



General representation



Fueling

Terminal
Services

Rate of Flow Control Valve

Description

The rate of flow control valve shall function to control or limit the flow rate, regardless of fluctuations in upstream or downstream pressure. The OCV 120 has a wide range of applications - anywhere the flow rate must be controlled or limited. Typical examples include:

- Pump systems
- Fuel metering systems

Features & Benefits

- Controls or limits flow to a predetermined rate
- Built-in orifice plate for sensing flow rate
- Extra-sensitive differential pilot
- Flow rate is adjustable with single screw
- Can be maintained without removal from the line
- Adjustable response speed
- Factory tested and can be pre-set to your requirements

Certification & Compliance

NSF-ISO Quality System (9001)



ABS Type Approval



Technical Standards & Safety Authority



American-Made: American Recovery & Reinvestment



Pressure Equipment Directive Certified 2014/68/EU



CE (Conformité Européenne) Compliance



Typical Applications

Metering Systems



Loading Terminals



Storage Tanks



Truck/Rail Car Loading & Unloading Systems



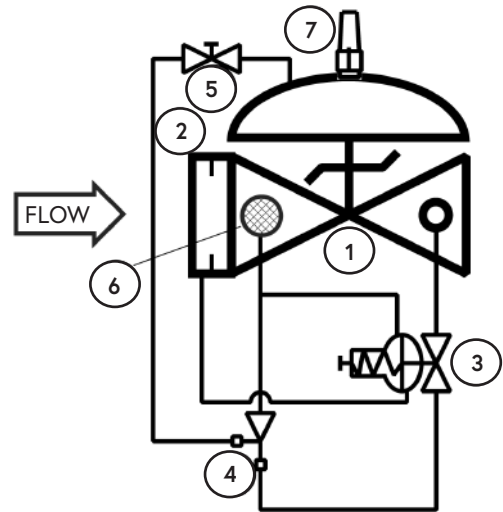
Operation

The normally open, spring loaded pilot, sensing the differential across the integral orifice plate which is located in the valve inlet flange, responds to changes in differential and causes the main valve to do the same. 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.

Components

The OCV 120 consists of the following components, arranged as shown on the schematic diagram:

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



Pressure Table

| End Connections | Ductile Iron | STEEL/SST | STEEL LCB | STEEL WCB | Aluminum |
|---|--------------|-----------|-----------|-----------|----------|
| Standard (Maximum Working Pressures at 100°F) | | | | | |
| Screwed | 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 | -- | -- | -- |
| Metric (Maximum Working Pressures at 37.78°C) | | | | | |
| Screwed | 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 | 19.0 bar | 18.4 bar | 19.7 bar | 19.7 bar |
| 300# Flanged | 44.1 bar | 49.6 bar | 48.0 bar | 51.0 bar | -- |

Based on ANSI flange ratings.

Flow Chart

| Standard Size Max. Flow (GPM) | 1 1/4" | 1 1/2" | 2" | 2 1/2" | 3" | 4" | 6" | 8" | 10" | 12" | 14" | 16" | 18" | 20" | 24" |
|---|--------|--------|------|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 7.5 FT/SEC (Military) | 40 | 50 | 80 | 120 | 180 | 300 | 680 | 1200 | 1850 | 2650 | 3200 | 4150 | 5250 | 6550 | 9400 |
| 15 FT/SEC (Max. Recommended) | 70 | 100 | 160 | 230 | 350 | 600 | 1350 | 2350 | 3700 | 5250 | 6350 | 8300 | 10500 | 13100 | 18800 |
| 20 FT/SEC (Max. Continuous) | 100 | 130 | 210 | 300 | 470 | 800 | 1800 | 3150 | 4950 | 7000 | 8450 | 11100 | 14000 | 17400 | 25100 |
| Metric Size Max. Flow (m ³ /hr) | DN32 | DN40 | DN50 | DN65 | DN80 | DN100 | DN150 | DN200 | DN250 | DN300 | DN350 | DN400 | DN450 | DN500 | DN600 |
| 2.29 M/SEC (Military) | 9 | 11 | 18 | 27 | 41 | 68 | 154 | 272 | 420 | 602 | 726 | 942 | 1192 | 1487 | 2134 |
| 4.57 M/SEC (Max. Recommended) | 16 | 23 | 36 | 52 | 79 | 136 | 306 | 533 | 840 | 1192 | 1441 | 1884 | 2384 | 2974 | 4268 |
| 6.10 M/SEC (Max. Continuous) | 23 | 30 | 48 | 68 | 107 | 182 | 409 | 715 | 1124 | 1589 | 1918 | 2520 | 3178 | 3950 | 5698 |

The OCV 120 is normally sized to match the meter size; however, in no case should the maximum velocity exceed 20 ft/sec (metric: 6.10 meters/sec).

Resetting, maintenance and periodic testing instructions must be followed as described in detail in the applicable OCV IOM (Installation, Operation & Maintenance) Manual.

Typical Materials

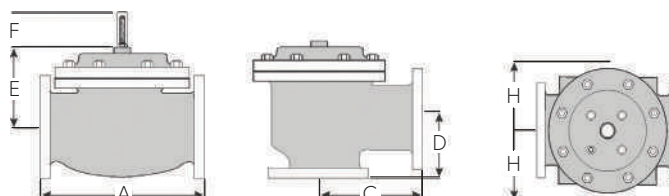
| Part | Standard Material |
|-------------------------------|---|
| Body/Bonnet | Ductile Iron (epoxy coated), Carbon Steel (epoxy coated), Stainless Steel, Aluminum |
| Seat Ring | Stainless Steel, Bronze |
| Stem | Stainless Steel, Monel |
| Spring | Stainless Steel |
| Diaphragm | Buna-N, Viton (Nylon reinforced) |
| Seat Disc | Buna-N, Viton |
| Pilot | Stainless Steel, Bronze |
| Other Pilot System Components | Stainless Steel, Bronze/Brass |
| Tubing & Fittings | Stainless Steel, Copper/Brass |

General Arrangement & Dimensions

| Standard Sizes | | | | | | | | | | | | | |
|----------------|-----------|-----------------|-------|--------|--------|---------|--------|----------|---------|--------|--------|----------|--------|
| 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 |

| Metric Sizes | | | | | | | | | | | | | |
|--------------|-----------|---------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| DIM | END CONN. | DN32-40 | 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 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 (OPT) | 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 1 1/4" (DN32).



Technical Data

| Temperature (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 |
| Sizes | |
| Screwed Ends | 1-1/4" - 3" |
| Grooved Ends | 1-1/2" - 6" (globe & angle) |
| Flanged Ends | 1-1/4" - 24" (globe); 1-1/4" - 16" (angle) |
| Pressure Rating (ANSI at 100°F) | |
| 250psi for Class 150# ANSI Flanged Ductile Iron | |
| 285psi for Steel/Stainless Steel & Aluminum | |
| 300# ANSI Flanges are available | |
| Solenoid Voltage | |
| Enclosure | Explosion Proof NEMA 4X, 6P, 7, 9 |
| Body | Brass, Stainless Steel |
| Voltages | 24, 120, 240, 480 VAC; 12, 24 VDC |

| Body & Cover Material |
|-----------------------------------|
| Ductile Iron |
| Carbon Steel |
| Stainless Steel |
| Aluminum |
| Trim Material |
| Bronze/Brass |
| Stainless Steel |
| Copper |
| Optional Components |
| Two-Stage Opening |
| Visual Indicator |
| Pre-Wired Junction Box |
| Items to Specify |
| Fluid Type |
| Model Number |
| Size |
| Body & Trim Material |
| Solenoid Voltage |
| Globe or Angle |
| Special Installation Requirements |

Engineering Specifications

The rate of flow 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 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 a needle valve speed control and an inline strainer. The rate of flow control valve shall be operationally and hydrostatically

tested prior to shipment. 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, orifice plate, opening speed control, and control line tubing shall be stainless steel. The rate of flow control valve shall have stainless steel bodies, explosion-proof enclosures and be suitable for operation on <voltage> (see Technical Data section). The rate of flow control valve shall be suitable for pressures of <X> to <X> psi (see Pressure Table) at flow rates up to <X> gpm (see Flow Chart). The rate of flow control valve shall be an OCV 120, as manufactured by OCV, Tulsa, OK, USA.