

# INSTALLATION & MAINTENANCE INSTRUCTIONS

**ASCO**<sup>®</sup>

BULLETIN

F210

Form No. V6318

## 2-WAY INSTRUMENT AIR OPERATED NORMALLY CLOSED AND NORMALLY OPEN STAMPED PISTON VALVES, 2" NPT

### DESCRIPTION

Bulletin F210's are 2-way internal pilot operated valves with an instrument air operator controlled from a separate source. The main valve is made of brass. Valves have an adjustable bleed device which allows adjustment of the piston's operating speed.

### OPERATION

Minimum operating pressure differential is 5 psi. Auxiliary air pressure is applied to the operator through the 1/8" NPT connection. When this pressure is applied to a Normally Closed valve, the disc holder lifts off its pilot seat, venting the area behind the piston. The line pressure then lifts the piston, opening the valve. When the auxiliary pressure is removed, the disc holder reseats and line pressure builds up behind the piston, causing it to close the valve.

In a Normally Open valve, main line pressure keeps the valve open. Auxiliary pressure applied to the operator closes the disc holder assembly against the pilot seat; line pressure builds up behind the piston, causing it to close the valve.

### ADJUSTABLE BLEED DEVICE (Refer to Figures 1 & 2)

The bleed adjusting screw (metering pin) is factory set to provide quick, shockless closing for most applications. If faster or slower closing is required, adjust the screw (metering pin) as follows:

1. Turn metering pin in as far as possible (clockwise) without over-tightening. Back out metering pin (counterclockwise) two complete turns. From this point, adjustment may be made to suit the system.
2. Turn metering pin clockwise to reduce closing speed.
3. Turn metering pin counterclockwise to increase closing speed.

### INSTALLATION

Check nameplate for correct catalog number, pressure and service. NOTE: Pressure to the operator must be within 3-30 psi range.

### POSITIONING

These valves are designed to perform properly when mounted in any position. However, for optimum life and performance, the operator should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the air operator assembly.

### PIPING

Connect piping to valve according to markings on valve body. Apply pipe compound sparingly to male pipe threads only. If applied to valve threads the compound may enter the valve and cause operational difficulty. Avoid pipe strain by properly supporting and aligning piping. When tightening the pipe, do not use valve or air operator as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point.

**IMPORTANT:** To protect the air operator, install a strainer or filter, suitable for the service involved, in the inlet side as close to the operator as possible. Clean periodically depending on service conditions. See ASCO 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 the valve from the pipeline for repairs, but auxiliary piping or tubing must be disconnected.

### CLEANING

All valves should be cleaned periodically. The time between cleanings will vary depending on the medium and service conditions. In general,

sluggish valve operation or excessive leakage will indicate that cleaning is required. Clean valve strainer or filter when cleaning the valve. The air operator should be disassembled only when malfunction or leakage occurs, and must be reassembled using parts from an ASCO Rebuild Kit.

### PREVENTIVE MAINTENANCE

1. Keep the medium flowing through the valve as free from dirt and foreign material as possible.
2. While in service, the valve should be operated at least once a month to insure proper opening and closing.
3. Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. If any parts are worn or damaged, all parts supplied in an ASCO Rebuild Kit should be replaced.

### CAUSES OF IMPROPER OPERATION

1. **Instrument Air Operator:** Check line pressure to operator.
2. **Incorrect Pressure:** Check pressure at the main valve. Pressure must be within range specified on nameplate.
3. **Excessive Operator Leakage:** If excessive external leakage exists, replace operator assembly.
4. **Excessive Valve Leakage:** Disassemble valve (see MAINTENANCE) and clean all parts. If any parts are worn or damaged, all parts supplied in an ASCO Rebuild Kit should be replaced.

### INSTRUMENT AIR OPERATOR DISASSEMBLY

#### NORMALLY CLOSED CONSTRUCTION (Refer to Figure 1)

Depressurize operator and main valve.

1. Disconnect pipe or tubing from 1/8" NPT elbow connection beneath operator assembly.
2. Remove elbow fitting from operator assembly.
3. Unscrew operator from valve.
4. Remove disc holder assembly, spring and bonnet gasket.
5. All parts and passageways are now accessible for cleaning. If any parts are worn or damaged, all parts supplied in an ASCO Rebuild Kit should be replaced.

### INSTRUMENT AIR OPERATOR REASSEMBLY

1. Clean all parts and passageways thoroughly.
2. Lubricate all rubber parts and inside diameters of bonnet with DOW CORNING<sup>®</sup> 111 COMPOUND lubricant or an equivalent high-grade silicone grease.
3. Reassemble spring, disc holder assembly and bonnet gasket O-ring into valve body recess. Thread the complete operator assembly into valve body recess and torque to  $175 \pm 25$  inch-pounds ( $19.8 \pm 2.8$  newton-meters). Apply a suitable thread-sealing compound or tape to the male thread of the elbow fitting and tighten fitting into connector on the operator assembly.

### INSTRUMENT AIR OPERATOR DISASSEMBLY

#### NORMALLY OPEN CONSTRUCTION (Refer to Figure 2)

Depressurize air operator and main valve.

1. Disconnect pipe or tubing from 1/8" NPT connection on top of operator assembly.
2. Unscrew operator from valve.
3. Remove disc holder assembly, spring and bonnet gasket.
4. All parts and passageways are now accessible for cleaning. If any parts are worn or damaged, all parts supplied in an ASCO Rebuild Kit should be replaced.

Form No. V6318

**ASCO Valves**

**ASCO**

Printed in U.S.A.

Automatic Switch Co. 50-60 Hanover Road, Florham Park, New Jersey 07932

© Automatic Switch Co. MCMLXXXIV. All Rights Reserved.

### INSTRUMENT AIR OPERATOR REASSEMBLY

1. Clean all parts and passageways thoroughly.
2. Lubricate all rubber parts and inside diameters of bonnet with DOW CORNING® 111 Compound lubricant or an equivalent high-grade silicone grease.
3. Reassemble spring, disc holder assembly and bonnet gasket O-ring into valve body recess. Thread the complete operator assembly into valve body recess and torque to  $175 \pm 25$  inch-pounds ( $19,8 \pm 2,8$  newton-meters).

### MAIN VALVE DISASSEMBLY (Refer to Figures 1 & 2)

#### Depressurize air operator and main valve.

1. Disconnect piping or tubing from 1/8" NPT connection located on operator.
2. Unscrew and remove operator. Lift out disc holder assembly and spring before removing bonnet gasket.
3. For normal maintenance it is not necessary to remove the valve seat. However, if removal is required, use a 7/16" socket wrench.
4. Dislodge retainer from metering pin passageway. Remove metering pin with gasket by turning it counterclockwise. Remove gasket from metering pin.
5. Remove (6) bonnet screws, valve bonnet, piston spring, piston assembly support, lip seal, body gasket and body passage gasket.
6. Remove aspirator tube and disc from piston.
7. All parts are now accessible to clean or replace. If any parts are worn or damaged, all parts supplied in an ASCO Rebuild Kit should be replaced.

### MAIN VALVE REASSEMBLY

1. Reassemble in reverse order of disassembly. Use exploded views for identification and placement of parts.
2. Lubricate all gaskets with DOW CORNING® 111 Compound lubricant or an equivalent high-grade silicone grease.
3. Position body gasket, body passage gasket and support in valve body.
4. Install aspirator kit in piston.
5. Hold the lip seal in your hands and flatten it out using the fingers. The lip seal is made of a resilient material which will reform easily to its original shape. Flattening it out tightens the gap between the piston and the lip seal when it is reassembled. Position lip seal, flanged end up, onto piston assembly.
6. Install piston assembly with lip seal into valve body cavity.
7. Replace piston spring, valve bonnet and bonnet screws. Torque bonnet screws in a crisscross manner to  $144 \pm 15$  inch-pounds ( $16,3 \pm 1,7$  newton-meters).
8. Replace valve seat with a small amount of thread compound on the seat threads. Torque valve seat to  $65 \pm 15$  inch-pounds ( $7,3 \pm 1,7$  newton-meters).
9. Install bonnet gasket and air operator assembly. The bonnet gasket, disc holder assembly and spring must be inserted in main body recess before replacing air operator. Torque operator bonnet to  $175 \pm 25$  inch-pounds ( $19,8 \pm 2,8$  newton-meters).
10. Install metering pin with gasket into valve body. Replace retainer and refer to "Adjustable Bleed Device" section for metering pin adjustment.
11. After completing maintenance, operate the valve a few times to be sure of proper operation.

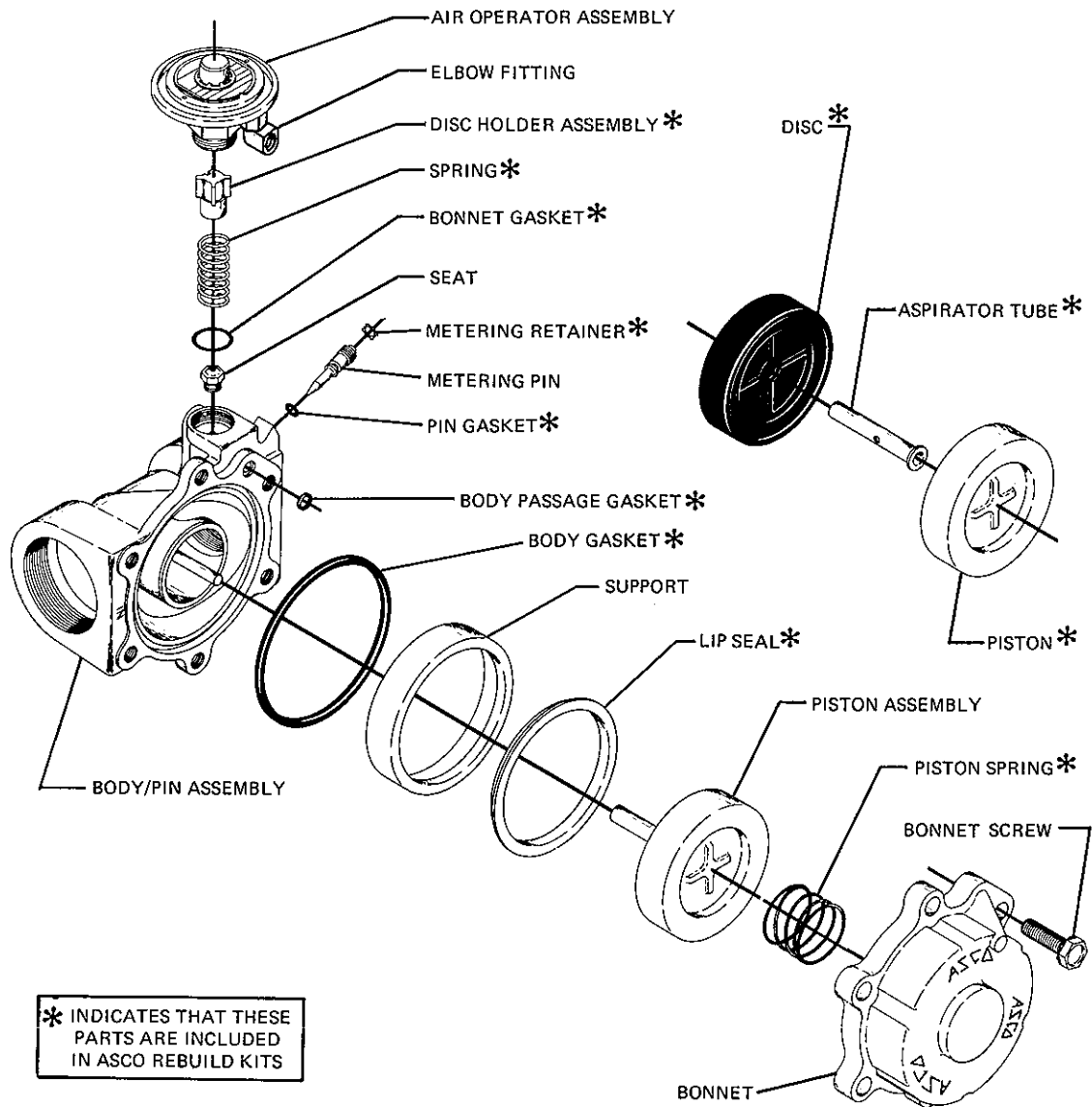
### ASCO REBUILD KITS

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

#### ORDERING INFORMATION FOR REBUILD KITS

When Ordering Rebuild Kits,  
Specify Valve Catalog Number  
and Serial Number.

TORQUE VALUES		
PART NAME	INCH-POUNDS	NEWTON METERS
Operator Bonnet	175 ± 25	19,8 ± 2,8
Bonnet Screws	144 ± 15	16,3 ± 1,7
Seat	65 ± 15	7,3 ± 1,7



\* INDICATES THAT THESE PARTS ARE INCLUDED IN ASCO REBUILD KITS

Figure 1  
Bulletin F210  
2-Way Instrument Air Operated Valve  
Normally Closed - 2" NPT

TORQUE VALUES		
PART NAME	INCH-POUNDS	NEWTON METERS
Operator Bonnet	175 ± 25	19,8 ± 2,8
Bonnet Screws	144 ± 15	16,3 ± 1,7
Seat	65 ± 15	7,3 ± 1,7

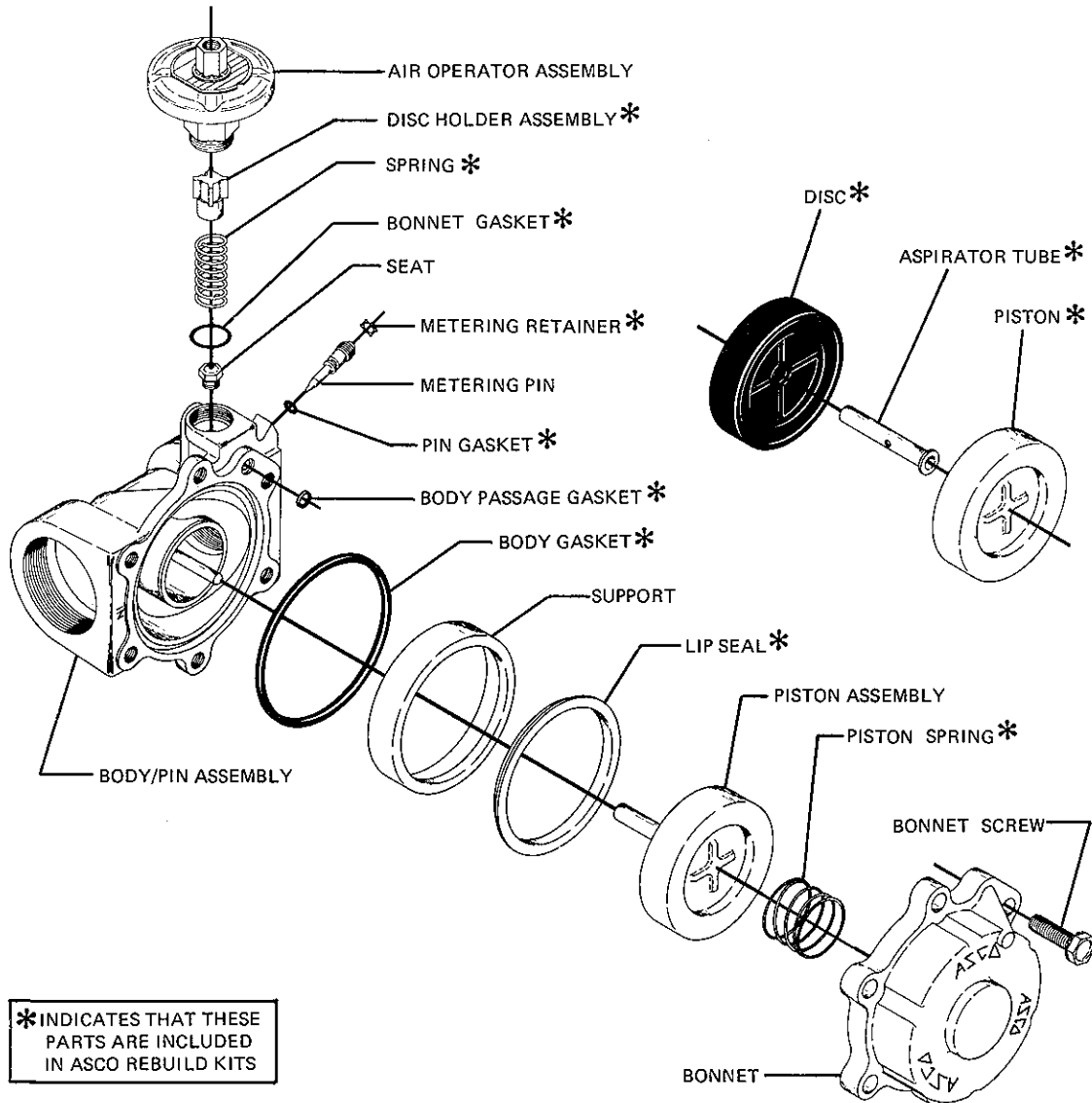


Figure 2  
 Bulletin F210  
 2-Way Instrument Air Operated Valve  
 Normally Open - 2" NPT