68-DE\EL(CN)

Electrically Actuated Deluge Valve

IOM

Installation • Operation • Maintenance

Installation, Operation & Maintenance

This document specifies the operating concept of OCV deluge valve model 68-x-DE\EL(CN) (x refers to valve size in Inch), UL listed when trimmed per the following technical data sheet.

VALVE MODEL DE/EL(CN)

General description

The Dorot Deluge and Pre-Action valve model DE/EL(CN) is a Globe / Weir-type hydraulic valve, activated automatically or manually.
The valve is mounted on the upstream side of a fire-extinguishing sprinklers system, preventing flow into the system at its “Ready” position.

1. The valve opens instantly upon an electric signal from an electric sensor line, tripped via a fire control panel.
2. In case of failure of the automatic activation system, manual emergency activation is possible.
3. The valve can be closed only after all of the below conditions are fulfilled:
    3.1. The electric signal is stopped.
    3.2. The emergency actuation valve is closed.
    3.3. The manual reset knob is pressed and held until the valve closes.
4. An optional part of the main valve control trim is a downstream outlet, which can be connected to a hydraulic alarm bell (customer supplied) and\or a pressure switch.
5. A 50mm (2") drain valve is assembled on the downstream side of the main valve which enables draining of the downstream pipe.
6. A 12 mm (½”) low-pressure relief valve ("Drip Valve") is mounted on the downstream side of the valve, to prevent the filling of the sprinkler system as a safety precaution against faulty sealing of the main valve. This relief valve closes instantly when the main valve is activated by an automatic or manual command.
7. A 12 mm (½”) screen filter is assembled on the pressure line which supplies the main valve control trim, to ensure clean operating water - preventing potential clogging.
8. In case of a temporary decrease of the inlet pressure, the main valve remains shut drip-tight.

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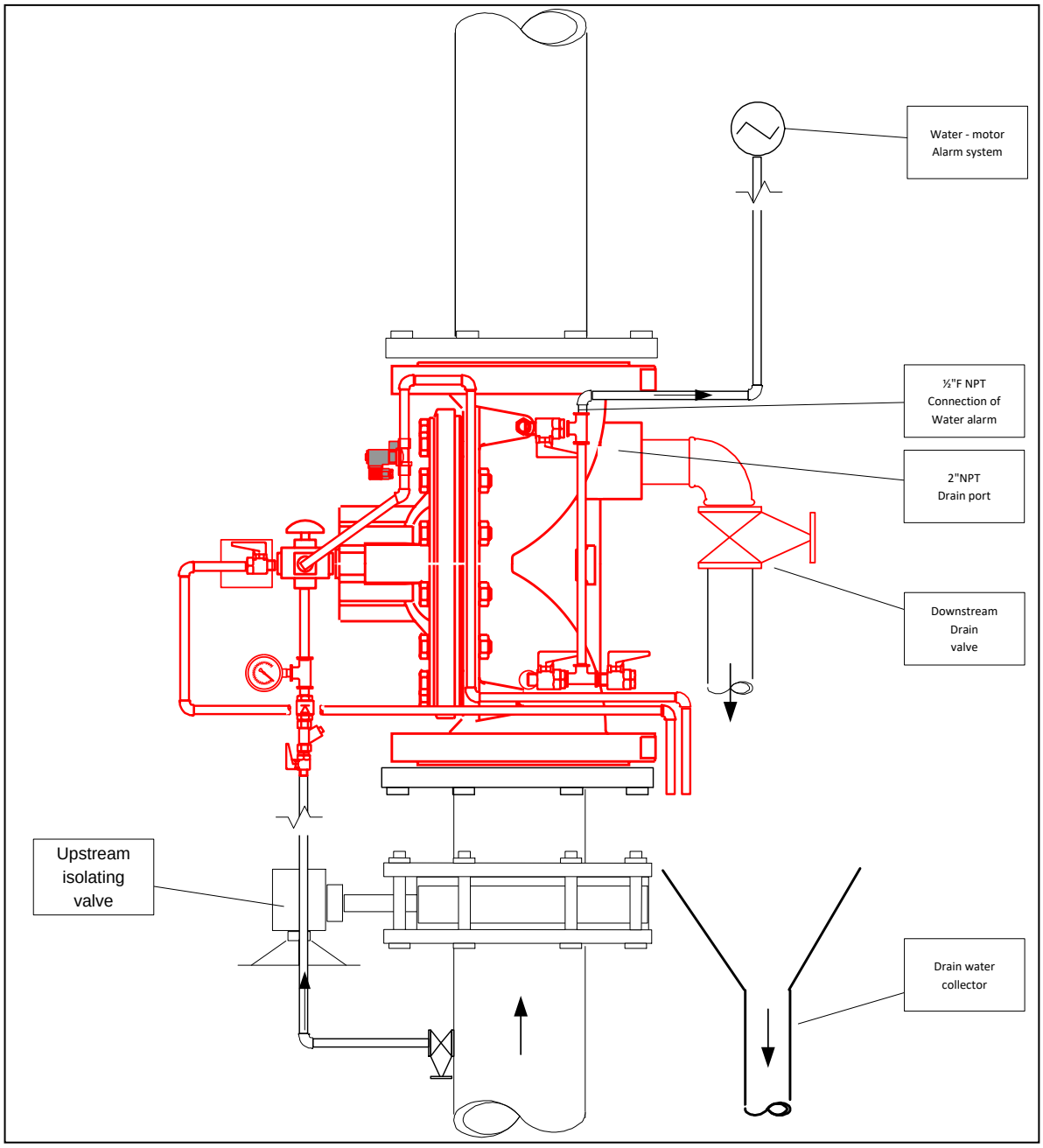
Installation (refer to fig. 3)

1. The valve may be installed vertically (with the upstream side positioned at the bottom) or horizontally. Sufficient space for maintenance should be left around the valve.
2. The valve should be positioned in such a way that enables convenient access to the emergency activation valve [b2] and the manual reset knob [e].
3. Manual isolating valves (not supplied) should be assembled upstream and downstream of the “DE/EL(CN)” valve.
4. A 12mm (½”) outlet should be provided upstream of the inlet isolating valve, for the connection of the control water pipeline.
5. A draining facility, for the water drained during the valve test procedures, should be prepared.
6. The 2” draining valve, outlet pipes of emergency activation valve [b2] and the low- pressure relay [a] should be connected to a suitable drainage pipeline.
7. Valve [b1] of the control assembly should be connected by ½” pipe to the main supply pipe, upstream of the Inlet isolating valve.

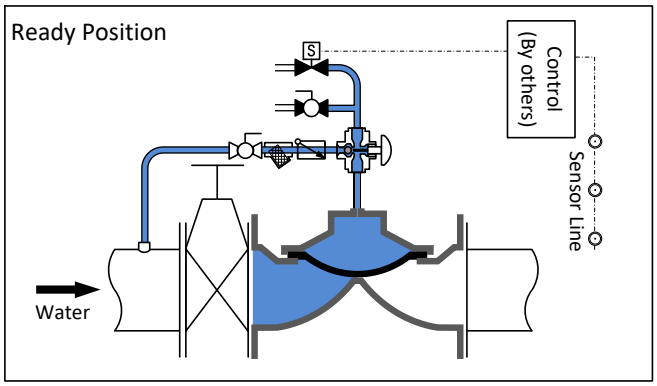
Fig. 1- General layout

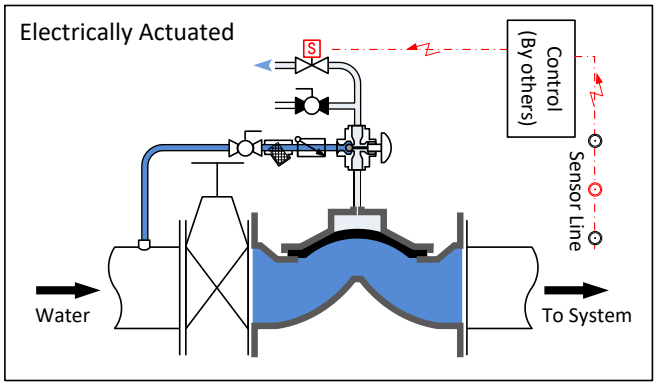


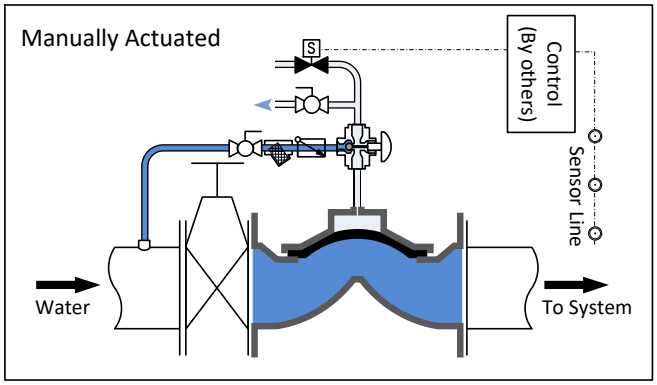
Note: **RED** components are supplied as integral parts of the valve

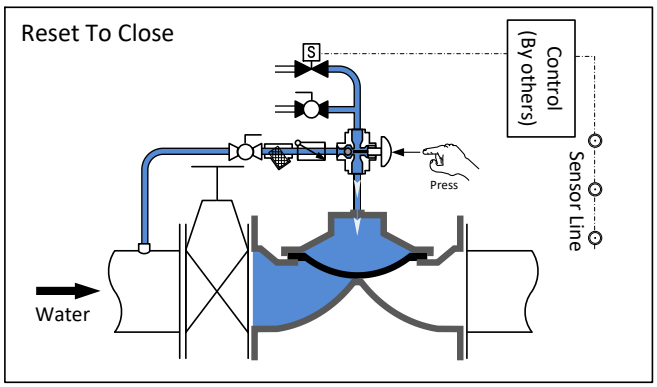
VALVE MODEL DE/EL(CN)

Operation Modes



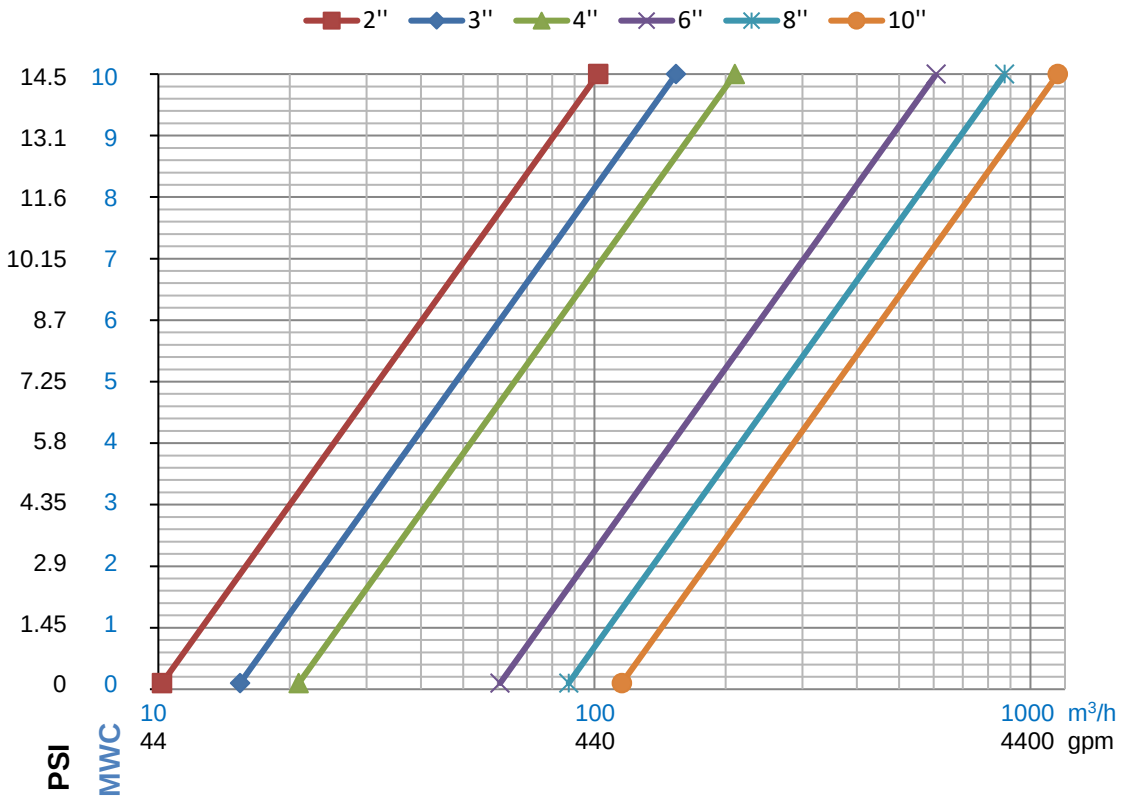






VALVE MODEL DE/EL(CN)
Design Data

1. Headloss chart



2. Operating conditions:

Valve size		Max. recommended flow		Flow factor		Equal pipe length*	
mm	inch	m3/h	gpm	Kv	Cv	m	Feet
50	2	32	140	102	119	8	25
80	3	80	350	155	181	7	22
100	4	130	570	210	245	11	38
150	6	270	1200	605	710	11	38
200	8	510	2250	870	1020	24	78
250	10	800	3500	1147	1340	45	148

* Calculated for V=5m/s (15ft/s), nominal pipe, Chw=100

2.1. Max. recommended flow velocity 5.5m/s (18 ft./s)
2.2. Pressure Rating 25 bar (360 psi)
2.3. Min. system pressure 1.5 bar (22 psi)

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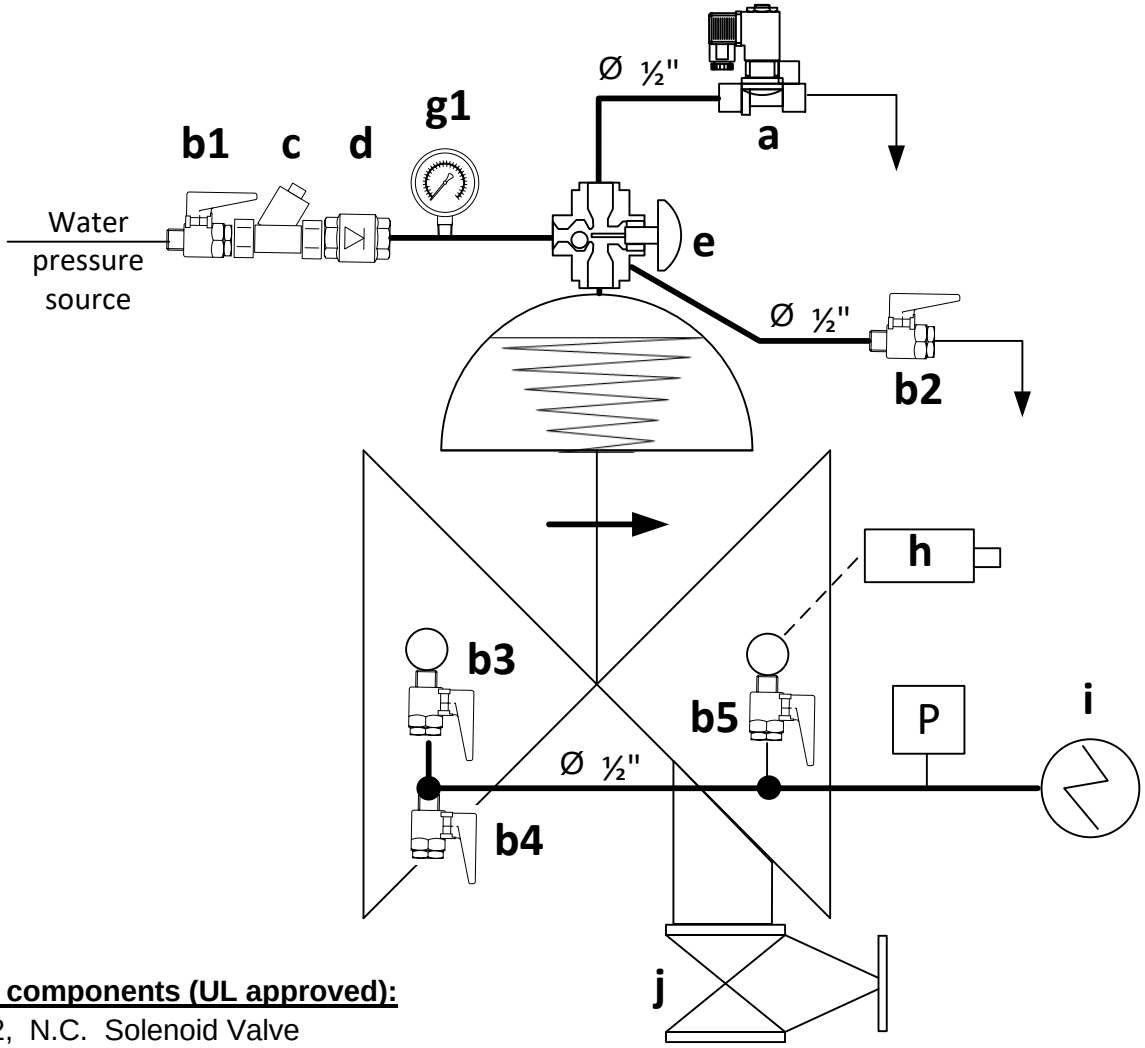
Activation Circuit Connection (refer to fig. 3)

1. The control chamber of the main valve is connected to a pressure source upstream of the inlet isolating valve.
2. The upstream connection includes the following items:
   - Isolating valve [b1]
   - Screen filter [c]
   - Check valve [d]

   All are ½" size.

3. A 2/2, Normally-Closed Solenoid valve [a], releases the pressure from the control chamber of the main valve, upon an electric signal sent by the fire system's control panel. This action instantly opens the main valve.
4. Manual activation of the deluge valve is attained by opening the Emergency Valve [b2]. Opening this valve drains the control chamber of the deluge valve and allows instant opening.
5. When the deluge valve opens the manual reset device shuts the upstream pressure source. The deluge valve can only be closed by pressing and holding the manual reset device knob until the valve's cover fills completely.
6. A Water-Alarm gong [i] can be connected to the valve. This unit is activated by a connection to the valve outlet, and is controlled by a set of control valves:
   4. Valve [b5], is Normally-Open.
   5. Valve [b3], is Normally-Closed and enables testing the alarm without opening of the deluge valve.
   6. Valve [b4], is Normally-Closed and enables draining of the alarm system.
7. A Drip valve [h] is assembled in the outlet of the main valve. It allows the automatic drainage of water that may accumulate in the outlet of the main valve, in case of faulty leaking valve. This Drip valve closes drip-tight when the pressure rises due to opening of the main valve.
8. A downstream drain valve [j] enables the draining of the pipe's sprinkler section.
9. Pressure gauges allow visual inspection of the inlet pressure [g1].
10. An optional pressure switch [P] can be connected to the deluge valve's downstream port, allowing an electric indication once the valve opens.

Fig. 3



Main components (UL approved):

a. 2/2, N.C. Solenoid Valve
b. ½" Ball valve
c. Screen filter
d. ½" Check valve
e. Manual reset device
g. Pressure gauge
h. Drip valve
i. Hydraulic Alarm (not supplied)
j. Drain valve
P Pressure switch (Optional)

VALVE MODEL DE/EL(CN)

Commissioning Procedure (refer to fig. 3)

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

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

Check the following:

- Isolating valve, upstream the main valve, is closed.
- Valves [b1, b5] are open (the handle is parallel to the pipe's axis), and valves [b2, b3, b4, b5, j] are closed (the handle is perpendicular to the pipe's axis).

1. Open the drain valve at the downstream side of the deluge valve and slightly open an upstream drain valve [j].
2. Slightly open the upstream isolating valve, allowing the pipe section upstream of the valve to fill until no air is released through an upstream 2" draining valve (close this valve when water drains from it); Press and hold the Manual Reset knob [e] and wait for the main valve to close, indicated by stoppage of water flow from the downstream drain valve.
3. Ensure minimal designed pressure at the main valve's inlet.
4. Activate the solenoid [a] by an electric signal. The main valve should open instantly.
5. Stop the electric signal.
6. Press and hold the Manual Reset knob [e] and wait for full re-closure of the main valve. Close time may take between 0.5 - 4 minutes, according to valve size.
7. Slightly open the upstream isolating valve.
8. Test the alarm bell:
    - Close control valve [b5]
    - Open control valve [b3]. Alarm bell should be activated.
    - Close valve [b3], and drain the bell pipe by valve [b4]. Close this valve when no water flows.
9. Reset the system:
    - Open isolating valve. Lock the valve.
    - Close the draining valve in the discharge side.

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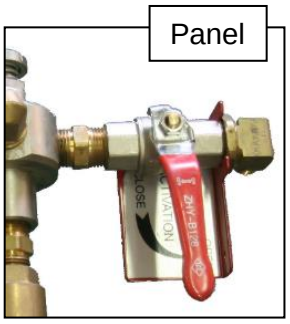
Operating Procedure

1. The valve is actuated by energizing a solenoid valve via a Alarm Control Panel.
2. De-energizing the solenoid causes the valve to close between 0.5-4 minutes, depending its size.
3. The Manual Emergency Actuation Valve [b2] may be located inside a metal box or over a plate. If in a box – first cover - and turn the handle as shown on the plaque in the
4. To close the main valve, return the handle of the Manual Emergency Actuation Valve to the "close" position. valve will close between 0.5-4 minutes, depending its size.



Fire

lift the box.

The

Periodical Check-up and Maintenance

Dorot recommends to perform this procedure on a monthly basis.
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-extinguishing system is returned to a "ready" position.
The following procedure should be carried as written, in addition to relevant NFPA requirements.
The owner of the valve is responsible for the setting, inspecting, routinely testing and maintaining the valve in compliance with NPFA standards or other local applicable regulations.
It is recommended that all tests and maintenance procedures shall 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 filter [c]: close ball valve [b1], open the cover of the filter, remove the screen element, clean and reassemble.
3. Open ball valve [b1].

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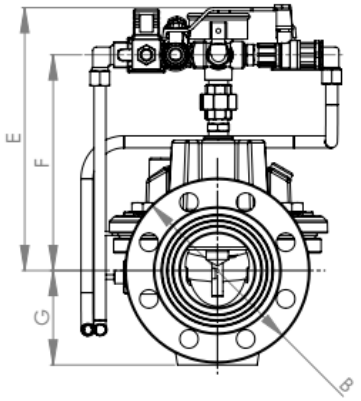
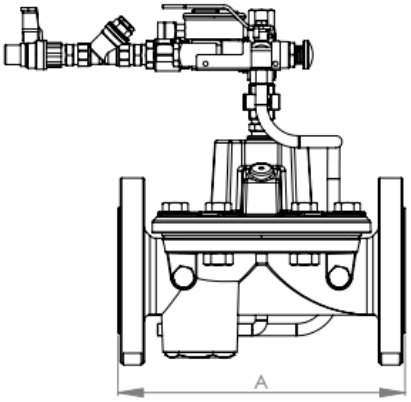
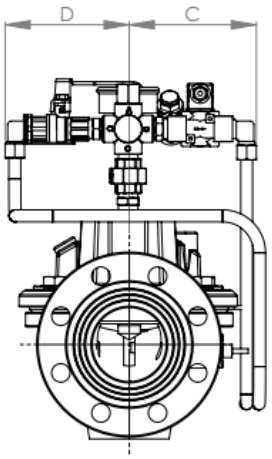
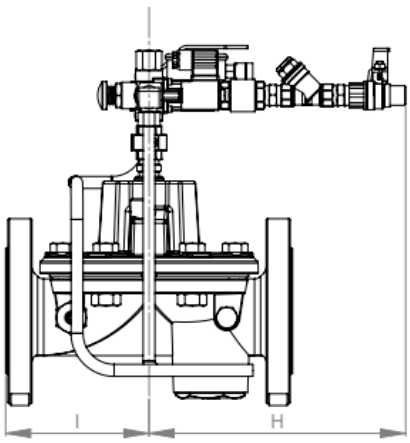
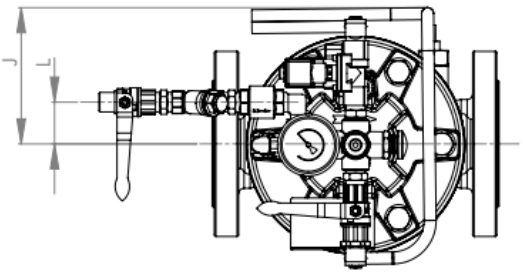
Dimensions











	2	3	4	6	8	10
A	254	310	355	443	530	635
B	168	200	238	306	360	430
C	106	139	153	182	222	271
D	136	136	136	160	200	249
E	250	316	312	395	415	438
F	200	233	247	276	316	365
G	55	102	87	114	141	159
H	262	277	262	262	262	262
I	127	155	178	217	265	304
J	129	145	164	198	225	260
L	45	45	45	45	45	45