

Safety Speed Control Valve (SSC Valve) Series ASS

RoHS

Meter-out control style:

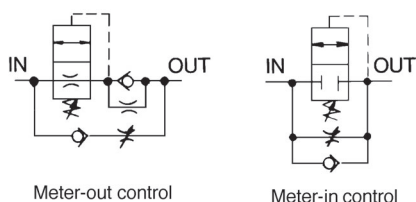
A control valve with cylinder speed control function, fixed throttle, and rapid air supply function

Meter-in control style:

A control valve with cylinder speed control function and rapid air supply function



Symbol



Model

Style	Model	Port size	Effective area (mm ²)		Weight (g)
			Controlled flow	Free flow	
Meter-out control	ASS100	1/8	2.4	9.5	97
	ASS300	1/4, 3/8	14.5	22.0	220
	ASS500	1/2, 3/4	52.0	55.0	580
	ASS600	3/4, 1	80.0	90.0	950
Meter-in control	ASS110	1/8	2.4	5.4	97
	ASS310	1/4, 3/8	16.5	23.0	220

Specifications

Fluid	Air
Max. operating pressure	0.7MPa
Ambient and fluid temperature	-5 to 60 °C (No freezing)
Setting pressure	0.1 to 0.5MPa

How to Order

ASS 3 00 — 02 B

Body size

1	1/8
3	3/8
5	3/4
6	1

Style

00	Meter-out control
10	Meter-in control

*Meter-in style is available only for ASS110 and ASS310.

Accessory

—	Without bracket
B	With bracket

Port size

Port size	Applicable series
01	1/8 ASS100, 110
02	1/4 ASS300, 310
03	3/8 ASS300, 310
04	1/2 ASS500
06	3/4 ASS500, 600
10	1 ASS600

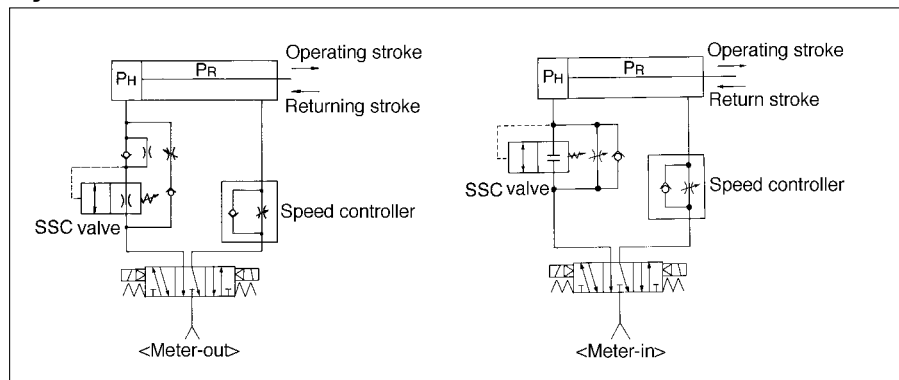
Thread

—	Rc(PT)
N	NPT
F	G(PF)

Prevents accidents caused by the cylinder rod sudden extensions

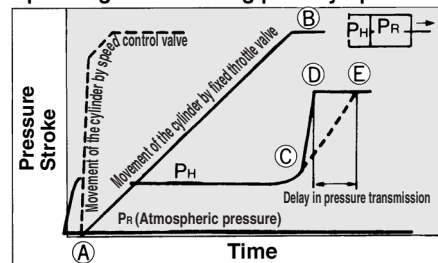
If pressure is applied only to one side of the cylinder, the rod could get out of control, leading to accidents that could involve injury to humans or damage to the product or jigs. The meter-out type SSC valve prevents the sudden extensions by effecting meter-in control when there is no pressure, and resumes the ordinary meter-out control after the cylinder has been pressurized. With the meter-in type, there is no risk of sudden extensions because the cylinder speed is constantly under meter-in control.

System circuit



Meter-out Graph/Pressure to time

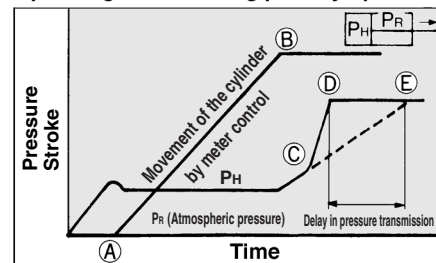
Operating stroke during primary operation



During the operating stroke at initial actuation, the cylinder moves at a slow speed from A to B due to the fixed throttle of the SSC valve. When it reaches B, the head pressure (P_H) rises quickly as indicated by the line from C to D. Therefore, there is no time loss associated with the pressure transmission lag indicated by the line from C to E, as in the case of meter-in control that is effected through the use of a speed controller. During normal operation after the cylinder has been pressurized, the cylinder's speed control is effected by the ordinary meter-out control.

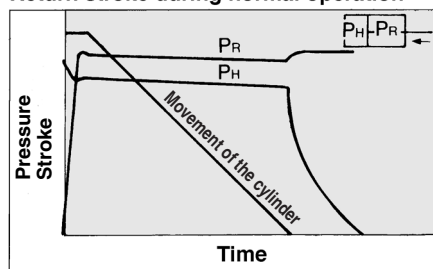
Meter-in Graph/Pressure to time

Operating stroke during primary operation

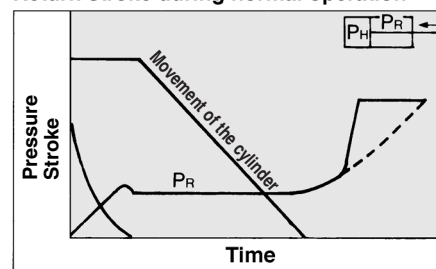


Due to meter-in control, the cylinder moves from A to B regardless of whether it is an initial operation or a normal operation. When it reaches B, the head pressure (P_H) rises quickly as indicated by the line from C to D. Therefore, there is no time loss associated with the pressure transmission lag indicated by the line from C to E, as in the case of meter-in control that is effected through the use of a speed controller. During normal operation after the cylinder has been pressurized, the cylinder's speed control is effected also by the ordinary meter-in control.

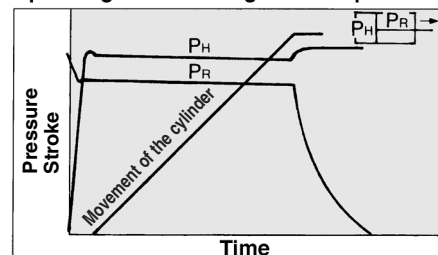
Return stroke during normal operation



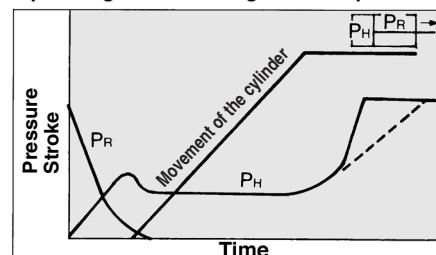
Return stroke during normal operation



Operating stroke during normal operation



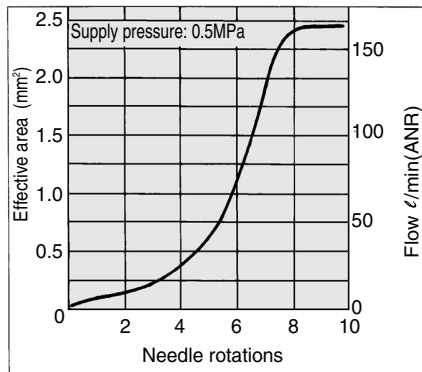
Operating stroke during normal operation



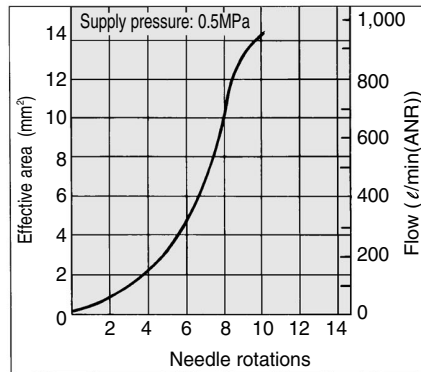
Flow Characteristics

Cylinder Extension Prevention Primary Speed

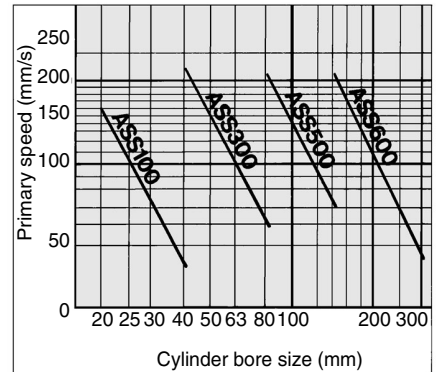
ASS100/ASS110



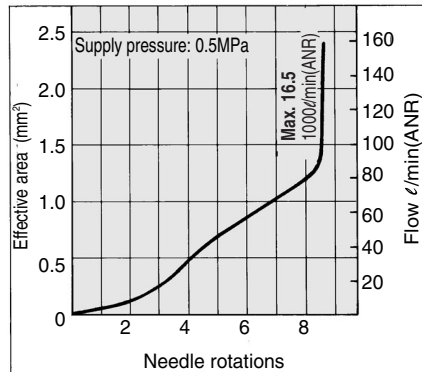
ASS300



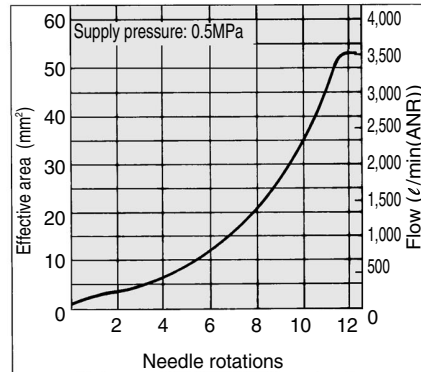
Meter-out control



ASS310

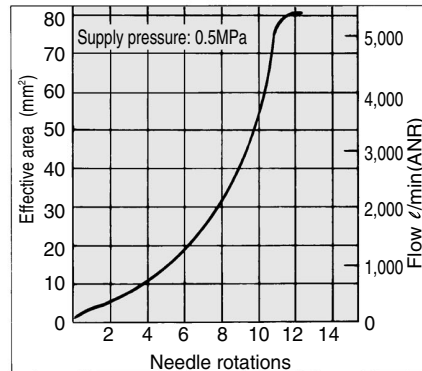


ASS500

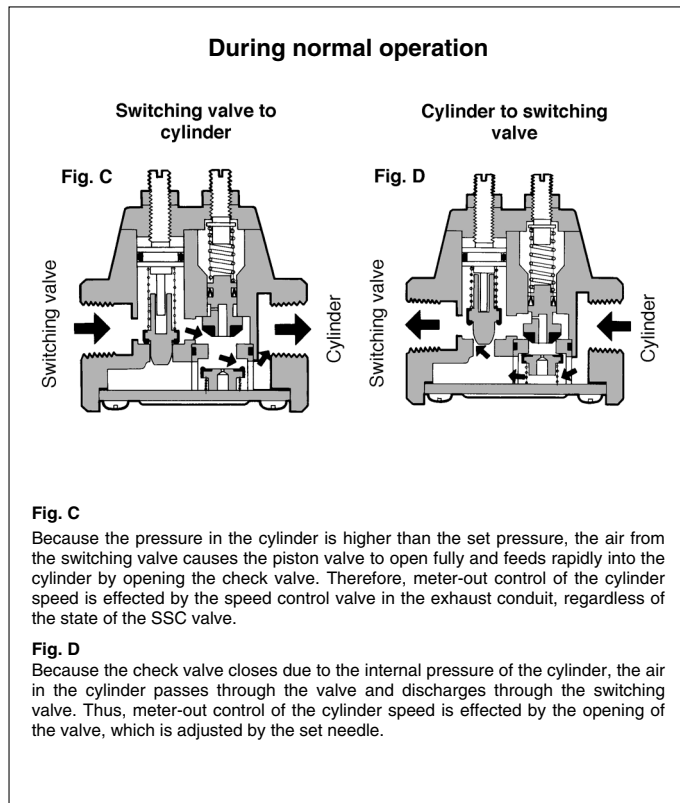
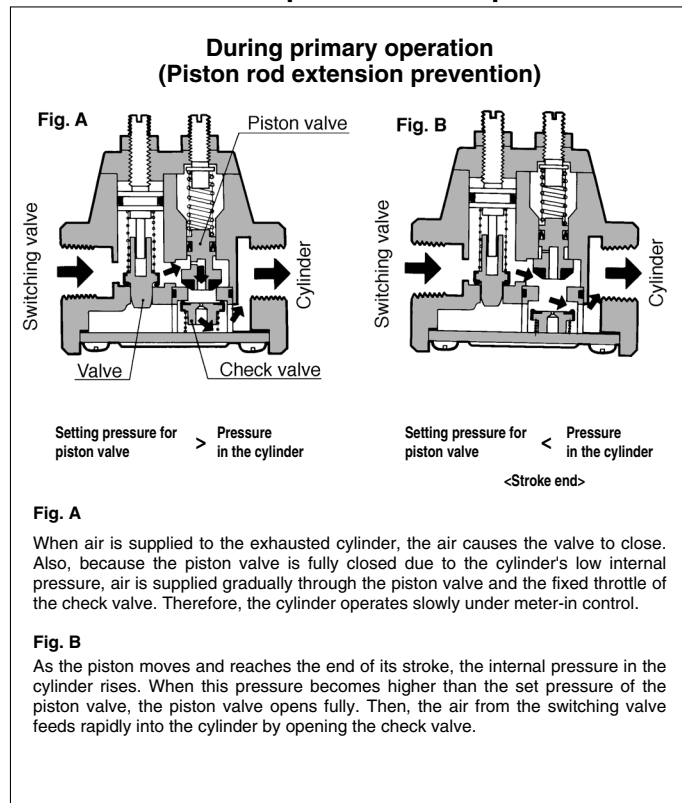


Conditions: Supply pressure at 0.5MPa, No load
Primary speed of meter-in type can be controlled as likely as during normal operation.

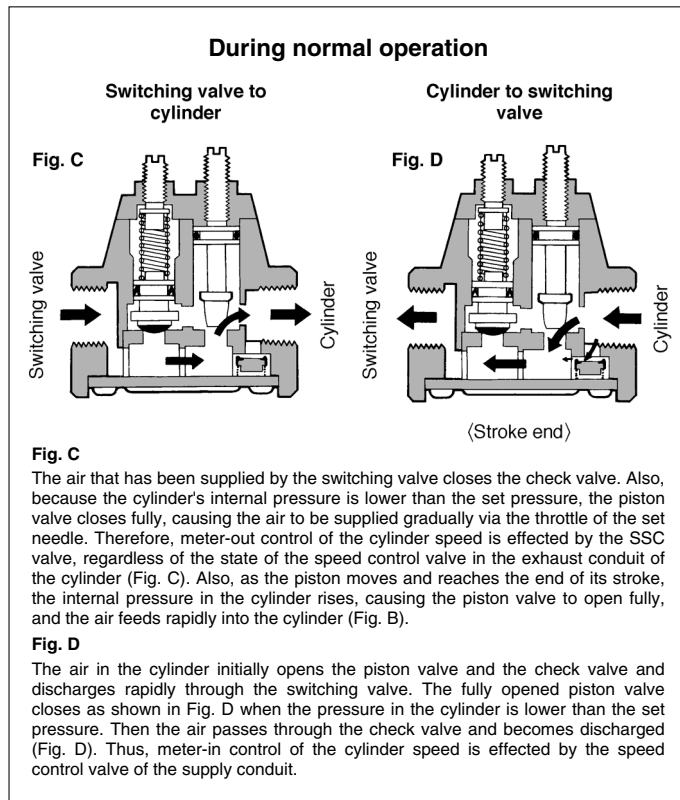
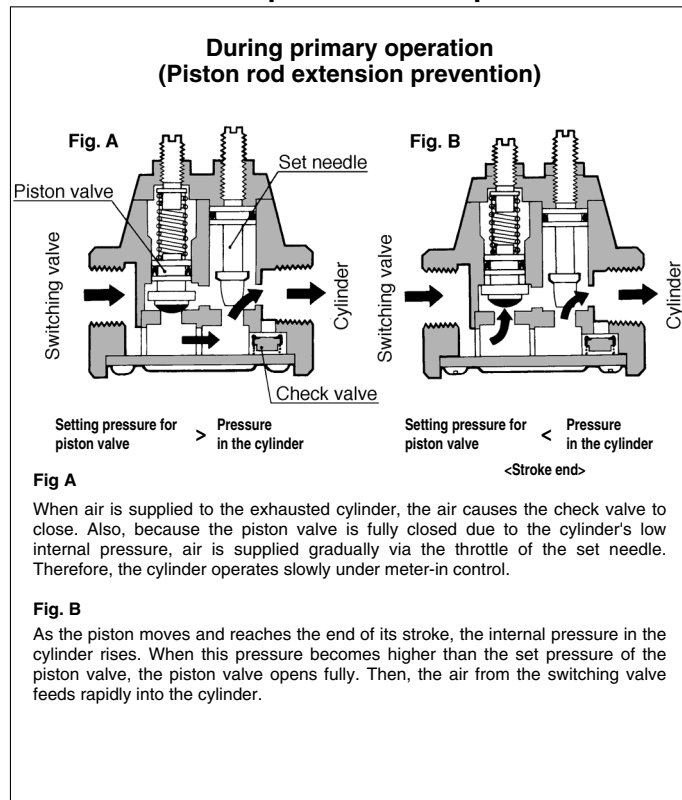
ASS600



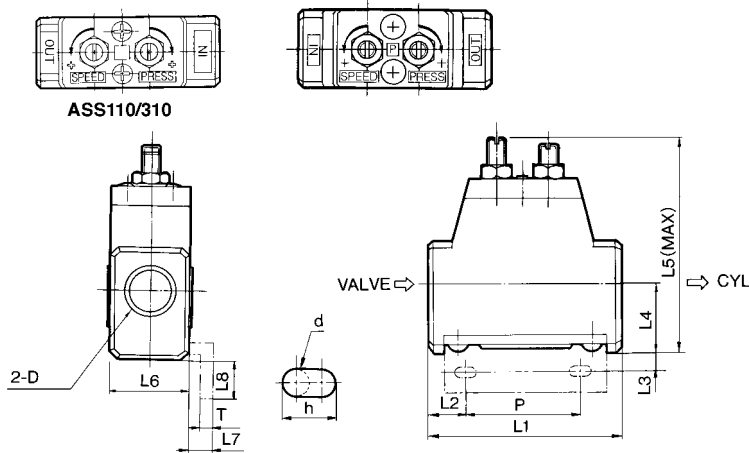
Meter-out Control/Operation Principles



Meter-in Control/Operation Principles

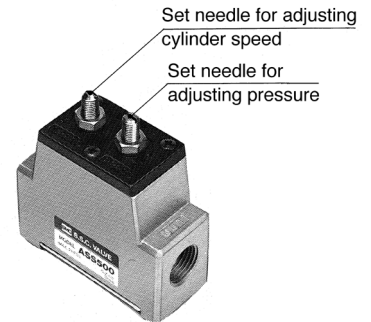


Dimensions



Mounting and Adjusting of SSC Valve

Mounting: Mount IN on the direction control valve side, and OUT on the cylinder side.



Part no. for bracket

Model	Part no. for bracket
ASS100	XT14-82-3-1
ASS300	XT14-105-5-1
ASS500	XT14-89-2-1
ASS600	XT14-85-2-1

Meter-out Control Style

Mounting method

Connect a tube directly to the cylinder with the IN side facing the directional control valve on the supply conduit (of the stroke that must be prevented from shooting-out).

Note 1) If the tube between the cylinder and the SSC valve is too long, it might not be possible to effect speed control during normal operation.

Note 2) The SSC valve cannot prevent quick extension if there is residual pressure in the cylinder.

Note 3) After the initial operation, make sure that the cylinder remains pressurized at the end of the stroke and that the cylinder has been filled with air before using the circuit to perform a normal operation.

Adjusting method

To adjust the meter-out control type, first adjust the cylinder speed for normal operation before adjusting the set pressure for preventing the sudden extension.

Adjusting procedure

① In the normal operation state (in which one of the conduits is pressurized) adjust the cylinder speed to the prescribed speed by operating the cylinder speed adjustment set needle located on the IN side. Turn the cylinder speed adjustment set needle counterclockwise to increase the speed and clockwise to decrease the speed. After adjusting, tighten the lock nut. Keep the cylinder cushion needle as open as possible.

② Initially, turn the pressure adjustment set needle located on the OUT side clockwise to raise the set pressure. At the time of shipment, the set pressure is adjusted to approximately 0.2MPa.

③ Release the pressure in the cylinder once. Then, supply air, and adjust the pressure by turning the pressure adjustment set needle counterclockwise. This is to effect the meter-in control of the cylinder movement through the SSC valve's fixed throttle in order to prevent quick extension, and to rapidly feed air pressure after the piston has reached the end of its stroke. After adjusting, make sure to tighten the lock nut.

Note 1) Set pressure adjustments must be made in accordance with operating conditions.

Note 2) Set pressure adjustment must be made during the initial operation after the pressure in the cylinder has been released.

Note 3) If the set pressure is adjusted too low, it will not be possible to prevent sudden extension during the initial operation. If it is adjusted too high, it will restrict the cylinder speed during normal operation.

④ Again, verify the operation of the cylinder during normal operation. If there is a significant delay in starting the cylinder movement, causing it to lurch, or if the speed is extremely slow, tighten the speed controller on the exhaust side or the cylinder speed adjustment set needle of the SSC valve clockwise, or lower than set pressure of the supply side SSC valve. Then, readjust by performing steps ③ and ④ again.

Note) Verify the cylinder movement during normal operation after it has been prevented from suddenly extending during the initial operation and the air pressure has been supplied sufficiently at the end of the stroke.

Meter-in Control Style

Mounting method

Connect a tube to the supply conduit (on the side that requires a rapid supply of air at the stroke end) with the IN side facing the directional control valve.

Note1) The longer the tubing of the cylinder, SSC valve, and speed controller, the longer is the delay during actuation.

Note2) If a load is applied constantly, such as when the cylinder is mounted vertically, it is not possible to control the speed of the stroke in the same direction as that of the load.

Adjusting method

To effect meter-in control, adjust the lurch prevention set pressure high; then, adjust the cylinder speed and the set pressure.

Adjusting procedure

① Initially, turn the pressure adjustment set needle located on the IN side clockwise to raise the set pressure. At the time of shipment, the set pressure is adjusted to approximately 0.2MPa.

② To prevent the cylinder from moving at high speeds, turn the cylinder speed adjustment set needle located on the OUT side clockwise to decrease the cylinder speed.

③ Next, operate the directional control valve repeatedly to move the cylinder, and adjust the cylinder speed adjustment set needle and the speed controller to achieve the prescribed cylinder speed. (If an SSC valve is used on both sides, perform the adjustment at the cylinder speed adjustment set needles on both sides.) After adjusting, tighten the lock nut. Keep the cylinder cushion needle on the side with the SSC valve as open as possible.

④ Adjust the pressure adjustment set needle counterclockwise so that the cylinder moves, the cylinder speed is controlled by meter-in control, and the pressure is rapidly supplied to the cylinder after reaching the stroke end. After adjusting, tighten the lock nut.

Note) Do not turn the pressure adjustment set needle excessively counterclockwise to prevent the cylinder from suddenly extending.