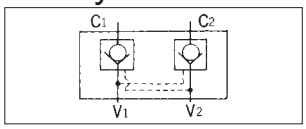
Double Pilot Check Vlave

Permanent Stop

ST-10	Port Size Rc1/4、3/8
ST-15	Port Size Rc1/2
ST-25	Port Size Rc3/4、1

In a general way, in case of stopping the piston of the cylinder in the middle of the cylinder stroke, the 3-position normal closed center valve is used to control. In this case, small volume of leakage from the valve and piping, piston of air cylinder is unbalanced, and a valve cannot keep the middle of the cylinder piston and piston moves. Permanent Stop is the valve to solve this problem.
This double pilot check valve is used for keeping the middle position of cylinder piston.

JIS Symbol



Ordering Instruction

ST-10 – 2
① ②

①Model No.
ST-10
ST-15
ST-25

②Port Size

2	Rc 1/4
3	Rc 3/8
4	Rc 1/2
6	Rc 3/4
8	Rc 1

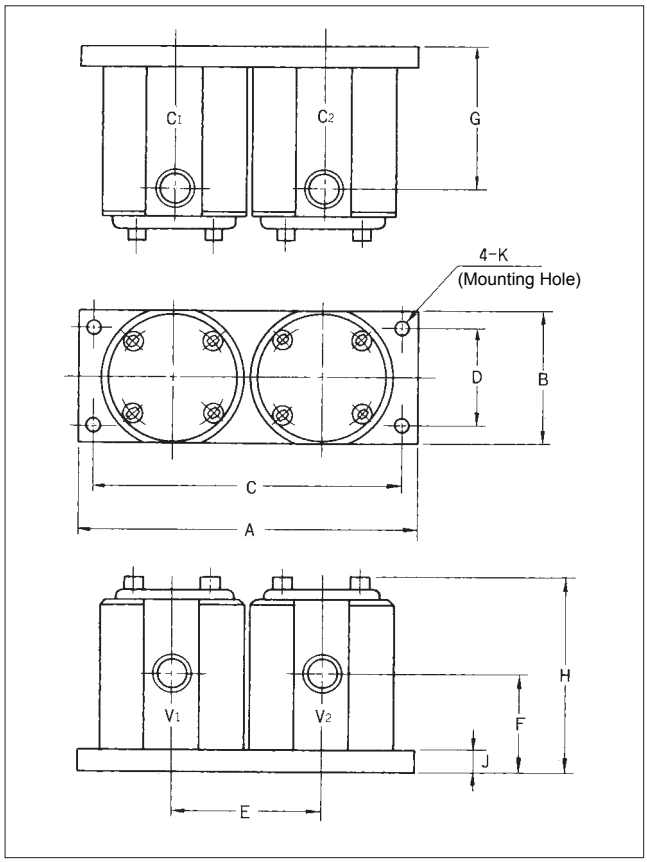
Specification

Model No.		Unit	ST-10	ST-15	ST-25
Port Size			Rc1/4,3/8	Rc1/2	Rc3/4,1
Effective Area		mm^2	45	70	190
Media			Air		
Pressure Range		MPa	0.15～1		
Ambient Temperature		degree C	−5～60		
Leakage	External	cm^3/min (ANR)	0		
	Internal	cm^3/min (ANR)	0		
Weight		kg	13	18	39

Note) When temperature of valve site goes down below 5 degree C, completely dry air shall be supplied to prevent from freezing.

Dimension

(Unit：mm)

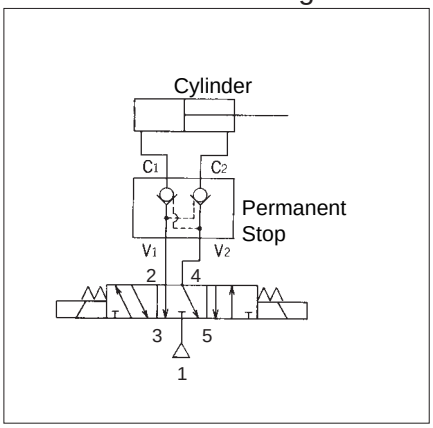


Model No.	A	B	C	D	E	F	G	H	J	K
ST-10	150	60	136	44	66	41	61	84	10	φ 65
ST-15	170	64	150	46	72	45	70	98	12	φ 85
ST-25	210	80	190	60	92	60	98	131	16	φ11

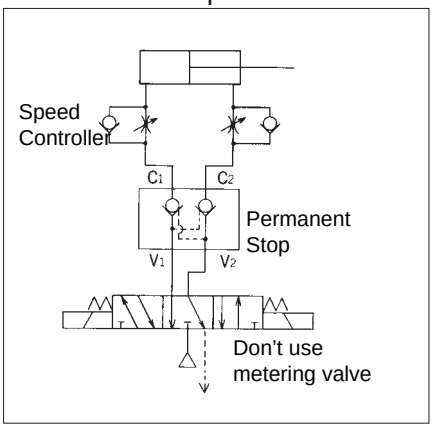
How To Connect & Individual Instructions

- Connect port 2 and 4 of solenoid valve to V1 and V2 port of Permanent Stop. And, pipe C1 and C2 port to ports of cylinder.
- Use a 3-position exhaust center valve. Don't use an all port block valve. (Refer to the circuit 1.)
- The piping between the cylinder and Permanent Stop should be as short as possible. Also, check the piping without air leakage.
- If speed controllers are used, install between Permanent Stop and the cylinder. Don't use metering valves on the exhaust port on the valve. If metering valves are used for the valve, Permanent Stop cannot be operated correctly. (Refer to the circuit 2.)
- Don't use metering valves on V1 and V2 port of Permanent Stop. Make one exhaust port of the valve when muffler is used. If two mufflers are used on the valve, middle of the cylinder position cannot be kept when one muffler is clogging.

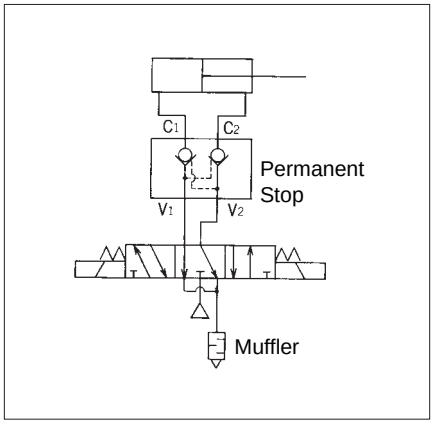
Circuit 1 Standard Usage



Circuit 2 with Speed Controllers

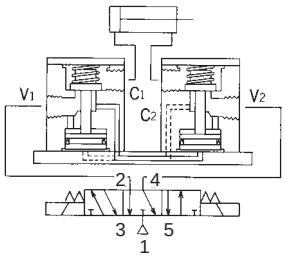


Circuit 3 with Muffler



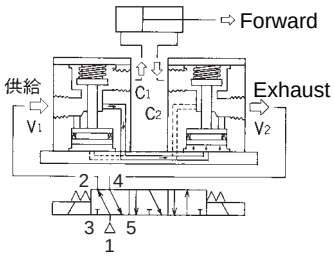
Operation Basis

① Condition before the operation after piping



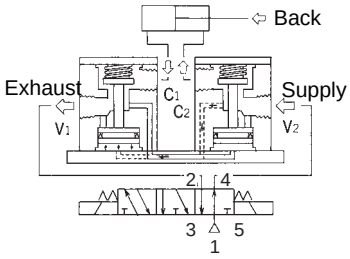
Use an exhaust center type valve. Connect port 2 of the valve and V1 port of Permanent Stop, and port 4 of the valve and V2 of Permanent Stop. Connect C1 and C2 port to the cylinder.

② Forward movement of cylinder rod



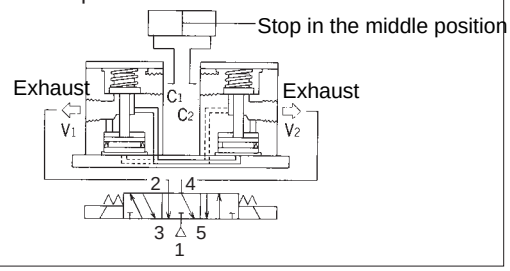
The valve position is changed, and air pressure from port 1 goes through port 2 of the valve and V1 port of Permanent Stop. Air pressure goes through C1 port of Permanent Stop and pressurizes the chamber of the cylinder. On the same time, exhaust air from the cylinder goes through C2 and V2 port of Permanent Stop and exhausts from port 5 of the valve. It makes the cylinder piston toward the rod cover side of the cylinder.

③ Back movement of cylinder rod



When valve position is changed and air is supplied to port 1 to 4, air pressure through V2 port and press up the poppet of Permanent Stop, and compressed air get into the cylinder chamber through C2 port of Permanent Stop. Exhaust air go through port C1 and V1 port of Permanent Stop and exhaust from port 3 of the valve. It makes the cylinder piston toward the head cover side of the cylinder.

④ Stop in the middle position



Between the operation ② and ③, if the valve position is set to the center position, the piston rod stops in the middle of the stroke. Air from V1 and V2 of Permanent Stop goes through port 2 and 4 of the valve and exhaust from port 3 and 5 of the valve. Air in the line of C1 and C2 port of Permanent Stop is kept by poppet with seal. Cylinder is kept in the middle of the position by air sealing in Permanent Stop.