

Model 110-29 ▲

The Model 110-29 is specifically designed for fuel loading systems and performs the following functions:

- ▶ Full flow delivery with two stage shutdown
- ▶ In liquid fuel systems, prevents air from passing through meter.
- ▶ In LPG systems, prevents flashing through meter.

## SERIES FEATURES

- ▶ Opens on signal from preset register
- ▶ Closes in two stages based on signals from preset register (mechanical or electronic)
- ▶ Can be maintained without removal from the line
- ▶ Factory tested
- ▶ Explosion-proof pre-wired junction box available
- ▶ Two stage opening (timer) available

## OPERATION

On start-up, SW1 and SW2 both close, energizing both solenoids in the preset (2A and 2B), allowing the main valve to open and admit full flow.

During the full flow mode, the valve will tend to close when air is sensed in the air eliminator (liquid fuel systems) or modulate as necessary to keep valve inlet pressure a predetermined amount above vapor pressure (LPG systems).

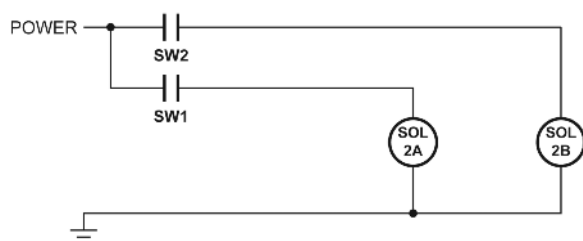
A predetermined number of gallons before the end of the loading run, SW1 opens to remove power from solenoid 1A, causing the main valve to close, but allowing low flow through solenoid 2B. At the conclusion of the load, SW2 opens, deenergizing and closing solenoid 2B and stopping all flow.

## COMPONENTS

The model 110-29 consists of the following components, arranged as shown on the schematic diagram:

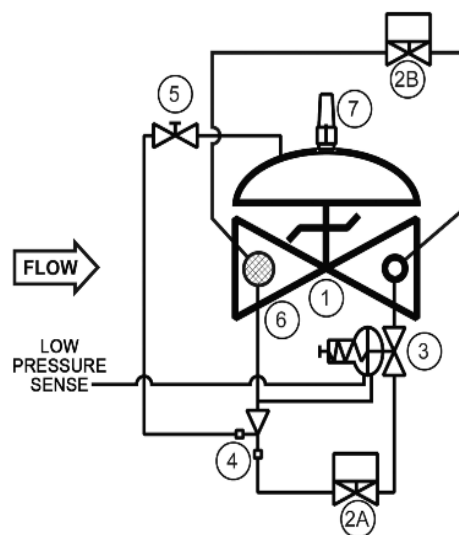
- 1.) **Model 65 Basic Valve**  
(fail closed)
- 2A.) **Two-Way Solenoid Pilot, N.C.**  
(high flow)
- 2B.) **Two-Way Solenoid Pilot, N.C.**  
(low flow)
- 3.) **Differential Control Pilot**
- 4.) **Ejector**
- 5.) **Needle Valve**
- 6.) **Inline Strainer**
- 7.) **Visual Indicator** (optional)

## SCHEMATIC & WIRING



## RECOMMENDED

- ▶ 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.
- ▶ Install a sense line from the differential pilot to (a) the head of a limited bleed air eliminator (liquid fuels systems) or (b) an appropriate location to sense vapor pressure (LPG systems).
- ▶ Following main valve installation, the solenoids must be wired into the preset register, as shown in the wiring diagram.



## MAX. PRESSURE

(Based on ANSI flange ratings.)  
(The pressures listed here are maximum working pressures at 100°F.)

END CONNECTIONS	DUCTILE IRON	STEEL/STN STL	ALUMINUM
Threaded	640 psi	640 psi	285 psi
Grooved	300 psi	300 psi	200 psi
150# Flanged	250 psi	285 psi	285 psi
300# Flanged	640 psi	740 psi	--

Note: Working pressures of solenoids vary greatly, consult factory on application of the OCV Model 110-29 valves.

## SIZING

The 110-29 valve is normally sized to match the meter size; however, in no case should the maximum velocity exceed 20 ft/sec, as shown below.

SIZE	1-1/4" -- 1-1/2"	2"	2-1/2"	3"	4"	6"	8"	10"	12"	14"	16"	24"
MAX FLOW (GPM)	100 -- 130	210	300	470	800	1800	3150	4950	7000	8450	11100	25100

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

# Model 110-29 (Terminal Services)



## SIZES Globe or Angle

Screwed Ends - 1 1/4" - 3"

Grooved Ends - 1 1/2" - 6" (globe)

1-1/2" - 6" (angle)

Flanged Ends - 1 1/4" - 24" (globe)

1 1/4" - 16" (angle)

## MAX. WORKING PRESSURE (at 100°F)

250 psi for 150# ANSI flanged Ductile Iron. 285 psi for Steel and Stainless Steel. 285 psi for Aluminum. 300# ANSI flanges are available.

## FLUID OPERATING TEMPERATURE RANGE

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

## SOLENOID VALVE VOLTAGE

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

Body: Brass, Stainless Steel

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

**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

## OPTIONAL FEATURES

Two Stage Opening; Pre-wired junction box

## SPECIFICATIONS (Typical Terminal Services Application)

The two-stage differential control valve shall open in one stage and close in two stages based on signals from the preset register. Additionally, in liquid fuel systems, the valve will close as necessary when air is sensed in the air eliminator so as to prevent air from passing through the meter. In LPG systems, the valve will modulate as necessary to keep the valve inlet pressure (meter outlet pressure) a predetermined amount above vapor pressure to ensure that only liquid passes through the meter.

## DESIGN

The two-stage differential control 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 pilot system shall be furnished complete, installed on the main valve and include differential control pilot, two solenoid pilots, a needle valve and an inline strainer. The two-stage differential 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. Solenoid pilots shall be Stainless Steel, as shall the needle valve and control line tubing. The solenoid enclosure shall be explosion-proof and suitable for operation on <voltage>.

## OPERATING CONDITIONS

The two-stage differential control valve shall be suitable for operation at <X> psi at flow rates up to <X> gpm.

## ACCEPTABLE PRODUCTS

The two-stage differential control valve shall be a <size> Model 110-29, <globe pattern, angle pattern>, with <threaded, grooved, 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	SCREWED	8 3/4	9 7/8	10 1/2	13	--	--	--	--	--	--	--	--
	GROOVED	8 3/4	9 7/8	10 1/2	13	15 1/4	20	--	--	--	--	--	--
	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 ANGLE	SCREWED	4 3/8	4 3/4	6	6 1/2	--	--	--	--	--	--	--	--
	GROOVED	4 3/8*	4 3/4	6	6 1/2	7 5/8	--	--	--	--	--	--	--
	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 ANGLE	SCREWED	3 1/8	3 7/8	4	4 1/2	--	--	--	--	--	--	--	--
	GROOVED	3 1/8*	3 7/8	4	4 1/2	5 5/8	--	--	--	--	--	--	--
	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

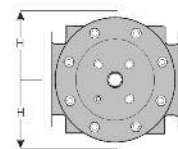
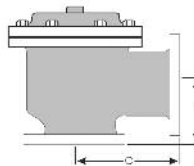
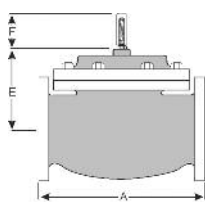
\*GROOVED END NOT AVAILABLE IN 1 1/4"

OCV valves can be mounted in the horizontal or vertical position, however 8" and larger valves are best suited to be mounted horizontally. 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.

**When ordering your 110-29 valve,**  
please provide:

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



QUALITY SYSTEM  
REGISTERED TO  
ISO 9001

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