

Hydraulic Actuated, Local Reset, Pressure Reducing Deluge Valve & Anti-Columnning

FDV - PA0

The FDV is a fire protection control valve for deluge fire sprinkler systems, designed for installation in hazardous environments.

It is suitable for vertical or horizontal installation and features a globe-pattern, line-pressure-operated design with a direct elastomeric diaphragm seal. The valve contains no balancing spring or internal metallic components in the wetted area. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-PA0 is a pressure-control deluge system, hydraulically actuated and locally reset. When the hydraulic detection system (a wet pilot detection line) is exposed to a predetermined temperature, one or more automatic sprinklers open, triggering the FDV-PA0 deluge valve to activate. Once open, the valve reduces the high inlet pressure to a predetermined fixed outlet pressure. The anti-columning feature ensures system operation regardless of the detection line's height or distance from the control valve.

The system includes an emergency manual override valve, which bypasses the fire detection system and enables manual activation when needed. This system reduces upstream pressure to a set downstream value and maintains it at a steady level. It responds to downstream pressure fluctuations caused by changes in flow demand, ensuring stable output pressure.

The system is equipped with a PSA device that manually and locally pressurizes the wet pilot pipeline, automatically stops pressurization in a fire scenario, and compensates for minor leakage-related pressure losses. This configuration is suitable for open-nozzle water spray pipelines.



MARKETS



TECHNICAL DATA

FLUID: Water, Brackish water, Sea water, Foam

SIZE RANGE:
50mm to 250mm (2" to 10")

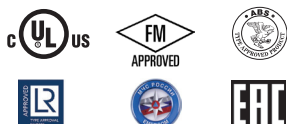
AVAILABLE CONNECTIONS ENDS:
Flange*Flange, Groove*Groove, Flange*Groove, Groove*Flange, Thread*Thread

PRESSURE NOMINAL:
250 psi (17.2 bar)

REGULATION RATIO: 5:1

SENSITIVITY:
1.45 psi (0.1 Bar)

APPROVALS



ADVANTAGES

- Only three parts: body, diaphragm, and cover plate. No wetted metal spring inside the control chamber.
- Unobstructed full-bore valve.
- Simple manual reset to the standby position without closing the butterfly valve or other valves in the system.
- Open fail-safe valve, maintained in a normally closed standby position.
- Low maintenance cost: serviced in-line with only one replaceable part - a long-life elastomeric diaphragm.
- The anti-columning feature ensures system operation regardless of the detection line's height or distance from the control valve.
- Conforms to inspection, testing, and maintenance standards for water-based fire protection systems (NFPA 25).

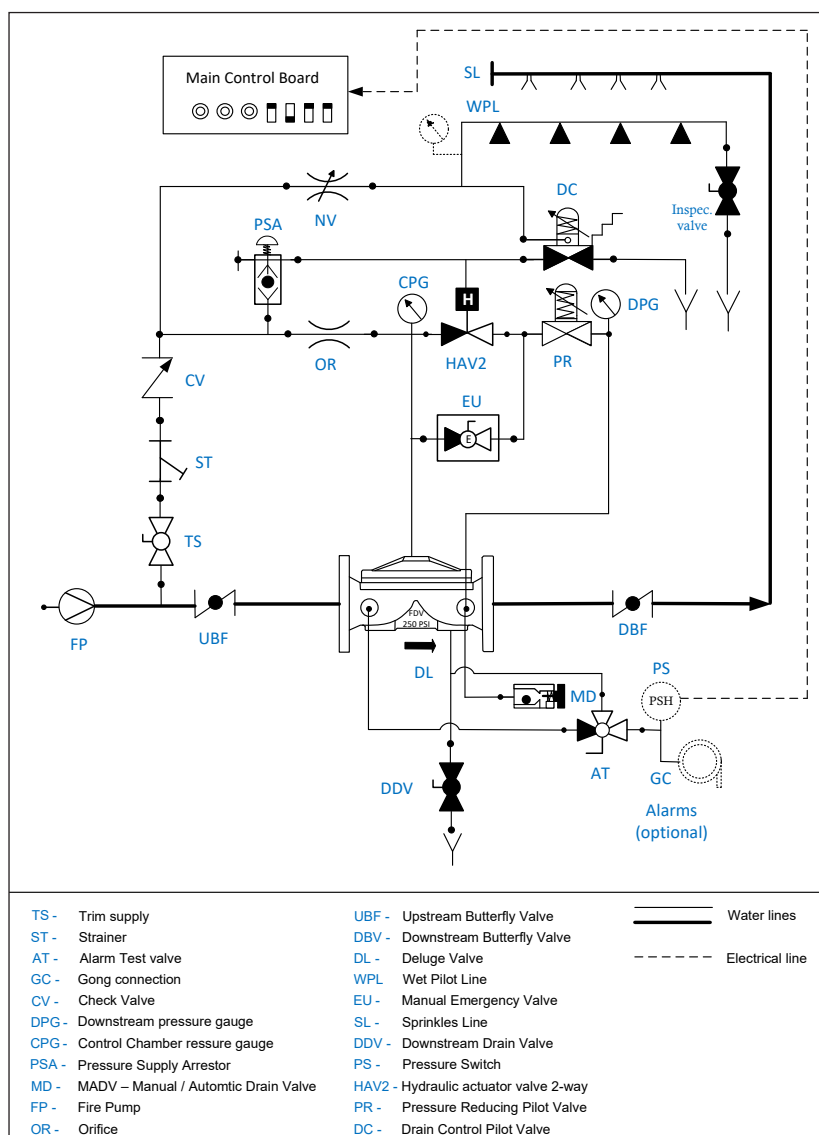
CHARACTERISTICS

- Hydrodynamic flow-path design ensures high flow rates with minimal head loss.
- The valve trips open automatically upon gradual release of water pressure from its control chamber. The trip is actuated by the hydraulic pressure release of a Wet Pilot Line, triggered by exposure to flame heat.
- Soft closing occurs upon pressurization of the valve's control chamber - either by line pressure or by an independent water source - preventing surges.
- A pressure-reducing pilot enables full control of downstream pressure and ensures stable regulation across a wide pressure range.
- The anti-columning pilot assures valve opening regardless of the Wet Pilot Line's pressure.

The FDV-PA0 resets to the stand-by closed position by pressurizing the Dry Pilot Line and manually operating the PSA device.

Schematic drawing: FDV-PA0

Set position



OPERATION

SET position

Pressurized water in the valve's control chamber (DL) is retained by the check valve (CV), the closed emergency valve (EU), and the closed HAV-2 actuator (HAV). The hydraulic pressure accumulated in the Wet Pilot Line keeps the DCPV drain pilot (DC) in its closed position, thereby maintaining the HAV-2 closed and consequently keeping the FDV deluge valve (DL) closed.

FIRE situation

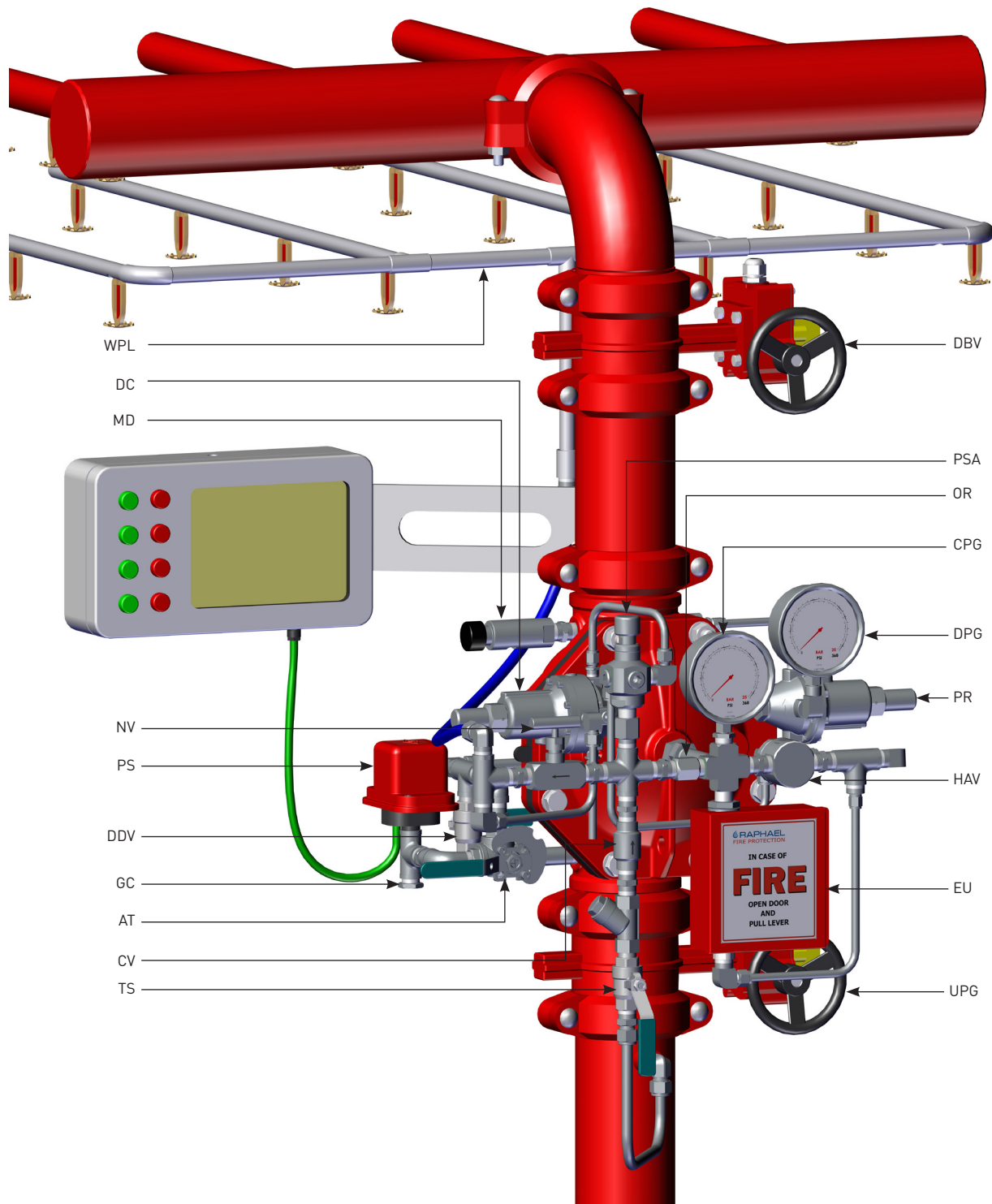
Pressurized water in the valve's control chamber (DL) is retained by the check valve (CV), the closed emergency valve (EU), and the closed HAV-2 actuator (HAV). The hydraulic pressure accumulated in the Wet Pilot Line keeps the DCPV drain pilot (DC) in its closed position, thereby maintaining the HAV-2 closed and consequently keeping the FDV deluge valve (DL) closed.

RESET position

Resetting the system requires replacing all activated (shattered-open) fire sprinklers in the detection pilot line. The Wet Pilot Line is then re-pressurized, returning the DCPV (DC) to its closed position. The PSA (PS) push button must be pressed to enable upstream pressure to pressurize the HAV-2 control chamber, thereby closing the FDV valve.

FDV - PA0

Typical installation

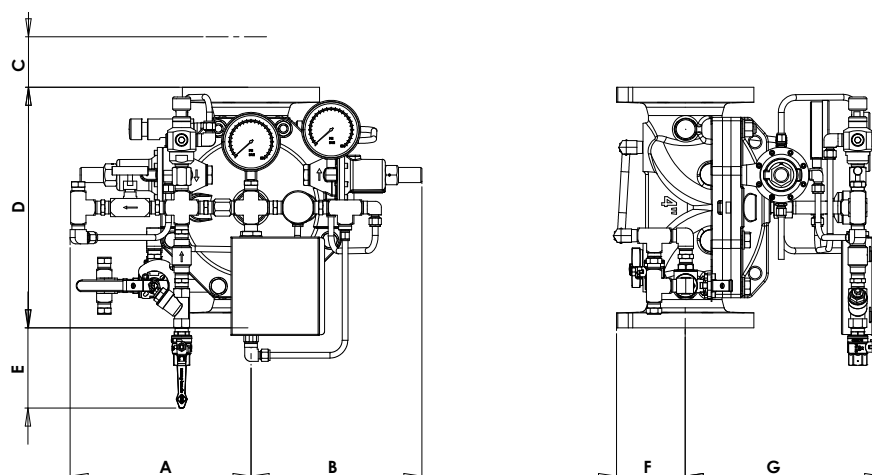


TS - Trim supply valve
SR - "Y" strainer
CV - Check valve
AT - Alarm test valve
GC - Gong Connection
DC - Drain Control Pilot Valve
DDR - Downstream drain valve

PS - Pressure Switch
HAV2 - Hydraulic Actuator Valve
PR - PRPV - Pressure Reducing Pilot Valve
DPG - Downstream Pressure Gauge
WPL - Wet Pilot Line
DBV - Downstream Butterfly valve

PSA - Pressure Supply Arrestor
NV - Needle valve
OR - Orifice
CPG - Control chamber Pressure Gauge
EU - Emergency Manual Unit
UBV - Upstream Butterfly valve

Parametric drawing:



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	293	11.5	300	11.8	300	11.8	315	12.4	340	13.4	395	15.5
B	217	8.5	238	9.3	284	11.1	257	10.1	304	12	349	13.7
C	66	2.6	45	1.7	N/A	N/A	N/A	N/A	N/A	N/A	43	1.7
D	220	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	222	8.7	77	3	133	5.2	101	4	47	1.8	N/A	N/A
F	151	5.9	128	5	120	4.7	158	6.2	172	6.8	222	8.7
G	262	10.3	292	11.5	233	9.1	372	14.6	380	15	540	21.2
Kg/lb	20	44	37	97	42	93	72	159	108	238	240	530

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
- Ambient conditions
- Min/Max operating flow
- Min/Max operating pressure
- Downstream set pressure
- Wet Pilot's installation height.
- Deluge valve material and coating
- Deluge valve ends and standard
- Trim materials
- System installation orientation
- Additional accessories needed:
Alarm Pressure switch
Alarm Gong