



68-DE\EL

Pre-Action Valve
Double-Interlocked
Electric-Electric Actuated

IOM

Installation • **O**peration • **M**aintenance



Installation, Operation & Maintenance

This document specifies the operating concept of OCV pre-action valve model 68-X-DEVEL (X refers to valve size in Inch), UL listed when trimmed per the following technical data sheet

Please review the safety instructions at the end of this document prior to commissioning the valve for use

PRE-ACTION DOUBLE-INTERLOCKED VALVE MODEL 68-DE\EL

General Description

OCV's pre-action valve model 68-X-DE\EL is a globe-weir-type hydraulic valve, actuated automatically or manually. The valve is mounted on the upstream side of a fire-suppression sprinkler system, preventing flow into the system in its "ready" position.



Operating pressures

- Pressure rating up to 25 bar \ 375 psi
- Minimum system pressure 1.5 bar \ 22 psi

UL listed working pressures

- 2" - 10": 25 bar \ 375 psi

Available end connections

- Flanged: 2" – 10" (Including 2.5")
- Grooved: 2" – 8" (Including 2.5")

Available body & cover and trim materials

| Body & Cover | Valve Fitting | Valve Tubing | Diaphragm |
|----------------------------------|-------------------|-------------------|-----------|
| Ductile Iron A536* | Brass* | Copper* | Neoprene* |
| CF8M/ASTM A-316 | SST316 | Cu-Ni 90/10 | NR |
| Ni-Al-Bronze ASTM B148 gr.C95800 | SST304 ASTM A 351 | SST316 | EPDM |
| Cast Steel ASTM A 216 WCB | Super Duplex 2507 | Super Duplex 2507 | NBR |
| | Aluminum-Bronze | | |
| | MONEL® | | |

* Standard material

PRE-ACTION DOUBLE-INTERLOCKED VALVE MODEL 68-DEVEL

General Description

Pre-action valve actuation:

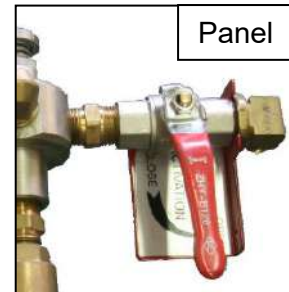
1. The pre-action valve opens instantly when a normally closed solenoid valve is energized, (or the coil of a continuously energized ED 100% normally open solenoid is de-energized for SIL 3-4 rated systems).
2. The solenoid is energized when an electric detector (e.g. heat, smoke, etc.) is tripped and simultaneously the PSL (Pressure Switch Low) is tripped.
3. The PSL is tripped when one (or more) of the automatic sprinklers burst on the dry (pneumatically pressurized) automatic sprinkler line, causing a drop in pneumatic pressure.
4. When tripped, the PSL allows an electric indication of a drop in pneumatic pressure in the dry (pneumatically pressurized) automatic sprinkler line.
5. In case of failure of the automatic actuation system, manual emergency actuation is possible.

Manual emergency actuation:

1. The manual emergency actuation valve [b2] may be located inside a metal box or over a plate. If in a box – first lift the cover - and turn the handle as shown on the plaque in the box.

Closing the pre-action valve is possible only after:

1. Closing the upstream isolation valve.
2. De-energizing the solenoid.
3. Restoring pressure in the dry (pneumatically pressurized) automatic sprinkler line.
4. Closing the manual emergency actuation ball valve [b2].

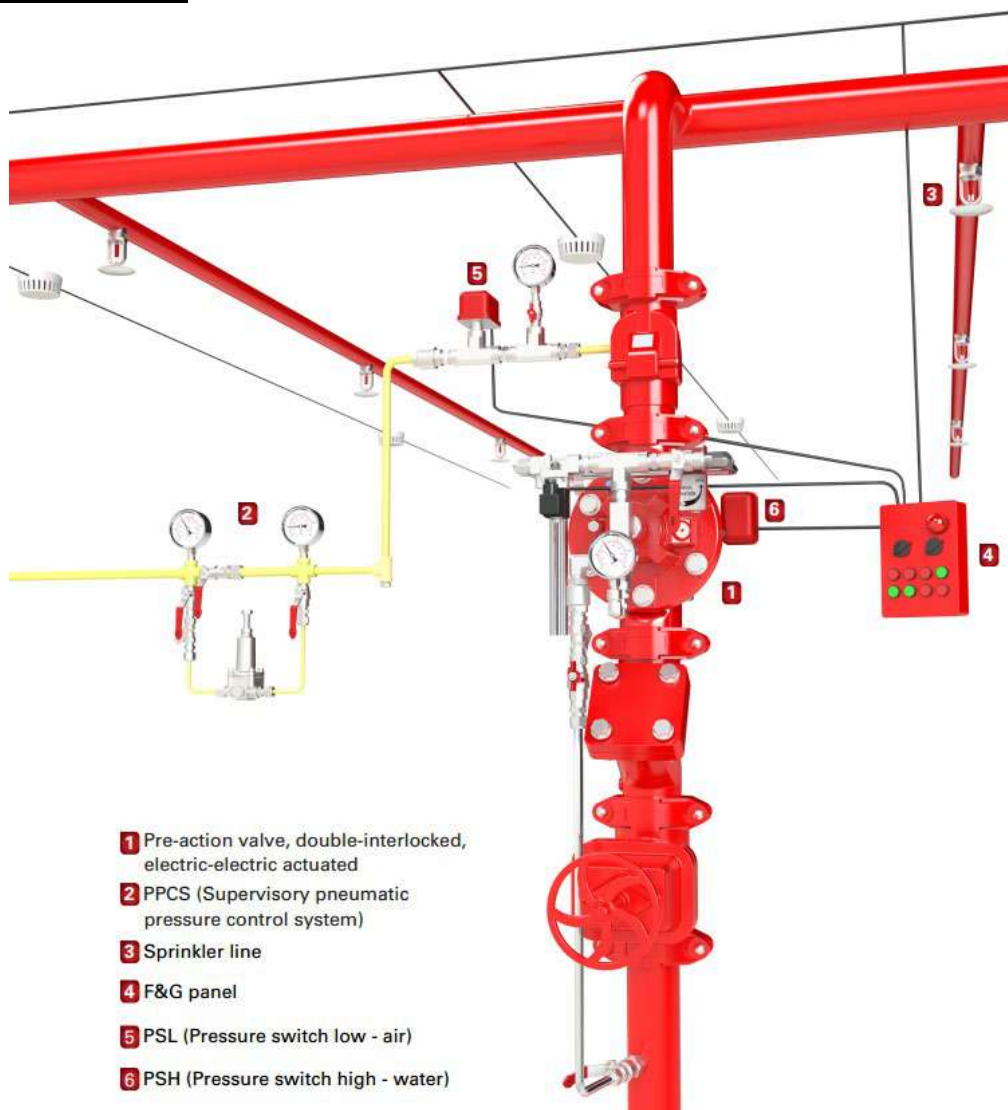


PRE-ACTION DOUBLE-INTERLOCKED VALVE MODEL 68-DEVEL

Pre-Installation Recommendations (refer to fig. 2 – System P&ID)

1. The valve is factory trimmed for both vertical and horizontal installation - out of the box, requiring no changes or tooling.
2. The valve may be installed either vertically (with the upstream positioned at the bottom) or horizontally.
3. Sufficient space for maintenance should be left around the pre-action valve.
4. Manual isolating valves (gate type, butterfly type or equivalent - not supplied) should be assembled upstream and downstream of the pre-action valve for maintenance purposes.
5. A drain facility for the water drained during the valve's test & working procedures should be prepared.

Fig. 1- General layout



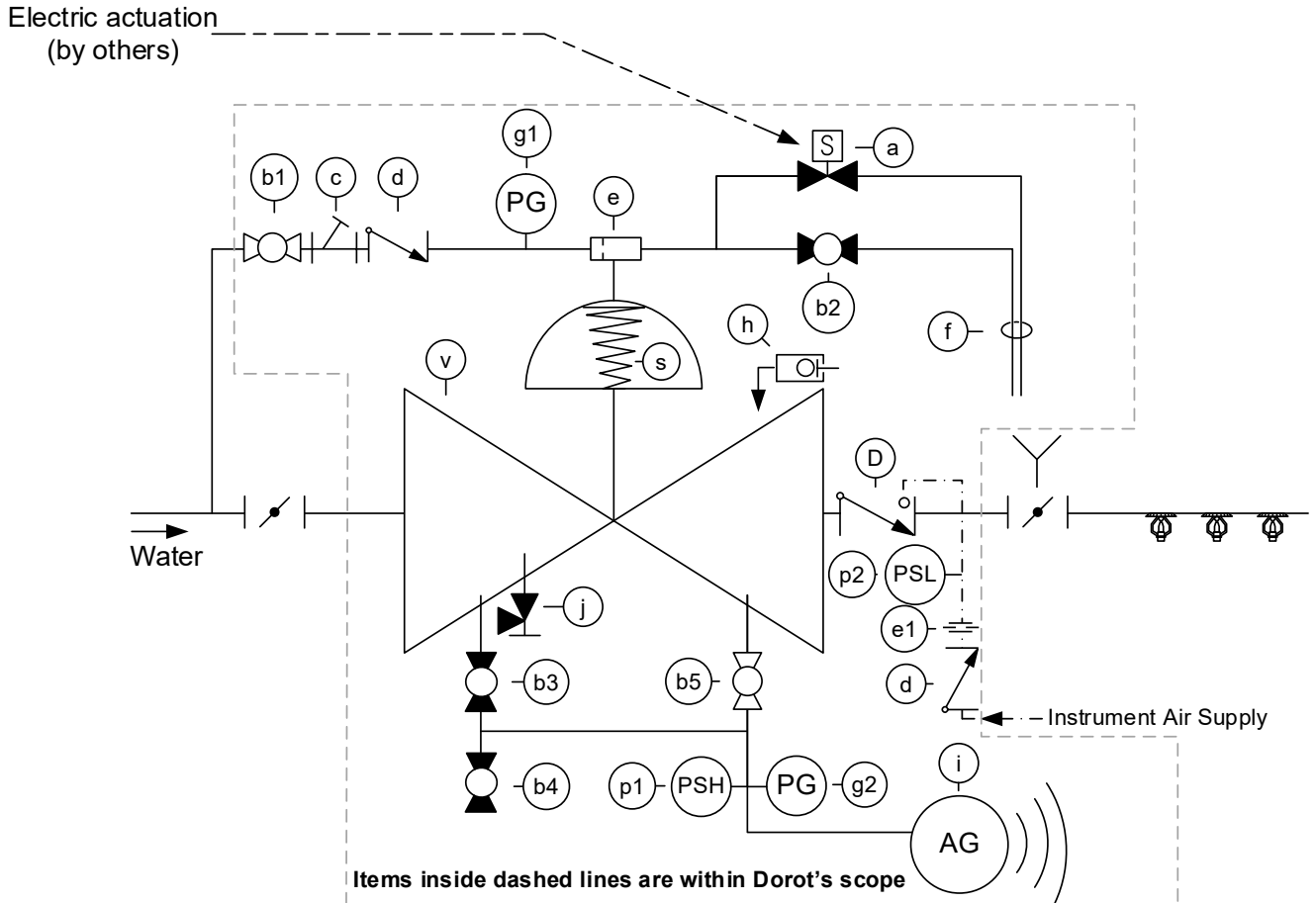
PRE-ACTION DOUBLE-INTERLOCKED VALVE MODEL 68-DE\EL

Installation (refer to fig. 2 – System P&ID)

1. The pre-action valve should be positioned in such a way that allows easy access to the emergency manual actuation valve [b2].
2. The priming control trim's ball valve [b1] should be connected to the main supply pipe upstream of the inlet isolating valve.
3. Connect the water motor alarm (optional) to the alarm trim's isolation ball valve [b5].
4. Connect the solenoid valve [a] to the F&G panel.
5. The drain valve [j], the outlet pipes of the 2/2-way solenoid [a] and the emergency manual valve [b2], should be drained.

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Fig. 2- System P&ID



| Integral System Items | |
|-----------------------|-----------------------------------|
| Item # | Description |
| v | Hydraulic valve |
| a | 2/2 N.C. solenoid |
| b1 | Priming line ball valve |
| b2 | Emergency manual activation valve |
| c | Y-Type strainer |
| d | Check valve |
| D | Riser check valve |
| e | T Restrictor |
| e1 | Restrictor |
| f | 1/2" tube |
| g1 | Pressure gauge |
| h | Drip valve |
| p2 | Pressure switch high - water |

| Item # | Description |
|--------|-------------------------------------|
| b3 | Alarm trim - test ball valve |
| b4 | Alarm trim - drain\purge ball valve |
| b5 | Alarm trim - isolation ball valve |
| g2 | Pressure gauge |
| i | Water motor alarm |
| j | Drain valve |
| l | Indicator Rod |
| p1 | Pressure switch high - water |
| s | Spring |

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Control Trim Connection (refer to fig. 2 – System P&ID)

1. The pre-action valve's control chamber is connected to a pressure source upstream of the inlet isolating valve.

NOTE: if using an external pressure source, it should be at a pressure equal or higher than the maximal upstream pressure.

2. The upstream control trim includes the following items:
 - Priming control trim's ball valve [b1].
 - Y-Type strainer [c].
 - Check valve [d].
 - T restrictor [e].
3. The 2/2 way N.C. solenoid [a] is connected to the F&G panel. When energized (via the F&G panel), the 2/2 way N.C. solenoid [a], releases the pressure from the control chamber, instantly opening the pre-action valve. To understand how the solenoid is energized, refer to "General Description".
4. A water motor alarm [i] may be connected to the pre-action valve via an optional alarm trim. The alarm trim consists of:
 - Ball valve [b5], which is normally-open.
 - Ball valve [b3], which is normally-closed and allows testing the alarm without opening the pre-action valve.
 - Ball valve [b4], which is normally-closed and allows draining the alarm trim and purging it from corrosive fluids if necessary.
5. A low-pressure drip valve (relief valve) [h], is mounted on a downstream port of the pre-action valve, as a safety device against faulty sealing of the pre-action valve, which may be caused by foreign objects or unclean water.
The drip valve allows small quantities of water to be drained from the system but shuts instantly when the pre-action valve is actuated and high pressure is present.
6. An upstream port on the pre-action valve allows connecting a drain valve [j] (available upon request).
7. Pressure gauges [g1, g2] allow visual inspection of the upstream and downstream pressures.
8. A PSL (Pressure Switch Low) [p2] located on the downstream of the riser check valve [D] is tripped when one (or more) of the automatic sprinklers burst on the dry (pneumatically pressurized) automatic sprinkler line, causing a drop in pneumatic pressure.
9. A PSH (Pressure Switch High) [p1] (optional), may be connected to the control chamber or to the pre-action valve's downstream port, allowing an electric indication of opening of the pre-action valve.

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Commissioning Procedure (refer to fig. 2 – System P&ID)

The following procedures should be carried out as written, in addition to relevant NFPA demands or other local applicable regulations.

It is recommended that the installation and adjustment be performed by qualified personnel.

Note:

Ball valves b3-b5 are part of the water motor alarm trim which is optional. Ignore any reference to them if they do not exist.

Verify the following:

1. The isolating valve upstream of the pre-action valve is closed.
2. Valves [b1, b5] are open (their handles are parallel to the pipe axis).
3. Valves [b2, b3, b4, j] are closed (their handles are perpendicular to the pipe axis).

Commissioning:

1. Ensure minimal designed pressure, upstream of the pre-action valve.
2. Open a drain valve downstream of the pre-action valve.
3. Slightly open the upstream isolating valve, allowing the pipe section upstream of the valve to fill until no air is released through the drain valve; Wait for the valve to close, indicated by water flow stopping in the downstream drain valve.
4. Ensure the designed pressure in the dry (pneumatically pressurized) automatic sprinkler line.
5. Close the downstream drain valve.
6. Fully open the both isolating valves.
7. The pre-action valve is now set for service.

Optional manual emergency actuation commissioning:

1. Open the manual emergency actuation valve [b2]. The pre-action valve will open.
2. To close the pre-action valve refer to “General Description”.

Automatic actuation commissioning:

1. Energize the solenoid [a]. The pre-action valve will open instantly.
2. To understand how the solenoid is energized, refer to “General Description”.
3. To close the pre-action valve refer to “General Description”.

Test the water motor alarm (if applicable):

1. Close ball valve [b5].
2. Open ball valve [b3]. The water motor alarm will sound.
3. Close ball valve [b3] and drain the water motor alarm pipeline through ball valve [b4]. Close this valve when water stops flowing.

Reset the pre-action valve:

1. To recommission the pre-action valve refer to “Commissioning”.

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Periodical Check-up and Maintenance

In case of valve actuation due to a fire event, this procedure must be carried out immediately after the event has ended and the fire-suppression system is returned to its "ready" position. The owner of the valve is responsible for the setting, inspecting, routine testing and the maintenance of the valve as written, in compliance with NPFA directives or other local applicable regulations.

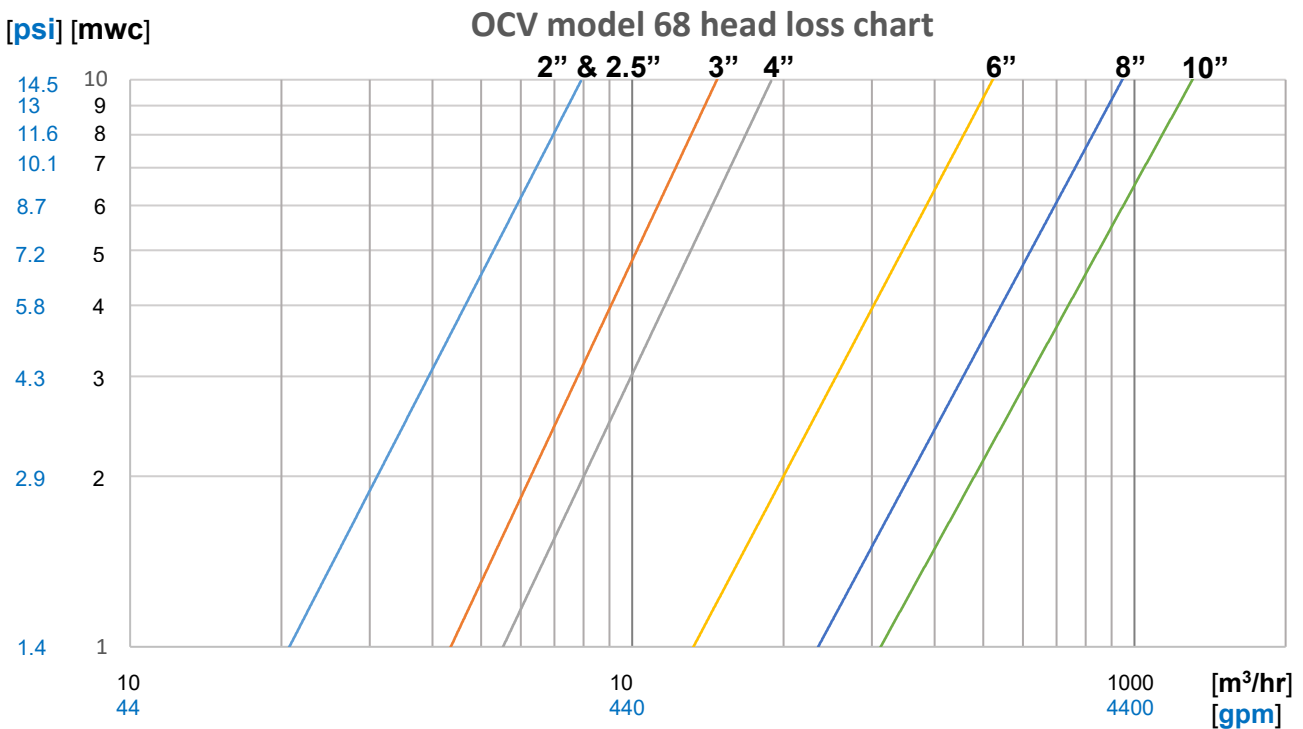
It is recommended that all tests and maintenance procedures be carried out by qualified personnel.

As some of the tests may sound an alarm, it is necessary to alert the local personnel and local fire-fighting authorities before the test is carried out.

1. Repeat the "Commissioning Procedure" steps above.
2. Inspect Y-Type strainer [c]: close ball valve [b1], open the cover of the Y-Type strainer, remove the screen element, clean and reassemble.
3. Open ball valve [b1].

PRE-ACTION DOUBLE-INTERLOCKED VALVE MODEL 68-DE\EL Design Data

Head loss chart



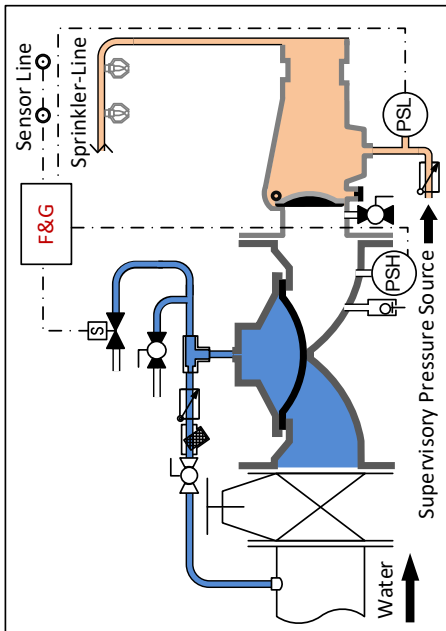
Hydraulic characteristics

| Valve Size | | 50 (2") | 65 (2.5") | 80 (3") | 100 (4") | 150 (6") | 200 (8") | 250 (10") |
|--|------------------------|---------|-----------|---------|----------|----------|----------|-----------|
| K_v | m ³ /hr @ 1 | 78 | 78 | 120 | 200 | 550 | 800 | 1300 |
| C_v | gpm @ 1 psi | 91 | 91 | 140 | 234 | 643 | 935 | 1519 |
| K Factor | - | 1.7 | 1.7 | 3.7 | 4.2 | 2.8 | 4.2 | 3.9 |
| Equivalent Pipe Length @ C_{HW} = 120 | meters | 3.7 | 13.3 | 16.4 | 18.9 | 20.9 | 42.5 | 51.2 |
| | feet | 12 | 44 | 54 | 62 | 69 | 139 | 168 |
| Control Chamber Displacement Volume | Liters | 0.18 | 0.18 | 0.3 | 0.5 | 2 | 4.8 | 6.2 |
| | Gallons | 0.05 | 0.05 | 0.08 | 0.13 | 0.53 | 1.27 | 1.64 |

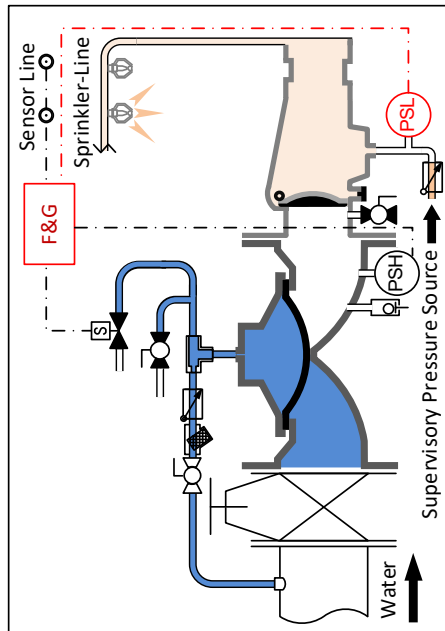
PRE-ACTION DOUBLE-INTERLOCKED VALVE MODEL 68-DE/EL

Operation Modes

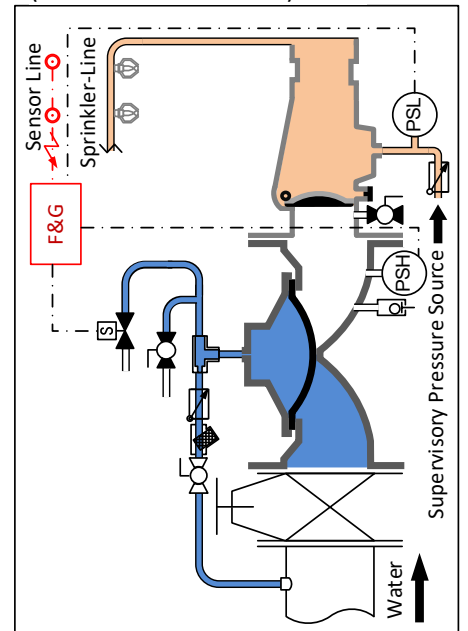
Standby Position



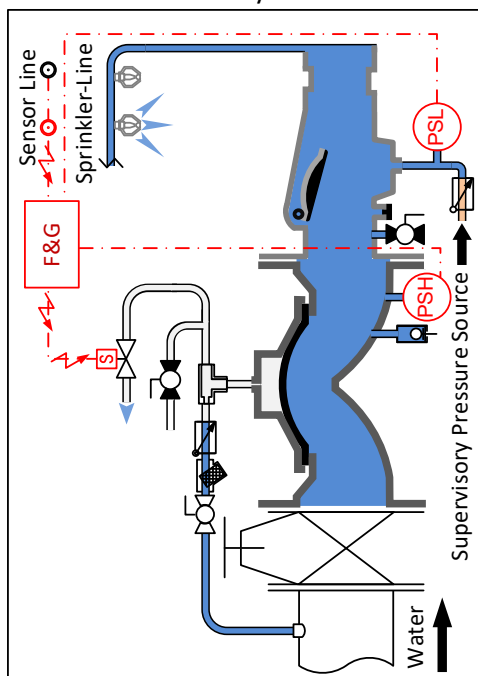
Sprinkler Burst (Valve Remains Closed)



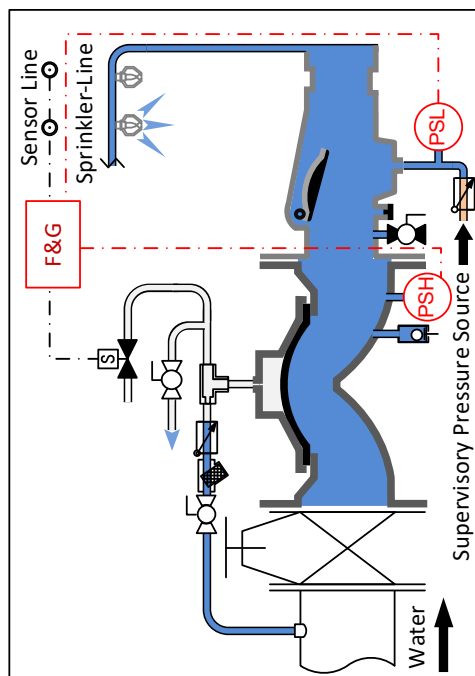
Electric Sensor-Line Activated (Valve Remains Closed)



Double-Interlock Actuated
Water Enters The System



Manually Actuated

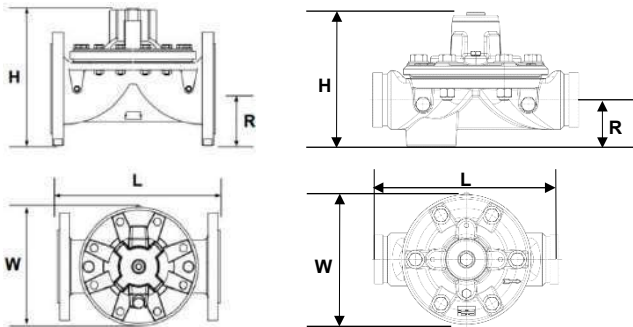


PRE-ACTION DOUBLE-INTERLOCKED VALVE MODEL 68-DE/EL

Basic Valve Dimensions

| Valve Size | | 50 (2") | | 65 (2.5") | | 80 (3") | | 100 (4") | | 150 (6") | | 200 (8") | | 250 (10") | | 300 (12") | | |
|------------|------------|---------------|------------|---------------------------------|-----------|---------------------------------|-----------|---------------------------------|-----------|---------------------------------|------------|----------------------------------|------------|----------------------------------|-----------|--------------------------------|------|-----|
| | | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | |
| Dimensions | 68 | L | 228 | 8 ⁷ / ₈ | 233 | 9 ³ / ₁₆ | 310 | 12 ³ / ₁₆ | 356 | 14 | 436 | 17 ¹ / ₈ | 530 | 20 ¹³ / ₁₆ | 636 | 25 | N/A | N/A |
| | | H | 169 | 6 ⁵ / ₈ | 185 | 7 ⁵ / ₁₆ | 237 | 9 ⁵ / ₁₆ | 263 | 10 ⁵ / ₁₆ | 378 | 14 ¹³ / ₁₆ | 481 | 18 ⁷ / ₈ | 546 | 21 ¹ / ₂ | N/A | N/A |
| | | R | 85 | 3 ⁵ / ₁₆ | 92.5 | 3 ¹¹ / ₁₆ | 105 | 4 ¹ / ₈ | 120 | 4 ¹¹ / ₁₆ | 150 | 5 ⁷ / ₈ | 180 | 7 | 215 | 8 ³ / ₈ | N/A | N/A |
| | | W* | 175 | 6 ⁷ / ₈ | 185 | 7 ⁵ / ₁₆ | 200 | 7 ¹³ / ₁₆ | 260 | 10 ³ / ₁₆ | 320 | 12 ⁵ / ₈ | 400 | 15 ¹¹ / ₁₆ | 495 | 19 ³ / ₈ | N/A | N/A |
| | | Weight kg/lbs | 10 / 22 | | 14.5 / 32 | | 30 / 66.1 | | 38 / 83.8 | | 75 / 165.3 | | 123 / 271 | | 190 / 419 | | N/A | |
| | 68 Grooved | L | 243 | 9 ⁵ / ₈ | 253 | 10 | 336 | 13 ³ / ₁₆ | 380 | 15 | 440 | 17 ⁵ / ₁₆ | 556 | 21 ⁷ / ₈ | N/A | N/A | N/A | N/A |
| | | H | 143 | 5 ⁵ / ₈ | 143 | 5 ⁵ / ₈ | 220 | 8 ¹¹ / ₁₆ | 229 | 9 | 337 | 13 ⁵ / ₁₆ | 433 | 17 | N/A | N/A | N/A | N/A |
| | | R | 55 | 2 ³ / ₁₆ | 55 | 2 ³ / ₁₆ | 77 | 3 | 86.5 | 3 ³ / ₈ | 114 | 4 ¹ / ₂ | 139 | 5 ¹ / ₂ | N/A | N/A | N/A | N/A |
| | | W* | 172 | 6 ¹³ / ₁₆ | 172 | 6 ¹³ / ₁₆ | 236 | 9 ⁵ / ₁₆ | 261 | 10 ⁵ / ₁₆ | 326 | 12 ¹³ / ₁₆ | 400 | 15 ¹¹ / ₁₆ | N/A | N/A | N/A | N/A |
| | | Weight kg/lbs | 6.2 / 13.7 | | 6.4 / 14 | | 14.5 / 32 | | 21 / 46.3 | | 38.5 / 85 | | 66 / 145.5 | | N/A | | N/A | |

* Valve width

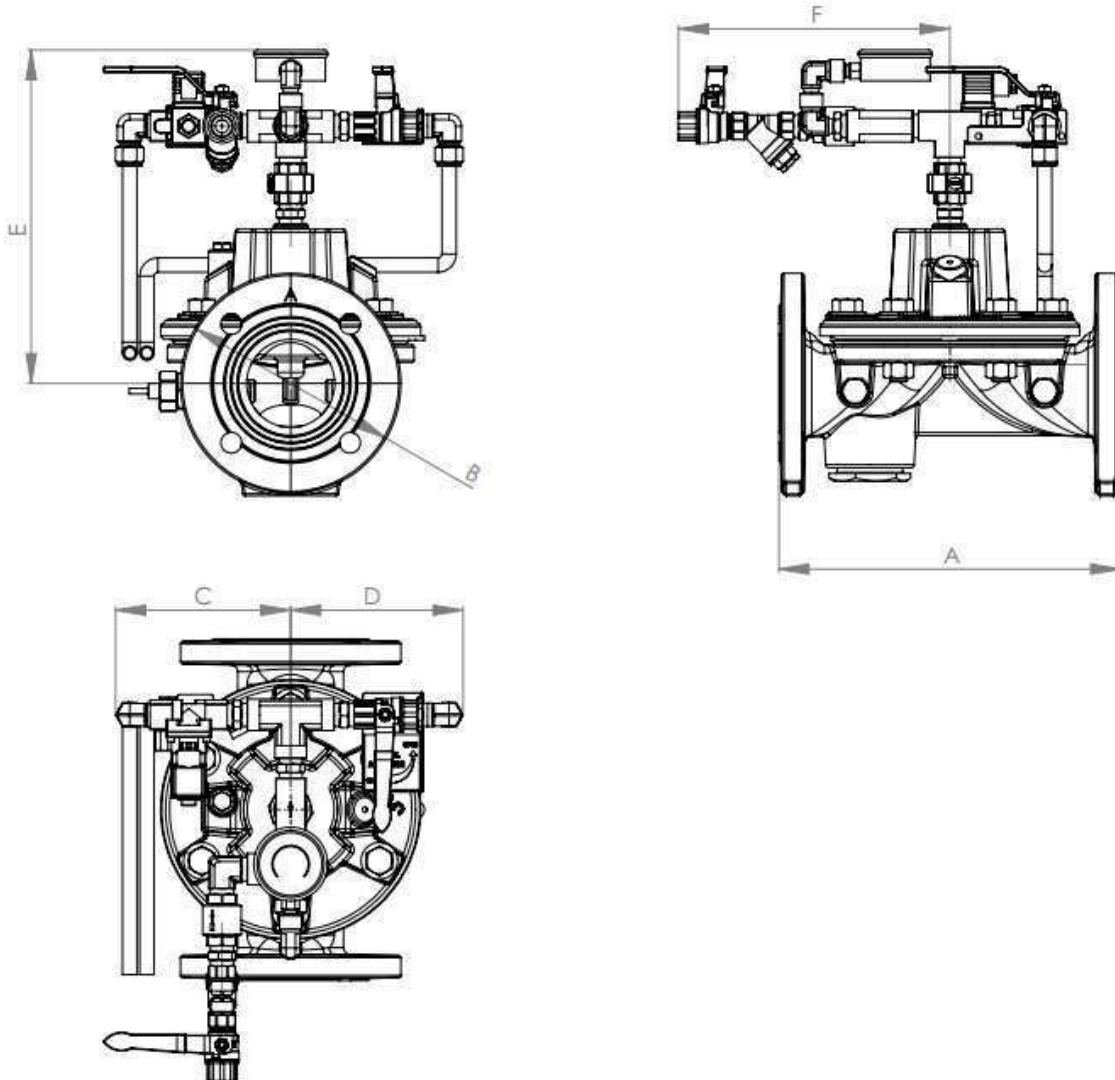


PRE-ACTION DOUBLE-INTERLOCKED VALVE MODEL 68-DE\EL

Trim Dimensions (excluding check valve)

| Valve size | | 2" & 2.5"(50 & 65) | | 3"(80) | | 4"(100) | | 6"(150) | | 8"(200) | | 10"(250) | |
|------------|---|---------------------------------|-----|----------------------------------|-----|----------------------------------|-----|---------------------------------|-----|----------------------------------|-----|---------------------------------|-----|
| | | Inch | mm | Inch | mm | Inch | mm | Inch | mm | Inch | mm | Inch | mm |
| Dimension | A | 10 | 254 | 12 ³ / ₁₆ | 310 | 14 | 355 | 17 ³ / ₈ | 443 | 20 ⁷ / ₈ | 530 | 25 | 635 |
| | B | 6 ⁵ / ₈ | 168 | 7 ⁷ / ₈ | 200 | 9 ³ / ₈ | 238 | 12 ¹ / ₈ | 306 | 14 ³ / ₁₆ | 360 | 16 ⁷ / ₈ | 430 |
| | C | 5 | 126 | 6 ⁵ / ₁₆ | 159 | 6 ¹³ / ₁₆ | 173 | 7 ⁷ / ₈ | 202 | 9 ¹ / ₂ | 242 | 11 ¹ / ₈ | 291 |
| | D | 6 ³ / ₁₆ | 157 | 6 ⁵ / ₁₆ | 157 | 6 ³ / ₁₆ | 157 | 6 ⁵ / ₁₆ | 160 | 7 ⁷ / ₈ | 200 | 9 ¹³ / ₁₆ | 249 |
| | E | 9 ³ / ₁₆ | 234 | 11 ¹³ / ₁₆ | 300 | 11 ¹³ / ₁₆ | 296 | 14 ⁷ / ₈ | 379 | 15 ¹¹ / ₁₆ | 399 | 16 ⁵ / ₈ | 422 |
| | F | 9 ¹¹ / ₁₆ | 246 | 9 ¹¹ / ₁₆ | 246 | 9 ¹¹ / ₁₆ | 246 | 9 ¹¹ / ₁₆ | 246 | 10 ³ / ₈ | 265 | 12 ¹ / ₂ | 317 |

* Dimensions are approximate



Installation, Operation & Maintenance

Safety Instructions:

PLEASE NOTE

- Before using this product, read and understand the instructions.
- All procedures must be carried out by qualified personnel.
- Make sure that all applicable safety precautions have been taken in addition to these instructions.
- Read this manual along with all the provided data.
- Save these instructions for future reference.

Before disassembly of any accessory or component:

- All internal pressures must be relieved and all media drained from the system in accordance with all applicable procedures.
- Pressure must be 0 (zero) bar/psi.

Before Installation:

- **Flush the lines upstream of the pressure reducing valve. If anti-corrosion, anti-freeze or any other type of additives are used, please consult the documentation or OCV FP division concerning potential damage to the valve and its components.**
- Remove all external and internal packaging along with any temporary protective material.
- Carefully inspect the valve to ensure that no damage has occurred in transit or during subsequent handling.
- Ensure that the valve is the correct type and size and that the identification markings show that the material and pressure/temperature rating is suitable for the required service conditions.
- Read the installation instructions carefully and follow them.
- Ensure that the valve is lifted safely into position without damaging the valve.
- Ensure that the valve is installed so that it can be safely operated and maintained without putting any people at risk.
- Make sure that a firm footing is provided for the person installing the valve with adequate space around the valve to meet operating and maintenance requirements.
- Ensure that there is adequate lighting for valve installation.
- The valve can be installed in any position, but flow direction should match the engraved arrow on the bonnet.

Failure to follow the instructions set forth in this publication could result in property damage, personal injury, or death from hazards that may be associated with this type of equipment.