

Deluge Valves



General representation



Fire
Protection

Electrically or Pneumatically Actuated, Manual Reset Deluge Valve

Description

Electrically or pneumatically, pilot controlled manual reset deluge/pre-action valve, actuated by the pipeline pressure. The valve is closed in its normal, set position and opens when the pneumatic pressure drops in a gas pressurized pilot line, releasing a hydraulic relay, or by an electric command. An emergency manual release valve is fitted as standard.

Certification & Compliance

UL Listed under VLFT category

ABS Type Approval

Lloyd's Register Approval

ANSI FCI 70-2 Class VI seat leakage class

Fire tested to EN ISO 6182-5:2006 (2"-6" only)



Features & Benefits

- High pressure (PN25/375psi), high flow deluge systems
- Automatic or local manual emergency actuation
- Hazardous, flammable & explosion classified area fire suppression
- Superior design featuring exceptionally low pressure losses at high flow rates
- Low lifelong maintenance costs due to straightforward design
- Applicable for fresh or brackish water, seawater & foam
- Out of box fully assembled & tested valves
- Factory trimmed for vertical & horizontal installations without modification
- Extensive valve & trim materials selection and corrosion protection coating

Typical Applications

Automatic or Manual Actuated Fire Suppression Systems

Petrochemical, Oil & Gas Installations

Tunnels

Power Generation, Transformer & Transmission Plants



Flammable Storage

Hangers & Airport Terminals

Onshore/Offshore

Mining



Operation

The basic control valve [1] used in this deluge system is a direct-sealing elastomeric diaphragm, 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 [2], a Y-type strainer [3], a check valve [4] and a DMR (Manual Reset Latching Device) [5].

Under fire conditions, the deluge valve opens automatically under either of the following circumstances:

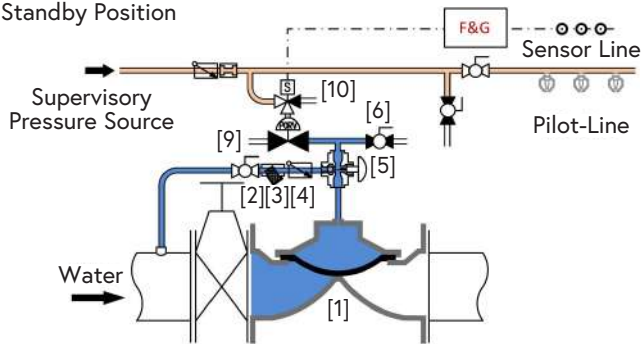
1. A fire alarm control panel (F&G panel) energizes the 3/2-way N.O. solenoid [10] (or de-energizes the coil of a continuously energized ED 100% normally closed solenoid for SIL 3-4 rated systems).
2. The pressure in the dry (pneumatically pressurized) pilot line drops, following bursting of one (or more) of the automatic sprinklers.

When this happens, the pressure in the relay valve [9] drops, causing it to open and allowing the water to drain from the deluge valve's control chamber. The deluge valve opens instantly and allows water to flow into the pipeline and through the open sprinklers over the protected area.

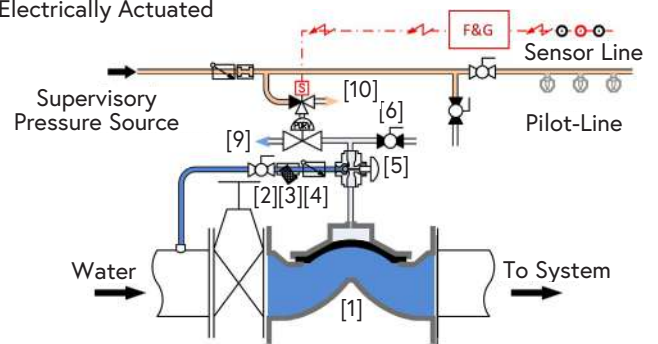
Manual emergency actuation is enabled by opening the emergency manual activation valve [6]. The deluge valve opens instantly and allows water to flow into the pipeline and through the open sprinklers over the protected area.

When the valve trips open, the DMR isolates the control chamber from the upstream pressure source. Reconnecting the upstream pressure to enable the deluge valve to close can only be achieved by pressing the DMR's knob.

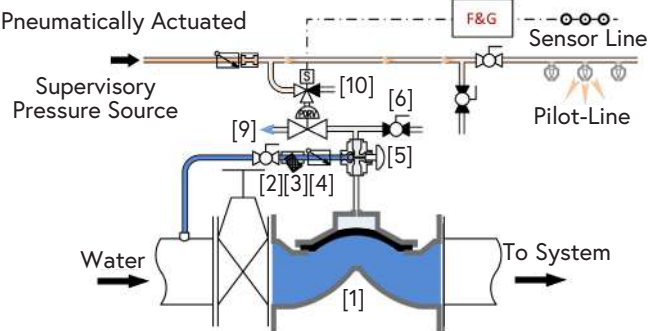
Standby Position



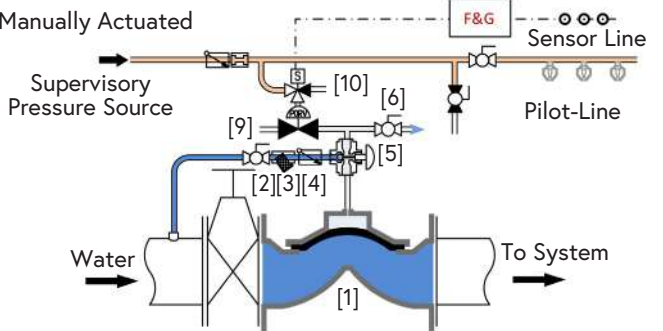
Electrically Actuated



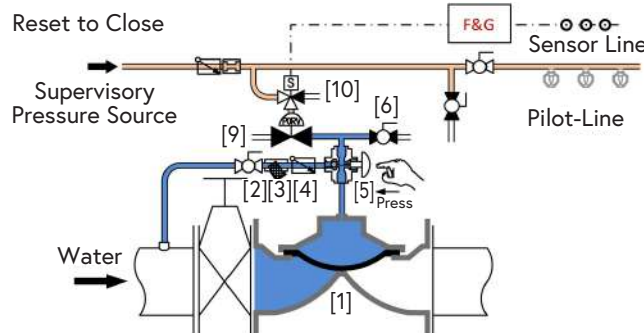
Pneumatically Actuated



Manually Actuated



Reset to Close



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

Components & Typical Materials

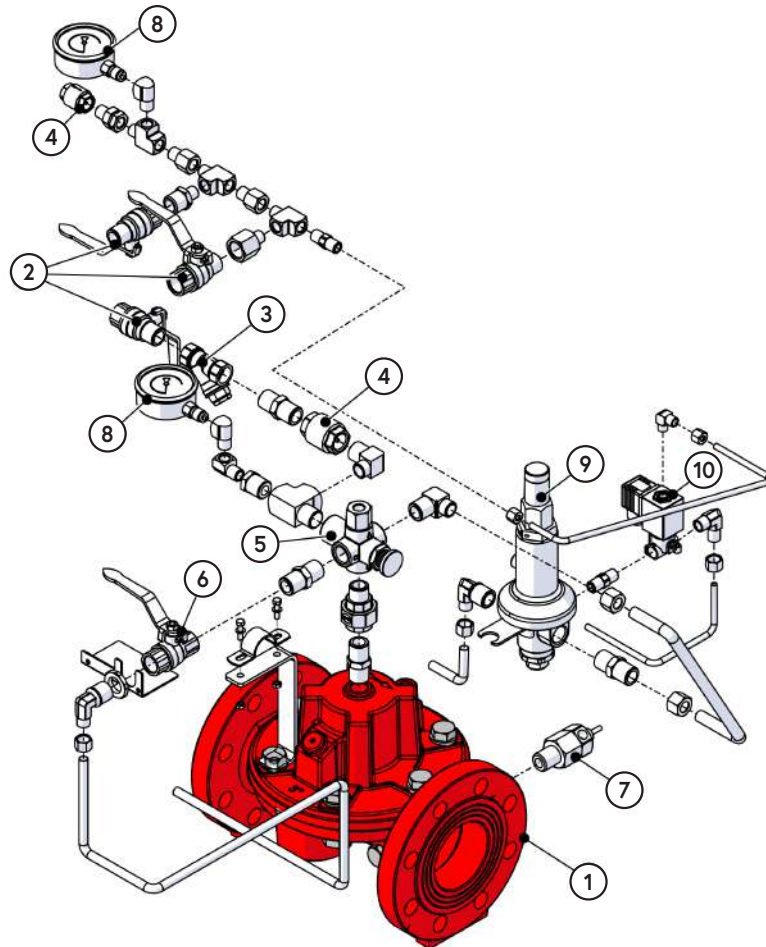
The OCV 68 DE\EL\PORV-MR consists of the following components, arranged as shown on the schematic diagram below.

ID	Part	Standard Material	POG (1) Applications
1	Valve Body	See OCV S100 Engineering Data (2)	
2	Ball Valve	Bronze, Stainless Steel Ball	Stainless Steel 316
3	Y-Type Strainer	Bronze, Stainless Steel Screen	Stainless Steel 316
4	Check Valve	Bronze	Stainless Steel 316
5	T-Restrictor	Brass	Stainless Steel 316
6	Manual Emergency Valve	Bronze	Stainless Steel 316
7	Drip Valve	Brass	Stainless Steel 316
8	Pressure Gauge	Stainless Steel	Stainless Steel 316
9	66-2UL Relay	Brass	Stainless Steel 316
10	3/2 Way N.O. Solenoid (3)	Brass	Stainless Steel 316

(1) Petrochemical, Oil & Gas

(2) Refer to materials selection guidelines, Engineering Data - Materials: Ductile Iron A-536 65-45-12; Cast Steel A-216 WCB; Cast Steel A-352 LCB; Austenitic Stainless Steel A-351/CF8M; Super Duplex 2507; Nickel-Aluminum-Bronze B-148 UNS C95800

(3) Consult factory



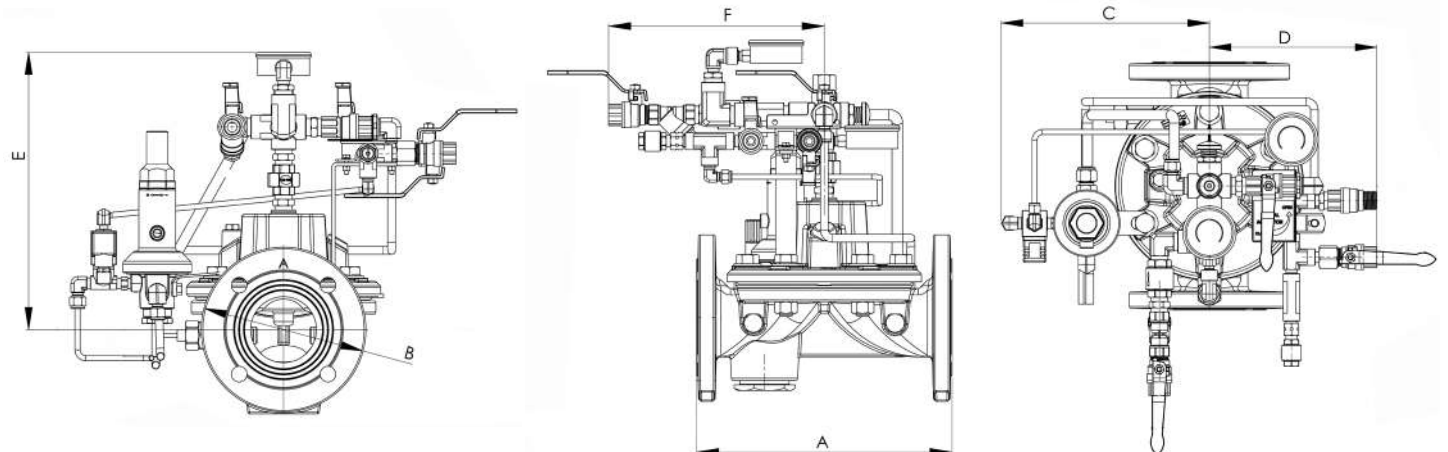
General Arrangement & Dimensions

Standard Sizes							
DIM	2"	2 1/2"	3"	4"	6"	8"	10"
A	9 5/8	9 3/16	12 3/16	14	17 3/16	20 7/8	25
A _G ⁽¹⁾	9 5/8	10	13 3/16	15	17 5/16	21 7/8	--
B	6 5/8	7 3/8	7 7/8	9 3/8	12 1/8	14 3/16	16 7/8
C	8 5/16	8 5/16	10 3/16	8 1/2	12 1/8	12 11/16	15 3/8
D	6 5/16	6 5/16	8 3/16	6 5/8	10 3/16	10 11/16	13 3/8
E	12 3/16	12 3/16	13 1/8	13 5/16	14 3/8	15 13/16	15 13/16
F	10 5/16	10 5/16	10 5/16	10 5/16	10 5/16	10 3/8	12

Approximate Dimensions. ⁽¹⁾ Grooved model length.

Metric Sizes							
DIM	DN50	DN65	DN80	DN100	DN150	DN200	DN250
A	243	233	310	356	436	530	635
A _G ⁽¹⁾	243	253	336	380	440	556	--
B	168	185	200	238	306	360	430
C	210	210	258	217	308	322	390
D	161	161	209	168	259	273	341
E	310	310	334	338	366	402	403
F	262	262	262	262	262	265	304

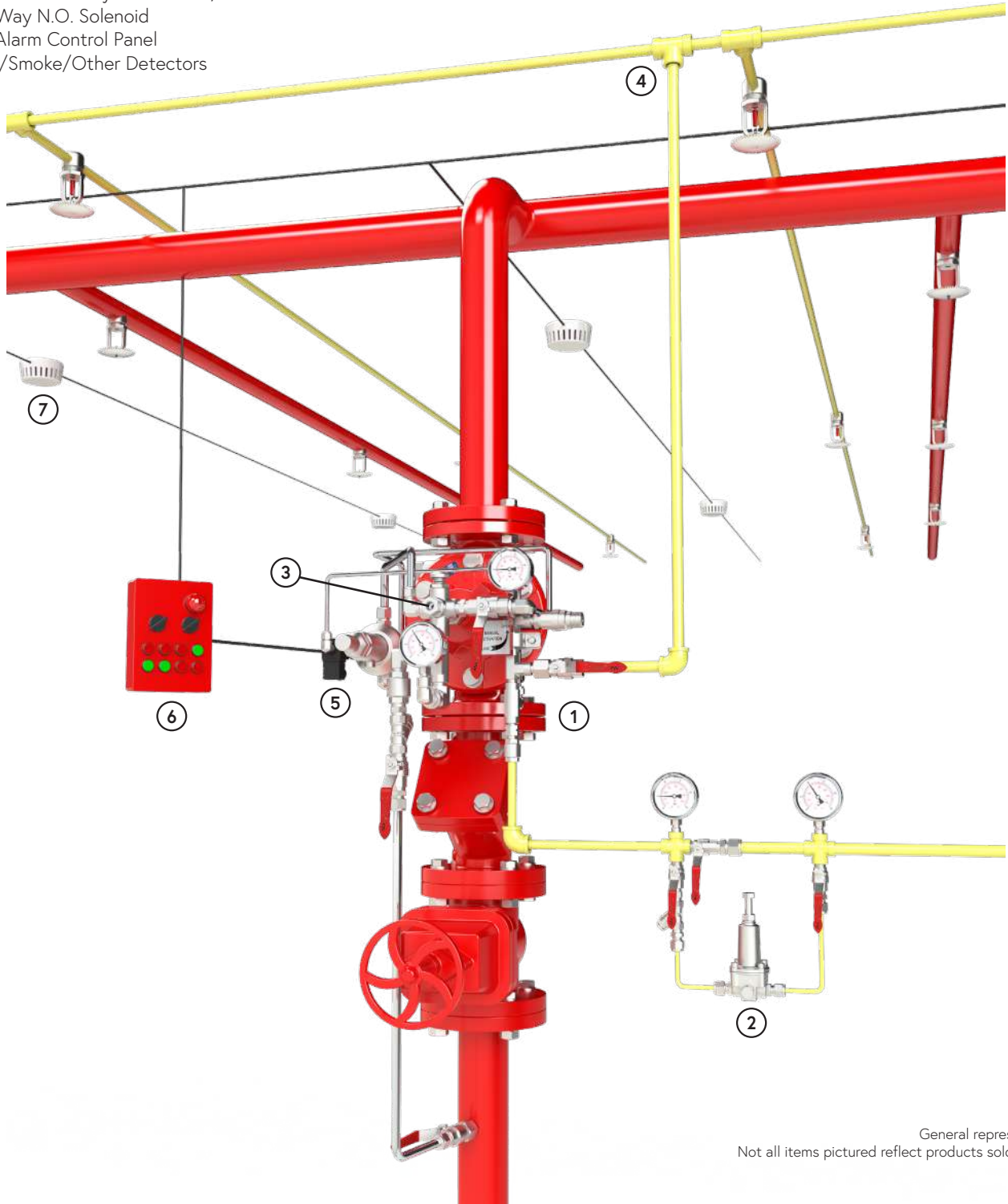
Approximate Dimensions. ⁽¹⁾ Grooved model length.



Typical Installation

The typical installation of the OCV 68 DE\EL\PORV-MR is as shown:

- 1 Electrically or Pneumatically Actuated, Manual Reset Deluge Valve
- 2 PPCS (Pneumatic Pressure Control System)
- 3 DMR (Manual Reset Latching Device)
- 4 Dry (Pneumatically Pressurized) Pilot Line
- 5 3/2-Way N.O. Solenoid
- 6 Fire Alarm Control Panel
- 7 Heat/Smoke/Other Detectors



General representation.
Not all items pictured reflect products sold by OCV.

Technical Data

Temperature (Elastomers)	
Media	up to 80°C = 176°F
Elastomers	suitable for extreme climates (available upon request)
Sizes	
UL Listed Model 68	2" - 10"
Straight Flow	2" - 24"
Pressure Rating (ANSI at 100°F)	
250psi for Class 150#	
375psi for Class 300#	
End Connections	
Flanged	ISO-PN16 & ISO-PN25
	ANSI B16.42 & B16.5 Class 150# & 300#
	Additional options available upon request
Grooved	Sizes: 2"-8"

Body & Cover Material	
Ductile Iron	Stainless Steel
Cast Steel	NAB
Trim Material	
Bronze/Brass - Copper	
Stainless Steel	
Monel	
Optional Components	
Position Indicator	
Alarm Test Trim	
Upstream Drain Valve	
Pressure Switch	
Limit/Proximity Switch	
Spring	
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 deluge valve shall be hydraulically operated, direct elastomeric diaphragm-seal, single chamber weir type. The valve shall consist of three major components: the body, the cover and the diaphragm assembly. The diaphragm assembly shall be the only moving part. The diaphragm forms a sealed control chamber in the upper portion of the valve, separating operating pressure from line pressure. Packing glands, stuffing boxes and dynamic o-ring seals are not permitted and there shall not be shafts, discs, bearings or pistons operating the valve. No hourglass shaped disc retainers shall be permitted, and no V-type, U-type or other slotted type disc guides shall be used. The valve shall contain a nylon reinforced rubber diaphragm, elastic & resilient through its entire surface without vulcanized radial seals

and/or reinforcements. The diaphragm assembly shall not be guided by any shafts or bearings and shall not be in close contact with other valve parts except for its sealing surface. The deluge valve shall be fully trimmed, hydrostatically and operationally tested at the factory. 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. 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 deluge valve shall be a OCV 68 DE\EL\PORV-MR, UL Listed under VLFT category, as manufactured by OCV, an Aquestia Ltd. brand, Tulsa, OK, USA.