

# Series PS Pilot-Operated Solenoid Valves

## Operation, Installation & Maintenance Instructions

### OPERATION SPECIFICATIONS

All Series "PS" Solenoid Valves are pilot-operated, 2-way, normally-closed valves. They require a minimum line pressure and minimum differential pressure to open and close. When the solenoid coil is de-energized, upstream pressure atop the diaphragm holds the valve closed. When the coil is energized, flow through the pilot valve creates a pressure difference across the diaphragm which opens the main valve orifice. These valves have 11-watt coils and can be energized continuously.

Although these valves are normally-closed, positive, leak tight sealing requires a small inlet pressure. A minimum inlet pressure of 5 PSI is recommended.

These valves should open fully at 5 PSI differential and higher. "PS" valves have very high Cv-factors. If process flow rates do not maintain 5 psid, the valve will not stay fully open, which means the pressure drop may be higher and the Cv-factor lower than anticipated. This should not adversely affect valve performance.

### VALVE PRESSURE RATINGS

Maximum and minimum pressure ratings and minimum pressure differential (for rated Cv) are tabulated below. **CAUTION:** Exceeding maximum inlet and/or outlet pressures may damage the valve and cause malfunction.

PRESSURE	PSI	BAR
Maximum Inlet @ 75°F (24°C)	140	9,7
Maximum Inlet @ 140°F (60°C)*	40	2,8
Minimum Inlet	5	0,4
Maximum Outlet @ 75°F (24°C)	70	4,8
Maximum Outlet @ 140°F (60°C)*	35	2,4
Minimum Differential	5	0,4

\*This rating is for PVC, for other materials consult factory  
Minimum temperature is 40°F.

### FAIL-DRY® DESIGN

All Series "PS" Solenoid Valves utilize the unique Plast-O-Matic patented Fail-Dry® safety design which features a vented chamber separating two (2) sealed sections of the valve body. This concept is extremely important for solenoid valves used in the chemical processing industry. It protects the metal operating components from corrosion that could cause valve failure and offers a warning of valve leakage before valve failure occurs.

### INSTALLATION INSTRUCTIONS

Please check the label located on the body for correct part number, pressure rating, voltage and to insure proper flow direction. Plast-O-Matic solenoid valves operated by 11-watt coils can be mounted horizontally or vertically; however, vertical mounting (coil up) is preferred since it results in longer cycle life.

**WARNING:** Do not energize coil unless it is installed properly on the valve

Valves should *NEVER* be mounted with coils on the bottom. When installing these valves in a piping system they should only be connected to plastic fittings. All male threads should be wrapped with PTFE tape or other acceptable pipe sealant. To prevent stringing of the PTFE tape onto the inner workings of the valves, be sure to keep the tape at least one full thread from the end of the pipe.

Whenever PTFE tape or other pipe sealants are used there is a tendency to over-torque because of the reduced friction. Therefore, connections should only be made hand-tight followed by a one-quarter turn more. Greater forces tend to stretch or distort the plastic bodies which can lead to future ruptures. Strap wrenches may be used for assembly. Metal pipe wrenches should *NEVER* be used as they can deeply scratch the plastic surfaces causing additional stresses.

Wiring should comply with all applicable electrical codes, local or otherwise. Care should be taken to insure that the solenoid coil leads cannot be pulled from the coil. If flexible conduit is not used to connect to the solenoid housing the supply conduit must be properly aligned and supported to prevent stressing the solenoid assembly.

### MAINTENANCE

The major causes of solenoid valve failure are usually either chemical incompatibility, damage from water hammer or foreign matter in the valve. Commonly encountered foreign matter includes pipe sealants, mineral and salt deposits, and other solids.

Before disassembling a valve for examination or cleaning make sure all electrical power and fluid line pressure are turned off. It should be noted that even after a pump is shut down to eliminate fluid line pressure there may still be pressure trapped in the piping system. One example of this would be head pressure located in a vertical run of pipe. If this situation is possible, extreme caution should be exercised when removing the top housing from the valve body. It would be advisable to place a clear plastic shield over the valve during disassembly to avoid injuring a worker.

**CAUTION:** Avoid breathing dangerous vapors and avoid skin contact with chemicals.

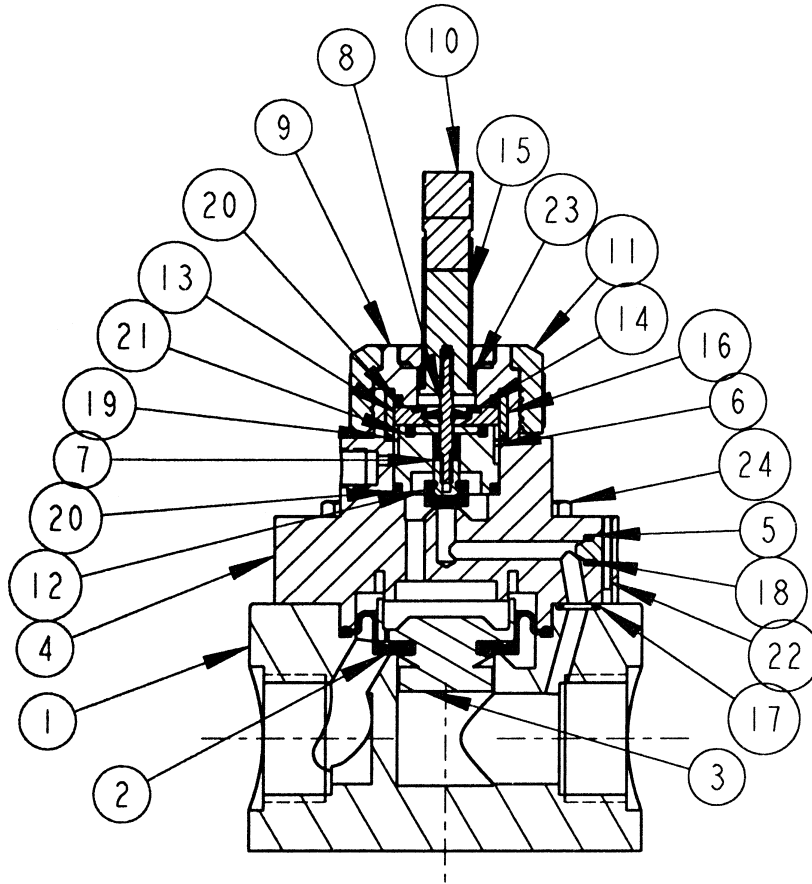
Whenever disassembling a valve it is wise to carefully inspect all of the parts to insure proper operation when it is reassembled. It is also a good idea to have a spare seal kit on hand. The seal kit part number is the valve part number preceded by "SK". Example: The seal kit for PS050EP11-CP is SKPS050EP11-CP.

When removing foreign matter or deposits on the valve seat or other internal parts, care should be taken not to scratch or nick the parts being cleaned.

After reassembly, operation should be checked by energizing the solenoid coil. If the valve is operating properly, a sharp metallic click will usually be heard when the valve's coil is energized.

Fail Dry® is a registered trademark of Plast-O-Matic Valves, Inc.

## Series PS Pilot-Operated Solenoid Valve Illustration and Parts List



ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	BODY	*13	1	HOLDER, DIAPHRAGM
*2	1	DIAPHRAGM, ROLLING	*14	1	DIAPHRAGM
*3	1	SUPPORT, DIAPHRAGM	*15	1	CORE (PLUNGER)
4	1	BODY, THREADED	16	1	SLEEVE, BODY ( <i>PVC Valves ONLY</i> )
*5	1	PLUG	*17	1	O-RING
*6	1	HOLDER, BELLOWS	*18	1	O-RING
*7	1	BELLOWS, PTFE	*19	1	O-RING ( <i>PVC Valves ONLY</i> )
*8	1	ROD, CONNECTING	*20	2	O-RING
9	1	HOUSING, CORE TUBE	*21	1	O-RING
10	1	ASSEMBLY, CORE-TUBE-FLANGE	*22	1	ROLL PIN
11	1	NUT, UNION	*23	1	SPRING - COMPRESSION
*12	1	CAP, SEAT	24	4	CAP SCREW, HEX HEAD

*Items shown with \* are seal kit parts*

For Part Numbers of each size and material, refer to Parts List #6815

NOTE: For any questions regarding valve, applications and product guarantee, contact Plast-O-Matic Valves Inc.