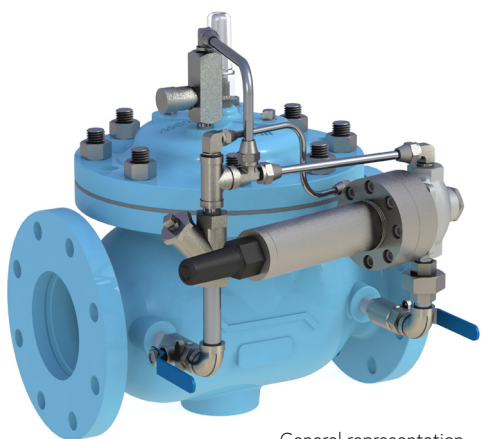




# Model 108-2HP



## Pressure Relief/Sustaining Valves



General representation



Waterworks

## Pressure Relief/Sustaining Valve

### Description

OCV 108-2HP, a pressure relief/sustaining valve, prevents main line pressure from exceeding a predetermined maximum and prevents the upstream pressure from falling below a predetermined minimum. This valve is applicable anywhere a system must be protected from pressures that are too high (relief) or too low (sustaining).

### Features & Benefits

- Limits inlet pressure by relieving excess pressure
- Prevents inlet pressure from dropping below a predetermined minimum
- Special pilot for set points of 200-740 psi
- Stainless Steel pilot
- Operates over a wide flow range
- Inlet pressure is adjustable with single screw
- Quick opening & adjustable closing speed
- Available with optional anti-cavitation orifice plate
- Can be maintained without removal from the line
- Factory tested and can be preset to your requirements

### Typical Applications

Irrigation Systems

Municipal Distribution Systems

Pump Systems



### Certification & Compliance

UL Water Quality / NSF 61-G & 372

NSF-ISO Quality System (9001)

American-Made: American Recovery & Reinvestment

Factory Mutual Approved

ABS Type Approval

CE (Conformité Européenne) Compliance



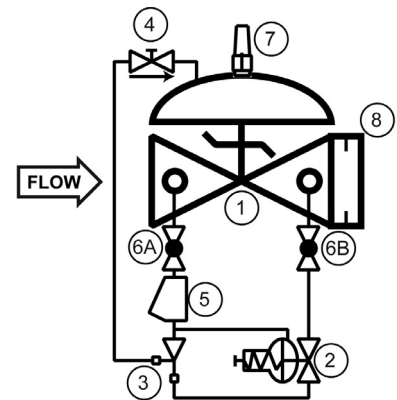
### Operation

The normally closed, spring-loaded pilot, sensing upstream 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 upstream pressure constant. The pilot system is equipped with a closing speed control that fine tunes the valve's response to the system variables.

### Components

The OCV 108-2HP consists of the following components, arranged as shown on the schematic diagram:

- 1 OCV S65 Basic Control Valve
- 2 OCV 2400 Pressure Relief/Backpressure Pilot
- 3 OCV 126 Ejector - Fixed orifice pilot system supply restrictor
- 4 OCV 141-3 Flow Control Valve (Adjustable Closing Speed Control)
- 5 OCV 159 Y-Type Strainer - Protects pilot system from dirt/debris
- 6 OCV 141-4 Isolation Ball Valves
- 7 OCV 155 Visual Indicator (Optional)
- 8 Anti-Cavitation Orifice Plate (Optional)



### Pressure Table

| End Connections                               | Ductile Iron | Steel/SST | Low-Lead Bronze |
|-----------------------------------------------|--------------|-----------|-----------------|
| Standard (Maximum Working Pressures at 100°F) |              |           |                 |
| Threaded                                      | 640 psi      | 640 psi   | 500 psi         |
| Grooved                                       | 300 psi      | 300 psi   | 300 psi         |
| 150# Flanged                                  | 250 psi      | 285 psi   | 225 psi         |
| 300# Flanged                                  | 640 psi      | 740 psi   | 500 psi         |

Based on ANSI flange ratings.

### Flow Characteristics

$DP = sg (Q/C_v \text{ or } K_v)^2$       where:     $Q$  = Flow rate in USGPM (Standard) or  $Q$  = Flow rate in cubic meters/sec (Metric)  
 $C_v$  = Flow rate in USGPM @ 1 psi pressure drop (Standard) or  
 $K_v$  = Flow rate in cubic meters/sec @ 1 bar pressure drop (Metric)  
 $DP$  = Pressure drop in psi (Standard) or  $DP$  = Pressure drop in bar (Metric)  
 $sg$  = Specific gravity of line fluid

| Standard   |             |             |
|------------|-------------|-------------|
| Valve Size | Globe $C_v$ | Angle $C_v$ |
| 1 1/4"     | 23          | 30          |
| 1 1/2"     | 27          | 35          |
| 2"         | 47          | 65          |
| 2 1/2"     | 68          | 87          |
| 3"         | 120         | 160         |
| 4"         | 200         | 270         |
| 6"         | 450         | 550         |
| 8"         | 760         | 1000        |
| 10"        | 1250        | 1600        |
| 12"        | 1940        | 2400        |
| 14"        | 2200        | --          |
| 16"        | 2850        | 4000        |
| 24"        | 6900        | --          |

| Metric     |             |             |
|------------|-------------|-------------|
| Valve Size | Globe $K_v$ | Angle $K_v$ |
| DN35       | 20          | 26          |
| DN40       | 23          | 30          |
| DN50       | 40 1/2      | 56          |
| DN65       | 59          | 75          |
| DN80       | 104         | 138 1/2     |
| DN100      | 173         | 233 1/2     |
| DN150      | 389         | 476         |
| DN200      | 657 1/2     | 865         |
| DN250      | 299         | 1384        |
| DN300      | 1081        | 2076        |
| DN350      | 1903        | --          |
| DN400      | 2465        | 3460        |
| DN600      | 5968 1/2    | --          |

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                                   | Optional                              |
|-------------------------------|-----------------------------------------------------|---------------------------------------|
| Valve Body/Bonnet             | Ductile Iron                                        | Cast Steel, Stainless Steel, Aluminum |
| Seat Ring                     | Stainless Steel                                     | Stainless Steel                       |
| Seat Retainer/Diaphragm Plate | Stainless Steel (up to 8"); Ductile Iron (10" & up) | --                                    |
| Stem                          | Stainless Steel                                     | Monel                                 |
| Spring                        | Stainless Steel                                     | --                                    |
| Diaphragm                     | EPDM                                                | Buna-N                                |
| Seat Disc                     | EPDM                                                | Buna-N                                |
| Pilot                         | Stainless Steel                                     | Stainless Steel                       |
| Tubing & Fittings             | Stainless Steel                                     | Stainless Steel                       |

\*Consult Factory for additional available materials.

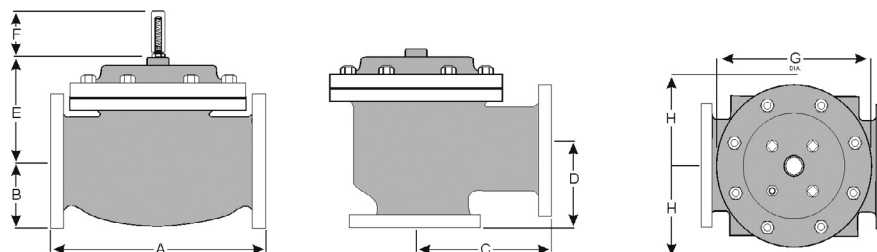
### General Arrangement & Dimensions

| Standard Sizes |                 |                |         |         |        |         |        |          |         |        |        |          |        |
|----------------|-----------------|----------------|---------|---------|--------|---------|--------|----------|---------|--------|--------|----------|--------|
| DIM            | End Connections | 1 1/2"         | 2"      | 2 1/2"  | 3"     | 4"      | 6"     | 8"       | 10"     | 12"    | 14"    | 16"      | 24"    |
| A              | Threaded        | 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# Flanged    | 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# Flanged    | 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       | 62 3/4 |
| B              | Threaded        | 1 7/16         | 1 11/16 | 1 7/8   | 2 1/4  | --      | --     | --       | ---     | ---    | ---    | ---      | ---    |
|                | Grooved         | 1*             | 1 3/16  | 1 7/16  | 1 3/4  | 2 1/4   | --     | --       | ---     | ---    | ---    | ---      | ---    |
|                | 150# Flanged    | 2 5/16 - 2 1/2 | 3       | 3 1/2   | 3 3/4  | 4 1/2   | 5 1/2  | 6 3/4    | 8       | 9 1/2  | 10 5/8 | 11 3/4   | 16     |
|                | 300# Flanged    | 2 5/8 - 3 1/16 | 3 1/4   | 3 3/4   | 4 1/8  | 5       | 6 1/4  | 7 1/2    | 8 3/4   | 10 1/4 | 11 1/2 | 12 3/4   | 18     |
| C              | Threaded        | 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# Flanged    | 4 1/4          | 4 3/4   | 6       | 6      | 7 1/2   | 10     | 12 11/16 | 14 7/8  | 17     | ---    | 20 13/16 | ---    |
|                | 300# Flanged    | 4 3/8          | 5       | 6 3/8   | 6 3/8  | 7 3/16  | 10 1/2 | 13 3/16  | 15 9/16 | 17 3/4 | ---    | 21 5/8   | ---    |
| D              | Threaded        | 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# Flanged    | 3              | 3 7/8   | 4       | 4      | 5 1/2   | 6      | 8        | 11 3/8  | 11     | ---    | 15 11/16 | ---    |
|                | 300# Flanged    | 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              | 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      |
| G              | All             | 6              | 6 3/4   | 7 11/16 | 8 3/4  | 11 3/4  | 14     | 21       | 24 1/2  | 28     | 31 1/4 | 34 1/2   | 52     |
| H              | All             | 10             | 11      | 11      | 11     | 12      | 13     | 14       | 17      | 18     | 20     | 20       | 28 1/2 |

Approximate Dimensions. \*Grooved end not available in 1/4"

| Metric Sizes |                 |       |      |      |      |       |       |       |       |       |       |       |       |
|--------------|-----------------|-------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| DIM          | End Connections | DN40  | DN50 | DN65 | DN80 | DN100 | DN150 | DN200 | DN250 | DN300 | DN350 | DN400 | DN600 |
| A            | Threaded        | 222   | 251  | 267  | 330  | --    | --    | --    | ---   | ---   | ---   | ---   | ---   |
|              | Grooved         | 222   | 251  | 267  | 330  | 387   | 508   | --    | ---   | ---   | ---   | ---   | ---   |
|              | 150# Flanged    | 216   | 238  | 267  | 305  | 381   | 451   | 645   | 756   | 864   | 991   | 1026  | 1575  |
|              | 300# Flanged    | 222   | 251  | 283  | 324  | 397   | 437   | 670   | 791   | 902   | 1029  | 1067  | 1619  |
| B            | Threaded        | 37    | 43   | 48   | 57   | --    | --    | --    | ---   | ---   | ---   | ---   | ---   |
|              | Grooved         | 25*   | 30   | 37   | 44   | 57    | --    | --    | ---   | ---   | ---   | ---   | ---   |
|              | 150# Flanged    | 59-64 | 76   | 89   | 95   | 114   | 140   | 171   | 203   | 241   | 270   | 298   | 406   |
|              | 300# Flanged    | 67-78 | 83   | 95   | 105  | 127   | 159   | 191   | 222   | 260   | 292   | 324   | 457   |
| C            | Threaded        | 111   | 121  | 152  | 165  | --    | --    | --    | ---   | ---   | ---   | ---   | ---   |
|              | Grooved         | 111*  | 121  | 152  | 165  | 194   | --    | --    | ---   | ---   | ---   | ---   | ---   |
|              | 150# Flanged    | 108   | 121  | 152  | 152  | 191   | 254   | 322   | 378   | 432   | ---   | 529   | ---   |
|              | 300# Flanged    | 111   | 127  | 162  | 162  | 198   | 267   | 335   | 395   | 451   | ---   | 549   | ---   |
| D            | Threaded        | 79    | 98   | 114  | 114  | --    | --    | --    | ---   | ---   | ---   | ---   | ---   |
|              | Grooved         | 79*   | 98   | 114  | 114  | 143   | --    | --    | ---   | ---   | ---   | ---   | ---   |
|              | 150# Flanged    | 76    | 98   | 102  | 102  | 140   | 152   | 203   | 289   | 279   | ---   | 398   | ---   |
|              | 300# Flanged    | 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   |
| G            | All             | 152   | 171  | 222  | 222  | 298   | 356   | 533   | 711   | 794   | 794   | 876   | 1321  |
| H            | All             | 254   | 279  | 279  | 279  | 305   | 330   | 356   | 457   | 508   | 508   | 508   | 724   |

Approximate Dimensions. \*Grooved end not available in 1/4"



### Technical Data

| Temperature (Elastomers)                             |                                            |
|------------------------------------------------------|--------------------------------------------|
| Water                                                | up to 110°C / 230°F max                    |
| Sizes                                                |                                            |
| Globe                                                | 1 1/4" - 24" / 32-600mm                    |
| Angle                                                | 1 1/4" - 16" / 32-400mm                    |
| Pressure Rating (Ductile Iron at 100°F/37.8°C)       |                                            |
| 250 psi for ASME Class 150# & 640 psi for Class 300# |                                            |
| End Connections                                      |                                            |
| Flanged                                              | ISO-PN16 & ISO-PN25                        |
|                                                      | ASME/ANSI B16.42 & B16.5 Class 150# & 300# |
|                                                      | Additional options available upon request  |
| Threaded                                             | BSP/NPT                                    |
| Grooved                                              | ASME/ANSI AWWA 606                         |
| Elastomers                                           |                                            |
| EPDM                                                 | Buna-N                                     |
| Coating Material                                     |                                            |
| NSF 61 Epoxy Coating                                 | High Built, Fusion Bonded Apoxy            |
| Main Valve Trim Material                             |                                            |
| Stainless Steel                                      |                                            |

| Body & Cover Material                                                                                                |                           |
|----------------------------------------------------------------------------------------------------------------------|---------------------------|
| Ductile Iron ASTM A536                                                                                               | Stainless Steel ASTM CF8M |
| Cast Steel ASTM A216                                                                                                 | Aluminum                  |
| Trim Material                                                                                                        |                           |
| Stainless Steel                                                                                                      |                           |
| Optional Components                                                                                                  |                           |
| Pressure Switch                                                                                                      | Open/Close Speed Control  |
| Limit Switch                                                                                                         | Pressure Gauges           |
| Drain Plug                                                                                                           | Visual Position Indicator |
| Items to Specify                                                                                                     |                           |
| Electrical features other than standard (24VDC, IP65/NEMA4)                                                          |                           |
| If explosion proof accessories are required such as solenoids, pressure switches, etc., please define classification |                           |
| Control trim material other than standard                                                                            |                           |
| Required standards, certifications and approvals                                                                     |                           |

### Engineering Specifications

The pressure relief/sustaining valve shall be a single-seated, line pressure operated, diaphragm actuated, pilot controlled 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 closing speed control, Y-Type strainer, and isolation ball

valves. The pressure relief/sustaining 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 low-lead bronze. Elastomers (diaphragms, resilient seats and o-rings) shall be EPDM. The control pilots, opening speed control, isolation ball valves, and control line tubing shall be stainless steel. The pressure relief/sustaining valve shall be suitable for controlling the inlet pressure range of <X to X> psi at flow rates ranging from <X to X> gpm. The pressure relief/sustaining valve shall be an OCV 108-2HP, as manufactured by OCV, Tulsa, OK, USA.