

PS-15, 15C, PF-15, 15C Type Solenoid Valve (for Steam, Liquids or Air)

Piston type

These series valves are basically the same as PS series, except that they are made of stainless steel.

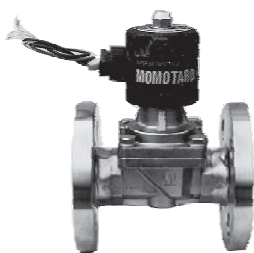
Although the electromagnet of the part contacting with liquid is made of stainless steel with special steel, cares should be paid in applications requiring high corrosion resistance.



PS-15 Type



PS-15C Type



PF-15 Type



PF-15C Type

FEATURES

- Suitable for stainless steel piping and equipment.
- Wide range of working pressure: 0~1.0MPa
- Free installation in vertical or horizontal direction.
- Energized open or energized close.

SPECIFICATIONS

Model name	PS-15	PF-15	PS-15C	PF-15C
Code name	PS15-V	PF15-V	PS15C-V	PF15C-V
Size	10~50(3/8"~2")	15~50(1/2"~2")	10~50(3/8"~2")	15~50(1/2"~2")
End connection	Screwed JIS Rc	Flanged JIS 10KFF	Screwed JIS Rc	Flanged JIS 10KFF
Operation	Energized open		Energized close	
Applicable fluid	Steam, water, air & oils (Kerosene, light oil, gasoline level)			
Applicable pressure	0~1.0MPa			
Min. pressure differential across the disc	0MPa (0.03MPa for coil installed horizontally.)			
Fluid temperature	5~180°C (For hot water: Max. 100°C)			
Fluid viscosity	20cSt or less			
Leakage allowance	Steam, water & oils: Nil (Confirm at pressure gauge), Air: 50ml/min (standard state) or less (when 0.05~1.0MPa)			
Rated voltage	Common use: AC100/200V 50/60Hz or AC110/220V 60Hz ^{*2}			
Insulation	Class H (Silicone mold)			
Ambient temperature	5~60°C			
Protection	Dust & drip proof (When used outdoors, also use TB-03 Type terminal box, as rain proof type)			
Materials	Body (Stainless steel), Disc (Stainless steel with Teflon tip)			
Installation	Can be installed on both horizontal and vertical piping at any angle between the vertical (when the coil part is placed above) and horizontal.			
Valve body pressure	Hydraulic 2.0MPa			

*1. Refer to page 231 for Method of Wiring.

*2. In case complete of shut off is required for air service, or the valve is used for well water, select WS or WF series.

*3. Special voltage items other than the above specified are available upon your request.

*4. We also provide PS-15Z and PF-15Z types, which size is smaller than 25mm and are suitable for applications requiring highly frequent opening/closing.

*5. Select PS, PF-15V, or 15CY types if humidity is higher than 85%.

DIMENSIONS AND CURRENT VALUES

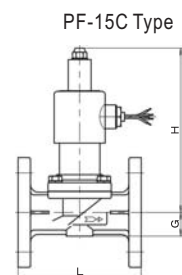
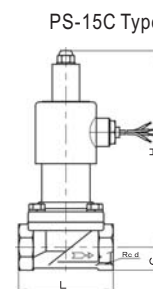
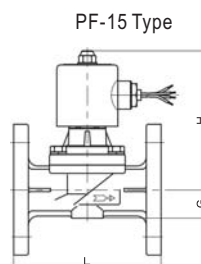
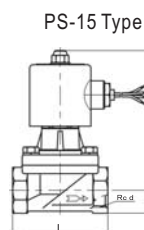
(mm)

Size		10(3/8")	15(1/2")	20(3/4")	25(1")	32(1 1/4")	40(1 1/2")	50(2")	
Screwed	PS-15 PS-15C Type	d	3/8"	1/2"	3/4"	1"	1 1/4"	2"	
		L	63	63	80	90	106	118	140
		G	15	15	18	22	27	30	37
		H	122(183)	122(183)	135(193)	139(197)	150(207)	153(210)	165(222)
		Port size	18	18	23	28	32	40	48
		Cv value	3	4.5	7.5	12	18	23	35
		Mass(kg)	1.3(1.9)	1.3(1.9)	1.8(2.2)	2.2(2.6)	2.9(3.3)	3.7(4.1)	5.6(5.8)
Flanged	PF-15 PF-15C Type	L	—	112	118	140	160	190	
		G	—	15	18	22	27	30	37
		H	—	122(183)	135(193)	139(197)	150(207)	153(210)	165(222)
		Port size	—	18	23	28	32	40	48
		Cv value	—	4.5	7.5	12	18	23	35
		Mass(kg)	—	2.6(3.2)	3.6(4)	4.9(5.3)	6.2(6.6)	7.3(7)	9.8(10)
		Current (A)	AC100V	Rated	0.25(0.35)	0.25(0.35)	0.30(0.35)	0.30(0.35)	0.40(0.45)
Starting	0.60(1.30)			0.60(1.30)	0.90(1.30)	0.90(1.30)	1.30(1.70)	1.30(1.70)	1.30(1.70)
AC200V	Rated		0.13(0.18)	0.13(0.18)	0.15(0.18)	0.15(0.18)	0.20(0.23)	0.20(0.23)	0.20(0.23)
	Starting		0.30(0.70)	0.30(0.70)	0.45(0.70)	0.45(0.70)	0.65(0.85)	0.65(0.85)	0.65(0.85)

Figures in () are for PS-15C or PF-15C.

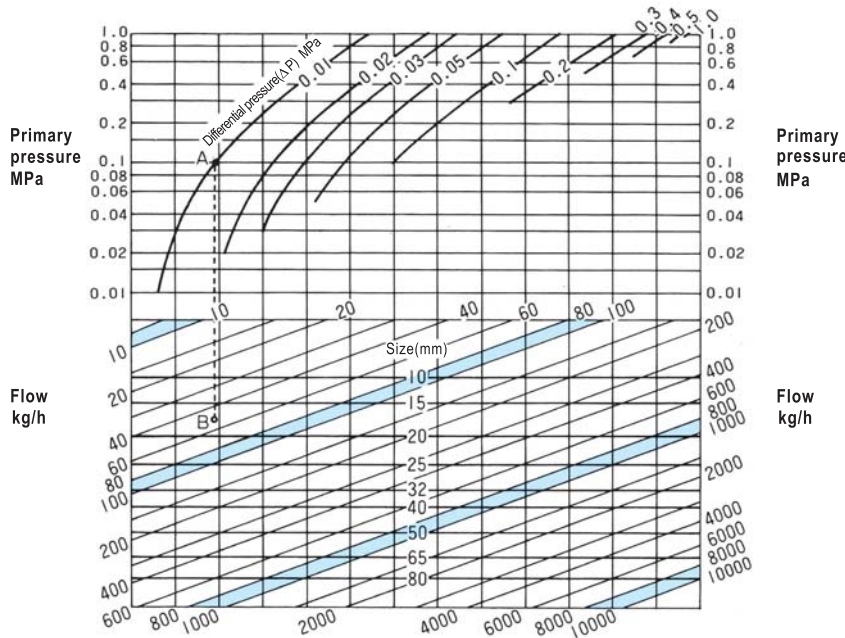
Flange code JIS 10KFF

FIGURATION DRAWING



SIZE SELECTION CHART (for Steam)

Applicable models: PS-12, 12C
 PF-12, 12C
 PS-15, 15C
 PF-15, 15C



HOW TO USE THE CHART

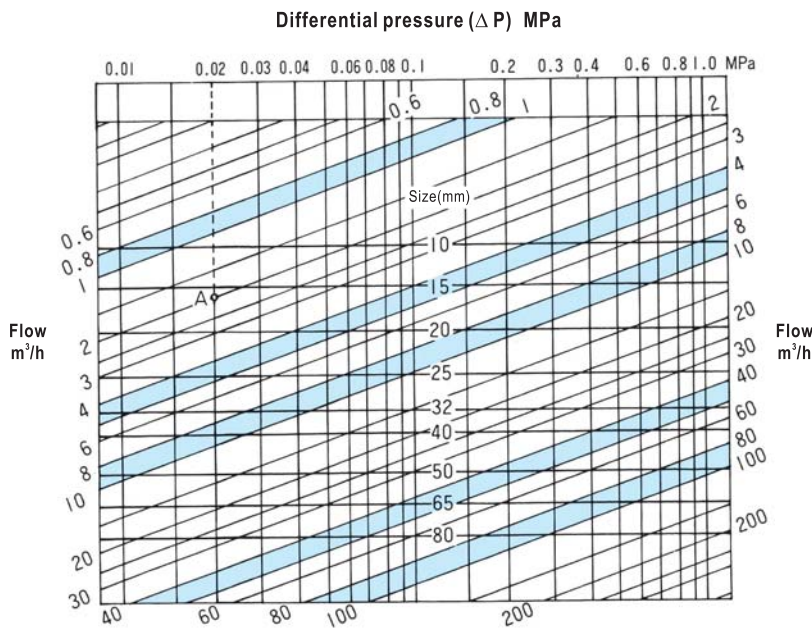
Example: Determine the size of valve meeting the following conditions:

- Primary pressure: 0.1MPa
- Secondary pressure: 0.09MPa
- Flow of steam (saturated): 50kg/h
- Differential pressure(ΔP) is:
 $0.1 - 0.09 = 0.01\text{MPa}$.

Identify intersection point (A) of the 0.1MPa primary pressure line and the 0.01MPa differential pressure differential curve. Draw a vertical line from point A until it intersects with the 50kg/h flow line. The intersection point is named B. Since point B is between the 15mm and 20mm size lines, the larger size, which is 20mm, is selected.

SIZE SELECTION CHART (for Water)

Applicable models: PS-12, 12C, 12K, 12CK
 PF-12, 12C
 PS-15, 15C
 PF-15, 15C



HOW TO USE THE CHART

Example: Determine the size of valve meeting the following conditions:

- Primary pressure: 0.3MPa
- Secondary pressure: 0.28MPa
- Flow of water: 2m³/h
- Differential pressure (ΔP): $0.3 - 0.28 = 0.02\text{MPa}$.

Find out the intersection point A between the 0.02MPa differential pressure (ΔP) line and the 2m³/h flow line. Since point A is between the lines representing nominal diameter 15mm and 20mm, the nominal diameter should be the larger one, i.e. 20mm.

DATA/PS, PF Type Solenoid Valve (for Air)

SIZE SELECTION CHART (for Air)

Applicable models: PS-12, 12C, 12K, 12CK
 PF-12, 12C
 PS-15, 15C
 PF-15, 15C

HOW TO USE THE CHART

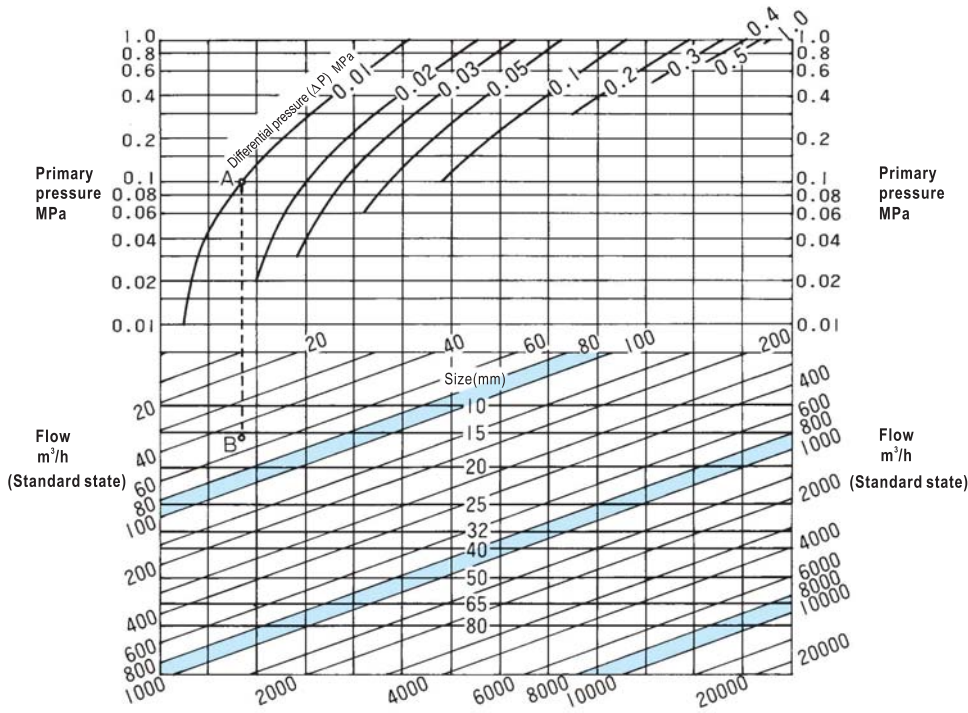
Example: Determine the size of valve meeting the following conditions:

Primary pressure: 0.1MPa

Secondary pressure: 0.09MPa

Flow of air (at 20°C): 50m³/h (standard state)

Differential pressure (ΔP) is: $0.1 - 0.09 = 0.01$ MPa. Identify intersection point (A) of the 0.1MPa primary pressure line and the 0.01MPa differential pressure curve. Draw a vertical line from point A until it intersects with the 50m³/h flow line. The intersection point is named B. Since point B is between the 15mm and 20mm size lines, the larger size, which is 20mm, is selected.



DATA/Solenoid Valve

METHOD FOR CONNECTION OF COIL

As shown in relevant specification table, different models of solenoid valve have different rated voltage. When connecting to power, make sure the voltage does not exceed the rated voltage of solenoid valve.

<Common voltage coil>

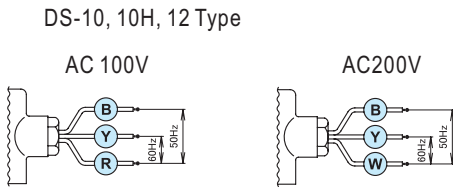
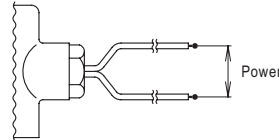
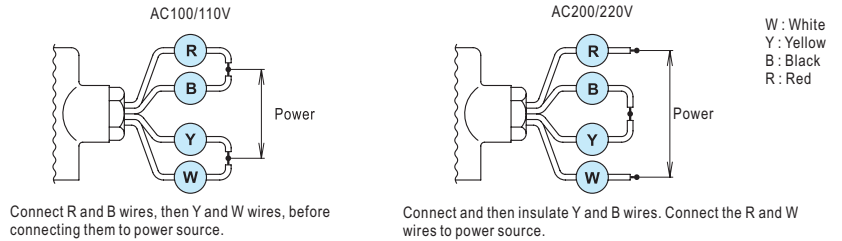
- Connect the 4 lead wires (in different color) to power source.

<Exclusive/Special voltage coil>

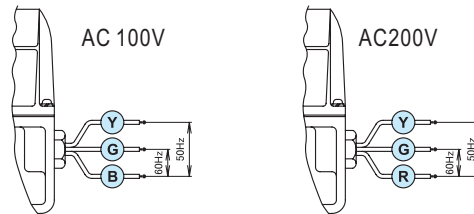
- Connect 2 lead wires to power source.

<Frequency selecting coil>

- There are 3 lead wires on coil. Read the connection method shown on product before connecting to power source. The lead wire that left unused should be insulated using insulating tape.



ED-S, F Type



REFERENCE: ABOUT EXPLOSION PREVENTION

Terminal box specially designed for solenoid valve. Can be screwed in with lead wire of solenoid valve and protect power cable and lead wire from being exposed to rain or dust. TB-03 series are for outdoor cable and conduit.

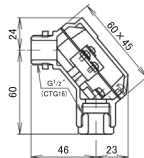


An example of TB-03 installation

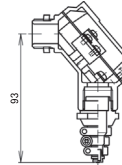
TB-03 TYPE SERIES (for indoor/outdoor, metal body, rainproof)

(Without indication lamp) Rated power: 250V 15A

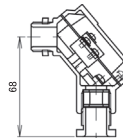
- TB-03 Type (standard model) With gland nut



- TB-03C Type With cap cone

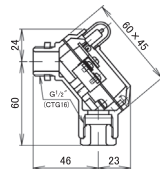


- TB-03F Type With ship-class gland

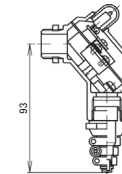


(With indication lamp) Rate power: AC100V or AC200V
Please specify voltage when ordering.

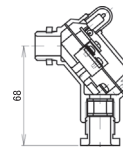
- TB-03L Type With indication lamp



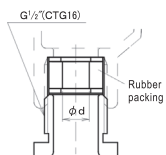
- TB-03LC Type Lamp + cap cone



- TB-03LF Type Lamp + ship-class gland

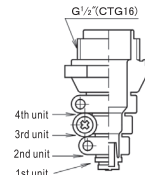


SPECIFICATIONS OF GLAND (TB-03F, 03LF Type)



Gland size	d (mm)	Size of applicable conduit		
		Hard steel conduit	Flexible metal conduit	
15a	9	16	Class 1	Class 2
15b	10		13	10 12
15c	11		15	15 17

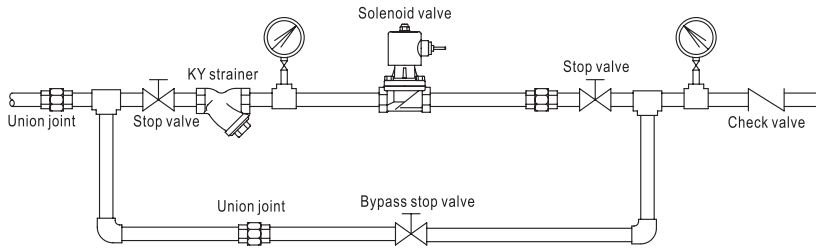
SPECIFICATIONS OF CAPCONE PLUG (TB-03C, 03LC Type)



Cut position	Applicable cable diameter(mm)
4th unit	10~12
3rd unit	8~10
2nd unit	6~8
1st unit	4~6

DATA/Solenoid Valve

■ Fig.1 Piping example



■ SELECTION AND INSTALLATION

1. Install strainer on the primary side of solenoid valve (see Fig. 1).
2. Install a bypass pipe (with stop valve) between the primary and secondary sides of solenoid valve if the operation of equipment cannot be stopped (see Fig. 1).
If you do not intend to install bypass pipe, install blowing stop valve, which is branched from the main pipe, right before the stop valve on the primary side of solenoid valve, to allow flushing.
3. The coil should stand upright above horizontal pipe (see Fig. 1, 2).
For size 50mm (and below) valve of WS, PS series, the coil can be upright above or at the same level of (and perpendicular to) horizontal pipe. In this case, make sure the pressure differential before and after the valve is larger than 0.03MPa (see Fig. 2).
4. Back flow may occur when the secondary pressure is larger than the primary pressure. To prevent back flow, install check valve on the secondary side (see Fig. 1).
5. If the valve is used for steam and the secondary pressure is negative pressure when the valve is closed, install vacuum regulating valve (vacuum breaker) on the secondary side of solenoid valve (see Fig.3).
6. Install steam trap on piping if the valve is used for steam.
7. When used for liquid, the pressure inside the piping may increase due to water hammer occurred when valve is closed or ambient temperature. In this case, it is recommended to install relief valve to protect machine (see Fig.4).
8. Connect coil properly using 0.75mm² above wire. Install fuse to protect electric circuit.
9. Repeated power-on and power-off for a long period may make the surface temperature rises up to about 70°C. Cares should be paid to avoid burning. (Depending on conditions and model, the temperature rise varies.)
10. Make sure the arrow mark on solenoid valve match with the direction of flow of fluid.
11. Leave some space for disassembling and maintenance.
12. Fix and support piping properly to prevent solenoid valve from being damaged due to weight of piping, excessively large stress, bending force, or vibration.
13. Discharge drain or apply thermal insulation if there is risk of freezing.
However, the coil should not be applied with any thermal insulation.

Fig.2 Installation position

Upright to horizontal pipe

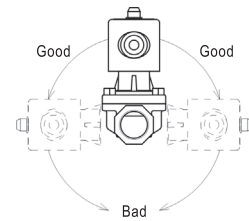


Fig.3 Steam line application

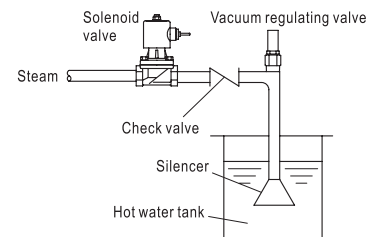
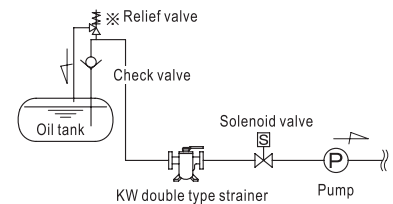


Fig.4 Relief valve installation



※ Install relief valve if pressure rise due to thermal expansion or other factors is anticipated.