Electrically Actuated, Remote Reset, Deluge Valve

FDV - DE1

The FDV is a fire protection control valve for deluge fire sprinkler systems, designed for installations in hazardous environments. Suitable for both vertical and horizontal installation, the globe-pattern, line-pressure-operated FDV valve features a direct elastomeric diaphragm seal, with no balancing spring or internal metallic wet components in the valve body. The hydrodynamic pattern design ensures high flow rates with minimal head loss.

The FDV-DE1 deluge system is electrically actuated and can be reset remotely.

An electric detection system activates a solenoid valve through a control panel, which opens the FDV deluge valve.

The deluge system incorporates an emergency valve that bypasses the fire detection systems for manual operation. This system is suitable for water spray pipelines with open nozzles.



MARKETS

Commercial | Marine | Residential | Industry

TECHNICAL DATA

FLUID:
Water, Brackish water, Sea water, Foam

PNEUMATICS:
Air, Nitrogen

SIZE RANGE:
40mm to 250mm (1½'' to 10'')

AVAILABLE CONNECTIONS ENDS:
Flange*Flange, Groove*Groove, Flange*Groove, Groove*Flange, Thread*Thread

PRESSURE NOMINAL:
250 psi (17.2 bar)

APPROVALS

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber
- Full bore unobstructed
- Simple reset of the valve to standby position without draining or opening the valve itself.
- Low maintenance cost: the valve is serviced in-line with only one replaceable part which is long life elastomeric diaphragm
- Conforms with inspection, testing and maintenance standard of water based fire protection systems, NFPA 25

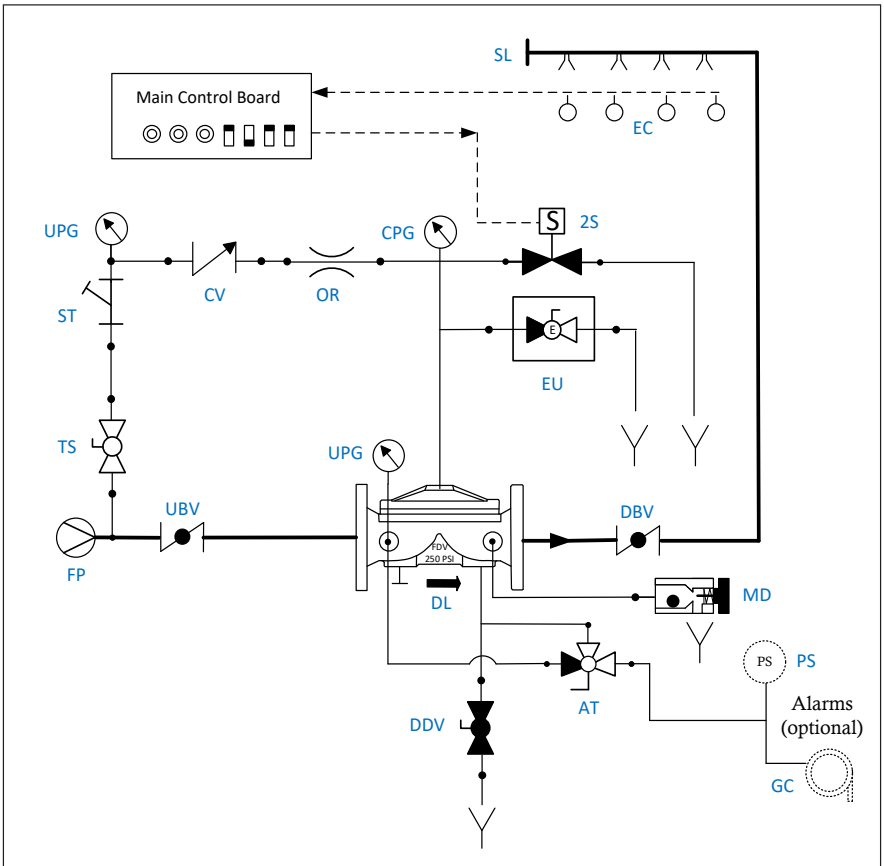
CHARACTERISTICS

- Hydro-dynamic pattern design ensures high flow rates with minimum head loss.
- The valve trips open automatically upon a gradual release of water pressure from its control chamber. The valve is actuated by an electric signal transmitted to the valve's solenoid from the main control panel, due to a flame heat exposure of a sensors detection system.
- Soft closing upon pressurization of the valve's control chamber, by line pressure or other independent water source, prevents surges part which is long life elastomeric diaphragm.

The FDV-DE1 resets to stand-by close position by de-energizing the alarm system solenoid's coil through the main control panel.

Schematic drawing: FDV-DE1

Set position



TS -	Trim supply	UBV -	Upstream Butterfly Valve		Water lines
ST -	Strainer	DBV -	Downstream Butterfly Valve		
AT -	Alarm Test valve	CPG -	Control Chamber P. gauge	- - - - - -	Electrical line
GC -	Gong connection	UPG -	Upstream Pressure gauge		
CV -	Check Valve	S2 -	2-way Solenoid valve		
OR -	Orifice	EU -	Manual Emergency Valve		
PS -	Pressure Switch	SL -	Sprinkles Line		
DL -	Deluge Valve	DDV -	Downstream Drain Valve		
MD -	MADV – Manual / Automtic Drain Valve	FP -	Fire Pump		
ES -	Electric Sensors System	SL -	Sprinklers Line		

OPERATION

SET position

Pressurized water in the valve's control chamber is trapped by the check valve (CV), the closed 2-way solenoid valve (S2), and the closed emergency valve (EU), maintaining the FDV deluge valve (DL) in a closed state.

FIRE situation

When the electric detection system (ES) senses flame heat, it triggers the main control panel, which transmits an electric signal, commanding the 2-way solenoid valve (S2) to open and drain the deluge valve's control chamber. Consequently, the FDV deluge valve opens, allowing water to flow to the spray sprinklers line.

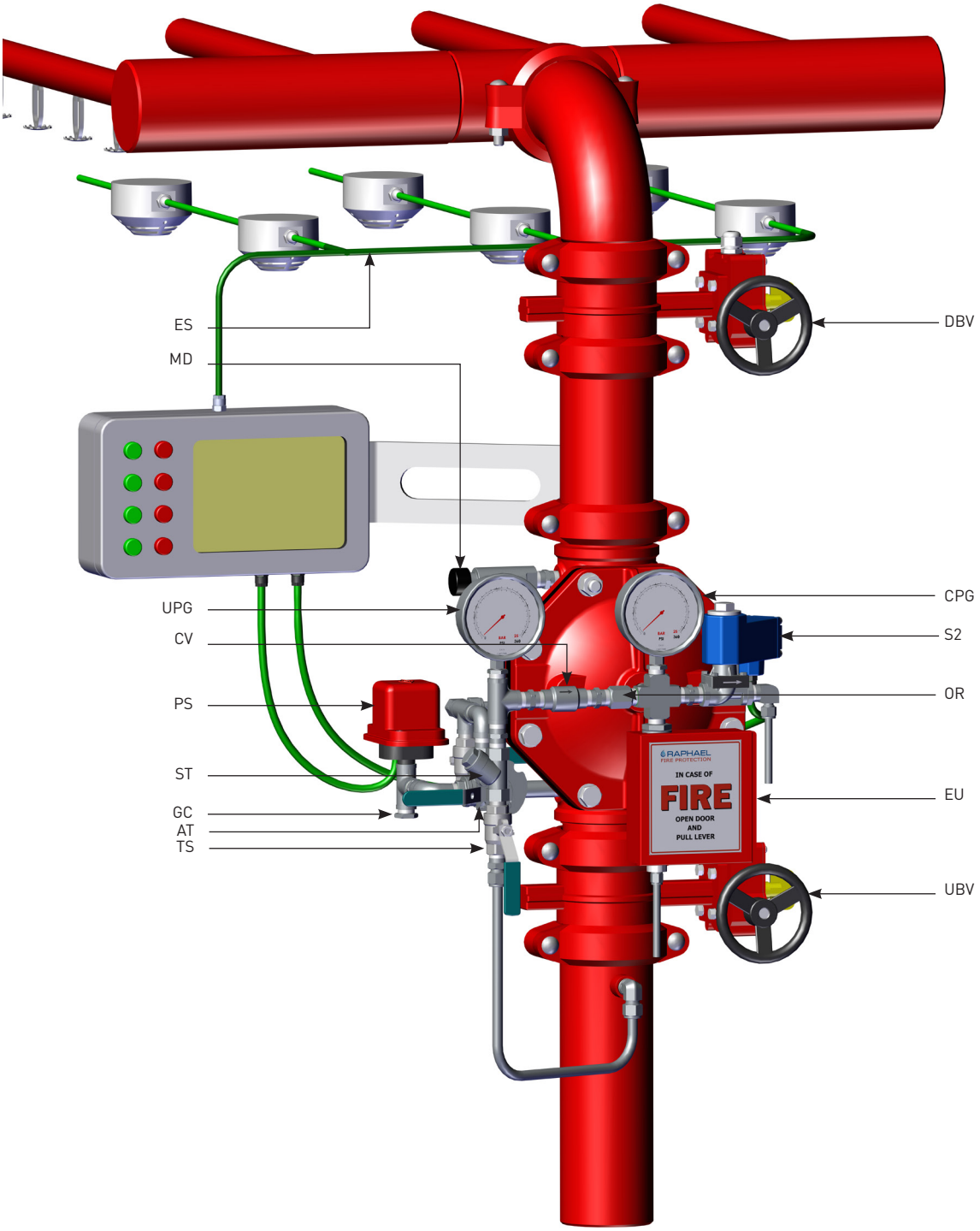
RESET position

When the electric detection system (ES) senses flame heat, it triggers the main control panel, which transmits an electric signal, commanding the 2-way solenoid valve (S2) to open and drain the deluge valve's control chamber. Consequently, the FDV deluge valve opens, allowing water to flow to the spray sprinklers line.

Raphael reserves the right to change the contents without notice

FDV - DE1

Typical installation



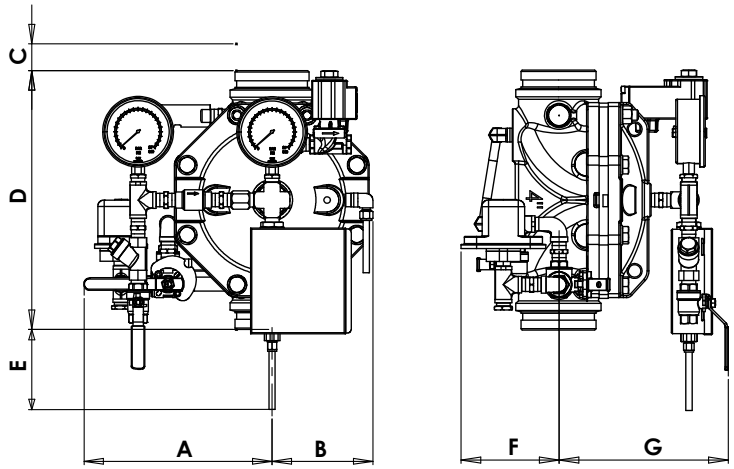
TS – Trim Supply
ST – Strainer
AT – Alarm Test valve
GC – Gong Connection
CV – Check Valves
DDV – Downstream Drain Valve

PS – Pressure Switch
OR – Orifice
S2 – 2-way Solenoid
MD – Manual Automatic Drain Valve
ES – Electric Sensors
UPG – Upstream Pressure Gauge

CPG – Control chamber Pressure Gauge
UBV – Upstream Butterfly Valve
DBV – Downstream Butterfly Valve

Parametric drawing:

FDV-DE1



Dimensions Table

Size	1.5"		2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	247	9.7	263	10.3	296	11.6	290	11.4	316	14.1	340	13.4	372	6.7
B	150	5.9	150	5.9	150	5.9	180	7	166	6.5	231	9	308	12.1
C	57	2.2	49	1.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D	204	8.0	220	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	226	8.9	220	8.6	170	6.6	110	4.3	95	3.7	32	1.3	N/A	N/A
F	147	5.8	115	4.5	119	4.6	147	5.8	152	6	154	6	192	7.5
G	159	6.2	174	6.8	204	8	234	9.2	300	11.9	334	13.1	423	17
Kg/lb	9.1	20	10.9	24	28.4	62.6	44.2	97.4	54.6	120.	100	200	228	502

Factory Standard

MAIN VALVE

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M
- Nickel Aluminum Bronze

ELASTOMERS:

- NR, fabric reinforced Natural Rubber
- EPDM, fabric reinforced
- NBR, fabric reinforced Nitrile Rubber

COATING:

- Base layer – high built Epoxy FBE
  Top layer – electrostatic Polyester powder RAL 3000
- Rilsan Polyamide based (Nylon 11)
- Internal – vitreous Enamel
  External – Epoxy/Polyester powder RAL 3000

TRIM

PIPING & TUBING:

- Stainless Steel 316
- Copper/Brass
- Cupro-Nickel
- Monel®

FITTINGS:

- Stainless Steel 316
- Brass
- Super Duplex
- Cupro-Nickel
- Monel®

ACCESSORIES:

- Stainless steel CF8M / 316
- Brass
- Nickel Aluminum Bronze
- SMO-245
- Monel®

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Additional accessories needed

For more detailed technical information, please refer to chapter Engineering Data.

Raphael reserves the right to change the contents without notice