

Thank you for purchasing PISCO product. Please be sure to read this User's Manual before using this item in order to make sure the safety. Please keep this manual handy with care, so that you can refer to it whenever necessary. PISCO products catalogues include Common Safety Instructions for PISCO products and Solenoid Valves. Please confirm the Safety Instructions as well before using this item.

⚠ Safety Instructions

- Warnings
- Mishandling of compressed air is dangerous. Conduct assembly and maintenance of devises with pneumatic equipment by persons with enough knowledge and experience.
  - Carry out maintenance and checks of equipment only after turning power off, shutting air off and making certain that the pressure in the piping has dropped to zero. When installing and detaching units from the manifold, shut air off and make sure the pressure in the piping has dropped to zero.
  - Since this item is not of explosion-proof structure, do not use it in surroundings containing flammable and/or explosive gases and/or fluids.
  - The coil generates heat when the pilot valve is energized by the following ① to ③ conditions. The heat may possibly lead to shorter operating life or system failure of the product. There are also possibilities of bad influence to peripherals or of burn injury by heat.  
If the product is energized by the following conditions, please consult with Pisco in such a case.  
① Continuous energizing for about 2 hours or more.  
② High cycle energizing.  
③ The total energizing time of a day exceeds the total non-energizing time even if it is intermittent energizing.
  - Do not use the item in locations where they can be exposed to water drops, oil drops, dust, etc. Since the item is not drip proof type, prepare protect measures when it is used under the conditions.

- Cautions
- Do not use the equipment other than the operating pressure range. Operating it other than the operating pressure range may cause damage or deformation.
  - These valves are designed to accommodate some leakage, so do not use them in applications that permit no leakage.
  - Do not use the valves for large-flow air blowing. As the structure is an internal pilot type, the drop of internal pressure may lead to malfunction.
  - Manual operation of the valve can operate the actuator connected to it. Therefore operate after confirming safety.
  - Be sure to turn off power before installing the wiring. Also pay special attention to wire colors in wiring.
  - You can use these valves without lubrication. When you lubricate, however, use Turbine Oil Class 1 (ISO VG32). Once you start the habit of lubrication, do not stop it. Otherwise the initial lubricant will be dispersed, thus causing malfunction.
  - Before wiring, check the ports of the valve by the marking on the body.
  - For maintenance or checks, turn off power, stop air supply and make certain that the pressure inside the piping has become zero. With the 3-position all port block type, watch out for the air remaining between valve and cylinder.
  - Do not use a 3-position valve when cylinder movement is to be stopped midway. Such an operation requires a level of accuracy that is very difficult to attain due to the compressibility of air. Furthermore, since the solenoid valves have been designed with a tolerance for some leakage, it may not be possible to maintain the stop position for a prolonged period of time.

Specifications

10 Series Pilot Valve		
Rated voltage	DC24V	AC100V
Item		
Operating system	Direct operation	
Valve construction	Elastic seal, poppet valve	
Allowable voltage range	DC21.6 ~ DC26.4V	AC90 ~ AC110V
Power consumption (with lamp)	0.55W	1VA
Surge limiting circuit	Surge absorber	Bridge diode
Manual operation	Push & lock type	
Direction of wiring taken out	Connector type [Straight (upward), Elbow type (sideways)]	
Lamp	LED	

15, 18, 22 Series Pilot Valve

Rated voltage	DC24V	AC100V	AC110V	AC200V	AC220V
Item					
Operating system	Direct operation				
Valve construction	Elastic seal, poppet valve				
Allowable voltage range	DC21.6 ~ DC26.4V	AC90 ~ AC110V	AC99 ~ AC121V	AC180 ~ AC220V	AC198 ~ AC242V
Power consumption (with lamp)	0.8W	1VA	1.1VA	2VA	2.2VA
Surge limiting circuit	Surge absorber	Bridge diode			
Manual operation	Push & lock type				
Direction of wiring taken out	Connector type [Straight (upward), Elbow type (sideways)]				
Lamp	LED				

Main Valve (10 Series)

	Model	Specifications for individual solenoid valves			Manifold specifications			
		SVB10S	SVB10D	SVB10A SVB10R SVB10P	SVB10S-M□	SVB10D-M□	SVB10A-M□ SVB10R-M□ SVB10P-M□	
Item								
Fluid admitted		Air						
Service pressure range		0.2 ~ 0.7MPa (29 ~ 102psi)		0.3 ~ 0.7MPa (43.5 ~ 102psi)	0.2 ~ 0.7MPa (29 ~ 102psi)		0.3 ~ 0.7MPa (43.5 ~ 102psi)	
Proof pressure		1.05MPa (152psi)						
Service temperature range		5 ~ 50°C (41 ~ 122°F)						
Installation		Free (※1)						
Operating system		Indirectly activated pneumatic operation by pilot valve						
Port thread size		M5x0.8			M5x0.8			
Valve construction		Elastic seal, spool valve						
No. of positions		2 positions		3 positions	2 positions		3 positions	
No. of ports		5 ports						
Valve function		Single	Double		Single	Double		
Response time (※2)	→ ON	15msec	12msec	15msec (※3)	15msec	12msec	15msec (※3)	
	→ OFF	20msec	12msec	25msec (※3)	20msec	12msec	25msec (※3)	
Max. operation cycle		5Hz						
Min. excitation time			50msec			50msec		
Lubrication		Not required						
Flow characteristics	1(P) → 4(A), 2(B)	C (※4)	0.6	0.8	0.36	0.4		
		S (※5)	3.0 (0.16)	4.0 (0.22)	1.8 (0.10)	2.0 (0.11)		
		Neutral position	C (※4)		0.4		0.32	
			S (※5)		2.0 (0.11)		1.6 (0.09)	
	4(A), 2(B) → 5(R1), 3(R2)	C (※4)	0.4	0.8	0.32	0.4		
		S (※5)	2.0 (0.11)	4.0 (0.22)	1.6 (0.09)	2.0 (0.11)		
		Neutral position	C (※4)		0.4		0.24	
			S (※5)		2.0 (0.11)		1.2 (0.07)	

※1) Please refer to the installation method.  
※2) The values are at the air pressure of 0.5MPa.  
※3) Values at the three positions are for response times from neutral: → ON, and from operation state to neutral: → OFF, respectively.  
※4) C: Sonic conductance C (dm<sup>3</sup>/s bar)  
※5) S: Effective sectional area S (mm<sup>2</sup> (CV factor))

Main Valve (15 Series)						
Type	SVB15S	SVB15D	SVB15A SVB15R SVB15P	SVB15J SVB15L SVB15M SVB15N	SVB15Y SVB15Z	
Item						
Fluid admitted	Air					
Service pressure range	0.15 ~ 0.7MPa		0.2 ~ 0.7MPa		0.15 ~ 0.7MPa	
Proof pressure	1.05MPa					
Service temperature range	5 ~ 50°C					
Installation	Free (※1)					
Operating system	Indirectly activated pneumatic operation by pilot valve					
Port thread size	M5×0.8 (※2)					
Valve construction	Elastic seal, spool valve					
No. of positions	2 positions		3 positions		2 positions	
No. of ports	5 ports		3 ports			
Valve function	Single	Double		Single	Double	
Response time	15msec	12msec		15msec	12msec	
Max. operation cycle	5Hz					
Min. excitation time		50msec				50msec
Lubrication	Not required					
Flow characteristics	C (※3)	0.68	0.74	0.68		
	S (※4)	3.4 (0.18)	3.7 (0.20)	3.4 (0.18)		
1(P) → 4(A)	Neutral position	C (※3)	0.64			
		S (※4)	3.2 (0.17)			

※1) Please refer to the installation method.  
※2) There is no thread processing of 1(P) · 5(R1) · 3(R2) port for SVB15J · L · Y type as they as manifold mount valve.  
※3) C: Sonic conductance C (dm<sup>3</sup>/s bar)  
※4) S: Effective sectional area S (mm<sup>2</sup> (CV factor))

Main Valve (18 Series)

Type		SVB18S		SVB18D		SVB18A SVB18R SVB18P		SVB18J SVB18L SVB18M SVB18N		SVB18Y SVB18Z	
Item											
Fluid admitted		Air									
Service pressure range		0.15 ~ 0.7MPa				0.2 ~ 0.7MPa		0.15 ~ 0.7MPa			
Proof pressure		1.05MPa									
Service temperature range		5 ~ 50°C									
Installation		Free (※1)									
Operating system		Indirectly activated pneumatic operation by pilot valve									
Port thread size		Rc1/8 (※2)									
Valve construction		Elastic seal, spool valve									
No. of positions		2 positions				3 positions		2 positions			
No. of ports		5 ports						3 ports			
Valve function		Single		Double				Single		Double	
Response time		20msec		15msec				20msec		15msec	
Max. operation cycle		5Hz									
Min. excitation time				50msec						50msec	
Lubrication		Not required									
Flow characteristics		C (※3)		2.6		2.6		2.6			
		S (※4)		13 (0.70)		13 (0.70)		13 (0.70)			
1(P) → 4(A)		Neutral position		C (※3) S (※4)		1.04					
						5.2 (0.28)					

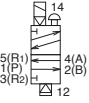
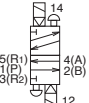
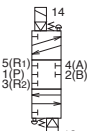
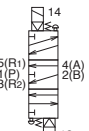
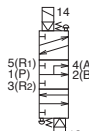
※1) Please refer to the installation method.  
※2) There is no thread processing of 1(P) · 5(R1) · 3(R2) port for SVB18J · L · Y type as they as manifold mount valve.  
※3) C: Sonic conductance C (dm<sup>3</sup>/s bar)  
※4) S: Effective sectional area S (mm<sup>2</sup> (CV factor))

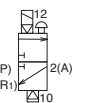
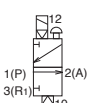
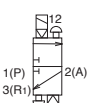
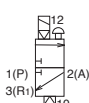
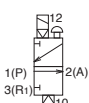
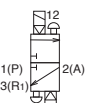
Main Valve (22 Series)

Model		SVB22S	SVB22D	SVB22A SVB22R SVB22P
Item				
Fluid admitted	Air			
Service pressure range	0.2 ~ 0.7MPa (29 ~ 102psi)		0.3 ~ 0.7MPa (43.5 ~ 102psi)	
Proof pressure	1.05MPa (152psi)			
Service temperature range	5 ~ 50°C (41 ~ 122°F)			
Installation	Free (※1)			
Operating system	Indirectly activated pneumatic operation by pilot valve			
Port thread size	1(P) · 4(A) · 2(B) port : Rc1/4, 5(R1) · 3(R2) port : Rc1/8			
Valve construction	Elastic seal, spool valve			
No. of positions	2 positions		3 positions	
No. of ports	5 ports			
Valve function	Single	Double		
Response time	25msec	18msec	25msec	
Max. operation cycle	5Hz			
Min. excitation time			50msec	
Lubrication	Not required			
Flow characteristics	C (※2)		3.6	3
	S (※3)		18 (0.98)	15 (0.81)
1 (P) → 4 (A)	Neutral position	C (※2)		
		S (※3)		
			2.6	
			13 (0.70)	

※1) Please refer to the installation method.  
※2) C: Sonic conductance C (dm<sup>3</sup>/s bar)  
※3) S: Effective sectional area S (mm<sup>2</sup> (CV factor))

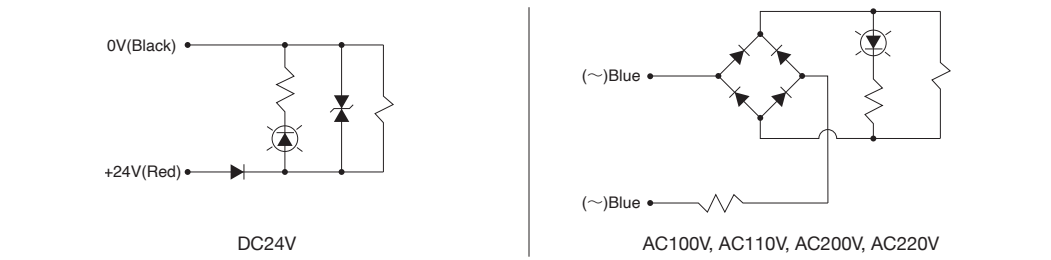
Valve Type

Code ▶ <b>S</b>	Code ▶ <b>D</b>	Code ▶ <b>A</b>	Code ▶ <b>R</b>	Code ▶ <b>P</b>
2 position 5 ports		3 position 5 ports		
Single solenoid	Double solenoid	Closed center	Exhaust center	Pressure center
				

Code ▶ <b>J</b>	Code ▶ <b>L</b>	Code ▶ <b>Y</b>	Code ▶ <b>M</b>	Code ▶ <b>N</b>	Code ▶ <b>Z</b>
2 position 3 ports					
Single solenoid Normally closed (for mixed-installation with 5-port valve)	Single solenoid Normally open (for mixed-installation with 5-port valve)	Double solenoid (for mixed-installation with 5-port valve)	Single solenoid Normally closed	Single solenoid Normally open	Double solenoid
					

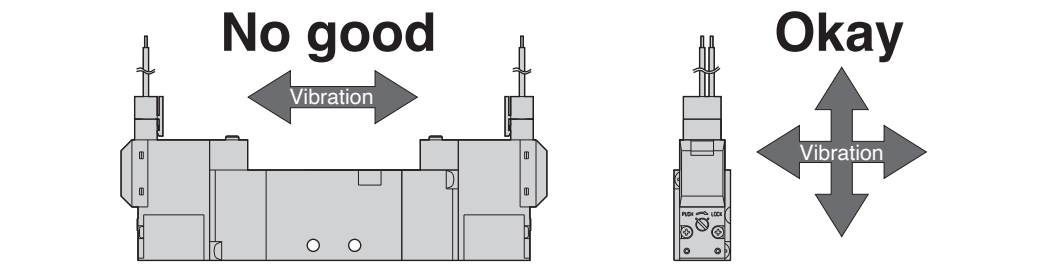
Electric circuit diagram

- Caution
- Do not pull or bend the connector cable with excessive force and also avoid repeat action on the cable. Doing so may result in the products broken and the cables being snapped off.
  - DC24V products are equipped with a surge absorber to protect against current spikes. However, since the absorber cannot completely absorb such surges, it is advisable to take precautionary measures when erroneous action due to a current spike is foreseen.



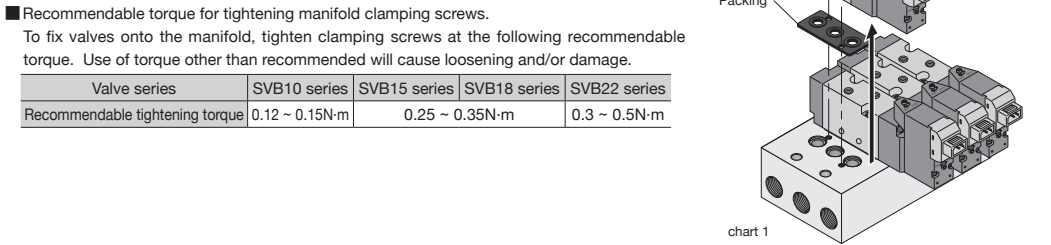
Installation method

- Warning
- When the Solenoid Valve is used with vibration of 49m/s<sup>2</sup> or below, install it in such a way that the direction of vibration is perpendicular to the spool valve. See the following illustration.



How to mount / remove the solenoid valves onto / from the manifold

- Removing and mounting of the valves are to be conducted according to the following procedures.
- Remove the two (2) clamping screws from the valve by a Philip type screwdriver.
  - Remove each valve unit from the manifold straight to the direction shown in the chart 1.
  - When installing the solenoid valve on to the manifold, please make sure the packing is placed in right position.
  - Clamp the two (2) screws.



How to plug in / remove of individual plug-in connector

- Caution
- Do not give excessive tension or bending to the individual plug-in connector (cable). Disconnection or damage to the connector may result.

- Individual plug-in connectors can be put in place by just plugging them in until they come to a stop (chart 2).
- To remove connectors, pull them out pushing connector lever in the arrow-indicated direction (chart 3).



Manual Operations

- Caution
- When operating the solenoid valves by manual operation, the actuator works. As such, please make sure the safety before the operation.
  - Do not apply unnecessary pressures to manual button to avoid possible damage.
  - As for 10 series, the manual and lock operation cannot be conducted when the manual cover is closed.
- Valves can be switched over by manual operation. (Switching over can only be performed at times when the valve is supplied with pilot pressure).
- To lock manual button, push it with a timepiece-use screw driver until it comes to a stop, then turn it clockwise. To release lock, turn manual button anticlockwise. (Max. tightening torque by timepiece-use screw driver: 0.05N·m)
- Be sure to unlock manual button before starting operations in normal mode.



Fixing of joints

- To fix joints on to valves and manifolds, hold valve or manifold itself. Tightening joints holding pilot valve may possibly cause damage.

※) Please make inquiry about other details to the following.