two-stage preset valve with pressure reducing control

installation, operating and maintenance instructions

model 127-9

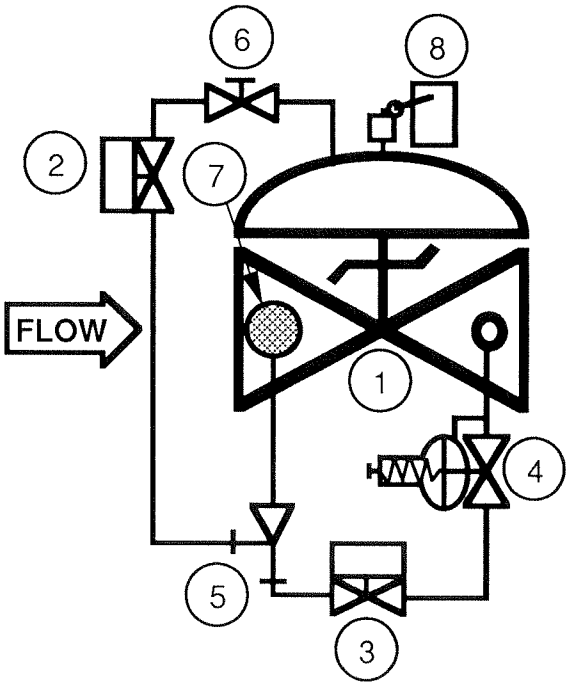
GENERAL DESCRIPTION

The OCV Model 127-9 is specifically designed for fuel loading systems, and used in conjunction with a two-stage preset meter, it performs the following functions:

1. PRESSURE REDUCING CONTROL: While in the full flow mode, the 127-9 will modulate as necessary to prevent discharge pressure from exceeding a predetermined maximum.
2. TWO-STAGE SHUTDOWN: Working off electrical signals from the preset meter, the 127-9 will close to the low flow position near the end of the load for "topping off" flow. At the end of the load, the valve will go fully closed.

The 127-9 consists of the following components, arranged as shown on the schematic diagram:

1. **Model 65 Basic Valve Assembly**, a hydraulically-operated, diaphragm-actuated, pilot-controlled, globe (or angle) valve which closes with an elastomer-on-metal seal.
2. **Model 450 Two-Way, Normally-Open Solenoid Pilot.** This pilot is energized to its closed position by the control circuit to enable the valve to hold its low flow startup and shutdown positions.
3. **Model 451 Two-Way, Normally-Closed Solenoid Pilot.** This pilot is the primary electrical control device on the valve. It is energized to its open position to enable the main valve to open, and deenergized to its closed position to make the main valve close.
4. **Model 1340 Pressure Reducing Pilot,** a two-way, normally-open valve which senses downstream (discharge) pressure under its diaphragm and balances it against an adjustable spring load. An increase in pressure above the set point will tend to close the pilot.
5. **Model 126 Ejector,** a simple tee fitting with an orifice installed in its inlet port. It provides the necessary pressure balance to enable the remainder of the pilot system to properly control the main valve.



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6. **Model 141-2 Needle Valve,** which controls the opening and closing speed of the main valve.
7. **Model 123 Inline Strainer,** which protects the pilot system from solid contaminants in the line fluid.
8. Model **150 Limit Switch Assembly.** This assembly includes a SPDT switch unit actuated by movement of the valve stem. It routes the electrical signals required for the two-stage closing function.

THEORY OF OPERATION

In order to understand the hydraulic operation of the 127-9, it is best to start with the **ejector (5).** The orifice in its inlet port may be thought of as a fixed supply. The remainder of the pilot system, consisting of the **N.C. solenoid pilot (3)** and the **pressure reducing pilot (4),** is installed on the downstream run port of the ejector, and may be thought of as a variable exhaust. Note that the branch port of the ejector, which is downstream of the orifice, is connected to the main valve diaphragm chamber through the **N.O. solenoid (2)** and the **needle valve (6).** With all this in mind, general action of the pilot system may be summarized as follows:

1. If all the components downstream of the ejector are open enough to allow exhaust to exceed supply, pressure is lowered on the main valve diaphragm chamber, which allows the valve to open.
2. If any of the components downstream of the ejector are closed enough so that exhaust is less than supply, pressure is increased on the main valve diaphragm chamber, which causes the valve to close.
3. If the N.O. solenoid pilot is closed, isolating the diaphragm chamber from the ejector, there can be no change in pressure on the diaphragm chamber. This holds the valve in position.

PRESSURE REDUCING ACTION: Under normal conditions, with downstream pressure below the set point of the pressure reducing pilot (6), the pilot is wide open. Ejector exhaust thus exceeds supply, and the main valve opens as described above. However, if the pressure increases to the set point of the pilot, the pilot begins to close until exhaust no longer exceeds supply, and the main valve begins to close. The net result is a modulating (throttling) action of the pilot and main valve to prevent the downstream pressure from exceeding the set point.

Now refer to the appropriate wiring diagram to follow the description of the following two functions. On these diagrams, the normally-open solenoid (4) is referred to as **S1,** the normally-closed solenoid as **S2,** and the two poles of the limit switch as **SW3. SW1** and **SW2** are the switches in the preset counter.

LIQUID CONTROLS METER WITH LIQUID CONTROLS PRESET

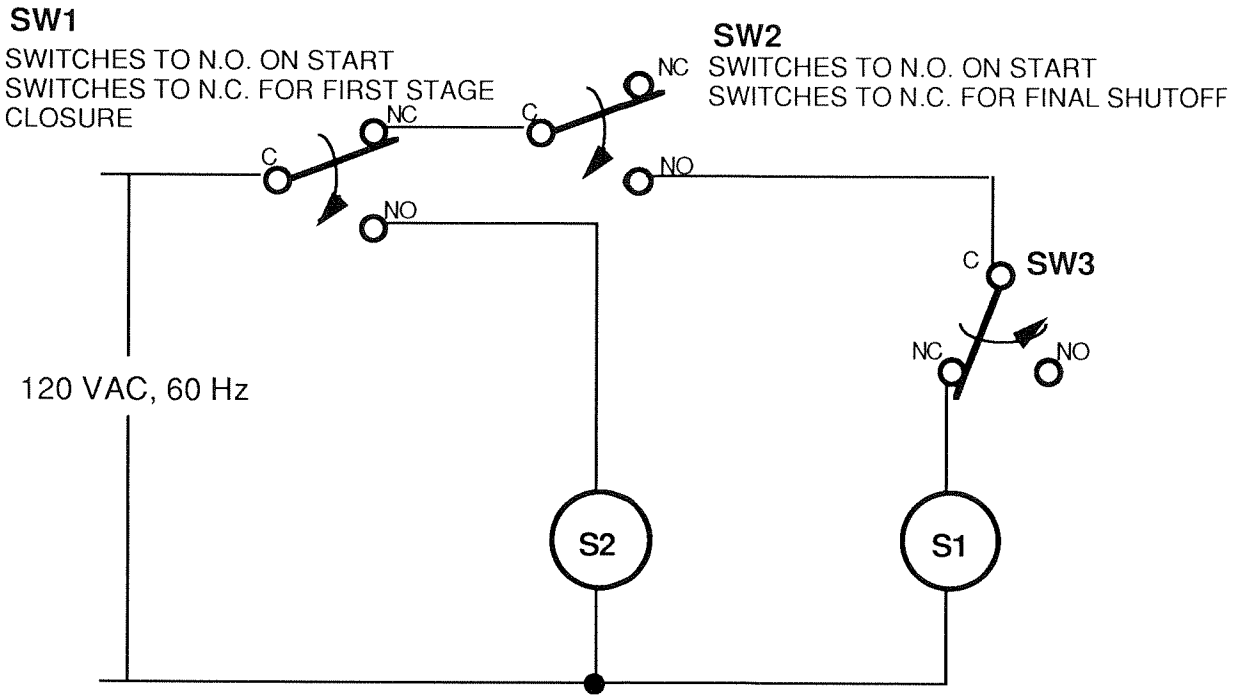
OPENING: A loading run is initiated by pulling the lever on the preset counter, which places **SW1** and **SW2** in their "N.O." positions. **SW1** immediately energizes **S2.** The valve opens until modulated by the pressure reducing pilot.

TWO-STAGE CLOSING: Shutdown is initiated by the preset counter a certain number of gallons before the end of the load when **SW1** switches back to N.C. This deenergizes **S2**, which starts the valve closed. When the valve is nearly closed, **SW3** switches back to N.C. This energizes **S1**, which closes, locking pressure on the main valve diaphragm chamber, thus holding the valve in the low flow position. When the preset counter reaches zero, **SW2** switches back to N.C., deenergizing **S1** and allowing the valve to go fully closed.

LIQUID CONTROLS METER WITH VEEDER-ROOT PRESET

OPENING: A loading run is initiated by pulling the lever on the preset counter, which places **SW1** in the "N.C." position and **SW2** in the "N.O." position. **SW2** immediately energizes **S2.** The valve opens until modulated by the pressure reducing pilot.

TWO-STAGE CLOSING: Shutdown is initiated by the preset counter a certain number of gallons before the end of the load when **SW2** switches back to "N.C." This deenergizes **S2**, which starts the valve closed. When the valve is nearly closed, **SW3** switches back to N.C. **SW3** energizes **S1**, which closes, locking pressure on the main valve diaphragm chamber, thus holding the valve in the low flow position. When the preset counter reaches zero, **W1** switches back to "N.O.", deenergizing **S1** and allowing the valve to go fully



SW1,SW2 = LIMIT SWITCH, SPDT (IN PRESET)
SW3* = LIMIT SWITCH, DPDT (VALVE MOUNTED)
S1* = SOLENOID PILOT, N.O.
S2* = SOLENOID PILOT, N.C.

* PROVIDED BY OCV

WIRING DIAGRAM - LIQUID CONTROLS PRESET

closed.

INSTALLATION

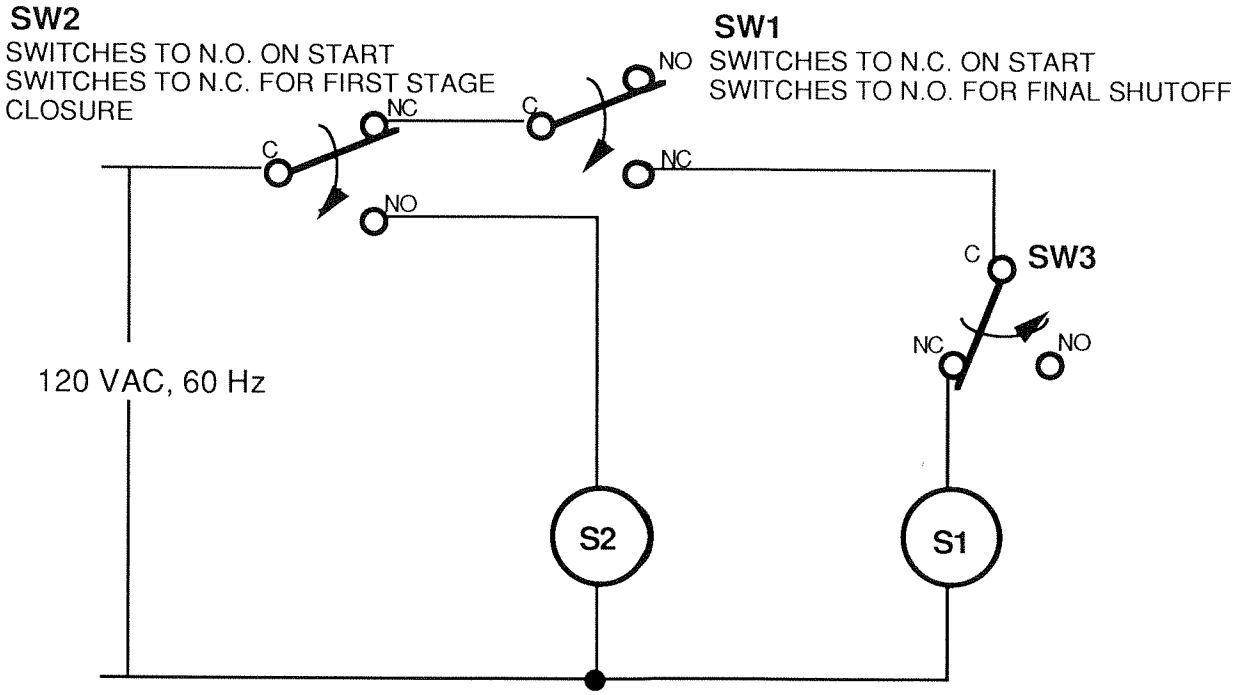
The 127-9 is furnished fully factory-assembled including all control line tubing.

1. Install the 127-9 on the discharge of the meter, observing the following:
   (a) Before installing the valve, make sure there is no foreign material inside the valve.
   (b) Make sure all tubing connections are secure.
   (c) For ease of maintenance service of the valve and meter, it is recommended that an isolation valve be installed upstream of the meter.
   (d) For performing startup adjustments, it is recommended that a pressure gauge of the appropriate range be installed downstream of the valve.
2. Check to make sure which type of preset counter is being used, then complete all wiring between the meter and valve as shown on the appropriate wiring diagram. Make **sure that the wiring and conduiting is appropriate for hazardous locations.**

STARTUP AND ADJUSTMENTS

The following procedures should be followed in the order presented in order to effect an initial startup of the 127-9.

1. Remove the adjusting screw cap from the pressure reducing pilot (4) and loosen the adjusting screw jam nut. Turn the adjusting screw fully **counterclockwise.**
2. Loosen the jam nut on the adjusting screw of the needle valve (6). Turn the adjusting screw fully **clockwise,** then **counterclockwise** five full turns.
3. Connect the loading arm to a truck or other appropriate receiving vessel.



SW1,SW2 = LIMIT SWITCH, SPDT (IN PRESET)
SW3* = LIMIT SWITCH, DPDT (VALVE MOUNTED)
S1* = SOLENOID PILOT, N.O.
S2* = SOLENOID PILOT, N.C.

* PROVIDED BY OCV

WIRING DIAGRAM - VEEDER-ROOT PRESET

4. Start the system by actuating the lever on the preset counter. The valve should open a small amount.
5. Carefully loosen a pipe plug in the main valve bonnet until fluid appears around the threads. When only clear fluid (no air) is discharging, retighten the plug.
6. Slowly turn the adjusting screw of the pressure reducing pilot (4) **clockwise until downstream pressure** increases to the set point. Tighten the adjusting screw jam nut and replace the plastic cap.

SUMMARY OF ADJUSTMENTS

1. Pressure reducing pilot (4): Clockwise to increase downstream pressure; **counterclockwise** to **decrease** downstream pressure.
2. Needle valve (6): **Clockwise** to **decrease** valve opening and closing speeds; **counter-clockwise** to **increase** valve opening and closing speeds.
3. Low flow position: The valve's low flow position may be adjusted by loosening the set screw in the collar on the indicator stem. **Lower** the collar to **increase** the low flow rate. **Raise** the collar to **decrease** the low flow rate.

MAINTENANCE

Required maintenance of the 127-9 is minimal. However, the following steps, periodically performed, will do much to keep the valve operating efficiently and properly.

1. Check for leaks at fittings and around flanges. Tighten as required.
2. Check for chipped or peeling paint. Touch up as required.
3. Check that all electrical wiring is secure.

TROUBLESHOOTING

In the event of malfunction of the 127-9, the following outline should enable the technician to isolate the cause of the problem and to take the appropriate corrective action.

MAIN VALVE FAILS TO OPEN

1. N.C. solenoid (3) not energized — Check control signals from meter.
2. N.C. solenoid (3) stuck closed or coil burned out — Replace coil. See the Solenoid Valve section of this manual.
3. Diaphragm of main valve (1) ruptured or stem binding — See Model 65 Basic Valve section of this manual.

MAIN VALVE FAILS TO CLOSE

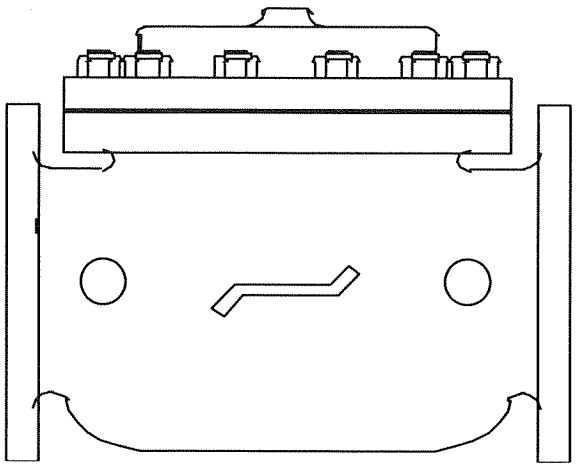
1. N.C. solenoid (3) not deenergized — Check control signals from meter.
2. N.C. solenoid (3) stuck open — Disassemble and determine cause. See the Solenoid Valve section of this manual.
3. N.O. solenoid (2) energized — Check control signals from meter.
4. N.O. solenoid (2) stuck closed — Disassemble and determine cause. See the Solenoid Valve section of this manual.
5. Stem of main valve (1) binding — See the Model 65 Basic Valve section of this manual.

VALVE SKIPS LOW FLOW POSITION ON SHUTDOWN

1. N.O. solenoid (2) not being energized. — Check signals from meter.
2. Coil of N.O. solenoid (2) burned out — Replace coil. See the Solenoid Valve section of this manual.
3. N.O. solenoid (2) stuck open — Disassemble and determine cause. See the Solenoid Valve section of this manual.

VALVE DOES NOT GO TO FULL SHUTOFF

1. N.O. solenoid (2) not being deenergized — Check signals from meter.
2. N.O. solenoid (2) stuck closed — Disassemble and determine cause. See the Solenoid Valve section of this manual.
3. Seat of main valve (1) damaged. — 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 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.
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 (eg., 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 ex-

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amination 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

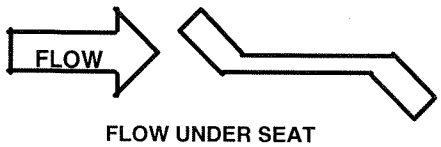
**A diaphragm failure can prevent the valve from either opening or closing, depending on the flow direction. Most water service valves flow "under the seat", in which case a diaphragm failure will keep the valve from closing. On the other hand, most fuel service valves flow "over the seat", in which 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.*

PROCEDURE A : DIAPHRAGM REPLACEMENT

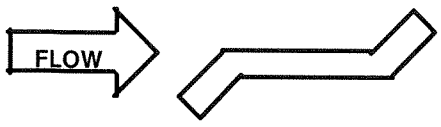
1. Isolate the valve from the system by closing upstream amd downstream block valves.
2. Loosen one of the tubing connections on the bonnet. Allow any residual pressure to bleed off.
3. Remove all tubing connected at the bonnet.
4. Remove the bonnet nuts.
5. Remove the bonnet. If the bonnet sticks in 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:*



FLOW UNDER SEAT
DIAPHRAGM FAILURE = VALVE FAILS TO CLOSE



FLOW OVER SEAT
DIAPHRAGM FAILURE = VALVE FAILS TO OPEN

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.

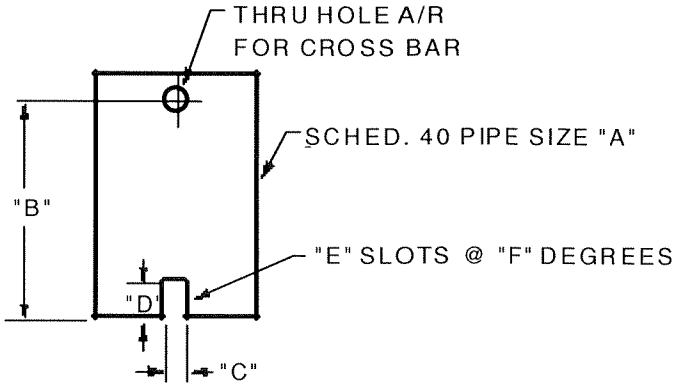
PROCEDURE C: SEAT DISC REPLACEMENT

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

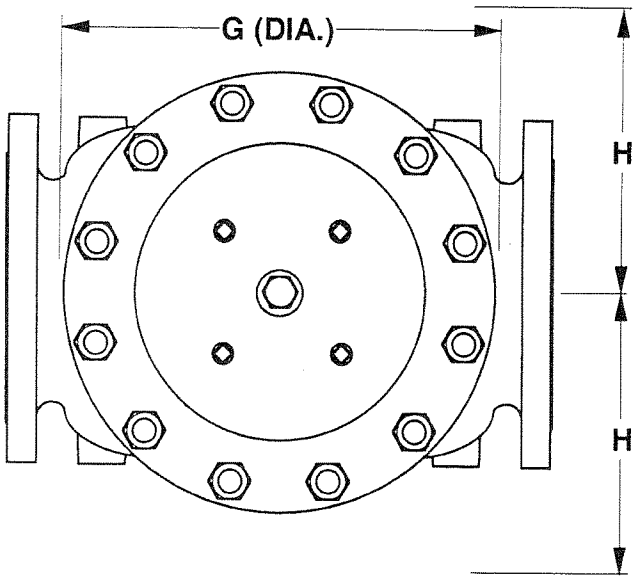
NOTE: It is rare for a seat ring to require replacement. Minor nicks and scratches in the seating surface can usually be smoothed out with emery cloth.

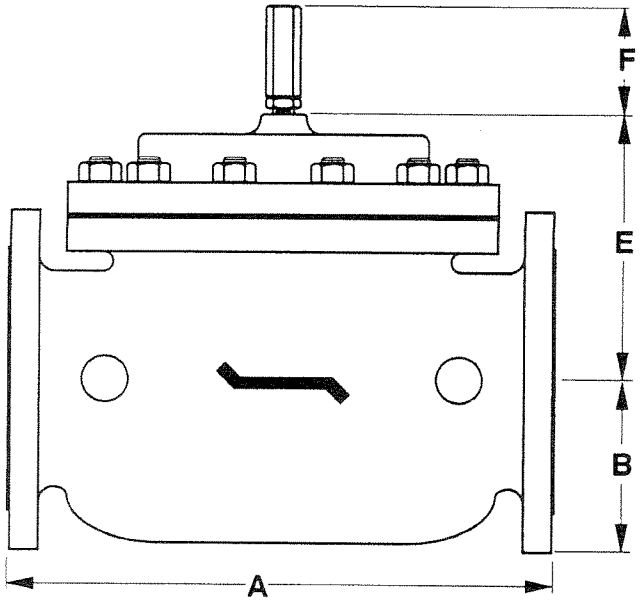
1. Perform Steps 1 and 2 of Procedure B, above.
2. If you are working on a 4" or smaller valve, follow Steps 3 thru 9, below.
3. If you are working on a 6" or larger valve, follow Steps 10 thru 16, below.
4. Seat rings in valves 4" and smaller are threaded into the valve body. To remove, you will need 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.



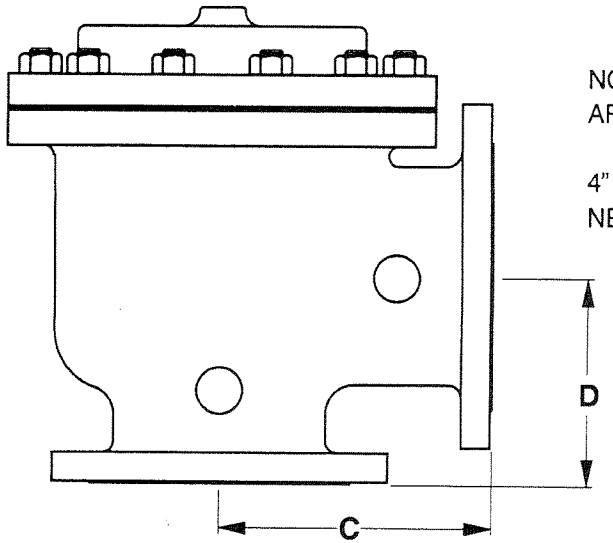
VALVE SIZE	"A" PIPE SIZE	"B" MIN. LENGTH	"C" SLOT WIDTH	"D" SLOT DEPTH	"E" NO. OF SLOTS	"F" SLOT SPACING
1-1/4"	3/4"	6"	3/8"	3/8"	2	180°
1-1/2"	3/4"	6"	3/8"	3/8"	2	180°
2"	1-1/2"	7"	3/8"	3/8"	2	180°
2-1/2"	2"	8"	1/2"	1/2"	3	120°
3"	2-1/2"	9"	5/8"	5/8"	2	180°
4"	3"	10"	5/8"	5/8"	2	180°

REVISED 3-17-97





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

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. V5256R7

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 Operator (Optional)

Manual operator allows manual operation when desired or during an electrical power outage. Two types of manual operators are available - push type (Suffix MO) and screw type (Suffix MS). To operate valve manually with push type operator, push stem at base of valve body as far upward as possible. Valve will now be in the same position as when the solenoid is energized. Removing pressure from stem will release manual operator to original position. To operate valve with a screw type manual operator, rotate manual operator stem at base of valve body clockwise until it hits a stop. Valve will now be in the same position as when the solenoid is energized. Rotate manual operator stem fully counterclockwise before operating valve electrically.

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 "I" or "IN". Outlet port will be marked "2".

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. 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 "1" or "IN". Outlet port will be marked "2". 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 valve strainer or filter when cleaning the valve.

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

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

Valve Disassembly

⚠ 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.

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.K218-948. 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.

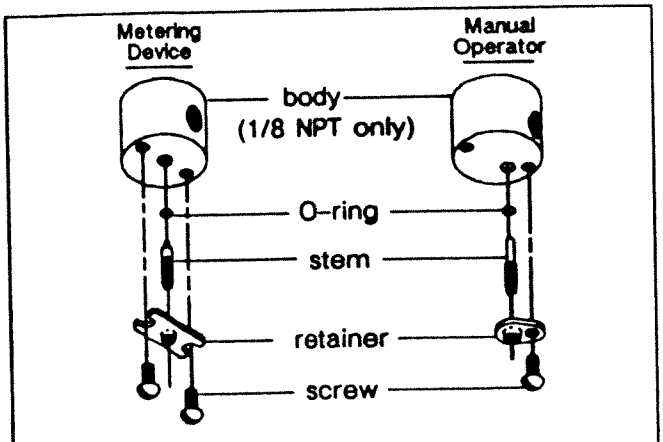
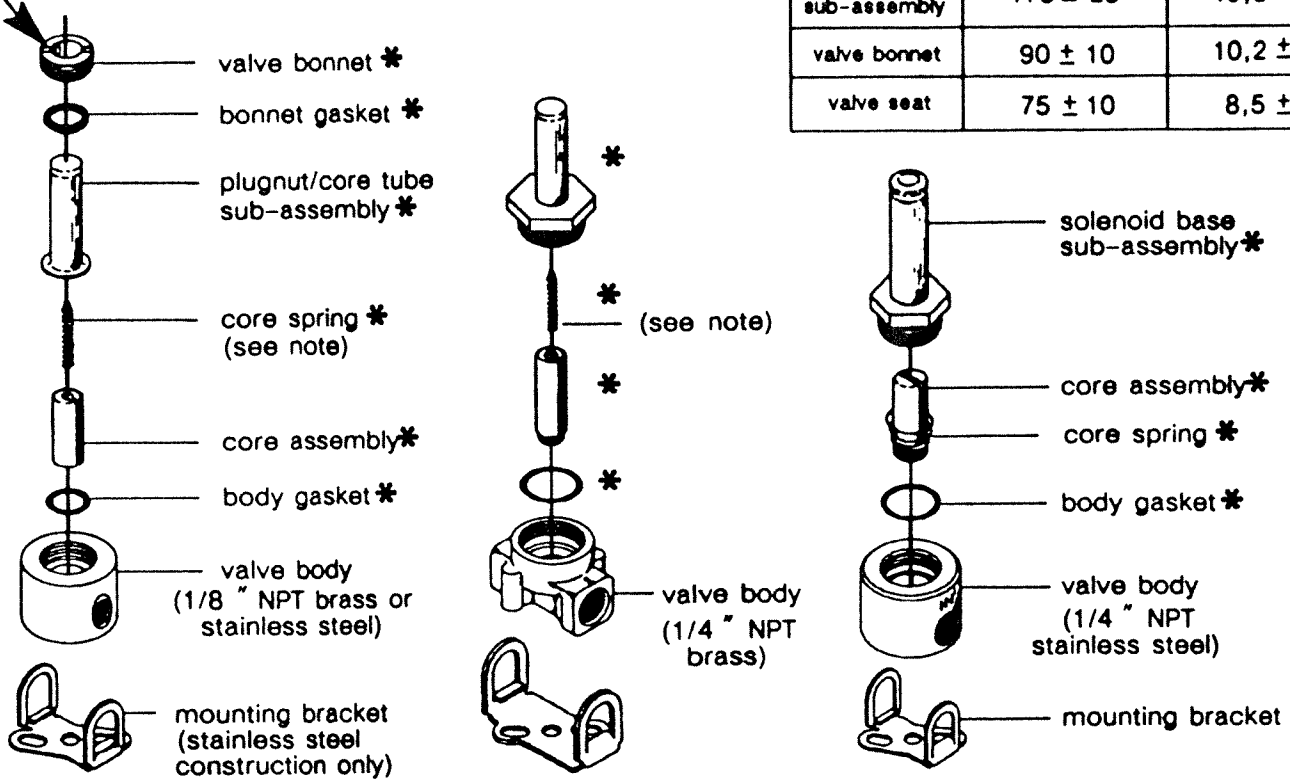


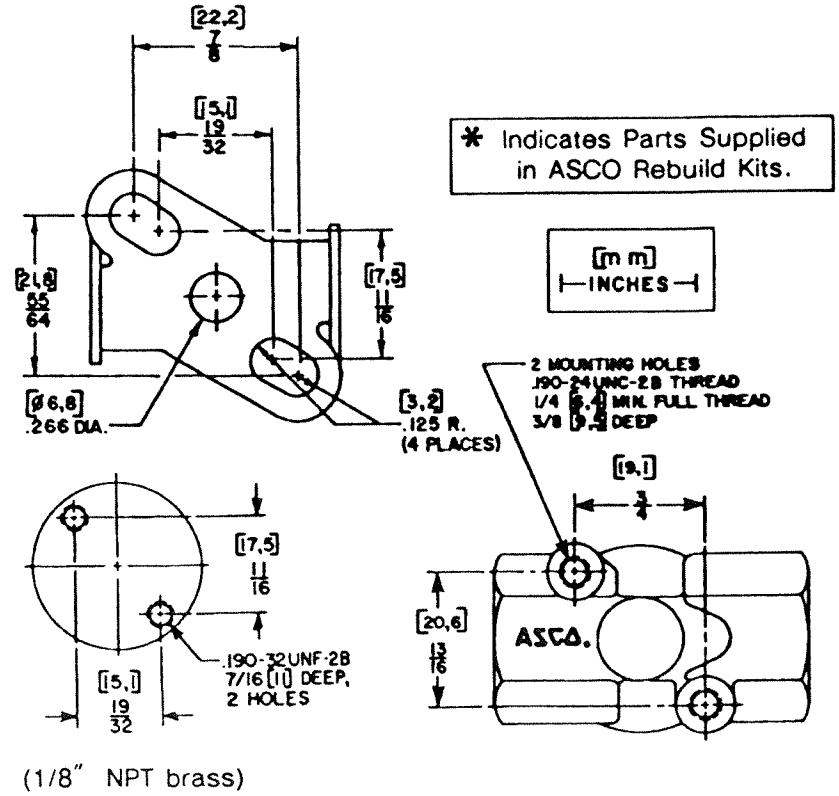
Figure 1. Metering and Manual Operator Constructions

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

*Bonnet wrench supplied in ASCO Rebuild Kits. For bonnet wrench only order No. K218-948.



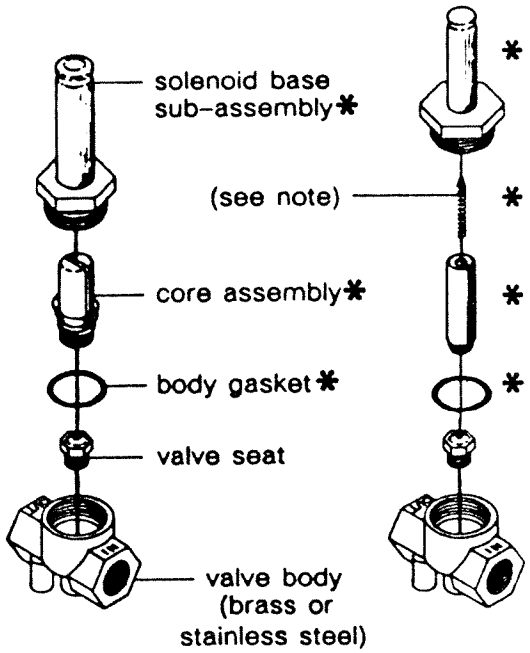
Series 8262



(1/8" NPT brass)

* Indicates Parts Supplied in ASCO Rebuild Kits.

[m m] INCHES

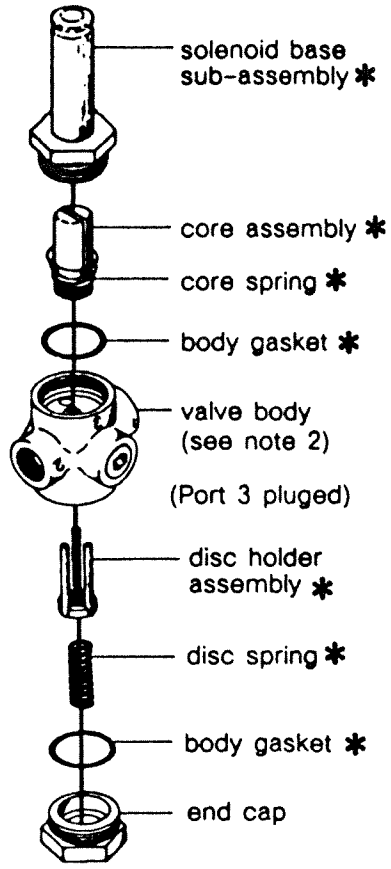


Series 8263

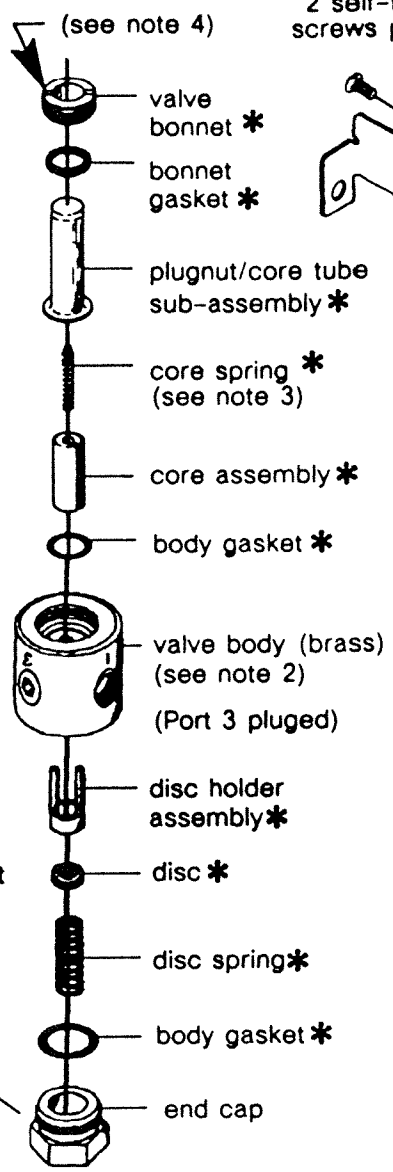
Note:
Wide end of core spring in core first, closed end protrudes from top of core.

Figure 2. Series 8262 and 8263, Normally Closed Construction

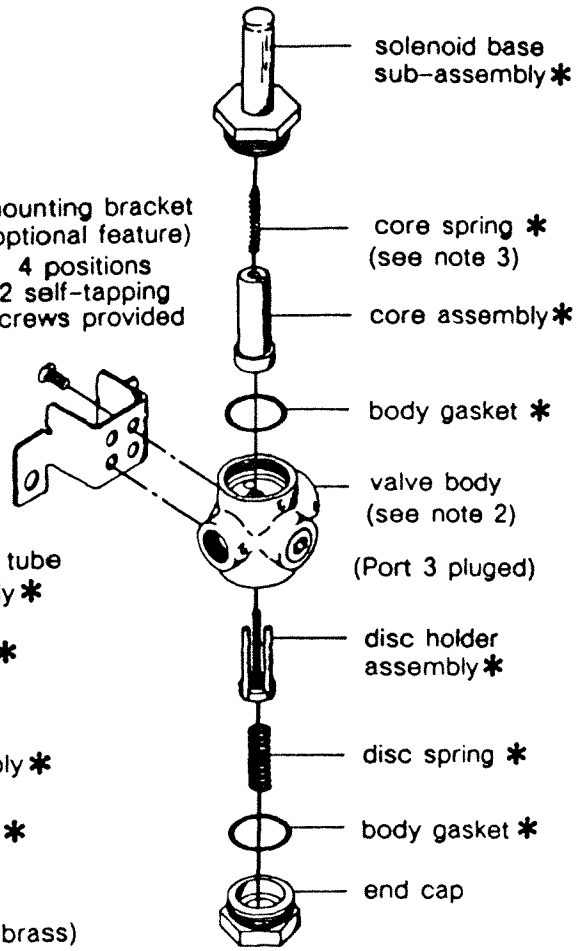
Torque Chart		
Part Name	Torque value Inch-Pounds	Torque value Newton-Meters
solenoid base sub-assembly / end cap, 1/4" NPT	175 ± 25	19,8 ± 2,8
valve bonnet / end cap, 1/8" NPT	90 ± 10	10,2 ± 1,1



1/4" NPT–Brass



1/8" NPT–Stainless Steel



1/4" NPT–Brass

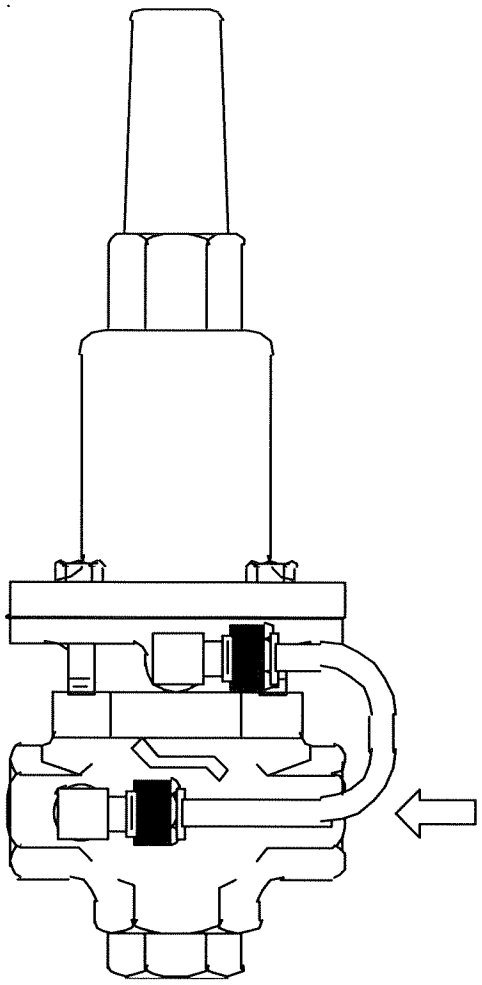
* Indicates Parts Supplied in ASCO Rebuild Kit

Notes:

1. For mounting, a flat surface must be provided across the entire length of the bracket. The valve body becomes secure to bracket, when bracket is tightened in to position.
2. Body inverted for in-line piping. Inverted 1 is valve inlet and inverted 2 is valve outlet.
3. Wide end of core spring in core first, closed end protrudes from top of core.
4. Bonnet wrench supplied in ASCO Rebuild Kit. For bonnet wrench only order No. K218-948.

Figure 3. Series 8262, Normally Open Construction

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



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.

OCV Control Valves
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.

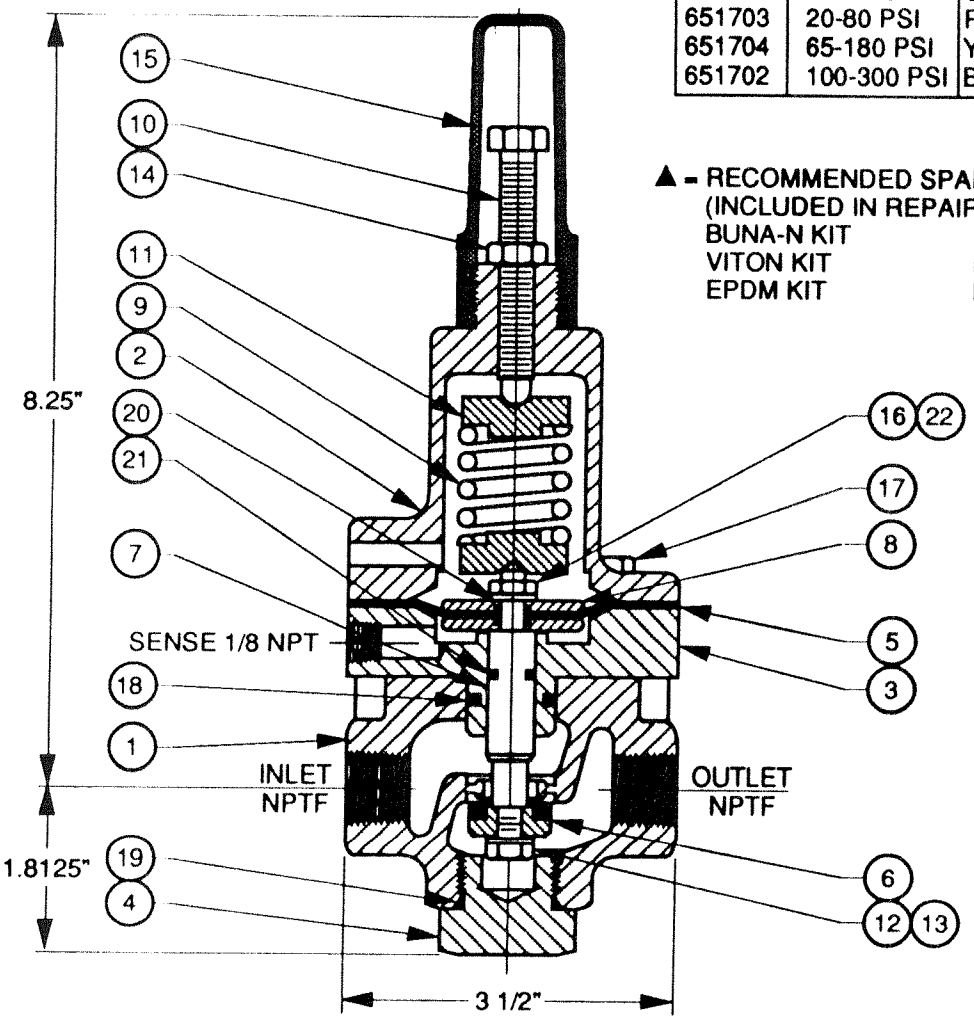
C. STEM REPAIR

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	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: RON — DATE: 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	

DESCRIPTION

MODEL 126 EJECTOR
The Model 126 ejector is a simple tee fitting with a fixed orifice in its inlet port. It provides the proper supply pressure to the main valve diaphragm chamber, allowing various two-way control pilots to control the valve position.

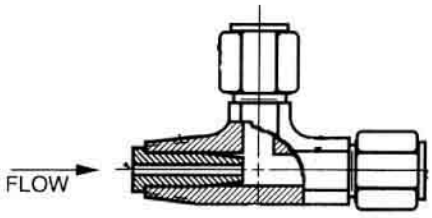
MODEL 126 EJECTOR DIAGRAM

Brass Construction / Stainless Steel Construction

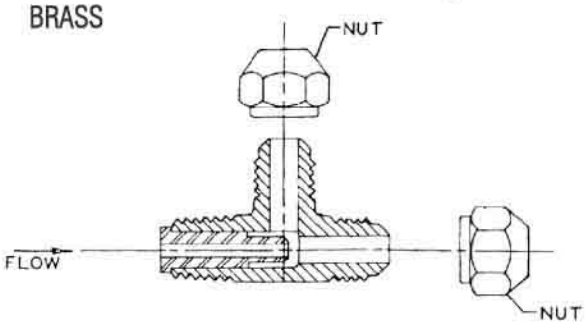
MATERIAL	PART NUMBER	P (NPT)	T-TUBE O.D.	STD. ORIFICE	USED ON VALVE SIZES
Brass	213100	3/8"	3/8"	.125"	1 ¼"-6"
Brass	214100	1/2"	1/2"	.188"	8"-10"
Brass	215100	3/4"	3/4"	.188"	12"-16"
316 Stn. Steel	213700	1/4"	3/8"	.090"	1 ¼"-6"
316 Stn. Steel	214700	3/8"	1/2"	.125"	8"-10"
316 Stn. Steel	215700	1/2"	3/4"	.188"	12"-16"

Orifice bushings are stainless steel.

STAINLESS

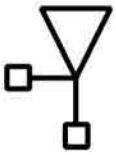


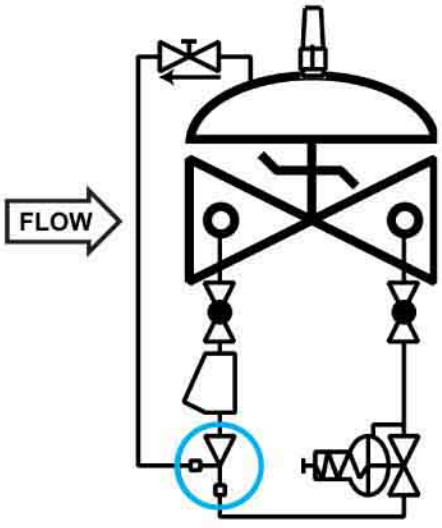
BRASS



SCHEMATIC SYMBOL

The Model 126 Ejector is shown on OCV Valve Schematics as:





EXAMPLE: Shown here on a MODEL 127-3 Pressure Reducing Valve

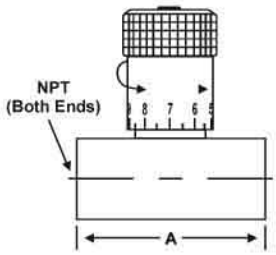
TOLL FREE 1.888.628.8258 • **phone:** (918)627.1942 • **fax:** (918)622.8916 • 7400 East 42nd Place, Tulsa, OK 74145
email: sales@controlvalves.com • **website:** www.controlvalves.com

DESCRIPTION

The Model 141-2 Needle Valve is an adjustable restriction device installed in the control circuit tubing. The setting of the needle valve meters the flow into and out of the main valve diaphragm chamber, thus controlling the response speed of the main valve. Depending on the application, the needle valve may be used as a closing speed control, opening speed control, or both simultaneously.

◀**Needle Valves shown**
Sizes: 3/4" & 1/4"

MODEL 141-2 MATRIX

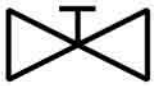


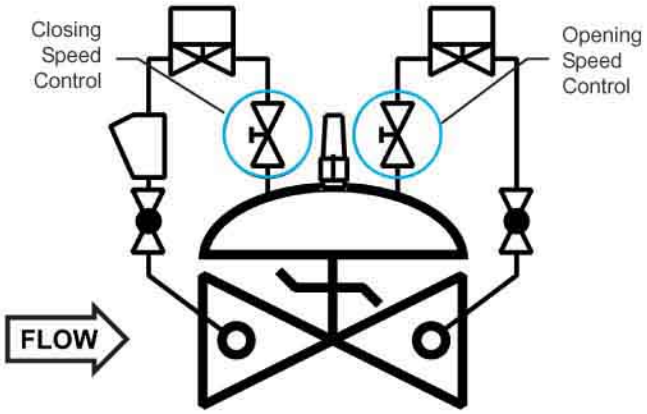
MATERIAL	PART NUMBER	INLET/OUTLET (NPT)	A	USED ON VALVE SIZE*
Brass	683100	1/4	2	1 ¼"-2"
Brass	683101	3/8	2 1/4	2 ½"-6"
Brass	683102	1/2	2 5/8	8"-10"
Brass	683103	3/4	3 1/4	12"-16"
Stn. Steel	683700	1/4	2	1 ¼"-2"
Stn. Steel	683702	3/8	2 1/4	2 ½"-6"
Stn. Steel	682704	1/2	2 5/8	8"-10"
Stn. Steel	683703	3/4	3 5/8	12"-16"

Note: Needle valve size may vary on valve application. Consult factory.

SCHEMATIC SYMBOL

The Model 141-2 Needle Valve is shown on OCV Valve Schematics as:

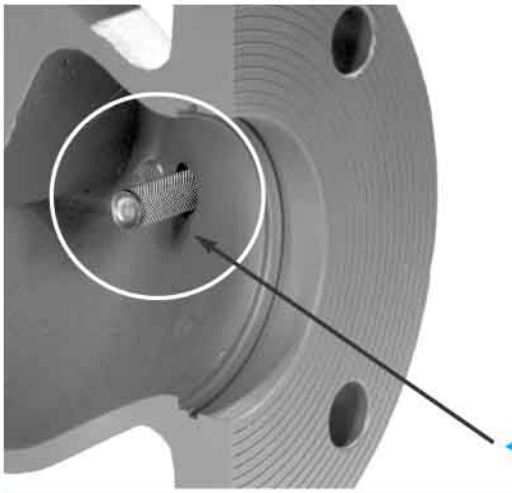




EXAMPLE: Shown here on a MODEL 115-3 DIGITAL VALVE as separate opening and closing speed controls.

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

Needle Valve 141-2



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

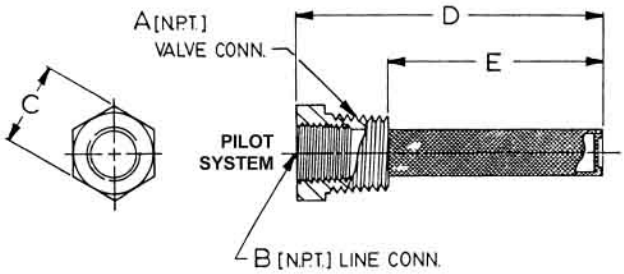
PART NUMBER	A	B	C	D	E	USED ON VALVE SIZE
660704	3/8	1/4	11/16	2 3/16	1 1/2	1 1/4"-6"
660705	1/2	3/8	7/8	2 1/4	1 1/2	8"-10"
660706	3/4	1/2	1 1/8	2 3/8	1 1/2	12"-16"

MATERIALS

Inline strainers are all-stainless steel construction.

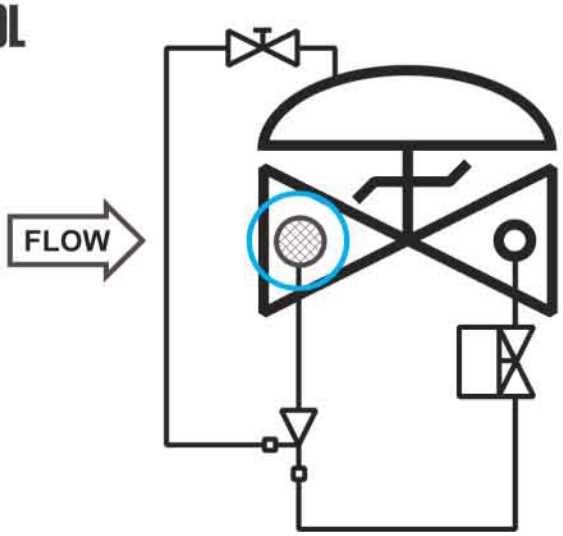
SCREEN SIZE

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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Inline Strainer 123

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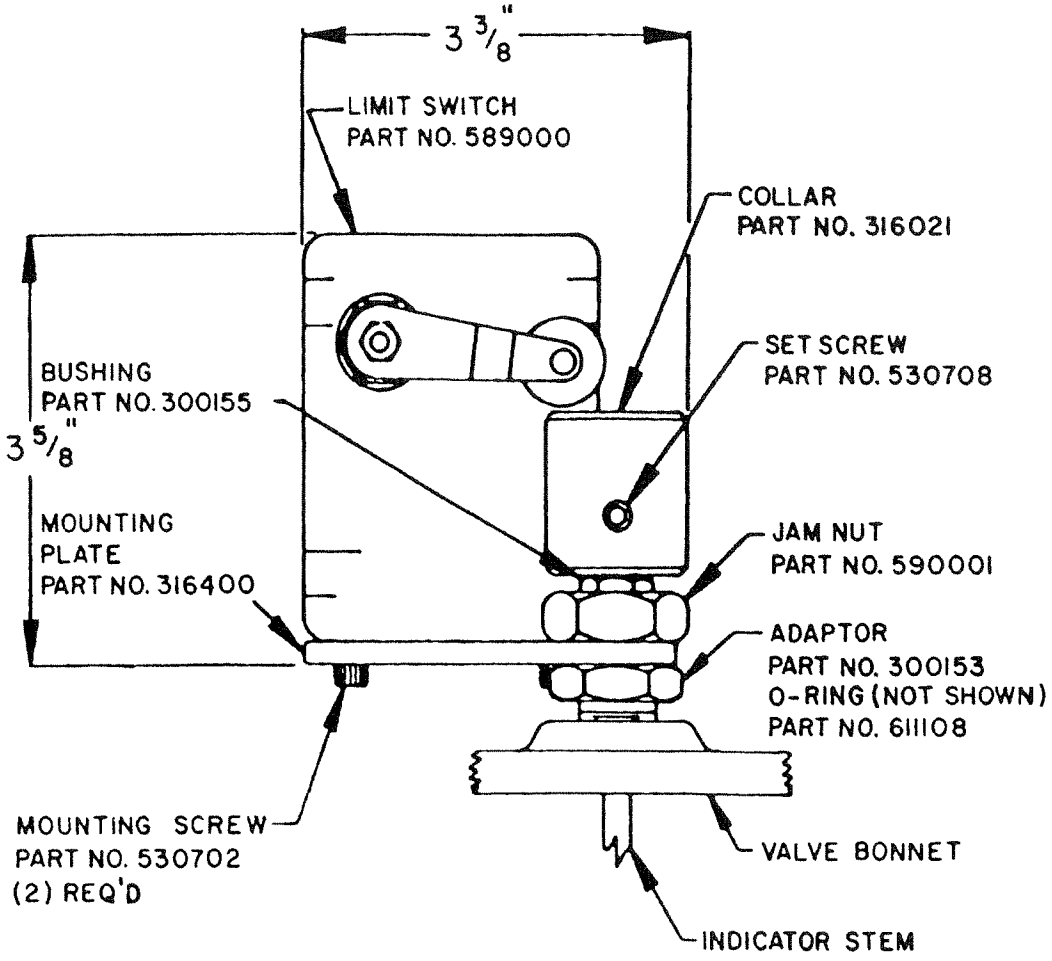

MODEL 150
LIMIT SWITCH ASSEMBLY