



Series 22R Controller ▲  
w/Model 115-3

The Model 22R Electronic Pressure Reducing Valve provides user pressure control with extreme stability over a wide range of flow. Combining the advantages of simplicity and line pressure operation with the features of electronic control, the valve is able to interface with SCADA systems to provide remote control and programmable variable logic. The electronic feature allows for a wider range of operation, simplifying valve sizing.

Typical examples include:

- Water transmission lines
- Water treatment plants
- Zone Pressure Control

\*NOTE: for clarification of Electronic terminology, refer to the OCV Electronic Glossary

## THEORY OF OPERATION

### Model 22R Controller with a Model 115-3 Digital Control Valve

The Model 115-3 control valve is positioned based on the discrete electrical signals applied to the solenoid pilots (2 and 3) from the Model 22R Electronic Controller. With a pressure transducer located downstream of the valve, the controller will monitor this transducer output to control the downstream pressure. If the pressure drops below the set point, the controller will open the valve by closing solenoid 2, blocking inlet pressure to the valve diaphragm chamber. Simultaneously, solenoid 3 is opened, allowing pressure on the diaphragm to vent downstream. **The valve opens and the downstream pressure increases.**

If the pressure rises above the set point, the controller will close the valve by opening solenoid 2, routing inlet pressure to the diaphragm chamber. At the same time, solenoid 3 is closed, preventing any discharge from the diaphragm chamber. **The valve closes and downstream pressure decreases.**

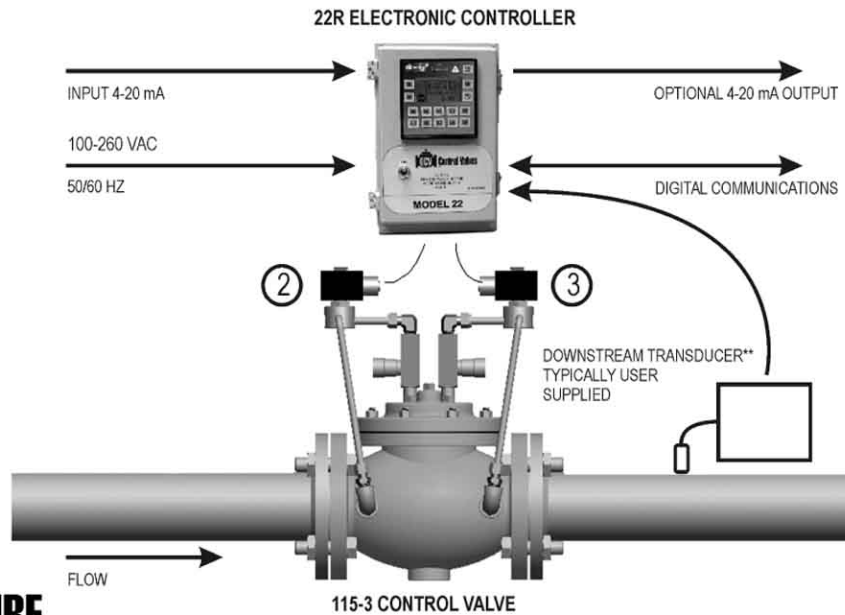
Finally, when pressure is at the set point, the controller closes both solenoids, thus no flow is allowed either on or off the diaphragm chamber. **The valve is "hydraulically locked" in position and downstream pressure is stable.**

The solenoids can be supplied to give one of the following "default" modes on absence or loss of electrical power:

- Default to closed
- Default to open
- Default in last position

## MODEL FEATURES

- ▶ Allows for frequent set point change
  - ▶ Wider range of flow than standard hydraulic control systems
  - ▶ Valve scheduling for control parameter modification (Time, Day of Week, Process variables)
  - ▶ Remote set point by digital or analog SCADA access
  - ▶ 100-260Vac 50-60Hz with 24/12 VDC, or solar Powered units available
  - ▶ Full function PID controller
  - ▶ Simplifies valve sizing
  - ▶ LCD display
  - ▶ Superior throttling characteristics compared to quarter turn valves
  - ▶ Cavitation protection available when required
- ▶ Optional
    - ▶ Analog Output (4-20mA)
    - ▶ Intranet monitoring control and e-mailing (Ultra Controller Series only)
    - ▶ Hydraulic backup
    - ▶ Touch panel color graphic LCD (Ultra Controller Series only)
    - ▶ Valve Position Transmitter
    - ▶ Consult factory for others



## SIZING

Consult the factory or refer to the ValveMaster Premier on the OCV website: [controlvalves.com](http://controlvalves.com)

## MAX. PRESSURE

Working pressures of solenoids vary greatly, consult factory on application of OCV Model 115-3 valves when pressures exceed those stated in chart.

END CONNECTIONS	DUCTILE IRON	STEEL/STN STL	BRONZE
Threaded	300 psi	300 psi	300 psi
Grooved	300 psi	300 psi	300 psi
150# Flanged	250 psi	285 psi	225 psi
300# Flanged	300 psi	300 psi	300 psi

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## SIZES GLOBE/ANGLE

Screwed Ends: 1 1/4" - 3"; Grooved Ends: 1 1/2" - 6"  
 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, EPDM 0°F - 300°F

## MATERIALS - Consult factory for others.

**Body/Bonnet:** Ductile Iron (epoxy coated), Carbon Steel (epoxy coated), Stainless Steel, Bronze, Others available (consult factory)

**Seat Ring:** Bronze, Stainless Steel

**Stem:** Stainless Steel, Monel

**Spring:** Stainless Steel

**Diaphragm:** Nylon Reinforced, Buna-N, Viton, EPDM

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

**Pilot:** Bronze, Stainless Steel; *Other pilot system components:* Bronze/Brass, All Stainless Steel

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

**Solenoid:** Enclosure: Weatherproof NEMA 4X / 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 115-3 valves.*

## CONTROLLER SPECIFICATIONS

**Power Requirements:** 100-260 VAC 50-60Hz standard, Optional 24VDC or 12VDC

**Inputs From Transducer:** 4-20mA standard, Optional 0-10VDC or pulse transducer

**Outputs To Solenoids:** 110-120VAC standard, Optional 220-240VAC, 12VDC, 24VDC

**Model 22R Panel Dimensions:** 9.50" (241mm) High x 6.00" (152mm) Wide x 5.78" (147mm) Deep

**Enclosure:** Nema 4X (weather tight, Corrosion resistant)

## APPLICATION ENGINEERING ASSISTANCE

Consult Factory

# SPECIFICATIONS (Typical Water Application)

The electronic pressure reducing valve shall operate to control down stream pressure via discrete electrical signals from the controller.

## DESIGN

The electronic pressure reducing valve shall be a single-seated, line pressure operated, diaphragm actuated, pilot controlled <globe, angle> 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 two needle valves, a Y-strainer, two solenoid valves and isolation ball valves. The electronic pressure reducing 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 bronze. Elastomers (diaphragms, resilient seats and O-rings) shall be Buna-N. The needle valve and isolation ball valves shall be brass, and control line tubing shall be copper. The solenoid valves shall have brass bodies, weatherproof enclosures and be suitable for operation on <voltage>.

## OPERATING CONDITIONS

The electronic pressure reducing valve shall be suitable for reducing pressures of <X to X> psi to <X> psi at flow rates up to <X> gpm.

## ACCEPTABLE PRODUCTS

The electronic pressure reducing valve shall be a <size> Model 22R <globe pattern, angle pattern>, with <150# flanged, 300# flanged, threaded, grooved> 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
H	ALL	10	11	11	11	12	13	14	17	18	20	20	28 1/2

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

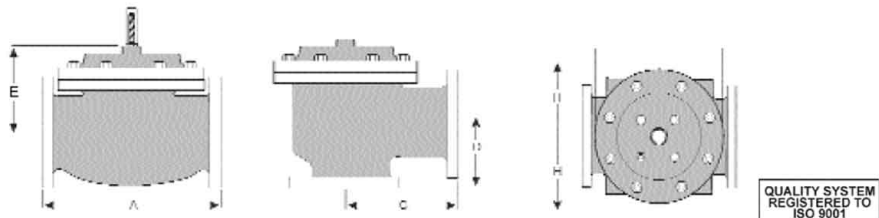
For maximum efficiency, the OCV control valve should be mounted in a piping system so that the valve bonnet (cover) is in the top position. Other positions are acceptable but may not allow the valve to function to its fullest and safest potential. In particular, please consult the factory before installing 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 22R valve

When Ordering please provide:

Fluid to be controlled -Model Number -Size -Globe or Angle -End Connection -Body Material -Trim Material -Solenoid & Controller Voltages - Pressure Transducer Output/Flow Range -Power failure mode: Open / Close / Hold last position -Solenoid enclosure Weatherproof or Explosion Proof -Solenoid exhaust to downstream or atmosphere -Controller Options Special Requirements / Installation Requirements



QUALITY SYSTEM REGISTERED TO ISO 9001

Represented by:

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