

# Operating Manual

**Model: 119-5**

**Size: "**

**Serial #:**

**Sales Order :**

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**Global** performance. **Personal** touch.

## **combination:**

- **rate of flow control**
- **slug control valve**

## **installation, operating and maintenance instructions**

### **model 119-5**

#### **GENERAL DESCRIPTION**

The OCV Model 119-5 is special fuel system valve designed for use on the discharge of a filter separator. Working in conjunction with any of the OCV Series 800 interface float pilots, the 119-5 performs the following functions:

1. Opens to allow fuel flow when there is little or no water in the sump of the filter separator.
2. Prevents the flow through the filter separator from exceeding a predetermined rate.
3. Closes tightly to prevent flow when a high water level is reached.

The 119-5 consists of the following components, arranged as shown on the schematic diagram.

1. **Model 65 Basic Valve Assembly**, a hydraulically-operated, diaphragm-actuated globe-style valve which closes with an elastomer-on-metal seal.
2. An orifice plate, integrally mounted in the flange of the valve, which senses a differential pressure proportional to flow rate.
3. **Model A224 Accelerator Pilot**, which receives the hydraulic signals from the interface float pilot and solenoid pilot and shifts to either open or close the main valve.
4. **Model 2450 Rate of Flow Control Pilot**, a two-way, normally-open pilot valve which senses the differential across the orifice plate (item 2) and balances it against an adjustable spring load. If the differential, hence the flow rate, exceeds the set point, the pilot tends to close.

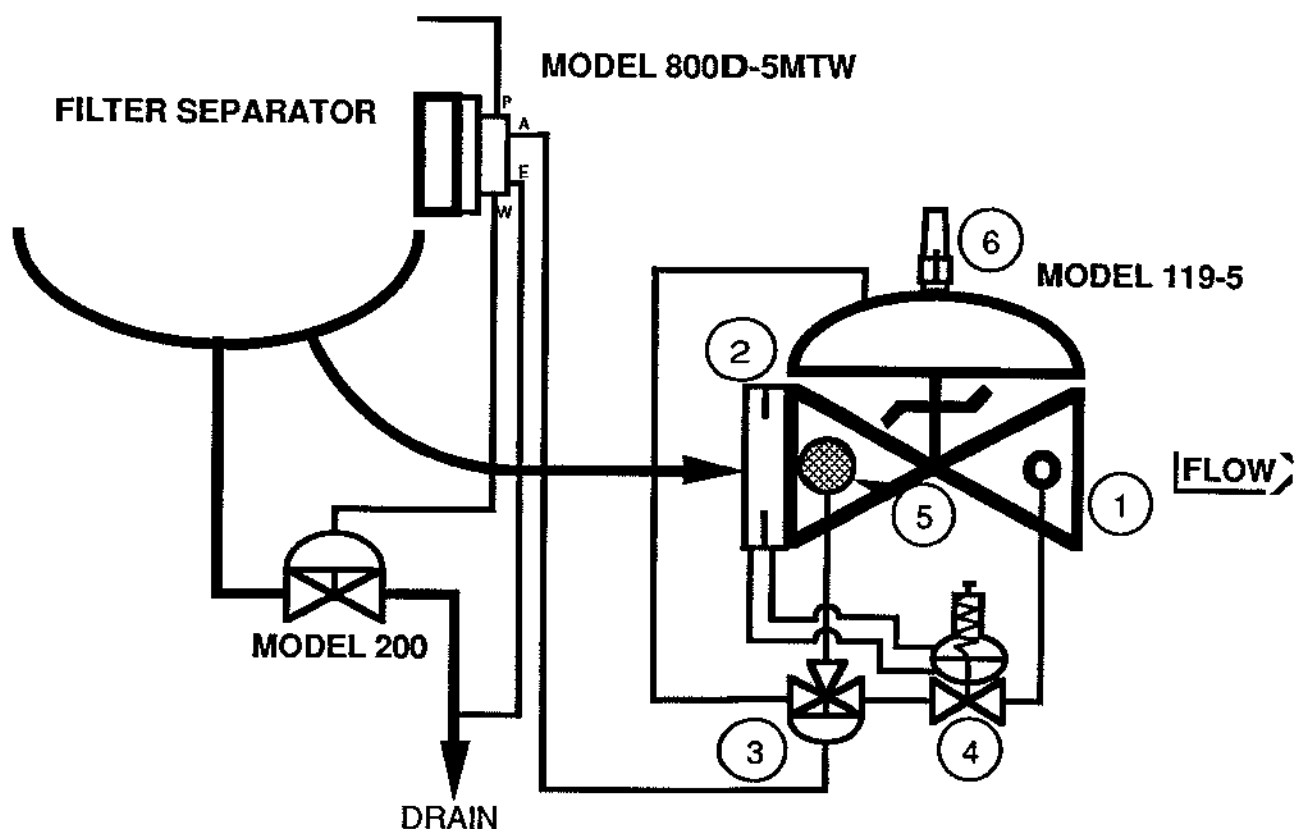
5. **Model 123 Inline Strainer**, which protects the pilot system from solid contaminants in the flow stream.
6. **Model 155L Visual Indicator Assembly**, which allows the user to determine the valve's operating position at a glance.

#### **THEORY OF OPERATION**

**SLUG CONTROL:** The action of the valve as a slug control (high water level shutoff) is governed by the action of the accelerator pilot (item 3), which in turn is controlled by the interface float pilot. If there is little or no water in the sump of the filter separator, the float is down and the float pilot pressurizes the diaphragm of the accelerator pilot. This shifts the pilot to connect the main valve diaphragm chamber to downstream, allowing the main valve to open. In this position there is also an orificed bleed from upstream, the purpose of which is explained below.

If the water level in the sump rises enough to lift the float to its highest position, the float pilot vents the diaphragm of the accelerator pilot. The pilot shifts to connect the main valve diaphragm chamber directly to inlet pressure. This drives the main valve fully closed.

**RATE OF FLOW CONTROL:** The flow rate through the filter separator is controlled by the rate of flow control pilot (item 4), acting on the differential pressure signal received from the integral orifice plate (item 2). As long as the flow rate is below the set point of the pilot, the pilot is wide open, allowing the main valve to open fully. However, as the flow rate reaches the set point, the pilot begins to close. As it closes, the orificed bleed of the accelerator pilot increases pressure to the main valve diaphragm chamber, closing the



main valve as required to prevent the flow rate from increasing any further.

## INSTALLATION

The 119-5 is furnished fully factory-assembled, ready for installation on the discharge flange of the filter separator.

1. Install the valve following the instructions given in the Model 65 Basic Valve section of this manual.
2. Install the interface float pilot on the filter separator.
3. Make the hydraulic connections from the interface float pilot with 1/4" OD tubing as follows:
  - (a) "ACCEL VALVE" port on float pilot to the 1/8" NPT port in the bonnet of the accelerator pilot.
  - (b) "POWER" port on float pilot to a point which will sense main valve inlet pressure. A convenient location is the unused inlet side port of the main valve.

- (c) "WATER DRAIN" port on float pilot to the bonnet of the automatic water drain
- (d) "EXHAUST" port on float pilot to atmospheric drain. Port 3 of the solenoid pilot should also be connected to this drain line.

## STARTUP AND ADJUSTMENTS

The following steps should be followed in then order presented in order to effect an initial startup of the 119-5. NOTE: In order to properly set the rate of flow pilot, you will need some means of measuring flow, such as a flow meter or an orifice plate with differential pressure gauges.

1. Remove the protective cap from the rate of flow control pilot. Turn the adjusting screw fully counter-clockwise.
2. Start the pump or otherwise start the system flowing.
3. Carefully loosen a pipe plug in the valve bonnet until fluid appears around the threads. When only

clear fluid (no air) is discharging, retighten the plug.

4. Open downstream valves to increase system demand as much as possible.
5. Slowly turn the adjusting screw of the rate of flow pilot clockwise until flow rate increases to the desired set point. Replace the protective cap.

## MAINTENANCE

Required maintenance of the 119-5 is minimal. However, the following checks, periodically performed, will do much to keep the valve operating efficiently and safely.

1. Check for chipped or peeling paint. Touch up as required.
2. Check for leaks around flanges and fittings. Tighten as required.
3. If the interface float pilot is equipped with a manual tester, the slug control function of the 119-5 may be checked at any time. Simply activate the manual tester to close the valve. Release the manual tester to restore normal operation.

## TROUBLESHOOTING

In the event of malfunction, the following guide should enable the technician to isolate the specific cause of the problem and take appropriate remedial action.

### MAIN VALVE FAILS TO OPEN

1. High water level in filter separator sump — Drain water from sump.
2. Temporarily disconnect the sense line at the bonnet of the accelerator pilot. You should receive flow from the interface pilot, but no flow from the accelerator pilot.
  - (a) If conditions are as described above, proceed to Step 3.
  - (b) If you receive flow from the solenoid pilot, the accelerator pilot diaphragm is ruptured — Replace the diaphragm. See the A224 section of this manual.

- (c) If you receive no flow from the interface float pilot, there is a malfunction of that pilot — See the 800 pilot section of this manual.

3. Stem of accelerator pilot binding or lower seat deteriorated — Disassemble pilot and determine cause. See the A224 section of this manual.
4. Main valve diaphragm ruptured — Replace diaphragm. See the Model 65 Basic Valve section of this manual.
5. Main valve stem binding — Disassemble valve and determine cause. See the Model 65 Basic Valve section of this manual.

### MAIN VALVE FAILS TO CLOSE

1. If the interface float pilot is equipped with a manual tester, activate it.
  - (a) If the valve closes, the water level has not yet risen to the high level required to close the valve.
  - (b) If the valve still does not close, proceed to Step 2.
2. Temporarily disconnect the sense line at the bonnet of the accelerator pilot. There should be no flow from the interface float pilot.
  - (a) If there is flow from the interface float pilot, there is a malfunction of that pilot — See the 800 pilot section of this manual.
  - (b) If there is no flow from the interface float pilot, proceed to Step 3.
3. Stem of the accelerator pilot binding or upper seat deteriorated — Disassemble pilot and determine cause. See the A224 section of this manual. If you can find nothing wrong with the accelerator pilot, proceed to Step 4.
4. Main valve stem binding, seat deteriorated or object caught in valve — Disassemble valve and determine cause. See the Model 65 Basic Valve section of this manual.





## Model 65/765

### basic control valve

#### GENERAL DESCRIPTION

The OCV Series 65 is a hydraulically operated, diaphragm-actuated valve, *full port* valve. The globe configuration (Model 65) is available in sizes 1 1/4" thru 16" and 24". The angle configuration (Model 65A) is available in sizes 1 1/4" thru 12" and 16".

The Series 765 is the same as the Series 65, except that it is a *reduced port* valve. It is available only in the globe configuration in sizes 3" thru 24".

The diaphragm is nylon-fabric bonded with synthetic rubber and forms a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. A synthetic rubber seat disc forms a tight seal with the valve seat when pressure is applied above the diaphragm.

#### FUNCTIONAL DESCRIPTION

Because the Series 65/765 is a hydraulically operated valve, it requires a minimum line pressure of approximately 5 psig in order to function. The valve functions on a simple principle of pressure differential. The line pressure at the inlet of the valve is bypassed through the pilot control piping to the diaphragm chamber of the valve. This pressure, together with the valve spring, works against the pressure under the valve seat. Because the effective area of the diaphragm is greater than that of the seat, the valve is held tightly closed. As the controlling pilot(s) allow the pressure to bleed off the diaphragm chamber, the two opposing pressures begin to balance and the valve will begin to open. The valve can be used to perform a simple on-off function, or with the proper pilot system, a modulating, or regulating function.

In cases where the line fluid is unusually dirty, or is otherwise unsuitable for operating the valve, an independent operating pressure source may be employed. The pressure available from such a source must be equal to, or greater than, line pressure.

#### INSTALLATION

In order to insure safe, accurate and efficient operation of the OCV control valve, the following list of checkpoints and procedures should be followed when installing the valve.

1. Make a careful visual inspection of the valve to insure that there has been no damage to the external piping, fittings or controls. Check that all fittings are tight.
2. Thoroughly flush all interconnecting piping of chips, scale and foreign matter prior to mounting the valve.

**CAUTION: Take appropriate care to protect personnel and equipment when lifting the valve for uncrating and for installation. Use appropriate lifting equipment. Lifting eyes are provided on 8" and larger valves to facilitate this task.**

3. Install the valve in the line according to the flow arrow on the inlet flange. The arrow should point downstream.
4. When installing flanged-end valves, use the proper number and size of flange bolts when installing the valve (see Tables 1 & 2). Make sure flange gaskets are of the proper material for the service. To ensure a tight seal, flange bolts should be tightened evenly in a criss-cross pattern. Tables 1 & 2 also shows the proper final torque values for the flange bolts.



5. Allow sufficient room around the valve for ease of adjustment and maintenance service.
6. After the lines are filled with liquid, bleed all air from the diaphragm chamber. This can be done by carefully loosening a pipe plug in the bonnet until fluid begins to appear around the threads. When only clear liquid (no air) is flowing, retighten the plug.

In addition, it is highly recommended that:

1. Isolation valves (e.g., gate or butterfly) be installed on the inlet and discharge sides of the valve to facilitate isolating the valve for maintenance.
2. Pressure gauges be installed at the inlet and outlet sides of the valve to provide monitoring of the valve during initial start-up and during operation. The body side ports, if unused by the pilot system, provide a convenient connection for the gauges.
3. All valves larger than 6" be installed horizontally, i.e., with the bonnet pointed up, for ease of adjustment and maintenance servicing.

## MAINTENANCE

The OCV control valve requires no lubrication and a minimum of maintenance. However, a periodic inspection should be established to determine how the fluid being handled is affecting the efficiency of the valve. In a water system, for example, the fluid velocity as well as the substances occurring in natural waters, such as dissolved minerals and suspended particles, vary in every installation. The effect of these actions or substances must be determined by inspection. It is recommended that an annual inspection, which includes examination of the valve interior, be conducted. Particular attention should be paid to the rubber parts, i.e., the diaphragm and seat disc. Any obviously worn parts should be replaced.

## REPAIR PROCEDURES

In the event of malfunction of the OCV control valve, troubleshooting should be conducted according to the procedures outlined for the specific model of valve. Then, if those steps indicate a problem with the main valve, this section will outline the procedures necessary to correct the problem.

Problems with the main valve can be classed in three basic categories:

### 1. VALVE FAILS TO OPEN

- a. Diaphragm damaged\* - See Procedure A
- b. Stem binding - See Procedure B

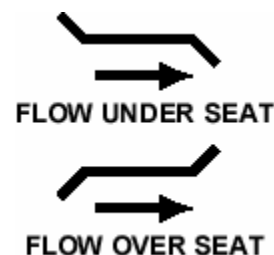
### 2. VALVE FAILS TO CLOSE

- a. Diaphragm damaged\* - See Procedure A
- b. Stem binding - See Procedure B
- c. Object lodged in valve - See Procedure B

### 3. VALVE OPENS AND CLOSSES BUT LEAKS WHEN CLOSED

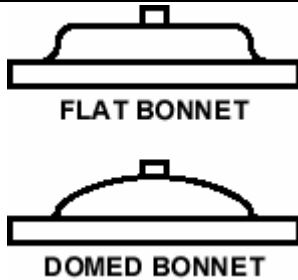
- a. Seat disc damaged - See Procedure C
- b. Seat ring damaged - See Procedure D

*\*A diaphragm failure can prevent the valve from either opening or closing, depending on the flow direction. Most water service valves flow "under the seat", in which case a diaphragm failure will keep the valve from closing. On the other hand, most fuel service valves flow "over the seat", in which case a diaphragm failure will keep the valve from opening. To determine which you have, examine the bridge mark cast into the side of the valve body, and then compare it with the figures below.*



**IMPORTANT:** Over the years, OCV has made significant design changes to the 3", 4", 8", 10" and 12" valves. Therefore, before ordering rubber kits or other parts, you will need to determine which style valve you have (old or new). This can be easily determined by looking at the valve *bonnet*. As shown below, old-style valves have flat bonnets; new-style valves (except for the 3" full port and 4" reduced port valves) have domed bonnets.





For 3" valves, simply measure the *diameter* of the bonnet. Old-style bonnets have a 7-11/16" (195 mm) diameter; new style bonnets have an 8-3/4" (222 mm) diameter. That same 8-3/4" diameter flat bonnet is also used on the 4" reduced port valve.

#### **PROCEDURE A: DIAPHRAGM REPLACEMENT**

1. Wear appropriate clothing and equipment to protect the skin and eyes from exposure to the line fluid.
2. Isolate the valve from the system by closing upstream and downstream block valves.
3. Bleed all pressure from the valve.

**WARNING! IT IS EXTREMELY IMPORTANT THAT ALL PRESSURE BE REMOVED FROM THE VALVE BEFORE DOING EVEN PARTIAL DISASSEMBLY.**

4. Loosen one of the tubing connections on the bonnet. Allow any residual pressure to bleed off.
5. To minimize any possible fluid spillage, drain the upstream and downstream sides of the valve as much as possible. Unused side ports in the main valve body can be used for this purpose. They will bring the fluid level down to approximately the centerline of the piping.
6. Remove all tubing connected at the bonnet.
7. Remove the bonnet nuts.
8. Remove the bonnet. If the bonnet sticks in place, it may be loosened by rapping sharply around its edge with a rubber-headed mallet. NOTE: 8" and larger valves are equipped with eye bolts through which a chain can be fastened to aid in lifting the bonnet.
9. Remove the spring.
10. Remove the diaphragm plate capscrews and the diaphragm plate.
11. Remove the old diaphragm.

12. Making sure the dowel pin holes are in the proper location, place the new diaphragm over the studs and press down until it is flat against the body and spool.
13. Replace the diaphragm plate and the diaphragm plate capscrews.
14. Tighten all diaphragm plate capscrews snugly. See Table 4 for proper torque values.
15. Replace the spring.
16. Replace the bonnet and reinstall the bonnet nuts.
17. Tighten the bonnet nuts snugly using a criss-cross tightening pattern. See Table 3 for torque requirements.
18. Reinstall the control tubing.
19. Reopen the upstream and downstream block valves.
20. Before placing the valve back in service, perform the air bleed procedure described in the Installation section of this manual.

#### **PROCEDURE B: CORRECTION OF BINDING STEM**

1. Perform Steps 1 thru 9 of Procedure A, above.
2. Remove the spool assembly from the valve. NOTE: On smaller valves, this can be accomplished simply by grasping the stem and pulling upward. Valves 6" and larger have the top of the stem threaded to accept an eyebolt to aid in lifting the spool out of the body. 6" thru 12" valves are threaded 3/8-16. 14" and 16" valves are threaded 5/8-11. The 24" valve is threaded 3/4-10.
3. Carefully examine both ends of the stem for deep scratches, scoring or buildup of mineral deposits. Polish the stem if necessary using a fine grade of emery cloth.
4. Similarly, examine and polish the upper bushing (in the bonnet) and the lower guide (in the seat ring).
5. Reinstall the spool assembly.
6. Reassemble the valve, following Steps 15 thru 20 in Procedure A.

#### **PROCEDURE C: SEAT DISC REPLACEMENT**

1. Perform Steps 1 and 2 of Procedure B, above.
2. With the spool assembly removed from the body, remove the seat retainer screws.

3. Slide the seat retainer off the lower end of the stem.
4. Remove the seat disc from its groove in the spool.  
NOTE: The seat disc may fit quite tightly in the groove. If necessary, it may be pried out using a thin-bladed screwdriver or similar tool.
5. Install the new seat disc in the groove.
6. Reinstall the seat retainer and tighten the seat retainer screws.
7. Reassemble the valve, following Steps 5 and 6 of Procedure B.
14. Install the new seat ring in the body, making sure that the capscrew holes line up.
15. Replace and tighten all the capscrews.
16. Reassemble the valve, following Steps 5 and 6 of Procedure B.



#### PROCEDURE D: SEAT RING REPLACEMENT

*NOTE: It is rare for a seat ring to require replacement. Minor nicks and scratches in the seating surface can usually be smoothed out with emery cloth.*

1. Perform Steps 1 and 2 of Procedure B, above.
2. If you are working on a 3" or smaller valve, or a 4" old-style valve, follow Steps 4 thru 9, below.
3. If you are working on a new-style 4" valve, or any valve 6" or larger, follow Steps 10 thru 16, below.
4. Seat rings in the smaller valves are threaded into the valve body. To remove, you will need a special seat ring tool. One may be purchased from OCV, or one may be fabricated. (See Table 5 for details.)
5. Using the seat ring tool, unthread the seat ring from the body.
6. Remove the old o-ring from the counterbore in the body.
7. Install the new o-ring in the counterbore.
8. Using the seat ring tool, install the new seat ring.
9. Reassemble the valve, following Steps 5 & 6 of Procedure B.
10. Seat rings on larger valves are bolted into the body with socket head capscrews. In addition you will note that the seat ring is equipped with additional threaded holes that may be used for "jacking" the seat ring out of the body.
11. Remove the socket head capscrews.
12. Remove the old seat ring from the body by temporarily installing two or more of the capscrews in the "jacking" holes.
13. Install a new o-ring in the groove of the new seat ring. Lubricate the o-ring and outer seat ring wall with Vaseline® or similar lubricant.





**TABLE 1**  
**FLANGE BOLTING REQUIREMENTS – CLASS 150 FLANGES**

VALVE SIZE (DN)	NO. OF BOLTS	BOLT SIZE	RECOMMENDED TORQUE (FT-LB)	RECOMMENDED TORQUE (N-M)
1 ¼" (32)	4	1/2-13 X 2.50" LONG	75	102
1 ½" (40)	4	1/2-13 X 2.50" LONG	75	102
2" (50)	4	1/2-13 X 2.50" LONG	75	102
2 ½" (65)	4	5/8-11 X 3.00" LONG	150	204
3" (80)	4	5/8-11 X 3.25" LONG	150	204
4" (100)	8	5/8-11 X 3.25" LONG	150	204
6" (150)	8	3/4-10 X 3.50" LONG	250	339
8" (200)	8	3/4-10 X 3.75" LONG	250	339
10" (250)	12	7/8-9 X 4.00" LONG	378	513
12" (300)	12	7/8-9 X 4.25" LONG	378	513
14" (350)	12	1-8 X 4.50" LONG	583	791
16" (400)	16	1-8 X 4.75" LONG	583	791
18" (450)	16	1 1/8" X 5.00" LONG	782	1061
20" (500)	20	1 1/8" X 5.50" LONG	782	1061
24" (600)	20	1 1/4"-7 X 6.00" LONG	1097	1488

**TABLE 2**  
**FLANGE BOLTING REQUIREMENTS – CLASS 300 FLANGES**

VALVE SIZE (DN)	NO. OF BOLTS	BOLT SIZE	RECOMMENDED TORQUE (FT-LB)	RECOMMENDED TORQUE (N-M)
1 ¼" (32)	4	5/8-11 X 2.75" LONG	150	204
1 ½" (40)	4	3/4-10 X 3.00" LONG	250	339
2" (50)*	6	5/8-11 X 3.00" LONG	150	204
	2	5/8-11 X 2.25" LONG	150	204
2 ½" (65)	8	3/4-10 X 3.25" LONG	250	339
3" (80)	8	3/4-10 X 3.50" LONG	250	339
4" (100)	8	3/4-10 X 3.75" LONG	250	339
6" (150)	12	3/4-10 X 4.25" LONG	250	339
8" (200)	12	7/8-9 X 4.75" LONG	378	513
10" (250)	16	1-8 X 5.50" LONG	583	791
12" (300)	16	1 1/8-7 X 5.75" LONG	782	1061
14" (350)	20	1 1/8-7 X 6.25" LONG	782	1061
16" (400)*	18	1 1/4-7 X 6.50" LONG	1097	1488
	2	1 1/4-7 X 5.50" LONG	1097	1488
18" (450)	24	1 1/4-7 X 6.75" LONG	1097	1488
20" (500)	24	1 1/4-7 X 7.25" LONG	1097	1488
24" (600)	24	1 1/2-6 X 8.00" LONG	1750	2375

\* TOP TWO HOLES ON VALVE FLANGES ARE DRILLED & TAPPED. USE THE SHORTER BOLTS LISTED IN THESE HOLES.



**TABLE 3**  
**BONNET BOLTING TORQUE SPECIFICATIONS**  
**NEW-STYLE FULL PORT VALVES (SERIES 65)**

VALVE SIZE (DN)	NO. OF STUDS	STUD SIZE	REC. TORQUE FT-LB (N-M)	VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)
1 ¼" (32)	8	3/8-16	31 (42)	8" (200)	12	7/8-9	378 (513)
1 ½" (40)	8	3/8-16	31 (42)	10" (250)	16	7/8-9	378 (513)
2" (50)	8	3/8-16	31 (42)	12" (300)	20	1 1/8-7	782 (1061)
2 ½" (65)	8	1/2-13	75 (102)	14" (350)	20	1 1/8-7	782 (1061)
3" (80)	8	1/2-13	75 (102)	16" (400)	20	1 1/4-7	1097 (1488)
4" (100)	8	3/4-10	250 (339)	24" (400)	28	1 1/2-6	1750 (2375)
6" (150)	12	3/4-10	250 (339)				

**NEW-STYLE REDUCED PORT VALVES (SERIES 765)**

VALVE SIZE (DN)	NO. OF STUDS	STUD SIZE	REC. TORQUE FT-LB (N-M)	VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)
3" (80)	8	3/8-16	31 (42)	12" (300)	16	7/8-9	378 (513)
4" (100)	8	1/2-13	75 (102)	16" (250)	20	1 1/8-7	782 (1061)
6" (150)	8	3/4-10	250 (339)	18" (300)	20	1 1/4-7	1097 (1488)
8" (200)	12	3/4-10	250 (339)	20" (350)	20	1 1/4-7	1097 (1488)
10" (250)	12	7/8-9	378 (513)	24" (400)	20	1 1/4-7	1097 (1488)

**OLD-STYLE FULL PORT VALVES (SERIES 65)**

VALVE SIZE (DN)	NO. OF SCREWS	STUD SIZE	REC. TORQUE FT-LB (N-M)	VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)
3" (80)	8	3/8-16	31 (42)	10" (250)	16	3/4-10	250 (339)
4" (100)	8	7/16-20	50 (68)	12" (300)	20	1 1/8-7	782 (1061)
8" (200)	12	3/4-10	250 (339)				



**TABLE 4**  
**DIAPHRAGM PLATE CAPSCREW TORQUE SPECIFICATIONS**  
**NEW-STYLE FULL PORT VALVES (SERIES 65)**

VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)	VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)
1 1/4" (32)	1	3/8-24 N	21.5 (29)	8" (200)	8	1/2-13 H	43 (58)
1 1/2" (40)	1	3/8-24 N	21.5 (29)	10" (250)	12	1/2-13 H	43 (58)
2" (50)	4	1/4-20 A	6.3 (8.6)	12" (300)	12	1/2-13 H	43 (58)
2 1/2" (65)	6	10-32 A	2.7 (3.7)	14" (350)	16	3/8-16 H	19.7 (27)
3" (80)	6	1/4-20 A	6.3 (8.6)	16" (400)	16	1/2-13 H	43 (58)
4" (100)	6	3/8-16 H	19.7 (27)	24" (400)	16	1-8 H	286 (383)
6" (150)	8	3/8-16 H	19.7 (27)				

**NEW-STYLE REDUCED PORT VALVES (SERIES 765)**

VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)	VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)
3" (80)	4	1/4-20 A	6.3 (8.6)	12" (300)	12	1/2-13 H	43 (58)
4" (100)	6	1/4-20 A	6.3 (8.6)	16" (250)	12	1/2-13 H	43 (58)
6" (150)	6	3/8-16 H	19.7 (27)	18" (300)	12	1/2-13 H	43 (58)
8" (200)	8	3/8-16 H	19.7 (27)	20" (350)	12	1/2-13 H	43 (58)
10" (250)	8	1/2-13 H	43 (58)	24" (400)	12	1/2-13 H	43 (58)

**OLD-STYLE FULL PORT VALVES (SERIES 65)**

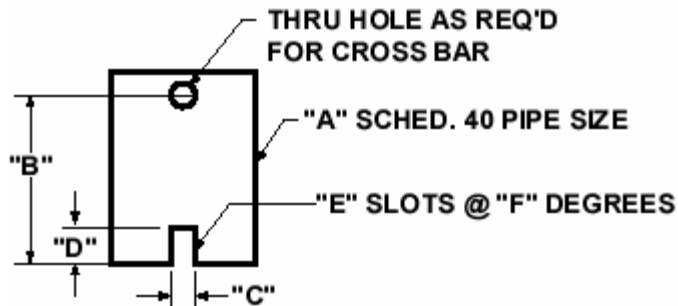
VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)	VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)
3" (80)	4	1/4-20 H	6.3 (8.6)	10" (250)	12	3/8-16 H	19.7 (27)
4" (100)	6	1/4-20 H	6.3 (8.6)	12" (300)	12	1/2-13 H	43 (58)
8" (200)	8	3/8-16 H	19.7 (27)				

N = SINGLE HEX NUT ON VALVE STEM

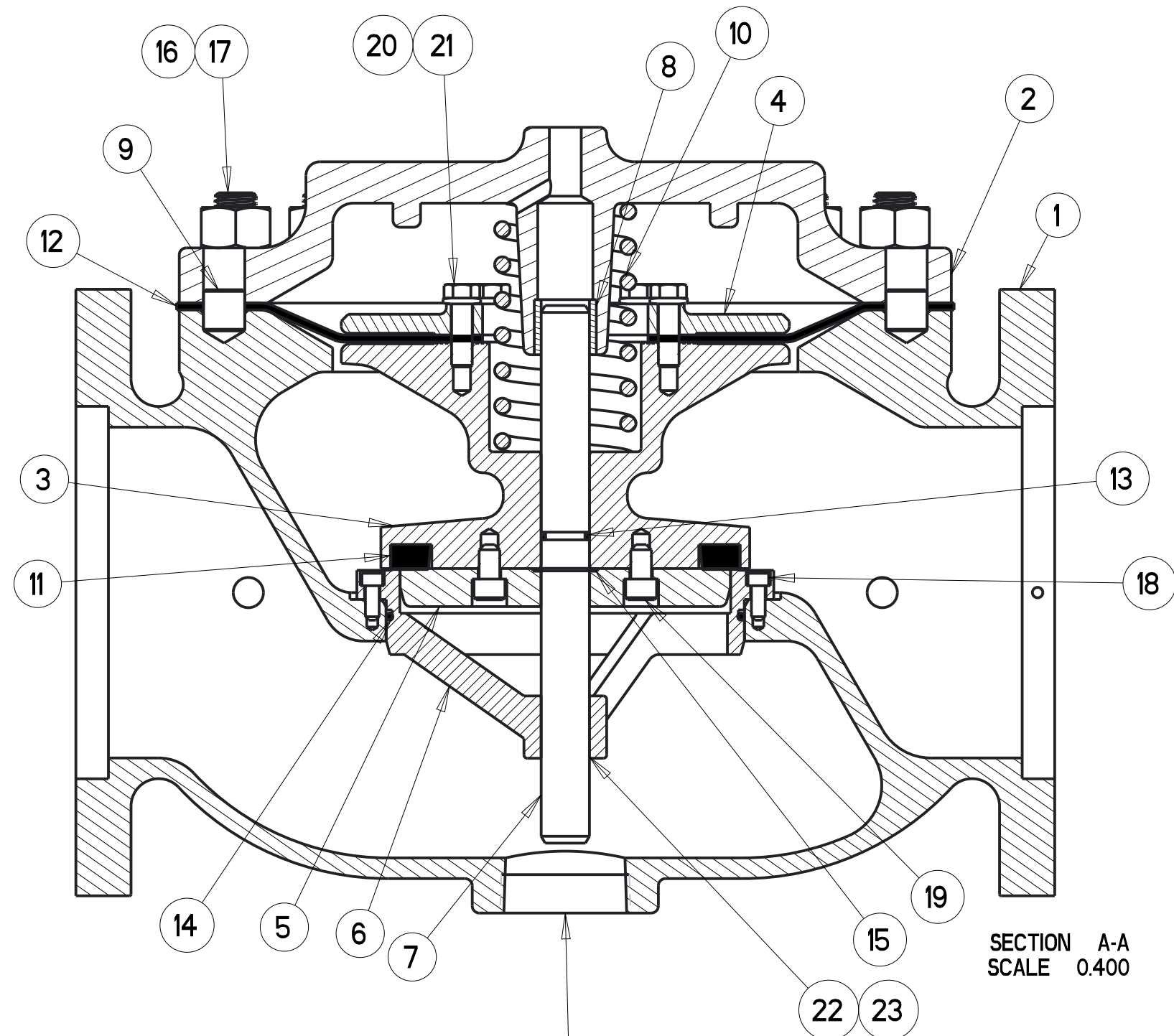
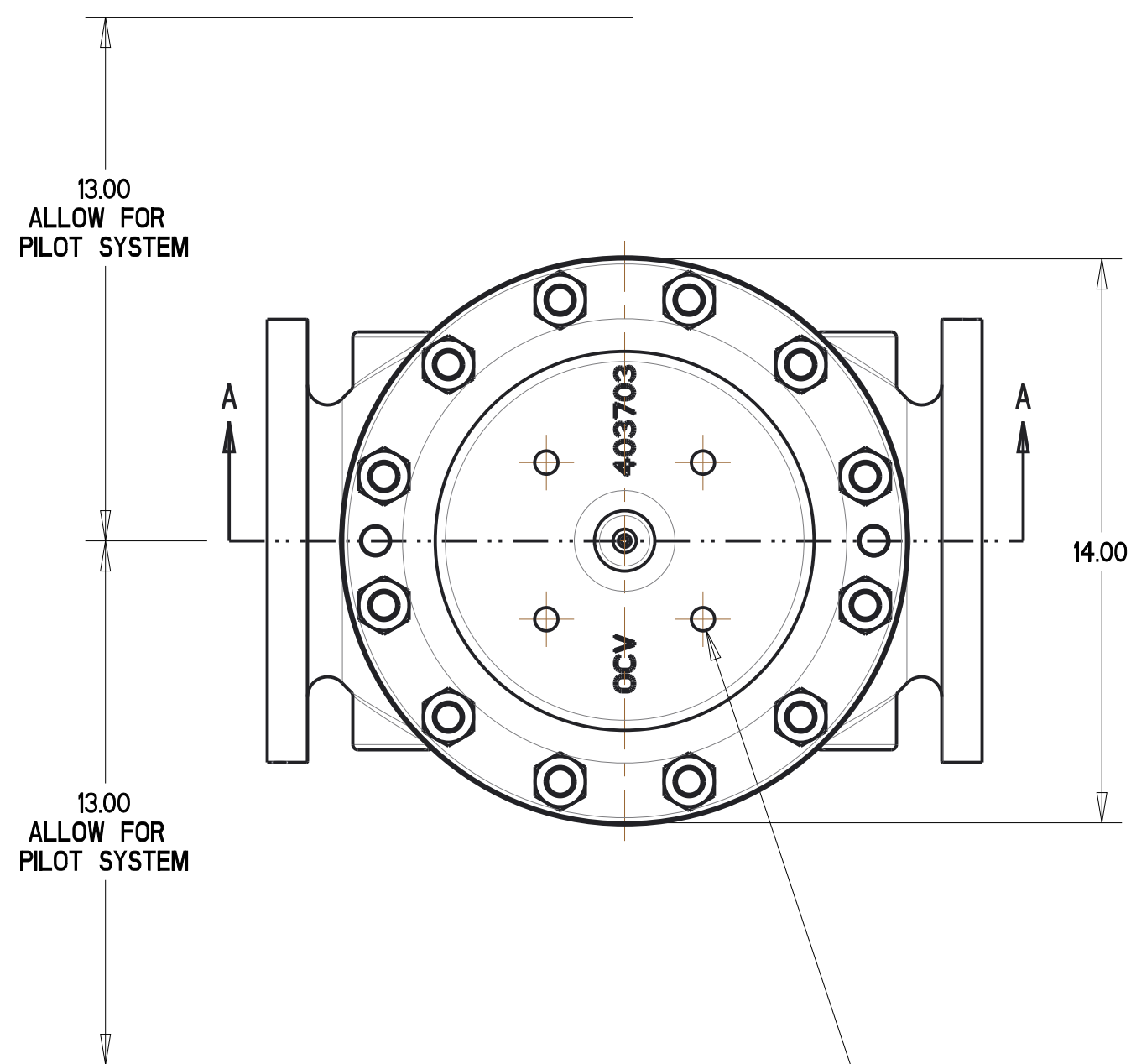
A = ALLEN-HEAD CAPSCREWS

H = HEX-HEAD CAPSCREWS

**TABLE 5**  
**SEAT RING TOOL DETAILS**

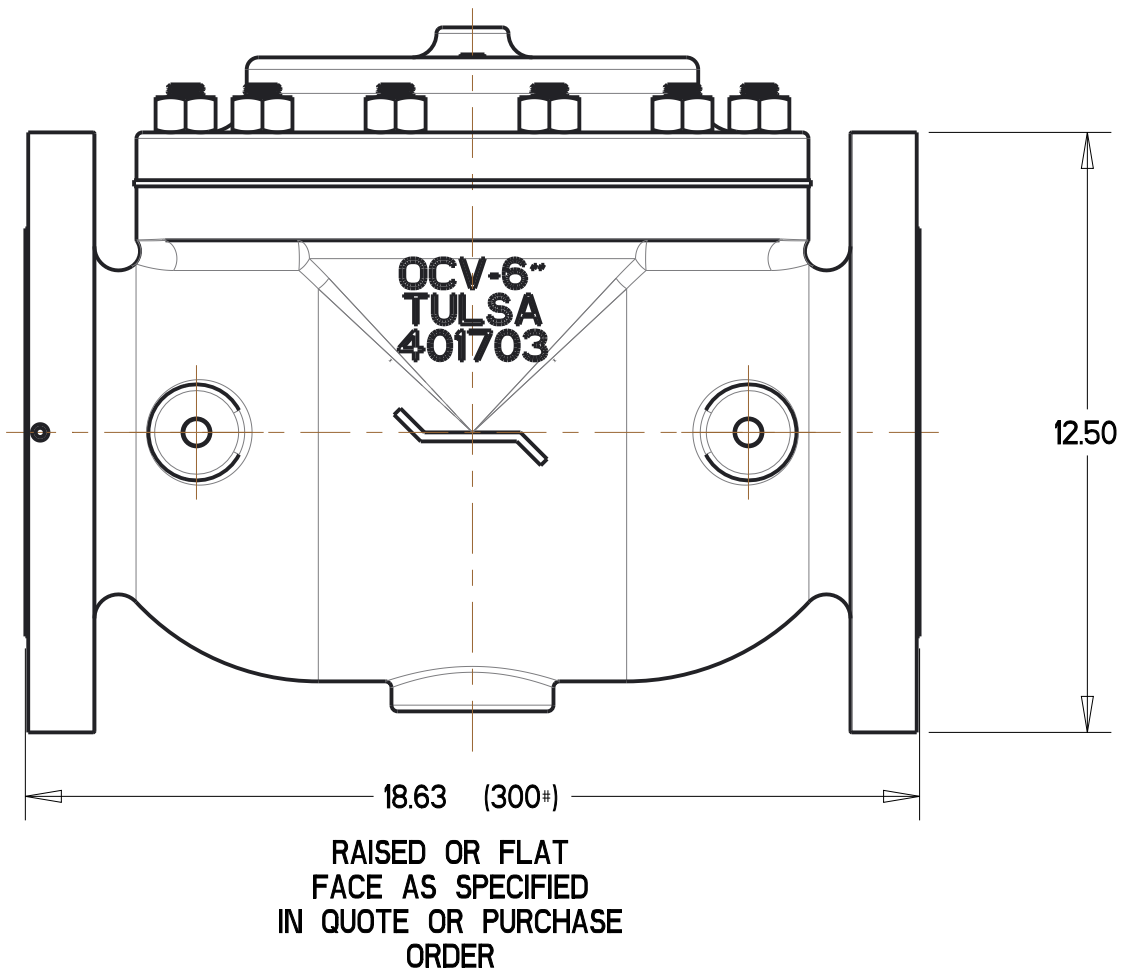
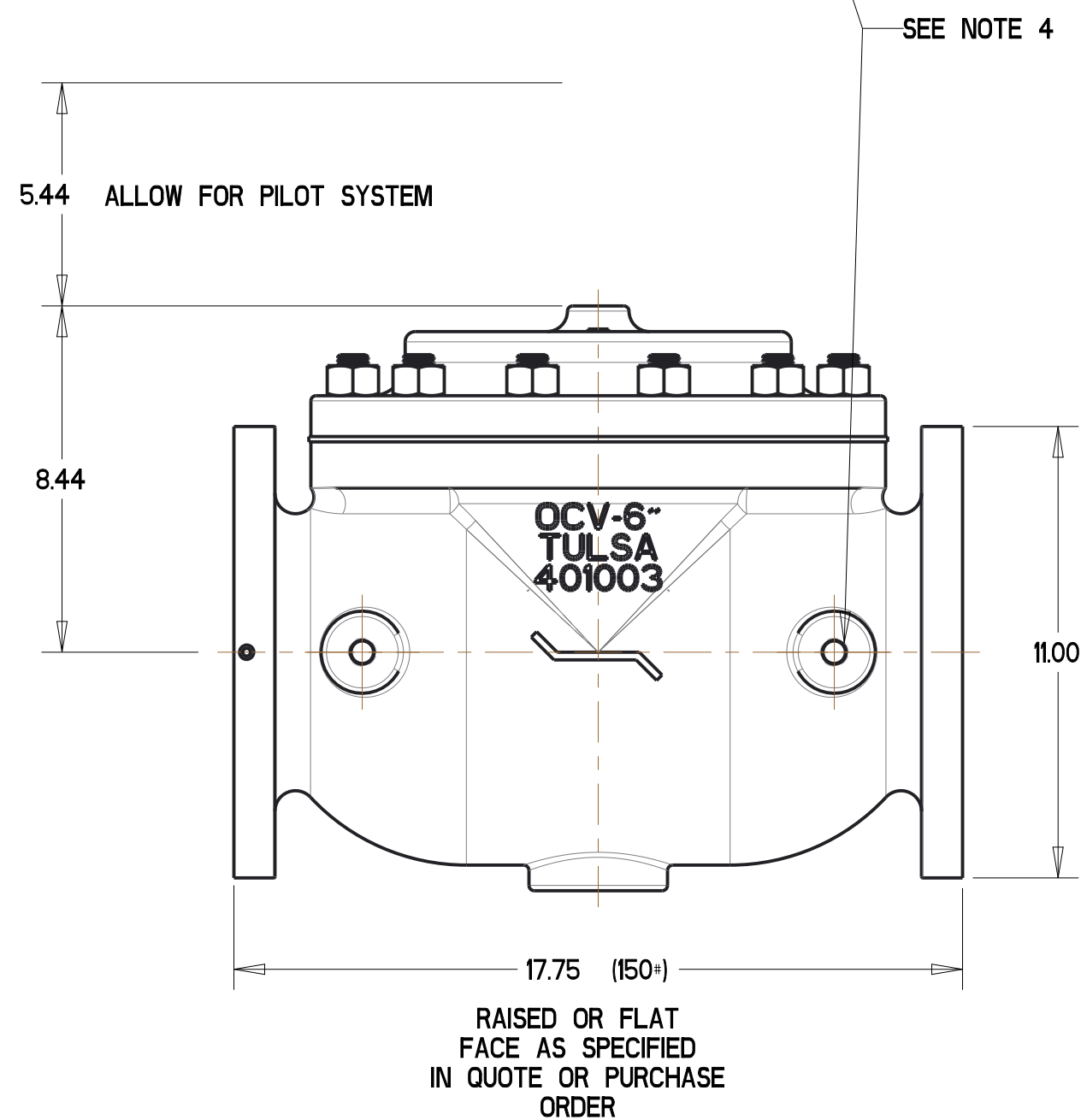


VALVE SIZE FULL PORT	VALVE SIZE RED. PORT	"A" PIPE SIZE	"B" MIN. LENGTH	"C" SLOT WIDTH	"D" SLOT DEPTH	"E" # SLOTS	"F" SPACING
1 1/4"	--	3/4	6"	3/8"	3/8"	2	180°
1 1/2"	--	3/4	6"	3/8"	3/8"	2	180°
2"	3"	1 1/2	7"	3/8"	3/8"	2	180°
2 1/2"	--	2	8"	1/2"	1/2"	3	120°
3" NEW	4"	2 1/2	9"	1/4"	3/8"	3	120°
3" OLD	--	2 1/2	9"	5/8"	5/8"	2	180°
4" OLD	--	3	10"	5/8"	5/8"	2	180°



ITEM	QTY	DESCRIPTION
1	1	BODY
2	1	BONNET
3	1	SPOOL
4	1	DIAPHRAGM PLATE
5	1	SEAT RETAINER
6	1	SEAT RING
7	1	STEM
8	1	BUSHING,UPPER
9	2	DOWEL PIN
10	1	SPRING
11	1	SEAT DISC
12	1	DIAPHRAGM
13	1	O-RING, STEM
14	1	O-RING, SEAT RING
15	1	SNAP-RING/SPLIT-RING, STEM
16	12	STUD
17	12	NUT,HEX
18	6	CAPSCREW, SEAT RING
19	4	CAPSCREW, SEAT RETAINER
20	8	CAPSCREW, DIAPHRAGM PLATE
21	8	WASHER, LOCK, DIAPHRAGM PLATE
22	1	BUSHING, LOWER (SS SEATS ONLY)
23	2	SNAP RING (SS SEATS ONLY)

- NOTES:
- EXTERNAL/INTERNAL COATING & MATERIALS PER OCV MATERIAL OF CONSTRUCTION SHEET
  - ABS DESIGN APPROVED
  - UL LISTED DESIGN
  - TOTAL OF (9) 3/8-18 NPTF PIPE TAPS ARE PROVIDED FOR THE PILOT SYSTEM AND ACCESSORIES. (5) ON THE BONNET & (4) ON THE BODY.
  - ANGLE BODYS ARE ALSO AVAILABLE
  - WIDE OPEN CV: 450
  - VERTICAL STROKE: 1.5 INCHES



				MATERIAL	TOLERANCES	OCV Control Valves		
E					UNLESS NOTED	TULSA OKLAHOMA USA		
D					.XX ±.015	6" 65 SERIES GLOBE VALVE		
C					.XXX ±.005			
B					ANGULAR ±0.5°			
A					MACH FINISH 125			
CHG	ECN	DATE	BY		NO. REQ'D	DRAWN BY	DATE	SIZE
					SCALE	CHKD BY	DATE	DRAWING NUMBER
REVISIONS				REF DWG NO'S				REV

C	6200D	
---	-------	--

# accelerator pilot

## installation, operating, and maintenance instructions

# model A224

### GENERAL DESCRIPTION

The OCV Model A224 Accelerator Pilot is a hydraulically-operated, diaphragm-type three-way valve. It has two operating positions, one which provides full flow between two of its ports. It is normally used on a main valve subject to the following conditions: (1) A modulating-type pilot, such as rate of flow, is also used on the valve; (2) Faster-than-normal closing speed is required; and (3) An independent means, such as a solenoid pilot or float valve, is used to place the valve in or out of operation.

### INSTALLATION

Referring to the attached assembly drawing for port identification, the A224 is installed on the main valve as follows: Port A is connected to the control pilot. Port B is connected to the bonnet of the main valve. Port D is connected to the energizing source (solenoid or float pilot).

### THEORY OF OPERATION

Pressurizing the bonnet of the A224 pilot through Port D moves the stem assembly to its downward position. Orificed flow is now available from Port C (main valve inlet) to both Port A (Control pilot) and Port B (Main valve bonnet). In this position, the A224 acts as an ejector. Flow through it is modulated by the control pilot, which in turn modulates the main valve to maintain a constant flow rate or pressure.

When pressure is removed from the bonnet of the A224, pressure at Port C forces the stem assembly to its upward position. Now Port A (Control pilot) is blocked, and full flow is available from Port C (main valve inlet) to Port B (main valve bonnet). The main valve thus goes quickly closed.

### MAINTENANCE

Because of the simplicity of design of the A224 pilot, required maintenance is minimal. Check fittings and bolts periodically for tightness, and inspect the body for damage or excessive buildup of foreign material.

### TROUBLESHOOTING

A major malfunction in the A224 pilot would generally be evident in a failure of the main valve to open or close. However, keep in mind that such symptoms can be also caused by a malfunction in the main valve itself or in the control pilot(s). If the A224 is suspected, proceed as follows:

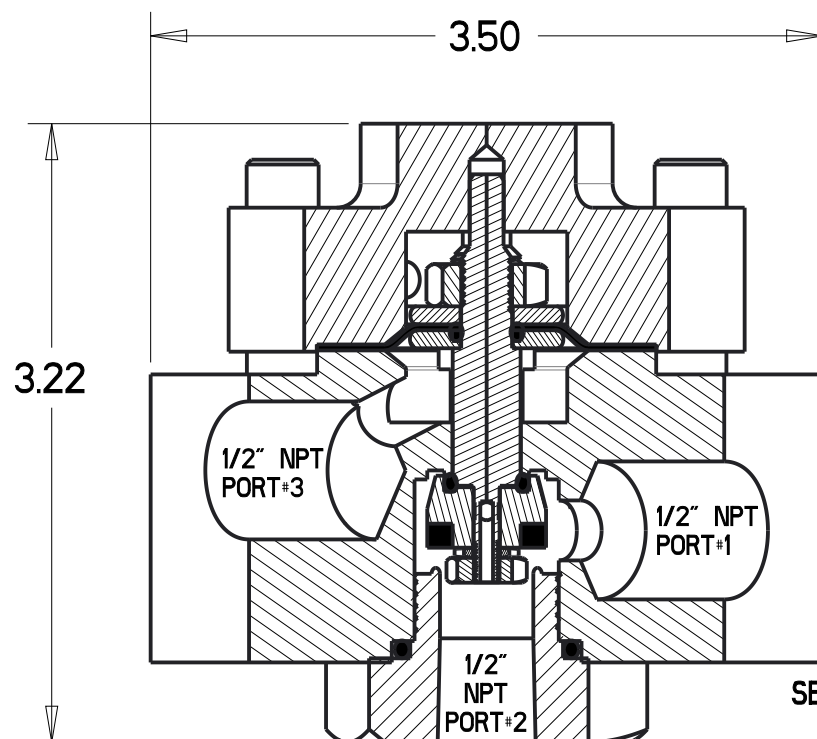
#### A. FAILURE OF PILOT TO OPEN MAIN VALVE

1. Ruptured diaphragm:
  - (a) Detach sense line from the bonnet of the pilot and remove the bonnet. Inspect the diaphragm carefully for holes or cracks.
  - (b) If damaged, replace with new diaphragm.
2. Pilot stem binding:
  - (a) With bonnet removed, inspect the stem journal in the bonnet for buildup of foreign material.
  - (b) Clean as necessary and reassemble pilot.
3. Obstruction in seat area: Disassemble pilot and remove obstruction.
4. Rubber seat damaged:
  - (a) Disassemble pilot and examine seats for excessive wear or damage.
  - (b) Replace if necessary and reassemble pilot.

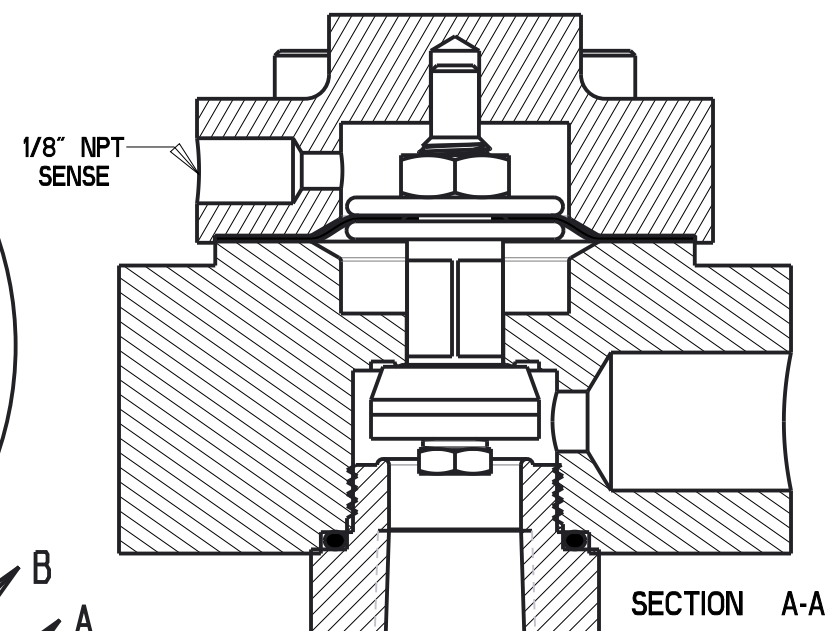
#### B. FAILURE OF PILOT TO CLOSE MAIN VALVE

1. Pilot stem binding - Proceed as in A2, above.
2. Obstruction in seat area - Proceed as in A3, above.
3. Rubber seat damaged - Proceed as in A4, above.

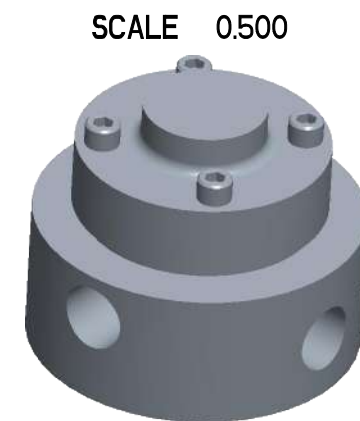




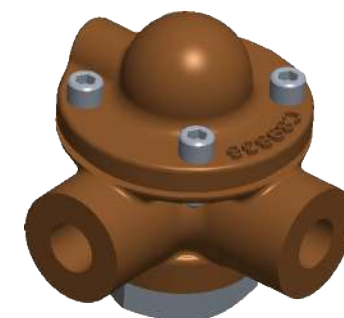
## BONNET VENTED



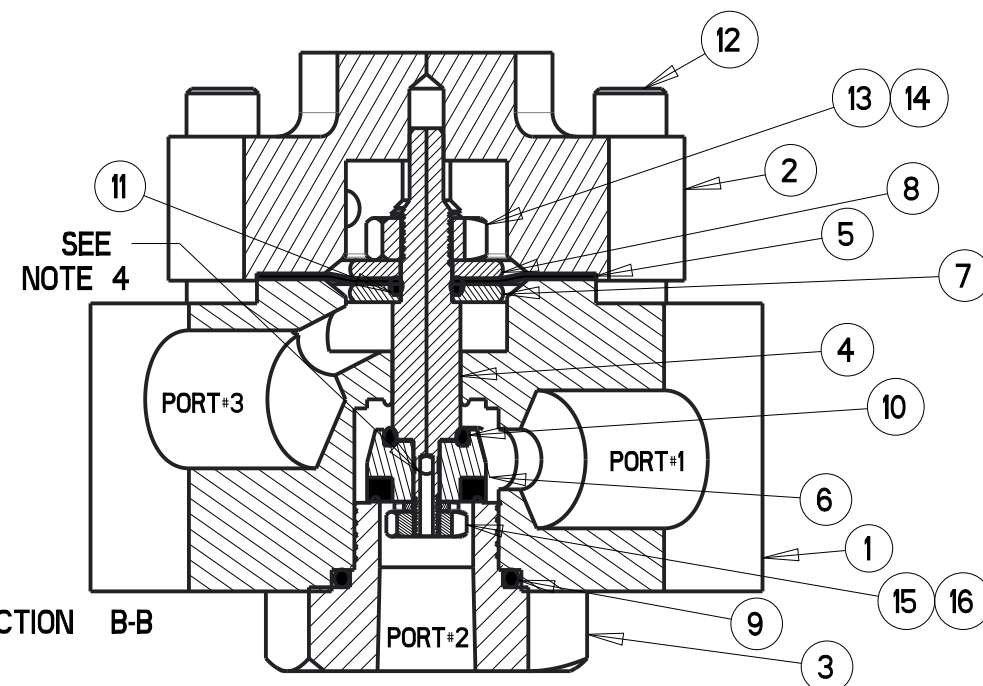
**SECTION A-A**



SS,ALUMINUM - BAR



**BZ - CASTING**



## BONNET PRESSURIZED

ITEM	P/N	QTY	DESCRIPTION	MATERIAL
1	302100S	1	BODY	LL BRONZE
	302100			B61 BRONZE
	302700			STN. STEEL
	302700DSS			DUPLEX STN STEEL
	302500			ALUMINUM
2	304100S	1	BONNET	LL BRONZE
	304100			B61 BRONZE
	304700			STN. STEEL
	304700DSS			DUPLEX STN STEEL
	304500			ALUMINUM
3	300782	1	ADAPTER	STN. STEEL
	300502			ALUMINUM
	300382			MONEL
	300132			B61 BRONZE
4	314732	1	STEM	STN. STEEL
	314032			MONEL
5	694000	1	DIAPHRAGM	BUNA-N
	694100			VITON
	694400			EPDM
	694300			FLUOROSILICONE
6	310708	1	SEAT PLUG	SS/BUNA
	310748			SS/EPDM
	310008			MONEL/BUNA
	310729			SS/VITON
7	308109	1	LOWER DIAPH PLATE	BRASS
	308709			STN. STEEL
	308001			MONEL
8	308110	1	UPPER DIAPH PLATE	BRASS
	308710			STN. STEEL
	308002			MONEL
9	610216	1	O-RING	BUNA-N
	614216			EPDM
10	611111	1	O-RING	VITON
	614111			EPDM
11	611012	1	O-RING	VITON
	614012			EPDM
12	530708	4	SKT HD CAPSCREW	STN. STEEL, BZ BODY
	530701			STN. STEEL, SS BODY
13	590717	1	HEX NUT	STN. STEEL
	590720			316 STN STEEL
14	685702	1	LOCKWASHER	STN. STEEL
	685723			316 STN STEEL
15	590718	1	NUT, SEAT	STN. STEEL
	590760			316 STN STEEL
16	685720	1	LOCKWASHER, SEAT	STN. STEEL
	685724			316 STN STEEL

B. BONNET VENTED: 1-2

E					MATERIAL	TOLERANCES		OCV Control Valves		
D					SEE TABLE	UNLESS NOTED		TULSA OKLAHOMA USA		
C						.XX	±.015	ACCELERATOR PILOT (MODULATING)		
B						.XXX	±.005			
A						ANGULAR	±0.5°			
CHG	ECN	DATE	BY		NO. REQ'D	DRAWN BY	DATE	SIZE	DRAWING NUMBER	
						JRK	3-22-17	B	A224	
					SCALE	CHKD BY	DATE			
REVISIONS				REF DWG NO'S	1.000	RON	3-22-17			



# interface float pilot

## installation, operating and maintenance instructions

### series 800

#### GENERAL DESCRIPTION

The OCV Series 800 Interface Float Pilot is a four-way pilot specifically designed for use in filter/separator systems. OCV manufactures the 800 with a stainless steel pilot block, with mounting flanges of ductile iron, aluminum, and stainless steel. Four different models are available:

MODEL 800B: Bottom-mounted

MODEL 800C: Side-mounted, victaulic connected

MODEL 800D: Side-mounted, flange-connected

MODEL 800H: Bottom-mounted (low profile float)

#### THEORY OF OPERATION

The four ports of the MODEL 800 PILOT and their piping connections are as follows:

- 1) POWER —To filter/separator discharge
- 2) WATER DRAIN —To bonnet of WATER DRAIN VALVE
- 3) ACC. VALVE —To bonnet of control pilot on main valve (usually OCV Model A224 Accelerator Pilot)
- 4) EXHAUST — To atmosphere.

The counter weighting of the MODEL 800's float enables it to ride the interface of two immiscible liquids. The float will rise in the heavier fluid (water) and sink in the lighter (flue). The float level controls the routing of flows inside the pilot block, interconnecting the ports in one of three configurations:

FLOAT LEVEL	PORT CONNECTIONS
LOW	POWER—>ACC. VALVE WATER DRAIN—>EXHAUST
MEDIAN	POWER —>ACC. VALVE POWER —> WATER DRAIN
HIGH	POWER —> WATER DRAIN ACC. VALVE —> EXHAUST

With the routing as shown, the main discharge valve will be open at the Low and Median positions, and closed at the High Position. The water drain valve will be closed at the Low Position and Open at the Median and High positions.

#### INSTALLATION

OCV ships the float/pilot assembly with the float restrained by wire or tape to avoid damage in transit. **REMOVE THIS RESTRAINT BEFORE PROCEEDING WITH INSTALLATION.**

All ports in the 800 block, as well as those in the bonnets of the accelerator pilot and water drain valve are drilled and tapped 1/8" NPT. The user or contractor is responsible for providing the fittings and tubing (1/4" OD stainless steel) necessary for connecting the various components. (See Theory of Operation.)

NOTE: The bottom-mounted versions (800B and 800H) are available with an integral water drain valve. In those case the tubing between the pilot block and water drain valve was installed at the factory.

When installing the pilot assembly on the filter separa-



tor, make sure the float is free to travel over its full range of motion without contacting any internal components in the vessel.

## MAINTENANCE

---

All of the Series 800 float pilots are equipped with manual test devices. It is highly recommended that these devices be actuated periodically to check for proper operation of the float pilot, main discharge valve, and water drain valve.

The 800B and 800H models have a push rod located on the bottom of the mounting flange. Push the rod up to lift the float and release it to lower the float.

The 800C and 800D models have a round knob with a screwdriver slot, located just to the right of the pilot block. Rotate the knob clockwise to raise the float; counter-clockwise to lower it.

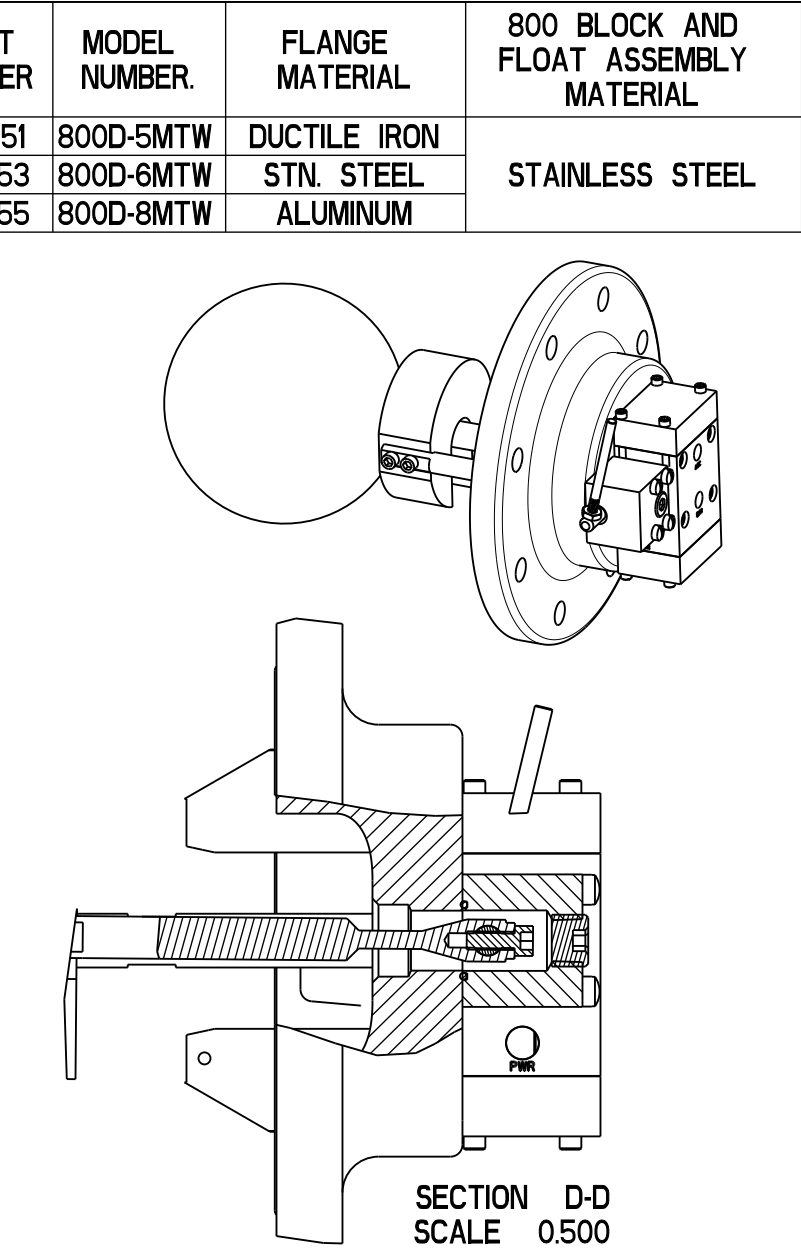
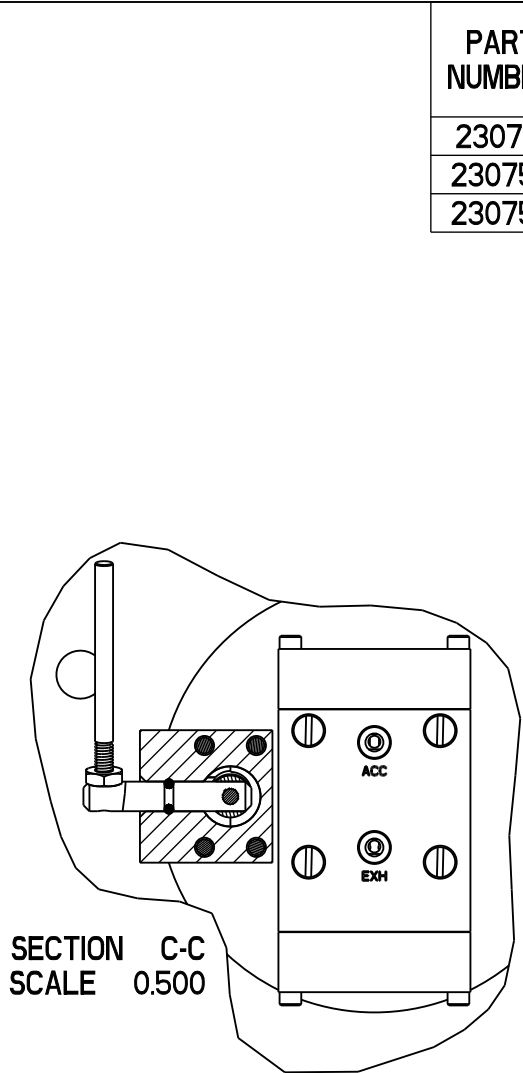
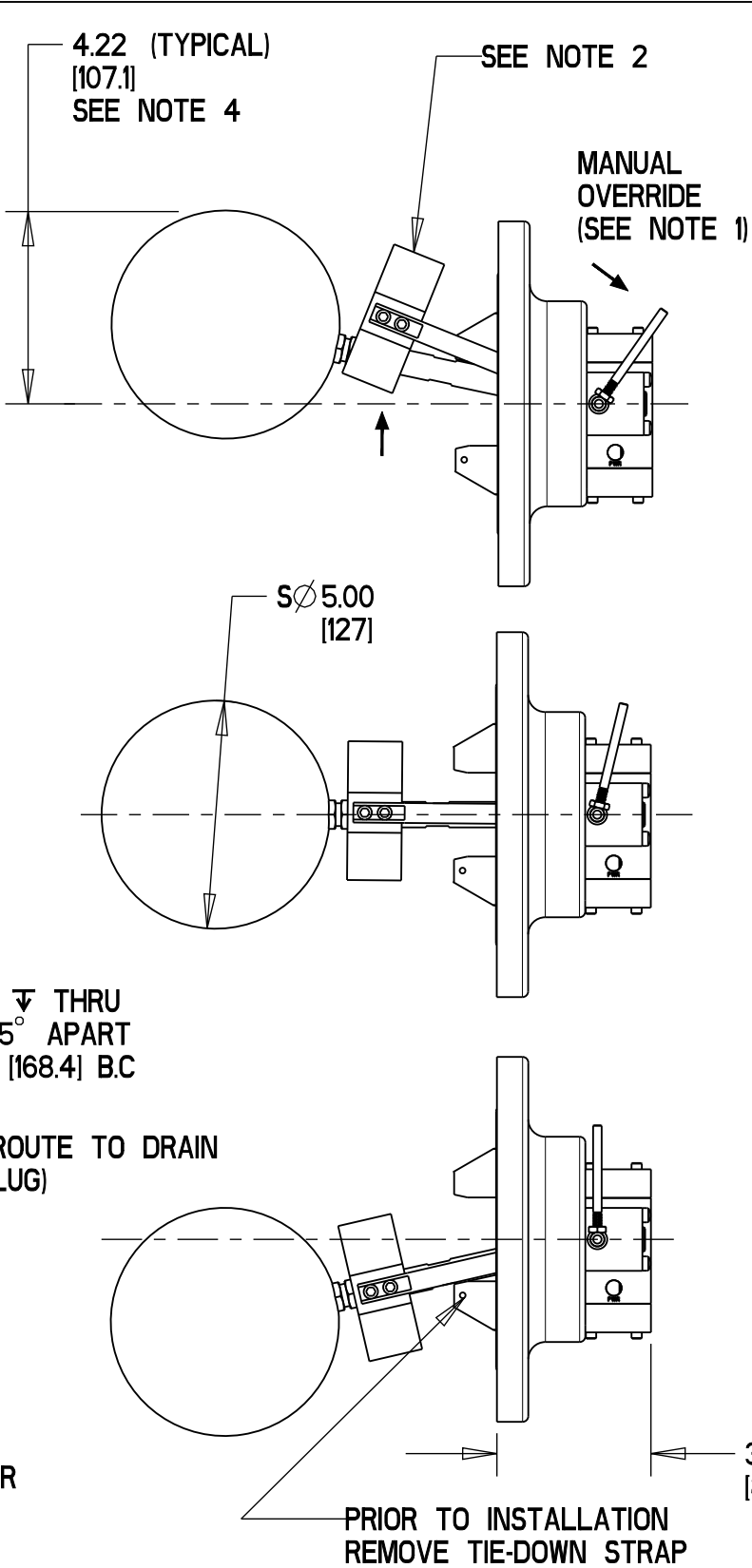
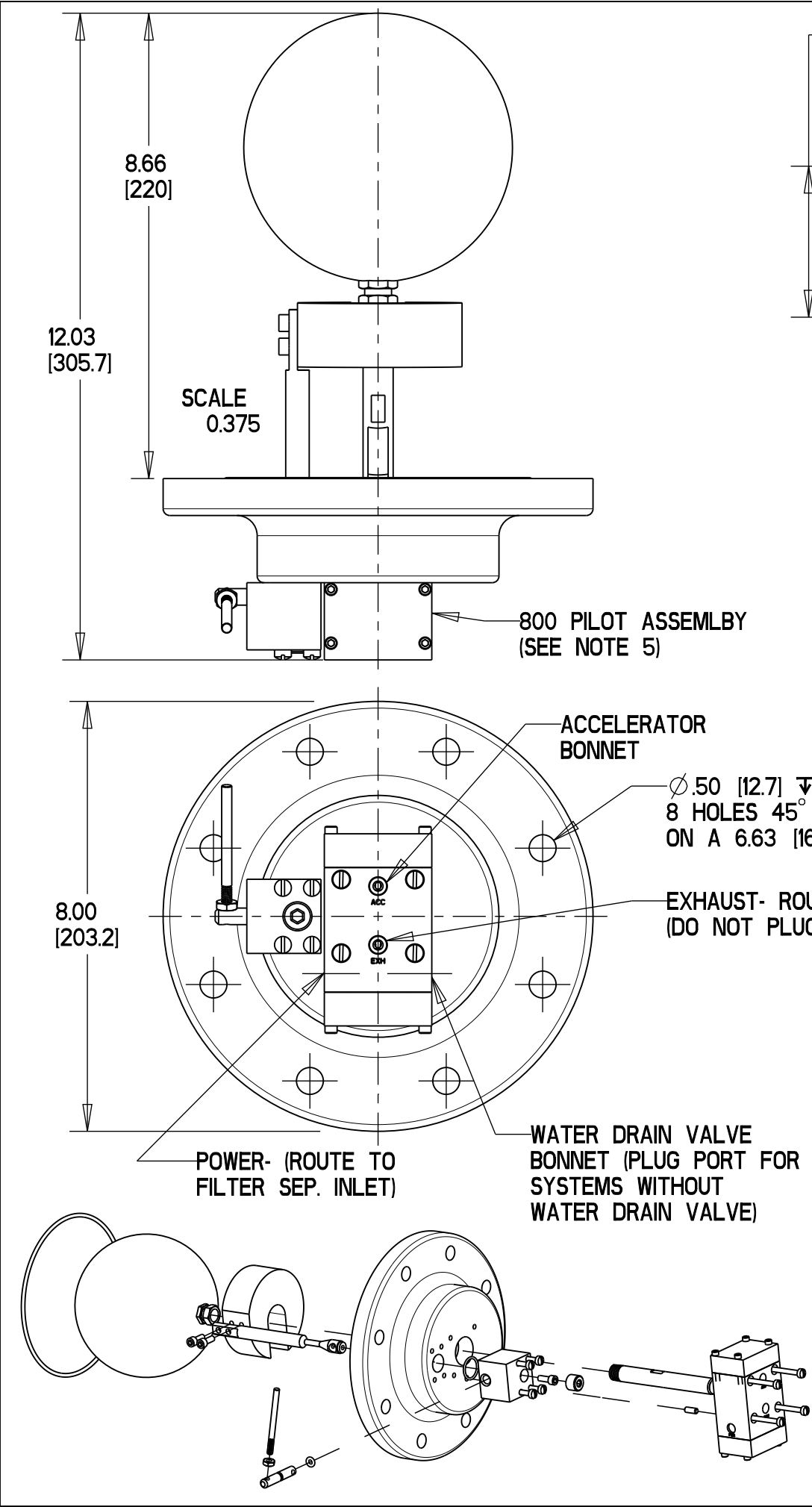
The 800D is also available with a ballasted manual tester (Model 800D-MTW). This consists of a rotating rod located just to the left of the pilot block. Pulling back on the rod removes part of the ballast from the float, now allowing it to float in fuel and rise to the full up position. Releasing the rod restores the ballast, allowing it to sink.

Remember that raising the float fully will close the main discharge valve and open the water drain valve. Returning the float to the full down position will reopen the main discharge valve and reclose the water drain valve.

## REPAIR

---

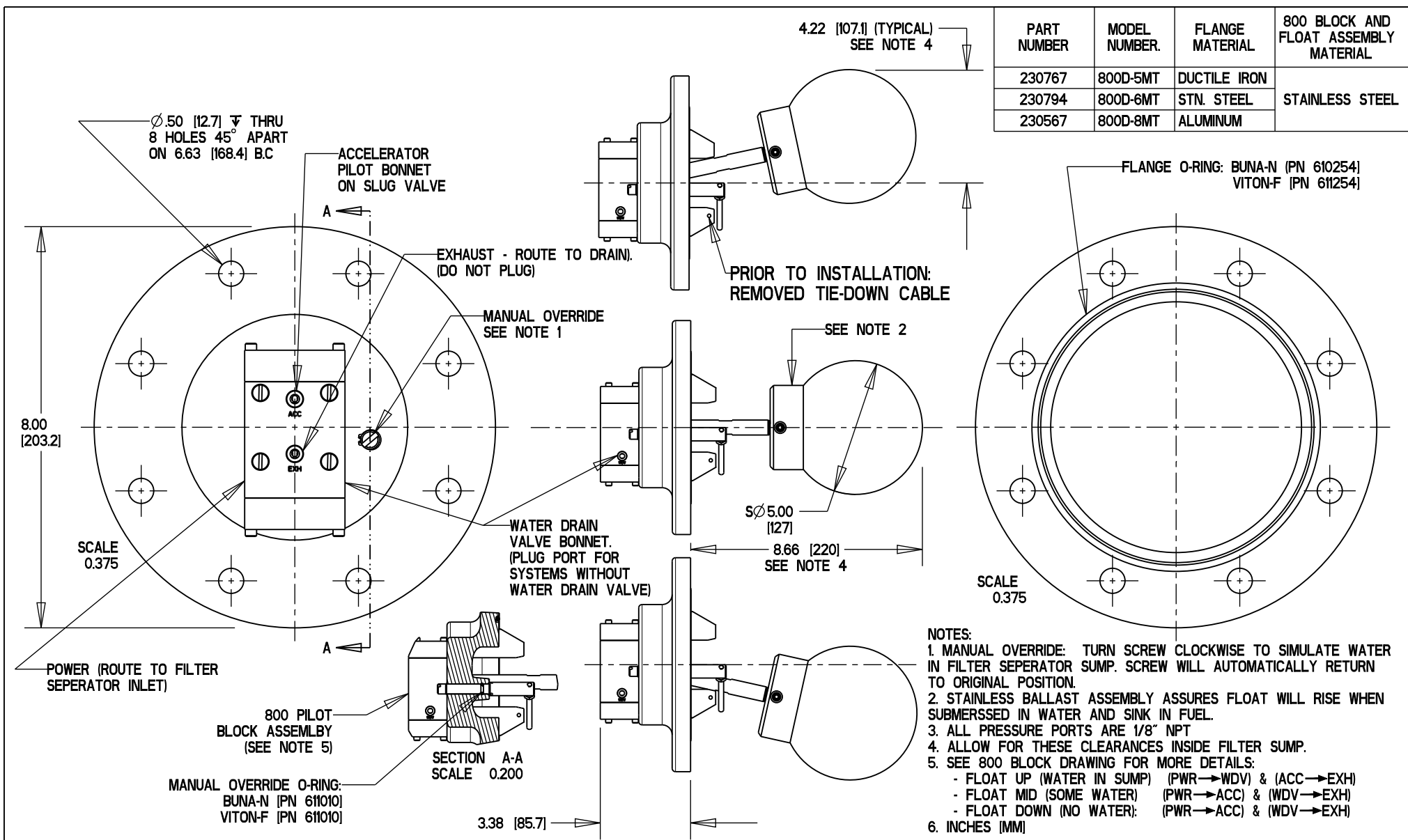
Due to the intricacy of the MODEL 800's assembly and the rarity of malfunctions, OCV does not recommend field repair of the pilot. If system operation problems are traced to an internal malfunction of the pilot, contact OCV Engineering.



PART NUMBER	MODEL NUMBER.	FLANGE MATERIAL	800 BLOCK AND FLOAT ASSEMBLY MATERIAL
230751	800D-5MTW	DUCTILE IRON	STAINLESS STEEL
230753	800D-6MTW	STN. STEEL	
230755	800D-8MTW	ALUMINUM	

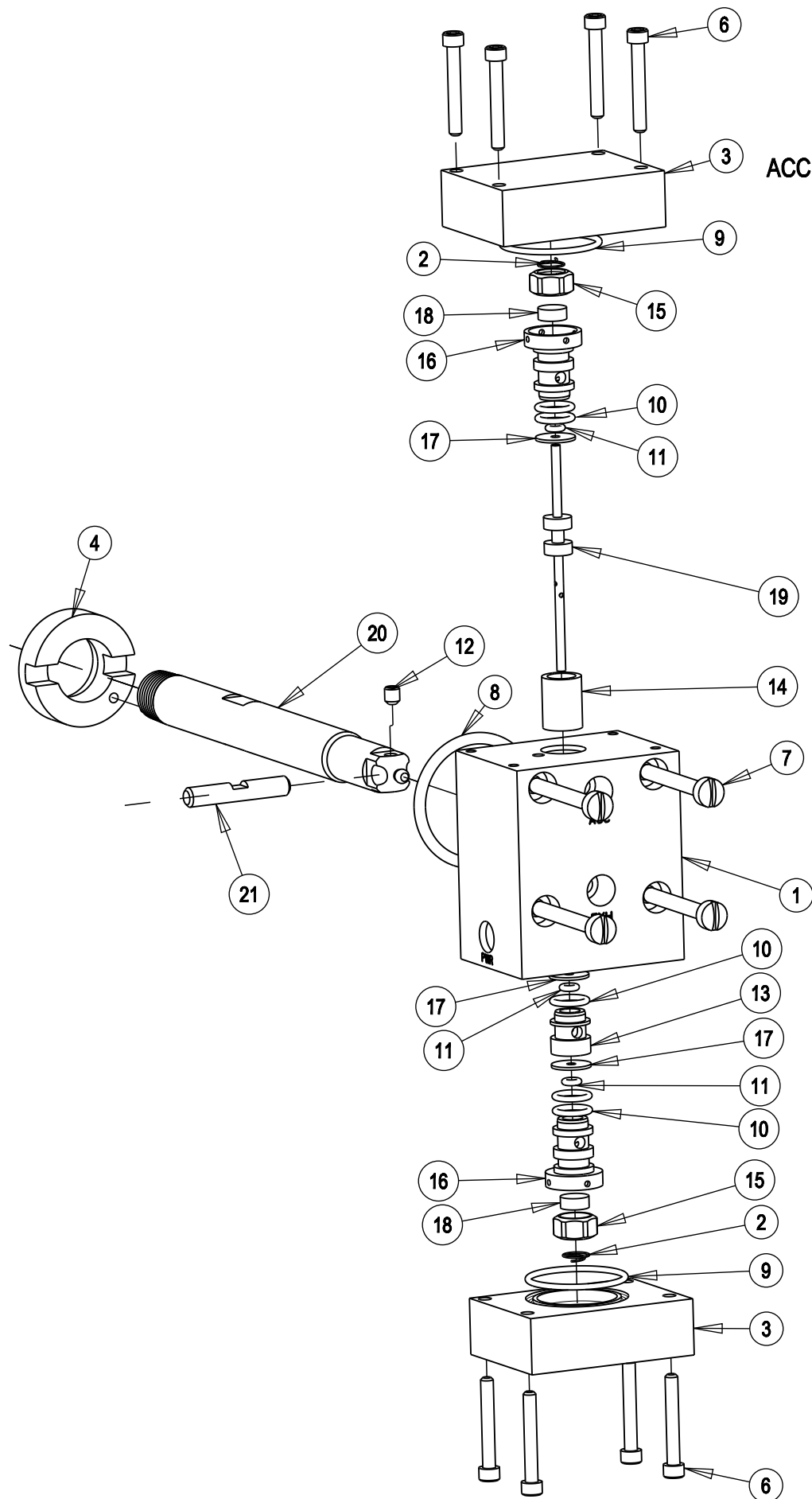
- NOTES:
1. MANUAL OVERRIDE: PULLING OUTSIDE LEVER REMOVES BALLAST WEIGHT FROM FLOAT ASSEMBLY. TESTS THE FLOAT BALL INTEGRITY AND THE PILOT FUNCTION.
  2. STAINLESS BALLAST ASSEMBLY ASSURES FLOAT WILL RISE WHEN SUBMERSSD IN WATER AND SINK IN FUEL.
  3. ALL PRESSURE PORTS ARE 1/8" NPT
  4. ALLOW FOR THESE CLEARANCES INSIDE FILTER SUMP.
  5. SEE 800 BLOCK DRAWING FOR MORE DETAILS.
  6. INCHES [MM]

					MATERIAL	TOLERANCES	OCV Control Valves		
E					SEE TABLE	UNLESS NOTED XX ±.015 .XXX ±.005 ANGULAR ±0.5° MACH FINISH 125	TULSA OKLAHOMA USA		
D							FLOAT PILOT, FILTER SEPERATOR SUMP		
C							WITH BALLAST MANUAL TESTER		
B							SIZE	DRAWING NUMBER	REV
A							NO. REQ'D		
CHG	ECN	DATE	BY		SCALE		JRK	3-19-2018	
REVISIONS				REF DWG NO'S	0.250	SDJ	3-19-2018	B	



PART NUMBER	MODEL NUMBER	FLANGE MATERIAL	800 BLOCK AND FLOAT ASSEMBLY MATERIAL
230767	800D-5MT	DUCTILE IRON	STAINLESS STEEL
230794	800D-6MT	STN. STEEL	
230567	800D-8MT	ALUMINUM	

					MATERIAL	TOLERANCES	OCV Control Valves		
E					SEE TABLE	UNLESS NOTED .XX ±.015 .XXX ±.005 ANGULAR ±0.5° MACH. FINISH 125	TULSA OKLAHOMA USA		
D							FLOAT PILOT, FILTER SEPERATOR SUMP WITH MECHANICAL MANUAL TESTER		
C									
B									
A					NO. REQ'D	DRAWN BY	DATE	SIZE	DRAWING NUMBER
CHG	ECN	DATE	BY		SCALE	CHKD BY	DATE	A	800D-MT
REVISIONS				REF DWG NO'S	0.200	SDJ	3-19-2018		



ACCELERATOR →

EXHAUST  
(PLUMB  
TO DRAIN) →

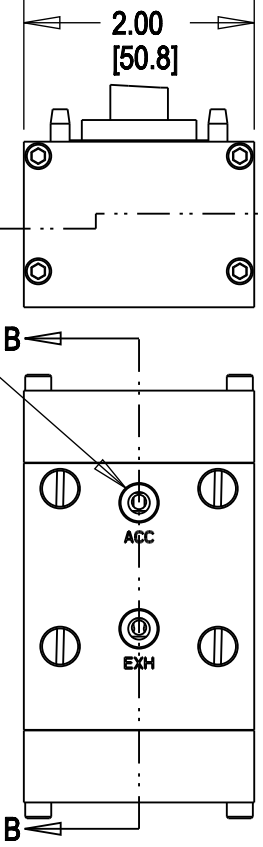
POWER →  
(FILTER SEP.  
PRESSURE)

← WATER  
DRAIN  
BONNET

SECTION B-B  
SCALE 1.000

SECTION A-A  
SCALE 1.000

1/8" NPT  
(TYPICAL ALL PORTS)



3.85  
[97.8]

					MATERIAL		TOLERANCES		
E							UNLESS NOTED		
D							XX ±.015		
C							.XXX ±.005		
B							ANGULAR ±.05°		
A							MACH FINISH 125		
CHG	ECN	DATE	BY		NO. REQ'D		DRAWN BY	DATE	
REVISIONS				REF DWG NO'S	0.600		JRK	02-26-2018	
							CHKD BY	DATE	
							SDJ	02-26-2018	

ITEM	QTY	DESCRIPTION
1	1	BODY
2	2	SPRING
3	2	CAP
4	1	ADAPTER
6	8	SCREW, CAP MOUNING
7	4	SCREW, BODY MOUNTING
8	1	O-RING, ADAPTER
9	2	O-RING, CAP
10	5	O-RING, ORIFICE & PLUG
11	3	O-RING, STEM
12	1	SET SCREW
13	1	PLUG
14	1	BUSHING
15	2	SEAT
16	2	ORIFICE
17	3	SPACER
18	2	DISC
19	1	STEM
20	1	LEVER
21	1	PIN, PIVOT

- NOTES.
1. INCHES [MM].
  2. 800 SERIES PILOT BLOCK IS USED ON MODEL B,C,D,F,H FILTER SEPARATO FLOAT ASSEMBLIES. REFER TO SPECIFIC SERIES DRAWINGS FOR MORE DETAILS.
  3. FLOAT DOWN (NO WATER).  
(PWR → ACC ) & (WDV → EXH)
  4. FLOAT UP (WATER IN SUMP)  
(PWR → WDV ) & (ACC → EXH)
  5. IF NOT USING HYRAULIC WATER DRAIN, PLUG WDV PORT.

OCV Control Valves				
TULSA OKLAHOMA USA				
800 SERIES BLOCK ASSEMBLY FILTER SEPARATOR FLOAT PILOTS				
SIZE	DRAWING NUMBER			REV
B	800			

# rate of flow control pilot

## installation, operating, and maintenance instructions

### model 2450

#### GENERAL DESCRIPTION

The OCV Model 2450 Rate of Flow Control Pilot is a direct-acting, spring-loaded, diaphragm-type control pilot. It is available in bronze or stainless steel (stainless steel internals) construction, with either Buna-N or Viton elastomers. It is designed to maintain a constant, preset rate of flow through the main valve. It is manually adjustable by means of an adjusting screw located on top of the pilot. The 2450 is a constant-throttling device, maintaining precise, positive control of the main valve.

#### FUNCTIONAL DESCRIPTION

Basically, the 2450 controls the amount of pressure in the upper chamber of the main valve, hence the degree of opening or closing of the valve. The pilot senses the pressure differential across an orifice plate located on the inlet of the main valve. The upstream, or high pressure, side of the orifice plate is sensed under the pilot diaphragm and the downstream, or low pressure, is sensed above the diaphragm. The low pressure sense is assisted by the pilot spring. As the flow through the orifice plate increases, the differential pressure increases and begins to close the pilot. As the pilot closes, the pressure in the upper chamber of the main valve increases, causing the valve to close a proportionate amount in order to maintain the preset rate of flow. Conversely, as the rate of flow decreases, the pilot opens, allowing the main valve to open and compensate for the decrease in flow.

#### INSTALLATION AND ADJUSTMENT

The 2450 should be installed in the main valve control piping between either the ejector or the accelerator pilot (depending on valve model) and the downstream body tap. Flow should be in the direction indicated on the pilot body. Sensing lines (1/4" O.D. tubing) are installed from the downstream orifice flange tap to the

upper sense tap of the pilot and from the upstream orifice flange tap to the lower sense tap of the pilot. Pilot adjustment is made with the adjusting screw located on top of the bonnet. Increase flow through the valve by turning the screw clockwise; decrease flow by turning the screw counterclockwise.

#### MAINTENANCE

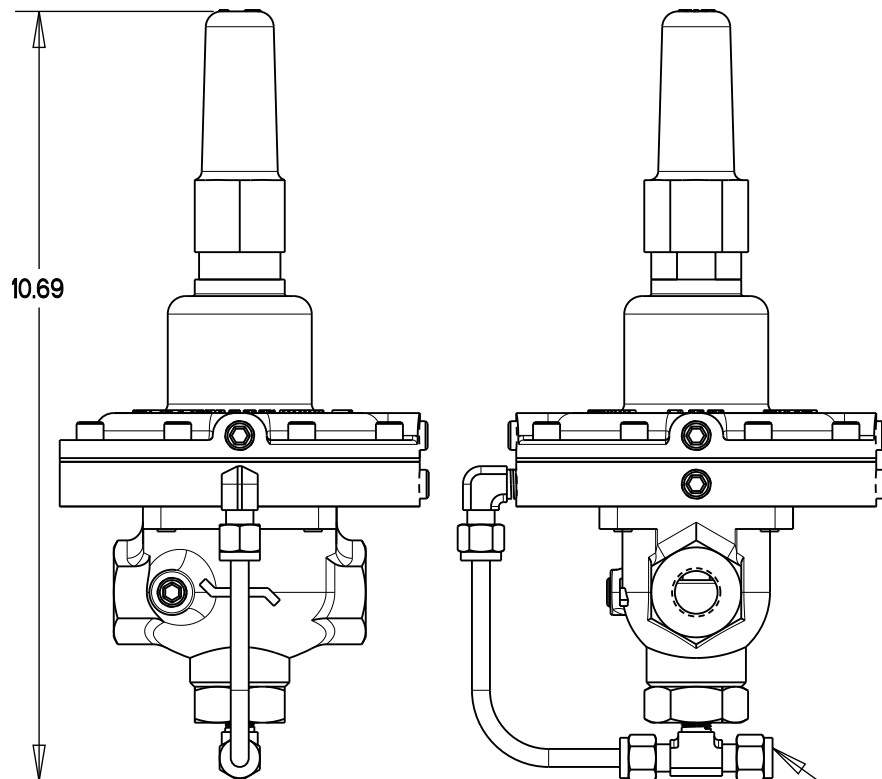
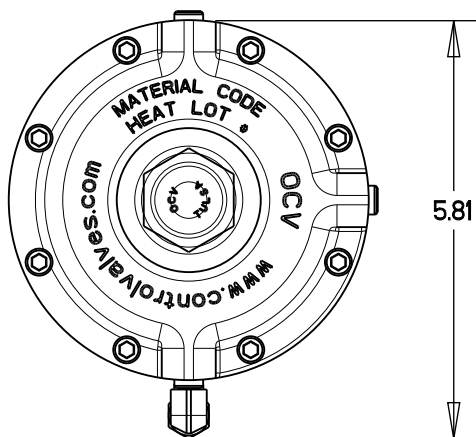
Because of the simplicity of design of the 2450 pilot, required maintenance is minimal. Fitting and bolts should be periodically checked for tightness and the body should be inspected for damage or excessive buildup of foreign material.

#### TROUBLESHOOTING

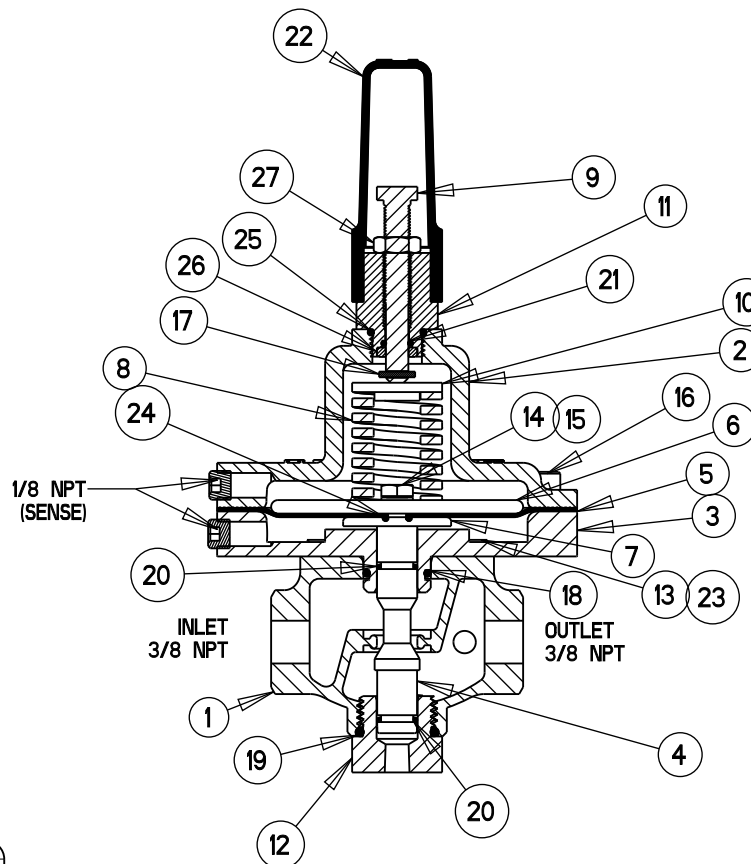
Troubleshooting of the 2450 is equally simple. Major troubleshooting points are as follows:

1. To check for ruptured diaphragm, disconnect the low pressure sense line from both the pilot and the valve flange. Plug the flange tap and pressurize the valve. A continuous discharge of fluid at the open sense port indicates a ruptured diaphragm.
2. An indication of the pilot stem binding may be checked by removing the pilot bonnet and moving the stem by hand. If excessive drag is evident, disassemble and pilot and determine the cause.
3. An erratic pilot action can result from a blockage in the port area of the valve stem or in the counterbalance area. Detach the sense line on the bottom plug and remove the plug. Clean out the counterbalance chamber as required. To remove the stem, hold the bottom of the stem with screwdriver in slot and remove the screw securing the diaphragm plates. The seat/stem assembly may now be removed through the bottom body port. Clean as necessary.





1/4" OD TUBE  
(BALANCING PORT CONNECTED TO LOWER SENSE CHAMBER)



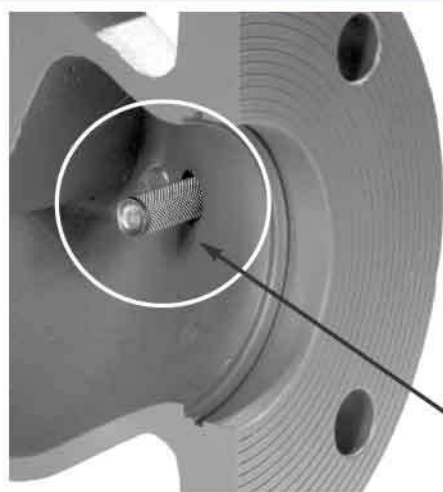
27	1	HEX NUT
26	1	BUSHING
25	1	O-RING
24	1	O-RING
23	4	O-RING
22	1	CAP
21	1	O-RING
20	2	O-RING
19	1	O-RING
18	1	O-RING
17	1	CODDER PIN
16	8	SKT HD CAPSCREW
15	1	LOCK WASHER
14	1	HEX HD CAPSCREW
13	4	FLAT HD SCREW
12	1	PLUG
11	1	ADJUSTING SCREW ADAP.
10	1	SPRING RETAINER
9	1	ADJUSTING SCREW
8	1	SPRING
7	1	LOWER DIAPH. PLATE
6	1	UPPER DIAPH. PLATE
5	1	DIAPHRAGM
4	1	STEM
3	1	ADAPTER
2	1	BONNET
1	1	BODY
ITEM	QTY	DESCRIPTION

## TOLERANCES

UNLESS NOTED  
 .XX  $\pm 0.015$   
 .XXX  $\pm 0.005$   
 ANGULAR  $\pm 0.5^\circ$   
 MACH. FINISH 125

DRAWN BY JRK  
 DATE 06-19-20  
 CHKD BY  
 DATE

OCV Control Valves			
TULSA OKLAHOMA USA			
RATE-OF-FLOW CONTROL PILOT			
SIZE	DRAWING NUMBER	REV	
A	2450		



## DESCRIPTION

The 123 Inline Strainer installs in the inlet side port of the main valve, and protects the pilot system from solid contaminants in the line fluid. The screen prevents the entrance of particles into the pilot system piping while flow through the main valve washes the screen clean. Recommended use on petroleum valve applications where flushing or removal of the screen for cleaning is not practical or may be considered hazardous.

Strainer Shown Installed

## DIMENSIONS

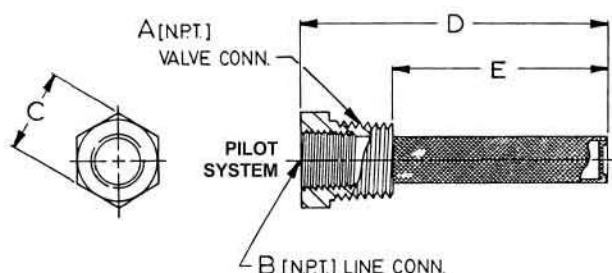
PART NUMBER	A	B	C	D	E	USED ON VALVE SIZE
660704	3/8	1/4	11/16	2 3/16	1 1/2	1 1/4"-6"
660705	1/2	3/8	7/8	2 1/4	1 1/2	8"-10"
660706	3/4	1/2	1 1/8	2 3/8	1 1/2	12"-16"

## MATERIALS

Inline strainers are all-stainless steel construction.

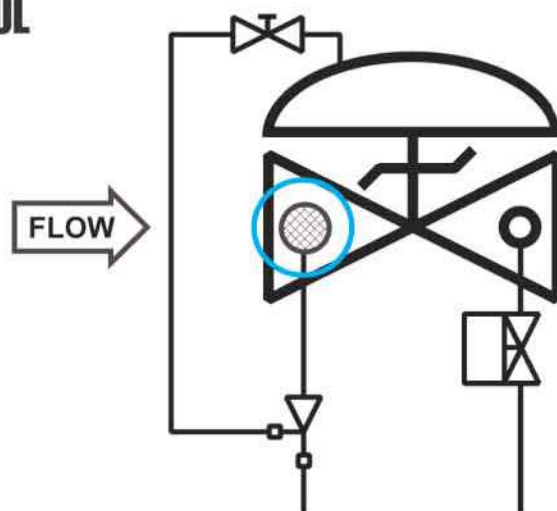
## SCREEN SIZE

Standard screen is 40 mesh. Other mesh sizes are available.



## SCHEMATIC SYMBOL

The Model 123 Inline Strainer is shown on OCV Valve Schematics as:



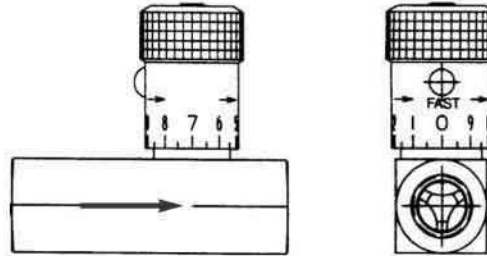
EXAMPLE: Shown here on a MODEL 115-2 Solenoid Valve.

## DESCRIPTION



The Model 141-3 Flow Control Valve is an adjustable restriction device, installed in the control circuit tubing. The flow control valve differs from a standard needle valve in that it includes an internal check valve. Thus it allows free flow in one direction (through the check) and restricted flow in the other direction (through the needle). The setting of the flow control valve meters the flow into or out of the main valve diaphragm chamber,

thus controlling either the opening or closing speed of the main valve. These can be installed in series for separate opening and closing speed control. Restricted flow is in the direction of the flow arrow on the body.

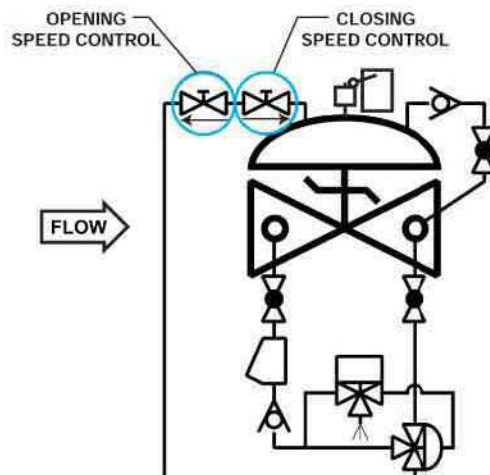


## MODEL 141-3 MATRIX

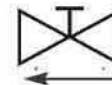
MATERIAL	PART NUMBER	INLET/OUTLET (NPT)	A	USED ON VALVE SIZE*
Brass	682100	1/4	2 3/8	1 1/4"-2"
Brass	682101	3/8	2 3/4	2 1/2"-6"
Brass	682102	1/2	3 1/4	8"-10"
Brass	682103	3/4	3 7/8	12"-16"
Stn. Steel	682700	1/4	2 3/8	1 1/4"-2" Stn.
Stn. Steel	682701	3/8	2 3/4	2 1/2"-6"
Stn. Steel	682702	1/2	3 1/4	8"-10"
Stn. Steel	682703	3/4	3 5/8	12"-16"

Note: Flow control valve use and size may vary on valve application. Consult factory.

## SCHEMATIC SYMBOL



The Model 141-3 Flow Control Valve is shown on OCV Valve Schematics as:



EXAMPLE: Shown here on a MODEL 125 Pump Control Valve as separate opening and closing speeds.

## DESCRIPTION

The Model 155L Visual Indicator is a device that enables the user to determine the extent of opening of a control valve. It consists of an adaptor threaded into the main valve bonnet, a rod threaded into the main valve stem, a sealed Pyrex sight glass, and protective stainless steel housing. The indicator rod moves as the main valve opens and closes. The 155L may be installed on virtually any OCV Model 65 Control Valve that requires only visual indication. Installation can be done without disassembly of the main valve. The 155L provides a convenient point for bleeding the air during system startups via a screw located on the top adaptor.

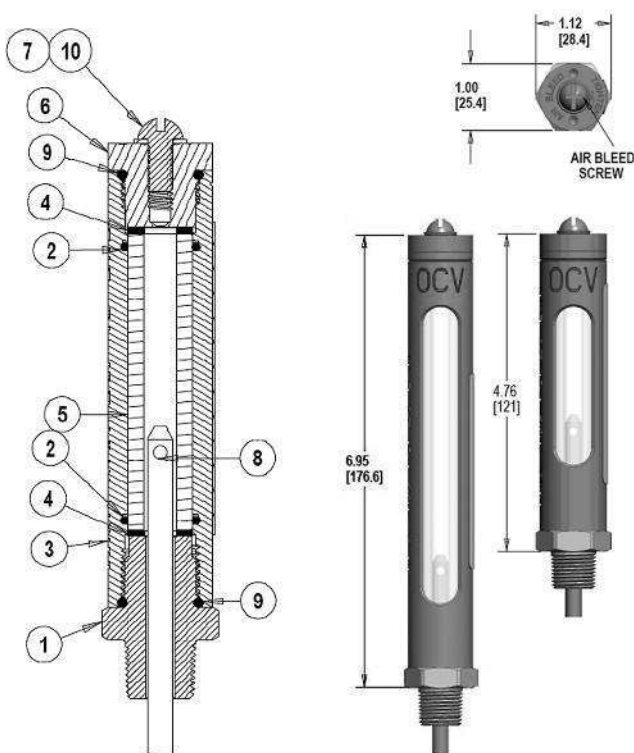
**WHERE USED** - The 155L is the standard visual indicator on military fuel service valves for Jet fuel or Avgas service. Optional on virtually any control valve not already employing a limit switch or position transmitter.



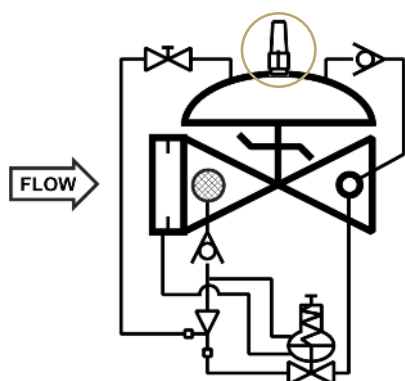
## MODEL 155L MATRIX

ITEM	DESCRIPTION	QTY	MATERIAL
1	ADAPTOR, LOWER	1	SS
2	O-RING, INNER HOUSING	2	FKM
3	HOUSING	1	SS
4	GASKET, CUSHION	2	FKM
5	SIGHT GLASS	1	PYREX
6	ADAPTOR, UPPER	1	SS
7	SCREW, AIR BLEED	1	SS
8	INDICATOR STEM	1	MONEL
9	O-RING, OUTER HOUSING	2	FKM
10	SEAL WASHER, AIR BLEED	1	FKM / SS

MAX WORKING PRESSURE: 400 PSI



## SCHEMATIC SYMBOL



The Model 155L is shown on OCV Valve schematics as:



EXAMPLE: Shown here on a Model 120-6 Rate of Flow / Check Valve

Order P/N 155L Assembly With Stem	Main Valve Size INCHES (MM)	Valve Stroke (Inches)
255750	1.25 (32)	0.375"
	1.5 (40)	
	2 (50)	0.5"
	2.5 (65)	0.75"
	3 (80)	1"
255751	4 (100)	1.375"
255752	6 (150)	1.5"
255753	8 (200)	2.5"
	10 (250)	3"
255754	12 (300)	3"
255755	14 (350)	3.5"
	16 (400)	4.3"





**Global** performance. **Personal** touch.