

New

Centering Vise

“High Accuracy Model” and “Long Stroke Model”

High Accuracy Model

Model FVA



For Locating Workpieces

Long Stroke Model

Model FVC

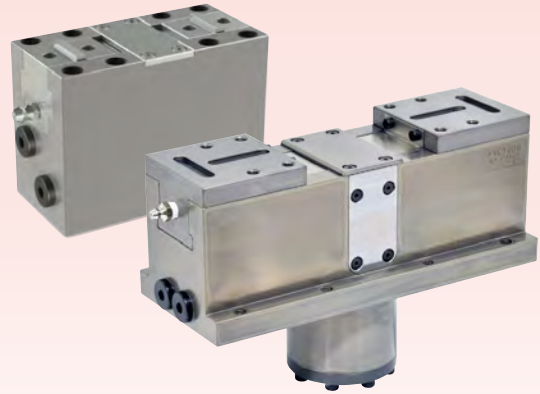


For Automatic Transfer of Workpieces

Centering Vise



Model **FVA**

Model **FVC**



“High Accuracy Model” and “Long Stroke Model”

For Gripping Cylindrical Workpiece, and Workpiece Transfer Hand

Double Action MAX. 7 MPa	 Model FVA → P.5	 Model FVC → P.9
	Classification Double Action High Accuracy Model	Classification Double Action Long Stroke Model
Operating Pressure Range	1.5 ~ 7 MPa	1.5 ~ 7 MPa
Advantages	High Accuracy with T-Slot Block Method Repeatability ±0.05 mm	Long Stroke with Link Method Slider Stroke FVC0630 : 10 mm FVC1000 : 15 mm FVC1600 : 20 mm
Accessories	<ul style="list-style-type: none"> • Speed Control Valve : Model BZL → P.13 • Air Bleed Valve : Model BZX • G Thread Plug (With Air Vent Function) : Model JZG 	

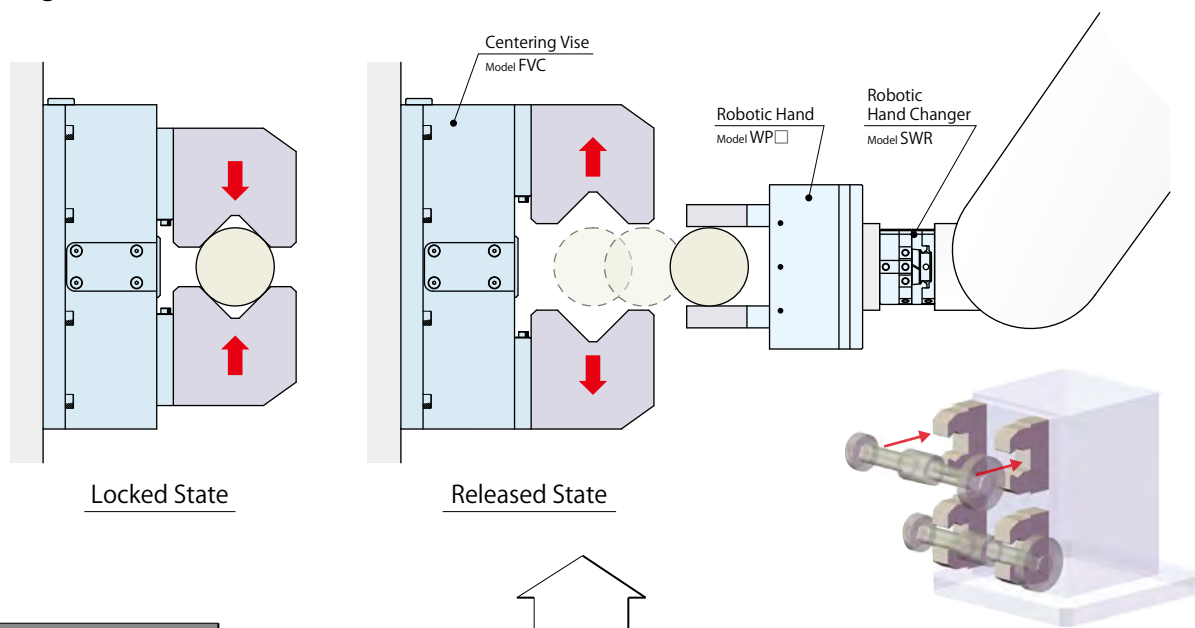
Application Examples

Centering Vise

FVA

FVC

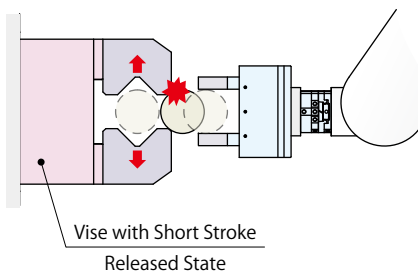
• Long Stroke Model for Automatic Transfer with Robot



Solvable Problems

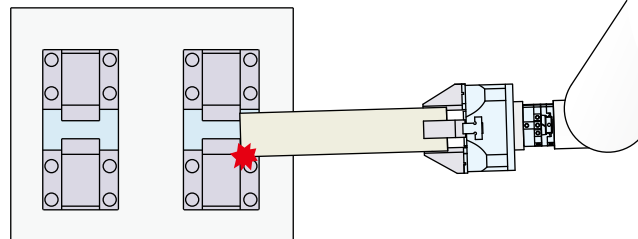
When Loading from the Front

Vise with short stroke is unable to secure the clearance for loading the workpiece.

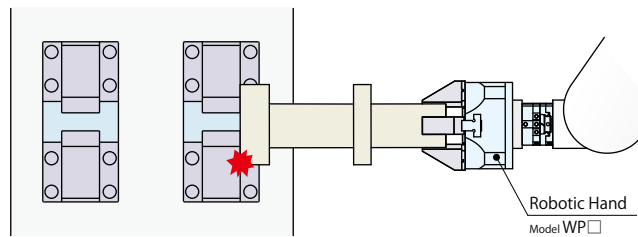


When Loading from the Side

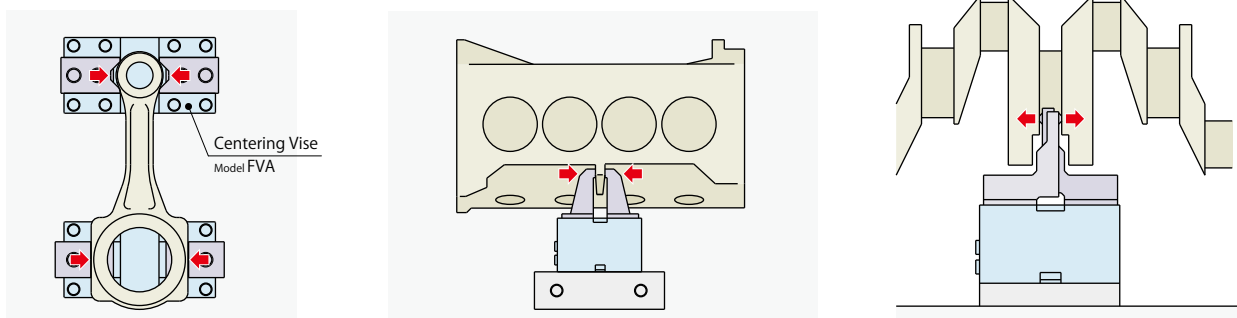
For the long workpiece, the robot cannot keep it horizontal.



It is unable to secure the clearance for loading the irregular-shape workpiece.

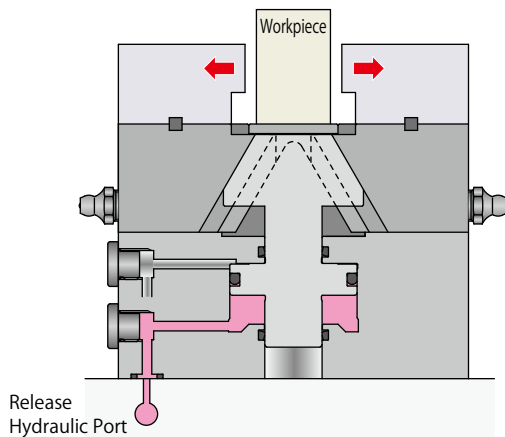


• High Accuracy Model for Locating Workpiece



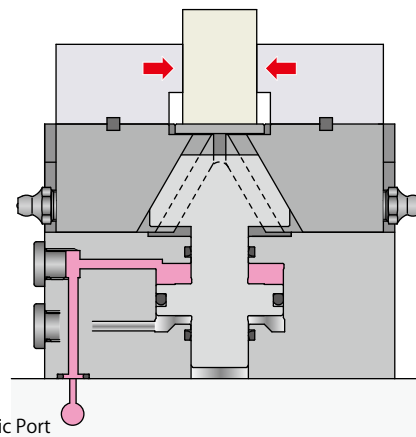
● Action Description : High Accuracy Model

Model **FVA**



Release Action

Perform a release action by supplying hydraulic pressure to the release port.



Lock Action

Perform a lock action by supplying hydraulic pressure to the lock port.

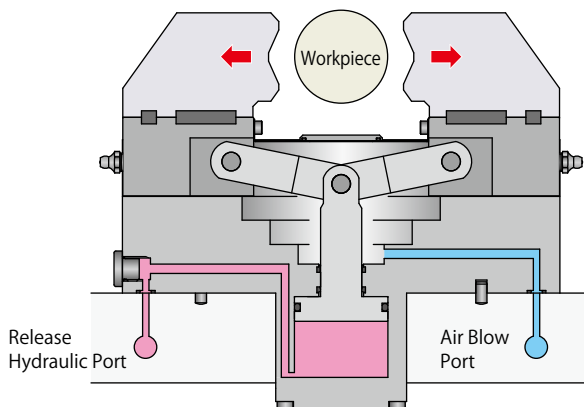
● High Accuracy

T-slot block design enables high repeatability and is suitable for high accuracy operation.

Repeatability : ± 0.05 mm

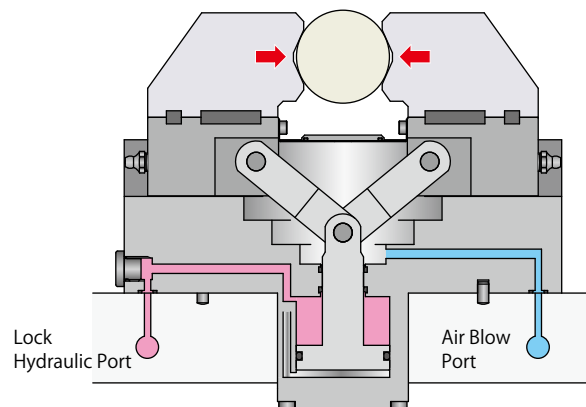
● Action Description : Long Stroke Model

Model **FVC**



Release Action

Perform a release action by supplying hydraulic pressure to the release port.

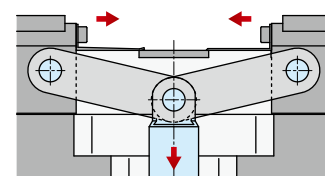


Lock Action

Perform a lock action by supplying hydraulic pressure to the lock port.

● Long Stroke

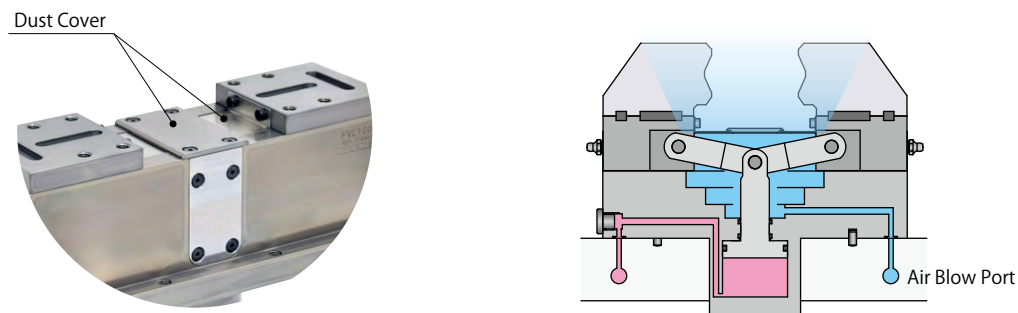
Link type sliding mechanism allows for wider stroke of the clamp lever and easy loading/unloading of workpieces. Suitable for automatic transfer.



Link Type Sliding Mechanism

- **Equipped with Dust Cover!**
- **Air Blow Function!** (FVC Only)

The dust cover and air blow prevent foreign substance and enable a longer operational life span.



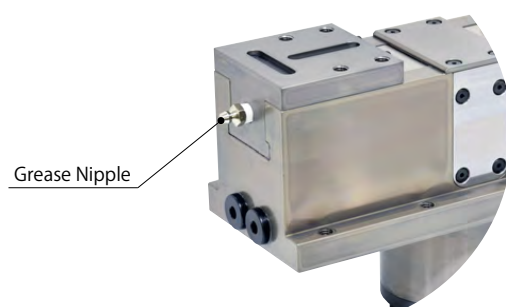
- **Easy to Machine the Mounting Surface of the Clamp Lever!**

Only key slot and bolt hole need to be machined for mounting the clamp lever.
This can be prepared by general facility, and no complicated serration is required.

- **Secure Locking of Workpiece with Powerful Gripping Force!**

- **Excellent Maintainability!**

The grease nipple is originally equipped for applying grease on the internal components.

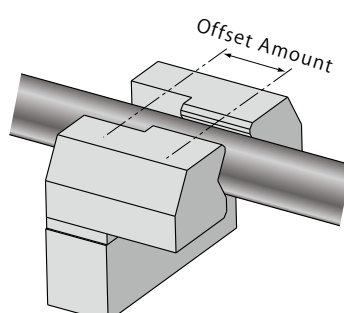


- **Offset Available!**

Offset of the workpiece is available. (FVC Only)

Drill tools are accessible avoiding interference with loaders etc.

※ Please contact us when using it with offset.



Model No. Indication

FVA 063 0

1 2

1 Cylinder Force

040 : Cylinder Force 4.2 kN (Hydraulic Pressure 7 MPa)

063 : Cylinder Force 7.0 kN (Hydraulic Pressure 7 MPa)

100 : Cylinder Force 11.1 kN (Hydraulic Pressure 7 MPa)

※ Cylinder force is different from clamping force.

2 Design No.

0 : Revision Number

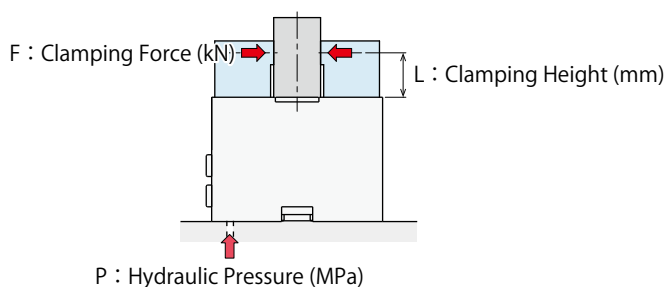
Specifications

Model No.	FVA0400	FVA0630	FVA1000
Slider Stroke (One Side) mm	5		
Cylinder Area cm ²	6.0	10.0	15.8
Cylinder Capacity cm ³	5.5	9.1	14.4
Max. Operating Pressure MPa	7.0		
Min. Operating Pressure MPa	1.5		
Withstanding Pressure MPa	10.5		
Repeatability (X-axis Direction) mm	±0.05		
Operating Temperature °C	0 ~ 70		
Pressurizing Agent	General Hydraulic Oil Equivalent to ISO-VG32		
Weight kg	2.5	3.4	4.3

Notes:

1. Adjust the operating speed so that the slider fully strokes within 1~2 seconds.
2. Secure the extra stroke of 1mm or more.

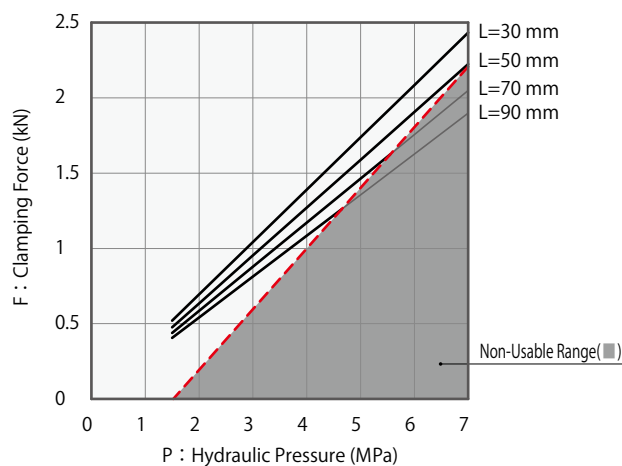
Clamping Force Curve



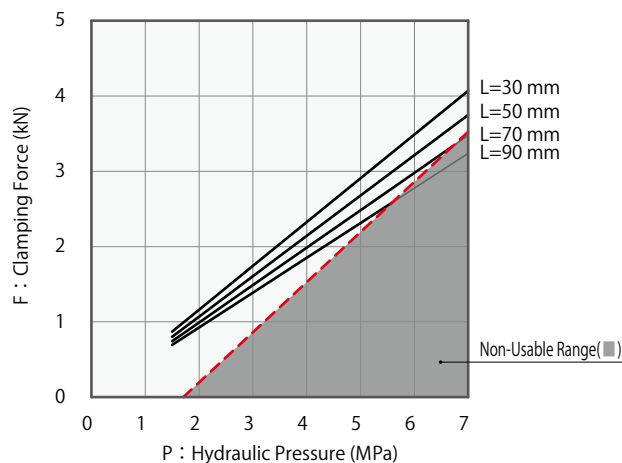
Notes:

- This table and graph show the relationship among F: Clamping Force (kN), P: Supply Hydraulic Pressure (MPa), and L: Clamping Height (mm).
 - Using in the non-usable range may damage the product and lead to fluid leakage.
- ※1. F: Clamping Force (kN), P: Supply Hydraulic Pressure (MPa), L: Clamping Height (mm).

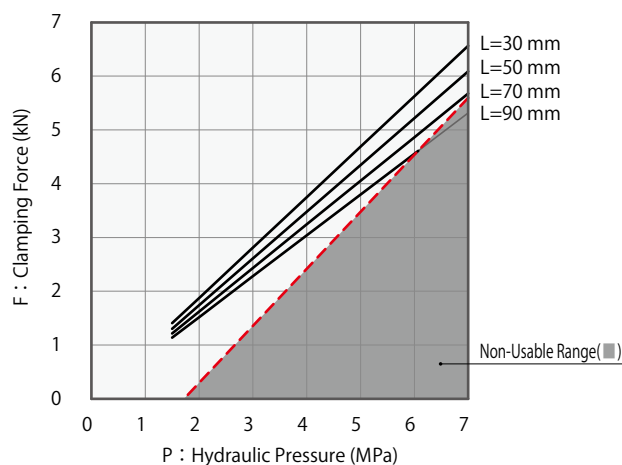
FVA0400				
Calculation Formula ※1 (kN) $F=(74 \times P) / (183+L)$				
Clamping Force (kN) Non-Usable Range (■)				
Hydraulic Pressure (MPa)	Clamping Height L (mm)			
	30	50	70	90
7	2.43	2.22	■	■
6	2.08	1.91	■	■
5	1.74	1.59	1.46	■
4	1.39	1.27	1.17	1.08
3	1.04	0.95	0.88	0.81
2	0.69	0.64	0.58	0.54
1.5	0.52	0.48	0.44	0.41



FVA0630				
Calculation Formula ※1 (kN) $F=(136 \times P) / (204+L)$				
Clamping Force (kN) Non-Usable Range (■)				
Hydraulic Pressure (MPa)	Clamping Height L (mm)			
	30	50	70	90
7	4.07	3.75	■	■
6	3.49	3.21	2.98	■
5	2.91	2.68	2.48	2.31
4	2.32	2.14	1.99	1.85
3	1.74	1.61	1.49	1.39
2	1.16	1.07	0.99	0.93
1.5	0.87	0.80	0.74	0.69

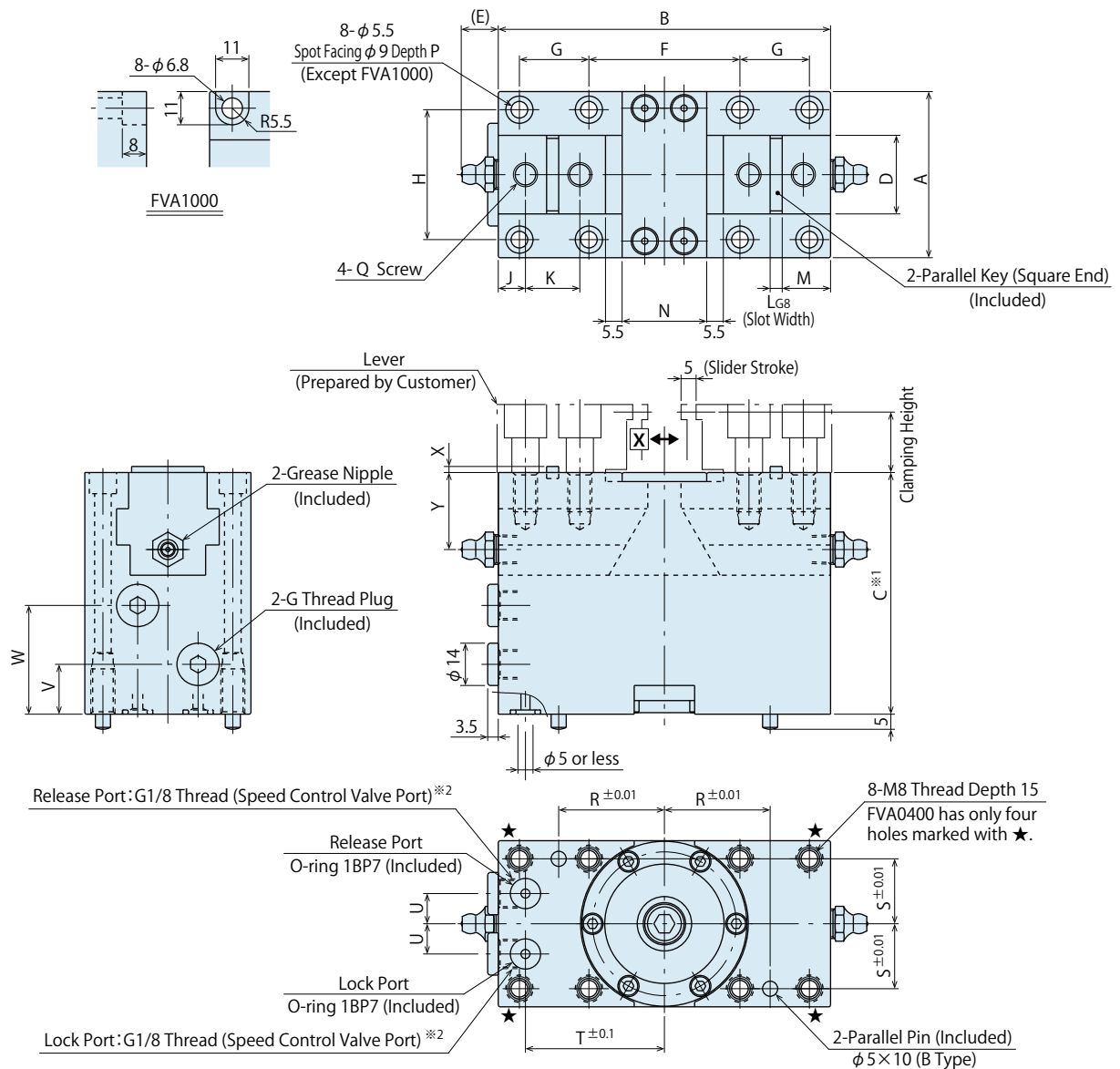


FVA1000				
Calculation Formula ※1 (kN) $F=(240 \times P) / (226+L)$				
Clamping Force (kN) Non-Usable Range (■)				
Hydraulic Pressure (MPa)	Clamping Height L (mm)			
	30	50	70	90
7	6.56	6.09	5.68	■
6	5.63	5.22	4.86	4.56
5	4.69	4.35	4.05	3.80
4	3.75	3.48	3.24	3.04
3	2.81	2.61	2.43	2.28
2	1.88	1.74	1.62	1.52
1.5	1.41	1.30	1.22	1.14

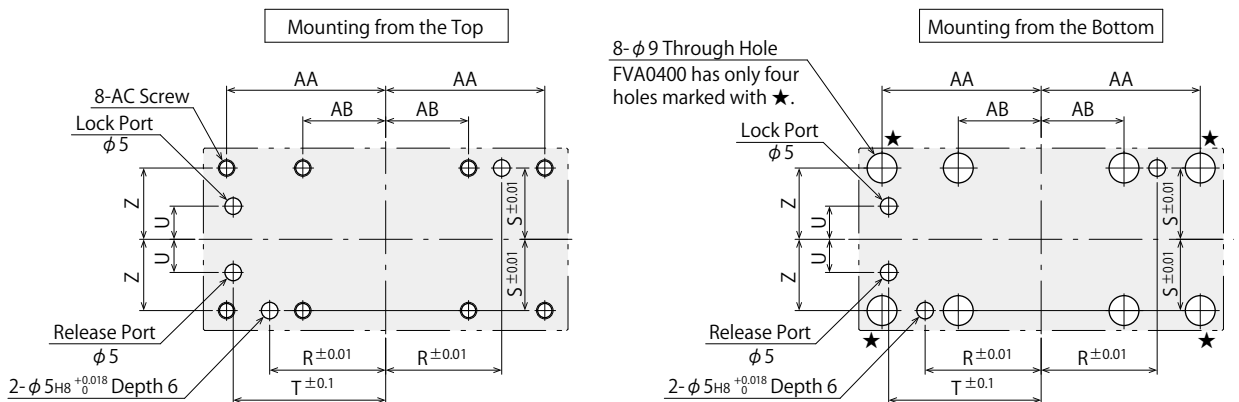


External Dimensions

※ The drawing shows the released state of FVA.

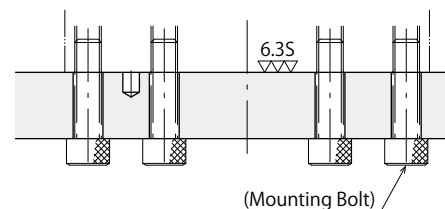


Machining Dimensions of Mounting



Notes:

1. Roughness of mounting surface should be 6.35 or better.
 2. Install a lever on the top of the slider when in use.
- ※1. Mounting bolts are not provided with the product.
Please prepare them according to the mounting height referring to dimension 'C'.
- ※2. Speed control valve is sold separately. Please refer to P.13 for detail.



● External Dimensions and Machining Dimensions of Mounting (mm)

Model No.	FVA0400	FVA0630	FVA1000
A	50	55	60
B	100	110	120
C	72	80	85
D	23	26	28
E	9	15	15
F	45	50	65
G	20	23	20
H	39	43	49
J	7	9	9
K	18	18	22
L	4 ^{+0.022 +0.004}	4 ^{+0.022 +0.004}	5 ^{+0.022 +0.004}
M	14	16	17.5
N	24	28	28
P	6	7	-
Q (Nominal×Pitch×Depth)	M6×1×12	M8×1.25×13	M10×1.5×15
R	32	35	42.5
S	19.5	21.5	24.5
T	41	46	51
U	9	10	10
V	15	16.5	17
W	31	36	36.5
X	2	2	2.5
Y	23.5	25.5	29.5
Z	19.5	21.5	24.5
AA	42.5	48	52.5
AB	22.5	25	32.5
AC (Nominal×Pitch×Depth)	M5×0.8×10	M5×0.8×10	M6×1×12
Parallel Key	4×4×20	4×4×25	5×5×25

Centering Vise
FVA
FVC

Model No. Indication

FVC 100 0

1 2

1 Cylinder Force

063 : Cylinder Force 6.6 kN (Hydraulic Pressure 7 MPa)

100 : Cylinder Force 11.1 kN (Hydraulic Pressure 7 MPa)

160 : Cylinder Force 16.4 kN (Hydraulic Pressure 7 MPa)

※ Cylinder force is different from clamping force.

2 Design No.

0 : Revision Number

Specifications

Model No.		FVC0630	FVC1000	FVC1600
Slider Stroke (One Side)	mm	10	15	20
Cylinder Area	Lock	9.4	15.8	23.4
	cm ² Release	12.6	19.6	28.3
Cylinder Capacity	Lock	21.2	47.5	90.0
	cm ³ Release	28.3	58.9	108.9
Max. Operating Pressure	MPa	7.0		
Min. Operating Pressure	MPa	1.5		
Withstanding Pressure	MPa	10.5		
Air Blow Operating Pressure	MPa	0.4		
Repeatability (X-axis Direction)	mm	±0.1		
Operating Temperature	°C	0 ~ 70		
Pressurizing Agent		General Hydraulic Oil Equivalent to ISO-VG32		
Weight	kg	5.8	11.8	21.2

Notes:

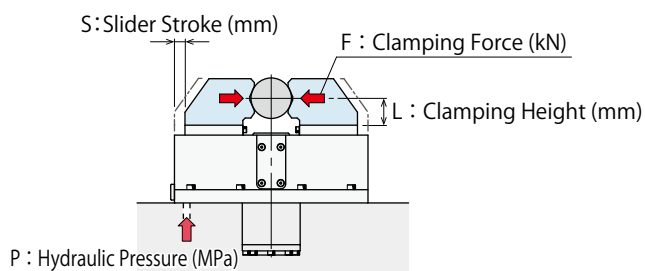
1. Adjust the operating speed so that the slider fully strokes within 1~2 seconds.
2. Secure the extra stroke of 1mm or more.

Clamping Force Curve

Centering Vise

FVA

FVC



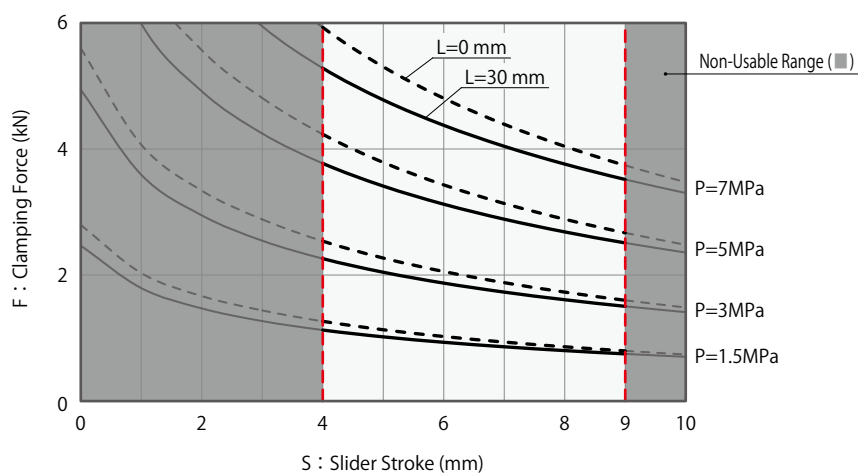
Notes:

- This graph shows the relationship among F: Clamping Force (kN), P: Supply Hydraulic Pressure (MPa), L: Clamping Height (mm), and S: Slider Stroke (mm).
- Using in the non-usable range may damage the product and lead to fluid leakage.

※1. Please contact us for higher clamping height than maximum clamping height.

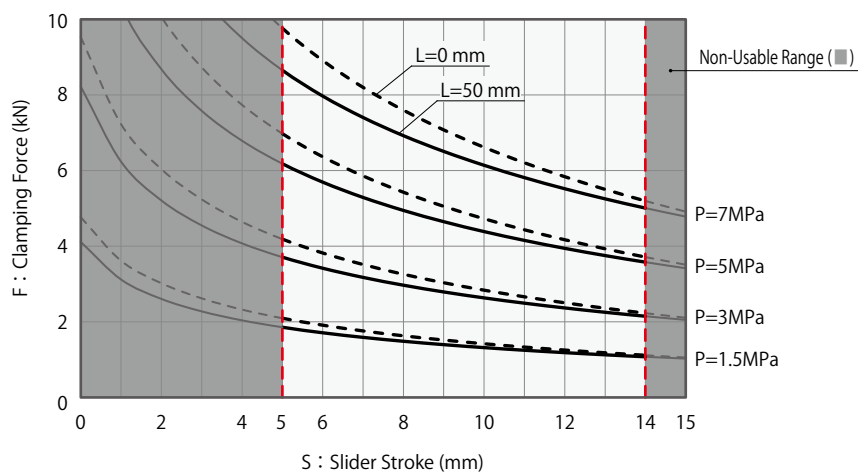
FVC0630

Max. Clamping Height ※1 30 mm



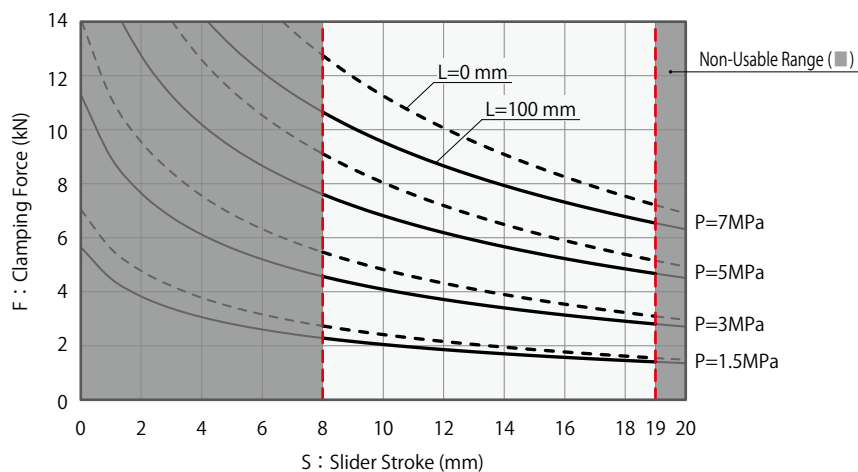
FVC1000

Max. Clamping Height ※1 50 mm



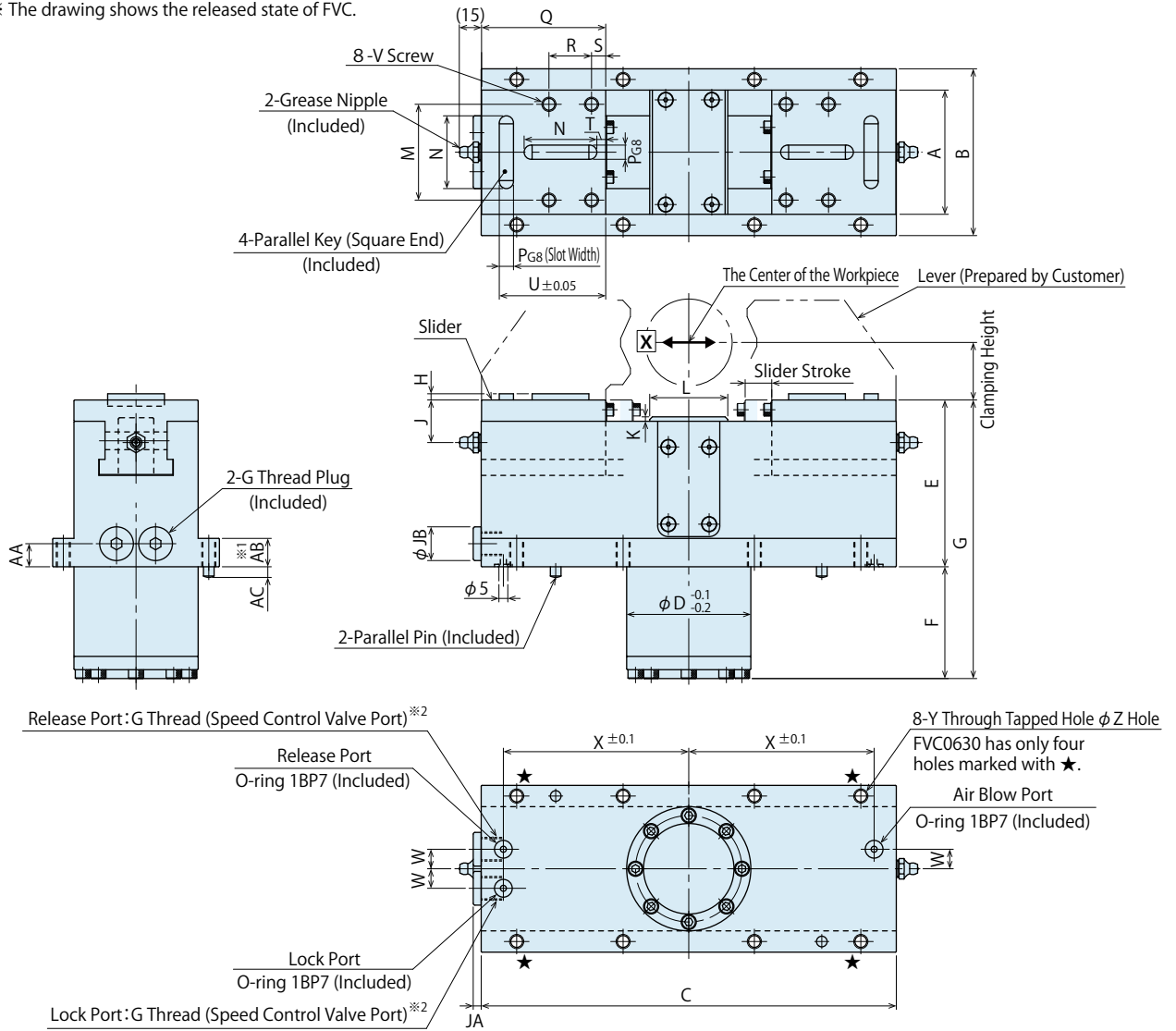
FVC1600

Max. Clamping Height ※1 100 mm

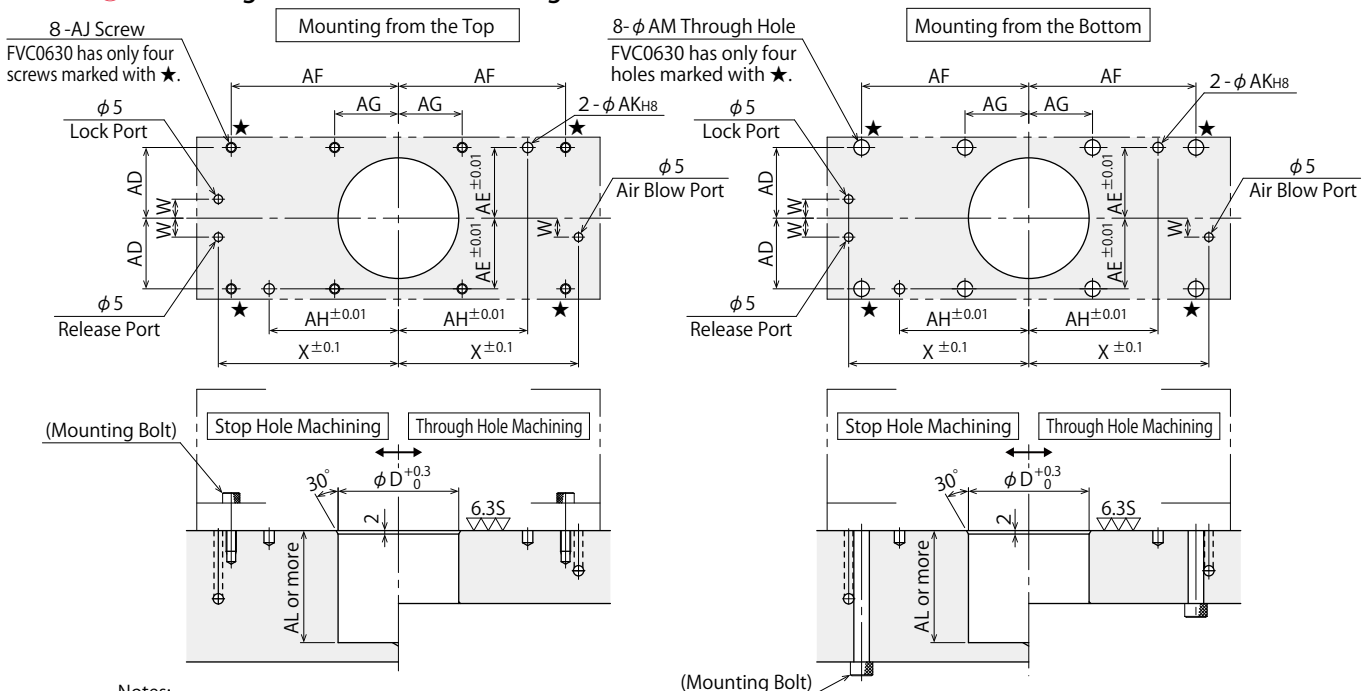


External Dimensions

※ The drawing shows the released state of FVC.



Machining Dimensions of Mounting



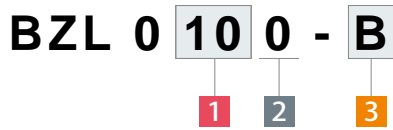
Notes:

1. Roughness of mounting surface should be 6.3S or better.
 2. Install a lever on the top of the slider when in use.
- ※1. Mounting bolts are not provided with the product. Please prepare them according to the mounting height referring to dimension 'AB'.
- ※2. Speed control valve is sold separately. Please refer to P.13 for detail.

External Dimensions and Machining Dimensions of Mounting (mm)

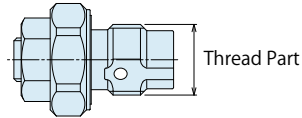
Model No.	FVC0630	FVC1000	FVC1600
Slider Stroke	10	15	20
A	55	70	82
B	80	94	114
C	182	234	298
D	60	70	82
E	75	94	116
F	54	63	80
G	129	157	196
H	3.5	3.5	4
J	19	24	30
K	2.5	2.5	2.5
L	40	44	57
M	42	54	62
N	29	41	56
P	8 ^{+0.027} _{+0.005}	8 ^{+0.027} _{+0.005}	10 ^{+0.027} _{+0.005}
Q	50	70	90
R	16	24	30
S	6.5	8	10
T	2.5	5	4.5
U	42	60	77
V (Nominal×Pitch×Depth)	M6×1×9	M8×1.25×11	M10×1.5×15
W	10	11	15
X	82	104.5	136.5
Y	M8	M8	M10
Z	6.8	6.8	8.5
AA	9	13	16
AB	16	16	20
AC	5	6	8
AD	34	41	49
AE	34	41	49
AF	71	97	130
AG	-	37	50
AH	50	75	90
AJ (Nominal×Pitch×Depth)	M6×1×12	M6×1×12	M8×1.25×16
AK	5 ^{+0.018} ₀ Depth 6	6 ^{+0.018} ₀ Depth 7	8 ^{+0.022} ₀ Depth 9
AL	56	65	82
AM	9	9	11
JA	3.5	4.5	4.5
JB	14	19	19
Parallel Pin	φ 5×10	φ 6×12	φ 8×16
Parallel Key	8×7×20	8×7×32	10×8×45
Lock Hydraulic Port:G Thread	G1/8	G1/4	G1/4
Release Hydraulic Port:G Thread			

Model No. Indication (Speed Control Valve for Low Pressure) PAT.



1 G Thread Size

- 10 : Thread Part G1/8A Thread
- 20 : Thread Part G1/4A Thread

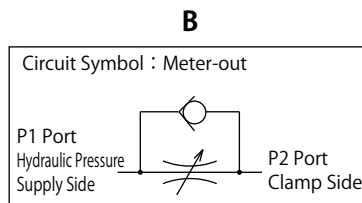


2 Design No.

- 0 : Revision Number

3 Control Method

- B : Meter-out



Specifications

Model No.	BZL0100-B	BZL0200-B
Max. Operating Pressure MPa	7	
Withstanding Pressure MPa	10.5	
Control Method	Meter-out	
G Thread Size	G1/8A	G1/4A
Cracking Pressure MPa	0.12	
Max. Passage Area mm ²	2.6	5.0
Pressurizing Agent	General Hydraulic Oil Equivalent to ISO-VG-32	
Operating Temperature °C	0 ~ 70	
Tightening Torque for Main Body N·m	10	25

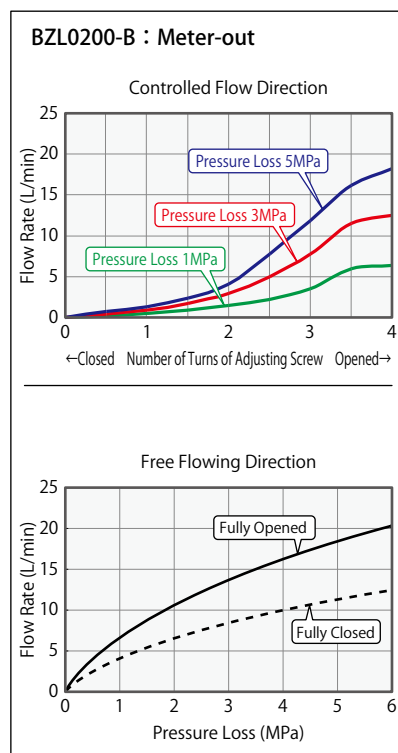
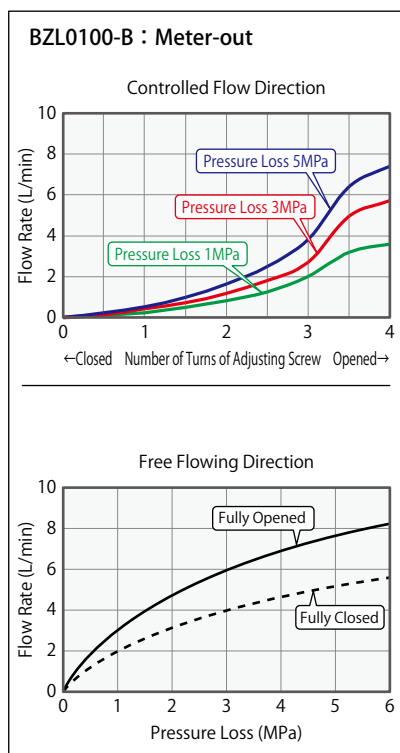
- Notes:
- Minimum passage area when fully opened is the same as the maximum passage area in the table above.
 - It must be mounted with recommended torque. Because of the structure of the metal seal, if mounting torque is insufficient, the flow control valve may not be able to adjust the flow rate.
 - Don't use used BZL to other clamps.
Flow control will not be made because the bottom depth difference of G thread makes metal seal insufficient.

Applicable Products

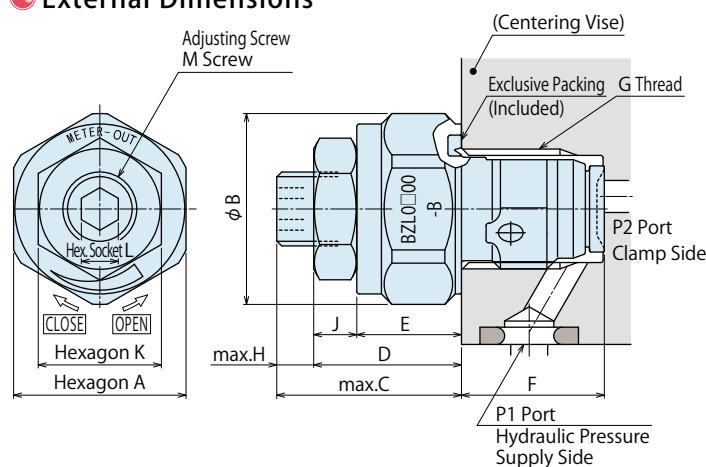
Model No.	FVA Centering Vise	FVC Centering Vise
BZL0100-B	FVA0400 FVA0630 FVA1000	FVC0630
BZL0200-B	-	FVC1000 FVC1600

- Note:
- Flow control circuit for double acting cylinder both should have meter-out circuits for the locking side and release side. Meter-in controls can be adversely affected by any air in the system.

Flow Rate Graph < Hydraulic Fluids ISO-VG32 (25~35°C) >



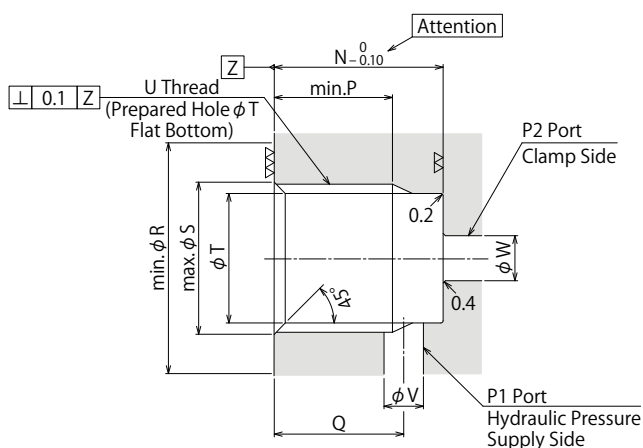
External Dimensions



(mm)

Model No.	BZL0100-B	BZL0200-B
A	14	18
B	15.5	20
C	15	16
D	12	13
E	8.5	9.5
F	(11.6)	(15.1)
G	G1/8	G1/4
H	3	3
J	3.5	3.5
K	10	10
L	3	3
M	M6×0.75	M6×0.75
N	11.5	15
P	8.5	11※1
Q	9	11.5
R (Flat Surface Area)	16	20.5
S	10	13.5
T	8.7	11.5
U	G1/8	G1/4
V	2 ~ 3	3 ~ 4
W	2.5 ~ 5	3.5 ~ 7

Machining Dimensions of Mounting Area



Notes:

- Since the $\nabla\nabla$ area is sealing part, be careful not to damage it.
- Since the ∇ area is the metal sealing part of BZL, be careful not to damage it. (Especially when deburring)
- No cutting chips or burr should be at the tolerance part of machining hole.
- As shown in the drawing, P1 port is used as the hydraulic supply and P2 port as the clamp side.
- If mounting plugs or fittings with G thread specification available in the market, the dimension '※1' should be 12.5.

Notes

- Please read "Notes on Hydraulic Cylinder Speed Control Circuit" to assist with proper hydraulic circuit design.
If there is something wrong with the circuit design, it leads to the applications malfunction and damage. (Refer to P.17)
- It is dangerous to air bleed during operation under high pressure. It must be done under lower pressure.
(For reference: the minimum operating range of the product within the circuit.)

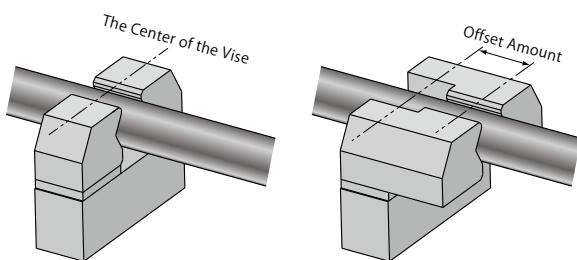
Cautions

● Notes for Design

- 1) Check Specifications
 - Please use each product according to the specifications.
- 2) Notes for Circuit Design
 - Please read "Notes on Hydraulic Cylinder Speed Control Circuit" on P.17 to assist with proper hydraulic circuit designing.
 - Ensure there is no possibility of supplying hydraulic pressure to the lock and release ports simultaneously.
 - Air blow passage should be $\phi 6$ mm or more.
- 3) Continuously supply air pressure to the air blow port. (FVC Only)
 - Continuously supply air pressure to the air blow port.
If air is shut off during operation foreign substance may enter into the cylinder leading to malfunction.
- 4) Tightening depth of the lever mounting bolt must be less than the maximum tightening depth.
 - Longer lever mounting bolt than the maximum tightening depth causes tightening the body and slider leading to malfunction and decrease of clamping force.

Model No.	Max. Tightening Depth (mm)
FVC0630	9
FVC1000	11
FVC1600	15

- 5) Do not apply impact on the lever (prepared by customer) when loading a workpiece.
 - Otherwise, it leads to malfunction or damage on the lever.
- 6) Clamp the workpiece at the center of the vise.
 - Please contact us for available offset amount.
(No offset option for FVA. Offset is only available for FVC.)



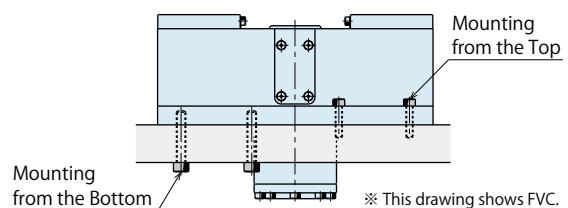
● Installation Notes

- 1) Check the Usable Fluid
 - Please use the appropriate fluid by referring to the Hydraulic Fluid List.
- 2) Procedure before Piping
 - The pipeline, piping connector and fixture circuits should be cleaned by thorough flushing.
 - The dust and cutting chips in the circuit may lead to fluid leakage and malfunction.
 - There is no filter provided with Kosmek's product except for a part of valves which prevents foreign materials and contaminants from getting into the circuit.
- 3) Applying Sealing Tape
 - Wrap with tape 1 to 2 times following the screw direction.
 - Pieces of the sealing tape can lead to oil leakage and malfunction.
 - In order to prevent a foreign substance from going into the product during the piping work, it should be carefully cleaned before working.
- 4) Installation/Removal of the Lever (Prepared by Customer)
 - Use hexagon socket bolts for mounting (with tensile strength of 12.9) and tighten them with the torque shown in the chart below. Installation failure causes the deformation of lever and decrease of clamping force.

	Model No.	Thread Size	Tightening Torque (N·m)
FVA	FVA0400	M6×1	10
	FVA0630	M8×1.25	25
	FVA1000	M10×1.5	50
FVC	FVC0630	M6×1	10
	FVC1000	M8×1.25	25
	FVC1600	M10×1.5	50

5) Mounting the Unit

- When mounting the centering vise, use hexagon socket bolts as multiple bolt holes for mounting (with tensile strength of 12.9) and tighten them with the torque shown in the chart below. Tightening with greater torque than recommended can depress the seating surface or break the bolt.



<When Mounting from the Top>

	Model No.	Thread Size	Tightening Torque (N·m)
FVA	FVA0400	M5×0.8	6.3
	FVA0630	M5×0.8	6.3
	FVA1000	M6×1	10
FVC	FVC0630	M6×1	10
	FVC1000	M6×1	10
	FVC1600	M8×1.25	25

<When Mounting from the Bottom>

	Model No.	Thread Size	Tightening Torque (N·m)
FVA	FVA0400	M8×1.25	25
	FVA0630	M8×1.25	25
	FVA1000	M8×1.25	25
FVC	FVC0630	M8×1.25	25
	FVC1000	M8×1.25	25
	FVC1600	M10×1.5	50

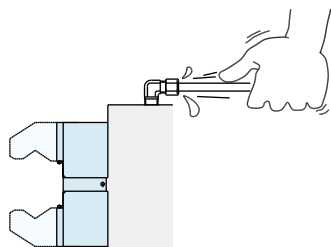
6) Operating Speed Adjustment

- Excessive operating speed of the centering vise may lead to wear-out or damage the internal components. Please adjust the operating speed so that the slider fully strokes within 1~2 seconds.
- Install a flow control valve and gradually control the flow rate from the low-speed side (small flow) to the designated speed. Controlling from the high-speed side (large flow) causes excessive surge pressure or overload to the clamp leading to damage of a machine or device.
- When controlling the speed with the flow control valve, make sure there is no excessively high pressure in the hydraulic circuit.
- Speed control may not be conducted if there is excessive air in the hydraulic circuit.
- The viscosity of fluid will decrease when its temperature increases. This will slow the operating speed of the centering vise. Adjust the speed under the proper temperature condition.

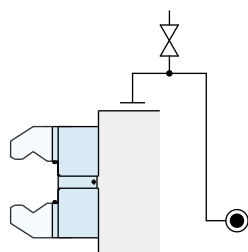
7) Air Bleeding of the Hydraulic Circuit

- If the hydraulic circuit has excessive air, the action time may become very long. If air enters the circuit after connecting the hydraulic port or under the condition of no air in the oil tank, please perform the following steps.

- ① Reduce hydraulic pressure to less than 2MPa.
- ② Loosen the cap nut of pipe fitting closest to the centering vise by one full turn.
- ③ Wiggle the pipeline to loosen the outlet of pipe fitting. Hydraulic fluid mixed with air comes out.



- ④ Tighten the cap nut after bleeding.
- ⑤ It is more effective to bleed air at the highest point inside the circuit or at the end of the circuit. (Set an air bleeding valve at the highest point inside the circuit.)



8) Checking Looseness and Retightening

- At the beginning of the machine installation, the bolt and lever mounting nut may be tightened lightly. Check the looseness and re-tighten as required.

● Hydraulic Fluid List

ISO Viscosity Grade ISO-VG-32

Maker	Anti-Wear Hydraulic Oil	Multi-Purpose Hydraulic Oil
Showa Shell Sekiyu	Tellus S2 M 32	Morlina S2 B 32
Idemitsu Kosan	Daphne Hydraulic Fluid 32	Daphne Super Multi Oil 32
JX Nippon Oil & Energy	Super Hyrando 32	Super Mulpus DX 32
Cosmo Oil	Cosmo Hydro AW32	Cosmo New Mighty Super 32
ExxonMobil	Mobil DTE 24	Mobil DTE 24 Light
Matsumura Oil	Hydol AW-32	
Castrol	Hyspin AWS 32	

Note: As it may be difficult to purchase the products as shown in the table from overseas, please contact the respective manufacturer.

Cautions

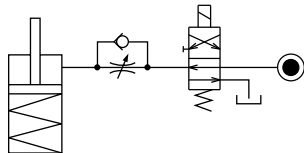
● Notes on Hydraulic Cylinder Speed Control Unit



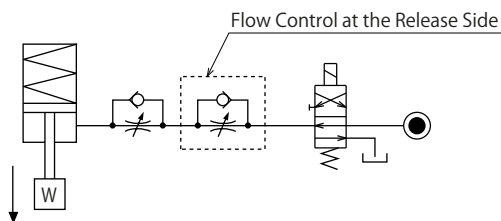
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

● Flow Control Circuit for Single Acting Cylinder

For spring return single acting cylinders, restricting flow during release can extremely slow down or disrupt release action. The preferred method is to control the flow during the lock action using a valve that has free-flow in the release direction. It is also preferred to provide a flow control valve at each actuator.



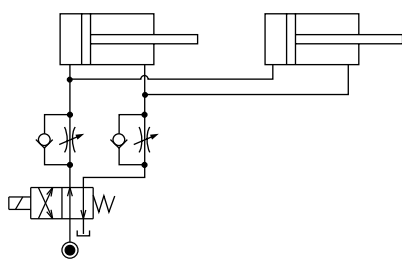
Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow. (Please add flow control to release flow if the lever weight is put on at the time of release action when using swing clamps.)



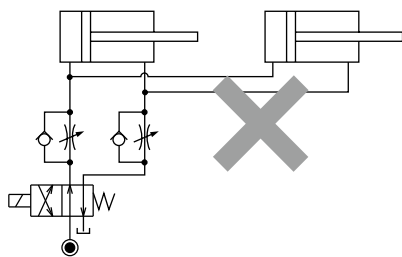
● Flow Control Circuit for Double Acting Cylinder

Flow control circuit for double acting cylinder should have meter-out circuits for both the lock and release sides. Meter-in control can have adverse effect by presence of air in the system.

【Meter-out Circuit】

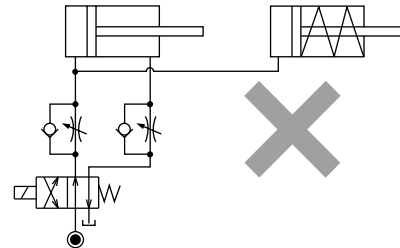


【Meter-in Circuit】



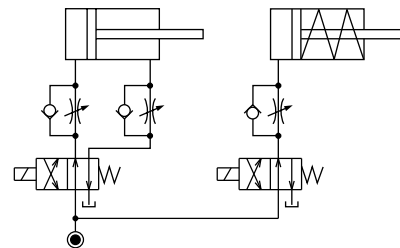
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

- ① Single acting components should not be used in the same flow control circuit as the double acting components. The release action of the single acting cylinders may become erratic or very slow.

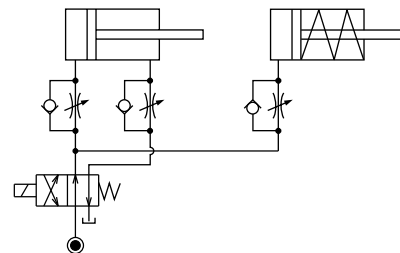


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

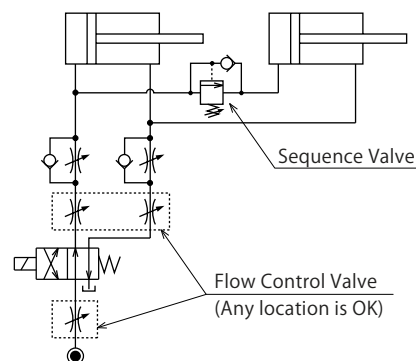
- Separate the control circuit.



- Reduce the influence of double acting cylinder control unit. However, due to the back pressure in tank line, single action cylinder is activated after double action cylinder works.

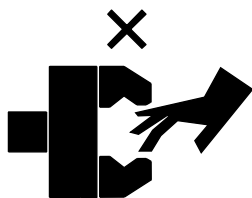


- ② In the case of meter-out circuit, the inner circuit pressure may increase during the cylinder action because of the fluid supply. The increase of the inner circuit pressure can be prevented by reducing the supplied fluid beforehand via the flow control valve. Especially when using sequence valve or pressure switches for clamping detection. If the back pressure is more than the set pressure then the system will not work as it is designed to.



● Notes on Handling

- 1) It should be handled by qualified personnel.
 - The hydraulic machine and air compressor should be handled and maintained by qualified personnel.
- 2) Do not handle or remove the machine unless the safety protocols are ensured.
 - ① The machine and equipment can only be inspected or prepared when it is confirmed that the preventive devices are in place.
 - ② Before the machine is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
 - ③ After stopping the machine, do not remove until the temperature cools down.
 - ④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.
- 3) Do not touch the centering vise while it is working. Otherwise, your hands may be injured due to clinching.



- 4) Do not disassemble or modify.
 - If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

● Maintenance and Inspection

- 1) Removal of the Product and Shut-off of Pressure Source
 - Before the product is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
 - Make sure there is no abnormality in the bolts and respective parts before restarting.
- 2) Regularly clean the area around the centering vise.
 - If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning, and fluid leakage.



- 3) If disconnecting by couplers on a regular basis, air bleeding should be carried out daily to avoid air mixed in the circuit.
- 4) Regularly tighten pipes, mounting bolts and fixing bolts to ensure proper use.
- 5) Make sure the hydraulic fluid has not deteriorated.
- 6) Make sure there is smooth action and no abnormal noise.
 - Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.
- 7) The products should be stored in the cool and dark place without direct sunshine or moisture.
- 8) Regularly fill the grease from the grease nipple. Use the grease of lithium soap thickened, mineral oil grease fortified with MoS₂.
(Recommended Grease : MOLYKOTE® BR-2 PLUS made by TORAY · DOW CORNING)
- 9) Please contact us for overhaul and repair.

● Warranty

- 1) Warranty Period
 - The product warranty period is 18 months from shipment from our factory or 12 months from initial use, whichever is earlier.
 - 2) Warranty Scope
 - If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense. Defects or failures caused by the following are not covered.
 - ① If the stipulated maintenance and inspection are not carried out.
 - ② If the product is used while it is not suitable for use based on the operator's judgment, resulting in defect.
 - ③ If it is used or handled in inappropriate way by the operator. (Including damage caused by the misconduct of the third party.)
 - ④ If the defect is caused by reasons other than our responsibility.
 - ⑤ If repair or modifications are carried out by anyone other than Kosmek, or without our approval and confirmation, it will void warranty.
 - ⑥ Other caused by natural disasters or calamities not attributable to our company.
 - ⑦ Parts or replacement expenses due to parts consumption and deterioration. (Such as rubber, plastic, seal material and some electric components.)
- Damages excluding from direct result of a product defect shall be excluded from the warranty.

KOSMEK

Harmony in Innovation

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- FOR FURTHER INFORMATION ON UNLISTED SPECIFICATIONS AND SIZES, PLEASE CALL US.
- SPECIFICATIONS IN THIS LEAFLET ARE SUBJECT TO CHANGE WITHOUT NOTICE.



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