

▲ Model 120-7

The Model 120-7 is specifically designed for fuel loading systems and performs the following functions:

- ▶ Rate of flow control - valve will modulate as necessary to prevent set point from being exceeded
- ▶ Two-stage shutdown

## SERIES FEATURES

- ▶ Opens on signal from preset register
- ▶ Limits flow rate to meter capacity (adjustable)
- ▶ Extra-sensitive differential pilot
- ▶ Closes in two stages based on signals from preset register
- ▶ Can be maintained without removal from the line
- ▶ Factory tested and can be pre-set to your requirements
- ▶ Explosion-proof prewired junction box available
- ▶ Two stage opening available via timer

## OPERATION

(Refer to wiring diagram)

On start-up, SW1 energizes the normally closed solenoid, allowing the valve to open. While open, the rate of flow pilot, sensing the differential across the integral orifice plate, will modulate the valve as necessary to prevent the flow rate from exceeding the pre-determined maximum. At a predetermined number of gallons prior to end of loading run, SW1 switches back to remove power from the normally closed solenoid and to make power available to the limit switch. The valve starts closed. At the low flow position, the limit switch reverses direction and energizes the normally open solenoid. This "hydraulically locks" the valve in the low flow position. At the conclusion of the load, SW2 switches back, de-energizing the normally open solenoid and the valve closes fully.

## COMPONENTS

The Model 120-7 consists of the following components, arranged as shown on the schematic diagram:

- 1.) Model 65 Basic Control Valve (Fail Closed)
- 2.) Integral Orifice Plate
- 3.) Model 450 Two-Way Solenoid Pilot
- 4.) Model 451 Two-Way Solenoid Pilot
- 5.) Model 2450 Rate of Flow Control Pilot
- 6.) Model 126 Ejector
- 7.) Model 141-2 Needle Valve
- 8.) Model 123 Inline Strainer
- 9.) Limit Switch

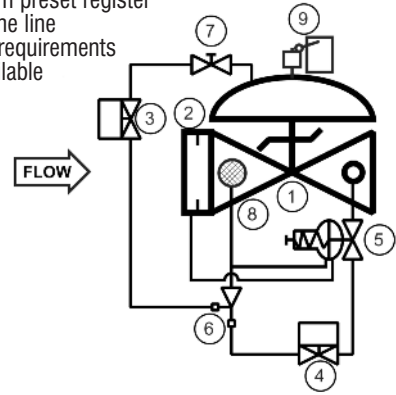
## SIZING

The following chart states the minimum and maximum flow rate with standard bore orifice plate, based on a fluid specific gravity of 0.8. This means the valve can be adjusted to control within the ranges shown. Lower flow ranges are possible through the use of smaller orifice plate bore and all ranges are adjustable within a 4:1 ratio (high to low flow). Consult the factory for assistance.

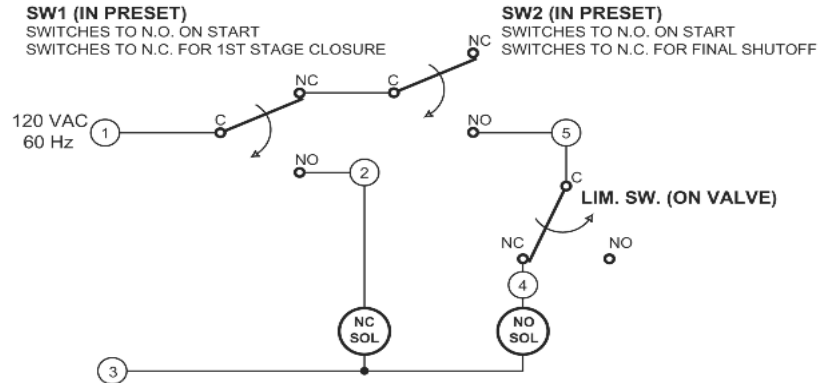
SIZE	1 1/4", 1 1/2"	2"	2 1/2"	3"	4"	6"	8"	10"	12"	14"	16"	24"
MIN. FLOW, GPM	38	63	88	145	250	560	940	1310	1875	2250	3000	8750
MAX. FLOW, GPM	152	252	352	580	1000	2240	3760	5240	7500	9000	12000	35000

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## SCHEMATIC



## WIRING DIAGRAM



## RECOMMENDED INSTALLATION

- ▶ Install the valve at the appropriate location, typically downstream of the preset meter.
- ▶ Install the valve with adequate space above and around the valve to facilitate servicing. Refer to the Dimension Table.
- ▶ Valve should be installed with the bonnet (cover) at the top, particularly 8" and larger valves.
- ▶ Shut-off valves should be installed upstream and downstream of the control valve. These are used to isolate the valve during start-up and maintenance.
- ▶ Following main valve installation, the solenoids and limit switch must be wired into the preset register, as shown in the wiring diagram.

## MAX. PRESSURE

END CONNECTIONS	DUCTILE IRON	STEEL/STN STL	ALUMINUM
150# Flanged	250 psi	285 psi	285 psi
300# Flanged	640 psi	740 psi	---

Model 120-7 Two-stage Preset Valve with Rate of Flow Control

# Model 120-7 (Fueling Service)



## SIZES

### GLOBE/ANGLE

Flanged Ends: 1 1/4" - 24" (globe);  
1 1/4" - 16" (angle)

### TEMPERATURE RANGE

(Valve Elastomers)

Buna-N -40° F - 180°F, Viton 0° F - 400°F

### MATERIALS

Consult factory for others.

**Body/Bonnet:** Ductile Iron (epoxy coated), Carbon Steel (epoxy coated), Stainless Steel, Aluminum

**Seat Ring:** Stainless Steel, Bronze

**Stem:** Stainless Steel, Monel

**Spring:** Stainless Steel

**Diaphragm:** Buna-N, Viton, (Nylon reinforced)

**Seat Disc:** Buna-N, Viton

**Pilot:** Stainless Steel, Bronze

**Other pilot system components:**

Stainless Steel, Bronze/Brass

**Tubing & Fittings:** Stainless Steel, Copper/Brass

### SOLENOID

**Enclosure:** Explosion Proof NEMA 4X, 6P, 7, 9

**Body:** Brass, Stainless Steel

**Voltages:** 24, 120, 240, 480 VAC  
12, 24 VDC

Note: Working pressures of solenoids vary greatly, consult factory on application of OCV Model 120-7 valves.

## SPECIFICATIONS (Typical Fuel Application)

The two-stage preset valve shall open in one stage and close in two stages based on signals from the preset register. While open, the valve shall function to limit the flow rate to the adjustable setpoint, regardless of fluctuations in upstream or downstream pressure.

### DESIGN

The two-stage preset valve shall be a single-seated, line pressure operated, diaphragm actuated, pilot controlled globe valve. The valve shall seal by means of a corrosion-resistant seat and a resilient, rectangular seat disc. These, and other parts, shall be replaceable without removing the valve from the line. The stem of the main valve shall be guided top and bottom by integral bushings. Alignment of the body, bonnet and diaphragm assembly shall be by precision dowel pins. The diaphragm shall not be used as a seating surface, nor shall the pistons be used as an operating means. The orifice plate shall be integrally-installed in the valve inlet flange. The pilot system shall be furnished complete and installed on the main valve. It shall include two solenoid pilots, a needle valve and an inline strainer. The two-stage preset valve shall be operationally and hydrostatically tested prior to shipment.

### MATERIALS OF CONSTRUCTION

The main valve body and bonnet shall be ductile iron per ASTM A536, Grade 65-45-12. All ferrous surfaces shall be coated with 4 mils of epoxy. The main valve seat ring shall be CF8M stainless steel. Elastomers (diaphragms, resilient seats and O-rings) shall be Buna-N. The control and solenoid pilots shall be stainless steel, as shall the needle valve and control line tubing. The orifice plate shall also be stainless steel. The solenoid and limit switch enclosures shall be explosion-proof and suitable for operation on <voltage>.

### OPERATING CONDITIONS

The two-stage preset valve shall be suitable for controlling the flow rate at <X> gpm at pressures ranging from <X to X> psi.

### ACCEPTABLE PRODUCTS

The two-stage preset valve shall be a <size> Model 120-7, <globe pattern, angle pattern>, with <150# flanged, 300# flanged> end connections, as manufactured by OCV Control Valves, Tulsa, Oklahoma, USA.

U.S. DIMENSIONS - INCHES

DIM	END CONN.	1 1/4-1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	24
A	150# FLGD	8 1/2	9 3/8	10 1/2	12	15	17 3/4	25 3/8	29 3/4	34	39	40 3/8	62
	300# FLGD	8 3/4	9 7/8	11 1/8	12 3/4	15 5/8	18 5/8	26 3/8	31 1/8	35 1/2	40 1/2	42	63 3/4
C	150# FLGD	4 1/4	4 3/4	6	6	7 1/2	10	12 11/16	14 7/8	17	--	20 13/16	--
	300# FLGD	4 3/8	5	6 3/8	6 3/8	7 13/16	10 1/2	13 3/16	15 9/16	17 3/4	--	21 5/8	--
D	150# FLGD	3	3 7/8	4	4	5 1/2	6	8	11 3/8	11	--	15 11/16	--
	300# FLGD	3 1/8	4 1/8	4 3/8	4 3/8	5 13/16	6 1/2	8 1/2	12 1/16	11 3/4	--	16 1/2	--
E	ALL	6	6	7	6 1/2	8	10	11 7/8	15 3/8	17	18	19	27
F (OPT)	ALL	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	6 3/8	6 3/8	6 3/8	6 3/8	6 3/8	8
H	ALL	10	11	11	11	12	13	14	17	18	20	20	28 1/2

\*GROOVED END NOT AVAILABLE IN 1 1/4"

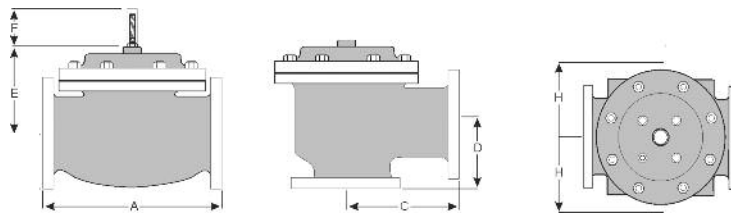
For maximum efficiency, the OCV control valve should be mounted in a piping system so that the valve bonnet (cover) is in the top position. Other positions are acceptable but may not allow the valve to function to its fullest and safest potential. In particular, please consult the factory before installing 8" and larger valves, or any valves with a limit switch, in positions other than described. Space should be taken into consideration when mounting valves and their pilot systems.

A routine inspection & maintenance program should be established and conducted yearly by a qualified technician. Consult our factory @ 1-888-628-8258 for parts and service.

### How to order your Model 120-7 valve

When ordering please provide:

Fluid to be controlled - Model Number - Size - Globe or Angle - End Connection - Body Material - Trim Material - Flow Rate Setting or Range - Solenoid Voltage - Special Requirements / Installation Requirements



QUALITY SYSTEM  
REGISTERED TO  
ISO 9001

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