

# Permanent Stop

Pilot operated check valve

## ST-10

Port Rc $\frac{1}{4}$ , Rc $\frac{3}{8}$

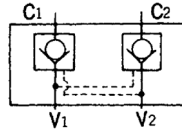
## ST-15

Port Rc $\frac{1}{2}$

## ST-25

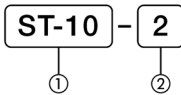
Port Rc $\frac{3}{4}$ , Rc1

JIS Symbol



- Normally, to maintain the piston at the middle of the stroke of the pneumatic cylinder, a closed type solenoid to control would be used. However, minor leakage and the pressure imbalance between solenoid, tubes, and cylinder make such position fixture difficult. Pilot operated check valve can solve this problem.
- Pilot operated check valve is used to connect the cylinder with solenoid to prevent leakage from occurring when pneumatic cylinder is stopped in the middle.

## Representation



### ① Model No.

ST-10

ST-15

ST-25

### ② Port size

2 : R $\frac{1}{4}$

3 : R $\frac{3}{8}$

4 : R $\frac{1}{2}$

6 : R $\frac{3}{4}$

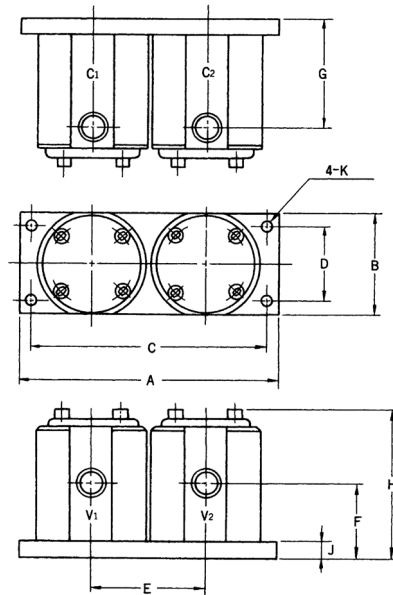
8 : R1

## Specifications

Model No.	Unit	ST-10	ST-15	ST-25
Port size		Rc $\frac{1}{4}$ , $\frac{3}{8}$	Rc $\frac{1}{2}$	Rc $\frac{3}{4}$ , 1
Effective area	mm <sup>2</sup>	45	70	190
Fluid		Air		
Operating pressure range	MPa	0.15~1		
Ambient temperature	°C	-5~60		
Internal leakage amount	External	0		
	Internal			
Weight	kg	1.3	1.8	3.9

Note) When the temperature falls below 5 °C, please provide air dryer to prevent water frozen.

## Dimensions



(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	∅ 6.5
ST-15	170	64	150	46	72	45	70	98	12	∅ 8.5
ST-25	210	80	190	60	92	60	98	131	16	∅ 11

ADD

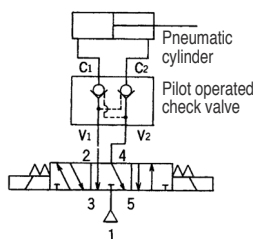
## Pilot operated check valve

**⚠** Connection method as well as warning

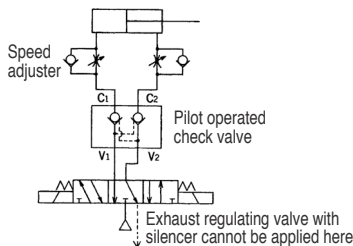
- Connect the port 2, 4 of the solenoid to the port V1, V2 of the pilot operated check valve. Then Connect the port C1, C2 of the tube to the port(s) of the pneumatic cylinder to complete the connection process.
- Use 3-position, PAB connect type solenoid instead of closed type solenoid (please refer to circuit diagram 1)
- Tubes for the pneumatic cylinder and the pilot operated check valve are recommended to be as short as possible; also, be sure that there is no air leakage from the tube.

- If speed adjuster is used, please have it installed in between the pilot operated check valve and the pneumatic cylinder. Avoid using metering valve on the gas exhaust port, otherwise pilot operated check valve may not function properly.
- Do not use metering valve on the port V1, V2 of the pilot operated check valve. Have one of the gas exhaust ports utilises silencer; if both ports are applied with silencer, if there is an obstruction, pneumatic cylinder will fail to keep still at the same position.

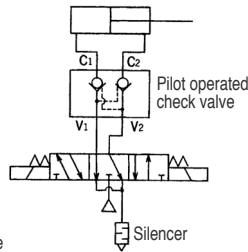
**Pic 1 Standard application**



**Pic 2 Speed adjuster application**

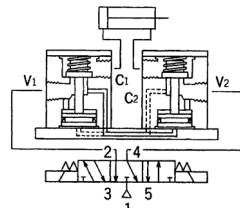


**Pic 3 Silencer application**



## Actuation principle

### 1. Actuation status after tubing is in place



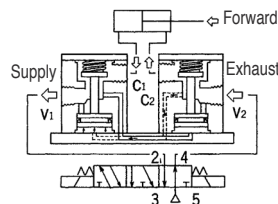
Use PAB connect type solenoid, connect the port 2, 4 of the solenoid to the port V1, V2 of the pilot operated check valve. Then Connect the port C1, C2 of the tube to the port(s) of the pneumatic cylinder to complete the connection process.

### 2. Pneumatic cylinder axis extend forward



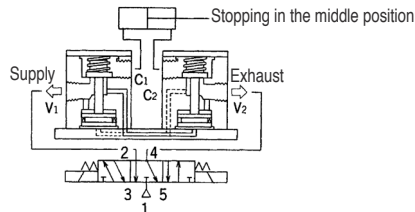
Position of the valve is altered, pneumatic pressure goes from port 1 to port 2, and then to port V1 of the pilot operated check valve. Pneumatic pressure goes through port C1 of the pilot operated check valve and the chamber of the pressurized pneumatic cylinder. Meanwhile, air exhausted from the pneumatic cylinder passes through port C2, V2 of pilot operated check valve and are exhausted from port 5, making the piston in the cylinder move toward the direction of cylinder's front cap.

### 3. Pneumatic cylinder axis moves backward



Position of the valve is altered, pneumatic pressure goes from port 1 to port 2, and then to port V1 of the pilot operated check valve. Pneumatic pressure goes through port C1 of the pilot operated check valve and the chamber of the pressurized pneumatic cylinder. Meanwhile, air exhausted from the pneumatic cylinder passes through port C2, V2 of pilot operated check valve and are exhausted from port 5, making the piston in the cylinder move toward the direction of cylinder's front cap.

### 4. Stopping in the middle position



Acting among 2 and 3, if the position of the valve is set in the middle position, axis will stop in the middle of the stroke. Air passes through V1, V2 and reaches port 2, 4, and will be exhausted from port 3, 5. Air in C1, C2 is controlled via popper oil seal. Stopping pneumatic cylinder is done by sealing air inside of the pilot operated check valve.