Operating Manual

Model: 114-1E
Size:
Serial #:
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OCV® FLUID SOLUTIONS LLC

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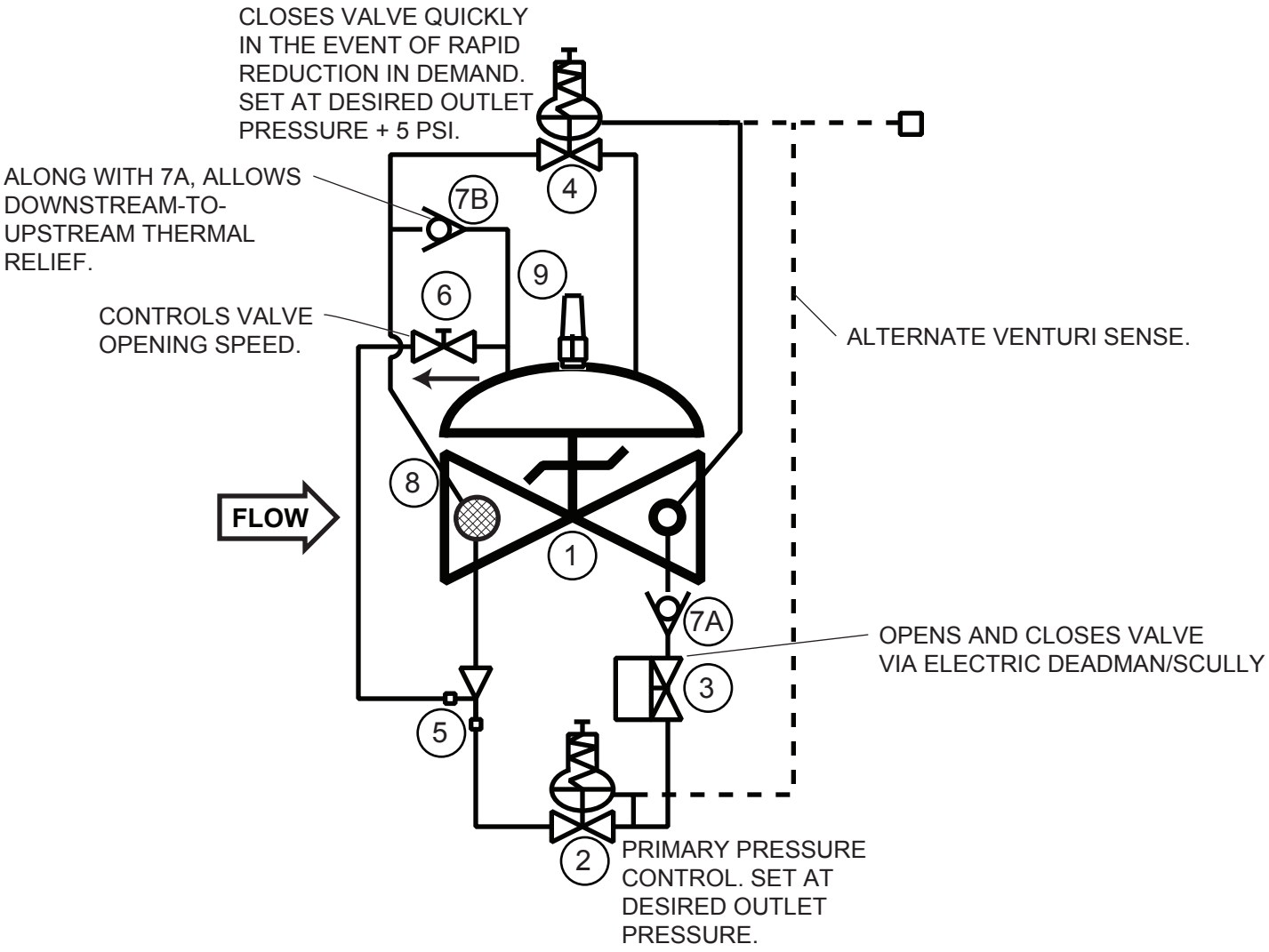
REFUELING CONTROL VALVE



ITEM	PART NO.	QTY	DESCRIPTION
1	65	1	BASIC VALVE ASSEMBLY
2	1340	1	PRESSURE REDUCING PILOT
3	451	1	TWO-WAY SOLENOID PILOT, N.C.
4	1330	1	SURGE CONTROL PILOT
5	126	1	EJECTOR
6	141-3	1	FLOW CONTROL VALVE (Opening Speed Control)
7	141-1	2	CHECK VALVE
8	123	1	INLINE STRAINER
9	155	1	VISUAL INDICATOR

installation, operating and maintenance instructions

refueling control valve

model 114-1E

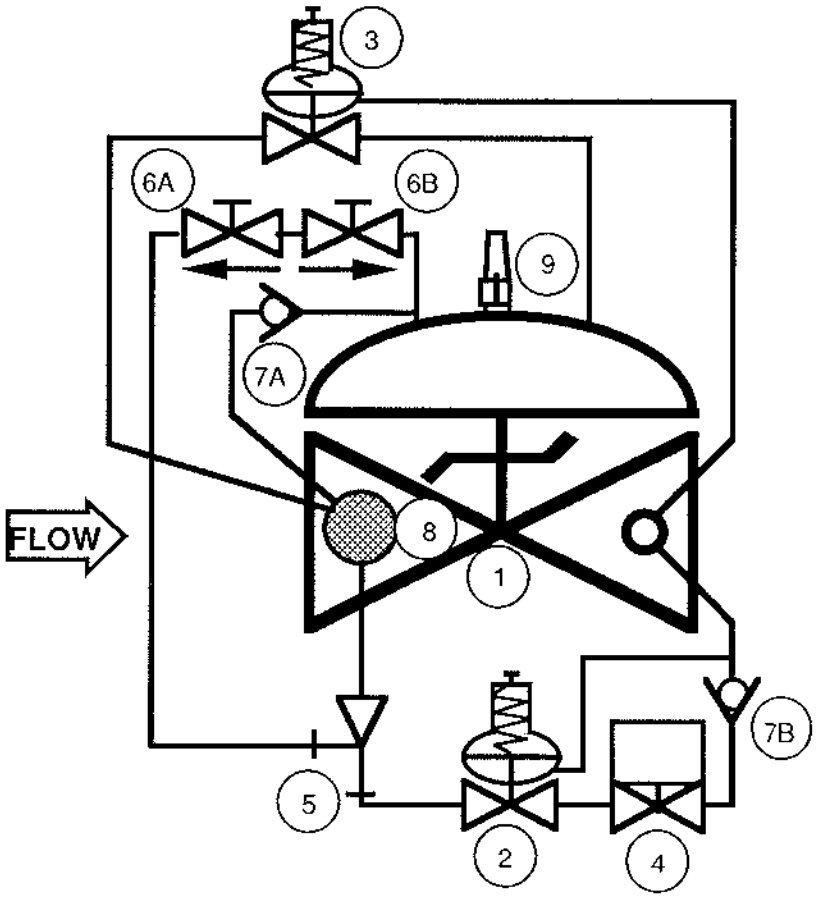
GENERAL DESCRIPTION

The OCV Model 114-1E is a control valve specifically designed for aircraft refueling service. Referred to as either a **refueling control valve** or **hydrant control valve**, it performs the following functions:

1. Opens and closes electrically from a deadman control handle.
2. While open, modulates to control downstream pressure at a predetermined set point.
3. Closes rapidly to prevent undue pressure buildup due to a rapid reduction in demand.
4. Will open to allow reverse (defueling) flow or to relieve thermal buildup.

The 114-1E consists of the following components, arranged as shown on the schematic diagram.

1. **Model 65 Basic Valve Assembly,** a hydraulically operated, diaphragm actuated globe valve which closes with an elastomer-on-metal seal.
2. **Model 1340 Pressure Reducing Pilot,** a two-way, normally-open control pilot which senses downstream pressure under its diaphragm and balances it against an adjustable spring load. An increase in pressure above the set point tends to make the pilot close.
3. **Model 1330 Surge Control Pilot,** a two-way, normally-closed control pilot which senses downstream pressure under its diaphragm and balances it against an adjustable spring load. An increase in pressure above the set point tends to make the pilot open.
4. **Model 451 Solenoid Pilot, a** two-way electrically-actuated pilot which is the interface with the electric deadman handle. Energizing the solenoid allows the main valve to open. De-energizing the solenoid causes the main valve to close.



6. Two **Model 141-3 Flow Control Valves,** needle-type valves which provide adjustable, restricted flow in one direction, and free flow in the opposite direction. Flow control valve (6A) is connected as an opening speed **control**, (6B) as a **closing speed control.**

7. Two **Model 141-1 Check Valves,** which give the 114-1E its reverse flow capability.

8. **Model 123 Inline Strainer,** which protects the pilot system from solid contaminants in the line fluid.

9. **Model 155 Visual Indicator,** which enables the user to determine the valve's position at a glance.

THEORY OF OPERATION

DEADMAN CONTROL ACTION: Squeezing the trigger of the deadman handle applies power to the coil of the **solenoid pilot (4),** opening it to connect the main valve diaphragm chamber to downstream, via the pressure reducing pilot. This allows the valve to open.

Releasing the trigger de-energizes the solenoid, closing it. Inlet pressure is applied through the ejector (5) to the main valve diaphragm chamber, directing the valve quickly and tightly closed.

PRESSURE REDUCING ACTION: The **pressure reducing pilot (2) senses the pressure at the** downstream side of the valve. As the pressure tends to increase above the set point, the pilot moves further closed. This results in an increase in pressure in the diaphragm chamber of the main valve.from the orifice in the ejector. The valve then closes slightly to restore the downstream pressure to the set point. Conversely, as the pressure tends to decrease below the set point, the pilot moves further open. This results in a decrease in pressure in the diaphragm chamber of the main valve. The main valve then opens wider to bring the downstream pressure back up to the set point. The net result of all this is a constant modulating action by the pilot and main valve and a downstream pressure which remains constant despite fluctuations in inlet pressure or demand.

SURGE CONTROL ACTION: As explained above, the main valve tends to close as downstream pressure rises above the set point. However, the speed of this closure is limited by the size of the orifice in the ejector. In the event of a rapid reduction in demand, such as might be caused by the closure of an aircraft tank valve, the valve may not be able to close fast enough to prevent the pressure from rising beyond established limits. For this reason, the 114-1E is equipped with a **surge control pilot (3).** This normally-closed pilot valve is connected directly between the inlet of the valve and the diaphragm chamber, and, like the pressure reducing pilot, senses downstream pressure. It is normally set 5-10 psi higher than the reducing pilot, therefore under normal conditions it is closed and has no effect on valve operation. However, if pressure does rise to its set point, the surge control pilot opens and sends a large volume of fluid to the main valve diaphragm chamber, causing the valve to close at a rate much greater than that which can be obtained through the ejector. Therefore downstream pressure build up is held to a minimum.

INSTALLATION

1. The 114-1E is furnished fully factory-assembled and ready for installation at the appropriate point in the system. The user is referred to the Model 65 Basic Valve section of this manual for full installation details.

2. After the valve is installed, the solenoid is wired into the deadman control system.

STARTUP AND ADJUSTMENTS

The following procedures should be followed in the order presented in order to effect an initial startup of the 114-1E.

1. Remove the plastic cap from the pressure reducing pilot (2) and loosen the adjusting screw jam nut. Turn the adjusting screw clockwise to a full stop.

2. Remove the plastic cap from the surge control pilot (3) and loosen the adjusting screw jam nut. Turn the adjusting screw clockwise to a full stop.

3. Loosen the adjusting screw jam nut on the opening speed control valve (6A). Turn the adjusting screw **fully clockwise**, then **counter-clockwise** three full turns.

4. Loosen the adjusting screw jam nut on the closing speed control valve (6B). Turn the adjusting screw fully clockwise, then counter-clockwise five full turns.

5. Start the pump or otherwise pressurize the system. The valve should remain closed.

6. Carefully loosen one of the pipe plugs in the main valve bonnet until fluid appears around the threads. When only clear fluid (no air) is discharging, retighten the plug.

7. Squeeze and hold the trigger of the deadman handle. The valve should open.

8. Slowly turn the adjusting screw of the pressure reducing pilot (2) **counter-clockwise** until the downstream pressure decreases to the desired set point **plus 10 psi**.

9. Slowly turn the adjusting screw of the surge control pilot (3) **counter-clockwise** until the pressure falls to the set point **plus 5 psi.** Tighten the adjusting screw jam nut and replace the plastic cap.

10. Slowly turn the adjusting screw of the pressure reducing pilot (2) **counter-clockwise** until the pressure falls to the set point. Tighten the adjusting screw jam nut and replace the plastic cap.

11. Release the trigger of the deadman handle and observe that the valve closes.

12. Shut down the system.

13. In case readjustment of the 114-1E should be required, the following summarizes the adjustment of the four adjustable controls on the 114-1E.

    (a) Pressure Reducing Pilot (2): **Clockwise** to **increase** downstream pressure.

    (b) Surge Control Pilot (3): **Clockwise** to **increase** downstream pressure.

    (c) Flow Control Valve (6A): **Clockwise** to **decrease** valve opening speed. *CAUTION: Never close this valve fully. To do so will prevent the valve from opening at all.*

    (d) Flow Control Valve (6B): **Clockwise** to **decrease** valve closing speed. *CAUTION: Never close this valve fully. To do so will prevent the valve from closing at all.*

MAINTENANCE

Because of the simplicity of design of the 114-1E, required maintenance is minimal. However, the following checks, periodically performed, can do much to keep the valve operating properly and efficiently.

1. Check for chipped or peeling paint. Touch up as required.

2. Check for leaks at fittings and around flanges and connections. Tighten as required.

3. Check that all electrical wiring is secure.

TROUBLESHOOTING

In the event of malfunction of the 114-1E, the following guide should enable the technician to isolate the cause of the problem and take the appropriate corrective action.

MAIN VALVE FAILS TO OPEN/PRESSURE TOO LOW

1. Valve closed upstream or downstream of 114-1E — Open as required.

2. Trigger of deadman handle not depressed — Depress as required.

3. Flow control valve (6A) fully closed — Open as required. See Adjustment Instructions.

4. Pressure reducing pilot (2) adjusted too far counter-clockwise — See Adjustment Instructions.

5. Surge control pilot (3) adjusted too far counter-clockwise — See Adjustment Instructions.

6. Solenoid pilot (4) stuck closed or coil burned out — See the Solenoid Valve section of this manual.

7. Stem of pressure reducing pilot (2) binding — Disassemble pilot and determine cause. See the 1340 Pilot section of this manual.

8. Stem of surge control pilot (3) binding or seat deteriorated — Disassemble pilot and determine cause. See the 1330 Pilot section of this manual.

9. Stem of main valve (1) binding or diaphragm ruptured — Disassemble valve and determine cause. See the Model 65 Basic Valve section of this manual.

MAIN VALVE FAILS TO CLOSE/PRESSURE TOO HIGH

1. Defective deadman handle — Repair or replace as necessary.

2. Pressure reducing pilot (2) adjusted too far clockwise — See Adjustment Instructions.

3. Solenoid pilot (4) stuck open or seat deteriorated — See the Solenoid Valve section of this manual.

4. Stem of pressure reducing pilot (2) binding or seat deteriorated — Disassemble pilot and determine cause. See the 1340 Pilot section of this manual.

5. Strainer (8) clogged — Clean as required.

6. Stem of main valve (1) binding or object caught in valve — Disassemble valve and determine cause. See the Model 65 Basic Valve section of this manual.

Installation, Operating, and Maintenance Instructions

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 ¼" thru 16" and 24". The angle configuration (Model 65A) is available in sizes 1 ¼" 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.

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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

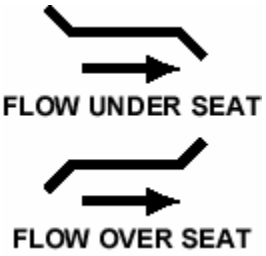
2. VALVE FAILS TO CLOSE

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

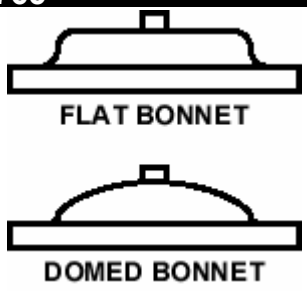
3. VALVE OPENS AND CLOSES BUT LEAKS WHEN CLOSED

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.

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.
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.

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 2	5/8-11 X 3.00" LONG 5/8-11 X 2.25" LONG	150 150	204 204
2 ½" (65)	8	3/4-10X 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 2	1 1/4-7 X 6.50" LONG 1 1/4-7 X 5.50" LONG	1097 1097	1488 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" (600)	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" (400)	20	1 1/8-7	782 (1061)
6" (150)	8	3/4-10	250 (339)	18" (450)	20	1 1/4-7	1097 (1488)
8" (200)	12	3/4-10	250 (339)	20" (500)	20	1 1/4-7	1097 (1488)
10" (250)	12	7/8-9	378 (513)	24" (600)	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 ¼" (32)	1	3/8-24 N	21.5 (29)	8" (200)	8	1/2-13 H	43 (58)
1 ½" (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 ½" (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" (600)	16	1-8 H	286 (383)
6" (150)	8	3/8-16 H	19.7 (27)				

NEW-STYLE REDUCED PORT VALVES (SERIES 765)

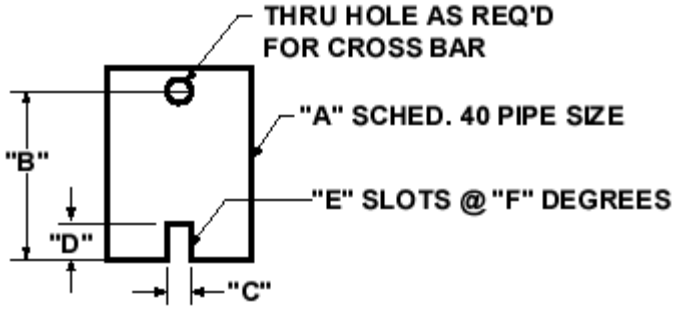
VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)	VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)
3" (80)	4	1/4-20 A	6.3 (8.6)	12" (300)	12	1/2-13 H	43 (58)
4" (100)	6	1/4-20 A	6.3 (8.6)	16" (400)	12	1/2-13 H	43 (58)
6" (150)	6	3/8-16 H	19.7 (27)	18" (450)	12	1/2-13 H	43 (58)
8" (200)	8	3/8-16 H	19.7 (27)	20" (500)	12	1/2-13 H	43 (58)
10" (250)	8	1/2-13 H	43 (58)	24" (600)	12	1/2-13 H	43 (58)

OLD-STYLE FULL PORT VALVES (SERIES 65)

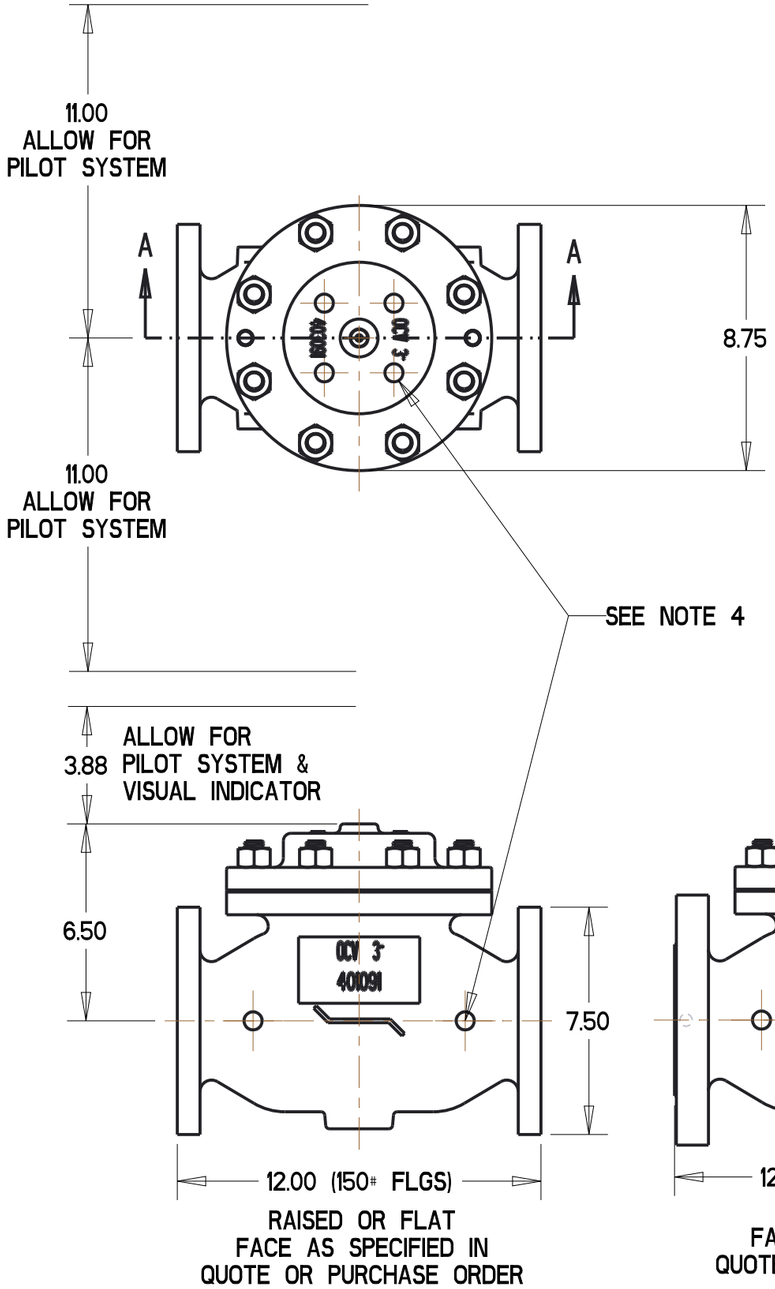
VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)	VALVE SIZE (DN)	NO. OF SCREWS	SCREW SIZE	REC. TORQUE FT-LB (N-M)
3" (80)	4	1/4-20 H	6.3 (8.6)	10" (250)	12	3/8-16 H	19.7 (27)
4" (100)	6	1/4-20 H	6.3 (8.6)	12" (300)	12	1/2-13 H	43 (58)
8" (200)	8	3/8-16 H	19.7 (27)				

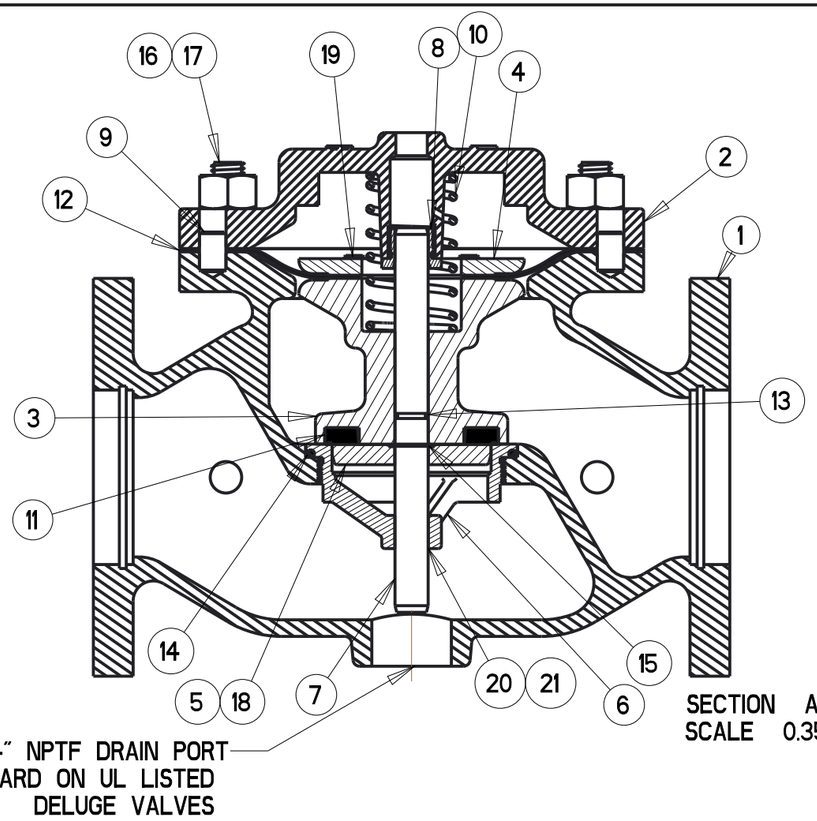
N = SINGLE HEX NUT ON VALVE STEM
A = ALLEN-HEAD CAPSCREWS
H = HEX-HEAD CAPSCREWS

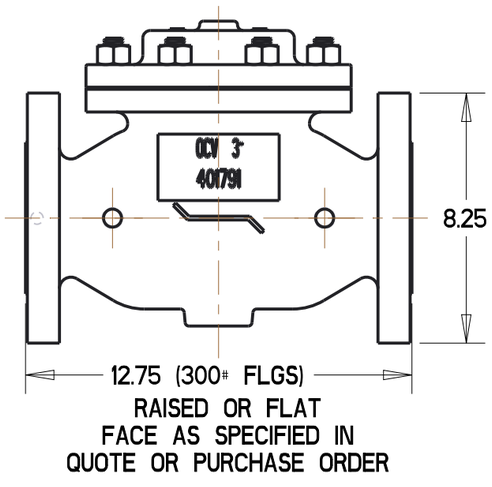
TABLE 5
SEAT RING TOOL DETAILS

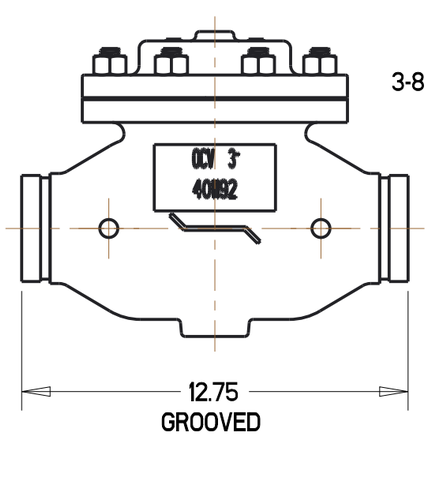


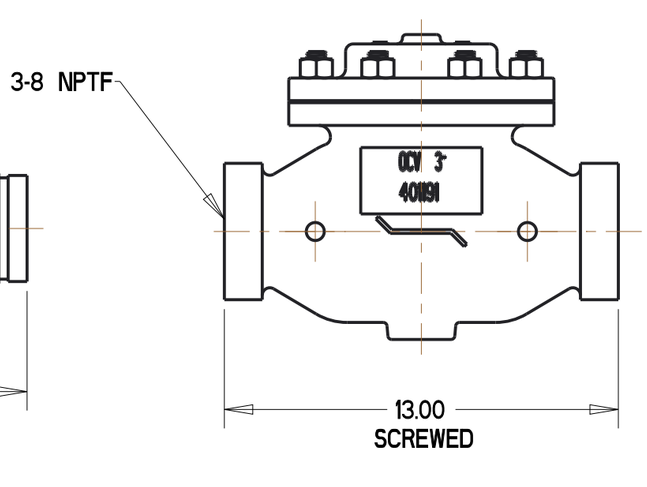
VALVE SIZE FULL PORT	VALVE SIZE RED. PORT	"A" PIPE SIZE	"B" MIN. LENGTH	"C" SLOT WIDTH	"D" SLOT DEPTH	"E" # SLOTS	"F" SPACING
1 1/4"	--	3/4	6"	3/8"	3/8"	2	180°
1 1/2"	--	3/4	6"	3/8"	3/8"	2	180°
2"	3"	1 1/2	7"	3/8"	3/8"	2	180°
2 1/2"	--	2	8"	1/2"	1/2"	3	120°
3" NEW	4"	2 1/2	9"	1/4"	3/8"	3	120°
3" OLD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







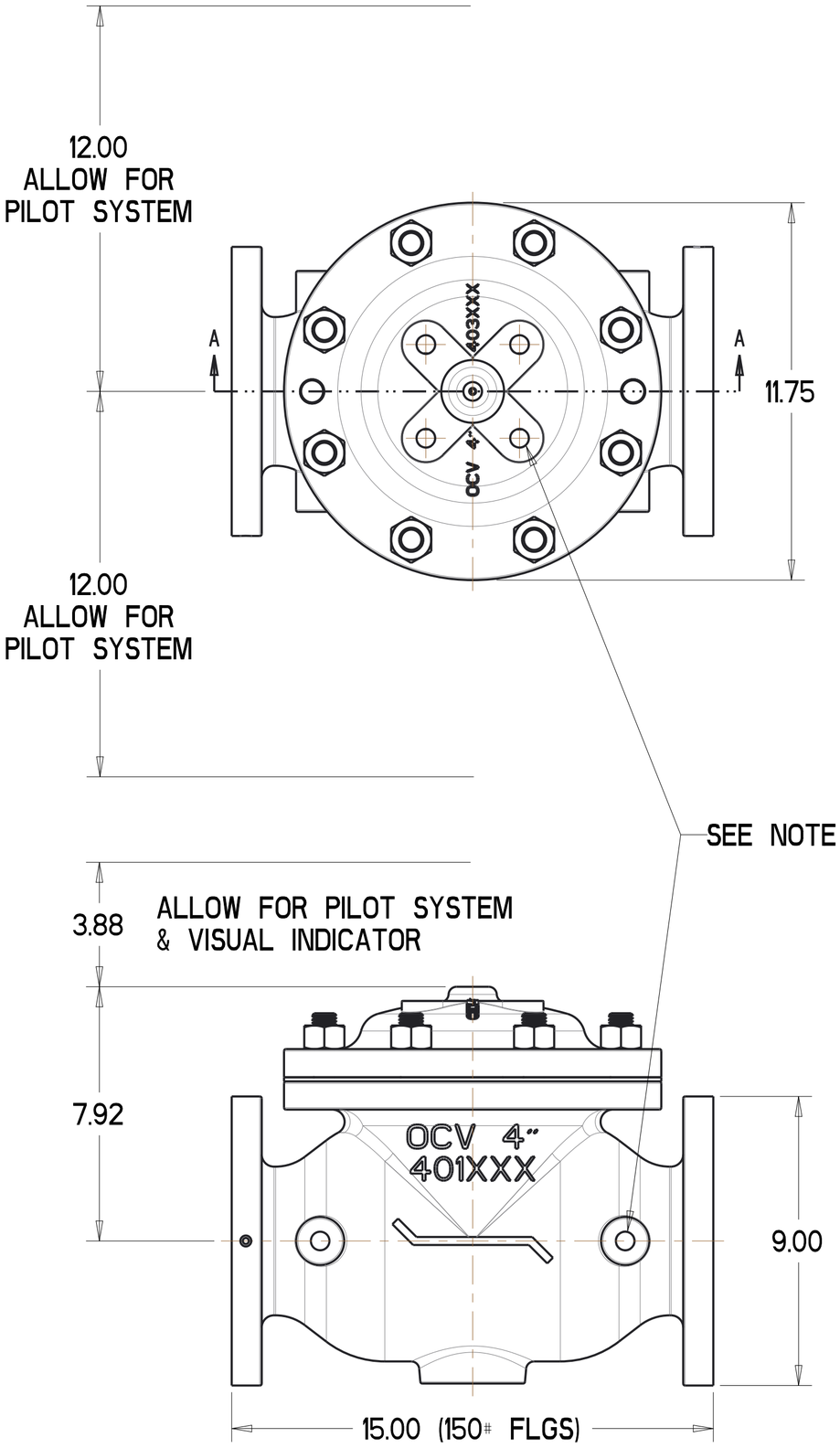


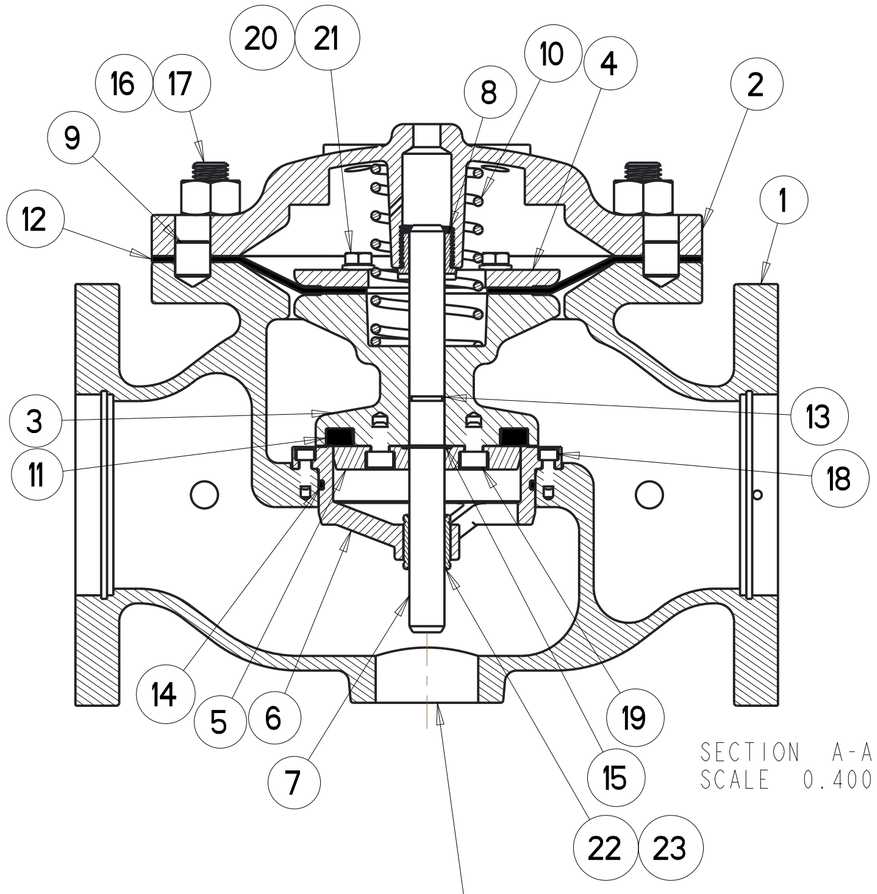


ITEM	QTY	DESCRIPTION
1	1	BODY
2	1	BONNET
3	1	SPOOL
4	1	DIAPHRAGM PLATE
5	1	SEAT RETAINER
6	1	SEAT RING
7	1	STEM
8	1	BUSHING,UPPER
9	2	DOWEL PIN
10	1	SPRING
11	1	SEAT DISC
12	1	DIAPHRAGM
13	1	O-RING, STEM
14	1	O-RING, SEAT RING
15	1	SNAP-RING SPLIT-RING, STEM
16	8	STUD
17	8	NUT,HEX
18	3	CAPSCREW, SEAT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

NOTES:
1. EXTERNAL/INTERNAL COATING & MATERIALS PER OCV MATERIAL OF CONSTRUCTION SHEET
2. ABS DESIGN APPROVED
3. UL LISTED DESIGN
4. TOTAL OF (9) 3/8-18 NPTF PIPE TAPS ARE PROVIDED FOR THE PILOT SYSTEM AND ACCESSORIES. (5) BONNET & (4) BODY.
5. ANGLE BODYS ARE ALSO AVAILABLE
6. WIDE OPEN CV: 120
7 VERTICAL STROKE: 1.0 INCHES

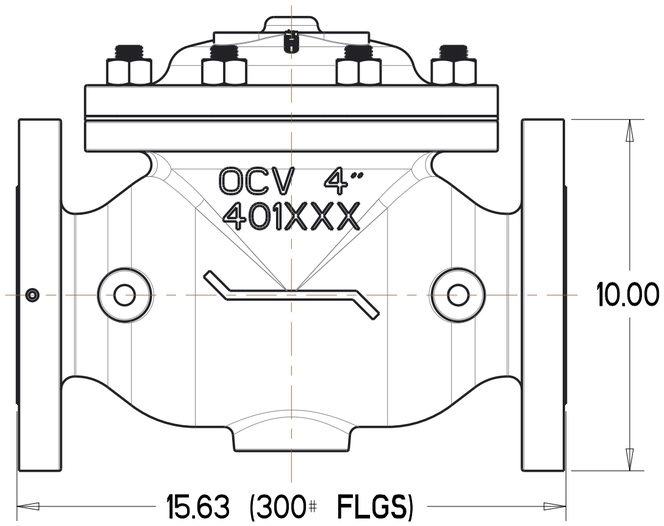
E					MATERIAL	TOLERANCES		OCV Control Valves
D						UNLESS NOTED		TULSA OKLAHOMA USA
C						.XX ±.015		
B						.XXX ±.005		3" 65 SERIES GLOBE VALVE
A						ANGULAR ±0.5°		
CHG	ECN	DATE	BY		NO. REQ'D	MACH FINISH 125		
REVISIONS				REF DWG NO'S		DRAWN BY	DATE	SIZE / DRAWING NUMBER / REV
						JRK	10-28-2016	B / 3190D /
					SCALE	CHKD BY	DATE	
					0.200			





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	8	STUD
17	8	NUT,HEX
18	6	CAPSCREW, SEAT RING
19	4	CAPSCREW, SEAT RETAINER
20	6	CAPSCREW, DIAPHRAGM PLATE
21	6	WASHER, LOCK, DIAPHRAGM PLATE
22	1	BUSHING, LOWER (SS SEATS ONLY)
23	2	SNAP RING (SS SEATS ONLY)

NOTES:
1. EXTERNAL/INTERNAL COATING & MATERIALS PER OCV MATERIAL OF CONSTRUCTION SHEET
2. ABS DESIGN APPROVED
3. UL LISTED DESIGN
4. 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.
5. ANGLE BODYS ARE ALSO AVAILABLE
6. WIDE OPEN CV: 200
7 VERTICAL STROKE: 1.4 INCHES

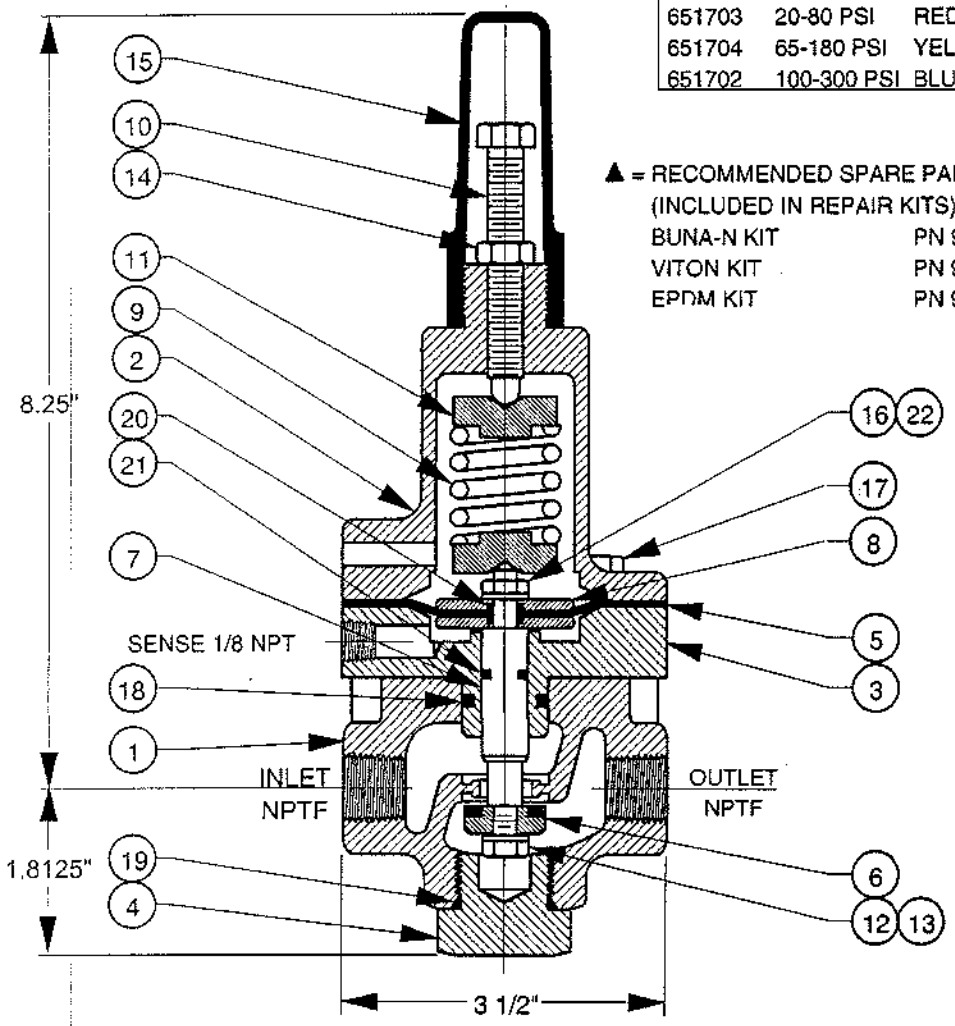


					MATERIAL	TOLERANCES		OCV Control Valves	
E						UNLESS NOTED		TULSA OKLAHOMA USA	
D						.XX ±.015			
C						.XXX ±.005		4" 65 SERIES GLOBE VALVE	
B						ANGULAR ±0.5°			
A						MACH FINISH 125			
					NO. REQ'D	DRAWN BY	DATE	SIZE	DRAWING NUMBER / REV
CHG	ECN	DATE	BY			JRK	10-27-2016	C	4400D
REVISIONS				REF DWG NO'S	SCALE 0.300	CHKD BY	DATE		

SPRING CHART		
651701	5-30 PSI	GREEN
651703	20-80 PSI	RED
651704	65-180 PSI	YELLOW
651702	100-300 PSI	BLUE

▲ = RECOMMENDED SPARE PARTS (INCLUDED IN REPAIR KITS)

BUNA-N KIT	PN 930000
VITON KIT	PN 930100
EPDM KIT	PN 930400



ITEM	PART NO	QTY	DESCRIPTION		MATERIAL
1	302102	1	BODY	3/8" NPTF	BRONZE
	302104			1/2" NPTF	
	302702			3/8" NPTF	STN STEEL
	302704			1/2" NPTF	
2	304102	1	BONNET		BRONZE
	304702				STN STEEL
3	300129	1	ADAPTOR		BRONZE
	300719				STN STEEL
4	692502	1	PLUG		ZINC PLTD STL
	310730				STN STEEL
▲ 5	694002	1	DIAPHRAGM		BUNA-N / NYLON
	694102				VITON / NYLON
	694016				EPDM / NYLON
▲ 6	310703	1	SEAT DISC		BUNA-N / SS
	310709				VITON / SS
	310707				EPDM / SS
7	314704	1	STEM		STN STEEL
	314004				MONEL
8	308102	2	DIAPHRAGM PLATE		BRASS
	308702				STN STEEL
9	CHART	1	SPRING		STN STEEL
10	300700	1	ADJUSTING SCREW		STN STEEL
11	300134	2	SPRING RETAINER		BRASS
	300729				STN STEEL
12	531700	1	HEX HEAD CAPSCREW		STN STEEL
▲ 13	685760	1	LOCKWASHER		STN STEEL
14	590717	1	HEX NUT		STN STEEL
15	692002	1	CAP		PVC
16	590712	1	HEX NUT		STN STEEL
17	531701	4	HEX HEAD CAPSCREW		STN STEEL
▲ 18	611116	1	O-RING		VITON
	614116				EPDM
▲ 19	610912	1	O-RING		BUNA-N
	611912				VITON
	914912				EPDM
▲ 20	611010	2	O-RING		VITON
	614010				EPDM
▲ 21	611012	1	O-RING		VITON
	614012				EPDM
22	685700	1	LOCKWASHER		STN STEEL

CHG	E.C. NO.	DATE	BY

REVISIONS

REF DWG NO'S

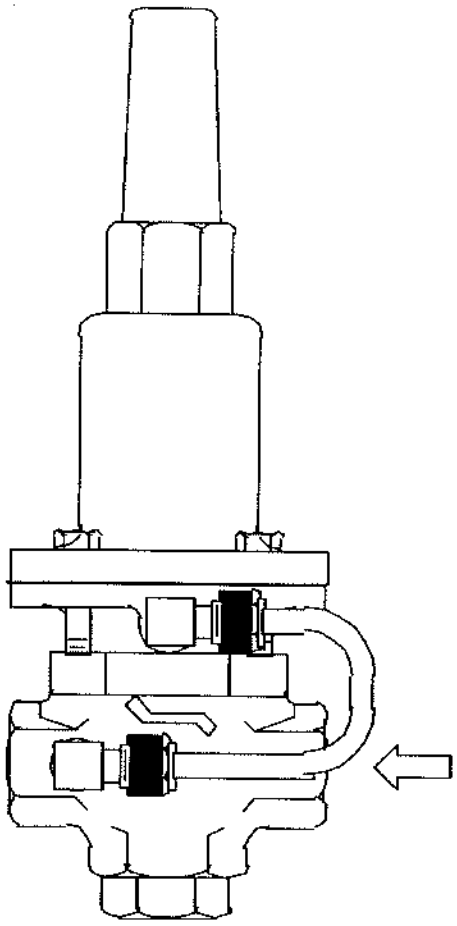
MATERIAL	TOLERANCES
NOTED	UNLESS NOTED FRACTIONAL ±1/64 DECIMAL ±.005 MACH. FINISH 125 √ ANGULAR ±1/2°

NO. REQ'D	DRAWN BY	DATE
	RON	2-15-96
SCALE 1/2	CHKD. BY	DATE

OCV Control Valves TULSA, OKLAHOMA U.S.A.

MODEL 1340 PILOT 3/8"-1/2" NPTF PRESSURE REDUCING

SIZE	DRAWING NUMBER	REV.
A	1340	



installation, operating, and maintenance instructions

pressure reducing pilot

model 1340

GENERAL DESCRIPTION

The Model 1340 Pressure Reducing Pilot is a normally-open, direct-acting, spring-loaded, diaphragm-type control pilot. As the primary control pilot for the OCV Series 127 control valves, it is designed to maintain a constant preset discharge pressure from the main valve. It is a constant throttling device, maintaining precise, positive control of the main valve.

The 1340 may also be used by itself as a downstream pressure regulator.

The 1340 is available in bronze or stainless steel construction and with 3/8 NPT or 1/2 NPT end connections.

The 1340 is available with four different adjustment ranges:

5-30 psi	65-180 psi
20-80 psi	100-300 psi

FUNCTIONAL DESCRIPTION

The 1340 controls the pressure in the diaphragm chamber of the main valve, hence the degree of opening or closing of the valve. The downstream pressure is sensed under the diaphragm of the pilot and is balanced against an adjustable spring load. As the downstream pressure decreases below the set point, the pilot opens wider, decreasing the pressure in the diaphragm chamber of the main valve, opening the valve a proportionate amount. Conversely, as downstream pressure increases above the set point, the pilot closes further, increasing the pressure in the diaphragm chamber of the main valve, closing the valve a proportionate amount. The net result is a constant modulating action of the pilot and main valve, keeping the downstream pressure at the set point within very close limits.

INSTALLATION AND ADJUSTMENT

The 1340 is normally installed in the main valve control piping between the ejector and the downstream body tap. Flow must be in the direction indicated. In most cases, a sense line is factory installed between the diaphragm sense port and the downstream pilot body side port, as shown in the drawing. The pilot can also be remote sensed by running a line (typically 1/4" O.D. tubing) from the 1/8 NPT connection under the pilot diaphragm to the desired downstream point where the pressure control is desired.

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7400 East 42nd Place / Tulsa, Oklahoma 74145 -4744 USA / (918) 627-1942 / 888-OCV-VALV / FAX 918-622-8916
e-mail: sales@controlvalves.com / website: www/controlvalves.com

Pressure adjustment is made by means of the single adjusting screw:

Clockwise adjustment **increases** downstream pressure.

Counterclockwise adjustment **decreases** downstream pressure.

MAINTENANCE

Required maintenance of the 1340 is minimal. Fittings and bolts should be periodically checked, and the body should be inspected for damage or excessive buildup of foreign material.

TROUBLESHOOTING

Other than improper adjustment, there are basically only three malfunctions which can occur with the 1340 pilot. These, and the symptoms they can cause, are as follows:

1. PILOT DIAPHRAGM RUPTURED: Results in failure of the main valve to close and/or downstream pressure that is too high. A ruptured pilot diaphragm will be evidenced by leakage through the vent hole in the pilot bonnet.
2. PILOT SEAT DISC DETERIORATED: Results in a downstream pressure that drifts too high under dead-end (zero flow) conditions.
3. PILOT STEM BINDING: Typically results in poor pressure control, though in extreme cases, it can result in failure of the main valve to open or close.

REPAIR PROCEDURES

Refer to the 1340 assembly drawing for parts identification.

A. DIAPHRAGM REPLACEMENT

1. Prior to disassembling the pilot, turn the adjusting screw (10) fully counterclockwise until it is loose enough to be turned with the fingers.
2. Remove the four bonnet capscrews (17).
3. Remove the bonnet (2). Set the spring (9) and spring retainers (11) aside in a safe place.
4. Remove the plug (4) from the bottom of the pilot.
5. Using a 7/16" socket as a backup on capscrew (12), remove hex nut (16), lockwasher (22), upper diaphragm plate (8) and o'ring (20).
6. Remove old diaphragm (5).
7. Inspect both diaphragm plate o'rings (20). Replace if necessary.
8. Place new diaphragm on stem (7).
9. Replace upper diaphragm plate (8), o'ring (20), lockwasher (22) and hex nut (16). Tighten securely.
10. Reinstall plug (4).
11. Hold spring (9) and spring retainers (11) together in the proper orientation, and insert them into the bonnet (2).
12. Place the bonnet over the adapter, and insert the bonnet capscrews (17). Tighten securely.
13. Place valve back in service, following the startup and adjustment procedures given in the main portion of this manual.

B. SEAT DISC REPLACEMENT

1. Follow Steps 1 through 4 under DIAPHRAGM REPLACEMENT, above.
2. Using a 7/16" socket as a backup on capscrew (12), remove hex nut (16), lockwasher (22), diaphragm plates (8) and o'rings (20).
3. Remove stem (7) and seat disc (12) through bottom of pilot.
4. Remove capscrew (12), seal washer (13) and old seat disc (6).
5. Place new seat disc, new seal washer and capscrew (12) on stem. Tighten securely.
6. Reinsert stem through bottom of pilot.
7. Reinstall diaphragm plates (8), o'rings (20), diaphragm (5), lockwasher (22) and hex nut (16). Tighten securely.
8. Reassemble pilot following Steps 10 through 13 under DIAPHRAGM REPLACEMENT, above.

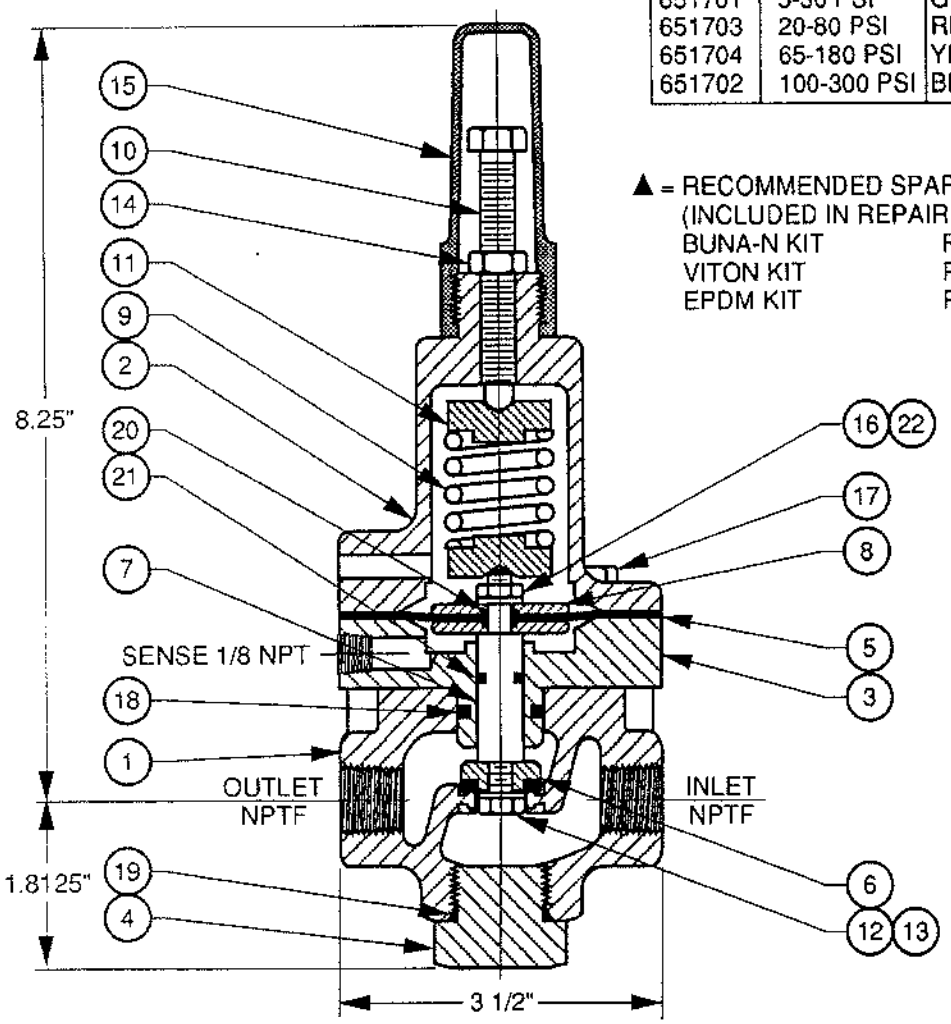
C. STEM REPAIR

1. Follow Steps 1 through 3 under SEAT DISC REPLACEMENT, above.
2. Inspect stem and o'ring (21) carefully.
3. Remove any foreign material or light scratches from the stem with a fine grade of emery cloth. A badly scored stem should be replaced.
4. Replace o'ring (21).
5. Lubricate the o'ring and stem liberally with Vaseline® or similar lubricant.
6. Reassemble pilot following Steps 6 through 8 under SEAT DISC REPLACEMENT, above.

SPRING CHART		
651701	5-30 PSI	GREEN
651703	20-80 PSI	RED
651704	65-180 PSI	YELLOW
651702	100-300 PSI	BLUE

▲ = RECOMMENDED SPARE PARTS (INCLUDED IN REPAIR KITS)

BUNA-N KIT	PN 930000
VITON KIT	PN 930100
EPDM KIT	PN 930400



	ITEM	PART NO	QTY	DESCRIPTION		MATERIAL
	1	302102	1	BODY	3/8" NPTF	BRONZE
		302104			1/2" NPTF	
		302702			3/8" NPTF	STN STEEL
		302704			1/2" NPTF	
	2	304102	1	BONNET		BRONZE
		304702				STN STEEL
	3	300129	1	ADAPTOR		BRONZE
		300719				STN STEEL
	4	692502	1	PLUG		ZINC PLTD STL
		310730				STN STEEL
	5	694002	1	DIAPHRAGM		BUNA-N / NYLON
▲		694102				VITON / NYLON
		694016				EPDM / NYLON
	6	310703	1	SEAT DISC		BUNA-N / SS
▲		310709				VITON / SS
		310707				EPDM / SS
	7	314702	1	STEM		STN STEEL
		314002				MONEL
	8	308102	2	DIAPHRAGM PLATE		BRASS
		308702				STN STEEL
	9	CHART	1	SPRING		STN STEEL
	10	300700	1	ADJUSTING SCREW		STN STEEL
	11	300134	2	SPRING RETAINER		BRASS
		300729				STN STEEL
	12	531700	1	HEX HEAD CAPSCREW		STN STEEL
▲	13	685760	1	LOCKWASHER		STN STEEL
	14	590717	1	HEX NUT		STN STEEL
	15	692002	1	CAP		PVC
	16	590712	1	HEX NUT		STN STEEL
	17	531701	4	HEX HEAD CAPSCREW		STN STEEL
▲	18	611116	1	O-RING		VITON
		614116				EPDM
	19	610912	1	O-RING		BUNA-N
▲		611912				VITON
		914912				EPDM
▲	20	611010	2	O-RING		VITON
		614010				EPDM
▲	21	611012	1	O-RING		VITON
		614012				EPDM
	22	685700	1	LOCKWASHER		STN STEEL

CHG	E.C. NO.	DATE	BY

REVISIONS

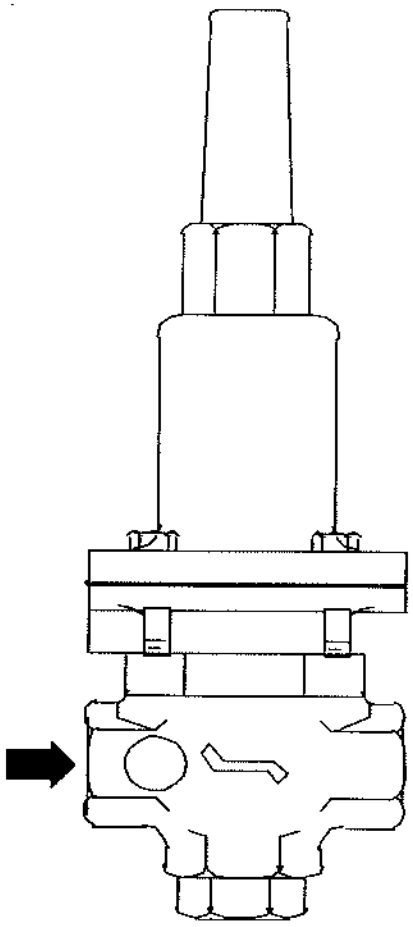
REF DWG NO'S

MATERIAL	TOLERANCES
NOTED	UNLESS NOTED FRACTIONAL ±1/64 DECIMAL ±.005 MACH. FINISH 125√ ANGULAR ±1/2°
NO. REQ'D	DRAWN BY: RON — DATE: 2-14-96
SCALE: 1/2	CHKD. BY — DATE

OCV Control Valves TULSA, OKLAHOMA U.S.A.

MODEL 1330 PILOT 3/8"-1/2" NPTF
PRESSURE RELIEF / SUSTAINING / SURGE

SIZE	DRAWING NUMBER	REV.
A	1330	



installation, operating, and maintenance instructions

pressure sustaining/ pressure relief pilot

model 1330

GENERAL DESCRIPTION

The Model 1330 Pressure Sustaining/Pressure Relief Pilot is a normally-closed, direct-acting, spring-loaded, diaphragm-type control pilot. As the primary control pilot for the OCV Series 108 control valves, it is designed to maintain a constant preset inlet pressure on the main valve. It is a constant throttling device, maintaining precise, positive control of the main valve.

The 1330 may also be used by itself as a back pressure regulator.

The 1330 is available in bronze or stainless steel construction and with 3/8 NPT or 1/2 NPT end connections.

The 1330 is available with four different adjustment ranges:

5-30 psi	65-180 psi
20-80 psi	100-300 psi

FUNCTIONAL DESCRIPTION

The 1330 controls the pressure in the diaphragm chamber of the main valve, hence the degree of opening or closing of the valve. The upstream pressure is sensed under the diaphragm of the pilot and is balanced against an adjustable spring load. As the upstream pressure increases above the set point, the pilot opens wider, decreasing the pressure in the diaphragm chamber of the main valve, opening the valve a proportionate amount. Conversely, as upstream pressure decreases below the set point, the pilot closes further, increasing the pressure in the diaphragm chamber of the main valve, closing the valve a proportionate amount. The net result is a constant modulating action of the pilot and main valve, keeping the upstream pressure at the set point within very close limits.

INSTALLATION AND ADJUSTMENT

The 1330 is normally installed in the main valve control piping between the ejector and the downstream body tap. Flow must be in the direction indicated. A sensing line, typically 1/4" O.D. tubing, must be installed between the pilot sense port and the upstream

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e-mail: sales@controlvalves.com / website: www/controlvalves.com

control piping ahead of the ejector.

Pressure adjustment is made by means of the single adjusting screw:

Clockwise adjustment **increases** upstream pressure.

Counterclockwise adjustment **decreases** upstream pressure.

MAINTENANCE

Required maintenance of the 1330 is minimal. Fittings and bolts should be periodically checked, and the body should be inspected for damage or excessive buildup of foreign material.

TROUBLESHOOTING

Other than improper adjustment, there are basically only three malfunctions which can occur with the 1330 pilot. These, and the symptoms they can cause, are as follows:

1. PILOT DIAPHRAGM RUPTURED: Results in failure of the main valve to open. A ruptured pilot diaphragm will be evidenced by leakage through the vent hole in the pilot bonnet.
2. PILOT SEAT DISC DETERIORATED: Results in failure of the valve to seal off completely (pressure relief service). Can also cause poor pressure control.
3. PILOT STEM BINDING: Typically results in poor pressure control, though in extreme cases, it can result in failure of the main valve to open or close.

REPAIR PROCEDURES

Refer to the 1330 assembly drawing for parts identification.

A. DIAPHRAGM REPLACEMENT

1. Prior to disassembling the pilot, turn the adjusting screw (10) fully counterclockwise until it is loose enough to be turned with the fingers.
2. Remove the four bonnet capscrews (17).
3. Remove the bonnet (2). Set the spring (9) and spring retainers (11) aside in a safe place.
4. Pull the adapter (3) out of the pilot body (1).
5. Remove hex nut (16), lockwasher (22), upper diaphragm plate (8) and o'ring (20).
6. Remove old diaphragm (5).
7. Inspect both diaphragm plate o'rings (20). Replace if necessary.
8. Place new diaphragm on stem (7).
9. Replace upper diaphragm plate (8), o'ring (20), lockwasher (22) and hex nut (16). Tighten securely.
10. Insert adapter (2) back into pilot body (1).
11. Hold spring (9) and spring retainers (11) together in the proper orientation and insert them into the bonnet (2).
12. Place the bonnet over the adapter and insert the bonnet capscrews (17). Tighten securely.
13. Place valve back in service, following the startup and adjustment procedures given in the main portion of this manual.

B. SEAT DISC REPLACEMENT

1. Follow Steps 1 through 4 under DIAPHRAGM REPLACEMENT, above.
2. Remove capscrew (12), seal washer (13) and old seat disc (6).
3. Place new seat disc, new seal washer and capscrew (12) on stem. Tighten securely.
4. Reassemble pilot following Steps 10 through 13 under DIAPHRAGM REPLACEMENT, above.

C. STEM REPAIR

1. Follow Steps 1 and 2 under SEAT DISC REPLACEMENT, above.
2. Remove stem (7) from adapter (3).
3. Inspect stem and o'ring (21) carefully.
4. Remove any foreign material or light scratches from the stem with a fine grade of emery cloth. A badly scored stem should be replaced.
5. Replace o'ring (21).
6. Lubricate the o'ring and stem liberally with Vaseline® or similar lubricant.
7. Place stem in adapter (3). Make sure it moves freely.
8. Reassemble pilot following Steps 3 and 4 under SEAT DISC REPLACEMENT, above.

Installation & Maintenance Instructions

2–WAY DIRECT–ACTING SOLENOID VALVES
NORMALLY OPEN OR NORMALLY CLOSED OPERATION
BRASS OR STAINLESS STEEL CONSTRUCTION – 1/8", 1/4", OR 3/8" NPT

SERIES
8262
8263

Form No.V5256R8

IMPORTANT: See separate solenoid installation and maintenance instructions for information on: Wiring, Solenoid Temperature, Causes of Improper Operation, and Coil or Solenoid Replacement.

DESCRIPTION

Series 8262 and 8263 valves are 2–way direct–acting general service solenoid valves. Valves bodies are of rugged brass or stainless steel. Series 8262 or 8263 valves may be provided with a general purpose or explosionproof solenoid enclosure. Series 8262 and 8263 valves with suffix "P" in the catalog number are designed for dry inert gas and non–lubricated air service.

OPERATION

Normally Open: Valve is open when solenoid is de–energized; closed when is energized.

Normally Closed: Valve is closed when solenoid is de–energized; open when energized.

IMPORTANT: No minimum operating pressure required.

Manual Operation

Manual operator allows manual operation when desired or during an electrical power outage. Depending upon basic valve construction, three types of manual operators are available:

Push Type Manual Operator

To engage push type manual operator, push stem at base of valve body upward as far as possible. Valve will now be in the same position as when the solenoid is energized. To disengage manual operator, release stem. Manual operator will return to original position.

Screw Type Manual Operator

To engage screw type manual operator, rotate stem at base of the valve body clockwise until it hits a stop. Valve will now be in the same position as when the solenoid is energized. To disengage, rotate stem counterclockwise until it hits a stop.

⚠ **CAUTION: For valve to operate electrically, manual operator stem must be fully rotated counterclockwise.**

Stem/Lever Type Manual Operator

To engage manual operator, turn stem/lever clockwise until it hits a stop. Valve will now be in the same position as when the solenoid is energized. To disengage manual operator, turn stem/lever counterclockwise until it hits a stop.

⚠ **CAUTION: For valve to operate electrically, manual operator stem/lever must be fully rotated counterclockwise.**

Flow Metering Devices

Valves with suffix "M" in catalog number are provided with a metering device for flow control. Turn stem to right to reduce flow; left to increase flow.

INSTALLATION

Check nameplate for correct catalog number, pressure, voltage, frequency, and service. Never apply incompatible fluids or exceed pressure rating of the valve. Installation and valve maintenance to be performed by qualified personnel.

Note: Inlet port will either be marked "1" or "IN". Outlet port will be marked "2" or "OUT".

Future Service Considerations.

Provision should be made for performing seat leakage, external leakage, and operational tests on the valve with a nonhazardous,noncombustible fluid after disassembly and reassembly.

Temperature Limitations

For maximum valve ambient and fluid temperatures, refer to charts below. Check catalog number, coil prefix, suffix, and watt rating on nameplate to determine the maximum temperatures.

Wattage	Catalog Number Coil Prefix	Coil Class	Max. Ambient Temp. °F	Max. Fluid Temp. °F
6, 10.5, 12.4	none, DA or S	A	77	180
6,10.5 12.4	DF, FT or SF	F	125	180
6,10.5, 12.4	HT	H	140	180
9,10.7	none, DP or SP	F	77	180
9.7	none, FT or HT	A, F or H	77	120
11.2	none, FT or HT	A, F or H	77	150
16.7	none, DP or SP	F	77	200
17.1	none, KP SP or SD	F	125	180
17.1	HB, KB SS or SV	H	140	180

Catalog Nos.8262B200 and 8262 C200 AC construction only and Catalog Nos.8262B214 and 8262 D200 AC and DC construction are limited to 140°F fluid temperature.

Valves with Suffix V or W that are designed for AC service and normally closed operation are for use with No. 2 and 4 fuel oil service. These valves have the same maximum temperatures per the above table except Suffix W valves are limited to a maximum fluid temperature of 140°F.

Listed below are valves with Suffix V in the catalog number that are acceptable for higher temperatures.

Catalog Number Coil Prefix	Max. Ambient Temp.°F	Max. Fluid Temp.°F
FT8262, HB8262 FT8263, HB8263 8262G, 8263G	125	250*
HT or HB 8262G HT or HB 8263G	140	250

*The only exception is the 8262G and 8263G series (Class F coil) at 50 Hertz rated 11.1 and 17.1 watts are limited to 210°F fluid temperature.

Positioning

This valve is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the solenoid base sub – assembly area.

Printed in U.S.A.

Valves with suffix "P" in the catalog number must be mounted with the solenoid vertical and upright.

Mounting
Refer to Figure 2 for mounting dimensions.

Piping
Connect piping or tubing to valve according to markings on valve body. Inlet port will either be marked "I" or "IN". Outlet port will be marked "2" or "OUT". Wipe the pipe threads clean of cutting oils. 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 solenoid as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point.

IMPORTANT: To protect the solenoid valve, install a strainer or filter suitable for the service involved, in the inlet side as close to the valve as possible. Clean periodically depending on service conditions. See ASCO Series 8600, 8601 and 8602 for strainers.

MAINTENANCE

⚠ WARNING: To prevent the possibility of personal injury or property damage, turn off electrical power, depressurize valve, and vent fluid to a safe area before servicing the valve.

NOTE: It is not necessary to remove the valve from the pipeline for repairs.

Cleaning
All solenoid valves should be cleaned periodically. The time between cleanings will vary depending on the medium and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. In the extreme case, faulty valve operation will occur and the valve may fail to open or close. Clean strainer or filter when cleaning the valve.

Preventive Maintenance
- Keep the medium flowing through the valve as free from dirt and foreign material as possible.
- While in service, the valve should be operated at least once a month to insure proper opening and closing.
- 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 parts are worn or damaged, install a complete ASCO Rebuild Kit.

Causes of Improper Operation
- **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on nameplate.
- **Excessive Leakage:** Disassemble valve (see Maintenance) and clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Valve Disassembly
1. Disassemble valve using exploded views for identification of parts.
2. Remove solenoid, see separate instructions.
3. Unscrew solenoid base sub-assembly or valve bonnet with special wrench adapter supplied in ASCO Rebuild Kit. For wrench adapter only, order No. K218948. Remove core assembly, core spring, and solenoid base gasket from valve body. For normal maintenance on Series 8263 valves it is not necessary to remove valve seat. See Figure 1 for metering or manual operator constructions.
4. For normally open construction (Figure 3) remove end cap, or manual operator, (not shown) end cap gasket, disc holder spring, and disc holder assembly.
5. All parts are now accessible to clean or replace. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Valve Reassembly
1. Use exploded views for identification, orientation and placement of parts.
2. Lubricate all gaskets with DOW CORNING® 111 Compound lubricant or an equivalent high-grade silicone grease.
3. For normally open construction (Figure 3), install disc holder assembly, disc holder spring, end cap gasket and end cap or manual operator. For valves with 1/8" NPT, torque end cap or manual operator to 90 ± 10 in-lbs [10,2 ± 1,1 Nm]. For all other valves torque end cap or manual operator to 175 ± 25 in-lbs [19,8 ± 2,8 Nm].
4. For Series 8263 apply a small amount of LOCTITE® PST® pipe sealant to threads of valve seat (if removed). Follow manufacturers instructions for application of pipe sealant. Then install valve seat and torque to 75 ± 10 in-lbs [8,5 ± 1,1 Nm].
5. Replace solenoid base gasket, core assembly with core spring and solenoid base sub-assembly or plugnut/core tube sub-assembly and valve bonnet. Note: For core assemblies with internal type core springs, install wide end of core spring in core assembly first, closed end of core spring protrudes from top of core assembly.
6. For 1/8" NPT valve constructions, Torque valve bonnet to 90 ± 10 in-lbs [10,2 ± 1,1 Nm]. Torque solenoid base sub-assembly to 175 ± 25 in-lbs [19,8 ± 2,8 Nm].
7. Install solenoid, see separate solenoid instructions. Then make electrical hookup to solenoid.

⚠ WARNING: To prevent the possibility of personal injury or property damage, check valve for proper operation before returning to service. Also perform internal seat and external leakage tests with a nonhazardous, noncombustible fluid.

8. Restore line pressure and electrical power supply to valve.
9. After maintenance is completed, operate the valve a few times to be sure of proper operation. A metallic *click* signifies the solenoid is operating.

ORDERING INFORMATION FOR ASCO REBUILD KITS

Parts marked with an asterisk (*) in the exploded view are supplied in Rebuild Kits. When Ordering Rebuild Kits for ASCO valves, order the Rebuild Kit number stamped on the valve nameplate. If the number of the kit is not visible, order by indicating the number of kits required, and the Catalog Number and Serial Number of the valve(s) for which they are intended.

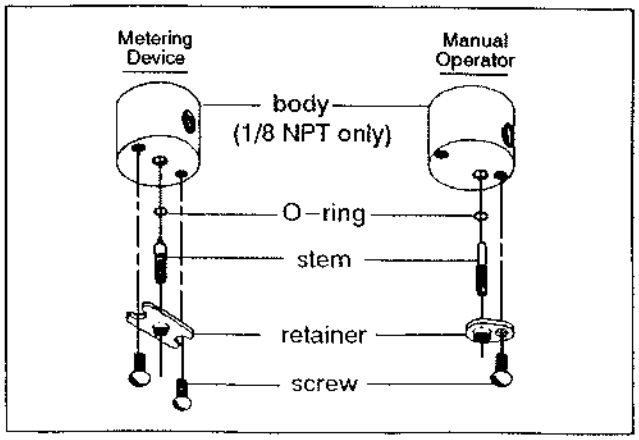
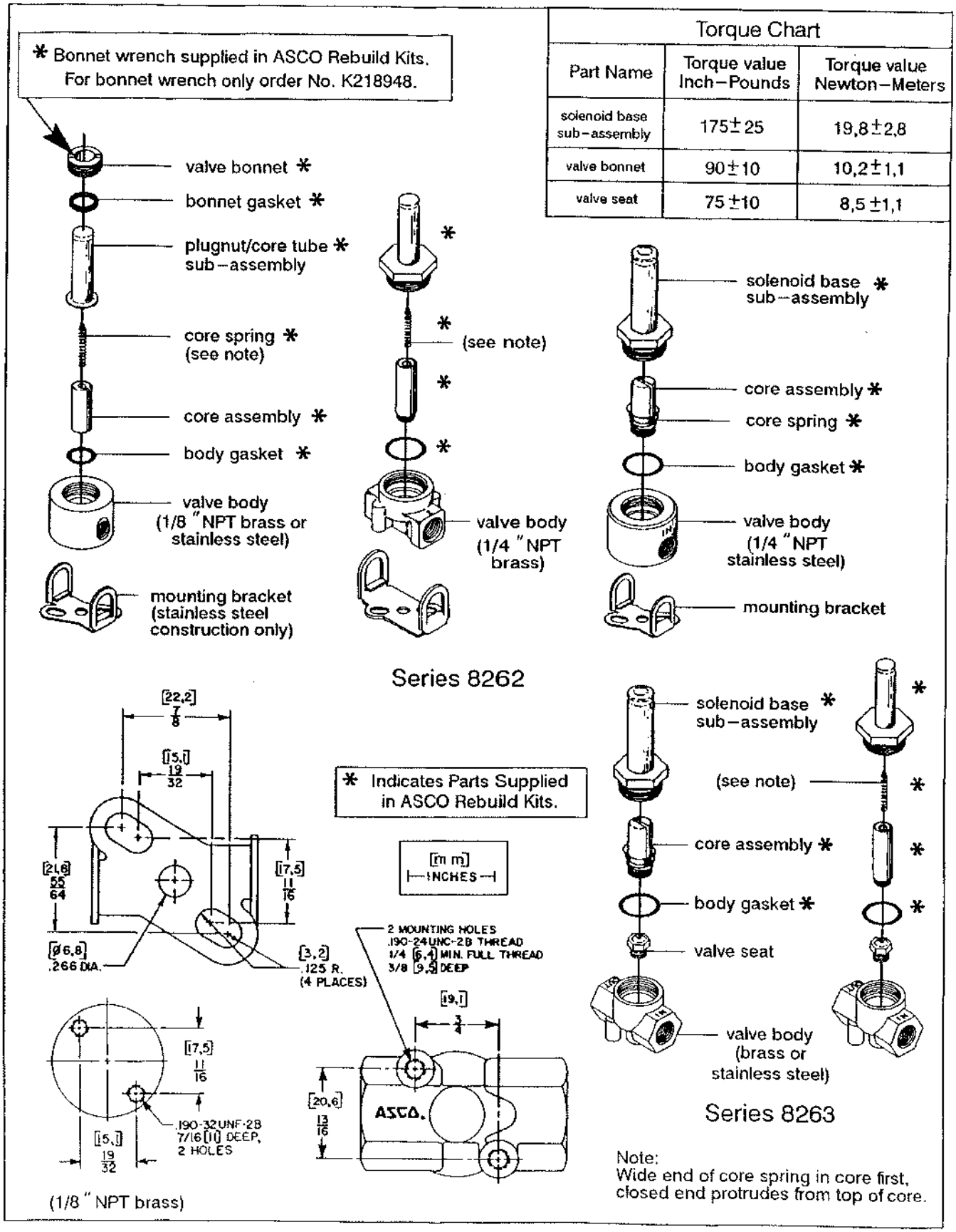


Figure 1. Metering and manual operator constructions.



Torque Chart		
Part Name	Torque value Inch–Pounds	Torque value Newton–Meters
solenoid base sub-assembly	175±25	19,8±2,8
valve bonnet	90±10	10,2±1,1
valve seat	75±10	8,5±1,1

Figure 2. Series 8262 and 8263, normally closed construction.

Disassembly and Reassembly of Stem /Lever Type Manual Operator (Refer to Figure 3)

NOTE: There are two stem/lever manual operator constructions. They are identified by the location of the core spring as ***internal*** or ***external*** spring construction.

1. Unscrew solenoid base sub–assembly from manual operator body.
2. Unscrew manual operator body from valve body. Then remove body gasket and stem retainer.
3. Slip stem/spacer sub–assembly with stem gasket from manual operator body. Remove core assembly with core spring from center of manual operator body.
4. All parts are now accessible for cleaning or replacement. Lubricate gaskets per ***Valve Reassembly*** step 2.
5. Position core assembly with core spring into base of manual operator body. Then install stem/spacer sub–assembly into manual operator body to engage with core assembly.
6. Reinstall stem retainer on body and stem/spacer sub–assembly.

IMPORTANT: The spacer on the stem/spacer sub–assembly must be *inside* of the stem retainer for *internal* spring construction and *outside* the stem retainer for *external* spring construction.

7. Replace body gasket and install manual operator assembly in valve body. Torque manual operator body to 175 ± 25 in–lbs [19,8 ± 2,8 Nm].
8. Replace solenoid base gasket and solenoid base sub–assembly. Torque solenoid base sub–assembly to 175 ± 25 in–lbs [19,8 ± 2,8 Nm].
9. Check manual operator for proper operation. Turn stem clockwise and counterclockwise; stem should turn freely without binding.

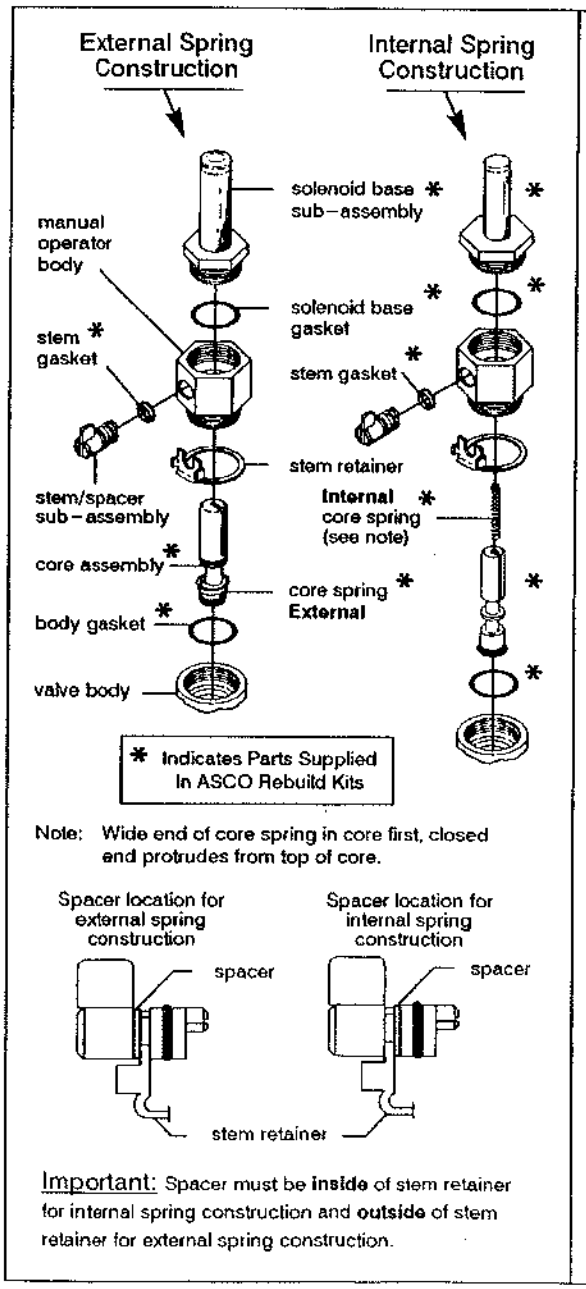


Figure 3. Stem/lever type manual operators

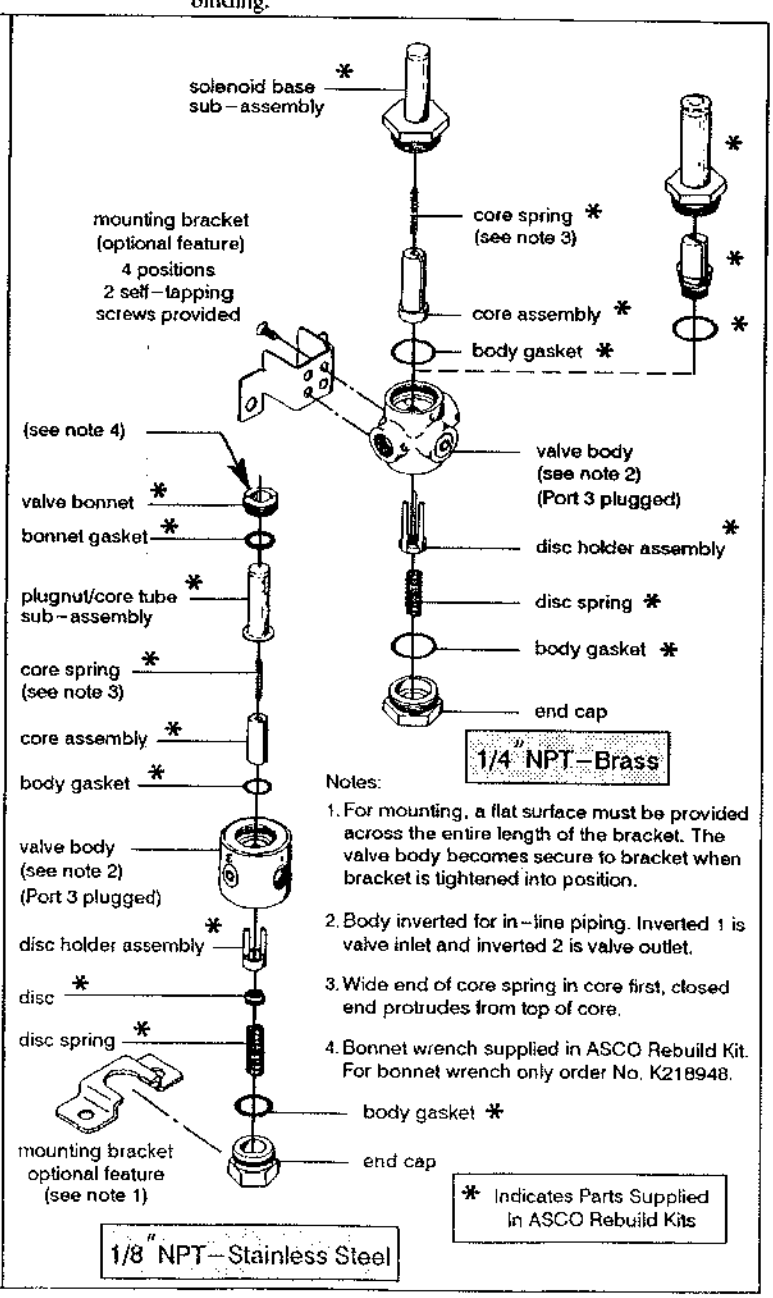
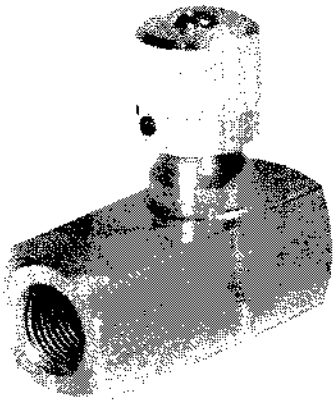


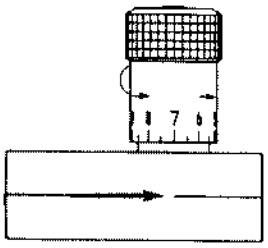
Figure 4. Series 8262, normally open construction.

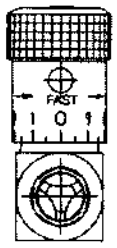
ASCO Valves Automatic Switch Co. 50–60 Hanover Road, Florham Park, New Jersey 07932



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.



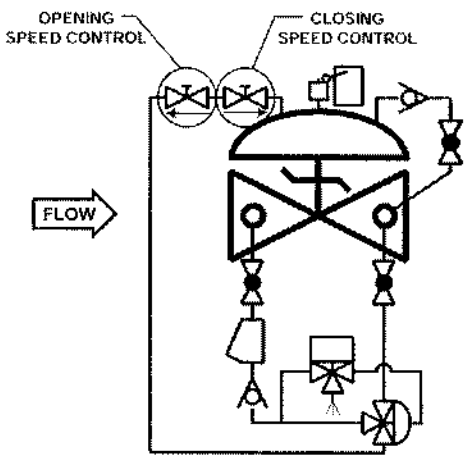


MODEL 141-3 MATRIX

MATERIAL	PART NUMBER	INLET/OUTLET (NPT)	A	USED ON VALVE SIZE*
Brass	682100	1/4	2 3/8	1 ¼"-2"
Brass	682101	3/8	2 3/4	2 ½"-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 ¼"-2" Stn.
Stn. Steel	682701	3/8	2 3/4	2 ½"-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.

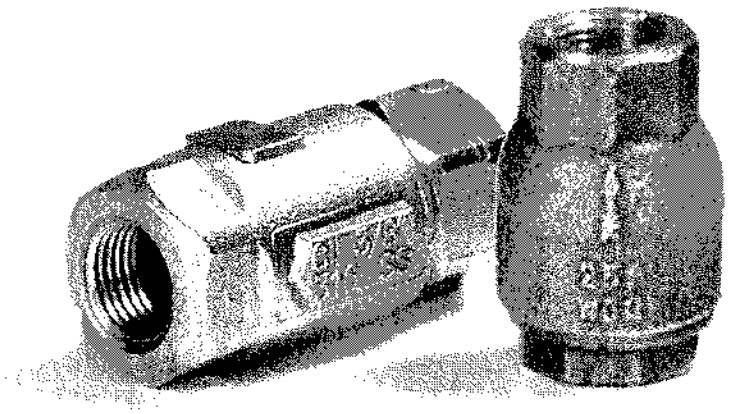
SCHEMATIC SYMBOL



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.

TOLL FREE 1.888.628.8258 • phone: (918)627.1942 • fax: (918)622.8916 • 7400 East 42nd Place, Tulsa, OK 74145
email: sales@controlvalves.com • website: www.controlvalves.com



DESCRIPTION

The Model 141-1 Check Valve uses a spring-loaded poppet that will allow flow in one direction only. It is the primary component used on valves with a reverse flow check function. Flow is in the direction of the arrow on the check valve body.

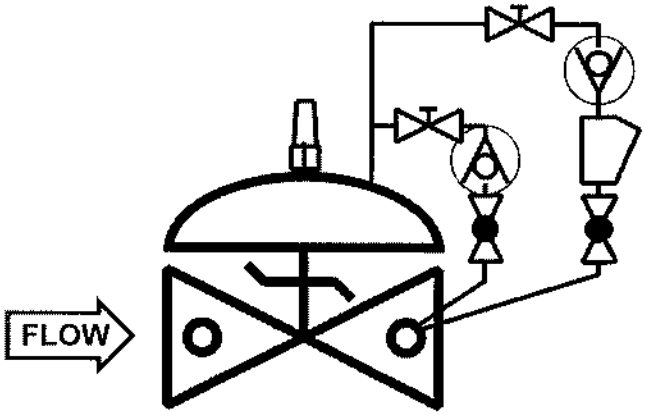
◄Check Valves shown
Stainless Steel & Brass

MODEL 141-1 MATRIX

MATERIAL	PART NUMBER	INLET/OUTLET (NPT)	LENGTH	USED ON VALVE SIZE
Bronze	681100	3/8	2	1 ¼"-6"
Bronze	681101	1/2	2 1/8	8"-10"
Bronze	681102	3/4	2 1/4	12"-16"
Stn. Steel	681700	3/8	2 5/16	1 ¼"-6"
Stn. Steel	681701	1/2	2 5/16	8"-10"
Stn. Steel	681702	3/4	2 7/8	12"-16"

SCHEMATIC SYMBOL

The Model 141-1 Check Valve is shown on OCV Valve Schematics as:



EXAMPLE: Shown here on a MODEL 94-3 Check Valve.

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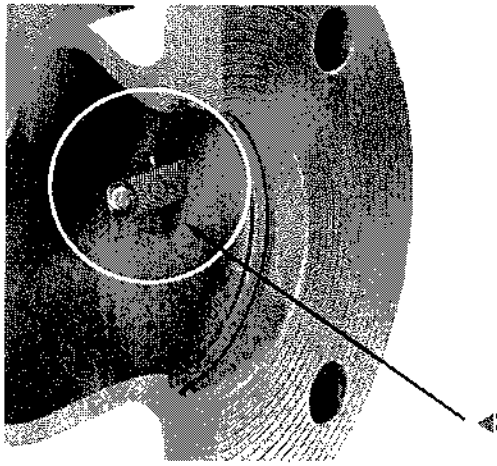
email: sales@controlvalves.com • website: www.controlvalves.com

Check Valve 141-1



◄Strainer Shown Installed

DESCRIPTION

The 123 Inline Strainer installs in the inlet side port of the main valve, and protects the pilot system from solid contaminates 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.

DIMENSIONS

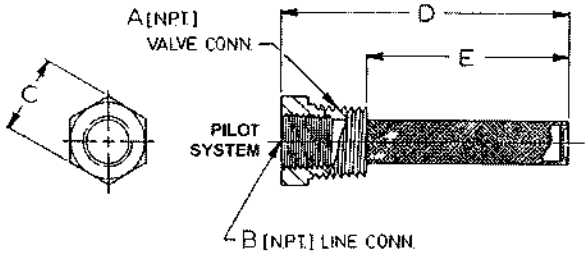
PART NUMBER	A	B	C	D	E	USED ON VALVE SIZE
660704	3/8	1/4	11/16	2 3/16	1 1/2	1 1/4"-6"
660705	1/2	3/8	7/8	2 1/4	1 1/2	8"-10"
660706	3/4	1/2	1 1/8	2 3/8	1 1/2	12"-16"

MATERIALS

Inline strainers are all-stainless steel construction.

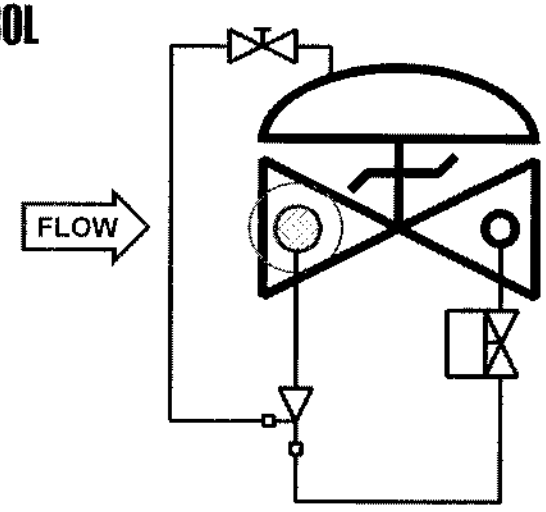
SCREEN SIZE

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.

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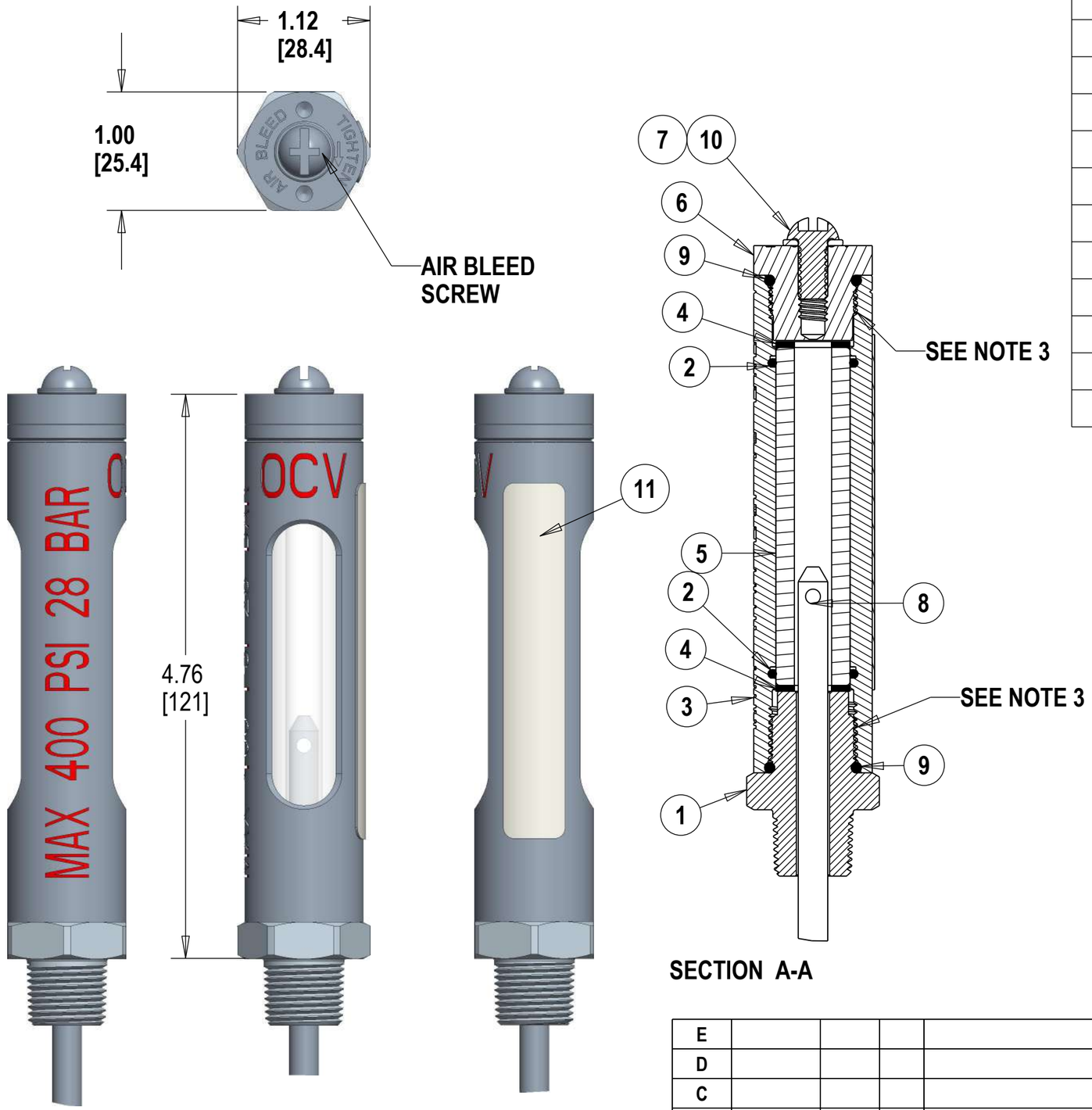
email: sales@controlvalves.com • website: www.controlvalves.com

Inline Strainer 123



SECTION A-A

ITEM	PN	DESCRIPTION	QTY	MATERIAL
1	300246	ADAPTOR, LOWER	1	SS
2	611016	O-RING, HOUSING	2	VITON
3	300570	HOUSING	1	SS
4	693100	GASKET, CUSHION	2	VITON
5	316045	SIGHT GLASS	1	PYREX
6	300245	ADAPTOR, UPPER	1	SS
7	532728	PLUG, AIR BLEED	1	SS
8	SEE TBL	INDICATOR STEM	1	MONEL
9	611908	O-RING, HOUSING	2	VITON
10	685768	SEAL, AIR BLEED PLUG	1	SS / VITON
11	521576	DECAL, WARNING LABLE	1	VINYL

INDICATOR STEMS (∅0.25")

P/N	MATERIAL	MAIN VALVE SIZES
316004	MONEL	1.25-3IN
316005		4IN
316006		6IN

NOTE:
1. PRESSURE RATING 400 PSI
2. INCHE [MM]
3. APPLY 1 DROP OF LOCTITE BLUE THREAD LOCKER. PRIOR TO ASSEMBLY
4. SPANNER TOOL REQUIRED FOR ASSEMBLY/ DISSASSEMLY. PN 300249

REVISIONS				REF DWG NO'S
CHG	ECN	DATE	BY	
A				
B				
C				
D				
E				

MATERIAL	TOLERANCES
SS - VITON	UNLESS NOTED .XX ±.015 .XXX ±.005 ANGULAR ±0.5° MACH FINISH 125

NO. REQ'D	DRAWN BY	DATE
	JRK	11-7-2019
SCALE	CHKD BY	DATE
1.000		

OCV Control Valves

TULSA OKLAHOMA USA

155L (1.25-6")
LIQUID FILLED VISUAL INDICATOR

SIZE	DRAWING NUMBER	REV
B	155L_UP_TO_6IN	


OCV® FLUID SOLUTIONS LLC
OCV®
Dorot
matholding group