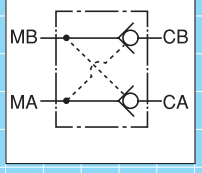
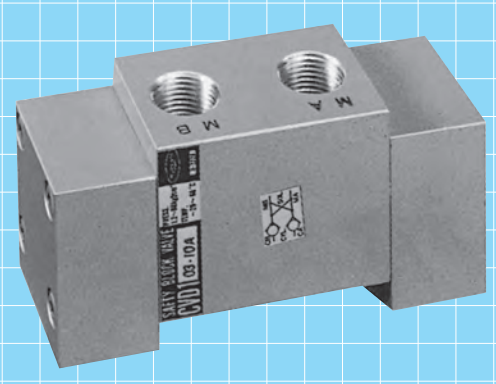
SAFETY BLOCK VALVES

CVD1	Standard type	RC 1/4 ~ 1

This is a safety line component that installed between three-position directional control valves and cylinders. It is used to ensure that the cylinder is held in the mid-position when stopped at the middle of its stroke. It protects equipments against accidents that may result from the cylinder unexpectedly moving from its middle stopping position.

JIS Symbol





Model Code

When ordering,specify the model as follows:

Standard type

Rc 1/4 ~ 3/8	CVD1-03 – ① (● Port size)
Rc 3/8 ~ 1/2	CVD1-04 – ② (● Port size)
Rc 3/4 ~ 1	CVD1-08 – ③ (● Port size)

① Port size	
Rc 1/4	8A
Rc 3/8	10A

② Port size	
Rc 3/8	10A
Rc 1/2	15A

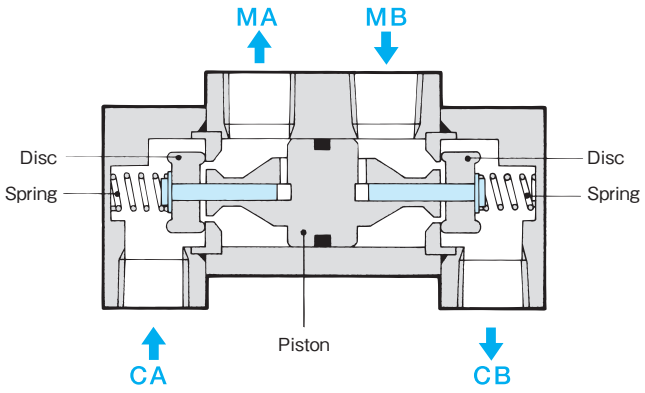
③ Port size	
Rc 3/4	20A
Rc1	25A

Specifications

Model code	CVD1-03		CVD1-04		CVD1-08	
Port size	8A	10A	10A	15A	20A	25A
	Rc1/4	Rc3/8	Rc3/8	Rc1/2	Rc3/4	Rc1
Effective sectional area	30㎟	40㎟	70㎟	80㎟	200㎟	220㎟
Operating pressure	0.12 ~ 1.0MPa					
Cracking pressure	0.05MPa					
Proof pressure	1.5MPa					
Frequency of operations	2 cycle/s Max.					
Operating temperature	–20 ~ 60℃ (For use below 5℃ ,provide adequate measures against freezing.)					
Mass	0.4kg		0.9kg		2.0kg	

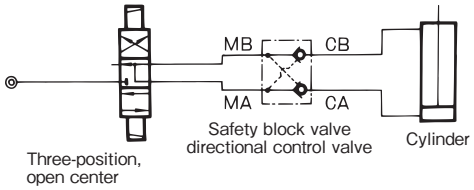
- For specifications other than those listed above,please contact us.
- In the event of use in high dry air above dew point – 40℃ ,please contact us.

Operation



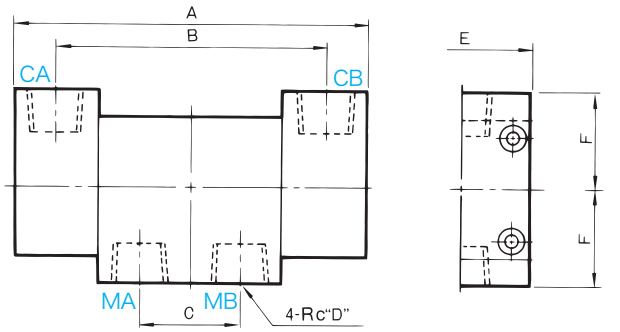
When a three-position,open-center type directional control valve,installed upstream of the safety block valve, is shifted to furnish an air pressure through port MA or MB, the disc and piston of the valve are moved by the air pressure to the left or to the right against the spring force. Ports MA and CA, or ports MB and CB are connected, and the cylinder is raised or lowered. When the directional control valves is shifted to its neutral position, the air pressure on the port MA or MB side is discharged, the disc is forced back by the spring to close the opening. With the poppet type, the discs prevent air leakage completely, and the cylinder is held at a given middle position for long periods.

Circuit Example



Outside Dimensions

CVD1-03-8A・10A
CVD1-04-10A・15A
CVD1-08-20A・25A



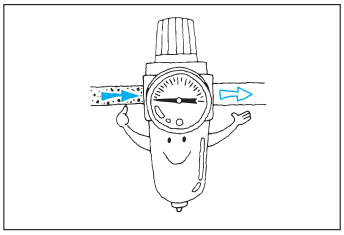
Units : mm

Model code	D	A	B	C	E	F
CVD1-03	1/4	110	82	32	36	25
	3/8					
CVD1-04	3/8	132	96	36	50	35
	1/2					
CVD1-08	3/4	202	152	60	60	45
	1					

Operating Instructions

1 Fluid

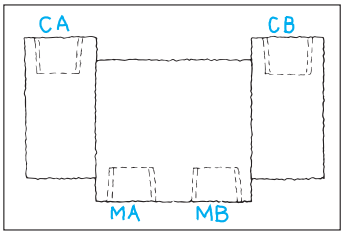
- Use with clean fluids only as dirt, wastes, etc. in the fluid may cause malfunctioning.



2 Piping

- Take care not to confuse the piping ports.

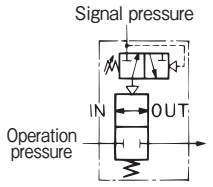
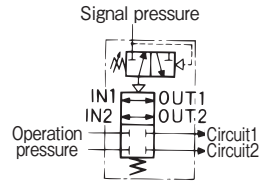
Port CA and CA
····· To cylinder
Port MA and MB
····· To directional control valve



LOCKUP VALVES

LVS(D)5	Standard type	RC 1/4・3/8・1/2・3/4・1

This valve responds to abnormal drops in the supply air pressure in the pneumatic line,ensuring that the set pressure for the driven unit is maintained until the supply pressure returns to normal. It also locks the actuator to prevent unexpected movements if the supply pressure varies.

JIS Simbol	
One-circuit	Two-circuit
	

Model Code

When ordering,specify the model as follows:

Standard type

Rc 1/4・3/8

LV ❶ 5 ❷ –02– ❸ – ❻

- ❶ Number of circuits
- ❷ Corrosion-resistant
- ❸ Port size
- ❻ Operating temperature range

Rc 3/8・1/2

LVS5 ❷ –04– ❹ – ❻

- ❷ Corrosion-resistant
- ❹ Port size
- ❻ Operating temperature range

Rc 3/4・1

LVS5 ❷ –08– ❺ – ❻

- ❷ Corrosion-resistant
- ❺ Port size
- ❻ Operating temperature range

❶ Number of circuits

One-circuit	S
Two-circuit	D

❸ Port size

Rc 1/4	8A
Rc 3/8	10A

❻ Operating temperature range

General purpose : – 20 ~ 60℃	No entry
Heat-resistant : 5 ~ 100℃	HT

❷ Corrosion-resistant

- Portions that are exposed to outside weather conditions are corrosion-resistant coating and the exposed bolts,nuts and brackets are stainless steel.

Standard	No entry
Corrosion-resistant type	S

❹ Port size

Rc 3/8	10A
Rc 1/2	15A

❺ Port size

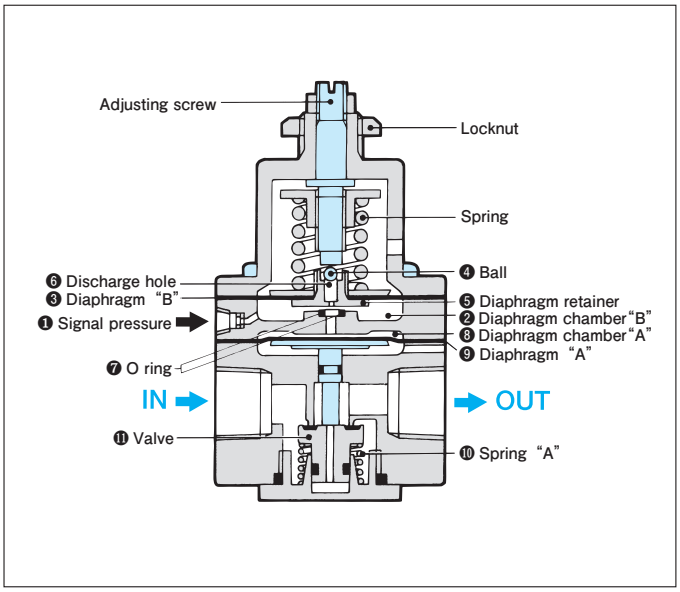
Rc 3/4	20A
Rc 1	25A

Specifications

Model code			LVS5-02		LVS5-04		LVS5-08		LVD5-02	
Number of circuits			1						2	
Port size			8A	10A	10A	15A	20A	25A	8A	10A
			Rc1/4	Rc3/8	Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1/4	Rc3/8
Effective sectional area			17㎟	22㎟	30㎟	49㎟	83㎟	137㎟	17㎟	22㎟
Operating pressure	Signal pressure		Max. 1.0MPa							
	Supply pressure		Max. 0.7MPa							
Pressure setting			0.14 ~ 0.7MPa							
Pressure differential	Setting pressure	0.2MPa	0.01MPa or less		0.015MPa or less				0.01MPa or less	
		0.4MPa			0.015MPa or less					
		0.7MPa			0.020MPa or less					
Proof pressure			1.5MPa							
Operating temperature			General purpose: − 20 ~ 60℃ / Heat-resistant: 5 ~ 100℃ (For use below 5℃ ,provide adequate measures against freezing.)							
Mass			0.6kg		1.7kg		2.6kg		1.0kg	

- For specifications other than those listed above,please contact us.
- In the event of use in high dry air above dew point − 40℃ ,please contact us.

Operation



Signal pressure ❶ enters diaphragm chamber B ❷ and acts on diaphragm B ❸ . When the signal pressure exceeds the spring force,it pushes diaphragm B upwards and causes ball ❹ to close the discharge hole ❻ in the diaphragm retainer ❺ .At the same time, the signal pressure flows between diaphragm retainer ❺ and O ring ❼ to diaphragm chamber A ❽ .
It acts on diaphragm A (❾) and forces valve(⓫) open against the force of spring A (❿), thus completing the operating circuit.

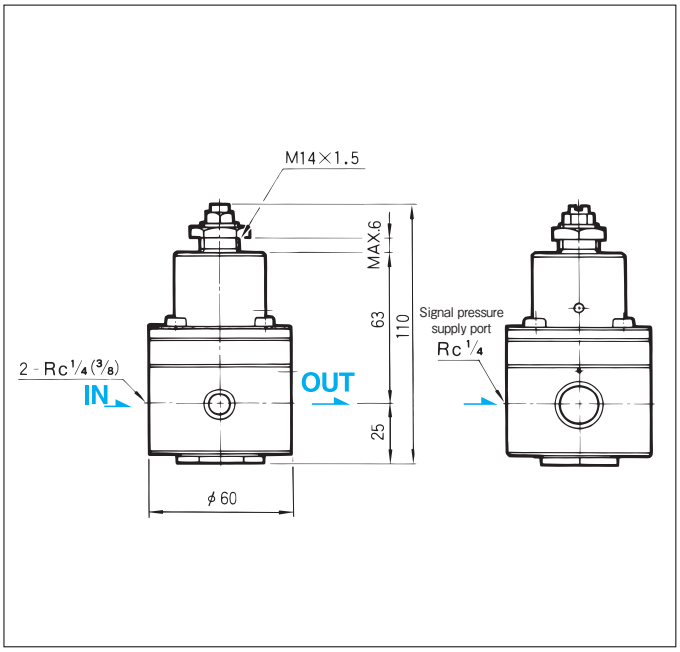
If the signal pressure drops below the spring force for any reason,diaphragm B ❸ is forced down by the spring and at the same time that discharge hole ❻ in diaphragm retainer ❺ is opened, diaphragm chamber B in connected with diaphragm chamber A ❽ . Because of this, the signal pressure supplied to diaphragm chamber A ❽ is discharged through discharge hole ❻ . After the signal pressure in diaphragm chamber A ❽ has been discharged, the force of spring A ❿ closes the valve, and the operating circuit is closed off. Thus, the Pressure in the circuit is maintained.

With the two-circuit type (LVD5-02) ,circuits 1 and 2 are installed in parallel to each other, and diaphragm chambers A ❽ of each circuit are connected to each other.

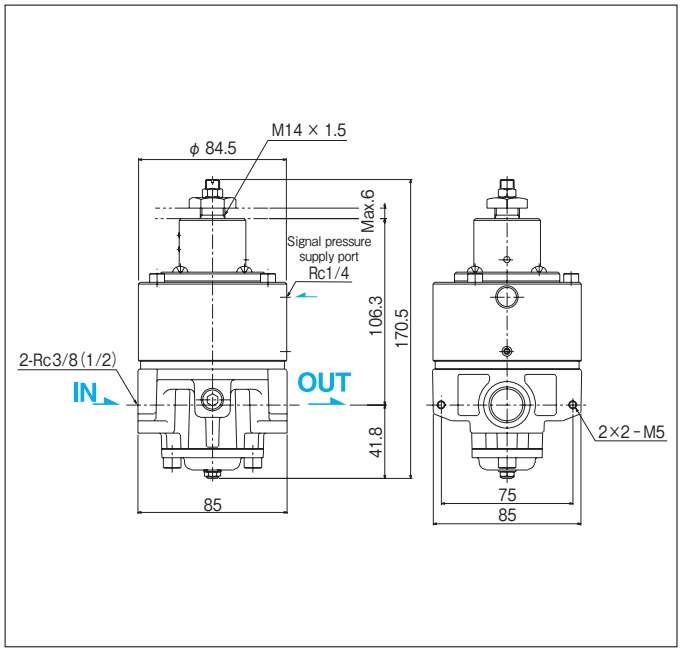
Outside Dimensions

Standard type (1 circuit)

LVS5-02-8A・10A

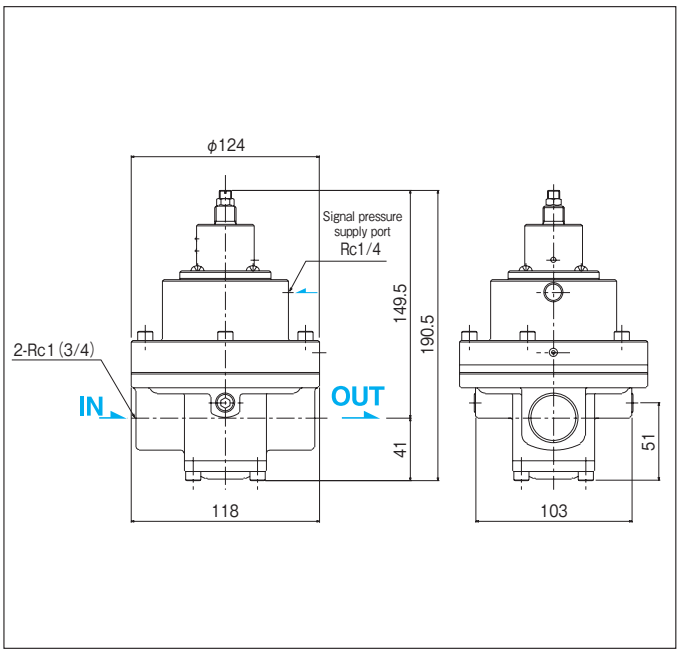


LVS5-04-10A・15A



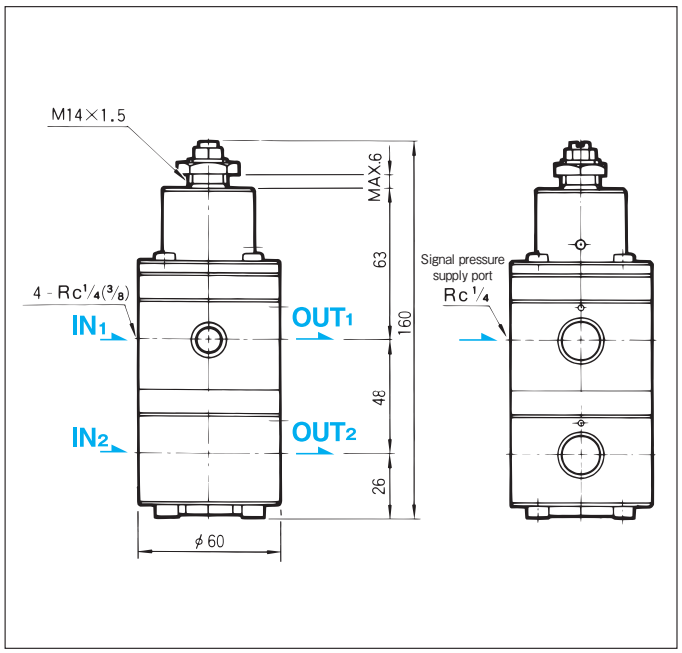
Standard type (1 circuit)

LVS5-08-20A・25A



Standard type (2 circuit)

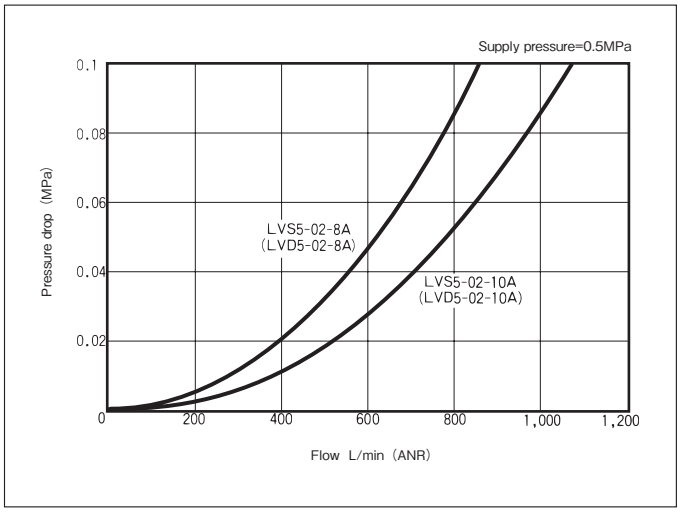
LVD5-02-8A・10A



Performance Tables

Flow characteristics graphs

LVS5-02 (supply pressure=0.5MPa)

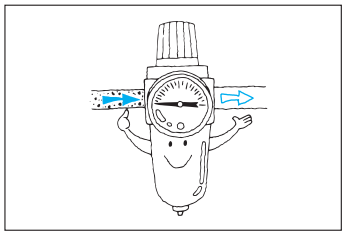


Please contact us for the flow rate characteristic graphs of LVS5-04 and LVS5-08.

Operating Instructions

1 Fluid

- Use only with clean fluids as dirt, waste, etc. in the fluid may cause malfunctioning.



2 During operation

- Lockup valves are of the bleed type. Although a small amount of air will escape from the relief opening during operation, it will not cause any problems under normal use. To prevent air escaping, apply a signal pressure more than 0.15MPa higher than the set pressure on the valve.

3 Pressure setting procedure

Step1. Apply a signal pressure equal to the set pressure.(Valve opens.)

Step2. Turn the adjusting screw clockwise to close the valve. This completes pressure setting. (After pressure setting is completed, a small amount of air will escape from the relief opening. However, this will not cause any problems under normal use.)

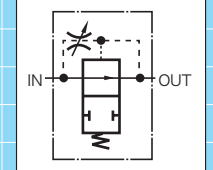
Step3. Increase the signal pressure. (Applying a signal pressure more than 0.05MPa higher than the set pressure will make operation more stable. To prevent air escaping, apply a signal pressure more than 0.15MPa higher than the set pressure.)

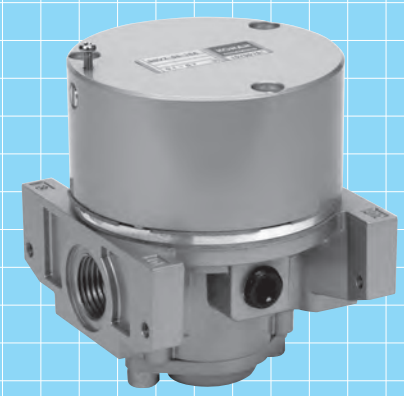
SLOW-START VALVES

SSV2	Standard type	RC 3/8 · 1/2

This valve prevents accidents that may arise from a cylinder suddenly rising in response to the operation of a solenoid valve, etc. It has a built-in bleed mechanism to supply air to the cylinder gradually at the initial stage of operation of the cylinder, and by automatically opening the main valve at high speed when the pressure in the cylinder rises enough.

JIS Symbol





Model Code

When ordering,specify the model as follows:

Standard type

Rc 3/8 · 1/2

SSV2 –04 – ①

● Port size

① Port size	
Rc3/8	10A
Rc1/2	15A

Specifications

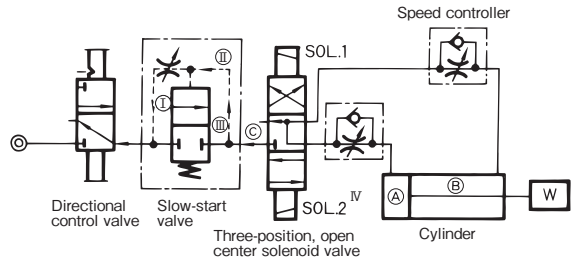
Model code	SSV2-04	
Port size	10A	15A
	Rc3/8	Rc1/2
Operating pressure	0.1 ～ 0.7MPa	
Proof pressure	1.05MPa	
Operating temperature	–20 ～ 60℃ (For use below 5℃ ,provide adequate measures against freezing.)	
Mass	1.4kg	

- For specifications other than those listed above,please contact us.
- In the event of use in high dry air above dew point – 40℃ ,please contact us.

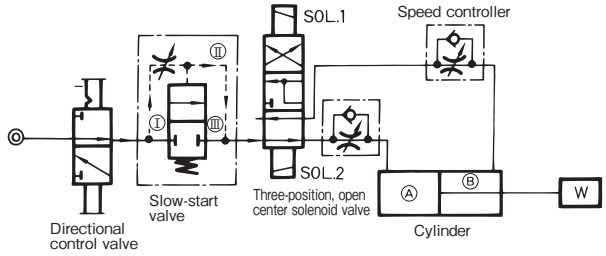
Operation

Standard type

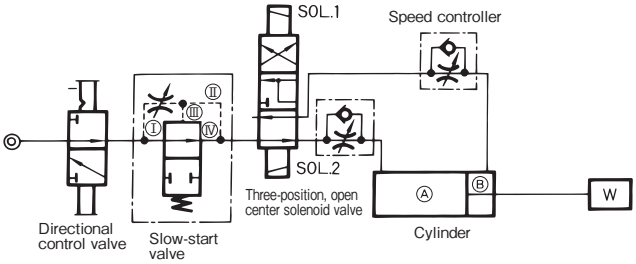
A



B



C



● When the cylinder has an internal pressure of 0 MPa

See circuit A .When the three-position, open-center solenoid valve is placed in neutral and the directional control valve in OFF, the air pressures in chambers Ⓐ and Ⓑ of the cylinder are discharged through the solenoid valve, and the air pressure in area Ⓒ flows Ⅲ to Ⅱ to Ⅰ and is discharged. During discharge, the main valve of the slow-start valve is kept closed by spring force.

● At startup of the cylinder

Turn on the directional control valve when the cylinder piston is to be moved to the right by energizing the number 2 solenoid of the solenoid valve. The air pressure flows through passages Ⅰ and Ⅱ and the passage drilled in the piston of the slow start valve, and passage Ⅲ , in that order, and is gradually furnished to the cylinder chamber Ⓐ. A needle valve is installed between chambers Ⅰ and Ⅱ . This is used to adjust the amount of air to cylinder chamber Ⓐ for meter-in control of the cylinder. This feature prevents sudden operation of the cylinder. At startup of the cylinder, the pressure on the piston top is still small, and hence the main valve of the slow-start valve remains closed, as in circuit A.

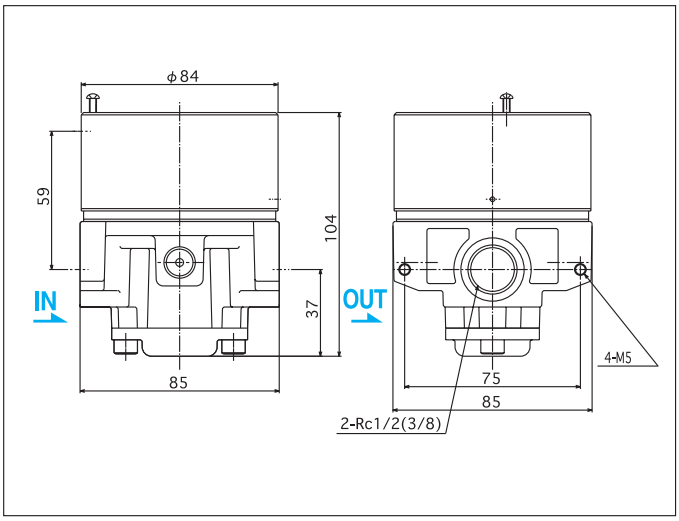
● During normal operation of the cylinder

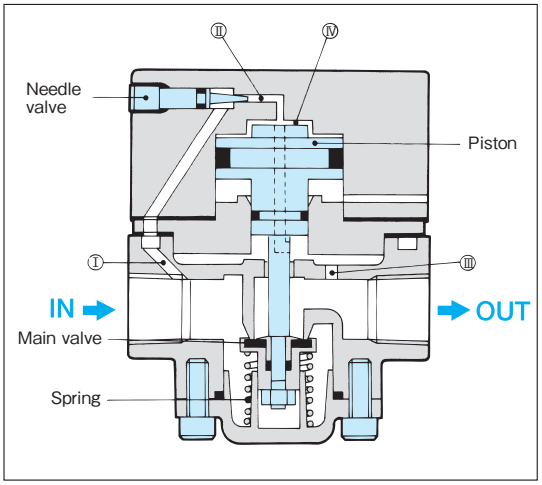
Air entering cylinder chamber Ⓐ through passages Ⅰ, Ⅱ and Ⅲ gradually increases. When the pressure reaches a given value, it starts to act on the piston top Ⅳ , pushing the piston down, and fully opens the main valve of the slow-start valve. When the main valve is opened, the normal airpressure circuit is completed. With a speed controller installed as the meter-out device the cylinder speed can now be controlled.

Outside Dimensions

Standard type

SSV2-04-10A・15A

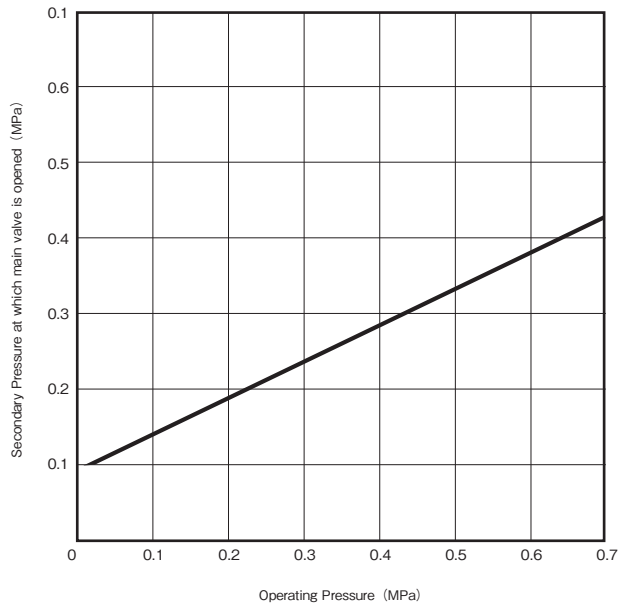




Performance Tables

Switching sensitivity graph

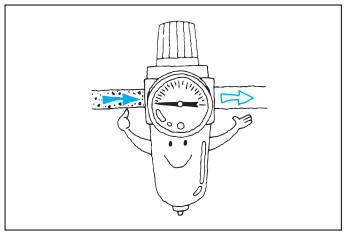
SSV2-04-10A・15A



Operating Instructions

1 Fluid

● Use only with clean fluids as dirt, waste, etc. may cause malfunctioning.



2 Starting speed of the cylinder

● Use the needle valve to adjust the starting speed of the cylinder.

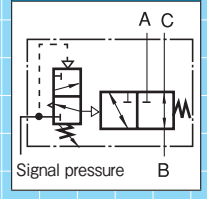
PRESSURE DETECTING VALVES

3 Ports

PSV5	Standard type	RC 3/8 · 1/2

This valve detects signal pressure (air pressure) and controls other valves to which it is attached ; when mounted on a shutoff valve, for example, it operates the shutoff valve if it detects a signal pressure drop.

JIS Symbol

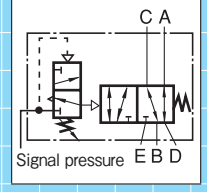


5 Ports

PSV2	Standard type	RC 1/4 · 3/8
PSV3L	Low pressure purpose	RC 1/4 · 3/8

5-port type pressure detection valve detects signal pressure (air pressure) and directly control other actuators.

JIS Symbol



Model Code

When ordering,specify the model as follows:

3 Ports

Standard type

Rc 3/8 · 1/2

PSV5 ① –04– ② – ④

① Corrosion-resistant
② Port size
④ Bracket

5 Ports

Standard type

Rc 1/4 · 3/8

PSV2 ① –02– ③ – ④

① Corrosion-resistant
③ Port size
④ Bracket

Low pressure purpose

Rc 1/4 · 3/8

PSV3L ① –02– ③ – ④

① Corrosion-resistant
③ Port size
④ Bracket

① Corrosion-resistant

- Portions that are exposed to outside weather conditions are corrosion-resistant coating and the exposed bolts,nuts and brackets are stainless steel.

Standard	No entry
Corrosion-resistant type	S

② Port size

Rc3/8	10A
Rc1/2	15A

③ Port size

Rc1/4	8A
Rc3/8	10A

- Port size of "D"and "E" are Rc1/4

④ Bracket

Without	No entry
With (Append)	BR

- Bracket is not mounted but appended with valves.

Specifications

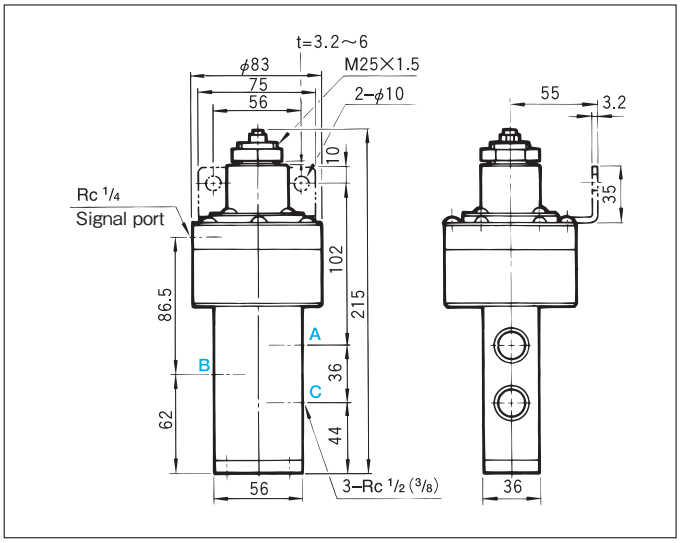
Number of ports		3 Ports		5 Ports		5 Ports (Low pressure purpose)	
Model code		PSV5-04		PSV2-02		PSV3L-02	
Port size		10A	15A	8A	10A	8A	10A
		Rc3/8	Rc1/2	Rc1/4	Rc3/8	Rc1/4	Rc3/8
Effective sectional area		32㎟	48㎟	22㎟		22㎟	
Operating pressure	Signal pressure	Max. 1.0MPa				Max. 0.5MPa	
	Supply pressure	Max. 0.7MPa				Max. 0.7MPa	
Pressure setting		0.06 ～ 0.7MPa				0.03 ～ 0.2MPa	
Proof pressure		1.5MPa				1.05MPa	
Operating temperature		-5 ～ 60℃					
Mass		約 1.5kg					

- For specifications other than those listed above,please contact us.
- In the event of use in high dry air above dew point － 40℃ ,please contact us.

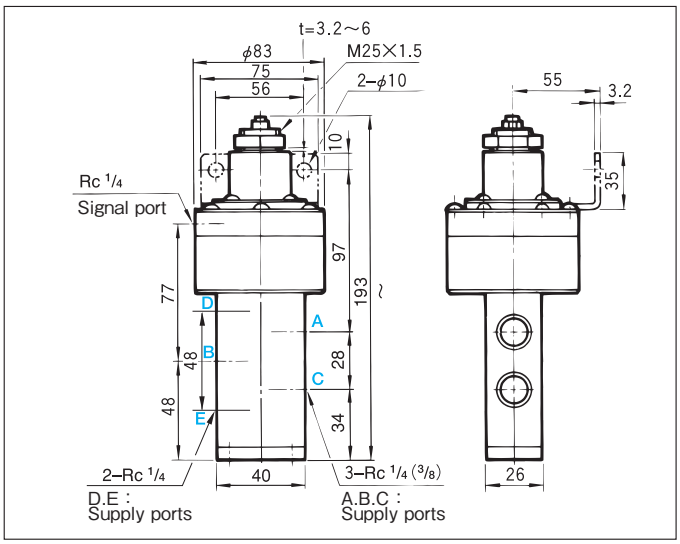
Outside Dimensions

Standard type

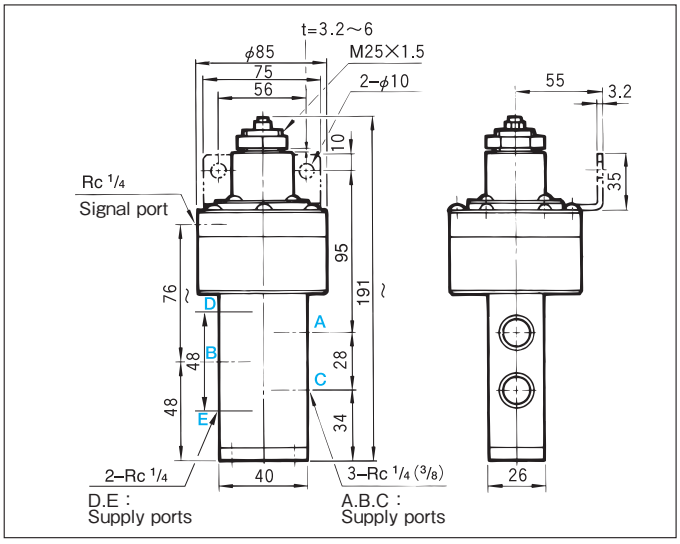
PSV5-04-10A・15A



PSV2-02-8A・10A



PSV3L-02-8A・10A



Operation

Differential

PSV5-04-10A・15A

Pressure setting (MPa)	Differential (MPa)
0.06	0.005 or less
0.5	0.03 or less
0.7	0.03 or less

PSV2-02-8A・10A

Pressure setting (MPa)	Differential (MPa)
0.06	0.003
0.5	0.018
0.7	0.02

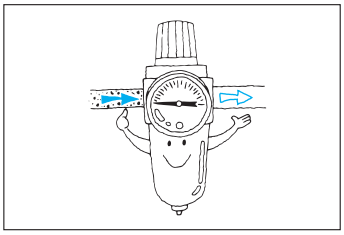
PSV3L-02-8A・10A

Pressure setting (MPa)	Differential (MPa)
0.03	0.002
0.06	0.004
0.2	0.005

Operating Instructions

1 Fluid

- Use clean fluid, as dusts and drains included in the fluid may greatly affect the product performance, causing malfunction.



2 Caution

- Pressure detection valve is a bleed type valve. During operation air escapes from the bleeding hole, but this does not affect the valve performance.

3 Pressure setting

Step1. Supply a signal pressure equal to the set pressure (Valve opens) .

Step2. Turn the adjusting screw clockwise to close the valve and complete pressure setting. (After pressure setting is completed, a small amount of air will escape from the bleeding hoie. However, this does not affect the valve performance.)

Step3. Increase the signal pressure. (Set the signal pressure at least 0.05 MPa higher than the set pressure for stable valve operation.)