PS-16, PF-16 (for Water), PS-17, PF-17 (for Steam) Type Solenoid Valve

[Stainless steel] Piston type, for high pressure

A sister product to series bronze solenoid valves for high pressure application.
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.

FEATURES

- Suitable for high pressure fluid.
- Stainless steel body, also suitable for high pressure water or steam.

SPECIFICATIONS

Operation	Energized open			
Model name	PS-16	PF-16	PS-17	PF-17
Code name	**PS16-V**	**PF16-V**	**PS17-V**	**PF17-V**
Size	10~50(⅜″~2″)	15~50(½″~2″)	10~50(⅜″~2″)	15~50(½″~2″)
Applicable fluid	Water		Steam	
Fluid temperature	5~100℃		5~200℃	
Fluid viscosity	20cSt or less		—	
Applicable pressure	0.05~2.0MPa		0.05~1.6MPa	
Min. pressure differential across the disc	0.05MPa			
Leakage allowance	2mL/min or less		3g/min or less	
Rated voltage	Common use:AC100/200V 50/60Hz or AC110/220V 60Hz*2.			
Insulation Class	Class H (Silicone mold)			
Ambient temperature	5~60℃		5~40℃	
Protection	Dust & drip proof (When used outdoors, also use TB-03 Type terminal box, as rain proof type)			
End connection	Screwed JIS Rc	Flanged JIS 16KFF	Screwed JIS Rc	Flanged JIS 16KFF
Materials	Body(Stainless steel), Disc(Stainless steel with Teflon tip)			
Installation	Install the valve vertically in horizontal piping placing coil part above.			
Valve body pressure test	Hydraulic 4.0MPa		Hydraulic 3.2MPa	

*1. Refer to Page 244 for method of wiring.
*2. For products suitable for special voltage, please contact our agent in your area.
*3. PS-16 and PF-16 Types with manual mechanism are also available.

DIMENSIONS AND CURRENT VALUES

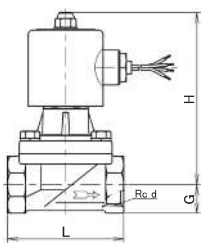
(mm)

Size				10(⅜″)	15(½″)	20(¾″)	25(1″)	32(1¼″)	40(1½″)	50(2″)
Screwed	PS-16 PS-17 Type	d		⅜″	½″	¾″	1″	1¼″	1½″	2″
		L		63	63	80	90	106	118	140
		G		15	15	18	22	27	30	37
		H		129	129	136	140	163	166	178
		Port size		18	18	23	28	32	40	48
		Cv value		3	4.5	7.5	12	18	23	35
		Mass(kg)		1.5	1.5	2.2	2.6	3.6	4.5	6.4
Flanged	PF-16 PF-17 Type	L		—	112	118	140	150	160	190
		G		—	15	18	22	27	30	37
		H		—	129	136	140	163	166	178
		Port size		—	18	23	28	32	40	48
		Cv value		—	4.5	7.5	12	18	23	35
		Mass(kg)		—	2.8	4	5.3	6.9	8.1	10.6
Current (A)		AC100V	Rated	0.3	0.3	0.4	0.4	0.6	0.6	0.6
			Starting	0.9	0.9	1.3	1.3	2.50	2.50	2.50
		AC200V	Rated	0.15	0.15	0.20	0.20	0.30	0.30	0.30
			Starting	0.45	0.45	0.65	0.65	1.25	1.25	1.25

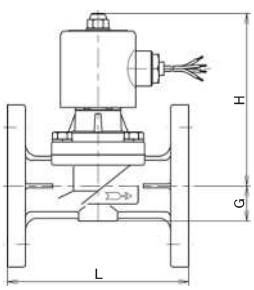
Flange code JIS 16KFF

FIGURATION DRAWING

PS-16, PS-17 Type



PF-16, PF-17 Type

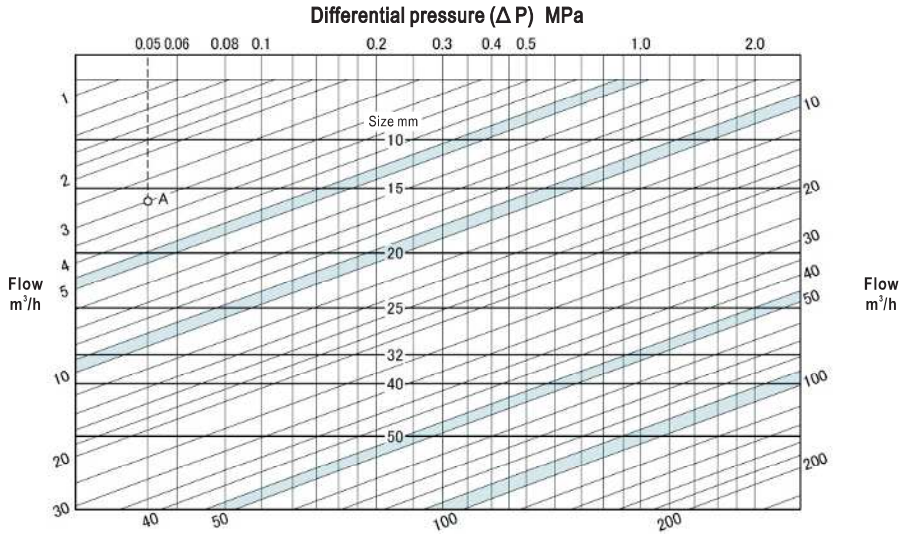


PS-16, PS-17 Type

PF-16, PF-17 Type

DATA/PS-16, PF-16 (for Water), PS-17, PF-17 (for Steam) Type Solenoid Valve

PS-16, PF-16 TYPE SIZE SELECTION CHART (for Water)

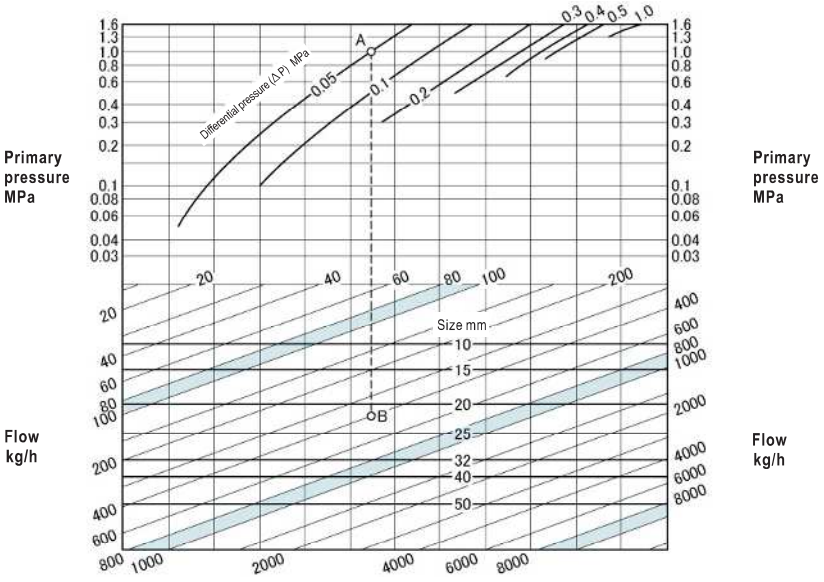


● HOW TO USE THE CHART

Example: Determine the size of valve meeting the following conditions:
Primary pressure: 1.0MPa
Secondary pressure: 0.95MPa
Flow of water: 2m³/h

Differential pressure (Δ P): 1.0−0.95=0.05MPa. Find out the intersection point A between the 0.05MPa differential pressure (Δ P) line and the 3m³/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.

PS-17, PF-17 TYPE SIZE SELECTION CHART (for Steam)



● HOW TO USE THE CHART

Example: Determine the size of valve meeting the following conditions:
Primary pressure: 1.0MPa
Secondary pressure: 0.95MPa
Flow of steam (saturated): 400kg/h
Differential pressure (ΔP) is: 1.0−0.95=0.05MPa. Identify intersection point (A) of the 1.0MPa primary pressure line and the 0.05MPa differential pressure curve. Draw a vertical line from point A until it intersects with the 400kg/h flow line. The intersection point is named B. Since point B is between the 20mm and 25mm size lines, the larger size, which is 25mm, is selected.

DATA/Solenoid Valve

METHOD FOR CONNECTION OF COIL

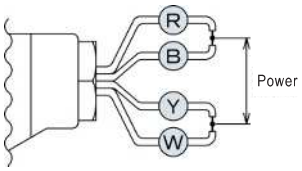
As shown in relevant specification table, different models of solenoid valves have different rated voltages.
When connecting to power, make sure the voltage does not exceed the rated voltage of solenoid valve.

<Common voltage coil>
- Connect the 4 lead wires (in different colors) to power source.

<Exclusive/Special voltage coil>
- Connect 2 lead wires to power source.

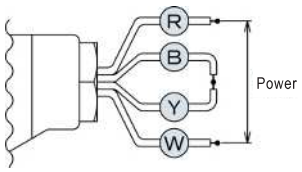
<Frequency selecting coil>
- There are 3 lead wires on coil. Read the connection method shown on product before connecting to power source.
  The lead wire left unused should be insulated by using insulating tape.

AC100/110V



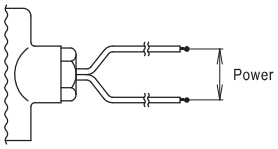
Connect R and B wires, then Y and W wires, before connecting them to power source.

AC200/220V



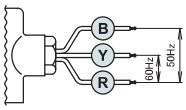
Connect and then insulate Y and B wires. Connect the R and W wires to power source.

W : White
Y : Yellow
B : Black
R : Red

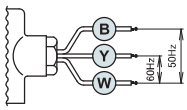


DS-10, 10H, 12, 13,13H Type

AC 100V

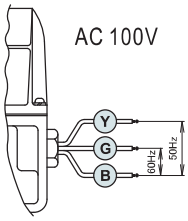


AC200V

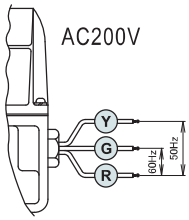


ED-S, F Type

AC 100V



AC200V



W : White
Y : Yellow
B : Black or blue
R : Red
G:Grey

REFERENCE: ABOUT EXPLOSION PREVENTION

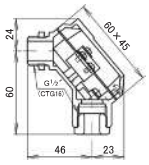
Terminal box specially designed for solenoid valve. Can be screwed in with lead wire of solenoid valve and protect power cable and lead wire from being exposed to rain or dust.
TB-03 series are for outdoor cables and conduit.

An example of TB-03 installation

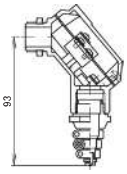
TB-03 TYPE SERIES (for indoor/outdoor, metal body, rainproof)

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

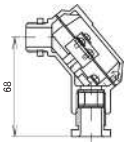
- TB-03 Type(standard model)
  With gland nut



- TB-03C Type
  With cap cone

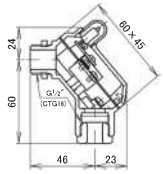


- TB-03F Type
  With ship-class gland

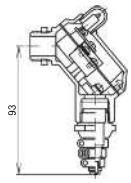


(With indication lamp) Rate power: AC100V or AC200V
Please specify voltage when ordering.

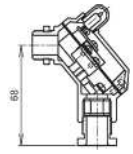
- TB-03L Type
  With indication lamp



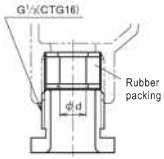
- TB-03LC Type
  Lamp + cap cone



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

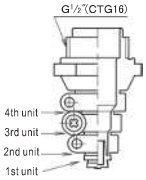


SPECIFICATIONS OF GLAND (TB-03F, 03LF Type)



Gland size	d (mm)
15a	9
15b	10
15c	11

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

■ Fig.1 Piping example

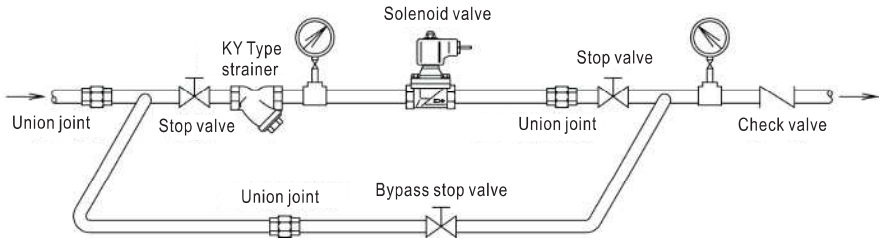
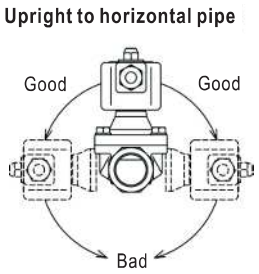


Fig.2 Installation position



■ 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. 3).
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.4).
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 which occurs when valve is closed or due to the expansion caused by ambient temperature increase. In this case, it is recommended to install relief valve to protect machine (see Fig.5).
8. Connect coil properly using 0.75mm^2 above wire. Install fuse to protect electric circuit.
9. Repeated power-on and power-off for a long period may make the surface temperature rise up to about 70℃. Attentions should be paid to avoid burning. (Depending on conditions and models, 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 dissembling 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.3: Elevated piping at secondary side

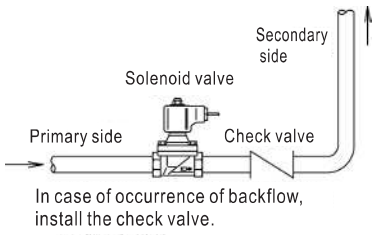


Fig.4 Steam line application

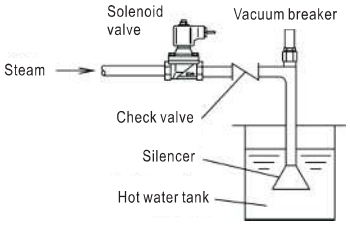
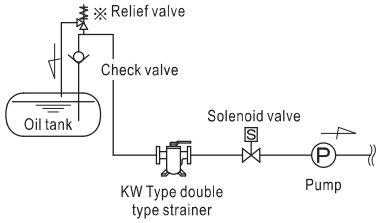


Fig.5 Relief valve installation



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