

# PSE-18, 18A Type Pressure Resistance and Explosion Proof Solenoid Valve

d2G4 pressure resistant and explosion proof structure  
Piston type

PSE-18, 18A is suitable where there is risk of explosion due to explosive gas.

Pilot-operating, durable, piston type solenoid valve suitable for oil.

### FEATURES

- Suitable for dangerous place with risk of explosion.
- Manual operating unit allows test run and manual operation at times of power failure.
- Easy installation and wiring by changing the direction of screw for cable tube.

### SPECIFICATIONS

Operation	Energized open		
Type	Straight		Angle
Model name	PSE-18		PSE-18A
Code name	PSE18-J1	WSE18-J2	PSE18A-J
Applicable fluid	Oils(Kerosene, light oil, A class heavy oil & gasoline), gases, air & water		
Applicable pressure	0.02~1.0MPa		
Min. pressure differential across the disc	0.02MPa		
Fluid temperature	5~60°C		
Fluid viscosity	50cSt or less		
Leakage allowance	Nil (Confirm at pressure gauge)		
Rated voltage	AC100/110V 50/60Hz	AC200/220V 50/60Hz	AC100/110V 50/60Hz or AC200/220V 50/60Hz
Insulation	Class H (Epoxy mold)		
Ambient temperature	5~50°C		
Protection	Pressure resistance and explosion proof d2G4		
End connection	Screwed JIS Rc		Screwed JIS R
Materials	Body(Cast bronze), Disc(Stainless steel with Teflon)		
Installation	Install the valve vertically in horizontal piping placing coil part above.		
Valve body pressure test	Hydraulic 2.0MPa		

### CURRENT VALUES

(A)

Voltage	AC100V		AC110V		AC200V		AC220V		
	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	
Current value	Rated	0.16	0.13	0.19	0.15	0.08	0.07	0.08	0.08
	Starting	0.27	0.25	0.30	0.25	0.14	0.13	0.15	0.13

### DIMENSIONS (PSE-18 Type)

(mm)

Size	d	L	H	G	A	B	Port size	Cv value	Mass(kg)
15(1/2")	1/2"	110	166	16	27	125	18	5	2.2
20(3/4")	3/4"	110	166	16	27	125	18	6	2.2
25(1")	1"	120	171	21	30	130	23	11	2.4
32(1 1/4")	1 1/4"	135	180	25	35	139	28	15	3.3
40(1 1/2")	1 1/2"	145	187	29	38	146	32	20	3.9
50(2")	2"	170	199	35	46	158	40	27	5.4

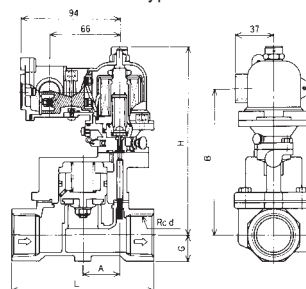
### DIMENSIONS (PSE-18A Type)

(mm)

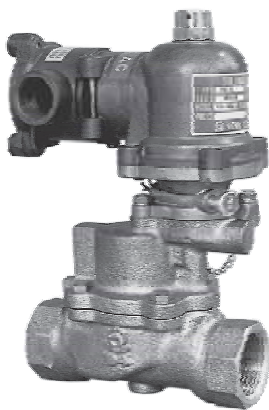
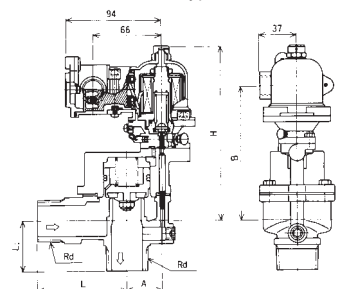
Size	d	L	L <sub>1</sub>	H	A	B	Port size	Cv value	Mass(kg)
15(1/2")	1/2"	65	40	161	27	120	18	5	2.1
20(3/4")	3/4"	65	40	161	27	120	18	6	2.1
25(1")	1"	71	40	164	30	123	23	11	2.3
32(1 1/4")	1 1/4"	88	50	173	35	132	28	15	3.2
40(1 1/2")	1 1/2"	95	53	179	38	138	32	20	3.8
50(2")	2"	101	57	189	46	148	40	27	5

### CONSTRUCTION

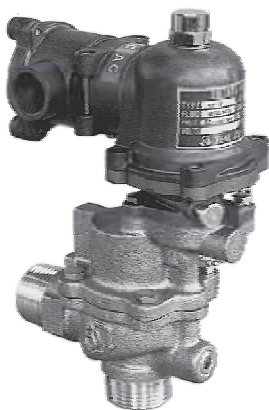
PSE-18 Type



PSE-18A Type



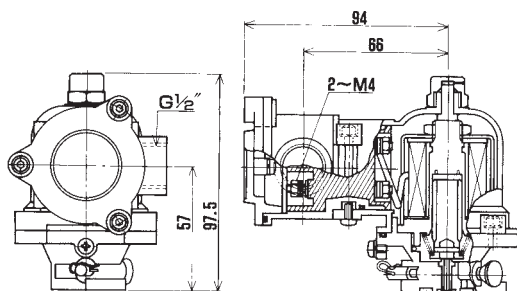
PSE-18



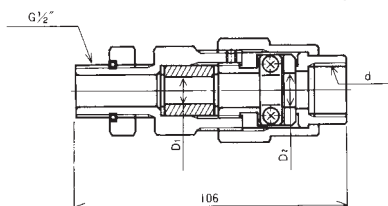
PSE-18A

# DATA/WSE, PSE Type Pressure Resistance and Explosion Proof Solenoid Valve

## ■ PRESSURE RESISTANT AND EXPLOSION PROOF SOLENOID PART



## ■ PRESSURE RESISTANT GLAND PACKING (TG type optional item)



## ■ DIMENSIONS

(mm)

Compellation	Size	d	D <sub>1</sub>	D <sub>2</sub>	Diameter of outside conductor
TG type P2	16 16	G $\frac{1}{2}$ "	10.5	13	9-10.5
TG type P3	16 22	G $\frac{3}{4}$ "	11	14	10-11
TG type P5	16 22	G $\frac{3}{4}$ "	13	14	11-12

## REFERENCE: ABOUT EXPLOSION PREVENTION

The Occupational Health and Safety Law and relevant regulations in Japan require utilization of electric equipments/tools that are explosion proof in places where there is risk of explosion.

## ■ EXPLOSION PROOF MARK OF WSE, PSE SERIES SOLENOID VALVE

d 2 G4

Ignition temperature: G4  
 Explosion degree: 2  
 Type of explosion proof structure:  
 d=pressure resistant and explosion proof structure

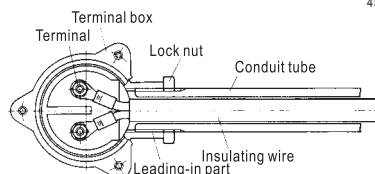
## ■ CONNECTING EXTERNAL LEAD AND TERMINAL BOX

### 1. Conduit tube pressure resistant screw connection

Fix the conduit tube using screw at the leading-in part of the wire. The wire should be insulating wire.

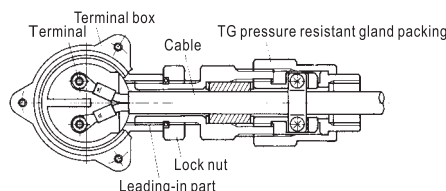
As for the connection between conduit tube and terminal box, use parallel screw for conduit as specified in JIS B0202, and screw in effective part of the screw for at least 5 threads, then fix the conduit tube as tightly as possible using lock nut.

Note: Install sealing fitting for the part 45cm from the leading-in part.



### 2. Pressure resistant packing connection

Apply packing on the leading-in part of external wire and cable on the wire. Put TG pressure resistant gland packing on the leading-in part of wire, screw in the effective part of the screw for at least 5 threads, fix as tightly as possible using a lock nut, and then tighten the pressure resistant packing to fix the cable.



## ■ TABLE FOR EXAMPLE OF CLASSIFICATION FOR EXPLOSION CLASS, IGNITION LEVEL AND FUEL GASES.

Explosion class	Ignition level		G1	G2	G3	G4	G5	G6
	B	A	Over 450°C	300~450°C	200~300°C	135~200°C	100~135°C	85~100°C
1	Over 0.6mm		Acetone, Ammonia, Carbon monoxide, Ethane, Acetic acid, Ethyl acetate, Toluene, Propane, Benzene, Methanol, Methane	Ethanol, Isopentyl acetate, 1-Butanol, Butane, Acetic anhydride	Gasoline, Hexane	Acetaldehyde, Ethyl ether		
2	0.4~0.6mm		Coal gas	Ethylene, Ethylene oxide				
3	0.4mm or less		Water gas, Hydrogen	Acetylene			Carbon disulfide	

A: Ignition temperature B: Minimum spacing (at depth 25) allowing transmission of flame □: The range of application of WSE, PSE series

## ■ HAZARDOUS AREA CLASSIFICATION AND LOCATIONS FOR UTILIZATION OF PRESSURE RESISTANT AND EXPLOSION PROOF SOLENOID VALVE

**Hazardous area:** An area, such as a factory workshop, where large amount of explosive gas is mixed with air and forms a hazardous atmosphere and there is risk of explosion. According to the period and frequency of existence of hazardous atmosphere, hazardous area can be divided into three categories:

**Category 0 area:** Under normal conditions, hazardous atmosphere exists continuously or a long period.

### Pressure resistant and explosion proof structure:

A fully airtight structure that can bear the pressure generated by explosion of gas inside the structure and cannot be ignited by explosive gas from outside of the structure.

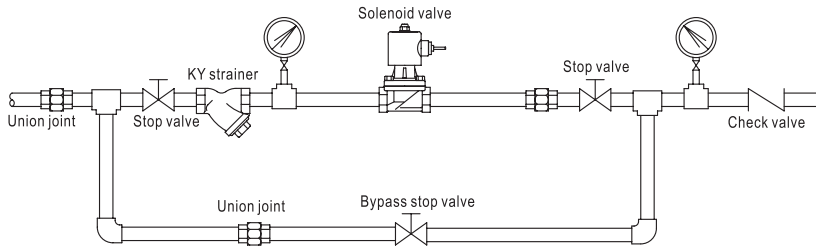
**Category 1 area:** Under normal conditions, there is risk of formation of hazardous atmosphere.

**Category 2 area:** Under abnormal conditions, there is risk of formation of hazardous atmosphere.

Pressure resistance and explosion proof solenoid valve is suitable for applications in category 1 area and 2 area dangerous places.

# 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 0.75mm<sup>2</sup> 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

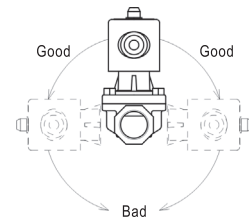


Fig.3 Steam line application

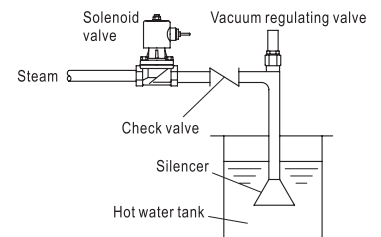
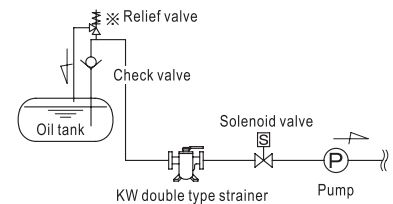


Fig.4 Relief valve installation



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