

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:

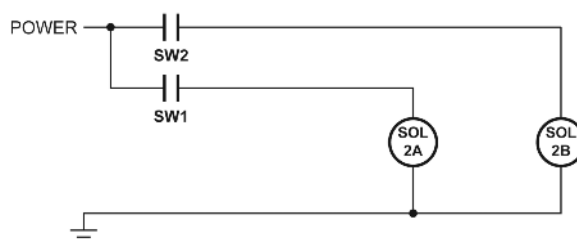
- 1.) **Model 65 Basic Valve**
(fail closed)
- 2A.) **Two-Way Solenoid Pilot, N.C.**
(high flow)
- 2B.) **Two-Way Solenoid Pilot, N.C.**
(low flow)
- 3.) **Differential Control Pilot**
- 4.) **Ejector**
- 5.) **Needle Valve**
- 6.) **Inline Strainer**
- 7.) **Visual Indicator** (optional)

SIZING

The 110-29 valve is normally sized to match the meter size; however, in no case should the maximum velocity exceed 6 meters/second, as shown below.

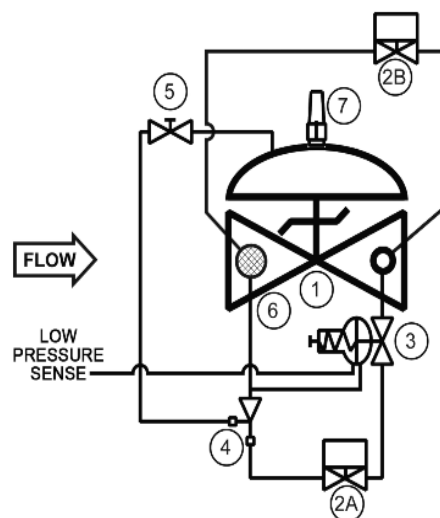
SIZE	1-1/4" (DN32) 1-1/2" (DN40)	2" (DN50)	2 1/2" (DN65)	3" (DN80)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)	14" (DN350)	16" (DN400)	24" (DN600)
MAX FLOW (M ³ /HR)	23 -- 30	48	68	107	182	409	715	1124	1589	1918	2520	5698

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 38°C.)

END CONNECTIONS	DUCTILE IRON	STEEL/STN STL	ALUMINUM
Threaded	44.1 bar	44.1 bar	19.7 bar
Grooved	20.7 bar	20.7 bar	13.8 bar
150# Flanged	17.2 bar	19.7 bar	19.7 bar
300# Flanged	44.1 bar	51.0 bar	--

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

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

Model 110-29 (Terminal Services) METRIC



SIZES Globe or Angle

Screwed Ends -	1 1/4" - 3" (DN32 thru DN80)
Grooved Ends -	1 1/2" - 6" (DN40 thru DN150) (globe)
	1 1/2" - 6" (DN40 thru DN150) (angle)
Flanged Ends -	1 1/4" - 24" (DN32 thru DN600) (globe)
	1 1/4" - 16" (DN32 thru DN400) (angle)

MAX. WORKING PRESSURE (at 37.78°C)

17.2 bar for 150# ANSI flanged Ductile Iron.

19.7 bar for Steel and Stainless Steel.

19.7 bar for Aluminum.

300# ANSI flanges are available.

FLUID OPERATING TEMPERATURE RANGE

Elastomers:

Buna-N -40°C to 82°C

Viton -6°C to 110°C

Fluorosilicone -40°C to 66°C

EPDM -18°C to 110°C

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> bar at flow rates up to <X> M³/HR.

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.

CE Markings

Applies to fuel valves installed in the European Union in accordance with the Pressure Equipment Directive, 97/23/EC CE-marked valves are available in LCB steel and CF8M stainless steel only OCV is registered to the PED through Det Norske Veritas

The following valves will be CE-marked:

- 6" (DN150) and larger valves, 150# and 300# class, liquid fuel only
- 2" (DN50) thru 4" (DN100) valves, 300# class, liquid fuel
- 1 1/4" (DN32) thru 4" (DN100) valves, 300# class, LPG or Butane service
- 4" (DN100) and smaller valves in Class 150# (liquids) are furnished under SEP with no CE-mark

OCV valves can be mounted in the horizontal or vertical position, however 8" (DN200) 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.

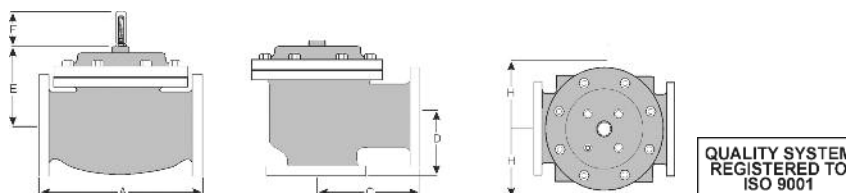
When ordering your 110-29 valve, please provide:

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

METRIC CONVERSION - MM

DIM	END CONN	DN32 - DN40	DN50	DN65	DN80	DN100	DN150	DN200	DN250	DN300	DN350	DN400	DN600
A	SCREWED	222	251	267	330								
	GROOVED	222	251	267	330	387	508						
	150# FLGD	216	238	267	305	381	451	645	756	863	991	1026	1575
	300# FLGD	222	251	283	324	397	473	670	791	902	1029	1067	1619
C	SCREWED	111	121	152	165								
	GROOVED	111*	121	152	165	194							
	150# FLGD	108	121	152	152	191	254	322	378	432		529	
	300# FLGD	111	127	162	162	198	267	335	395	451		549	
D	SCREWED	79	98	102	114								
	GROOVED	79*	98	102	114	143							
	150# FLGD	76	98	102	102	140	152	203	289			398	
	300# FLGD	79	105	111	111	148	165	216	306			419	
E	ALL	152	152	178	165	203	254	302	391	457	457	483	686
F	ALL	98	98	98	98	98	98	162	162	162	162	162	203
H	ALL	254	279	279	279	305	330	356	432	457	508	508	724

*GROOVED END NOT AVAILABLE IN DN32



QUALITY SYSTEM
REGISTERED TO
ISO 9001

Represented by:

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