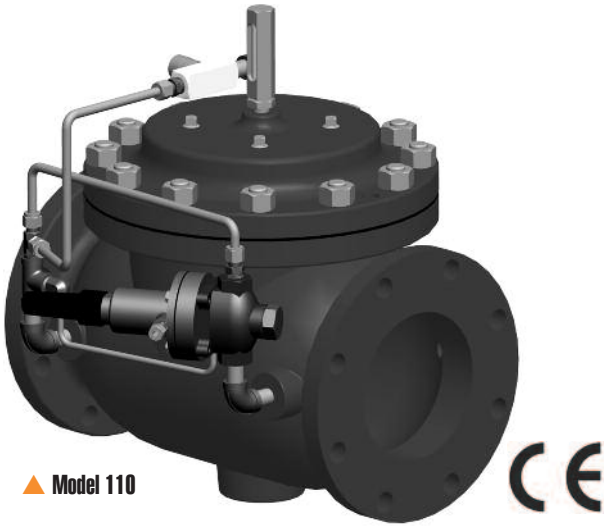
Model 110 (Terminal Services) METRIC



▲ Model 110

The Model 110 operates on/off based on the pressure difference between two points in a system.
Typical examples include:

- ▶LPG metering systems to prevent flashing
- ▶Metering systems as an air eliminator shut-off valve

SERIES FEATURES

- ▶Valve opens on an increasing differential; closes on decreasing differential
- ▶Operates over a wide flow range
- ▶Pressure differential 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

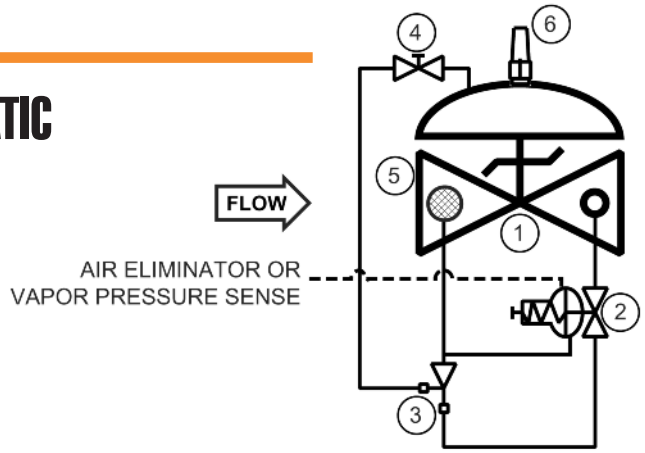
The normally closed, spring-loaded pilot senses two pressure points: the high pressure sense in the main valve inlet and the low pressure sense that is field-connected to an air eliminator head (liquid fuel) or vapor pressure bulb (LPG system). As long as the differential pressure is above the set point, the pilot is open, along with the main valve. If the differential drops below the set point, the pilot and main valve will close. In this manner, the valve acts to prevent the passage of air and/or flashing liquid through the meter. The pilot system is equipped with a needle valve response speed control.

COMPONENTS

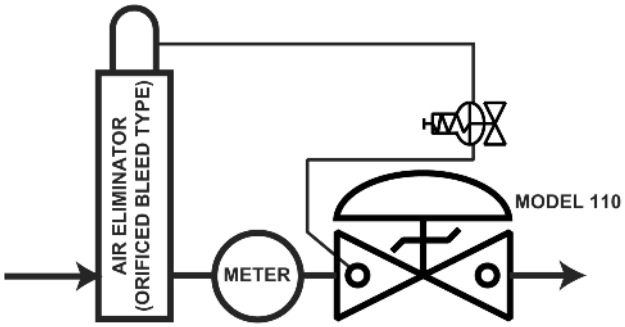
The Model 110 consists of the following components, arranged as shown on the schematic diagram:

1.) **Model 65 Basic Control Valve** (Fail Closed)
2.) **Model 1356 Differential Control Pilot**
3.) **Model 126 Ejector**
4.) **Model 141-2 Needle Valve**
5.) **Model 123 Inline Strainer**
6.) **155L Visual Indicator** (optional)

SCHEMATIC



RECOMMENDED INSTALLATION



SIZING

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

MAX. PRESSURE (The pressures listed here are maximum working pressures at 37.78°C)

END CONNECTIONS	DUCTILE IRON	STEEL WCB	STEEL LCB	Stn. Stl. CF8M	ALUMINUM
Threaded	44.1 bar	44.1 bar	44.1 bar	44.1 bar	19.7 bar
Grooved	20.7 bar	20.7 bar	20.7 bar	20.7 bar	13.8 bar
150# Flanged	17.2 bar	19.7 bar	18.4 bar	19.0 bar	19.7 bar
300# Flanged	44.1 bar	51.0 bar	48.0 bar	49.6 bar	----

SIZE, DN	32-40	50	65	80	100	150	200	250	300	350	400	600
MAX FLOW, M^3/HR	27	45	64	105	182	409	681	954	1363	1635	2180	6359

Definitive sizing information can be found in the OCV Catalog under both the Series 110 section and the Engineering section Performance Charts. Consult the factory for assistance.

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 Differential Pressure Control Valve METRIC

Model 110 (Terminal Services) METRIC

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

FLUID OPERATING TEMPERATURE RANGE
(Valve Elastomers)
Buna-N -40°C to 82.22°C
Viton -6.67°C to 110°C
Fluorosilicone -40°C to 65.56°C
EPDM -17.78°C to 110°C
SPRING RANGE (differential setting)
0.3-2.1 bar; 1.4-5.5 bar; 1.38-13.79 bar; 6.9-20.7 bar
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

SPECIFICATIONS (Typical Terminal Services Application)

The differential control valve shall function to operate on a differential between two pressure points, where a decreased differential shall cause the valve to close.

DESIGN
The 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 and installed on the main valve. It shall include a needle valve speed control and inline strainer. The 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. The control pilots shall be Stainless Steel while the speed control, tubing and fittings shall be Stainless Steel.
OPERATING CONDITIONS
The differential control valve shall be suitable for flow rates ranging from <X to X> m^3/hr.
ACCEPTABLE PRODUCTS
The differential control valve shall be a <size> Model 110, <globe pattern, angle pattern>, with <150# flanged, 300# flanged, threaded, grooved> end connections, as manufactured by OCV Control Valves, Tulsa, Oklahoma, USA.

METRIC DIMENSIONS - M.M.

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	864	991	1026	1575
	300# FLGD	222	251	283	324	397	473	670	791	902	1029	1067	1619
C ANGLE	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 ANGLE	SCREWED	79	98	102	114	--	--	--	--	--	--	--	--
	GROOVED	79*	98	102	114	143	--	--	--	--	--	--	--
	150# FLGD	76	98	102	102	140	152	203	289	279	--	398	--
	300# FLGD	79	105	111	111	148	165	216	306	298	--	419	--
E	ALL	152	152	178	165	203	254	302	391	432	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

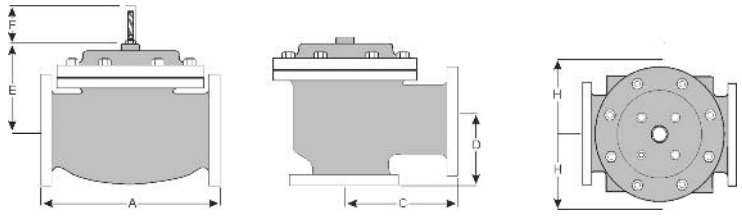
*GROOVED END NOT AVAILABLE IN DN32

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

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" (DN200) 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 @ **1-918-627-1942** for parts and service.

How to order your Model 110 valve
When ordering please provide:
Fluid to be controlled - Model Number - Size - Globe or Angle - End Connection - Body Material -Trim Material - Pilot Options - Pressure Differential Setting or Spring Range - High pressure and low pressure connection requirement - Elastomers - Special Requirements / Installation Requirements



QUALITY SYSTEM REGISTERED TO ISO 9001

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

Global performance. Personal touch.