PROFESSIONAL

Hydraulic Cylinders for Jigs

Best Choice of Workpiece Clamping

100% BEST QUALITY

High Pressure
Clamping Cylinders

Work Supporting / Valves

Air Drive Booster Pumps

Wen Fu Industrial Co., Ltd.

WENFU

Professional Hydraulic Cylinders for Jigs

Best Choice of Workpiece Clamping

Wen Fu Industrial Co., Ltd. was founded in Fengyuan, Taichung, in the year 2000 by Mr. Lu Jinxing. The company's main product is high-pressure hydraulic cylinders, and it has been in operation for 20 years. Due to our long-term investment in research and development, continuous product improvement, and a strong focus on quality control, many long-term customers have recognized and are willing to support them.

Apart from the headquarters in Taiwan, in 2005, they also established Hangzhou Wenfu Machinery Co., Ltd. in Hangzhou, China, which deals exclusively with sales and product maintenance. All of the company's products are manufactured in Taiwan and are primarily sold in Taiwan and exported to China. With the assistance of numerous dealers, some manufacturers in countries like Thailand and Mexico also use their products.

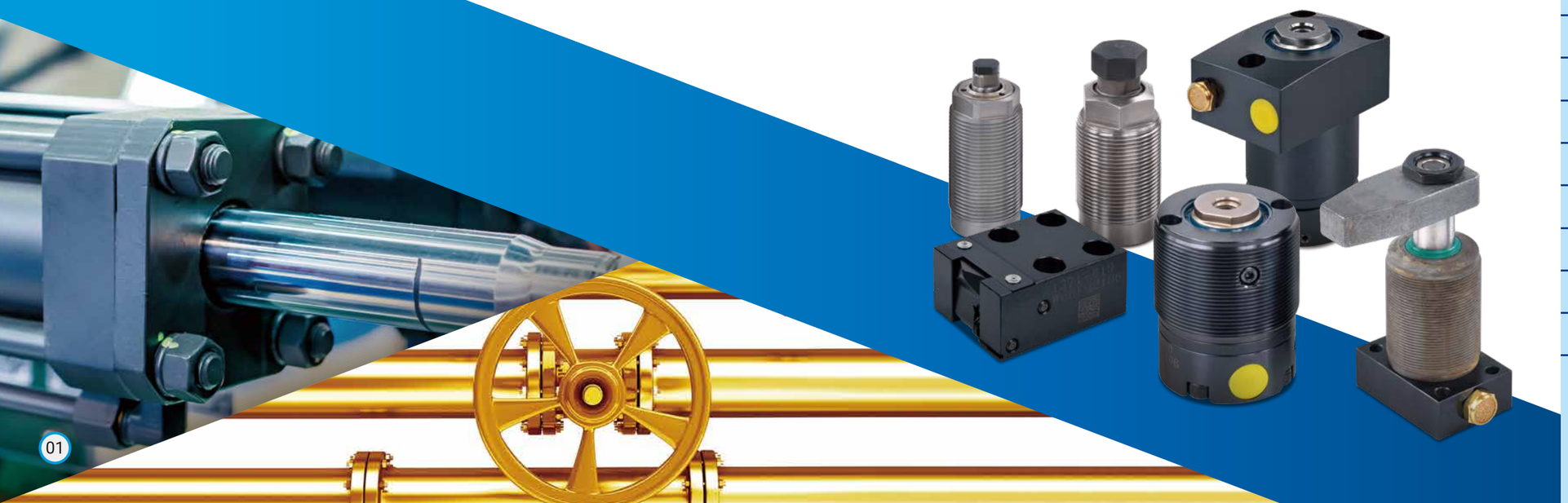
The company's business philosophy is "Contributing our effort to society and industry" (Support World). Even though they may not yet be among the world's top-tier manufacturers, they are determined to do their best to make customers proud of using their products. They want customers to deeply experience the convenience and durability of their products. Even though they are just a small screw in the entire processing industry, they will do their best to play their role well and find ways to grow and help more customers in the future.

Professional

Best Service

Reliable & Pragmatic

Sustainable Development



INDEX

HBC | Hydraulic Block Cylinder

Piston: Ø16~Ø40 mm | Pressure Max: 500 bar

Applications

- HBC hydraulic block cylinders have a wide range of applications. They can be designed and used to achieve functions such as positioning, fixing, supporting, and pushing according to the user's needs.

Introduction

- This series is in accordance with German standards.
- The product includes a dust seal to prevent external oil contamination from entering the cylinder body.
- The maximum operating pressure can reach 500 bar.
- This product can be manufactured as pipe thread or manifold-mounted, and the inlet hole position on the manifold can be selected as needed.
- It can be made as single-acting (with spring return) or double-acting based on requirements.
- Most block cylinders have a filter at the inlet hole to effectively filter out large impurities and prevent them from entering the cylinder body, reducing internal wear and extending the product's lifespan. (Some small block cylinders cannot accommodate filters due to their small size.)

Precautions

- Avoid Lateral Forces: Applying excessive lateral forces on the piston rod can damage the cylinder's internal components, reducing its product lifespan, and potentially causing hydraulic fluid leakage or external leaks.

Part-No.

HBC - 16 S × 8 B

1 2 3 4 5

No.	Meaning	Option
1	Series	HBC
2	The Diameter of Piston	16 / 25 / 32 / 40
3	Single Action / Double Action	S / D
4	The Hydraulic Cylinder Stroke Length	Please refer to the product specifications for "hydraulic cylinder stroke."
5	The Inlet Hole Position on The Manifold for Hydraulic Fluid Entry	B / S / K / L (In the case of the pipe thread type, leave this section blank.)

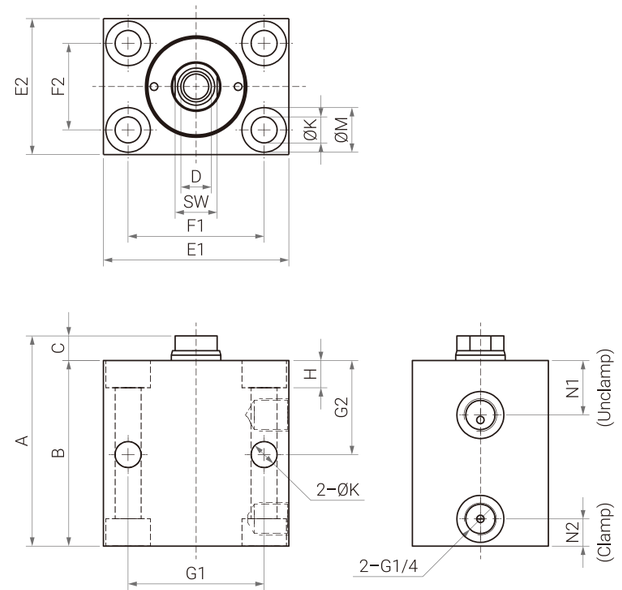
Example:

- A pipe thread hydraulic cylinder with an inner diameter of 25, double-acting, and a stroke of 20, the model number is HBC-25D×20.
- A manifold-mounted hydraulic cylinder with an inner diameter of 16, single-acting, and a stroke of 8, the model number is HBC-16S×8B.

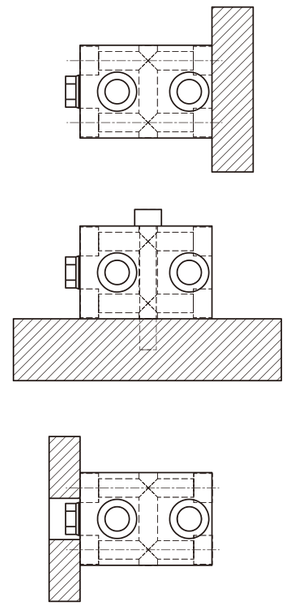
HBC | Hydraulic Block Cylinder (Pipe Thread Type)

Piston: Ø16~Ø40 mm | Pressure Max: 500 bar

Specifications



Installation Method



Items	Unit	Specification							
Piston Diameter	mm	16		25		32		40	
Rod Diameter	mm	10		16		20		25	
Force at 100 bar	kN	2.0		4.9		8.0		12.6	
Force at 500 bar	kN	10.0		24.6		40.2		62.9	
Single-Acting Stroke (Short / Long)	mm	8	20	8	20	10	20	10	20
Double-Acting Stroke (Short / Long)	mm	16	50	20	50	25	50	25	50
A	mm	63	97	71	101	85	110	89	114
B	mm	56	91	64	94	75	100	79	104
C	mm	7		7		10		10	
D (Deep)	mm	M6×1.0 (12)		M10×1.5 (15)		M12×1.75 (15)		M16×2.0 (25)	
SW	mm	8		13		17		N/A	
E1	mm	60		65		75		85	
E2	mm	35		45		55		63	
F1	mm	40		50		55		63	
F2	mm	22		30		35		40	
G1	mm	30		50		55		63	
G2	mm	30		33		38		40	
H	mm	6.5		9		11		11	
K	mm	6.8		9		11		11	
M	mm	11		14		18		18	
N1	mm	18		18		22		24	
N2	mm	11		11		11		11	

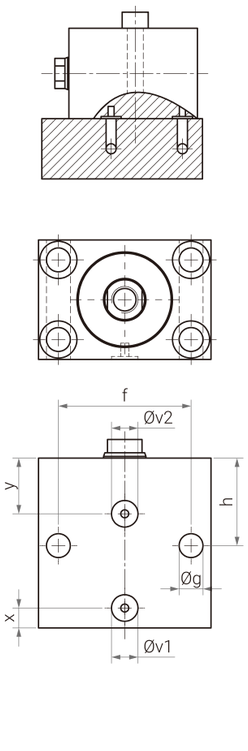
HBC | Hydraulic Block Cylinder (Manifold-Mounted Type)

Piston: Ø16~Ø40 mm | Pressure Max: 500 bar

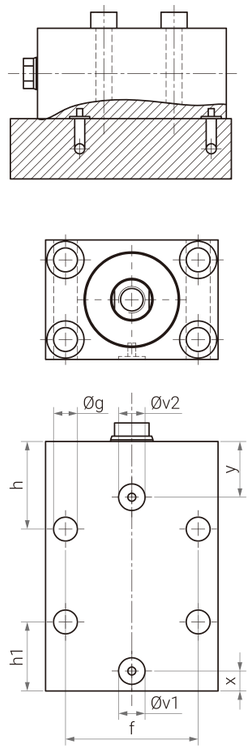
Specifications

- Manifold-Mounted Block Cylinders and Pipe Thread Block Cylinders are identical in terms of appearance, size, and piston stroke. The only difference lies in the inlet hole configuration. The specifications only note the differences in inlet hole positions on the manifold-mounted type.
- There are three options for inlet hole positions: front end (S), back end (B), and side (K or L).

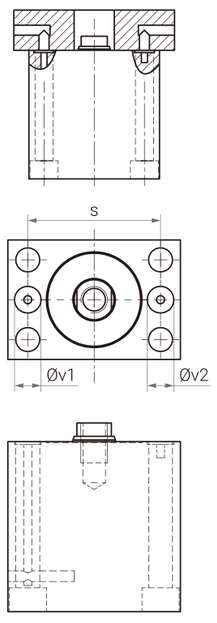
Side Connection K Type (Short Stroke)



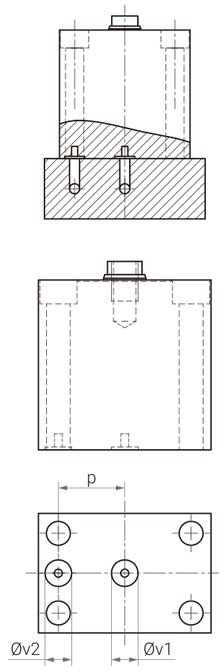
Side Connection L Type (Long Stroke)



Front Connection S Type



Back Connection B Type



Items	HBC-16	HBC-25	HBC-32	HBC-40
f	30	50	55	63
Øg	6.5	9	11	11
h	30	33	38	40
h1	24.5	26	27	27
s	40	50	55	65
p	20	25	27.5	31.5
Øv1 (Extending)	10	10	10 (K & L) / 13 (B & S)	10 (K & L) / 13 (B & S)
Øv2 (Retracting)	10	10	10 (K & L) / 13 (B & S)	10 (K & L) / 13 (B & S)
v1 & v2 Oil Hole	Ø3	Ø3	Ø3	Ø3
O-ring	7.5×1.5	7.5×1.5	7.5×1.5 / 10.5×1.5	7.5×1.5 / 10.5×1.5
x	7	7.5	10	10
y	20.5	21	25	27

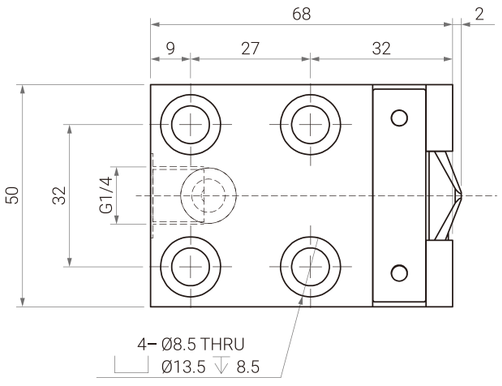
1371-010 | Hydraulic Block Cylinder

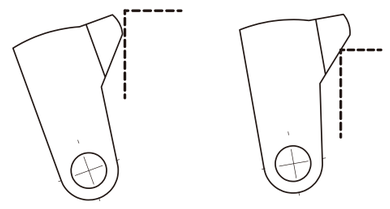
Piston: Ø16 mm | Pressure Max: 500 bar

Introduction

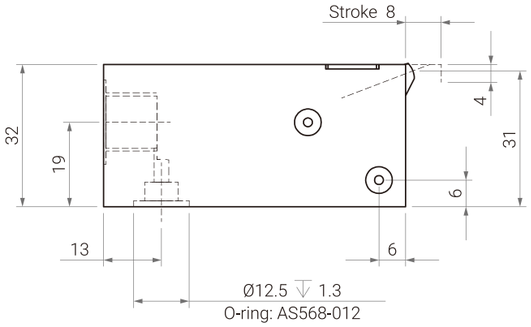
- The 1371-010 is primarily used when workpieces cannot be clamped from above. It is a low-position swinging fixed hydraulic cylinder, single-acting, with spring return, and a maximum operating pressure of 500 bar.
- This cylinder is fixed at a low position with a central pivot point for swinging movement, allowing it to provide two-dimensional force. The horizontal component of the output force is approximately 90%, and the downward vertical component is about 30%. The exact force distribution may vary depending on the clamping position.
- This product features oil holes for both pipe thread and manifold-mounted. Normally, the oil holes on the manifold-mounted are sealed with internal hex screws and sealing rings. To use it with the manifold-mounted, you should remove the internal hex screws and sealing rings and plug the G1/4 orifice.
- This hydraulic cylinder is designed for specific applications where workpieces cannot be easily clamped from above, and it offers unique force distribution characteristics for such scenarios.

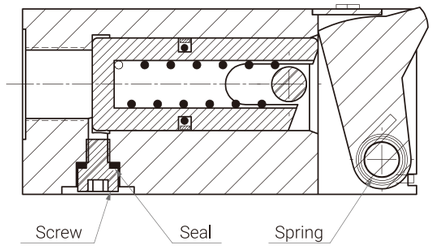
Specifications





Clamping Position





Piston Diameter	Stroke	Manifold-Mounted O-ring	Force		The Amount of Oil Used Per 10 mm Stroke
			100 bar	500 bar	
16 mm	8 mm	AS568-012	1.7 kN	8.5 kN	2 cm^3

HPS | High Pressure Swing Clamp Cylinder

Piston: Ø25~Ø63 mm | Pressure Max: 500 bar

Introduction

- Swing clamp cylinders are typically used in applications where there is a need to maintain clear space for placing and clamping workpieces.
- The clamping action of a swing Clamp cylinder consists of two parts (as shown in Figure 1). It first rotates to a specific angle and then lowers to clamp the workpiece. It's essential not to clamp the workpiece during the rotational stroke, as it can damage the internal rotational mechanism.
- The swing clamp cylinders contains a clutch, which serves to separate the shaft and the internal rotational mechanism when the rotation speed is excessive, heavy clamping arm is installed, or when it collides with other objects during rotation. This is to protect the rotational mechanism from damage due to abnormal external forces.
- Swing clamp cylinders can be single-acting (with spring return) or double-acting, offering both clockwise and counterclockwise rotation. The standard rotation angle is 90°, with options for 60°, 45°, 30°, and 0° (as shown in Figure 2).
- Installation methods include base mounting and full-threaded mounting.
- You can choose pipe thread types or manifold-mounted types.

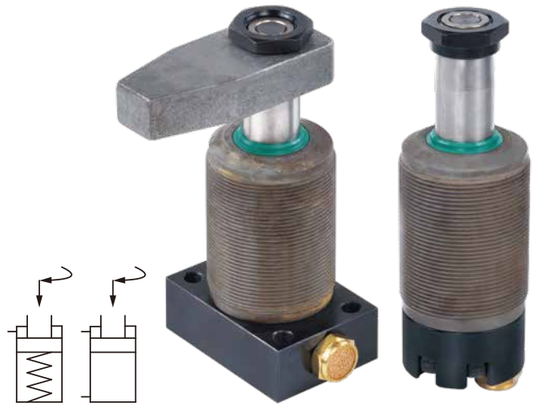


Figure 1

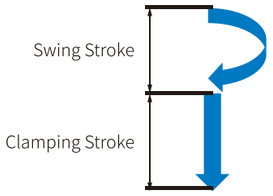
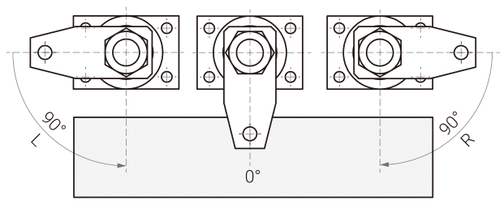


Figure 2



Precautions

- For the length of clamping arm and operating pressure, please refer to the effective clamping force and operating pressure chart in the product specifications. Using a clamping arm whose length that exceeds the specified range can lead to cylinder damage.
- If you experience unreliable or unstable rotation, consider installing a flow control valve to reduce the rate of hydraulic fluid intake.
- For the maximum filling speed, consult the product specifications. Avoid using excessively high filling speeds to prevent excessively rapid rotation.

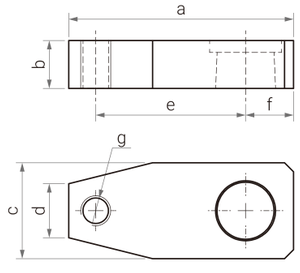
Part-No.

HPS - 25 S A R × 90

1 2 3 4 5 6

No.	Meaning	Option
1	Series	HPS
2	The Diameter of Piston	Ø25 / Ø40 / Ø50 / Ø63
3	Acting Type	S: Single-Acting / D: Double-Acting
4	Mounting Type	A: Threaded Type B: Flange, Pipe Thread Type C: Flange, Manifold-Mounted Type
5	Rotating Direction	Turn Right R or Turn Left L
6	Rotating Angle	90°, 60°, 45°, 0°

Accessories: Clamping Arm Specifications



Items	a	b	c	d	e	f	g
HPS-25 w/ Threaded Inserts	75	16	32	16	50	16	M10
HPS-25 w/o Threaded Inserts	75	16	32	16	N/A	16	N/A
HPS-40 w/ Threaded Inserts	115	23	48	22	77	25	M16
HPS-40 w/o Threaded Inserts	115	23	48	22	N/A	25	N/A

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HPS

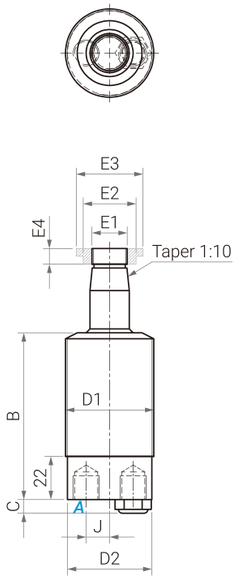
HPS | High Pressure Swing Clamp Cylinder

Piston: Ø25~Ø63 mm | Pressure Max: 500 bar

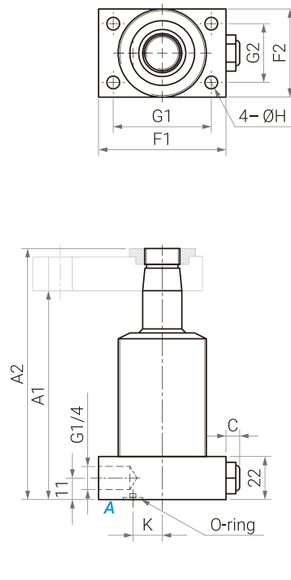
Specifications

A Clamping. ***B*** Unclamping.

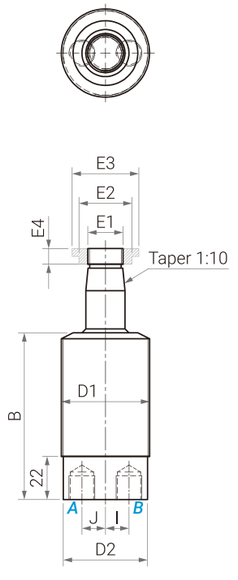
Single-Acting Full-Threaded Type



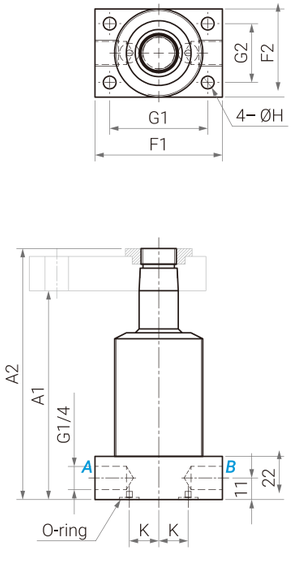
Single-Acting Base-Mounted Type



Double-Acting Full-Threaded Type



Double-Acting Base-Mounted Type



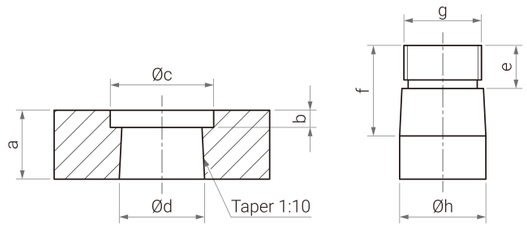
Items	Unit	HPS-25	HPS-40	HPS-50	HPS-63
Piston Diameter	mm	Ø25	Ø40	Ø50	Ø63
Rod Diameter	mm	Ø20	Ø32	Ø40	Ø50
Swing Stroke	mm	7	8	11	9
Clamping Stroke	mm	11	14	15	15
Full Stroke	mm	18	22	26	24
Max. Filling Speed	cc/s	3.2	10	18.4	27.7
Oil Volume / Stroke	cc	3.2	10	18.4	27.7
Oil Volume / Return Stroke	cc	8.8	27.7	51	74.8
Rotation Direction	–	Right / Left			
Rotation Angle	–	90°, 60°, 45°, 0°			
Acting	–	Single / Double			
Min. Pressure	bar	40	40	40	40
A1	mm	106.5	119.5	138	142

Items	Unit	HPS-25	HPS-40	HPS-50	HPS-63
A2	mm	128	147.5	172	182
B	mm	85	94.5	110	116
C	mm	7	7	7	7
D1	mm	M45×1.5	M60×1.5	80	90
ØD2	mm	Ø43	Ø58	Ø77	Ø88
E1	mm	M18×1.5	M28×1.5	M35×1.5	M45×1.5
ØE2	mm	Ø23.5	Ø33.8	Ø45	Ø55
E3	mm	30	40	55	68
E4	mm	10	11	11	13
F1	mm	65	85	100	115
F2	mm	45	63	80	90
G1	mm	50	65	80	90
G2	mm	30	44	60	68
H	mm	Ø6.5	Ø8.5	Ø13.5	Ø16
I	mm	12	12.5	19	25.5
J	mm	12	19.5	26.5	34
K	mm	15	28	31	37.5
O-ring	mm	S8	S8	S8	S8

HPS | High Pressure Swing Clamp Cylinder

Piston: Ø25~Ø63 mm | Pressure Max: 500 bar

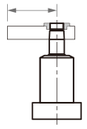
Dimensions of Clamping Arms

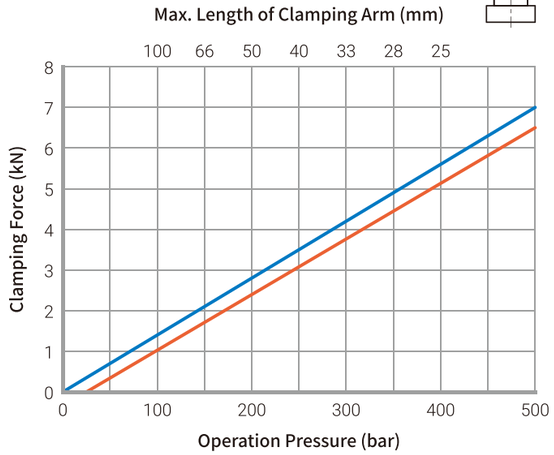


Type	a	b	Øc	Ød	e	f	g	Øh
HPS-25	16	4	24	19.9	10	21	M18×1.5	20
HPS-40	23	5	34	31.9	11	28	M28×1.5	32
HPS-50	28	5	46	39.9	12	34	M35×1.5	40
HPS-60	34	6	56	49.9	13	40	M45×1.5	50

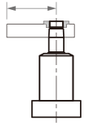
Effective Clamping Force & Operating Pressure Chart

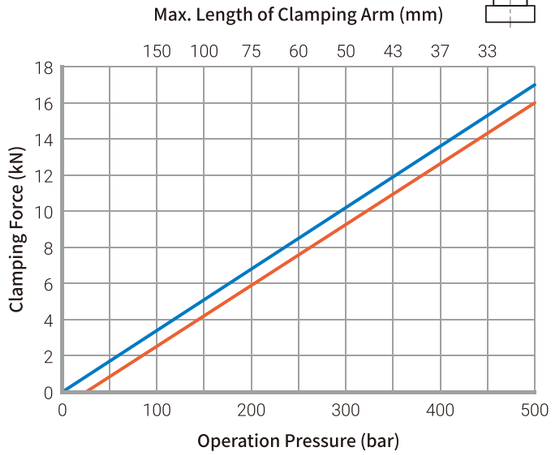
HPS-25 Double-Acting Single-Acting



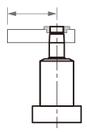


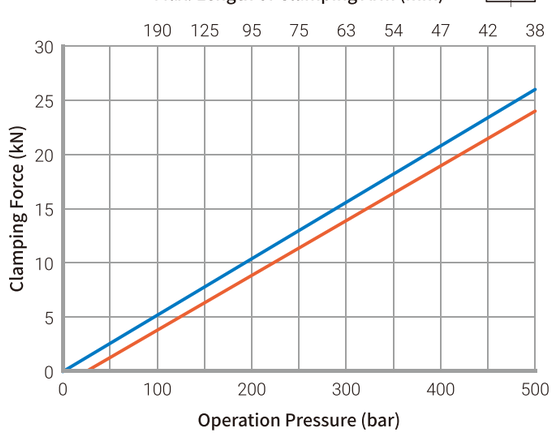
HPS-40 Double-Acting Single-Acting



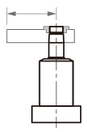


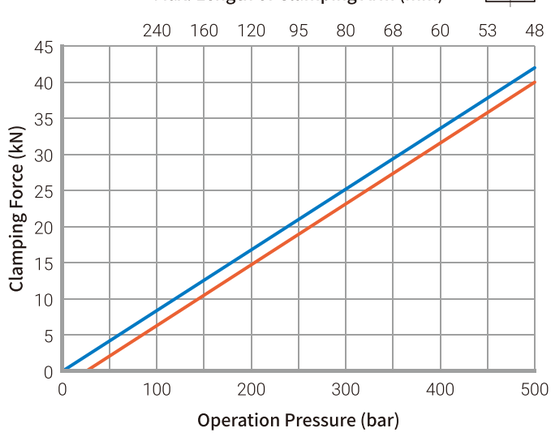
HPS-50 Double-Acting Single-Acting





HPS-63 Double-Acting Single-Acting





HPS | The Method of Installing Clamping Arms

The Method of Locking The Clamping Arm

CORRECT

Turn the nut with one hand while holding the clamping arm steady with the other.

WRONG

The Method to Remove The Clamping Arm

CORRECT

WRONG

HPS-FA | High Pressure Top Flange Swing Clamp Cylinder

Piston: Ø25~Ø63 mm | Pressure Max: 500 bar

Introduction

- Swing clamp cylinders are typically used in applications where there is a need to maintain clear space for placing and clamping workpieces.
- The clamping action of a swing Clamp cylinder consists of two parts (as shown in Figure 1). It first rotates to a specific angle and then lowers to clamp the workpiece. It's essential not to clamp the workpiece during the rotational stroke, as it can damage the internal rotational mechanism.
- The swing clamp cylinders contains a clutch, which serves to separate the shaft and the internal rotational mechanism when the rotation speed is excessive, heavy clamping arm is installed, or when it collides with other objects during rotation. This is to protect the rotational mechanism from damage due to abnormal external forces.
- Swing clamp cylinders can be single-acting (with spring return) or double-acting, offering both clockwise and counterclockwise rotation. The standard rotation angle is 90°, with options for 60°, 45°, 30°, and 0° (as shown in Figure 2).
- Installation methods include base mounting and full-threaded mounting.
- You can choose pipe-mounted types or manifold-mounted types.

Figure 1

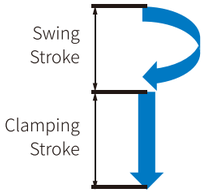


Figure 2

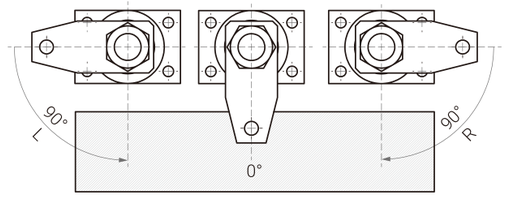
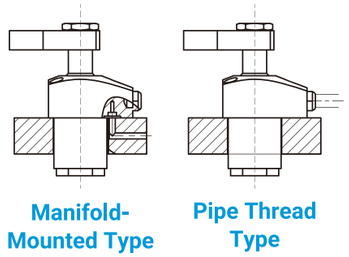


Figure 3



Manifold-Mounted Type | Pipe Thread Type

Precautions

- For the pressure plate length and operating pressure, please refer to the effective clamping force and operating pressure chart in the product specifications. Using a pressure plate length that exceeds the specified range can lead to cylinder damage.
- If you experience unreliable or unstable rotation, consider installing a flow control valve to reduce the rate of hydraulic fluid intake.
- For the maximum filling speed, consult the product specifications. Avoid using excessively high filling speeds to prevent excessively rapid rotation.

Part-No.

HPS-FA - 25 - S - R - 90

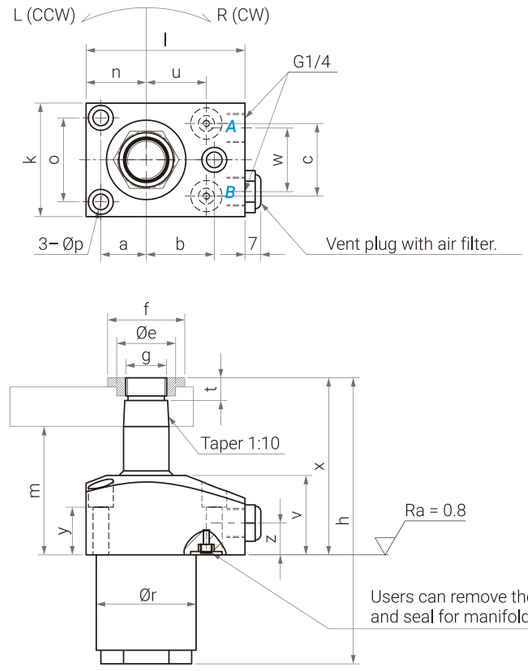
1 2 3 4 5

No.	Meaning	Option
1	Series	HPS-FA
2	Bore of Cylinder	Ø25 / Ø40 / Ø50 / Ø63
3	Acting Type	S: Single-Acting / D: Double-Acting
4	Rotating Direction	Turn Right R or Turn Left L
5	Rotating Angle	90°, 60°, 45°, 0°

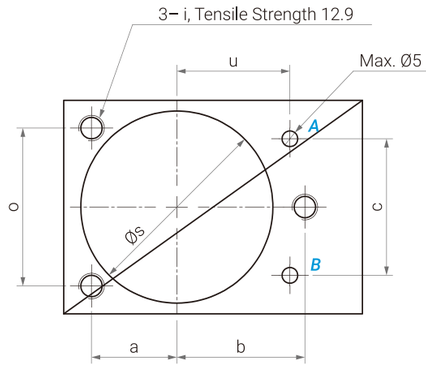
HPS-FA | High Pressure Top Flange Swing Clamp Cylinder

Piston: Ø25~Ø63 mm | Pressure Max: 500 bar

Specifications



Specifications of Base



A Clamping.

B Unclamping / Vent Plug.

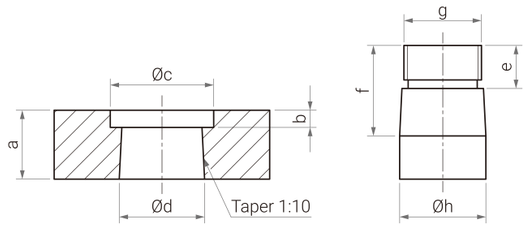
Items	Unit	HPS-FA25	HPS-FA40	HPS-FA50	HPS-FA63
Piston Diameter	mm	Ø25	Ø40	Ø50	Ø63
Rod Diameter	mm	Ø20	Ø32	Ø40	Ø50
Swing Stroke	mm	7	8	11	9
Clamping Stroke	mm	11	14	15	15
Full Stroke	mm	18	22	26	24
Max. Filling Speed	cc/s	3.2	10	18.4	27.7
Oil Volume / Stroke	cc	3.2	10	18.4	27.7
Oil Volume / Return Stroke	cc	8.8	27.7	51	74.8
Rotation Direction	–	Right / Left			
Rotation Angle	–	90°, 60°, 45°, 0°			
Acting	–	Single / Double			
Min. Pressure	bar	40	40	40	40
a	mm	20	27	37	42
b	mm	30	38	50	55
c	mm	32	46	62	75
Øe	mm	23.5	33.8	45	55.5
f	mm	30	40	55	68

Items	Unit	HPS-FA25	HPS-FA40	HPS-FA50	HPS-FA63
g	mm	M18×1.5	M28×1.5	M35×1.5	M45×1.5
h	mm	126.5	147.5	172	182
i	mm	M6	M8	M10	M12
k	mm	50	63	85	95
l	mm	70	85	110	125
m	mm	57	65	70	69
n	mm	26.5	34.5	47	55
o	mm	37	48	65	72
Øp	mm	6.6	9	11	14
Ør	mm	44	59.8	79.8	89.8
Øs	mm	45	61	80	90
t	mm	9	10	11	12
u	mm	26.5	31	40	45
v	mm	35	40	40	40
w	mm	28	41	55	70
x	mm	78	93	104	109
y	mm	21	27	25	14
z	mm	14	14	12	12
The Moment of Overload Protection	Nm	3.5	11	17	22

HPS-FA | High Pressure Top Flange Swing Clamp Cylinder

Piston: Ø25~Ø63 mm | Pressure Max: 500 bar

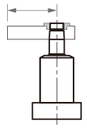
Dimensions of Clamping Arms



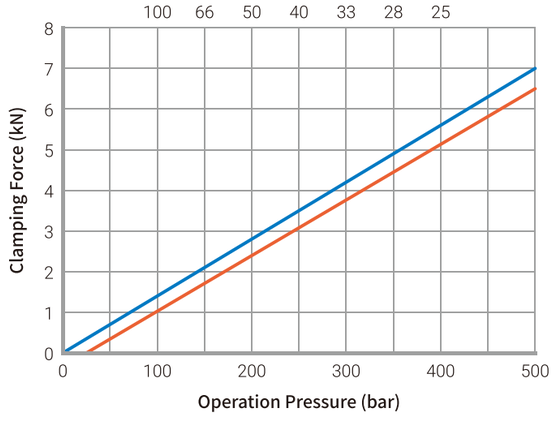
Type	a	b	Øc	Ød	e	f	g	Øh
HPS-25	16	4	24	19.9	10	21	M18×1.5	20
HPS-40	23	5	34	31.9	11	28	M28×1.5	32
HPS-50	28	5	46	39.9	12	34	M35×1.5	40
HPS-60	34	6	56	49.9	13	40	M45×1.5	50

Effective Clamping Force & Operating Pressure Chart

HPS-25 — Double-Acting — Single-Acting

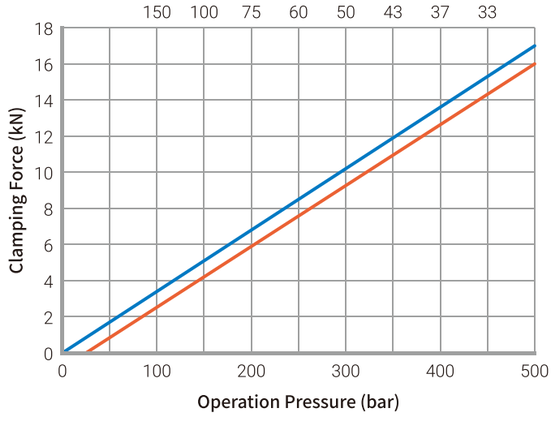


Max. Length of Clamping Arm (mm)

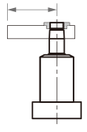


HPS-40 — Double-Acting — Single-Acting

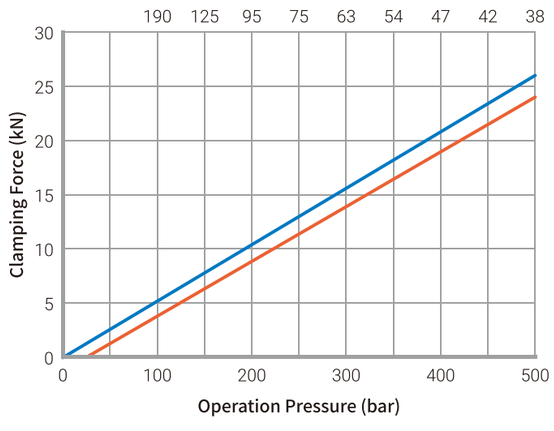
Max. Length of Clamping Arm (mm)



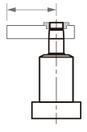
HPS-50 — Double-Acting — Single-Acting



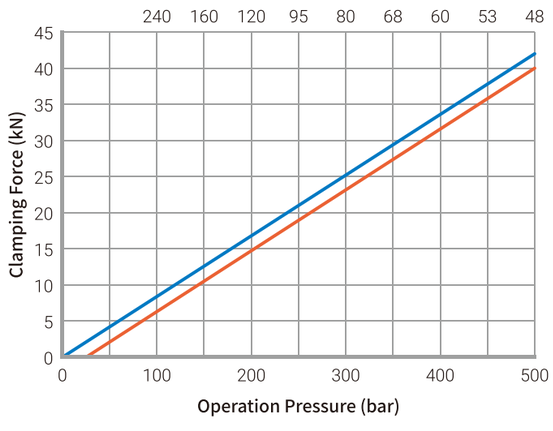
Max. Length of Clamping Arm (mm)



HPS-63 — Double-Acting — Single-Acting



Max. Length of Clamping Arm (mm)

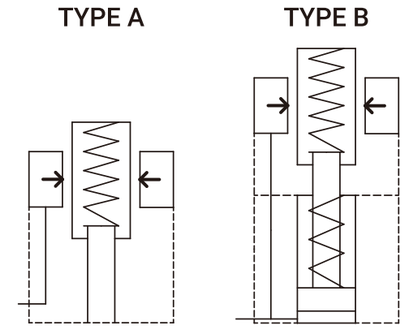


SP SERIES | Hydraulic Work Support Cylinder

Rod: Ø16~Ø40 mm | Pressure Max: 500 bar

Introduction

- Support cylinders are mainly used to support workpieces. They can compensate for surface irregularities during machining and bear the loads during processing to prevent vibrations and workpiece deformation.
- The product is available in two types, A and B:
- Type A is a spring-extend type, where the initial position of the shaft is the highest extended position. When the workpiece contacts the downward shaft for positioning, filling the oil will tighten the shaft to generate supporting force.
- Type B is a hydraulic-extend type, where the initial position of the shaft is the lowest. After positioning the workpiece, supplying oil will extend the shaft to contact the workpiece and then stop, tightening the shaft to generate supporting force.

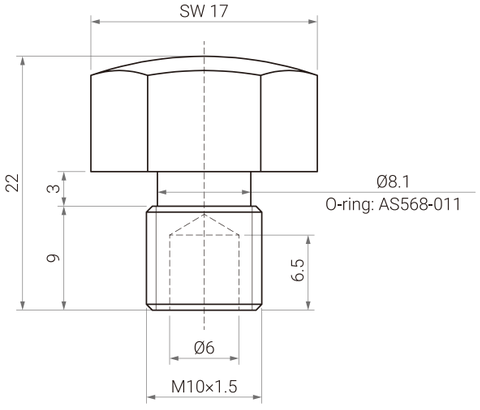


Precautions

- Contact Force: In the case of Type B, the contact force depends on the initial distance between the workpiece and the cylinder surface. Because the support cylinder initially supports the shaft with a spring, within the allowable range, the farther the workpiece is from the cylinder, the smaller the contact force. Conversely, the closer the workpiece is to the cylinder, the greater the contact force. For Type A, the contact force depends on the distance the workpiece is pressed down. The more it is pressed down, the greater the contact force.
- Minimum Operating Pressure: Due to the internal structure of the support cylinder, which uses a thin shell to clamp the shaft for supporting the workpiece, there is a minimum recommended pressure of approximately 100 bar to press the thin shell and enable it to support the workpiece.
- Flow Control: Since support cylinders require a relatively small amount of hydraulic fluid, excessive hydraulic oil flow can cause the shaft's piston to fail to reach its position before the thin shell clamps the shaft. If you encounter situations where the shaft stroke does not reach the specified position before locking, consider reducing the flow rate (adjustable with a flow control valve). It's also possible that the shaft extends too quickly, causing it to impact the workpiece, and then the thin shell clamps it, resulting in the shaft not making proper contact with the workpiece. It is recommended that the filling time be at least 1 second.
- Air Discharge: If there is air in the oil, it can lead to a longer clamping time.
- Overload: If you exceed the specified load capacity, the shaft may be pressed back due to insufficient support force. If you use a clamping cylinder above the support cylinder, the support cylinder must act first, and the support force must be at least 1.5 times greater than the clamping force.
- Lateral Loads: The support force of the support cylinder compensates only in the shaft direction. When the support cylinder's shaft bears a lateral load, it causes permanent deformation in the thin shell, which results in the shaft's inability to accurately position or provide support.
- Elastic Deformation: Since the support cylinder is also made of metal, it naturally undergoes elastic deformation. Typically, 5 kN of pressure can lead to elastic deformations ranging from 0.005 mm to 0.015 mm (the amount of elastic deformation varies for different cylinders).
- Contact Bolts: When using support cylinders, it is essential to use contact bolts to prevent dust, liquids, and other debris from entering the cylinder, potentially causing cylinder damage. Also, do not remove the O-ring from the bolt, as cutting fluid can still enter the cylinder and cause internal rust and other problems.

When Using Custom-Made Contact Bolts, Please Follow The Rules:

- Ensure that the contact surface is hardened and shaped like a rounded dome to safely contact potentially uneven workpiece surfaces.
- If the contact surface needs to be flat, consider using a floating bolt. However, keep in mind that floating bolts may yield, so plastic deformation must be calculated.
- Special-shaped contact bolts designed to match the workpiece surface can potentially induce lateral forces, leading to support cylinder damage.
- When contact bolts touch the workpiece, they either touch at a "point" or a "groove." Points and grooves experience larger elastic deformation when pressed into the workpiece. Additionally, points or grooves can become fully embedded in the workpiece, allowing lateral forces to directly affect the support cylinder, potentially causing damage.
- Custom-made contact bolts should not be too heavy, as excessive pressure can cause abnormal operation inside the support cylinder.
- Recommended contact bolt specifications for the SP-16 series may vary depending on the different cylinder thread specifications and O-ring placement.



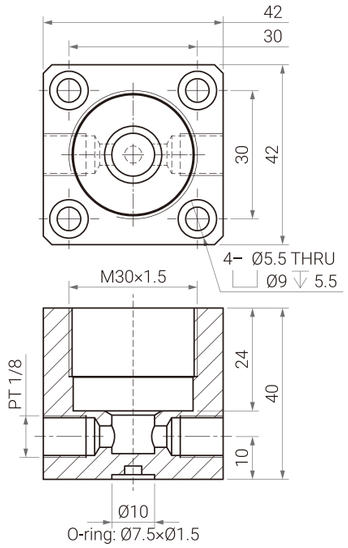
SP-16 | Hydraulic Work Support Cylinder

Rod: Ø16~Ø40 mm | Pressure Max: 500 bar

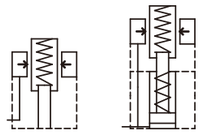
Specifications

- Compact design allows installation in tight spaces.
- When installing, first insert the white sealing ring. When tightening, avoid excessive force; simply tighten until it doesn't leak oil. Excessive force during tightening can reduce the sealing effectiveness of the sealing ring or even cause it to lose its leak-proof function due to excessive deformation.

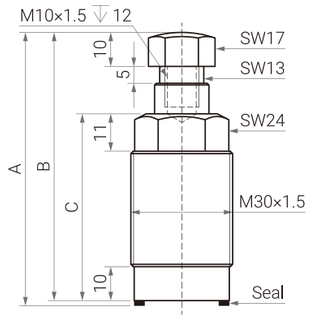
SP-16BASE



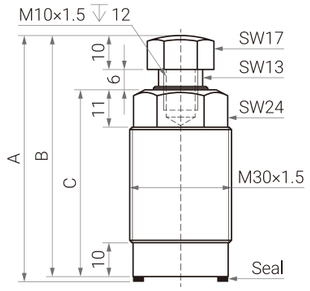
TYPE A TYPE B



SP-16A

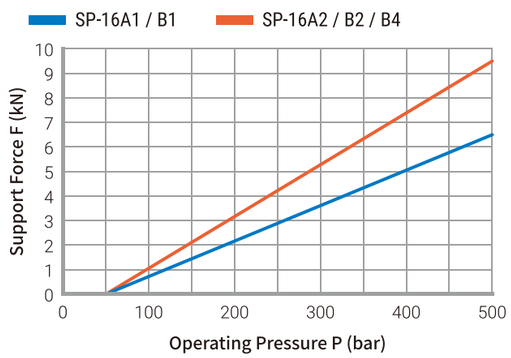


SP-16B

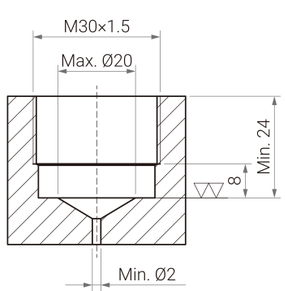


Items	Unit	SP-16A1	SP-16A2	SP-16B1	SP-16B2	SP-16B4
Rod Diameter	mm	Ø16	Ø16	Ø16	Ø16	Ø16
Stroke	mm	8	8	8	8	15
Min. Pressure	bar	100	100	100	100	100
Spring Contact Force (Min. / Max.)	N	8 / 13	8 / 13	10 / 23	10 / 23	10 / 23
Support Force (500 bar)	kN	6.5	9.5	6.5	9.5	9.5
A	mm	80.5	90.5	72.5	82.5	89.5
B	mm	79	89	71	81	88
C	mm	55	65	55	65	72

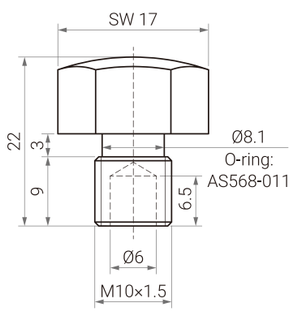
Support Force & Hydraulic Pressure Relationship Diagram



Installation Dimensions



Accessories: Contact Bolts



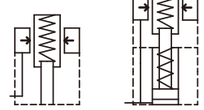
SP-25 | Hydraulic Work Support Cylinder

Rod: Ø16~Ø40 mm | Pressure Max: 500 bar

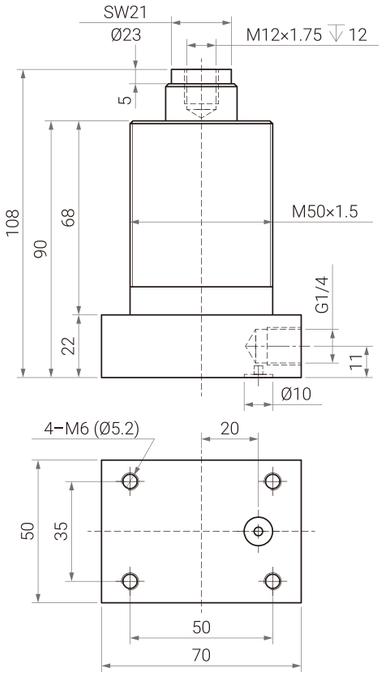
Specifications

- The maximum support force can reach up to 25 kN and is available in two types, A and B. You can choose between pipe thread type or manifold-mounted type based on your needs.
- Part-No.:
  - SP-25A – Spring-Extend with Pipe Thread Type.
  - SP-M25A – Spring-Extend with Manifold-Mounted Type.
  - SP-25B – Hydraulic-Extend with Pipe Thread Type.
  - SP-M25B – Hydraulic-Extend with Manifold-Mounted Type.

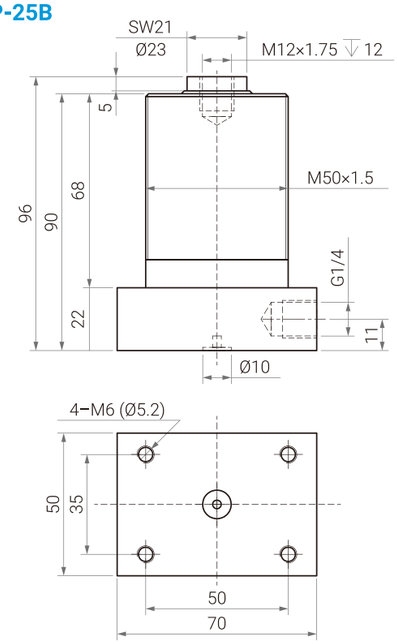
TYPE A TYPE B



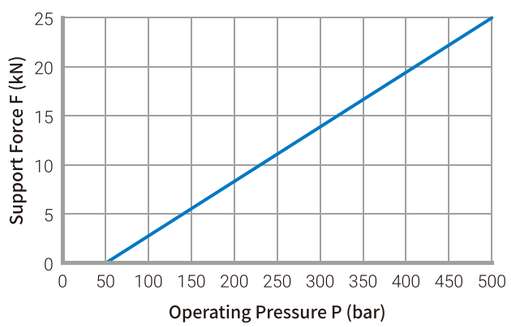
SP-25A



SP-25B



Support Force & Hydraulic Pressure Relationship Diagram



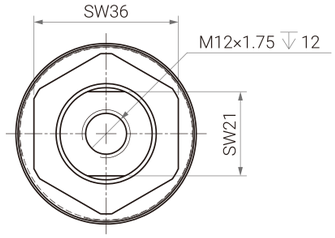
Items	Unit	SP-25
Rod Diameter	mm	Ø25
Stroke	mm	12
Min. Operating Pressure	bar	100
Spring Contact Force (Min. / Max.)	N	30 / 50
Support Force (500 bar)	kN	25
O-ring for Manifold-Mounted Type	mm	7.5×1.5

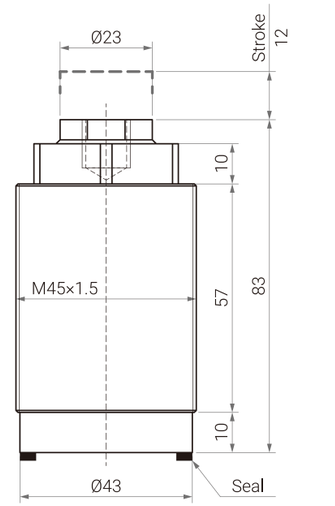
SP-T25B | Hydraulic Work Support Cylinder (Threaded-Body Type)

Rod: Ø16~Ø40 mm | Pressure Max: 500 bar

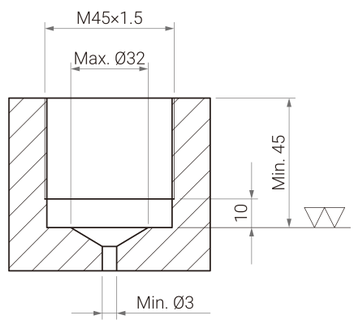
Specifications

- Max support force is about 20 kN.
- When installing, first insert the white sealing ring. When tightening, avoid excessive force; simply tighten until it doesn't leak oil. Excessive force during tightening can reduce the sealing effectiveness of the sealing ring or even cause it to lose its leak-proof function due to excessive deformation.

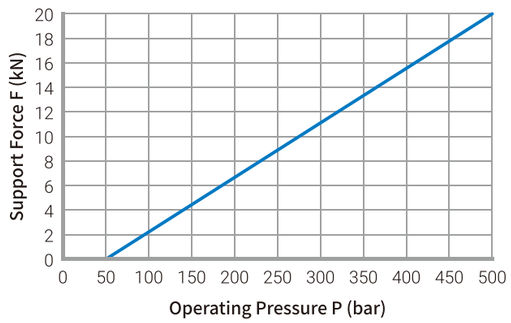




Installation Dimensions



Support Force & Hydraulic Pressure Relationship Diagram



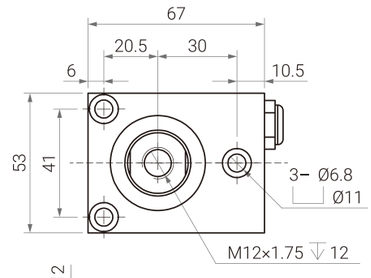
Items	Unit	SP-T25B
Rod Diameter	mm	Ø25
Stroke	mm	12
Support Force (500 bar)	kN	20
Min. Operating Pressure	bar	100

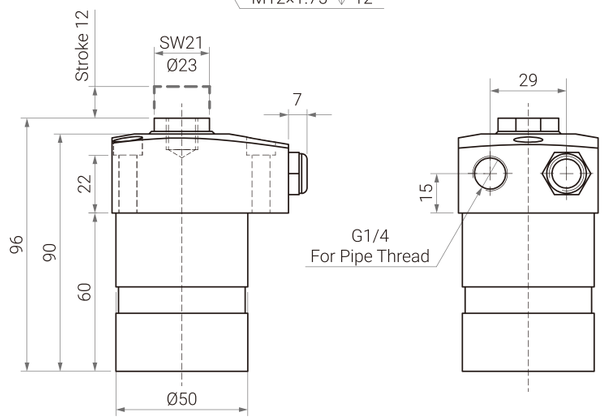
SP-FA25B | Hydraulic Work Support Cylinder (Flange Type)

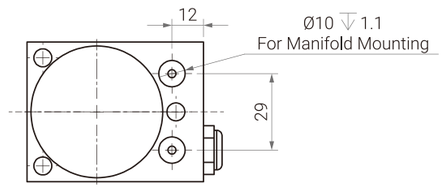
Rod: Ø16~Ø40 mm | Pressure Max: 500 bar

Specifications

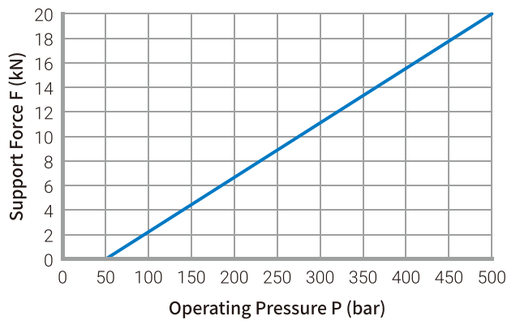
- Can choose Pipe Thread type or Manifold-Mounted according to needs.
- Part-No.: SP-FA25B – Pipe Thread Type.
  SP-FAM25B – Manifold-Mounted Type.







Support Force & Hydraulic Pressure Relationship Diagram



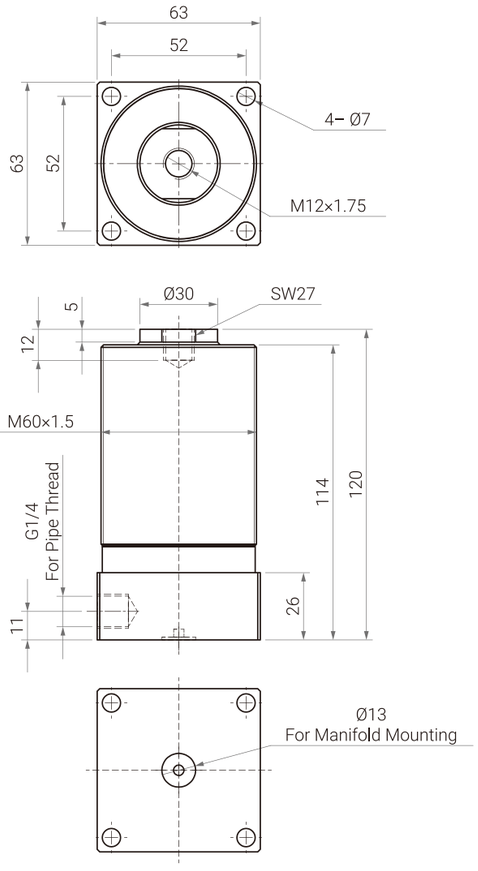
Items	Unit	SP-FA25B
Rod Diameter	mm	Ø25
Stroke	mm	12
Support Force (500 bar)	kN	20
Min. Operating Pressure	bar	100
O-ring for Manifold-Mounted	mm	7.5×1.5

SP-32B | Hydraulic Work Support Cylinder

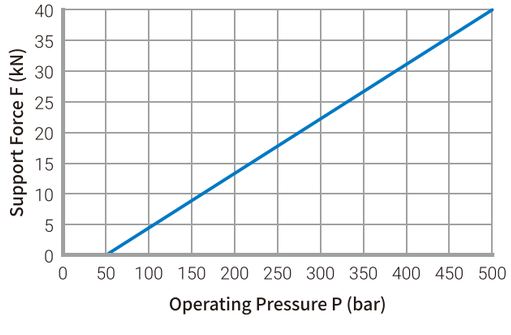
Rod: Ø16~Ø40 mm | Pressure Max: 500 bar

Specifications

- The pipe thread connection is located on the side of the base, and the manifold mounting with O-ring seal is located below the base.
- Part-No.: SP-32B – Pipe Thread Type.
  SP-M32B – Manifold-Mounted Type.



Support Force & Hydraulic Pressure Relationship Diagram



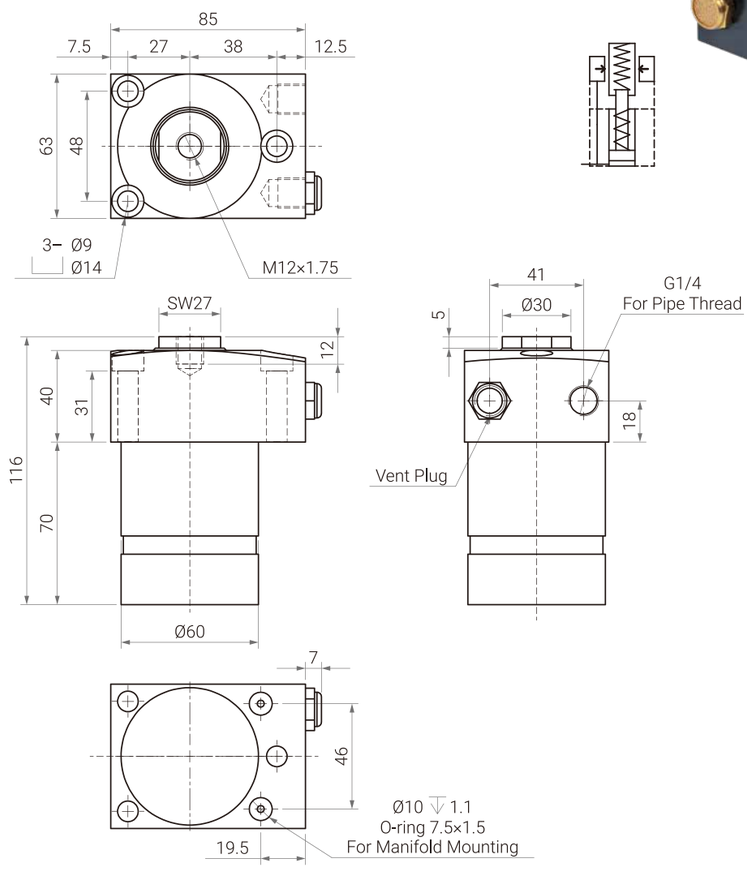
Items	Unit	SP-32B
Rod Diameter	mm	Ø32
Stroke	mm	12
Support Force (500 bar)	kN	40
Min. Operating Pressure	bar	100
O-ring for Manifold-Mounted	mm	10.5×1.5

SP-FA32B | Hydraulic Work Support Cylinder

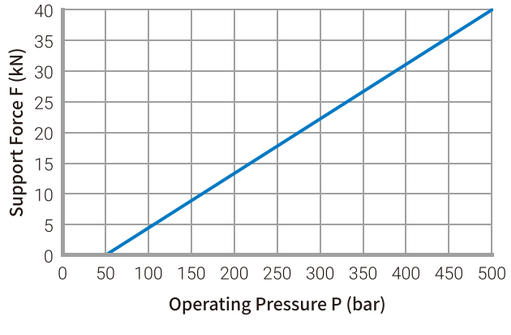
Rod: Ø16~Ø40 mm | Pressure Max: 500 bar

Specifications

- Can choose Pipe Thread type or Manifold-Mounted according to needs.
- Part-No.: SP-FA32B – Pipe Thread Type.
  SP-FAM32B – Manifold-Mounted Type.



Support Force & Hydraulic Pressure Relationship Diagram



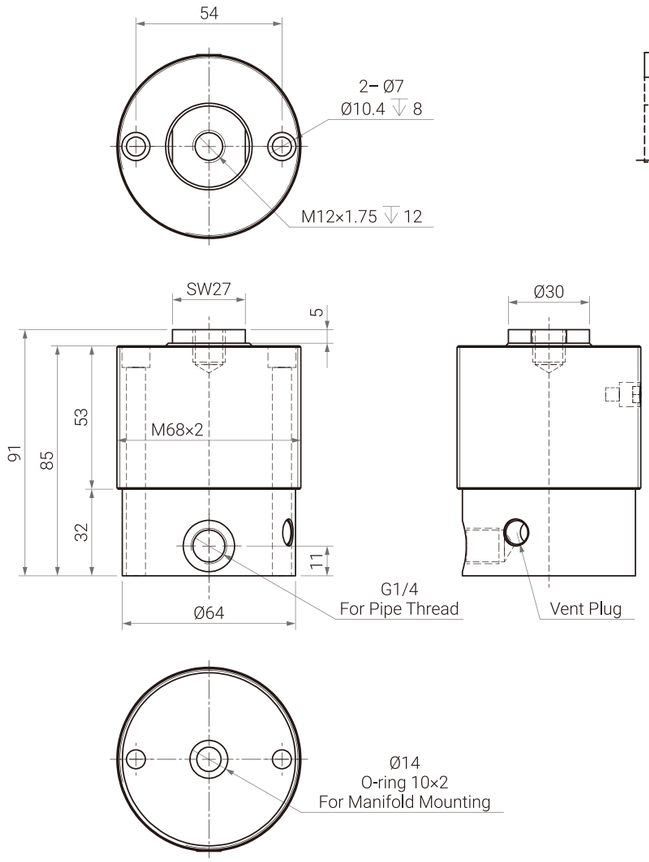
Items	Unit	SP-FA32B
Rod Diameter	mm	Ø32
Stroke	mm	12
Support Force (500 bar)	kN	40
Min. Operation Pressure	bar	100
O-ring for Manifold-Mounted	mm	7.5×1.5

SP-T32B (1914-010) | Hydraulic Work Support Cylinder

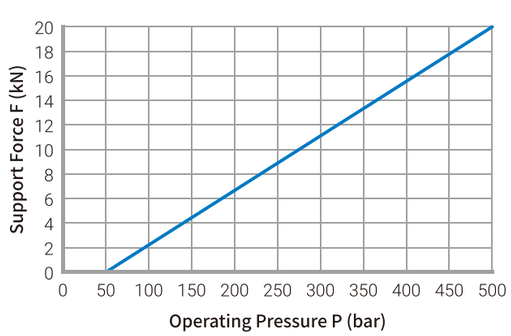
Rod: Ø16~Ø40 mm | Pressure Max: 500 bar

Specifications

- Can choose Pipe Thread type or Manifold-Mounted according to needs.
- Part-No.: SP-T32B – Pipe Thread Type.
  SP-TM32B – Manifold-Mounted Type.



Support Force & Hydraulic Pressure Relationship Diagram

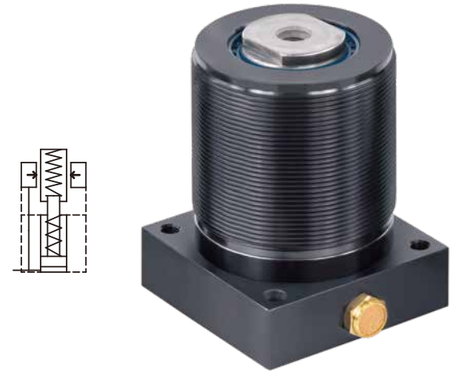


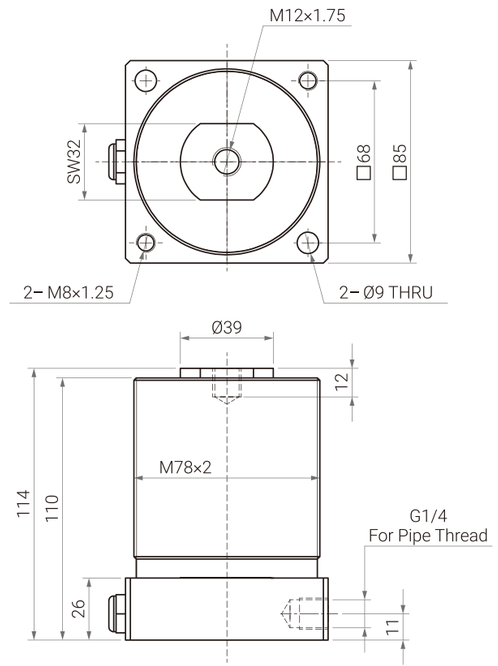
Items	Unit	SP-T32B
Rod Diameter	mm	Ø32
Stroke	mm	12
Support Force (500 bar)	kN	20
Min. Operation Pressure	bar	100

SP-40B | Hydraulic Work Support Cylinder

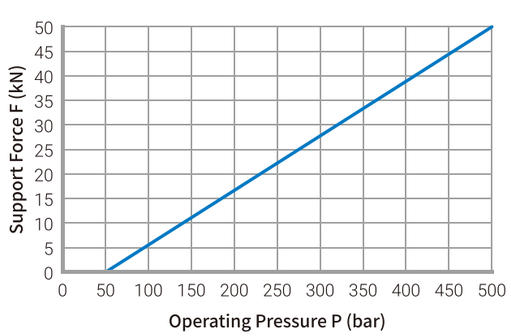
Rod: Ø16~Ø40 mm | Pressure Max: 500 bar

Specifications





Support Force & Hydraulic Pressure Relationship Diagram



Items	Unit	SP-40B
Rod Diameter	mm	Ø40
Stroke	mm	18
Support Force (500 bar)	kN	50
Min. Operation Pressure	bar	100

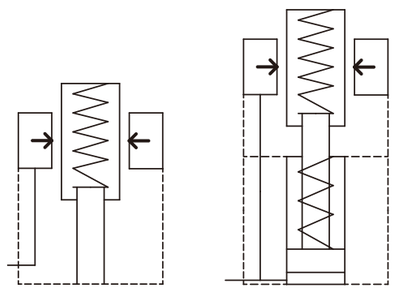
LSP SERIES | Low Pressure Hydraulic Work Support Cylinder

Rod: Ø10~Ø20 mm | Pressure Max: 70 bar

Introduction

- This low-pressure support cylinder is used in mechanical processing to provide support force, reducing vibration, absorbing cutting forces, and preventing displacement, aiming to improve machining precision and quality.
- The LSP-10 and LSP-12 bolt-type support cylinders have a small volume, making them suitable for arrangement in smaller spaces or for supporting workpieces with uneven heights.
- This support cylinder provides strong support force and can replace various specifications of similar cylinders, making it convenient for fixture design and selection, thus saving costs.
- The maximum operating pressure should not exceed 70 bar; exceeding this limit may cause permanent damage to the internal structure, leading to malfunction.
- The product is divided into two types: A and B.
- Type A is a spring ejection type, with the spindle initially in the highest ejection position. After the workpiece contacts and presses down the spindle for positioning, oil is filled to tighten the spindle and generate support force.
- Type B is a hydraulic ejection type, with the spindle initially in the lowest position. When the workpiece is positioned, oil is supplied to eject the spindle to contact the workpiece, and then the spindle is tightened to generate support force.

TYPE A TYPE B



Precautions

- Contact Force Magnitude: For Type B, the contact force depends on the initial distance between the workpiece and the spindle surface. Because the support cylinder is initially supported by a spring, within the allowed range, the farther the workpiece is from the oil cylinder, the smaller the contact force. Conversely, the closer the workpiece is to the oil cylinder, the greater the contact force. For Type A, it depends on the distance the workpiece is pressed down; the more it is pressed, the greater the contact force.
- Flow Control (Excessive Flow Leading to Failure to Position the Spindle): Since the support cylinder requires a relatively small amount of oil, when the hydraulic oil flow is too high, the piston inside the spindle may not have enough time to reach the position before the spindle is clamped by the thin shell. If the spindle stroke does not reach the specified position and locks prematurely, reduce the flow (can purchase a flow valve for adjustment). Additionally, the ejection speed of the support cylinder spindle may be too fast, causing the spindle to rebound precisely as it is clamped by the thin shell, preventing proper contact with the workpiece.
- Air Venting in Oil: If there is air in the oil, it can lead to longer clamping times than necessary.
- Overload: If the load force exceeds the specified load, the spindle may be pressed back due to insufficient support force.
- Lateral Load: The support force of the support cylinder compensates only in the direction of the spindle. When the support cylinder spindle is subjected to lateral forces, it may cause permanent deformation of the thin shell, resulting in the spindle's inability to precisely position or generate support force.
- Elastic Deformation: As the support cylinder is made of metal, it naturally undergoes elastic deformation. Typically, a pressure of 5 kN can result in elastic deformation ranging from 0.005 mm to 0.015 mm (the elastic deformation amount varies for different cylinders).
Contact Bolts: When using the support cylinder, be sure to use
- contact bolts; otherwise, dust, liquids, and other debris may enter the cylinder, causing damage. Do not remove the O-ring from the bolts; otherwise, cutting fluid may still enter the cylinder, leading to internal rusting and other problems.

When Using Custom-made Contact Bolts, Please Follow The Rules:

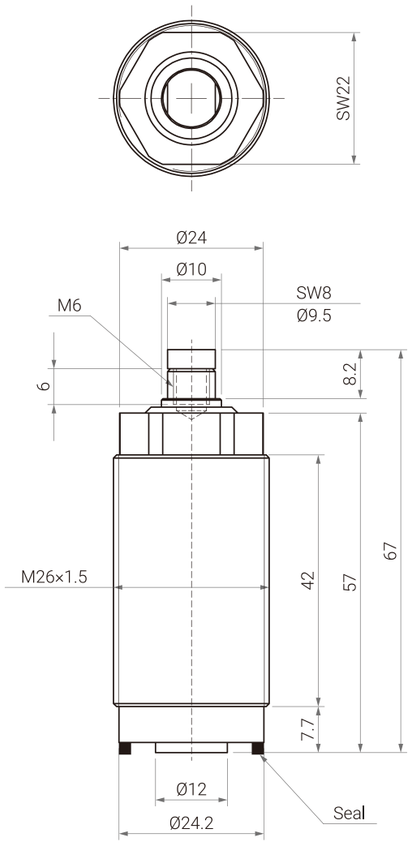
- The contact surface must undergo hardening treatment and be processed into a shape similar to a rounded dome to safely contact uneven workpiece surfaces.
- If the contact surface needs to be flat, it can only be made into a moving screw. However, since the moving screw may yield, plastic deformation must be considered.
- If the contact bolt has a custom shape to match the workpiece surface, it may lead to the occurrence of lateral forces, causing damage to the support cylinder.
- When the contact bolt contacts the workpiece, it should contact at a "point" or "groove" because points and grooves undergo greater elastic deformation when pressed into the workpiece. In addition, since points or grooves will be completely embedded in the workpiece, any lateral force will directly affect the support cylinder, leading to damage.
- Custom-made contact bolts should not be too heavy, as this may excessively compress the springs inside the support cylinder, causing abnormal operation.

LSP-10B | Low Pressure Hydraulic Work Support Cylinder

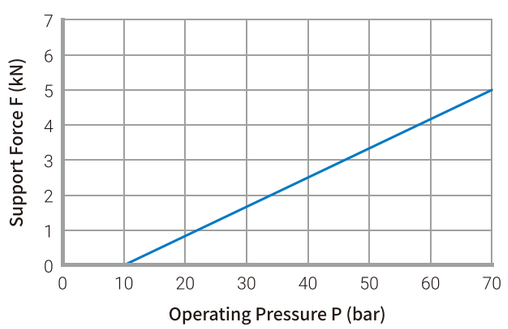
Rod: Ø10~Ø20 mm | Pressure Max: 70 bar

Specifications

- Compact in size, suitable for installation on smaller fixtures in limited spaces.
- When installing, first insert the white sealing ring. When tightening, avoid excessive force; simply tighten until it doesn't leak oil. Excessive force during tightening can reduce the sealing effectiveness of the sealing ring or even cause it to lose its leak-proof function due to excessive deformation.



Support Force & Hydraulic Pressure Relationship Diagram



Items	Unit	LSP-10B
Rod Diameter	mm	Ø10
Stroke	mm	6
Support Force (70 bar)	kN	4

LSP-12 | Low Pressure Hydraulic Work Support Cylinder

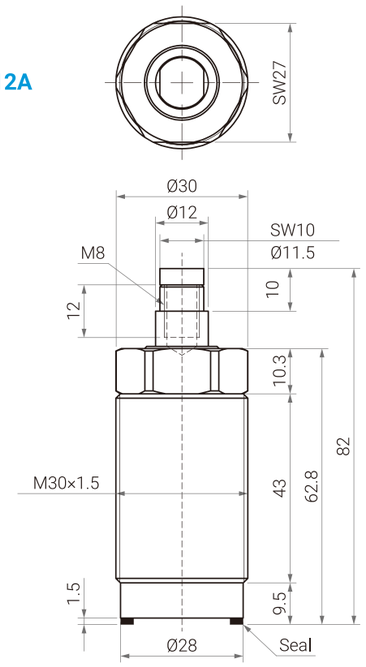
Rod: Ø10~Ø20 mm | Pressure Max: 70 bar

Specifications

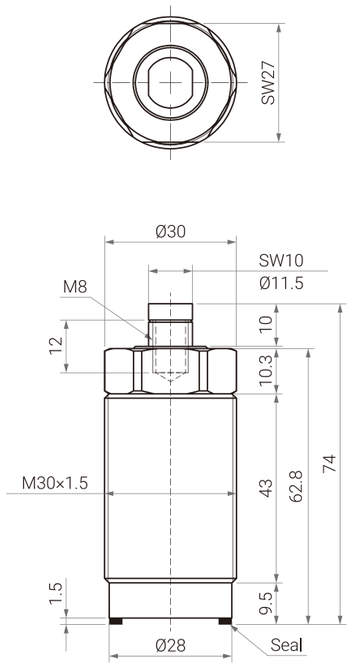
- Compact in size, suitable for installation on smaller fixtures in limited spaces.
- When installing, first insert the white sealing ring. When tightening, avoid excessive force; simply tighten until it doesn't leak oil. Excessive force during tightening can reduce the sealing effectiveness of the sealing ring or even cause it to lose its leak-proof function due to excessive deformation.
- Part-No.: LSP-12A – Spring-Extend Type.
  LSP-12B – Hydraulic-Extend Type.

TYPE A TYPE B

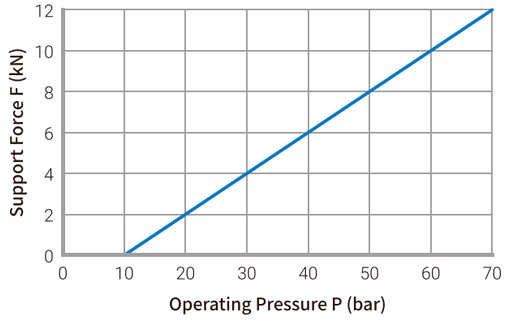
LSP-12A



LSP-12B



Support Force & Hydraulic Pressure Relationship Diagram

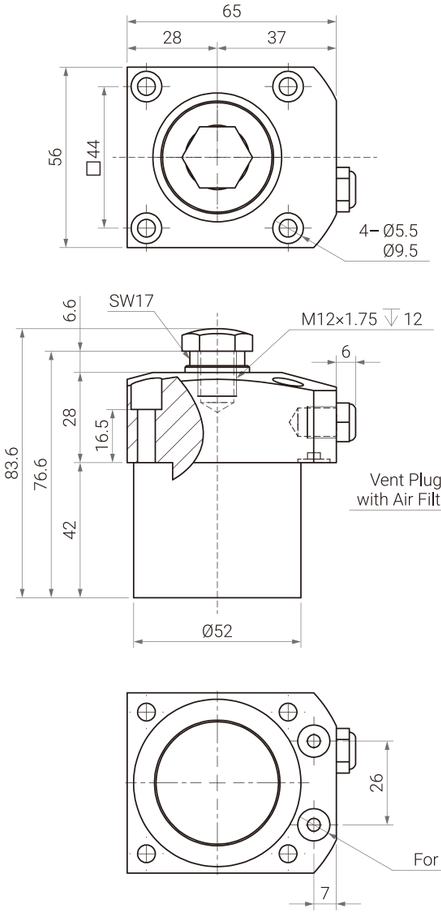


Items	Unit	LSP-12
Rod Diameter	mm	Ø12
Stroke	mm	8
Support Force (70 bar)	kN	12

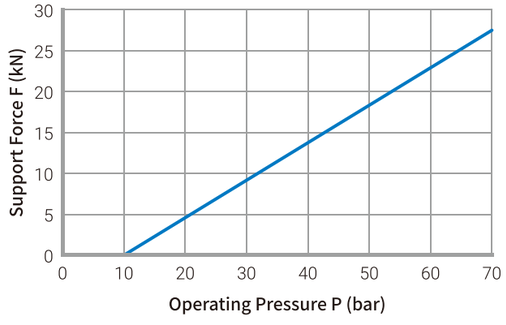
LSP-20B | Low Pressure Hydraulic Work Support Cylinder

Rod: Ø10~Ø20 mm | Pressure Max: 70 bar

Specifications



Support Force & Hydraulic Pressure Relationship Diagram



Items	Unit	LSP-20B
Rod Diameter	mm	Ø20
Stroke	mm	12
Support Force (70 bar)	kN	28

TC | Threaded-Body Single Acting Hydraulic Cylinder

Piston: Ø12~Ø25 mm | Pressure Max: 500 bar

Introduction

- TC Threaded-Body cylinders are compact, allowing them to be directly fixed to pre-threaded locations on fixtures. When arranged for use, they effectively reduce the required installation space.
- The hydraulic lines can be concealed within the fixture plate. However, when installing, it's necessary to place a leak-preventing gasket at the bottom to prevent hydraulic oil leakage from the threaded area.
- TC bolt cylinders are single-acting cylinders that use spring force for return to their original position. Therefore, no loads should be applied during the return stroke.
- During installation, ensure that the angle of contact between the top and the workpiece does not exceed 10 degrees. Also, pay attention to the flatness of the sealing surface of the installation hole and its perpendicularity to the hole's axis.
- When installing, first insert the white sealing ring. When tightening, avoid excessive force; simply tighten until it doesn't leak oil. Excessive force during tightening can reduce the sealing effectiveness of the sealing ring or even cause it to lose its leak-proof function due to excessive deformation.
- This cylinder comes in two types: A and B. Type A features a rounded contact surface, while Type B has threads for securing custom connectors.

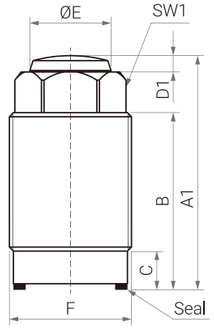
Part-No.

TC	-	12	A
①		②	③

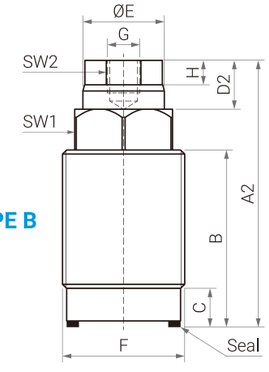
No.	Meaning	Option
1	Series	TC
2	Rod Diameter	Ø12 / Ø16 / Ø20 / Ø25
3	Rod Type	A / B

Specifications

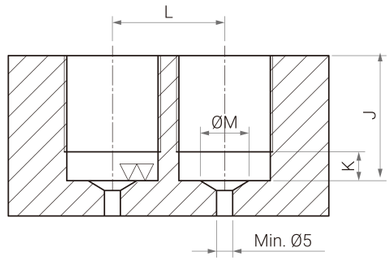
TYPE A



TYPE B



Installation Hole Diagram



Items	Unit	TC-12	TC-16	TC-20	TC-25
Rod Diameter	mm	Ø12	Ø16	Ø20	Ø25
Stroke	mm	10	12	15	16
Force (100 bar)	kN	1.1	2	3	4.9
Force (500 bar)	kN	5.7	10	15.7	24.6
Spring Force	N	25	50	70	120
Min. Pressure	bar	10	10	10	10
Oil Volume / 10 mm Stroke	cc	1.13	2.01	3.14	4.91
A1	mm	39	47.5	57.5	59.5
A2	mm	45.5	53.5	65.5	68.5
B	mm	28	33	42	42

Items	Unit	TC-12	TC-16	TC-20	TC-25
C	mm	8.5	9.5	9.5	11.5
D1 / D2	mm	2.5 / 10	3 / 9	4 / 12	5 / 14
ØE1 / ØE2	mm	12 / 11	16 / 15	20 / 19	25 / 23
F	mm	M22×1.5	M26×1.5	M30×1.5	M38×1.5
G	mm	M6×1.0	M6×1.0	M8×1.25	M8×1.25
H	mm	6	6	8	8
J (Min. / Max.)	mm	16 / 27	20 / 32	24 / 41	28 / 38
K (Max.)	mm	8	9	9	11
L (Min.)	mm	25	30	35	43
M (Min. / Max.)	mm	9 / 12	12 / 16	14 / 20	18 / 25
SW1	mm	17	22	24	32
SW2	mm	10	13	17	19

WLC | Hydraulic Top Flange Lever-Type Cylinder

Piston: Ø22.4~Ø40 mm | Pressure Max: 200 bar

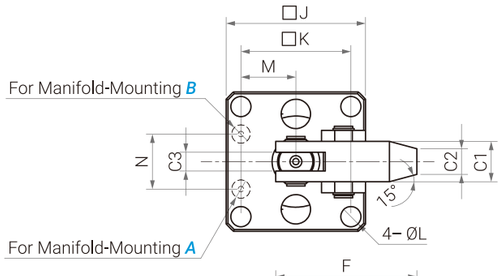
Introduction

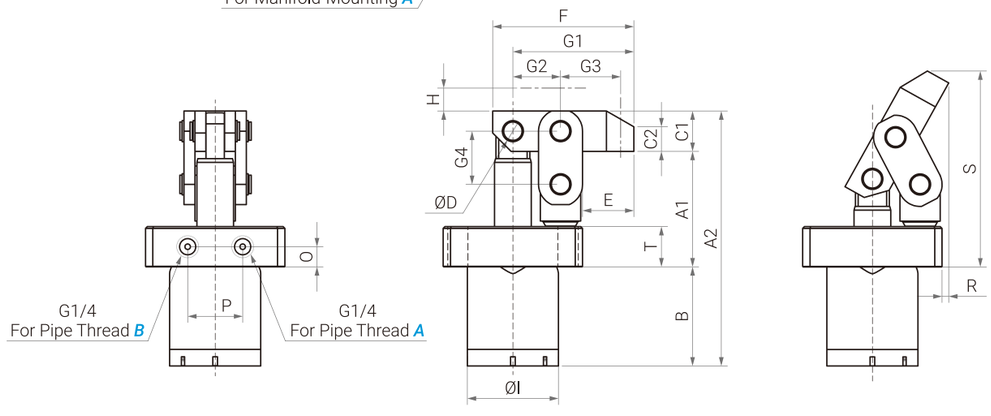
- The lever cylinder is primarily used for downward clamping of workpieces. The front end of the lever plate can be lifted to facilitate the placement or lifting of the workpiece.
- There are two types of oil cylinder distribution pipes and oil route boards, which can be selected according to specific requirements.
- The lever base is movable, allowing for a change in the position of the pressure plate. This feature facilitates the design of oil holes and piping locations when customers create fixtures. Moreover, the ability to change orientation to accommodate different fixtures enables cost savings through repeated use.
- The standard shipment is the oil route board type. If piping is required, please specify when placing the order.

Specifications

A Clamping.

B Unclamping.





Items	Unit	WLC-4	WLC-5	WLC-7	WLC-8	WLC-10	WLC-12
Piston	mm	22.4	25	30	32	36	40
Area	cm^2	3.94	4.91	7.07	8.04	10.18	12.57
Max. Pressure	bar	200	200	200	200	200	150
A1	mm	55.5	55.5	63	63	66.3	66.3
A2	mm	121.5	121.5	139	139	148.7	148.7
B	mm	47	47	54	54	57	57
C1	mm	19	19	22	22	25.4	25.4
C2	mm	11	11	14	14	18	18
C3	mm	9	9	10	10	11	11
ØD	mm	8	8	10	10	12	12
E	mm	22.5	22.5	28	28	38.3	38.3
F	mm	64	64	77	77	90	90
G1	mm	54.5	54.5	66	66	81	81
G2	mm	22	22	26	26	30	30

Items	Unit	WLC-4	WLC-5	WLC-7	WLC-8	WLC-10	WLC-12
G3 (Min.)	mm	28	28	34	34	39	39
G4	mm	24	24	29	29	33	33
H	mm	3	3	4	4	4	4
ØI	mm	43	43	50	50	60	60
J	mm	64	64	76	76	84	84
K	mm	50	50	60	60	66	66
ØL	mm	9	9	11	11	13	13
M	mm	25.5	25.5	30	30	35	35
N	mm	26	26	30	30	30	30
O	mm	11	11	11	11	11	11
P	mm	26	26	30	30	30	30
R	mm	6.9	6.9	3.7	3.7	14.6	14.6
S	mm	92	92	107	107	120	120
T	mm	22	22	22	22	22	22
O-ring	mm	7.5×1.5					

HLC | Hydraulic Link-Clamp Cylinder

Piston: Ø22~Ø28 mm | Pressure Max: 300 bar

Introduction

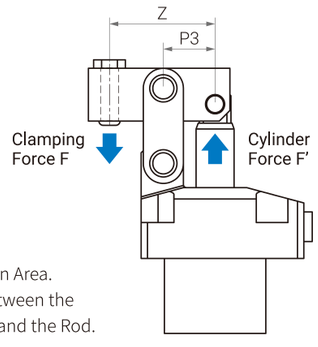
- The HLC link-clamp cylinder is mainly used when there is a need for space clearance for placing and clamping workpieces, allowing for easy placement and clamping of the workpiece.
- This product is of Japanese specifications.
- A dust seal is provided at the push rod to prevent external dirt from entering the cylinder body.
- The maximum operating pressure can reach 300 bar. (If the clamping arm is longer, it can reach 350 bar. For details, please consult the technical staff.)
- You can choice pipe thread or manifold-mounting type.
- When supplying oil through pipe thread, please remove the nut installed in the oil inlet hole of the piping and ensure that the O-ring of the oil inlet hole of the manifold-mounting is properly installed.
- A filter screen is installed at the product's oil inlet hole to prevent foreign objects from entering the cylinder body.
- This link-clamp cylinder is double-acting.

※The product itself does not come with a clamping arm, which needs to be made or ordered separately.

Caution

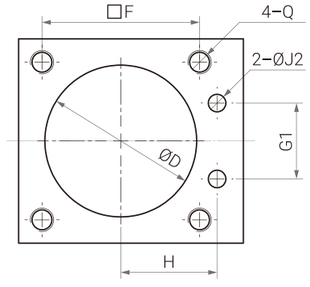
- There is a minimum recommended length for the clamping arm(please refer to the "Z" value in the clamping arm design specifications). When the length is below this value, please reduce the pressure to prevent damage to the cylinder.
- After the clamping arm stops pressing down, please ensure that the clamping arm is horizontal, with a tilt angle exceeding ±3° (excessive horizontal force can damage the pin fixing position above the center axis).
- This product does not come with a clamping arm. The clamping arm needs to be made separately. Please refer to the product specifications for relevant fabrication specifications.

Output Force Calculation



- F = P3 × F' / (Z-P3).
- F : Clamping Force.
- F' : Cylinder Force = Pressure × Piston Area.
- Z : The distance between the clamping point and the Rod.

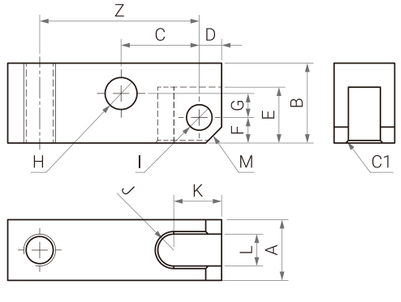
Mounting Details



Unit (mm)

Items	D	F	G1	H	J2	Q
HLC-22	Max. Ø52	54	26	33	Max. Ø6	M8
HLC-28	Max. Ø62	65	30	40	Max. Ø6	M10

Clamp Arm Details



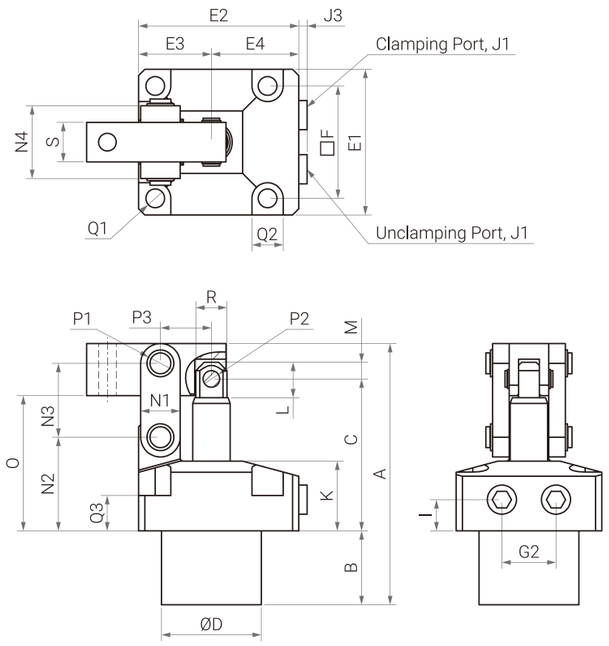
Unit (mm)

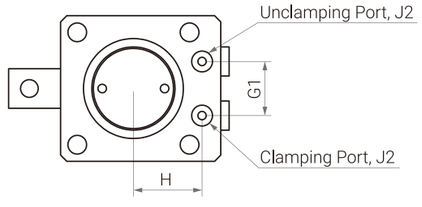
Items	A	B	C	D	E	F	G	H	I	J	K	L	M	Z	Recommended Material
HLC-22	$19^{0}_{-0.1}$	25	24.5	7	17.5	8	7.5	$Ø10^{+0.02}_{0}$	$Ø8^{+0.02}_{0}$	R5	15	$10^{+0.1}_{0}$	C5	Min. 50	S45C, RC30~40°
HLC-28	$22^{0}_{-0.1}$	31	30.5	10	22	9	9.5	$Ø14^{+0.02}_{0}$	$Ø12^{+0.02}_{0}$	R5.5	21	$11^{+0.1}_{0}$	C7	Min. 60	

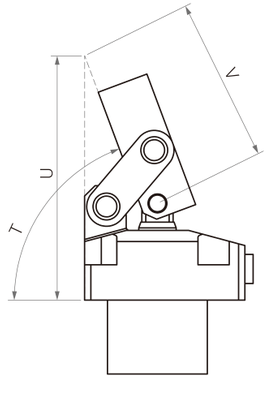
HLC | Hydraulic Link-Clamp Cylinder

Piston: Ø22~Ø28 mm | Pressure Max: 300 bar

Specifications







Unit (mm)

Items	HLC-22	HLC-28
Clamp Stroke	26.5	33
Full Stroke	29.5	36
Safety Stroke	3	3
Rod Diameter	Ø18	Ø22
Piston Diameter	Ø22	Ø28
Effective Area	3.8 cm^2	6.2 cm^2
Force (200 bar)	7.6 kN	12.4 kN
A	125.5	154.5
B	35.5	43.5
C	73	89
D	$Ø48^{-0.1}_{-0.2}$	$Ø58^{-0.1}_{-0.2}$
E1	70	86
E2	77	96
E3	35	43
E4	42	53
F	54	65
G1	26	30
G2	26	30
H	33	40
I	15	17
J1	G1/8	G1/4
J2	Ø10 (Deep 1.1)	Ø10 (Deep 1.1)
J2-O-ring	Ø7.5×Ø1.5	Ø7.5×Ø1.5
J3	4	5
K	33.5	41
L	17	21.8
M	8	11
N1	19	25
N2	45	54.5
N3	35.5	44
N4	35	42
O	65	80
P1	Ø10	Ø14
P1 (Snap Ring)	STW-10	STW-14
P2	Ø8	Ø12
P2 (Snap Ring)	STW-8	STW-12
P3	24.5	30.5
Q1	Ø9	Ø11
Q2	15	18.5
Q3	17	20
R	Ø15	Ø20
S	19	22
T	70°	69°
U	117.4	144.8
V	79	98

XLC | Hydraulic Link-Clamp Cylinder

Piston: Ø16~Ø40 mm | Pressure Max: 300 bar

Application

- The XLC link-clamp cylinder is primarily used when there is a need for clearance in the space for placing and clamping workpieces. It facilitates easy placement and clamping of the workpiece. The main difference between the XLC link-clamp cylinder series and the HLC series lies in the fact that the XLC series can output 1.3 times the clamping force but does not provide the option to select left or right side downward pressure.

Introduction

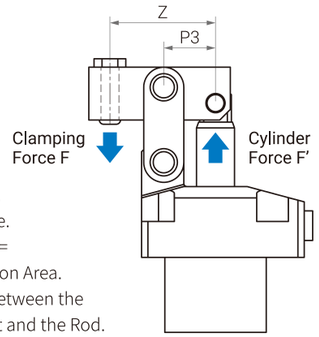
- This product follows Japanese specifications but has an output force 1.3 times that of the Japanese standard.
- A dust seal is installed at the rod end to prevent external contaminants from entering the cylinder.
- The maximum operating pressure can reach 300 bar.
- It can be supplied with oil through piping or an oil circuit board.
- The product's oil inlet is equipped with a filter to prevent foreign particles from entering the cylinder.
- This is a double-acting hydraulic cylinder, with both clamping and retracting controlled by hydraulic pressure.

※The product itself does not come with a clamping arm, which needs to be made or ordered separately.

Caution

- There is a minimum recommended value for the length of the clamping arm (please refer to the "Z" pressure plate design specification). Refer to the pressure and pressure plate length relationship table to avoid using a pressure plate that is too short, which could lead to damage to the hydraulic cylinder.
- After the clamping arm has been lowered, ensure that it remains horizontal, with an inclination angle not exceeding ±3°. (Excessive horizontal force can cause damage to the fixing point above the pivot due to generated forces.)
- This product does not come with a Clamping arm. The clamping arm must be fabricated separately, and the specifications of the clamping arm can be found in the specifications.

Output Force Calculation



- F = P3 × F' / (Z-P3).
- F : Clamping Force.
- F': Cylinder Force = Pressure × Piston Area.
- Z : The distance between the clamping point and the Rod.

Part-No.

XLC - M 16

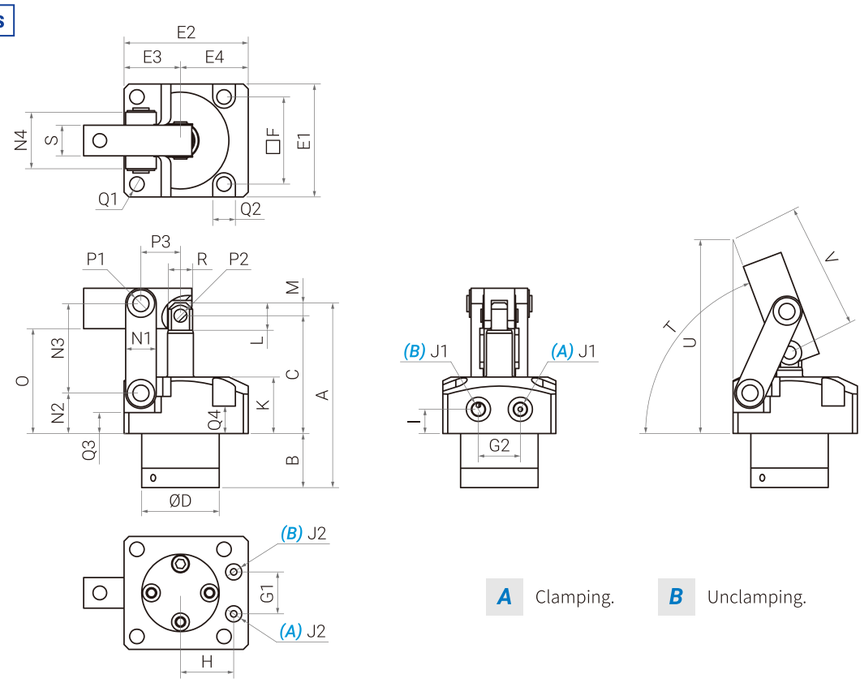
1 2 3

No.	Meaning	Option
1	Series	XLC
2	Version	Space: Pipe Thread / M: Manifold Mounting
3	Piston Diameter	16 / 20 / 25 / 32 /40

XLC | Hydraulic Link-Clamp Cylinder

Piston: Ø16~Ø40 mm | Pressure Max: 300 bar

Specifications



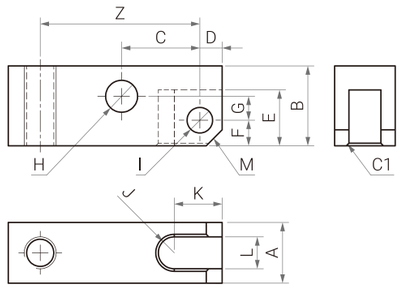
Items	Unit	XLC-16	XLC-20	XLC-25	XLC-32	XLC-40
Clamp Stroke	mm	17.8	20	23	28.5	36.5
Full Stroke	mm	20.8	23	26	31.5	39.5
Safety Stroke	mm	3	3	3	3	3
Rod Diameter	mm	10	16	16	20	25
Piston Diameter	mm	16	20	25	32	40
Effective Area	cm^2	2.01	3.14	4.91	8.04	12.56
Force (200 bar)	kN	4.02	6.28	9.82	16.08	25.12
A	mm	98.2	101.7	114.5	141.5	171.5
B	mm	33.7	29.2	33.5	41.5	50
C	mm	58.5	65.5	73	89	108.5
D $^{-0.1}_{-0.2}$	mm	35	44	48	58	66
E1	mm	50	60	70	86	108
E2	mm	60	69	77	96	110
E3	mm	25	30	35	43	54
E4	mm	35	39	42	53	56
F	mm	40	47	54	65	85
G1	mm	22	23	26	30	40
G2	mm	22	23	26	30	40
H	mm	27.5	30	33	40	43
I	mm	12.5	15	15	17	21
J1	mm	G1/8	G1/8	G1/8	G1/4	G1/4
J2	mm	Ø10, Deep 1.1				
J2-O-ring	mm	Ø7.5×Ø1.5				

Items	Unit	XLC-16	XLC-20	XLC-25	XLC-32	XLC-40
K	mm	26.5	32	35	41	52
L	mm	13	13	17	21.8	27.5
M	mm	6	6	8	11	13
N1	mm	13	15	19	25	32
N2	mm	20	24	25	27	36
N3	mm	42	47.5	55.5	71.5	82
N4	mm	24	32	39	46	56
O	mm	52.5	59.5	65	80	96
P1	mm	6	8	10	14	16
P1 (Snap Ring)	N/A	STW6	STW8	STW8	STW14	STW16
P2	mm	6	6	8	12	14
P2 (Snap Ring)	N/A	STW6	STW6	STW8	STW12	STW14
P3	mm	18.5	21	24.5	30.5	37.5
Q1	mm	5.5	Ø6.8	Ø9	Ø11	Ø14
Q2	mm	10	12	15	18.5	20.5
Q3	mm	12.5	14	13	11.5	17
Q4	mm	18	17	17	20	26
R	mm	9	12	15	18	23
S	mm	12	16	19	22	32
T	deg	70	70	69	70	71
U	mm	91.5	111.3	120.1	151.3	189.4
V	mm	56.1	71.7	78.3	100.5	129.2

XLC | Hydraulic Link-Clamp Cylinder

Piston: Ø16~Ø40 mm | Pressure Max: 300 bar

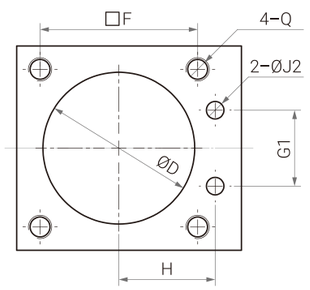
Clamp Arm Details



Unit (mm)

Items	XLC-16	XLC-20	XLC-25	XLC-32	XLC-40
A	12	16	$19^{\ 0}_{-0.1}$	$22^{\ 0}_{-0.1}$	$32^{\ 0}_{-0.1}$
B	16	20	25	31	38
C	18.5	21	24.5	30.5	37.5
D	6	6	7	10	13
E	13.5	13.5	17.5	22	28
F	6	6	8	9	12.5
G	3.5	6	7.5	9.5	9.5
H	$Ø6^{\ +0.02}_{\ 0}$	$Ø8^{\ +0.02}_{\ 0}$	$Ø10^{\ +0.02}_{\ 0}$	$Ø14^{\ +0.02}_{\ 0}$	$Ø16^{\ +0.02}_{\ 0}$
I	$Ø6^{\ +0.02}_{\ 0}$	$Ø6^{\ +0.02}_{\ 0}$	$Ø8^{\ +0.02}_{\ 0}$	$Ø12^{\ +0.02}_{\ 0}$	$Ø14^{\ +0.02}_{\ 0}$
J	R3	R4	R5	R5.5	R8
K	14	13	15	21	28
L	6	$8^{\ +0.1}_{\ 0}$	$10^{\ +0.1}_{\ 0}$	$11^{\ +0.1}_{\ 0}$	$16^{\ +0.1}_{\ 0}$
M	C4	C4	C5	C7	C8
MIN Z (below 300 bar)	40	50	58	67	90
MIN Z (below 250 bar)	35	45	50	62	72
MIN Z (below 200 bar)	30	35	40	55	65
Recommended Material	S45C, RC30°~40°				

Mounting Details



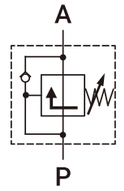
Unit (mm)

Items	XLC-1	XLC-20	XLC-25	XLC-32	XLC-40
D	Max. Ø36	Max. Ø47	Max. Ø52	Max. Ø62	Max. Ø72
F	40	47	54	65	85
G1	22	23	26	30	40
H	27.5	30	33	40	43
J2	Max. Ø6	Max. Ø6	Max. Ø6	Max. Ø6	Max. Ø6
Q	M5	M6	M8	M10	M12

SV | Hydraulic Sequence Valve

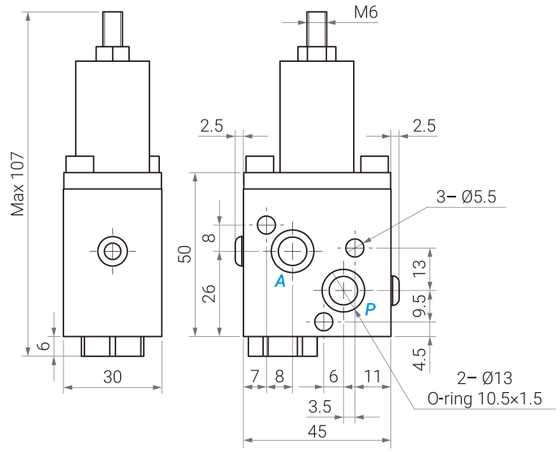
Introduction

- The principle involves an internal valve that remains closed when the pressure is below the set value, preventing hydraulic oil from flowing through. When the pressure exceeds the set value, the hydraulic oil can pass through to drive the hydraulic cylinder connected to the valve.
- Hydraulic sequence valves are suitable for use in fixture circuits, determining the actuation sequence of hydraulic cylinders based on pressure. Adjustment is achieved by rotating the upper screw.
- There are two types of products: SV-A manifold-mounted type and SV-B pipe thread type. This sequence valve is equipped with a filter to effectively prevent metal debris in the oil from entering the valve, ensuring proper operation.

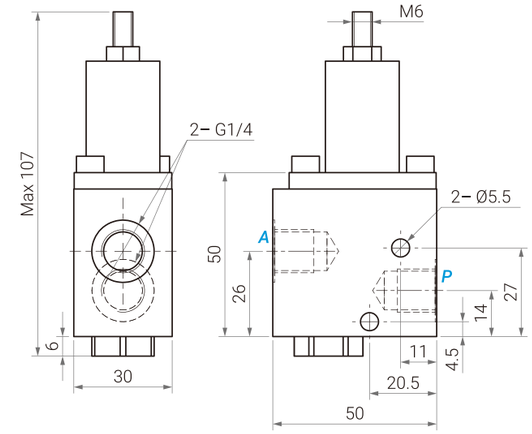


Specifications

SV-A



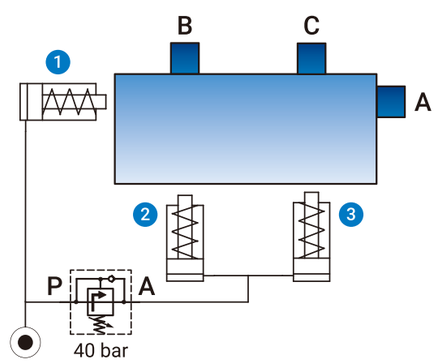
SV-B



Manifold-Mounted		Pipe Thread	
Part-No.	Range of Pressure	Part-No.	Range of Pressure
SV-A1	10~70 bar	SV-B1	10~70 bar
SV-A2	5~210 bar	SV-B2	5~210 bar

Example

- When the hydraulic unit begins supplying oil, hydraulic cylinder ① will initially push the workpiece towards position A. Subsequently, when the pressure reaches 40 bar, the sequence valve will open, allowing oil to flow through. This enables hydraulic cylinders ② and ③ to start their movement, pushing the workpiece towards positions B and C, respectively.

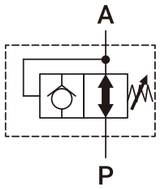


PRV | Hydraulic Pressure Reducing Value

Pressure Max: 500 bar

Introduction

- The pressure reducing valve functions to decrease the hydraulic pressure to a set value. The adjustment is done by rotating the upper screw to adjust the spring inside the valve. The internal valve opens and closes based on the spring force, achieving the desired pressure reduction.
- The maximum operating pressure of this product can reach 500 bar.
- The pressure reducing valve has different control ranges based on the spring coefficient. Please choose according to your specific requirements.
- This product is available in two types: manifold-mounted type and pipe thread type. When using the manifold-mounted type, caps are installed to lock the oil holes on both sides of the pipe thread.

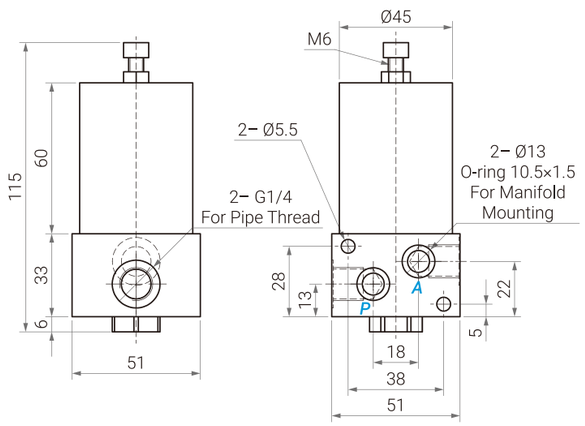


Part-No.

PRV	-	M	02	1
①		②	③	④

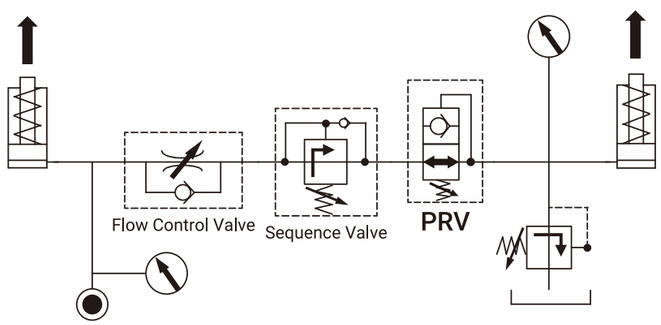
No.	Meaning	Option			
1	Series	PRV			
2	Mode	Blank: Pipe Thread / M: Manifold			
3	Model	02			
4	Pressure Range bar	1	5~30	4	30~240
		2	10~50	5	50~380
		3	20~120		

Specifications



Example

- This diagram illustrates the hydraulic unit's operation. After the hydraulic unit outputs pressure, the left cylinder will initially descend. The actuation of the right cylinder is determined first by the flow control valve for its speed and then by the sequence valve for initiating the descent at a specific pressure. Subsequently, the pressure is reduced to a set value through the pressure reducing valve. Due to factors such as time, the pressure of the right cylinder may slightly increase. The final safety valve is used to control the pressure below a certain set value, and pressure values are monitored simultaneously through an oil gauge.

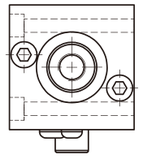


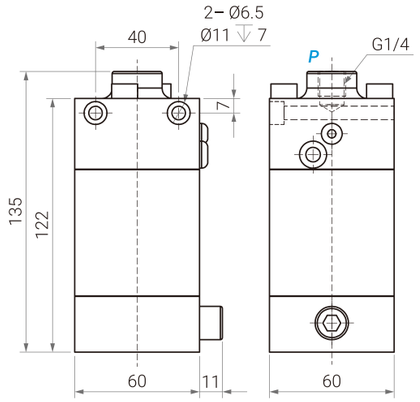
M.B. | Hydraulic Booster

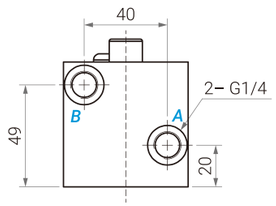
Pressure Max: 50 bar

Specifications

- ***A*** Boosting.
- ***B*** Pressure relief.
- ***P*** High pressure.

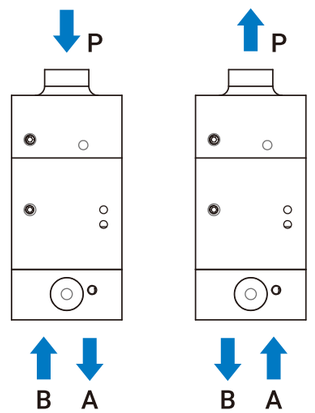






Action Mode

- A input, B output > P output high pressure oil.
- A output, B input > P reverse oil back to A.



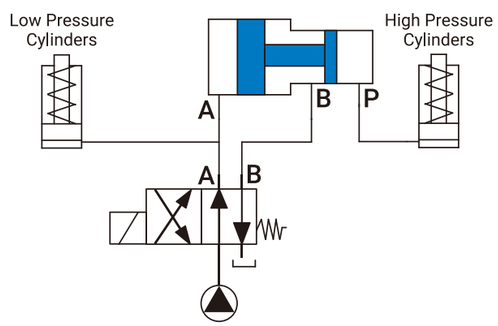
Introduction

- This hydraulic actuated booster operates in a fully automatic mode, providing an infinitely available high-pressure source with a specific boost ratio.
- There are two specifications for the boost ratio: 4× and 7×.
- The product's oil pipe connection points are equipped with stainless steel wire mesh filters to prevent the entry of metal impurities that could cause abnormalities in the product.
- It is essential to maintain the cleanliness of the oil for the oil supply to prolong the product's lifespan.
- When this booster is in operation, it initially opens the internal passages from A to P, allowing the input source to flow directly to the rear clamp fixture. Once the clamp fixture is filled with oil, it closes the passages between A and P. Subsequently, the internal boosting mechanism is engaged to increase the hydraulic pressure to the specified multiple of the pressure value. During pressure release, the oil is pushed through the B orifice to actuate the internal switch, opening the P-A passage, allowing the hydraulic oil inside the clamp fixture to exit through A.

Max. Pressure	Max. Output Pressure
50 bar	Part-No.: M.B.×4 / 4× Booster: 200 bar Part-No.: M.B.×7 / 7× Booster: 350 bar

Example

- When a system requires both high-pressure hydraulic cylinders and low-pressure hydraulic cylinders, and there is only a low-pressure hydraulic unit available, an intensifier can be used to convert low pressure to high pressure for supplying the high-pressure cylinders. As shown in the diagram, after oil is introduced into port A of the intensifier, high-pressure oil is output from port P to supply the high-pressure hydraulic cylinder. When pressure needs to be released, the solenoid valve switches, allowing oil to enter port B and open the check valve inside the intensifier, allowing oil to return through port A.



ABP | Air Drive Booster Pump

Pressure Max: 6 bar

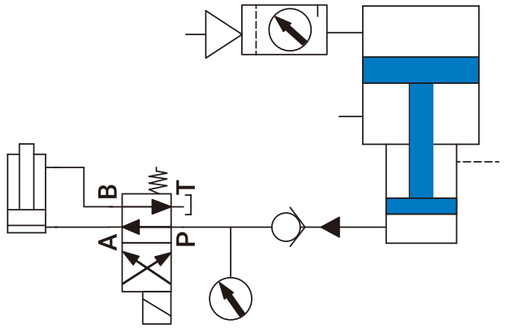
Introduction

- This pump is driven by air pressure to boost and output hydraulic oil.
- It can serve as a power source for hydraulic cylinders, with a higher flow rate than typical boosters. It allows continuous boosting without limitations on the actuation cylinder's stroke.
- The input air pressure can be adjusted using an air pressure regulating valve to control the output hydraulic pressure. When the output pressure decreases due to external factors, the pump automatically compensates. Therefore, it is particularly suitable for prolonged hydraulic clamping. Compared to electric pumps, it is more energy-efficient and does not generate oil temperature.
- The product comes in two boost ratios: 10× boost and 50× boost, suitable for low-pressure or high-pressure fixtures, respectively.
- The compact size of the product saves space and facilitates easy installation.
- The product is primarily composed of three main parts: oil tank, solenoid valve, and pneumatic pump, which can be purchased separately.

Specifications

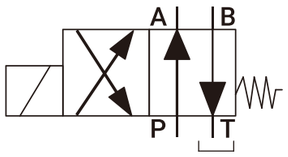
Items	Specifications	
Input Fluid	Compressed Air	
Max. Pressure	6 bar	
Boost Ratio	10	50
Output Flow Rate (5 bar)	8 L/min	1.6 L/min
Oil Tank Capacity	5 L	
Dimensions	L: 300×W: 300×H: 400 mm	
Types of Hydraulic Oil	ISO-VG68	

Pump



HDV Pneumatically Controlled Hydraulic Solenoid Valve

- This solenoid valve has standard A and B oil outlets with G1/8 threaded connections following the JIS (Japanese Industrial Standards) specifications.
- It is driven by compressed air at 6 bar and can operate at a maximum hydraulic pressure of 500 bar.
- The solenoid valve is a four-port two-position valve, and it can also be equipped with a pressure switch detector. Please specify the pressure range when placing an order.
- A single pump can accommodate up to two solenoid valves. For custom orders requiring dual solenoid valves, please provide relevant requirements during the order placement.



WENFU

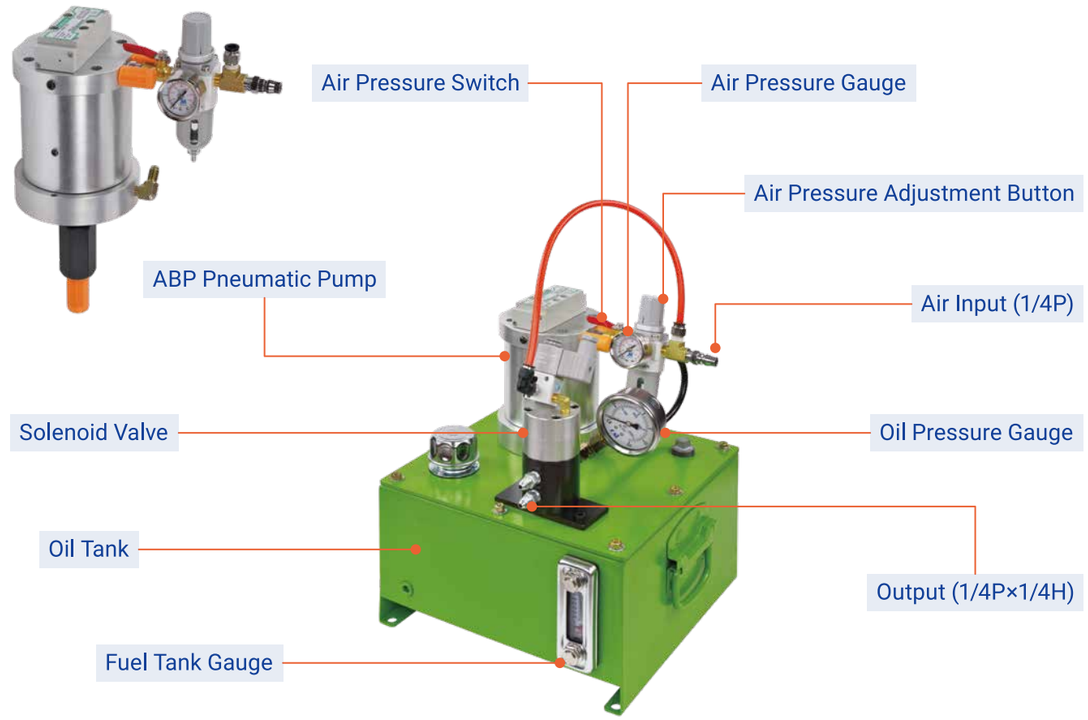
ABP

ABP | Air Drive Booster Pump

Pressure Max: 6 bar

Instructions for Use

- After connecting the air input to the air pressure source, turn on the air pressure switch and lift the air pressure adjustment button. Rotate it to adjust while simultaneously confirming the pressure value on the output pressure gauge. Once adjusted, press down and secure the air pressure adjustment button. By controlling the air pressure solenoid valve, you can adjust the four-hole two-position hydraulic valve. The oil gauge on the oil tank allows you to monitor the remaining oil level. When replenishing hydraulic oil, fill it up to the level indicated on the oil gauge. Do not overfill the entire tank, as a full tank during pump operation may cause oil leakage from the top of the tank.



Part-No.

ABP - 50 × AC110V

1 2 3

No.	Meaning	Option
1	Series	ABP
2	Boost Ratio	10 / 50
3	Input Voltage	AC110V / AC220V / DC24V

Wen Fu Industrial Co., Ltd.

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