

# INSTALLATION AND MAINTENANCE INSTRUCTIONS

2-WAY INTERNAL PILOT – PISTON TYPE  
AIR OPERATED VALVE – PNEUMATIC OPERATOR CONTROLLED  
NORMALLY CLOSED – 1/4 - 3/8 - 1/2 N.P.T. – 3/8 ORIFICE – "Y" TYPE BODY

BULLETIN

P222

ASCO®

## DESCRIPTION

Bulletin P222 valves are 2-way, normally closed, piston type valves with pilot operated by a pneumatic operator, controlled from a separate source. Main valve has just one (1) moving part - a piston. Pneumatic operator has two (2) moving parts - piston assembly and stem/disc.

## OPERATION

### PNEUMATIC OPERATOR (Refer to Figure 1)

Auxiliary pressure is applied to or exhausted from pneumatic operator via 1/8 N.P.T. connection. When pressure is applied to the pneumatic operator, the stem/disc is raised, opening the pilot. When the pneumatic operator is depressurized, the stem/disc is lowered by spring force, closing the pilot.

**NOTE:** Pressure to the pneumatic operator must be within 50-125 P.S.I. range.

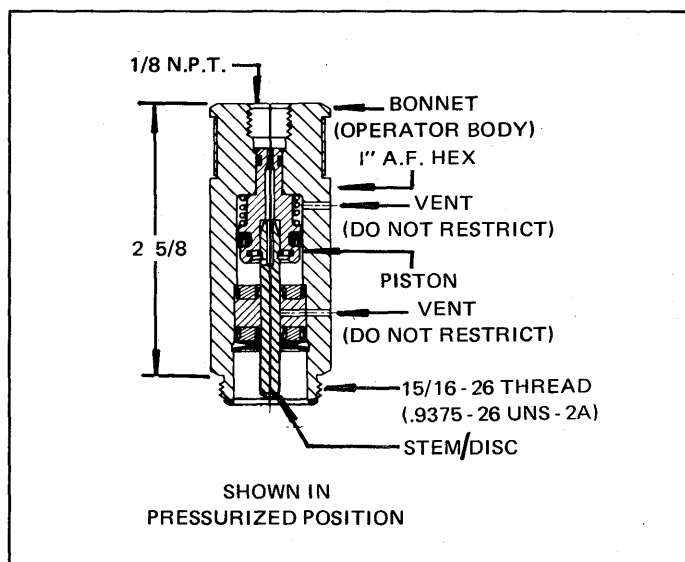


Figure 1.

### MAIN VALVE (Normally Closed)

Normally closed valves are closed when pneumatic operator is depressurized and open when pneumatic operator is pressurized.

**IMPORTANT:** Minimum operating pressure differential is 1 P.S.I.

## INSTALLATION

Check nameplate for correct catalog number, pressure and service.

### POSITIONING

Valve may be mounted in any position.

### PIPING

Connect piping to valve according to flow markings on valve body. Apply pipe compound sparingly to male pipe threads only; if applied to valve or operator threads, it may enter valve or operator and cause operational difficulty. Pipe strain should be avoided by proper support and alignment of piping. When tightening pipe, do not use valve as a lever. Wrenches applied to valve body or piping are to be located as close to connection point as possible.

**IMPORTANT:** For protection of the valve, install a strainer or filter suitable for the service involved in the inlet side as close to the valve as possible. Periodic cleaning is required, depending on the service conditions. See Bulletins 8600, 8601 and 8602 for strainers.

## MAINTENANCE

**WARNING:** Turn off auxiliary pressure and line pressure to valve before making repairs. It is not necessary to remove valve from pipe line for repairs but auxiliary air supply must be disconnected.

### CLEANING

A periodic cleaning of all valves is desirable. However, the pneumatic operator assembly should only be disassembled when malfunction or leakage occurs, and must be rebuilt with a Spare Parts Kit. The time between cleanings will vary, depending on the media and service conditions. In general, sluggish valve operation or excessive leakage will indicate that cleaning is required.

## PREVENTIVE MAINTENANCE

1. Keep medium flowing through valve as free from dirt and foreign material as possible.
2. While in service, operate valve at least once a month to insure proper opening and closing.
3. Periodic inspection (depending on media and service conditions) of internal valve parts for damage or excessive wear is recommended. However, the pneumatic operator assembly should only be disassembled when malfunction or leakage occurs and must be rebuilt with a Spare Parts Kit. Thoroughly clean all main valve parts. Replace any parts that are worn or damaged.

## IMPROPER OPERATION

1. **Pneumatic Operator:** Check line pressure to pneumatic operator.
2. **Incorrect Pressure:** Check pressure at the main valve. Pressure must be within range indicated on nameplate.
3. **Excessive Leakage:** Disassemble valve and clean all parts. Replace parts that are worn or damaged with a complete Spare Parts Kit for best results.

## PNEUMATIC OPERATOR DISASSEMBLY (Refer to Figure 2)

Depressurize pneumatic operator and main valve.

1. Disconnect pipe or tubing from 1/8 N.P.T. connection on top of bonnet (operator body).
2. Unscrew bonnet (operator body) from valve.
3. Remove bonnet gasket.
4. Disassemble valve stem/disc as follows:  
Pneumatic Operator - With piston in relaxed position (down) clutch stem securely and pull. Stem will pull free from retaining ring in piston. **CAUTION:** Retaining ring (in piston) must be replaced whenever operator is disassembled.
5. Remove retaining ring (seal assembly) and two (2) Belleville washers to facilitate removal of seal assembly.
6. Spring on piston should press piston and seal sub-assembly out of bonnet (operator body). If additional force is required to extract sub-assembly, use plastic or other nonmarring rod thru 1/8 N.P.T. connection to exert force on top of piston.
7. Remove external 'U' cup lip seal and piston gasket from piston sub-assembly.
8. All parts and passageways are now accessible for cleaning or replacement. Replace worn or damaged parts with a complete Spare Parts Kit.

## PNEUMATIC OPERATOR REASSEMBLY (Refer to Figure 2)

1. Clean all parts and passageways thoroughly.
2. Lubricate all rubber parts with Dow Corning's Valve Seal or equivalent silicone grease.
3. Reassemble parts in reverse order of disassembly. Parts should be installed in the same cavity from which they were removed. **CAUTION:** Piston 'U' cup lip seal - lip end must face down (towards seal sub-assembly). Slip assembly into bonnet (operator body). **CAUTION:** Be certain gasket (piston) and spring are in place before inserting piston sub-assembly.
4. After assembly of piston sub-assembly and seal sub-assembly, slide stem thru I.D. Press further until stem engages in piston and is locked securely in place by piston retaining ring. **CAUTION:** Retaining ring (in piston) must be replaced whenever operator is disassembled.
5. Place bonnet gasket ('O' ring) in body recess and thread complete operator assembly into body.

## VALVE DISASSEMBLY (Refer to Figure 2)

Depressurize pneumatic operator and main valve.

1. Disconnect pipe or tubing from 1/8 N.P.T. connection on top of bonnet (operator body).
2. Unscrew bonnet (pneumatic pilot operator) including stem/disc and bonnet gasket ('O' ring) respectively.
3. Remove piston stop.
4. A 6-32 machine screw (provided in Spare Parts Kits) serves as a self-tapping screw to remove piston from body. Thread screw a few turns in large hole located in flat surface of piston. Remove piston assembly by using a pair of pliers on the head of the screw. **CAUTION:** Do not damage center hole (pilot orifice) in flat surface of piston or piston in any way.
5. Remove piston rings from piston assembly.
6. All internal parts are now accessible for cleaning or replacement. Replace worn or damaged parts with a complete Spare Parts Kit for best results.

## VALVE REASSEMBLY (Refer to Figures 2 and 3)

1. Reassemble in reverse order of disassembly paying careful attention to exploded views provided for identification and placement of parts.
2. When replacing piston, care should be taken to see that the piston rings are properly located in the piston. To prevent damage, compress the piston rings when preassembling piston in cylinder. Wrap .003 thick plastic sheet, supplied in Spare Parts Kit, around circumference of piston/piston ring assembly to compress piston rings. Slip assembly into valve body and slide out plastic sheet and discard. Be sure there is free movement of the piston assembly when installed in the cylinder.  
**CAUTION:** Do not damage piston rings or piston by forcing piston assembly into valve.

ASCO Valves

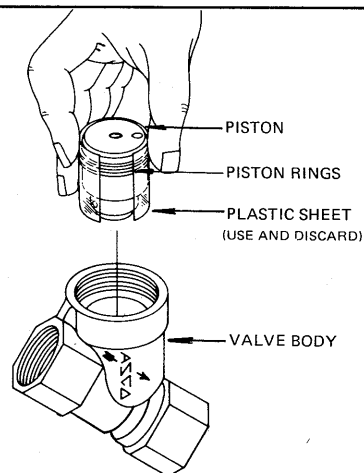
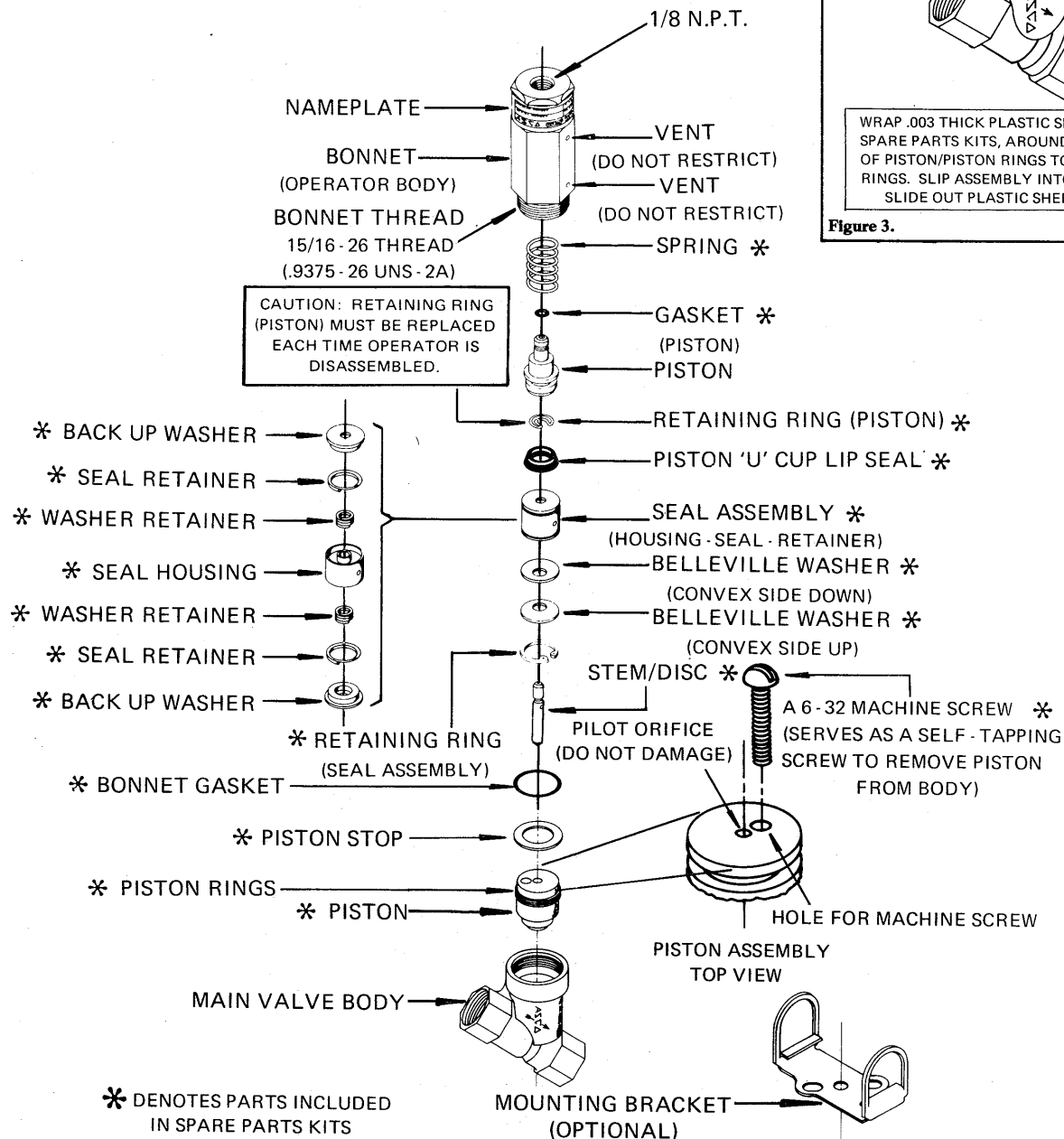
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## SPARE PARTS KITS

Spare Parts Kits are available for ASCO valves.  
Parts marked with an asterisk (\*) are supplied in Spare Parts Kits.

### ORDERING INFORMATION FOR SPARE PARTS KITS

When Ordering Spare Parts Kits  
Specify Valve Catalog Number  
and Serial Number.



WRAP .003 THICK PLASTIC SHEET, SUPPLIED IN SPARE PARTS KITS, AROUND CIRCUMFERENCE OF PISTON/PISTON RINGS TO COMPRESS PISTON RINGS. SLIP ASSEMBLY INTO VALVE BODY AND SLIDE OUT PLASTIC SHEET AND DISCARD.

Figure 3.

BULLETIN P222  
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Figure 2.