

116-5MR

Pressure Reducing, Solenoid Shutoff Deluge Valve

Electrically controlled deluge valve, actuated by the pipeline pressure. The valve is closed in its normal, set position and opens when a 3w solenoid valve is energized. The valve must be manually reset following automatic activation using the ball valve manual reset lever. When tripped, the valve regulates to a steady, preset downstream pressure, regardless of upstream pressure or flow rate fluctuations. An emergency manual release valve is fitted as standard.



* General representation of valve

CERTIFICATION & COMPLIANCE



- ANSI FCI 70-2 Class VI seat leakage class
- ABS approval

FEATURES & BENEFITS

- Opens quickly when the solenoid valve is activated
- Reduces a higher upstream pressure to a lower downstream pressure
- Constant downstream pressure over a wide flow range
- Downstream pressure is adjustable with single screw
- Adjustable opening speed control
- Manual override to open the valve fully
- Local ball valve manual reset assembly prevents closure using solenoid valve
- Visual indicator for indication of main valve position
- Large supply drain port to drain sprinkler main
- Factory tested
- Can be installed both vertically or horizontally
- Wide range of materials available

TYPICAL APPLICATIONS



Automatic or Manual Actuated Fire Suppression Systems



Petrochemical, Oil & Gas Installations



Tunnels



Power Generation, Transformer & Transmission Plants



Flammable Storage



Hangars & Airport Terminals



Onshore / Offshore



Mining

OPERATION

The basic control valve **[1]** used in this deluge system is a diaphragm actuated globe valve which closes with an elastomer-on-metal seal, hydraulically operated control valve engineered specifically for fire protection systems.

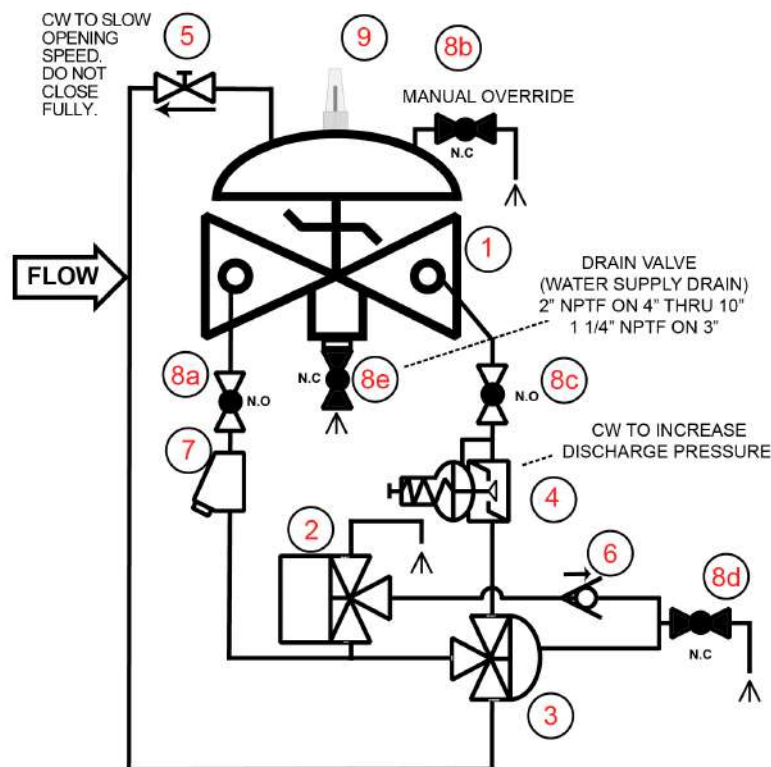
In the standby position, the deluge valve is held closed by the upstream water pressure, trapped in the valve's control chamber. The water pressure enters the control chamber through the priming line ball valve **[8a]**, a Y-type strainer **[7]**, a 3-way auxiliary pilot **[3]** and an opening speed control valve **[5]**.

Under fire conditions, a fire alarm control panel energizes the 3/2-way N.C. solenoid **[2]** (or de-energizes the coil of a continuously energized ED 100% normally open solenoid for SIL 3-4 rated systems). The auxiliary pilot shifts position and allows the water to begin to drain from the deluge valve's control chamber through the pressure reducing pilot **[4]**. The deluge valve opens instantly, regulating to a steady, preset downstream pressure, regardless of upstream pressure or flow rate fluctuations. This allows water to flow into the pipeline and through the open sprinklers over the protected area.

Manual emergency actuation is enabled by opening the emergency manual activation valve **[8b]**. The deluge valve opens instantly and fully, and allows water to flow into the pipeline and through the open sprinklers over the protected area.

The valve must be manually reset following automatic actuation, using the ball valve manual rest lever **[8d]**.

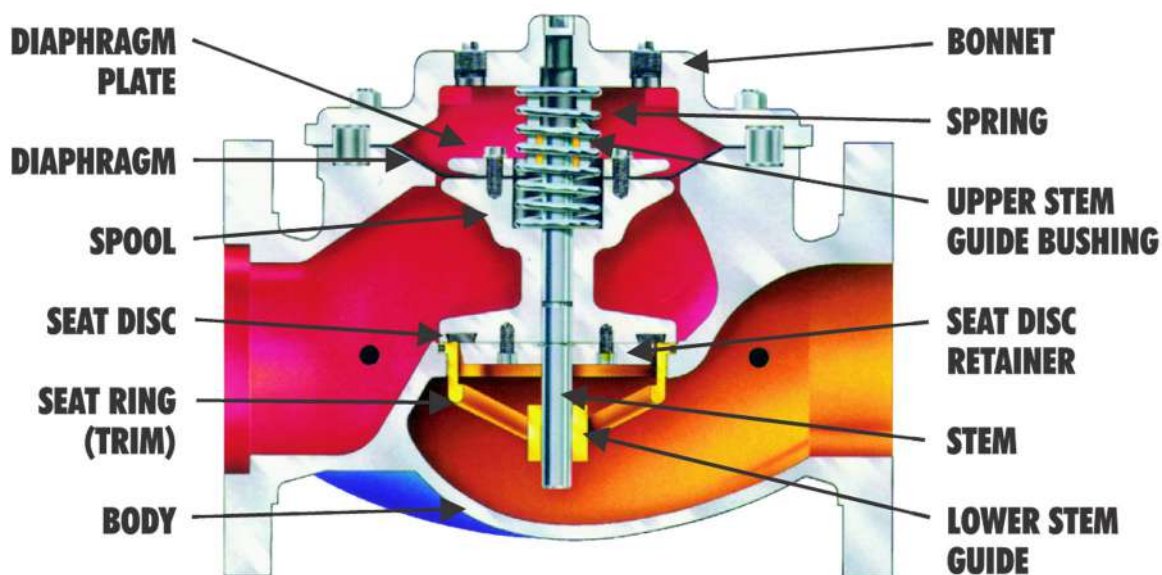
A visual indicator (optional) **[9]** provides indication of the valve's position at a glance.



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

TYPICAL MATERIALS

| ID | Description | Standard | Optional |
|----|---------------------------|-------------------------|--|
| 1 | Valve Body | Ductile Iron | Cast Steel, Stainless Steel, NAB, Duplex Stainless Steel |
| 2 | Seat Ring | Bronze | Stainless Steel, NAB, Duplex Stainless Steel |
| 3 | Stem | Stainless Steel | Monel |
| 4 | Spring | Stainless Steel | Elgiloy/MP35N |
| 5 | Diaphragm | Nylon Reinforced Buna-N | EPDM |
| 6 | Three-Way Auxiliary Pilot | Bronze | Stainless Steel, Duplex Stainless Steel |
| 7 | Solenoid Valve | Stainless Steel | ---- |
| 8 | Tubing/Fittings | Copper, Bronze/Brass | Stainless Steel, Monel |



* General representation of valve

GENERAL ARRANGEMENT & DIMENSIONS
U.S. DIMENSIONS - INCHES

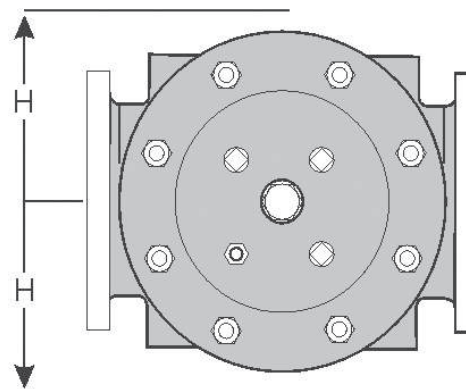
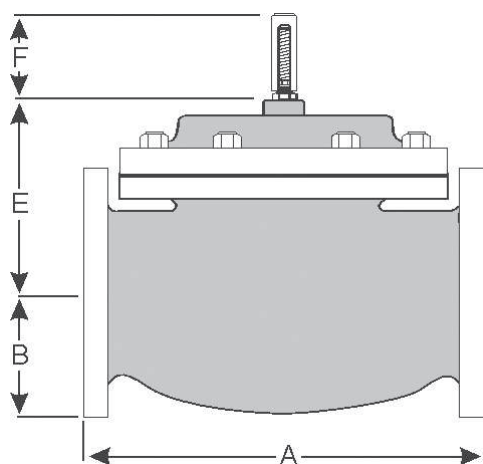
| DIM | END CONN. | 3" | 4" | 6" | 8" | 10" |
|-----|-----------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| A | 150# FLGD | 12 | 15 | 17 ³ / ₄ | 25 ³ / ₈ | 29 ³ / ₄ |
| | 300# FLGD | 12 ³ / ₄ | 15 ⁵ / ₈ | 18 ⁵ / ₈ | 26 ³ / ₈ | 31 ¹ / ₈ |
| B | 150# FLGD | 3 ³ / ₄ | 4 ¹ / ₂ | 5 ¹ / ₂ | 6 ³ / ₄ | 8 |
| | 300# FLGD | 4 ¹ / ₈ | 5 | 6 ¹ / ₄ | 7 ¹ / ₂ | 8 ³ / ₄ |
| E | ALL | 6 ¹ / ₂ | 8 | 10 | 11 ⁷ / ₈ | 15 ³ / ₈ |
| F | ALL | 3 ⁷ / ₈ | 3 ⁷ / ₈ | 3 ⁷ / ₈ | 6 ³ / ₈ | 6 ³ / ₈ |
| H | ALL | 11 | 12 | 13 | 14 | 17 |

* Approximate dimensions

METRIC DIMENSIONS - M.M.

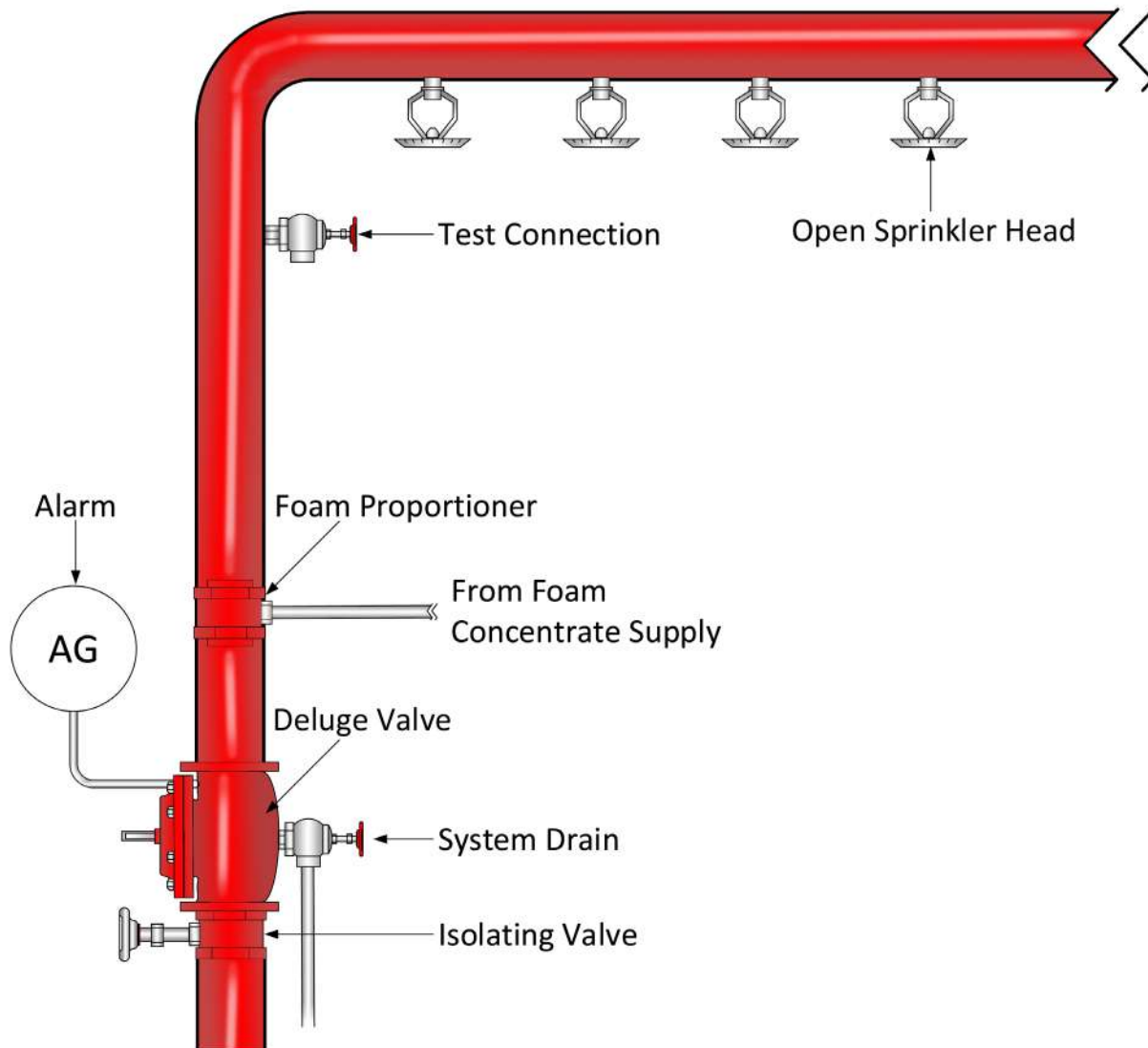
| DIM | END CONN. | DN80 | DN100 | DN150 | DN200 | DN250 |
|-----|-----------|------|-------|-------|-------|-------|
| A | 150# FLGD | 305 | 381 | 451 | 645 | 756 |
| | 300# FLGD | 324 | 397 | 473 | 670 | 791 |
| B | 150# FLGD | 95 | 114 | 140 | 171 | 203 |
| | 300# FLGD | 105 | 127 | 159 | 191 | 222 |
| E | ALL | 165 | 203 | 254 | 302 | 391 |
| F | ALL | 98 | 98 | 98 | 162 | 162 |
| H | ALL | 279 | 305 | 330 | 356 | 432 |

* Approximate dimensions



* General representation of valve

TYPICAL INSTALLATION



FLOW CHARACTERISTICS

| VALVE SIZE | | 3" (DN80) | 4" (DN100) | 6" (DN150) | 8" (DN200) | 10" (DN250) |
|------------|--------|-----------|------------|------------|------------|-------------|
| GLOBE Cv | US | 120 | 200 | 450 | 760 | 1250 |
| GLOBE Kv | METRIC | 103.8 | 173 | 389.3 | 657.4 | 1081.2 |

* Not all items pictured reflect products sold by OCV

TECHNICAL DATA

Temperature:

- Buna-N 32°F to 180°F
- EPDM 32°F to 230°F

Solenoid Valve Voltage:

- 24VDC standard (all other standard voltages available, AC and DC)

Sizes:

- Globe: 3", 4", 6", 8", 10"

End Connections:

- Flanged:
ANSI Class #150 and #300

Pressure Rating (Ductile Iron at 100°F):

- 250psi for Class #150
- #300 ANSI flanges are available

Body and Cover Material:

- Ductile Iron • NAB
- Cast Steel • Stainless Steel
- Duplex Stainless Steel

Trim Material:

- Tubing/Fittings: Copper, Bronze/Brass
(Optional: Stainless Steel, Monel)
- Three Way Auxiliary Pilot: Bronze
(Optional: Stainless Steel, Duplex
Stainless Steel)
- Solenoid Valve: Stainless Steel

Optional Components:

- Alarm Test Trim
- Upstream Drain Valve
- Pressure Switch
- Limit/Proximity Switch

Items to Specify:

- Serial Number
- Valve Size
- Globe (consult factory for Angle)
- Flanged 150# or 300# ANSI
- Trim Material
- Voltage
- Special Needs/Installation Requirements

ENGINEERING SPECIFICATIONS

The deluge valve shall be a single-seated, line pressure operated, diaphragm actuated, globe valve. The deluge valve shall seal by means of a corrosion resistant seat and resilient, rectangular seat disc. Maintenance, disassembly and reassembly of all the valve's components shall be made possible on-site and in-line, without the need to remove 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 pistons be used as an operating means. The deluge valve shall be fully trimmed, hydrostatically and operationally tested at the factory. The main valve body and bonnet standard material shall be Ductile Iron or Cast Steel. Main valve body and bonnet surfaces shall include a fire red epoxy coating. Other materials and coatings available upon request. The main valve seat ring shall be bronze (other materials available upon request). Elastomers (diaphragms, resilient seats, and O-rings) shall be Buna-N or E.P.D.M. Control pilot shall be Bronze. The solenoid valve shall be Stainless Steel. The control line tubing shall be copper (other materials available upon request). Additional coatings and special materials are available upon request. The deluge valve shall be a Model 116-5MR, as manufactured by OCV Fluid Solutions, Tulsa, OK, USA.

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