

Pneumatically Actuated, Remote Reset, Pressure Reducing Deluge Valve

FDV - PP1

The FDV-PP1 fire protection system is based on Raphael's FDV deluge valve. It is pneumatically actuated and can be remotely reset. The FDV valve is available in various materials and coatings, making it suitable for installation in hazardous environments.

In the event of a fire, heat exposure causes one or more automatic sprinklers on the pneumatic dry pilot detection line to shatter open, venting air pressure from the actuator and triggering the deluge valve to open.

The system is capable of reducing upstream pressure to a pre-set downstream level and maintaining it consistently. It automatically compensates for downstream pressure fluctuations caused by changes in flow demand, ensuring reliable performance.

The deluge system includes an emergency valve that bypasses the fire detection systems for manual operation. It is suitable for configurations with automatic sprinklers installed on the dry pilot line and open nozzles on the main spray lines.



MARKETS



Commercial



Industry



Marine



P.O.G.



Storage



Residential



Airport

TECHNICAL DATA

FLUID: Water, Brackish water, Sea water, Foam

PNEUMATICS: Air, Nitrogen

SIZE RANGE:

40 mm to 250 mm (1½" 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)

ADVANTAGES

- Only three parts: body, diaphragm, and cover plate. No wet metal spring inside the control chamber.
- Full-bore, unobstructed design.
- Simple manual reset to the valve's standby position without draining or opening the valve itself, and without closing the OS &Y or other system valves.
- Maintained in a standby closed position.
- Low maintenance cost: the valve can be serviced in-line and includes only one replaceable part — a long-life elastomeric diaphragm.
- Complies with NFPA 25, the standard for the inspection, testing, and maintenance of water-based fire protection systems.

CHARACTERISTICS

- The hydro-dynamic pattern design ensures high flow rates with minimal head loss.
- The valve opens automatically upon a gradual release of water pressure from its control chamber. It is actuated either by an electric signal conveyed to the valve's solenoid or by a release of pneumatic pressure in the Dry Pilot Line due to exposure to flame heat.
- Soft closing occurs when the valve's control chamber is pressurized, either by line pressure or by an independent water source, thereby preventing pressure surges.
- A pressure-reducing pilot enables full control of the downstream pressure and ensures a stable setpoint across a wide pressure range.

The FDV-PP1 resets to a stand-by closed position by de-energizing the solenoid coil of the alarm system through the main control panel and by pressurizing the Dry Pilot Line.

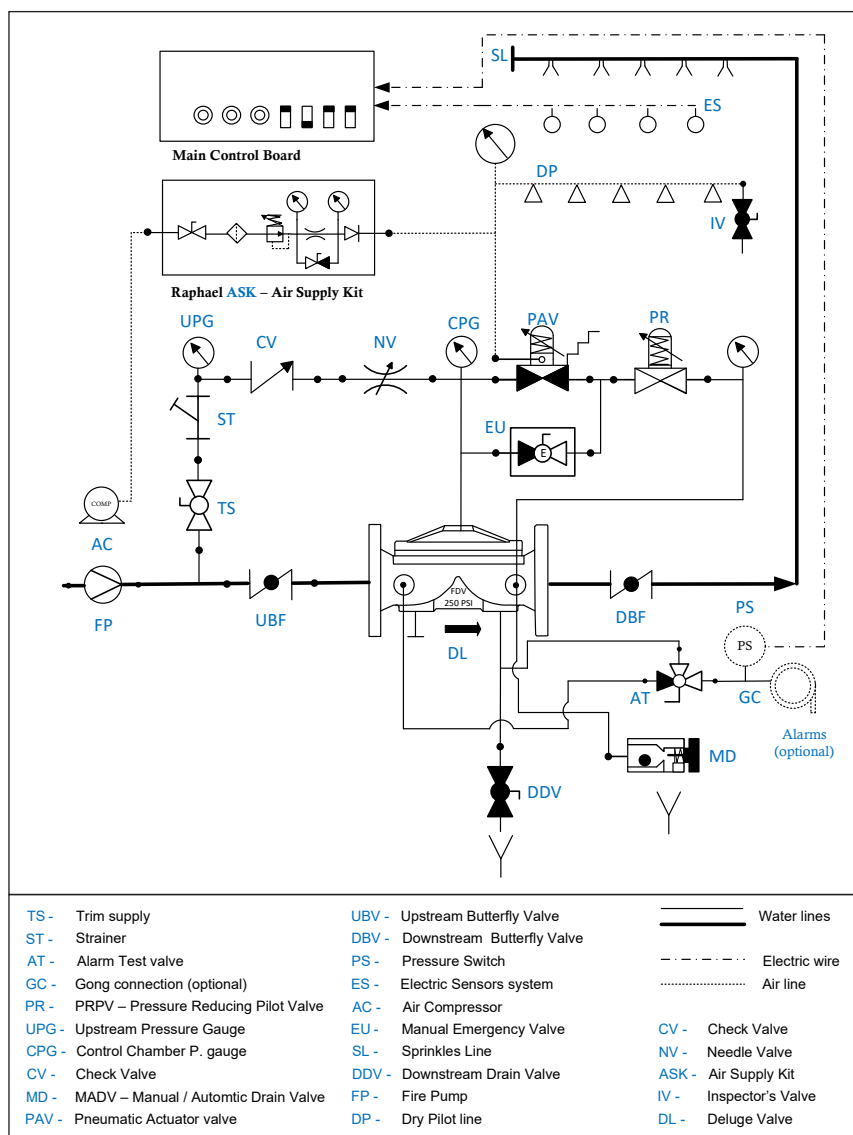
APPROVALS



Schematic drawing:

FDV-PP1

Set position



OPERATION

SET POSITION

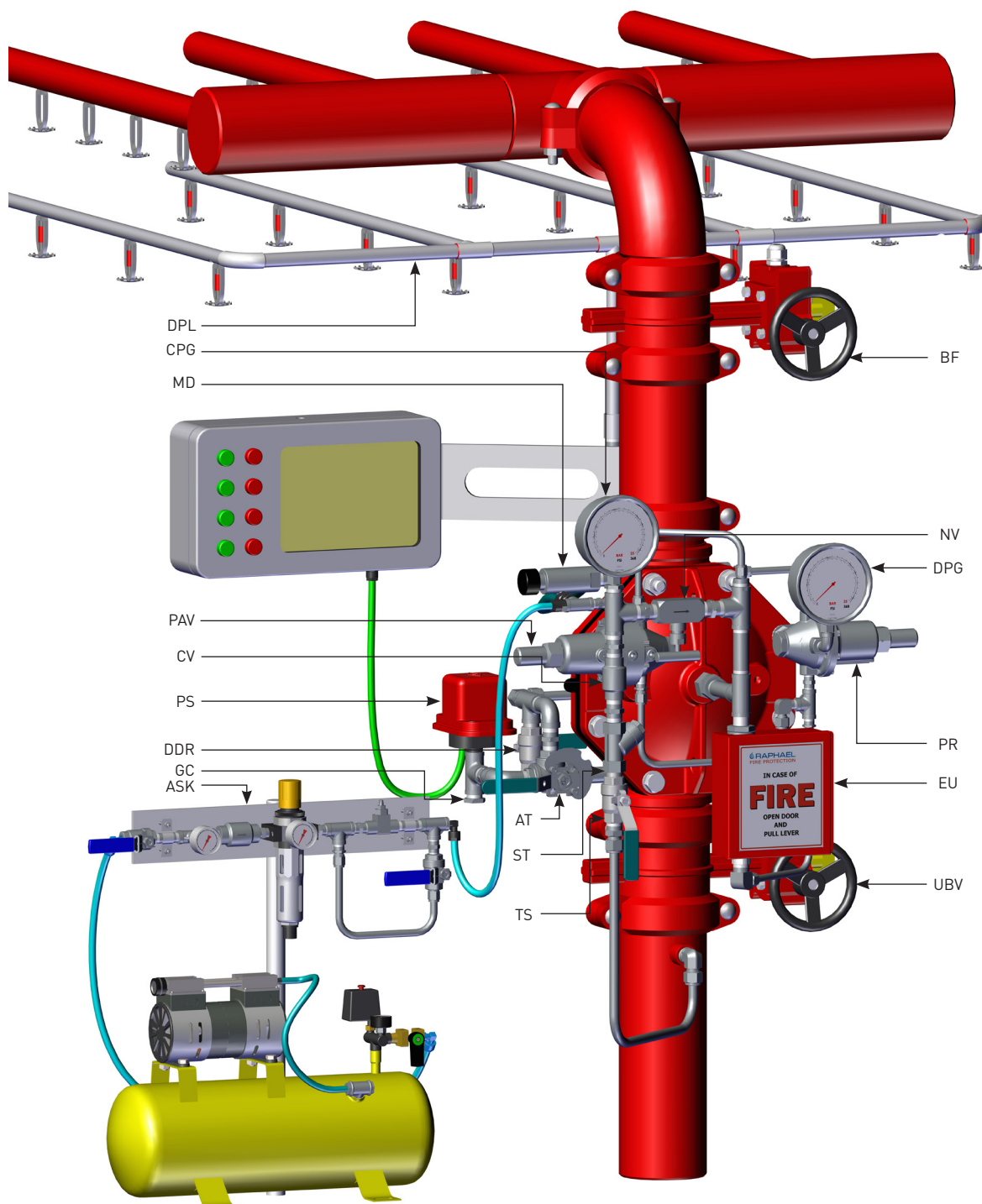
Pressurized water in the valve's control chamber (DL) is trapped by the closed pneumatic actuator (PAV), the closed emergency valve (EU), and the check valve (CV), thereby maintaining the deluge valve in its closed position.

FIRE SITUATION

When one or more automatic fire sprinklers in the Dry Pilot (DP) detection line are exposed to a predetermined temperature and open, the pilot line depressurizes, causing the pneumatic actuator to open. When open, the pneumatic actuator vents the deluge control chamber causing it to open and admit water to the spray sprinkler line at a steady, preset pressure.

RESET POSITION

To initiate a system reset, all opened fire sprinklers in the dry Pilot detection line must be replaced. As a result, the pneumatic actuator is pressurized, closed, and the FDV deluge valve closes.



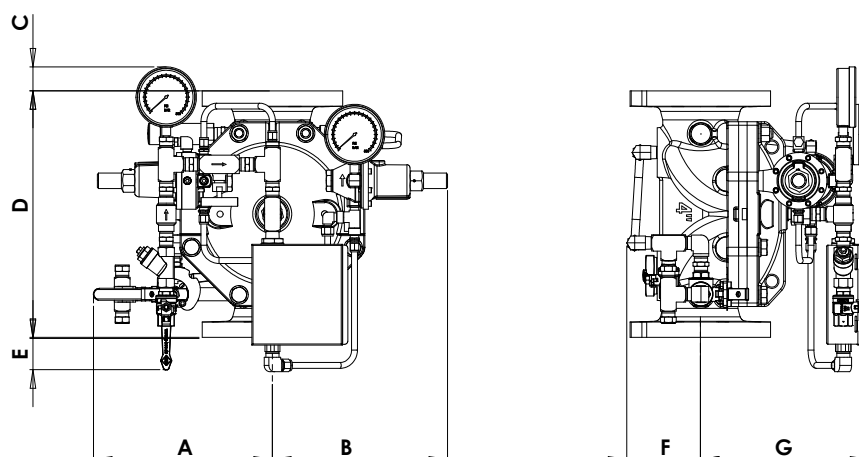
TS - Trim supply valve
ST - "Y" Strainer
AT - Alarms Test Valve
ASK - Air supply Kit
GC - Gong Connection
PS - Pressure Switch

DDV - Downstream Drain Valve
PAV - Pneumatic Actuator Valve 2 way.
NV - Needle Valve
CV - Check Valve
MD - MADV Manual Automatic Drain Valve
DPL - Dry Pilot Line

DBV - Downstream Butterfly Valve
UBV - Upstream Butterfly Valve
CPG - Control chamber Pressure Gauge
DPG - Downstream Pressure Gauge
PR - PRPV Pressure Reducing Pilot Valve
EU - MEU Manual Emergency Unit

Parametric drawing:

FDV-PP1



Dimensions Table

Size	1½"		2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	255	10	261	10.2	296	11.6	290	11.4	313	12.3	338	13.3	393	15.4
B	214	8.4	218	8.6	238	9.4	284	11.2	310	1.2	304	11.9	307	12
C	138	5.4	130	5.1	76	2.9	39	1.5	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	153		142	5.6	93	3.6	56	2.2	23	0.9	N/A	N/A	N/A	N/A
F	150	5.9	129	5	120	4.7	119	4.6	159	6.2	172	6.7	219	8.6
G	194	7.6	207	8.1	263	10.3	272	10.7	338	13.3	378	14.8	510	20
Kg/lb	15.4	34	17.7	39	34.2	75.4	50.5	111	70	154	106	233	263	580

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
- Pneumatic working pressure
- Deluge valve ends
- Deluge valve coating
- Trim material
- System installation orientation
- Additional accessories needed