filter separator control valve

installation, operating and maintenance instructions

model 119

GENERAL DESCRIPTION

The OCV Model 119 is a 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 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. Closes tightly to prevent flow when a high water level is reached.

The 119 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. **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.
3. **Model 123 Inline Strainer,** which protects the pilot system from solid contaminants in the flow stream.
4. **Model 155L Visual Indicator Assembly,** which allows the user to determine the valve's operating position at a glance.

THEORY OF OPERATION

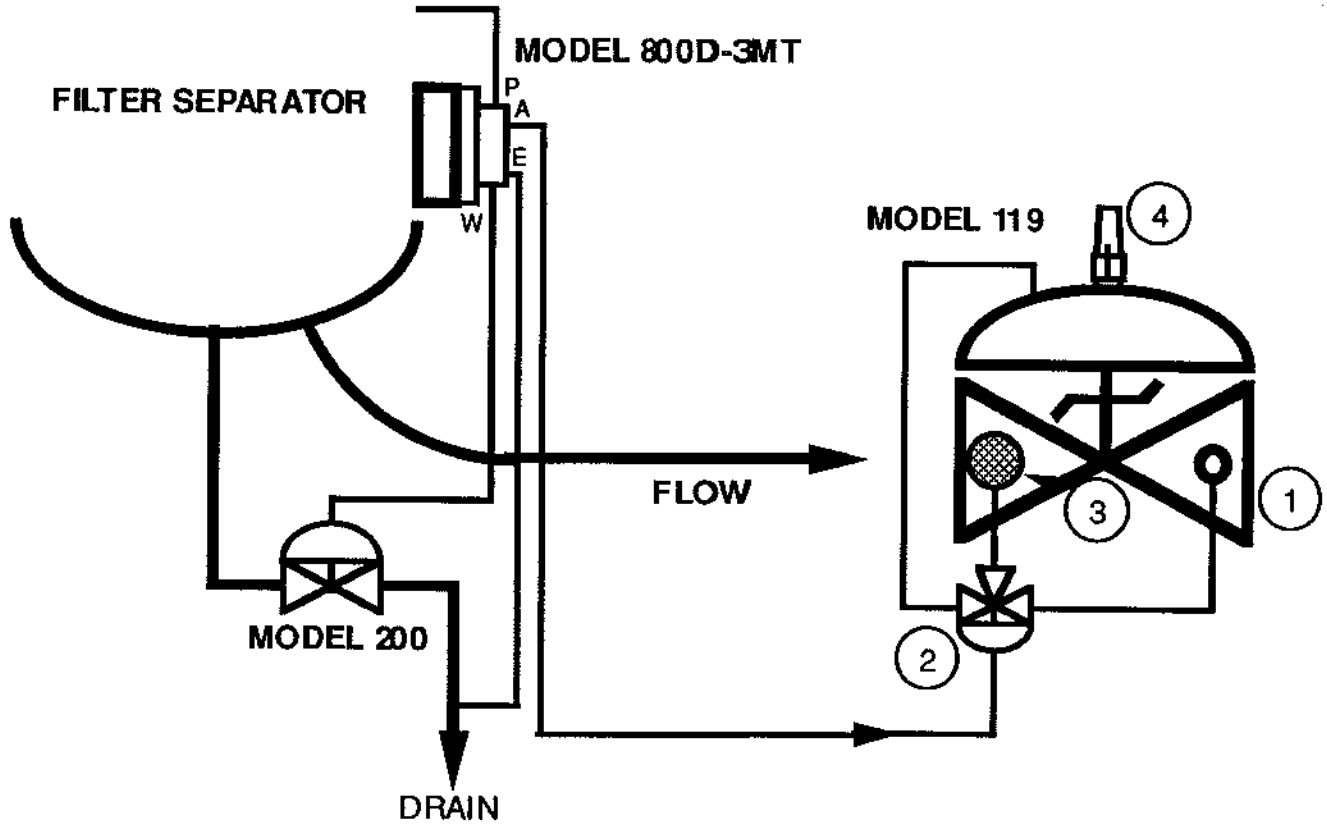
SLUG CONTROL: The action of the valve as a slug control (high water level shutoff) is governed by the action of the accelerator pilot (item 2), which in turn is controlled by the interface float pilot. If there is little or no water in the sump of the filter separator, the float is down and the float 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.

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.

INSTALLATION

The 119 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 valve (when used).



(d) "EXHAUST" port on float pilot to atmospheric drain.

STARTUP AND ADJUSTMENTS

The following steps should be followed in the order presented in order to effect an initial startup of the 119.

1. Start the pump or otherwise start the system flowing.

2. 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.

MAINTENANCE

Required maintenance of the 119 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 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 acclerator 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 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.

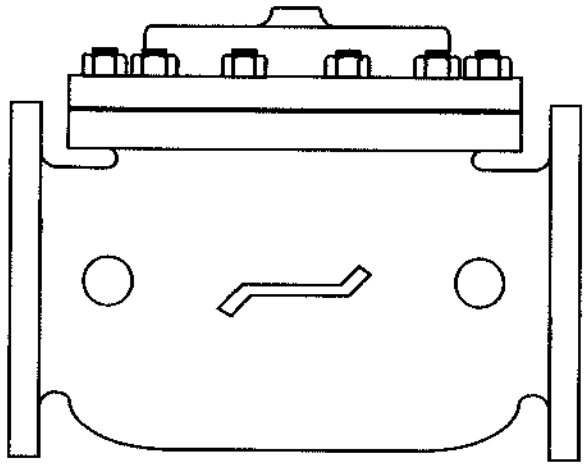
2. Temporarily disconnect the sense line at the bonnet of the accelerator pilot. There should be no flow from the interface float pilot.

   (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.



installation, operating, and maintenance instructions

series 65

basic control valve

GENERAL DESCRIPTION

The OCV Series 65 is a hydraulically-operated, diaphragm-actuated valve. It is available in either a globe (Model 65) or angle (Model 65A) configuration. 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. An elastomeric seat disc forms a tight seal with the valve seat when pressure is applied above the diaphragm.

FUNCTIONAL DESCRIPTION

Because the Series 65 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 ensure 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 ensure 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.

3. Install the valve in the line according to the flow arrow on the inlet flange. The arrow should point downstream.

4. Allow sufficient room around the valve for ease of adjustment and maintenance service.

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 elastomeric 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

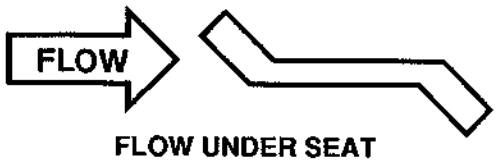
   c. Object lodged in valve - See Procedure B

3. VALVE OPENS AND CLOSES BUT LEAKS WHEN CLOSED

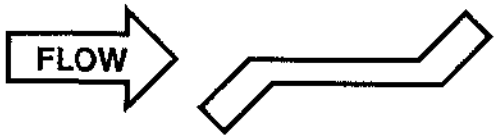
   a. Seat disc damaged - See Procedure C

   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, then compare it with the figures below.*



FLOW UNDER SEAT
DIAPHRAGM FAILURE = VALVE FAILS TO CLOSE



FLOW OVER SEAT
DIAPHRAGM FAILURE = VALVE FAILS TO OPEN

PROCEDURE A : DIAPHRAGM REPLACEMENT

1. Isolate the valve from the system by closing upstream and downstream block valves.

2. Loosen one of the tubing connections on the bonnet. Allow any residual pressure to bleed off.

3. Remove all tubing connected at the bonnet.

4. Remove the bonnet nuts.

5. 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.*

6. Remove the spring.

7. Remove the diaphragm plate capscrews and the diaphragm plate.

8. Remove the old diaphragm.

9. 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.

10. Replace the diaphragm plate and the diaphragm plate capscrews.

11. Tighten all diaphragm plate capscrews snugly.

12. Replace the spring.

13. Replace the bonnet and reinstall the bonnet nuts.

14. Tighten the bonnet nuts snugly using a criss-cross tightening pattern.

15. Reinstall the control tubing.

16. Reopen the upstream and downstream block valves.

17. Before placing the valve back in service, perform the air bleed procedure described in the first section of this manual.

PROCEDURE B: CORRECTION OF BINDING STEM

1. Perform Steps 1 thru 6 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.*

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 12 thru 17 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.

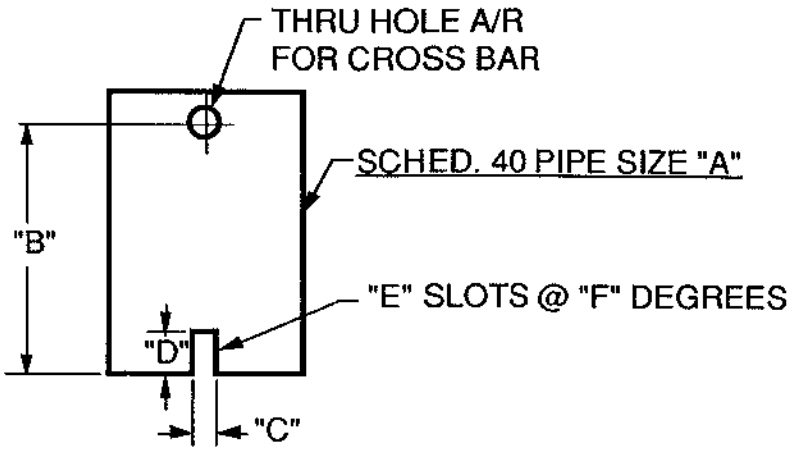
6. Reinstall the seat retainer and tighten the seat retainer screws.

7. Reassemble the valve, following Steps 5 and 6 of Procedure B.

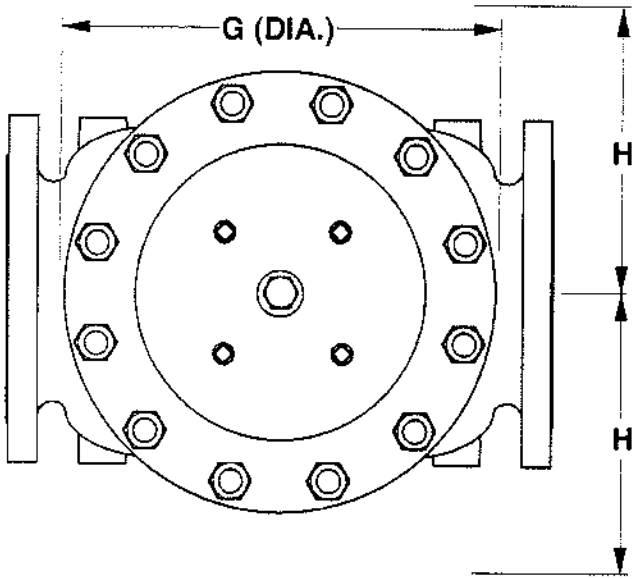
PROCEDURE D: SEAT RING REPLACEMENT

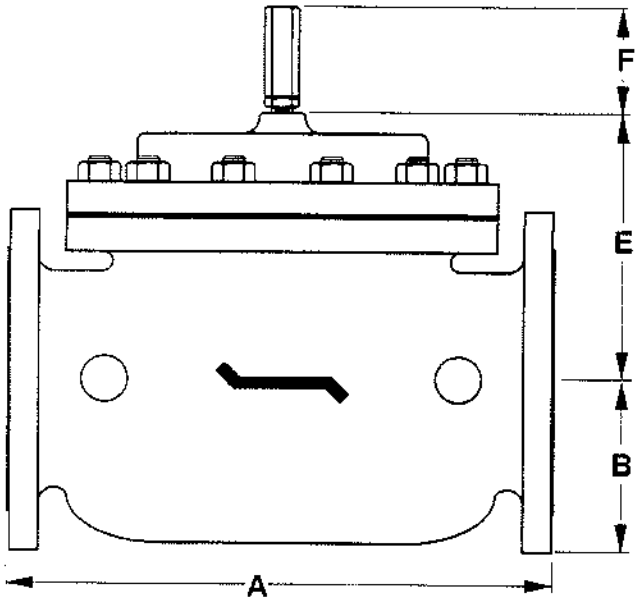
NOTE: It is rare for a seat ring to require replacement. Minor nicks and scratches in the seating surface can usually be smoothed out with emery cloth.

1. Perform Steps 1 and 2 of Procedure B, above.
2. If you are working on a 4" or smaller valve, follow Steps 3 thru 9, below.
3. If you are working on a 6" or larger valve, follow Steps 10 thru 16, below.
4. Seat rings in valves 4" and smaller are threaded into the valve body. To remove, you will need a special seat ring tool. You may fabricate one using standard pipe as shown in the sketch below, or one may be purchased from OCV.
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 in valves 6" and larger 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.

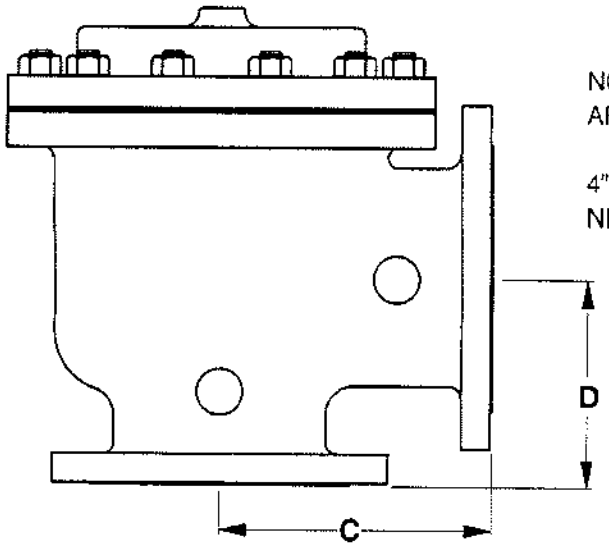


VALVE SIZE	"A" PIPE SIZE	"B" MIN. LENGTH	"C" SLOT WIDTH	"D" SLOT DEPTH	"E" NO. OF SLOTS	"F" SLOT SPACING
1-1/4"	3/4"	6"	1/4"	3/8"	2	180°
1-1/2"	3/4"	6"	1/4"	3/8"	2	180°
2"	1-1/2"	7"	1/4"	3/8"	2	180°
2-1/2"	2"	8"	5/16"	1/2"	3	120°
3"	2-1/2"	9"	1/2"	5/8"	2	180°
4"	3"	10"	1/2"	5/8"	2	180°





DIM	ANSI CLASS	VALVE SIZE												
		1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	24
A	S.E	8.75	8.75	9.88	10.50	13.00	–	–	–	–	–	–	–	–
	150	8.50	8.50	9.38	10.50	12.00	15.00	17.75	25.38	29.75	34.00	39.00	40.38	62.00
	300	8.75	8.75	9.88	11.12	12.75	15.62	18.62	26.38	31.12	35.50	40.50	42.00	63.75
B	SE	1.44	1.44	1.69	1.88	2.25	–	–	–	–	–	–	–	–
	150	2.31	2.50	3.00	3.50	3.75	4.50	5.50	6.75	8.00	9.50	10.62	11.75	16.00
	300	2.62	3.06	3.25	3.75	4.12	5.00	6.25	7.50	8.75	10.25	11.50	12.75	18.00
C	SE	4.38	4.38	4.75	6.00	6.50	–	–	–	–	–	–	–	–
	150	4.25	4.25	4.75	6.00	6.00	7.50	10.00	12.69	14.88	17.00	–	20.81	–
	300	4 3/8	4.38	5.00	6.38	6.38	7.81	10.50	13.19	15.56	17.75	–	21.62	–
D	SE	3.12	3.12	3.88	4.00	4.50	–	–	–	–	–	–	–	–
	150	3.00	3.00	3.88	4.00	4.00	5.50	6.00	8.00	11.38	11.00	–	15.69	–
	300	3.25	3.25	4.12	4.38	4.38	5.81	6.50	8.50	12.06	11.75	–	16.50	–
E	ALL	6.00	6.00	6.00	7.00	6.50	7.92	10.00	11.88	15.38	17.00	18.00	19.00	27.00
F	ALL	3.88	3.88	3.88	3.88	3.88	3.88	3.88	6.38	6.38	6.38	6.38	6.38	8.00
G	ALL	6.00	6.00	6.75	7.69	8.75	11.75	14.00	21.00	24.50	28.00	31.25	34.50	52.00
H	ALL	10.00	10.00	11.00	11.00	11.00	12.00	13.00	14.00	17.00	18.00	20.00	20.00	28.50



NOTE: 3" VALVE DIMENSIONS ARE FOR NEW MODEL 3100

4" VALVE DIMENSIONS ARE FOR NEW MODEL 4400

REV. A SDJ 6-6-02
REV. B SDJ 2-3-03

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

DRAWN BY	DATE
SDJ	10-6-97
CHKD. BY	DATE

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

GENERAL VALVE DIMENSIONS

SIZE	DRAWING NUMBER	REV.
A	65D	B

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

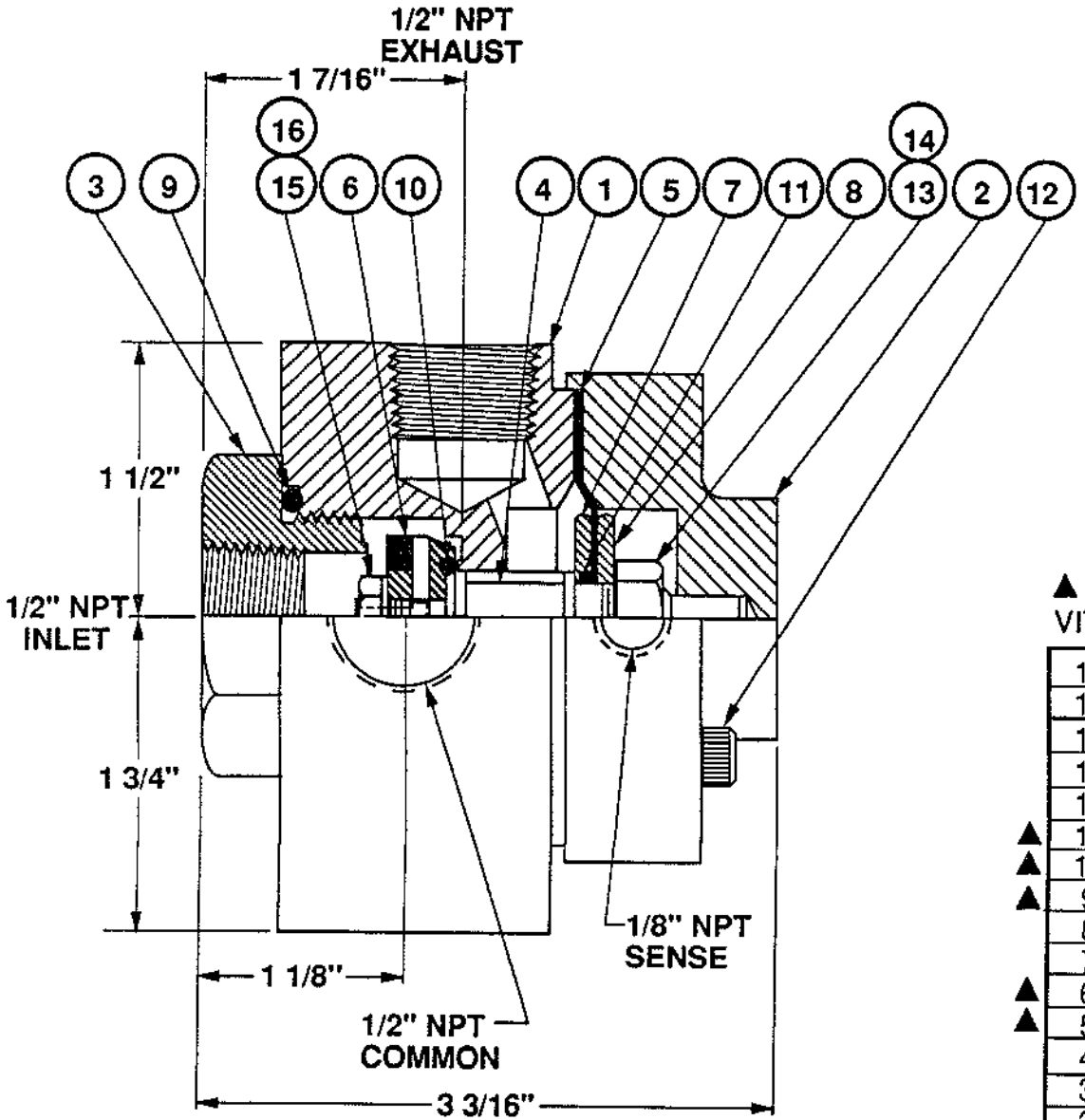
A major malfunction in the A224 pilot would generally be evident in a failure of the main valve to open or close. However, keep in mind that such symptoms can be also caused by a malfunction in the main valve itself or in the control pilot(s). If the A224 is suspected, proceed as follows:

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.



▲ = RECOMMENDED SPARE PARTS
VITON ELASTOMERS AVAILABLE

	ITEM	PART NO	QTY	DESCRIPTION	MATERIAL
	16	685720	1	LOCKWASHER	STN. STEEL
	15	590718	1	HEX NUT	STN. STEEL
	14	685702	1	LOCKWASHER	STN. STEEL
	13	590717	1	HEX NUT	STN. STEEL
	12	530717	4	SKT. HD. CAPSCREW	STN. STEEL
▲	11	611012	1	O-RING	VITON
▲	10	611111	1	O-RING	VITON
▲	9	610216	1	O-RING	BUNA-N
	8	308710	1	UPPER DIAPH. PLATE	STN. STEEL
	7	308709	1	LOWER DIAPH. PLATE	STN. STEEL
▲	6	310708	1	SEAT PLUG	SS/BUNA-N
▲	5	694000	1	DIAPHRAGM	BUNA-N
	4	314732	1	STEM	STN. STEEL
	3	300782	1	ADAPTER	STN. STEEL
	2	304700	1	BONNET	STN. STEEL
	1	302700	1	BODY	STN. STEEL

CHG	E.C. NO.	DATE	BY	REVISIONS	REF DWG NO'S

MATERIAL: STN STL BUNA-N
NO. REQ'D
SCALE: FULL

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

DRAWN BY: SDJ | DATE: 2-2-93
CHKD. BY | DATE

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

ACCELERATOR PILOT

SIZE	DRAWING NUMBER	REV.
A	A224	

installation, operating, and maintenance instructions

float pilot

model 800

GENERAL DESCRIPTION

The Oil Capital Valve MODEL 800 FLOAT PILOT is a four-way pilot specifically designed for use in filter/separator systems. OCV manufactures the MODEL 800 in bronze, aluminum and stainless steel and furnishes it in the following mounting systems:

MODEL 800B—Bottom-mounted
MODEL 800C—Side-mounted, victaulic-connected
MODEL 800D—Side-mounted, flange-connected
MODEL S400—Exterior float chamber, victaulic-connected.

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 or discharge side of MAIN CONTROL VALVE.

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

INSTALLATION

OCV furnishes the MODEL 800 PILOT in four basic mounting configurations. In all cases the purchaser furnishes the fittings, pipe, tubing, etc. to make the appropriate connections to the MODEL 800's ports. The pilot block is machined to receive 1/8" male NPT tubing. 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. Locate the pilot so that the center line of the adapter coincides with the desired median float level. Remember that when the float is at this level, both the WATER DRAIN VALVE and the MAIN CONTROL VALVE will be open.

MODEL 800B: This is a bottom-mounted integral flange fitting wit the FLOAT PILOT and WATER DRAIN VALVE mounted and piped. Insert gasket. Bolt flange to filter/separator tank. Pipe ACC. VALVE port, POWER port, and EXHAUST port.

MODEL 800C: Insert float assembly in filter/separator. Make victaulic connection. Pipe all pilot block ports as indicated.

MODEL 800D: Install gasket. Bolt flange to filter/separator. Pipe all pilot block ports as indicated.

MODEL S400: This is an exterior mounted modular float chamber. Float and pilot are factory installed. Make top and bottom victaulic connections on chamber. Pipe all pilot ports as indicated.

OCV will also furnish the MODEL 800 FLOAT PILOT as a separate unit for replacement or integration into customer's system. Consult OCV engineering department if installation problems develop.

MAINTENANCE

More than 20 years of testing and field use have demonstrated the OCV MODEL 800 FLOAT PILOT is reliable and relatively trouble free under a variety of service conditions. The only routine maintenance required is a periodic check for leaks at fittings and between the pilot body and end caps.

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 MODEL 800 FLOAT PILOT, contact OCV engineering.

OCV Control Valves
7400 East 42nd Place / Tulsa, Oklahoma 74145 -4744 USA / (918) 627-1942 / 888-OCV-VALV / FAX 918-622-8916
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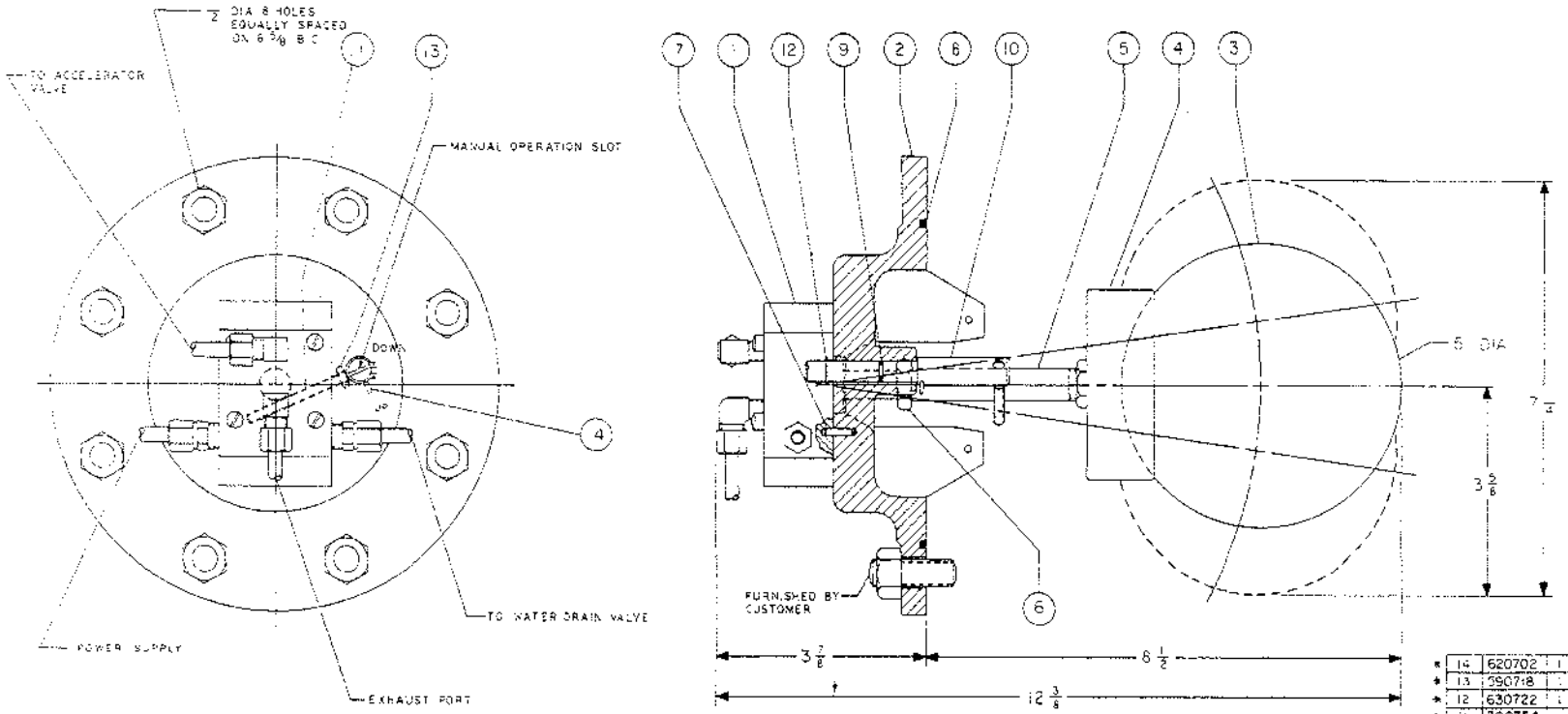

ITEM	PART NO.	QTY.	DESCRIPTION	MATERIAL
* 14	620702	1	ROLL PIN	STN. STL.
* 13	590718	1	NUT	STNLS. STL.
* 12	630722	1	SNAP RING	STNLS. STL.
* 11	300754	1	LEVER	STN. STL.
* 10	314714	1	STEM	STNLS. ST.
* 9	611010	1	O RING	VITON
8	610254	1	O RING	BUNA-N
7	620709	1	BODY ALIGNMENT PIN	STNLS. STL.
6	590719	1	HEX NUT	STNLS. STL.
5	300088	1	FLOAT ARM	STEEL
4	300404	1	COUNTER WEIGHT	CAD PL STL
3	520703	1	SPHERICAL FLOAT	STNLS STL
2	300011	1	PILOT MOUNTING FLANGE	DUCT. IRON
	300511	1	PILOT MOUNTING FLANGE	ALUMINUM
1	800 SERIES	1	PILOT VALVE ASSEMBLY	STNLS STL
		1	PILOT VALVE ASSEMBLY	BRASS
		1	PILOT VALVE ASSEMBLY	ALUMINUM

BILL OF MATERIAL

NOTES

1. ORDER BY MODEL NUMBER
2. * OPTIONAL PARTS FOR MANUAL TESTER
3. STNLS. STL. TRIM STANDARD ON ALL PILOT BLOCK ASSEMBLIES
4. LARGER FLOATS AND FLANGES ARE AVAILABLE ON SPECIAL ORDER
5. FLOAT IS WEIGHTED TO FLOAT HALF WAY IN LIQUID HAVING SPECIFIC GRAVITY OF 1.00 WHERE INTER-FACE OPERATION BETWEEN TWO IMMISCIBLE LIQUIDS IS DESIRED PLEASE SPECIFY SPECIFIC GRAVITIES OF BOTH LIQUIDS

MODEL NUMBER	PILOT MATERIAL	FLANGE MATERIAL
800-D-3	ALUMINUM	ALUMINUM
800-D-4	BRASS	DUCT. IRON
800-D-5	STNLS. STL.	DUCT. IRON

800-D-6 STN. STL. - STN. STL.

REVISIONS	REF. DWG. NO'S
E	
D	
C	
B	
A	
SYM.	A. R. NO. DATE BY

MATERIAL | TOLERANCES | NOTICE | DRAWN BY | DATE | SCALE | CHKD BY | DATE

OCV Control Valves

FLOAT ACTUATED PILOT VALVE (FLANGE MOUNTED)

SIZE D | 800-D | A

water drain valve

installation, operating, and maintenance instructions

model 200

GENERAL DESCRIPTION

The OCV Valve MODEL 200 WATER DRAIN VALVE is a normally-closed, diaphragm-actuated globe valve. OCV regularly manufactures the following models:

MODEL	SIZE	MATERIAL	PRESSURE RATING (psi)
200	3/4, 1"	Aluminum	125
225	3/4, 1"	Bronze	125
250	3/4, 1"	Ductile Iron	150

Higher pressure rating and 1/2" size valves are available on request. Consult OCV sales division.

THEORY OF OPERATION

The MODEL 200's spring holds the valve in its normal, closed position until pressure is routed to the WATER DRAIN VALVE bonnet. The force exerted by this pressure moves the seat assembly to its open position. When bonnet pressure is relieved spring force closes the valve once again.

INSTALLATION

OCV furnishes the MODEL 200 as a separate unit or premounted on an integral bottom plate in conjunction with the MODEL 800 FLOAT PILOT.

The integral model requires only connection of the MODEL 200's discharge to a drain pipe.

To install the separate WATER DRAIN VALVE:

Thread the valve to the WATER DRAIN port of the filter/separator tank with the flow arrow pointing away from the tank. Connect the MODEL 200's discharge side to WATER DRAIN line. Connect the bonnet port to appropriate pilot port.

MAINTENANCE

The MODEL 200 requires no routine maintenance other than a periodic check for leaks at connections and between the pilot body and adaptor.

TROUBLESHOOTING

The following problems can occur due to an internal malfunction of the WATER DRAIN VALVE:

SYMPTOM	PROBABLE CAUSE	ACTION
VALVE FAILS TO OPEN EVEN THOUGH SUPPLY PRESSURE IS REACHING BONNET	RUPTURED DIAPHRAGM	REPLACE DIAPHRAGM
LEAKING THROUGH SEAT EVEN THOUGH BONNET IS EXHAUSTED TO ATMOSPHERE	FAULTY SEAT DISC	REPLACE SEAT DISC
LEAKING BETWEEN VALVE BODY AND ADAPTOR (OR BOTTOM PLATE)	FAILURE OF O-RING TO SEAL	REPLACE O-RING

REPAIR

Field maintenance personnel can perform the following repairs:

1) Replace diaphragm: Remove bolts. Pull bonnet. Remove diaphragm. Install new diaphragm. Reassemble.
2) Replace seat disc: Remove bolts. Separate body from adaptor (or bottom plate). Remove spring and seat assembly. Remove seat retainer, flat washer and seat disc. TREAT SEAT RETAINER THREADS WITH PIPE JOINT COMPOUND. Reassemble. Use caution in mating body and adaptor to avoid damage to sealing O-ring.
3) Replace O-ring: Remove bolts from adaptor (or bottom plate). Remove, replace and lubricate O-ring. Reassemble. Avoid damaging O-ring when mating.

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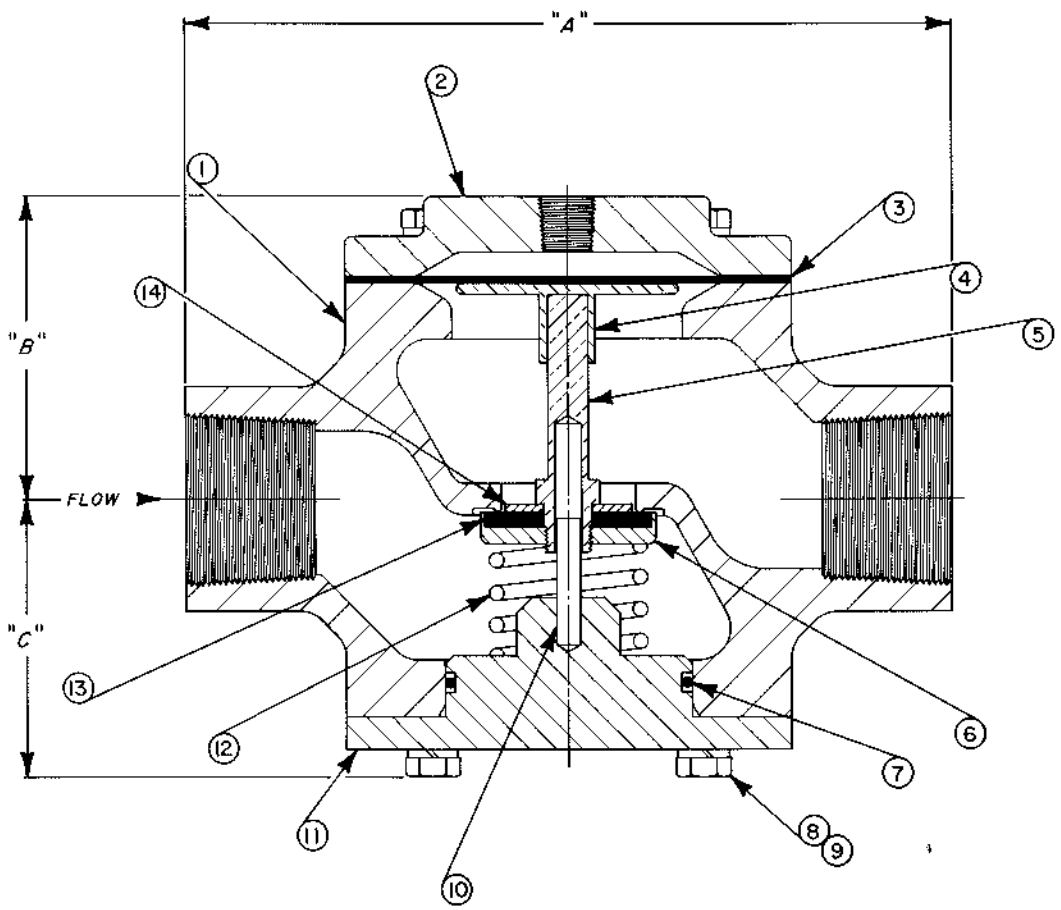


	ITEM	O.C.V. NO	QTY	DESCRIPTION	MATERIAL
	1			BODY (SEE BELOW)	
	2	304523 304123 303012	1	BONNET	ALUMINUM BRASS DUCT. IRON
△	3	690025	1	DIAPHRAGM	BUNA-N
	4	307730	1	DIAPHRAGM PLATE	STN'L STEEL
	5			SEAT RETAINER(SEE BELOW)	
	6	310712	1	SEAT	STN'L STEEL
△	7	610132	1	O-RING	BUNA-N
	8	685763	8	SPLIT LOCK WASHER	STN'L STEEL
	9			HEX HEAD (SEE BELOW)	
	10	620704	1	PIN	STN'L STEEL
	11			BOTTOM COVER	
	12	650724	1	SPRING	STN'L STEEL
△	13	691511	1	SEAT DISC	BUNA-N
	14	685710	1	FLAT WASHER	STN'L STEEL

$\frac{1}{2}$" N.P.T.

1	301421 301431 301411	1	BODY	ALUMINUM BRASS DUCT. IRON
5	309714	1	SEAT RETAINER	STN'L STEEL
9	531016	4	HEX HEAD BOLT	STN'L STEEL
11	300595 300195 300095	1	BOTTOM COVER	ALUMINUM BRASS DUCT. IRON
15	590712	4	HEX NUT (NOT SHOWN)	STN'L STEEL

$\frac{3}{4}$" N.P.T.

1	301422 301432 301412	1	BODY	BRONZE ALUMINUM DUCT. IRON
5	309712	1	SEAT RETAINER	STN'L STEEL
9	531715	8	HEX HEAD SCREW	STN'L STEEL
11	300147 300547 300006	1	BOTTOM COVER	BRASS ALUMINUM DUCT. IRON

1" N.P.T.

1	301423 301433 301413	1	BODY	BRONZE ALUMINUM DUCT. IRON
5	309712	1	SEAT RETAINER	STN'L STEEL
9	531715	8	HEX HEAD SCREW	STN'L STEEL
11	300147 300547 300006	1	BOTTOM COVER	BRASS ALUMINUM DUCT. IRON

DIMENSIONS

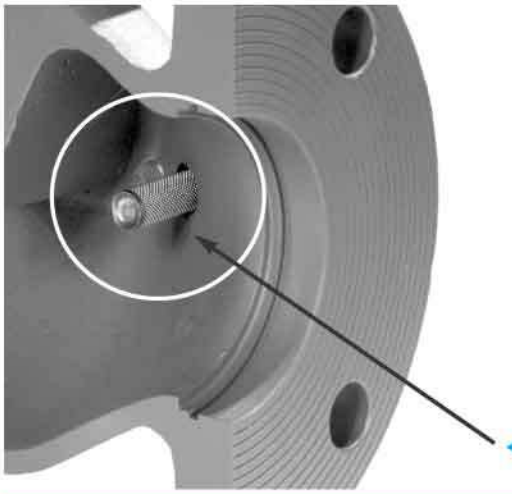
	"A"	"B"	"C"
$\frac{1}{2}$" NPT	4"	$1\frac{7}{16}$"	$1\frac{1}{2}$"
$\frac{3}{4}$" & 1" NPT	6"	$2\frac{3}{8}$"	$2\frac{3}{16}$"

NOTES:

1. △ = RECOMMENDED SPARE PARTS
2. MODEL — MATERIAL
   - 200 — ALUMINUM
   - 225 — BRASS
   - 250 — DUCTILE IRON
3. WHEN ORDERING PARTS PLEASE SPECIFY
   - a. MODEL NO. & VALVE SIZE
   - b. O.C.V. NO.
   - c. DESCRIPTION
   - d. MATERIAL

REVISIONS				REF. DWG. NO'S	MATERIAL	TOLERANCES	OCV Control Valves
CHG	E.C. NO.	DATE	BY			UNLESS NOTED FRACTIONAL ± 1/64 DECIMAL ± .001 ANGULAR ± 1/2° MACH. FINISH 125	WATER DRAIN VALVE
					NO. REQ'D	DRAWN BY	DATE 1-83
					SCALE	CHKD. BY	DATE

SIZE D — DRAWING NUMBER — REV A



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

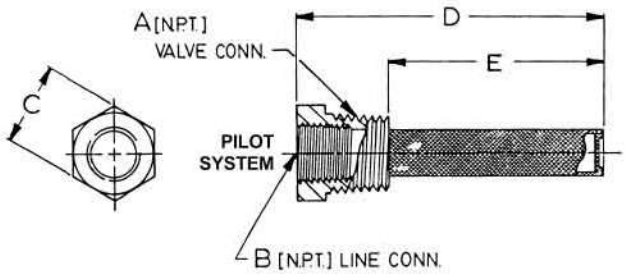
PART NUMBER	A	B	C	D	E	USED ON VALVE SIZE
660704	3/8	1/4	11/16	2 3/16	1 1/2	1 1/4"-6"
660705	1/2	3/8	7/8	2 1/4	1 1/2	8"-10"
660706	3/4	1/2	1 1/8	2 3/8	1 1/2	12"-16"

MATERIALS

Inline strainers are all-stainless steel construction.

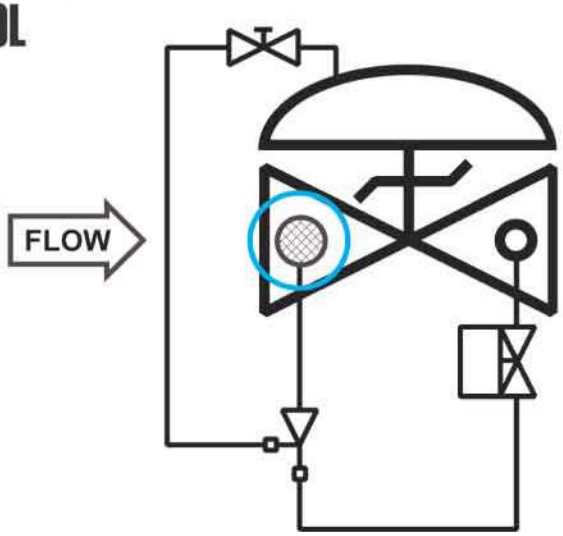
SCREEN SIZE

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

VALVE POSITION INDICATOR (LIQUID FILLED) 155L

DESCRIPTION

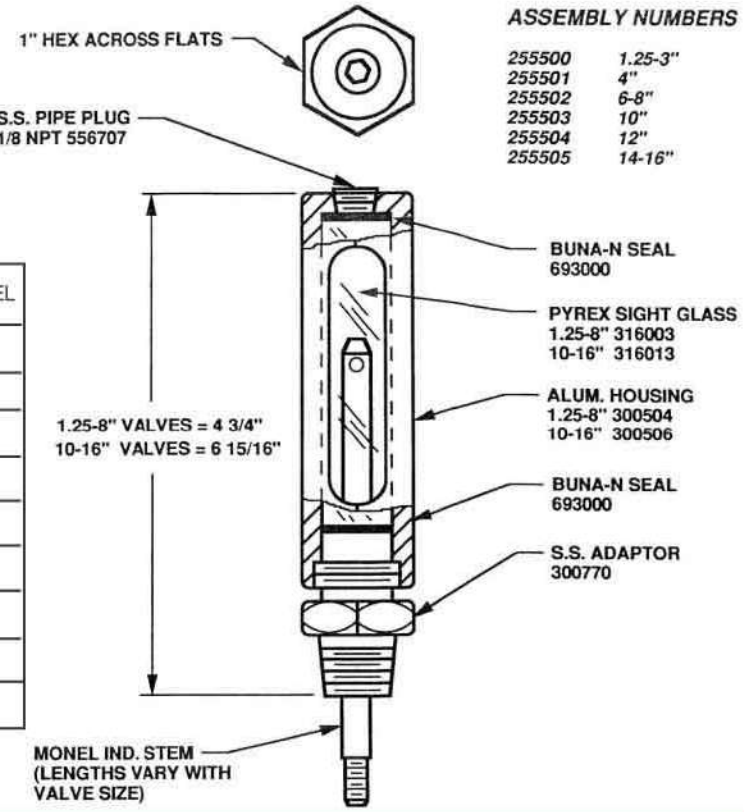
The Model 155L Visual Indicator is a device that enables the user to determine the extent of opening of a control valve. It consists of an adaptor threaded into the valve bonnet, a rod threaded into the main valve stem, a sealed Pyrex sight glass, and a protective aluminum housing. The indicator rod moves as the valve opens and closes. The 155L may be installed on virtually any OCV control valve, and can be done so without any disassembly of the valve itself. Since the assembly is not sealed from the diaphragm chamber of the main valve, it provides a convenient point for bleeding air via the 1/8" NPT port located at the top of the sight glass.

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

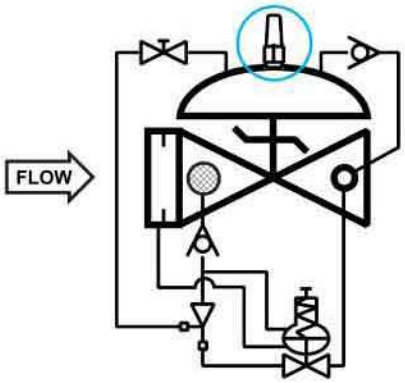
MODEL 155L MATRIX

MATERIAL	PART NO.	VALVE TRAVEL
1 1/4" - 1 1/2"	255500	3/8"
2"	255500	1/2"
2 1/2"	255500	3/4"
3"	255500	1"
4"	255501	1 3/8"
6" - 8"	255502	1 1/2" - 2"
10"	255503	2 1/2"
12"	255504	3"
14" - 16"	255505	3 1/2", 4"

MAX WORKING PRESSURE: 300 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

MATERIALS

Indicator Rod:	Monel
Adapter:	Stainless Steel
Housing:	Aluminum
Sight Glass:	Pyrex
Sight Glass Seals:	Buna-N

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Valve Position Indicator (Liquid Filled) 155L