

▲ Model 120-1

The Model 120-1 has a wide range of applications: anywhere the flow rate must be controlled or limited, combined with a need for an on/off electrical operation. Typical examples include:

- ▶ Pump systems
- ▶ Truck loading terminals

## SERIES FEATURES

- ▶ Controls or limits flow to a predetermined rate
- ▶ Built-in orifice plate for sensing flow rate
- ▶ Electrically operated solenoid allows valve to open (control flow rate) or shut-off (close)
- ▶ Extra-sensitive differential pilot
- ▶ Flow rate is adjustable with single screw
- ▶ Adjustable response speed
- ▶ Can be maintained without removal from the line
- ▶ Factory tested and can be pre-set to your requirements

## OPERATION

A two-way solenoid acts as an override and when closed, causes the main valve to close. Opening the solenoid allows the normally open, spring loaded rate of flow control pilot take over. The pilot, sensing the increased differential (flow rate) works to close the pilot and main valve, whereas decreased differential works to open them. The net result is a constant modulating action of the pilot and main valve to hold the differential, hence the flow rate, constant. The pilot system is equipped with a needle valve that fine tunes the valve's response to the system variables.

The solenoid can be supplied normally closed (energize to enable) or normally open (energize to close).

## COMPONENTS

The Model 120-1 consists of the following components, arranged as shown on the schematic diagram:

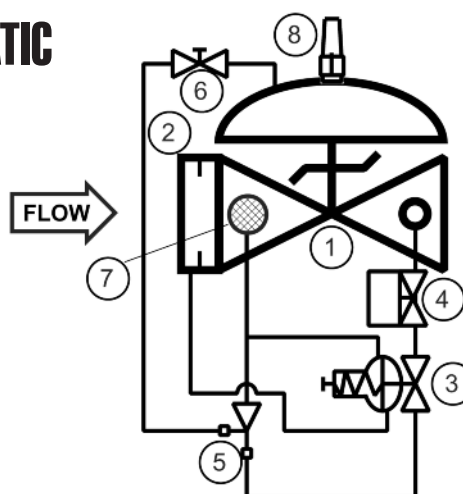
- 1.) Model 65 Basic Control Valve
- 2.) Orifice Plate
- 3.) Model 2450 Rate of Flow Control Pilot
- 4.) Model 451 Two-Way Solenoid Pilot
- 5.) Model 126 Ejector
- 6.) Model 141-2 Needle Valve
- 7.) Model 123 Inline Strainer
- 8.) Model 155L Visual Indicator

## 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 bores, 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

## SCHEMATIC



## RECOMMENDED INSTALLATION

- ▶ 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, and any valve with a limit switch.
- ▶ 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.
- ▶ In order to properly set the flow rate, a meter or some other means of measuring flow should be installed in series with the control valve.
- ▶ Following main valve installation, the solenoid must be wired into the user's control system. This is a simple two-wire (plus ground) connection.

## MAX. PRESSURE

(The pressures listed here are maximum working pressures at 100°F)

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

# Model 120-1 (Terminal Services)



## SIZES GLOBE/ANGLE

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

## FLUID OPERATING TEMPERATURE RANGE

(Valve Elastomers)

Buna-N -40°F to 180°F

Viton 20°F to 230°F

Fluorosilicone -40°F to 150°F

EPDM 0°F to 230°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:** Stainless Steel, Brass

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

12, 24 VDC

Note: Working pressures of solenoids vary greatly, consult factory on application of OCV Model 120-1 valves.

## SPECIFICATIONS (Typical Terminal Services Application)

The rate of flow control valve/solenoid shut-off shall function to control or limit the flow rate, regardless of fluctuations in upstream or downstream pressure. The valve shall be equipped with a two-way solenoid valve that will allow the valve to open when <energized, de-energized>.

### DESIGN

The rate of flow control/solenoid shut-off 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, installed on the main valve and include an opening speed control, an inline strainer and solenoid valve. The rate of flow control valve shall be operationally and hydrostatically tested prior to shipment.

### MATERIALS OF CONSTRUCTION

The main valve body and bonnet shall be ductile iron. All ferrous surfaces shall be coated with 4 mils of epoxy. The main valve seat ring shall be stainless steel. Elastomers (diaphragms, resilient seats and O-rings) shall be Buna-N. The control pilot shall be stainless steel while the opening speed control and control line tubing shall be stainless steel. The orifice plate shall also be stainless steel. The solenoid shall have an explosion-proof enclosure and be suitable for operation on <voltage>.

### OPERATING CONDITIONS

The rate of flow control valve/solenoid shut-off shall be suitable for controlling the flow rate over a range of <X to X (limited to 4:1)> gpm at pressures ranging from <X to X> psi.

### ACCEPTABLE PRODUCTS

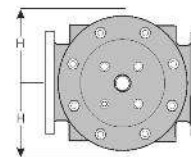
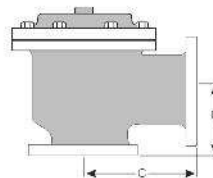
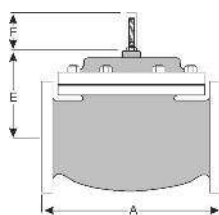
The rate of flow control valve/solenoid shut-off shall be a <size> Model 120-1, <globe pattern, angle pattern>, with <150# flanged, 300# flanged> end connections, as manufactured by OCV Control Valves, Tulsa, Oklahoma, USA.

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.



QUALITY SYSTEM  
REGISTERED TO  
ISO 9001

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 120-1 valve

When ordering please provide:

Fluid to be controlled - Model Number - Size -  
Globe or Angle - End Connection - Body  
Material - Trim Material - Pilot Options - Flow  
Rate Setting or Range - Solenoid Voltage -  
Energize to Open or Close Valve - Special  
Requirements / Installation Requirements.

Represented by:

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