

New

Di-Vise



Model **FVP**
Pushing Model



Model **FVH**
Holding Model

Di-Vise

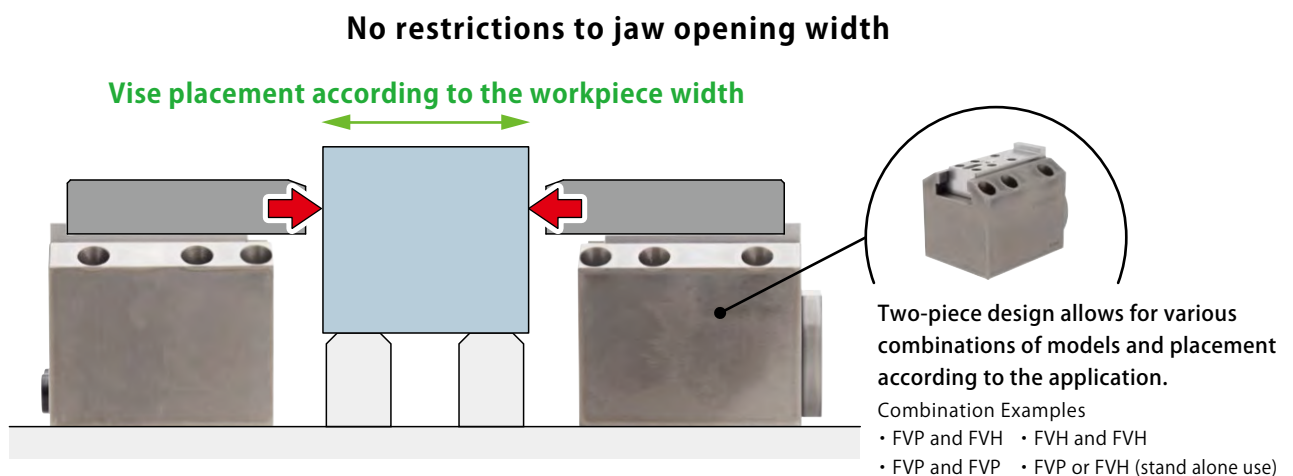
Model FVP/FVH



Clamping without Deformation due to Flexible Clamping Position

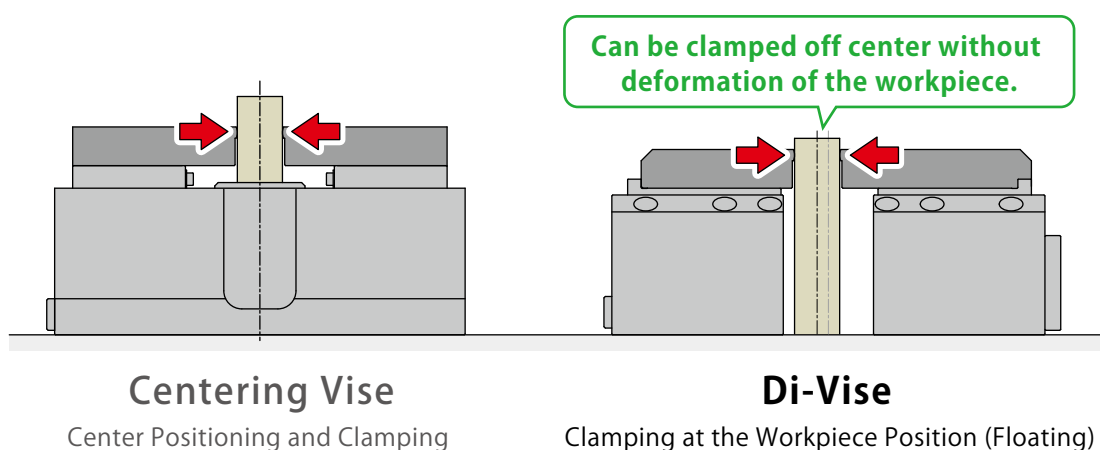
Hydraulic double acting vise with an innovative two-piece design to allow for flexible placement according to the workpiece.

Two-Piece Design to Allow for Flexible Placement



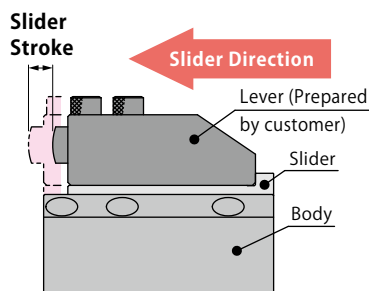
Follow the Workpiece Position

For stable clamping without affecting workpiece position.



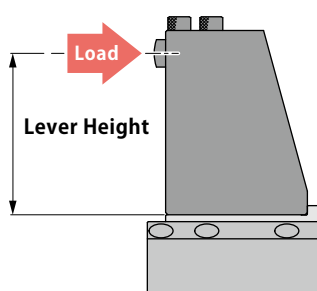
Slider Stroke **8mm**

Long stroke to match the variety of workpieces.



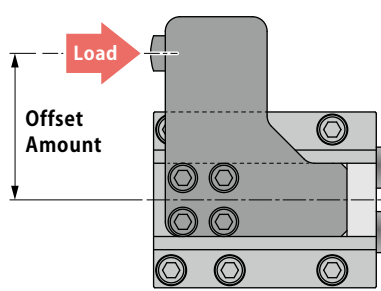
Maximum Lever Height **75mm**

High clamping position is possible.

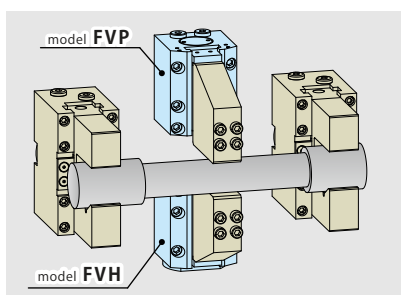


Allowable Offset Amount **50mm**

Eccentric (offset) lever is possible.

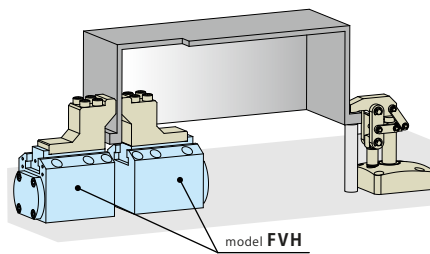


● Application Examples



Pushing Model + Holding Model
model FVP + model FVH

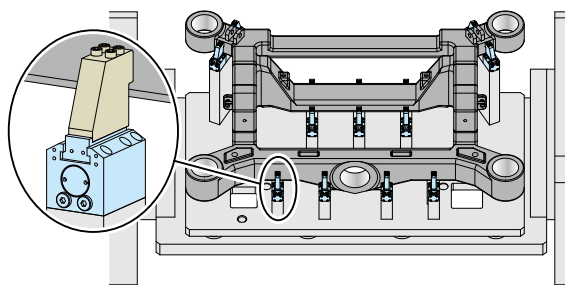
For Clamping Long Workpieces
Use in Combination with Centering Vise



Holding Model + Holding Model
model FVH + model FVH

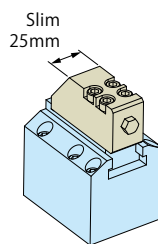
For Preventing Chatter on Thin-Wall Workpieces

Stabilize the workpiece without deforming by using FVH and FVH.

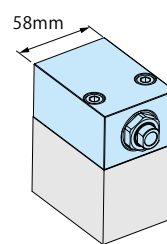


Pushing Model + Pushing Model
model FVP + model FVP

For Clamping Large Workpieces



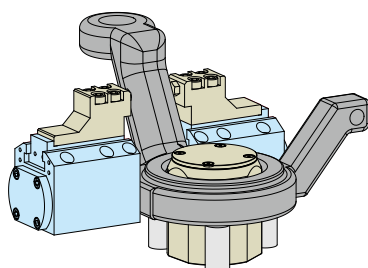
model FVP
model FVH



model DBC
KOSMEK Block Cylinder

One-Side Use for Side Pushing and Holding

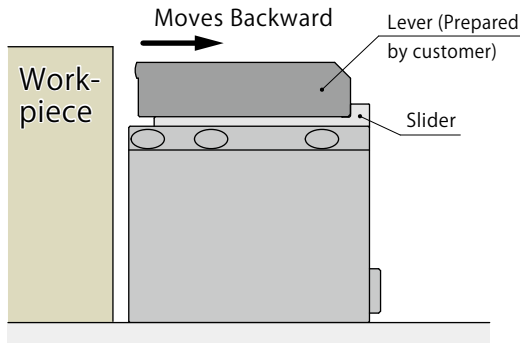
Slim Lever for Placement in Narrow Spaces



For Complex-Shaped Workpieces

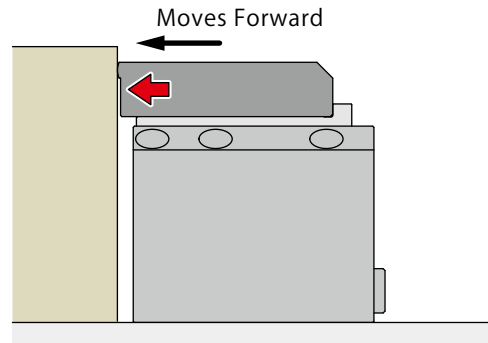
Pushing Model model FVP

Action Description



Released State

When hydraulic pressure is supplied to the release port, the slider moves backward.



Locked State

When hydraulic pressure is supplied to the lock port, the slider moves forward following the workpiece. It continues to apply clamping force to the workpiece.

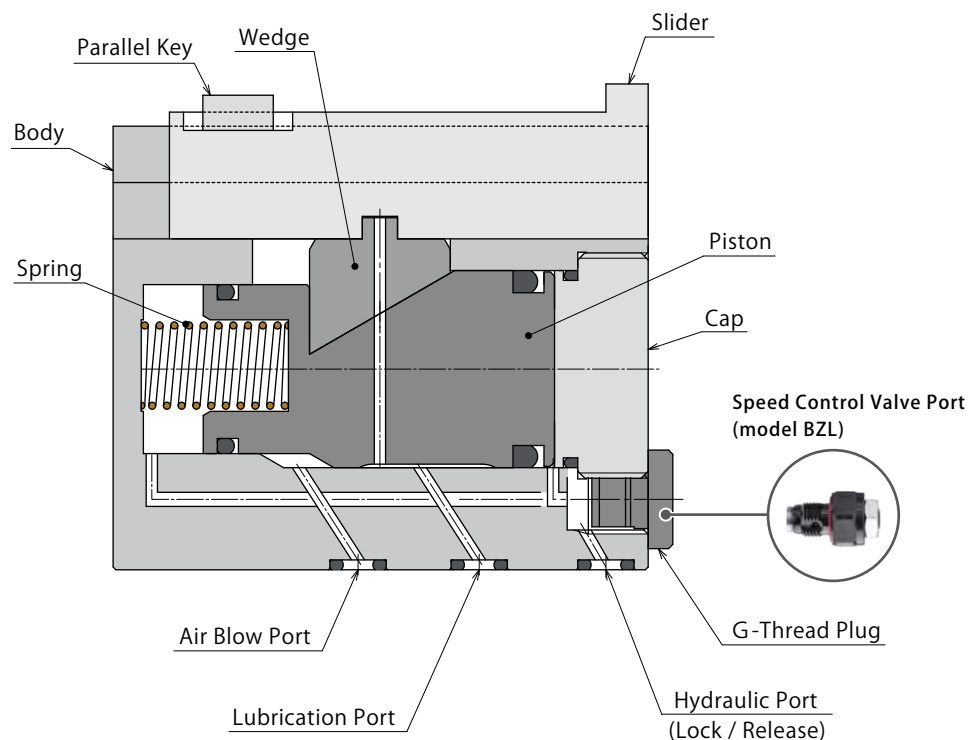
Note :

1. When pushing models are facing each other, adjust the speed so that they contact a workpiece at the same time as much as possible. One-side pushing force will be generated when only one side contacts the workpiece, leading to deformation of the workpiece.

Structure

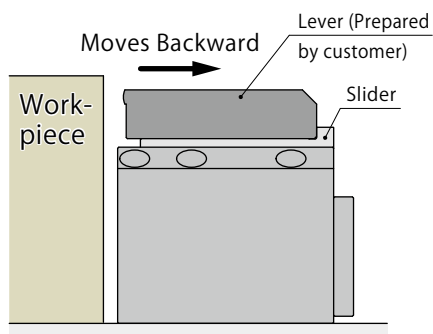


model FVP



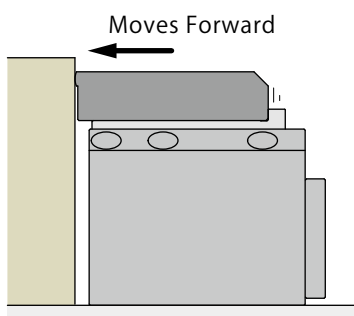
Holding Model model FVH

Action Description



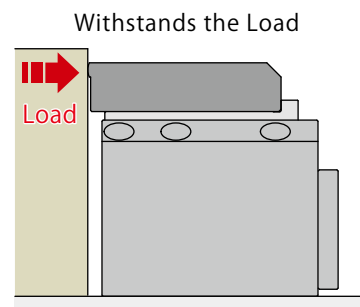
Released State

When hydraulic pressure is supplied to the release port, the slider moves backward.



Lever Advanced

When hydraulic pressure is supplied to the lock port, the slider moves forward, and stops after it contacts the workpiece.



Locked State

After contacting the workpiece, the built-in wedge locks the slider in position.

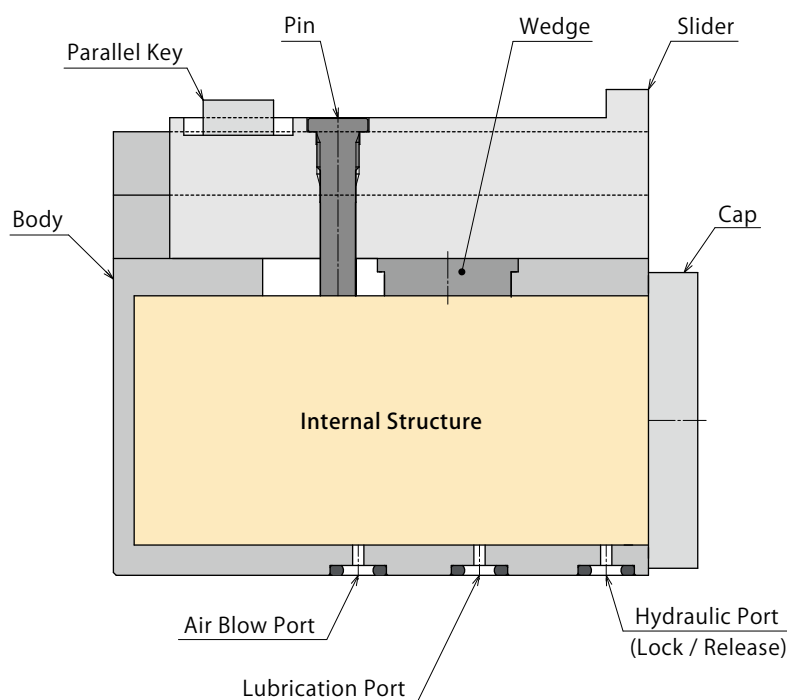
Notes :

1. When the pushing model and the holding model are facing each other, adjust the speed so that the holding model locks before the pushing model activates.
2. When released, the built-in spring may cause the slider to move forward momentarily, but this is not a malfunction. A force (approx. 50 N) is generated to contact the workpiece.

Structure



model FVH



● Model No. Indication :
Pushing Model

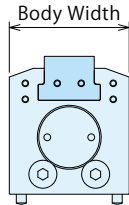
FVP 060 0

1 2



1 Size

060 : Body Width = 60mm



2 Design No.

0 : Revision Number

● Model No. Indication :
Holding Model

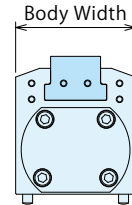
FVH 060 0

1 2



1 Size

060 : Body Width = 60mm



2 Design No.

0 : Revision Number

● Specifications

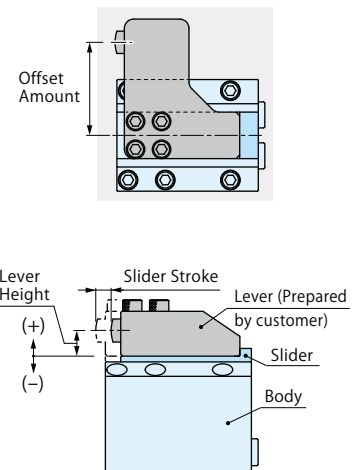
Model No.			FVP0600	FVH0600
Slider Stroke※1			mm	8
Slider Pushing Force※2 (at 7MPa)			kN	3.0
				0.4 or less (Lever Height at 0mm) 0.6 or less (Lever Height at 25mm) 0.75 or less (Lever Height at 50mm) 0.9 or less (Lever Height at 75mm)
Holding Force (at 7MPa)			kN	—
Max. Lever Height			mm	—50 / +75
Max. Lever Weight			kg	—
Allowable Offset Amount			mm	50
Cylinder Capacity	Lock side	cm ³	5.2	9.6
	Release side	cm ³	3.8	8.0
Max. Operating Pressure			MPa	7.0
Min. Operating Pressure			MPa	1.5
Withstanding Pressure			MPa	10.5
Operating Temperature			°C	0 ~ 70
Usable Fluid			General Hydraulic Oil equivalent to ISO-VG-32	
Weight			kg	2.1
				2.0

Notes :

※1. Provide extra stroke of more than 1mm.

※2. Slider pushing force varies depending on operating speed and lever height.

Please confirm that there are no problems under actual operating conditions before use.



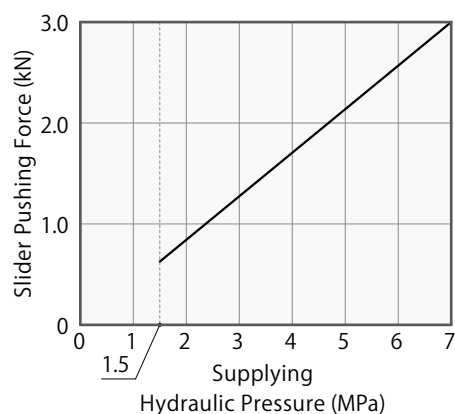
Performance Curve

Slider Pushing Force Curve

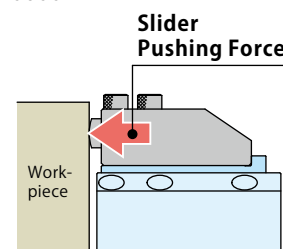
FVP : Pushing Model

Calculation Formula Slider Pushing Force (kN) = $0.43 \times$ Supplying Hydraulic Pressure (MPa)

Hydraulic Pressure (MPa)	Slider Pushing Force (kN)
7	3.0
6	2.6
5	2.2
4	1.7
3	1.3
2	0.9
1.5	0.6



FVP0600

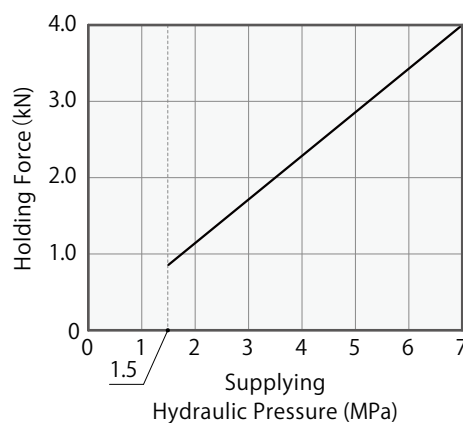


Holding Force Curve

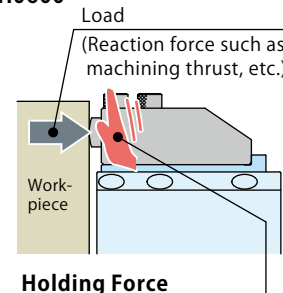
FVH : Holding Model

Calculation Formula Holding Force (kN) = $0.57 \times$ Supplying Hydraulic Pressure (MPa)

Hydraulic Pressure (MPa)	Holding Force (kN)
7	4.0
6	3.4
5	2.9
4	2.3
3	1.7
2	1.1
1.5	0.9



FVH0600



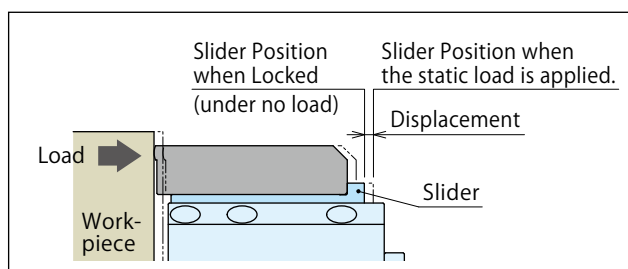
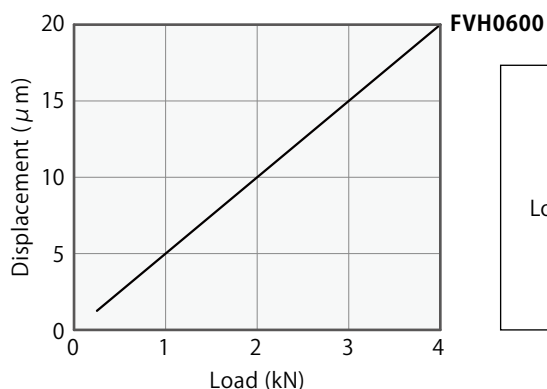
Holding Force

The force that supports the load. Please refer to "Load/Displacement Curve" for displacement.

Load/Displacement Curve

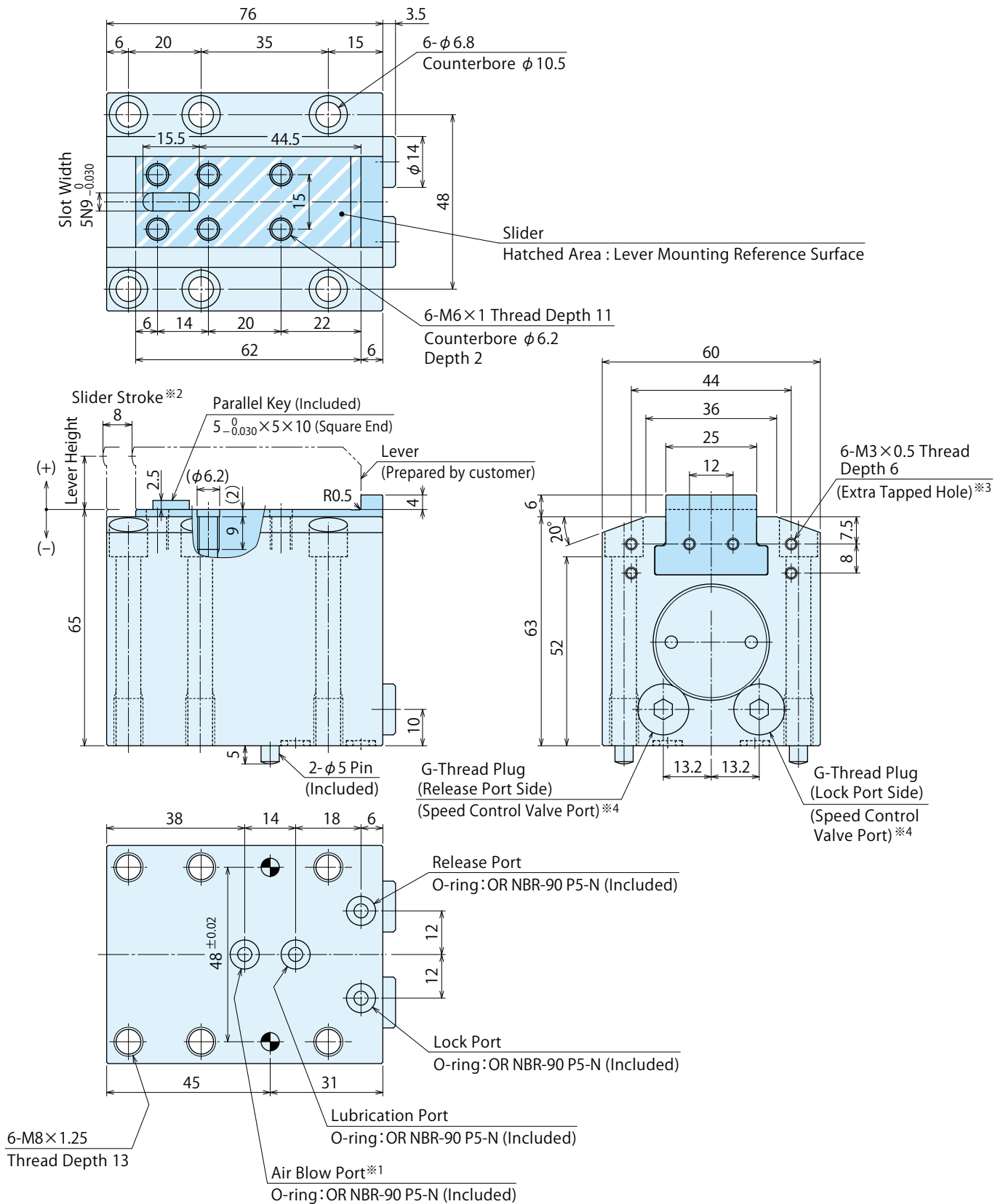
FVH : Holding Model

※ This graph shows the static load-displacement of the slider to the retracting direction at supply hydraulic pressure 7MPa.



External Dimensions FVP0600 Pushing Model

※ The drawing shows the released state.



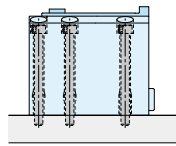
Notes :

1. Install a lever on the top of the slider when in use.
2. Mounting bolts are not provided with the product. Please prepare them according to the mounting position. (Refer to Installation of the Product on P.13)
- ※1. Continuously supply air pressure to the air blow port.
- ※2. Provide extra stroke of more than 1mm.
- ※3. The extra tapped hole can be used for detecting a slider position, etc.
- ※4. Speed control valve is sold separately. Please refer to P.15 for detail.

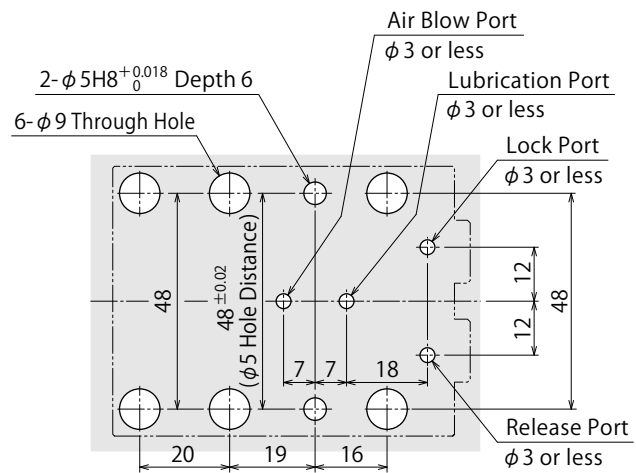
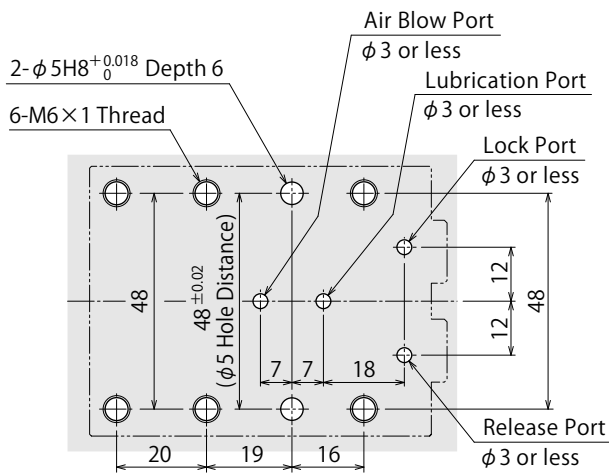
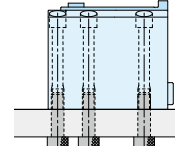
Machining Dimensions for Mounting Hole

Common for FVP0600 / FVH0600

When mounting
from the top

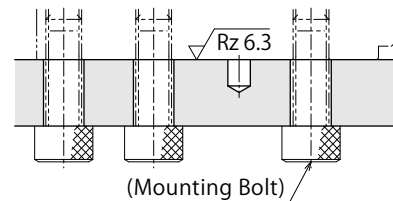


When mounting
from the bottom



Notes :

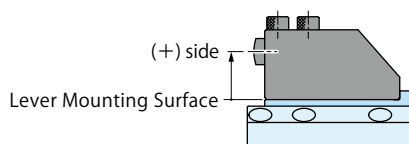
1. The mounting surface (O-ring sealing surface) should be flat with a maximum height roughness of Rz 6.3 or better.



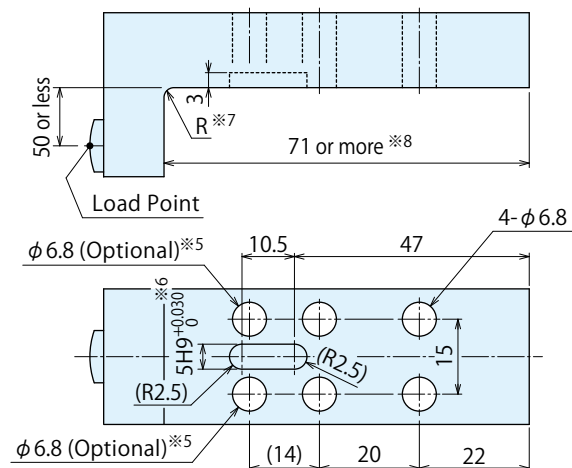
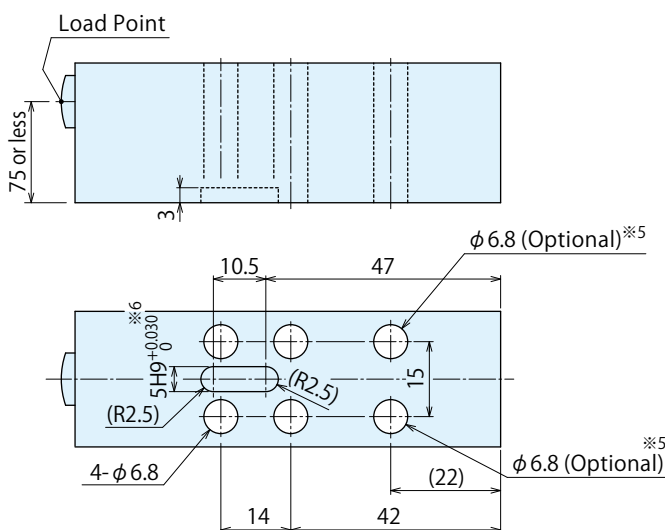
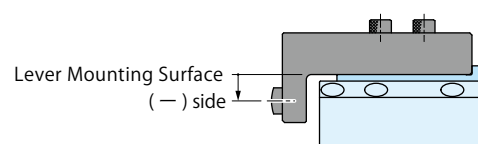
Lever Design Dimensions

Common for FVP0600 / FVH0600

In case the lever height is in (+) side.



In case the lever height is in (−) side.

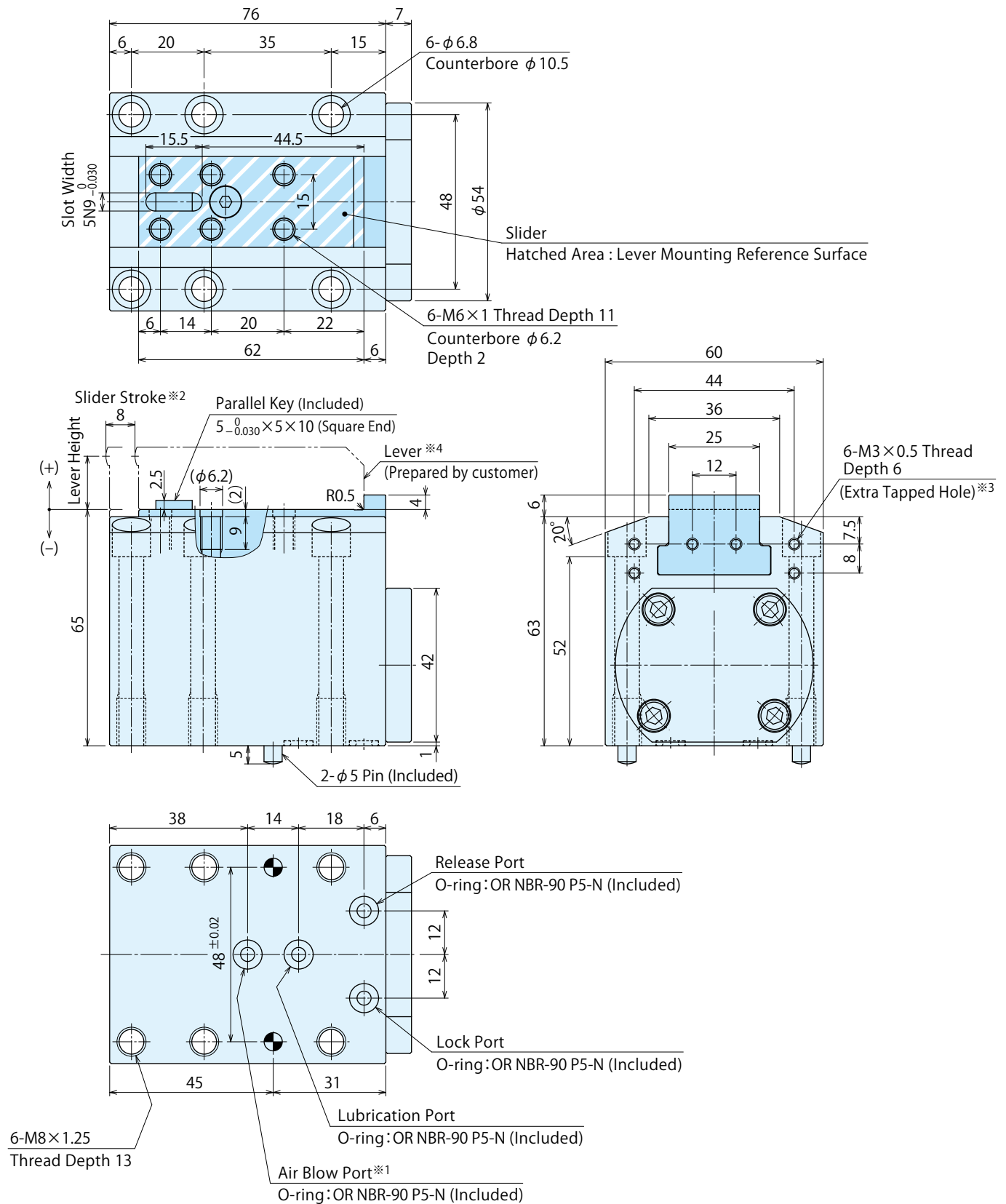


Notes :

1. Refer to P.13 for installation and removal of the lever.
- ※5. Lever can be mounted by using 4 bolts, however, if the offset amount is large, it is recommended to use 6 bolts. Refer to P.11 for further information.
- ※6. The tolerance of the key slot is precision fit for the supplied key. Please change it if necessary.
- ※7. Please determine the dimension R in consideration of the dimension ※8 to ensure proper clearance between lever and vise.

External Dimensions FVH0600 Holding Model

※ The drawing shows the released state.



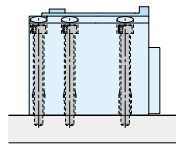
Notes :

1. Install a lever on the top of the slider when in use.
2. Mounting bolts are not provided with the product. Please prepare them according to the mounting position.
(Refer to Installation of the Product on P.13)
- ※1. Continuously supply air pressure to the air blow port.
- ※2. Provide extra stroke of more than 1mm.
- ※3. The extra tapped hole can be used for detecting a slider position, etc.
- ※4. The lever weight must be 3kg or less.

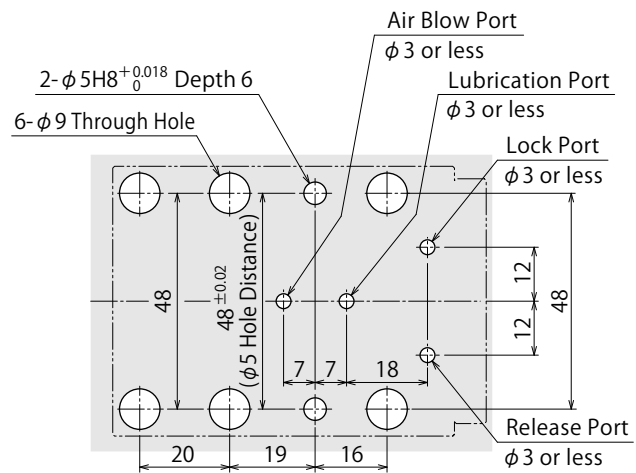
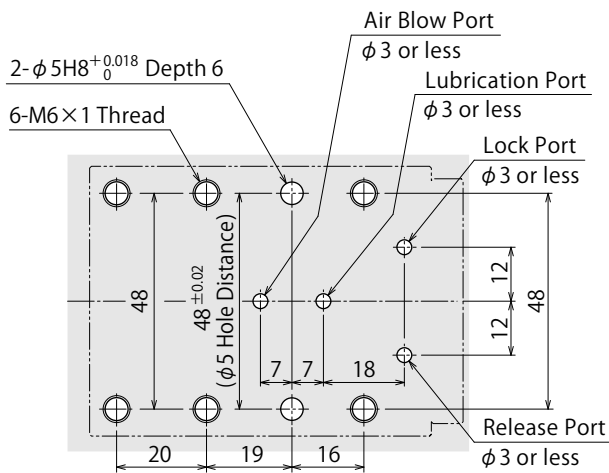
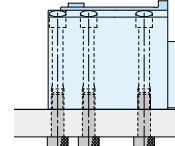
Machining Dimensions for Mounting Hole

Common for FVP0600 / FVH0600

When mounting
from the top

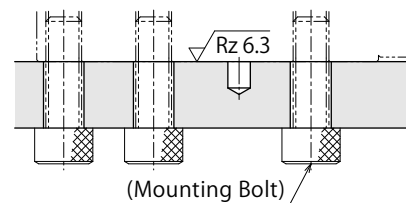


When mounting
from the bottom



Notes :

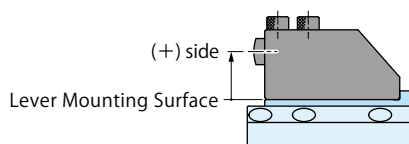
1. The mounting surface (O-ring sealing surface) should be flat with a maximum height roughness of Rz 6.3 or better.



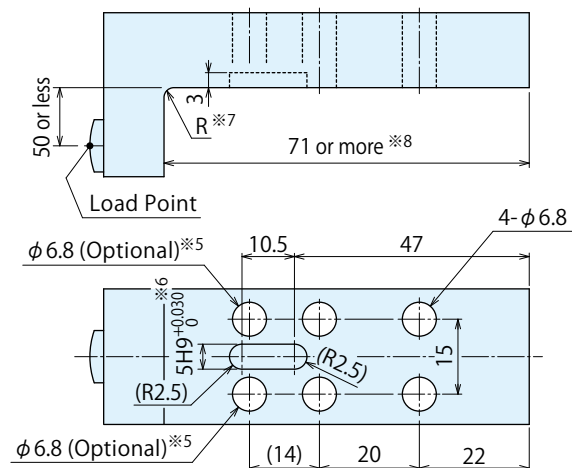
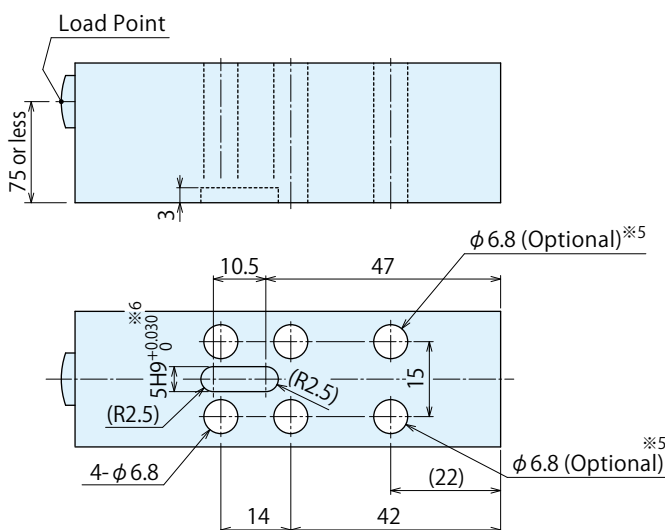
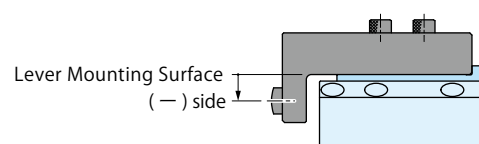
Lever Design Dimensions

Common for FVP0600 / FVH0600

In case the lever height is in (+) side.



In case the lever height is in (−) side.



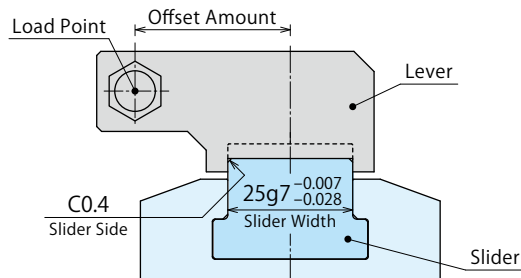
Notes :

1. Refer to P.13 for installation and removal of the lever.
- *5. Lever can be mounted by using 4 bolts, however, if the offset amount is large, it is recommended to use 6 bolts. Refer to P.11 for further information.
- *6. The tolerance of the key slot is precision fit for the supplied key. Please change it if necessary.
- *7. Please determine the dimension R in consideration of the dimension *8 to ensure proper clearance between lever and vise.

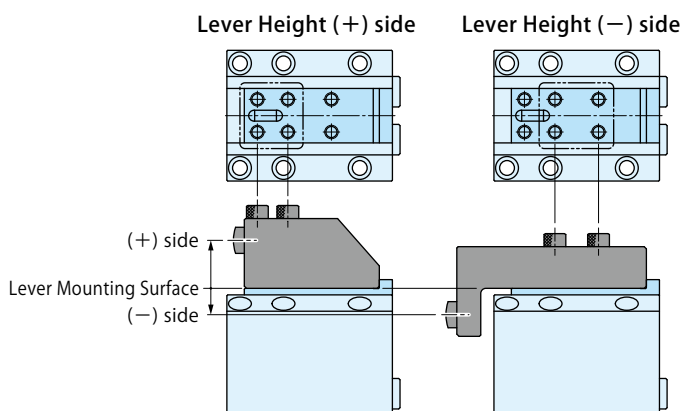
● Cautions

● Notes for Design

- 1) Check Specifications
 - Please use each product according to the specifications.
- 2) Notes for Circuit Design
 - Refer to "Hydraulic Circuit Design Example" on P.12 for hydraulic circuit design.
 - Please read "Notes on Hydraulic Cylinder Speed Control Unit" for proper hydraulic circuit design. Improper circuit design may lead to malfunctions and damage. (Refer to P.18)
 - Ensure there is no possibility of supplying hydraulic pressure to the lock port and the release port simultaneously.
 - When FVP and FVH are facing each other, adjust the speed so that FVH locks before FVP activates.
 - When FVPs are facing each other, adjust the speed so that they contact a workpiece at the same time as much as possible. One-side pushing force will be generated when only one side contacts the workpiece, leading to deformation of the workpiece.
- 3) Do not apply impact on the lever (prepared by customer) when loading a workpiece.
 - Otherwise, it leads to malfunction or damage to the lever.
- 4) Do not exceed the max. lever height and allowable offset. If exceeded, it can damage the product. Make sure to use within the specified values. Also, the ability varies depending on the lever height and offset amount. Be sure to confirm that there are no problems with the actual equipment before use. To ensure stability when the offset amount is 12mm or more, it is recommended to position with a shoulder on the slider width rather than the key slot. (Slider Width : 25g7)



- 5) Select the lever mounting bolt position according to lever height. There are 6 threaded holes on the lever mounting part. Use all 6 threaded holes or the threaded holes according to the lever height as shown below.
 - In case lever height is in (+) side, use 4 bolts at the front.
 - In case lever height is in (–) side, use 4 bolts at the rear.
 If the offset amount is large, it is recommended to use all 6 bolts.



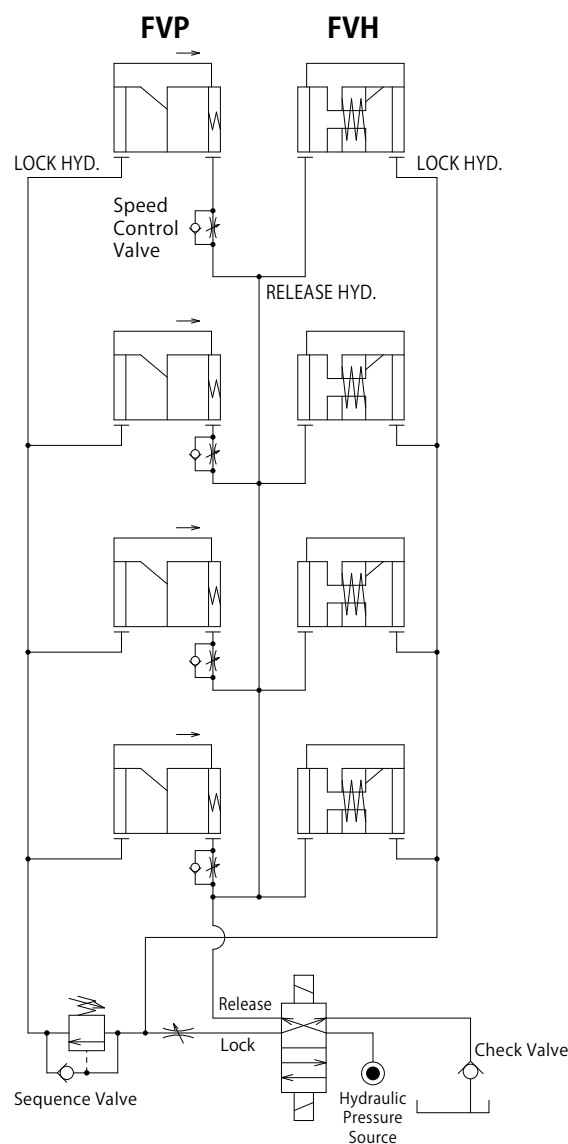
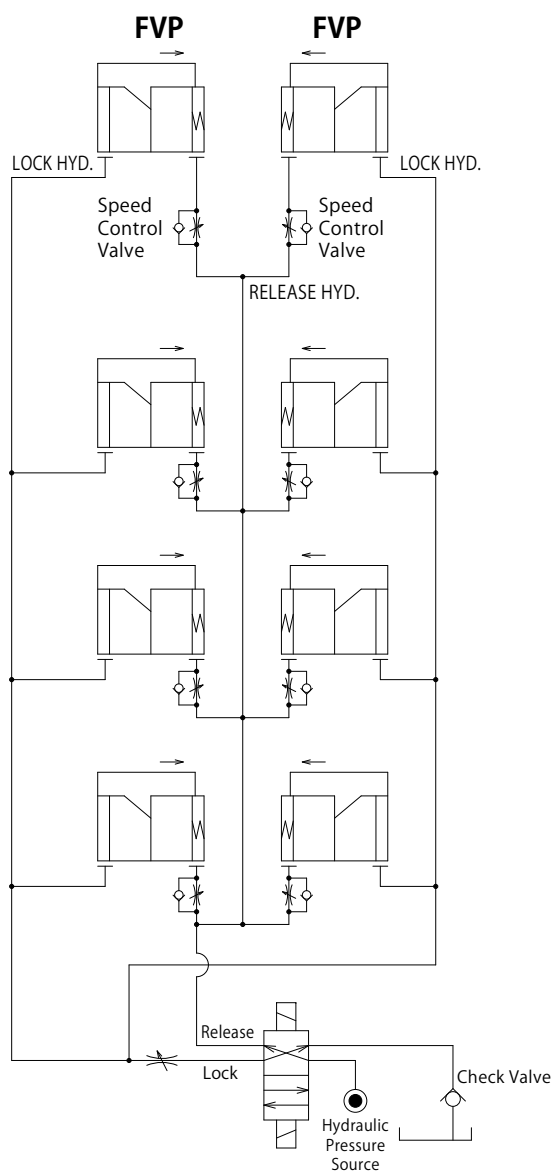
● Hydraulic Circuit Design Example

- The actual operating sequence depends on various conditions such as the number of units connected, pipe length, pipe diameter, etc., and should be adjusted on the actual equipment.

When pushing models (**FVP**) are facing each other.

When pushing model (**FVP**) and holding model (**FVH**) are facing each other.

- When pushing models are facing each other, adjust the speed so that they contact a workpiece at the same time as much as possible. One-side pushing force will be generated when only one side contacts the workpiece, leading to deformation of the workpiece.
- When the pushing model and the holding model are facing each other, adjust the speed so that the holding model locks before the pushing model activates.



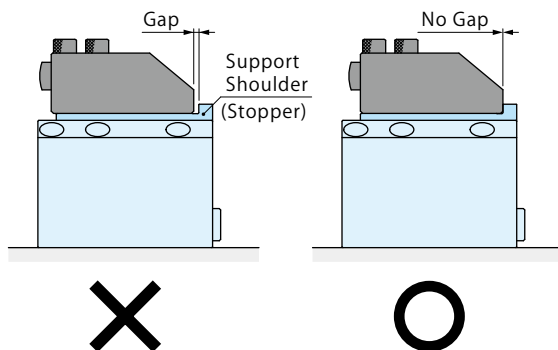
● Cautions

● Installation Notes

- 1) Check the fluid to use.
 - Please use the appropriate fluid by referring to the Hydraulic Fluid List (P.17).
- 2) Installation/Removal of the Lever (Prepared by Customer)
 - Use hexagonal socket bolts for mounting (with tensile strength of 12.9) and tighten them with the torque shown in the following list.

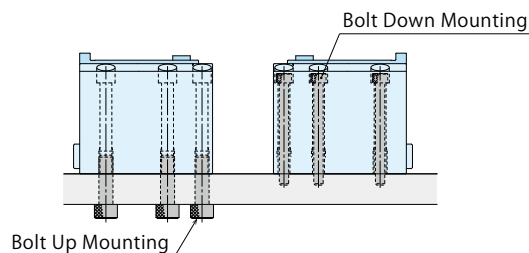
Model No.	Mounting Bolt Size	Tightening Torque (N·m)
FVP0600	M6×1	10
FVH0600	M6×1	10

- The lever should be pressed against the support shoulder (stopper) and fitted without any gaps. Improper installation may cause deformation or breakage of the lever, or a reduction in its ability.



3) Installation of the Product

- When mounting the product, use 6 hexagon socket bolts (with tensile strength of 12.9) and tighten them with the torque shown in the table below. Tightening with greater torque than recommended can depress the seating surface or break the bolt.



< In case of Bolt Down Mounting >

Model No.	Mounting Bolt Size	Tightening Torque (N·m)
FVP0600	M6×1	10
FVH0600	M6×1	10

< In case of Bolt Up Mounting >

Model No.	Mounting Bolt Size	Tightening Torque (N·m)
FVP0600	M8×1.25	25
FVH0600	M8×1.25	25

4) Operating Speed Adjustment

- If the di-vise operates too fast, the components will be worn out leading to premature damage and ultimately complete failure. Please adjust the operating speed so that the slider fully strokes within 0.5~1 seconds. The holding model has a time lag until the holding force is generated after the slider movement. Excessively slow operating speed of the slider will increase the time lag until the holding force is generated.
- When pushing models are facing each other, adjust the speed so that they contact a workpiece at the same time as much as possible. One-side pushing force will be generated when only one side contacts the workpiece, leading to deformation of the workpiece.
- When the pushing model and the holding model are facing each other, adjust the speed so that the holding model locks before the pushing model activates.
- 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 di-vise 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 accelerate the operating speed of the centering vise. Adjust the speed under the proper temperature condition.

● Maintenance and Inspection

- 1) In case of using dry air for air blow, please apply grease to the lubrication port regularly.

Model No.	Frequency (Recommended)	Grease Supply Amount
FVP0600	Once a week or every 1,000 cycles	1mℓ
FVH0600	Once a month or every 50,000 cycles	(1 push of grease gun)

- Use the grease of lithium soap thickened, mineral oil grease fortified with MoS₂. (Recommended Grease : MOLYKOTE® BR-2 PLUS made by TORAY • DOW CORNING)

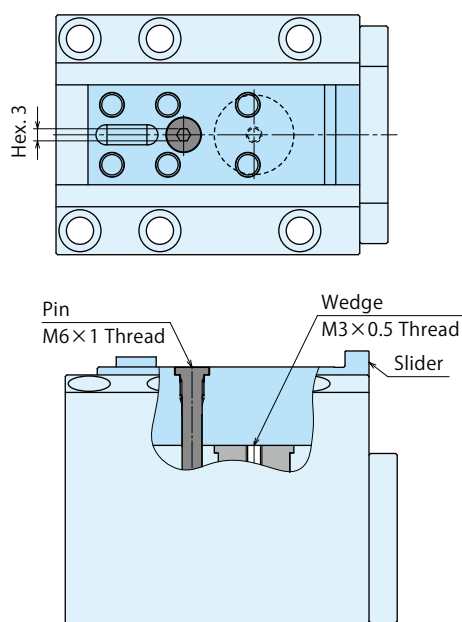
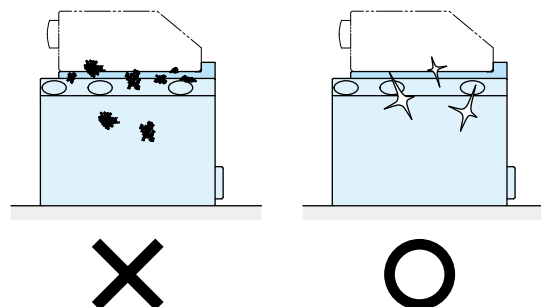
If too much grease is applied, it may cause a decrease in the holding force of FVH. Also, it may be overflowed from the gap of body and slider when operating.

- 2) The slider of FVH can be removed by pulling out the pin, and the slider and the wedge can be cleaned.

- After cleaning, be sure to lubricate the slider with hydraulic fluid. The mounting hole of the wedge is connected into the cylinder. If contaminants enter the cylinder, it will damage the packing and cause malfunction. Disassemble the slider in a clean environment. The cylinder part cannot be disassembled. When reassembling, apply grease to the entire pin and tighten it with 6.3N • m.

- 3) Regularly clean around the Di-Vise.

If it is used when the surface is contaminated with dirt, it may lead to insufficient locating accuracy, malfunctioning and fluid leakage. (This product is not completely sealed. Cutting chips and coolant may enter through the gaps of the components.)



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

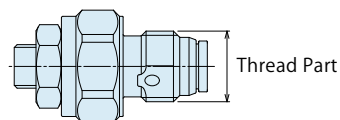
BZL 0 10 1 - B

1
2
3



1 G Thread Size

10 : Thread Part G1/8A Thread

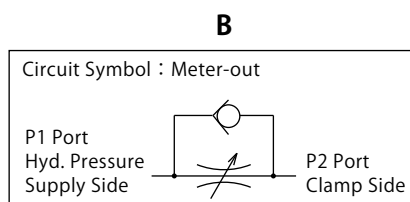


2 Design No.

1 : Revision Number

3 Control Method

B : Meter-out



Specifications

Model No.		BZL0101-B
Max. Operating Pressure	MPa	7
Withstanding Pressure	MPa	10.5
Control Method		Meter-out
G Thread Size		G1/8A
Cracking Pressure	MPa	0.12
Max. Passage Area	mm ²	2.6
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32
Operating Temperature	°C	0 ~ 70
Tightening Torque for Main Body	N·m	10
Weight	g	12

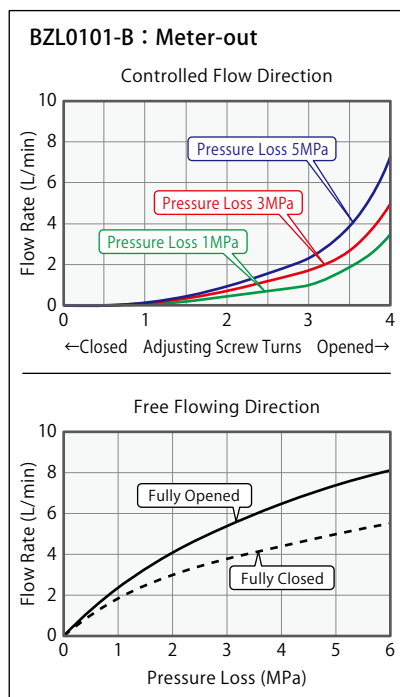
- Notes :
1. It must be mounted with recommended torque. Because of the structure of the metal seal, if mounting torque is insufficient, the flow control valve may not be able to adjust the flow rate.
 2. Do not attach a used BZL to other clamps.
Flow control will not be made because the bottom depth difference of G thread makes metal seal insufficient.

Applicable Products

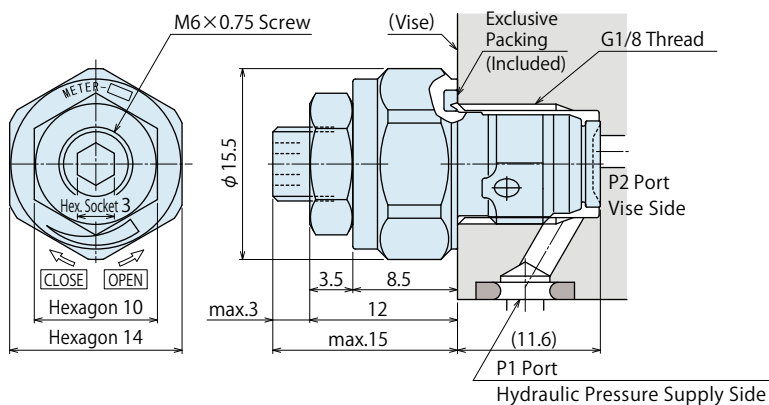
※ Not applicable to FVH (Di-Vise Holding Model).

Model No.	FVP (Double Action) Di-Vise Pushing Model
BZL0101-B	FVP0600

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



External Dimensions : BZL0101-B (Unit:mm)



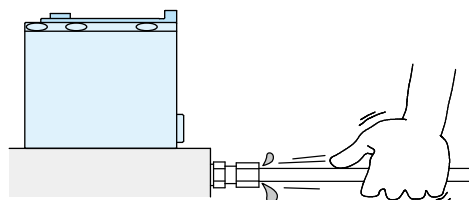
Notes

1. Please read "Notes on Hydraulic Cylinder Speed Control Unit" for proper hydraulic circuit design.
Improper circuit design may lead to malfunctions and damages. (Refer to P.18)
2. It is dangerous to release the air under high pressure. It must be done under lower pressure.
(For reference : the minimum operating range of the product within the circuit.)

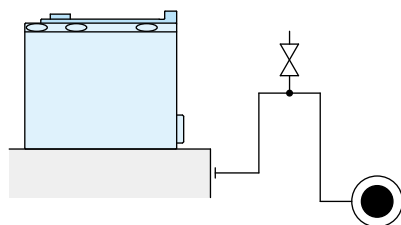
Cautions

● Installation Notes (For Hydraulic Series)

- 1) Check the Usable Fluid
 - Please use the appropriate fluid by referring to the Hydraulic Fluid List.
- 2) Preparation for 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.
 - Please implement piping construction in a clear environment to prevent anything getting in products.
- 4) 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 Di-Vise by one full turn.
 - ③ Shake 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 release air at the highest point of the circuit or close to the Di-Vise at the end of the circuit.
(Set an air bleeding valve at the highest point inside the circuit.)



5) Checking Looseness and Retightening

- At the beginning of the machine installation, the bolt and 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 : Please contact manufacturers when customers require products in the list above.

● Notes on Hydraulic Cylinder Speed Control Unit

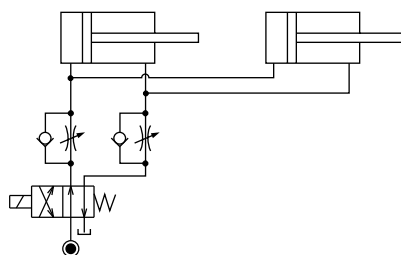


Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

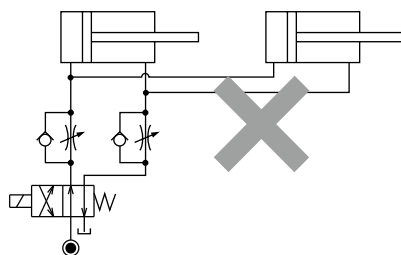
● Flow Control Circuit for Double Acting Cylinder

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

【Meter-out Circuit】

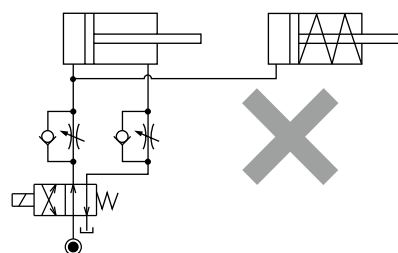


【Meter-in Circuit】



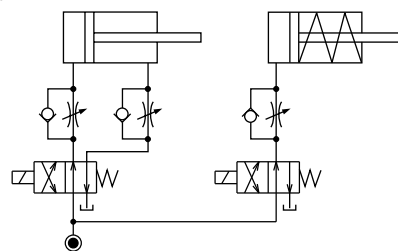
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

- 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.

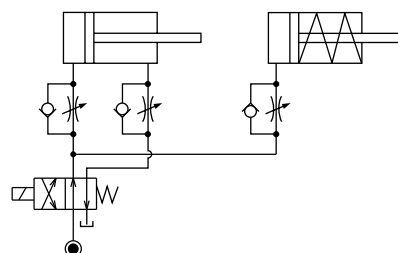


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

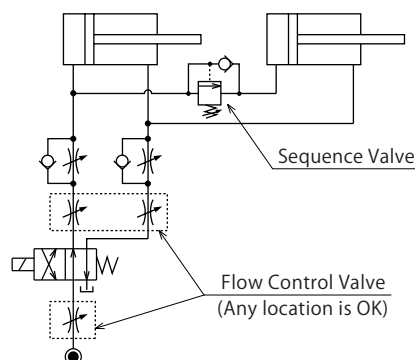
- Separate the control circuit.



- Reduce the influence of double acting cylinder control circuit. However, due to the back pressure in tank line, single acting cylinder may be activated after double acting cylinder works.



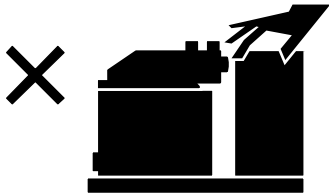
- ② In the case of meter-out circuit, the inner circuit pressure may increase during the cylinder action depending on the fluid supply. The increase of the inner circuit pressure can be prevented by reducing the supplied fluid beforehand via the flow control valve. Especially when using sequence valve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



● Cautions

● Notes on Handling

- 1) It should be operated by qualified personnel.
- The hydraulic machine and air compressor should be operated and maintained by qualified personnel.
- 2) Do not operate or remove the product unless the safety protocols are ensured.
 - ① The machine and equipment can only be inspected or prepared when it is confirmed that the safety devices are in place.
 - ② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
 - ③ After stopping the product, do not remove until the temperature drops.
 - ④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.
- 3) Do not touch a workpiece, attachment and Di-Vise while they are working. Otherwise, your hands may be injured due to clinching.



- 4) Do not disassemble or modify.
 - If the product 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 safety devices and preventive devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the hydraulic and air circuits.
 - Make sure there is no abnormality in the bolts and respective parts before restarting.
- 2) If disconnecting by couplers, air bleeding should be carried out on a regular basis to avoid air mixed in the circuit.
- 3) Regularly tighten mounting bole, nut and others to ensure proper use.
- 4) Make sure the hydraulic fluid has not deteriorated.
- 5) Make sure there is a smooth action without an irregular noise.
 - Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.
- 6) The products should be stored in the cool and dark place without direct sunshine or moisture.
- 7) 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 operated in an 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.

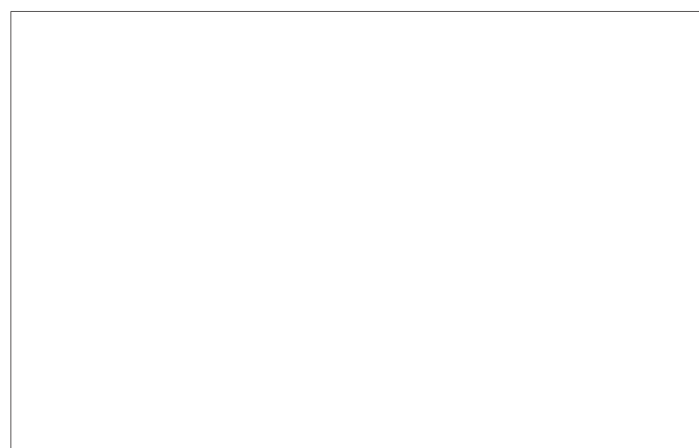


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- For Further Information on Unlisted Specifications and Sizes, Please call us.
- Specifications in this Leaflet are Subject to Change without Notice.

