



Model 127-5

Special Application Valves



General representation



Fueling



Terminal Services

Pressure Reducing & Surge Control Valve

Description

The pressure reducing & surge control valve shall function to reduce a higher upstream pressure to a constant, lower downstream pressure and prevent the downstream pressure from rising too far in the event of sudden reduction of flow. The OCV 127-5 should be used in fuel delivery systems where a pressure must be reduced to a manageable level and demand can diminish rapidly (dead end service).

Certification & Compliance

NSF-ISO Quality System (9001)



ABS Type Approval



Technical Standards & Safety Authority



American-Made: American Recovery & Reinvestment



Pressure Equipment Directive Certified 97/23/EC



CE (Conformité Européenne) Compliance



Features & Benefits

- Reduces a higher inlet pressure to a lower outlet pressure
- Constant outlet pressure over wide flow range
- Minimizes downstream pressure build-up in the event of sudden reduction in flow
- Pilot-operated main valve not subject to pressure fall-off
- Can be maintained without removal from the line
- Adjustable opening/response speed
- Factory tested and can be pre-set to your requirements

Typical Applications

Metering Systems



Loading Terminals



Storage Tanks



Truck/Rail Car Loading & Unloading Systems



Operation

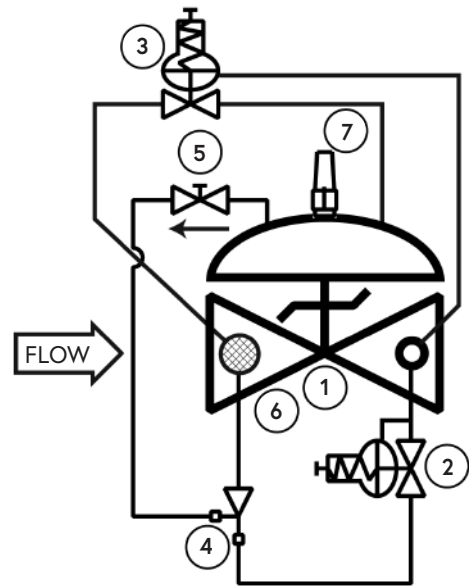
The normally open, spring-loaded pilot, sensing downstream pressure, responds to changes in pressure and causes the main valve to do the same. The net result is a constant modulating action of the pilot and main valve to hold the downstream pressure constant. The pilot system is equipped with an opening speed control that fine tunes the valve's response to the system variables.

A normally closed, spring-loaded pilot, also sensing downstream pressure, is installed between the valve inlet and the bonnet (cover), and is typically set 5 psi higher than the normal reducing control. If downstream pressure rises to the set point of this pilot, it opens to close the main valve very quickly, minimizing downstream pressure build-up.

Components

The OCV 127-5 consists of the following components, arranged as shown on the schematic diagram:

- 1 Model 65 Basic Valve
- 2 Model 1340 Pressure Reducing Pilot
- 3 Model 1330 or 2470 Normally Closed Pilot (surge control)
- 4 Model 126 Ejector
- 5 Model 141-3 Flow Control Valve (opening speed control)
*NOTE: Model 141-2 Needle Valve used on sizes 1-1/4"-3"
- 6 Model 123 Inline Strainer
- 7 Model 155L Visual Indicator



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 127-5 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

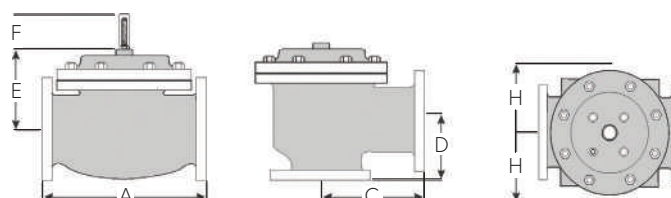
| Part | Standard Material |
|-------------------------------|---|
| Body/Bonnet | Ductile Iron (epoxy coated), Carbon Steel (epoxy coated), Stainless Steel, Aluminum |
| Seat Ring | Stainless Steel, Bronze |
| Stem | Stainless Steel, Monel |
| Spring | Stainless Steel |
| Diaphragm | Buna-N, Viton (Nylon 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 pressure reducing & surge 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 an opening speed control and an inline strainer. The pressure reducing & surge 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 pilots, opening speed control, and control line tubing shall be stainless steel. The pressure reducing & surge control valve shall be suitable for operation on <voltage> (see Technical Data section). The pressure reducing & surge 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 pressure reducing & surge control valve shall be an OCV 127-5, as manufactured by OCV, Tulsa, OK, USA.