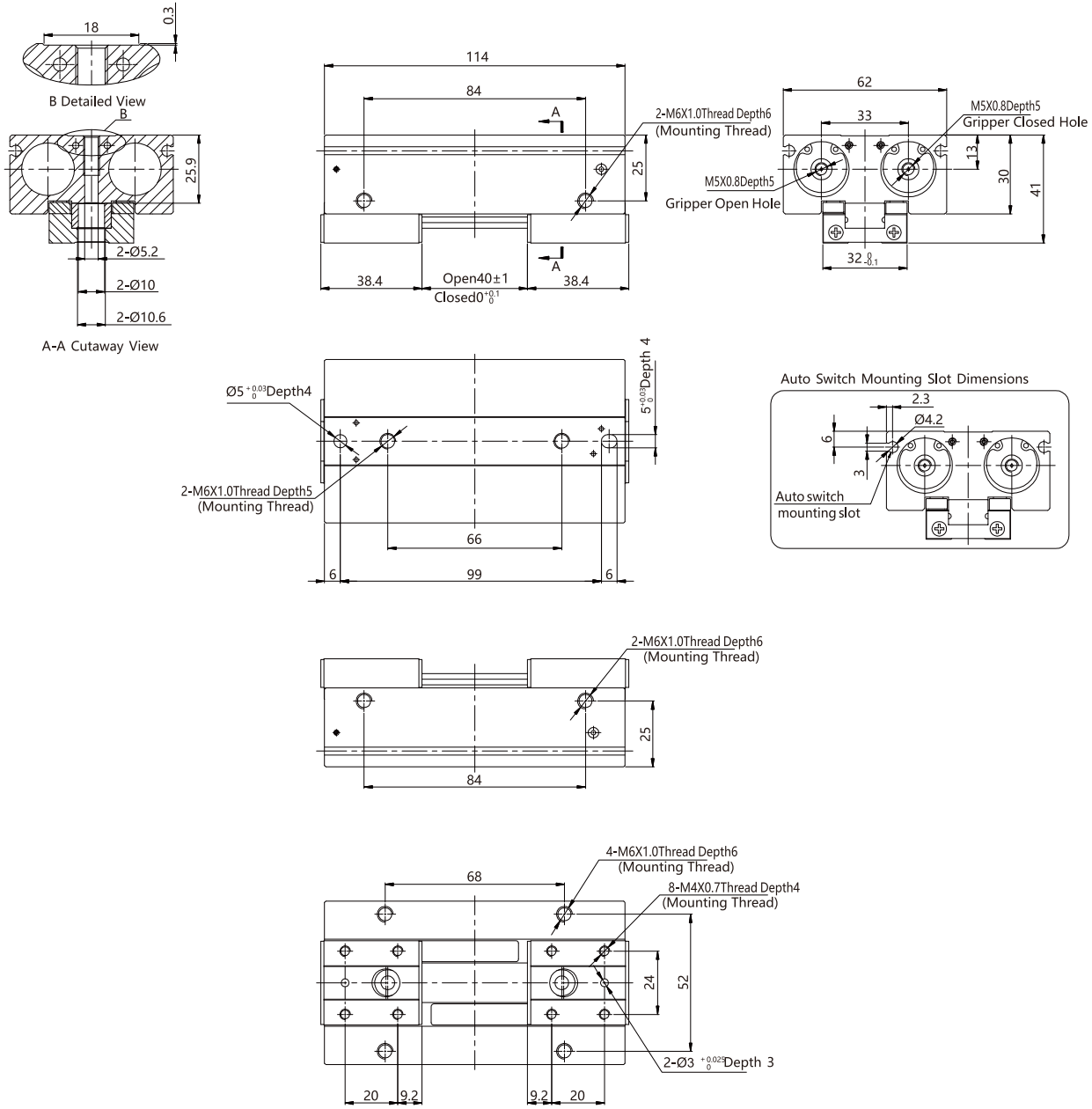
Main Dimension

SHF20D



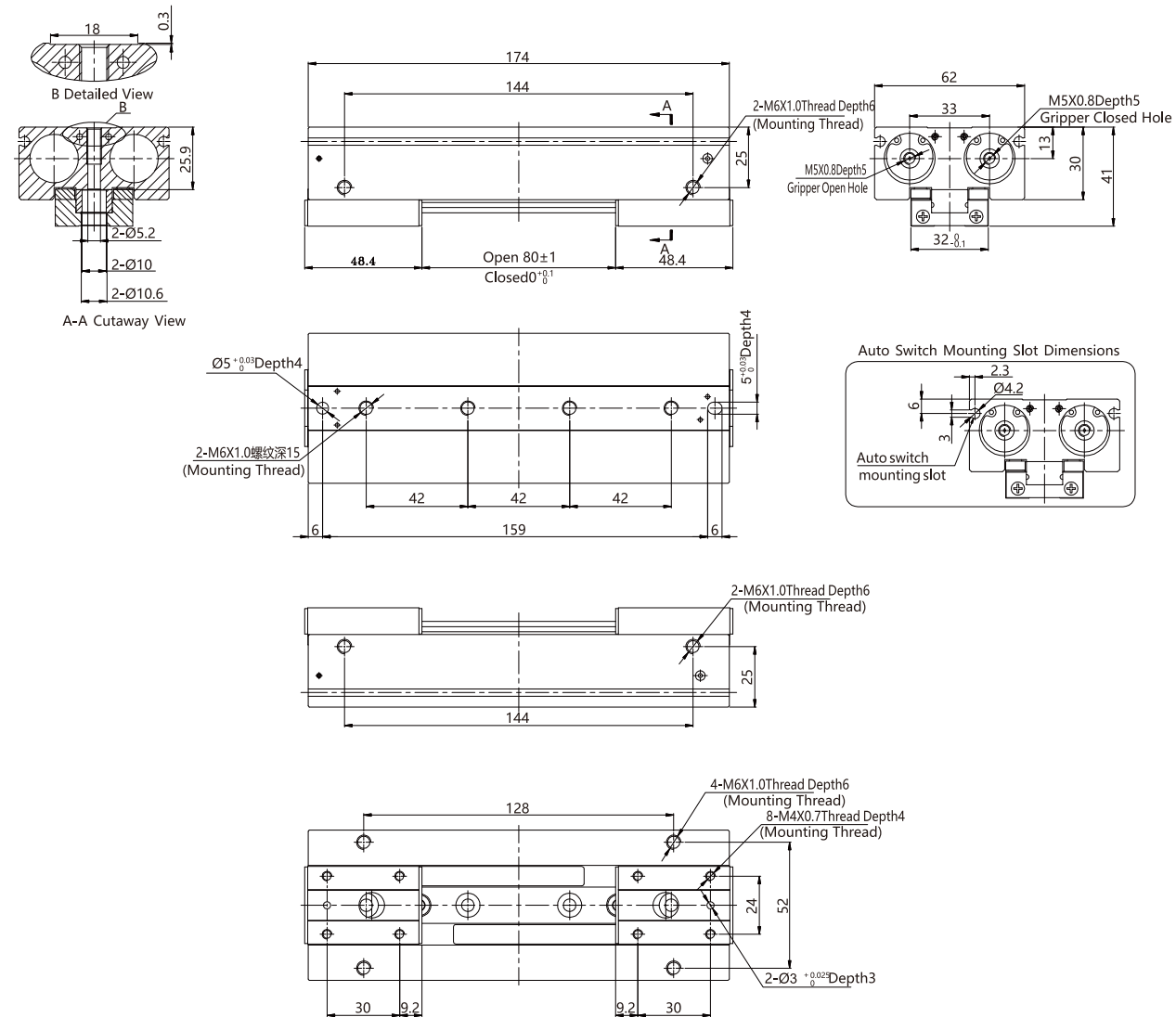
Main Dimension

SHF20D1



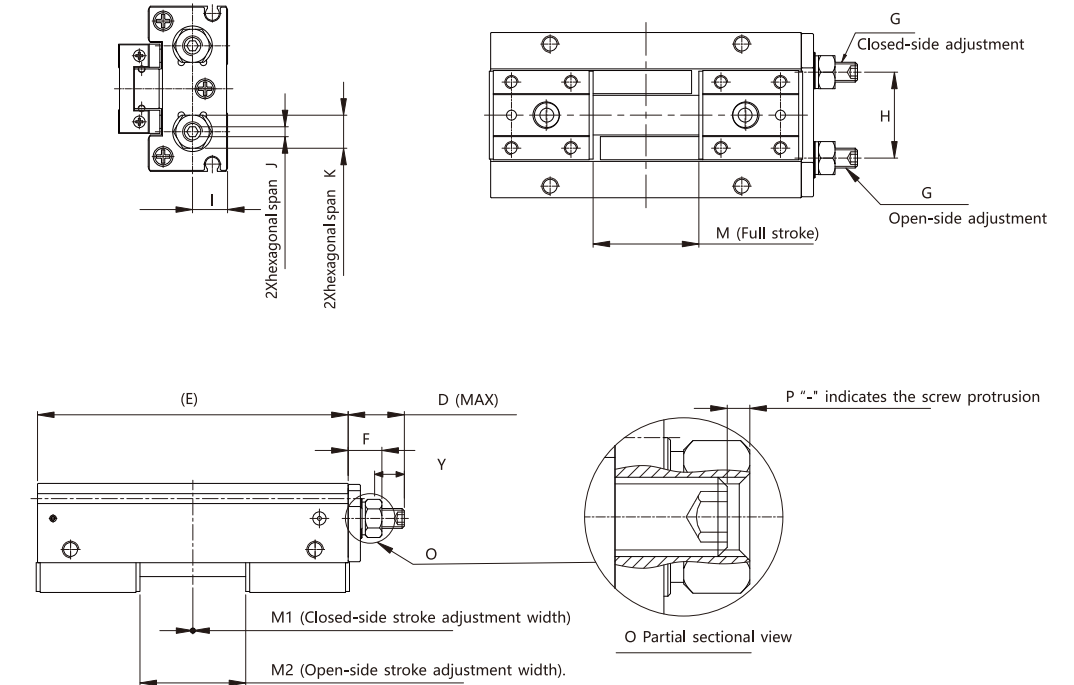
© Main Dimension

SHF20D2

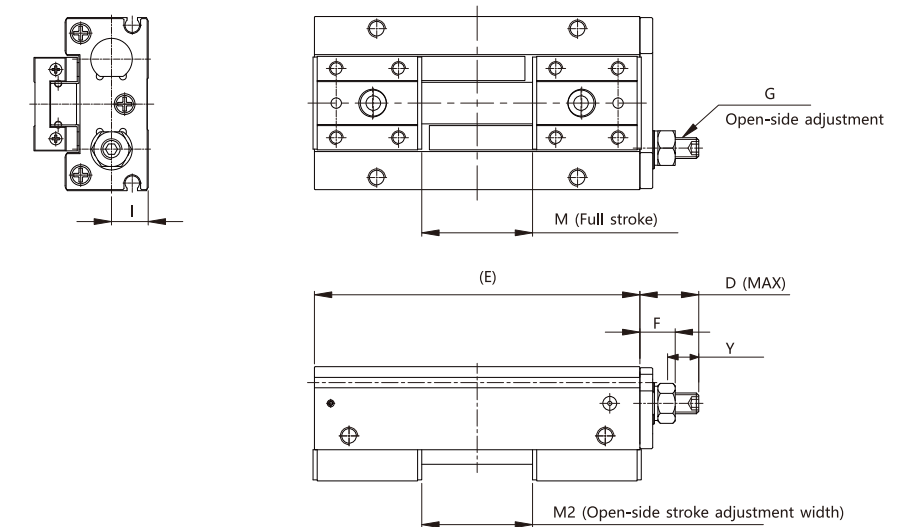


◎ Main Dimension (Adjustable Type)

SHFJ□□-A□

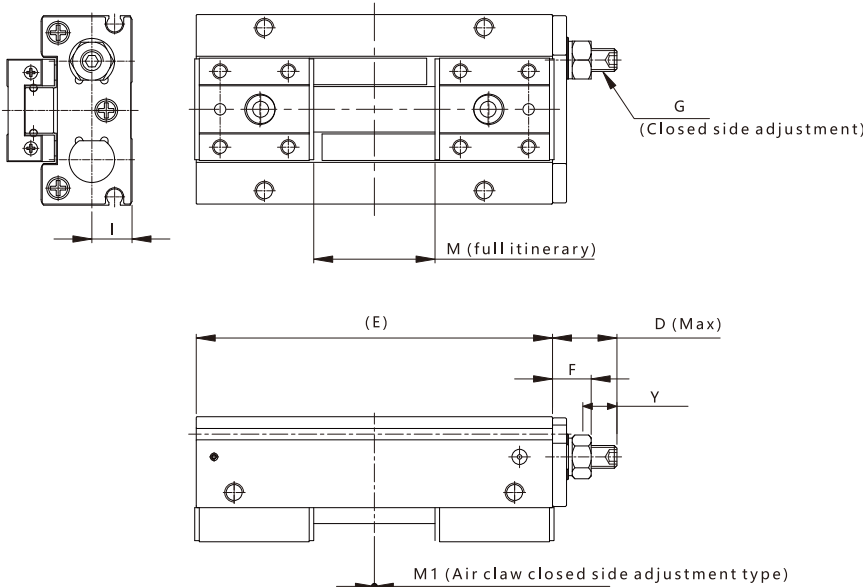


SHFJ□□-B□



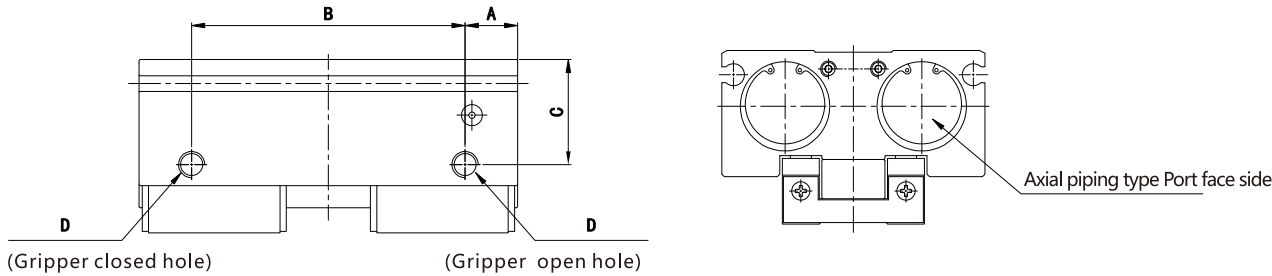
Main Dimension (adjustable)

SHFJ□□-C□



Type		Adjustable air claw opening and closing on both sides: A		Air claw open side adjustment type: B		Air claw closed side adjustment type: C		D	E	F	G	H	I	J	K	M	Y	P
		M1	M2	M1	M2	M1	M2											
SHFJ8D/DR	□1	0-4	4-8	/	4-8	0-4	/	9	36	6.8	M4X0.7	15.8	5.9	2	7	8	2	-0.2
	□2	0-8	0-8	/	0-8	0-8	/	12									4	-1.2
SHFJ8D1/D1R	□1	0-6	10-16	/	10-16	0-6	/	9	48	9.2	M5X0.8	20	7.7	2.5	8	16	3	0.8
	□2	0-10	6-16	/	6-16	0-10	/	12									5	-0.2
SHFJ8D2/D2R	□1	0-12	20-32	/	20-32	0-12	/	12	72	10.21	M6X1.0	26	10.6	3	10	32	6	0.8
	□2	0-22	10-32	/	10-32	0-22	/	18									11	-0.2
SHFJ12D/DR	□1	0-8	4-12	/	4-12	0-8	/	12	52	11.2	M6X1.25	33	13	4	12	12	4	1.2
	□2	0-12	0-12	/	0-12	0-12	/	14									6	1.2
SHFJ12D1/D1R	□1	0-8	16-24	/	16-24	0-8	/	12	68	11.2	M6X1.25	33	13	4	12	24	4	1.2
	□2	0-14	10-24	/	10-24	0-14	/	14									7	2.2
SHFJ12D2/D2R	□1	0-18	30-48	/	30-48	0-18	/	18	104	11.2	M6X1.25	33	13	4	12	48	9	0.2
	□2	0-28	20-48	/	20-48	0-28	/	23									14	0.2
SHFJ16D/DR	□1	0-10	6-16	/	6-16	0-10	/	14	72	11.2	M6X1.25	33	13	4	12	16	5	1.2
	□2	0-14	2-16	/	2-16	0-14	/	17									7	0.2
SHFJ16D1/D1R	□1	0-8	24-32	/	24-32	0-8	/	14	94	11.2	M6X1.25	33	13	4	12	32	4	0.2
	□2	0-18	14-32	/	14-32	0-18	/	17									9	2.2
SHFJ16D2/D2R	□1	0-16	48-64	/	48-64	0-16	/	17	142	11.2	M6X1.25	33	13	4	12	64	8	1.2
	□2	0-36	28-64	/	28-64	0-36	/	28									18	0.2
SHFJ20D/DR	□1	0-8	12-20	/	12-20	0-8	/	18	86	11.2	M6X1.25	33	13	4	12	20	4	-2.8
	□2	0-18	2-20	/	2-20	0-18	/	23									9	-2.8
SHFJ20D1/D1R	□1	0-10	30-40	/	30-40	0-10	/	18	114	11.2	M6X1.25	33	13	4	12	40	5	-1.8
	□2	0-20	20-40	/	20-40	0-20	/	23									10	-1.8
SHFJ20D2/D2R	□1	0-20	60-80	/	60-80	0-20	/	23	174	11.2	M6X1.25	33	13	4	12	80	10	-1.8
	□2	0-40	40-80	/	40-80	0-40	/	33									20	-1.8

Main Body Options:Side Ported Type

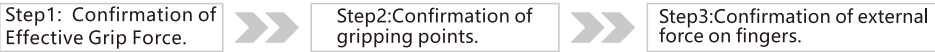


Model	SHF8DR	SHF8D1R	SHF8D2R	SHF12DR	SHF12D1R	SHF12D2R	SHF16DR	SHF16D1R	SHF16D2R	SHF20DR	SHF20D1R	SHF20D2R
A	5.5			7			9			10		
B	25	37	61	38	54	90	54	76	124	66	94	154
C	11			14.8			19			23		
D	M3×0.5			M5×0.8			M5×0.8			M5×0.8		

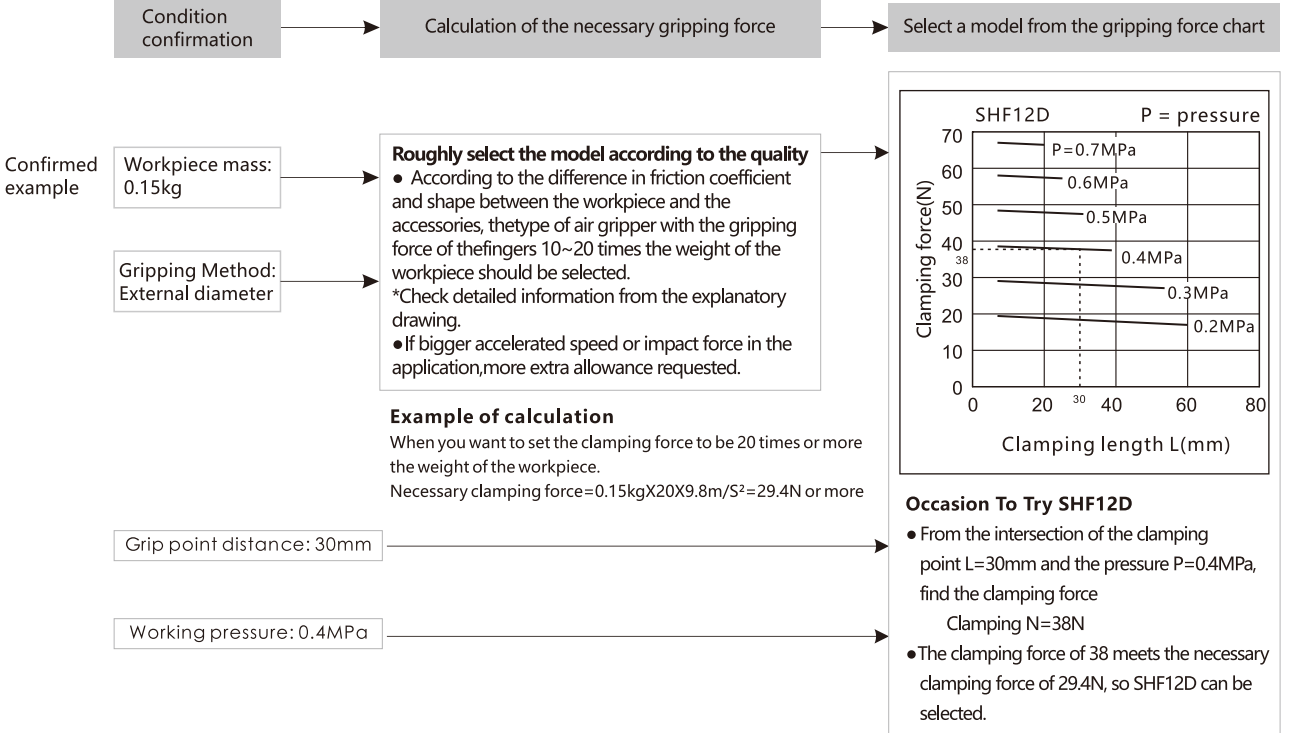
Note:Dimensions other than the above are the same as the Horizontal ported type

Model Selection

Selected Steps

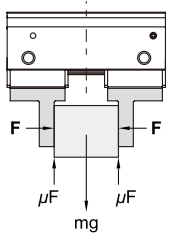


Step1 Effective gripping force confirmation



Model Selection

Model selection instructions



About 10-20 times the weight of the workpiece
• The recommended value (more than 10-20 times the weight of the workpiece) is calculated based on the impact generated by normal handling, etc., under the condition of the safety value a=4.

When $\mu=0.2$	When $\mu=0.1$
$F = \frac{mg}{2 \times 0.2} \times 4$ $= 10 \times mg$	$F = \frac{mg}{2 \times 0.1} \times 4$ $= 20 \times mg$
10 times the workpiece mass	20 times the workpiece mass

Note:1. When the friction coefficient is higher than $\mu=0.2$, for safety, our company recommends that the model should be selected at 10 to 20 times the weight of the workpiece.
2. For excessive acceleration and impact, it is necessary to select a larger safety value.

When clamping the workpiece shown on the left
F: Clamping force(N)
 μ : Friction coefficient of attachments and work pieces
m: Workpiece mass(kg)
g: Gravitational acceleration(=9.8m/s²)
mg: Workpiece gravity(N)

If the workpiece does not fall

$$\frac{2}{\text{Number of Fingers}} \times \mu F > mg$$

Then

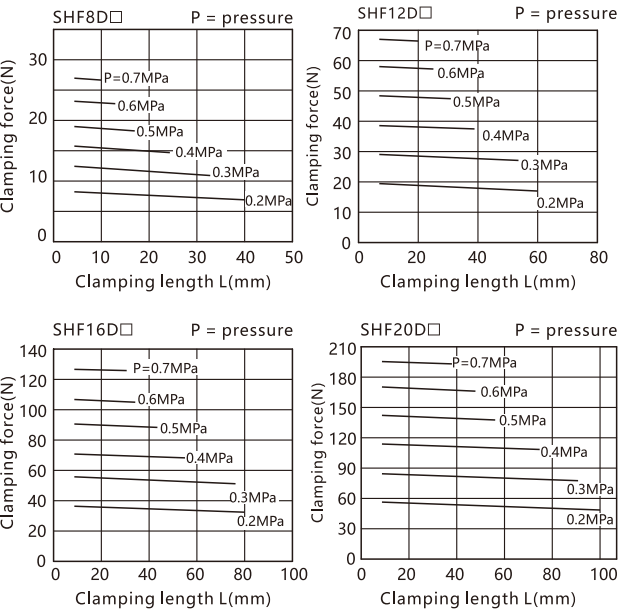
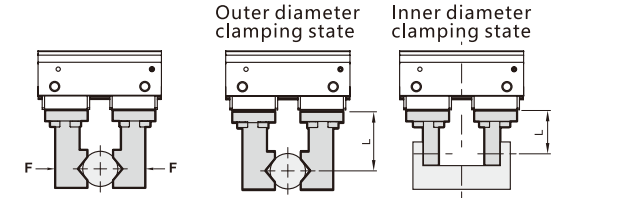
$$F > \frac{mg}{2 \times \mu}$$

The safety value is represented by a, and F is determined

$$F = \frac{mg}{2 \times \mu} \times a$$

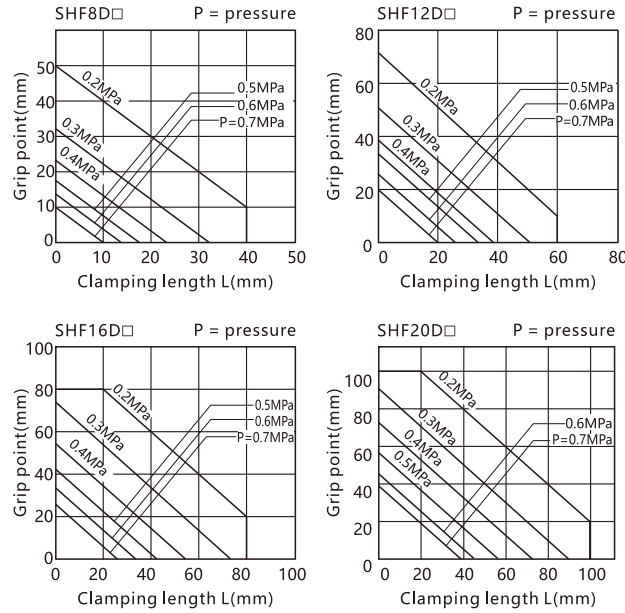
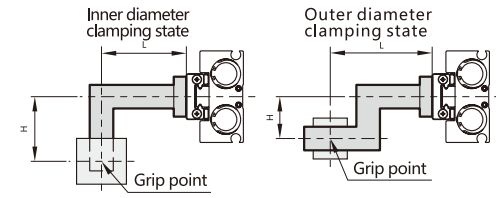
Step 1 Confirmation of Effective Grip Force

Representation of Effective Grip Force
The effective clamping force of the right picture, as shown in the figure below, the two fingers and accessories are in contact with the workpiece together, and the thrust on one finger is represented by F.



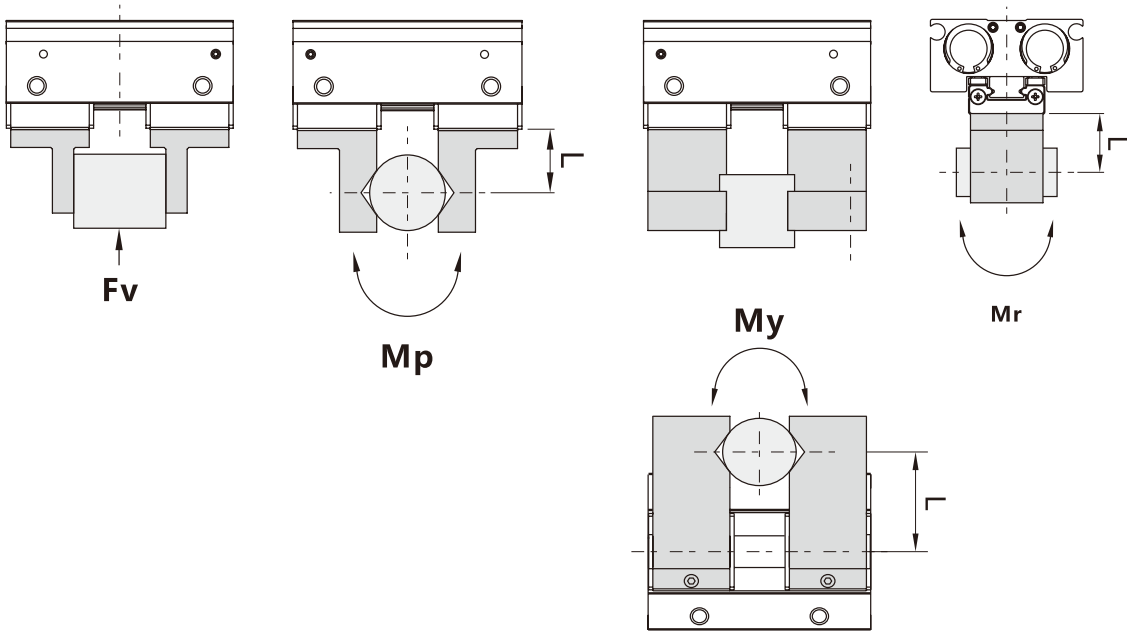
Step 2 Confirmation of clamping point

1. The clamping point of the workpiece, according to the operating pressure, should be within the range shown in the figure below.
2. If the clamping point of the workpiece are out of the range, it will reduce the service life of the gripper.



Model Selection

Step3 Confirmation of external force on fingers



L: The distance to the load application point

Model	Vertical direction Allowable load Fv(N)	Maximum allowable torque		
		Bending torque Mp(N.m)	Deflection torque My(N.m)	Rotation torque Mr(N.m)
SHF8D□	58	0.26	0.26	0.53
SHF12D□	98	0.68	0.68	1.4
SHF16D□	176	1.4	1.4	2.8
SHF20D□	294	2	2	4

Note: The load and moment values in the table are static values

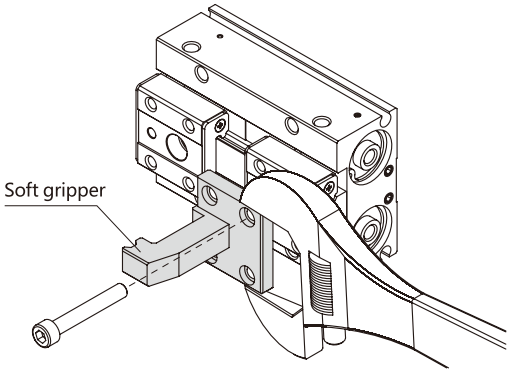
Calculation of allowable external force (when moment load is applied)	Example of calculation
$\text{Allowable load } F(N) = \frac{M(\text{maximum allowable moment}) (N.m)}{L \times 10^{-3} \times \text{※}}$ (※ Is the unit conversion constant)	When the actual static load f=10N, the bending moment of the point L=30mm from the end face of the jaw of SHF2-12D $\text{Allowable load } F = \frac{0.68}{30 \times 10^{-3}}$ $= 22.7 (N)$ Load f=10(N) < 22.7(N) so you can use.

Installation and Use

1. When installing, do not let the air gripper fall or be hit, so as to avoid damage to the product and dents.
Slight deformation will cause poor accuracy and work not well.
2. When installing accessories, please properly tighten the screws within the limited torque range.
Tightening with a torque out of the torque range may cause malfunction, and if the tightening torque is insufficient, positional displacement or drop may occur.

How to install the gripper attachment

Attach the attachment to the mounting female thread of the jaws with screws, etc., using the tightening torque in the table below.

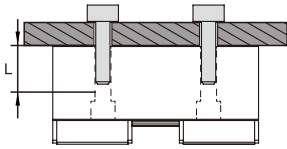


Model	Screws used	Maximum tightening torque N.m
SHF8D□	M2.5×0.45	0.36
SHF12D□	M3×0.5	0.63
SHF16D□	M4×0.7	1.5
SHF20D□	M4×0.7	1.5

3. When installing the air gripper, please properly tighten the screws within the limited torque range.
Bad action if bigger tighten torque;
Position offset or fall if smaller tighten torque.

How to install the gripper attachment

Top mount type (main body screw hole)



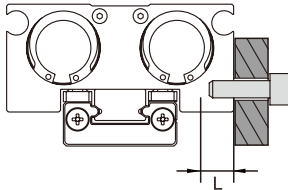
Model	Screws used	Maximum tightening torque N.m	Maximum thread entry depth Lmm
SHF8D□	M3×0.5	0.95	7
SHF12D□	M4×0.7	2.2	10
SHF16D□	M5×0.8	4.5	12
SHF20D□	M6×1.0	7.8	15

Use Environment



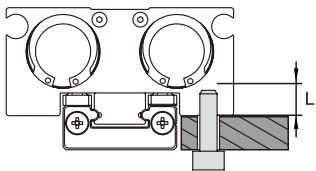
Pay attention to the corrosion resistance of linear guides.
The materials of Fingers & guides are martensitic stainless steel, which is weaker than. Martensitic stainless steel is used on fingers and rails; compared with austenitic stainless steel, the corrosion resistance is weak; especially in the environment where there are water droplets such as freezing dew, there is a problem of rust

Side Mount Type (Through Hole in Body)



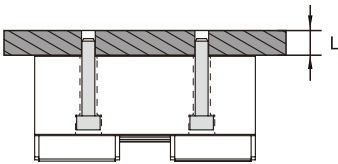
Model	Screws used	Maximum tightening torque N.m	Maximum thread entry depth Lmm
SHF8D□	M3×0.5	0.63	4
SHF12D□	M4×0.7	1.5	5
SHF16D□	M5×0.8	3	5.5
SHF20D□	M6×1.0	5.2	6

Bottom mount type (main body screw hole, main body through hole)
1. Use the main body screw holes



Model	Screws used	Maximum tightening torque N.m	Maximum thread entry depth Lmm
SHF8D□	M3×0.5	0.63	4
SHF12D□	M4×0.7	1.5	5
SHF16D□	M5×0.8	3	5.5
SHF20D□	M6×1.0	5.2	6

2. Use the empty holes without thread



Model	Screws used	Maximum tightening torque N.m	Maximum thread entry depth Lmm
SHF8D□	★M2.5×0.45	0.36	4.3
SHF12D□	M3×0.5	0.63	—
SHF16D□	M4×0.7	1.5	—
SHF20D□	M5×0.8	3	—

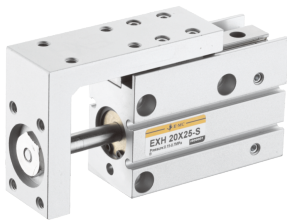
Note: When the SHF12, 16 thin air gripper is installed through the main body, the commercially available hexagon socket screws can be used; the screw depth depends on the specific installation situation.

- Note: When SHF air grippers are used for body through-hole mounting :
- ★1: SHF8 use the included special screws
 - 2: SHF12, 16 20 commercially available socket cap screws
 - 3: The screw screwing depth depends on the customer's specific installation situation.

EXH

Compact Slide Cylinder

EXH: Compact Slide Cylinder (With Magnet, Bumper Cushioning)



Specifications

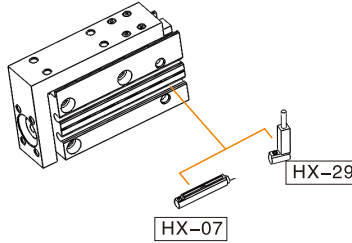
Bore(mm)	6	10	16	20
Acting type	Double Acting			
Working medium	Clean Air(40 μm filtration)			
Working pressure (MPa)	0.15~0.7			
Guaranteed pressure (MPa)	1.05			
Working temperature (°C)	-20~70(No freezing)			
Speed range (mm/s)	50~500			
Cushion type	Rubber cushion			
Stroke tolerance(mm)	+1.0 0			
Allowable kinetic energy(J)	0.008	0.025	0.05	0.1
Port size	M5 × 0.8			

How to Order?

Series No	Bore	X	Stroke	—	Magnet No
EXH	6 10 16 20		5 10 15 ...		S : With magnet

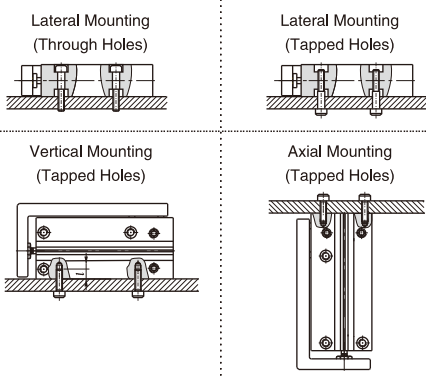
Order Example:
EXH series, linear bearing, bore 6mm, stroke 10mm,
ERP code is: EXH6X10-S

Optional Accessories



Note: Short stroke please use HX-29 series due to limited space.

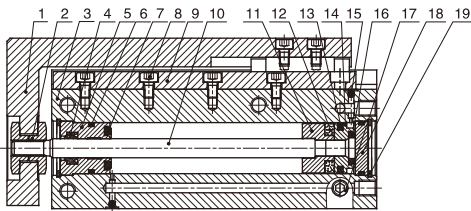
How to Mount ?



Stroke

Bore (mm)	Standard Stroke (mm)	Max. Stroke (mm)
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

Internal Structure



No.	Part Name	Material
1	Slide Table	Aluminum alloy
2	Locknut	Carbon steel
3	Body	Aluminum alloy
4	Front Scraper Seal	NBR
5	Head cover	Aluminum alloy
6	O-ring	NBR
7	Bumper	TPU
8	Screws	Carbon steel
9	Linear ball slide rail	Stainless steel
10	Piston rod	Stainless steel
11	Magnet seat	Aluminum alloy
12	Magnet	Neodymium iron boron
13	Piston seal	NBR
14	Piston	Aluminum alloy
15	Steel ball	Stainless steel
16	Bumper	TPU
17	Plug	Cu
18	Rear cover	Aluminum alloy
19	C clip	Spring steel

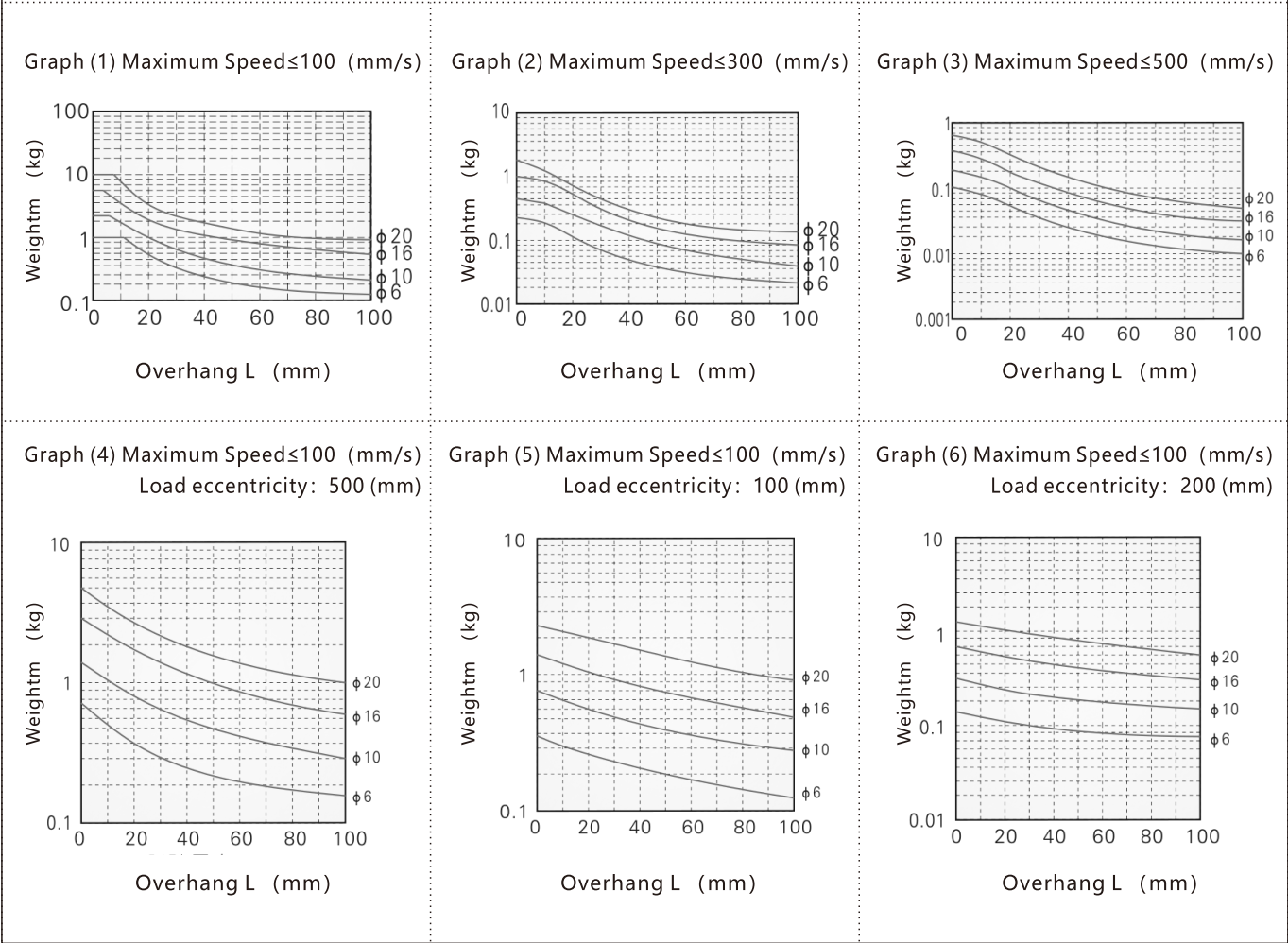
Model Selection Method

- 1.Cylinder theoretical force confirmation: Select the bore size according to the thrust and practicality, refer to the below table.
- 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.

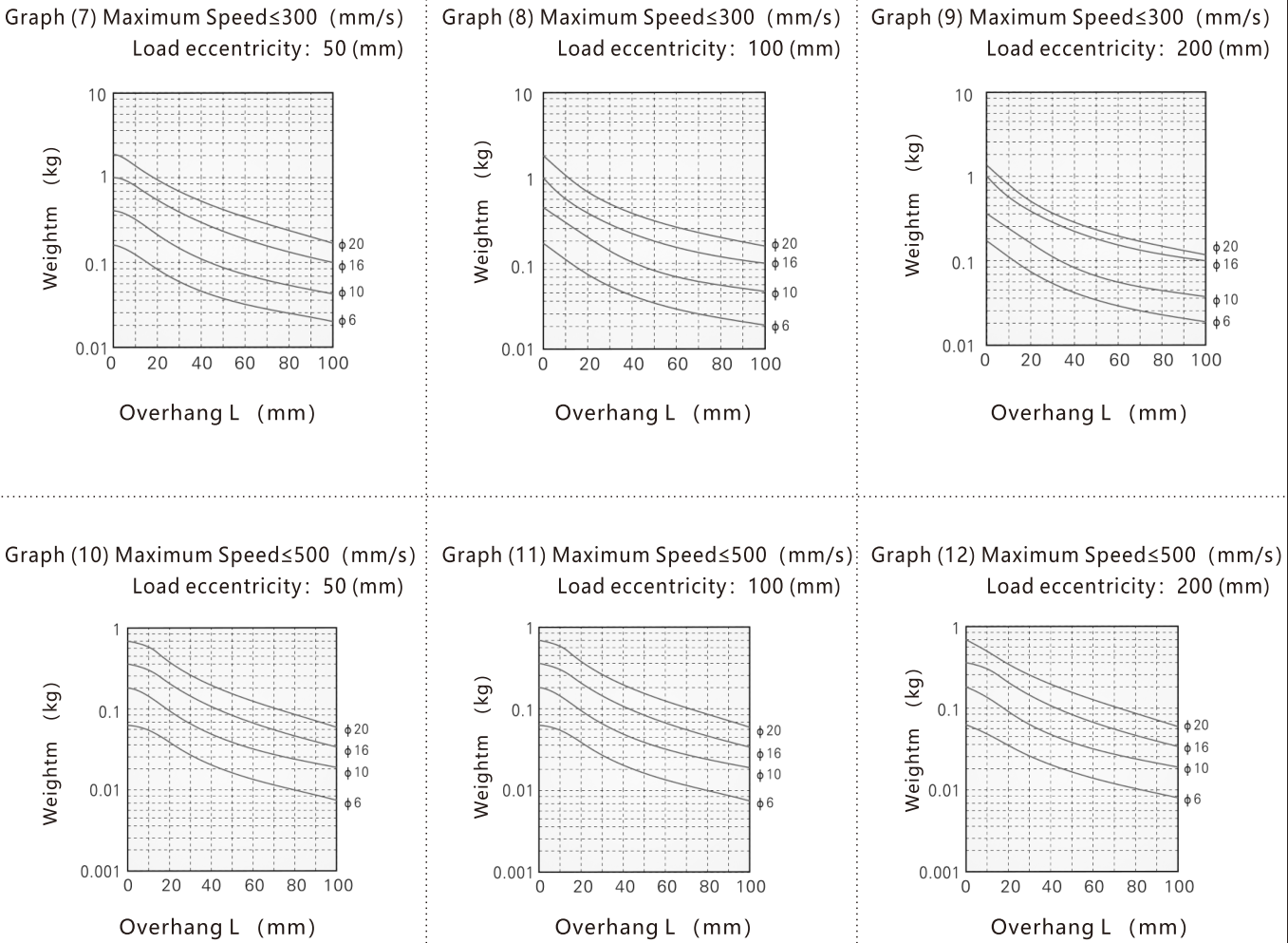
	Vertical			Horizontal								
Mounting position												
Maximum Speed (mm/s)	≤100	≤300	≤500	≤100			≤300			≤500		
Load eccentricity (mm)	—	—	—	50	100	200	50	100	200	50	100	200
Selection graph	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

Note:L can also be the angular distance between the load centre of gravity and the cylinder shaft centre as shown in the right figure.

2.1 The relation between loading and overhang(Selection graphs)



Model Selection Method



2.2 Selection example

Example 1: Mounting: Vertical

Maximum Speed:500mm/s
Overhang:40mm
Load weight:0.1kg

Refer to Graph3 base on vertical mounting and a speed of 500 mm/s
In graph3, find the intersection of a 40mm overhang and load weight of 0.1kg, which results in a selection of Φ20

Example 2: Mounting: Horizontal

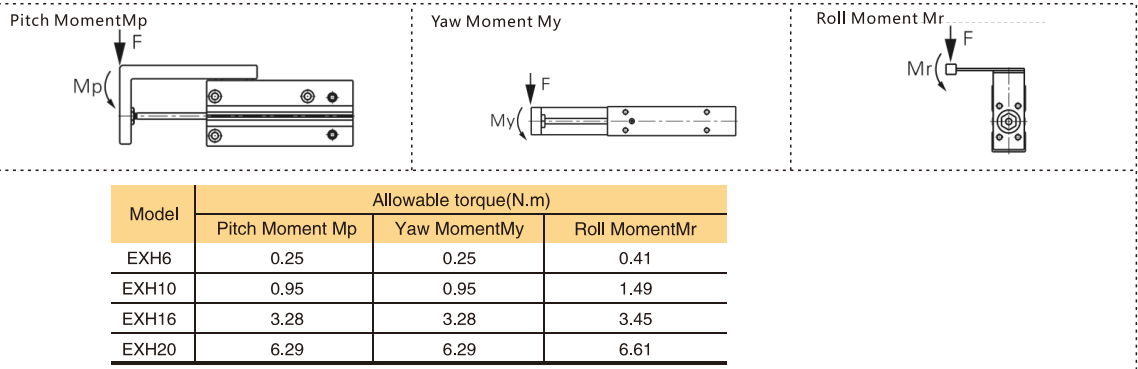
Maximum Speed:500mm/s
Load eccentricity:50mm
Overhang:30mm
Load weight:0.1kg

Refer to Graph10 base on horizontal mounting and a speed of 500 mm/s
In graph, find the intersection of a 30mm overhang and load weight of 0.1kg, which results in a selection of Φ16.

Installation and application

1. The actual loading and torque of cylinder must be less than its allowable loading and torque:

1.1 The allowable moment of cylinder



1.2 When the cylinder is subjected to different type of torque, 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

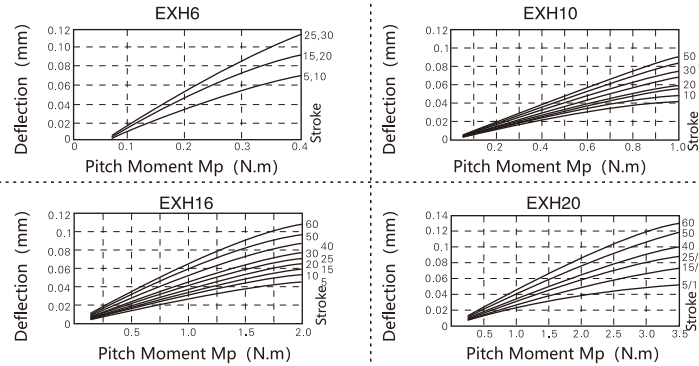
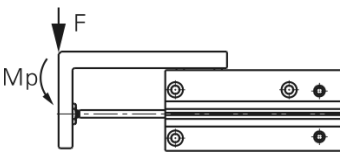


Table deflection due to Yaw Moment

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

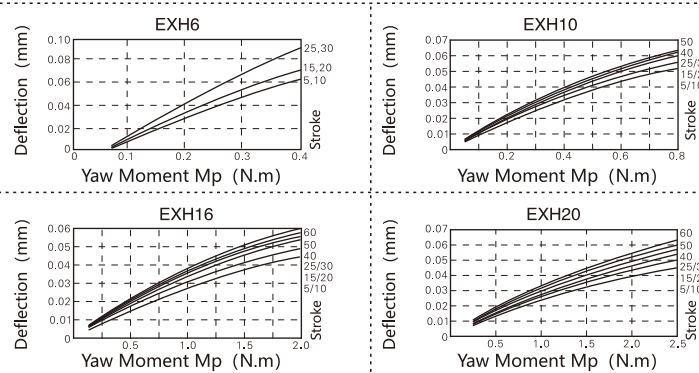
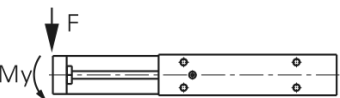
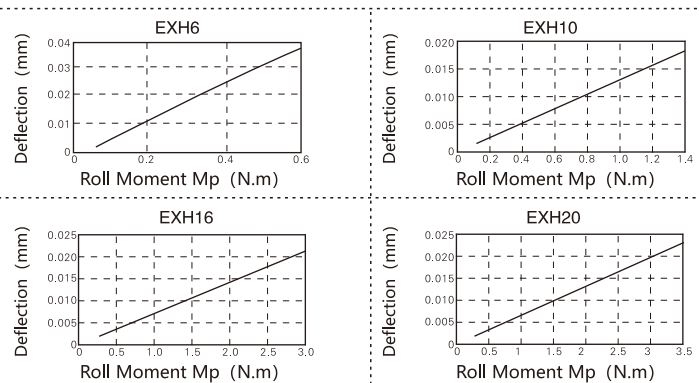
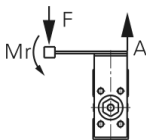


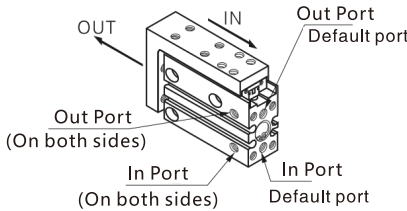
Table deflection due to Roll Moment

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

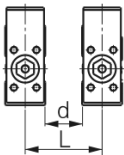


Installation and Application

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

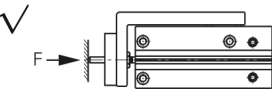


3. In compact slides with sensor switch, there is a danger of sensor switch malfunction if the mounting pitch is less than the dimensions shown in Table right. Be sure to allow at least the indicated interval.

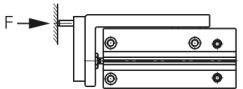


Model	At least indicated interval (mm)	
	d	L
EXH6	5	21
EXH10	5	25
EXH16	10	35
EXH20	15	47

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)



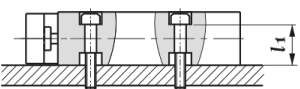
The loading and piston rod are coaxial



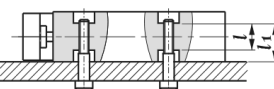
The loading and piston rod are offset

5. Be sure to use a flow control valve, and adjust the speed to 500mm/s or less.
6. A compact slide can be mounted from 4 directions. Don't exceed the max. fastening torque to tighten the mounting bolts.

Lateral Mounting (Through Holes)



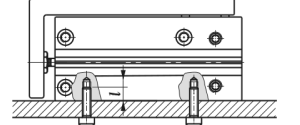
Lateral Mounting (Tapped Holes)



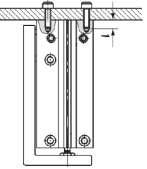
Model	Bolts	Max.fastening torque	L1
EXH6	M3X0.5	1.1 (Nm)	12.7
EXH10	M4X0.7	2.5 (Nm)	15.6
EXH16	M4X0.7	2.5 (Nm)	20.6
EXH20	M5X0.8	5.1 (Nm)	24

Model	Bolts	Max.fastening torque	L	L1
EXH6	M4X0.7	2.5 (Nm)	9.4	12.7
EXH10	M5X0.8	5.1 (Nm)	11.2	15.6
EXH16	M5X0.8	5.1 (Nm)	16.2	20.6
EXH20	M6X1.0	8.1 (Nm)	16	24

Vertical Mounting (Tapped Holes)



Axial Mounting (Tapped Holes)



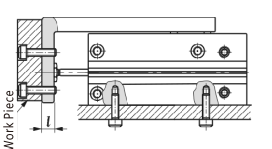
Model	Bolts	Max.fastening torque	L
EXH6	M3X0.5	1.1 (Nm)	5
EXH10	M4X0.7	2.5 (Nm)	6
EXH16	M4X0.7	2.5 (Nm)	6
EXH20	M5X0.8	5.1 (Nm)	8

7. Work Piece Mounting:

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

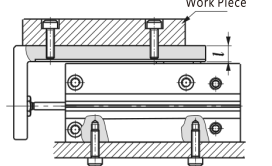
When mounting a work piece on top of the table, do not screw the bolt deeper than the thread length in the table (See below table L), otherwise the bolt will damage the linear guide.

Front Mounting



Model	Bolts	Max.fastening torque	L
EXH6	M3X0.5	1.1 (Nm)	5.5
EXH10	M4X0.7	2.5 (Nm)	7.5
EXH16	M4X0.7	2.5 (Nm)	10
EXH20	M5X0.8	5.1 (Nm)	11

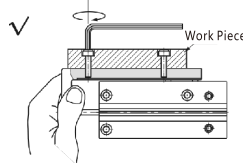
Top Mounting



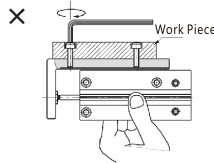
Model	Bolts	Max.fastening torque	L
EXH6	M3X0.5	1.1 (Nm)	6.5
EXH10	M4X0.7	2.5 (Nm)	8
EXH16	M4X0.7	2.5 (Nm)	9
EXH20	M5X0.8	5.1 (Nm)	9.5

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.



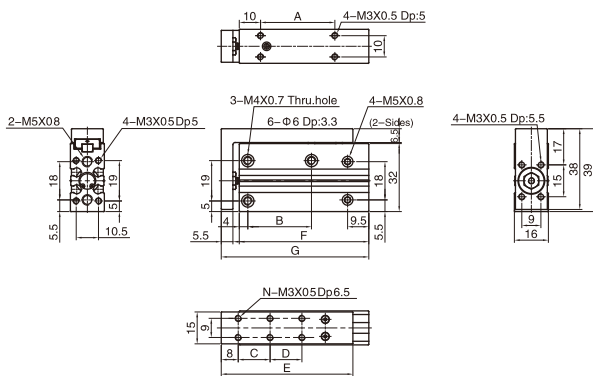
Hold the slide and fasten the bolt



Hold the body and fasten the bolt

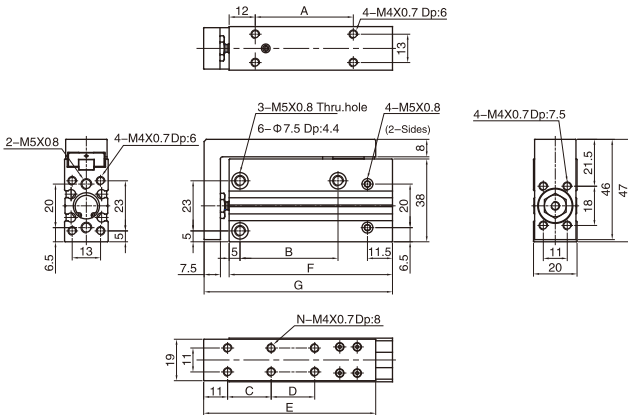
Main Dimension

EXH Φ6



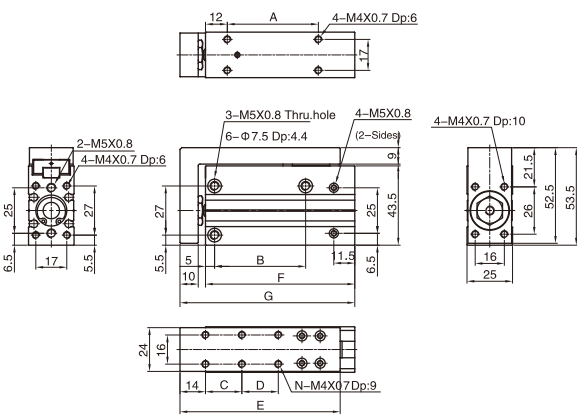
Bore\Sign	N	A	B	C	D	E	F	G
5	4	10	14	10	-	42	36	44.5
10	4	15	14	10	-	42	41	49.5
15	4	20	24	20	-	52	46	54.5
20	4	25	24	20	-	52	51	59.5
25	4	30	30	30	-	62	56	64.5
30	4	35	30	30	-	62	61	69.5
40	6	45	45	20	20	72	71	79.5

EXH Φ10



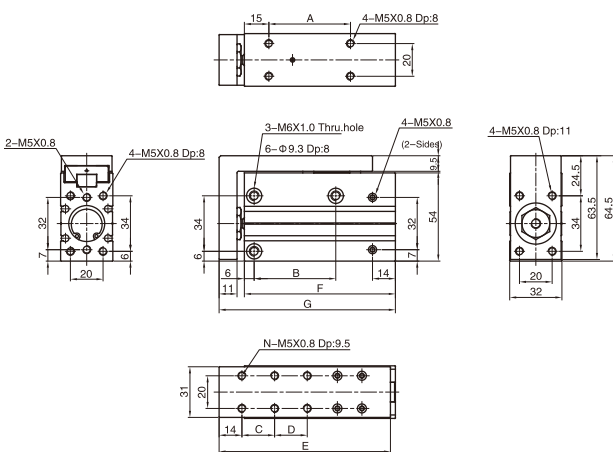
Bore\Sign	N	A	B	C	D	E	F	G
5	4	10	14	10	-	49	40	51.5
10	4	15	14	10	-	49	45	56.5
15	4	20	24	20	-	59	50	61.5
20	4	25	24	20	-	59	55	66.5
25	4	30	30	30	-	69	60	71.5
30	4	35	30	30	-	69	65	76.5
40	6	45	45	20	20	79	75	86.5
50	6	55	55	25	25	89	85	96.5

EXH Φ16



Bore\Sign	N	A	B	C	D	E	F	G
5	4	15	20	10	-	58	47	61
10	4	20	20	10	-	58	52	66
15	4	25	30	20	-	68	57	71
20	4	30	30	20	-	68	62	76
25	4	35	40	30	-	78	67	81
30	4	40	40	30	-	78	72	86
40	6	50	50	20	20	88	82	96
50	6	60	60	25	25	98	92	106
60	6	70	60	30	30	108	102	116

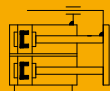
EXH Φ20



Bore\Sign	N	A	B	C	D	E	F	G
5	4	15	20	10	-	64	57.5	73
10	4	20	20	10	-	64	62.5	78
15	4	25	25	20	-	74	67.5	83
20	4	30	25	20	-	74	72.5	88
25	4	35	40	30	-	84	77.5	93
30	4	40	40	30	-	84	82.5	98
40	6	50	50	20	20	94	92.5	108
50	6	60	70	25	25	104	102.5	118
60	6	70	70	30	30	114	112.5	128

ELS/ELSL
Slide Cylinder

ELS/ELSL Series Slide Cylinder(with magnet,rubber cushion)



Specifications

Bore(mm)	6	8	12	16	20	25
Acting Type	Double Acting					
Working Medium	Clean Air(after 40 μ m filtration)					
Working Pressure(MPa)	0.15~0.7					
Guaranteed Pressure(MPa)	1.05					
Working Temperature(°C)	-20~70(No freezing)					
Piston Speed(mm/s)	50~500					
Stroke tolerance	Stroke ≤ 100 ^{+0.0} ₀ , Stroke > 100 ^{+1.5} ₀					
Cushion	Rubber cushion on both ends, Shock absorber cushion					
Port Size	M5x0.8			G1/8		

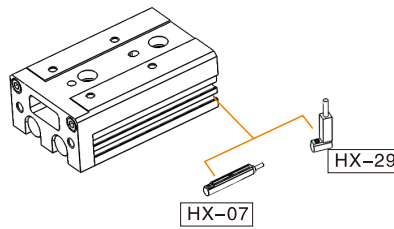
How to order?

Series No.	Bore	X	Stroke	— Magnet No.	— Adjuster	— Thread Type
ELS:Standard Type	6				Blank: None adjuster	Blank: G
ELSL:Symmetric Type	8				A: Adjusters on both ends	
	12				AS: Forward adjuster	
	16				AF: Backward adjuster	
	20				B: Shock absorber on both ends	
	25				BS: Forward shock absorber	
					BF: Backward shock absorber	
					(Note: Shock absorber is not available for φ 6)	

Order Example:

ELS Series Basic type cylinder, bore size 20, stroke 50, with Magnet, without adjuster, thread type G.The ERP code is: ELS20X50-S

Optional Accessories



Note:Short stroke please use HX-29 series due to limited space.

Stroke

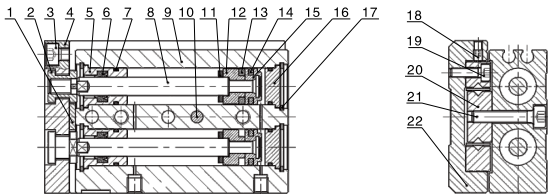
Bore(mm)	Standard Stroke(mm)										Max.Stroke(mm)
Double Acting	6	10	20	30	40	50					50
	8	10	20	30	40	50	75				75
	12	10	20	30	40	50	75	100			100
	16	10	20	30	40	50	75	100	125		125
	20	10	20	30	40	50	75	100	125	150	150
	25	10	20	30	40	50	75	100	125	150	150

Weight(g)

Bore(mm)	Stroke(mm)							
	10	20	30	40	50	75	100	125
6	73	90	103	146	163	—	—	—
8	143	156	178	225	269	—	—	—
12	345	350	355	403	470	651	—	—
16	542	551	560	623	708	973	1245	1523
20	988	995	1002	1111	1226	1617	2081	2482
25	1462	1480	1498	1638	1785	2314	2845	3437

Note: The weight in the above table is the standard product weight without adjuster.

Internal Structure



No.	Part Name	Material
1	Cushion Pad	TPU
2	Fixing Screw	Stainless Steel
3	Hexagon Socket Cap Head Screw	Carbon Steel
4	Fixing Plate	Aluminum Alloy
5	Front Cover	Aluminum Alloy
6	Front Scraper Seal	NBR
7	O-ring	NBR
8	Piston Rod	Stainless Steel
9	Barrel	Aluminum Alloy
10	Positioning pin	Stainless Steel
11	Anti-Crash Gasket	TPU
12	Magnet Seat	Aluminum Alloy
13	Integrated Magnet	RbFeB
14	Piston Seal	NBR
15	Piston	Aluminum Alloy
16	Rear Cover	Aluminum Alloy
17	C-Type Retainer Ring	Spring Steel
18	Hexagon Socket Set Screw	Carbon Steel
19	Hexagon Socket Cap Head Screw	Carbon Steel
20	Linear Roller Sliding Guide Rail	Assembly
21	Hexagon Socket Cap Head Screw	Carbon Steel
22	Slide Table	Aluminum Alloy

Model Selection Method

Please select compact cylinder's type according to following procedure, and cross reference with data sheets.

1. Operating conditions(According to mounting position and work form)

- 1.1 Model used(Bore size, Stroke)
- 1.2 Type of cushion(Bumper, Shock absorber)
- 1.3 Mounting position of work(Top, front)
- 1.4 Mounting direction(Axial, Vertical)
- 1.5 Average speed Va(mm/s)
- 1.6 Applied load W(N)
- 1.7 Overhang L1, L2, L3(mm)

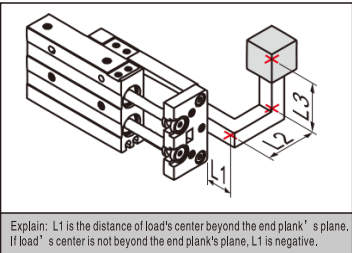
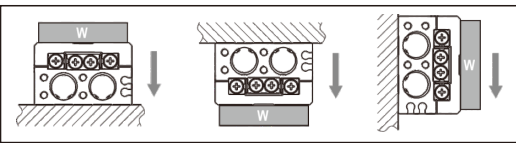


Fig. 1 Applied load



3. Load Check

Detailed procedures

3.1 Calculate allowable applied load Wa(N)

$$W_a = K \times \beta \times W_{max}$$

K: Mounting work coefficient (Fig.2)
β: Applied load coefficient (Fig.3)
Wmax: Maximum allowable applied load (Table 1)

3.2 Check that load(W) doesn't exceed allowable applied load (Wa)

$$W \leq W_a$$

Fig. 2 Mounting work coefficient (K)

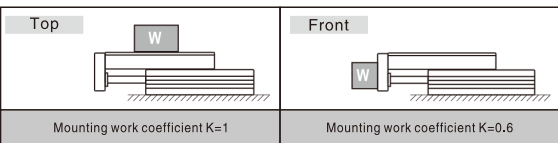
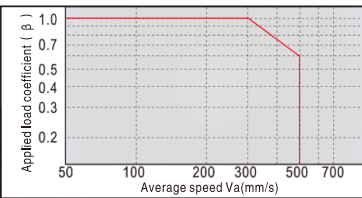


Fig. 3 Applied load coefficient (β)



2. Kinetic energy check

Detailed procedures

2.1 Calculate kinetic energy of load E (J)

$$E = \frac{1}{2} \times \frac{W}{g} \times \left(\frac{1.4 \times V_a}{1000} \right)^2$$

2.2 Calculate allowable kinetic energy Ea (J)

$$E_a = K \times E_{max}$$

K: Mounting work coefficient (Fig.2)
Emax: Maximum allowable kinetic energy (Table 1)

2.3 Check that kinetic energy of load doesn't exceed allowable kinetic energy

$$E \leq E_a$$

4. Moment check4

Detailed procedures

Horizontal

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

Dynamic moment:
 $M_p = W \times (L_1 + A) / 1000$
Static moment:
 $M_{po} = \frac{W \times (L_1 + A)}{1000} + \frac{W \times a \times (L_2 + B)}{1000 \times g}$
Dynamic moment:
 $M_r = W \times (C + L_3) / 1000$
Static moment:
 $M_{ro} = \frac{W \times (C + L_3)}{1000} + \frac{W \times a \times (L_2 + B)}{1000 \times g}$
Dynamic moment:
 $M_y = 0$
Static moment:
 $M_{yo} = (W \times a \times (C + L_3)) / 1000g$

* Check

Dynamic moment:
 $\frac{M_p}{M_{pmax}} + \frac{M_y}{M_{ymax}} + \frac{M_r}{M_{rmax}} \leq 1$
Static moment:
 $\frac{M_{po}}{M_{po_{max}}} + \frac{M_{yo}}{M_{yo_{max}}} + \frac{M_{ro}}{M_{ro_{max}}} \leq 1$

Vertical

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

Dynamic moment:
 $M_p = W \times (L_2 + B) / 1000$
Static moment:
 $M_{po} = \frac{W \times (L_2 + B)}{1000} + \frac{W \times a \times (L_2 + B)}{1000 \times g}$
Dynamic moment:
 $M_y = W \times (C + L_3) / 1000$
Static moment:
 $M_{yo} = \frac{W \times a \times (C + L_3)}{1000g} + \frac{W \times a \times (L_2 + B)}{1000}$
* Check
Dynamic moment:
 $\frac{M_p}{M_{pmax}} + \frac{M_y}{M_{ymax}} \leq 1$
Static moment:
 $\frac{M_{po}}{M_{po_{max}}} + \frac{M_{yo}}{M_{yo_{max}}} \leq 1$
Explain:
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).
Mpmax, Mymax, Mrmax, Mpo_{max}, Myo_{max}, Mro_{max}: Maximum allowable moment (Refer to table 2);
g: Acceleration of gravity (g=9.81m/s²).
a: Acceleration of inertia
a=1600x (Va/1000)², Shock absorber
a=400x (Va/1000)²
W: Load weight (Determined by actuality).

Model Selection Method

Please select compact cylinder's type according to following procedure, and cross reference with data sheets.

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/s²
K	Mounting work coefficient	-
L1,L2,L3	Overhang	mm
Mp,My,Mr	Dynamic moment(Pitch Yaw Roll)	Nm
Mpmax,Mymax,Mrmax	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	m/s
W	Applied load	N
Wmax	Maximum allowable applied load	N
β	Applied load coefficient	-

Table 1: Maximum allowable kinetic energy(Emax)Maximum allowable applied load(Wmax)

Model	Maximum allowable kinetic energy Emax(J)			Maximum allowable applied load Wmax (N)
	Basic type	Rubber stopper type	Shock absorber type	
ELS6	0.01	0.01	-	4
ELS8	0.024	0.024	0.048	8
ELS12	0.05	0.05	0.1	15
ELS16	0.1	0.1	0.2	30
ELS20	0.13	0.13	0.26	40
ELS25	0.22	0.22	0.44	70

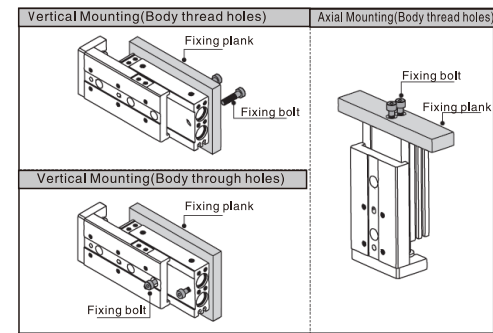
Table 2: Maximum allowable moment(Nm), Correction value for center position distance of moment(mm)

Bore size	Stroke	Static moment			Dynamic moment			Correction value		
		Mp_{max}	Myo_{max}	Mro_{max}	Mp_{max}	My_{max}	Mr_{max}	A	B	C
ELS6	10	3.3	3.8	2.6	0.7	0.7	0.6	27	7.3	15
	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		
ELS8	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		
ELS12	10	33	34.3	30.9	7.3	7.3	5.8	48	10	25
	20	33	34.3	30.9	7.6	7.6	5.8	58		
	30	33	34.3	30.9	7.8	7.8	5.8	68		
	40	33	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		
ELS16	10	33	34.3	30.9	7.3	7.3	5.8	48	11	31
	20	33	34.3	30.9	7.6	7.6	5.8	58		
	30	33	34.3	30.9	7.8	7.8	5.8	68		
	40	33	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		
ELS20	10	60.1	50.5	72.8	14.5	14.5	15.2	47	16.5	38
	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		
ELS25	10	60.1	50.5	72.8	16.3	16.3	17.6	52	20.3	43
	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		

Installation and Operation

1.How to mount cylinder:

1.1 Cylinder can to be mounted from 3 directions.

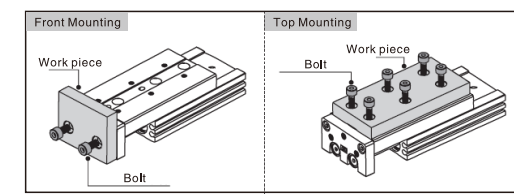


1.2 When mounting an compact slide cylinder, screws of appropriate length should be used and tightened properly within the maximum tightening torque. If screws are tightened beyond designed limits, malfunction may occur. If they are tightened insufficiently, it may result in sliding or falling off from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

Vertical Mounting(Body thread holes)	Model	Bolt used	Max.tightening torque (Nm)	Max.screw-in depth (mm)
	ELS6	M4X0.7	2.1	8
	ELS8	M4X0.7	2.1	8
	ELS12	M5X0.8	4.4	10
	ELS16	M6X1.0	7.4	12
	ELS20	M6X1.0	7.4	12
	ELS25	M8X1.25	18	16
Vertical Mounting(Body through holes)	Model	Bolt used	Max.tightening torque (Nm)	Max.screw-in depth (mm)
	ELS6	M3X0.5	1.2	10.8
	ELS8	M3X0.5	1.2	12.5
	ELS12	M4X0.7	2.8	18
	ELS16	M5X0.8	5.7	23.5
	ELS20	M5X0.8	5.7	28.5
	ELS25	M6X1.0	10	34.5
Axial Mounting(Body tapped holes)	Model	Bolt used	Max.tightening torque (Nm)	Max.screw-in depth (mm)
	ELS6	M2.5X0.45	0.5	3.5
	ELS8	M3X0.5	0.9	4.0
	ELS12	M4X0.7	2.1	6.0
	ELS16	M5X0.8	4.4	7.0
	ELS20	M5X0.8	4.4	8.0
	ELS25	M6X1.0	7.4	10.0

2.Work Piece Mounting:

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

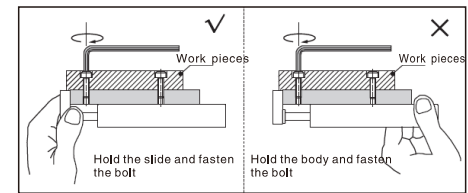


2.2 When mounting a work piece, tighten the bolts properly at a torque value within the limiting range. Use bolts at least 0.5mm shorter than maximum thread depth to prevent bolts from contacting the guide block. If the bolts are too long, they hit the guide block and cause damage.

Front Mounting	Model	Bolt used	Max.tightening torque (Nm)	Max.screw-in depth (mm)
	ELS6	M3X0.5	0.9	5
	ELS8	M4X0.7	2.1	6
	ELS12	M5X0.8	4.4	8
	ELS16	M6X1.0	7.4	10
	ELS20	M6X1.0	7.4	13
	ELS25	M8X1.25	18	15
Top Mounting	Model	Bolt used	Max.tightening torque (Nm)	Max.screw-in depth (mm)
	ELS6	M3X0.5	0.9	4
	ELS8	M3X0.5	0.9	4.5
	ELS12	M4X0.7	2.1	5.5
	ELS16	M5X0.8	4.4	7.5
	ELS20	M5X0.8	4.4	9.5
	ELS25	M6X1.0	7.4	13

2.3 Since the table is supported by the linear guide, take care not to apply strong impact or large moment to the guide section.

2.4 Hold the slide when fastening work pieces to it with bolts, if the body is held while tightening bolts, excessive moment may damage guide section.

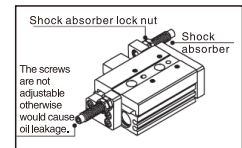


3.About shock absorber:

3.1 Shock absorbers are expendable parts. 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.

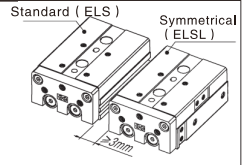


Model	Shock absorber	Tightening torque (Nm)
ELS8	AC0806-WY	1.67
ELS12	AC0806-WY	1.67
ELS16	AC1008-WY	3.14
ELS20	AC1416-WY	10.8
ELS25	AC1416-WY	10.8

4.How to mount sensor switch:

4.1 ELS Series are all with magnet.

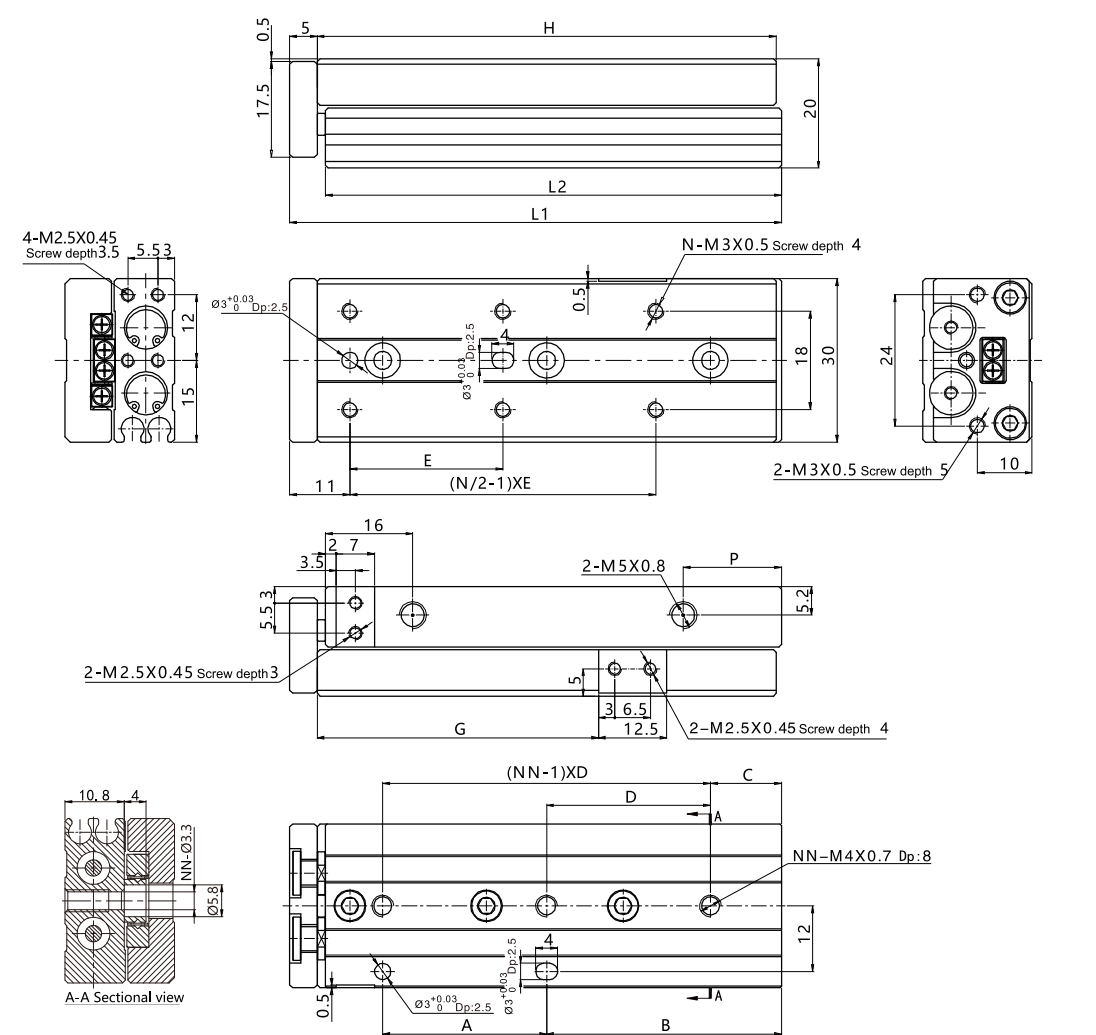
4.2 Maintain a minimum spacing of at least 3mm if two compact cylinders are used side by side in order to avoid malfunction.



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.

Main Dimension

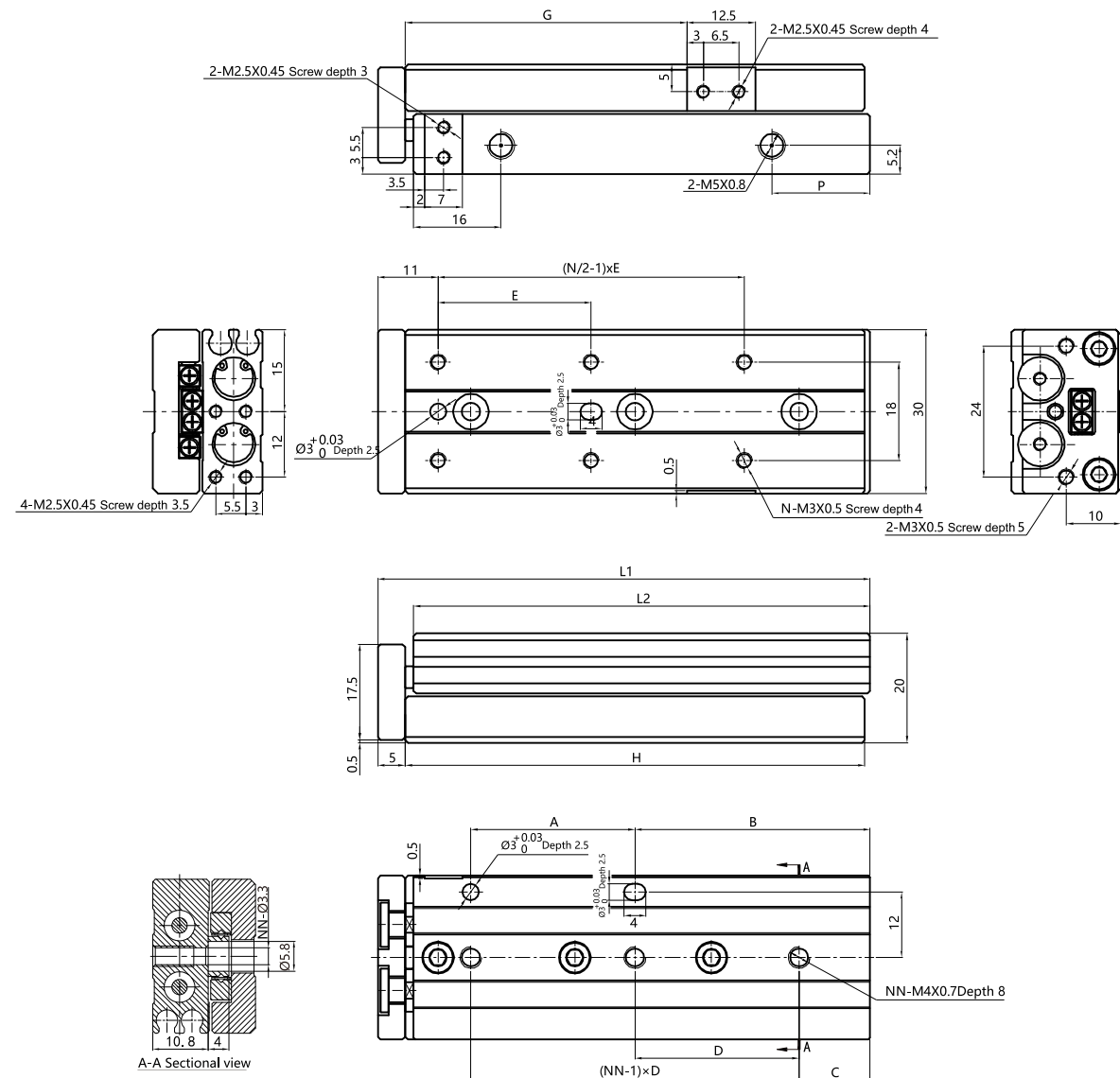
ELS 6



Stroke/Sign	A	B	C	D	E	G	H	P	L1	L2	N	NN
10	20	11	6	25	20	21.5	42	9.5	48	41.5	4	2
20	20	21	6	35	30	31.5	52	9.5	58	51.5	4	2
30	20	31	11	20	20	41.5	62	8	68	61.5	6	3
40	30	43	13	30	28	51.5	84	18	90	83.5	6	3
50	48	41	17	24	38	61.5	100	24	106	99.5	6	4

○ **Main Dimension**

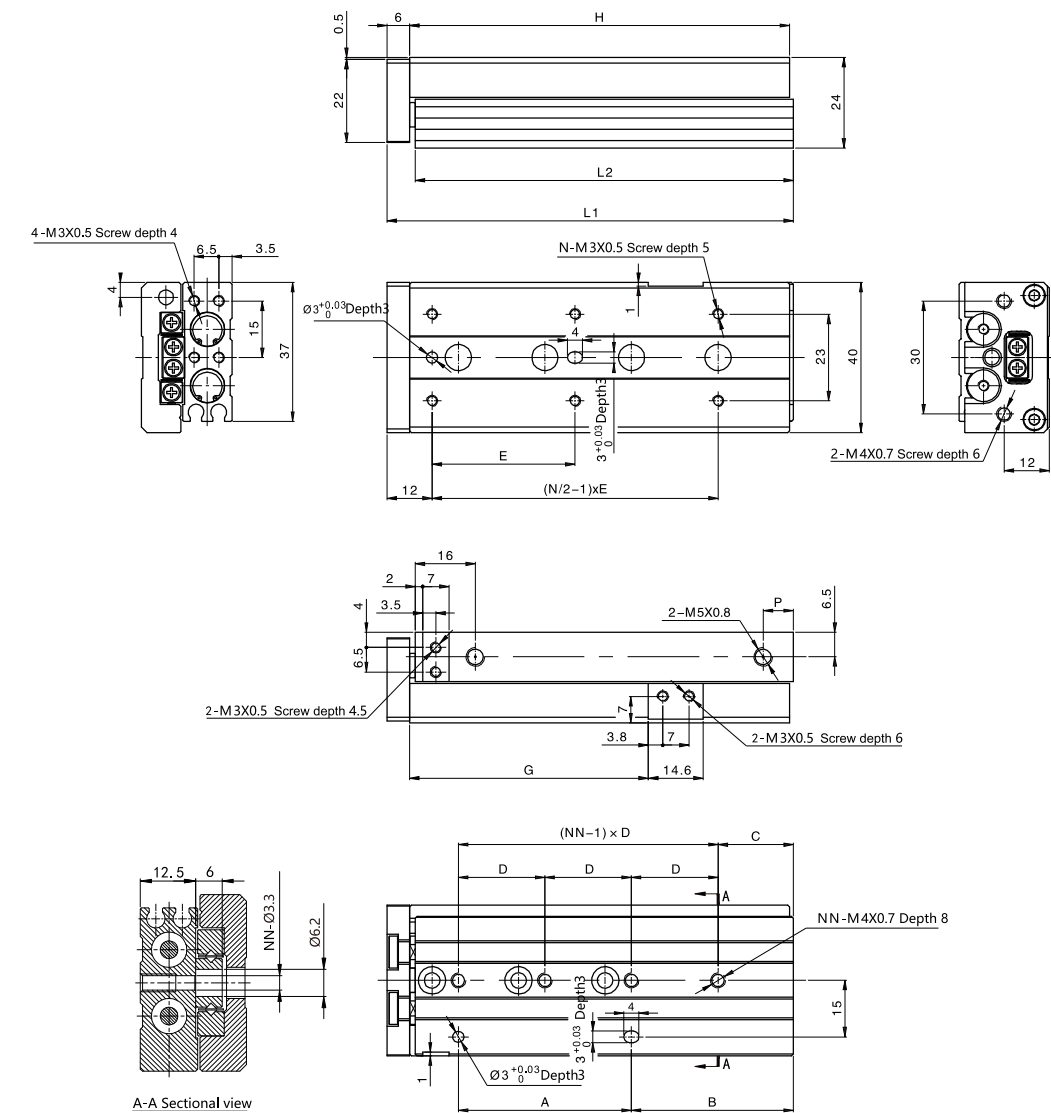
ELSL 6



Storke/Sign	A	B	C	D	E	G	H	P	L1	L2	N	NN
10	20	11	6	25	20	21.5	42	9.5	48	41.5	4	2
20	20	21	6	35	30	31.5	52	9.5	58	51.5	4	2
30	20	31	11	20	20	41.5	62	8	68	61.5	6	3
40	30	43	13	30	28	51.5	84	18	90	83.5	6	3
50	48	41	17	24	38	61.5	100	24	106	99.5	6	4

© Main Dimension

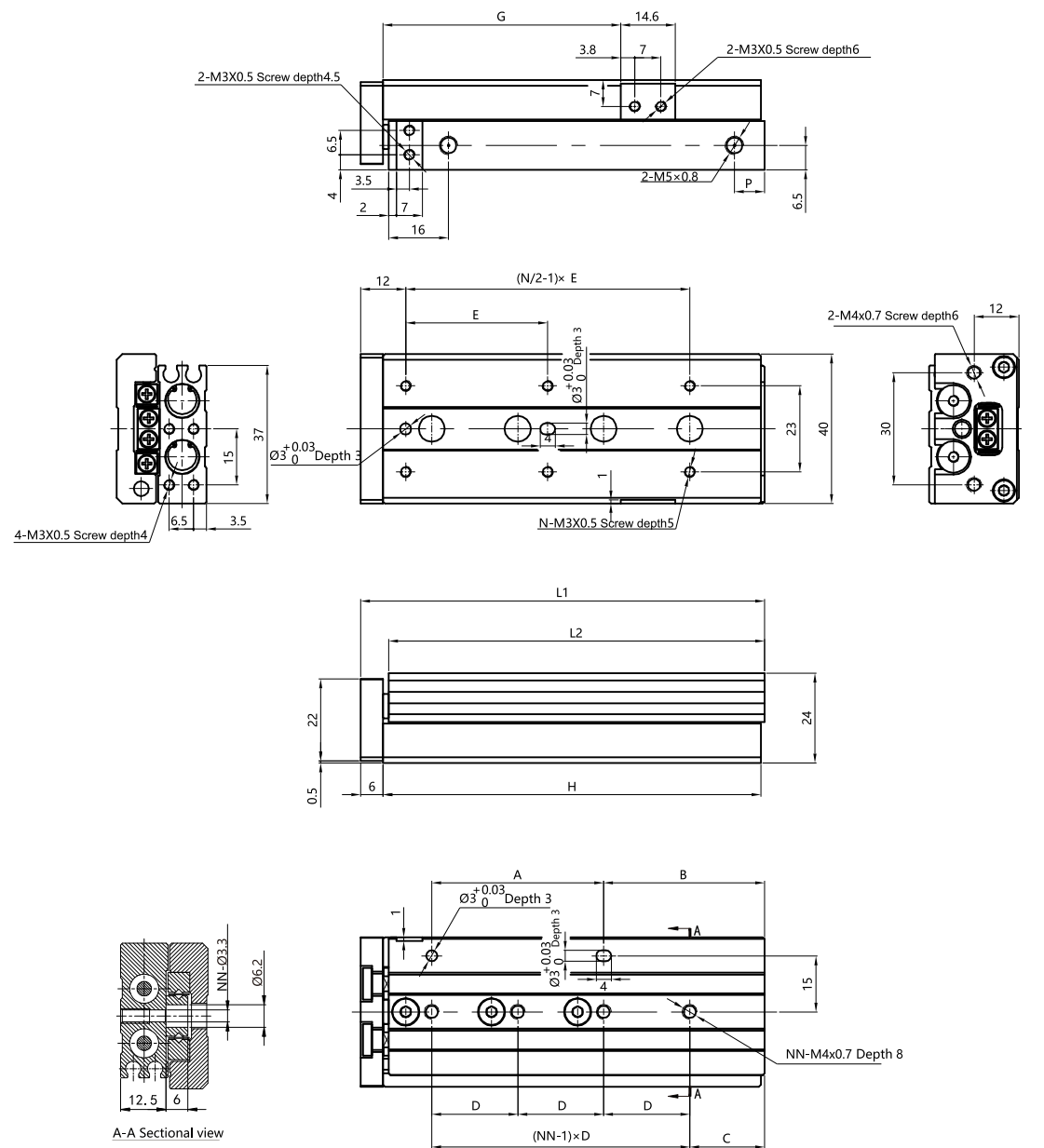
ELS 8



Stroke/Sign	A	B	C	D	E	G	H	P	L1	L2	N	NN
10	20	17	9	28	25	23.5	49	13	56	48.5	4	2
20	30	12	12	30	25	33.5	54	8	61	53.5	4	2
30	20	33	13	20	40	43.5	65	8	72	64.5	4	3
40	28	43	15	28	50	53.5	83	8	90	82.5	4	3
50	46	43	20	23	38	63.5	101	8	108	100.5	6	4
75	56	83	27	28	50	88.5	151	8	158	150.5	6	5

Main Dimension

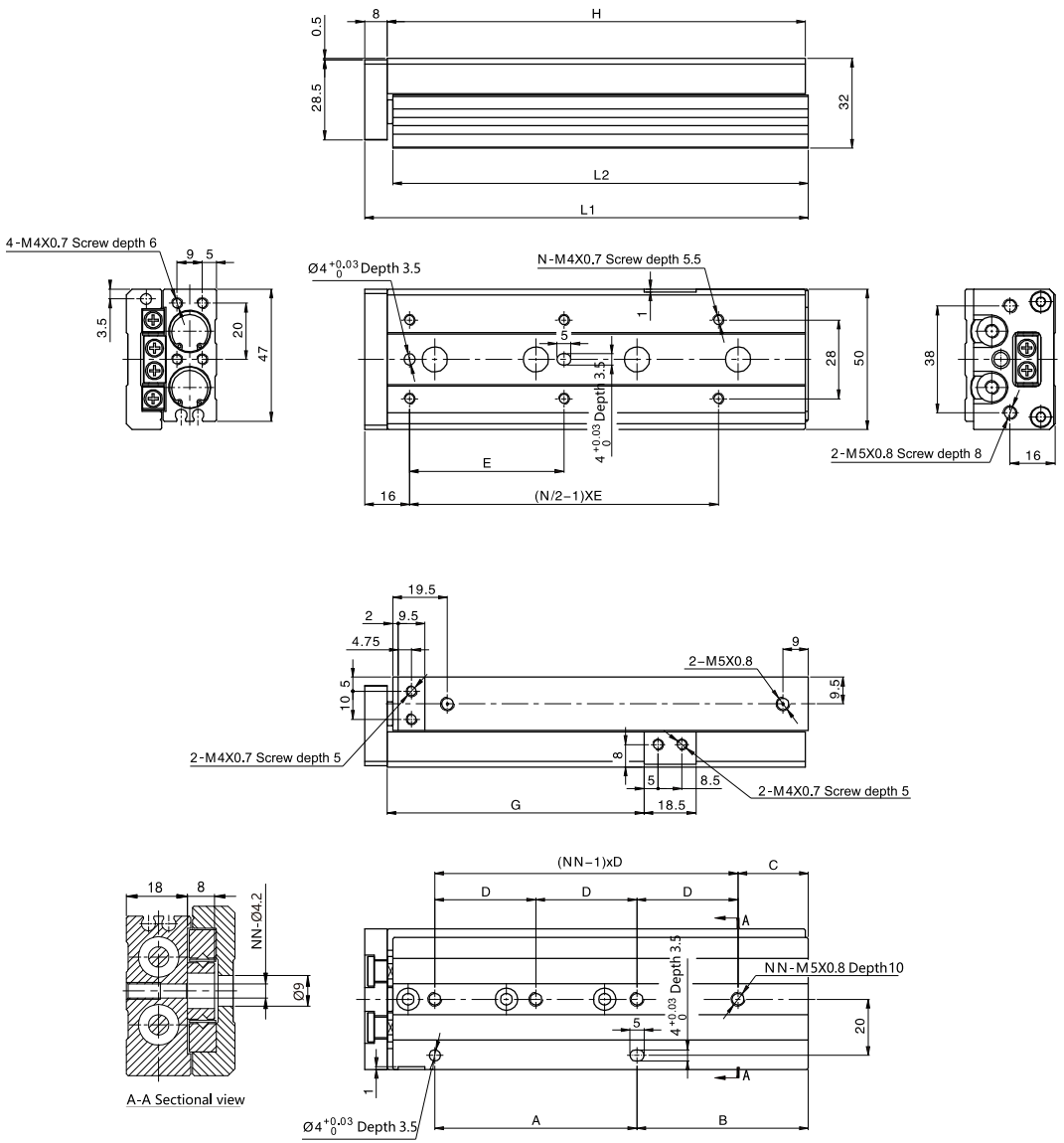
ELSL 8



Stroke/Sign	A	B	C	D	E	G	H	P	L1	L2	N	NN
10	20	17	9	28	25	23.5	49	13	56	48.5	4	2
20	30	12	12	30	25	33.5	54	8	61	53.5	4	2
30	20	33	13	20	40	43.5	65	8	72	64.5	4	3
40	28	43	15	28	50	53.5	83	8	90	82.5	4	3
50	46	43	20	23	38	63.5	101	8	108	100.5	6	4
75	56	83	27	28	50	88.5	151	8	158	150.5	6	5

Main Dimension

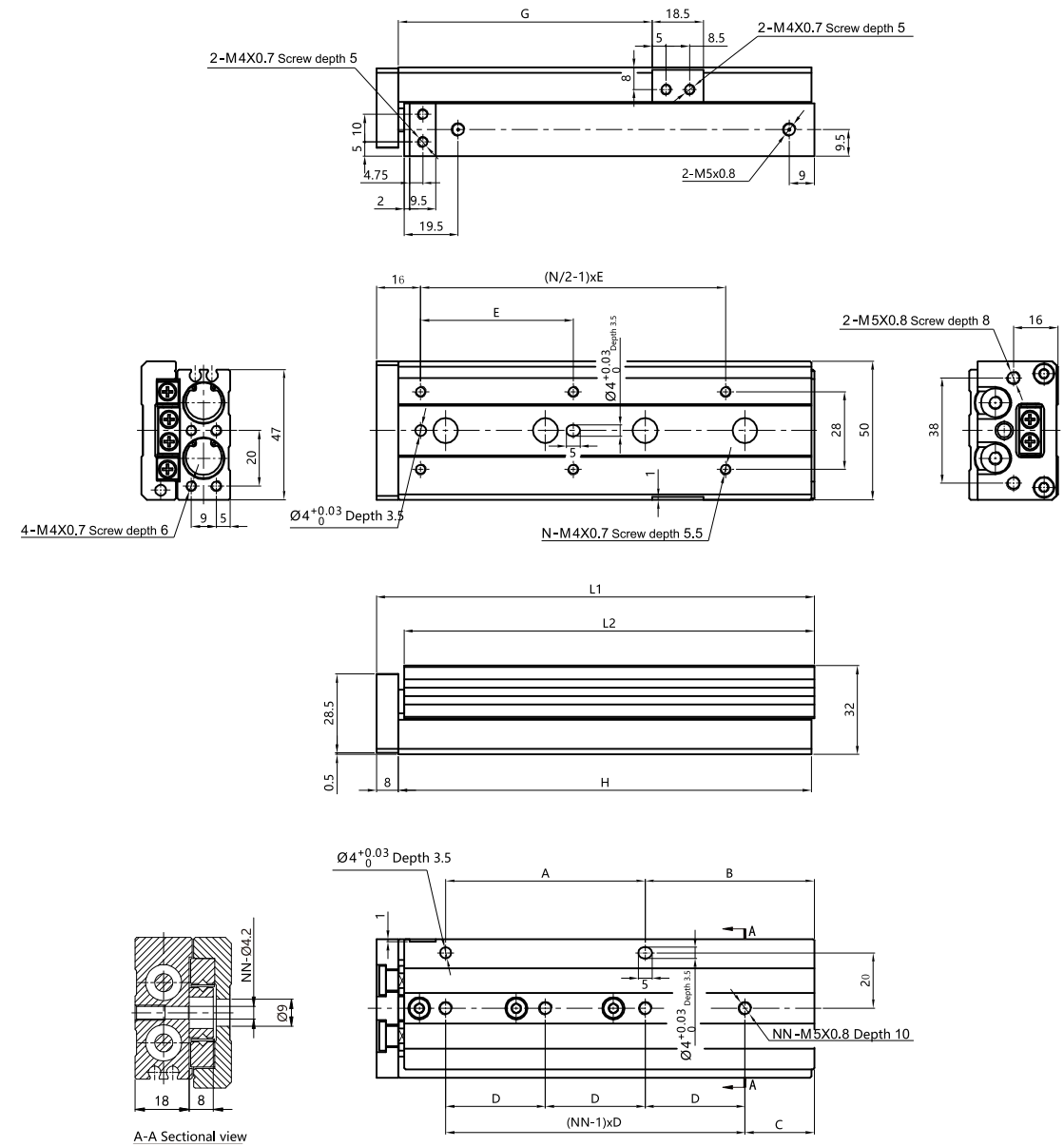
ELS 12



Stroke/Sign	A	B	C	D	E	G	H	L1	L2	N	NN
10	40	15	15	40	35	26.5	71	80	70	4	2
20	40	15	15	40	35	36.5	71	80	70	4	2
30	40	15	15	40	35	46.5	71	80	70	4	2
40	25	42	17	25	50	56.5	83	92	82	4	3
50	36	51	15	36	35	66.5	103	112	102	6	3
75	72	61	25	36	55	91.5	149	158	148	6	4
100	76	111	35	38	65	116.5	203	212	202	6	5

Main Dimension

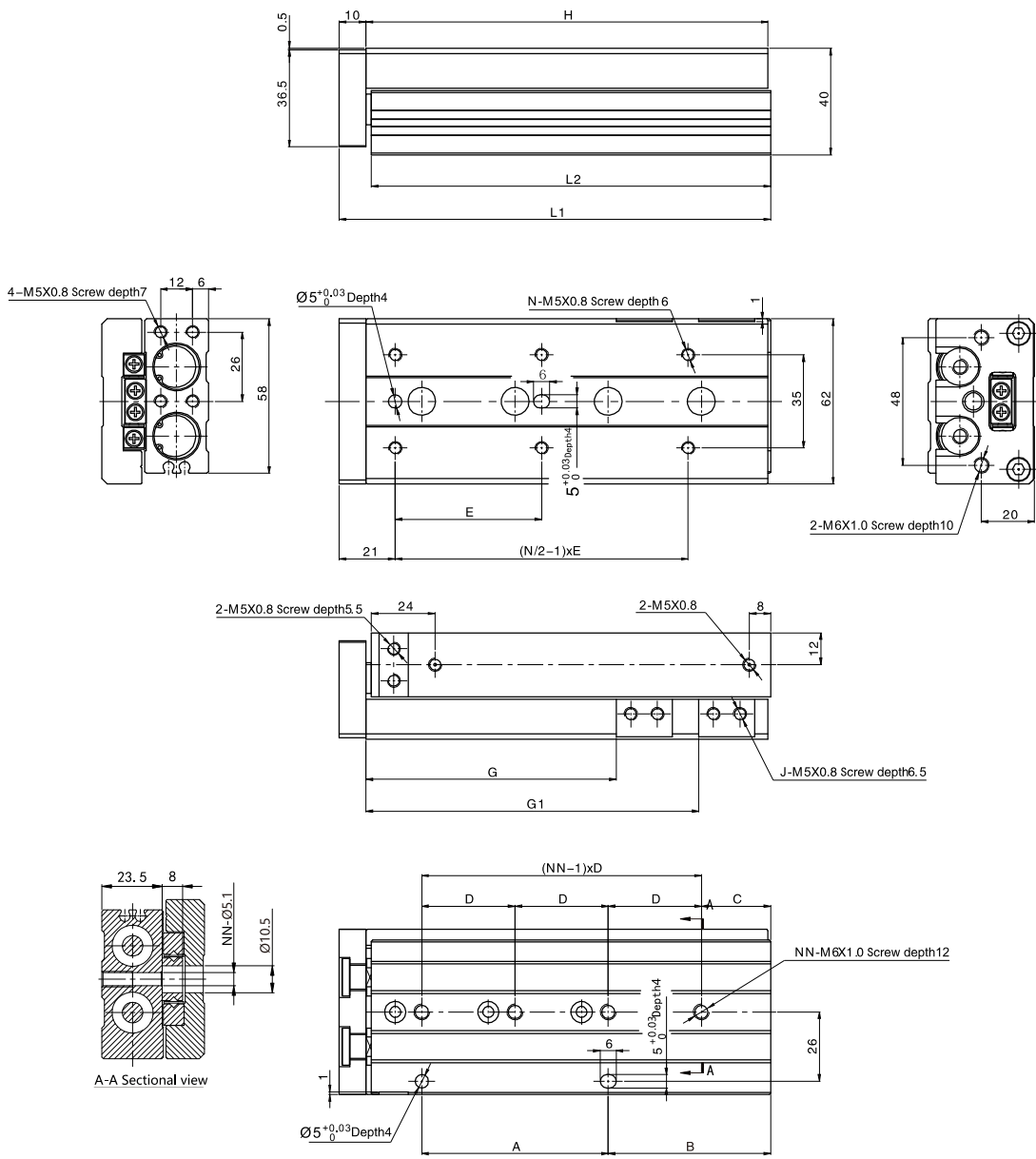
ELSL 12



Stroke/Sign	A	B	C	D	E	G	H	L1	L2	N	NN
10	40	15	15	40	35	26.5	71	80	70	4	2
20	40	15	15	40	35	36.5	71	80	70	4	2
30	40	15	15	40	35	46.5	71	80	70	4	2
40	25	42	17	25	50	56.5	83	92	82	4	3
50	36	51	15	36	35	66.5	103	112	102	6	3
75	72	61	25	36	55	91.5	149	158	148	6	4
100	76	111	35	38	65	116.5	203	212	202	6	5

Main Dimension

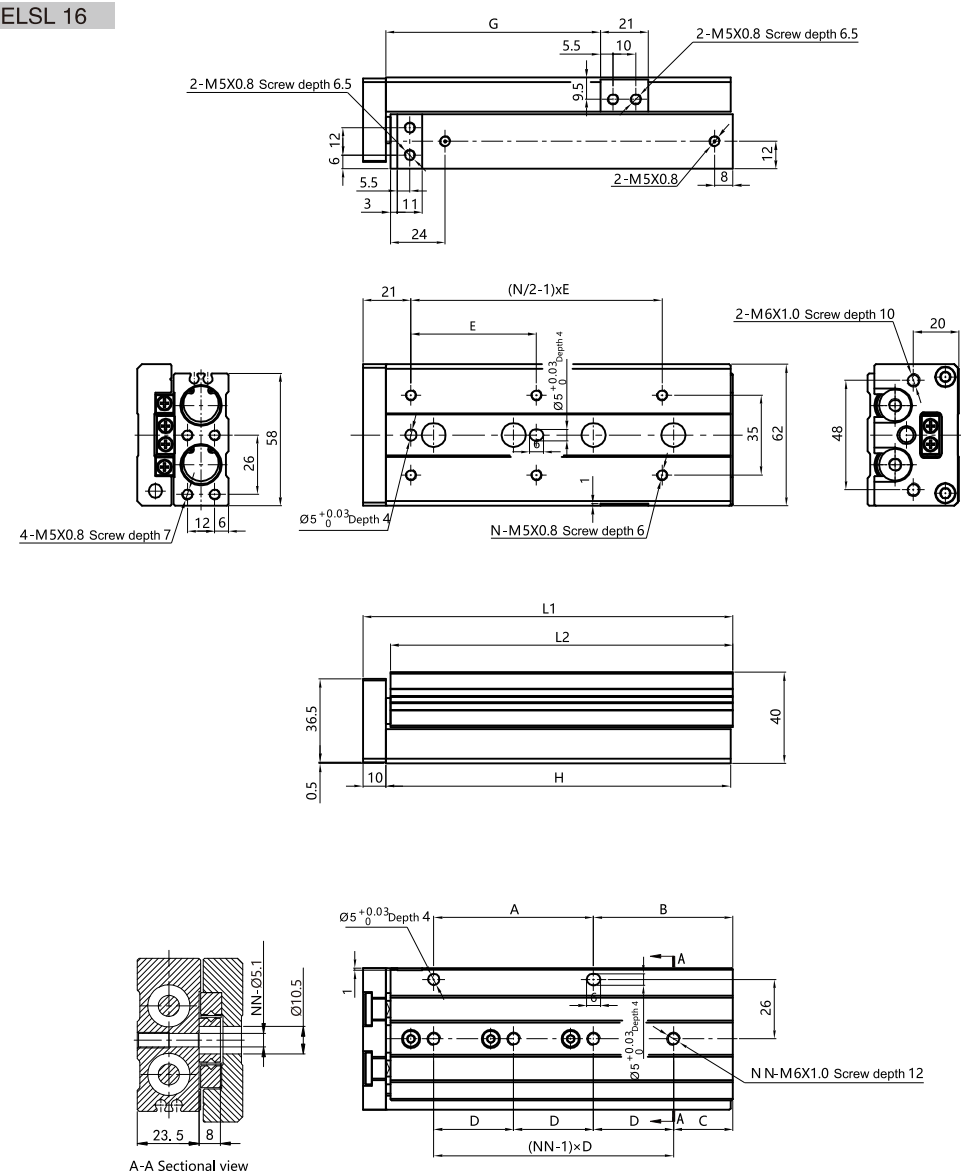
ELS 16



Stroke/Sign	A	B	C	D	E	G	H	L1	L2	N	NN
10	40	16	16	40	35	29	76	87	75	4	2
20	40	16	16	40	35	39	76	87	75	4	2
30	40	16	16	40	35	49	76	87	75	4	2
40	50	16	16	50	40	59	86	97	85	4	2
50	30	51	21	30	30	69	101	112	100	6	3
75	70	61	26	35	55	94	151	162	150	6	4
100	70	109	39	35	65	119	199	210	198	6	5
125	70	159	19	35	70	144	249	260	248	8	7

Main Dimension

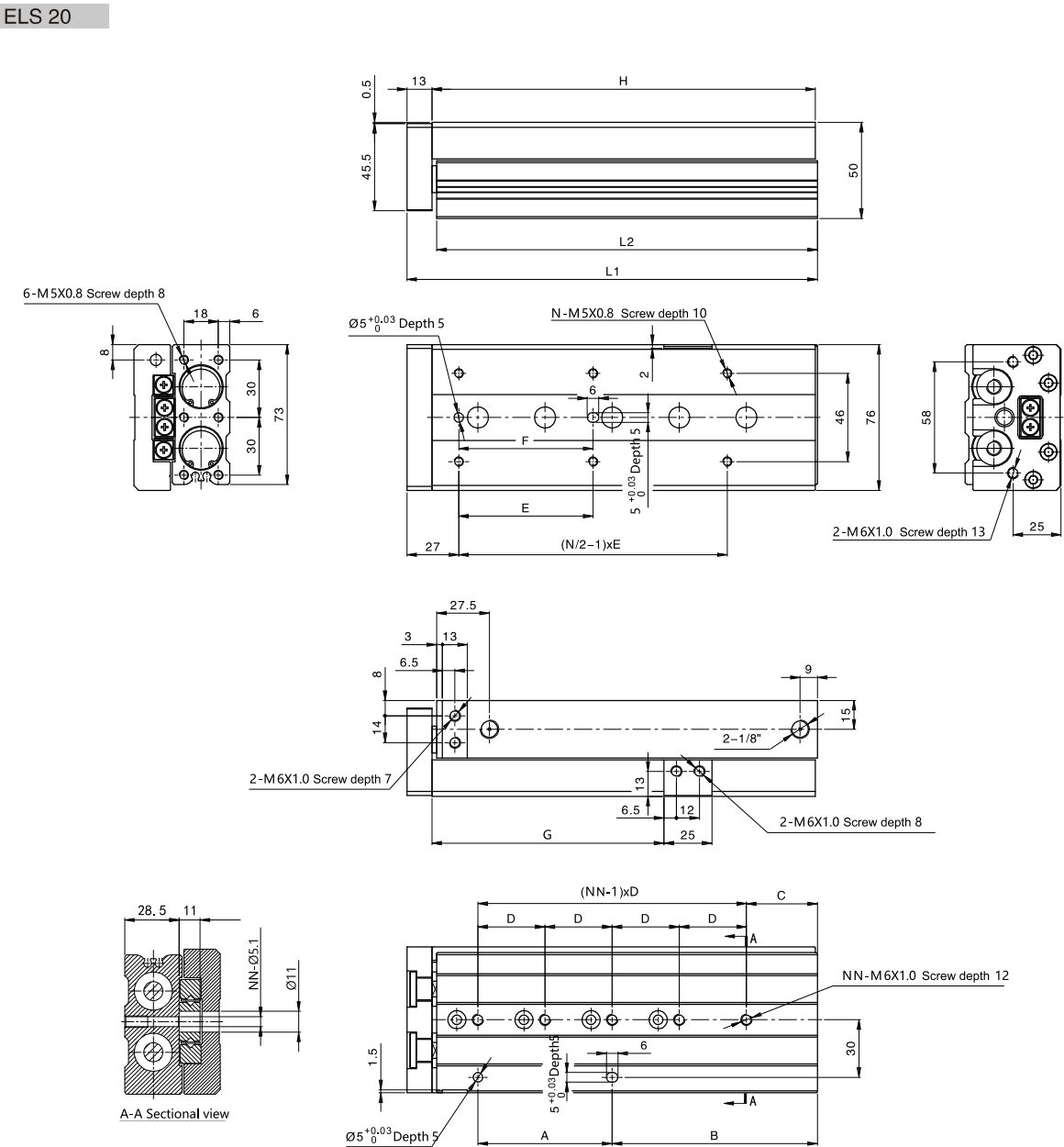
ELSL 16



Storke/Sign	A	B	C	D	E	G	H	L1	L2	N	NN
10	40	16	16	40	35	29	76	87	75	4	2
20	40	16	16	40	35	39	76	87	75	4	2
30	40	16	16	40	35	49	76	87	75	4	2
40	50	16	16	50	40	59	86	97	85	4	2
50	30	51	21	30	30	69	101	112	100	6	3
75	70	61	26	35	55	94	151	162	150	6	4
100	70	109	39	35	65	119	199	210	198	6	5
125	70	159	19	35	70	144	249	260	248	8	7

Main Dimension

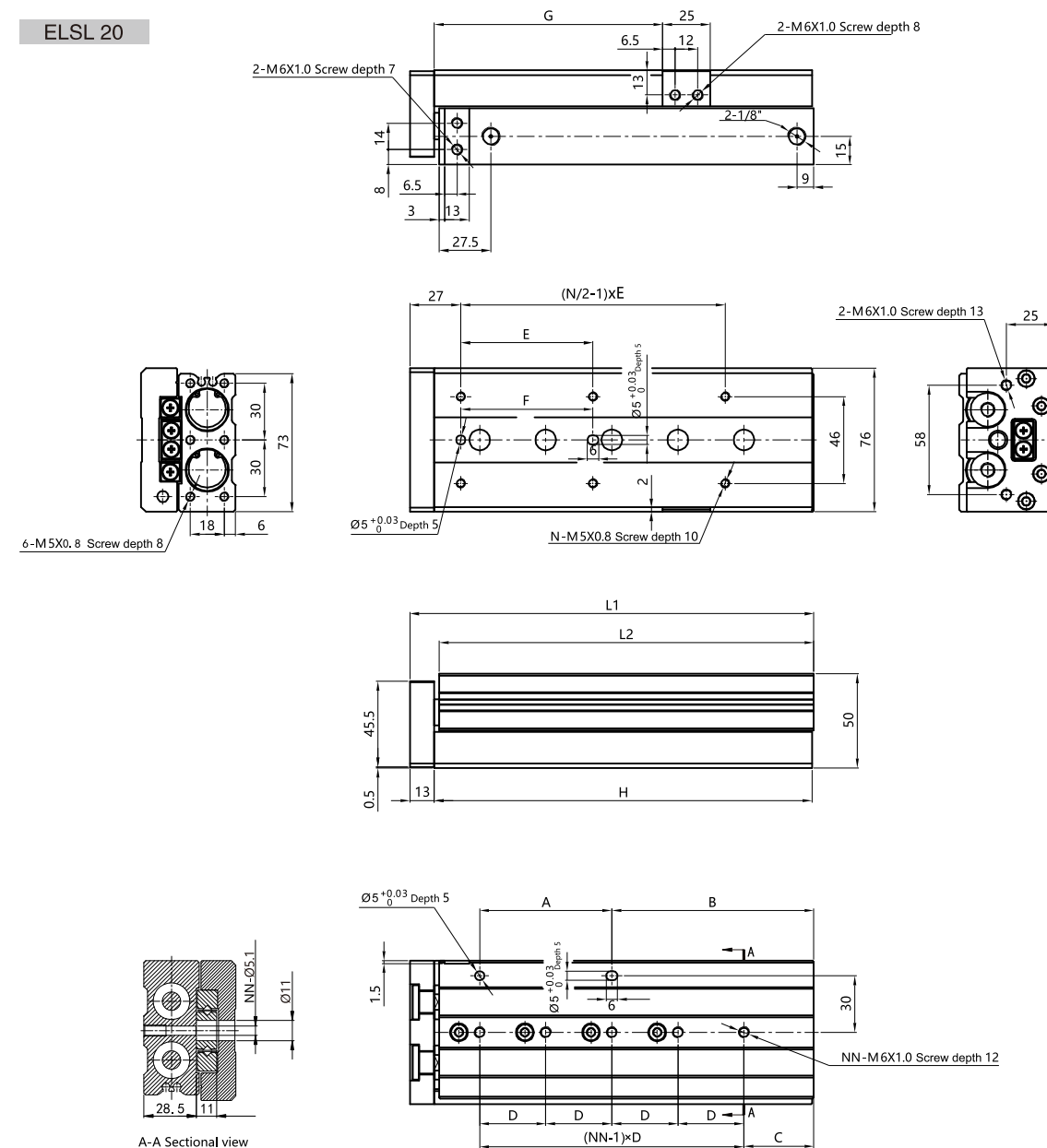
ELS 20



Storke/Sign	A	B	C	D	E	F	G	H	L1	L2	N	NN
10	35	25	15	45	50	40	31	83	97	81.5	4	2
20	35	25	15	45	50	40	41	83	97	81.5	4	2
30	35	25	15	45	50	40	51	83	97	81.5	4	2
40	35	35	15	55	60	50	61	93	107	91.5	4	2
50	35	50	15	35	35	35	71	108	122	106.5	6	3
75	70	54	19	35	60	60	96	147	161	145.5	6	4
100	70	107	37	35	70	70	121	200	214	198.5	6	5
125	76	155	41	38	70	70	146	254	268	252.5	8	6
150	88	195	19	44	80	80	171	306	320	304.5	8	7

○ **Main Dimension**

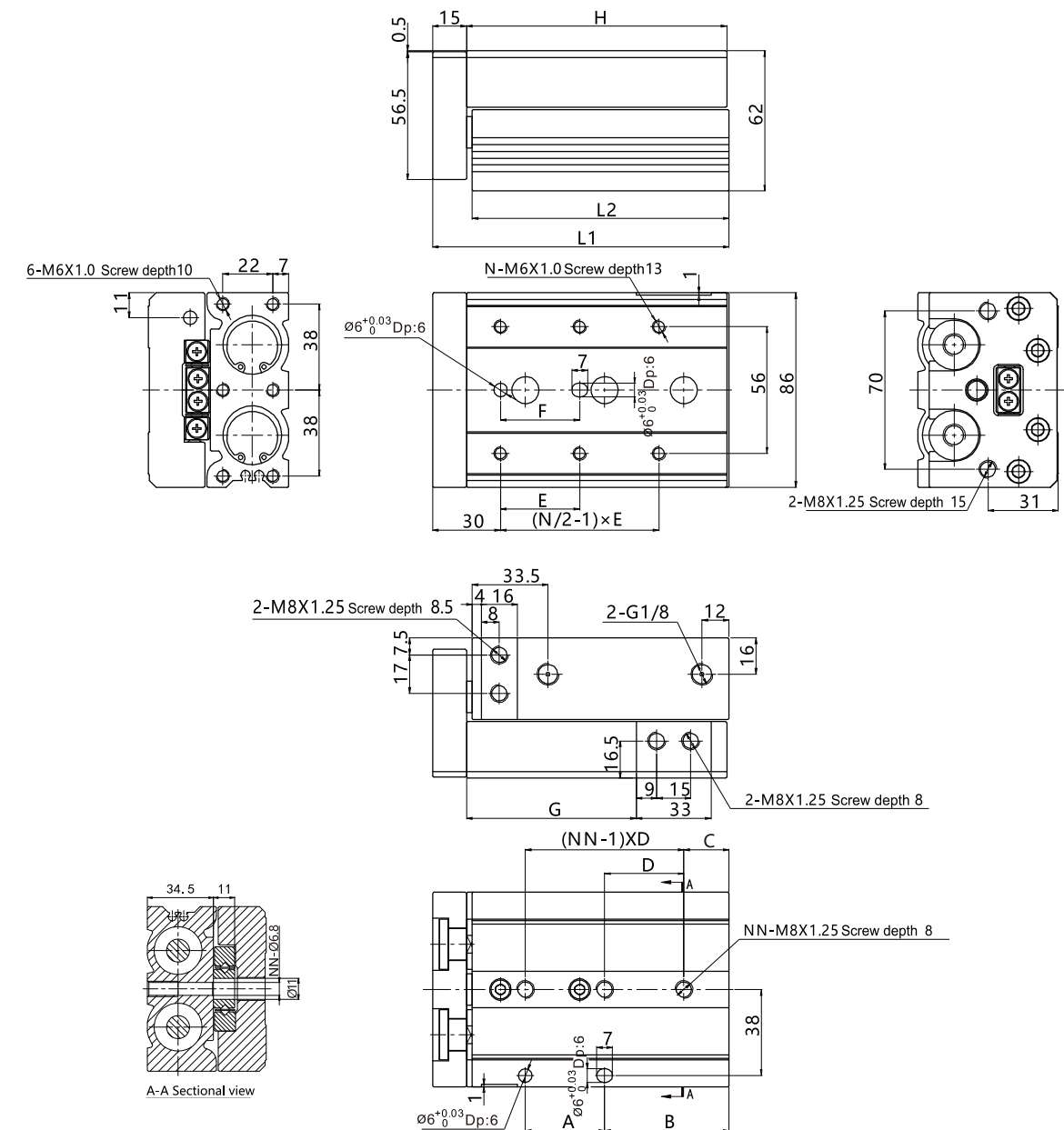
ELSL 20



Storke/Sign	A	B	C	D	E	F	G	H	L1	L2	N	NN
10	35	25	15	45	50	40	31	83	97	81.5	4	2
20	35	25	15	45	50	40	41	83	97	81.5	4	2
30	35	25	15	45	50	40	51	83	97	81.5	4	2
40	35	35	15	55	60	50	61	93	107	91.5	4	2
50	35	50	15	35	35	35	71	108	122	106.5	6	3
75	70	54	19	35	60	60	96	147	161	145.5	6	4
100	70	107	37	35	70	70	121	200	214	198.5	6	5
125	76	155	41	38	70	70	146	254	268	252.5	8	6
150	88	195	19	44	80	80	171	306	320	304.5	8	7

© Main Dimension

ELS 25



Stroke/Sign	A	B	C	D	E	F	G	H	L1	L2	N	NN
10	45	22	22	45	50	40	35	92	108	90.5	4	2
20	45	22	22	45	50	40	45	92	108	90.5	4	2
30	45	22	22	45	50	40	55	92	108	90.5	4	2
40	55	22	22	55	60	50	65	102	118	100.5	4	2
50	35	55	20	35	35	35	75	115	131	113.5	6	3
75	70	61	26	35	60	60	100	156	172	154.5	6	4
100	70	102	32	35	70	70	125	197	213	195.5	6	5
125	76	154	40	38	75	75	150	255	271	253.5	8	6
150	80	190	30	40	80	80	175	295	311	293.5	8	7

Series No.	—	Type	Bore	Accessory Type
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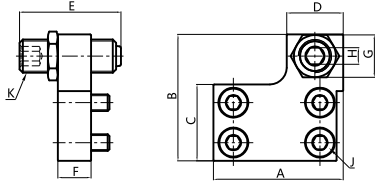
Bore/Sign	A	B	C	D	E	E1	F	M	P	H	I	J	Q
8	7	23	14	15.5	38	6	11	M8X1.0	M3Length 16	16.6	7	15.5	M3Length 16
12	9.5	31	14.5	16	38	6	11	M8X1.0	M4Length 14	20.5	9	15	M4Length 14
16	11	37	17.5	19	43	7	12.7	M10X1.0	M5Length 18	23	11	18.5	M5Length 18
20	13	47	23.5	26	76	12	19	M14X1.5	M6Length 25	27	12	25.5	M6Length 25
25	16	54	27	24	76	12	19	M14X1.5	M8Length 20	33	17	23	M8Length 20

Storke/Sign	A	B	C	D	E	F	G	H	L1	L2	N	NN
10	45	22	22	45	50	40	35	92	108	90.5	4	2
20	45	22	22	45	50	40	45	92	108	90.5	4	2
30	45	22	22	45	50	40	55	92	108	90.5	4	2
40	55	22	22	55	60	50	65	102	118	100.5	4	2
50	35	55	20	35	35	35	75	115	131	113.5	6	3
75	70	61	26	35	60	60	100	156	172	154.5	6	4
100	70	102	32	35	70	70	125	197	213	195.5	6	5
125	76	154	40	38	75	75	150	255	271	253.5	8	6
150	80	190	30	40	80	80	175	295	311	293.5	8	7

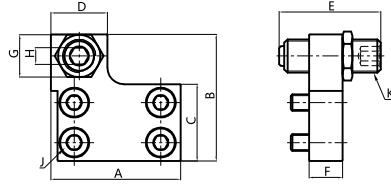
Main Dimension

AF (With stroke adjusting screws at retraction end)

Suitable for ELS



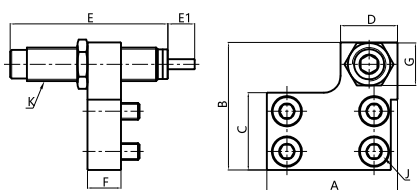
Suitable for ELSL



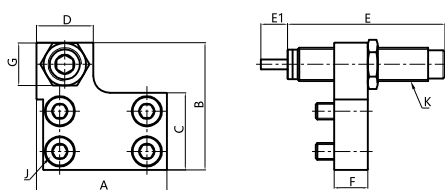
Bore/Sign	Adjustable stroke range	A	B	C	D	E	F	G	H	J	K
6	10	18	19	11.2	8	22.5	6	8	3	M2.5 Length 6	M6X1.0
8	10	25	23.2	13.2	15	27.5	8	11	4	M3 Length 8	M8X1.0
12	10	32	31	18.5	13	27.5	8	11	4	M4 Length 8	M8X1.0
16	10	39	38	23	17	30.5	10	12.7	5	M5 Length 10	M10X1.0
20	10	48	48	29	20.5	34	12	19	6	M5 Length 12	M14X1.5
25	10	51	53.5	34	25	34	15	19	6	M6 Length 16	M14X1.5

BF(With shock absorber at retraction end)

Suitable for ELS



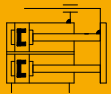
Suitable for ELSL



Bore/Sign	A	B	C	D	E	E1	F	G	J	K
8	25	23.2	13.2	15	38	6	8	11	M3 Length 8	M8X1.0
12	32	31	18.5	13	38	6	8	11	M4 Length 8	M8X1.0
16	39	38	23	17	43	8	10	12.7	M5 Length 10	M10X1.0
20	48	48	29	20.5	76	12	12	19	M5 Length 12	M14X1.5
25	51	53.5	34	25	76	12	15	19	M6 Length 16	M14X1.5

ELQ/ELQL
Slide Cylinder

ELQ/ELQL Series Slide Cylinder(with magnet,rubber cushion)



Specifications

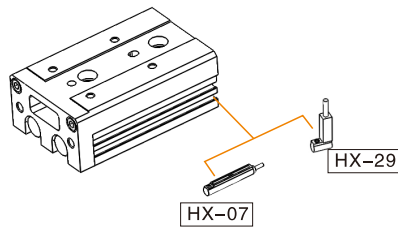
Bore(mm)	6	8	12	16	20	25
Acting Type	Double Acting					
Working Medium	Clean Air(after 40 μ m filtration)					
Working Pressure(MPa)	0.15~0.7					
Guaranteed Pressure(MPa)	1.05					
Working Temperature(°C)	-20~70(No freezing)					
Piston Speed(mm/s)	50~500					
Stroke tolerance	Stroke ≤ 100 ^{+0.0} ₀ , Stroke > 100 ^{+1.5} ₀					
Cushion	Rubber cushion on both ends, Shock absorber cushion					
Port Size	M5x0.8				G1/8	

How to order?

Series No.	Bore	X	Stroke	— Magnet No.	— Adjuster	— Thread Type
ELQ:Standard Type	6			S: With magnet	Blank: None adjuster	Blank: G
ELQL:Symmetric Type	8				A: Adjusters on both ends	
	12				AS: Forward adjuster	
	16				AF: Backward adjuster	
	20				B: Shock absorber on both ends	
	25				BS: Forward shock absorber	
					BF: Backward shock absorber	
					(Note: Shock absorber is not available for φ 6)	

Order Example:
ELQ Series Basic type cylinder, bore size 20, stroke 50, with Magnet, without adjuster, thread type G.The ERP code is: ELQ20X50-S

Optional Accessories



Note:Short stroke please use HX-29 series due to limited space.

Stroke

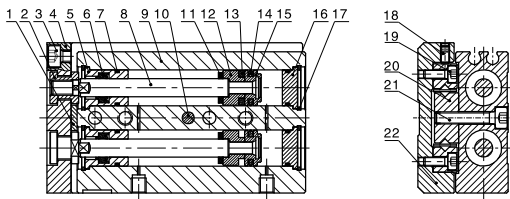
Bore(mm)	Standard Stroke(mm)										Max.Stroke(mm)
Double Acting	6	10	20	30	40	50					50
	8	10	20	30	40	50	75				75
	12	10	20	30	40	50	75	100			100
	16	10	20	30	40	50	75	100	125		125
	20	10	20	30	40	50	75	100	125	150	150
	25	10	20	30	40	50	75	100	125	150	150

Weight(g)

Bore(mm)	Stroke(mm)							
	10	20	30	40	50	75	100	125
6	73	90	103	131	149	—	—	—
8	129	151	175	211	261	—	—	—
12	303	307	354	412	461	614	—	—
16	505	514	558	622	713	889	1104	1266
20	912	923	934	1042	1155	1475	1906	2098
25	1402	1420	1438	1562	1782	2123	2571	3053

Note: The weight in the above table is the standard product weight without adjuster.

Internal Structure



No.	Part Name	Material
1	Cushion Pad	TPU
2	Fixing Screw	Stainless Steel
3	Hexagon Socket Cap Head Screw	Carbon Steel
4	Fixing Plate	Aluminum Alloy
5	Front Cover	Aluminum Alloy
6	Front Scraper Seal	NBR
7	O-ring	NBR
8	Piston Rod	Stainless Steel
9	Barrel	Aluminum Alloy
10	Positioning pin	Stainless Steel
11	Anti-Crash Gasket	TPU
12	Magnet Seat	Aluminum Alloy
13	Integrated Magnet	RbFeB
14	Piston Seal	NBR
15	Piston	Aluminum Alloy
16	Rear Cover	Aluminum Alloy
17	C-Type Retainer Ring	Spring Steel
18	Hexagon Socket Set Screw	Carbon Steel
19	Hexagon Socket Cap Head Screw	Carbon Steel
20	Linear Roller Sliding Guide Rail	Assembly
21	Hexagon Socket Cap Head Screw	Carbon Steel
22	Slide Table	Aluminum Alloy

Model Selection Method

Please select compact cylinder's type according to following procedure, and cross reference with data sheets.

1.Operating conditions(According to mounting position and work form)

- 1.1 Model used(Bore size, Stroke)
- 1.2 Type of cushion(Bumper, Shock absorber)
- 1.3 Mounting position of work(Top, front)
- 1.4 Mounting direction(Axial, Vertical)
- 1.5 Average speed Va(mm/s)
- 1.6 Applied load W(N)
- 1.7 Overhang L1, L2, L3(mm)

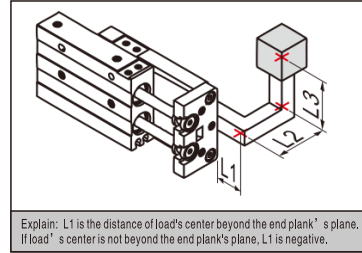
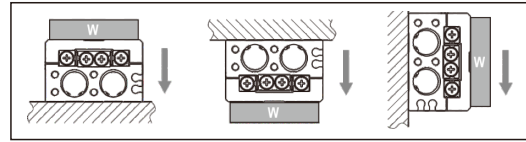


Fig. 1 Applied load



3.Load Check

Detailed procedures

3.1 Calculate allowable applied load Wa(N)

$$W_a = K \times \beta \times W_{max}$$

K: Mounting work coefficient (Fig 2)
β: Applied load coefficient (Fig 3)
Wmax: Maximum allowable applied load (Table 1)

3.2 Check that load(W) doesn't exceed allowable applied load (Wa)

$$W \leq W_a$$

Fig. 2 Mounting work coefficient (K)

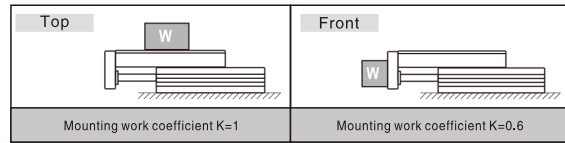
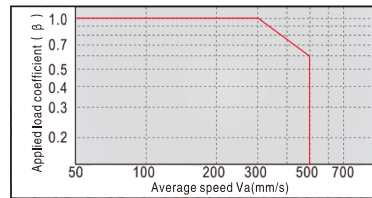


Fig. 3 Applied load coefficient (β)



2. Kinetic energy check

Detailed procedures

2.1 Calculate kinetic energy of load E (J)

$$E = \frac{1}{2} \times \frac{W}{g} \times \left(\frac{1.4 \times V_a}{1000} \right)^2$$

2.2 Calculate allowable kinetic energy Ea (J)

$$E_a = K \times E_{max}$$

K: Mounting work coefficient (Fig 2)
Emax: Maximum allowable kinetic energy (Table 1)

2.3 Check that kinetic energy of load doesn't exceed allowable kinetic energy

$$E \leq E_a$$

4. Moment check4

Detailed procedures

Horizontal

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

Dynamic moment:
$$M_p = W \times (L_1 + A) / 1000$$

Static moment:
$$M_{po} = \frac{W \times (L_1 + A)}{1000} + \frac{W \times a \times (L_2 + B)}{1000 \times g}$$

Dynamic moment:
$$M_r = W \times (C + L_3) / 1000$$

Static moment:
$$M_{ro} = \frac{W \times (C + L_3)}{1000} + \frac{W \times a \times (L_2 + B)}{1000 \times g}$$

Dynamic moment:
$$M_y = 0$$

Static moment:
$$M_{yo} = (W \times a \times (C + L_3)) / 1000g$$

* Check

Dynamic moment:
$$\frac{M_p}{M_{pmax}} + \frac{M_y}{M_{ymax}} + \frac{M_r}{M_{rmax}} \leq 1$$

Static moment:
$$\frac{M_{po}}{M_{po_{max}}} + \frac{M_{yo}}{M_{yo_{max}}} + \frac{M_{ro}}{M_{ro_{max}}} \leq 1$$

Vertical

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

Dynamic moment:
$$M_p = W \times (L_2 + B) / 1000$$

Static moment:
$$M_{po} = \frac{W \times (L_2 + B)}{1000} + \frac{W \times a \times (L_2 + B)}{1000 \times g}$$

Dynamic moment:
$$M_r = W \times (C + L_3) / 1000$$

Static moment:
$$M_{ro} = \frac{W \times (C + L_3)}{1000} + \frac{W \times a \times (L_2 + B)}{1000 \times g}$$

Dynamic moment:
$$M_y = 0$$

Static moment:
$$M_{yo} = 0$$

* Check

Dynamic moment:
$$\frac{M_p}{M_{pmax}} + \frac{M_y}{M_{ymax}} \leq 1$$

Static moment:
$$\frac{M_{po}}{M_{po_{max}}} + \frac{M_{yo}}{M_{yo_{max}}} \leq 1$$

Explain:
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).
Mpmax, Mymax, Mrmax, Mpo, Myo, Mro, Mro: Maximum allowable moment (Refer to table 2).
g: Acceleration of gravity (g=9.81m/s²).
a: Acceleration of inertia
a=1600x (Va/1000)², Shock absorber
a=400x (Va/1000)²
W: Load weight (Determined by actuality).

Model Selection Method

Please select compact cylinder's type according to following procedure, and cross reference with data sheets.

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/s²
K	Mounting work coefficient	-
L1,L2,L3	Overhang	mm
Mp,My,Mr	Dynamic moment(Pitch Yaw Roll)	Nm
Mpmax,Mymax,Mrmax	Maximum allowable dynamic moment(Pitch Yaw Roll)	Nm
Mpo,Myo,Mro	Static moment(Pitch Yaw Roll)	Nm
Mpo,Myo,Mro	Maximum allowable static moment(Pitch Yaw Roll)	Nm
Va	Average speed	m/s
W	Applied load	N
Wmax	Maximum allowable applied load	N
β	Applied load coefficient	-

Table 1: Maximum allowable kinetic energy(Emax)Maximum allowable applied load(Wmax)

Model	Maximum allowable kinetic energy Emax(J)			Maximum allowable applied load Wmax (N)
	Basic type	Rubber stopper type	Shock absorber type	
ELQ6	0.01	0.01	-	4
ELQ8	0.024	0.024	0.048	8
ELQ12	0.05	0.05	0.1	15
ELQ16	0.1	0.1	0.2	30
ELQ20	0.13	0.13	0.26	40
ELQ25	0.22	0.22	0.44	70

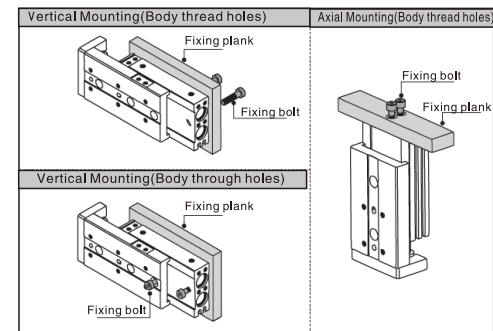
Table 2: Maximum allowable moment(Nm), Correction value for center position distance of moment(mm)

Bore size	Stroke	Static moment			Dynamic moment			Correction value		
		Mpmax	Myo	Mro	Mpmax	Myo	Mro	A	B	C
ELQ6	10	3.3	3.8	2.6	0.7	0.7	0.6	27	7.3	15
	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		
ELQ8	10	10.1	9.1	8.8	2.5	2.5	2.0	32	8.5	19
	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		
ELQ12	75	32.8	35.3	16.4	4.6	4.6	1.8	132	10	25
	10	33	34.3	30.9	7.3	7.3	5.8	48		
	20	33	34.3	30.9	7.6	7.6	5.8	58		
	30	33	34.3	30.9	7.8	7.8	5.8	68		
	40	33	34.3	30.9	8.0	8.0	5.8	78		
ELQ16	50	53.4	49.6	39.7	9.8	9.8	5.8	88	11	30
	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		
	10	33	34.3	30.9	8.8	8.8	7.6	43		
	20	33	34.3	30.9	9.2	9.2	7.6	53		
ELQ20	30	33	34.3	30.9	9.5	9.5	7.6	63	16.5	35
	40	33	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		
ELQ25	125	143.7	144.5	53.3	24.8	24.8	7.8	204	20.3	42
	10	60.1	50.5	72.8	14.5	14.5	15.2	47		
	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		
ELQ25	50	60.1	50.5	72.8	16.6	16.6	15.2	92	20.3	42
	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		

Installation and Operation

1.How to mount cylinder:

1.1 Cylinder can to be mounted from 3 directions.

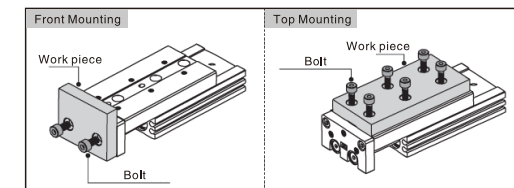


1.2 When mounting an compact slide cylinder, screws of appropriate length should be used and tightened properly within the maximum tightening torque. If screws are tightened beyond designed limits, malfunction may occur. If they are tightened insufficiently, it may result in sliding or falling off from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

Vertical Mounting(Body thread holes)	Model	Bolt used	Max.tightening torque (Nm)	Max.screw-in depth (mm)
	ELQ6	M4X0.7	2.1	8
	ELQ8	M4X0.7	2.1	8
	ELQ12	M5X0.8	4.4	10
	ELQ16	M6X1.0	7.4	12
	ELQ20	M6X1.0	7.4	12
	ELQ25	M8X1.25	18	16
Vertical Mounting(Body through holes)	Model	Bolt used	Max.tightening torque (Nm)	Max.screw-in depth (mm)
	ELQ6	M3X0.5	1.2	10.8
	ELQ8	M3X0.5	1.2	12
	ELQ12	M4X0.7	2.8	13.5
	ELQ16	M5X0.8	5.7	16.5
	ELQ20	M5X0.8	5.7	22
	ELQ25	M6X1.0	10	28
Axial Mounting(Body through holes)	Model	Bolt used	Max.tightening torque (Nm)	Max.screw-in depth (mm)
	ELQ6	M2.5X0.45	0.5	3.5
	ELQ8	M3X0.5	0.9	4.0
	ELQ12	M4X0.7	2.1	6.0
	ELQ16	M5X0.8	4.4	7.0
	ELQ20	M5X0.8	4.4	8.0
	ELQ25	M6X1.0	7.4	10.0

2.Work Piece Mounting:

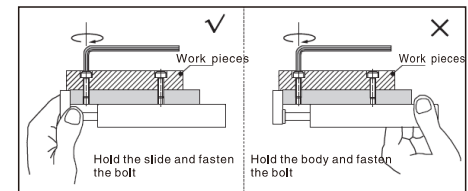
2.1 Work pieces can be mounted on 2 surfaces of the compact slide.



2.2 When mounting a work piece, tighten the bolts properly at a torque value within the limiting range. Use bolts 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.

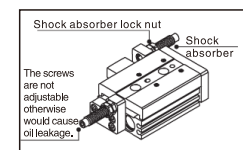
Front Mounting	Model	Bolt used	Max.tightening torque (Nm)	Max.screw-in depth (mm)
	ELQ6	M3X0.5	0.9	5
	ELQ8	M4X0.7	2.1	6
	ELQ12	M5X0.8	4.4	8
	ELQ16	M6X1.0	7.4	10
	ELQ20	M6X1.0	7.4	13
	ELQ25	M8X1.25	18	15
Top Mounting	Model	Bolt used	Max.tightening torque (Nm)	Max.screw-in depth (mm)
	ELQ6	M3X0.5	0.9	4
	ELQ8	M3X0.5	0.9	4.5
	ELQ12	M4X0.7	2.1	5.5
	ELQ16	M5X0.8	4.4	7.5
	ELQ20	M5X0.8	4.4	9.5
	ELQ25	M6X1.0	7.4	13

2.3 Since the table is supported by the linear guide, take care not to apply strong impact or large moment to the guide section.
2.4 Hold the slide when fastening work pieces to it with bolts, if the body is held while tightening bolts, excessive moment may damage guide section.



3.About shock absorber:

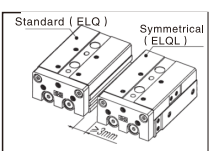
3.1 Shock absorbers are expendable parts. Promptly replace them when energy absorbing capacity decreases.
3.2 Never turn or adjust the screws on bottom of the shock absorber body. The screws are not for adjusting. Otherwise would cause oil leakage.
3.3 Follow the table for tightening torque of shock absorber to lock nuts.



Model	Shock absorber	Tightening torque (Nm)
ELQ8	AC0806-WY	1.67
ELQ12	AC0806-WY	1.67
ELQ16	AC1008-WY	3.14
ELQ20	AC1416-WY	10.8
ELQ25	AC1416-WY	10.8

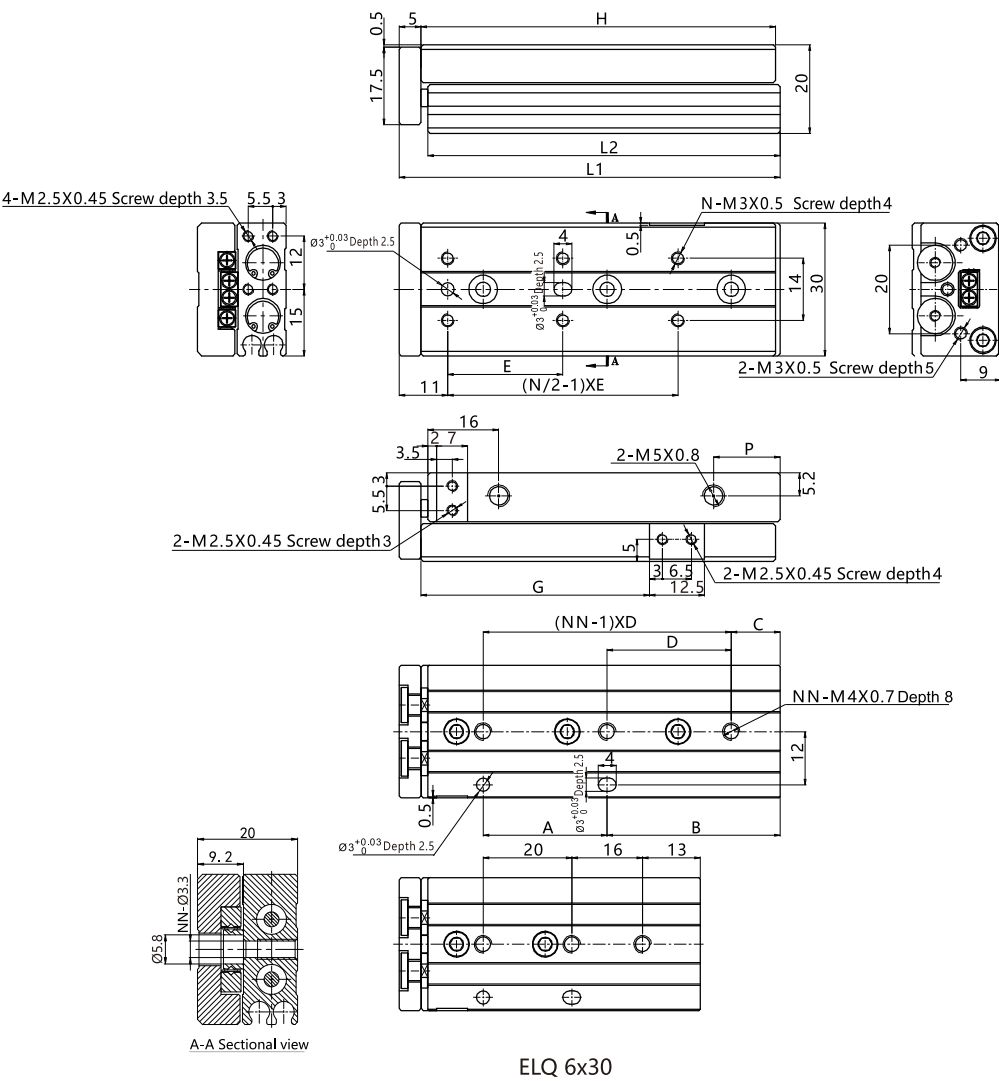
4.How to mount sensor switch:

4.1 ELQ Series are all with magnet.
4.2 Maintain a minimum spacing of at least 3mm if two compact cylinders are used side by side in order to avoid malfunction.



Main Dimensions

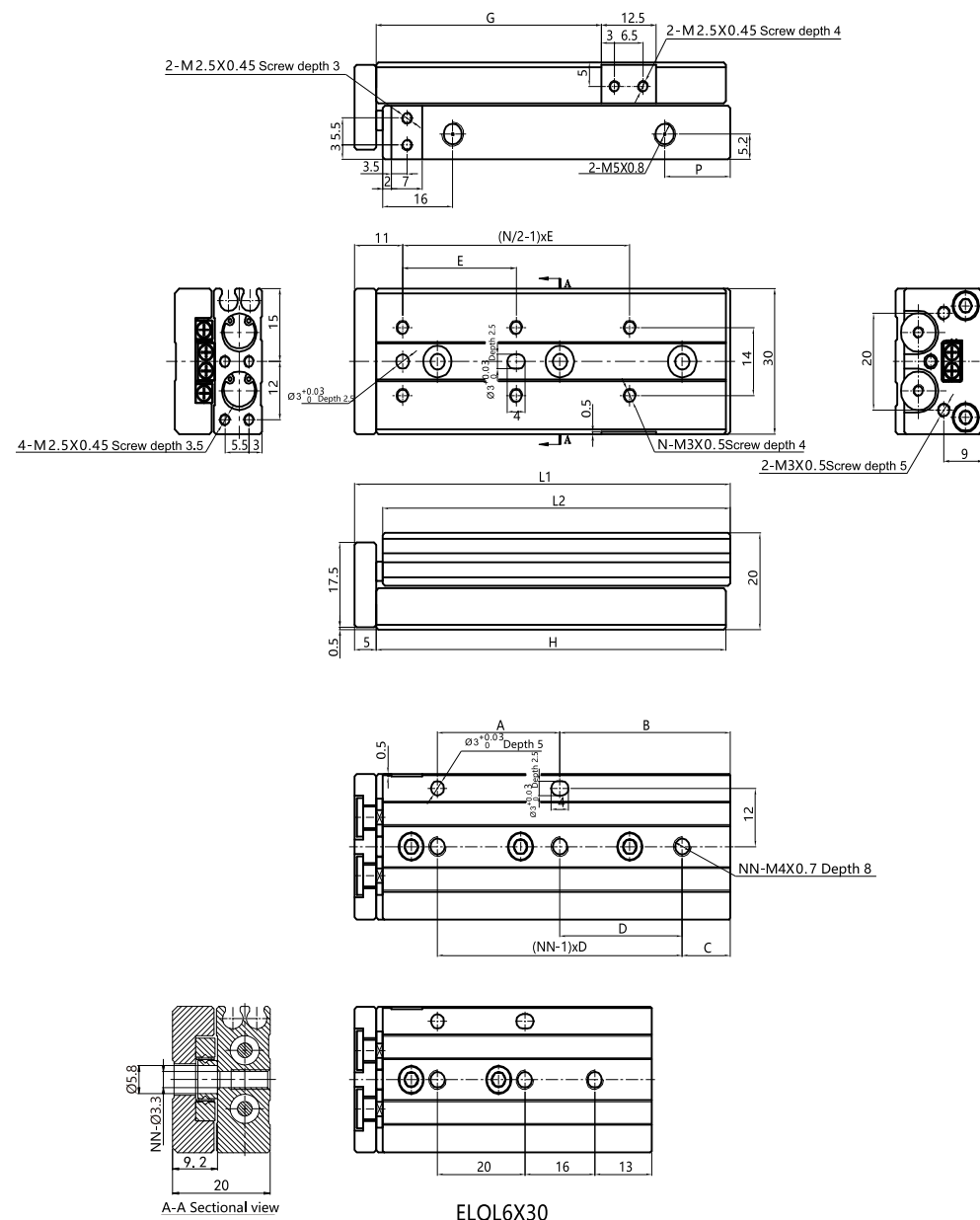
ELQ 6



Stroke/Sign	A	B	C	D	E	G	H	P	L1	L2	N	NN
10	16	13	6	23	22	21.5	42	9.5	48	41.5	4	2
20	26	13	13	26	25	31.5	52	9	58	51.5	4	2
30	20	29	See drawing	See drawing	21	41.5	62	9	68	61.5	6	3
40	28	39	11	28	26	51.5	80	15	86	79.5	6	3
50	28	49	21	28	27	61.5	90	15	96	89.5	6	3

◎ Main Dimensions

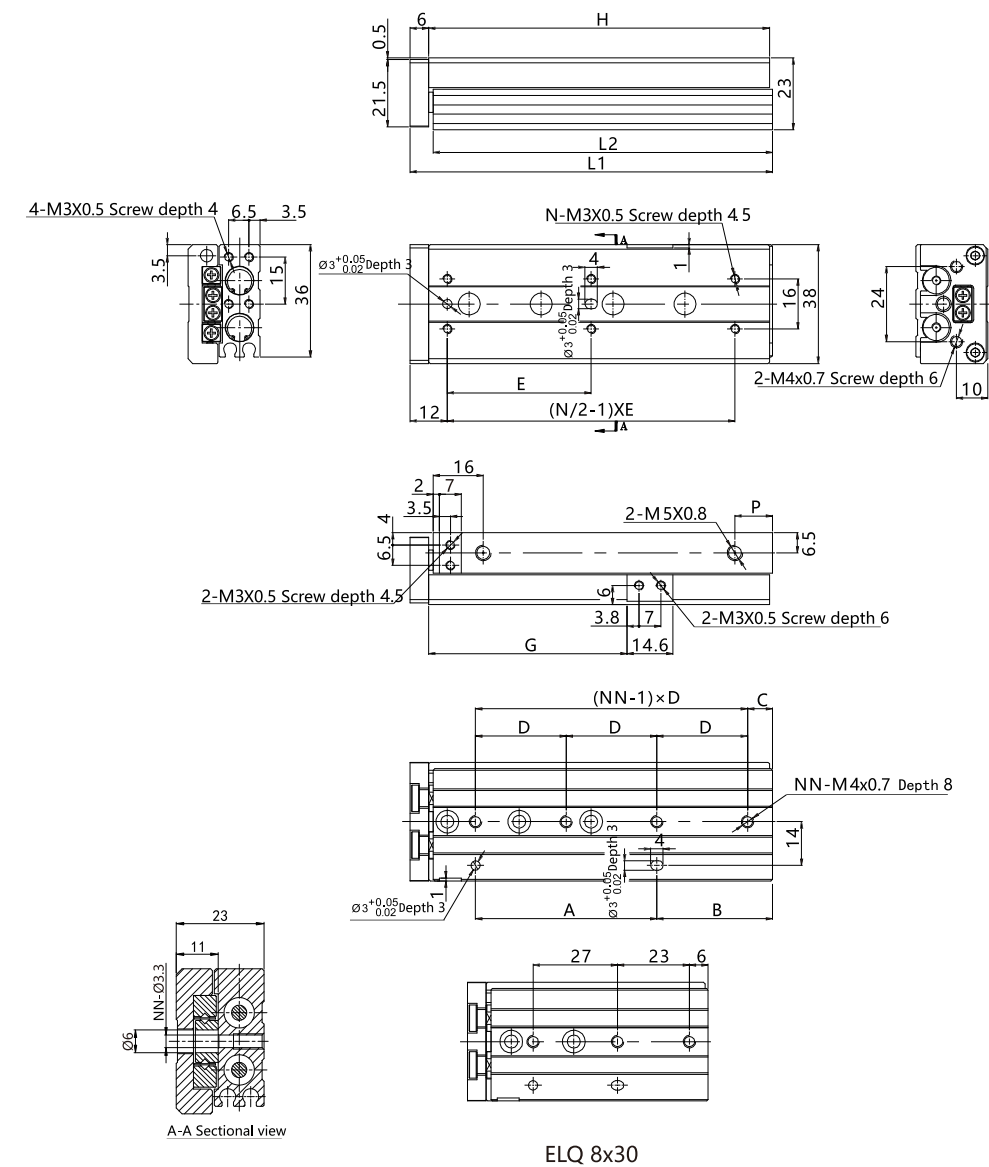
ELQL 6



Storke/Sign	A	B	C	D	E	G	H	P	L1	L2	N	NN
10	16	13	6	23	22	21.5	42	9.5	48	41.5	4	2
20	26	13	13	26	25	31.5	52	9	58	51.5	4	2
30	20	29	See drawing	See drawing	21	41.5	62	9	68	61.5	6	3
40	28	39	11	28	26	51.5	80	15	86	79.5	6	3
50	28	49	21	28	27	61.5	90	15	96	89.5	6	3

© Main Dimensions

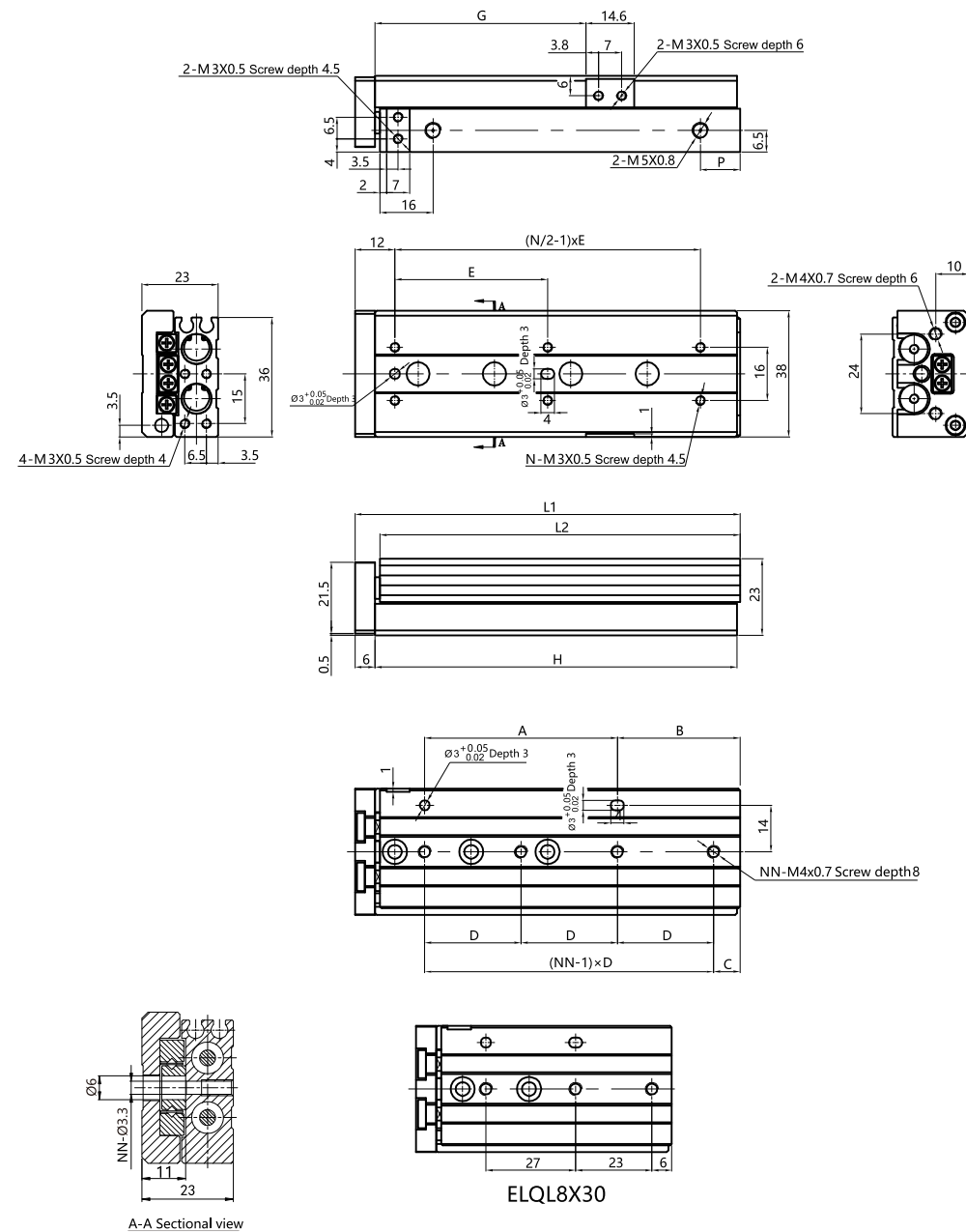
ELQ 8



Stroke/Sign	A	B	C	D	E	G	H	P	L1	L2	N	NN
10	19	13	7	25	25	23.5	46	10.5	53	45.5	4	2
20	28	14	14	28	25	33.5	56	10	63	55.5	4	2
30	27	29	See drawing	See drawing	26	43.5	70	10	77	69.5	6	3
40	31	39	8	31	32	53.5	84	12	91	83.5	6	3
50	58	37	8	29	46	63.5	109	12	116	108.5	6	4
75	60	63	33	30	50	88.5	137	10	144	136.5	6	4

◎ Main Dimensions

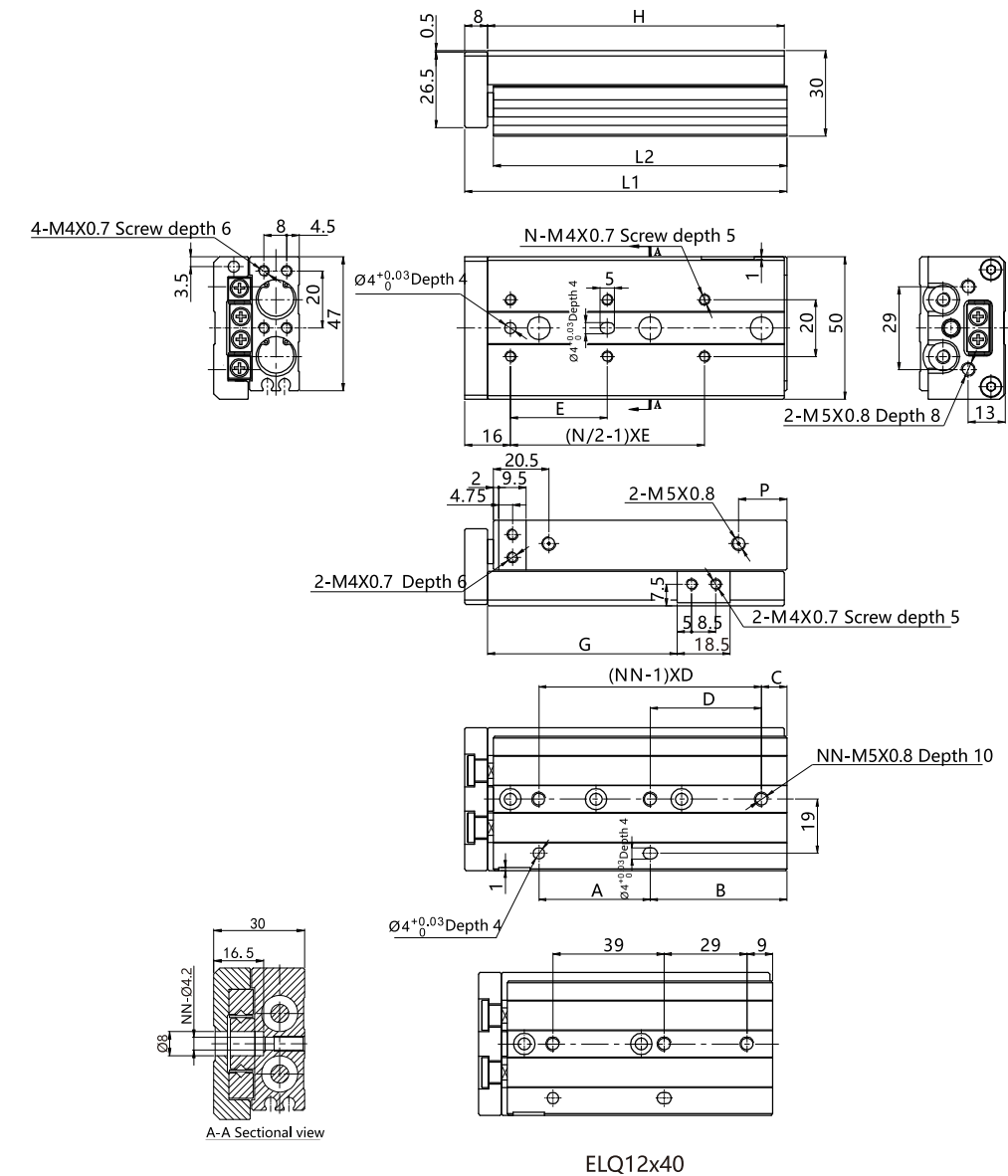
ELQL 8



Storke/Sign	A	B	C	D	E	G	H	P	L1	L2	N	NN
10	19	13	7	25	25	23.5	46	10.5	53	45.5	4	2
20	28	14	14	28	25	33.5	56	10	63	55.5	4	2
30	27	29	See drawing	See drawing	26	43.5	70	10	77	69.5	6	3
40	31	39			8	31	32	53.5	84	12	91	83.5
50	58	37	8	29	46	63.5	109	12	116	108.5	6	4
75	60	63	33	30	50	88.5	137	10	144	136.5	6	4

© Main Dimensions

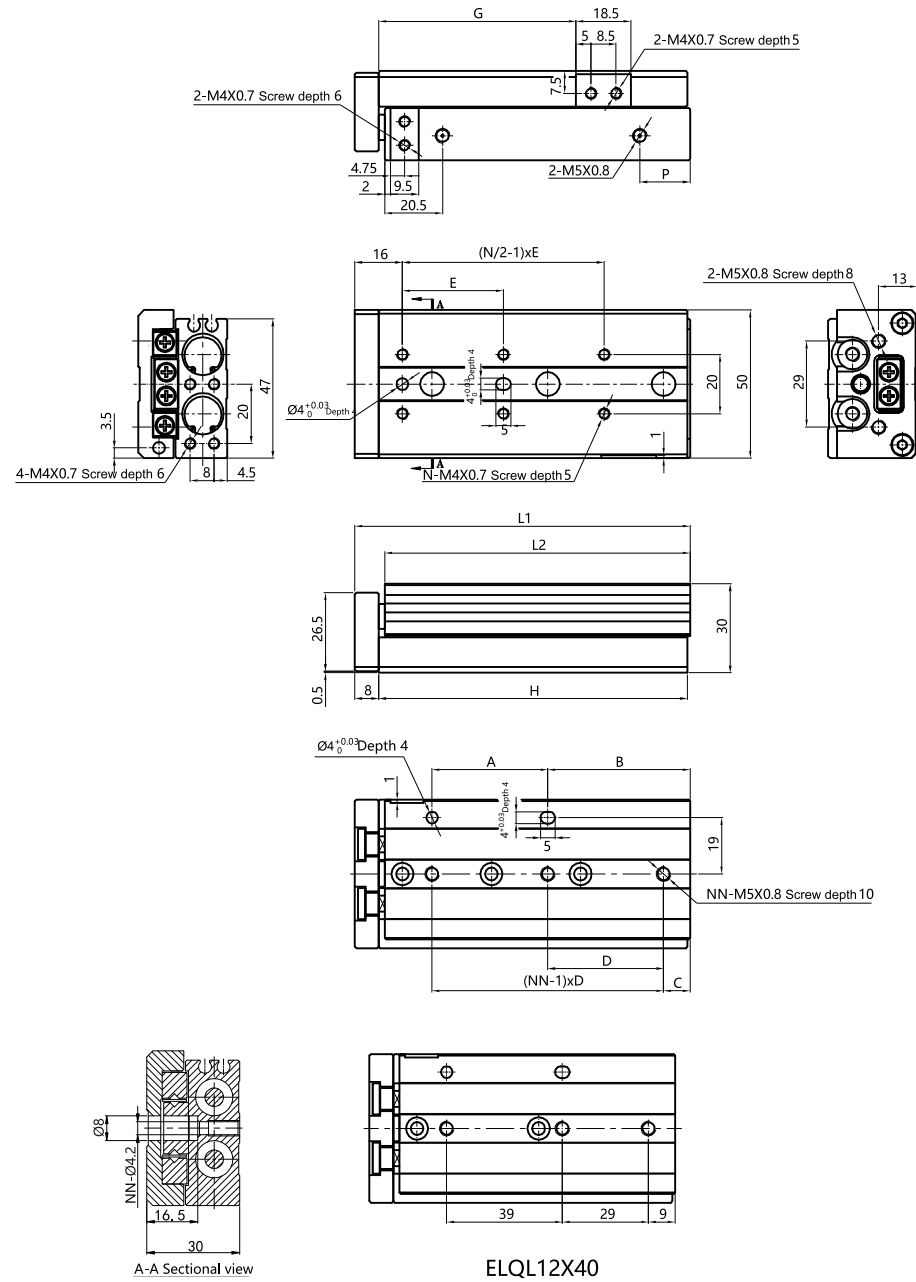
ELQ 12



Stroke/Sign	A	B	C	D	E	G	H	L1	L2	N	NN
10	32	18	18	32	28	26.5	67	76	66	4	2
20	32	18	18	32	36.5	28	67	76	66	4	2
30	40	20	20	40	38	46.5	77	86	76	4	2
40	39	38	See drawing	See drawing	34	56.5	94	103	93	6	3
50	39	48	9	39	34	66.5	104	113	103	6	3
75	72	59	23	36	36	91.5	148	157	147	8	4
100	72	84	12	36	36	116.5	173	182	172	10	5

Main Dimensions

ELQL 12

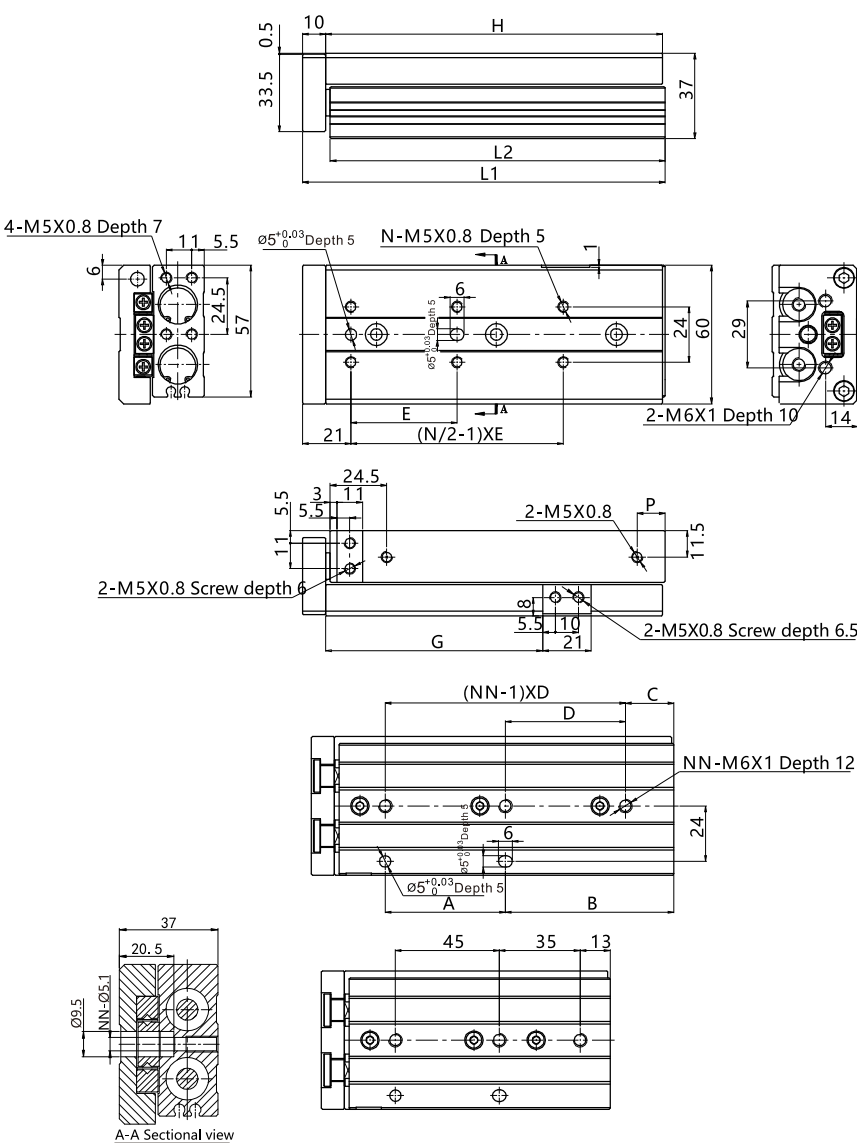


ELQL12X40

Stroke/Sign	A	B	C	D	E	G	H	P	L1	L2	N	NN
10	32	18	18	32	28	26.5	67	13	76	66	4	2
20	32	18	18	32	28	36.5	67	13	76	66	4	2
30	40	20	20	40	38	46.5	77	13	86	76	4	2
40	39	38	See drawing	See drawing	34	56.5	94	17	103	93	6	3
50	39	48	9	39	34	66.5	104	17	113	103	6	3
75	72	59	23	36	36	91.5	148	17	157	147	8	4
100	72	84	12	36	36	116.5	173	17	182	172	10	5

Main Dimensions

ELQ 16

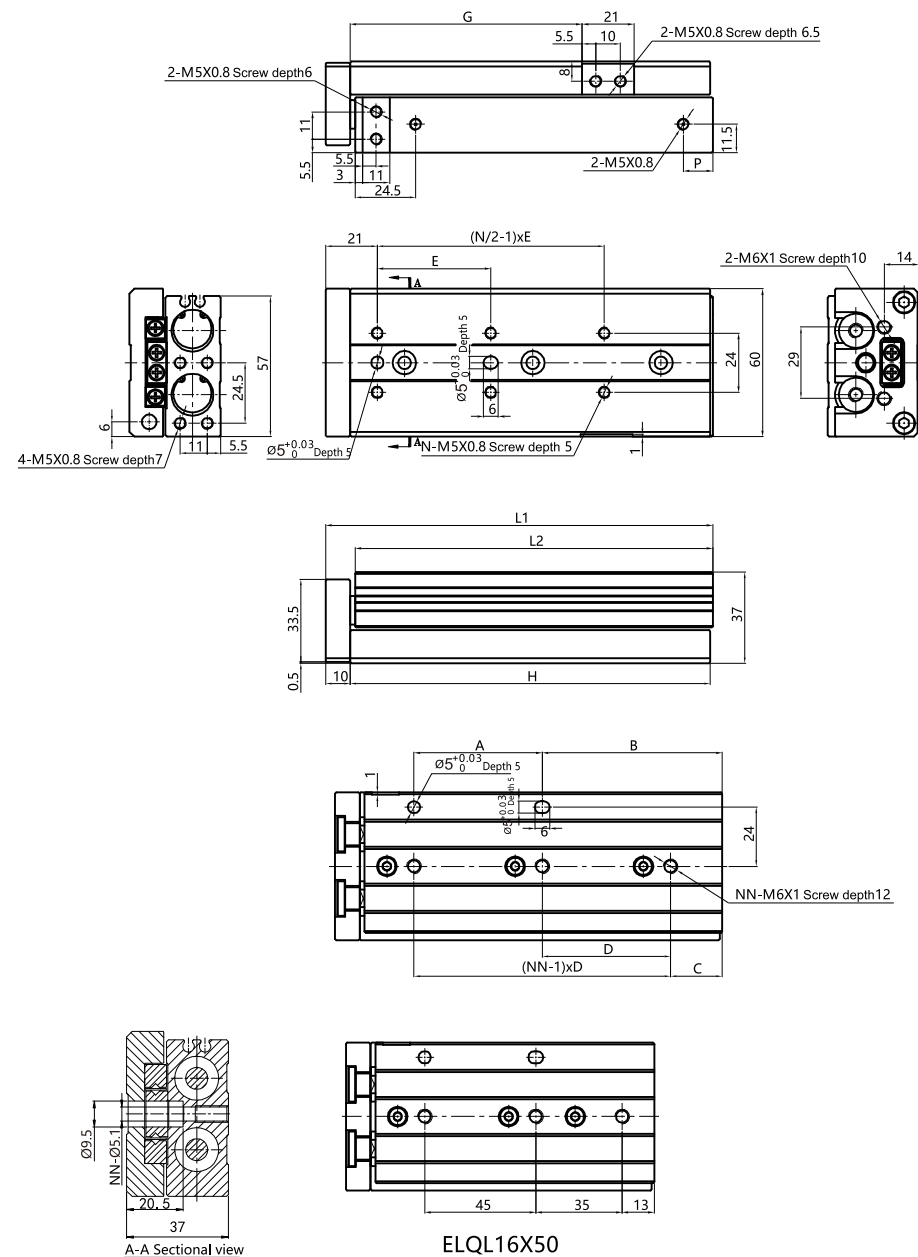


ELQ16x50

Stroke/Sign	A	B	C	D	E	G	H	L1	L2	N	NN	P
10	39	18	18	39	38	29	78	89	77	4	2	12
20	39	18	18	39	38	39	78	89	77	4	2	12
30	48	19	19	48	48	49	88	99	87	4	2	12
40	58	19	19	58	58	59	98	109	97	4	2	12
50	45	48	See drawing	See drawing	40	69	114	125	113	6	3	18
75	52	73	21	52	46	94	146	157	145	6	3	12
100	88	80	36	44	44	119	189	200	188	8	4	12
125	88	105	17	44	44	144	214	225	213	10	5	12

◎ Main Dimensions

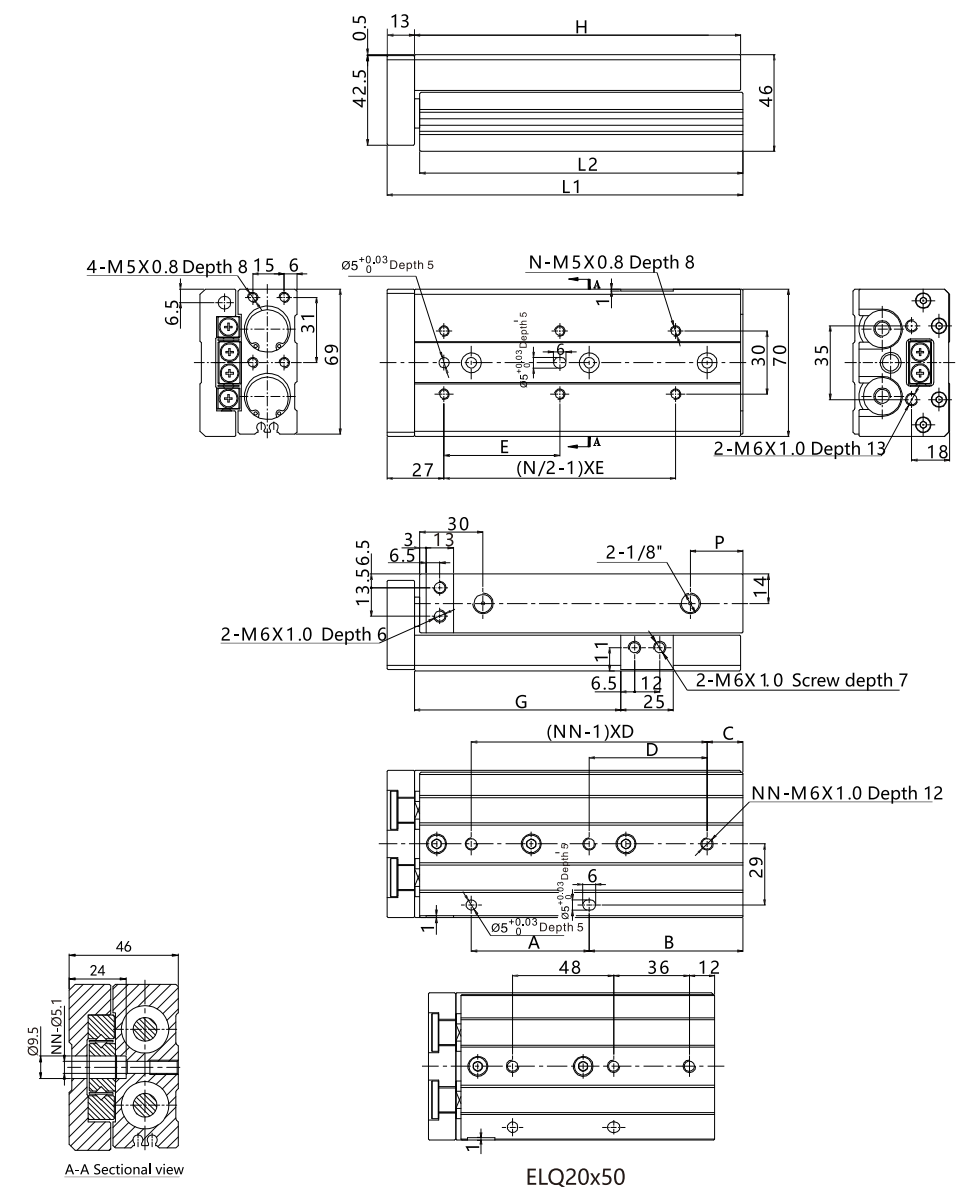
ELQL 16



Storke/Sign	A	B	C	D	E	G	H	L1	L2	N	NN	P
10	39	18	18	39	38	29	78	89	77	4	2	12
20	39	18	18	39	38	39	78	89	77	4	2	12
30	48	19	19	48	48	49	88	99	87	4	2	12
40	58	19	19	58	58	59	98	109	97	4	2	12
50	45	48	See drawing	See drawing	40	69	114	125	113	6	3	18
75	52	73	21	52	46	94	146	157	145	6	3	12
100	88	80	36	44	44	119	189	200	188	8	4	12
125	88	105	17	44	44	144	214	225	213	10	5	12

© Main Dimensions

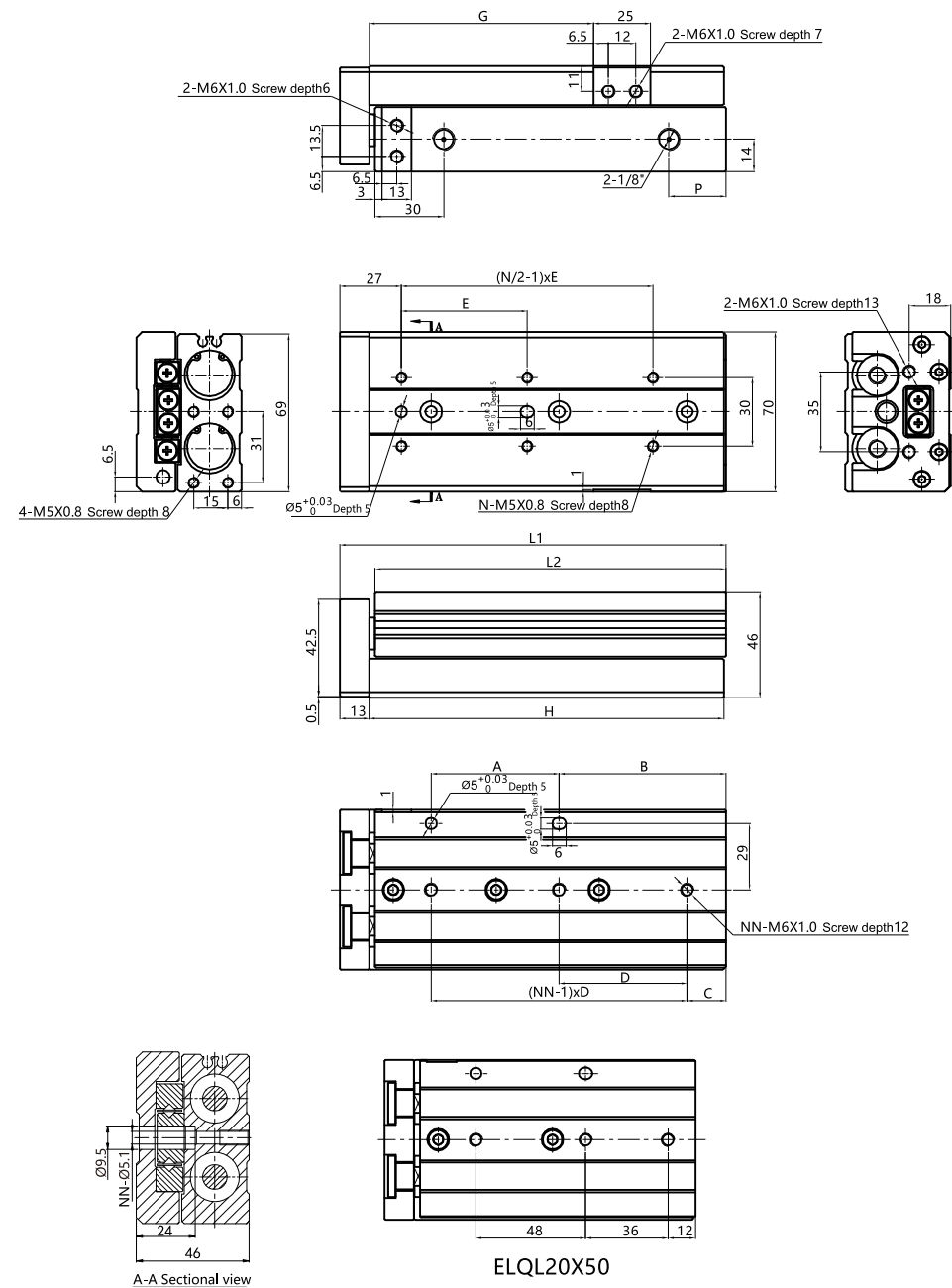
ELQ 20



Stroke/Sign	A	B	C	D	E	P	G	H	L1	L2	N	NN
10	50	18	22	46	45	16	31	94	108	92.5	4	2
20	50	18	22	46	40	16	41	94	108	92.5	4	2
30	50	18	22	46	48	16	51	94	108	92.5	4	2
40	56	22	22	56	58	16	61	104	118	102.5	4	2
50	48	48	See drawing	See drawing	42	18	71	122	136	120.5	6	3
75	56	73			55	25	96	155	169	153.5	6	3
100	112	74	18	56	50	25	121	212	226	210.5	8	4
125	118	96	37	59	55	25	146	240	254	238.5	8	4
150	124	118	56	62	62	25	171	268	282	266.5	8	4

◎ Main Dimensions

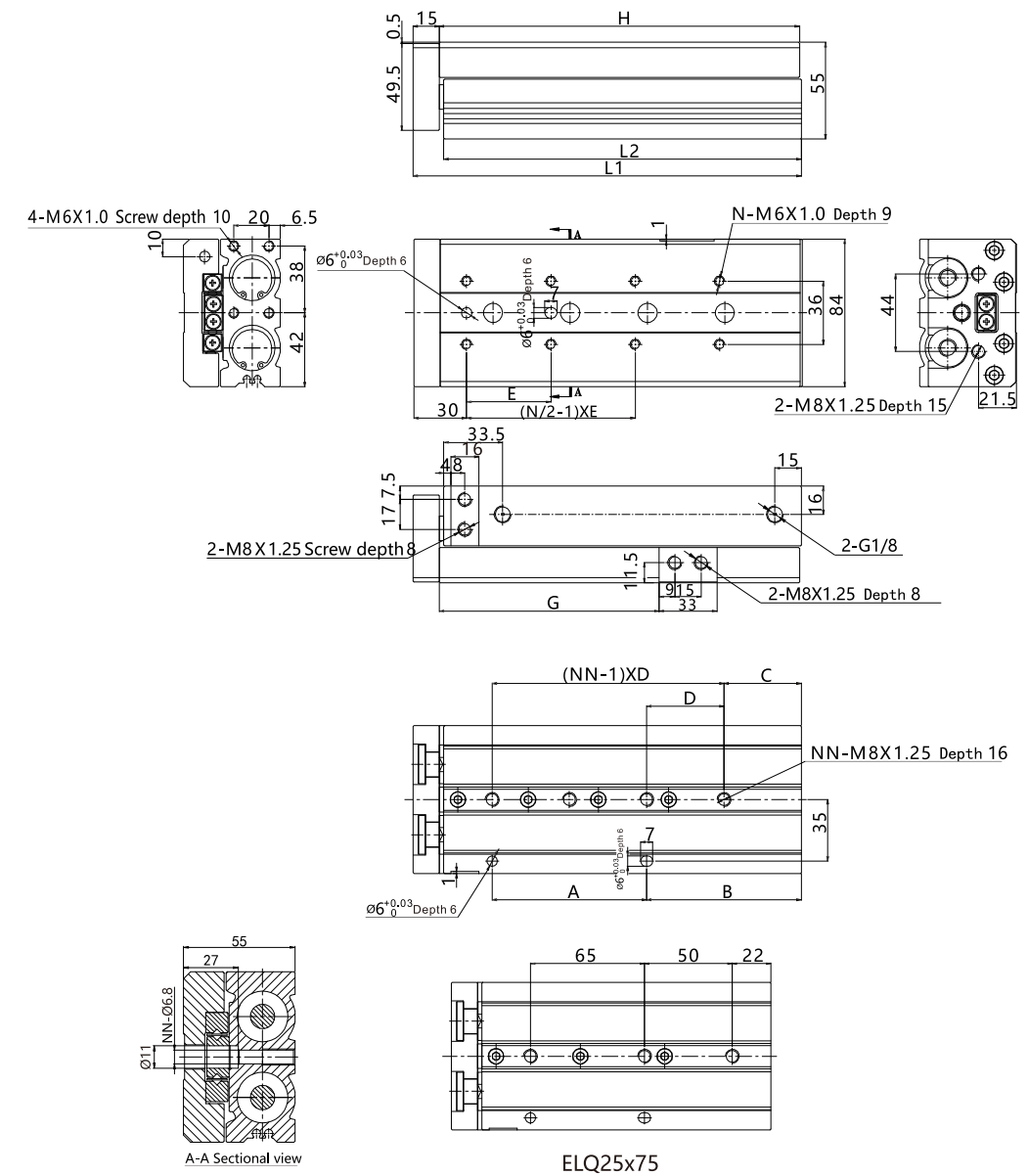
ELQL 20



Storke/Sign	A	B	C	D	E	P	G	H	L1	L2	N	NN
10	50	18	22	46	45	16	31	94	108	92.5	4	2
20	50	18	22	46	40	16	41	94	108	92.5	4	2
30	50	18	22	46	48	16	51	94	108	92.5	4	2
40	56	22	22	56	58	16	61	104	118	102.5	4	2
50	48	48	See drawing	See drawing	42	18	71	122	136	120.5	6	3
75	56	73	17	56	55	25	96	155	169	153.5	6	3
100	112	74	18	56	50	25	121	212	226	210.5	8	4
125	118	96	37	59	55	25	146	240	254	238.5	8	4
150	124	118	56	62	62	25	171	268	282	266.5	8	4

© Main Dimensions

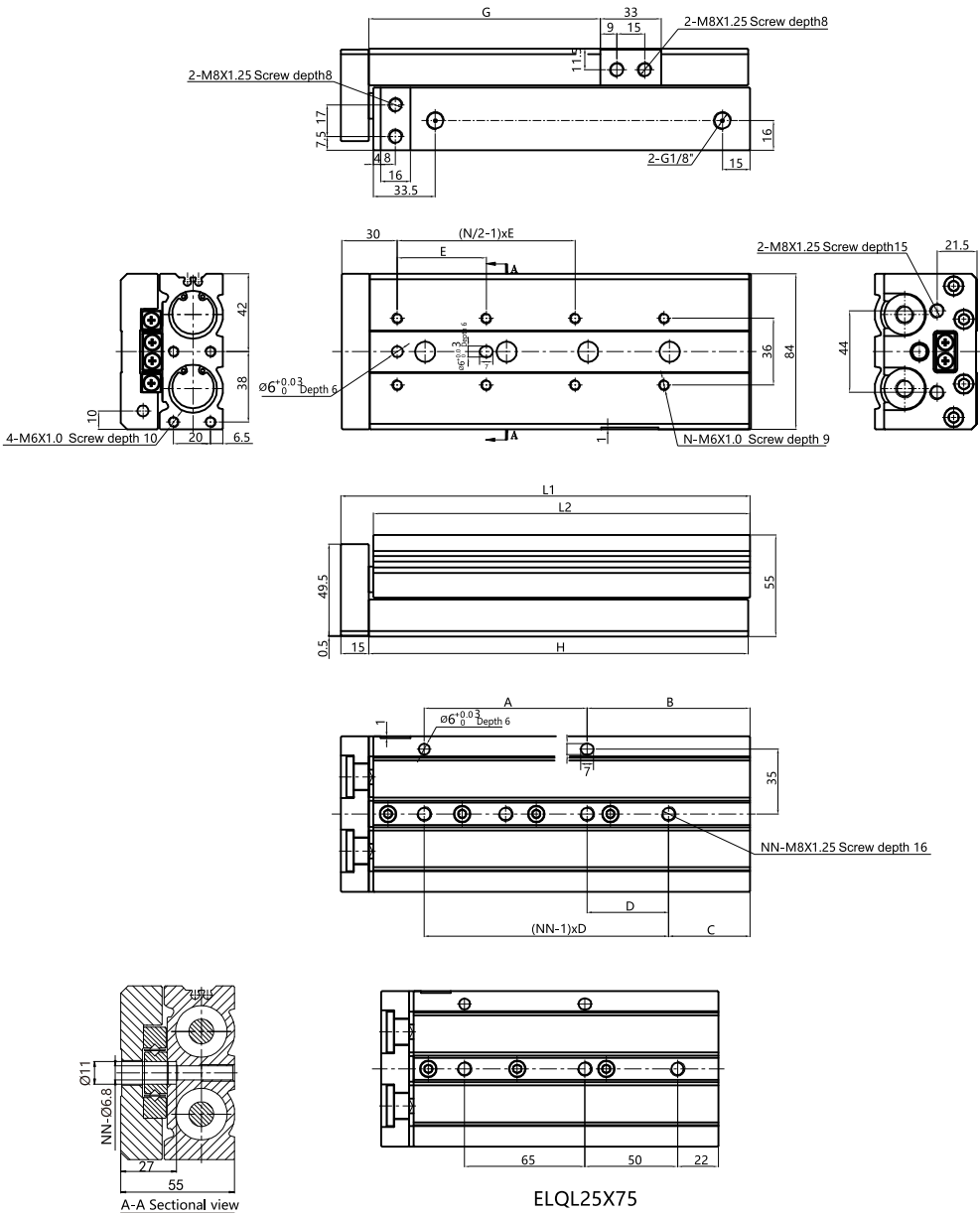
ELQ 25



Stroke/Sign	A	B	C	D	E	G	H	L1	L2	N	NN
10	55	23	23	55	55	35	107	123	105.5	4	2
20	55	23	23	55	46	45	107	123	105.5	4	2
30	55	23	23	55	55	55	107	123	105.5	4	2
40	65	23	23	65	65	65	117	133	115.5	4	2
50	80	32	32	80	75	75	141	157	139.5	4	2
75	65	72	See drawing	See drawing	60	100	166	182	164.5	6	3
100	88	88	44	44	48	125	205	221	203.5	8	4
125	132	97	31	66	60	150	258	274	256.5	8	4
150	132	122	56	66	65	175	283	299	281.5	8	4

Main Dimensions

ELQL 25



Stroke/Sign	A	B	C	D	E	G	H	L1	L2	N	NN
10	55	23	23	55	55	35	107	123	105.5	4	2
20	55	23	23	55	46	45	107	123	105.5	4	2
30	55	23	23	55	55	55	107	123	105.5	4	2
40	65	23	23	65	65	65	117	133	115.5	4	2
50	80	32	32	80	75	75	141	157	139.5	4	2
75	65	72	See drawing	See drawing	60	100	166	182	164.5	6	3
100	88	88	44	44	48	125	205	221	203.5	8	4
125	132	97	31	66	60	150	258	274	256.5	8	4
150	132	122	56	66	65	175	283	299	281.5	8	4

How to Order(for accessories)

Series No.	Type	Bore	Accessory Type
FJ	ELQ : Standard type ELQL : Symmetric type	6 8 12 16 20 25	A: With stroke adjusting screws at both ends AS: With stroke adjusting screws at extension end AF: With stroke adjusting screws at retraction end B: With shock absorbers both end BS: With shock absorber at extension end BF: With shock absorber at retraction end

Optional Accesories

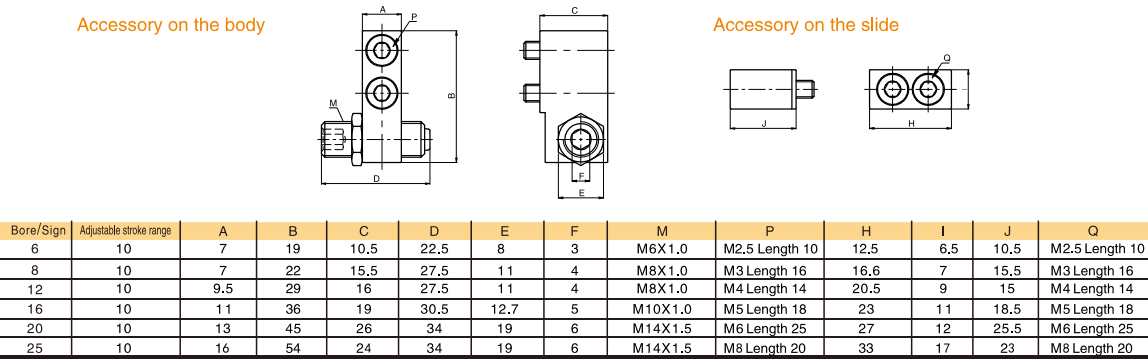
	Accessory type/Bore	6	8	12	16	20	25
ELQ	Both end	A (stroke adjusting screw) FJ-ELS6A	FJ-ELQ 8A	FJ-ELQ 12A	FJ-ELQ 16A	FJ-ELQ 20A	FJ-ELS 25A
		B (shock absorber)	FJ-ELQ 8B	FJ-ELQ 12B	FJ-ELQ 16B	FJ-ELQ 20B	FJ-ELS 25B
	Extension end	AS (stroke adjusting screw) FJ-ELS6AS	FJ-ELQ 8AS	FJ-ELQ 12AS	FJ-ELQ 16AS	FJ-ELQ 20AS	FJ-ELS 25AS
		BS (shock absorber)	FJ-ELQ 8BS	FJ-ELQ 12BS	FJ-ELQ 16BS	FJ-ELQ 20BS	FJ-ELS 25BS
Retraction end	AF (stroke adjusting screw)	FJ-ELS6AF	FJ-ELQ 8AF	FJ-ELQ 12AF	FJ-ELQ 16AF	FJ-ELQ 20AF	FJ-ELS 25AF
	BF (shock absorber)		FJ-ELQ 8BF	FJ-ELQ 12BF	FJ-ELQ 16BF	FJ-ELQ 20BF	FJ-ELS 25BF

	Accessory type/Bore	6	8	12	16	20	25
ELQL	Both end	A (stroke adjusting screw) FJ-ELSL6A	FJ-ELQL8A	FJ-ELQL12A	FJ-ELQL16A	FJ-ELQL20A	FJ-ELSL25A
		B (shock absorber)	FJ-ELQL8B	FJ-ELQL12B	FJ-ELQL16B	FJ-ELQL20B	FJ-ELSL25B
	Extension end	AS (stroke adjusting screw) FJ-ELS6AS	FJ-ELQ8AS	FJ-ELQ12AS	FJ-ELQ16AS	FJ-ELQ20AS	FJ-ELS25AS
		BS (shock absorber)	FJ-ELQ8BS	FJ-ELQ12BS	FJ-ELQ16BS	FJ-ELQ20BS	FJ-ELS25BS
Retraction end	AF (stroke adjusting screw)	FJ-ELS L6AF	FJ-ELQL8AF	FJ-ELQL12AF	FJ-ELQL16AF	FJ-ELQL20AF	FJ-ELSL25AF
	BF (shock absorber)		FJ-ELQL8BF	FJ-ELQL12BF	FJ-ELQL16BF	FJ-ELQL20BF	FJ-ELSL25BF

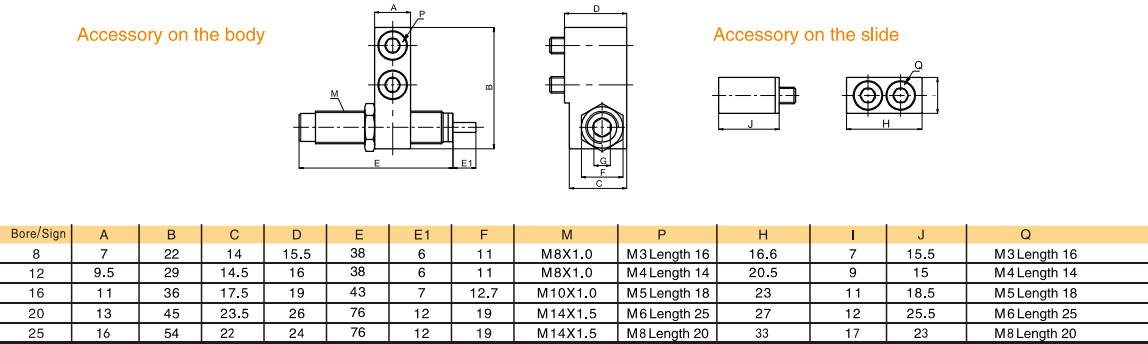
Note: A=AS+AF; B=BS+BF
BS(backward shock absorber) is different for Standard type and Symmetric type

Dimension for Accessories

AS (With stroke adjusting screws at extension end)



BS (With shock absorber at extension end)

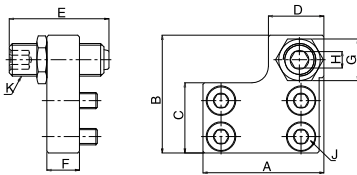




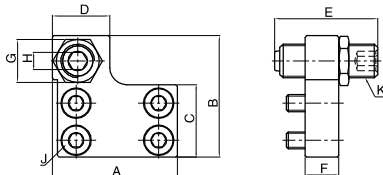
Main Dimensions

AF (With stroke adjusting screws at retraction end)

Suitable for ELQ



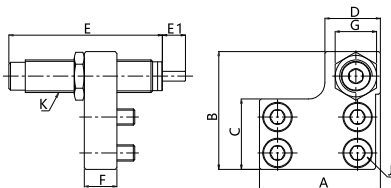
Suitable for ELQL



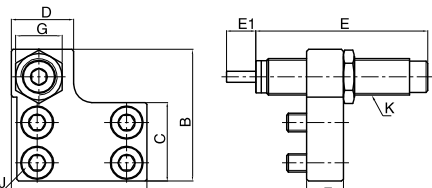
Bore/Sign	Adjustable stroke range	A	B	C	D	E	F	G	H	J	K
6	10	18	19	11.2	8	22.5	6	8	3	M2.5 Length 6	M6X1.0
8	10	24.5	22.2	13.2	13	27.5	8	11	4	M3 Length 8	M8X1.0
12	10	31.5	29	18	15	27.5	8	11	4	M4 Length 8	M8X1.0
16	10	37	36	21.5	17	30.5	10	12.7	5	M5 Length 10	M10X1.0
20	10	45	44	26	23	34	12	19	6	M5 Length 12	M14X1.5
25	10	51	53.5	34	25	34	15	19	6	M6 Length 16	M14X1.5

BF(With shock absorber at retraction end)

Suitable for ELQ



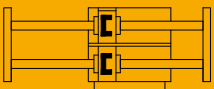
Suitable for ELQL



Bore/Sign	A	B	C	D	E	E1	F	G	J	K
8	24.5	22.2	13.2	13	38	6	8	11	M3 Length 8	M8X1.0
12	31.5	29	18	15	38	6	8	11	M4 Length 8	M8X1.0
16	37	36	21.5	17	43	7	10	12.7	M5 Length 10	M10X1.0
20	45	44	26	23	76	12	12	19	M5 Length 12	M14X1.5
25	51	53.5	34	25	76	12	15	19	M6 Length 16	M14X1.5

EXSW
Slide Cylinder

EXSW Series Slide Cylinder(with magnet,rubber cushion)



Specifications

Bore(mm)	16	20	25	32
Acting type	Double acting			
Working Medium	Clean Air(after 40 μ m filtration)			
Working Pressure (MPa)	0.1~1.0			
Guaranteed Pressure (MPa)	1.5			
Working Temperature (°C)	-20~70(No freezing)			
Speed range (mm/s)	30~500			
Cushion type	Rubber cushion			
Stroke tolerance(mm)	+1.0 0			
Adjustable stroke(mm)	-5~0			
No-rotating precision	± 0.05°		± 0.03°	
Port Size	M5 × 0.8		G1/8	

① PT、NPT port size is optional.

How to Order?

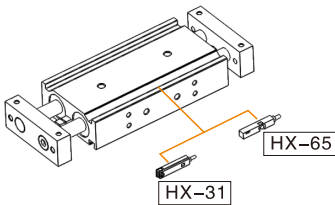
Series No	Type No	Bore	X	Stroke	-	Magnet No	-	Thread Type
EXSW	M: Slide bearing	16 20 25 32		25 50 75 ...		S : With magnet		Blank: G P : PT T : NPT

Order Example:
EXSW series, Slide Bearing type, Bore 16mm, stroke 30mm ERP code is: EXSWM16X30-S

Product Features

- * Compact structure with double cylinder.
- * High non-rotation accuracy.
- * Double Force.
- * Strong side load resistance.

Optional Accessories

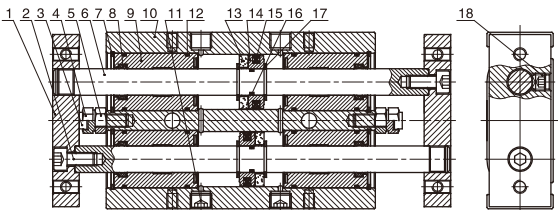


Stroke

Bore (mm)	Standard Stroke (mm)	Max. Stroke (mm)
16~32	10 20 30 40 50 75 100 125 150	150

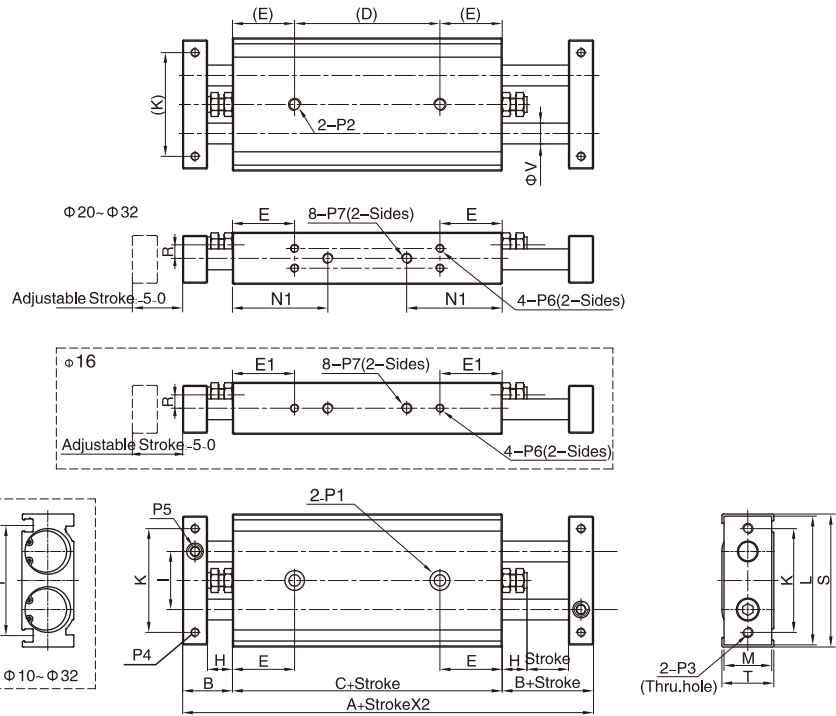
Note: Above chart shows standard stroke, for unstandard stroke, please contact with us.

Internal Structure



No.	Part Name	Material
1	Fixing plate	Aluminum alloy
2	Nut	Carbon steel
3	Bumper	POM
4	Adjustable nut	Carbon steel
5	Screw	Carbon steel
6	Piston rod	S45C hard chrome carbon steel
7	C clip	Carbon Steel
8	Wiper seal	NBR
9	Head cover	Aluminum alloy
10	Body	Aluminum alloy
11	Hex fix screw	Cu
12	O-ring	NBR
13	Magnet	NdFeB
14	Piston	Aluminum alloy
15	Piston seal	NBR
16	O-ring	NBR
17	C clip	Carbon steel
18	Nut	Carbon steel

Main Dimension



(mm)																	
Bore\Sign	A	B	C	E	E1	F	H	I	K	L	M	N1	R	S	T	V	W
16	133	19	95	25	25	47.5	9	25	45	56	18	38	5	58	20	8	—
20	158	24	110	30	30	53	12	28	50	62	23	46	6.5	64	25	10	9.5
25	160	24	112	30	30	64	12	35	60	78	28	43	9	80	30	12	13
32	193	30	133	30	30	76	14	44	75	96	36	53	11.5	98	38	16	20
Bore\Sign	P1				P2		P3		P4		P5		P6		P7		
16	ø8 Dp:4.4;Thru.hole:ø4.3				M5X0.8 Dp:8		M5X0.8		M4X0.7		M6X1.0		M4X0.7 Dp:5		M5X0.8		
20	ø9.5 Dp:5.3;Thru.hole:ø5.2				M6X1.0 Dp:10		M5X0.8		M4X0.7 Dp:6		M8X1.25		M4X0.7 Dp:5.5		M5X0.8		
25	ø11 Dp:6.3;Thru.hole:ø6.8				M8X1.25 Dp:12		M6X1.0		M5X0.8 Dp:7.5		M8X1.25		M5X0.8 Dp:7		1/8"		
32	ø11 Dp:6.3;Thru.hole:ø6.8				M8X1.25 Dp:12		M6X1.0		M5X0.8 Dp:8		M10X1.5		M5X0.8 Dp:7		1/8"		

ESW Rodless Cylinder

ELS/ELLSL Rodless Cylinder(rubber cushion)



Specifications

Bore(mm)	16	20	25	32
Acting Type	Double Acting			
Working Medium	Clean Air(40 μ m filtration)			
Pressure Range	0.15~0.7			
Guaranteed Pressure (Mpa)	1.0			
Working Temperature(℃)	-20~70 (No freezing)			
Piston Speed(mm/s)	50~400			
Stroke tolerance	0~250 ^{+1.0} ₀	251~1000 ^{+1.4} ₀	1001~ ^{+1.8} ₀	
Cushion Type	Rubber cushion on both ends			
Port Size	M5x0.8		G1/8 ①	

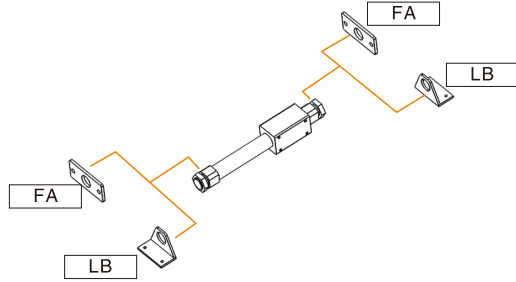
① PT、NPT port size is optional.
Note: Max working pressure of cylinder should not exceed 0.7Mpa, otherwise the magnetic coupling is in risk of disengagement

How to Order?

Series	Type	Bore	X	Stroke	Mounting Type	Thread Type
ESW		16		100	Blank:No	Blank:G
	Blank:Basic type	20		150	LB	P:PT
		25		200	FA	T:NPT
		32		250		
				...		
				800		

Order Example
ESW series, basic type,bore 32mm, stroke 50mm, G thread, ERP code is ESW32 × 50

Optional Accessories



Stroke

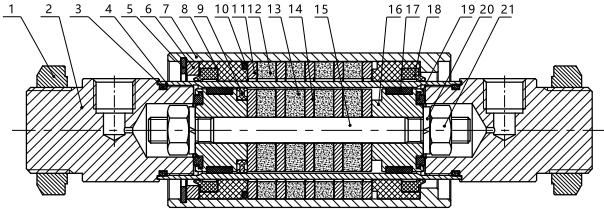
Bore (mm)	Standard Stroke (mm)															Max. Stroke (mm)
16	50	100	150	200	250	300	350	400	450	500						1000
20	50	100	150	200	250	300	350	400	450	500	600	700	800			2000
25	50	100	150	200	250	300	350	400	450	500	600	700	800			2000
32	50	100	150	200	250	300	350	400	450	500	600	700	800			2000

Notes: ESW series basic rodless cylinder, cylinder diameter 32, stroke 50, end cap tooth type G tooth, ERP code: ESW32X50

Magnetic Retention

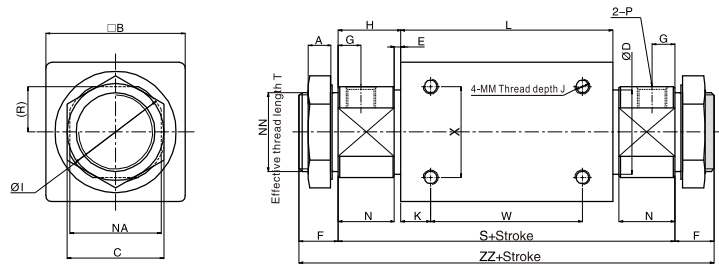
Bore(mm)	Magnetic Retention(N)
16	140
20	200
25	360
32	550

Internal Structure

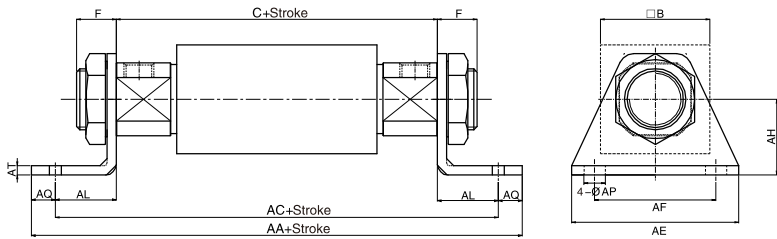


No.	Part Name	Material	No.	Part Name	Material
1	Hex Nut	Carbon Steel	12	Magnet	Sintered NdFeB
2	Cover	Aluminum Alloy	13	Magnet	Sintered NdFeB
3	O Ring	NBR	14	Blocking Plate for Barrel	Carbon Steel
4	Barrel	Stainless Steel	15	Connecting Rod	Stainless Steel
5	Retaining ring	Spring Steel	16	Piston	Aluminum Alloy
6	Slider baffle	Aluminum Alloy	17	Wear Ring	PTFE
7	Slider	Aluminum Alloy	18	Soft Dust Removing Seal	TPU
8	Wear Ring	PTFE	19	Bumper	TPU
9	Piston Seal	NBR	20	Spring Bumper	Carbon Steel
10	O Ring	NBR	21	Hex Nut	Carbon Steel
11	Blocking Plate for Slider	Carbon Steel			

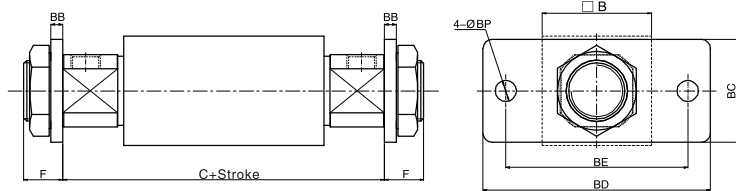
Main Dimension



Model/Sign	A	B	C	D	E	F	G	H	I	J	K	L	MM	N	NA	NN	R	S	T	W	X	ZZ	P
ESW16	4	35	14	18	2	10	5.5	13	22	5	11	57	M4X0.7	11	20	M10X1.0	10	83	8	35	19	103	M5X0.8
ESW20	7	36	26	22.8	2	13	7.5	20	29	6	8	66	M4X0.7	18	25	M20X1.5	12	106	10.5	50	25	132	1/8"
ESW25	8	46	32	27.8	2	13	7.5	20.5	33.5	7.5	10	70	M5X0.8	18.5	30	M26X1.5	15	111	10.5	50	30	137	1/8"
ESW32	8	60	32	35	2	16	8	22	40	8	15	80	M6X1.0	20	36	M26X1.5	18	124	13.5	50	40	156	1/8"



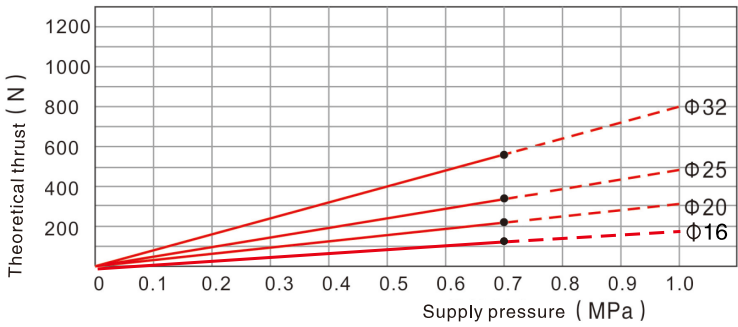
Model/Sign	AA	AC	C	F	AE	AF	AH	AL	AP	AQ	AT	B	LB Ordering Code
16	111	101	83	10	42	33	20	9	5.4	5	2.5	35	FJ-ESW16LB
20	158	142	106	13	43	30	23	18	6.5	8	3	36	FJ-ESW20LB
25	167	151	111	13	54	40	26	20	6.5	8	4	46	FJ-ESW25LB
32	184	170	124	16	62	46	33	23	7	7	4	60	FJ-ESW32LB



Model/Sign	B	BB	BC	BD	BE	BP	C	F	FA Ordering Code
20	36	4	34	75	60	7	106	13	FJ-SM20FA
25	46	4	40	75	60	7	111	13	FJ-SM25FA
32	60	4	40	75	60	7	124	16	FJ-SM25FA

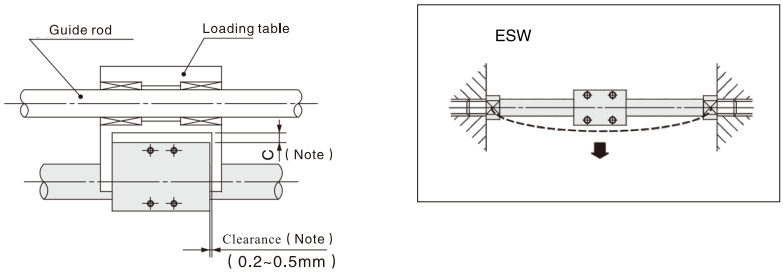
Installation and Operation

1. Load capacity of the ESW rodless cylinder series is determined by the theoretical holding force (theoretical thrust). The weight of the load cannot exceed the theoretical holding force, as stated at below chart.

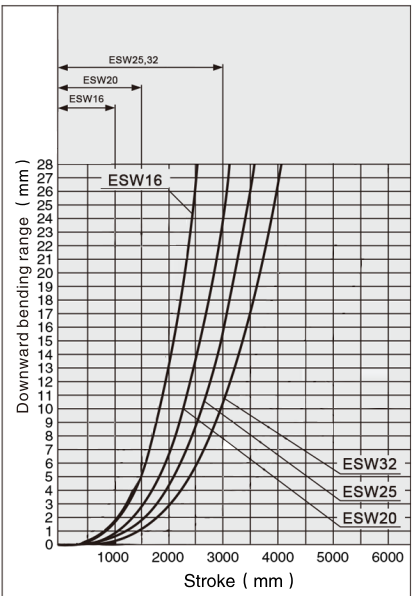


2. The downward bending deflection of the cylinder self-weight

Horizontal installation: the downward bending deflection of self-weight is shown in the figure below. As the stroke becomes longer, variations in the center axis become larger. Consider using a connection method that is able to absorb these bending deflection.



Note: Please reserve clearance according to the self-weight downward bending range shown in the right figure to prevent the cylinder from touching the installation surface or the load, so that the cylinder can slide smoothly within the minimum pressure range.



Note: the data of downward bending range is measured when the external slider moves to the middle of the stroke.

3. Maximum load including the adapting piece

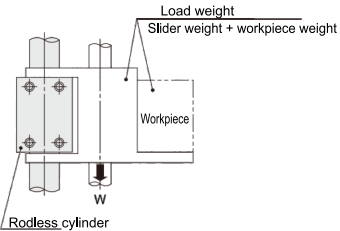
Load cannot be installed on the ESW series cylinders directly, please use other axis (linear guide rail, etc.) as oriented device. Maximum load including the adapting piece must be lower than the figures in the chart below.

Model	Maximum Load(KG)
ESW16	1.0
ESW20	1.1
ESW25	1.2
ESW32	1.5

Installation and Operation

4. Vertical movements

- 4.1 Please use rolling bearing (linear guide rail, etc.) as oriented device.
If the sliding bearing was used, the sliding resistance will increase due to the load and the torque generated by the load, resulting in poor movement.



Model	Allowable load weight(KG)	Maximum working pressure(MPa)
ESW16	7.0	0.65
ESW20	11.0	0.65
ESW25	18.5	0.65
ESW32	30.0	0.65

Note: If the actual pressure exceeds the maximum working pressure, the magnetic coupling is at risk of demagnetizing, attention please.

5. In case of stopping the slider halfway, please refer to the specific parameters in below chart

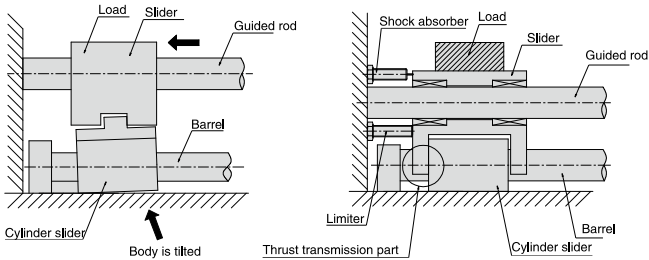
- 5.(1) If using an external stopper is used to stop the cylinder, working pressure cannot exceed the specified values listed in the chart below. Once the applied pressure exceeds the threshold limited, the magnetic coupling is at risk of demagnetizing, attention please..

Model	Maximum threshold value while stop halfway (MPa)
ESW16	0.65
ESW20	0.65
ESW25	0.65
ESW32	0.65

- 5.(2) If using a pneumatic circuit to stop the cylinder, the kinetic energy cannot exceed the specified values listed in the chart below. Once the applied pressure exceeds the threshold limited, the magnetic coupling is at risk of demagnetizing, attention please.

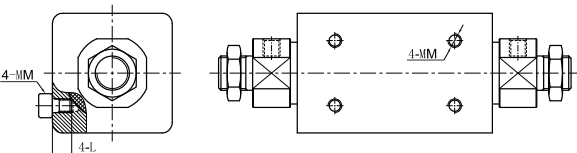
Model	Allowable kinetic energy while stop halfway(Es)(J)
ESW16	0.13
ESW20	0.24
ESW25	0.45
ESW32	0.88

5. (3) If the load is stopped at the end of stroke , cylinder may be tilted due to the big inertia and both the bearing and cylinder barrel will be damaged.(as shown in the left picture below).
By using a stopper and a shock absorber together, the thrust will be passed through the cylinder body to avoid cylinder tilting. (as shown in the right picture below).



5. (4) In a vertical installation situation, a pneumatic circuit cannot be used to stop the cylinder. Piston stopped because of pressure increase, but the magnetic coupling is at risk of demagnetizing due to the weight and inertia of the load.

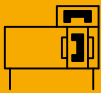
6. Cautions of the mounting thread length:



Model	MM	Length of thread≤L
ESW16	M4X0.7	5
ESW20	M4X0.7	5
ESW25	M5X0.8	6.5
ESW32	M6X1.0	7

ESWR

Magnetic Coupled Rodless Cylinder



Product Features

- Cylinder with non-rotational design, compact structure, and space-saving, compatible with various guidance systems;
- External inductive switch seat, simplifying the installation and adjustment of magnetic switches;
- Double mounting surfaces for the slider, providing users with a variety of installation options;
- Centralized piping design, simplifying the wiring process to reduce costs, ensuring system safety and ease of maintenance.



How to Order?

Series Code	Type Code	Cylinder Diameter	X	Stroke	Magnet Code	Thread Code
ESWR	Blank: Dual Side Piping Type G: Centralized Piping Type	16 20 25 32		50 100 150 200 250	Blank: Non-Magnetic S: With Magnet	Blank:G

Ordering Example: ESWR Series Cylinder, Type is Centralized Piping, Cylinder Diameter is 16, Stroke is 200, Thread is G Thread, ERP Code is: ESWRG16X200-S

Specifications

Cylinder Diameter (mm)	16	20	25	32
Actuation Type	Double-acting type			
Working Medium	Air (filtered through a filter net of 40 μ m or larger)			
Minimum Operating Pressure	0.16MPa		0.15MPa	0.14MPa
Maximum Operating Pressure	0.7 MPa			
Guaranteed Pressure Resistance	1.05MPa			
Operating Temperature (° C)	-20~70 (non-freezing)			
Speed Range (mm/s)	50~500			
Stroke Tolerance Range (mm)	0~250 ^{+1.0} ₀	251~1000 ^{+1.4} ₀	1001~;	^{+1.8} ₀
Cushioning Method	Rubber cushioning at both ends			
Magnetic Holding Force (N)	140	200	360	550
Port Diameter	M5X0.8	G1/8		
Weight (0-stroke weight) kg	ESWR: 0.33 ESWRG: 0.329 Increase in mass by 0.046 for every 50mm of stroke	ESWR: 0.439 ESWRG: 0.437 Increase in mass by 0.086 for every 50mm of stroke	ESWR: 0.725 ESWRG: 0.726 Increase in mass by 0.075 for every 50mm of stroke	ESWR: 1.215 ESWRG: 1.211 Increase in mass by 0.073 for every 50mm of stroke

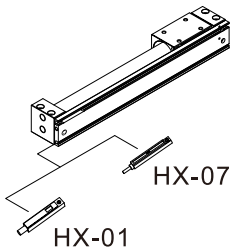
Stroke Table

Cylinder Diameter(mm)	Standard Stroke (mm)	Max. Stroke (mm)
16	50 100 150 200 250 300 350 400 450 500	750
20	100 150 200 250 300 350 400 450 500 600 700 800	1000
25	100 150 200 250 300 350 400 450 500 600 700 800	1200
32	100 150 200 250 300 350 400 450 500 600 700 800	1500

Optional Accessories

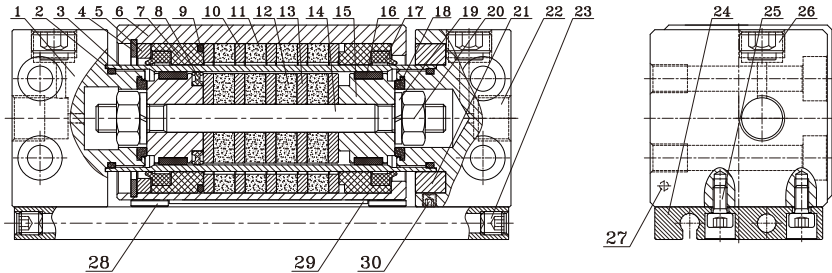
Note:
Cylinder diameters of 16 and 20 mm can only use the HX-07 series magnetic switches.

For cylinder diameters of 25 and 32 mm, please use the HX-07 or HX-01 series magnetic switches.



Internal Structure

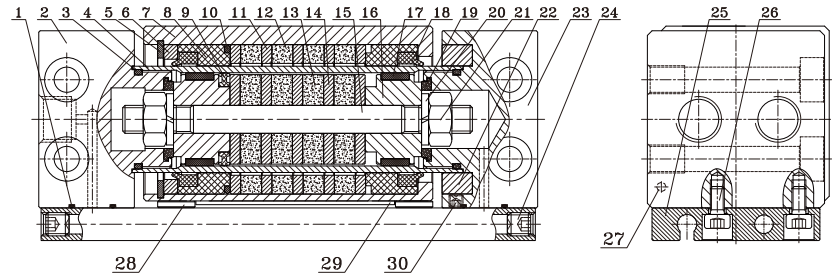
ESWR Dual pipe fitting type



NO	Name	Materials	NO	Name	Materials
1	End Cover A	Aluminum Alloy	16	Wear Ring	POM
2	O-Ring	NBR	17	Scraper Ring	TPU
3	Cylinder Barrel	Stainless Steel	18	Anti-collision Gasket	TPU
4	C-Clip for Counterbore (Reverse)	Spring Steel	19	Spring Washer	Stainless Steel
5	Slider Stop	Aluminum Alloy	20	Hex Nut	Stainless Steel
6	Slider	Aluminum Alloy	21	Retaining Ring	Aluminum Alloy
7	Wear Ring B	POM	22	End Cover B	Aluminum Alloy
8	Piston Seal	NBR	23	Hex Socket Set Screw	Carbon Steel
9	O-Ring	NBR	24	Inductive Switch Seat	Aluminum Alloy
10	Slider Separator	Free-Cutting Steel	25	Hex Socket Head Cap Screw	Carbon Steel
11	Integral Magnet	Sintered Neodymium Iron Boron	26	Plug	Carbon Steel
12	Integral Magnet	Sintered Neodymium Iron Boron	27	Magnet	Sintered Neodymium Iron Boron
13	Cylinder Separator	Free-Cutting Steel	28	Spacer	POM
14	Connecting Rod	Stainless Steel	29	Demagnetization Plate	SPCC
15	Piston	Aluminum Alloy	30	Hex Socket Set Screw	Carbon Steel

Remarks:
For cylinder diameters of 25 and 32,
parts (21) and (30) are not available.

ESWRG Centralized Piping Type

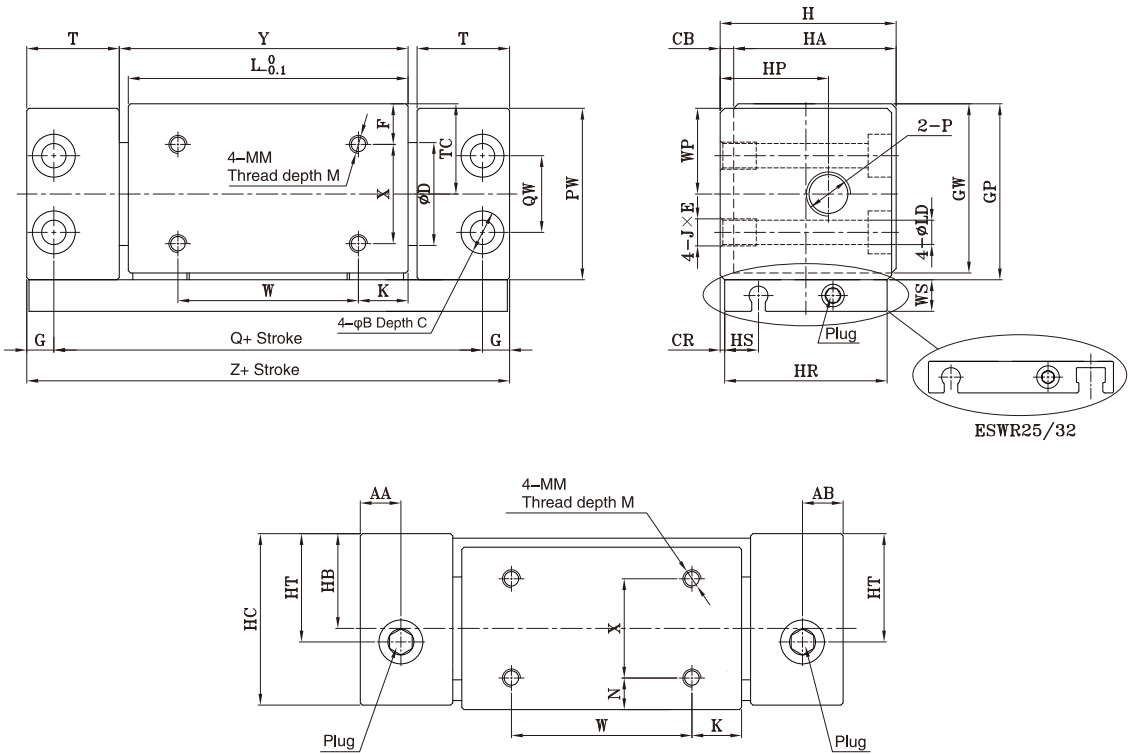


NO	Name	Materials	NO	Name	Materials
1	O-Ring	NBR	16	Piston	Aluminum Alloy
2	End Cover A	Aluminum Alloy	17	Wear Ring	POM
3	O-Ring	NBR	18	Scraper Ring	TPU
4	Cylinder Barrel	Stainless Steel	19	Anti-collision Gasket	TPU
5	C-Clip for Counterbore (Reverse)	Spring Steel	20	Spring Washe	Stainless Steel
6	Slider Stop	Aluminum Alloy	21	Hex Nut	Stainless Steel
7	Slider	Aluminum Alloy	22	Retaining Ring	Aluminum Alloy
8	Wear Ring B	POM	23	End Cover B	Aluminum Alloy
9	Piston Seal	NBR	24	Hex Socket Set Screw	Carbon Steel
10	O-Ring	NBR	25	Inductive Switch Seat	Aluminum Alloy
11	Slider Separator	Free-Cutting Steel	26	Hex Socket Head Cap Screw	Aluminum Alloy
12	Integral Magnet	Sintered Neodymium Iron Boron	27	Magnet	Sintered Neodymium Iron Boron
13	Integral Magnet	Sintered Neodymium Iron Boron	28	Spacer	POM
14	Cylinder Separator	Free-Cutting Steel	29	Demagnetization Plate	SPCC
15	Connecting Rod	Stainless Steel	30	Hex Socket Set Screw	Aluminum Alloy

Remarks:
For cylinder diameters of 25 and 32,
parts (22) and (30) are not available.

Internal Structure

ESWR Dual pipe fitting type

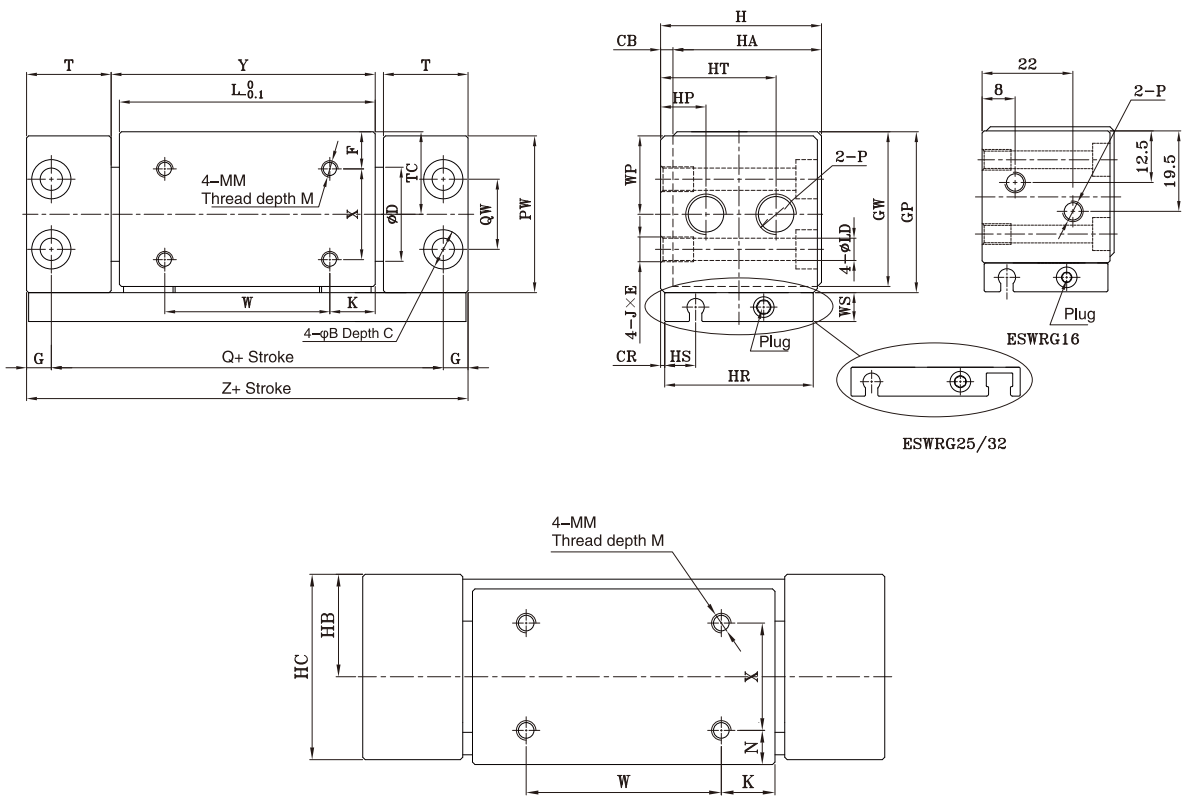


Model	AA	AB	B	C	CB	CR	D	F	G	GP	GW	H	HA	HB	HC	HP	HR	HS	HT	JXE	K
ESWR16	10.5	10.5	8	4.2	1	0.5	18	8	5	33	31.5	32	31	16	31	17	30	5.5	17	M5X0.8X7	14
ESWR20	9	8	9.5	5.2	3	1	22.8	9	6	39	37.5	39	36	21	38	24	36	7.5	24	M6X1X8	11
ESWR25	8.5	8.5	9.5	5.2	3	1	27.8	8.5	6	44	42.5	44	41	23.5	43	23.5	41	5	23.5	M6X1X8	15
ESWR32	10.5	10.5	11	6.5	3	2	33.6	10.5	7	55	53.5	55	52	29	54	29	51	5	29	M8X1.25X10	13

Model	L	LD	M	MM	N	PW	Q	QW	T	TC	W	WP	WS	X	Y	Z	P
ESWR16	53	4.3	5	M4X0.7	6	32	84	18	19	17	25	16	7	18	54.5	94	M5X0.8
ESWR20	62	5.4	5	M4X0.7	7	38	95	17	20.5	20	40	19	7	22	64	107	1/8"
ESWR25	70	5.4	6	M5X0.8	6.5	43	105	20	21.5	22.5	40	21.5	7	28	72	117	1/8"
ESWR32	76	7	7	M6X1	8.5	54	116	26	24	27	50	27	7	35	79	130	1/8"

Internal Structure

ESWRG Centralized Piping Type



Model	B	C	CB	CR	D	F	G	GP	GW	H	HA	HB	HC	HP	HR	HS	HT	JXE	K
ESWRG16	8	4.2	1	0.5	18	8	5	33	31.5	32	31	16	31	-	30	5.5	-	M5X0.8X7	14
ESWRG20	9.5	5.2	3	1	22.8	9	6	39	37.5	39	36	21	38	11	36	7.5	28	M6X1X8	11
ESWRG25	9.5	5.2	3	1	27.8	8.5	6	44	42.5	44	41	23.5	43	14.5	41	5	33.5	M6X1X8	15
ESWRG32	11	6.5	3	2	33.6	10.5	7	55	53.5	55	52	29	54	20	51	5	40	M8X1.25X10	13

Model	L	LD	M	MM	N	PW	Q	QW	T	TC	W	WP	WS	X	Y	Z	P
ESWRG16	53	4.3	5	M4X0.7	6	32	84	18	19	17	25	-	7	18	54.5	94	M5X0.8
ESWRG20	62	5.4	5	M4X0.7	7	38	95	17	20.5	20	40	19	7	22	64	107	1/8"
ESWRG25	70	5.4	6	M5X0.8	6.5	43	105	20	21.5	22.5	40	21.5	7	28	72	117	1/8"
ESWRG32	76	7	7	M6X1	8.5	54	116	26	24	27	50	26	7	35	79	130	1/8"

ESWT

Guide Rod Type Rodless Cylinder



Specifications

Bore(mm)	16	20	25	32
Acting Type	Double Acting			
Working Medium	Clean Air(40 μ m filtration)			
Pressure Range	0.18~0.7			
Guaranteed Pressure (Mpa)	1.05			
Working Tempreature(℃)	-20~70 (No freezing)			
Piston Speed(mm/s)	50~400			
Stroke Tolerance	0~250 ^{+1.0} ₀	251~1000 ^{+1.4} ₀	1001~ ^{+1.8} ₀	
Cushion Type	Rubber cushion/Shock absorber			
Magnetic Retention	140	200	360	550
Port Size	M5x0.8	G1/8 ①		

① PT、NPT port size is optional.

How to Order?

Series	Type	Bore × Stroke	Magnet.No	Cushion Type	Thread Type
ESWT(Slide bearing)	Blank: Both sides tubing G:Centralized piping type	16 50 20 100 25 150 32 200 250	Blank: No magnet S: With magnet	Blank: Both sides adjustable screw cushion B: Both sides shock absorber and adjustable nut BS: Plate A shock absorber and adjusted nut Plate B or C adjusted screw	Blank:G P:PT T:NPT
Blank	Both sides tubing				
G	Centralized piping type				

Both sides adjustable screw cushion

Both sides shock absorber and adjustable nut

Plate shock absorber and adjusted nut
Plate B or C adjusted screw

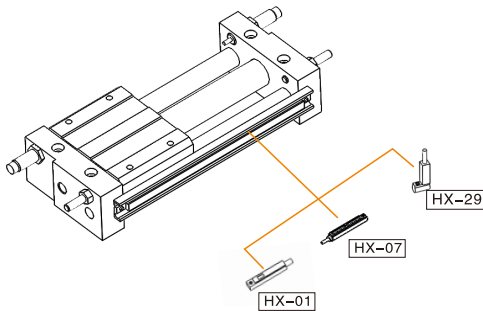
Adjusted screw
(Across the same)

Adjusted bolt
(Across the same)
Shock absorber

Plate B or C
Adjusted bolt
Plate A
Shock absorber
(Across the same)

Order Example
ESWT Series Guide Rod Type Rodless Cylinder, Bore 32,Stroke 50,No magnet, Both sides shock absorber and adjustable nut,G thread, the ERP code is:ESWT32X50-B

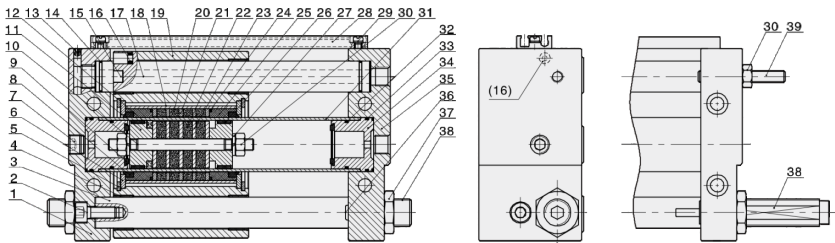
Optional Accessories



Stroke

Bore (mm)	Standard Stroke (mm)																Max. Stroke (mm)
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	800				1000
25	50	100	150	200	250	300	350	400	450	500	600	700	800				1500
32	50	100	150	200	250	300	350	400	450	500	600	700	800				1500

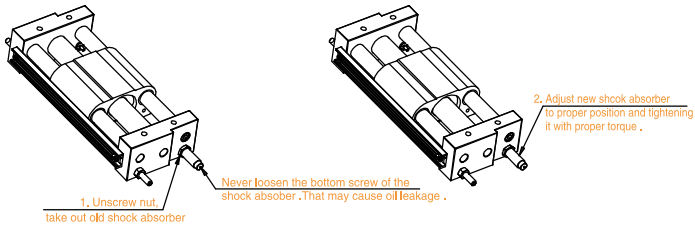
Internal Structure



No.	Part Name	Material	No.	Part Name	Material
1	Plate B	Aluminum alloy	21	Sliding block partition	Fast cutting steel
2	Hex fix screw	Carbon steel	22	Magnet	Sintered NdFeB
3	Guide rod A	Carbon steel	23	Barrel plate	Fast cutting steel
4	Bearing	Copper	24	O-ring	NBR
5	C type retainer ring	Spring steel	25	Wear ring	PTFE
6	Ontology baffle	Aluminum alloy	26	Wear ring	PTFE
7	Hex fix plug	Carbon steel	27	Spring washer	Carbon steel
8	Blowing dust ring	TPU	28	Switch base	Aluminum alloy
9	Anti-bump cushion	TPU	29	Screw	Carbon steel
10	Connecting rod	Stainless steel	30	Hexagonal nut	Carbon steel
11	Piston	Aluminum alloy	31	Barrel	Stainless steel
12	Piston rod seal	NBR	32	O-ring	NBR
13	Steel ball	Stainless steel	33	O-ring	NBR
14	O-ring	NBR	34	Anti-bump base	Aluminum alloy
15	Soft dust scraping ring	Stainless steel	35	Plate A	Aluminum alloy
16	Magnet	Sintered NdFeB	36	Anti-bump cushion	TPU
17	Guide rod C	Carbon steel	37	Hexagonal nut	Carbon steel
18	Sleeve	Aluminum alloy		Adjustable screw	Carbon steel
19	Body	Aluminum alloy		Oil shock absorber	Components
20	Magnet	Sintered NdFeB	39	Adjustable nut	Carbon steel

About Shock Absorber

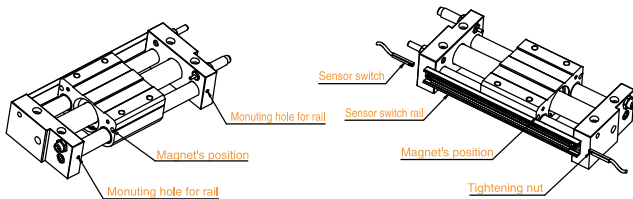
- Shock absorbers are consumable parts .When a decrease in energy absorption capacity is noticed ,it must be replaced. Refer to the table below for the absorber type. Please order corresponding shock absorber according to the table and replace the old ones according to the procedure .
- Never loosen the bottom screw of the shock absorber. (It is not an adjustment screw.) That may cause oil leakage.
- Refer to the table below for tightening torques of the shock absorber setting nut.



Model	ESWT16	ESWT20	ESWT25	ESWT32
Shock absorber type	AC0806-WY	AC1008-WY	AC1416-WY	AC2030-WY
Tightening torque(Nm)	1.67	3.14	10.8	10.8

About Sensor Switch

- 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 to order sensor switch ,mounting it into the rail' s groove, adjusting it to proper position ,tightening it with proper torque.

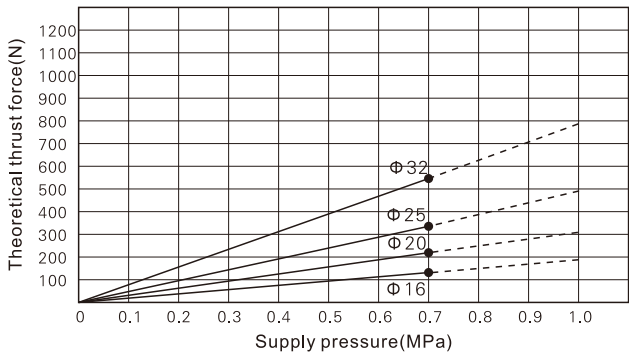


Model	ESWT16-S	ESWT20-S	ESWT25-S	ESWT32-S
Sensor switch type	HX-01、HX-07			

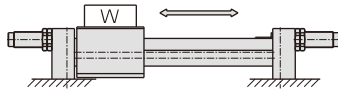
Please refer to the detailed information of sensor switch on page 3.166-3.174

Installation and Use

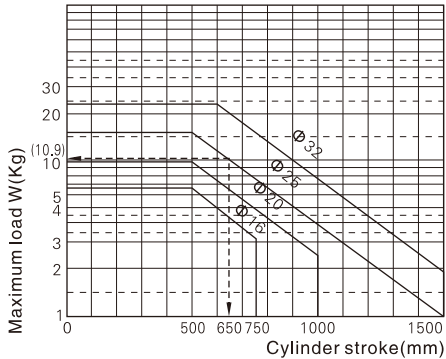
- Theoretical retention force.
 - The following table shows the theoretical retention force of the cylinder.



- If the load coincides with the center of gravity of the slider, the relationship between the load and the stroke is as follows.



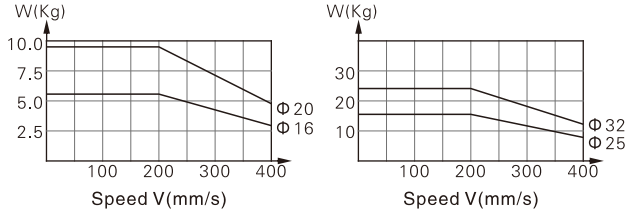
Inside diameter	Maximum load W(Kg)	Maximum load corresponding to the travel range
16	5.6	~300mm
20	9.6	~500mm
25	16	~500mm
32	24	~600mm



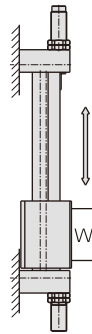
When running horizontally, select the appropriate cylinder bore according to the relationship curve between load and speed.

- When the load is moving horizontally, the load W(Kg).
- Find the slider running speed V.
- Select cylinder bore according to allowable driving force Fn and speed relationship diagram.

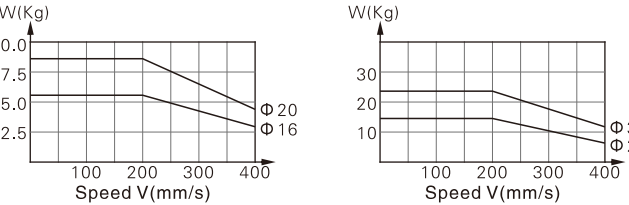
Horizontal operating load and speed relationship curve



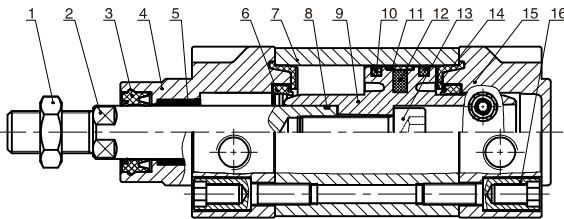
- Vertical operation, the relationship between load and speed curve is as follows.



Vertical operating load and speed relationship curve



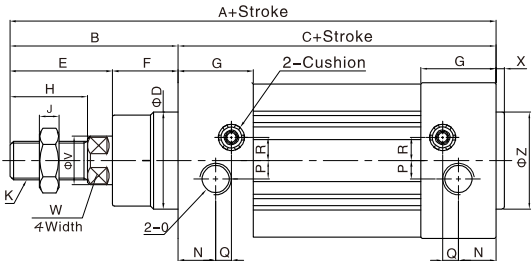
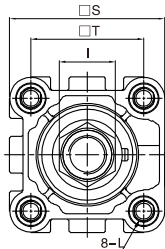
Internal Structure



NO.	Part Name	Material
1	Nut	Carbon steel
2	Piston rod	S45C hard chrome carbon steel
3	Piston rod seal	TPU
4	Head cover	Aluminum alloy
5	Self lubricating bearing	Bronze powder
6	Cushion seal	TPU
7	Barrel	Aluminum alloy
8	O-ring	NBR
9	Piston	Aluminum alloy
10	Piston seal	TPU
11	Wear ring	PTFE
12	Magnet	Plastic
13	Hexagon screw	Carbon steel
14	Cushion pad	TPU
15	Rear cover	Aluminum alloy
16	Bolt	Carbon steel

Main Dimension

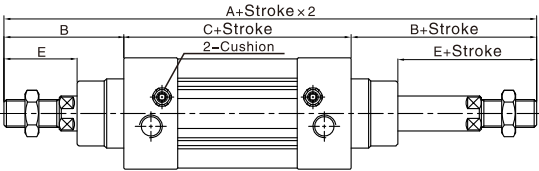
FVBC



Bore/Sign	A	B	C	D	E	F	G	H	I	J	K	L	N	O	P	Q	R	S	T	V	W	X	Z
32	142	48	94	30	29	19	27.5	22	17	6	M10x1.25	M6 Dp.16	13	1/8"	5.5	6	6	46.5	32.5	12	10	3	30
40	159	54	105	35	33	21	32	24	17	7	M12x1.25	M6 Dp.16	17	1/4"	6	7.5	8.5	54	38	16	13	3.5	35
50	175	69	106	40	42	27	31	32	23	8	M16x1.5	M8 Dp.16	15.5	1/4"	7.5	6.5	9.5	64	46.5	20	17	3.5	40
63	190	69	121	45	42	27	33	32	23	8	M16x1.5	M8 Dp.16	16.5	3/8"	7.5	7.5	11.5	75	56.5	20	17	4	45
80	214	86	128	45	53	33	33	40	26	10	M20x1.5	M10 Dp.17	16.5	3/8"	8	8.5	12.5	93	72	25	22	4	45
100	229	91	138	55	55	36	37	40	26	10	M20x1.5	M10 Dp.17	19.5	1/2"	10	7	12	110	89	25	22	4	55

Note: With magnet and without magnet, the dimensions are same.

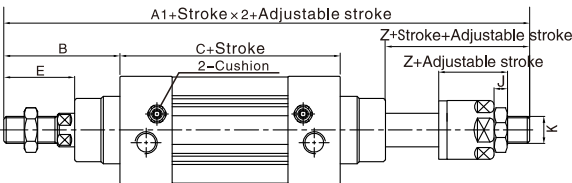
FVBCE



Bore/Sign	A	A1	B	C	E	Z	J	K
32	190	188	48	94	29	27	6	M10x1.25
40	213	208	54	105	33	28	7	M12x1.25
50	244	233	69	106	42	31	8	M16x1.5
63	259	248	69	121	42	31	8	M16x1.5
80	300	286	86	128	53	39	10	M20x1.5
100	320	304	91	138	55	39	10	M20x1.5

Note: 1. With magnet and no magnet, the dimensions are same.
2. Not marked dimension is same as FVBC standard type.
3. FXBC series dimensions is same as FVBC.

FVBCJ

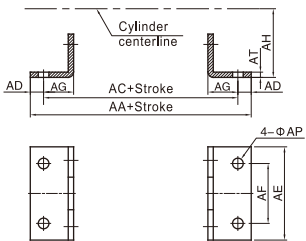


Dimension of Mounting Accessories

LB



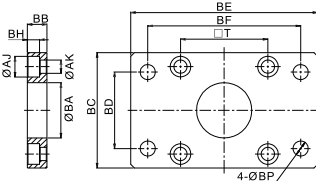
Bore	Model\Sign	AA	AC	AD	AE	AF	AG	AH	AP	AT
32	FJ-VBC32LB	158	142	8	47	32	24	32	7	4
40	FJ-VBC40LB	179	161	9	53	36	28	36	10	4
50	FJ-VBC50LB	190	170	10	65	45	32	45	10	5
63	FJ-VBC63LB	209	185	12	75	50	32	50	10	5
80	FJ-VBC80LB	248	210	19	95	63	41	63	12	6
100	FJ-VBC100LB	266	220	23	115	75	41	71	14.5	6



FA/FB



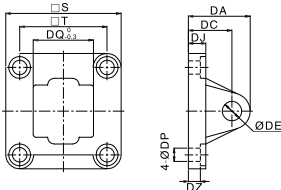
Bore	Model\Sign	AJ	AK	BA	BB	BC	BD	BE	BF	BH	BP	T
32	FJ-VBC32FA	11	6.5	30.5	10	47	32	80	64	6.5	7	32.5
40	FJ-VBC40FA	11	6.5	35.5	10	53	36	90	72	6.5	9	38
50	FJ-VBC50FA	14	9	40.5	12	65	45	108	90	8.5	9	46.5
63	FJ-VBC63FA	14	9	45.5	12	75	50	118	100	8.5	9	56.5
80	FJ-VBC80FA	17	11	45.5	16	95	63	150	126	10.5	12.5	72
100	FJ-VBC100FA	17	11	55.5	16	115	75	176	150	10.5	14.5	89



CA



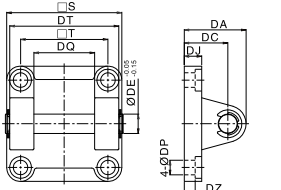
Bore	Model\Sign	DA	DC	DE	DJ	DP	DQ	DZ	S	T
32	FJ-VBC32CA	31	22	10	9.5	7	25.8	5.5	47	32.5
40	FJ-VBC40CA	37	25	12	9.5	7	27.8	5.5	53	38
50	FJ-VBC50CA	39	27	12	10.5	9	31.8	6.5	65	46.5
63	FJ-VBC63CA	47	32	16	10.5	9	39.7	6.5	75	56.5
80	FJ-VBC80CA	51	36	16	14.5	11	49.7	10	95	72
100	FJ-VBC100CA	61	41	20	14.5	11	59.7	10	115	89



CB



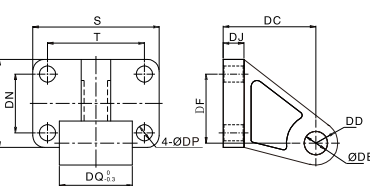
Bore	Model\Sign	DA	DC	DE	DJ	DP	DQ	DT	DZ	S	T
32	FJ-VBC32CB	31	22	10	9.5	7	26 ^{+0.52} ₀	45	5.5	47	32.5
40	FJ-VBC40CB	37	25	12	9.5	7	28 ^{+0.52} ₀	52	5.5	53	38
50	FJ-VBC50CB	39	27	12	10.5	9	32 ^{+0.52} ₀	60	6.5	65	46.5
63	FJ-VBC63CB	47	32	16	10.5	9	40 ^{+0.52} ₀	70	6.5	75	56.5
80	FJ-VBC80CB	51	36	16	14.5	11	50 ^{+0.52} ₀	90	10	95	72
100	FJ-VBC100CB	61	41	20	14.5	11	60 ^{+0.74} ₀	110	10	115	89



CR



Bore	Model\Sign	DC	DD	DE	DF	DJ	DP	DQ	DM	DN	S	T
32	FJ-VBC32CR	32	10	10	21	8	7	25.8	31	18	51	38
40	FJ-VBC40CR	36	11	12	24	10	7	27.8	35	22	54	41
50	FJ-VBC50CR	45	13	12	33	12	9	31.8	45	30	65	50
63	FJ-VBC63CR	50	15	16	37	12	9	39.7	50	35	67	52
80	FJ-VBC80CR	63	15	16	47	14	11	49.7	60	40	86	66
100	FJ-VBC100CR	71	19	20	55	15	11	59.7	70	50	96	76



VBC/LBC
Standard Cylinder



Specifications

Bore Size (mm)	32	40	50	63	80	100	125	160	200	250
Acting type	Double Acting									
Working medium	Clean Air(40 μ m filtration)									
Working pressure (MPa)	0.1~1.0									
Guaranteed pressure (MPa)	1.5									
Working temperature (°C)	-20~70(No freezing)									
Speed range (mm/s)	50~800									
Cushion type	Air Cushion									
Cushion stroke (mm)	27	30	36	34	35	42	50			
Mounting type	LB FA FB CA CB CR									
Port size ①	G1/8	G1/4	G3/8	G1/2	G3/4	G1				

① PT、NPT port size is optional.

How to Order?

Series No	Cushion Type	Type No.	Bore X	Stroke	Adjustable Stroke	Magnet No.	Seal Material	Mounting Type	Thread Type
VB: Profile barrel LB: Round barrel	C: Air cushion Blank: Basic type D: Double shaft type J: Double shaft and adjustable stroke type	32 40 50 63 80 ... 250	25 50 75 ...	10 20 30 40 50 75 100	Blank: No magnet S: With magnet	Blank: TPU seal	Blank: No CA CB CR LB FA FB	Blank: No IJ YJ YCJ BJ FD	Blank: G P: PT T: NPT

Order Example:

VBC series, double shaft air cylinder, Bore 40mm, stroke 50mm, with magnet, TPU seal material, CA mounting accessory, NPT thread.

ERP code is: VBCD 40X50-S-CA-T

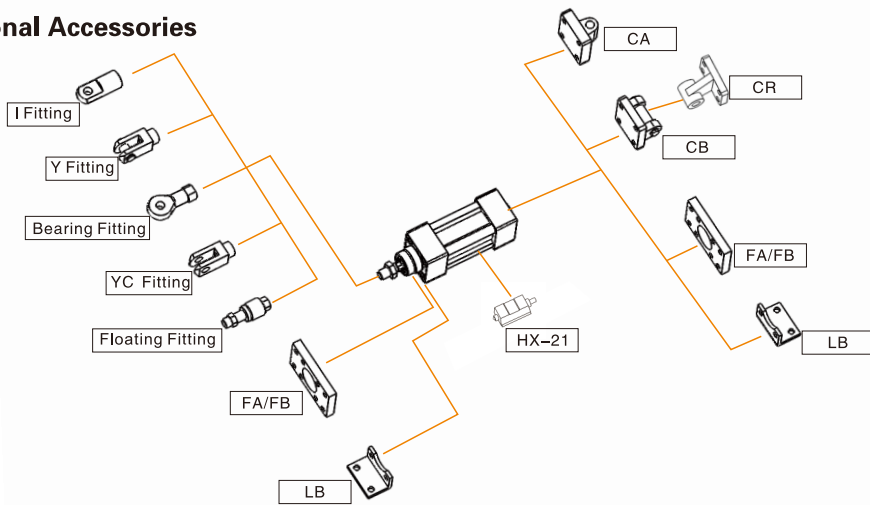
Note:1. If cylinder with several different mounting accessories, please use this sequential

coding: CA/CB/CR/LB/FA/FB/IJ/YJ/BJ/FD

2.VBC series, bore range: Φ32~Φ200;LBC series,bore range: Φ32~Φ250

3.No CR/LB option for Φ200

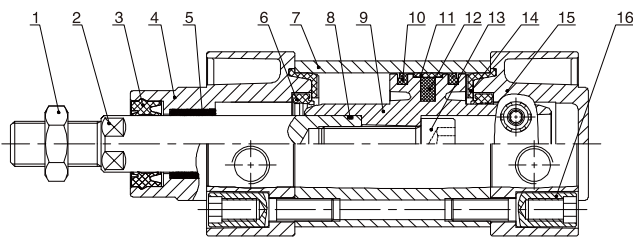
Optional Accessories



Stroke

Bore (mm)	Standard Stroke (mm)	Max. Stroke (mm)
32	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500	1900
40	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800	1900
50~250	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1900

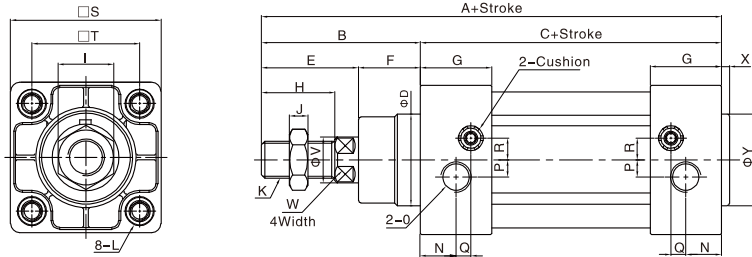
Internal Structure



NO.	Part Name	Material
1	Nut	Carbon steel
2	Piston rod	S45C hard chrome carbon steel
3	Piston rod seal	TPU
4	Head cover	Aluminum alloy
5	Self lubricating bearing	Bronze powder
6	Cushion seal	TPU
7	Barrel	Aluminum alloy
8	O-ring	NBR
9	Piston	Aluminum alloy
10	Piston seal	TPU
11	Wear ring	PTFE
12	Magnet	Plastic
13	Hexagon screw	Carbon steel
14	Cushion pad	TPU
15	Rear cover	Aluminum alloy
16	Bolt	Carbon steel

Main Dimension

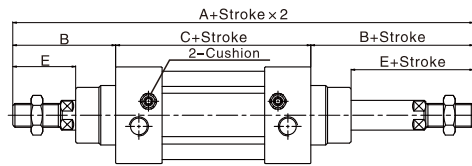
VBC



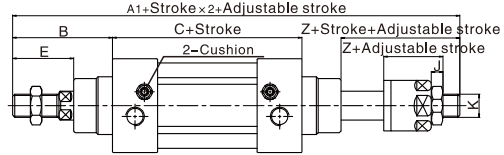
Bore/Sign	A	B	C	D	E	F	G	H	I	J	K	L	N	O	P	Q	R	S	T	V	W	X	Y
32	142	48	94	30	29	19	27.5	22	17	6	M10x1.25	M6 depth16	13	1/8"	5.5	6	6	47	32.5	12	10	3	30
40	159	54	105	35	33	21	32	24	17	7	M12x1.25	M6 depth16	17	1/4"	6	7.5	8.5	53	38	16	13	3.5	35
50	175	69	106	40	42	27	31	32	23	8	M16x1.5	M8 depth16	15.5	1/4"	7.5	6.5	9.5	65	46.5	20	17	3.5	40
63	190	69	121	45	42	27	33	32	23	8	M16x1.5	M8 depth16	16.5	3/8"	7.5	7.5	11.5	75	56.5	20	17	4	45
80	214	86	128	45	53	33	33	40	26	10	M20x1.5	M10 depth17	16.5	3/8"	9	7.5	13.5	95	72	25	22	4	45
100	229	91	138	55	55	36	37	40	26	10	M20x1.5	M10 depth17	18.5	1/2"	9.5	8.5	13.5	115	89	25	22	4	55
125	279	119	160	60	74	45	46	54	41	13.5	M27x2.0	M12 depth20	23	1/2"	14	12	14	140	110	32	27	-	-
160	332	152	180	65	94	58	50	72	55	18	M36x2.0	M16 depth24	25	3/4"	15	12	20	180	140	40	36	-	-
200	347	167	180	75	110	57	50	72	55	18	M36x2.0	M16 depth24	25	3/4"	-	-	-	220	175	40	36	-	-
250	388	188	200	90	121	67	52	84	65	21	M42x2.0	M20 depth25	26.5	1"	20.5	7.5	21	270	220	50	45	10	90

Note:With magnet and without magnet,the dimensions are same.

VBCD



VBCJ



Bore/Sign	A	A1	B	C	E	Z	J	K
32	190	188	48	94	29	27	6	M10x1.25
40	213	208	54	105	33	28	7	M12x1.25
50	244	233	69	106	42	31	8	M16x1.5
63	259	248	69	121	42	31	8	M16x1.5
80	300	286	86	128	53	39	10	M20x1.5
100	320	304	91	138	55	39	10	M20x1.5
125	398	372.5	119	160	74	48.5	13.5	M27x2.0
160	484	448	152	180	94	58	18	M36x2.0
200	514	462	167	180	110	58	18	M36x2.0
250	576	531	188	200	121	76	21	M42x2.0

Note: 1. With magnet and no magnet, the dimensions are same.

2. Not marked dimension is same as VBC standard type.

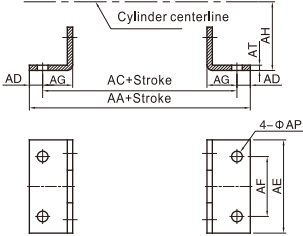
3. LBC series dimensions are same as VBC.

Dimension of Mounting Accessories

LB



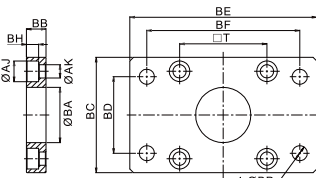
Bore	Model\Sign	AA	AC	AD	AE	AF	AG	AH	AP	AT
32	FJ-VBC32LB	158	142	8	47	32	24	32	7	4
40	FJ-VBC40LB	179	161	9	53	36	28	36	10	4
50	FJ-VBC50LB	190	170	10	65	45	32	45	10	5
63	FJ-VBC63LB	209	185	12	75	50	32	50	10	5
80	FJ-VBC80LB	248	210	19	95	63	41	63	12	6
100	FJ-VBC100LB	266	220	23	115	75	41	71	14.5	6
125	FJ-VBC125LB	290	250	20	140	90	45	90	16.5	8
160	FJ-VBC160LB	340	300	20	180	115	60	115	18.5	10
200	FJ-VBC200LB	380	320	30	220	135	70	135	24	12



FA/FB



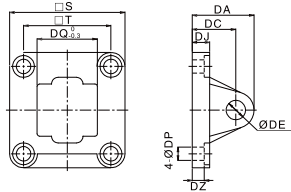
Bore	Model\Sign	AJ	AK	BA	BB	BC	BD	BE	BF	BH	BP	T
32	FJ-VBC32FA	11	6.5	30.5	10	47	32	80	64	6.5	7	32.5
40	FJ-VBC40FA	11	6.5	35.5	10	53	36	90	72	6.5	9	38
50	FJ-VBC50FA	14	9	40.5	12	65	45	108	90	8.5	9	46.5
63	FJ-VBC63FA	14	9	45.5	12	75	50	118	100	8.5	9	56.5
80	FJ-VBC80FA	17	11	45.5	16	95	63	150	126	10.5	12.5	72
100	FJ-VBC100FA	17	11	55.5	16	115	75	176	150	10.5	14.5	89
125	FJ-VBC125FA	19	13	62	20	140	90	218	180	12.5	16.5	110
160	FJ-VBC160FA	26	18	72	20	180	115	278	230	14.5	18.5	140
200	FJ-VBC200FA	26	18	82	25	220	135	318	270	17	22	175



CA



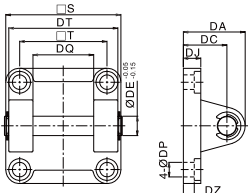
Bore	Model\Sign	DA	DC	DE	DJ	DP	DQ	DZ	S	T
32	FJ-VBC32CA	31	22	10	9.5	7	25.8	5.5	47	32.5
40	FJ-VBC40CA	37	25	12	9.5	7	27.8	5.5	53	38
50	FJ-VBC50CA	39	27	12	10.5	9	31.8	6.5	65	46.5
63	FJ-VBC63CA	47	32	16	10.5	9	39.7	6.5	75	56.5
80	FJ-VBC80CA	51	36	16	14.5	11	49.7	10	95	72
100	FJ-VBC100CA	61	41	20	14.5	11	59.7	10	115	89
125	FJ-VBC125CA	75	50	25	17.5	13	69.7	10	140	110
160	FJ-VBC160CA	82.5	55	30	20	18	89.7	19	176	140
200	FJ-VBC200CA	88.5	60	30	25	18	89.7	24	218	175



CB



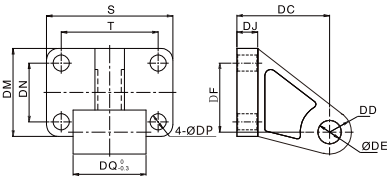
Bore	Model\Sign	DA	DC	DE	DJ	DP	DQ	DT	DZ	S	T
32	FJ-VBC32CB	31	22	10	9.5	7	26 ^{+0.52} ₀	45	5.5	47	32.5
40	FJ-VBC40CB	37	25	12	9.5	7	28 ^{+0.52} ₀	52	5.5	53	38
50	FJ-VBC50CB	39	27	12	10.5	9	32 ^{+0.62} ₀	60	6.5	65	46.5
63	FJ-VBC63CB	47	32	16	10.5	9	40 ^{+0.62} ₀	70	6.5	75	56.5
80	FJ-VBC80CB	51	36	16	14.5	11	50 ^{+0.62} ₀	90	10	95	72
100	FJ-VBC100CB	61	41	20	14.5	11	60 ^{+0.74} ₀	110	10	115	89
125	FJ-VBC125CB	75	50	25	17.5	13	70 ^{+0.74} ₀	130	10	140	110
160	FJ-VBC160CB	82	55	30	20	18	90 ⁺¹ ₀	163.5	19	176.5	140
200	FJ-VBC200CB	89.5	60	30	25	18	90 ⁺¹ ₀	175	24	218	175



CR



Bore	Model\Sign	DC	DD	DE	DF	DJ	DP	DQ	DM	DN	S	T
32	FJ-VBC32CR	32	10	10	21	8	7	25.8	31	18	51	38
40	FJ-VBC40CR	36	11	12	24	10	7	27.8	35	22	54	41
50	FJ-VBC50CR	45	13	12	33	12	9	31.8	45	30	65	50
63	FJ-VBC63CR	50	15	16	37	12	9	39.7	50	35	67	52
80	FJ-VBC80CR	63	15	16	47	14	11	49.7	60	40	86	66
100	FJ-VBC100CR	71	19	20	55	15	11	59.7	70	50	96	76
125	FJ-VBC125CR	90	22.5	25	70	20	14	69.7	90	60	124	94
160	FJ-VBC160CR	115	30	30	97	26	14	90	126	88	157	118
200	FJ-VBC200CR	135	30	30	105	31	18	90	130	90	162	122



TBC/XBC
Standard Cylinder



Specifications

Bore Size (mm)	32	40	50	63	80	100	125	160
Acting type	Double Acting							
Working medium	Clean Air(40 μ m filtration)							
Working pressure (MPa)	0.1~1.0							
Guaranteed pressure (MPa)	1.5							
Working temperature (°C)	-20~70(No freezing)							
Speed range (mm/s)	50~800						30~500	
Cushion type	Air Cushion							
Cushion stroke (mm)	25		24		30		28	
Mounting type	LB FA FB CA CB TC							
Port size ①	G1/8	G1/4		G3/8		G1/2		G3/4

① PT、NPT port size is optional.

How to Order?

Series No.	Cushion Type	Type No.	Bore X	Stroke	Adjustable Stroke	Magnet No.	Seal Material	Mounting Type	Thread Type
	C: Air cushion		32	25	10	Blank: No magnet		Blank: No	Blank: G
	TB: Round type barrel		40	50	20	S: With magnet		CA	P: PT
	XB: Profile barrel		50	75	30			CB	T: NPT
			63	...	40			LB	
			80		50	Blank: Standard material (NBR seal)		FA	
			100		75	V: VITON seal		FB	
			125 (Only TB is optional)		100	(The standard is VITON seal, if HNBR seal please apply for non-standard)		TC	
			160 (Only TB is optional)						

Series No.	Cushion Type	Type No.	Bore X	Stroke	Adjustable Stroke	Magnet No.	Seal Material	Mounting Type	Thread Type
	C: Air cushion		32	25	25	Blank: No magnet			Blank: G
	TB: Round type barrel		40	50	50	S: With magnet			P: PT
			50	75	75				T: NPT
			63	...	...				
			80						
			100						

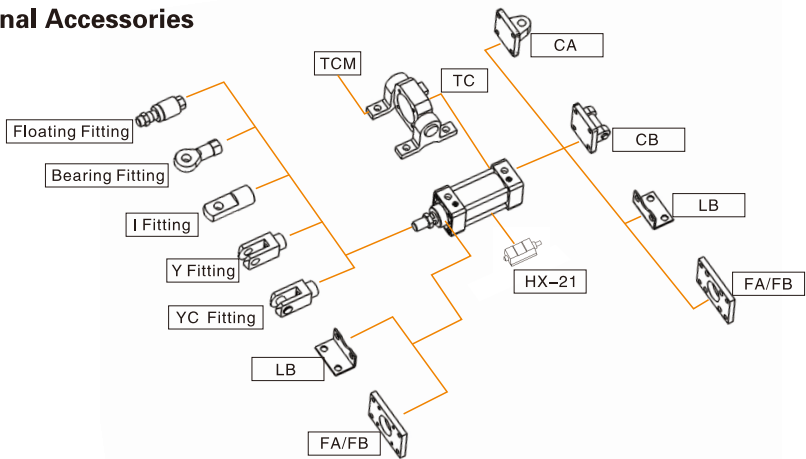
Order Example:

TBC series, bore 40mm, stroke 50mm, with magnet, seal material is standard material, CA mounting accessory.

EPR code is: TBC40X50-S-CA

Note: If cylinder with several different mounting accessories, please use this sequential coding: CA/CB/CR/LB/FA/FB/TC/IJ/YJ/BJ/FD(TC only available for TBC)

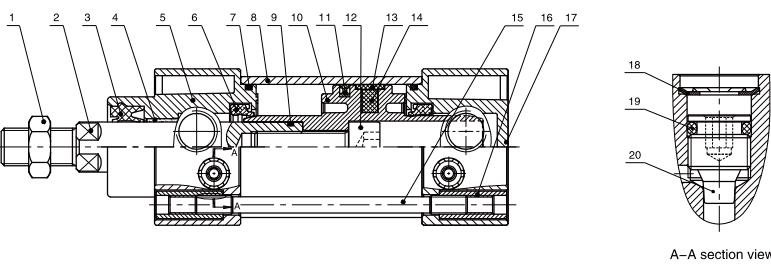
Optional Accessories



Stroke

Bore (mm)	Standard Stroke (mm)																Max. Stroke (mm)
32	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	1900
40	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	1900
50~160	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	1900

Internal Structure

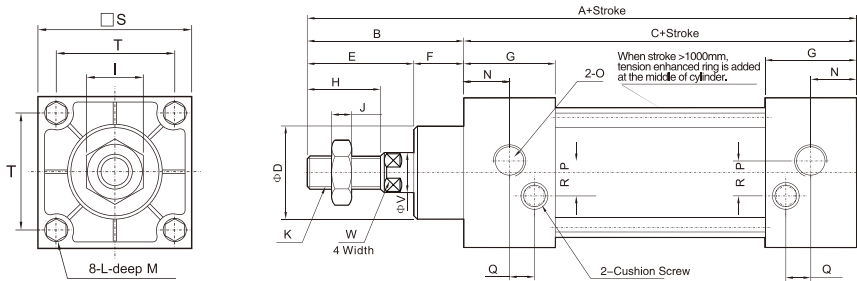


A-A section view

NO.	Part Name	Material
1	Nut	Carbon steel
2	Piston rod	S45C hard chrome carbon steel
3	Piston rod seal	TPU
4	Self lubricating bearing	Bronze powder
5	Head cover	Aluminum alloy
6	Cushion seal	NBR
7	O-ring	NBR
8	Barrel	Aluminum alloy
9	O-ring	NBR
10	Piston	Aluminum alloy
11	Piston seal	NBR
12	Screw	Carbon steel
13	Wear ring	PTFE
14	Magnet	Plastic
15	Tie rod	Carbon steel
16	Tie rod nut	Carbon steel
17	Rear cover	Aluminum alloy
18	Retainer ring	Spring steel
19	O-ring	NBR
20	Nut	Brass

Main Dimension

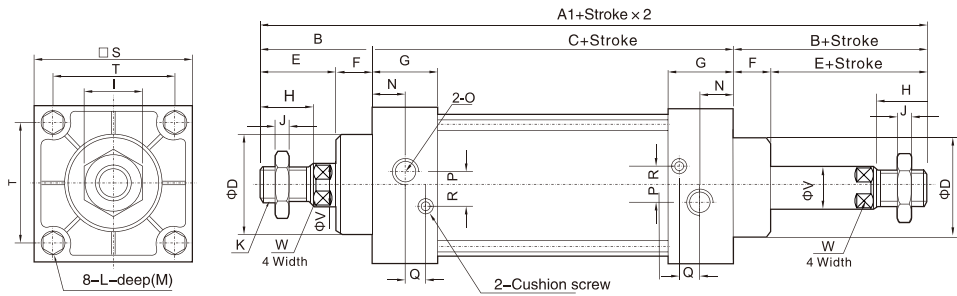
TBC Φ32-Φ160



Bore/Sign	A	B	C	D	E	F	G	H	I	J	K	L
32	140	47	93	26	32	15	27.5	22	17	6	M10X1.25	M6X1
40	142	49	93	32	34	15	27.5	24	17	7	M12X1.25	M6X1
50	150	57	93	38	42	15	27.5	32	23	8	M16X1.5	M6X1
63	153	57	96	38	42	15	27.5	32	23	8	M16X1.5	M8X1.25
80	182	75	107	46	54	21	33	40	26	10	M20X1.5	M10X1.5
100	188	75	113	46	54	21	33	40	26	10	M20X1.5	M10X1.5
125	218	88	130	52	68	20	38	54	41	13.5	M27X2.0	M12X1.75
160	254	113	141	62	88	25	38	72	55	18	M36X2.0	M16X2.0
Bore/Sign	M	N	O	P	Q	R	S	T	V	W		
32	13	14	1/8"	3.5	7	6.5	45	33	12	10		
40	13	13.5	1/4"	5	5.5	8.5	50	37	16	14		
50	13	14.5	1/4"	8.5	3	11	62	47	20	17		
63	13	15	3/8"	7	5	9.5	75	56	20	17		
80	15.5	16.5	3/8"	7	8	10	94	70	25	22		
100	15.5	16.5	1/2"	7.5	8	13	112	84	25	22		
125	19	19	1/2"	15	5	15	137.5	104	32	27		
160	19.5	19	3/4"	15	6	15	173.5	134	40	36		

Main Dimension

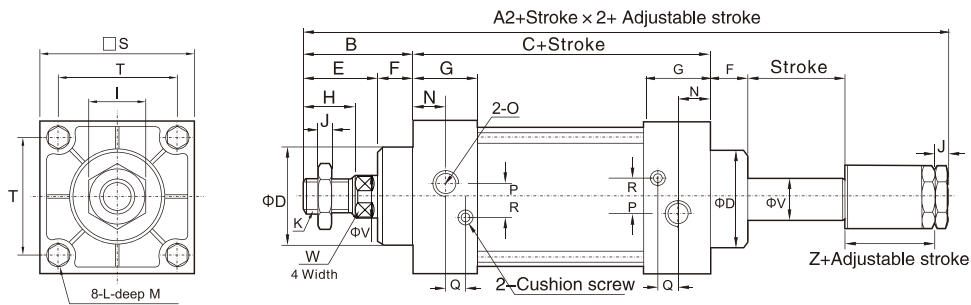
TBCD Φ32-Φ160



Bore/Sign	A1	B	C	D	E	F	G	H	I	J	K	L
32	187	47	93	26	32	15	27.5	22	17	6	M10X1.25	M6X1
40	191	49	93	32	34	15	27.5	24	17	7	M12X1.25	M6X1
50	207	57	93	38	42	15	27.5	32	23	8	M16X1.5	M6X1
63	210	57	96	38	42	15	27.5	32	23	8	M16X1.5	M8X1.25
80	257	75	107	46	54	21	33	40	26	10	M20X1.5	M10X1.5
100	263	75	113	46	54	21	33	40	26	10	M20X1.5	M10X1.5
125	306	88	130	52	66	20	38	54	41	13.5	M27X2.0	M12X1.75
160	367	113	141	62	88	25	38	72	55	18	M36X2.0	M16X2.0
Bore/Sign	M	N	O	P	Q	R	S	T	V	W		
32	13	14	1/8"	3.5	7	6.5	45	33	12	10		
40	13	13.5	1/4"	5	5.5	8.5	50	37	16	14		
50	13	14.5	1/4"	8.5	3	11	62	47	20	17		
63	13	15	3/8"	7	5	9.5	75	56	20	17		
80	15.5	16.5	3/8"	7	8	10	94	70	25	22		
100	15.5	16.5	1/2"	7.5	8	13	112	84	25	22		
125	19	19	1/2"	15	5	15	137.5	104	32	27		
160	19.5	19	3/4"	15	6	15	173.5	134	40	36		

Note: 1. With magnet and no magnet, the dimensions are the same.
2. XBC series dimensions are same as TBC.

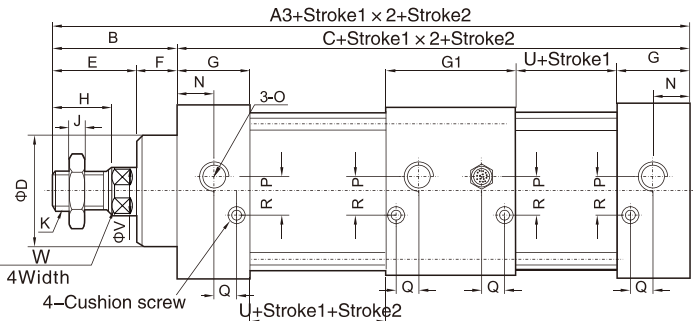
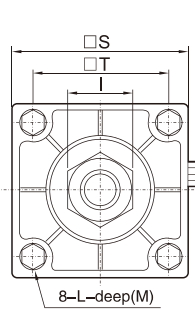
TBCJ Φ32-Φ160



Bore/Sign	A2	B	C	D	E	F	G	H	I	J	K	L
32	182	47	93	26	32	15	27.5	22	17	6	M10X1.25	M6X1
40	185	49	93	32	34	15	27.5	24	17	7	M12X1.25	M6X1
50	196	57	93	38	42	15	27.5	32	23	8	M16X1.5	M6X1
63	199	57	96	38	42	15	27.5	32	23	8	M16X1.5	M8X1.25
80	242	75	107	46	54	21	33	40	26	10	M20X1.5	M10X1.5
100	248	75	113	46	54	21	33	40	26	10	M20X1.5	M10X1.5
125	286.5	88	130	52	68	20	38	54	41	13.5	M27X2.0	M12X1.75
160	337	113	141	62	88	25	38	72	55	18	M36X2.0	M16X2.0
Bore/Sign	M	N	O	P	Q	R	S	T	V	W	Z	
32	13	14	1/8"	3.5	7	6.5	45	33	12	10	21	
40	13	13.5	1/4"	5	5.5	8.5	50	37	16	14	21	
50	13	14.5	1/4"	8.5	3	11	62	47	20	17	23	
63	13	15	3/8"	7	5	9.5	75	56	20	17	23	
80	15.5	16.5	3/8"	7	8	10	94	70	25	22	29	
100	15.5	16.5	1/2"	7.5	8	13	112	84	25	22	29	
125	19	19	1/2"	15	5	15	137.5	104	32	27	35	
160	19.5	19	3/4"	15	6	15	173.5	134	40	36	40	

Main Dimension

TBCT Φ32-Φ100



Bore/Sign	A3	B	C	D	E	F	G	G1	H	I	J	K	L
32	233	47	186	26	32	15	27.5	55	22	17	6	M10X1.25	M6X1
40	235	49	186	32	34	15	27.5	55	24	17	7	M12X1.25	M6X1
50	243	57	186	38	42	15	27.5	55	32	23	8	M16X1.5	M6X1
63	249	57	192	38	42	15	27.5	55	32	23	8	M16X1.5	M8X1.25
80	296	75	221	46	54	21	33	73	40	26	10	M20X1.5	M10X1.5
100	308	75	233	46	54	21	33	73	40	26	10	M20X1.5	M10X1.5
Bore/Sign	M	N	O	P	Q	R	S	T	V	U	W		
32	13	14	1/8"	3.5	7	6.5	45	33	12	38	10		
40	13	13.5	1/4"	5	5.5	8.5	50	37	16	38	14		
50	13	14.5	1/4"	8.5	3	11	62	47	20	38	17		
63	13	15	3/8"	7	5	9.5	75	56	20	41	17		
80	15.5	16.5	3/8"	7	8	10	94	70	25	41	22		
100	15.5	16.5	1/2"	7.5	8	13	112	84	25	47	22		

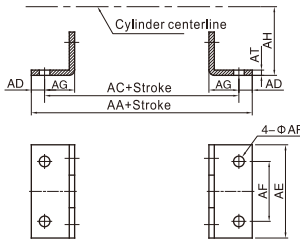
Note:1.With magnet and no magnet, the dimensions are same. 2.XBC series dimensions are same as TBC.

Dimension of Mounting Accessories

LB



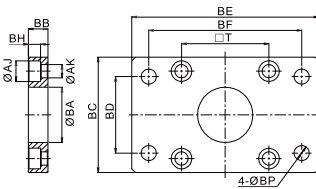
Bore	Model/Sign	AA	AC	AD	AE	AF	AG	AH	AP	AT
32	FJ-TBC32LB	153	134	9.5	50	33	20.5	28	9	3
40	FJ-TBC40LB	169	140	14.5	57	36	23.5	30	12	3
50	FJ-TBC50LB	173	149	12	68	47	28	36.5	12	3
63	FJ-TBC63LB	184	158	13	80	56	31	41	12	3
80	FJ-TBC80LB	199	167	16	97	70	30	49	14	4
100	FJ-TBC100LB	209	173	18	112	84	30	57	14	4



FA/FB



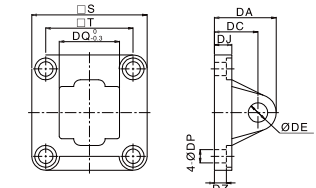
Bore	Model/Sign	AJ	AK	BA	BB	BC	BD	BE	BF	BH	BP	T
32	FJ-TBC32FA	11	7	28.5	10	47	33	72	58	6.5	7	33
40	FJ-TBC40FA	11	7	32.5	10	52	36	84	70	6.5	7	37
50	FJ-TBC50FA	11	7	38.5	10	65	47	104	86	6.5	9	47
63	FJ-TBC63FA	14	9	38.5	12	73	56	115	98	8.5	9	56
80	FJ-TBC80FA	17	11	47.5	16	92	70	141	119	10.5	11	70
100	FJ-TBC100FA	17	11	47.5	16	113	84	160	138	10.5	11	84



CA



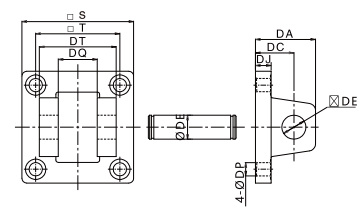
Bore	Model/Sign	DA	DC	DE	DJ	DP	DQ	DZ	S	T
32	FJ-TBC32CA	48	34	12	10	7	16	5.5	44	33
40	FJ-TBC40CA	48.5	34	14	10.5	7	20	5.5	49.5	37
50	FJ-TBC50CA	48.5	33	14	10.5	7	20	6.5	62	47
63	FJ-TBC63CA	50	34	14	10.5	9	20	6.5	72	56
80	FJ-TBC80CA	66.5	48	20	13	11	32	10	92	70
100	FJ-TBC100CA	65.5	48.5	20	13	11	32	10	110	84



CB



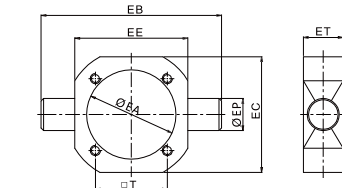
Bore	Model/Sign	DA	DC	DE	DJ	DP	DQ	DT	S	T
32	FJ-TBC32CB	32.5	19.5	12	10	7	16.5	32.5	47	33
40	FJ-TBC40CB	32.5	19.5	14	10.5	7	20.5	44	50	37
50	FJ-TBC50CB	34	19	14	10.5	7	20.5	52	62	47
63	FJ-TBC63CB	34	22	14	10	9	20.5	52	72	56
80	FJ-TBC80CB	50	32	20	13	11	32.5	64	93	70
100	FJ-TBC100CB	51	32	20	13.5	11	32.5	64	110	84



TC



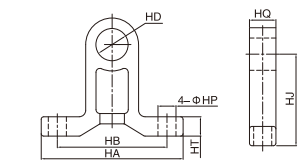
Bore	Model/Sign	EA	EB	EC	EE	EP	ET	T
32	FJ-TBC32TC	38	89	54	55	16	31	33
40	FJ-TBC40TC	46	116	65	63	25	30.5	37
50	FJ-TBC50TC	56	127	76	75	25	29	47
63	FJ-TBC63TC	69.5	140.5	90	88	25	31	56
80	FJ-TBC80TC	87.5	165	107	114	25	36	70
100	FJ-TBC100TC	107.5	181	131	132	25	41	84



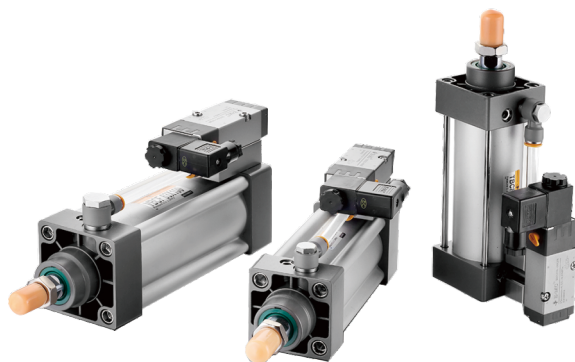
TCM



Bore	Model/Sign	HA	HB	HD	HP	HT	HQ	HJ
32	FJ-TBC32TCM	110.5	80	16	12	13	21.5	51
40/50/63	FJ-TBC40TCM	111.5	80	25.5	12	10.5	21	50.5
80/100	FJ-TBC80TCM	110	85	25.5	14	15	20.5	71



TBCF/VBCF
Valve Mounted Air Cylinder



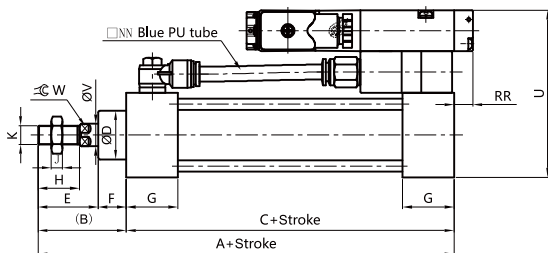
How to Order?

TBCF											
Series No.	Bore	XStroke	Magnet No.	Mounting Type	Valve Port Size	Voltage	Connection Mode	Cover Color	Patchcord	Thread Type	
TBCF	32	25	Blank: No magnet S: With magnet	Blank: No CA TC CB IJ CR YJ LB YCJ FA BJ FB FD	32 40 50 63 80 100	06: 1/8" 08: 1/4" 10: 3/8"	Blank: DIN connector F: Flying leads K: Waterproof DIN connector L: Plug-in type			Blank: G P: PT T: NPT	

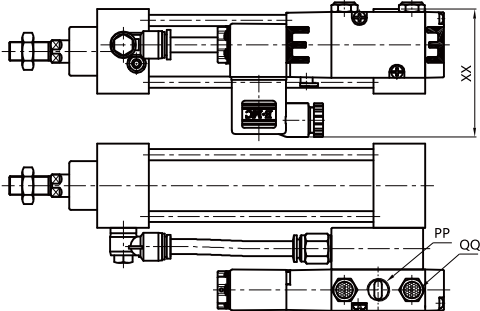
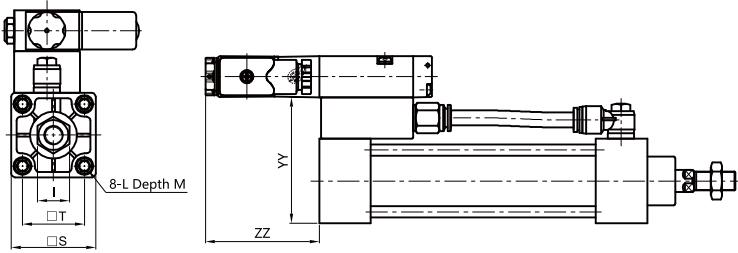
◎ Main Dimension

TBCF

Get electricity piston rod retract



Get electricity piston rod extend



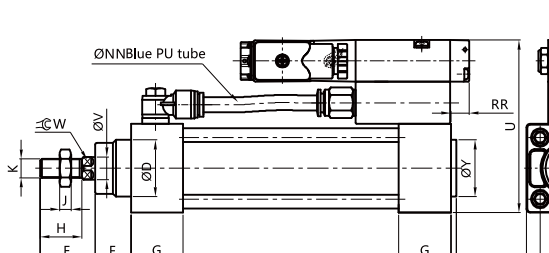
(mm)								
Bore\Sign	Valve Mounted	PP	QQ	NN	RR	XX	YY	ZZ
32	RV5221-06QM	G1/8	G1/8	8	10	68.2	67.2	60.7
	RV5221-08QM	G1/4						
40	RV5221-06QM	G1/8	G1/8	8	11	69.2	72.2	61.7
	RV5221-08QM	G1/4						
50	RV5221-06QM	G1/8	G1/8	8	10	71.7	84.2	60.7
	RV5221-08QM	G1/4						
63	RV5231-08QM	G1/4	G1/4	8	20.1	79.7	97	71.2
	RV5231-10QM	G3/8						
80	RV5231-08QM	G1/4	G1/4	10	18.1	88.7	116	69.2
	RV5231-10QM	G3/8						
100	RV5231-08QM	G1/4	G1/4	10	15.6	97.7	134	66.7
	RV5231-10QM	G3/8						

Bore\Sign	A	B	C	D	E	F	G	H	I	J	K	L	M	S	T	U	V	W
32	140	47	93	26	32	15	27.5	22	17	6	M10X1.25	M6X1	13	45	33	89.2	12	10
40	142	49	93	32	34	15	27.5	24	17	7	M12X1.25	M6X1	13	50	37	94.2	16	14
50	150	57	93	38	42	15	27.5	32	23	8	M16X1.5	M6X1	13	62	47	106.2	20	17
63	153	57	96	38	42	15	27.5	32	23	8	M16X1.5	M8X1.25	13	75	56	125.5	20	17
80	182	75	107	46	54	21	33	40	26	10	M20X1.5	M10X1.5	15.5	94	70	144.5	25	22
100	188	75	113	46	54	21	33	40	26	10	M20X1.5	M10X1.5	15.5	112	84	161	25	22

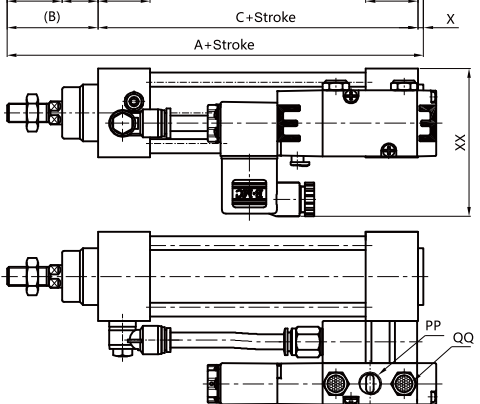
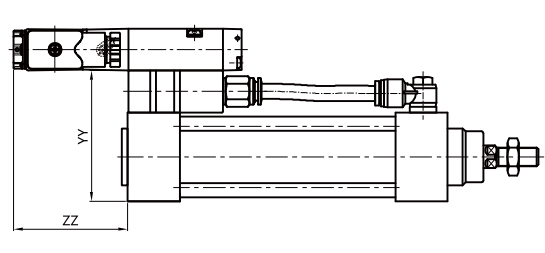
◎ Main Dimension

VBCF

Get electricity piston rod retract



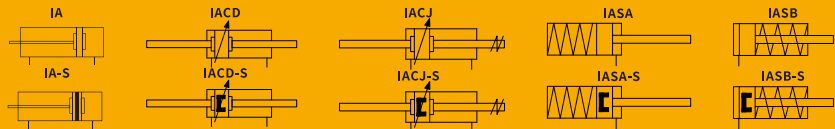
Get electricity piston rod extend



(mm)								
Bore\Sign	Equipped with Solenoid Valve	PP	QQ	NN	RR	XX	YY	ZZ
32	RV5221-06QM	G1/8	G1/8	8	9.7	78.2	69.2	60.4
	RV5221-08QM	G1/4						
40	RV5221-06QM	G1/8	G1/8	8	5.7	81.7	75.2	56.4
	RV5221-08QM	G1/4						
50	RV5221-06QM	G1/8	G1/8	8	7.2	89.2	87.2	57.9
	RV5221-08QM	G1/4						
63	RV5231-08QM	G1/4	G1/4	8	11.1	94.2	97	62.2
	RV5231-10QM	G3/8						
80	RV5231-08QM	G1/4	G1/4	10	11.2	105.7	117	62.3
	RV5231-10QM	G3/8						
100	RV5231-08QM	G1/4	G1/4	10	7.2	116.2	137	58.3
	RV5231-10QM	G3/8						

Bore\Sign	A	B	C	D	E	F	G	H	I	J	K	L	M	S	T	U	V	W
32	142	48	94	30	29	19	27.5	22	17	6	M10X1.25	M6X1	16	47	32.5	91.2	12	10
40	159	54	105	35	33	21	32	24	17	7	M12X1.25	M6X1	16	53	38	97.2	16	13
50	175	69	106	40	42	27	31	32	23	8	M16X1.5	M8X1.25	16	65	46.5	109.2	20	17
63	190	69	121	45	42	27	33	32	23	8	M16X1.5	M8X1.25	16	75	56.5	125.5	20	17
80	214	86	128	45	53	33	33	40	26	10	M20X1.5	M10X1.5	17	95	72	145.5	25	22
100	229	91	138	55	55	36	37	40	26	10	M20X1.5	M10X1.5	17	115	89	165.5	25	22

IA/IAC
Mini Type Cylinder



Specifications

Bore size(mm)	8	10	12	16	20	25	32	40
Acting type	Double Acting/Single Acting							
Working medium	Clean Air(40 μ m filtration)							
Working pressure (MPa)	0.1~1.0(Double Acting) / 0.2~1.0(Single Acting)							
Guaranteed pressure (MPa)	1.5							
Working temperature (℃)	-20~70(No freezing)							
Speed range (mm/s)	Double Acting: 30~800 Single Acting:50~800							
Cushion type	Rubber cushion				Rubber cushion(Standard) / Air cushion(Optional)			
Barrel material	Stainless steel							
Mounting type	LB FA SDB						/	
Port size	M5 x 0.8				G1/8①			G1/4

① PT、NPT port size is optional.

How to Order?

Series No	Cushion Type	Type No	Bore	X	Stroke	Adjustable Stroke	Magnet No	Tail Type	Mounting Type	Thread Type	
IA: Stainless steel barrel	C: Air Cushion Blank: Rubber Cushion		8			10	Blank: No Magnet S: With Magnet	Blank: Swiveling tail U: Flat tail CM: Round tail	Blank: No LB FA SDB TC IJ YJ BJ	Blank: G P: PT T: NPT	
			10		25	20					
			12		50	30					
			16		75	40					
			20		...	50					
			25			75					
			32			100					
			40								
		Blank: Basic type									
		D: Double shaft type									
		J: Double shaft and adjustable stroke type									
		SA: Single action extend type									
		SB: Single action return type									
		(Note: single action is available for rubber cushion type only)									

Order Example:

IA series, Double shaft and adjustable stroke type, air cushion, bore 25mm, stroke 25mm, adjustable stroke 20, with magnet, no mounting type, round tail, PT thread.

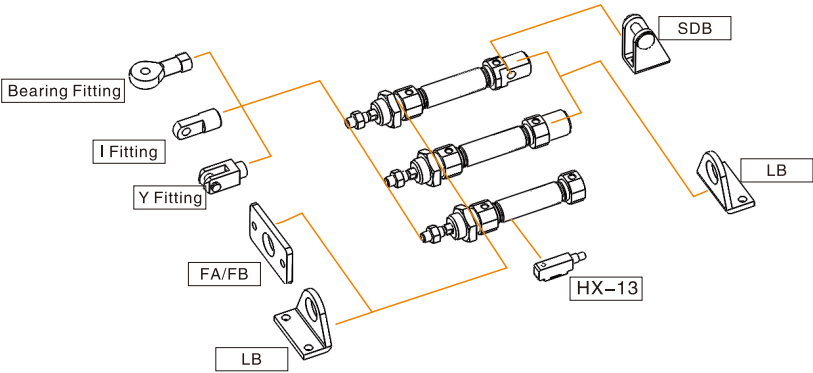
ERP code is: IACJ25 x 25-20-S-CM-P

Note: 1.If cylinder with several different mounting accessories, please use this sequential coding: LB/FA/SDB /IJ/YJ/BJ

2.IA Series,Bore 8mm and Bore 10mm,No round tail type is optional.

3.IAC Series, Φ16、Φ20、Φ25、Φ32、Φ40is optional.

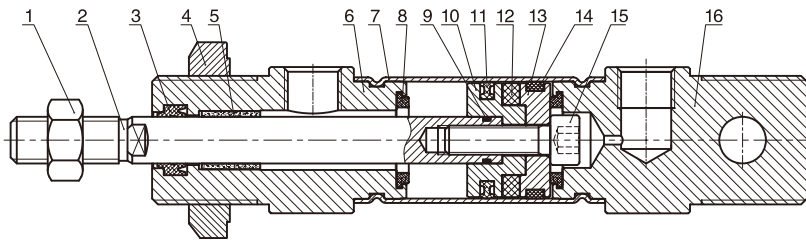
Optional Accessories



Stroke

Bore (mm)		Standard Stroke (mm)													Max. Stroke (mm)
Double Acting	8	25 50 75 100 125 150													200
	10	25 50 75 100 125 150 175 200													200
	12	25 50 75 100 125 150 175 200 225 250													500
	16	25 50 75 100 125 150 175 200 225 250 300 350 400 500													500
	20~25	25 50 75 100 125 150 175 200 225 250 300 350 400 500													800
	32~40	25 50 75 100 125 150 175 200 225 250 300 350 400 500													800
Single Acting	8	10 15 20 25 30 40 50													50
	10	10 15 20 25 30 40 50													50
	12	10 15 20 25 30 40 50													50
	16	10 15 20 25 30 40 50 60 75 80 100													100
	20~25	10 15 20 25 30 40 50 60 75 80 100 125 150													150
	32~40	10 15 20 25 30 40 50 60 75 80 100 125 150													150

Internal Structure

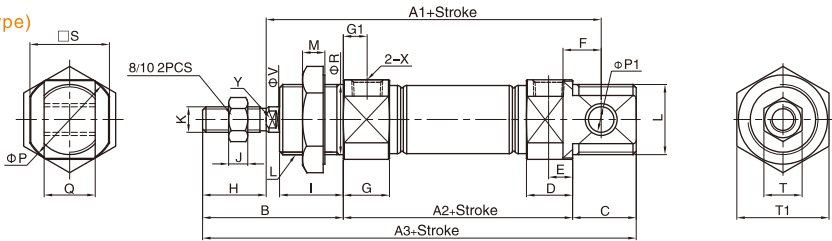


NO.	Part name	Material
1	Nut	Carbon steel
2	Piston rod	IA8、10:SUS304hard chrome carbon steel / IA12-IA25:S45C hard chrome carbon steel
3	Piston rod seal	NBR
4	Nut	Carbon steel
5	Self lubricating bearing	Bronze powder
6	Head cover	Aluminum alloy
7	Barrel	Stainless Steel
8	Anti-bump cushion	TPU
9	O-ring	NBR
10	Piston	IA8、10: Stainless steel / IA12-IA25: Aluminum alloy
11	Piston seal	NBR
12	Magnet	Plastic
13	Magnet base	IA8、10: Stainless steel / IA12-IA25: Aluminum alloy
14	Wear ring	PTFE
15	Hexagon screw	Carbon steel
16	Rear cover	Aluminum alloy

Main Dimension

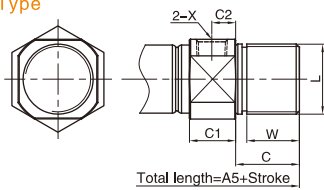
IA Φ8-Φ25

Swiveling tail (CA Type)



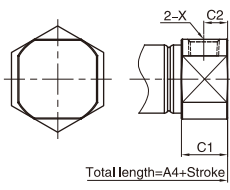
IA Φ12-Φ40

CM Type



IA Φ8-Φ40

U Type

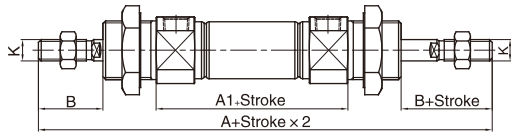


Bore/Sign	A1	A2	A3	A4	A5	B	C	C1	C2	D	E	F	G	G1	H	I	J	K	L	M	P	P1	Q	R	S
8	64	46	86	74	-	28	12	9.5	5	9.5	5.2	6	11.5	7	12	12	3	M4X0.7	M12X1.25	7	17	4	8	12	15
10	64	46	86	74	-	28	12	9.5	5	9.5	5.2	6	11.5	7	12	12	3	M4X0.7	M12X1.25	7	17	4	8	12	15
12	75	50	105	88	105	38	17	10	5	10	5	9	12	7	16	17	5	M6X1.0	M16X1.5	6	19.7	6	12	16	18.3
16	82	56	111	94	111	38	17	10.5	5.5	10.5	5.5	9	12.5	7	16	17	5	M6X1.0	M16X1.5	6	22	6	12	16	20
20	95	62	126	106	126	44	20	14.5	7.5	14.5	7.5	12	14.5	7.5	20	20	6	M8X1.25	M22X1.5	7	29	8	16	22	25
25	104	65	137	115	137	50	22	16	8	16	8	12	16	8	22	22	6	M10X1.25	M22X1.5	7	33.5	8	16	22	30
32	-	68	-	126	140	58	14	17	9	-	-	-	17	9	20	30	6	M10X1.25	M30X1.5	7	37.2	-	-	30	34.5
40	-	89	-	158	174	69	16	22.5	12	-	-	-	22.5	12	24	35	7	M12X1.25	M38X1.5	8	46.2	-	-	38	42.5

Bore/Sign	T	T1	X	V	W	Y
8	7	17	M5X0.8	4	-	-
10	7	17	M5X0.8	4	-	-
12	10	22	M5X0.8	6	15	5
16	10	22	M5X0.8	6	15	5
20	12	29	1/8"	8	18	6
25	17	29	1/8"	10	20	8
32	17	36	1/8"	12	11.5	10
40	17	46	1/4"	16	13.5	14

Note: With magnet and no magnet, the dimensions are same.

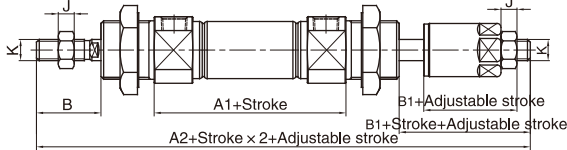
IAD Φ8-Φ40



Bore/Sign	A	A1	A2	B	B1	J	K
8	104	48	103.5	16	15.5	3	M4X0.7
10	104	48	103.5	16	15.5	3	M4X0.7
12	128	52	128	21	21	5	M6X1.0
16	134	58	134	21	21	5	M6X1.0
20	150	62	151	24	25	6	M8X1.25
25	165	65	164	28	27	6	M10X1.25
32	184	68	183	28	27	6	M10X1.25
40	227	89	221	34	28	7	M12X1.25

Note: Unlabeled the same size as standard type.

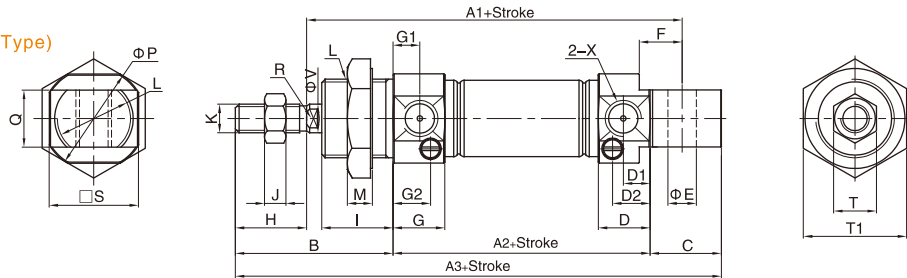
IAJ Φ8-Φ40



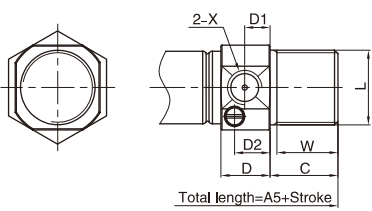
Main Dimension

IAC Φ16-Φ40

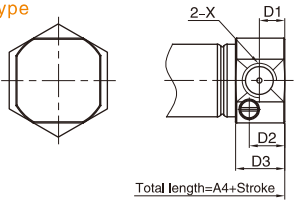
Swiveling tail (CA Type)



CM Type



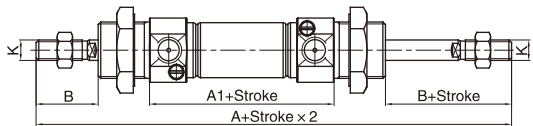
U Type



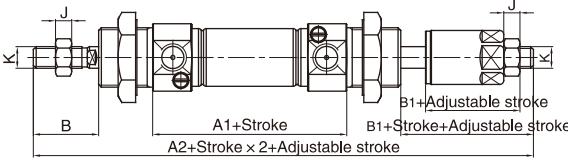
Bore/Sign	A1	A2	A3	A4	A5	B	C	D	D1	D2	D3	E	F	G	G1	G2	H	I	J	K	L	M	P	Q	R
16	82	56	111	94	111	38	17	12	6	9	12	6	9	12.5	7	9.5	16	17	5	M6X1.0	M16X1.5	6	22	12	5
20	95	62	126	106	126	44	20	14.5	7.5	11	14.5	8	12	14.5	7.5	11	20	20	6	M8X1.25	M22X1.5	7	29	16	6
25	104	65	137	115	137	50	22	16	8	12.5	16	8	12	16	8	12.5	22	22	6	M10X1.25	M22X1.5	7	33.5	16	8
32	—	68	—	126	140	58	14	17	9	13	17	—	—	17	9	13	20	30	6	M10X1.25	M30X1.5	7	37.2	—	10
40	—	89	—	158	174	69	16	22.5	12	18.5	22.5	—	—	22.5	12	18.5	24	35	7	M12X1.25	M38X1.5	8	46.2	—	14
Bore/Sign	S	T	T1	X	V	W	(mm)																		
16	20	10	22	M5X0.8	6	15																			
20	25	12	29	1/8"	8	18																			
25	30	17	29	1/8"	10	20																			
32	34.5	17	36	1/8"	12	11.5																			
40	42.5	17	46	1/4"	16	13.5																			
Note: With magnet and no magnet, the dimensions are same.																									

Note: With magnet and no magnet, the dimensions are same.

IACD Φ16-Φ40



IACJ Φ16-Φ40

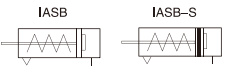


Bore/Sign	A	A1	A2	B	B1	J	K
16	132.5	56.5	132.5	21	21	5	M6X1.0
20	150	62	151	24	25	6	M8X1.25
25	165	65	164	28	27	6	M10X1.25
32	184	68	183	28	27	6	M10X1.25
40	227	89	221	34	28	7	M12X1.25

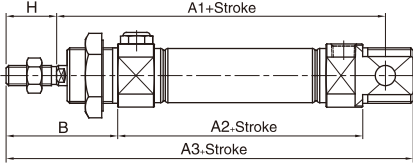
Note: Unlabeled the same size as standard type.

Main Dimension

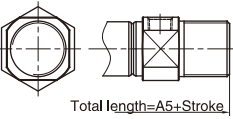
IASB Φ8-Φ40



Swiveling tail (CA Type)

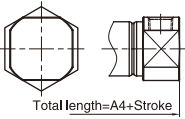


CM Type



Total length=A5+Stroke

U Type

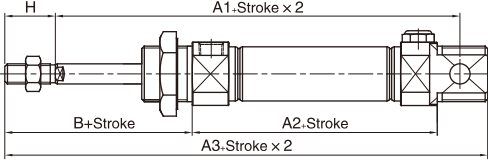


Total length=A4+Stroke

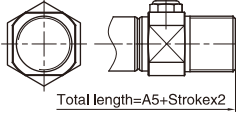
IASA Φ8-Φ40



Swiveling tail (CA Type)

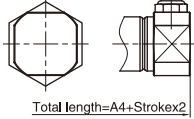


CM Type



Total length=A5+Strokex2

U Type



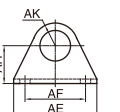
Total length=A4+Strokex2

Bore\Sign	A1			A2			A3			A4			A5			B	H
	0-50	51-100	101-150	0-50	51-100	101-150	0-50	51-100	101-150	0-50	51-100	101-150	0-50	51-100	101-150		
8	99	-	-	71	-	-	111	-	-	99	-	-	130	-	-	28	12
10	99	-	-	71	-	-	111	-	-	99	-	-	130	-	-	28	12
12	100	-	-	75	-	-	130	-	-	113	-	-	130	-	-	38	16
16	107	132	-	81	106	-	136	161	-	119	144	-	136	161	-	38	16
20	120	145	170	87	112	137	151	176	201	131	156	181	151	176	201	44	20
25	129	154	179	90	115	140	162	187	212	140	165	190	162	187	212	50	22
32	-	-	-	93	118	143	-	-	-	151	176	201	165	190	215	58	20
40	-	-	-	114	139	164	-	-	-	183	208	233	199	224	249	69	24

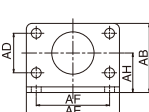
Note: Unlabeled the same size as standard type.

Accessory Dimensions

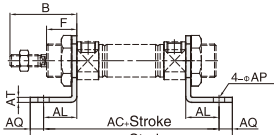
LB Accessory



Applicable to:
IA12-25



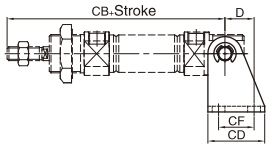
Applicable to:
IA32/40



Applicable to:
IA12-40

Bore	Model\Sign	AA	AB	AC	AD	AE	AF	AH	AK	AL	AP	AQ	AT	B	F
8	FJ-IA8LB	78	-	68	-	35	25	16	10	11	4.5	5	2	28	12
10	FJ-IA8LB	78	-	68	-	35	25	16	10	11	4.5	5	2	28	12
12	FJ-IA12LB	90	-	78	-	42	32	20	13	14	5.5	6	2.5	38	17
16	FJ-IA12LB	96	-	84	-	42	32	20	13	14	5.5	6	2.5	38	17
20	FJ-IA20LB	112	-	96	-	54	40	25	20	17	7	8	3	44	20
25	FJ-IA20LB	115	-	99	-	54	40	25	20	17	7	8	3	50	22
32	FJ-IA32LB	110	49	96	28	66	52	28	-	14	7	7	3.5	58	30
40	FJ-IA40LB	149	58	129	30	80	60	33	-	20	9	10	3.5	69	35

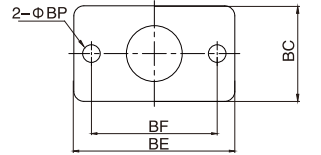
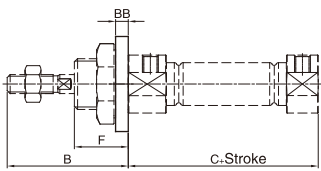
SDB Accessory



Bore	Model\Sign	D	Q	CA	CB	CD	CF	CH	CP	CQ	CT
12	FJ-IA12SDB	13	12.1	21.5	91	25	15	27	5.5	17.1	2.5
16	FJ-IA12SDB	13	12.1	21.5	98	25	15	27	5.5	17.1	2.5
20	FJ-IA20SDB	16	16.1	29	115	32	20	30	6.6	24.1	4
25	FJ-IA20SDB	16	16.1	29	126	32	20	30	6.6	24.1	4

Note: Φ12、Φ16 use same mounting accessories
Φ20、Φ25 use same mounting accessories

FA Accessory

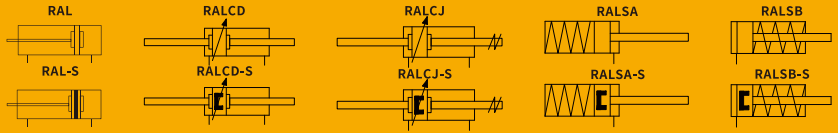


Bore	Model\Sign	B	C	BB	BC	BE	BF	F
12	FJ-RA16FA	38	50	3	26	52	40	17
16	FJ-RA16FA	38	56	3	26	52	40	17
20	FJ-RA20FA	44	62	3.5	38	64	50	20
25	FJ-RA20FA	50	65	3.5	38	64	50	22

Note: Φ12、Φ16 use same mounting accessories
Φ20、Φ25 use same mounting accessories

RAL

Mini Type Cylinder



Specifications

Bore size(mm)	16	20	25	32	40	50	63
Acting type	Double Acting/Single Acting						
Working medium	Clean Air(40 μ m filtration)						
Working pressure (MPa)	0.1~0.7(Double Acting) 0.2~0.7(Single Acting)						
Guaranteed pressure (MPa)	1.5						
Working temperature (°C)	-20~70(No freezing)						
Speed range (mm/s)	Double Acting: 30~800 Single Acting:50~800						
Cushion type	Rubber cushion / Air cushion						
Barrel material	Aluminum alloy						
Mounting type	LB FA SDB						
Port size	M5 x 0.8	G1/8 ①			G1/4 ①		

① PT、NPT port size is optional.

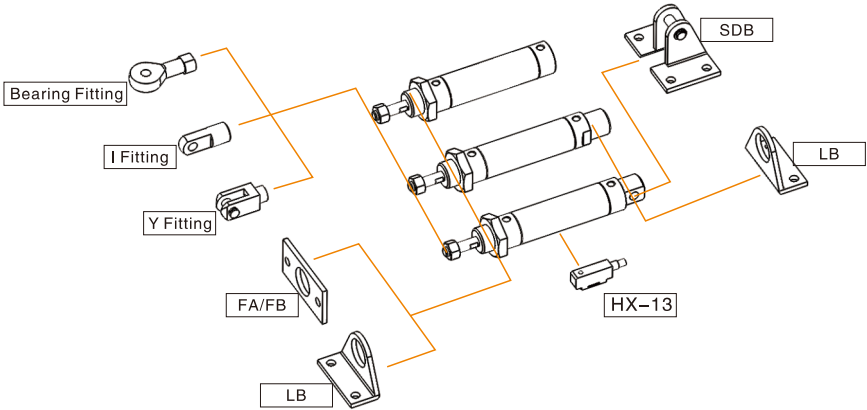
How to Order?

Series No	Cushion Type	Type No	Bore	X	Stroke	Adjustable Stroke	Magnet No	Tail Type	Mounting Type	Thread Type
RAL:Aluminium alloy cylinder	C: Air cushion Blank: Rubber cushion		16 20 25 32 40 50 63		25 50 75 ...	10 20 30 40 50 75 100	Blank: No magnet S: With magnet		Blank: No LB FA SDB IJ YJ BJ	Blank: G P: PT T: NPT

Order Example:

RAL series, Double shaft and adjustable stroke type, air cushion, Bore 32mm, stroke 25mm, Adjustable stroke 20, with magnet, No Mounting type, Round tail, PT thread.
ERP code is: RALCJ32*25-20-S-CM-P
Note: If cylinder with several different mounting accessories, pls with this sequential coding: LB/FA/SDB /IJ/YJ/BJ

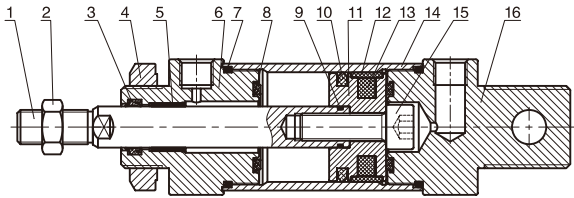
Optional Accessories



Stroke

Bore (mm)		Standard Stroke (mm)																Max. Stroke (mm)
Double Acting	16~20	25	50	75	80	100	125	150	160	175	200	250	300					800
	25~63	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	800
Single Acting	16	25	50	75	100												100	
	20~40	25	50	75	100	125	150											150

Internal Structure

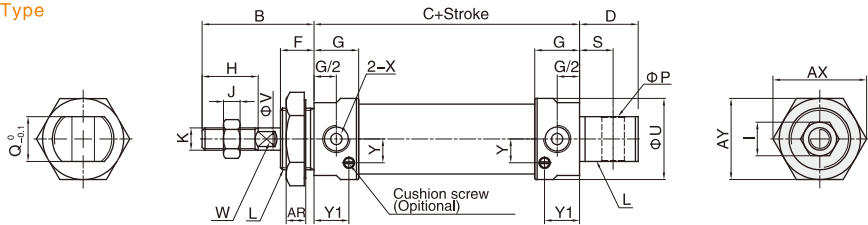


No.	Part Name	Material
1	Piston rod	S45C hard chrome carbon steel
2	Nut	Carbon steel
3	Piston rod seal	NBR
4	Nut	Carbon steel
5	Self lubricating bearing	Bronze powder
6	Head cover	Aluminum alloy
7	O-ring	NBR
8	Anti-bump cushion	TPU
9	O-ring	NBR
10	Piston seal	NBR
11	Piston	Aluminum alloy
12	Wear ring	PTFE
13	Magnet	Plastic
14	Barrel	Aluminum alloy
15	Hexagon screw	Carbon steel
16	Rear cover	Aluminum alloy

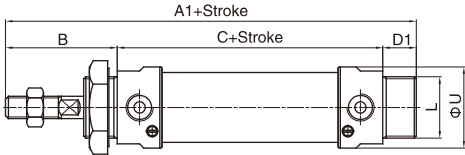
Main Dimension

RAL φ16-Φ63

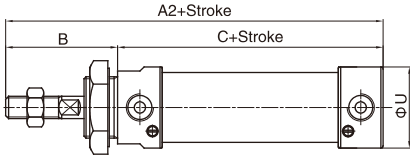
CA Type



CM Type (CM is not available for Φ50, Φ63 series)



U Type

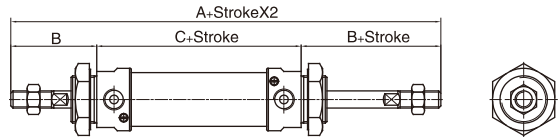


(mm)																									
Bore\Sign	A1	A2	B	C	D	D1	F	G	H	I	J	K	L	P	Q	S	U	V	W	X	AR	AX	AY	Y	Y1
16	102	92	36	56	14	10	14	11	16	10	5	M6X1.0	M16X1.5	6	12	7	20	6	5	M5X0.8	6	25	22	6.3	8
20	122	110	40	70	21	12	12	16	20	12	6	M8X1.25	M22X1.5	8	16	12	29	8	6	1/8"	7	33	29	8.5	12.5
25	128	114	44	70	21	14	14	16	22	17	6	M10X1.25	M22X1.5	8	16	12	34	10	8	1/8"	7	33	29	10	12.5
32	128	114	44	70	27	14	14	16	22	17	6	M10X1.25	M24X2.0	10	16	15	39.5	12	10	1/8"	8	37	32	12	12
40	152	138	46	92	27	14	14	22	24	17	7	M12X1.25	M30X2.0	12	20	15	49.5	16	14	1/4"	9	47	41	16	18
50	146	54	92	27	22	22	24	19	8	M14X1.5	M36X2.0	12	20	16	55	20	18	1/4"	11	53	48	13.6	14		
63	146	54	92	27	22	22	24	19	8	M14X1.5	M36X2.0	12	20	16	69	20	18	1/4"	11	53	48	19.8	14		

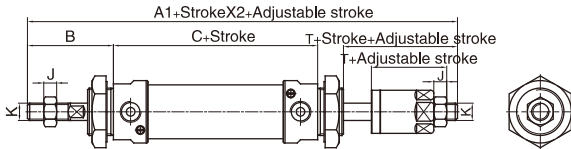
Note: With magnet and no magnet, the dimensions are same.

Main Dimension

RALD φ16-Φ40



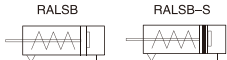
RALJ φ16-Φ40



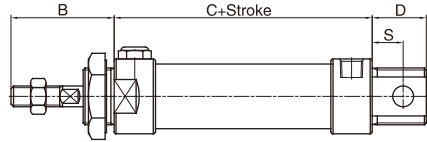
Bore\Sign	A	A1	B	C	J	K	T
16	128	127	36	56	5	M6X1.0	21
20	150	147	40	70	6	M8X1.25	25
25	158	155	44	70	6	M10X1.25	27
32	158	155	44	70	6	M10X1.25	27
40	184	180	46	92	7	M12X1.25	28

Note: Unlabeled the same size as standard type.

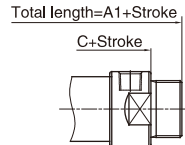
RALSB φ16-Φ40



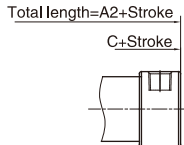
CA Type



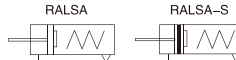
CM Type



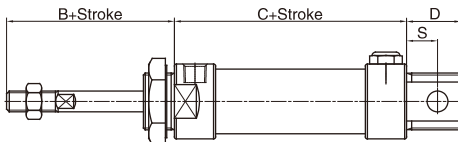
U Type



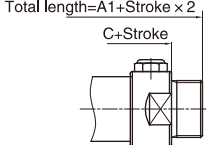
RALSA φ16-Φ40



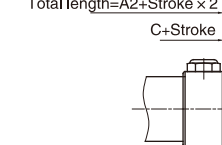
CA Type



CM Type



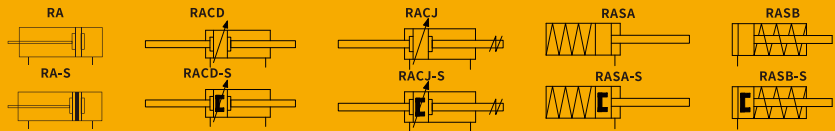
U Type



Bore\Sign	A1			A2			C			B	D	S
	0-50	51-100	101-150	0-50	51-100	101-150	0-50	51-100	101-150			
16	127	152	-	117	142	-	81	106	-	36	14	7
20	147	172	197	135	160	185	95	120	145	40	21	12
25	153	178	203	139	164	189	95	120	145	44	21	12
32	153	178	203	139	164	189	95	120	145	44	27	15
40	177	202	227	163	188	213	117	142	167	46	27	15

Note: Unlabeled the same size as standard type.

RA
Mini Type Cylinder



Specifications

Bore size(mm)	16	20	25	32	40	50	63
Acting type	Double Acting/Single Acting						
Working medium	Clean Air(40 μ m filtration)						
Working pressure (MPa)	0.1~0.7(Double Acting) 0.2~0.7(Single Acting)						
Guaranteed pressure (MPa)	1.5						
Working temperature (°C)	-20~70(No freezing)						
Speed range (mm/s)	Double Acting: 30~800 Single Acting:50~800						
Cushion type	Rubber cushion / Air cushion						
Barrel material	Stainless steel						
Mounting type	LB FA SDB						
Port size	M5×0.8	G1/8 ①			G1/4 ①		

① PT, NPT port size is optional.

How to Order?

Series No	Cushion Type	Type No	Bore	X	Stroke	Adjustable Stroke	Magnet No	Tail Type	Mounting Type	Thread Type
RA:Stainless steel cylinder	C: Air cushion		16		25	10	S: With magnet		Blank; No	Blank: G
	Blank: Rubber cushion		20		50	20			LB	P: PT
	(Rubber cushion is not available for Φ 50, Φ 63)		25		75	30			FA	T: NPT
			32		...	40		Blank: Swiveling tail (CA)	SDB	
			40			50		U: Flat tail	IJ	
			50			75		CM: Round tail	YJ	
			63			100			BJ	
										
		Blank: Basic type								
		D: Double shaft type								
		J: Double shaft and adjustable stroke type								
		SA: Single action extend type								
		SB: Single action return type								
		(Note: single action is available for rubber cushion type only)								

Order Example:

RA series, Double shaft and adjustable stroke type, air cushion, bore 32mm, stroke 25mm, adjustable stroke 20mm, with magnet, no mounting type, round tail, PT thread.

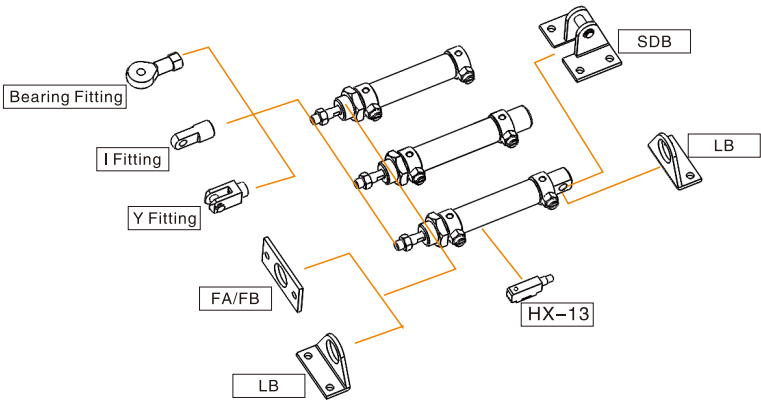
ERP code is: RACJ32*25-20-S-CM-P

Note: 1. If cylinder with several different mounting accessories, please with this sequential

coding: LB/FA/SDB /IJ/YJ/BJ

2. RA series always with magnet.

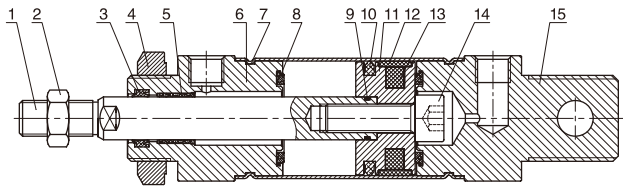
Optional Accessories



Stroke

Bore (mm)	Standard Stroke (mm)																Max. Stroke (mm)
Double Acting	16	25	50	75	80	100	125	150	160	175	200						500
	20	25	50	75	80	100	125	150	160	175	200	250	300				600
	25~63	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	800
Single Acting	16	25	50	75	100												100
	20~40	25	50	75	100	125	150										150

Internal Structure

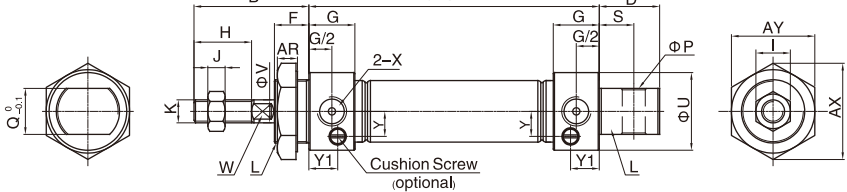


No.	Part Name	Material
1	Piston rod	S45C hard chrome carbon steel
2	Nut	Carbon steel
3	Piston rod seal	NBR
4	Nut	Carbon steel
5	Self lubricating bearing	Bronze powder
6	Head cover	Aluminum alloy
7	Barrel	Stainless Steel
8	Anti-bump cushion	TPU
9	O-ring	NBR
10	Piston seal	NBR
11	Piston	Aluminum alloy
12	Wear ring	PTFE
13	Magnet	Plastic
14	Hexagon screw	Carbon steel
15	Rear cover	Aluminum alloy

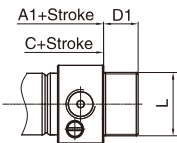
Main Dimension

RA Φ16-Φ63

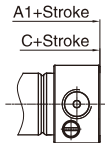
CA Type



CM Type



U Type



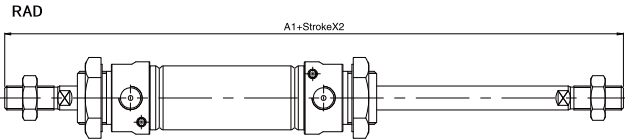
Bore\Sign	A1	B	C	D	D1	F	G	H	I	J	K	Y1	L	P	Q	S	U	V	W	X	AX	AY	Y
16	98	38	60	16	16	16	10	16	10	5	M6X1.0	7	M16X1.5	6	12	9	21	6	5	M5X0.8	25	22	6.5
20	116	40	76	21	12	12	16	20	12	6	M8X1.25	12.5	M22X1.5	8	16	12	27	8	6	1/8"	33	29	8
25	120	44	76	21	14	14	16	22	17	6	M10X1.25	12.5	M22X1.5	8	16	12	30	10	8	1/8"	33	29	10
32	120	44	76	27	14	14	16	22	17	6	M10X1.25	12	M24X2.0	10	16	15	35	12	10	1/8"	37	32	12
40	122	46	76	27	14	14	17	24	17	7	M12X1.25	13	M30X2.0	12	20	15	42	16	14	1/4"	47	41	16
50	147	52	95	27	20	20	23	24	19	8	M14X1.25	11.5	M36X2.0	12	20	16	53	20	18	1/4"	53	48	26.5
63	147	52	95	27	20	20	23	24	19	8	M14X1.25	11.5	M36X2.0	12	20	16	66	20	18	1/4"	53	48	33

Note: 1.With magnet and no magnet, the dimensions are same.

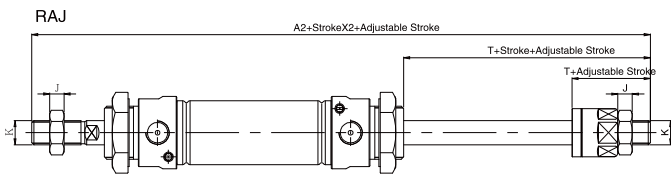
2.Rubber cushion is not available for Φ 50, Φ 63.

◎ Main Dimension

RAD Φ16-Φ40



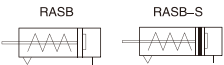
RAJ Φ16-Φ40



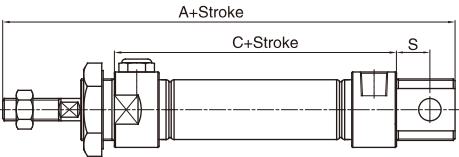
Bore\Sign	A1	A2	J	K	T
16	136	135	5	M6X1.0	21
20	156	153	6	M8X1.25	25
25	164	161	6	M10X1.25	27
32	164	161	6	M10X1.25	27
40	168	164	7	M12X1.25	28

Note: Unlabeled the same size as standard type.

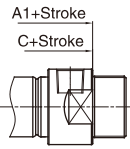
RASB Φ16-Φ40



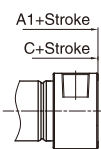
CA Type



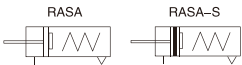
CM Type



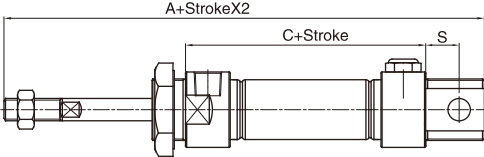
U Type



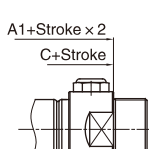
RASA Φ16-Φ40



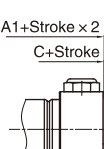
CA Type



CM Type



U Type

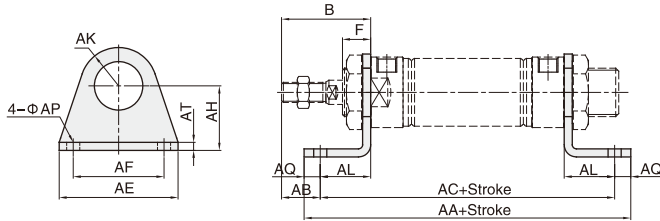


Bore\Sign	A			A1			C			S
	0-50	51-100	101-150	0-50	51-100	101-150	0-50	51-100	101-150	
16	139	164	-	123	148	-	85	110	-	9
20	162	187	212	141	166	191	101	126	151	12
25	166	191	216	145	170	195	101	126	151	12
32	172	197	222	145	170	195	101	126	151	15
40	174	199	224	147	172	197	101	126	151	15

Note: Unlabeled the same size as standard type.

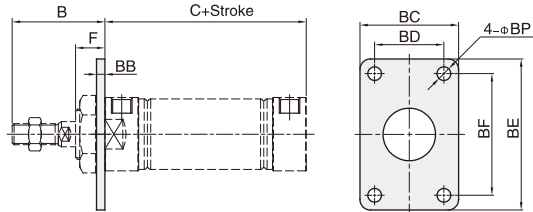
◎ Main Dimension

LB



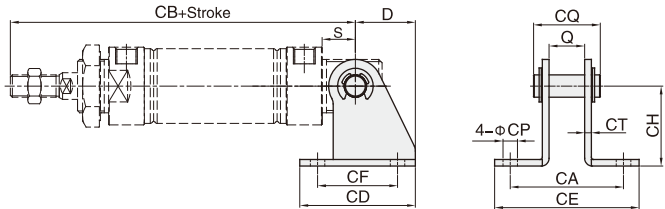
Bore	Model\Sign	B		F		AA		AA(RALSB)			AA(RASB)			AB			
		RAL	RA	RAL	RA	RAL	RA	0-50	51-100	101-150	0-50	51-100	101-150	RAL	RA		
16	FJ-RA16LB	36	38	14	16	94	98	119	144	-	123	148	-	23	25		
20	FJ-RA20LB	40	40	12	12	116	122	141	166	191	147	172	197	25	25		
25	FJ-RA20LB	44	44	14	14	116	122	141	166	191	147	172	197	25	25		
32	FJ-RA32LB	44	44	14	14	136	142	161	186	211	167	192	217	19	19		
40	FJ-RA40LB	46	46	14	14	158	142	183	208	233	167	192	217	21	21		
Bore	Model\Sign	AC		AC(RALSB)			AC(RASB)			AE	AF	AH	AK	AL	AP	AQ	AT
		RAL	RA	0-50	51-100	101-150	0-50	51-100	101-150								
16	FJ-RA16LB	82	86	107	132	-	111	136	-	44	32	20	13	13	5.5	6	2.5
20	FJ-RA20LB	100	106	125	150	175	131	156	181	54	40	25	17	15	6.5	8	3
25	FJ-RA20LB	100	106	125	150	175	131	156	181	54	40	25	17	15	6.5	8	3
32	FJ-RA32LB	120	126	145	170	195	151	176	201	59	45	32	19	25	7	8	3.5
40	FJ-RA40LB	142	126	167	192	217	151	176	201	64	50	36	23	25	7	8	3.5

FA



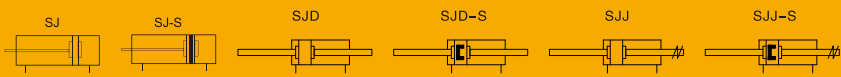
Bore	Model\Sign	B		C		C(RALSB)			C(RASB)			BB	BC	BD	BE	BF	BP	F	
		RAL	RA	RAL	RA	0-50	51-100	101-150	0-50	51-100	101-150							RAL	RA
16	FJ-RA16FA	36	38	56	60	81	106	-	85	110	-	3	26	-	52	40	5.5	14	16
20	FJ-RA20FA	40	40	70	76	95	120	145	101	126	151	3.5	38	-	64	50	7	12	12
25	FJ-RA20FA	44	44	70	76	95	120	145	101	126	151	3.5	38	-	64	50	7	14	14
32	FJ-RA32FA	44	44	70	76	95	120	145	101	126	151	4	47	33	72	58	6.5	14	14
40	FJ-RA40FA	46	46	92	76	117	142	167	101	126	151	4	50	36	84	70	6.5	14	14

SDB



Bore	Model\Sign	D	S		Q	CA	CB		CB(RALSB)			CB(RASB)			CD	CE	CF	CH	CP	CQ	CT
			RAL	RA			RAL	RA	0-50	51-100	101-150	0-50	51-100	101-150							
16	FJ-RA16SDB	18	7	9	12.1	42.1	99	107	124	149	-	132	157	-	36	55.1	24	25.5	5.5	22.5	3
20	FJ-RA20SDB	24.5	12	12	16.1	51.1	122	128	147	172	197	153	178	203	48	66.1	32	32	6.5	27	3
25	FJ-RA20SDB	24.5	12	12	16.1	51.1	126	132	151	176	201	157	182	207	48	66.1	32	32	6.5	27	3
32	FJ-RA32SDB	27	15	15	16.1	50.1	129	135	154	179	204	160	185	210	52	65.1	36	35.5	6.5	27.5	3
40	FJ-RA40SDB	27	15	15	20.1	52.1	153	137	178	203	228	162	187	212	56	69.1	40	40	6.5	32.5	3

SJ
Mini Type Cylinder



Specifications



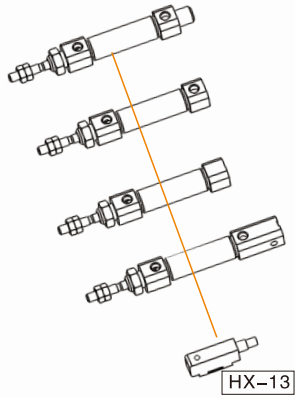
Bore size(mm)	6	10	12	16
Acting type	Double Acting			
Working medium	Clean Air(40 μ m filtration)			
Working pressure (MPa)	0.1~0.7			
Guaranteed pressure (MPa)	1.0			
Working temperature (°C)	-20~70(No freezing)			
Speed range (mm/s)	50~750			
Cushion type	Rubber cushion on both ends			
Port size	M5x0.8			

How to Order?

Series No.	Type No.	Bore X Stroke	Magnet No.	Tail Type
SJ	Blank: Basic type D: Double shaft type J: Double shaft and adjustable stroke type	6 10 12 16	Blank: No magnet S: With magnet	U: Flat tail (Radial intake type) CB: Double U-type (Radial intake type) CM: Round tail (Radial intake type) R: Axial intake type (Note: Only U or R optional for Ø6)

Order Example:
SJ series cylinder, basic type, 10mm bore, 50mm stroke, with magnet, flat tail, the ERP code is: SJ10x50-S-U
Note: SJ6 has no double shaft type, the double shaft and adjustable stroke type is optional.

Optional Accessories

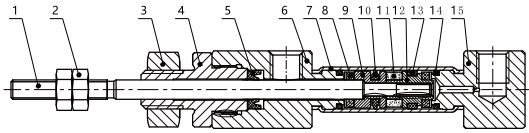


Stroke

Bore (mm)		Standard Stroke (mm)																		Max. Stroke (mm)
Double Acting	6	10	15	20	25	30	40	50	60											60
	10	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	200		
	12	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	200		
	16	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	200		

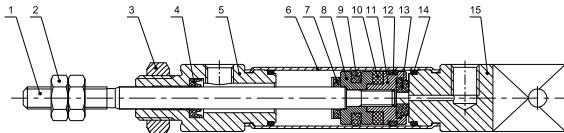
Internal Structure

SJØ6



No.	Part name	Material
1	Piston rod	S45C hard chrome carbon steel
2	Nut	Carbon steel
3	Nut	Carbon steel
4	Outer cover	Brass
5	Piston seal	NBR
6	Head cover	Aluminum alloy
7	Barrel	Stainless steel
8	Anti-bump cushion	TPU
9	Piston	SUS304
10	Piston seal	NBR
11	Magnet	RbFeb
12	Magnet Base	SUS304
13	Wear ring	PTFE
14	O-ring	NBR
15	Rear cover	Aluminum alloy

SJØ10、Ø12、Ø16

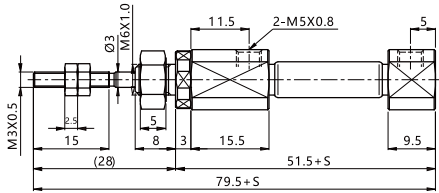


No.	Part name	Material
1	Piston rod	S45C hard chrome carbon steel
2	Nut	Carbon steel
3	Nut	Carbon steel
4	Head cover dust ring	NBR
5	Head cover	Aluminum alloy
6	Barrel	Stainless steel
7	Anti-bump cushion	TPU
8	Piston	Ø10:SUS304 Ø16: Aluminum alloy
9	Piston seal	NBR
10	Magnet	RbFeB
11	Magnet Base	Ø10:SUS304 Ø16: Aluminum alloy
12	Wear ring	PTFE
13	Anti-bump cushion	TPU
14	O-ring	NBR
15	Rear cover	Aluminum alloy

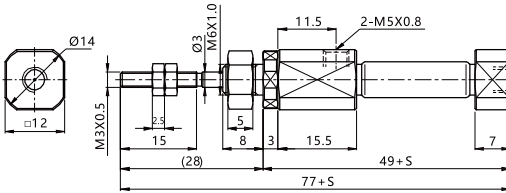
Main Dimension

SJØ6

U Type

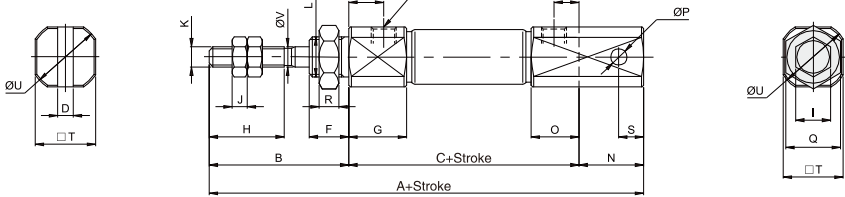


R Type

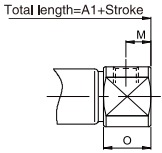


SJØ10、Ø12、Ø16

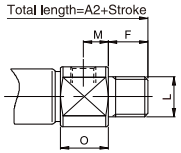
CB Type



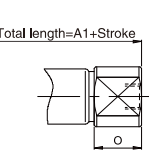
U Type



CM Type



R Type



Bore/Sign	A	A1	A2	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	X
10	87	74	82	28	46	3.2	7	8	11.5	15	7	3	M4X0.7	M8X1.0	5	13	9.5	3.3	11	4	5	12	14	4	M5X0.8
12	92	74	82	28	46	6.5	7.5	8	12	15	8	4	M5X0.8	M10X1.0	5	18	9.5	5	11	4	8	15	17	5	M5X0.8
16	93	75	83	28	47	6.5	7.5	8	12.3	15	8	4	M5X0.8	M10X1.0	5	18	9.5	5	14	4	8	18.3	19.7	5	M5X0.8

SJR

Stainless Steel Mini Cylinder



Specifications

Bore (mm)	10	16
Acting Type	Double Acting	
Working Medium	Clean Air (25 μm filtration)	
Working Pressure(MPa)	0.1~0.7	
Guaranteed Pressure(MPa)	1.0	
Working Temperature(°C)	-20~80(No Freezing)	
Speed Range(mm/s)	50~750	
Cushion Type	Rubber Bumper	
Port size	M5X0.8	



How to order?

Series No.	Bore	X	Stroke	-	Magnet No.	-	Tail Type
SJR	10 16		10 15 20 ...		Blank: No Magnet S: Built-in Magnet		U: Flat Tail(Radial Piping) R: Axial Piping

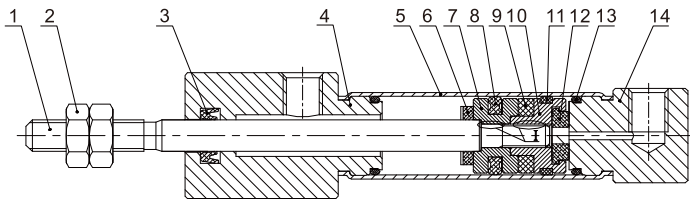
Order Example: SJR series cylinder, basic type, bore 10mm, stroke 50mm, with magnet, flat tail. The ERP code is SJR10X50-S-U.

Stroke

Bore (mm)		Standard Stroke (mm)															Max. Stroke (mm)
Double Acting	20	10	15	20	25	30	40	50	60	75	80	100	125	150			150
	16	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200

Note: Please contact us when ordering stroke exceeds the maximum stroke

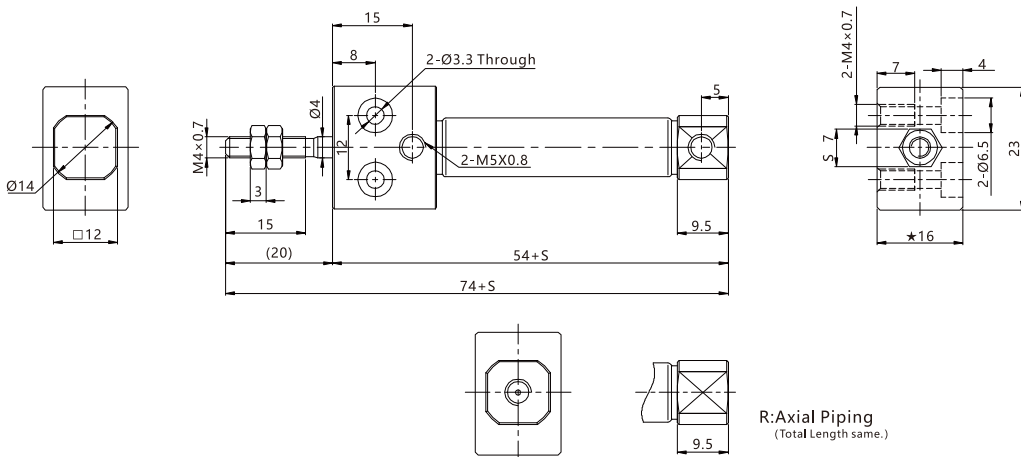
Internal Structure



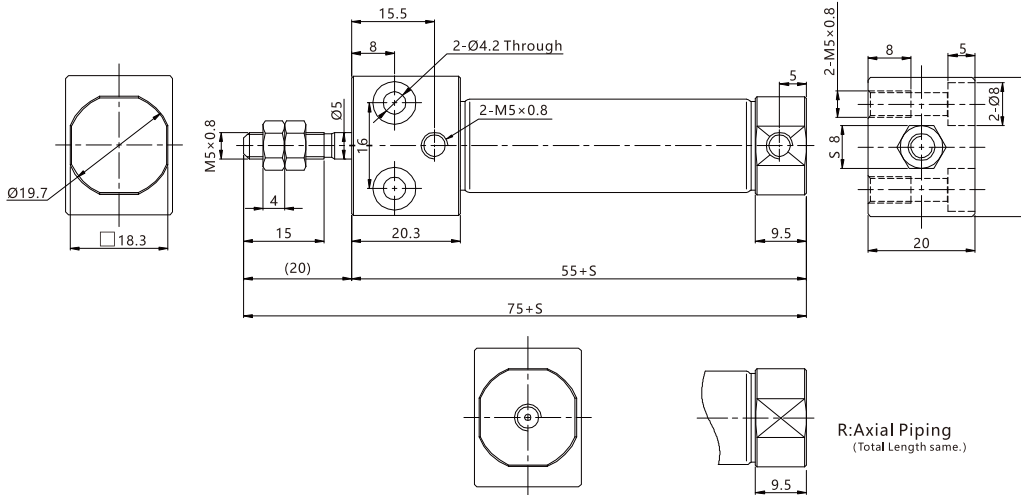
No.	Part Name	Material
1	Piston Rod	SUS304 hard chrome carbon steel
2	Nut	Carbon Steel
3	Rod Seal	NBR
4	Head Cover	Aluminum Alloy
5	Tube	Stainless Steel
6	Bumper	TPU
7	Piston	10:SUS304 16:Aluminum Alloy
8	Piston Seal	NBR
9	Magnet	RbFeB
10	Magnet Base	10:SUS304 16:Aluminum Alloy
11	Wear Ring	PTFE
12	Bumper	TPU
13	O-ring	NBR
14	Rear Cover	Aluminum Alloy

Main Dimension

SJR10

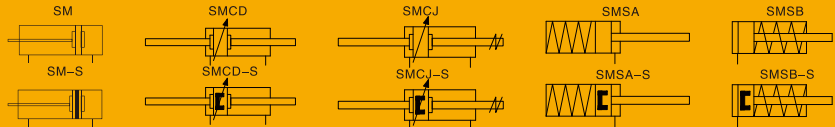


SJR16





SM
Mini Type Cylinder



Specifications



Bore size(mm)	20	25	32	40
Acting type	Double Acting/Single Acting			
Working medium	Clean Air(40 μ m filtration)			
Working pressure (MPa)	0.1~1.0(Double Acting) / 0.2~1.0(Single Acting)			
Guaranteed pressure (MPa)	1.5			
Working temperature (°C)	-20~70(No freezing)			
Speed range (mm/s)	Double Acting: 30~800 Single Acting:50~800			
Cushion type	Rubber cushion / Air cushion			
Barrel material	Aluminum alloy			
Mounting type	LB FA SDB			
Port size	G1/8 ①		G1/4 ①	

① PT、NPT port size is optional.

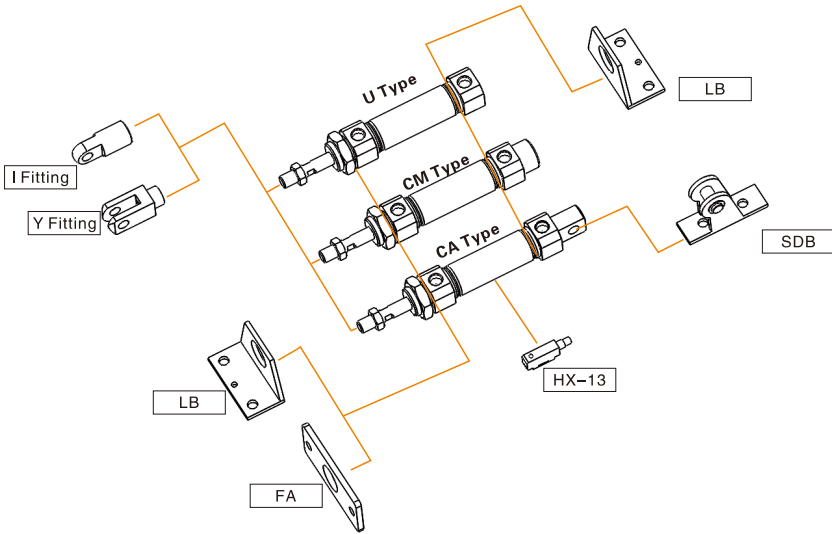
How to Order?

Series	Cushion Type	Type Code	Bore X Stroke	Adjustable Stroke	Magnet Code	Tail Type	Mounting Type	Thread Type
SM	C: Air cushion Blank: Rubber cushion	20 25 32 40	25 50 75 ...	10 20 30 40 50 75 100	Blank: No magnet S: With magnet	Blank: Swiveling tail U: Flat tail CM: Round tail	Blank:No bracket LB FA SDB IJ YJ	Blank: G P: PT T: NPT
Blank: Basic type D: Double -shaft type J: Double -shaft,adjustable stroke type SA: Single acting spring extend SB: Single acting spring return								

Order Example:

SM series double shaft adjustable stroke cylinder, air cushion, bore 32mm, stroke 25mm, adjustable stroke 20mm. with magnet, no bracket, round tail, PT thread. The ERP code is: SMCJ32x25-20-S-CM-P
Note: There are many mounting types, you can chose LB/FA/SDB/IJ/YJ
LB and Rear FA are not available for Swiveling tail.

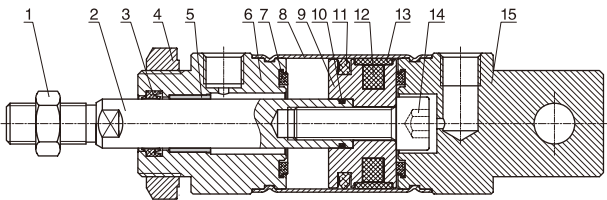
Optional Accessories



Stroke

Bore (mm)		Standard Stroke (mm)																				Max. Stroke (mm)
Double Acting	20	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	400	500	600
	25~40	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	400	500	600
Single Acting	20	10	15	20	25	30	40	50	60	75	80	100	125	150								
	25~40	10	15	20	25	30	40	50	60	75	80	100	125	150								

Internal Structure

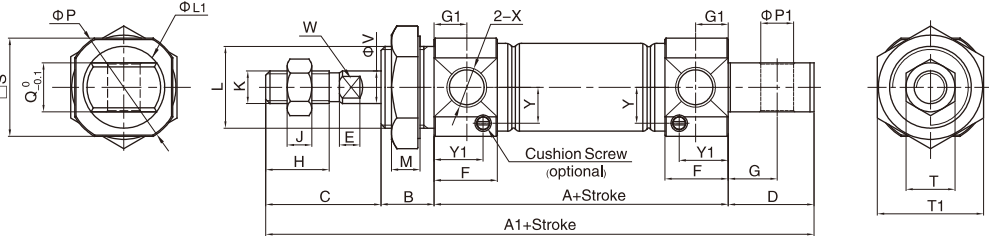


No.	Part Name	Material
1	Nut	Carbon Steel
2	Piston rod	S45C hard chrome carbon steel
3	Piston rod seal	NBR
4	Nut	Carbon Steel
5	Self lubricating Bearing	Bronze Powder
6	Head cover	Aluminum Alloy
7	Anti-bump cushion	TPU
8	Barrel	Stainless steel
9	Piston	Aluminum Alloy
10	O-ring	NBR
11	Piston seal	NBR
12	Magnet	Plastic
13	Wear ring	PTFE
14	Hexagon screw	Carbon steel
15	Rear cover	Aluminum Alloy

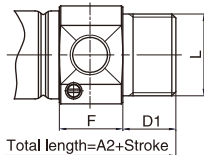
Main Dimension

SM Φ20-Φ40

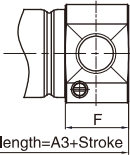
Swiveling tail (CA Type)



CM Type



U Type

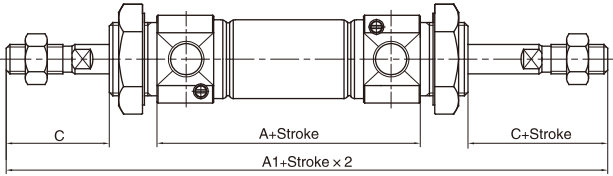


Bore/Sign	A	A1	A2	A3	B	C	D	D1	E	F	G	G1	H	J	K	L	L1	M	P	P1	Q	S	T	T1	X	V	W	Y	Y1
20	62	124	116	103	13	28	21	13	5	15.5	12	8	15.5	6	M8X1.25	M20X1.5	20	7	29	8	12	25	12	26	1/8"	8	6	8.8	12
25	62	128	120	107	13	32	21	13	5.5	15	12	8	19.5	6	M10X1.25	M26X1.5	22	8	33.5	8	12	30	17	32	1/8"	10	8	10	11.5
32	64	136	122	109	13	32	27	13	5.5	15	15	8	19.5	6	M10X1.25	M26X1.5	26	8	37.5	10	20	34.5	17	32	1/8"	12	10	12	11
40	88	165	154	138	16	34	27	16	7	22	15	11	21	8	M14X1.5	M32X2.0	32	9	46.5	10	20	42.5	19	41	1/4"	16	14	16	18

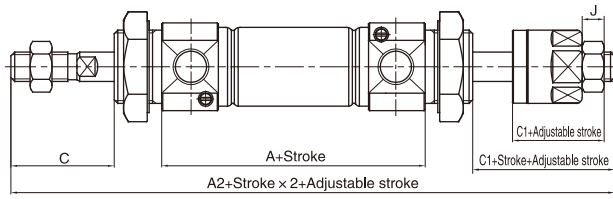
Note: With magnet and without magnet, the dimensions are same.

Main Dimension

SMD Φ20-Φ40



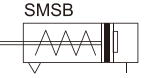
SMJ Φ20-Φ40



Bore/Sign	A	A1	A2	C	C1	J	K
20	62	144	141	28	25	6	M8X1.25
25	62	152	147	32	27	6	M10X1.25
32	64	154	149	32	27	6	M10X1.25
40	88	188	182	34	28	7	M12X1.25

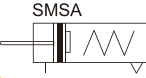
Note: Unlabeled the same size as standard type.

SMSB Φ20-Φ40

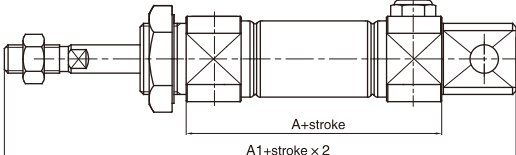
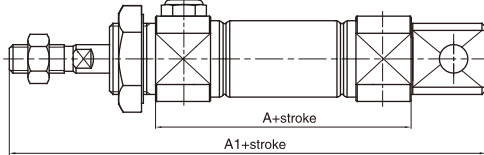


Swiveling tail (CA Type)

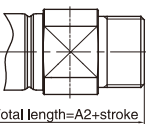
SMSA Φ20-Φ40



Swiveling tail (CA Type)



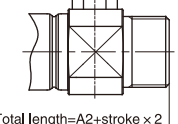
CM Type



U Type



CM Type



U Type

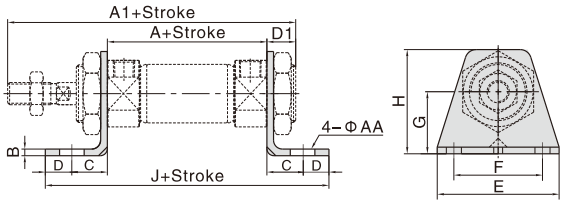


Bore/Sign	A			A1			A2			A3		
	0-50	51-100	101-150	0-50	51-100	101-150	0-50	51-100	101-150	0-50	51-100	101-150
20	87	112	137	149	174	199	141	166	191	128	153	178
25	87	112	137	153	178	203	145	170	195	132	157	182
32	89	114	139	161	186	211	147	172	197	134	159	184
40	113	138	163	190	215	240	179	204	229	163	188	213

Note: Unlabeled the same size as standard type.

Accessory Dimensions

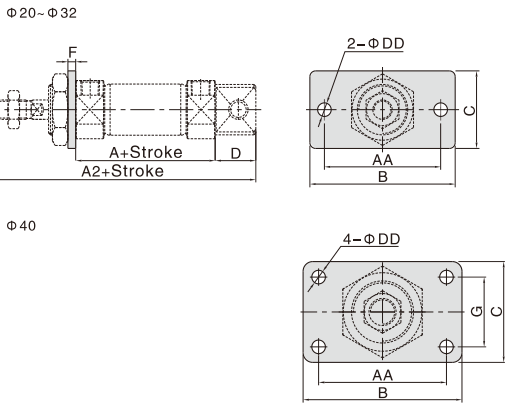
LB



Bore/Sign	A	A1	AA	B	C	D	D1	E	F	G	H	J
FJ-SM20LB	62	116	7	3	20	8	13	55	40	25	40	118
FJ-SM25LB	62	120	7	3	20	8	13	55	40	28	47	118
FJ-SM40LB	88	154	7	3	23	10	16	75	55	30	54	154

Note: Φ 32 series borrowed Φ 25 series

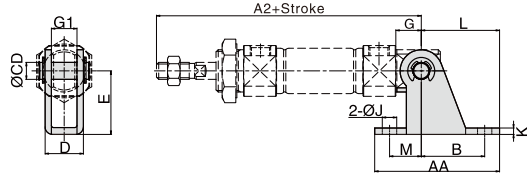
FA



Bore/Sign	A	A2	AA	B	C	D	DD	F	G
FJ-SM20FA	62	124	60	75	34	21	7	4	-
FJ-SM25FA	62	128	60	75	40	21	7	4	-
FJ-SM40FA	88	165	66	82	52	27	7	5	36

Note: Φ 32 series borrowed Φ 25 series

SDB



Bore/Sign	A2	AA	B	D	E	G	G1	CD	K	J	L	M
FJ-SM20SDB	115	59	30	18.1	30	12	12.1	8	3	6.8	37	15
FJ-SM32SDB	124	75	40	28.1	40	15	20.1	10	4	9	50	15

Note: Φ 25 series borrowed Φ 20 series
Φ 40 series borrowed Φ 32 series

SMR

Stainless Steel Mini Cylinder



Specifications



Bore (mm)	20	25	32
Acting Type	Double Acting		
Working Medium	Clean Air (40 μm filtration)		
Working Pressure (MPa)	0.1~1.0		
Guaranteed Pressure (MPa)	1.5		
Working Temperature(℃)	-20~80(No Freezing)		
Speed Range(mm/s)	30~800		
Cushion Type	Rubber Bumper		
Port Size	G1/8		

How to order?

Series No.	Cushion Type	Type No.	Bore X Stroke	Magnet No.	Thread Type	Tail Type
SMR	Blank: Rubber Cushion	Blank: Basic Type	20 25 32	10 15 20 ...	Blank: No Magnet S: Built-in Magnet	Blank: Male Thread Blank: Flat Tail (Radial Piping)

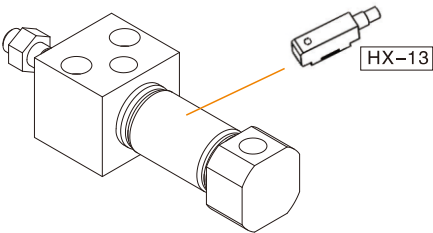
Order Example: SMR series cylinder , basic type , bore 20mm, stroke 50mm, with magnet.The ERP code is SMR20X50-S.

Stroke

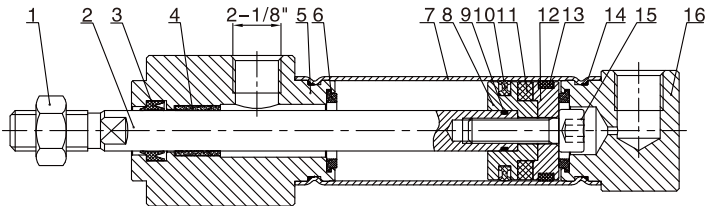
Bore (mm)	Standard Stroke(mm)	Max. Stroke(mm)
Double Acting	20	5~500
	25、32	5~600

Note: Please contact us when ordering stroke exceeds the maximum stroke

Optional Accessories

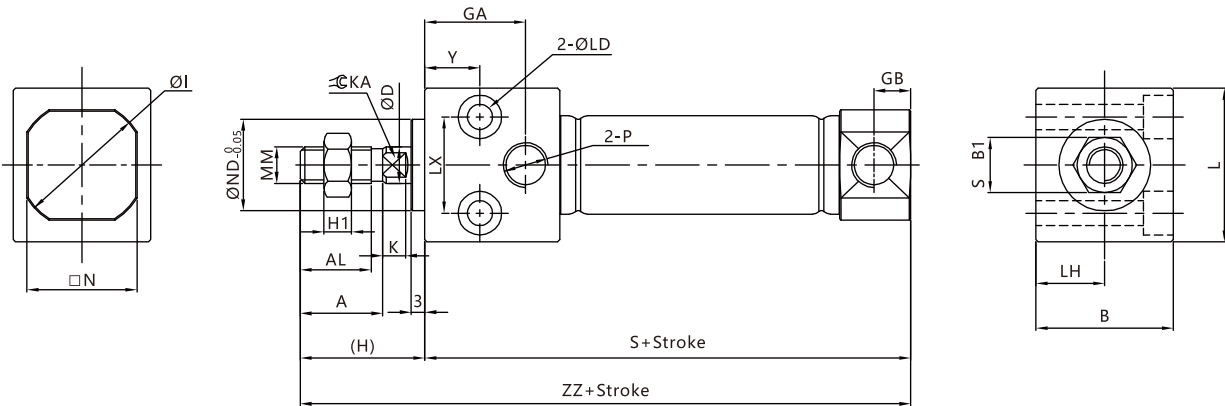


Internal Structure



No.	Part Name	Material
1	Nut	Carbon Steel
2	Piston Rod	SUS304 hard chrome carbon steel
3	Rod Seal	NBR
4	Self-lubricating Bearing	Composite Material
5	Head Cover	Aluminum Alloy
6	Bumper	TPU
7	Tube	Stainless Steel
8	Piston	Aluminum Alloy
9	O-ring	NBR
10	Piston Seal	NBR
11	Magnet	Plastic
12	Magnet Base	Aluminum Alloy
13	Wear Ring	PTFE
14	O-ring	NBR
15	Hexagon Screw	Carbon Steel
16	Rear Cover	Aluminum Alloy

Main Dimension



Bore/Symbol	A	AL	B	B1	D	GA	GB	H	H1	I	K	KA	L	LD	LH	LX	MM	N	ND	P	S	Y	ZZ
20	18	15.5	30	12	8	22	8	27	6	28	5	6	33.5	Ø5.5、Ø9.5 Counterbore Depth 6.5	15	21	M8X1.25	24	20 ^{±0.05}	G1/8	76	12	103
25	22	19.5	36	17	10	22	8	31	6	33.5	5.5	8	39	Ø6.6、Ø11 Counterbore Depth 7.5	18	25	M10X1.25	30	26 ^{±0.05}	G1/8	76	12	107
32	22	19.5	42	17	12	22	8	31	6	37.5	5.5	10	47	Ø9、Ø14 Counterbore Depth 10	21	30	M10X1.25	34.5	26 ^{±0.05}	G1/8	78	12	109

EG
Mini Type Cylinder



Specifications

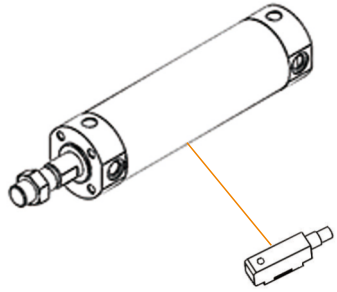
Bore Size(mm)		20	25	32	40	50	63
Acting type		Double Acting					
Working medium		Clean air(40 μ m filtration)					
Pressure range(MPa)		0.1~1.0MPa(15~145psi)(1.0~10.0bar)					
Garanteed pressure(MPa)		1.5MPa(215psi)(15bar)					
Working temperature(℃)		-20~70(No freezing)					
Speed range(mm/s)		50~1000					
Stroke range		+1.4 0					
Cushion type		Rubber cushion(Standard)/Air cushion					
Port size		M5	G1/8"			G1/4"	
Kinetic energy J	Male thread on piston rod	0.28	0.41	0.66	1.20	2.00	3.40

How to Order?

Series No	Type No	Bore	X Stroke	Magnet No	Piston Rod Thread Type	Thread Type
EG	Blank: Basic type D: Double shaft type C: Air cushion type	20 25 32 40 50 63	25 50 75 100 ...	Blank: No magnet S: With magnet	M: Male thread	Blank: G P: PT T: NPT

Order Example:
EG Series basic type cylinder, 25mm bore, 50mm stroke, with magnet, male thread on piston rod, G thread.
ERP code is: EG25X50-S-M

Optional Accessories

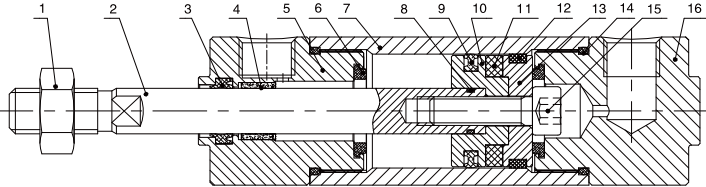


HX-13

Stroke

Bore (mm)	Standard Stroke (mm)															Max. Stroke (mm)
Double Acting	20	25	50	75	100	125	150	175	200							201~1200
	25	25	50	75	100	125	150	175	200	250	300					301~1200
	32	25	50	75	100	125	150	175	200	250	300					301~1500
	40	25	50	75	100	125	150	175	200	250	300					301~1500
	50	25	50	75	100	125	150	175	200	250	300					301~1500
	63	25	50	75	100	125	150	175	200	250	300					301~1500

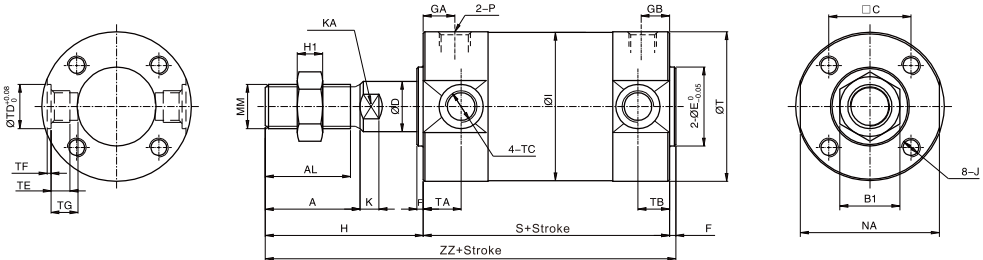
Internal Structure



No.	Part Name	Material
1	Nut	Carbon steel(Nickel plating)
2	Piston rod	Stainless steel(EG20、25) Carbon steel(EG32、40、50、63)
3	Piston rod seal	TPU
4	Self-lubricating bearing	Compound material
5	Head cover	Aluminum alloy
6	Anti-bump cushion	TPU
7	Barrel	Aluminum alloy
8	O-ring	NBR
9	Piston seal	NBR
10	Piston	Aluminum alloy
11	Magnet	RbFeB(EG20、25) Plastic(EG32、40、50、63)
12	Wear ring	PTFE
13	Magnet base	Aluminum alloy
14	O-ring	NBR
15	Hex cylinder head screw	Carbon steel(Black)
16	Rear cover	Aluminum alloy

Main Dimension

EG

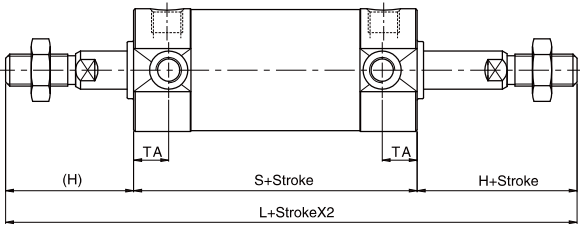


Bore	Standard Stroke Range	Long Stroke Range	A	AL	B1	C	D	E	F	H	I	J	K	KA	MM	NA
20	≤200	201~1200	18	15.5	12	14	8	12	2	35	26	M4X0.7depth7	5.5	6	M8X1.25	24
25	≤300	301~1200	22	19.5	17	16.5	10	14	2	40	31	M5X0.8depth7.5	6	8	M10X1.25	29
32	≤300	301~1500	22	19.5	17	20	12	18	2	40	38	M5X0.8depth8	6	10	M10X1.25	35.5
40	≤300	301~1500	30	27	19	26	16	25	2	50	47	M6X1.0depth12	6.5	14	M14X1.5	44
50	≤300	301~1500	35	32	27	32	20	30	2	58	58	M8X1.25depth16	7.5	18	M18X1.5	55
63	≤300	301~1500	35	32	27	38	20	32	2	58	72	M10X1.5depth16	7.5	18	M18X1.5	69
Bore	Standard Stroke Range	Long Stroke Range	P	S	GA	GB	T	H1	TA	TB	ZZ	TD	TF	TE	TG	TC
20	≤200	201~1200	M5X0.8	69(77)	13.5	13.5	26.5	6	11	11	106(114)	8	0.5	4	5.5	M5X0.8
25	≤300	301~1200	1/8"	69(77)	10	10	31.5	6	11	11	111(119)	10	1	5	6.5	M6X0.75
32	≤300	301~1500	1/8"	71(79)	10.5	9.5	38.5	6	11	10	113(121)	12	1	5.5	7.5	M8X1.0
40	≤300	301~1500	1/8"	78(87)	11.5	10	47.5	8	12	10	130(139)	14	1.25	6	8.5	M10X1.25
50	≤300	301~1500	1/4"	90(102)	13	13	58.5	11	13	12	150(162)	16	2	7.5	10	M12X1.25
63	≤300	301~1500	1/4"	90(102)	14	12	72.5	11	13	12	150(162)	18	3	11.5	14.5	M14X1.5

Note:1、 With magnet and without magnet,the dimensions are same.
2、 Within the "()" size is the size of long stroke;
3、 G 、 PT 、 NPT port size is optional.

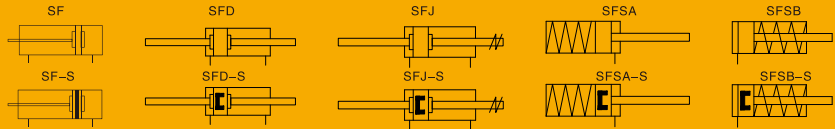
Dimension of Double Shaft

EGD



Bore/Sign	S	H	L	TA
20	77	35	147	11
25	77	40	157	11
32	79	40	159	11
40	87	50	187	12
50	102	58	218	13
63	102	58	218	13

SF Compact Cylinder



Specifications



Bore Size(mm)	20	25	32	40	50	63	80	100
Acting type	Double Acting/Single Acting							
Working medium	Clean Air(40 μ m filtration)							
Working pressure(MPa)	0.1~1.0(Double acting) / 0.2~1.0(Single acting)(MPa)							
Guaranteed pressure(MPa)	1.5(MPa)							
Working temperature(°C)	-20~70(No freezing)							
Speed range(mm/s)	30~500							
Cushion type	Rubber cushion							
Port size	M5X0.8				G1/8			

①NPT、PT port size is optional.

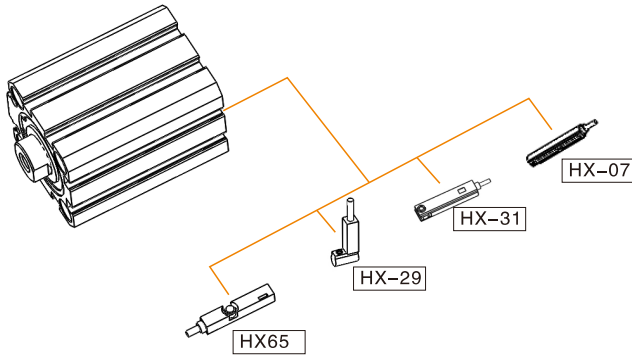
How to Order?

Series No	Type No	Bore	X	Stroke	Adjustable Stroke	Magnet No	Piston Rod Thread Type	Thread Type
SF	Blank: Basic type D: Double shaft type J: Double shaft and adjustable stroke type SA: Single acting spring extend SB: Single acting spring return	20 25 32 ... 100	5 10 15 20 ...	10 20 30 40 50 75 100		Blank: No magnet S: With magnet	Blank: Female thread M: Male thread	Blank: G P: PT T: NPT

Order Example:

SF Series basic cylinder, 25mm bore, 50mm stroke, with magnet, male thread on piston rod, G thread
ERP code is: SF25X50-S-M

Optional Accessories



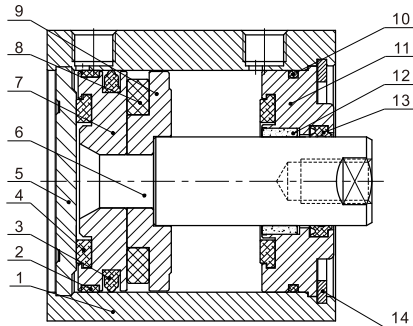
Note: Short stroke please use HX-29 series due to limited space.

Stroke

Bore (mm)		Standard Stroke (mm)																Max. Stroke (mm)	
Double Acting	20/25	5	10	15	20	25	30	35	40	45	50	60	80	100	125	150	150		
	32~63	5	10	15	20	25	30	35	40	45	50	60	80	100	125	150	175	200	
	80/100	10	15	20	25	30	35	40	45	50	60	80	100	125	150	175	200		
Single Acting	20~63	5	10	15	20	25													25

Note: The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder.
e.g. 27mm stroke cylinder has the same dimensions of 30 std. stroke cylinder.
When ordering stroke is larger than the maximum stroke, please contact us.

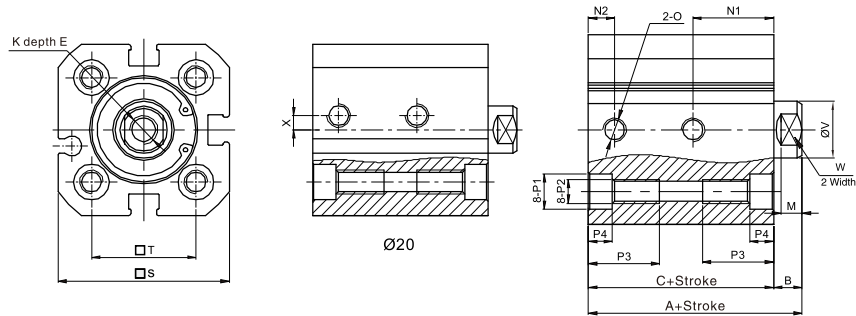
Internal Structure



No.	Part Name	20	25	32	40	50	63	80	100
1	Barrel	Aluminum alloy							
2	Wear ring	No				PTEE			
3	Piston seal	NBR							
4	Anti-bump cushion	TPU				NBR			
5	Rear cover	Aluminum alloy							
6	Piston rod	Stainless steel			Carbon steel				
7	Piston	Aluminum alloy							
8	Magnet	RbFeB				Plastic			
9	Magnet base	Aluminum alloy							
10	O-ring	NBR							
11	Head cover	Aluminum alloy							
12	Bearing	No				Bronze powder			
13	Piston rod seal	TPU							
14	C type retainer ring	Spring steel							

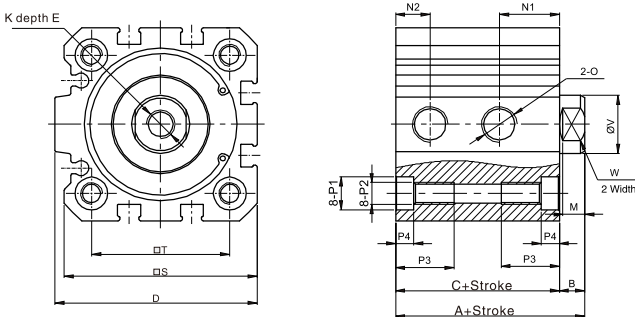
Main Dimension

Φ20、Φ25



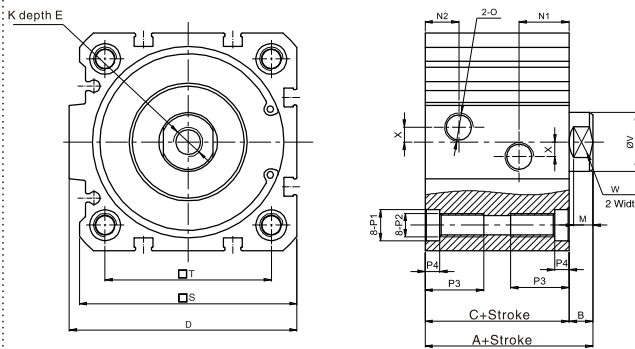
Bore/Sign	A	C	N1	N2	B	E	M	K	O	P1	P2	P3	P4	S	T	X	V	W
20	43	37	15	5.5	6	10	4	M6X1.0	M5X0.8	Φ7.3	M5X0.8	15	5	36	22	3	10	8
25	45	39	17	5.5	6	10	4.5	M6X1.0	M5X0.8	Φ7.3	M5X0.8	15	5	40	26	-	12	10

Φ32、Φ40



Bore/Sign	A	C	N1	N2	B	D	E	M	K
32	51	44	15	8	7	48	12	6	M8X1.25
40	52	45	16.5	9.5	7	55.5	12	6	M8X1.25
Bore/Sign	O	P1	P2	P3	P4	S	T	V	W
32	1/8"	Φ9	M6X1.0	16	5	45.5	32.5	16	14
40	1/8"	Φ9	M6X1.0	16	5	53	38	16	14

Φ50~Φ100



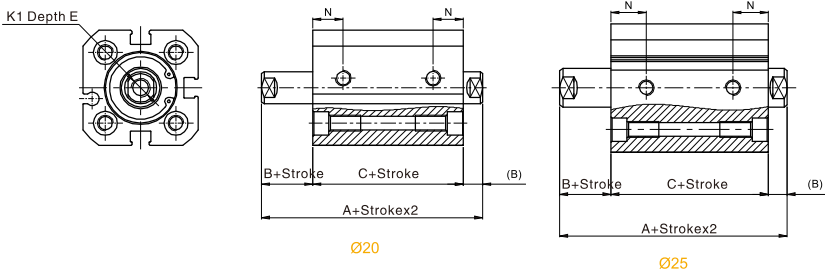
Bore/Sign	A	C	N1	N2	B	D	E	M	K	
50	53	45	16	10.5	8	65.5	16	6.5	M10X1.5	
63	57	49	17	11.5	8	77.5	16	6.5	M10X1.5	
80	64	54	17	15	10	95.5	21	8.5	M12X1.75	
100	77	67	24.5	19	10	113.5	21	8	M12X1.75	
Bore/Sign	O	P1	P2	P3	P4	S	T	X	V	W
50	1/8	10.5	M8X1.25	20	5	63	46.5	4	20	17
63	1/8	10.5	M8X1.25	20	5	74	56.5	5	20	17
80	1/8	13.7	M10X1.5	25	5	92	72	10	25	22
100	1/8	13.7	M10X1.5	25	5	109	89	14	32	27

Note: With magnet and no magnet, the dimensions are the same.

◎ Main Dimension

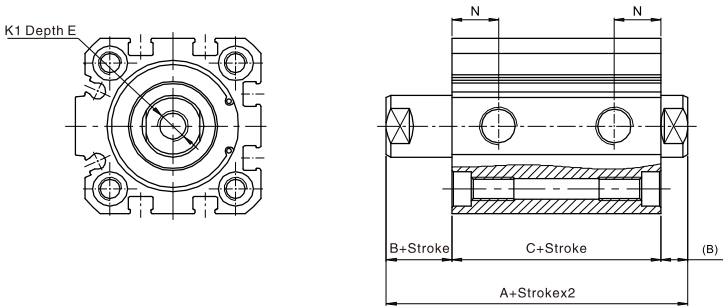
SFD

Φ20、Φ25



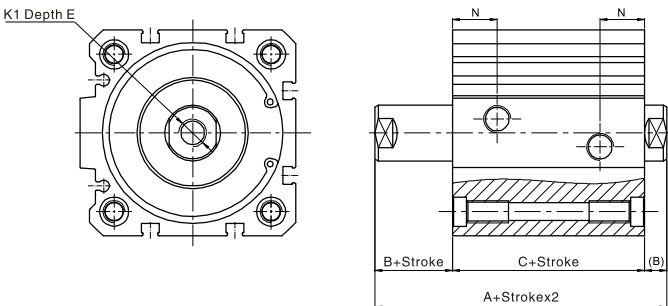
Bore/Sign	A	B	C	N	K1	E
20	49	6	37	9.5	M6X1.0	10
25	51	6	39	11	M6X1.0	10

Φ32、Φ40



Bore/Sign	A	B	C	N	K1	E
32	58	7	44	12	M8X1.25	12
40	59	7	45	13	M8X1.25	12

Φ50~Φ100



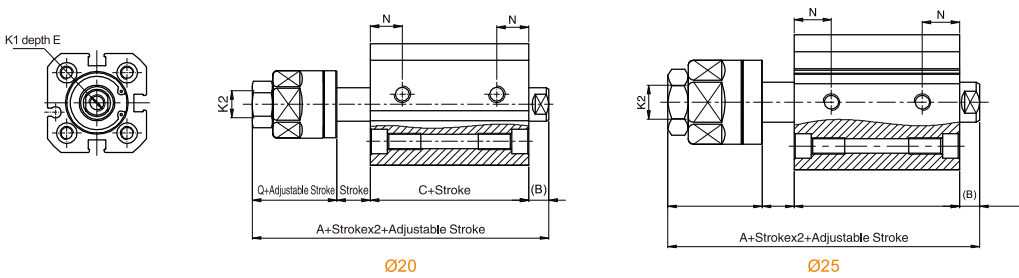
Bore/Sign	A	B	C	N	K1	E
50	61	8	45	13.5	M10X1.5	12(5≤S<15)/16(S≥15)
63	65	8	49	16	M10X1.5	12(5≤S<15)/16(S≥15)
80	74	10	54	16	M12X1.75	14(10≤S<25)/21(S≥25)
100	87	10	67	20.5	M12X1.75	21

Note:Not marked dimension,the same as standard type.Parts of double shaft male thread type,please refer to standard dimension.

◎ Main Dimension

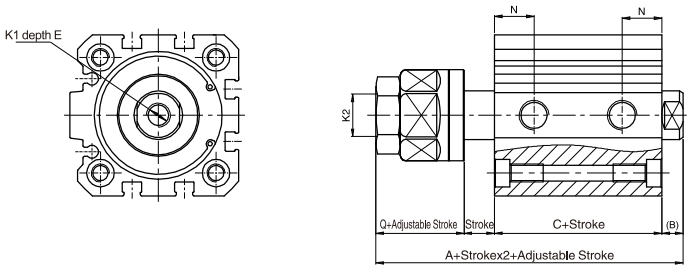
SFJ

Φ20、Φ25



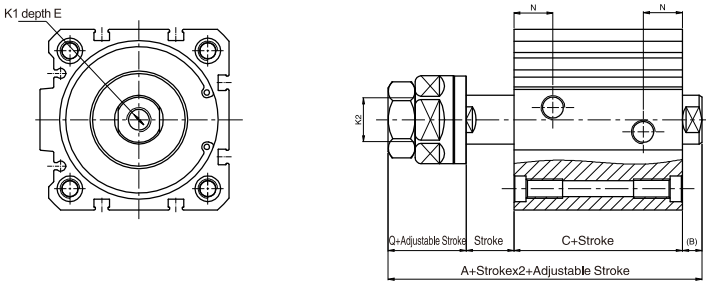
Bore/Sign	A	B	C	Q	N	K1	E	K2
20	68	6	37	25	9.5	M6X1.0	10	M8X1.25
25	72.5	6	39	28	11	M6X1.0	10	M10X1.25

Φ32、Φ40



Bore/Sign	A	B	C	Q	N	K1	E	K2
32	79	7	44	30	12	M8X1.25	12	M14X1.5
40	81	7	45	29	13	M8X1.25	12	M14X1.5

Φ50~Φ100



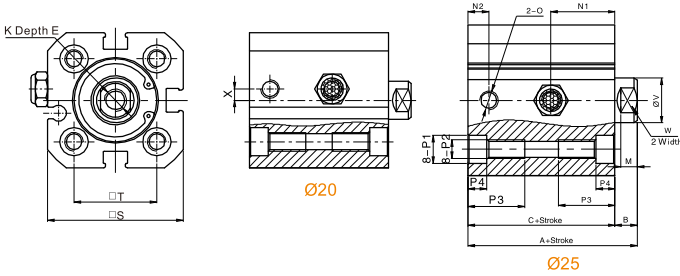
Bore/Sign	A	B	C	Q	N	K1	E	K2
50	85	8	45	32	13.5	M10X1.5	12(5≤S<15)/16(S≥15)	M18X1.5
63	88.5	8	49	32	16	M10X1.5	12(5≤S<15)/16(S≥15)	M18X1.5
80	101	10	54	37	16	M12X1.75	14(10≤S<25)/21(S≥25)	M22X1.5
100	113.5	10	67	37	20.5	M12X1.75	21	M26X1.5

Note:Not marked dimension,the same as standard type.Parts of double shaft male thread type,please refer to standard dimension.

Main Dimension

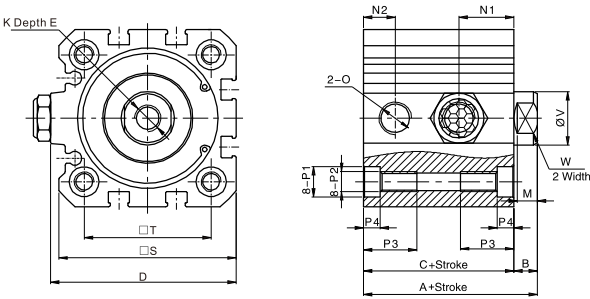
SFSB

Φ20、Φ25



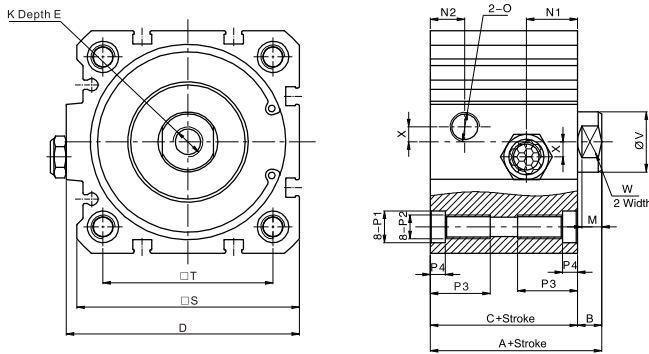
Bore/Sign	A	C	N1	N2	B	E	M	K	O	P1	P2	P3	P4	S	T	X	V	W
20	43	37	15	5.5	6	10	4	M6X1.0	M5X0.8	Φ 7.3	M5X0.8	15	5	36	22	3	10	8
25	45	39	17	5.5	6	10	4.5	M6X1.0	M5X0.8	Φ 7.3	M5X0.8	15	5	40	26	-	12	10

Φ32、Φ40



Bore/Sign	A	C	N1	N2	B	D	E	M	K	O	P1	P2	P3	P4	S	T	V	W
32	51	44	15	8	7	48	12	6	M8X1.25	1/8"	Φ9	M6X1.0	16	5	45.5	32.5	16	14
40	52	45	16.5	9.5	7	55.5	12	6	M8X1.25	1/8"	Φ9	M6X1.0	16	5	53	38	16	14

Φ50~Φ100



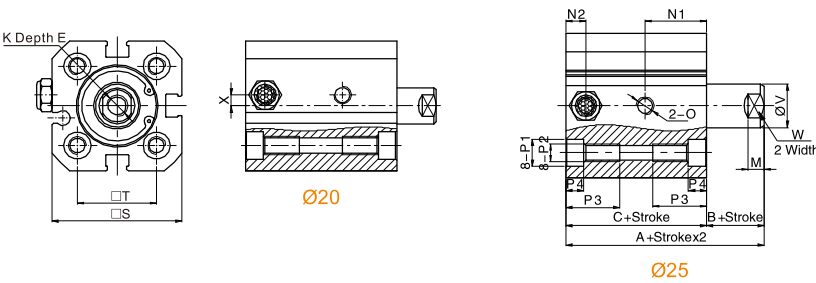
Bore/Sign	A	C	N1	N2	B	D	E	M	K	O	P1	P2	P3	P4	S	T	X	V	W
50	53	45	16	10.5	8	65.5	16	6.5	M10X1.5	1/8"	Φ 10.5	M8X1.25	20	5	63	46.5	4	20	17
63	57	49	17	11.5	8	77.5	16	6.5	M10X1.5	1/8"	Φ 10.5	M8X1.25	20	5	74	56.5	5	20	17

Note: With magnet and without magnet, the dimensions are same.

Main Dimension

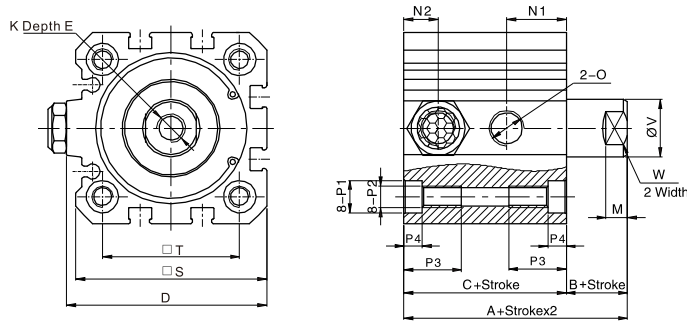
SFSA

Φ20、Φ25



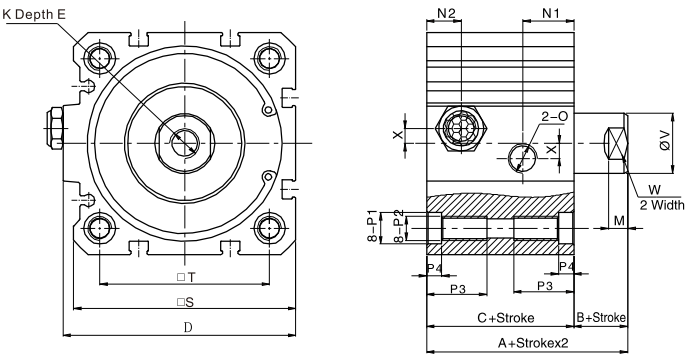
Bore/Sign	A	C	N1	N2	B	E	M	K	O	P1	P2	P3	P4	S	T	X	V	W
20	43	37	15	5.5	6	10	4	M6X1.0	M5X0.8	Φ 7.3	M5X0.8	15	5	36	22	3	10	8
25	45	39	12	5.5	6	10	4.5	M6X1.0	M5X0.8	Φ 7.3	M5X0.8	15	5	40	26	-	12	10

Φ32、Φ40



Bore/Sign	A	C	N1	N2	B	D	E	M	K	O	P1	P2	P3	P4	S	T	V	W
32	51	44	15	8	7	48	12	6	M8X1.25	1/8"	Φ9	M6X1.0	16	5	45.5	32.5	16	14
40	52	45	16.5	9.5	7	55.5	12	6	M8X1.25	1/8"	Φ9	M6X1.0	16	5	53	38	16	14

Φ50~Φ100

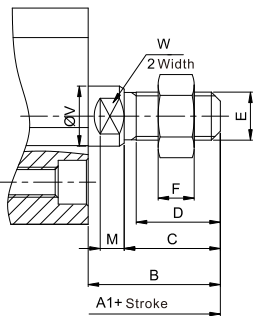


Bore/Sign	A	C	N1	N2	B	D	E	M	K	O	P1	P2	P3	P4	S	T	X	V	W
50	53	45	16	10.5	8	65.5	16	6.5	M10X1.5	1/8"	Φ 10.5	M8X1.25	20	5	63	46.5	4	20	17
63	57	49	17	11.5	8	77.5	16	6.5	M10X1.5	1/8"	Φ 10.5	M8X1.25	20	5	74	56.5	5	20	17

Note: With magnet and without magnet, the dimensions are same.

Male Thread Dimension

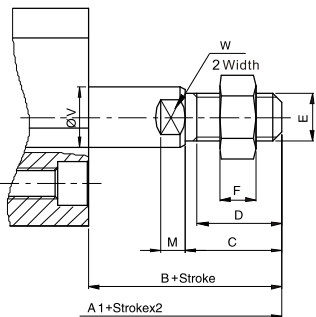
SF, SFD, SFJ, SFSB



Bore\Sign	A1	B	C	D	E	F	M	V	W
20	59	22	16	14	M8X1.25	6	4	10	8
25	61	22	16	14	M8X1.25	6	4.5	12	10
32	70	26	19	16.5	M10X1.25	6	6	16	14
40	71	26	19	16.5	M10X1.25	6	6	16	14
50	75	30	22	19.5	M12X1.25	7	6.5	20	17
63	79	30	22	19.5	M12X1.25	7	6.5	20	17
80	92	38	28	25	M16X1.5	8	8.5	25	22
100	105	38	28	25	M16X1.5	8	8	32	27

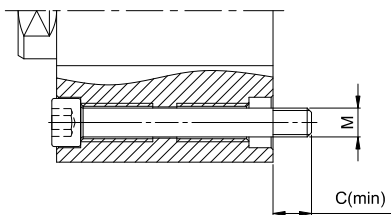
Note: For SFSB cylinder, Φ80 and Φ100 are not optional.

SFSA



Bore\Sign	A1	B	C	D	E	F	M	V	W
20	59	22	16	14	M8X1.25	6	4	10	8
25	61	22	16	14	M8X1.25	6	4.5	12	10
32	70	26	19	16.5	M10X1.25	6	6	16	14
40	71	26	19	16.5	M10X1.25	6	6	16	14
50	75	30	22	19.5	M12X1.25	7	6.5	20	17
63	79	30	22	19.5	M12X1.25	7	6.5	20	17

Installation Note



Bore\Sign	M	C
20	M4X0.7	6
25	M4X0.7	6
32	M5X0.8	7
40	M5X0.8	7
50	M6X1.0	9
63	M6X1.0	9
80	M8X1.25	12
100	M8X1.25	12

SFM

Guide Rod Type Cylinder



Specifications

Bore(mm)	20	25	32	40
Acting type	Double Acting			
Working medium	Clean Air(40 μm filtration)			
Working pressure(MPa)	0.1~1.0			
Garanteed pressure(MPa)	1.5			
Working temperature(°C)	-20~70(No freezing)			
Speed range(mm/s)	30~500			
Stroke tolerance(mm)	+1.0 0			
Cushion type	Rubber cushion			
Port size	M5X0.8		G1/8	

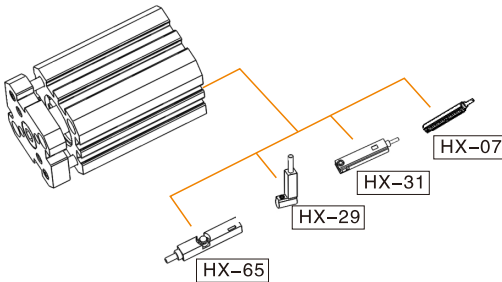
① NPT、PT port size is optional.

How to Order?

Series	Bore	X	Stroke	-	Magnet	-	Thread Type
SFM	20 25 32 40		5 10 15 ...		Blank: No magnet S : With magnet		Blank: G P: PT T: NPT

Order Example:
SFM series basic cylinder, bore 25mm, stroke 20mm, with magnet, G thread ,
ERP code is: SFM25X20-S

Optional Accessories



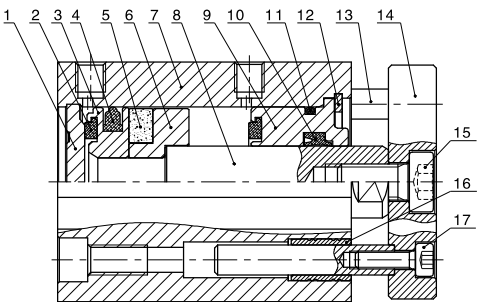
Note:Short stroke please use HX-29 series due to limited space.

Stroke

Bore (mm)		Standard Stroke (mm)																Max. Stroke (mm)	
Double Acting	20~40	5	10	15	20	25	30	35	40	45	50	55	60	70	75	80	90	100	100

Note:The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder.
e.g. 27mm stroke cylinder has the same dimensions of 30 std. stroke cylinder.
When ordering stroke is larger than the maximum stroke, please contact us.

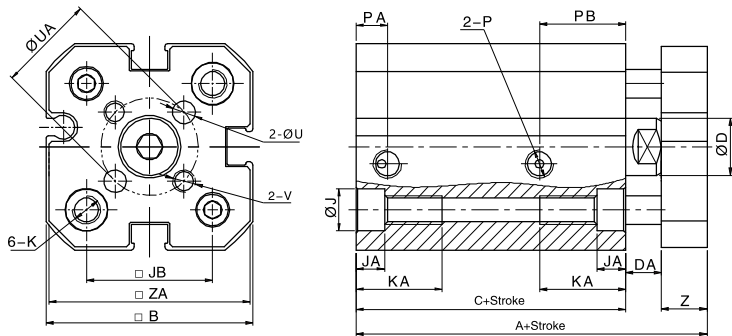
Internal Structure



No.	Part Name	Material
1	Rear cover	Aluminum alloy
2	Anti-bump cushion	TPU
3	Piston	Aluminum alloy
4	Piston seal	NBR
5	Integrated magnet	RbFeB
6	Magnet base	Aluminum alloy
7	Barrel	Aluminum alloy
8	Piston rod	Stainless steel/Carbon steel
9	Head cover	Aluminum alloy
10	Piston rod seal	TPU
11	O-ring	NBR
12	C type retainer ring	Spring steel
13	Guide	Stainless steel
14	Fixing plate	Aluminum alloy
15	Hexagon Socket Cap Head Screw	Carbon steel
16	Slide bearing	Brass
17	Hexagon Socket Cap Head Screw	Carbon steel

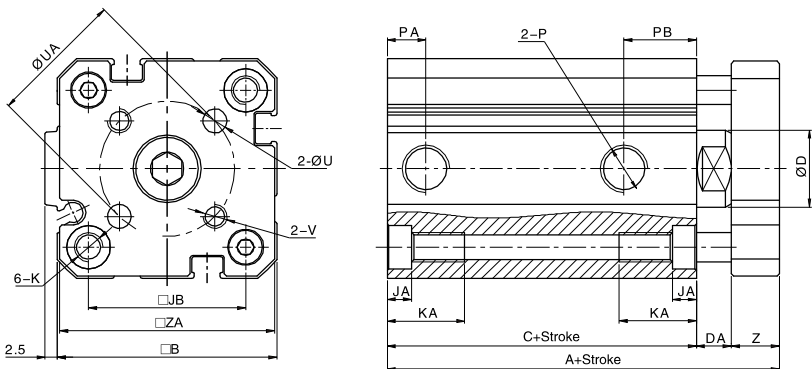
Main Dimension

SFMΦ20、Φ25



Bore/Sign	A	B	C	D	DA	J	JA	JB	K	KA	P	PA	PB	U	UA	V	Z	ZA
20	51	36	37	10	6	7.3	5	22	M5X0.8 Through holeΦ4.2	15	M5X0.8	5.5	15	4	17	M4X0.7	8	35
25	53	40	39	12	6	7.3	5	26	M5X0.8 Through holeΦ4.2	15	M5X0.8	5.5	17	5	22	M5X0.8	8	39

SFMΦ32、Φ40

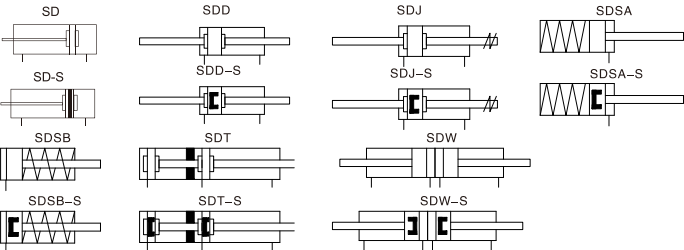
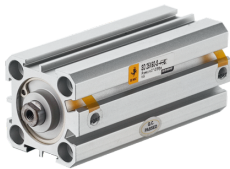


Bore/Sign	A	B	C	D	DA	J	JA	JB	K	KA	P	PA	PB	U	UA	V	Z	ZA
32	61	45.5	44	16	7	9	5	32.5	M6X1.0 Through holeΦ5.2	16	G1/8	8	15	5	28	M5X0.8	10	44.5
40	62.5	53	45	16	7.5	9	5	38	M6X1.0 Through holeΦ5.2	16	G1/8	9.5	16.5	5	33	M5X0.8	10	52

SD

Compact Cylinder

Pneumatic Symbols



Specifications

Bore(mm)	12	16	20	25	32	40	50	63	80	100
Acting type	Double Acting									
Working medium	Clean Air(40 μ m filtration)									
Working pressure(MPa)	0.1~1.0(Double acting) / 0.2~1.0(Single acting)									
Garanteed pressure(MPa)	1.5									
Working temperature(℃)	-20~70(No freezing)									
Speed range(mm/s)	30~500									
Cushion type	Rubber cushion									
Port size	M5×0.8				G1/8①		G1/4①		G3/8①	

① PT、NPT port size is optional.

Product Features

- * Compact cylinder, light weight.
- * Unique slot type barrel design easy for magnet switch install.
- * Equipped with self-lubricating bearings, piston rod no need extra lubricating.
- * Magnet optional.

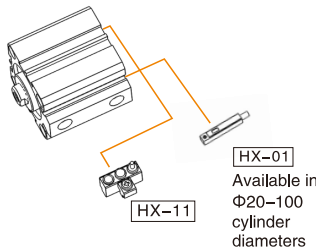
How to Order?

Series No	Type No	Bore X Stroke	Adjustable Stroke	Magnet No	Piston Rod Thread Type	Thread Type
SD	12 25 5 16 ... 10 20 100 15	10 20 30 40 50 75 100	Blank: No magnet S: With magnet	Blank: Female thread M: Male thread	Blank: G P: PT T: NPT	
Blank: Basic type D: Double shaft type J: Double shaft and adjustable stroke type SA: Single acting spring extend SB: Single acting spring return						

Series No	Type No	Bore	X	Stroke1	X	Stroke12	Magnet No	Piston Rod Thread Type	Thread Type
SD		12		5		25	Blank: No magnet		Blank: G
	T: Multi position type	16		10		50	S: With magnet		P: PT
	W: Double shaft and	20		15		75			T: NPT
	Multi position type	25		...		...		Blank: Female thread	
		...						M: Male thread	
		100							

Ordering Example : SD series, single acting spring extend, bore 40mm, stroke 30mm, with magnet, piston rod thread female thread type, G thread.ERP code is :SDSA40X30-S

Optional Accessories (Magnetic Opening)

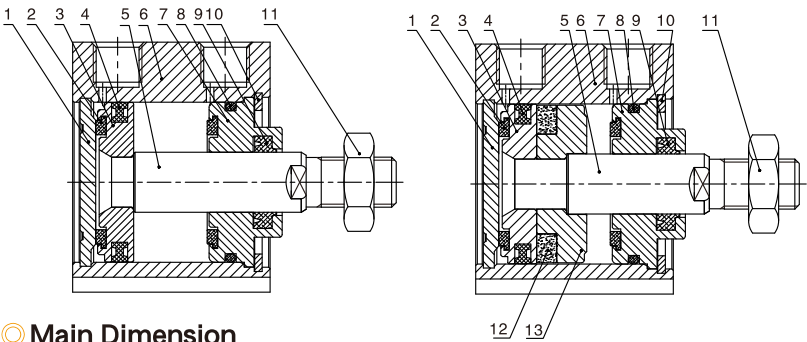


Stroke

Bore (mm)		Standard Stroke (mm)																				Max. Stroke (mm)
Double Acting	12/16	5 10 15 20 25 30 35 40 45 50 55 60																				60
	20	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 100 110 120 130 140 150																				150
	25	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 100 110 120 130 140 150																				150
	32~100	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 100 110 120 130 140 150 160 170 180 190 200																				200
Single Acting	12~63	5 10 15 20 25 30																				30

Note:The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder,e.g. 27mm stroke cylinder has the same dimensions of 30 std. stroke cylinder.

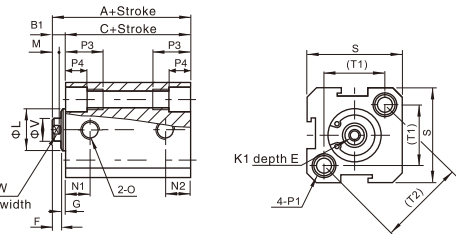
Internal Structure



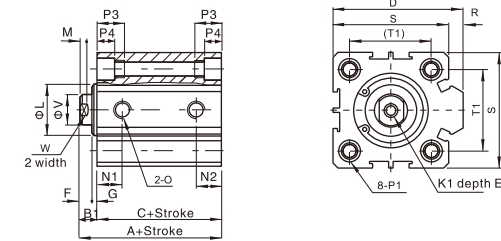
No	Part Name	Material
1	Rear cover	Aluminum alloy
2	Anti-bump cushion	TPU
3	Piston	Aluminum alloy
4	Piston seal	NBR
5	Piston rod	S45C hard chrome carbon steel
6	Barrel	Aluminum alloy
7	Head cover	Aluminum alloy
8	O-ring	NBR
9	Piston rod seal	TPU
10	C type retainer ring	Spring steel
11	Nut	Carbon steel
12	Magnet	RbFeb
13	Magnet base	Aluminum alloy

Main Dimension

SD Φ12-Φ16

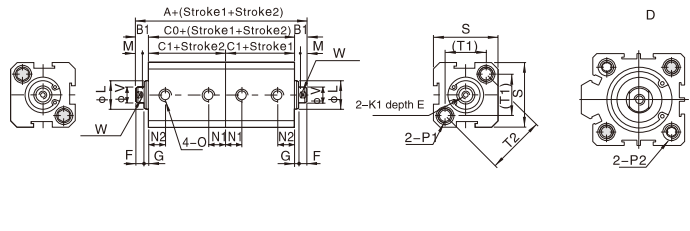


SD Φ20-Φ100

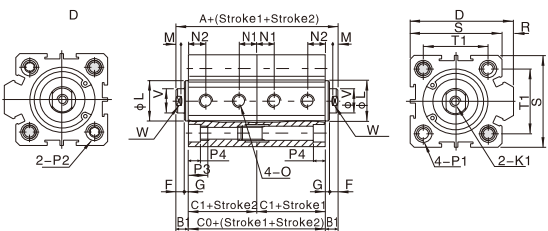


Sign Bore	A		C		B1	D	E	F	G	K1	L	M	N1		N2		O	P1	P3	P4	R	S	T1	T2	V	W
	standard	With magnet	standard	With magnet									St=5	St>5	St=5	St>5										
12	22	32	17	27	5	-	6	4	1	M3X0.5	10.2	3	7.5	7.5	5	5	M5X0.8	Counter bore: Φ6.5 Thread: M5X0.8 Through Hole: Φ4.2	12	4.5	-	25	16.2	23	6	5
16	24	34	18.5	28.5	5.5	-	6	4	1.5	M3X0.5	11	3	8	8	5	5.5	M5X0.8	Counter bore: Φ6.5 Thread: M5X0.8 Through Hole: Φ4.2	12	4.5	-	29	19.8	28	6	5
20	25	35	19.5	29.5	5.5	36	8	4	1.5	M4x0.7	13	3	8.2	9	5	5.5	M5X0.8	Counter bore: Φ6.5 Thread: M5X0.8 Through Hole: Φ4.2	14	4.5	2	34	24	-	8	6
25	27	37	21	31	6	42	10	4	2	M5X0.8	17	3	9	9	5.5	5.5	M5X0.8	Counter bore: Φ8.2 Thread: M6X1.0 Through Hole: Φ5.2	15	5.5	2	40	28	-	10	8
32	31.5	41.5	24.5	34.5	7	50	12	4.5	2.5	M6X1.0	22	3	9	9	6.5	9	1/8"	Counter bore: Φ8.2 Thread: M6X1.0 Through Hole: Φ5.2	16	5.5	6	44	34	-	12	10
40	33	43	26	36	7	58.5	12	4	3	M8X1.25	28	3	9.5	9.5	7.5	7.5	1/8"	Counter bore: Φ10.2 Thread: M8X1.25 Through Hole: Φ6.8	20	7.5	6.5	52	40	-	16	14
50	37	47	28	38	9	71.5	15	5	4	M10X1.5	38	3	8	10.5	8	10.5	1/4"	Counter bore: Φ11 Thread: M8X1.25 Through Hole: Φ6.8	25	8.5	9.5	62	48	-	20	17
63	41	51	32	42	9	84.5	15	5	4	M10X1.5	40	3	9.5	12	9.5	11	1/4"	Counter bore: Φ11 Thread: M8X1.25 Through Hole: Φ6.8	25	8.5	9.5	75	60	-	20	17
80	52	62	41	51	11	104	20	6	5	M14X1.5	45	4	11.5	14.5	11.5	14.5	3/8"	Counter bore: Φ17 Thread: M12X1.75 Through Hole: Φ10.3	25	11	10	94	74	-	25	22
100	63	73	51	61	12	124	20	7	5	M18X1.5	55	4	16	20.5	16	20.5	3/8"	Counter bore: Φ19 Thread: M14X2.0 Through Hole: Φ12.2	30	13	10	114	90	-	32	27

SDW Φ12-Φ16



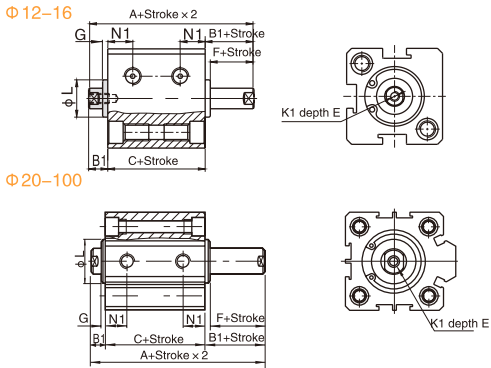
SDW Φ20-Φ100



Bore/Sign	Basic Type			With Magnet			B1	D	E	F	G	K1	L	M	N2		N1	
	A	C0	C1	A	C0	C1									S=5	S>5	S=5	S>5
12	44	34	17	64	54	27	5	—	6	4	1	M3x0.5	10.2	3	7.5	7.5	5	5
16	48	37	18.5	68	57	28.5	5.5	—	6	4	1.5	M3x0.5	11	3	8	8	5	5.5
20	50	39	19.5	70	59	29.5	5.5	36	8	4	1.5	M4x0.7	13	3	8.2	9	5	5.5
25	54	42	21	74	62	31	6	42	10	4	2	M5x0.8	17	3	9	9	5.5	5.5
32	63	49	24.5	83	69	34.5	7	50	12	4.5	2.5	M6x1	22	3	9	9	6.5	9
40	66	52	26	86	72	36	7	58.5	12	4	3	M8x1.25	28	3	9.5	9.5	7.5	7.5
50	74	56	28	94	76	38	9	71.5	15	5	4	M10x1.5	38	3	8	10.5	8	10.5
63	82	64	32	102	84	42	9	84.5	15	5	4	M10x1.5	40	3	9.5	12	9.5	11
80	104	82	41	124	102	51	11	104	20	6	5	M14x1.5	45	4	14.5	14.5	14.5	14.5
100	126	102	51	146	122	61	12	124	20	7	5	M18x1.5	55	4	20.5	20.5	20.5	20.5
Bore/Sign	O		W	P1				P2				P3	P4	R	S	T1	T2	V
12	M5x0.8		5	ø6.5 Thread: M5X0.8 Through Hole: ø4.2				—				12	4.5	—	25	16.2	23	6
16	M5x0.8		5	ø6.5 Thread: M5X0.8 Through Hole: ø4.2				—				12	4.5	—	29	19.8	28	6
20	M5x0.8		6	Counter bore: ø6.5 Thread: M5X0.8 Through Hole: ø4.2				Counter bore: ø6.5 Through Hole: ø5.2				14	4.5	2	34	24	—	8
25	M5x0.8		8	Counter bore: ø8.2 Thread: M6X1.0 Through Hole: ø5.2				Counter bore: ø8.2 Through Hole: ø6.2				15	5.5	2	40	28	—	10
32	1/8"		10	Counter bore: ø8.2 Thread: M6X1.0 Through Hole: ø5.2				Counter bore: ø8.2 Through Hole: ø6.2				16	5.5	6	44	34	—	12
40	1/8"		14	Counter bore: ø10.2 Thread: M8X1.25 Through Hole: ø6.8				Counter bore: ø10 Through Hole: ø8.2				20	7.5	6.5	52	40	—	16
50	1/4"		17	Counter bore: ø11 Thread: M8X1.25 Through Hole: ø6.8				Counter bore: ø11 Through Hole: ø8.5				25	8.5	9.5	62	48	—	20
63	1/4"		17	Counter bore: ø11 Thread: M8X1.25 Through Hole: ø6.8				Counter bore: ø11 Through Hole: ø8.5				25	8.5	9.5	75	60	—	20
80	3/8"		22	Counter bore: ø17 Thread: M12X1.75 Through Hole: ø10.3				Counter bore: ø17 Through Hole: ø12.3				25	11	10	94	74	—	25
100	3/8"		27	Counter bore: ø19 Thread: M14X2 Through Hole: ø12.2				Counter bore: ø19 Through Hole: ø14.2				30	13	10	114	90	—	32

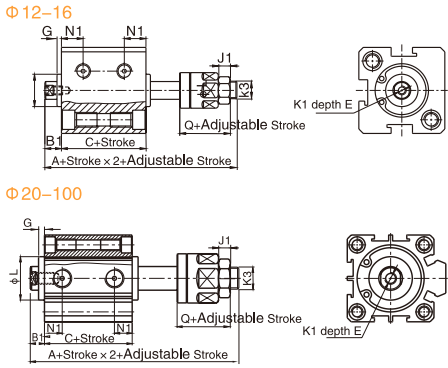
Main Dimension

SDD Φ12-Φ100



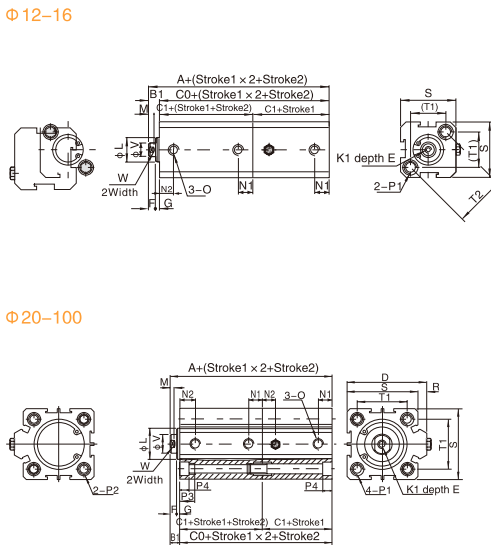
Bore	Basic Type		With Magnet		E		B1	F	G	K1	L	N1	
	A	C	A	C	S≤10	S>10						S=5	S>5
12	27	17	37	27	6	6	5	4	1	M3x0.5	10.2	5.5	6.3
16	29.5	18.5	39.5	28.5	6	6	5.5	4	1.5	M3x0.5	11	6	7.3
20	30.5	19.5	40.5	29.5	8	8	5.5	4	1.5	M4x0.7	15	6.5	7.5
25	33	21	43	31	10	10	6	4	2	M5x0.8	17	7	8
32	38.5	24.5	48.5	34.5	12	12	7	4	3	M6x1	22	6	9
40	40	26	50	36	12	12	7	4	3	M8x1.25	28	8	10
50	46	28	56	38	15(S≤10.11)	15	9	5	4	M10x1.5	38	8	10.5
63	50	32	60	42	15(S≤10.11)	15	9	5	4	M10x1.5	40	9.5	11.8
80	63	41	73	51	13	20	11	6	5	M14x1.5	45	14.5	14.5
100	75	51	85	61	18	20	12	7	5	M18x1.5	55	20.5	20.5

SDJ Φ12-Φ100



Bore	Basic Type		With Magnet		E		B1	Q	G	J1	K1	K3	L	N1	
	A	C	A	C	S≤10	S>10								S=5	S>5
12	40	17	50	27	6	6	5	17	1	4	M3x0.5	M5x0.8	10.2	5.5	6.3
16	42.5	18.5	52.5	28.5	6	6	5.5	17	1.5	4	M3x0.5	M5x0.8	11	6	7.3
20	47.5	19.5	57.5	29.5	8	8	5.5	21	1.5	5	M4x0.7	M6x1.0	15	6.5	7.5
25	54	21	64	31	10	10	6	25	2	6	M5x0.8	M8x1.25	17	7	8
32	61.5	24.5	71.5	34.5	12	12	7	27	3	6	M6x1.0	M10x1.25	22	6	9
40	65	26	75	36	12	12	7	29	3	8	M8x1.25	M14x1.5	28	8	10
50	73	28	83	38	15(S≤10.11)	15	9	32	4	11	M10x1.5	M18x1.5	38	8	10.5
63	77	32	87	42	15(S≤10.11)	15	9	32	4	11	M10x1.5	M18x1.5	40	9.5	11.8
80	94	41	104	51	13	20	11	37	5	13	M14x1.5	M22x1.5	45	14.5	14.5
100	105	51	115	61	18	20	12	37	5	13	M18x1.5	M26x1.5	55	20.5	20.5

STD Φ12-Φ100



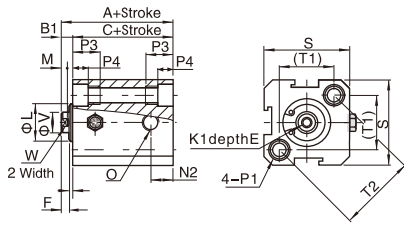
Bore	Basic Type		With Magnet		B1	D	E	F	G	K1	L	M	N1		N2			
	A	C0	C1	A									C0	C1	S=5	S>5	S=5	S>5
12	39	34	17	59	54	27	5	-	6	4	1	M3x0.5	10.2	3	5	5	7.5	7.5
16	42.5	37	18.5	62.5	57	28.5	5.5	-	6	4	1.5	M3x0.5	10	3	5	5.5	8	8
20	44.5	39	19.5	64.5	59	29.5	5.5	36	8	4	1.5	M4x0.7	13	3	5	5.5	8.2	9
25	48	42	21	68	62	31	6	42	10	4	2	M5x0.8	17	3	5.5	5.5	9	9
32	56	49	24.5	76	69	34.5	7	50	12	4	2.4	M6x1	22	3	6.5	9	9	9
40	59	52	26	79	72	36	7	58.5	12	4	3	M8x1.25	28	3	7.5	7.5	9.5	9.5
50	65	56	28	85	76	38	9	71.5	15	5	4	M10x1.5	38	3	8	10.5	8	10.5
63	73	64	32	93	84	42	9	84.5	15	5	4	M10x1.5	40	3	9.5	11	9.5	12
80	93	82	41	113	102	51	11	104	20	6	5	M14x1.5	45	4	14.5	14.5	14.5	14.5
100	114	102	51	134	122	61	12	124	20	7	5	M18x1.5	55	4	20.5	20.5	20.5	20.5

Bore	O	W	P1		P2		P3	P4	R	S	T1	T2	V
12	M5x0.8	5	Ø6.5 Thread: M5X0.8 Through Hole: Ø4.2		-		12	4.5	-	25	16.2	23	6
16	M5x0.8	5	Ø6.5 Thread: M5X0.8 Through Hole: Ø4.2		-		12	4.5	-	29	19.0	28	6
20	M5x0.8	8	Counter bore: Ø6.5 Thread: M5X0.8 Through Hole: Ø4.2 Counter bore: Ø6.2 Thread: M5X1.0 Through Hole: Ø4.6		Counter bore: Ø6.5 Thread: M5X0.8 Through Hole: Ø4.2 Counter bore: Ø6.2 Thread: M5X1.0 Through Hole: Ø4.6		14	4.5	2	34	24	-	8
32	1/8"	10	Counter bore: Ø6.2 Thread: M8X1.0 Through Hole: Ø4.6		Counter bore: Ø6.2 Thread: M8X1.0 Through Hole: Ø4.6		16	5.5	6	40	28	-	10
40	1/8"	14	Counter bore: Ø10.2 Thread: M8X1.25 Through Hole: Ø6.5		Counter bore: Ø10 Thread: M8X1.0 Through Hole: Ø6.2		20	7.5	6.5	52	40	-	16
50	1/4"	17	Counter bore: Ø11 Thread: M8X1.25 Through Hole: Ø6.5		Counter bore: Ø11 Thread: M8X1.25 Through Hole: Ø6.5		25	8.5	9.5	62	48	-	20
63	1/4"	17	Counter bore: Ø11 Thread: M8X1.25 Through Hole: Ø6.5		Counter bore: Ø11 Thread: M8X1.25 Through Hole: Ø6.5		25	8.5	9.5	75	60	-	25
80	3/8"	22	Counter bore: Ø17 Thread: M12x1.75 Through Hole: Ø10.3		Counter bore: Ø17 Thread: M12x1.75 Through Hole: Ø10.3		25	11	10	94	74	-	20
100	3/8"	27	Counter bore: Ø19 Thread: M14x2 Through Hole: Ø12.2		Counter bore: Ø19 Thread: M14x2 Through Hole: Ø14.2		30	13	10	114	90	-	32

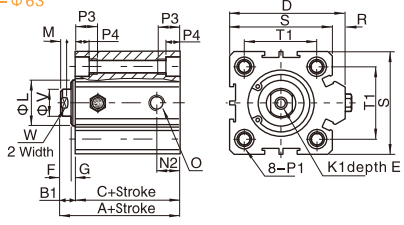
Main Dimension

SDSB/SDSA Φ12-Φ63

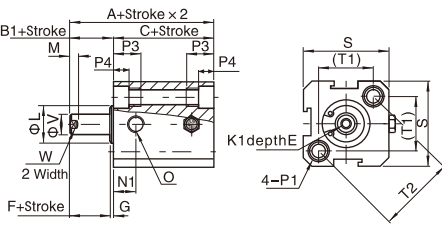
SDSB
Φ12, Φ16



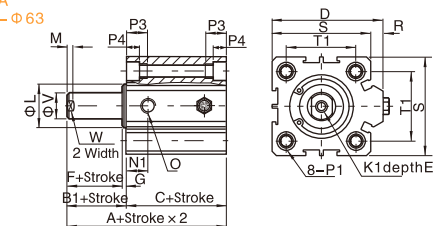
SDSB
Φ20-Φ63



SDSA
Φ12, Φ16



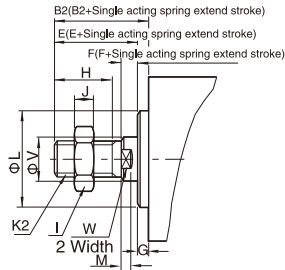
SDSA
Φ20-Φ63



Sign	A (standard)		A (With magnet)		C (standard)		C (With magnet)		B1	D	E	F	G	K1	L	M	N1	N2
Bore	St≤10	St>10	St≤10	St>10	St≤10	St>10	St≤10	St>10										
12	32	42	42	52	27	37	37	47	5	-	6	4	1	M3×0.5	10.2	3	7.5	5
16	34	44	44	54	28.5	38.5	38.5	48.5	5.5	-	6	4	1.5	M3×0.5	11	3	8	5.5
20	35	45	45	55	29.5	39.5	39.5	49.5	5.5	36	8	4	1.5	M4×0.7	13	3	9	5.5
25	37	47	47	57	31	41	41	51	6	42	10	4	2	M5×0.8	17	3	9	5.5
32	41.5	51.5	51.5	61.5	34.5	44.5	44.5	54.5	7	50	12	4.5	2.5	M6×1.0	22	3	9	9
40	43	53	53	63	36	46	46	56	7	58.5	12	4	3	M8×1.25	28	3	9.5	7.5
50	47	57	57	67	38	48	48	58	9	71.5	15	5	4	M10×1.5	38	3	10.5	10.5
63	51	61	61	71	42	52	52	62	9	84.5	15	5	4	M10×1.5	40	3	12	11

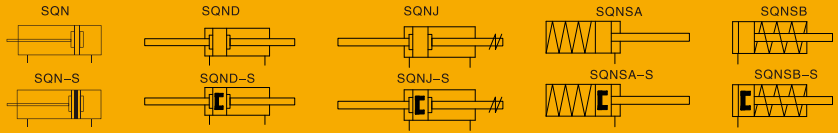
Bore /Sign	O	R	S	T1	T2	P1		P3	P4	V	W
12	M5×0.8	-	25	16.2	23	Counter bore: Φ6.5 Thread: M5×0.8 Through Hole: Φ4.2		12	4.5	6	5
16	M5×0.8	-	29	19.8	28	Counter bore: Φ6.5 Thread: M5×0.8 Through Hole: Φ4.2		12	4.5	6	5
20	M5×0.8	2	34	24	-	Counter bore: Φ6.5 Thread: M5×0.8 Through Hole: Φ4.2		14	4.5	8	6
25	M5×0.8	2	40	28	-	Counter bore: Φ8.2 Thread: M6×1.0 Through Hole: Φ5.2		15	5.5	10	8
32	1/8"	6	44	34	-	Counter bore: Φ8.2 Thread: M6×1.0 Through Hole: Φ5.2		16	5.5	12	10
40	1/8"	6.5	52	40	-	Counter bore: Φ10.2 Thread: M8×1.25 Through Hole: Φ6.8		20	7.5	16	14
50	1/8"	9.5	62	48	-	Counter bore: Φ11 Thread: M8×1.25 Through Hole: Φ6.8		25	8.5	20	17
63	1/4"	9.5	75	60	-	Counter bore: Φ11 Thread: M8×1.25 Through Hole: Φ6.8		25	8.5	20	17

Male Thread Dimension



Bore /Sign	B2	E	F	G	H	I
12	17	16	4	1	10	8
16	17.5	16	4	1.5	10	8
20	20.5	19	4	1.5	13	10
25	23	21	4	2	15	12
32	25	22.5	4.5	2.5	15	17
40	35	32	4	3	25	19
50	37	33	5	4	25	27
63	37	33	5	4	25	27
80	44	39	6	5	30	32
100	50	45	7	5	35	36
Bore /Sign	J	K2	L	M	V	W
12	4	M5×0.8	10.2	3	6	5
16	4	M5×0.8	11	3	6	5
20	5	M6×1.0	13	3	8	6
25	6	M8×1.25	17	3	10	8
32	6	M10×1.25	22	3	12	10
40	8	M14×1.5	28	3	16	14
50	11	M18×1.5	38	3	20	17
63	11	M18×1.5	40	3	20	17
80	13	M22×1.5	45	4	25	22
100	13	M26×1.5	55	4	32	27

SQN Compact Cylinder



Specifications

Bore(mm)	12	16	20	25	32	40	50	63	80	100
Acting type	Double Acting/Single Acting									
Working medium	Clean Air(40 μ m filtration)									
Working pressure(MPa)	0.1~1.0(Double acting) / 0.2~1.0(Single acting)									
Garanteed pressure(MPa)	1.5									
Working temperature(°C)	-20~70(No freezing)									
Speed range(mm/s)	30~500									
Cushion type	Rubber cushion									
Port size	M5×0.8				G1/8①		G1/4①		G3/8①	

① PT、NPT port size is optional.

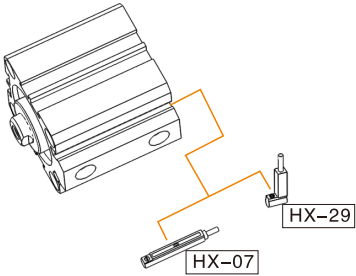
How to Order?

Series No	Type No	Bore	X	Stroke	Adjustable Stroke	Magnet No	Piston Rod Thread Type	Thread Type	Optional Accessories
SQN	Blank: Basic type D: Double shaft type J: Double shaft and adjustable stroke type SA: Single acting spring extend SB: Single acting spring return	12 16 20 25 100	5 10 15 ...	10 20 30 40 50		Blank: No magnet S: With magnet	Blank: Female thread M: Male thread	Blank: G P: PT T: NPT	FA (Only Φ32 ~ Φ100 optional)

Order Example:

SQN Series single acting spring extend cylinder, 40mm bore, 30mm stroke, with magnet, femal thread on piston rod, G thread.
ERP code is: SQNSA40X30-S

Optional Accessories



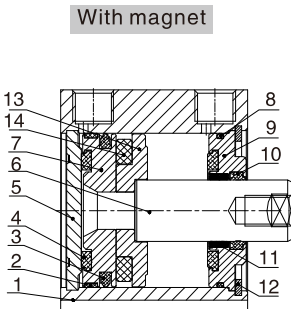
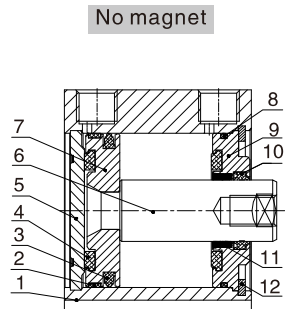
Note:Short stroke please use HX-29 series due to limited space.

Stroke

Bore (mm)		Standard Stroke (mm)															Max. Stroke (mm)						
Double Acting	12/16	5	10	15	20	25	30	35	40	45	50									50			
	20/25	5	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100	110	120	130	140	150	150
	32~100	5	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100						
Single Acting	12/16	5 10 15 20															20						
	20~63	5 10 15 20 25 30															30						

Note: The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 27mm stroke cylinder has the same dimensions of 30 std. stroke cylinder.
When ordering stroke is larger than the maximum stroke, please contact us.

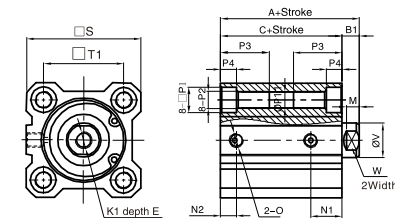
Internal Structure



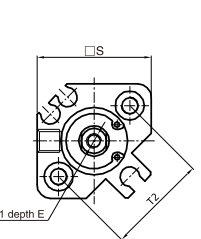
No	Part Name
1	Barrel
2	Wear ring
3	Piston seal
4	Anti-bump cushion
5	Rear cover
6	Piston rod
7	Piston
8	integrated magnet
9	Head cover
10	Piston rod seal
11	Self lubricating bearing
12	C type retainer ring
13	Magnet base
14	Magnet

Main Dimension

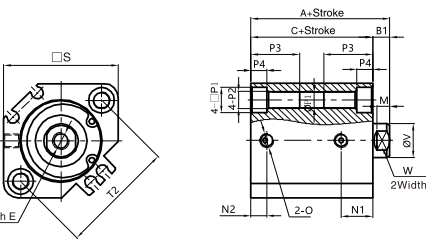
SQN Φ12-Φ25 (No magnet)



SQN Φ12 (With magnet)

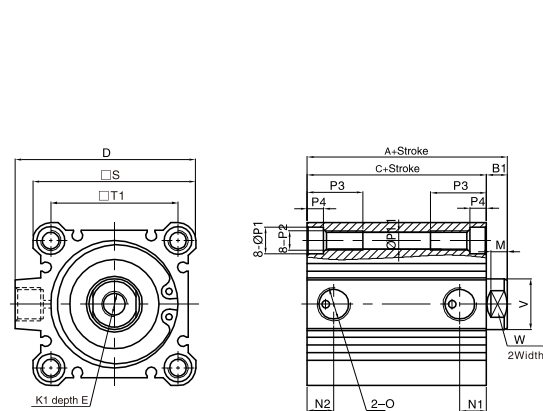


SQN Φ16-Φ25(With magnet)



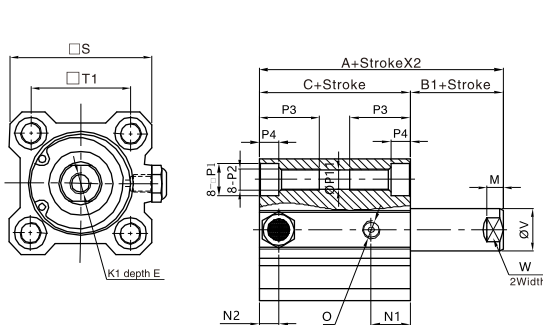
Model	Basic Type				With Magnet				B1	D	E	M
	Sign	A	C		N1	N2	A	C				
Bore	St≤50	St≥60	St≤50	St≥60								
12	20.5	-	17	-	7.5	5	31.5	28	9	5	3.5	6
16	22	-	18.5	-	8	5.5	34	30.5	9.5	5.5	3.5	8
20	24	34	19.5	29.5	9	5.5	36	31.5	9.5	5.5	4.5	7
25	27.5	37.5	22.5	32.5	11	5.5	37.5	32.5	11	5.5	5	12
Bore/Sign	K1	O	P1	P11	P2	P3	P4	S	T1	T2	V	W
12	M3x0.5	M5x0.8	6	3.4	M4x0.7	11	3.5	25	15.5	22	6	5
16	M4x0.7	M5x0.8	6	3.4	M4x0.7	11	3.5	29	20	28	8	6
20	M5x0.8	M5x0.8	9	5.5	M6x1.0	17	5.5	36	25.5	36	10	8
25	M6x1.0	M5x0.8	9	5.5	M6x1.0	17	5.5	40	28	40	12	10

SQN Φ32-Φ100

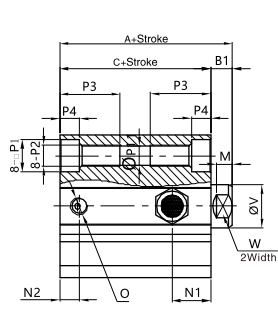


Model	Basic Type				With Magnet				B1	D	E	M
	Sign	A	C		N1	N2	A	C				
Bore	St≤50	St≥60	St≤50	St≥60								
32	St=5	30	40	23	33	7.5	6.5	40	33	10.5	7.5	7
40	St>5	36.5	46.5	29.5	39.5	11	8	46.5	39.5	11	8	7
50	St=5	38.5	48.5	30.5	40.5	9	9	48.5	40.5	10.5	8	71
63	St>5	44	54	36	46	14	9.5	54	46	15	10.5	8
80	St=5	53.5	63.5	43.5	53.5	16	14	63.5	53.5	16	14	10
100	St>5	65	75	53	63	20	17.5	75	63	20	17.5	12
Bore/Sign	K1	O	P1	P11	P2	P3	P4	S	T1	T2	V	W
32	M8x1.25	1/8"	9	5.5	M6x1.0	17	5.5	45	34	-	16	14
40	M8x1.25	1/8"	9	5.5	M6x1.0	17	5.5	52	40	-	16	14
50	M10x1.5	1/4"	10.5	6.6	M8x1.25	22	6.5	64	50	-	20	17
63	M10x1.5	1/4"	14	9	M10x1.5	28.5	9	77	60	-	20	17
80	M16x2.0	3/8"	17	11	M12x1.75	35.5	11	98	77	-	25	22
100	M20x2.5	3/8"	17	11	M12x1.75	35.5	11	117	94	-	32	27

SQNSA Φ12-Φ25 (No magnet)

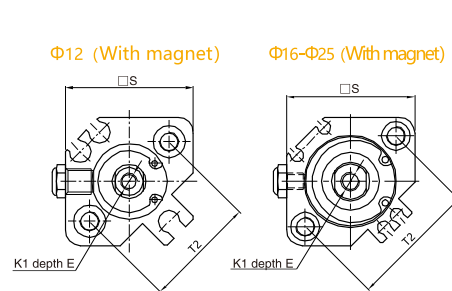


SQSB Φ12-Φ25 (No magnet)

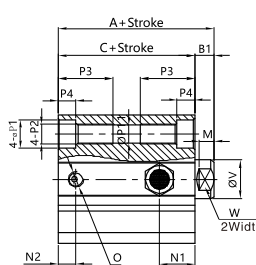


Main Dimension

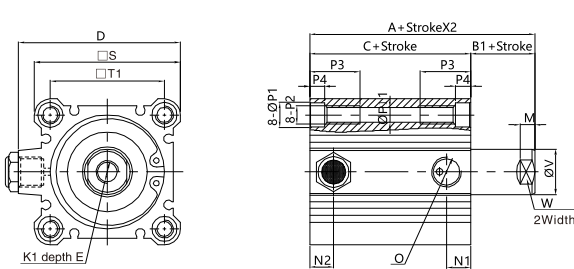
SQNSA Φ12-Φ25 (With magnet)



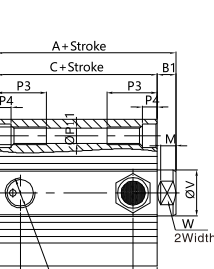
SQNSB Φ12-Φ25 (With magnet)



SQNSA Φ32-Φ63



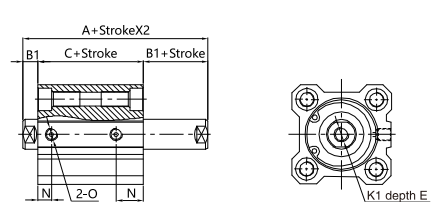
SQNSB Φ32-Φ63



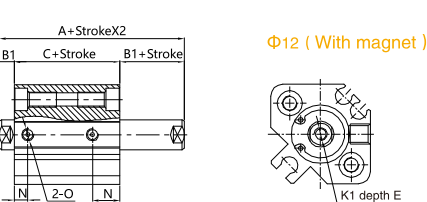
Model	Basic Type				N1	N2	B1	D	E
	Stroke	A	C						
Bore /Sign	5/10	15/20	25/30	5/10	15/20	25/30			
12	25.5	30.5	-	22	27	-	7.5	5	3.5
16	27	32	-	23.5	28.5	-	8	5.5	3.5
20	29	34	39	24.5	29.5	34.5	9	5.5	4.5
25	32.5	37.5	42.5	27.5	32.5	37.5	11	5.5	5
32	35	40	45	28	33	38	10.5	7.5	7
40	41.5	46.5	51.5	34.5	39.5	44.5	11	8	7
50	48.5	53.5	58.5	40.5	45.5	50.5	10.5	10.5	8
63	54	59	64	46	51	56	15	10.5	8
Bore /Sign	O	P1	P11	P2	P3	P4			
12	M5x0.8	6	3.4	M4x0.7	11	3.5			
16	M5x0.8	6	3.4	M4x0.7	11	3.5			
20	M5x0.8	9	5.5	M6x1.0	17	5.5			
25	M5x0.8	9	5.5	M6x1.0	17	5.5			
32	1/8"	9	5.5	M6x1.0	17	5.5			
40	1/8"	9	5.5	M6x1.0	17	5.5			
50	1/4"	10.5	6.6	M8x1.25	22	6.5			
63	1/4"	14	9	M10x1.5	28.5	9			

Model	Basic Type				N1	N2	K1
	Stroke	A	C				
Bore /Sign	5/10	15/20	25/30	5/10	15/20	25/30	
12	36.5	41.5	-	33	38	-	M3x0.5
16	39	44	-	35.5	40.5	-	M4x0.7
20	41	46	51	36.5	41.5	46.5	M5x0.8
25	42.5	47.5	52.5	37.5	42.5	47.5	M6x1.0
32	45	50	55	38	43	48	M8x1.25
40	51.5	56.5	61.5	44.5	49.5	54.5	M8x1.25
50	58.5	63.5	68.5	50.5	55.5	60.5	M10x1.5
63	64	69	74	56	61	66	M10x1.5
Bore /Sign	M	S	T1	T2	V	W	
12	3.5	25	15.5	22	6	5	
16	3	29	20	28	8	6	
20	4	36	25.5	36	10	8	
25	4.5	40	28	40	12	10	
32	6	45	34	-	16	14	
40	6	52	40	-	16	14	
50	6.5	64	50	-	20	17	
63	6.5	77	60	-	20	17	

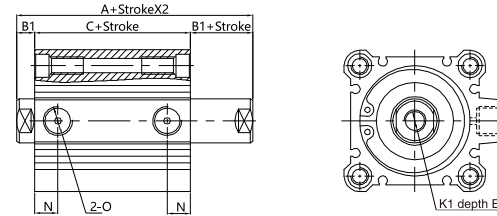
SQND Φ12-Φ25(No magnet)



SQND Φ12-Φ25(With magnet)



SQND Φ32-Φ100

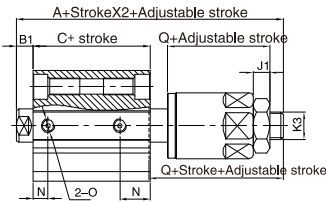


Bore /Sign	A		C		B1	E	N
	Standard	With magnet	Standard	With magnet			
12	32.2	39.4	25.2	32.4	3.5	6	9
16	33	43	26	36	3.5	8	9.5
20	35	47	26	38	4.5	7	9.5
25	39	49	29	39	5	9.5(St=5)/12(St>5)	11
32	44.5	54.5	30.5	40.5	7	9(St≤10)/13(St>10)	10
40	54	64	40	50	7	11(St≤10)/13(St>10)	13
50	56.5	66.5	40.5	50.5	8	12(St≤10)/15(St>10)	13.5
63	58	68	42	52	8	12(St≤10)/15(St>10)	16
80	71	81	51	61	10	14(St≤15)/20(St>15)	16
100	84.5	94.5	60.5	70.5	12	20(St≤25)/26(St>25)	21

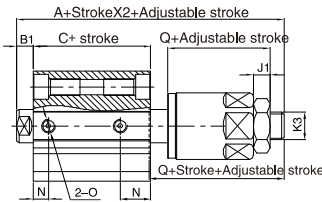
Note: Not marked dimensions is same as standard type. Male thread type pls check this page.

Main Dimension

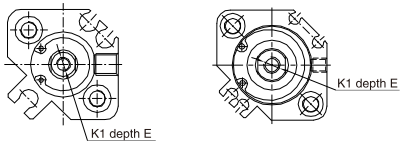
SQNJ Φ 12- Φ 25(No magnet)



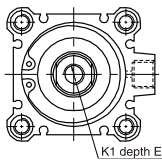
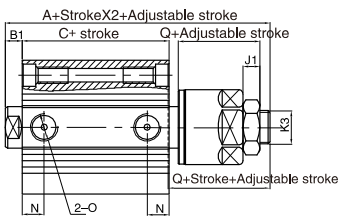
SQNJ Φ 12- Φ 25(With magnet)



Φ12 (With magnet) Φ16-Φ25 (With magnet)

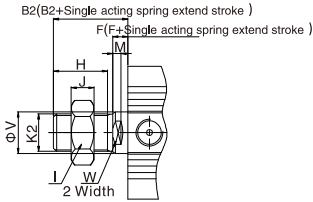


SQNJ Φ 32- Φ 100



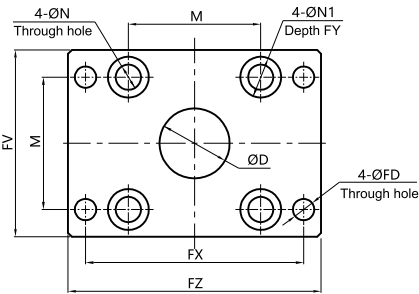
Bore /Sign	A		C		B1	E	N	Q	J1	K3
	Standard	With magnet	Standard	With magnet						
12	45.2	52.4	25.2	32.4	3.5	6	9	17	4	M5x0.8
16	50	60	26	36	3.5	8	9.5	21	5	M6x1.0
20	55	67	26	38	4.5	7	9.5	25	6	M8x1.25
25	61.5	71.5	29	39	5	9.5(St≤5)/12(St>5)	11	28	6	M10x1.25
32	67	77	30.5	40.5	7	9(St≤10)/13(St>10)	10	30	8	M14x1.5
40	75.5	85.5	40	50	7	11(St≤10)/13(St>10)	13	29	8	M14x1.5
50	80.5	90.5	40.5	50.5	8	12(St≤10)/15(St>10)	13.5	32	11	M18x1.5
63	82	92	42	52	8	12(St≤10)/15(St>10)	16	32	11	M18x1.5
80	97.3	107.3	51	61	10	14(St≤15)/20(St>15)	16	37	13	M22x1.5
100	106.5	116.5	60.5	70.5	12	20(St≤25)/26(St>25)	20	37	13	M26x1.5

Male type dimension



Bore /Sign	B2	F	H	I	J	K2	M	V	W
12	14	3.5	9	8	4	M5x0.8	3.5	6	5
16	15.5	3.5	10	10	5	M6x1.0	3	8	6
20	18.5	4.5	12	12	6	M8x1.25	4	10	8
25	22.5	5	15	17	6	M10x1.25	4.5	12	10
32	28.5	5	20.5	19	8	M14x1.5	4	16	14
40	28.5	5	20.5	19	8	M14x1.5	4	16	14
50	33.5	5	26	27	11	M18x1.5	4	20	17
63	33.5	5	26	27	11	M18x1.5	4	20	17
80	43.5	8	32.5	32	13	M22x1.5	6	25	22
100	43.5	8	32.5	36	13	M26x1.5	5.5	32	27

FA

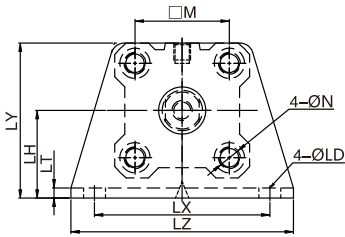
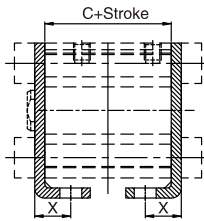


Bore/Sign	M	N	N1	FD	FT	FV	FX	FY	FZ	D	Matching screws (Short head hexagon socket head screw)
SQN32-FA	34	6.5	10.5	5.5	8	48	56	4.3	65	23	GSH6X16B(Black)X4
SQN40-FA	40	6.5	10.5	5.5	8	54	62	4.3	72	29	GSH6X16B(Black)X4
SQN50-FA	50	8.5	13.5	6.5	9	67	76	5.3	89	36	GSH8X16B(Black)X4
SQN63-FA	60	10.5	16.5	9	10	80	92	6.3	108	36	GSH10X20B(Black)X4
SQN80-FA	77	12.5	18.5	11	12	99	116	7.5	134	44	GSH12X25B(Black)X4
SQN100-FA	94	12.5	18.5	11	12	117	136	7.5	154	60	GSH12X25B(Black)X4

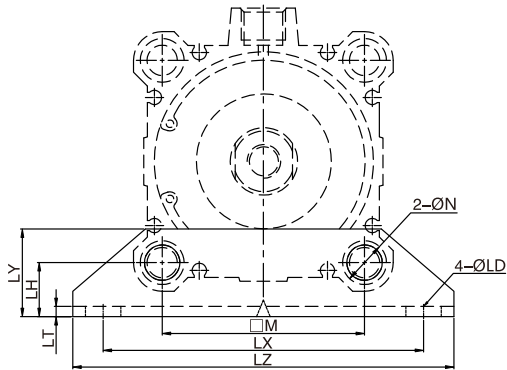
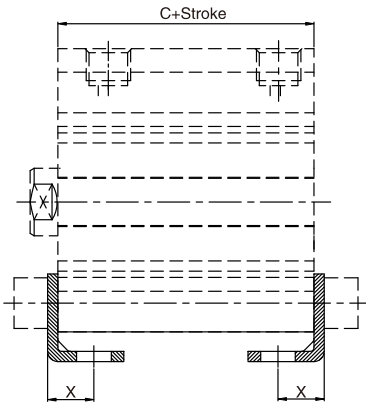
Note: Surface treatment: Shot blasting-Electrophoresis (black)

Main Dimension

Attachment LB(Ø12~Ø25)



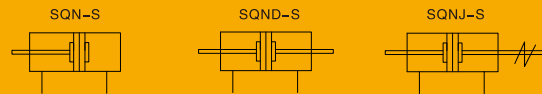
Attachment LB(Ø32~Ø100)



Bore/Symbol	C		Attached Magnet	M	N	X	LD	LH	LT	LX	LY	LZ
	Standard	Stroke										
12	17	—	28	15.5	4.5	8	4.5	17	2	34	29.5	44
16	18.5	—	30.5	20	4.5	8	4.5	19	2	38	33.5	48
20	19.5	29.5	31.5	25.5	6.5	9.2	6.5	24	3	48	42	62
25	22.5	32.5	32.5	28	6.5	10.7	6.5	26	3	52	46	66
32	23	33	33	34	6.5	11.2	6.5	13	3	57	20	71
40	29.5	39.5	39.5	40	6.5	11.2	6.5	13	3	64	20	78
50	30.5	40.5	40.5	50	8.5	12.2	8.5	14	3	79	22	95
63	36	48	46	60	10.5	13.7	10.5	16	3	95	26	113
80	43.5	53.5	53.5	77	13	16.5	13	20.5	4.5	118	32	140
100	53	63	63	94	13	23	13	24	6	137	36	162

SQN

Compact Cylinder (Large bore size)



© Specifications

Bore(mm)	125	140
Acting type	Double Acting	
Working medium	Clean Air(40 μm filtration)	
Working pressure(MPa)	0.15~1.0MPa(22~145psi)(1.5~10bar)	
Garanteed pressure(MPa)	1.5MPa(215psi)	
Working temperature(°C)	-20~70	
Speed range(mm/s)	30 ~ 500	
Stroke tolerance range	Stroke ≤ 100 ⁺¹ ₀	Stroke > 100 ^{+1.5} ₀
Cushion type	Rubber cushion	
Port size	G, PT, NPT port is optional	

Product features

1. According to JIS standard
2. Cylinder body and cylinder rear covers are fixed by C Type rings, stable and compact
3. Inside hole manufacture by hardness oxidation process, wearproof and long life span.
4. Compact design, save assembly space
5. Cylinder has two type sensor hole, multiple choice, easy operation
6. Multiple port size is optional.

© How to Order?

Series No.	Type No. Bore X Stroke	Adjustable Stroke	Magnet	Piston Rod Thread Type	Thread Type
SQN	125 140	10 20 30 40 50 75 100	S: with magnet Blank: without magnet	M: male thread Blank: female thread	Blank: G P: PT T: NPT

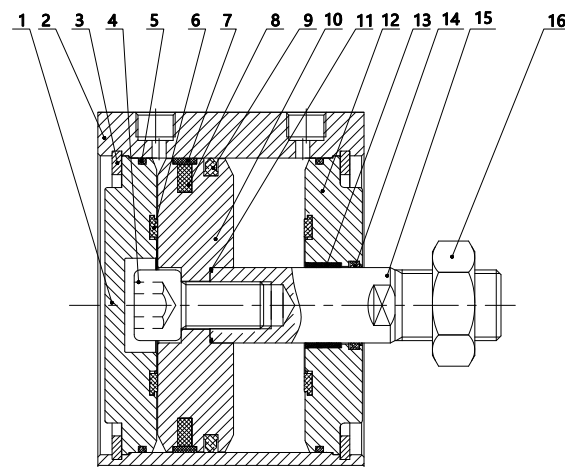
Order Example:

SNQ Series Double shaft type and adjustable stroke , 125mm bore, 50mm stroke, adjustable 50mm stroke , with magnet, female thread on piston rod, G thread.
ERP code: SNQNJ125X50-50-S

Stroke

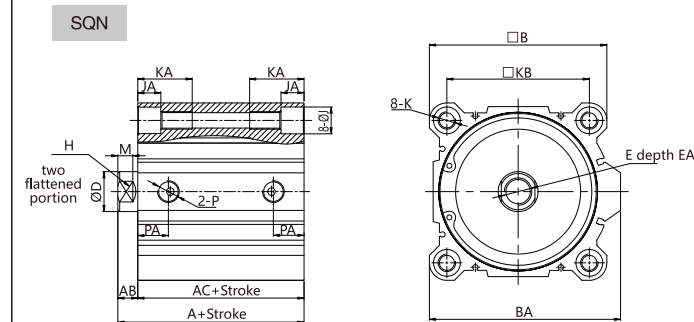
Bore(mm)	Standard Stroke(mm)	Max. Stroke(mm)
125	10 20 30 40 50 75 100 125 150 175 200 250 300	300
140		

Internal Structure



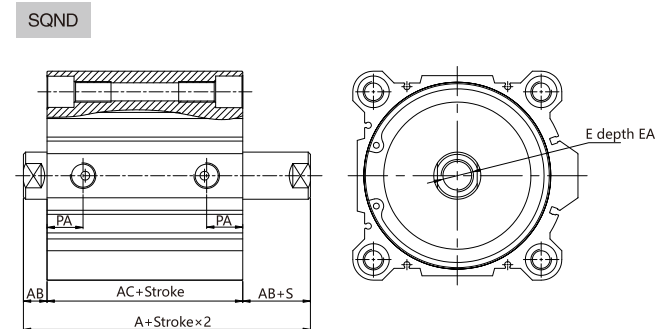
NO.	Part name	Material
1	rear cover	Aluminum
2	Barrel	Aluminum
3	C type retainer ring	Spring steel
4	Hexagon socket head cap screws	Carbon Steel
5	O ring	NBR
6	Anti-bump cushion	NBR
7	Wear ring	PTFE
8	Split type magnet	Plastic rubber
9	Piston rod seal	NBR
10	Piston	Aluminum
11	O-ring	NBR
12	Head cover	Aluminum
13	Bearing	Composite material
14	Head cover dust ring	NBR
15	Piston rod	\$45C hard chrome carbon steel
16	hexagon nut	Carbon Steel

© Main Dimension

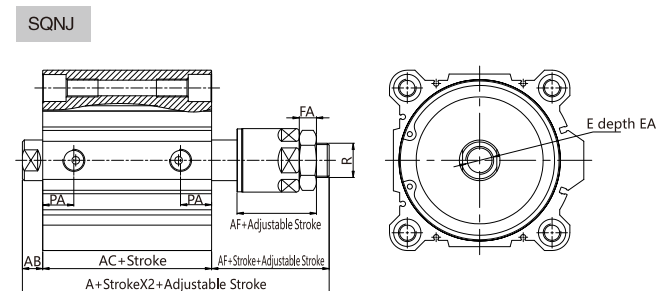


Bore/Sign	A	AB	AC	B	BA	D	E	EA(St≤10)	EA(St>10)	H
125	99	16	83	142	153	32	M22X2.5	22.5	30	27
140	99	16	83	158	168	32	M22X2.5	22.5	30	27

Bore/Sign	J	JA	K	KA	KB	P	PA	M
125	21.5	18.4	M14X2 through hole: Ø12.3	43.5	114	G3/8	24.5	12
140	21.5	18.4	M14X2 through hole: Ø12.3	43.5	128	G3/8	24.5	12

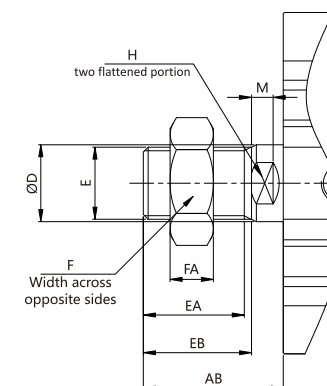


Bore/Sign	A	AB	AC	E	EA(St≤10)	EA(St>10)	PA
125	115	16	83	M22X2.5	22.5	30	24.5
140	115	16	83	M22X2.5	22.5	30	24.5

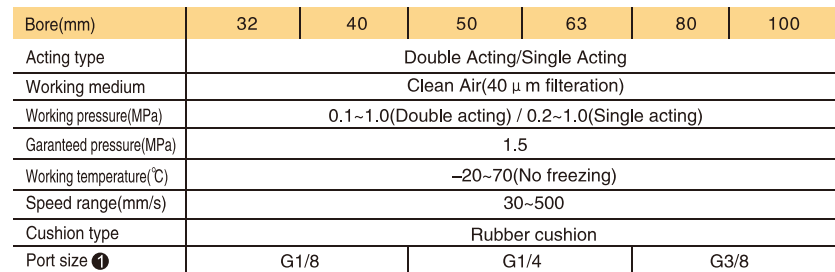


Bore/Sign	A	AB	AC	AF	E	EA(St≤10)	EA(St>10)	FA	PA	R
125	140.8	16	83	42.5	M22X2.5	22.5	30	13.5	24.5	M27X2
140	140.8	16	83	42.5	M22X2.5	22.5	30	13.5	24.5	M27X2

Male Thread Type Dimension



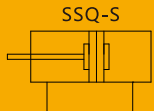
Bore/Sign	AB	D	AF	E	EA	EB	F	FA	H	M
125	58	32	42.5	M30X1.5	42	45	45	18	27	9
140	58	32	42.5	M30X1.5	42	45	45	18	27	9



No.	Part Name	Material
1	Barrel	Aluminum alloy
2	Wear ring	PTEE
3	Piston seal	NBR
4	Anti-bump cushion	NBR/TPU
5	Rear cover	Aluminum alloy
6	Piston rod	S45C hard chrome carbon steel
7	Piston	Aluminum alloy
8	Magnet	Plasic
9	Magnet base	Aluminum alloy
10	O-ring	NBR
11	Head cover	Aluminum alloy
12	Piston rod seal	TPU
13	Self lubricating bearing	Bronze powder
14	C-type retainer ring	Spring steel

Bore/Sign	AB	D	E	EA	FA	F	H	M
32	38.5	16	M14X1.5	23.5	8	19	14	22
40	38.5	16	M14X1.5	23.5	8	19	14	28
50	43.5	20	M18X1.5	28.5	11	27	17	35
63	43.5	20	M18X1.5	28.5	11	27	17	35
80	53.5	25	M22X1.5	35.5	13	32	22	43
100	53.5	32	M26X1.5	35.5	13	36	27	59

SSQ
Compact Cylinder



Specifications

Bore(mm)	12	16	20	25
Acting type	Double Acting			
Working medium	Clean Air(40 μm filtration)			
Working pressure	0.1~1.0MPa			
Guaranteed pressure	1.5MPa(215psi)			
Working temperature °C	-20~70(No freezing)			
Speed range mm/s	50 ~ 500			
Stroke tolerance mm	Standard stroke $+{}^1_0$ Long stroke $+{}^1_0$ ⁻⁴			
Cushion type	Rubber cushion			

Product Features

- 1. The magnetic switch of each cylinder bore has 3 mounting surfaces to choose from.
- 2. Compact design, save more installation space.
- 3. Inner hole adopts hard oxidation process, good wear resistance and durability.
- 4. Installation position is combined with the through hole type and the thread type, convenient to install.

How to Order?

Series No	Type No	Bore	X	Stroke	-	Magnet No	-	Piston Rod Thread Type
SSQ	Blank: Basic type	12 16 20 25				S: With magnet Blank: No magnet		M: Male thread Blank: Female thread

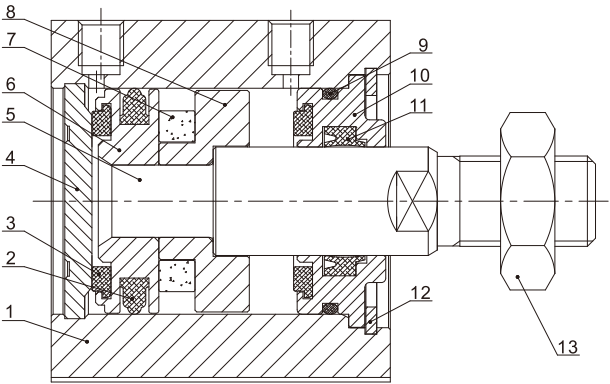
Order Example:
SSQ Series cylinder, 25mm bore, 50mm stroke, with magnet, female thread on piston rod.
ERP code is: SSQ25X50-S

Stroke

Bore (mm)	Standard Stroke(mm)	Long Stroke(mm)
12	5 10 15 20 25 30	35 40 45 50
16		
20	5 10 15 20 25 30 35 40 45 50	75 100 125 150
25		

"Note: The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder.
e.g. 39mm stroke cylinder has the same dimensions of 40 std. stroke cylinder."

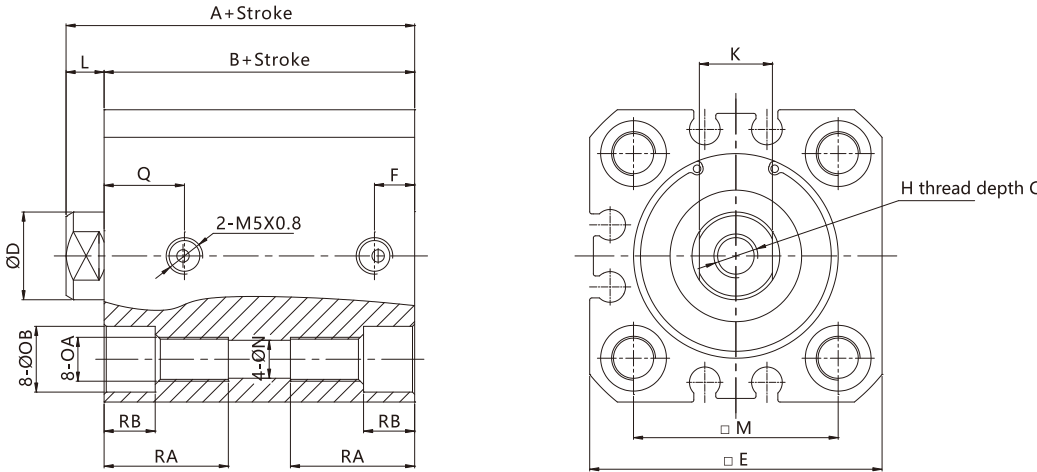
Internal Structure



No	Part Name	Material
1	Barrel	Aluminum alloy
2	Piston seal	NBR
3	Anti-bump cushion	TPU
4	Rear cover	Aluminum alloy
5	Piston rod	S45C hard chrome carbon steel
6	Piston	Brass(Bore 12/16) Aluminum alloy(Bore 20/25)
7	Integrated magnet	Sintered NdFeB
8	Magnet base	Aluminum alloy
9	O-ring	NBR
10	Head cover	Brass(Bore 12/16) Aluminum alloy(Bore 20/25)
11	Piston rod seal	NBR
12	C type retainer ring	Spring steel
13	Nut	Carbon steel

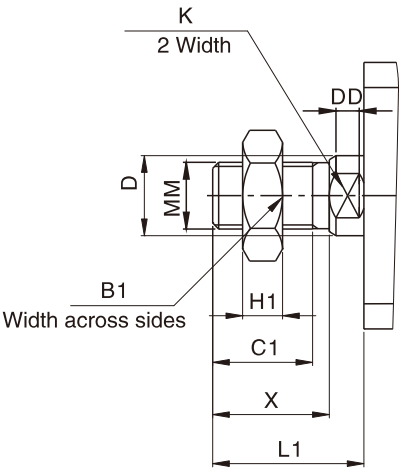
External Dimensions

SSQ



Bore/Sign	Standard stroke												Long stroke					C	D	E	H	K	M	N	OA	OB	RA	RB
	no magnet						with magnet						A	B	F	Q	L											
	A	B	F	Q	L	A	B	F	Q	L																		
12	20.5	17	5	7.5	3.5	25.5	22	5	7.5	3.5	45.5	32	7	9	13.5	6	6	25	M3X0.5	5	15.5	3.4	M4X0.7	5.8	7	4		
16	20.5	17	5	7.5	3.5	25.5	22	5	7.5	3.5	45.5	32	7	9.5	13.5	8	8	29	M4X0.7	6	20	3.4	M4X0.7	6.5	7	4		
20	24	19.5	5.5	9	4.5	34	29.5	5.5	9	4.5	55.5	41	5.5	9.5	14.5	7	10	36	M5X0.8	8	25.5	5.2	M6X1.0	9	10	7		
25	27.5	22.5	5.5	11	5	37.5	32.5	5.5	11	5	59	44	5.5	12.5	15	12	12	40	M6X1.0	10	28	5.5	M6X1.0	9	10	7		

Male Type Dimension



Bore/Sign	B1	D	MM	H1	C1	X	L1		K	DD
							Standard stroke	Long stroke		
12	8	6	M5X0.8	4	9	10.5	14	24	5	3.5
16	10	8	M6X1.0	5	10	12	15.5	25.5	6	3
20	12	10	M8X1.25	6	12	14	18.5	28.5	8	4
25	17	12	M10X1.25	6	15	17.5	22.5	32.5	10	4.5

SQM
Guide Rod Type Cylinder



Specifications

Bore Size(mm)	12	16	20	25	32	40
Acting type	Double Acting					
Working medium	Clean Air (40 μ filtration)					
Working pressure (Mpa)	0.1~1.0					
Guaranteed pressure(Mpa)	1.5					
Working temperature	-20~70(No freezing)					
Speed range	30~500					
Stroke tolerance	+1.0 0					
Cushion type	Rubber cushion					
Port Size	M5X0.8				G1/8	
Non-rotating tolerance	± 0.2°		± 0.1°			

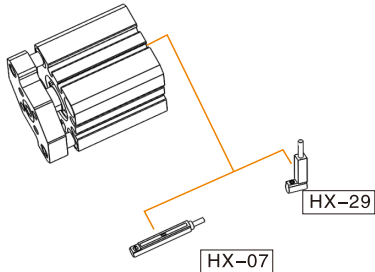
① PT、NPT port size is optional.

How to Order?

Series No	Bore	X	Stroke	Magnet No	Thread Type
SQM	12	5	Blank: No magnet S: With magnet	Blank: G P: PT T: NPT	
	16	10			
	20	15			
	25	...			
	32				
	40				

Order Example:
SQM series basic type cylinder, 25mm bore, 20mm stroke, with magnet, G thread, no mounting,
ERP code is: SQM 25X20-S

Optional Accessories



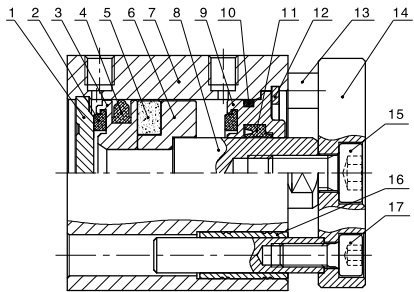
Note:Short stroke please use HX-29 series due to limited space.

Stroke

Bore (mm)	Standard Stroke (mm)	Max. Stroke (mm)
12、16	5 10 15 20 25 30	30
20、25	5 10 15 20 25 30 35 40 45 50	50
32、40	5 10 15 20 25 30 35 40 45 50 75 100	100

Note:The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder.
e.g. 27mm stroke cylinder has the same dimensions of 30 std. stroke cylinder.
When ordering stroke is larger than the maximum stroke, please contact us.

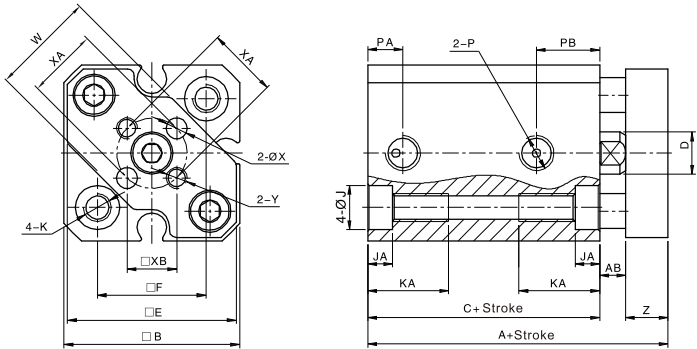
Internal Structure



NO.	Part Name	Material
1	Rear cover	Aluminum alloy
2	Anti-bump cushion	TPU
3	Piston	Aluminum alloy
4	Piston seal	NBR
5	Integral magnet	RbFeB
6	Magnet base	Aluminum alloy
7	Barrel	Aluminum alloy
8	Piston rod	Carbon steel
9	head cover	Aluminum alloy
10	O-ring	NBR
11	Piston rod seal	TPU
12	C type retainer ring	Spring steel
13	Rod	Stainless steel
14	Fixed plate	Aluminum alloy
15	Hex socket cap screw	Carbon steel
16	Sliding bearing	Brass
17	Hex socket cap screw	Carbon steel

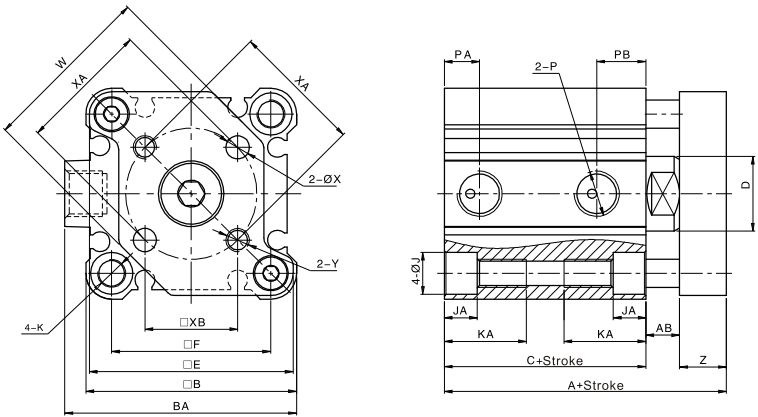
Main Dimension

SQMΦ12~25



Bore/Sign	A		C		AB	B	D	E	F	J	JA	K
	Standard	With magnet	Standard	With magnet								
12	26.5	37.5	17	28	3.5	25	6	24	15.5	6.3	3.5	M4X 0.7 Throgh hole: Φ 3.4
16	28	40	18.5	30.5	3.5	29	8	28	20	6.5	3.5	M4X 0.7 Throgh hole: Φ 3.4
20	32	44	19.5	31.5	4.5	36	10	35	25.5	9	7	M6X 1.0 Throgh hole: Φ 5.2
25	35.5	45.5	22.5	32.5	5	40	12	39	28	9	7	M6X 1.0 Throgh hole: Φ 5.2
Bore/Sign	KA		P	PA	PB		W	X	XA	XB	Y	Z
	Standard	With magnet			Standard	With magnet						
12	11.5	M5X0.8	5	7.5	9	15	3	10	7.1	M3X0.5	6	
16	11.5	M5X0.8	5.5	8	9.5	21	3	14	9.9	M3X0.5	6	
20	18	M5X0.8	5.5	9	9	26	4	17	12	M4X0.7	8	
25	17.5	M5X0.8	5.5	11	11	29	5	22	15.6	M5X0.8	8	

SQMΦ32、Φ40



Bore/Sign	A		C		AB	B	BA	D	E	F	J	JA
	Standard	With magnet	Standard	With magnet								
32	40	50	23	33	7	45	49.5	16	43.5	34	9	3
40	46.5	56.5	29.5	39.5	7	52	57	16	50.5	40	9	3
Bore/Sign	K		KA	P	PA	PB	W	X	XA	XB	Y	Z
	Standard	With magnet										
32	M6X 1.0 Throgh hole: Φ 5.2		17.5	1/8"	7.5	10.5	37	5	28	19.8	M5X0.8	10
40	M6X 1.0 Throgh hole: Φ 5.2		17.5	1/8"	8	11	46	5	33	23.3	M5X0.8	10

SQK
Rotary Clamp Cylinder

SQK: Standard double-action type, with magnetism



Specifications

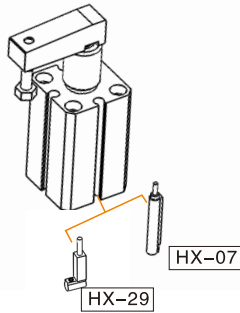
Bore(mm)	16	20	25	32	40
Acting Type	Double Acting				
Working medium	Clean Air(40 μ m filtration)				
Working pressure (MPa)	0.15~1.0(MPa)				
Guaranteed pressure (MPa)	1.5(MPa)				
Working temperature (°C)	-20~70(No freezing)				
Piston Speed (mm/s)	50~200				
Rotation angle	90° ± 2°				
Rotation Direction	Left rotation or right rotation				
Rotation Stroke(mm)	7.5	9.5			15
Clamping stroke (mm)	10 20 30			10 20 30 50	
Stroke Tolerance	+1.0 0				
Cushion Type	Rubber cushion				
Port Size	M5x0.8			G1/8	
Non-rotating accuracy (clamping part)	± 1.2°			± 0.9°	

How to Order?

Series No	Rotation Direction	Bore X Stroke	Magnet.No	Type No	Mounting Type	Thread Type
SQK	R:Right Rotation L:Left Rotation	16 20 25 32 40 10 20 30 50	S: With magnet	Blank: Basic Type(with arm) J: No arm	Blank: No mounting	Blank: G P: PT T: NPT

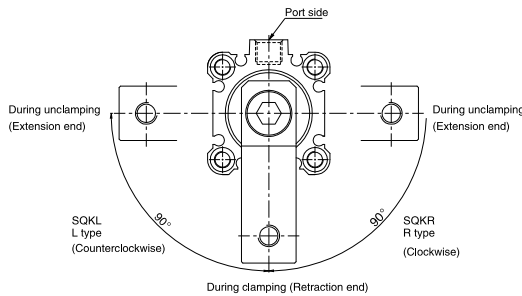
Order Example:
SQK series basic type cylinder, bore 25mm, stroke20mm, right rotation, G thread, with arm, no mounting, ERP code is: SQKR25 x 20-S

Optional Accessories



Note:Short stroke please use HX-29 series due to limited space.

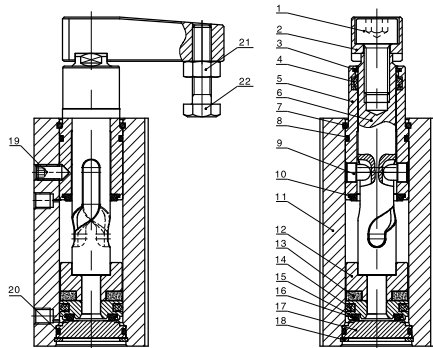
Definition of Rotation Direction and Rotation Angle



Stroke

	Bore(mm)	Clamping Stroke(mm)	Max.Clamping Stroke(mm)
Double acting	16、20、25	10 20 30	30
	32、40	10 20 30 50	50

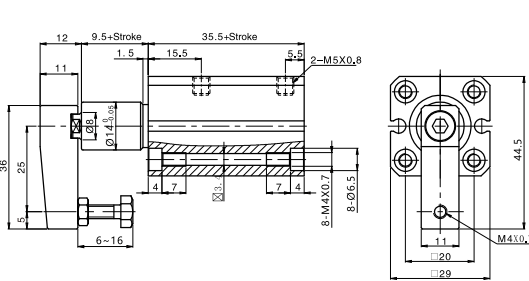
Internal Structure



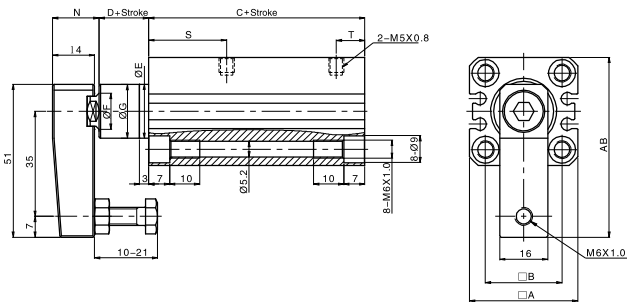
No.	Part Name	Material	No.	Part Name	Material
1	Hex Socket Cap Screw	Carbon steel	12	Magnet Base	Aluminium alloy
2	Clamping Arm	Steel	13	Integral Magnet	NdFeB/Plastic
3	Dust Scraping Ring	Free Machining Steel	14	Piston Seal	NBR
4	Piston Rod Seal	NBR	15	Piston	Aluminium alloy
5	Head Cover	Aluminium alloy	16	Anti-collision Gasket	PTEE
6	Piston Rod	Special material	17	Rear Cover	Aluminium alloy
7	Check Ring	Spring Steel/Stainless Steel	18	Check Ring for C Type Hole	Spring Steel
8	O-ring	NBR	19	Hex Socket Tighten Screw	Carbon steel
9	Rolling Stopper Pin	Special material	20	O-ring	NBR
10	Anti-collision Gasket	TPU	21	Hex Nut	Carbon steel
11	Barrel	Aluminium alloy	22	Hex bolt	Stainless Steel

Main Dimension

SQK Φ 16

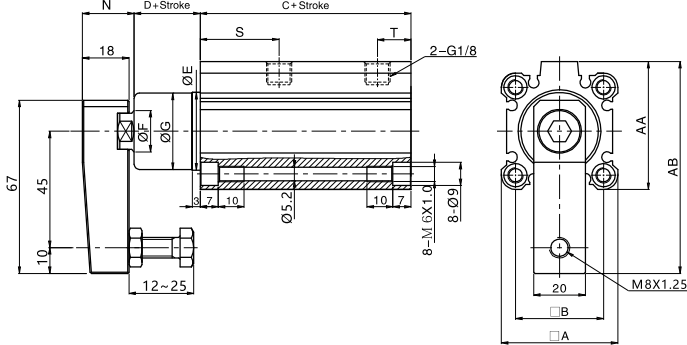


SQK Φ 20、Φ 25

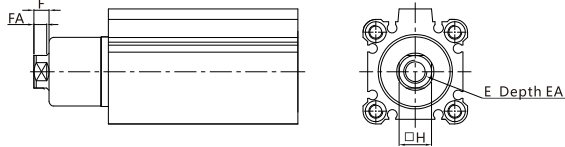


Bore/Sign	A	AB	B	C	D	E	F	G	N	S	T
20	36	60	25.5	62	6.5	18.2 _{±0.05}	12	17.9	15.5	26	9.5
25	40	62	28	63	6.5	23.2 _{±0.05}	12	22.5	15.5	27.5	10

SQK Φ 32、Φ 40



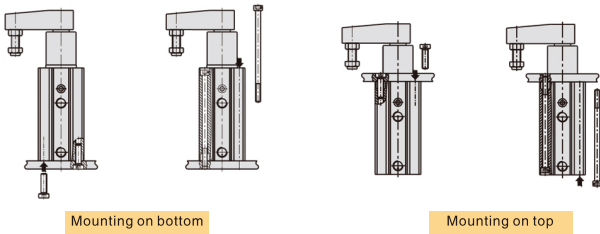
No arm



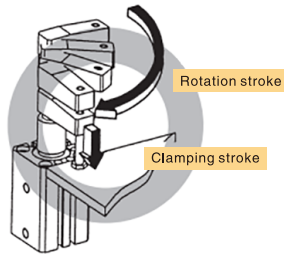
Bore/Sign	A	AA	AB	B	C	D	E	F	G	N	S	T
32	45	49.5	82	34	71.5	15.5	30.2 _{±0.05}	16	29.5	20	30.5	13
40	52	51	86	40	65	23	30.2 _{±0.05}	16	29.5	20	27.5	8

Installation and Use

- 1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
- 2. The medium used by cylinder shall be filtered to 40 μ m or below.
- 3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
- 4. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust jam cap shall be added in air inlet and outlet ports.
- 5. To insure the life-span of cylinder and jig, please use flow control valve to control the speed of cylinder.
- 6. The method of installation are mounted by flange on top or bottom.

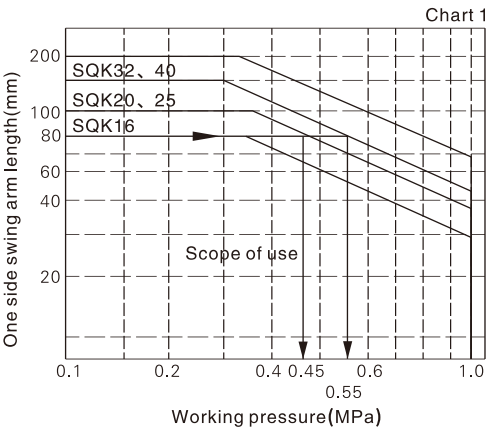


- 7. Please clean the piston rod and dust scraping ring to protect the cylinder.
- 8. Magnetic switch of SQK is same as SQ series cylinder.
- 9. Please install the cylinder as below diagram.



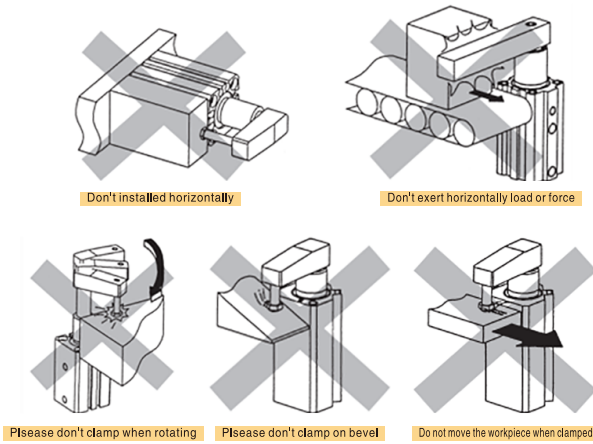
Model Selection

- 1. The cylinder comes with a standard swing arm. When modifying or making your own swing arm, please choose the appropriate cylinder according to the following principles.
- 2. Allowable bending torque requirements: Please use the pendulum length and operating pressure within the range shown in the following figure (Chart 1).

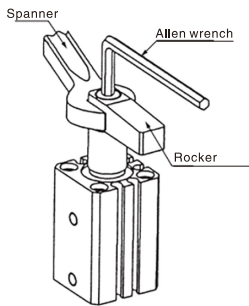


Example: When the length of the swing arm is 80mm, SQK20 and 25 should be used at a pressure below 0.45MPa, SQK32 and 40 should be used at a pressure below 0.55MPa.

- 10. The installation method as the diagram below is wrong, and will injure the cylinder and shorten the cylinder life.

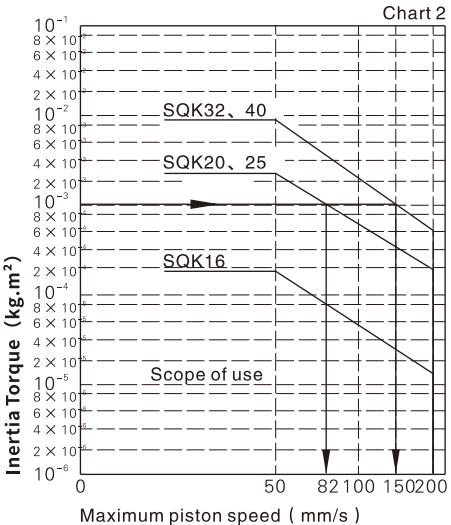


- 11. Please follow the diagram below on right side to assemble/disassemble the rocker by spanner and allen wrench, don't hold the body to assemble/disassemble rocker, or will damage the cylinder.



Allowable Inertia Torque:

If the cylinder runs too fast, it will cause damage to the internal parts; According to the inertia torque of the swing arm, the gas running speed should be used in the range shown in the figure below (Figure 2).

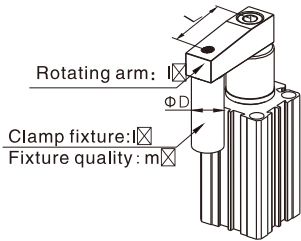


Do not mount the cylinder vertically. Example: When the inertia torque of the swing arm is 10⁻³ Kg·m², keep the maximum speed of the SQK20 and 25 cylinders below 82 mm/s, and keep the maximum speed of the SQK32 and 40 cylinders below 150 mm/s. Note) The reference value for the maximum piston speed is 1.6 times the average piston speed.

Model Selection

- 4. The inertia torque requirement of the cylinder's self-swinging arm around the cylinder's rotational axis (Chart 3).

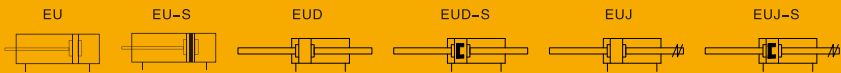
(Chart 3)	
Model	Inertia Torque(Kg · m ²)
SQK16	1.053X10 ⁻⁵
SQK20/25	5.257X10 ⁻⁵
SQK32/40	1.653X10 ⁻⁴



- 5. Calculation examples:
 - 5.1、Determine the rotating arm moment of inertia (I_Σ) :After selecting the cylinder bore, it can be found by the torque of inertia requirements table (chart 3)
 - 5.2、Determine the moment of inertia of the clamping fixture (I_Σ) : according to the shape of the body combined with Article 6, "commonly used object moment of inertia calculation formula", choose the appropriate formula to calculate.
The fixture on the right is a cylinder, and the moment of inertia is calculated as follows:I_Σ=(m_Σ*D*D)/8+m_Σ*L*L
When SQK32 cylinder is selected: L=0.045m(external dimension); Suppose D=0.04m m_Σ=0.4kg
Check the table:I_Σ=1.653x10⁻⁴ (Kg · m²)
Through calculation, we can get:I_Σ=(m_Σ*D*D)/8+m_Σ*L*L= (0.4*0.04*0.04)/8+0.4*0.045*0.045 =8.9x10⁻⁴ (Kg · m²)
Actual moment of inertia: :I=I_Σ+I_Σ=10.553x10⁻⁴ =1.0553 x 10⁻³ (Kg · m²)
Check Chart 2 to find that the maximum speed of the cylinder cannot be exceeded 150mm/s;
Refer to Figure 1 to see that the cylinder can be used at 1MPa pressure.
Average piston speed = Maximum piston speed /1.6=94(mm/s)
- 6. Commonly used object moment of inertia calculation formula:

Graphical Representation	Formula for calculating the moment of inertia	Graphical Representation	Formula for calculating the moment of inertia
1. Thin rod Rotation axis position: Vertical and pass through one end of the thin rod	$I = \frac{m \cdot a^2}{3}$	4. Rectangular sheet (cube) Position of the axis of rotation: Parallel to side b and through the center of gravity of the rectangle	$I = \frac{m \cdot a^2}{12}$
2. Thin rod Rotation axis position: Vertical and pass the center of gravity of the thin rod	$I = \frac{m \cdot a^2}{12}$	5. Rectangular sheet (cube) Position of the axis of rotation: Vertical and pass one end of the rectangular plate	$I = m \cdot \frac{4a^2}{12} + m \cdot \frac{4a^2}{12} + m \cdot \frac{4a^2}{12} + m \cdot \frac{4a^2}{12}$
3. When the front end of the handle is loaded	$I = m \cdot \frac{a^2}{3} + m \cdot a^2$ $k = m \cdot \frac{2r}{5}$	6. Rectangular sheet (cube) Position of the axis of rotation: Vertical and pass the center of gravity of the rectangular plate	$I = \frac{m \cdot a^2}{12} + \frac{m \cdot b^2}{12}$

EU
Free Mount Cylinder



Specifications

Bore(mm)	6	10	16	20	25	32
Acting type	Double acting/Single acting					
Working medium	Clean air(40 μ m filtration)					
Working pressure(MPa)	0.1~1.0(Double acting) / 0.2~1.0(Single acting)					
Guaranteed pressure(Mpa)	1.5					
Working temperature(°C)	-20~70(No freezing)					
Speed range(mm/s)	30~500					
Cushion type	Rubber cushion					
Port size	M5 × 0.8					G1/8"①

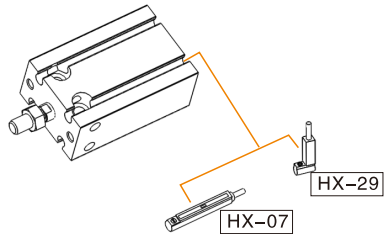
① PT、NPT port size is optional.

How to Order?

Series No	Type No	Bore	X	Stroke	Adjustable Stroke	Magnet No	Thread Type
EU	Blank: Basic type D: Double shaft type J: Double shaft and adjustable stroke type	6 10 16 ... 32		5 10 15 ... 80	10 20 30	Blank: No magnet S: With magnet	Blank: G P: PT T: NPT

Order Example:
EU Series basic type cylinder, 32mm bore, 30mm stroke, with magnet, NPT thread. ERP code is: EU32X30-S-T

Optional Accessories



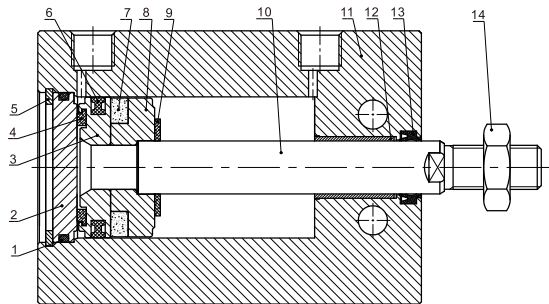
Note: Short stroke please use HX-29 series due to limited space.

Stroke

Bore (mm)	Standard Stroke (mm)								Max. Stroke (mm)
6	5	10	15	20	25	30	35		35
10	5	10	15	20	25	30	35	40	40
16	5	10	15	20	25	30	40	50	60
20	5	10	15	20	25	30	40	50	60
25	5	10	15	20	25	30	40	50	60
32	5	10	15	20	25	30	40	50	60

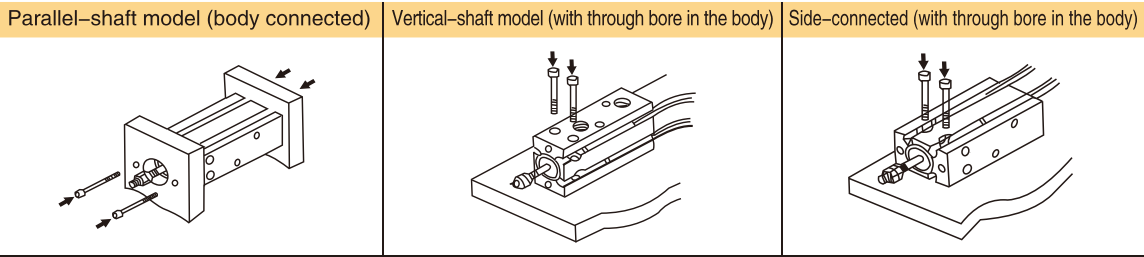
Note: 1. The maximum range of non – standard stroke is adjusted from the next longer stroke (add gasket inside), which has the same dimensions as the next longer stroke std. stroke cylinder.
e.g. 23mm non–standard stroke cylinder is adjusted from 25 standard stroke cylinder, it they have the same dimensions.
2. When ordering the stroke is greater than the Max. stroke, please contact the company.

Internal Structure

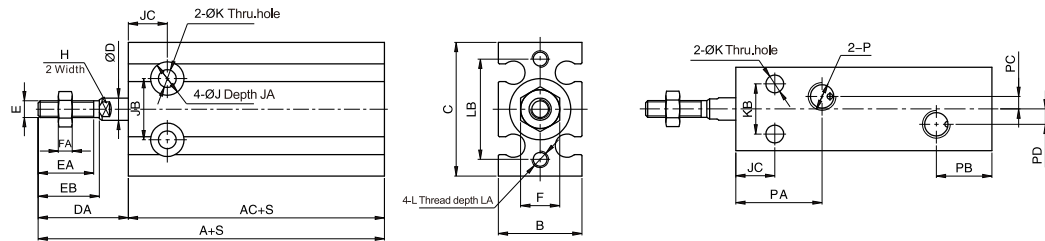


No.	Part Name	Material
1	O-ring	NBR
2	Rear cover	Aluminum alloy
3	Piston	Aluminum alloy
4	Anti-bump cushion	TPU
5	C type retainer ring	Spring steel
6	Piston seal	NBR
7	Magnet	NdFeB
8	Magnet base	Aluminum alloy
9	Anti-bump cushion	TPU/NBR
10	Piston rod	Stainless steel
11	Barrel	Aluminum alloy
12	Bearing	Compound material
13	Piston rod seal	TPU/NBR
14	Nut	Carbon steel

Installation



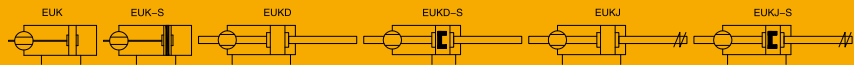
Main Dimension



Bore/Sign	A(No magnet)	A(With magnet)	AC(No magnet)	AC(With magnet)	B	C	D	DA	E	EA	EB						
6	46	46	33	33	13	22	3	13	M3X0.5	7	8						
10	52	52	36	36	15	24	4	16	M4X0.7	10	11						
16	46	56	30	40	20	32	6	16	M5X0.8	11	12.5						
20	55	65	36	46	26	40	8	19	M6X1.0	12	14						
25	63	73	40	50	32	50	10	23	M8X1.25	15.5	18						
32	69	79	42	52	40	62	12	27	M10X1.25	19.5	22						
Bore/Sign	F	FA	H	J	JA	JB	JC	K	KB	L	LA	LB	P	PA	PB	PC	PD
6	5.5	2.5	—	5.8	4.5	10	7	3.2	7	M3X0.5	5	17	M5X0.8	15	10	—	—
10	7	3	—	5.8	4.8	11	7	3.2	9	M3X0.5	5	18	M5X0.8	15.5	10	—	—
16	8	4	5	7.5	6.5	14	7	4.3	12	M4X0.7	6	25	M5X0.8	15.5	11.5	2	2
20	10	5	6	9.5	8	16	9	5.5	16	M5X0.8	8	30	M5X0.8	21	10	4.5	5.5
25	12	6	8	9.5	9	20	10	5.5	20	M5X0.8	8	38	M5X0.8	23	10	4.5	6
32	17	6	10	11	11.5	24	11	6.6	24	M6X1.0	9	48	1/8"	23	12.5	4.5	9

Note: When bore is φ6、10mm, EU cylinder with double nuts.

EUK
Free Mount Cylinder



Specifications

Bore(mm)	10	16	20	25	32
Acting type	Double acting				
Working medium	Clean air(40 μ m filtration)				
Working pressure(MPa)	0.1~1.0(Double acting)				
Guaranteed pressure(Mpa)	1.5				
Working temperature(°C)	-20~70(No freezing)				
Speed range(mm/s)	Double acting: 30~500 Single acting: 50~500				
Stroke tolerance	+1.0 0				
Cushion type	Rubber cushion				
Port size	M5 x 0.8				G1/8 ①

① PT、NPT port size is optional.

Product Characteristics

- The body of a variety of fixed forms, small body, light weight, easy to install and use, without accessories;
- Various specifications and models are available for customers to choose, and the whole series is divided into magnetic induction and non-magnetic induction, which is convenient for control;
- High precision of piston rod guiding, no need to add additional lubricant;
- Equipped with piston rod fixing block to ensure that the piston rod does not rotate;
- The inductive switch is buried type, integrated design and simple positioning.

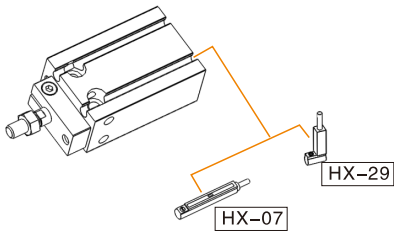
How to Order?

Series No	Type No	Bore X Stroke	Adjustable Stroke	Magnet No	Thread Type
EUK	Blank: Basic type D: Double shaft type J: Double shaft and adjustable stroke type	10 16 ... 32	5 10 15 ... 80	Blank: No magnet S: With magnet	Blank: G

Order Example:

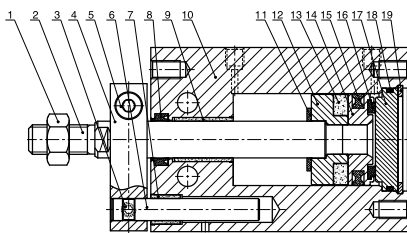
EUK Series basic type cylinder, 32mm bore, 30mm stroke, with magnet, G thread,
ERP code is: EUK 32X30-S

Optional Accessories



Note: Short stroke please use HX-29 series due to limited space.

Internal Structure



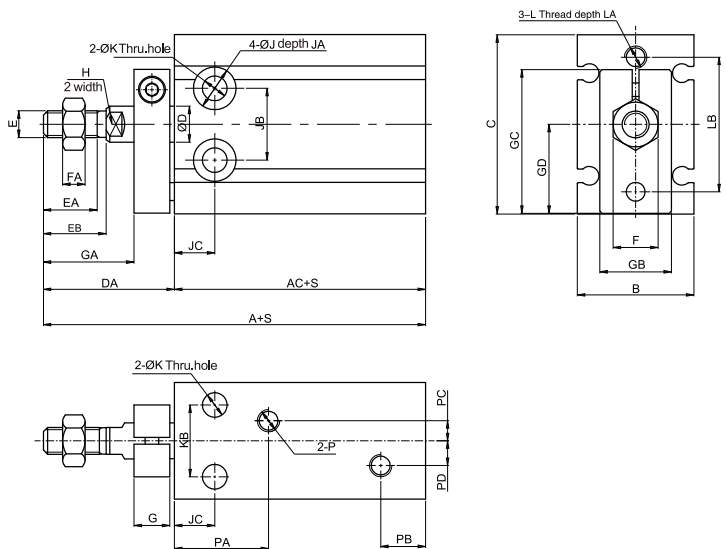
Stroke

Bore (mm)	Standard Stroke (mm)										Max. Stroke (mm)
10	5	10	15	20	25	30	35	40			40
16	5	10	15	20	25	30		40	50	60	60
20	5	10	15	20	25	30		40	50	60	80
25	5	10	15	20	25	30		40	50	60	80
32	5	10	15	20	25	30		40	50	60	80

- Note: 1. 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
2. When ordering the stroke is greater than the Max. stroke, please contact the company.

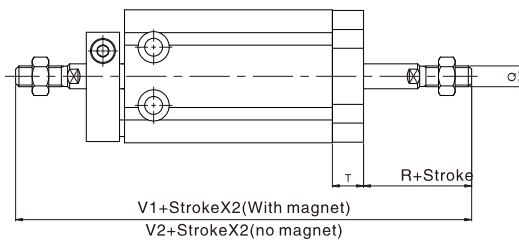
No.	Part Name	Material	No.	Part Name	Material
1	Nut	Carbon steel	11	Bumper	TPU/NBR
2	Piston rod	Stainless steel	12	Manget holder	Aluminum alloy
3	Socket head screw	Carbon steel	13	Magnet	NdFeB
4	No-rotating plate	Aluminum alloy	14	Piston	Aluminum alloy
5	Hexagon socket cap screw	Carbon steel	15	Piston seal	NBR
6	Fixed rod	Stainless steel	16	Bumper	TPU
7	Self lubricating bearing	Compound material/brass	17	Rear cover	Aluminum alloy
8	Piston rod seal	TPU/NBR	18	O-ring	NBR
9	Bearing	Compound material	19	C-clip	Spring steel
10	Barrel	Aluminum alloy			

Main Dimension



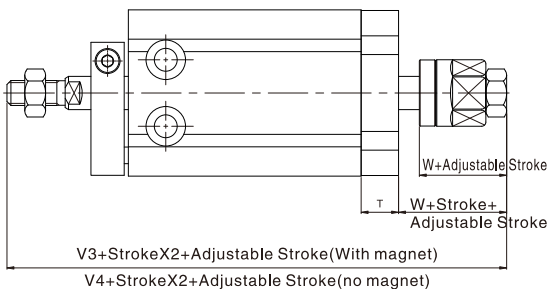
Bore/Sign	A(No magnet)				A(With magnet)				AC(No magnet)				AC(With magnet)				B	C	D	DA	E				EA	EB	F
10	57				57				36				36				15	24	4	21	M4X0.7				10	11	7
16	56				66				30				40				20	32	6	26	M5X0.8				11	12.5	8
20	65				75				36				46				26	40	8	29	M6X1.0				12	14	10
25	73				83				40				50				32	50	10	33	M8X1.25				15.5	18	12
32	84				94				42				52				40	62	12	42	M10X1.25				19.5	22	17
Bore/Sign	FA	G	GA	GB	GC	GD	H	J	JA	JB	JC	K	KB	L	LA	LB	P	PA	PB	PC	PD						
10	3	8	12	13	20.4	11.8	-	5.8	4.8	11	7	3.2	9	M3X0.5	5	18	M5X0.8	15.5	10	-	-						
16	4	8	17	13	26.3	15.7	5	7.5	6.5	14	7	4.3	12	M4X0.7	6	25	M5X0.8	15.5	11.5	2	2						
20	5	8	20	16	32	19.8	6	9.5	8	16	9	5.5	16	M5X0.8	8	30	M5X0.8	21	10	4.5	5.5						
25	6	10	22	19	40	24.8	8	9.5	9	20	10	5.5	20	M5X0.8	8	38	M5X0.8	23	10	4.5	6						
32	6	12	29	24	49	30.8	10	11	11.5	24	11	6.6	24	M6X1.0	9	48	1/8"	23	12.5	4.5	9						

EUKD



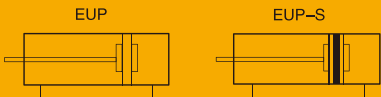
Bore/Sign	V1	V2	V3	V4	Q	R	T	W
10	79	79	78.5	78.5	M4X0.7	16	6	15.5
16	89.5	79.5	90.5	80.5	M5X0.8	16	7.5	17
20	103	93	105	95	M6X1.0	19	9	21
25	115	105	117	107	M8X1.25	23	9	25
32	131	121	131	121	M10X1.25	27	10	27

EUKJ



- Note:
1. Dimensions not noted are the same as the standard.
2. Two nuts are assembled on each piston rod of 10 bore (except the piston rod fitted with adjusting nut), and one nut is assembled on each piston rod of the remaining bore.

EUP
Panel Cylinder



Specifications



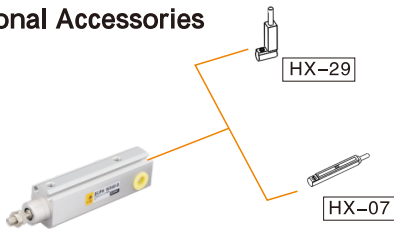
Bore(mm)	6	10	16
Acting Type	Double Acting		
Working Medium	Clean Air(after 40 μ m filtration)		
Working Pressure(MPa)	0.1~0.7		
Guaranteed Pressure(MPa)	1.05		
Working Temperature(°C)	-20~70(No freezing)		
Piston Speed(mm/s)	30~500		
Stroke tolerance	+1.0 0		
Cushion	Rubber cushion		
Port Size	M3×0.5		M5×0.8

How to order?

Series No.	Type No.	Bore × Stroke	Magnet No.	Piston Rod Thread Type	Mounting Type
EUP	Blank: Basic type H: Rear hinge seat type	6 10 16	Blank: No magnet S: With magnet	Blank: Male thread N: No thread	Blank: No CF CR

Order Example:
EUP series basic type cylinder, bore 10, stroke 50, with magnet,no mounting type.
The ERP code is: EUP10X50-S

Optional Accessories



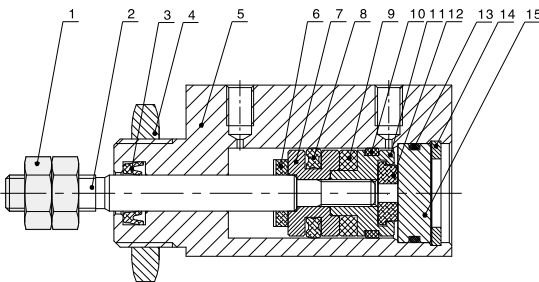
Note:Short stroke please use HX-29 series due to limited space.

Stroke

	Bore(mm)	Standard Stroke(mm)	Max.Stroke(mm)
Double Acting	6	5 10 15 20 25	25
	10	5 10 15 20 25 30 35 40	40
	16	5 10 15 20 25 30 35 40	40

Note:The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder.
e.g. 27mm stroke cylinder has the same dimensions of 30 std. stroke cylinder.
When ordering stroke is larger than the maximum stroke, please contact us.

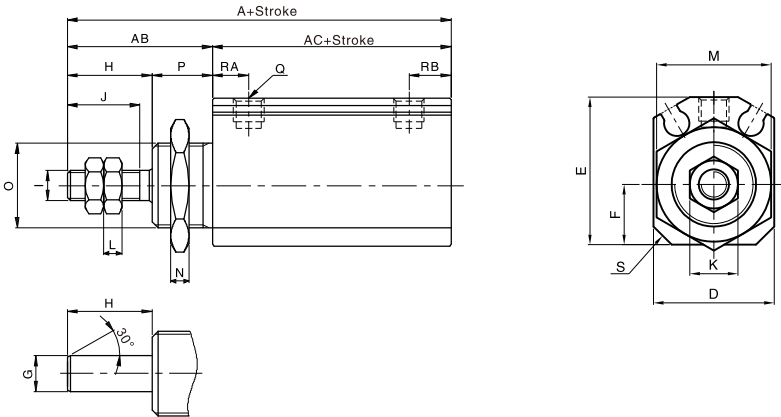
Internal Structure



No.	Part Name	Material
1	Nut	Carbon steel
2	Piston Rod	SUS 304 hard chrome carbon steel
3	Front Cover o-ring	NBR
4	Nut	Carbon steel
5	Barrel	Aluminum Alloy
6	Anti-bump cushion	TPU
7	Piston	6:SUS304 10: Cu 16:Aluminum Alloy
8	Piston seal	NBR
9	Magnet	NdFeB
10	Wearing ring	PTFE
11	Magnet Seat	SUS304 16: Aluminum Alloy
12	Anti-bump cushion	TPU 16:NBR
13	O-ring	NBR
14	Snap ring	Spring steels
15	Rear Cover	Aluminum Alloy

Main Dimensions

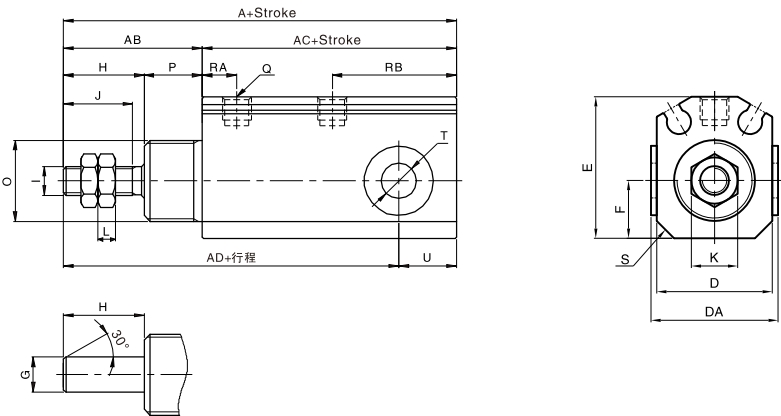
EUP



No thread piston rod

Bore/Sign	A		AB	AC		D	E	F	G	H	I	J	K	L	M	N	O	P	Q	RA	RB	S
	No magnet	With magnet		No magnet	With magnet																	
6	33	38	17	16	21	14	16.5	6	3	9	M3X0.5	7	5.5	2.5	12.7	3	M10X1.0	8	M3X0.5	4.6	6.5	2
10	39.5	44.5	20	19.5	24.5	15	19	7	4	12	M4X0.7	10	7	3	17	3	M12X1.0	8	M3X0.5	6	7	2.5
16	43.5	48.5	24	19.5	24.5	20	24.5	10	6	14	M5X0.8	12	8	3	19	3	M14X1.0	10	M5X0.8	6	7	3

EUPH

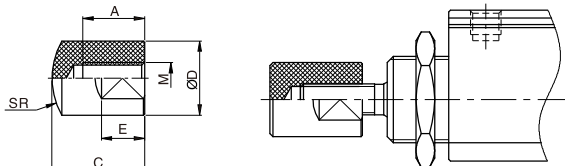


No thread piston rod

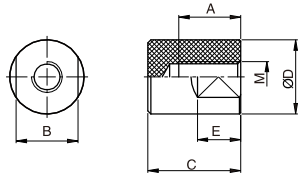
Bore/Sign	A		AB	AC		AD		D	DA	E	F	G	H	I	J	K	L
	No magnet	With magnet		No magnet	With magnet	No magnet	With magnet										
6	38	43	17	21	26	34	39	14	–	16.5	6	3	9	M3X0.5	7	5.5	2.5
10	50.5	55.5	20	30.5	35.5	44	49	15	17	19	7	4	12	M4X0.7	10	7	3
16	58	63	24	34	39	48	53	20	22	24.5	10	6	14	M5X0.8	12	8	3
Bore/Sign	O		P		Q		RA		RB		S		T		U		
6	M10X1.0		8		M3X0.5		4.6		11.5		2		Ø3 ^{+0.05} ₀		4		
10	M12X1.0		8		M3X0.5		6		18		2.5		Ø5 ^{+0.065} ₀		6.5		
16	M14X1.0		10		M5X0.8		6		21.5		3		Ø6 ^{+0.065} ₀		10		

Mounting Type

CR(Round head)

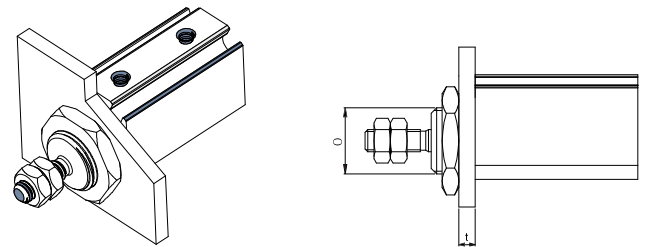


CF(Flat head)



Bore/Sign	A	B	C	D	E	M	SR
FJ-EUP6CF/CR	6	6	11	8	5	M3X0.5	8
FJ-EUP10CF/CR	8	8	13	10	6	M4X0.7	10
FJ-EUP16CF/CR	10	10	15	12	7	M5X0.8	12

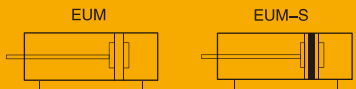
Installation and Use



Bore	Thread specification(t)	Max. Thickness(t)	Panel hole size
6	M10X1.0	4	Ø10.5
10	M12X1.0	4	Ø12.5
16	M14X1.0	6	Ø14.5

EUM

Minitype Free Mount Cylinder



Specifications

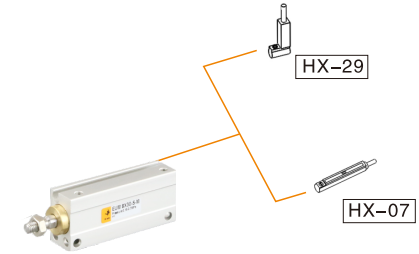
Bore(mm)	6	8	10	12	16	20
Acting Type	Double Acting					
Working Medium	Clean Air(after 40 μ m filtration)					
Working Pressure(MPa)	0.15~0.7					
Guaranteed Pressure(MPa)	1.05					
Working Temperature(℃)	-20~70(No freezing)					
Piston Speed(mm/s)	30~500					
Cushion	None			Rubber cushion		
Stroke tolerance	+1.0 0					
Port Size	M3 × 0.5					M5 × 0.8

How to order?

Series No.	Type No.	Bore	X Stroke	Magnet No.	Piston Rod Thread Type	Mounting Type
EUM	Blank: Basic type	6 8 10 12 16 20	4 6 8	Blank: No magnet S: With magnet	Blank: Female thread M: Male thread	Blank: Lateral mounting R: Axial mounting (Note:ø6,ø8,ø10 is not available)

Order Example:
EUM series basic type cylinder, bore 10, stroke 20, with magnet,male thread
The ERP code is: EUM10X20-S-M

Optional Accessories



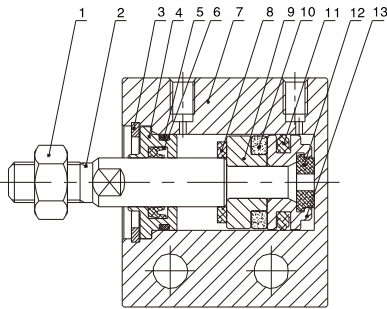
Note:Short stroke please use HX-29 series due to limited space.

Stroke

Bore(mm)	Standard Stroke(mm)	Max.Stroke(mm)
6	4 6 8 10 15 20 25 30	30
8	4 6 8 10 15 20 25 30	30
10	4 6 8 10 15 20 25 30	30
12	5 10 15 20 25 30 35 40 45 50	50
16	5 10 15 20 25 30 35 40 45 50	50
20	5 10 15 20 25 30 35 40 45 50	50

Note:The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder.
e.g. 27mm stroke cylinder has the same dimensions of 30 std. stroke cylinder.
When ordering stroke is larger than the maximum stroke, please contact us.

Internal Structure



No.	Part Name	Material
1	Nut	Carbon steel
2	Piston Rod	SUS 304 hard chrome carbon steel
3	Snap ring	Spring steels
4	Head cover	Cu/Aluminum alloy
5	O-ring	NBR
6	Head cover o-ring	NBR
7	Barrel	Aluminum Alloy
8	Anti-bump cushion	NBR
9	Magnet Seat	SUS304/Aluminum alloy
10	Magnet	NdFeB
11	Piston seal	NBR
12	Anti-bump cushion	TPU
13	Piston	SUS304/Cu/Aluminum alloy

Magnet Switch Table

For Cylinder Model	Bore size	Two wire electronic type	Three wire electronic NPN type	Three wire electronic PNP type	Two wire reed switch type	Reed Switch Photo
SD	Φ20-100 (Front face installation)	HX-01D	HX-01N	HX-01P	HX-01R	
SE/SHY/SHZ/ESWT	Full series					
SQ/SQM/EU/EUK/ EUM/EUP/SF/SFM/ SQK/SG//EMQ/ELS/ ELQ/EXH/ESWT *SHY/SHZ(except Φ 10)	Full series	HX-07D HX-29D	HX-07N HX-29N	HX-07P HX-29P	HX-07R	 
		Note:Short stroke please use HX-29 series due to limited space.				
SD/EN	Full series (Side installation)	HX-11D	HX-11N	HX-11P	HX-11R	
RAL/RA/IA/SJ/ SM/EG/NEG/NCM	Full series	HX-13D	HX-13N	HX-13P	HX-13R	
TBC/XBC/ VBC/LBC	Full series	HX-21D	HX-21N	HX-21P	HX-21R	
FVBC/EXSM/ EXSWM/SF/SFM	Full series	HX-31D	HX-31N	HX-31P	HX-31R	
FVBC/EXSM/ EXSWM/SF/SFM	Full series	HX-65D	HX-65N	HX-65P	HX-65R	

Item/ Model	Electronic type			Reed switch
	D	N	P	R
Wiring method	2-Wire type	3-Wire type		2-Wire type
Wire color	White	Black		Gray
Sensor type	Without contact			With contact
Operating voltage	10~28V DC	5~30V DC		5~240V AC/DC
Switching current	50mA max	200mA max		100mA max
Contact rating	1.4W max	6W max		10W max
Response sepeed	High frequency			Low frequency
Service life	Ultra long			Long
Shock	Almost no impact			Easy to damage
Sensing range	Almost using in all cylinders			Narrow range of sensing
Action range	4-5mm from switch on to off			7-10mm from switch on to off
Accuracy	Excellent			Ordinary

Note: According to above chart, please give priority to electronic type.

HX-01

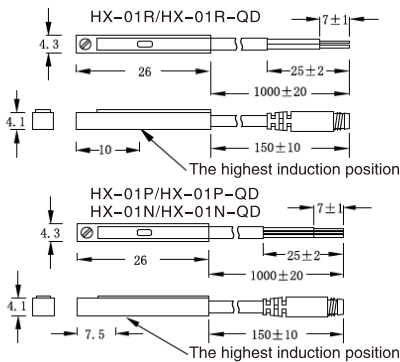
Magnet Switch



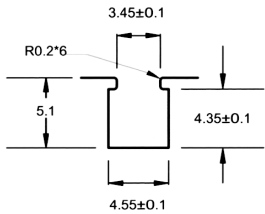
How to Order?

HX	-	01	D	-	2M
Product code		Series NO.	Switch Type D: Two wire without contact switch N: NPN type P: PNP type R: Two wire reed switch		Wirelength 2M:2M 5M:5M 10M:10M QD8: QD8Male connector QD12: QD12Male connector Note:The standard wire length of the quick connector is 0.15m. Other wire lengths cannot be ordered

Dimension

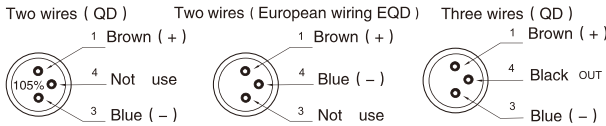


Groove Dimension

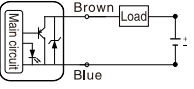
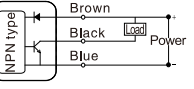
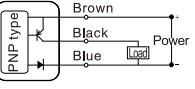
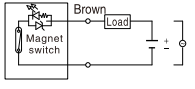


Suitable for cylinder:
SD/SE/SHY/SHZ/ESWT

M8/M12 male wiring diagram



Specifications

Type	HX-01D	HX-01N	HX-01P	HX-01R
Connect Diagram				
Parameter				
Wiring method	2-Wire Type		3-Wire Type	
Switching logic			Electronic type N.O.	
Sensor type	None contact type		NPN type (Input)	PNP type (Output)
Operating voltage	10-28V DC		5 - 30V DC	
Max. switching current	50mA max		200mA max.	
Contact rating	1.4 W max		6W max.	
Current consumption	40 μ Amax@24V		8mAmax@24V(Switch Active)	
Voltage drop	2.8 V max.		1 V max.@200mA DC	
Leakage current	90 μ Amax@28V		0.01mA max.	
Indicator			Red LED	
Max. exchange frequency			1000Hz	
Temperature range			-10 - 70℃	
Shock			50G	
Vibration			9G	
Enclosure classification			IEC 529 IP67 (NEMA 6)	
Protection circuit	2、4		3、4	
Cable	2.6Φ,2C,Black color,oil resistance PVC		2.6Φ,3C,Black color,oil resistance PVC	
Switch sensitive			40-750G	

Note: 1= none /2= output short circuit protection /3= power reverse protection /4= surge absorption protection

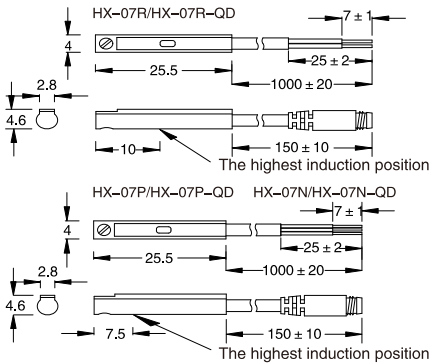
HX-07
Magnet Switch



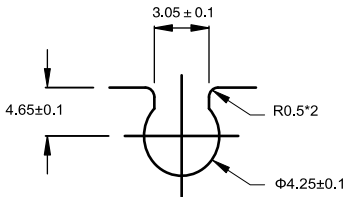
How to Order?

HX	-	07	D	-	2M
Product code		Series NO.	Switch Type D: Two wire without contact switch N: NPN type P: PNP type R: Two wire reed switch		Wirelength 2M:2M 5M:5M 10M:10M QD8: QD8Male connector QD12: QD12Male connector Note:The standard wire length of the quick connector is 0.15m. Other wire lengths cannot be ordered

Dimension

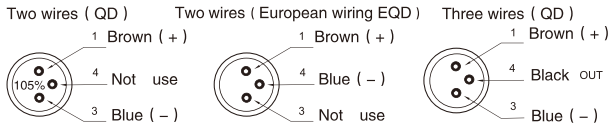


Groove Dimension



Suitable for cylinder:
SQ/SQM/EU/EUK/
EUM/EUP/SF/SFM/
SQK/SG//EMQ/ELS/
ELQ/EXH/ESWT
*SHY/SHZ(except Φ10)

M8/M12 male wiring diagram



Specifications

Type	HX-07D	HX-07N	HX-07P	HX-07R
Connect Diagram				
Parameter				
Wiring method	2-Wire Type	3-Wire Type		2-Wire Type
Switching logic		Electronic no contact type N.O.		SPST Normally Open
Sensor type	None contact type	NPN type (Input)	PNP type (Output)	Reed switch
Operating voltage	10-28V DC	5-30V DC		5-240V DC/AC
Max. switching current	50mA max	200mA max.		100mA max.
Contact rating	1.4 W max	6W max.		10W max.
Current consumption	40 μA max @24V	8mA max @24V(Switch Active)		None
Voltage drop	2.8 V max.	1 V max. @200mA DC		2.5 V max.
Leakage current	90 μA max @28V	0.01mA max.		None
Indicator		Red LED		
Max. exchange frequency		1000Hz		200Hz
Temperature range		-10-70℃		
Shock		50G		30G
Vibration		9G		
Enclosure classification		IEC 529 IP67 (NEMA 6)		
Protection circuit	2、4	3、4		1
Cable	2.6Φ,2C,Black color,oil resistance PVC	2.6Φ,3C,Black color,oil resistance PVC		2.6Φ,2C,Gray color,oil resistance PVC
Switch sensitive		40-750G		70G

Note: 1= none /2= output short circuit protection /3= power reverse protection /4= surge absorption protection

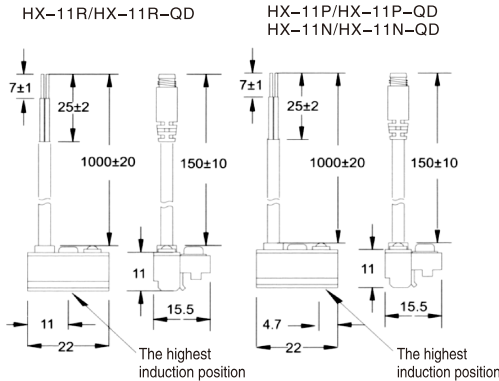
HX-11
Magnet Switch



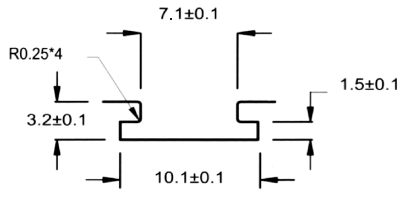
How to Order?

HX	-	11	D	-	2M
Product code		Series NO.	Switch Type D: Two wire without contact switch N: NPN type P: PNP type R: Two wire reed switch		Wirelength 2M:2M 5M:5M 10M:10M QD8: QD8Male connector QD12: QD12Male connector Note:The standard wire length of the quick connector is 0.15m. Other wire lengths cannot be ordered

Dimension

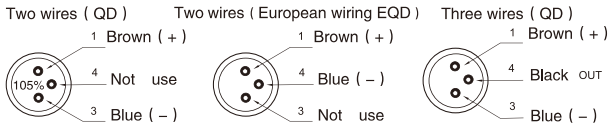


Groove Dimension



Suitable for cylinder:
SD/EN

M8/M12 male wiring diagram



Specifications

Type	HX-11D	HX-11N	HX-11P	HX-11R
Connect Diagram				
Parameter				
Wiring method	2-Wire Type	3-Wire Type		2-Wire Type
Switching logic		Electronic type N.O.		SPST Normally Open
Sensor type	None contact type	NPN type (Input)	PNP type (Output)	Reed switch
Operating voltage	10-28V DC	5-30V DC		5-240V DC/AC
Max. switching current	50mA max	200mA max.		100mA max.
Contact rating	1.4 W max	6W max.		10W max.
Current consumption	40 μA max @24V	20mA max @24V(Switch Active)		None
Voltage drop	2.8 V max.	1 V max. @200mA DC		2.5 V max.
Leakage current	90 μA max @28V	0.01mA max.		None
Indicator		Red LED		
Max. exchange frequency		1000Hz		200Hz
Temperature range		-10-70℃		
Shock		50G		30G
Vibration		9G		
Enclosure classification		IEC 529 IP67 (NEMA 6)		
Protection circuit	2、4	3、4		1
Cable	3.3Φ,2C,Black color,oil resistance PVC	3.3Φ,3C,Black color,oil resistance PVC		3.3Φ,2C,Gray color,oil resistance PVC
Switch sensitive		40-750G		40-50G

Note: 1= none /2= output short circuit protection /3= power reverse protection /4= surge absorption protection

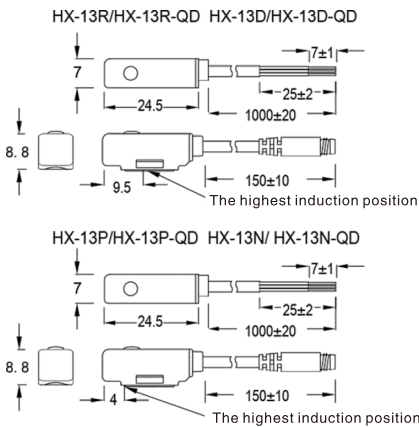
HX-13
Magnet Switch



How to Order?

HX - 13 D - 2M - A 20								
Product code	Series NO.	Switch Type D: Two wire without contact switch N: NPN type P: PNP type R: Two wire reed switch	Wirelength 2M:2M 5M:5M 10M:10M QD8: QD8Male connector QD12: QD12Male connector Note:The standard wire length of the quick connector is 0.15m. Other wire lengths cannot be ordered	Bore material Blank: No binding belt A: Aluminum alloy barrel (with binding belt) S: Stainless steel barrel (with binding belt)	Bore code			
					Bore material	Bore code		
					Aluminum alloy barrel	16: Bore16Φmm		
						20: Bore20Φmm		
						25: Bore25Φmm		
						32: Bore32Φmm		
						40: Bore40Φmm		
					Stainless steel barrel	06: Bore06Φmm		
						08: Bore08Φmm		
						10: Bore10Φmm		
						12: Bore12Φmm		
						16: Bore16Φmm		
						20: Bore20Φmm		
						25: Bore25Φmm		
						32: Bore32Φmm		
						40: Bore40Φmm		

Dimension

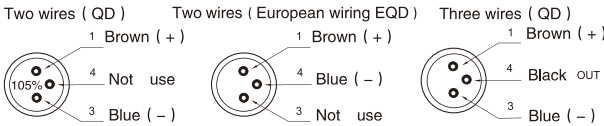


Installation

Detailed mounting method refer to page 3.175-3.177

Suitable for cylinder:
RAL/RA/IA/SJ/
SM/EG/NEG/NCM

M8/M12 male wiring diagram



Specifications

Type	HX-13D	HX-13N	HX-13P	HX-13R
Connect Diagram				
Parameter				
Wiring method	2-Wire Type	3-Wire Type		2-Wire Type
Switching logic		Electronic no contact type N.O.		SPST Normally Open
Sensor type	None contact type	NPN type (Input)	PNP type (Output)	Reed switch
Operating voltage	10-28V DC	5-30V DC		5-240V DC/AC
Max. switching current	50mA max	200mA max.		100mA max.
Contact rating	1.4 W max	6W max.		10W max.
Current consumption	40 μA max @ 24V	8mA max @ 24V (Switch Active)		None
Voltage drop	2.8 V max.	1 V max. @ 200mA DC		2.5 V max.
Leakage current	90 μA max @ 28V	0.01mA max.		None
Indicator		Red LED		
Max. exchange frequency		1000Hz		200Hz
Temperature range		-10-70℃		
Shock		50G		30G
Vibration		9G		
Enclosure classification		IEC 529 IP67 (NEMA 6)		
Protection circuit	2、4	3、4		1
Cable	3.2Φ.2C.Black color,oil resistance PVC	3.2Φ.3C.Black color,oil resistance PVC		3.2Φ.2C.Black color,oil resistance PVC
Switch sensitive		45-750G		50G

Note: 1= none /2= output short circuit protection /3= power reverse protection /4= surge absorption protection

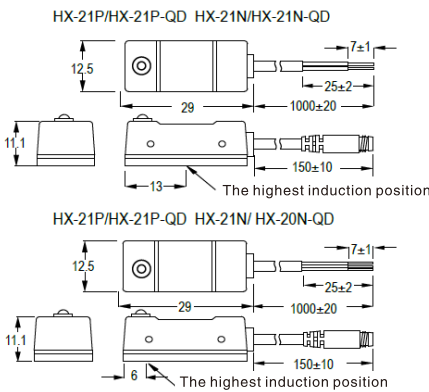
HX-21
Magnet Switch



How to Order?

HX	-	21	D	-	2M
Product code		Series NO.	Switch Type		Wirelength
			D: Two wire without contact switch N: NPN type P: PNP type R: Two wire reed switch		2M:2M 5M:5M 10M:10M QD8: QD8Male connector QD12: QD12Male connector Note:The standard wire length of the quick connector is 0.15m. Other wire lengths cannot be ordered

Dimension

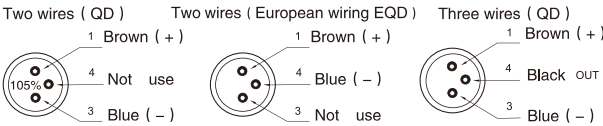


Installation

Detailed mounting method refer to page 3.175-3.177

Suitable for cylinder:
TBC/XBC/VBC/LBC

M8/M12 male wiring diagram



Specifications

Type	HX-21D	HX-21N	HX-21P	HX-21R
Connect Diagram				
Parameter				
Wiring method	2-Wire Type	3-Wire Type		2-Wire Type
Switching logic		Electronic type N.O.		SPST Normally Open
Sensor type	None contact type	NPN type (Input)	PNP type (Output)	Reed switch
Operating voltage	5-30V DC	5-30V DC		5-240V DC/AC
Max. switching current	50mA max	200mA max.		100mA max.
Contact rating	1.4 W max	6W max.		10W max.
Current consumption	40 μA max @ 24V	20mA max @ 24V (Switch Active)		None
Voltage drop	2.8 V max.	1 V max. @ 200mA DC		2.5 V max.
Leakage current	90 μA max @ 28V	0.01mA max.		None
Indicator		Red LED		
Max. exchange frequency		1000Hz		200Hz
Temperature range		-10-70℃		
Shock		50G		30G
Vibration		9G		
Enclosure classification		IEC 529 IP67 (NEMA 6)		
Protection circuit	2、4	3、4		1
Cable	3.8Φ.2C.White color,oil resistance PVC	3.8Φ.3C.Black color,oil resistance PVC		3.8Φ.2C.Gray color,oil resistance PVC
Switch sensitive		40-750G		55-65G

Note: 1= none /2= output short circuit protection /3= power reverse protection /4= surge absorption protection

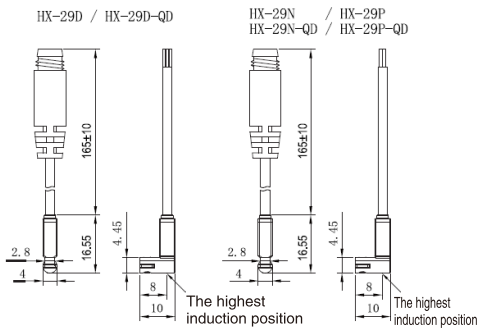
HX-29
Magnet Switch



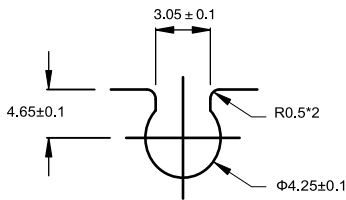
How to Order?

HX	-	29	D	-	2M
Product code		Series NO.	Switch Type D: Two wire without contact switch N: NPN type P: PNP type R: Two wire reed switch		Wirelength 2M:2M 5M:5M 10M:10M QD8: QD8Male connector QD12: QD12Male connector Note:The standard wire length of the quick connector is 0,15m. Other wire lengths cannot be ordered

Dimension

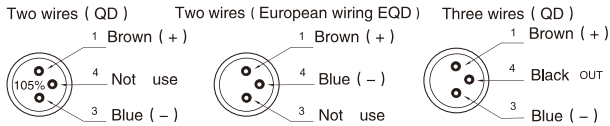


Groove Dimension



Suitable for cylinder:
SQ/SQM/EU/EUK/
EUM/EUP/SF/SFM/
SQK/SG//EMQ/ELS/
ELQ/EXH/ESWT
*SHY/SHZ(except Φ 10)

M8/M12 male wiring diagram



Specifications

Type	HX-29D	HX-29N	HX-29P
Connect Diagram			
Parameter			
Wiring method	2-Wire Type	3-Wire Type	
Switching logic	Electronic no contact type N.O.		
Sensor type	None contact type	NPN type (Input)	PNP type (Output)
Operating voltage	10-28V DC	5-30V DC	
Max. switching current	50mA max	200mA max.	
Contact rating	1.4 W max	6W max.	
Current consumption	40 μAmax@24V	8mAmax@24V(Switch Active)	
Voltage drop	2.8 V max.	1 V max.@200mA DC	
Leakage current	90 μAmax@28V	0.01mA max.	
Indicator	Red LED		
Max. exchange frequency	1000Hz		
Temperature range	-10 - 70℃		
Shock	50G		
Vibration	9G		
Enclosure classification	IEC 529 IP67 (NEMA 6)		
Protection circuit	4	3、4	
Cable	2.6Φ,2C,Black color,oil resistance PVC	2.6Φ,3C,Black color,oil resistance PVC	
Switch sensitive	40-750G		

Note: 1= none /2= output short circuit protection /3= power reverse protection /4= surge absorption protection

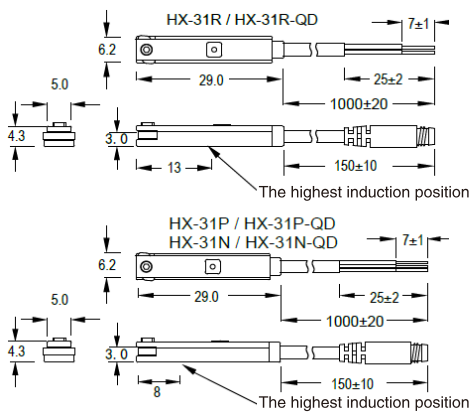
HX-31
Magnet Switch



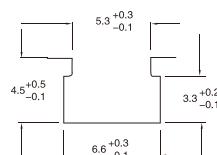
How to Order?

HX	-	31	D	-	2M
Product code		Series NO.	Switch Type D: Two wire without contact switch N: NPN type P: PNP type R: Two wire reed switch		Wirelength 2M:2M 5M:5M 10M:10M QD8: QD8Male connector QD12: QD12Male connector Note:The standard wire length of the quick connector is 0,15m. Other wire lengths cannot be ordered

Dimension

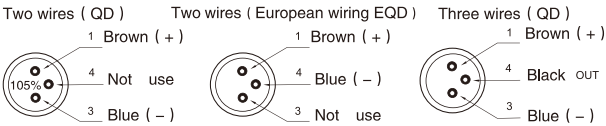


Groove Dimension



Suitable for cylinder:
FVBC/EXSM/
EXSWM/SF/SFM

M8/M12 male wiring diagram



Specifications

Type	HX-31D	HX-31N	HX-31P	HX-31R
Connect Diagram				
Parameter				
Wiring method	2-Wire Type	3-Wire Type		2-Wire Type
Switching logic	Electronic type N.O.			SPST Normally Open
Sensor type	None contact type	NPN type (Input)	PNP type (Output)	Reed switch
Operating voltage	10-28V DC	5-30V DC		5-240V DC/AC
Max. switching current	50mA max	200mA max.		100mA max.
Contact rating	1.4 W max	6W max.		10W max.
Current consumption	40 μA max@24V	14(N)/17(P)mA max(Switch Active)		None
Voltage drop	2.8 V max.	1 V max. @200mA DC		2.5 V max.
Leakage current	90 μA max@28V	0.01mA max.		None
Indicator	Red LED			
Max. exchange frequency	1000Hz			200Hz
Temperature range	-10-70℃			
Shock	50G			30G
Vibration	9G			
Enclosure classification	IEC 529 IP67 (NEMA 6)			
Protection circuit	2、4	3、4		1
Cable	2.9Φ,2C,White color,oil resistance PVC	2.9Φ,3C,Black color,oil resistance PVC		2.9Φ,2C,Gray color,oil resistance PVC
Switch sensitive	40-750G			40G

Note: 1= none /2= output short circuit protection /3= power reverse protection /4= surge absorption protection

HX-65
Magnet Switch

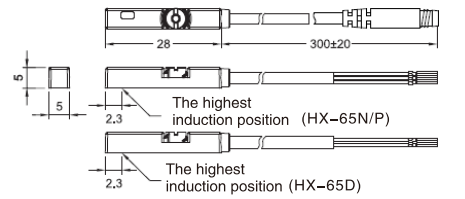
How to Order?



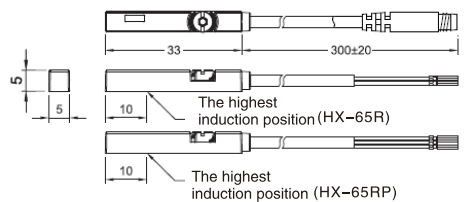
HX	-	65	D	-	2M
Product code		Series NO.	Switch Type		Wirelength
			D: Two wire without contact switch		2M:2M
			N: NPN type		5M:5M
			P: PNP type		10M:10M
			R: Two wire reed switch		
					QD8: QD8Male connector
					QD12: QD12Male connector
					Note:The standard wire length of the quick connector is 0.15m. Other wire lengths cannot be ordered

Dimension

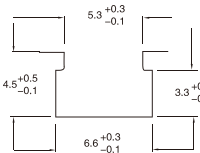
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HX-65R,HX-65RP /HX-65R-QD,HX-65RP-QD

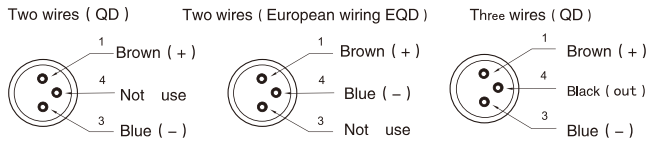


Groove Dimension



Suitable for cylinder:
FVBC/EXSM/
EXSWM/SF/SFM

M8/M12 male wiring diagram



Specifications

Type	HX-65D	HX-65N	HX-65P	HX-65R
Connect Diagram				
Parameter				
Wiring method	2-Wire Type	3-Wire Type		2-Wire Type
Switching logic		Electronic type N.O		SPST Normally Open
Sensor type	None contact type	NPN type (Input)	PNP type (Output)	Reed switch
Operating voltage	10-28V DC	5-30V DC		5-240V DC/AC
Max. switching current	50mA max	200mA max.		100mA max.
Contact rating	1.4 W max	6W max.		10W max.
Current consumption	40 μAmax@24V	8mAmax@24V DC (Switch Active)		None
Voltage drop	2.8 V max.	1 V max.@200mA DC		2.5 V max.
Leakage current	90 μAmax@28V	0.01mA max.		None
Indicator		Red LED		
Max. exchange frequency		1000Hz		200Hz
Temperature range		-10-70℃		
Shock		50G		30G
Vibration		9G		
Enclosure classification		IEC 529 IP67 (NEMA 6)		
Protection circuit	2、4	3、4		1
Cable	2.6Φ,2C,Black oil resistant PVC	2.6Φ,3C,Black oil resistant PVC		2.6Φ,2C,Black oil resistant PVC
Switch sensitive		40-750G		70G

Note: 1= none /2= output short circuit protection /3= power reverse protection /4= surge absorption protection

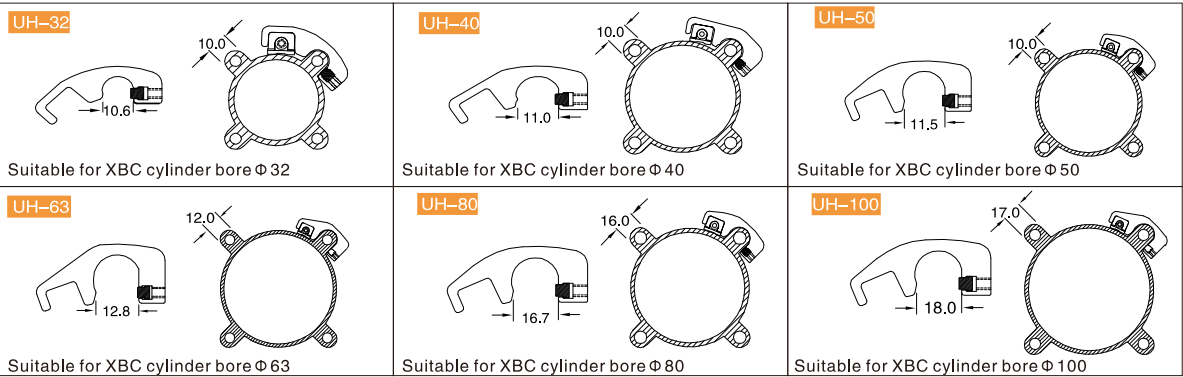
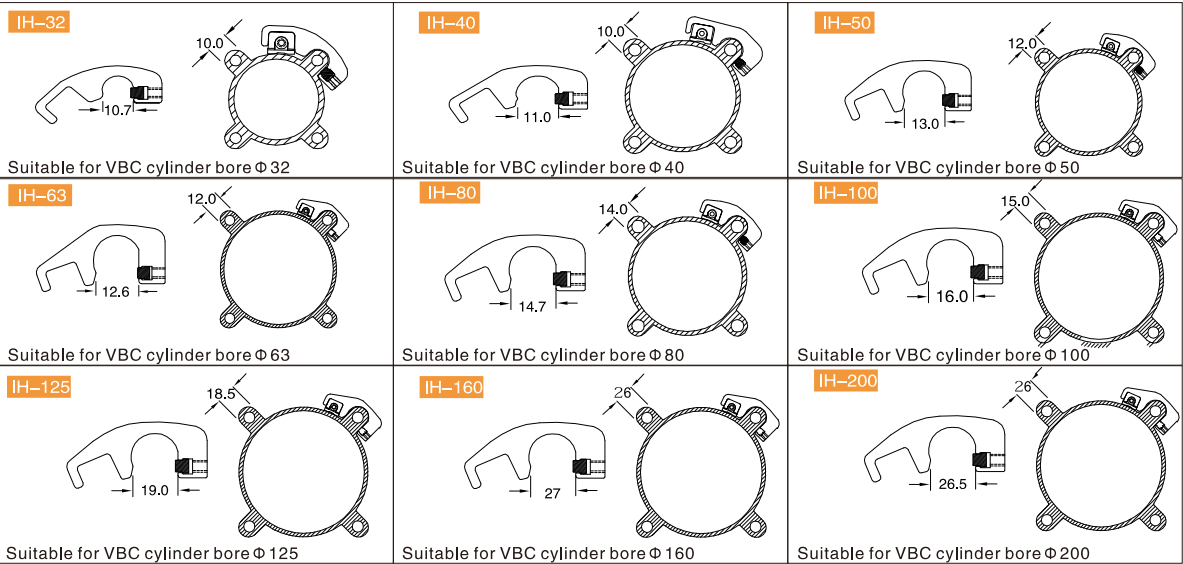
IH/UH
Bracket

Dimension



IH series bracket (VBC profile barrel)
IH-32 IH-40 IH-50 IH-63 IH-80
IH-100 IH-125 IH-160 IH-200

UH series bracket (XBC profile barrel)
UH-32 UH-40 UH-50 UH-63 UH-80
UH-100



PM
Bracket

Dimension

PM series bracket (TBC、LBC Cylinder)

PM-6 PM-8 PM-10 PM-12 PM-16

PM-6 Suitable for TBC32/40/50 LBC32/40 Diameter of tie-rod $\Phi 5 \sim \Phi 6$	PM-8 Suitable for TBC63 LBC50/63 Diameter of tie-rod $\Phi 7 \sim \Phi 8$	PM-10 Suitable for TBC80/100 LBC80/100 Diameter of tie-rod $\Phi 8.5 \sim \Phi 10$	PM-12 Suitable for TBC125 LBC125 Diameter of tie-rod $\Phi 10.5 \sim \Phi 12$	PM-16 Suitable for TBC160 LBC160/200 Diameter of tie-rod $\Phi 14 \sim \Phi 16$
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PAB
Mounting Band

PAB series fixed steel belt (Fixed size for round body cylinder, HX-13 auto switch)

Step 1	Step 2	Step 3	Step 4
Put the magnetic switch in the steel belt.	Get around the steel belt and magnetic switch.	Insert the steel belt into the slot, adjust the release of the switch, tighten the screw on the steel belt.	After adjusting the position of magnetic switch, fixed steel belt

PAB - S 2 0 Bore

S: The Round Barrel Cylinder (stainless steel material)
Applicable to bore: 06、08、10、12、16、20、25、32、40、50、63

A: The Round Barrel Cylinder (alluminum alloy material)
Applicable to bore: 16、20、25、32、40

Note: This steel belt cannot be used in EG series round cylinder

PAB-13 series mounting band (Universal for HX-13 auto switch)

Step 1	Step 2	Step 3	Step 4
1. Loosen the screw on the steel belt first 2. Make sure that three to four circle of thread at the bottom of the screw is still in the nut	1. Get the steel belt through the hole at the bottom of HX-13 2. Put the screw head into the slot of the clip 3. Get the steel belt around the cylinder as below picture, then tighten the steel belt 4. Mark on the round hole of the nearest PIN of the belt	1. Loosen the steel belt 2. Mark the hole as below picture, and cut the belt on the second hole away from the mark hole 3. Use the thumb to press down the steel belt along th chuck, bending the belt 4. Assemble the switch and the cylinder as below picture, then ajust the position of magnet switch, lock the screw, then you could fix it.	1. Put the belt that' s just been cut down into the slot hole of the steel belt 2. Put the chuck PIN onto the mark hole 3. Use the thumb to press down the steel belt along th chuck, bending the belt 4. Assemble the switch and the cylinder as below picture, then ajust the position of magnet switch, lock the screw, then you could fix it.

Attention!

Please don' t lock the screw with too much force, otherwise might cause damage on magnet switch or cylinder.

NBC
NFPA Standard Cylinder



Specifications



Bore(mm)	40(1-1/2")	50(2")	63(2-1/2")	80(3-1/4")	100(4")
Acting type	Double Acting				
Working medium	Clean Air(40 μ m filtration)				
Working pressure (psi)	14.5~145				
Guaranteed pressure (psi)	215				
Working temperature (℃)	-20~70℃ (-4~176°F) (No freezing)				
Speed range (mm/s)	50~800				
Cushion type	Air Cushion				
Mounting type	MSI MF1 MF2 MP2 MP4 YJ				
Port size	NPT1/4		NPT3/8		NPT1/2
Magnet switch	HX-21				

How to Order?

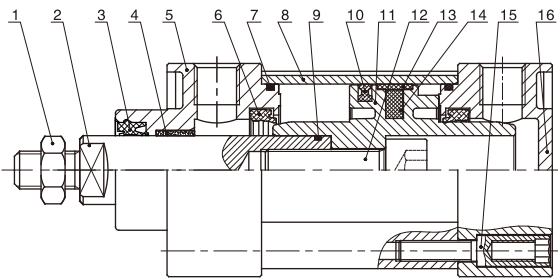
Series No.	Cushion Type	Type No.	Bore	–	Stroke	–	Magnet No.	–	Seal Material	–	Mounting Type
NB: Profile barrel (North American Standard)	C: Air cushion		40(1-1/2")		*Stroke length must be indicated as 4 digits.		Blank: No magnet				Blank: No
			50(2")				S: With magnet				LB
			63(2-1/2")		First and second digit:Stroke/Inch						CA
			80(3-1/4")		Third and fourth digit:Stroke/Hundredth of an inch						CB
			100(4")		Example) 0525=5.25(5-1/4) inch stroke				Blank: Standard material		FA
		Blank: Basic type			Details in stroke chart				(NBR seal)		FB
		D: Double shaft type							V: VITON seal		YJ
		J: Double shaft and adjustable type									

Order Example:
NBC series, double shaft air cylinder, bore 40, stroke 2 inch, with magnet, NBR seal, CA mounting accessory.
EPR code is: NB40-0200-S-CA
Note: If using a cylinder with different mounting accessories, please use this sequential coding: LB/CA/CB/FA/FB/YJ

Stroke

Bore Size	Standard Stroke (inch)	Max. Stroke (inch)
40~63(1-1/2"~2-1/2")	0.5 1 2 3 4 5 6 7 8 9 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80	80
80~100(3-1/4"~4")	0.75 1 2 3 4 5 6 7 8 9 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80	80

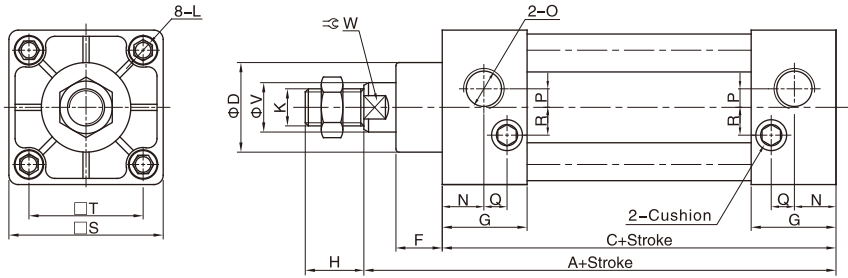
Internal Structure



NO.	Part Name	Material
1	Nut	Carbon steel
2	Piston rod	S45C hard chrome carbon steel
3	Piston rod seal	TPU
4	Self lubricating bearing	Bronze powder
5	Head cover	Aluminum alloy
6	Cushion seal	NBR
7	O-ring	NBR
8	Barrel	Aluminum alloy
9	O-ring	NBR
10	Piston seal	NBR
11	Piston	Aluminum alloy
12	Nut	Carbon steel
13	Wear ring	PTFE
14	Magnet	Plastic
15	Tie rod nut	Carbon steel
16	Rear cover	Aluminum alloy

Main Dimension

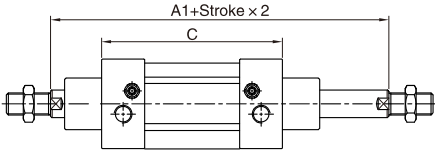
NBC



Bore	A	C	D	F	G	H	K	L	N	O	P	Q	R	S	T	V	W
40(1-1/2")	4.625	3.625	1.26	0.59	1.08	0.75	UNF 7/16-20-2A	M6	0.53	NPT1/4	0.197	0.216	0.35	1.97	1.457	0.63	0.50
50(2")	4.625	3.625	1.496	0.59	1.08	0.75	UNF 7/16-20-2A	M6	0.57	NPT1/4	0.335	0.118	0.433	2.44	1.85	0.787	0.50
63(2-1/2")	4.75	3.75	1.496	0.59	1.08	0.75	UNF 7/16-20-2A	M8	0.59	NPT3/8	0.28	0.197	0.374	2.95	2.205	0.787	0.50
80(3-1/4")	5.625	4.25	1.811	0.827	1.30	1.125	UNF 3/4-16-2A	M10	0.65	NPT3/8	0.28	0.31	0.39	3.70	2.756	0.984	0.87
100(4")	5.625	4.25	1.811	0.827	1.30	1.125	UNF 3/4-16-2A	M10	0.65	NPT1/2	0.30	0.31	0.51	4.41	3.307	0.984	0.87

Note:With magnet and No magnet, the dimensions are same.

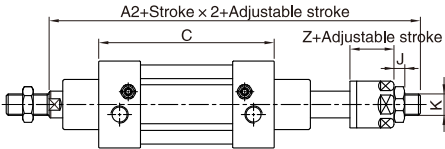
NBCD



Bore	A1	A2	C	J	K	Z
40(1-1/2")	5.626	6.319	3.625	0.276	M12x1.25	0.827
50(2")	5.626	6.437	3.625	0.315	M16x1.5	0.906
63(2-1/2")	5.752	6.563	3.75	0.315	M16x1.5	0.906
80(3-1/4")	7.0	7.988	4.25	0.394	M20x1.5	1.142
100(4")	7.0	7.988	4.25	0.394	M20x1.5	1.142

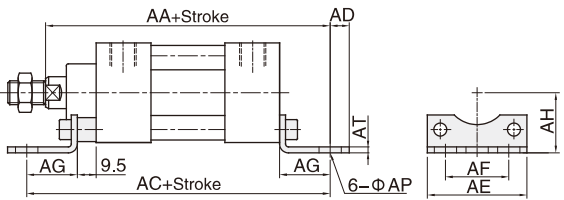
Note:1. With magnet and without magnet, the dimensions are same.
2. The unmarked dimension is the same as NBC standard type.

NBCJ



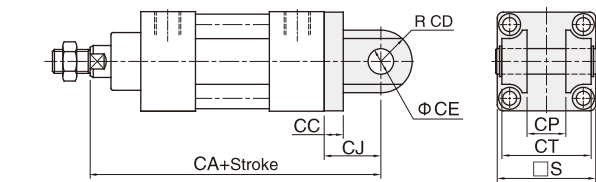
Main Dimension

NBC□S-MS1

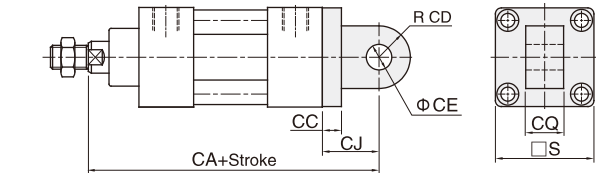


Bore	AA	AC	AD	AE	AF	AG	AH	AP	AT
40(1-1/2")	5.625	6.00	0.38	1.97	1.25	1.00	1.188	0.44	0.12
50(2")	5.625	6.00	0.38	2.44	1.75	1.00	1.438	0.44	0.12
63(2-1/2")	5.75	6.125	0.38	2.95	2.25	1.00	1.625	0.44	0.12
80(3-1/4")	6.875	7.375	0.50	3.74	2.75	1.25	1.938	0.56	0.16
100(4")	6.875	7.375	0.50	4.41	3.50	1.25	2.25	0.56	0.16

NBC□S-MP2

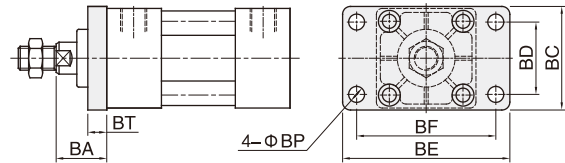


NBC□S-MP4

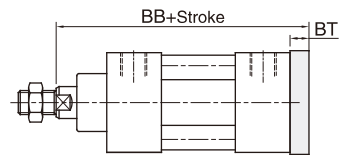


Bore	CA	CC	CD	CE	CJ	CP	CQ	CT	S
40(1-1/2")	5.75	0.38	0.62	0.50	1.125	0.765	0.75	1.765	1.95
50(2")	5.75	0.38	0.62	0.50	1.125	0.765	0.75	1.765	2.42
63(2-1/2")	5.875	0.38	0.62	0.50	1.125	0.765	0.75	1.765	2.93
80(3-1/4")	7.50	0.63	0.87	0.75	1.875	1.265	1.25	2.515	3.66
100(4")	7.50	0.63	0.87	0.75	1.875	1.265	1.25	2.515	4.37

NBC□S-MF1

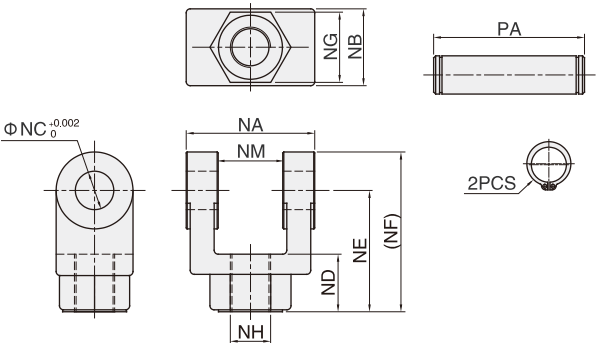


NBC□S-MF2



Bore	BA	BB	BC	BD	BE	BF	BP	BT
40(1-1/2")	1.00	5.00	2.05	1.43	3.31	2.75	0.315	0.375
50(2")	1.00	5.00	2.56	1.84	4.13	3.375	0.375	0.375
63(2-1/2")	1.00	5.125	2.87	2.19	4.57	3.875	0.375	0.375
80(3-1/4")	1.375	6.25	3.62	2.76	5.63	4.685	0.435	0.63
100(4")	1.375	6.25	4.50	3.31	6.34	5.435	0.435	0.63

NBC□S-YJ



Bore	NA	NB	NC	ND	NE	NF	NG	NH	NM	PA
40(1-1/2")	1.764	1.00	0.504	0.75	1.5	2.0	1.0	UNF-7/16-20-2A	0.764	2.17
50(2")	1.764	1.00	0.504	0.75	1.5	2.0	1.0	UNF-7/16-20-2A	0.764	2.17
63(2-1/2")	1.764	1.00	0.504	0.75	1.5	2.0	1.0	UNF-7/16-20-2A	0.764	2.17
80(3-1/4")	2.516	1.50	0.752	1.13	2.37	3.13	1.37	UNF 3/4-16-2A	1.264	2.95
100(4")	2.516	1.50	0.752	1.13	2.37	3.13	1.37	UNF 3/4-16-2A	1.264	2.95

NCM

NFPA Standard Mini Cylinder



Specifications

Bore(mm)	16(9/16")	20(3/4")	25(1-1/16")	32(1-1/4")	40(1-1/2")
Acting type	Double Acting				
Working medium	Clean Air(40 μ m filtration)				
Working pressure (psi)	15~100	14.5~145			
Guaranteed pressure (psi)	160	215			
Working temperature (℃)	-20~70℃ (-4~176 ℱ) (No freezing)				
Speed range (mm/s)	50~800				
Cushion type	Rubber cushion				
Barrel material	Stainless Steel				
Mounting type	LB SDB				
Port size	No.10~32	NPT1/8			
Magnet switch	HX-03				

How to Order?

Series No	Cushion Type	Type No	Bore	X	Stroke	-	Magnet No -	Tail Type	-	Mounting Type
NCM (North American Standard)	Blank: Rubber cushion		16(9/16") 20(3/4") 25(1-1/16") 32(1-1/4") 40(1-1/2")		*Stroke length must be indicated as 4 digits. First and second digit:Stroke/Inch Third and fourth digit:Stroke/Hundredth of an inch Example) 0525=5,25(5-1/4) inch stroke Details in stroke chart		S: With magnet	Blank: Swiveling tail R: Axial air-in		Blank: No LB SDB YJ
	Blank: Basic type D: Double shaft type									

Order Example:

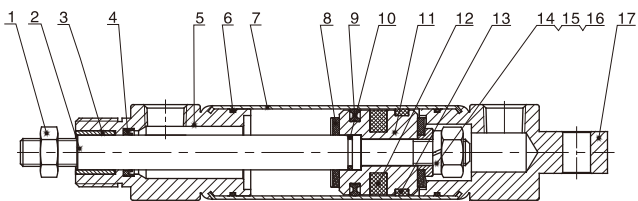
NCM series, Double shaft type, Bore 32 mm, stroke 2 inch, with magnet, No Mounting type, Swiveling tail.
ERP code is: NCMD32 × 0200-S

Note: If using a cylinder with different mounting accessories, please use this sequential coding: LB/SDB/YJ

Stroke

Bore Size	Standard Stroke (inch)	Max. Stroke (inch)
16(9/16")	1/2 1 2 3 4 5 6 7 8 9 10	20
20~40(3/4"~1-1/2")	1/2 1 2 3 4 5 6 7 8 9 10 15 20	30

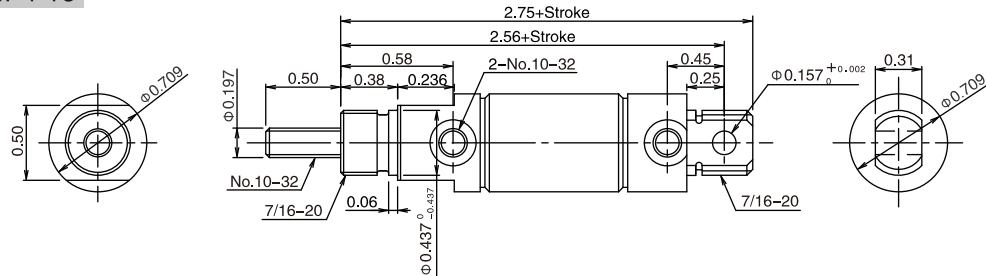
Internal Structure



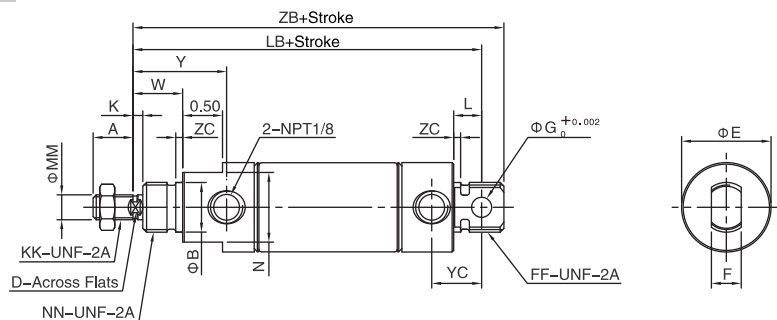
NO.	Part Name	Material
1	Nut	Carbon steel
2	Piston rod	S45C hard chrome carbon steel
3	Self lubricating bearing	Bronze powder
4	Piston rod seal	NBR
5	Head cover	Aluminum alloy
6	O-ring	NBR
7	Barrel	Stainless Steel
8	Cushion pad	NBR
9	Piston seal	NBR
10	O-ring	NBR
11	Piston	Aluminum alloy
12	Magnet	Plastic
13	Wear ring	PTFE
14	Pressing pads	Carbon steel
15	Spring washer	Carbon steel
16	Nut	Carbon steel
17	Rear cover	Aluminum alloy

Main Dimension

NCM Φ16



NCM Φ20-Φ40



Bore	MM	KK	A	B	D	E	F	FF	ΦG	K	L	N	NN	W	Y	YC	LB	ZB	ZC
20(3/4")	0.250	1/4-28	0.50	0.622 ^{-0.003}	-	0.87	0.38	5/8-18	0.252	-	0.34	0.75	5/8-18	0.50	0.815	0.654	3.75	4.03	0.08
25(1-1/16")	0.312	5/16-24	0.50	0.622 ^{-0.003}	0.25	1.12	0.38	5/8-18	0.252	0.12	0.34	0.88	5/8-18	0.62	0.933	0.654	3.84	4.12	0.08
32(1-1/4")	0.472	7/16-20	0.75	0.748 ^{-0.003}	0.38	1.38	0.50	3/4-16	0.252	0.25	0.41	1.06	3/4-16	0.88	1.283	0.811	4.47	4.87	0.08
40(1-1/2")	0.472	7/16-20	0.75	0.748 ^{-0.003}	0.38	1.65	0.62	3/4-16	0.378	0.25	0.50	1.25	3/4-16	0.88	1.268	0.886	4.38	4.75	0.08

Note:1. With magnet and without magnet,the dimensions are same.

NEG

NFPA Standard



Specifications

Bore(mm)	20(3/4")	25(1")	32(1-1/4")	40(1-1/2")	50(2")	63(2-1/2")
Acting type	Double Acting					
Working medium	Clean air(40 μ m filtration)					
Pressure range(psi)	15~145					
Garanteed pressure(psi)	215					
Working temperature	-20~70℃ (-4~176°F) (No freezing)					
Speed range(mm/s)	50~1000					
Stroke tolerance(mm)	+1.4 0					
Cushion type	Rubber cushion(Standard) /Air cushion(Optional,Currently developed only 63mm bore)					
Port size	M5	NPT1/8			NPT1/4	
Magnet switch	HX-13					

How to Order?

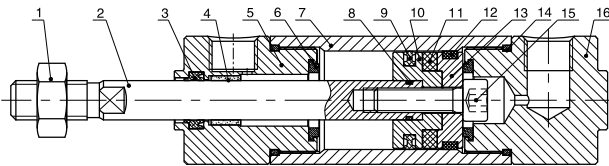
Series No	Type No	Bore	X	Stroke	- Magnet No -	Piston Rod Thread Type	- Thread Type
NEG (North America Standard)	Blank: Basic type C: Air cushion type	20(3/4") 25(1") 32(1-1/4") 40(1-1/2") 50(2") 63(2-1/2")		*Stroke length must be indicated as 4 digits. First and second digit:Stroke/Inch Third and fourth digit:Stroke/Hundredth of an inch Example) 0525=5.25(5-1/4) inch stroke Details in stroke chart	Blank: No magnet S: With magnet	M: Male thread	Blank: NPT

Order Example:
NEG Series basic type cylinder, 25mm bore, 2 inch stroke, with magnet, male thread on piston rod, NPT thread.
ERP code is: NEG25X0200-S-M

Stroke

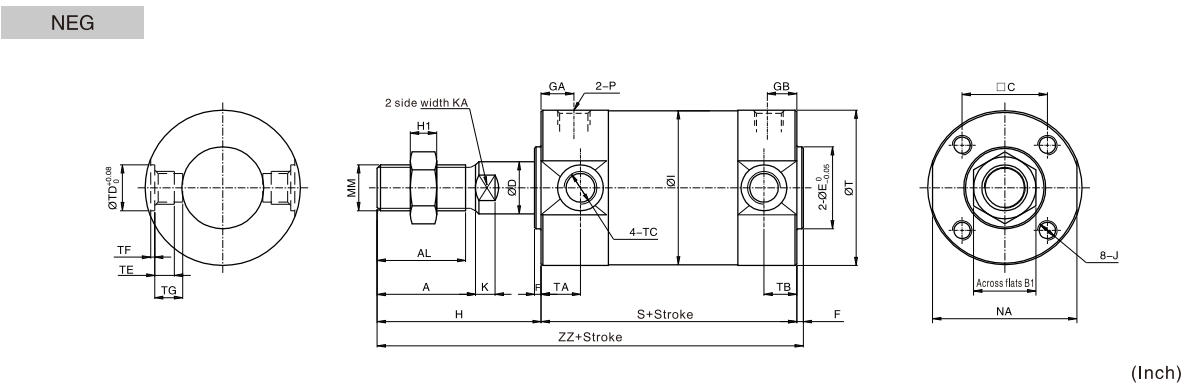
Bore(mm)	Standard Stroke (inch)												Long Stroke (inch)
Double acting	20	1	2	3	4	5	6	7					8.01~47
	25	1	2	3	4	5	6	7	8	9	10	11	12
	32	1	2	3	4	5	6	7	8	9	10	11	12
	40	1	2	3	4	5	6	7	8	9	10	11	12
	50	1	2	3	4	5	6	7	8	9	10	11	12
	63	1	2	3	4	5	6	7	8	9	10	11	12

Internal Structure



NO.	Part Name	Material
1	Nut	Carbon steel
2	Piston rod	Stainless steel(NEG20、25) Carbon steel(NEG32、40、50、63)
3	Piston rod seal	TPU
4	Self-lubricating bearing	Compound material
5	Head cover	Aluminum alloy
6	Rubber cushion	TPU
7	Barrel	Aluminum alloy
8	O-ring	NBR
9	Piston seal	NBR
10	Piston	Aluminum alloy
11	Magnet	RbFeB(NEG20、25) Plastic(NEG32、40、50、63)
12	Wear ring	PTFE
13	Magnet base	Aluminum alloy
14	O-ring	NBR
15	Hex cylinder head screw	Carbon steel
16	Rear cover	Aluminum alloy

Main Dimension



Bore	Standard Stroke Range	Long Stroke Range	A	AL	B1	C	D	E	F	H	I	J	K	KA	MM	NA
20	Up to 8	8.01 to 14	0.55	0.50	0.39	0.55	0.315	0.472	0.08	1.00	1.02	#8-32UNC depth0.28	0.16	0.24	1/4-28UNF	0.94
25	Up to 12	12.01 to 16	0.55	0.50	0.51	0.65	0.394	0.551	0.08	1.12	1.22	#10-32UNF depth0.30	0.20	0.31	5/16-24UNF	1.14
32	Up to 12	12.01 to 18	0.83	0.75	0.67	0.79	0.472	0.709	0.08	1.63	1.50	#10-32UNF depth0.30	0.22	0.39	7/16-20UNF	1.40
40	Up to 12	12.01 to 32	0.83	0.75	0.67	1.02	0.630	0.984	0.08	1.63	1.85	1/4-28UNF depth0.47	0.30	0.55	7/16-20UNF	1.73
50	Up to 12	12.01 to 48	0.96	0.88	0.75	1.26	0.787	1.181	0.08	2.07	2.28	5/16-24UNF depth0.63	0.30	0.71	1/2-20UNF	2.17
63	Up to 12	12.01 to 48	0.96	0.88	0.75	1.50	0.787	1.260	0.08	2.07	2.83	3/8-24UNF depth0.63	0.30	0.71	1/2-20UNF	2.72
Bore	Standard Stroke Range	Long Stroke Range	P	S	GA	GB	T	H1	TA	TB	ZZ	TD	TF	TE	TG	TC
20	Up to 8	8.01 to 14	M5X0.8	2.72(3.03)	0.531	0.531	1.04	0.157	0.43	0.43	3.80(4.11)	0.315	0.02	0.16	0.22	M5X0.8
25	Up to 12	12.01 to 16	NPT1/8	2.72(3.03)	0.393	0.393	1.24	0.197	0.43	0.43	3.92(4.23)	0.394	0.04	0.20	0.26	M6X0.75
32	Up to 12	12.01 to 18	NPT1/8	2.80(3.11)	0.413	0.374	1.51	0.236	0.43	0.39	4.51(4.82)	0.472	0.04	0.22	0.30	M8X1.0
40	Up to 12	12.01 to 32	NPT1/8	3.07(3.42)	0.452	0.393	1.87	0.236	0.47	0.39	4.78(5.13)	0.551	0.05	0.24	0.33	M10X1.25
50	Up to 12	12.01 to 48	NPT1/4	3.54(4.01)	0.512	0.512	2.30	0.315	0.51	0.47	5.69(6.16)	0.630	0.08	0.30	0.39	M12X1.25
63	Up to 12	12.01 to 48	NPT1/4	3.54(4.01)	0.551	0.472	2.85	0.315	0.51	0.47	5.69(6.16)	0.709	0.12	0.45	0.57	M14X1.5

Note:1、 With magnet and without magnet,the dimensions are same.
2、 Within the "()" size is the size of long stroke;

NSQ
NFPA Standard



Specifications

Bore(mm)	12	16	20	25	32	40	50	63	80	100
Acting type	Double Acting /Single Acting: With Spring Return / With Spring Extend									
Working medium	Clean Air (40 μm filtration)									
Working pressure (psi)	14.5~145									
Guaranteed pressure (psi)	217									
Working temperature	-20~70℃ (-4~176F) (No freezing)									
Cushion type	Rubber Cushion									
Stroke tolerance	+1.0 0									
Lubrication	Not required									
Port size	M5x0.8				NPT1/8		NPT1/4		NPT3/8	
Magnet switch	HX-07/HX-29									

How to Order?

Series No	Mounting Type	Type No	Bore	X	Stroke	Adjustable Stroke	Magnet No	Piston Rod Thread Type	Thread Type
NSQ (North America Standard)	Blank: Through hole A: Femal thread at both ends	Blank: Basic type D: Double shaft type J: Double shaft and adjustable stroke type SA: Single acting spring extend SB: Single acting spring return	12		25	10	Blank: No magnet S: With magnet	Blank: Female thread M: Male thread N: No thread	Blank: NPT
			16		50	20			
			20		75	30			
			25		...	40			
			...			50			
			100			75			
						100			

Order Example:

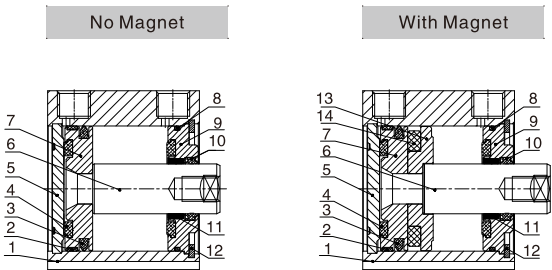
NSQ Series single acting spring extend cylinder, through hole mounting type, 40mm bore, 30mm stroke, with magnet, female thread on piston rod, NPT thread.
ERP code is: NSQSA40X30-S

Stroke

	Bore (mm)		Standard Stroke (mm)														Max.Stroke (mm)
			5	10	15	20	25	30	35	40	45	50	60	70	80	90	
Double Acting	12/16		5	10	15	20	25	30	35	40	45	50	60				50
	20/25		5	10	15	20	25	30	35	40	45	50	60	70	80	90	100
	32-100		5	10	15	20	25	30	35	40	45	50	60	70	80	90	100
Single Acting	12/16		5	10	15	20											20
	20-63		5	10	15	20	25	30									30

Note:The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder.
e.g. 27mm stroke cylinder has the same dimensions of 30 std. stroke cylinder.

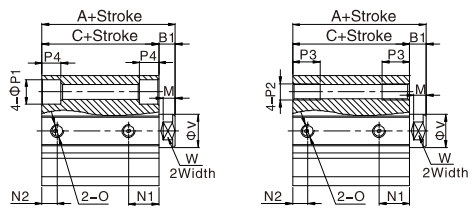
Internal Structure



No	Part Name
1	Barrel
2	Wear ring
3	Piston seal
4	Anti-bump cushion
5	Rear cover
6	Piston rod
7	Piston
8	O-ring
9	Head cover
10	Piston rod seal
11	
12	C type retainer ring
13	Magnet
14	Magnet base

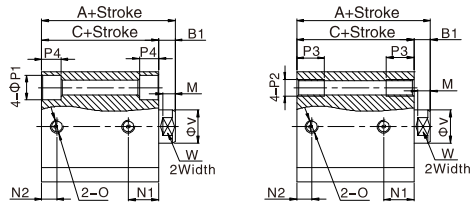
● Main Dimension

NSQ Φ12-Φ25 (No Magnet)



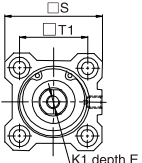
Through hole type

Thread type

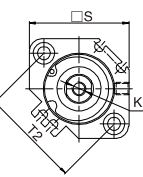


Through hole type

Thread type



Φ12 (With magnet)

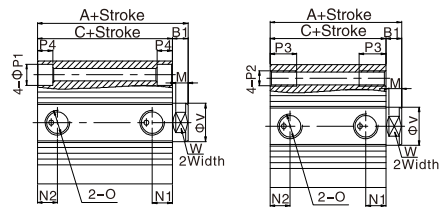


Φ16-Φ25 (With magnet)

Model Sign	Basic Type				With Magnet											
	A		C		N1	N2	A	C	N1	N2	B1	D	E	M		
12	St≤50	St≥60	St≤50	St≥60	7.5	5	31.5	28	9	5	3.5	-	5.4	3.5		
16	22	-	18.5	-	8	5.5	34	30.5	9.5	5.5	3.5	-	5.4	3		
20	24	34	19.5	29.5	9	5.5	36	31.5	9.5	5.5	4.5	-	7	4		
25	27.5	37.5	22.5	32.5	11	5.5	37.5	32.5	11	5.5	5	-	10	4.5		

Bore /Sign	K1	O	P1	P2	P3	P4	S	T1	T2	V	W
12	M3x0.5	#8-32UNC	6.3	#8-32UNC	7	3.5	25	15.5	22	6	5
16	M4x0.7	#8-32UNC	6.5	#8-32UNC	7	3.5	29	20	28	8	6
20	M5x0.8	#10-32UNF	9	1/4-20UNC	10	7	36	25.5	36	10	8
25	M6x1.0	1/4-28UNF	9	1/4-20UNC	10	7	40	28	40	12	10

NSQ Φ32-Φ100



Through hole type

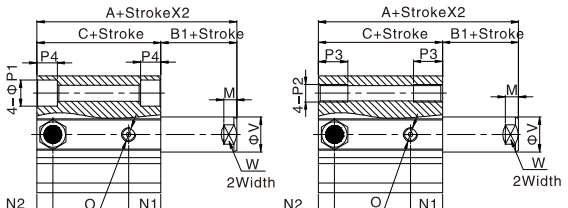
Thread type

Model Sign	Basic Type				With Magnet											
	A		C		N1	N2	A	C	N1	N2	B1	D	E	M		
32	St=5	30	40	23	33	7.5	6.5	40	33	10.5	7.5	7	49.5	13.3	6	
40	St>5	36.5	46.5	29.5	39.5	11	8	46.5	39.5	11	8	7	57	18.3	6	
50	St=5	38.5	48.5	30.5	40.5	9	9	48.5	40.5	10.5	10.5	8	71	17.6	6.5	
63	St>5	44	54	36	46	14	9.5	54	46	15	10.5	8	84	17.6	6.5	
80	St=5	53.5	63.5	43.5	53.5	16	14	63.5	53.5	16	14	10	104	24.3	8.5	
100	St>5	65	75	53	63	20	17.5	75	63	20	17.5	12	123.5	27	9.5	

Bore /Sign	K1	O	P1	P2	P3	P4	S	T1	T2	V	W
32	5/16-24UNF	NPT1/8	9	1/4-20UNC	10	7	45	34	-	16	14
40	3/8-24UNF	NPT1/8	9	1/4-20UNC	10	7	52	40	-	16	14
50	1/2-20UNF	NPT1/4	11	5/16-18UNC	14	8	64	50	-	20	17
63	1/2-20UNF	NPT1/4	14	7/16-14UNC	18	10.5	77	60	-	20	17
80	5/8-18UNF	NPT3/8	17.5	1/2-13UNC	22	13.5	98	77	-	25	22
100	3/4-16UNF	NPT3/8	17.5	1/2-13UNC	22	13.5	117	94	-	32	27

● Main Dimension

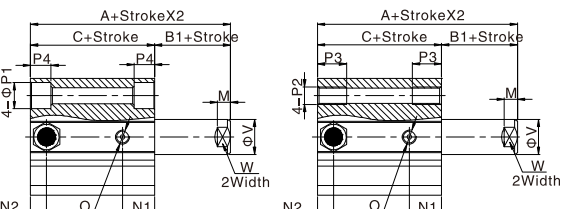
NSQSA Φ12-Φ25 (No Magnet)



Through hole type

Thread type

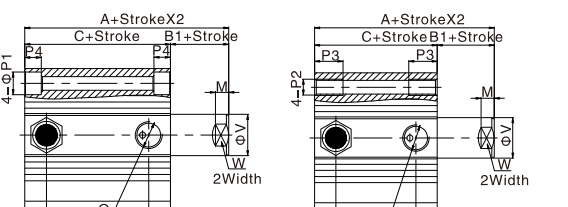
NSQSA Φ12-Φ25 (With Magnet)



Through hole type

Thread type

NSQSA Φ32-Φ63



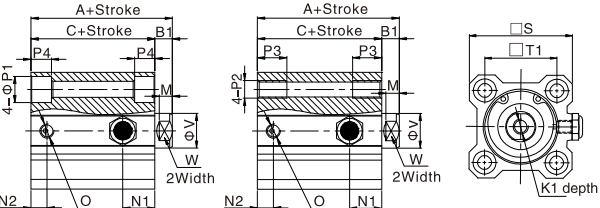
Through hole type

Thread type

Model Bore /Sign	Basic Type												B1	D	E
	A			C			N1	N2							
Stroke	5/10	15/20	25/30	5/10	15/20	25/30									
12	25.5	30.5	-	22	27	-	7.5	5	3.5	-	5.4				
16	27	32	-	23.5	28.5	-	8	5.5	3.5	-	5.4				
20	29	34	39	24.5	29.5	34.5	9	5.5	4.5	-	7				
25	32.5	37.5	42.5	27.5	32.5	37.5	11	5.5	5	-	10				
32	35	40	45	28	33	38	10.5	7.5	7	49.5	13.3				
40	41.5	46.5	51.5	34.5	39.5	44.5	11	8	7	57	18.3				
50	48.5	53.5	58.5	40.5	45.5	50.5	10.5	10.5	8	71	17.6				
63	54	59	64	46	51	56	15	10.5	8	84	17.6				

Bore /Sign	O	P1	P2	P3	P4
12	M5x0.8	6.3	#8-32UNC	7	3.5
16	M5x0.8	6.5	#8-32UNC	7	3.5
20	M5x0.8	9	1/4-20UNC	10	7
25	M5x0.8	9	1/4-20UNC	10	7
32	NPT1/8	9	1/4-20UNC	10	7
40	NPT1/8	9	1/4-20UNC	10	7
50	NPT1/4	11	5/16-18UNC	14	8
63	NPT1/4	14	7/16-14UNC	18	10.5

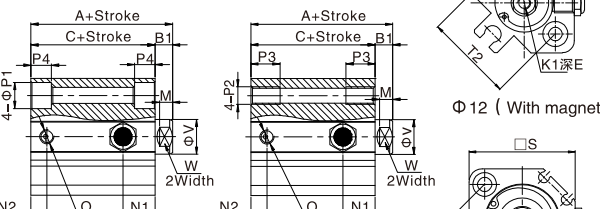
NSQSB Φ12-Φ25 (No Magnet)



Through hole type

Thread type

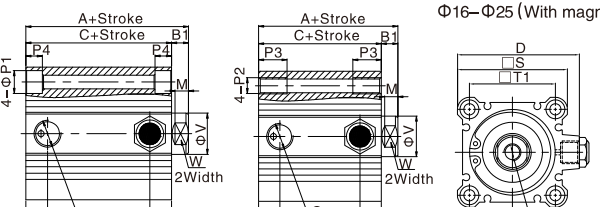
NSQSB Φ12-Φ25 (With Magnet)



Through hole type

Thread type

NSQSB Φ32-Φ63



Through hole type

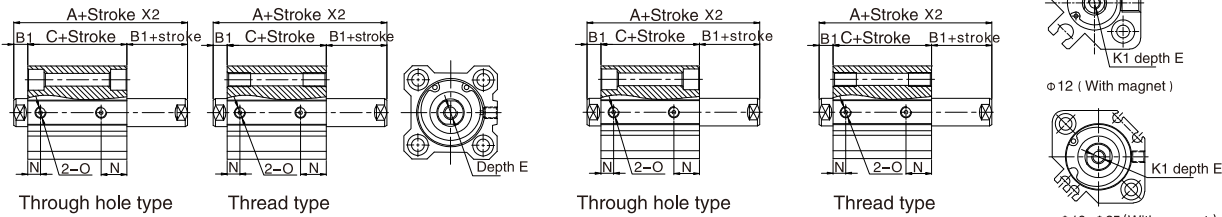
Thread type

Model Bore /Sign	Basic Type												K1
	A			C			N1	N2					
Stroke	5/10	15/20	25/30	5/10	15/20	25/30							
12	36.5	41.5	-	33	38	-	9	5	#8-32UNC				
16	39	44	-	35.5	40.5	-	9.5	5.5	#8-32UNC				
20	41	46	51	36.5	41.5	46.5	9.5	5.5	#10-32UNF				
25	42.5	47.5	52.5	37.5	42.5	47.5	11	5.5	1/4-28UNF				
32	45	50	55	38	43	48	10.5	7.5	5/16-24UNF				
40	51.5	56.5	61.5	44.5	49.5	54.5	11	8	3/8-24UNF				
50	58.5	63.5	68.5	50.5	55.5	60.5	10.5	10.5	1/2-20UNF				
63	64	69	74	56	61	66	15	10.5	1/2-20UNF				

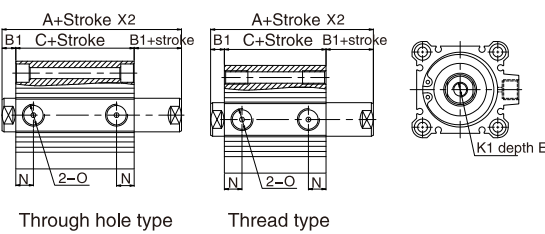
Bore /Sign	M	S	T1	T2	V	W
12	3.5	25	15.5	22	6	5
16	3	29	20	28	8	6
20	4	36	25.5	36	10	8
25	4.5	40	28	40	12	10
32	6	45	34	-	16	14
40	6	52	40	-	16	14
50	6.5	64	50	-	20	17
63	6.5	77	60	-	20	17

Main Dimension

NSQD Φ12-Φ25 (No Magnet)



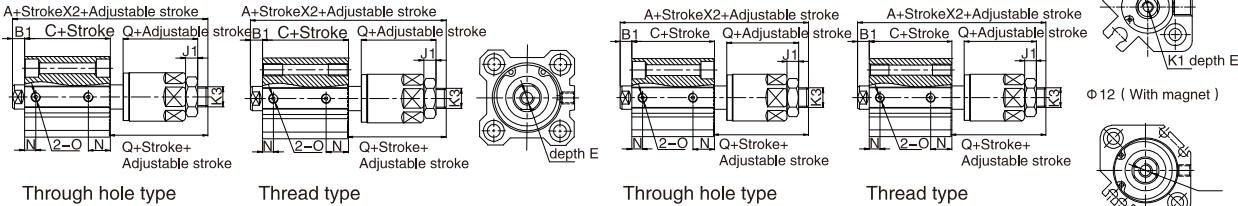
NSQD Φ32-Φ63



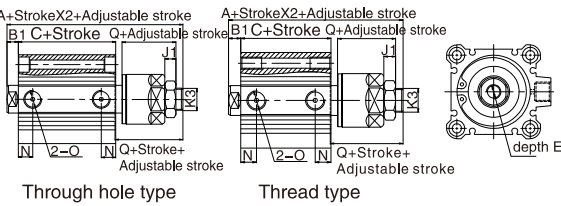
Bore /Sign	A		C		B1	E	N
	standard	With magnet	standard	With magnet			
12	32.2	39.4	25.2	32.4	3.5	5.4	9
16	33	43	26	36	3.5	5.4	9.5
20	35	47	26	38	4.5	7	9.5
25	39	49	29	39	5	9.5(St≤5)/10(St>5)	11
32	44.5	54.5	30.5	40.5	7	9(St≤10)/13.3(St>10)	10
40	54	64	40	50	7	11(St≤10)/18.3(St>10)	13
50	56.5	66.5	40.5	50.5	8	12(St≤10)/17.6(St>10)	13.5
63	58	68	42	52	8	12(St≤10)/17.6(St>10)	16
80	71	81	51	61	10	14(St≤15)/24.3(St>15)	16
100	84.5	94.5	60.5	70.5	12	20(St≤25)/27(St>25)	21

Note: Not marked dimensions is same as standard type. Male thread type pls check this page.

NSQJ Φ12-Φ25 (No Magnet)

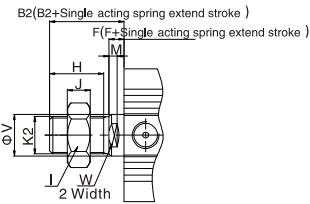


NSQJ Φ32-Φ100



Bore /Sign	A		C		B1	E	N	Q	J1	K3
	standard	With magnet	standard	With magnet						
12	45.2	52.4	25.2	32.4	3.5	5.4	9	17	4	M5x0.8
16	50	60	26	36	3.5	5.4	9.5	21	5	M6x1.0
20	55	67	26	38	4.5	7	9.5	25	6	M8x1.25
25	61.5	71.5	29	39	5	9.5(St≤5)/10(St>5)	11	28	6	M10x1.25
32	67	77	30.5	40.5	7	9(St≤10)/13.3(St>10)	10	30	8	M14x1.5
40	75	85.5	40	50	7	11(St≤10)/18.3(St>10)	13	29	8	M14x1.5
50	80.5	90.5	40.5	50.5	8	12(St≤10)/17.6(St>10)	13.5	32	11	M18x1.5
63	82	92	42	52	8	12(St≤10)/17.6(St>10)	16	32	11	M18x1.5
80	97.3	107.3	51	61	10	14(St≤15)/24.3(St>15)	16	37	13	M22x1.5
100	109	119	60.5	70.5	12	20(St≤25)/27(St>25)	21	37	13	M26x1.5

Male Type Dimension



Bore /Sign	B2	F	H	I	J	K2	M	V	W
12	11.5	3.5	9	8	4	#8-32UNC	3.5	6	5
16	11.5	3.5	10	10	5	#8-32UNC	3	8	6
20	12.5	4.5	12	12	6	#10-32UNF	4	10	8
25	14.5	5	15	17	6	1/4-28UNF	4.5	12	10
32	19.7	7	20.5	19	8	5/16-24UNF	4	16	14
40	23	7	20.5	19	8	3/8-24UNF	4	16	14
50	27.5	8	26	27	11	1/2-20UNF	4	20	17
63	27.5	8	26	27	11	1/2-20UNF	4	20	17
80	35.5	10	32.5	32	13	5/8-18UNF	6	25	22
100	40.5	12	32.5	36	13	3/4-16UNF	5.5	32	27

Note: