



FIRE PROTECTION

PRODUCT CATALOG

RAPHAEL VALVES INDUSTRIES

RAPHAEL VALVES INDUSTRIES (1975) LTD.

Founded in 1949, Raphael Valves Industries Ltd., is a manufacturer of high-quality control valves. With an extensive and pioneering product lineup, Raphael leads the global market in valve technology.

Our product range includes hydraulic control valves, butterfly valves, gate valves, check valves and more, specifically designed to meet the needs of the Irrigation, Waterworks, and Fire Protection sectors. Each valve undergoes thorough quality control testing and manufacturing procedures, holding prestigious certifications such as ISO 9001, UL and FM approval.

Motivated by our passion for innovation, we have invested significant resources to Smart Solutions, aimed at improving the management of water networks and facilitating access to real-time data for technical and logistical operations around the world. As part of this effort, Raphael experts have introduced the revolutionary "ULTRAF PRO" Ultrasonic Hydrometer, a revolutionary integration of ultrasonic flow measurement and hydraulic valve technology, setting new benchmarks in the industry.

Raphael offers a wide range of elastomeric diaphragm-type valves in streamlined globe and angle patterns. These valves are essential components in fixed fire extinguishing systems using water, foam, or seawater media. Our Fire Protection range includes Deluge and Preaction systems, Pressure control valves, Monitors and Hydrants, suitable for various environments such as Petrochemical, Oil & Gas, Offshore, and Marine applications.

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DELUGE SYSTEMS

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Electrically Actuated, Local Reset, Deluge Valve

FDV - DE0

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-DE0 deluge system is electrically actuated and can be reset locally.

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

The system includes an emergency manual override valve that bypasses the fire detection system, enabling manual activation when required.

In addition, the FDV-DE0 system is equipped with a PSA device that manually and locally pressurizes the deluge control chamber, keeping it closed, preventing re-pressurization during actuation (when the control chamber must be drained), and compensating for minor leakage-related pressure losses.

This configuration is suitable for open-nozzle water spray pipelines.



MARKETS



Commercial



Marine



Residential



Industry

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- Full-bore, unobstructed design
- Simple manual reset of the valve to standby position without closing OS & Y or other valves in the system.
- Open fail safe valve, maintained in 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

- 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.

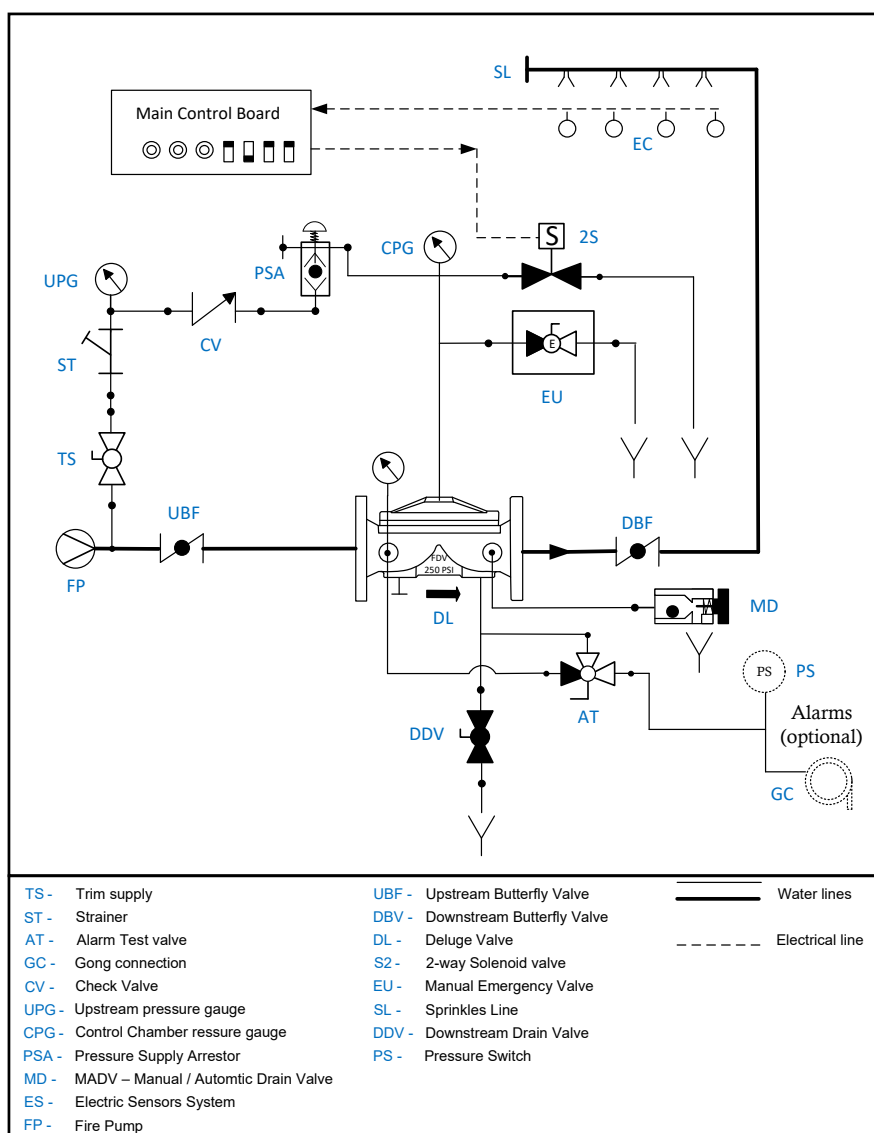
The FDV-DE0 resets to stand-by close position by pressurizing the Dry Pilot Line and manually operating the PSA device.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION:

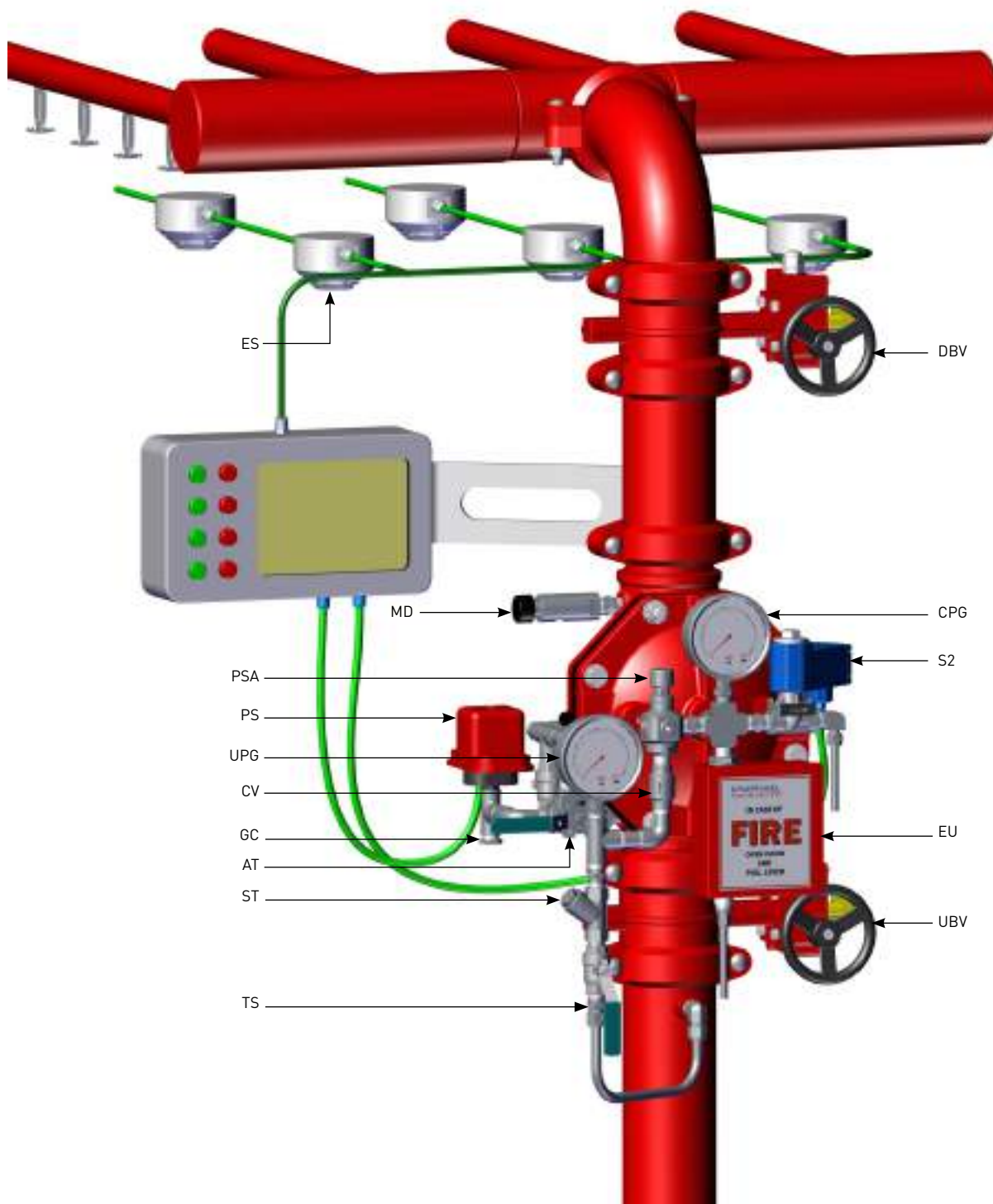
Pressurized water in the valve's control chamber (DL) is trapped by the closed PSA (PSA), the closed 2-way solenoid valve (S2) and by the closed emergency valve (EU), maintaining the FDV deluge valve (DL) closed.

FIRE SITUATION:

When the electric detection system (ES) senses flame heat, it triggers the main control panel, which then 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

To reset the system, the electrical alarm system must be reset to de-energize and close the solenoid valve. This action stops the drainage of the FDV control chamber. The PSA (PSA) push button should then be pressed to allow upstream pressure to pass, pressurizing the control chamber and closing the FDV deluge valve.



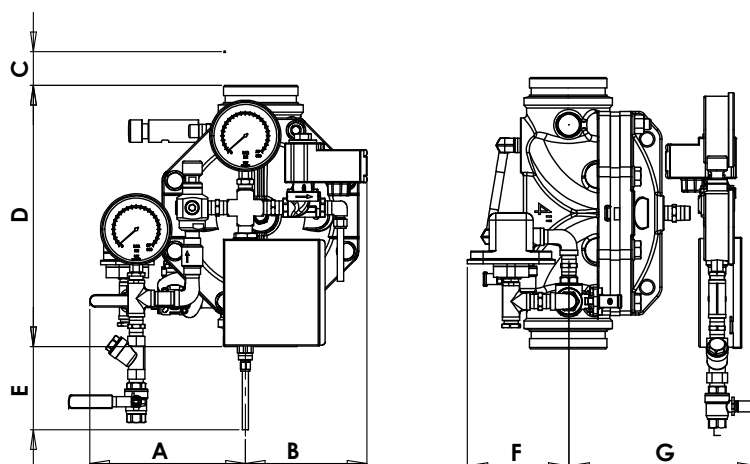
TS – Trim Supply
ST – Strainer
AT – Alarm Test valve
GC – Gong Connection
CV – Check Valve
EU – Emergency Unit

DDV – Downstream Drain Valve
PS – Pressure Switch
S2 – 2 way Solenoid
PSA – Pressure Supply Arrestor
MD – Manual Automatic Drain Valve
ASK – Air Supply Kit

ES – Electric Sensors
UPG – Upstream Pressure Gauge
CPG – Control chamber Pressure Gauge
UBV – Upstream Butterfly Valve
DBV – Downstream Butterfly Valve

Parametric drawing:

FDV-DE0



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	255	10	263	10.3	270	10.6	290	11.4	315	12.4	340	13.3	353	3.8
B	155	6.1	150	5.9	162	6.3	211	8.3	178	7	230	9	308	12.1
C	55	2.1	46	1.8	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	295	11.6	213	8.4	147	5.8	112	4.4	80	3.1	74	2.9	N/A	N/A
F	145	5.7	144	5.6	119	4.6	115	4.5	159	6.2	172	6.8	203	7.9
G	150	5.9	170	6.6	193	7.5	225	8.8	295	11.6	330	12.9	420	16.5
Kg/lb	10.2	22.5	12	26.4	30	66.1	35	77.1	55	121	101	223	230	

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
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Additional accessories needed

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 hydro-dynamic 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:

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)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber
- Full-bore, unobstructed design
- Simple reset of the valve to standby position without draining or opening the valve itself.
- 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

- 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.

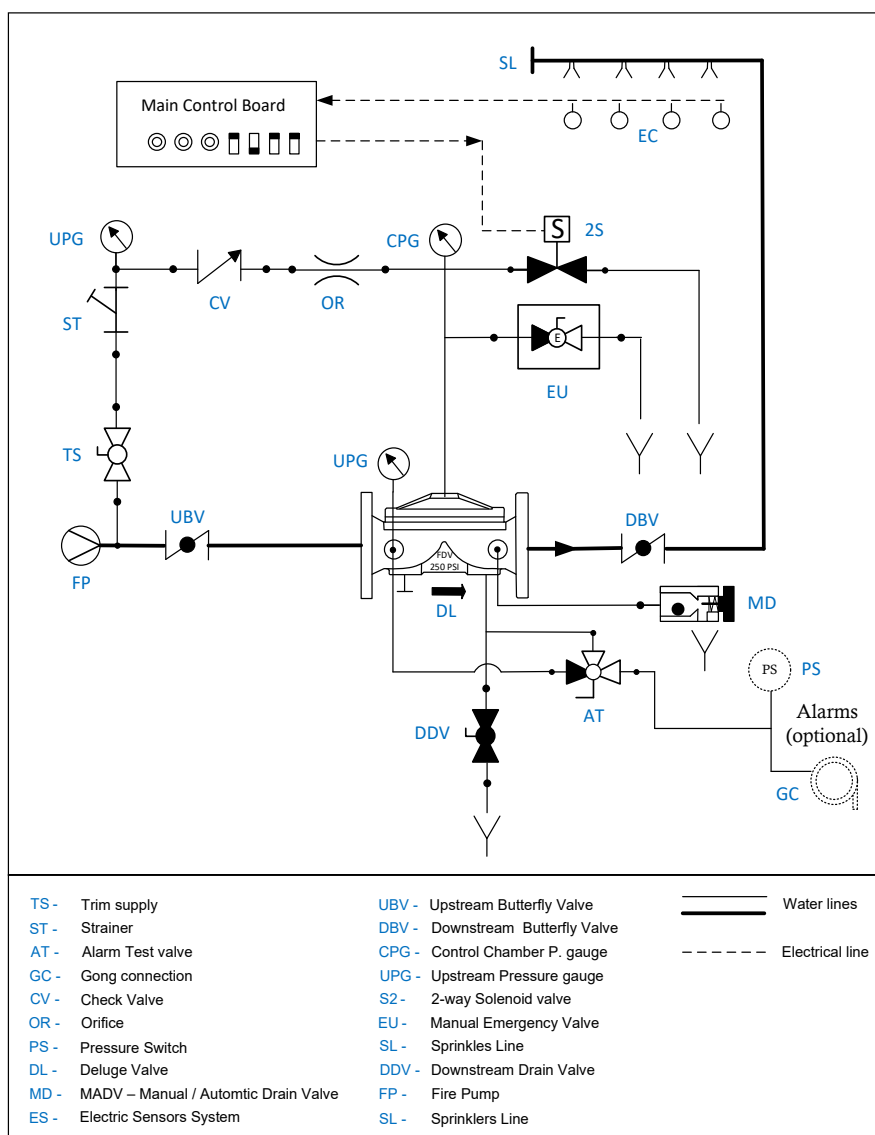
The FDV-DE1 resets to stand-by close position, by de-energizing the alarm system solenoid's coil through the main control panel.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION:

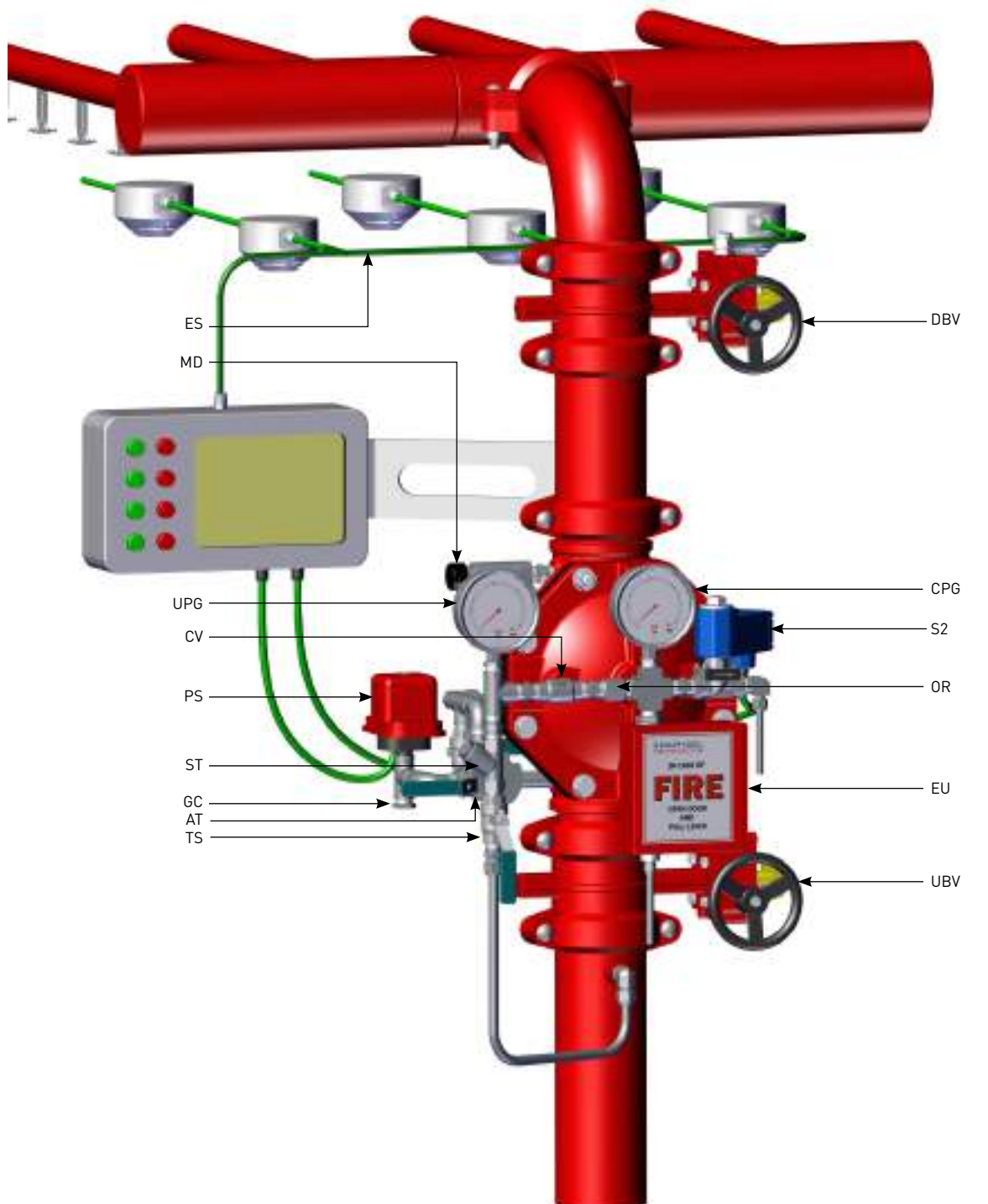
Pressurized water in the valve's control chamber is trapped by the check valve (CV), the closed 2-way solenoid valve (S2), and the closed emergency valve (EU), maintaining the FDV deluge valve (DL) in a closed state.

FIRE SITUATIONS:

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

System reset requires the electrical alarm system to be reset to de-energize and close the solenoid valve, preventing the FDV control chamber from draining. Upstream water enters the FDV deluge control chamber through the orifice (OR), closing the valve.



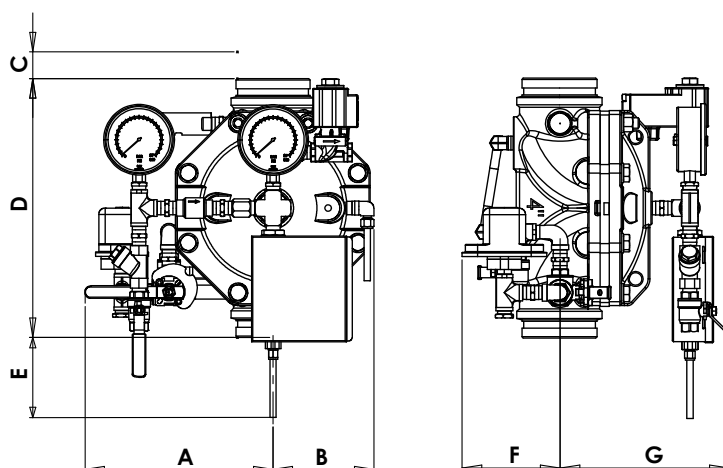
TS – Trim Supply
ST – Strainer
AT – Alarm Test valve
GC – Gong Connection
CV – Check Valves
DDV – Downstream Drain Valve

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

3-Way Electrically Actuated, Remote Reset, Deluge Valve

FDV-3W- DE1

The FDV-3W-DE1 fire protection system, which is equipped with an electrically actuated control trim, is based on Raphael's FDV deluge valve.

The FDV functions as a fire protection control valve for deluge sprinkler systems and is specifically designed for installation in hazardous environments.

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

The FDV-3W-DE1 deluge system is electrically actuated and can be reset remotely.

An electric detection system activates a 3-way solenoid valve via a control panel, which in turn opens a 3-way actuator. As the actuator fully drains the deluge valve's control chamber, the valve delivers its full flow capacity with minimal head loss.

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



MARKETS



Marine



Storage



P.O.G.



Tunnels



Airports

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)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- Full-bore, unobstructed design
- Simple manual reset of the valve to standby position without closing OS & Y or other valves in the system.
- Open fail safe valve, maintained in 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

- Hydrodynamic pattern design ensures high flow rates with minimal head loss.
- The valve trips open automatically upon a gradual release of water pressure from its control chamber. The trip is actuated by an electric signal transmitted from the main control panel to the valve's solenoid, in response to heat or flame detected by the sensor system.
- Soft closing upon re-pressurization of the valve's control chamber—by line pressure or another independent water source—prevents surges.
- The FDV-3W-DE1 three-way control principle ensures full valve opening with maximum flow rate and minimal head loss.

The FDV-3W-DE1 resets to the standby closed position when the solenoid coil is de-energized through the main control board.

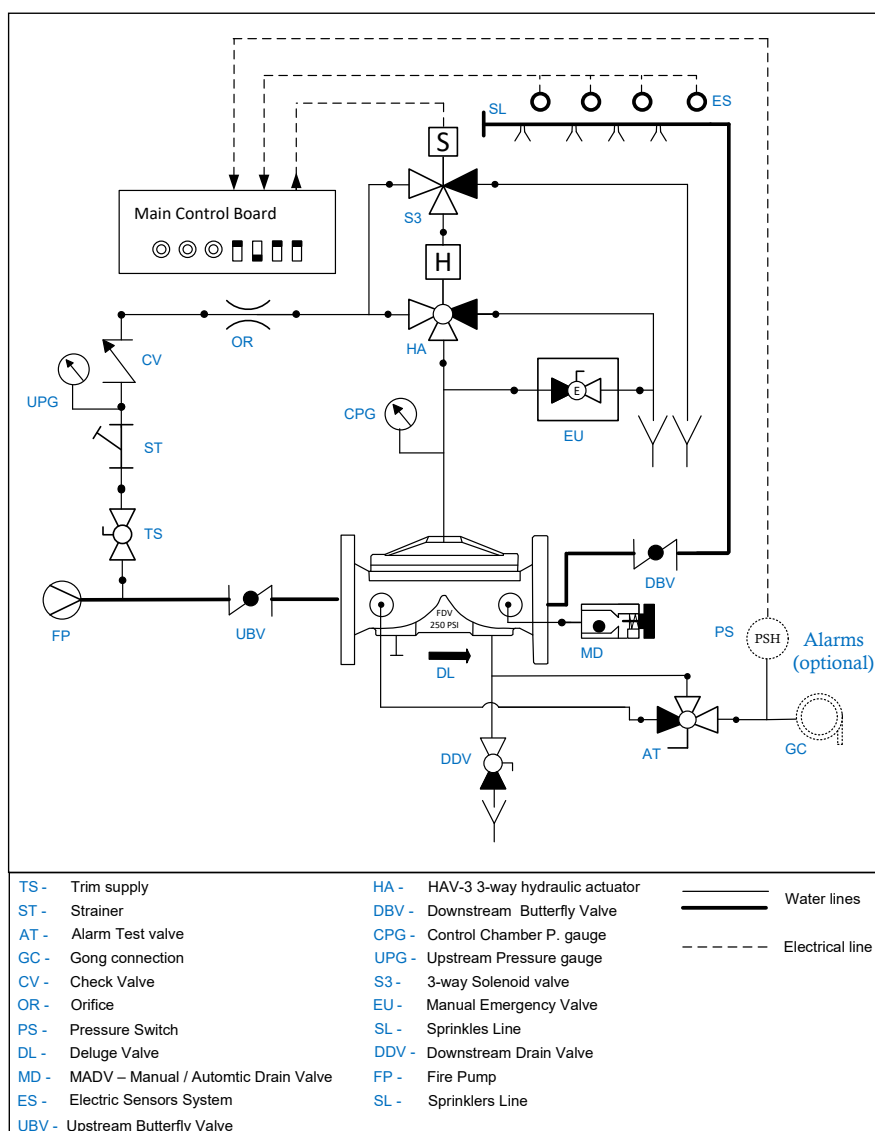
APPROVALS



Schematic drawing:

FDV-3W-DE1

Set position



OPERATION

SET POSITION

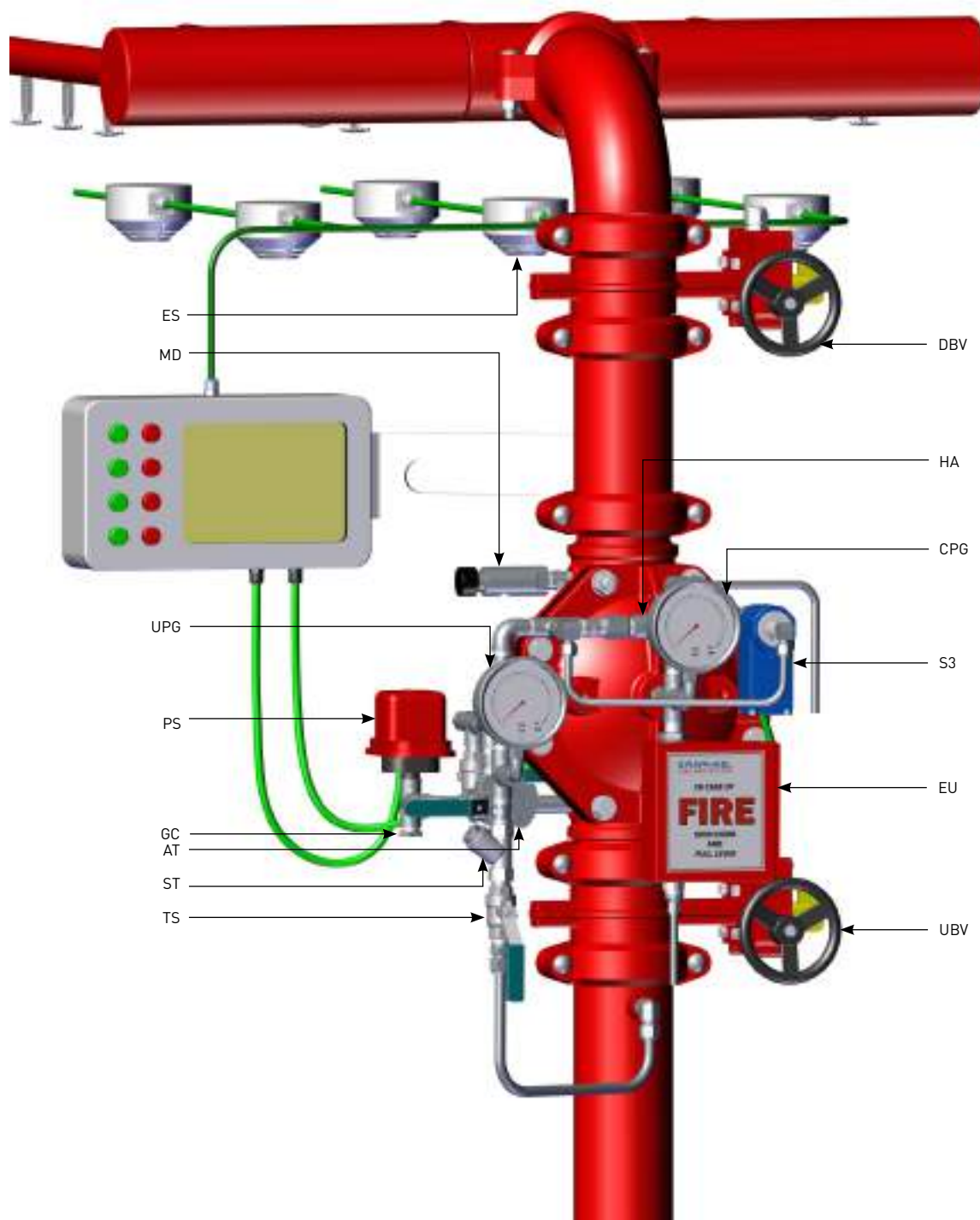
Pressurized water in the valve's control chamber is trapped by the check valve (CV), the closed 3-way actuator HAV-3 (HA), and the closed emergency valve (EU), maintaining the FDV deluge valve in a closed state. The hydraulic actuator's control chamber is supplied by the 3-way solenoid (S3), which enables the upstream flow into the deluge valve's control chamber, keeping the valve closed.

FIRE SITUATION

When an electric detection system (ES) senses flame heat, it triggers the main control panel, which in turn, transmits an electric signal commanding the 3-way solenoid valve (S3). When the solenoid valve is energized, it changes state and pressurizes the actuator's control chamber. The actuator (HA) changes state, blocking the upstream flow to the deluge control chamber and fully draining this space. Consequently, the FDV Deluge valve opens and allows water to flow into the spray sprinkler line (SL).

RESET POSITION

When the electric signal from the main control board to the solenoid's coil is interrupted, the solenoid changes state and pressurizes the actuator (HA) control chamber, which in turn, changes state as well. The actuator enables the flow from the trim pressure supply valve (TS), through the orifice (OR), into the deluge control chamber, which subsequently closes. As a result, the sprinkler spray flow stops.



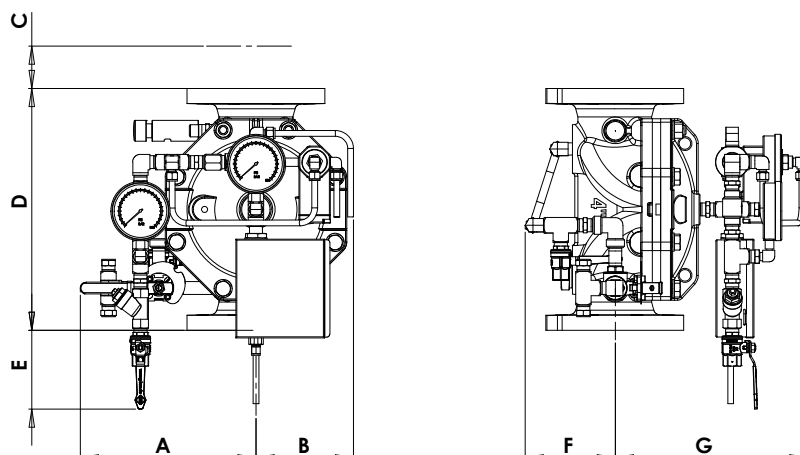
TS - Trim Supply
ST - "Y" Strainer
AT - Alarms Test Valve
GC - Pressure Gauge Connection
AL - Alarm Pressure Switch

DDV - Downstream Drain Valve
UPG - Upstream Pressure gauge
MD - Manual Automatic Drain Valve
ES - Electric Sensors system
DBV - Downstream Butterfly Valve

HA - HAV3 3-way Hydraulic actuator
CPG - Cont. chamber Pressure Gauge
S3 - 3-way Solenoid
EU - Emergency Unit
UBV - Upstream Butterfly Valve

Parametric drawing:

FDV-3W-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	255	10	263	10	297	11.7	290	11.4	316	12.4	340	13.4	373	14.7
B	161	6.3	161	6.3	161	6.3	161	6.3	176	6.9	231	9	308	12.1
C	35	1.3	27	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D	202	8.0	325	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	230	9	218	8.5	166	6.5	130	5.1	98	3.8	44	1.7	N/A	N/A
F	127	5	127	5	128	5	148	5.8	150	5.9	172	6.8	203	8
G	240	9.4	254	10	283	11.1	319	12.5	387	15.2	421	16.5	210	8.3
Kg/lb	11.3	25	13	28.6	30	66	46	101	56	123	102	224	230	507

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

Pneumatically Actuated, Local Reset, Deluge Valve

FDV-DP0

The FDV-DP0 fire protection system is based on Raphael's FDV deluge valve and is equipped with a pneumatically actuated control trim. The FDV is a fire protection control valve for deluge sprinkler systems, specifically designed for installation in hazardous environments. It is suitable for both vertical and horizontal installations and features a globe-pattern, line-pressure-operated design with a direct elastomeric diaphragm seal. The valve contains no balancing spring and no internal metallic components in the wetted area. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-DP0 deluge system is pneumatically actuated and locally resettable. In a fire situation, when the pneumatic dry pilot detection line is exposed to flame heat, one or more automatic sprinklers shatter, venting air pressure from the actuator and causing the deluge valve to open.

The system incorporates an emergency valve that bypasses the fire detection system for manual operation. Additionally, the trim is equipped with a PSA - a device that enables local system reset, i.e., closing the FDV valve by repressurizing its control chamber.

The system is suitable for use with automatic sprinklers on the dry pilot pipeline and with open nozzles on the main spraying pipelines.



MARKETS



Commercial



Marine



Residential



Industry



P.O.G.

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

PNEUMATIC PRESSURE:

29-58 psi (2- 4 bar)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- Full-bore, unobstructed design
- Simple manual reset of the valve to standby position without closing OS & Y or other valves in the system.
- Open fail safe valve, maintained in 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

- Hydrodynamic pattern design ensures high flow rates with minimal head loss.
- The valve trips open automatically upon a gradual release of water pressure from its control chamber. The trip is actuated by the pneumatic pressure release of the Dry Pilot Line, caused by exposure to flame heat.
- Soft closing, upon pressurization of the valve's control chamber—by line pressure or an independent water source - prevents surges.

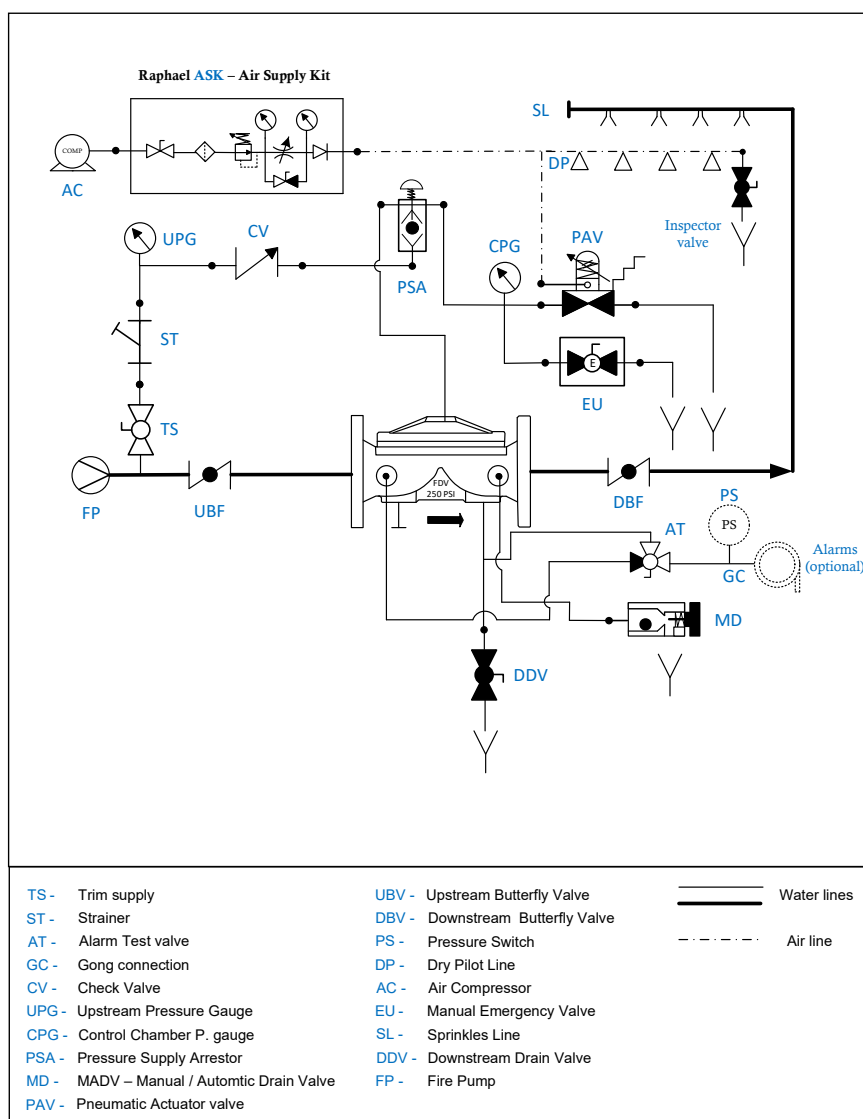
The FDV-DP0 resets to the standby closed position by pressurizing the Dry Pilot Line and manually operating the PSA device.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

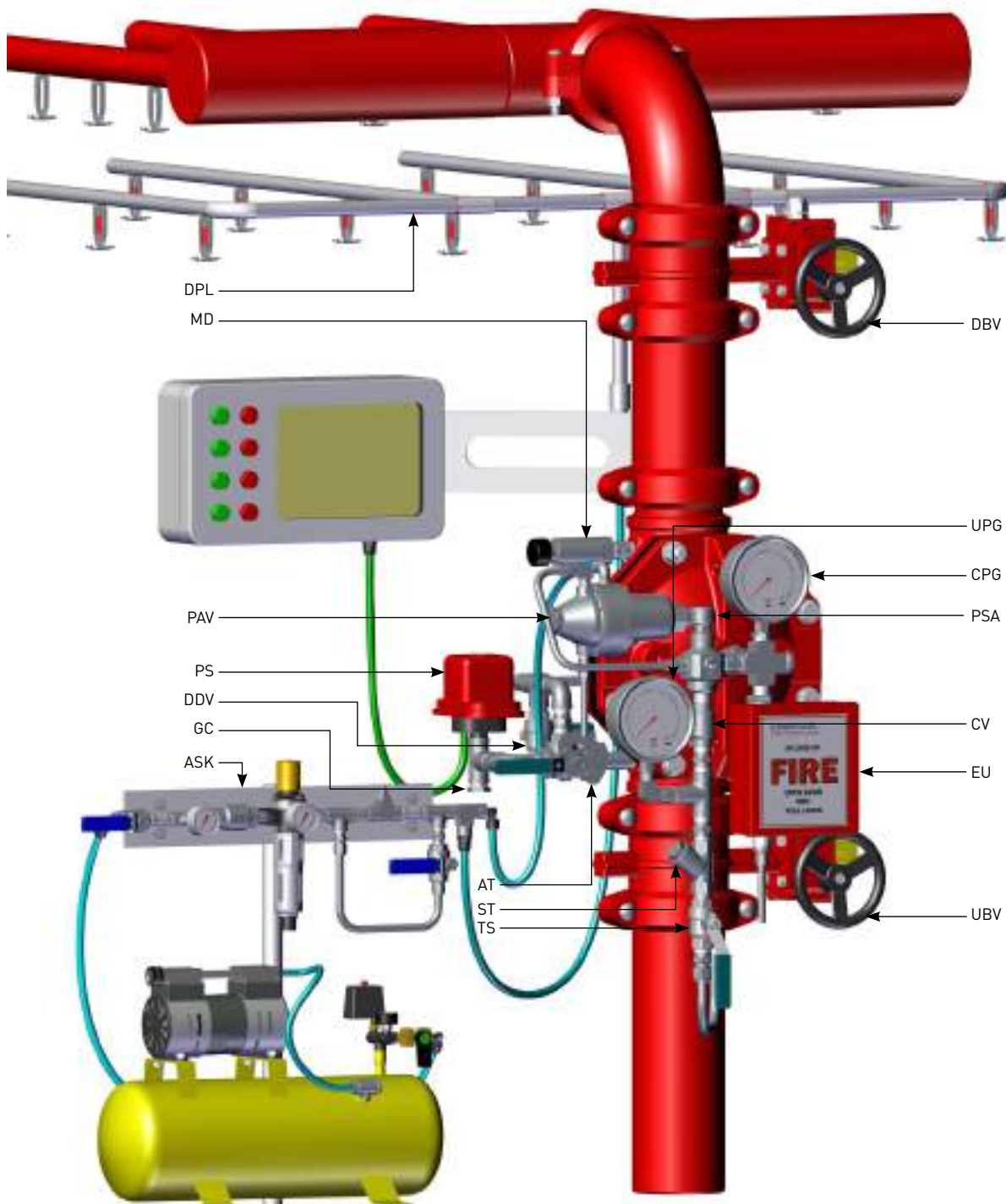
The pneumatic pressure accumulated in the Dry pilot line maintains the pneumatic actuator (PAV) close. Pressurized water in the valve's control chamber (DL) is trapped by the check valve (CV), the closed PSA [PSA], the closed emergency valve (EU) and by the closed actuator (PAV), maintains the FDV Deluge valve close.

FIRE SITUATION

When some of the Dry Pilot detection line's automatic fire sprinklers are subjected to flames heat and shatter-open, the pilot detection line depressurizes the actuator [PAV] control chamber. Consequently, the actuator opens and drains the deluge valve's control chamber. The FDV deluge valve [DL] opens and admits water to the spray sprinklers line.

RESET POSITION

System reset requires the replacement of all the shattered-open automatic fire sprinklers in the Dry Pilot detection line. The detection line is then pressurized together with the PAV actuator control chamber to reset it to the closed position. Pressurizing is performed by pushing the PSA push button [PSA]. Consequently, the FDV deluge valve's control chamber will be filled and pressurized, causing the valve to close.



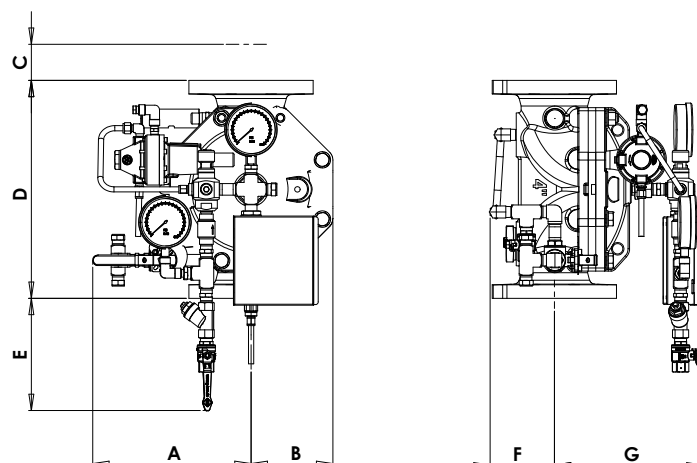
TS – Trim Supply
ST – Strainer
AT – Alarm Test valve
CV – Check Valve
GC – Gong Connection
DDV – Downstream Drain Valve

PS – Pressure Switch
PAV – Pneumatic Actuator Valve
PSA – Pressure Supply Arrestor
MD – Manual Automatic Drain Valve
ASK – Air Supply Kit
DPL – Dry Pilot Line

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

Parametric drawing:

FDV-DP0



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	260	10.2	260	10.2	275	10.8	280	11	315	12.4	340	13.4	373	14.6
B	122	4.8	122	4.8	122	4.8	150	8.9	177	6.9	232	9.1	300	11.8
C	97	3.8	46	1.8	18.5	0.72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D	202	8	325	12.8	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	305	12	295	11.6	243	9.5	206	8.1	173	6.8	120	4.7	21	0.8
F	117	4.6	117	4.6	119	4.6	119	4.6	136	5.3	157	6.2	191	7.5
G	193	7.6	207	8.1	237	9.3	263	10.3	328	12.9	366	14.4	455	17.9
Kg/lb	12.6	27.6	14.3	31.5	31.5	69.5	47.2	104	58	128	103	227	232	511

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

Pneumatically Actuated, Remote Reset, Deluge Valve

FDV-DP1

The FDV-DP1 fire protection system is based on Raphael's FDV Deluge valve and is equipped with a pneumatically actuated control trim. The installed FDV valve offers a range of optional materials and coatings, designed for installations in hazardous environments.

The FDV-DP1 deluge system is actuated pneumatically and resets remotely: In a fire situation, when the pneumatic dry pilot detection line is exposed to flame heat, one or more of its automatic fire sprinklers shatter open, venting the air pressure from an actuator and commanding the deluge valve to open.

The Deluge system incorporates an emergency valve, bypassing the fire detection systems for manual operation. This system is suitable for automatic sprinklers at the dry pilot pipeline and with open nozzles at the main spraying pipelines.



MARKETS



Marine



Storage



P.O.G.



Tunnels



Airports



Industry

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)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- Full-bore, unobstructed design
- Simple manual reset of the valve to standby position without closing OS & Y or other valves in the system.
- Open fail safe valve, maintained in 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

- 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 trip is actuated by Dry Pilot Line's pneumatic pressure release due to its exposure to flame heat.
- Soft closing upon pressurization of the valve's control chamber, by line pressure or other independent water source, prevents surges.

The FDV-DP1 resets to the standby closed position by pressurizing the Dry Pilot Line.

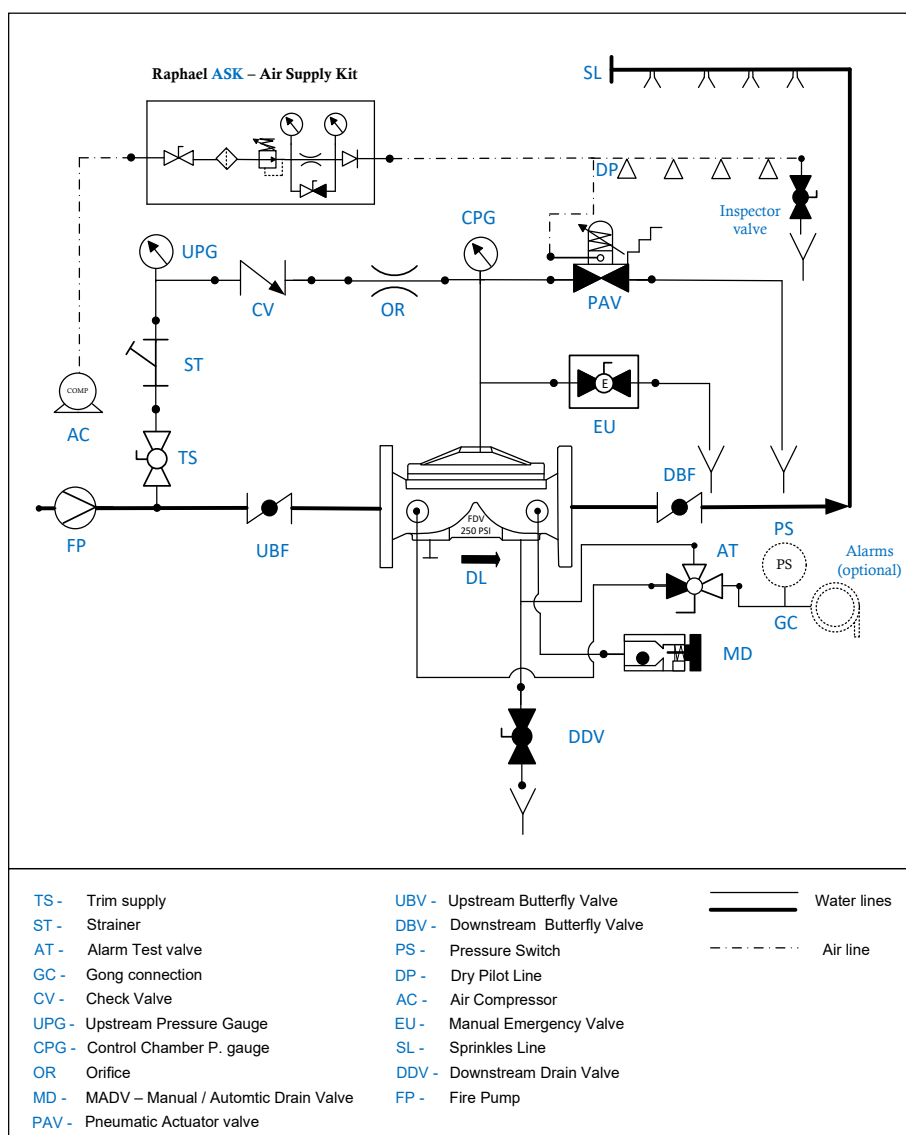
APPROVALS



Schematic drawing:

FDV-DP1

Set position



OPERATION

SET POSITION

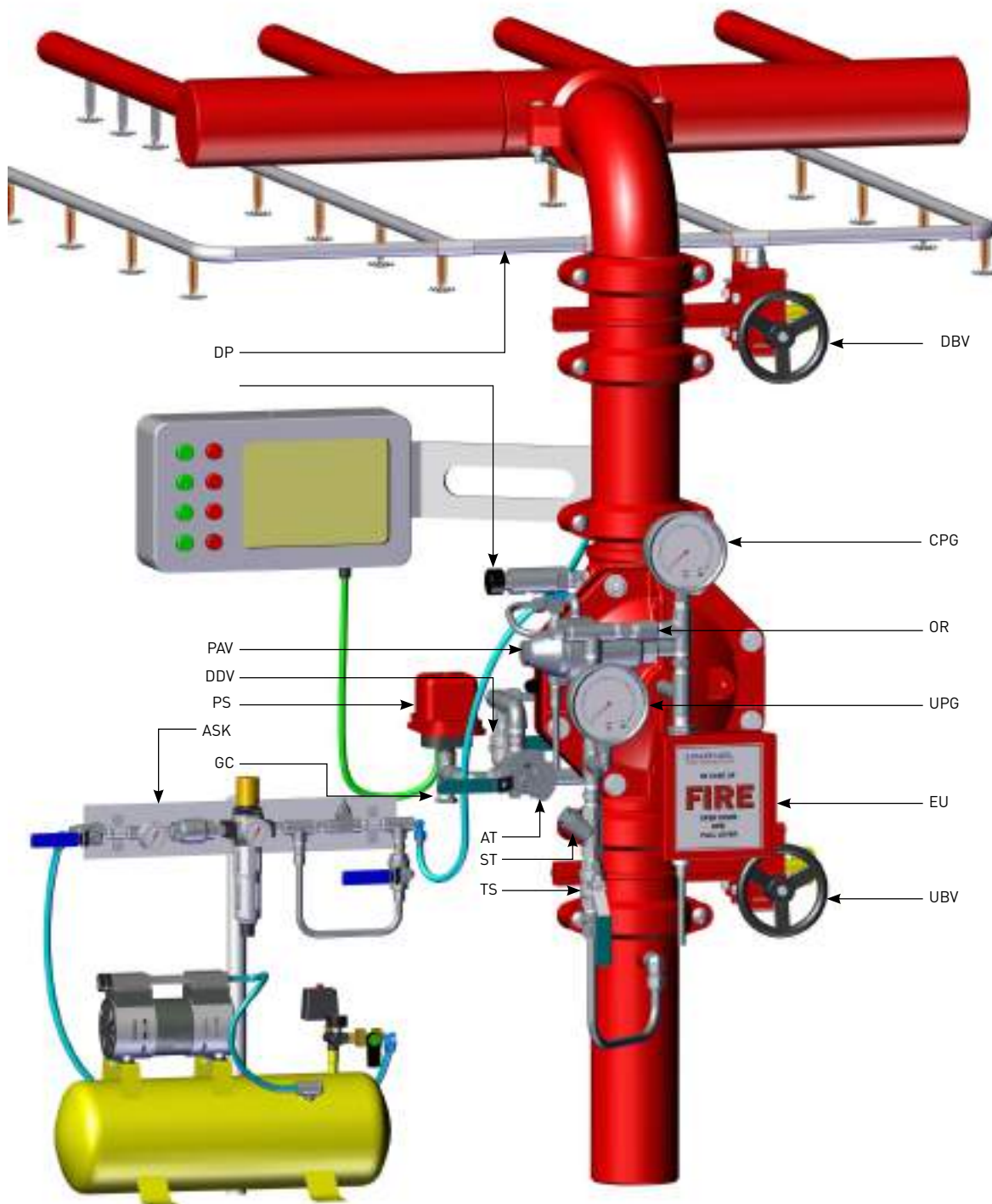
The pneumatic pressure accumulated in the Dry pilot line maintains the pneumatic actuator (PAV) close. Pressurized water in the valve's control chamber (DL) is trapped by the check valve (CV), the closed emergency valve (EU) and by the closed actuator (PAV), maintains the FDV Deluge valve close.

FIRE SITUATION

When some of the Dry Pilot detection line's automatic fire sprinklers are subjected to flames heat and shatter-open, the pilot detection line depressurizes the actuator [PAV] control chamber. Consequently, the actuator opens and drains the deluge valve's control chamber. The FDV deluge valve opens and admits water to the spray sprinklers line.

RESET POSITION

System reset requires the replacement of all the shattered-open automatic fire sprinklers in the Dry Pilot detection line. The detection line is then pressurized as well as the PAV actuator control chamber to reset it to the closed position. The FDV deluge valve's control chamber will be filled and pressurized through the orifice, causing the valve (DL) to close.



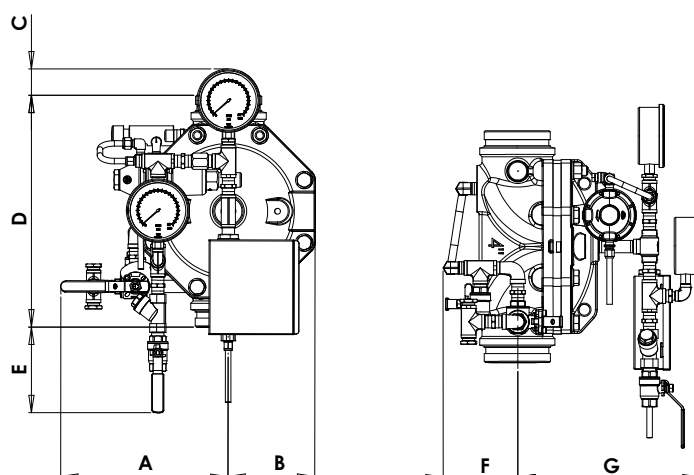
TS – Trim Supply
ST – Strainer
AT – Alarm Test valve
DP – Dry Pilot line
GC – Gong Connection
DDV – Downstream Drain Valve

PS – Pressure Switch
PAV – Pneumatic Actuator Valve
MD – Manual Automatic Drain Valve
ASK – Air Supply Kit
OR – Orifice

ES – Electric Sensors
UPG – Upstream Pressure Gauge
CPG – Control chamber Pressure Gauge
UBV – Upstream Butterfly Valve
DBV – Downstream Butterfly Valve

Parametric drawing:

FDV-DP1



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	254	10	254	10	275	10.8	290	11.4	194	7.6	225	8.8	373	14.6
B	122	4.8	122	4.8	122	4.8	150	5.9	293	11.5	346	13.6	308	12.1
C	135	5.3	130	5.1	76	3	36	1.4	10	0.4	N/A	N/A	N/A	N/A
D	202	8	325	12.8	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	267	10.5	257	10.1	171	6.7	135	5.3	100	3.9	47	1.8	N/A	N/A
F	117	4.6	118	4.6	120	4.7	120	4.7	158	6.2	158	6.2	192	7.5
G	260	10.2	275	10.8	304	11.9	310	12.2	380	14.9	415	16.3	505	19.9
Kg/lb	12	26.4	13.8	30.4	31	68.3	46.7	103	57.7	127	103	227	232	511

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

Electro-Pneumatically Actuated, Local Reset, Deluge Valve

FDV-DC0

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

The FDV-DC0 deluge system can be actuated both pneumatically and electrically and is locally resettable. In the event of a fire, when the pneumatic dry pilot detection line is exposed to heat, one or more automatic fire sprinklers shatter, releasing air pressure from the actuator and causing the deluge valve to open. Alternatively, when a sensor in the electrical detection system activates the main control board, a solenoid valve opens and vents the dry pilot line, thereby opening the deluge valve.

The system also incorporates an emergency valve that bypasses the fire detection systems, enabling manual operation. In addition, the trim is equipped with a PSA device, which allows local system reset by pressurizing the control chamber and closing the FDV valve.

This system is suitable for use with automatic sprinklers on the dry pilot pipeline and with open nozzles on the main spray pipelines.



MARKETS



Commercial



Industry



Storage



P.O.G.

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)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- Full-bore, unobstructed design
- Simple manual reset of the valve to standby position without closing OS & Y or other valves in the system.
- Open fail safe valve, maintained in 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

- 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 trip is actuated by Dry Pilot Line's pneumatic pressure release due to its exposure to flame heat.
- Soft closing upon pressurization of the valve's control chamber, by line pressure or other independent water source, prevents surges.

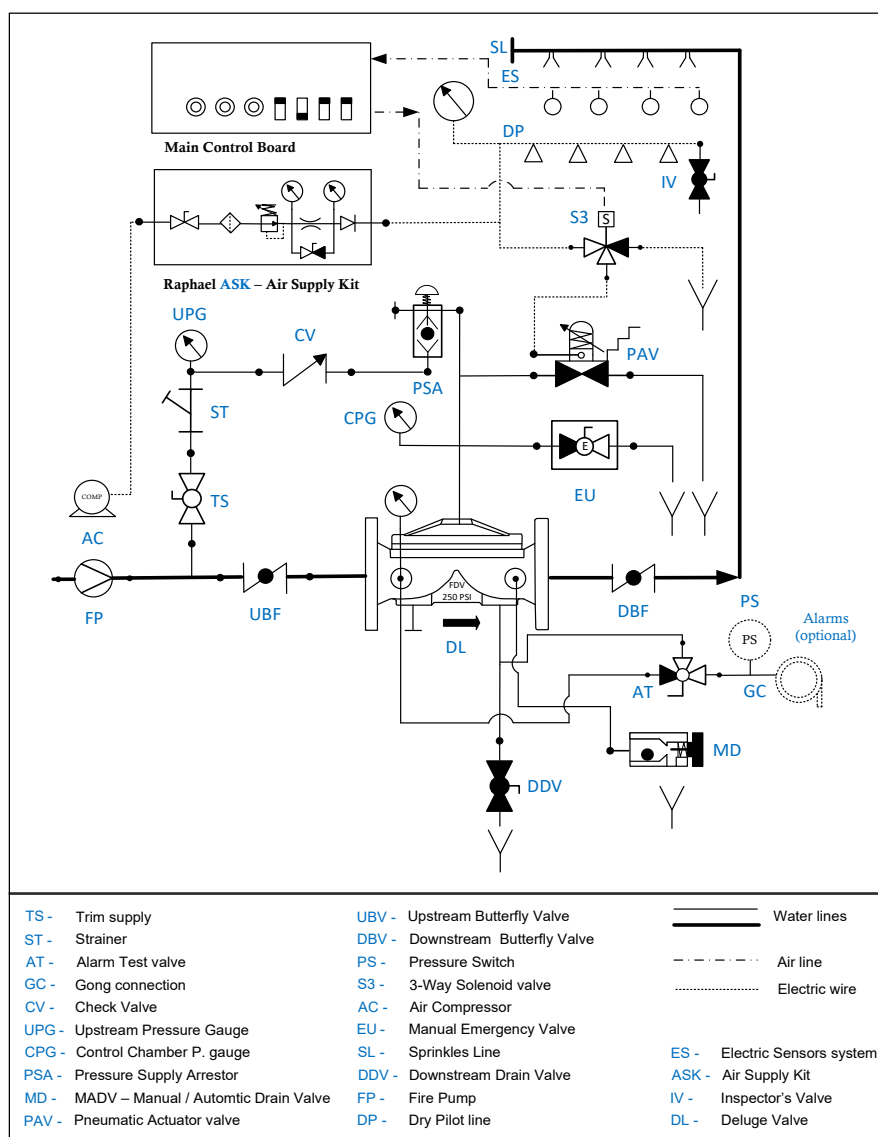
The FDV-DC0 resets to stand-by close position by de-energizing the alarm system solenoid's coil through the main control panel or, pressurizing the Dry Pilot line and manually operating the PSA device.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION.

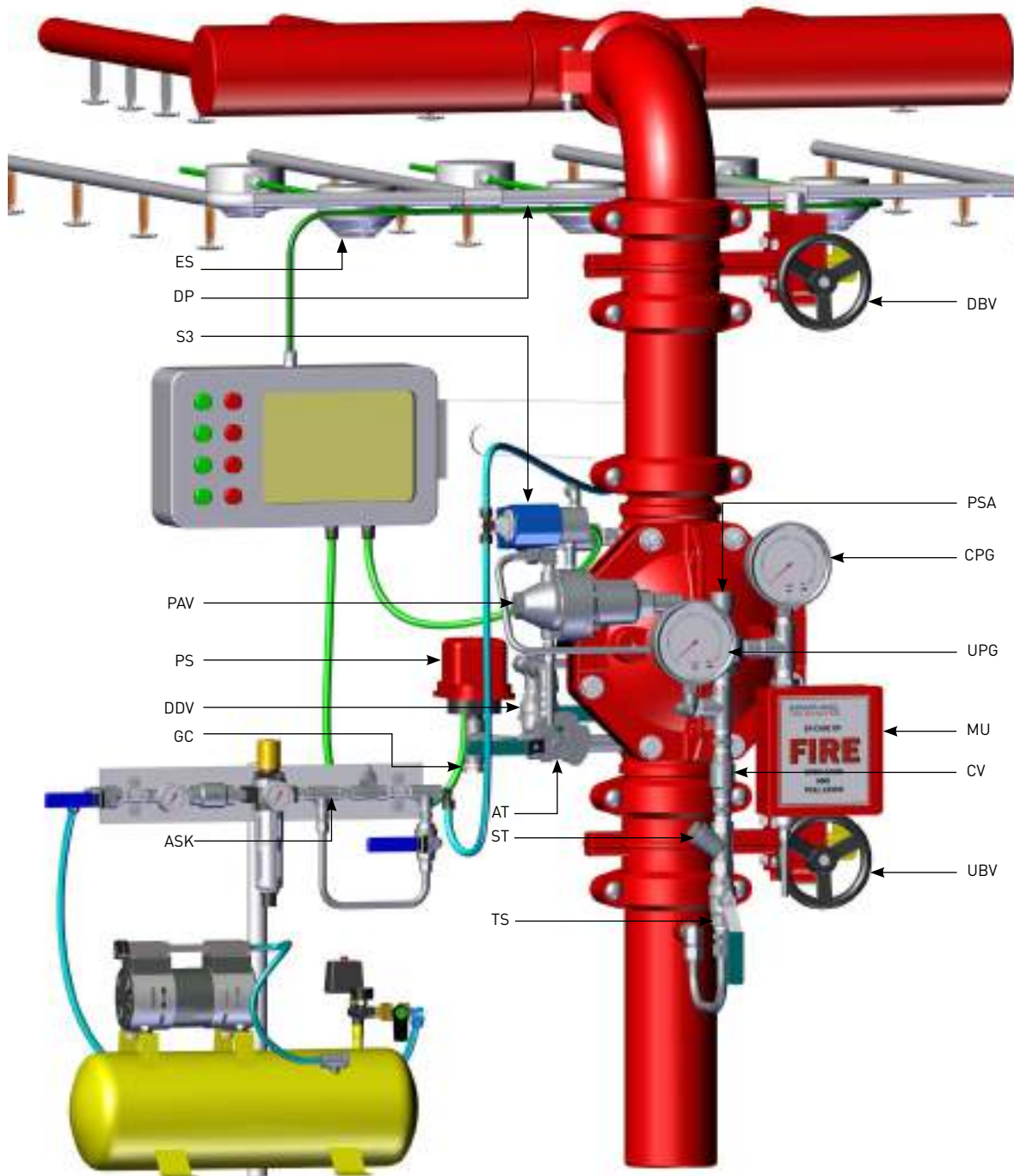
Pressurized water in the valve's control chamber is trapped by the check valve (CV), the closed pneumatic actuator (PAV), and the closed emergency valve (EU). The air pressure accumulated in the Dry Pilot detection line (DP) is conveyed to the actuator through a 3-way solenoid valve (S3), maintaining the Deluge valve (DL) closed.

FIRE SITUATION

When some of the Dry pilot detection line's automatic sprinklers are subjected to the heat of fire flames and shatter open, the pilot line depressurizes, tripping open the Actuator (PAV). Alternatively, an electric detection system senses heat and triggers the main control board, which in turn energizes the 3-way solenoid valve (S3). The solenoid valve bypasses the Dry pilot detection line, depressurizing the PAV and causing it to open. The FDV-DC0's control chamber then drains, and the Deluge valve opens.

RESET POSITION.

System reset requires the replacement of all shattered-open fire sprinklers in the Detection pilot line (DP). Alternatively, the electrical alarm system must be reset and the solenoid de-energized. The dry pilot line and the actuator's (PAV) control chamber must be pressurized by pushing the PSA (PSA) push button until the set pneumatic pressure is reached.



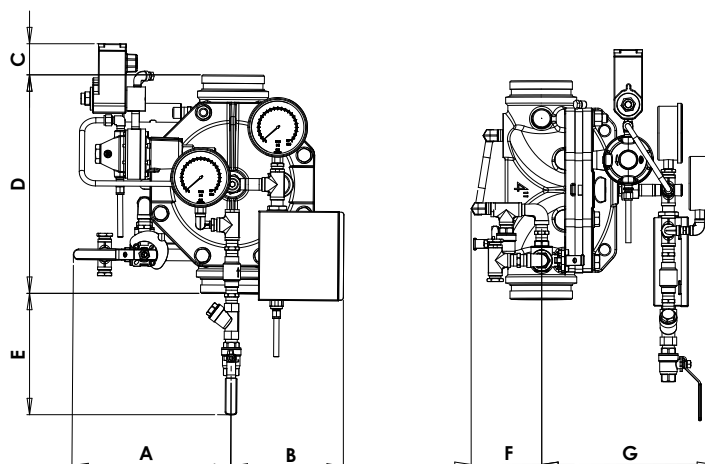
TS - Trim Supply
ST - Strainer
AT - Alarm Test valve
S3 - 3-way solenoid valve
CV - Check Valve
GC - Gong Connection

DP - Dry Pilot Line
DDV - Downstream Drain Valve
PS - Pressure Switch
PAV - Pneumatic Actuator Valve
MD - Manuel Automatic Drain Valve
PSA - Pressure Supply Arrestor

ASK - Air Supply Kit
ES - Electric Sensors
UPG - Upstream Pressure Gauge
CPG - Control chamber Pressure Gauge
UBV - Upstream Butterfly Valve
DBV - Downstream Butterfly Valve

Parametric drawing:

FDV-DC0



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	260	10.2	260	10.2	275	10.8	280	11	315	12.4	340	13.4	373	14.6
B	204	8	204	8	204	8	204	8	204	8	231	9	308	12.1
C	97	3.8	46	1.8	18.5	0.72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D	202	8	325	12.8	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	305	12	295	11.6	243	9.5	206	8.1	173	6.8	120	4.7	21	0.8
F	117	4.6	117	4.6	119	4.6	119	4.6	136	5.3	157	6.2	191	7.5
G	193	7.6	207	8.1	237	9.3	263	10.3	328	12.9	366	14.4	455	17.9
Kg/lb	12.6	27.6	14.3	31.5	31.5	69.5	47.2	104	58	128	103	227	232	511

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
- Pneumatic working pressure
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid voltage
- Additional accessories needed

Electro-Pneumatically Actuated, Remote Reset, Deluge Valve

FDV-DC1

The FDV-DC1 fire protection system is based on Raphael's FDV deluge valve and is equipped with both pneumatically and electrically actuated control trim. The installed FDV valve is available in a variety of optional materials and coatings, making it suitable for installations in hazardous environments.

The FDV-DC1 deluge system is pneumatically actuated and supports remote resetting.

In the event of a fire, when the pneumatic dry pilot detection line is exposed to heat from flames, one or more of its automatic fire sprinklers shatter, venting air pressure from both the dry pilot line and the pneumatic actuator. This pressure drop activates the pneumatic actuator, causing the deluge valve to open.

Alternatively, if an electrical detection sensor signals the main control board, it activates a solenoid valve, which vents the dry pilot line, activates the pneumatic actuator, and opens the deluge valve.

The system includes an emergency valve that allows manual activation by bypassing both the fire detection systems and the solenoid valve. It is compatible with automatic sprinklers on the dry pilot line and open nozzles on the main spray pipelines.



MARKETS



Marine



Industry



Storage



P.O.G.



Airports

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)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- Full-bore, unobstructed design
- Simple manual reset of the valve to standby position without closing OS & Y or other valves in the system.
- Open fail safe valve, maintained in 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.

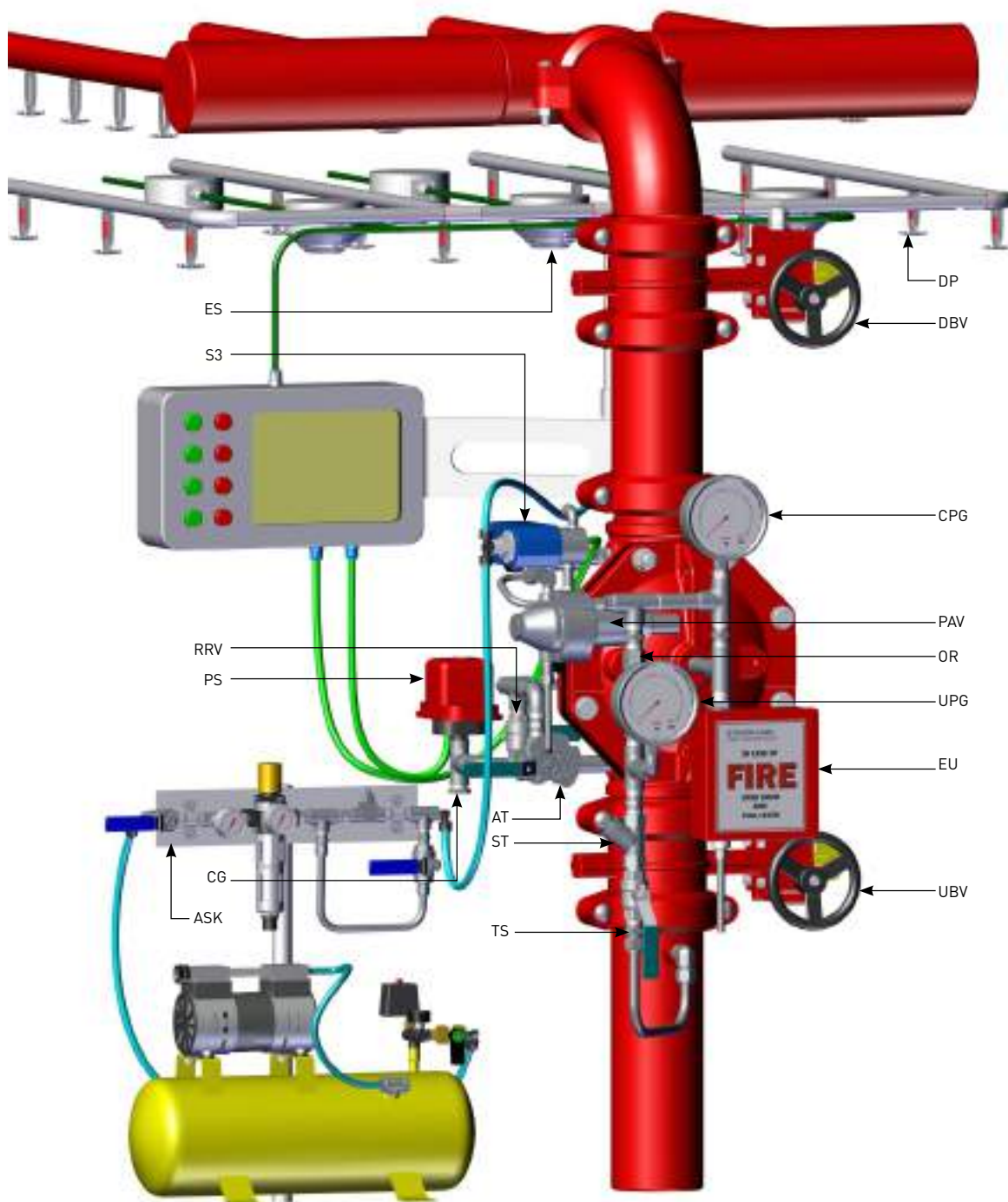
CHARACTERISTICS

- 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 trip is actuated by Dry Pilot Line's pneumatic pressure release due to its exposure to flame heat.
- Soft closing upon pressurization of the valve's control chamber, by line pressure or other independent water source, prevents surges.

The FDV-DC1 resets to stand-by close position by de-energizing the alarm system solenoid's coil through the main control panel or, pressurizing the Dry Pilot line.

APPROVALS





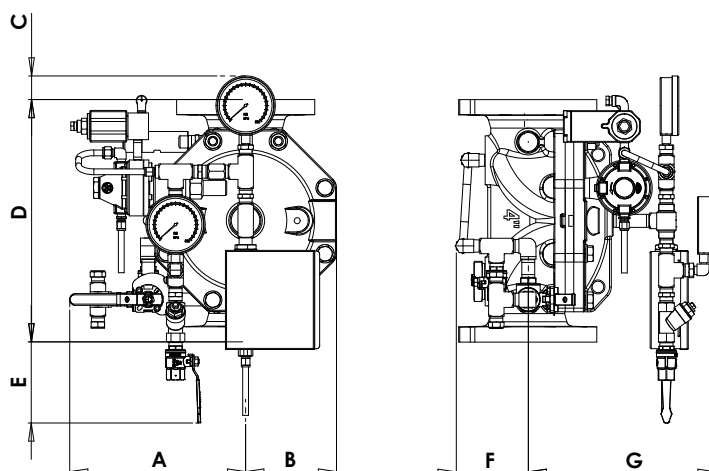
TS – Trim Supply
ST – Strainer
AT – Alarm Test valve
S3 – 3-way solenoid valve
CV – Check Valve
GC – Gong Connection

DP – Dry Pilot Line
DDV – Downstream Drain Valve
PS – Pressure Switch
PAV – Pneumatic Actuator Valve
OR – Orifice
ASK – Air Supply Kit

ES – Electric Sensors
UPG – Upstream Pressure Gauge
CPG – Control chamber Pressure Gauge
UBV – Upstream Butterfly Valve
DBV – Downstream Butterfly Valve

Parametric drawing:

FDV-DC1



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	260	10.2	260	10.2	275	10.8	280	11	315	12.4	340	13.4	373	14.6
B	204	8	204	8	204	8	204	8	204	8	231	9	308	12.1
C	97	3.8	46	1.8	18.5	0.72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D	202	8	325	12.8	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	305	12	295	11.6	243	9.5	206	8.1	173	6.8	120	4.7	21	0.8
F	117	4.6	117	4.6	119	4.6	119	4.6	136	5.3	157	6.2	191	7.5
G	193	7.6	207	8.1	237	9.3	263	10.3	328	12.9	366	14.4	455	17.9
Kg/lb	12.6	27.6	14.3	31.5	31.5	69.5	47.2	104	58	128	103	227	232	511

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
- Pneumatic working pressure
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid voltage
- Additional accessories needed

Hydraulically Actuated, Local Reset, Deluge Valve

FDV-DH0

The FDV-DH0 fire protection system is based on Raphael's FDV deluge valve and is equipped with a hydraulically controlled trim. The FDV is a fire protection control valve for deluge sprinkler systems, specifically designed for installation in hazardous environments. It is suitable for both vertical and horizontal installations and features a globe-pattern, line-pressure-operated design with a direct elastomeric diaphragm seal. The valve contains no balancing spring and has no internal metallic components in the wetted area. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-DH0 deluge system is hydraulically actuated and can be locally reset. In a fire situation, when the wet pilot detection line is exposed to flame heat, one or more automatic sprinklers shatter, releasing pressure from the deluge control chamber and causing the deluge valve to open.

The system incorporates an emergency valve that bypasses the fire detection system for manual operation. Additionally, the trim is equipped with a PSA - a device that enables local system reset by repressurizing the control chamber and closing the FDV valve.

The system is suitable for use with automatic sprinklers on the wet pilot pipeline and with open nozzles on the main spraying pipelines.



MARKETS



Marine



Commercial



Residential



P.O.G.



Airports

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- Full-bore, unobstructed design
- Simple manual reset of the valve to standby position without closing OS & Y or other valves in the system.
- Open fail safe valve, maintained in 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

- 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 trip is actuated by a Wet Pilot Line's hydraulic pressure release due to its exposure to flame heat.
- Soft closing upon pressurization of the valve's control chamber, by line pressure or other independent water source to prevent surges.

The FDV-DH0 resets to stand-by close position by repressurizing the Dry Pilot line and manually operating the PSA device.

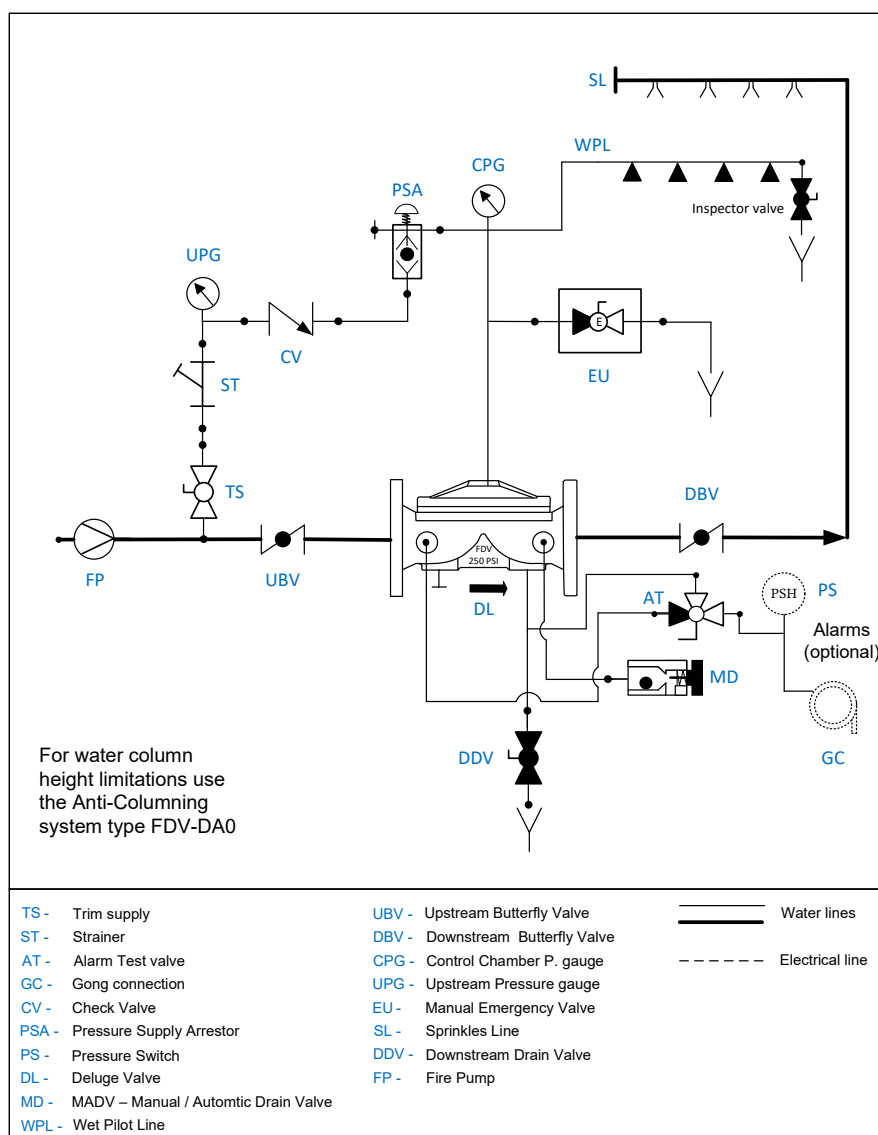
APPROVALS



Schematic drawing:

FDV-DH0

Set position



OPERATION

SET POSITION

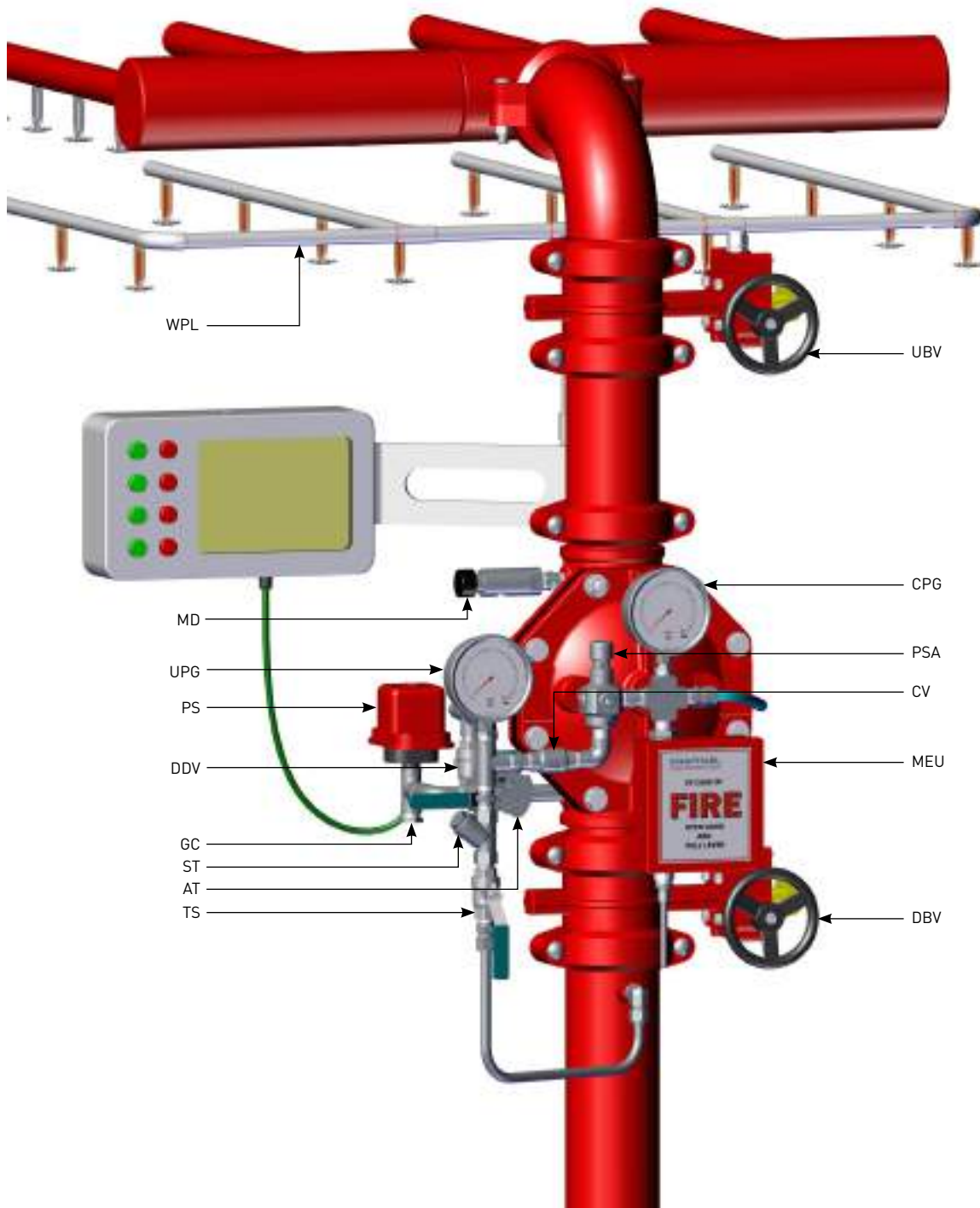
Pressurized water in the valve's control chamber is trapped by the closed PSA [PSA], the closed emergency valve [EU] and by the closed automatic Wet Pilot detection Line [WPL]. The hydraulic pressure accumulated in the Wet pilot detection line, maintains the FDV deluge valve [DL] closed.

FIRE SITUATION

When the Wet pilot detection line's [WPL] automatic fire sprinklers are subjected to flame heat and shatter-open, it enables the FDV control chamber to drain and de-pressurize. Consequently, the deluge valve will open admitting water into the spray sprinkler system. The Deluge system incorporates an emergency valve, bypassing the fire detection system for manual operation.

RESET POSITION

System reset requires a replacement of all shattered-open wet pilot detection line's automatic fire sprinklers. The wet pilot line is then pressurized by the upstream pressure. The PSA [PSA] push button should be pressed to enable upstream pressure passage to pressurize the Pilot line and close the FDV's main valve.



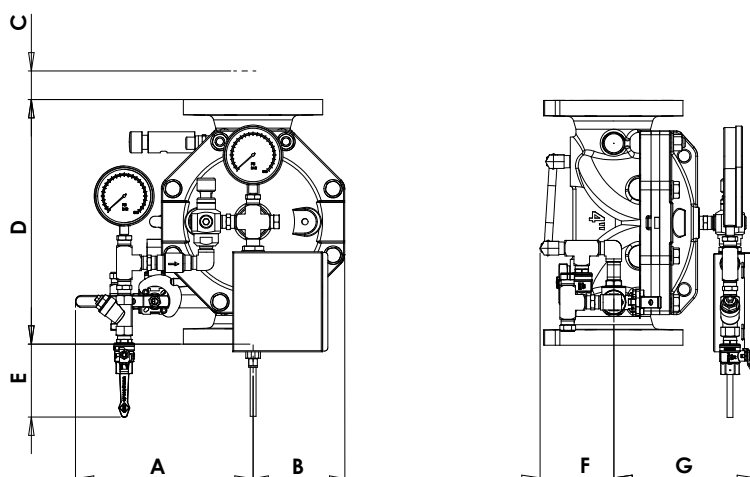
TS – Trim Supply
ST – Strainer
AT – Alarm Test valve
GC – Gong Connection
DDV – Downstream Drain Valve

PS – Pressure Switch
UPG – Upstream Pressure Gauge
MD – Manual Automatic Drain Valve
WPL – Wet Pilot line
UBV – Upstream Butterfly Valve

CPG – Control chamber Pressure Gauge
PSA – Pressure Supply Arrestor
CV – Check Valve
EU – Emergency Unit
DBV – Downstream Butterfly Valve

Parametric drawing:

FDV-DH0



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	255	10	263	10.3	270	10.6	290	11.4	315	12.4	340	13.3	353	3.8
B	122	4.8	122	4.8	122	4.8	150	5.9	178	7	231	9	308	12.1
C	55	2.1	46	1.8	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	295	11.6	213	8.4	147	5.8	112	4.4	80	3.1	74	2.9	N/A	N/A
F	145	5.7	144	5.6	119	4.6	115	4.5	159	6.2	172	6.8	203	7.9
G	150	5.9	170	6.6	193	7.5	225	8.8	295	11.6	330	12.9	420	16.5
Kg/lb	10.2	22.5	12	26.4	30	66.1	35	77.1	55	121	101	223	230	

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
- Pilot line installation height
- Additional accessories needed

Hydraulically Actuated, Remote Reset Deluge Valve

FDV - DH1

The FDV is a Fire Protection control valve for Deluge fire sprinkler systems, designed for installations in hazardous environments.

The FDV-DH1 Deluge system is actuated hydraulically and resets remotely.

When the Wet pilot detection line's automatic fire sprinklers are subjected to flame heat and shatter-open, it enables the FDV control chamber to drain and de-pressurize, opening of the deluge valve and admitting water into the spray sprinkler system. The Deluge system incorporates an emergency valve, bypassing the fire detection system for manual operation.

Designed for vertical or horizontal installation, a globe pattern, line pressure operated FDV-DH1 valve features a direct elastomeric diaphragm seal. It has no balancing spring or internal metallic wet components in the valve body. The hydrodynamic pattern design, ensures high flow rates with minimum head loss.



MARKETS



Marine



P.O.G.



Airports

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- Full-bore, unobstructed design
- Simple manual reset of the valve to standby position without closing OS & Y or other valves in the system.
- Open fail safe valve, maintained in 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

- 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 trip is actuated by a Wet Pilot Line's hydraulic pressure release due to its exposure to flame heat.
- Soft closing upon pressurization of the valve's control chamber, by line pressure or other independent water source, prevents surge.

The FDV-DH1 resets to stand-by close position by pressurizing the Wet Pilot Line.

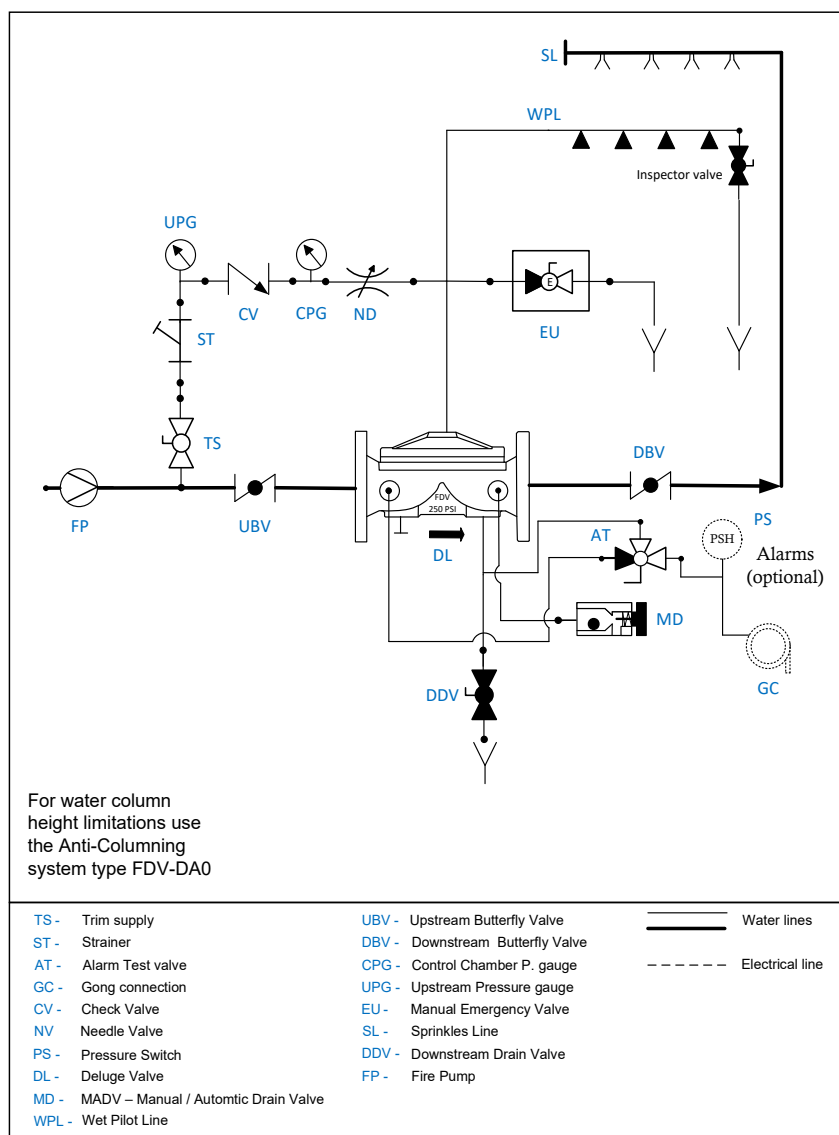
APPROVALS



Schematic drawing:

FDV-DH1

Set position



OPERATION

SET POSITION

Pressurized water in the valve's control chamber (DL) is trapped by check valve (CV), The closed emergency valve (EU) and by the automatic springers on the wet pilot line (WPL), maintaining the FDV deluge valve (DL) closed.

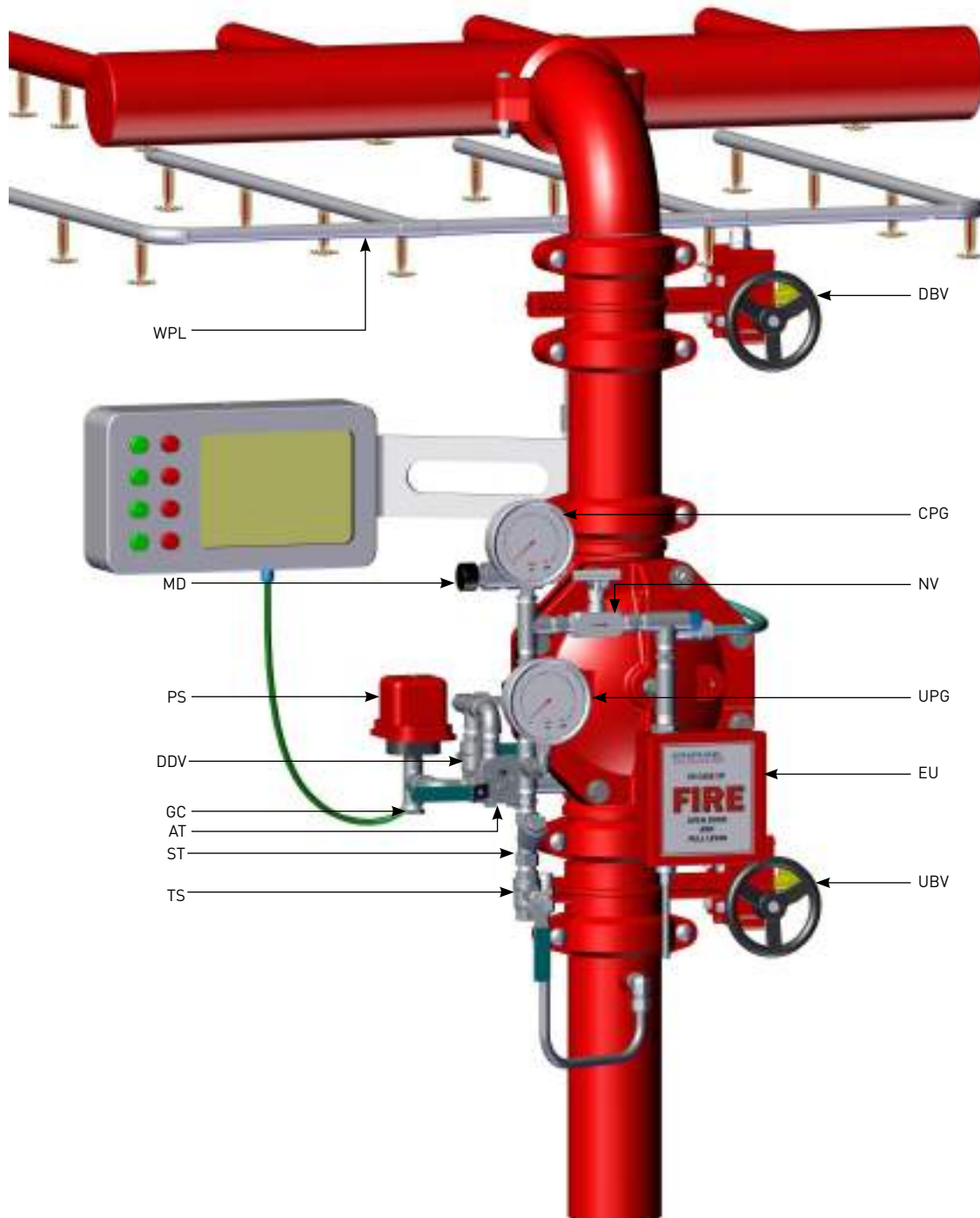
FIRE SITUATION

When some of the Wet pilot detection line's automatic fire sprinklers are subjected to flames heat and shatter-open, it depressurizes and the FDV deluge valve (DL) control chamber. Consequently, The FDV deluge valve opens and admits water to the spray sprinklers line.

RESET POSITION

System reset requires the replacement of all the wet pilot line (WPL) detection Line's shattered-open automatic fire sprinklers.

The detection line need to be pressurized, and consequently. The FDV valve control chamber is pressurizes as well and the valve closes.



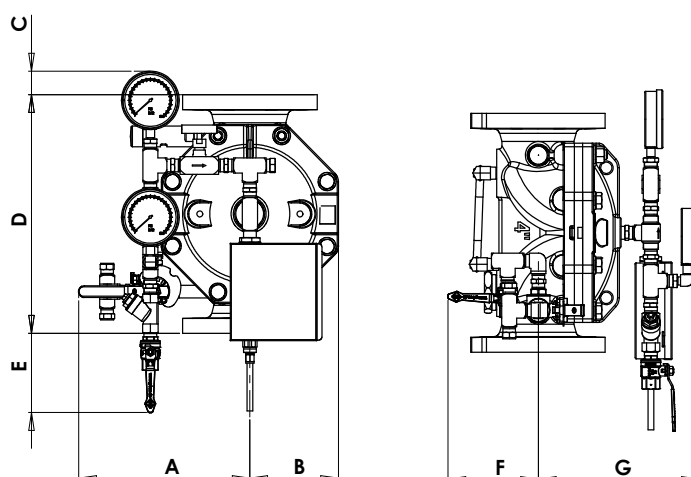
TS – Trim Supply
ST – Strainer
AT – Alarm Test valve
GC – Gong Connection
DDV – Downstream Drain Valve

PS – Pressure Switch
NV – Needle Valve
MD – Manual Automatic Drain Valve
WPL – Wet Pilot line
UPG – Upstream Pressure Gauge

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

Parametric drawing:

FDV-DH1



Dimensions Table

Size	1½", 2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	246	11.8	268	10.5	280	11	305	12	332	13	365	14.4
B	250	9.8	330	13	284	11.2	404	16	431	17	308	12
C	97	3.8	87	3.4	75.5	2.9	67	2.6	67	2.6	NA	NA
D	202	7.9	325	12.8	396	15.5	464	18.3	567	22.3	768.5	30.2
E	208	8	160	6.3	93	3.6	98	3.8	91	3.6	NA	NA
F	98	3.8	116	4.5	198	7.8	233	9	246	9.7	203	8
G	243	9.5	233	9.2	263	10.3	326	12.8	361	14.2	472	18.6
Kg/Lb	9	20	22	48	44	97	66	145	107	236	227	500.5

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
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Trim materials
- Pilot line installation height
- Additional accessories needed

3 Way Hydraulically Actuated, Remote Reset Deluge Valve

FDV- 3W-DH1

The FDV-3W-DH1 fire protection system is based on Raphael's FDV deluge valve and is equipped with a hydraulically actuated control trim. The FDV functions as a fire protection control valve for deluge sprinkler systems and is specifically designed for installation in hazardous environments. It is suitable for both vertical and horizontal installations and features a globe-pattern, line-pressure-operated design with a direct elastomeric diaphragm seal.

The valve contains no balancing spring and no metallic components in the wetted area. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-3W-DH1 deluge system is hydraulically actuated and can be reset remotely. When one or more automatic sprinklers in the wet pilot detection line are exposed to flame heat and shatter open, the pressure in the detection line decreases. This pressure drop also reduces the pressure in the three-way actuator's control chamber, causing the actuator to change its state. In this state, the actuator drains the deluge valve's control chamber, allowing the valve to open fully and admit water into the spray sprinkler system.

When the detection line is re-pressurized, the actuator returns to its initial state. This allows upstream pressure to flow into the deluge valve's control chamber, re-pressurizing it and closing the valve. Consequently, water flow to the spray sprinkler system stops.

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



MARKETS



Marine



Industry



Storage



P.O.G.



Airports

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- Full-bore, unobstructed design
- Simple manual reset of the valve to standby position without closing OS & Y or other valves in the system.
- Open fail safe valve, maintained in 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

- Hydrodynamic pattern design ensures high flow rates with minimal head loss.
- The valve automatically trips open when water pressure in its control chamber is gradually released. The trip is actuated by a pressure drop in the pilot line caused by flame heat that triggers one or more automatic sprinklers to open.
- Soft closing upon re-pressurization of the valve's control chamber—by line pressure or another independent water source—prevents surges.

The FDV-3W-DH1 three-way control principle ensures full valve opening with maximum flow rate and minimal head loss.

This system resets to stand-by close position by shutter open sprinkler replacement, and re-pressurizing the pilot line.

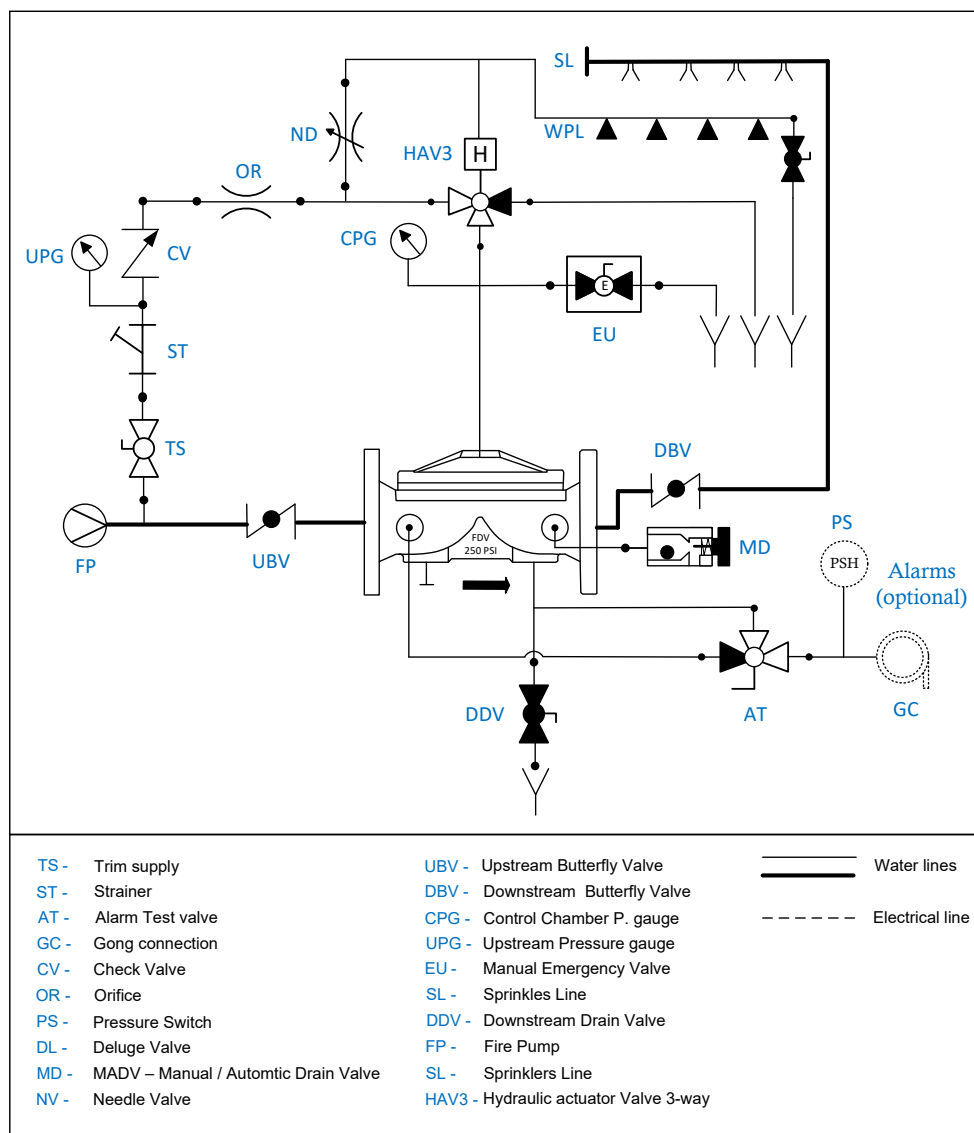
APPROVALS



Schematic drawing:

FDV-3W-DH1

Set position



OPERATION

SET POSITION

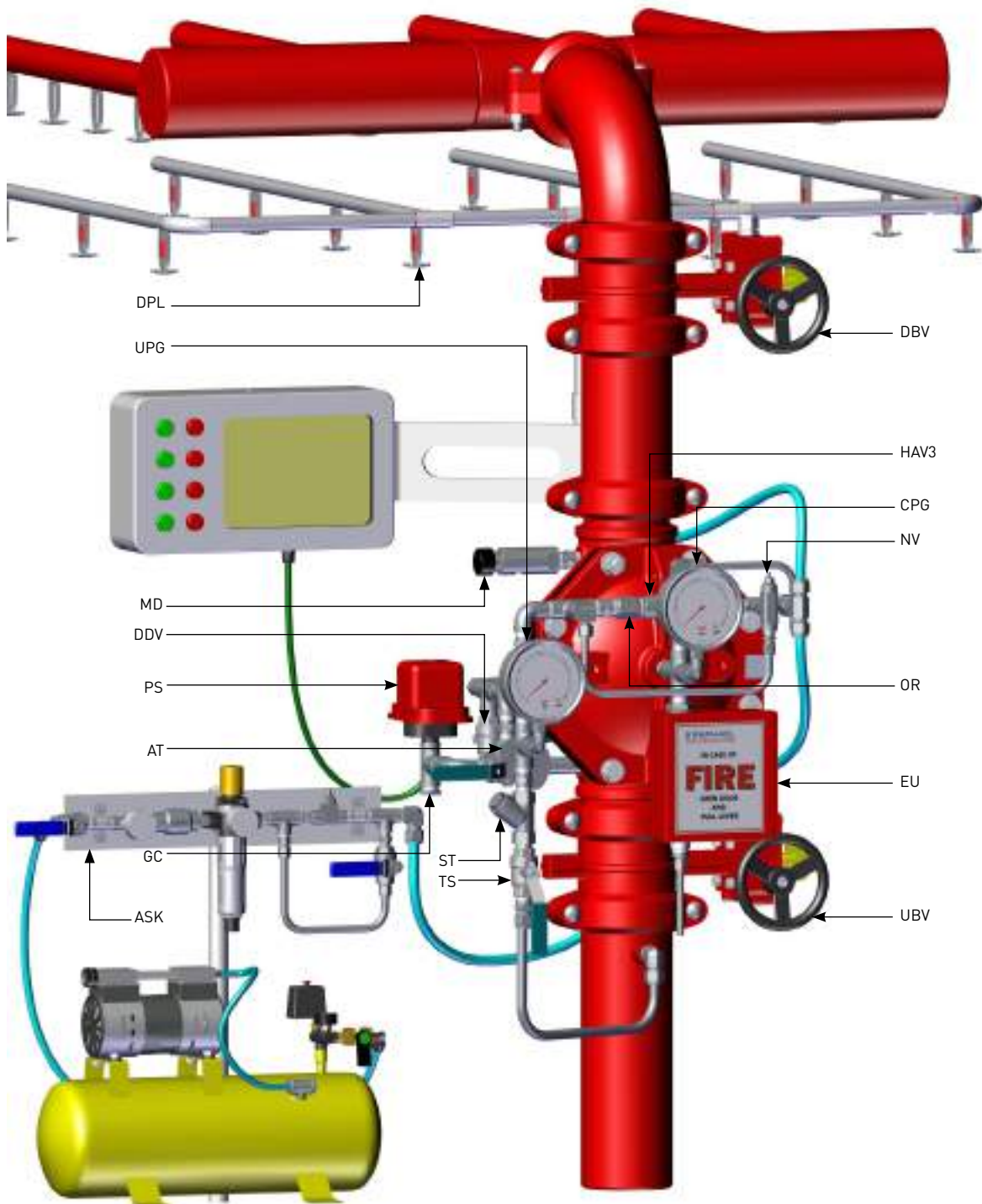
Pressurized water in the valve's control chamber is trapped by the check valve (CV) and the closed emergency valve (EU), keeping the FDV deluge valve closed. The hydraulic actuator's (HAV3) control chamber is pressurized by the Wet Pilot Line (WPL). This pressure holds the actuator in an open position, allowing upstream flow into the deluge valve's control chamber and thereby maintaining the valve in its closed state.

FIRE SITUATION

When one or more automatic sprinklers in the Wet Pilot Detection Line (WPL) are exposed to fire heat and shatter open, the line pressure drops. Consequently, the pressure in the three-way actuator's (HAV3) control chamber also decreases, causing the actuator to change state. In this new state, the actuator drains the deluge valve's control chamber, which opens the deluge valve and allows water to flow into the sprinkler system.

RESET POSITION

When one or more automatic sprinklers in the Wet Pilot Detection Line (WPL) are exposed to fire heat and shatter open, the line pressure drops. Consequently, the pressure in the three-way actuator's (HAV3) control chamber also decreases, causing the actuator to change state. In this new state, the actuator drains the deluge valve's control chamber, which opens the deluge valve and allows water to flow into the sprinkler system.



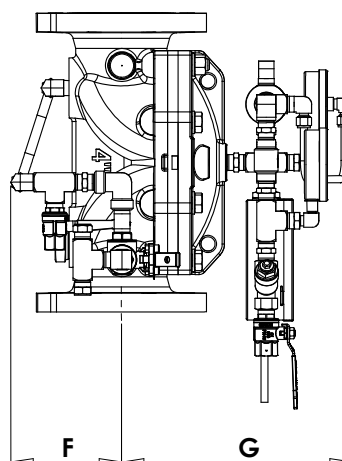
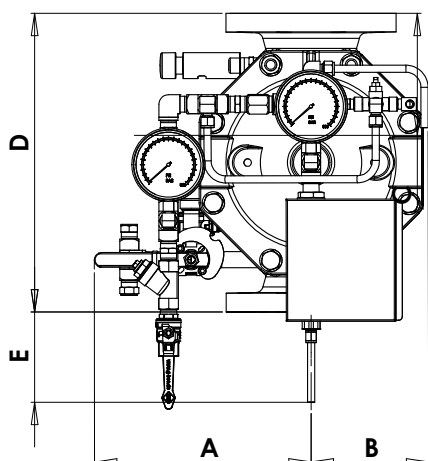
PS - Pressure Switch
HA - HAV-3 Hydraulic actuator 3 way
EU - Emergency Unit
UBV - Upstream Butterfly Valve
DBV - Downstream Butterfly Valve
UPG - Upstream Pressure Gauge

CPG - Control Chamber Pressure Gauge
GC - Gong connection
DPL - Dry Pilot Line
MD - Manual Automatic Drain Valve
CV - Check Valve
NV - Needle valve

OR - Orifice
DDV - Downstream Drain Valve
AT - Alarms Test Valve
ST - "Y" Strainer
TS - Trim Supply

Parametric drawing:

FDV-3W-DH1



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	267	10.3	268	10.5	276	10.8	290	11.4	316	12.4	340	13.4	373	14.7
B	156	6.1	156	6.1	156	6.1	156	6.1	177	7	232	9.1	308	12.1
C	135	5.3	135	5.3	74	2.9	36	1.4	N/A	N/A	N/A	N/A	N/A	N/A
D	202	8.0	325	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	220	8.66	224	8.8	158	6.2	121	4.7	89	3.4	36	1.4	N/A	N/A
F	127	5	127	5	128	5	150	5.9	151	5.9	171	6.7	203	8
G	230	10.6	230	10.6	274	10.8	310	12.2	376	14.8	415	16.2	500	19.6
Kg/lb	10.3	22.7	12.0	26.4	29.2	64.3	45.2	99.6	55.5	123	121	266	230	507

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 working pressure
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Trim materials
- Pilot line installation height
- Additional accessories needed

Hydraulically Actuated & Anti-Columning, Local Reset Deluge Valve

FDV - DAO

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

It is suitable for both vertical and horizontal installations 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-DAO deluge system is actuated hydraulically and reset locally.

When a hydraulic detection system - a Wet Pilot Detection Line - is exposed to a predetermined temperature, the automatic fire sprinklers shatter open, causing a pressure drop that activates a pilot valve, which in turn commands the FDV-DAO deluge valve to open. The Anti-Columning feature ensures reliable system operation regardless of the detection line's height or its distance from the control valve. The deluge system also incorporates an emergency valve that bypasses the fire detection system for manual operation.

In addition, the FDV-DAO system is equipped with a PSA device that manually and locally pressurizes the deluge control chamber and the wet pilot line. This keeps the valve closed, prevents re-pressurization during actuation (when the control chamber must be drained), and compensates for minor leakage-related pressure losses. This configuration is suitable for open-nozzle water spray pipelines.



MARKETS



Marine



Commercial



Residential



Industry



Airports

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate, no wet metal spring inside the control chamber.
- Full-bore, unobstructed design.
- Simple reset of the valve to standby position without draining or opening the valve itself, neither closing OS&Y or other valves in the system.
- Full Anti Columning property enables a nearly unlimited pilot line height.
- Open fail safe valve, maintained in stand-by closed position by the PSA.
- 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 flowrates with minimum head loss.
- The valve trips open automatically upon a gradual release of water pressure from its control chamber. The trip is actuated by a Wet Pilot Line's hydraulic pressure release due to its exposure to flame heat.
- The Anti-Columning properties guarantee an immediate system trip, regardless of the Wet Pilot height.
- Soft closing upon pressurization of the valve's control chamber, by line pressure or other independent water source, prevents surges.

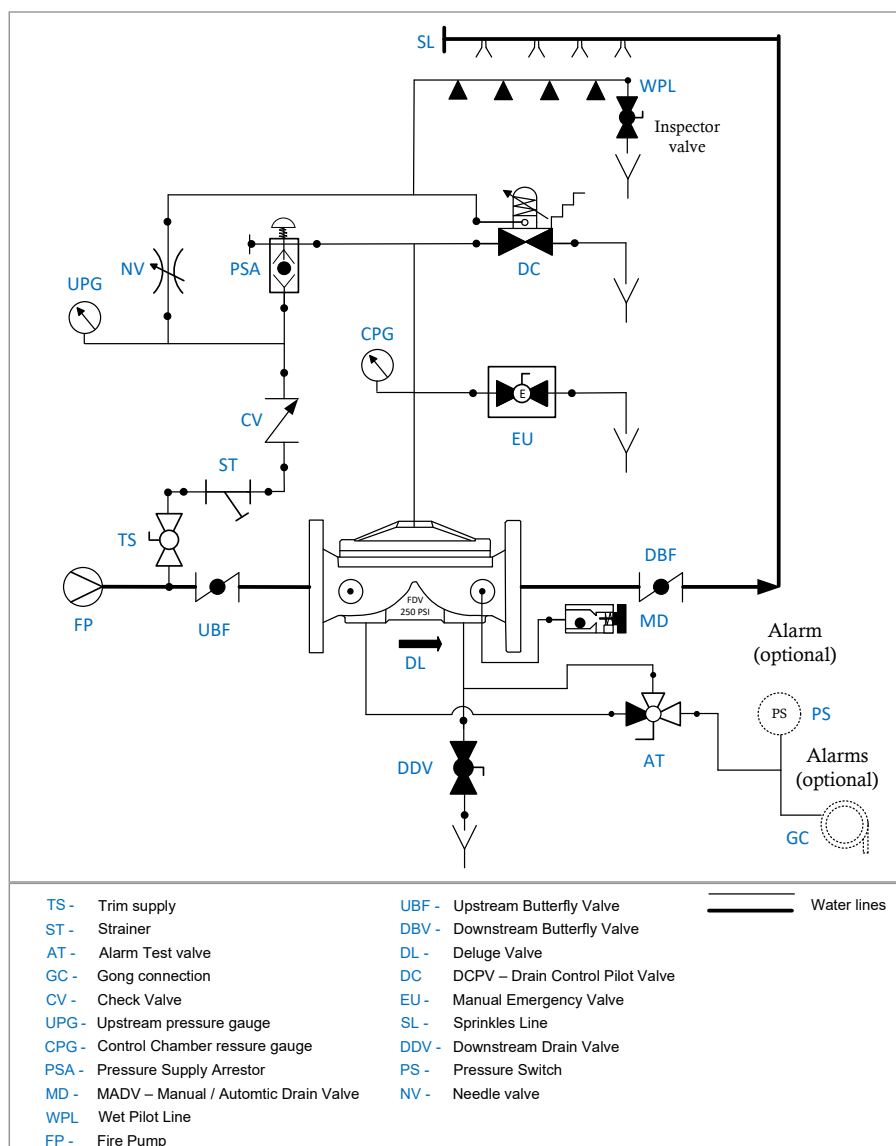
The FDV-DAO resets to stand-by close position by pressurizing the Dry Pilot Line and manually operating the PSA device.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

After pressing the PSA push button and releasing, pressurized water in the valve's control chamber is trapped by the closed PSA (PSA), the closed emergency valve (EM) and by the closed DCPV drain pilot valve (DC). The hydraulic pressure accumulated in the Wet pilot line keeps this device in its close position, maintaining the FDV deluge valve closed.

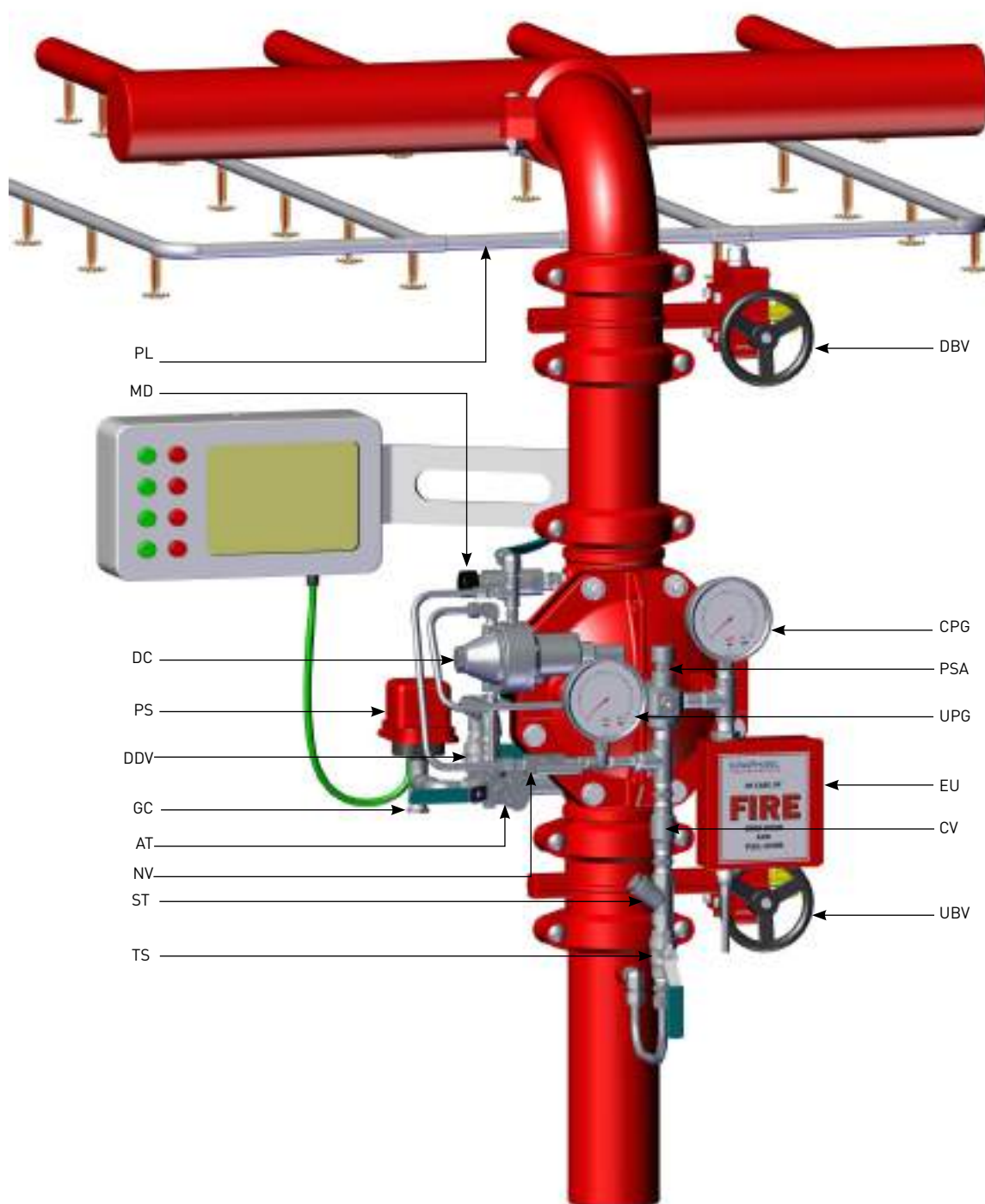
FIRE SITUATION

When some of the Wet pilot detection line's automatic fire sprinklers are subjected to the predetermined temperature levels and shutter-open, the pilot line pressure drops and the DCPV (DC) opens. Consequently, the DCPV opens its drain port, regardless of the residual column pressure.

When it opens, the DCPV releases the FDV control chamber pressure causing the valve to open and admit water into the spray sprinklers pipeline.

RESET POSITION

System reset requires the replacement of all Shattered-open Fire sprinklers in the Detection pilot line (PL). The PSA push button needs to be pressed. When pushed down, upstream water pressurizes the Pilot line, resets the DCPV to closed position and pressurizes the control chamber. Consequently, the FDV deluge valve close.



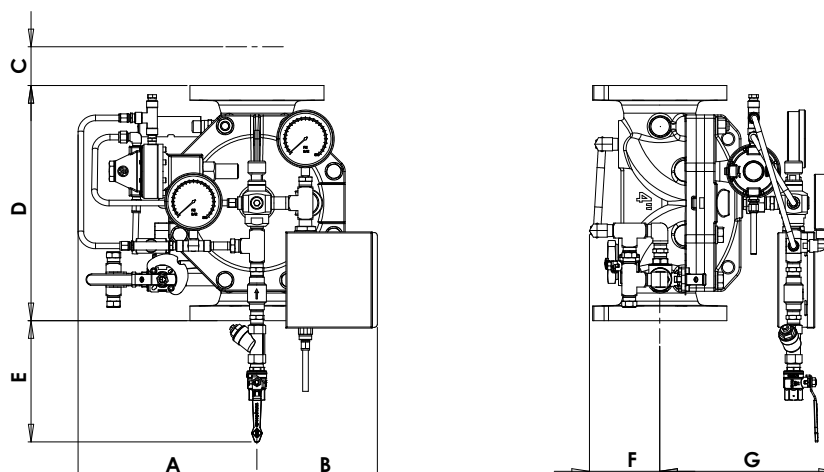
TS - Trim Supply
ST - Strainer
AT - Alarm Test valve
GC - Gong Connection
DDV - Downstream Drain Valve
PS - Pressure Switch

NV - Needle Valve
DC - Drain Control Pilot Valve
PSA - Pressure Supply Arrestor
MD - Manual Automatic Drain Valve
PL - Pilot line
UPG - Upstream Pressure Gauge

CPG - Control chamber Pressure Gauge
UBV - Upstream Butterfly Valve
DBV - Downstream Butterfly Valve
EU - Emergency Unit

Parametric drawing:

FDV-DA0



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	204	8	204	8	204	8	204	8	316	12.4	377	14.8	406	15.9
B	272	10.7	272	10.7	272	10.7	290	11.4	204	8	231	9	308	9.1
C	65	2.55	61	2.4	41	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	305	12	295	11.6	245	9.6	206	8.1	173	6.8	120	4.7	N/A	N/A
F	118	4.6	91	3.6	120	4.7	120	4.7	158	6.2	160	6.3	203	8
G	220	8.66	233	9.2	265	10.4	294	11.6	360	14.2	395	15.5	484	19
Kg/lb	13.1	28.8	15.1	33.2	32.5	71.6	48.2	106	59	130	93	205	233	513

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 316/CF8M
- Brass
- Nickel Aluminum Bronze
- Monel®
- Cupro-Nickel

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
- Pilot line installation height
- Additional accessories needed

Electrically Actuated, Local Reset, Economic Deluge Valve

FDV - AE0

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-AE0 deluge system is electrically actuated and can be reset locally.

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

The system includes an emergency manual override valve that bypasses the fire detection system, enabling manual activation when required.

In addition, the FDV-AE0 system is equipped with a PSA device that manually and locally pressurizes the deluge control chamber, keeping it closed, preventing re-pressurization during actuation (when the control chamber must be drained), and compensating for minor leakage-related pressure losses.

This configuration is suitable for open-nozzle water spray pipelines.



MARKETS



Commercial



Industry



Marine



Storage



Residential



Airport

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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: up to 5.1

SENSITIVITY: 1.4 spi (0.1 bar)

ADVANTAGES

- Only three parts: body, diaphragm, and cover plate — with no wetted metal spring inside the control chamber.
- Full-bore, unobstructed design.
- Simple reset to standby position without draining or opening the valve.
- Low maintenance cost: the valve can be serviced in-line, with only one replaceable part — the long-life elastomeric diaphragm.
- Complies with NFPA 25, the standard for the inspection, testing, and maintenance of water-based fire protection systems.

CHARACTERISTICS

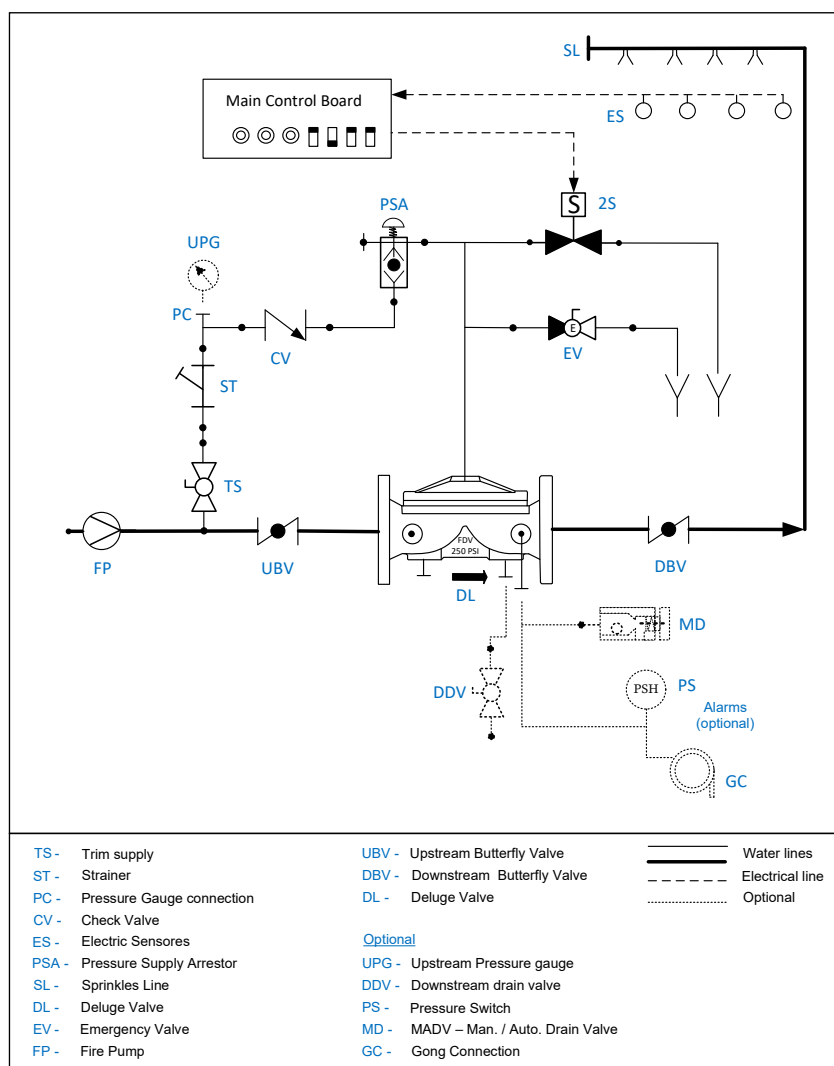
- Hydrodynamic pattern design ensures high flow rates with minimal head loss.
- The valve automatically opens when water pressure in its control chamber is gradually released by an electric signal conveyed to the solenoid.
- Soft closing occurs when the control chamber is pressurized — either by line pressure or an independent water source — preventing surges.

The FDV-AE0 resets to its stand-by closed position by pressurizing the Dry Pilot Line and manually operating the PSA device.

APPROVALS



Set position

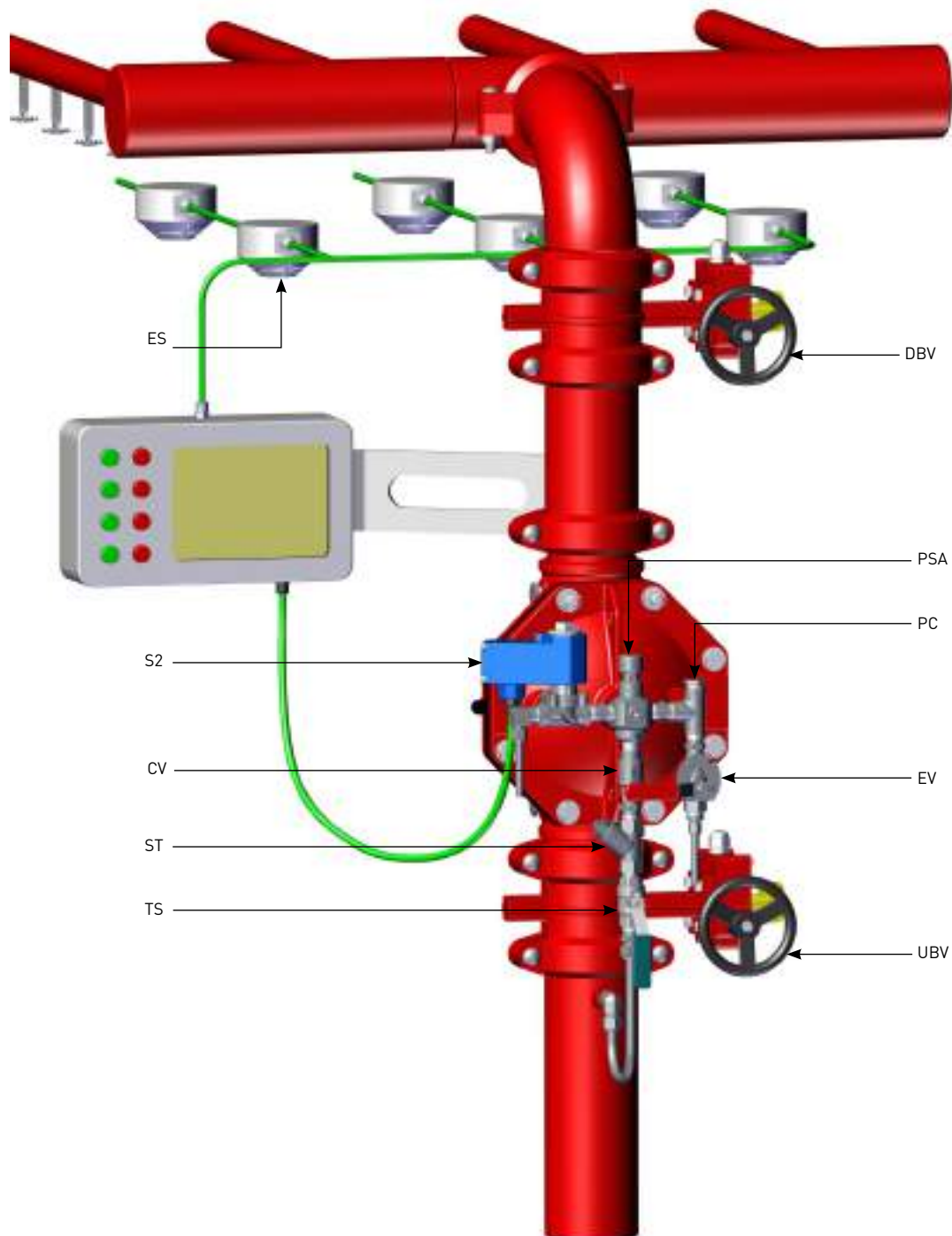


SET POSITION

Pressurized water in the valve's control chamber (DL) is retained by the closed PSA (PSA), the closed 2-way solenoid valve (S2), and the closed emergency valve (EV), thereby keeping the FDV deluge valve shut.

When the electric detection system (ES) senses heat or flames, it activates the main control panel, which then 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 into the spray sprinkler line.

To reset the system, the electrical alarm system must first be reset to de-energize and close the solenoid valve. This action stops the drainage of the FDV control chamber. Next, the PSA push button should be pressed to allow upstream pressure to enter and re-pressurize the control chamber, thereby closing the FDV deluge valve.



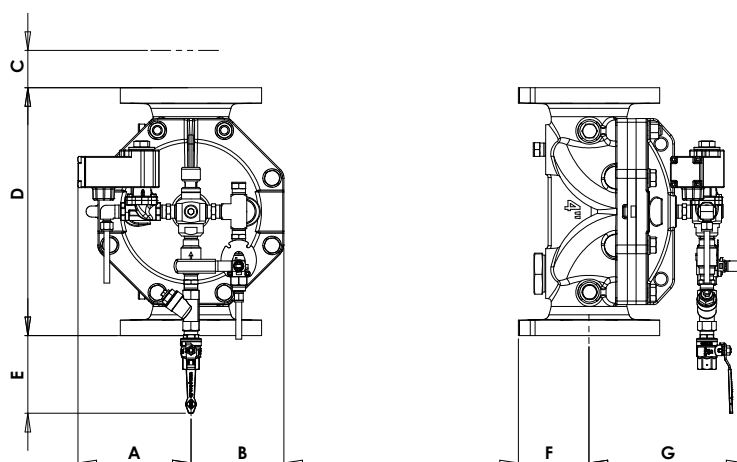
TS – Trim Supply
ST – Strainer
CV – Check Valve
EV – Emergency Valve

PC – Pressure gauge Connection
PSA – Pressure Surge Arrestor
S2 – 2-way Solenoid
ES – Electric Sensors

UBV – Upstream Butterfly Valve
DBV – Downstream Butterfly Valve

Parametric drawing:

FDV-AE0



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	182	7.1	182	7.1	182	7.1	184	7.2	197	7.8	250	9.8	324	12.7
B	105	4.1	105	4.1	115	4.5	150	5.9	177	7	231	9.8	308	12.1
C	13	0.5	N/A	N/A	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	224	8.9	214	8.4	163	6.4	125	6	93	3.6	40	1.6	N/A	N/A
F	52	2	58	2.3	100	3.9	114	4.5	143	5.6	172	6.8	203	8
G	172	6.7	186	7.3	215	8.5	232	9.1	300	11.8	333	13.1	442	17.4
Kg/lb	7	15.4	9	19.8	27	59.2	42	92.6	53	117	98	216	226	498

Factory Standard

MAIN VALVE

BODY & COVER

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

ELASTOMERS:

- NBR, 3-layered reinforced Natural Rubber
- EPDM, 3-layered reinforced

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:
 - Pressure gauge
 - Pressure switch
 - Drain valve (manual or automatic)
 - Gong

Electrically Actuated, Remote Reset Deluge Valve

FDV - AE1

The FDV is a deluge fire sprinkler system, designed for installation 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 components in the wetted area. Its hydrodynamic design ensures high flow rates with minimal head loss.

The FDV-AE1 fire protection deluge system is electrically actuated and can be reset remotely.

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

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



MARKETS



Commercial



Industry



Marine



Storage



Residential



Airport

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

ADVANTAGES

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

CHARACTERISTICS

- Hydrodynamic pattern design ensures high flow rates with minimal head loss.
- The valve automatically trips open upon gradual release of water pressure from its control chamber, when an electric signal is conveyed to the valve's solenoid.
- Soft closing occurs upon pressurization of the valve's control chamber — by line pressure or an independent water source — preventing surges.

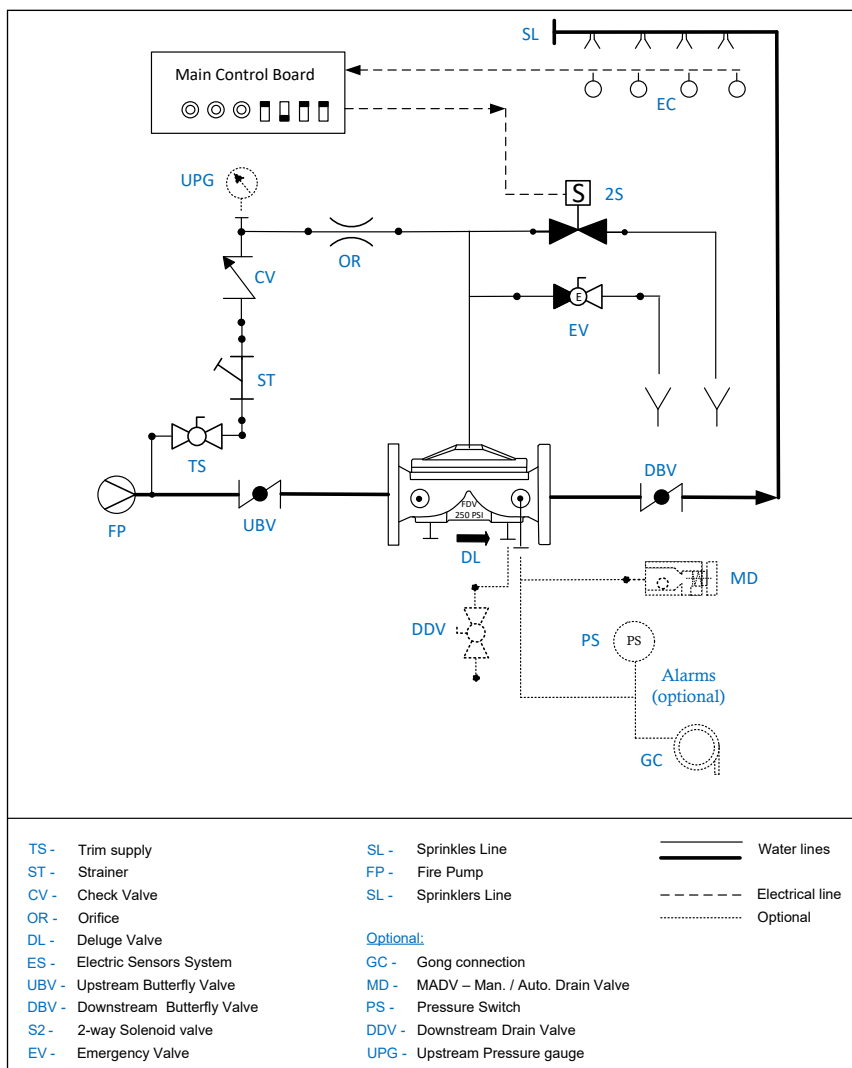
The FDV-AE1 resets to the standby closed position when the solenoid coil is de-energized through the main control board.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

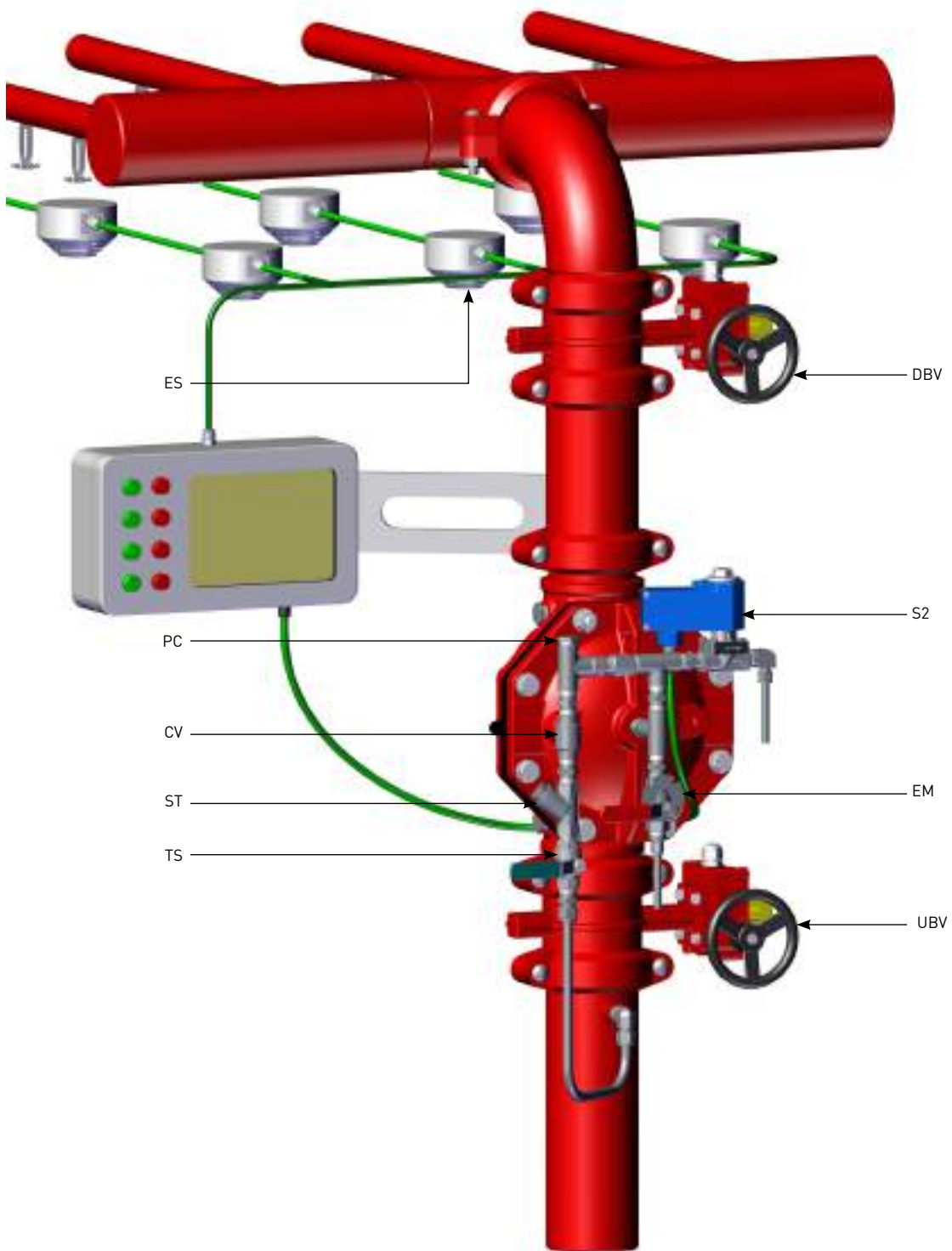
Pressurized water in the valve's control chamber is trapped by the check valve (CV), the closed 2-way solenoid valve (S2), and the closed emergency valve (EU), maintaining the FDV deluge valve (DL) in a closed state.

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

System reset requires the electrical alarm system to be reset to de-energize and close the solenoid valve, preventing the FDV control chamber from draining. Upstream water enters the FDV deluge control chamber through the orifice (OR), closing the valve.



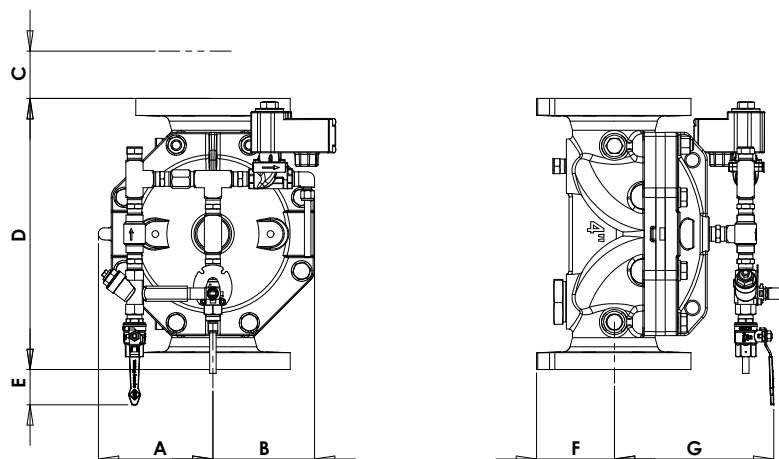
TS – Trim Supply
ST – Strainer
CP – Pressure Gauge Connection
CV – Check Valves

OR – Orifice
S2 – 2-way Solenoid
ES – Electric Sensors
UBV – Upstream Butterfly Valve

DBV – Downstream Butterfly Valve

Parametric drawing:

FDV-AE1



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	163	6.4	163	6.4	163	6.4	169	6.6	196	7.7	248	9.8	325	12.8
B	150	5.9	150	5.9	150	5.9	181	7.1	178	7	232	9.1	308	12.1
C	90	3.5	82	.2	32	1.2	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	155	6.1	142	5.6	88	3.5	52	2	N/A	N/A	N/A	N/A	N/A	N/A
F	21	0.8	58	2.3	100	3.9	114	4.5	143	5.6	172	6.8	203	8
G	176	7	190	7.5	220	8.7	256	10	302	11.9	355	13.9	442	17.4
Kg/lb	6.9	15.2	8.6	20	25.8	56.8	42	92.6	52	115	97	214	226	498

Factory Standard

MAIN VALVE

BODY & COVER

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

ELASTOMERS:

- NBR, 3-layered reinforced Natural Rubber
- EPDM, 3-layered reinforced

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:

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

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:
Pressure gauge
Pressure switch
Drain valve (manual or automatic)
Gong

Electrically Actuated, Remote Reset, Economic Deluge Valve

FDV-3W-AE1

The FDV-3W-AE1 fire protection system, which is equipped with an electrically actuated control trim, is based on Raphael's FDV deluge valve.

The FDV functions as a fire protection control valve for deluge sprinkler systems and is specifically designed for installation in hazardous environments.

It is suitable for both vertical and horizontal installations and features a globe-pattern, line-pressure-operated design with a direct elastomeric diaphragm seal.

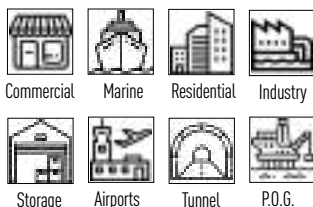
The FDV-3W-AE1 deluge system is electrically actuated and can be reset remotely.

An electric detection system activates a 3-way solenoid valve via a control panel, which in turn opens a 3-way actuator. As the actuator fully drains the deluge valve's control chamber, the valve delivers its full flow capacity with minimal head loss.

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



MARKETS



TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

SOV TYPE:

3/2 Direct Acting N.O. Standard or Latching (pulse) 24VDC, 110AC, 230AC.

APPROVALS



ADVANTAGES

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

CHARACTERISTICS

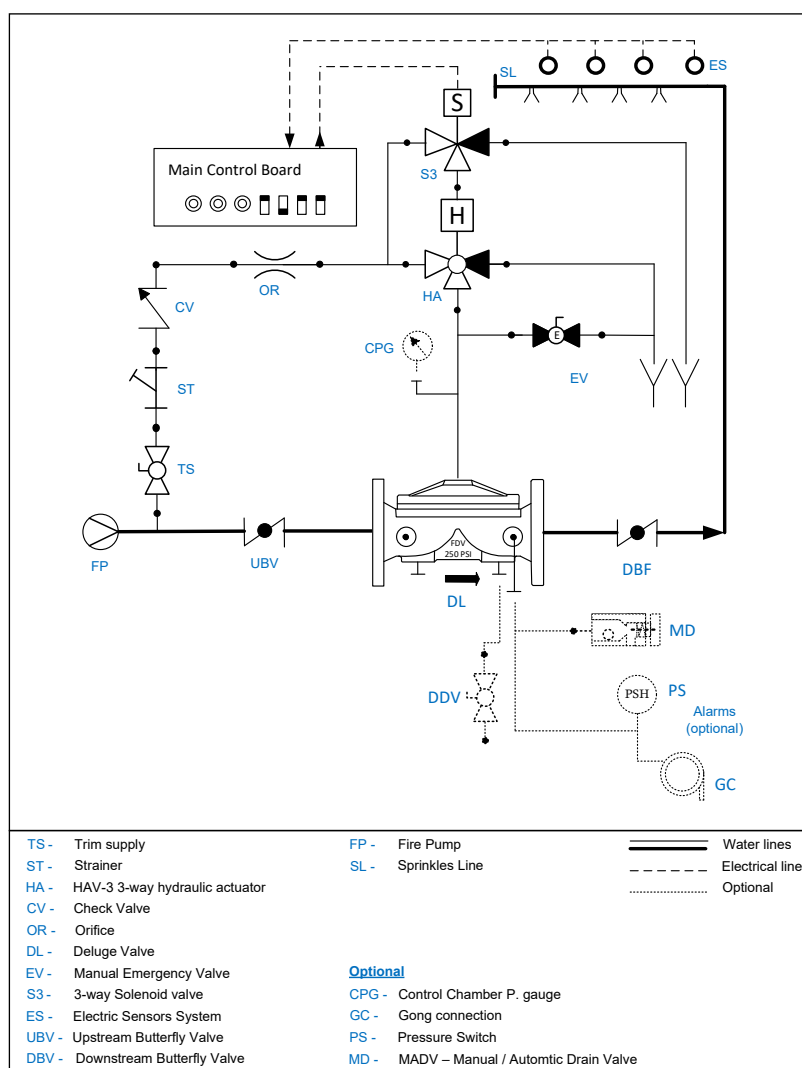
- Hydrodynamic pattern design ensures high flow rates with minimal head loss.
- The valve trips open automatically upon a gradual release of water pressure from its control chamber. The trip is actuated by an electric signal transmitted from the main control panel to the valve's solenoid, in response to heat or flame detected by the sensor system.
- Soft closing upon re-pressurization of the valve's control chamber—by line pressure or another independent water source—prevents surges.
- The FDV-3W-AE1 three-way control principle ensures full valve opening with maximum flow rate and minimal head loss.

The FDV-3W-AE1 resets to the standby closed position when the solenoid coil is de-energized through the main control board.

Schematic drawing:

FDV-3W-AE1

Set position



OPERATION

SET POSITION

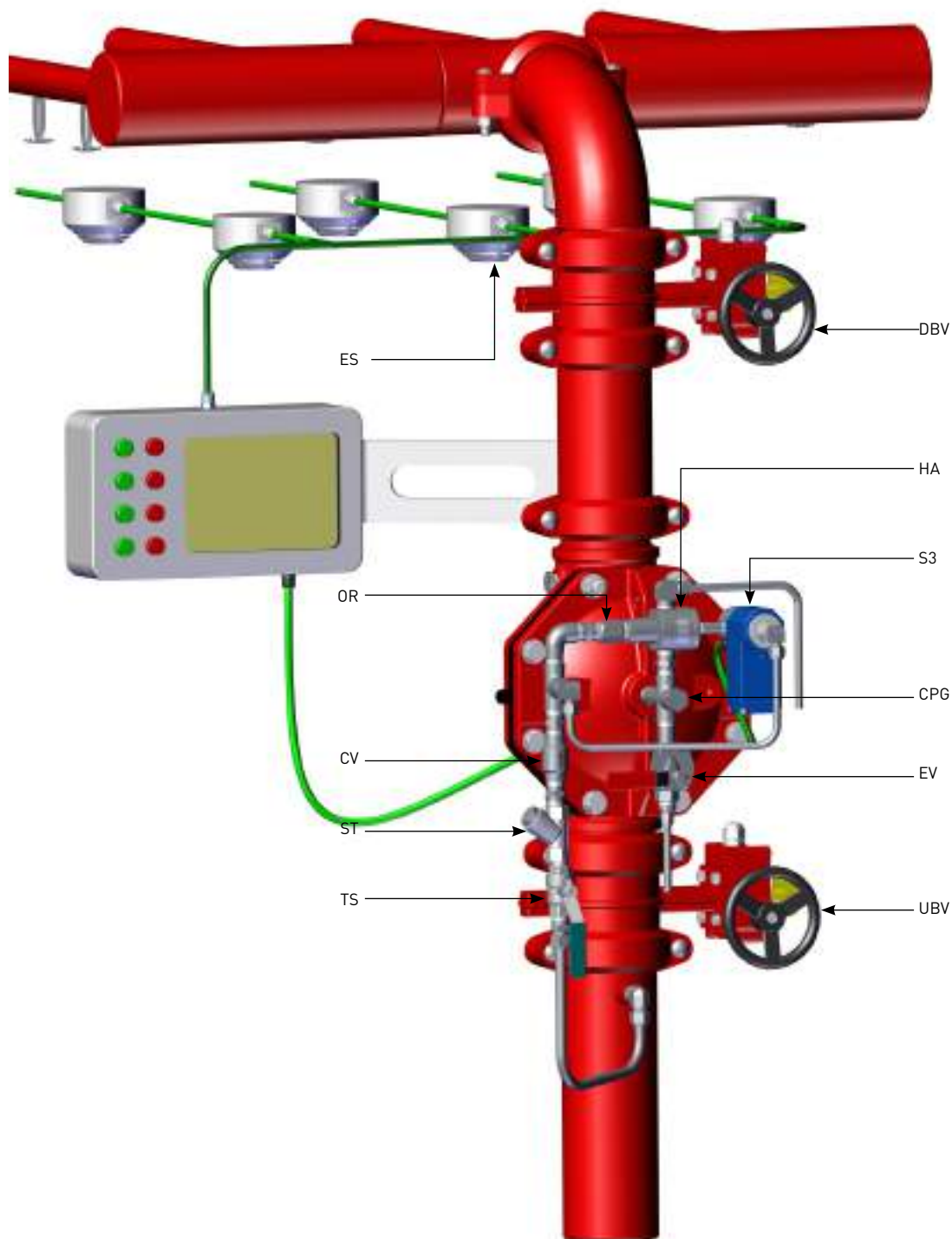
Pressurized water in the valve's control chamber is trapped by the check valve (CV), the closed 3-way actuator HAV-3 (HA), and the closed emergency valve (EV), maintaining the FDV deluge valve in a closed state. The hydraulic actuator's control chamber is supplied by the 3-way solenoid (S3), which enables the upstream flow into the deluge valve's control chamber, keeping the valve closed.

FIRE SITUATION

When an electric detection system (ES) senses flame heat, it triggers the main control panel, which in turn, transmits an electric signal commanding the 3-way solenoid valve (S3). When the solenoid valve is energized, it changes state and pressurizes the actuator's control chamber. The actuator (HA) changes state, blocking the upstream flow to the deluge control chamber and fully draining this space. Consequently, the FDV Deluge valve opens and allows water to flow into the spray sprinkler line (SL).

RESET POSITION

When the electric signal from the main control board to the solenoid's coil is interrupted, the solenoid changes state and pressurizes the actuator (HA) control chamber, which in turn, changes state as well. The actuator enables the flow from the trim pressure supply valve (TS), through the orifice (OR), into the deluge control chamber, which subsequently closes. As a result, the sprinkler spray flow stops.



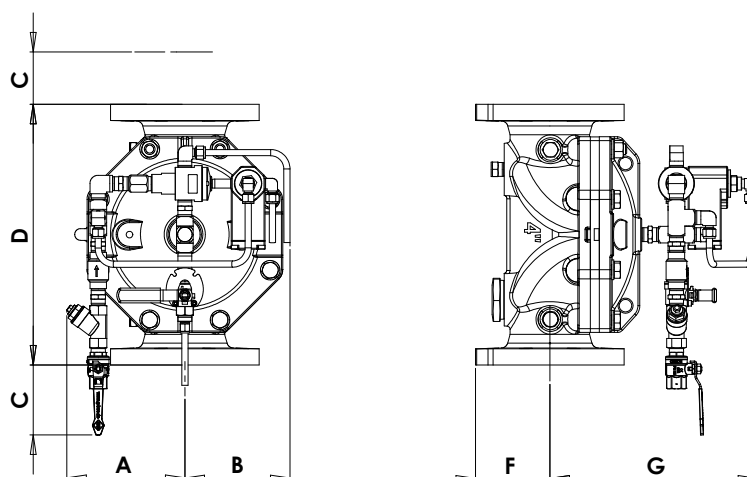
TS - Trim Supply
ST - "Y" Strainer
CV - Check Valve
OR - Orifice

ES - Electric Sensors system
DBV - Downstream Butterfly Valve
HA - HAV3 3-way Hydraulic actuator
S3 - 3-way solenoid valve

CPG - Connection - control chamber PG
EV - Emergency Valve
UBV - Upstream Butterfly Valve

Parametric drawing:

FDV-3W-AE1



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	181	7	181	7	181	7	181	7	197	7.7	250	9.8	308	12.1
B	161	6.3	161	6.3	161	6.3	161	6.3	177	7	231	9	308	12.1
C	35	1.3	27	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D	202	8.0	325	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	206	8.1	196	7.7	143	5.6	107	4.2	76	3	N/A	N/A	N/A	N/A
F	52	2	58	2.3	100	3.4	114	4.5	141	5.5	172	6.8	203	7.8
G	240	9.4	253	9.9	283	11.1	320	12.6	386	15.2	420	16.5	510	20
Kg/lb	7.8	17.2	9.6	21.2	26.8	59	42.5	93.7	53	116	98	216	227	500

Factory Standard

MAIN VALVE

BODY & COVER

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

ELASTOMERS:

- NBR, 3-layered reinforced Natural Rubber
- EPDM, 3-layered reinforced

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
- Cupro-Nickel
- 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
- Solenoid Voltage
- Solenoid Protection
- Trim materials
- Additional accessories needed:
Pressure gauge
Pressure switch
Drain valve (manual or automatic)
Gong

Pneumatically Actuated, Local Reset, Economic Deluge Valve

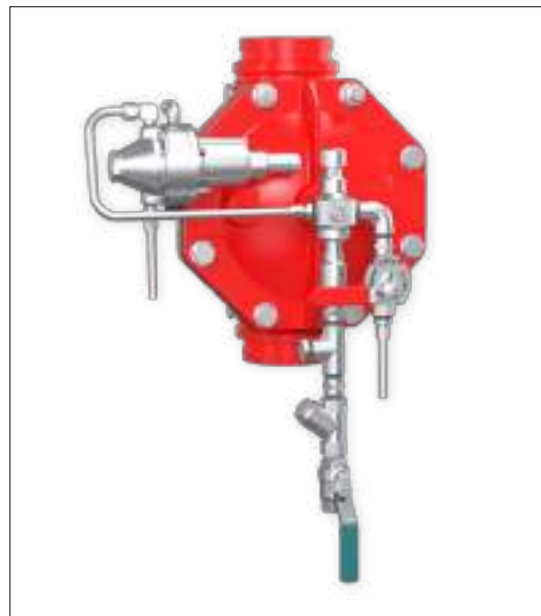
FDV-AP0

The FDV-AP0 fire protection system is based on Raphael's FDV deluge valve and is equipped with a pneumatically actuated control trim. The FDV is a fire protection control valve for deluge sprinkler systems, specifically designed for installation in hazardous environments. It is suitable for both vertical and horizontal installations and features a globe-pattern, line-pressure-operated design with a direct elastomeric diaphragm seal. The valve contains no balancing spring and no internal metallic components in the wetted area. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-AP0 deluge system is pneumatically actuated and locally resettable. In a fire situation, when the pneumatic dry pilot detection line is exposed to flame heat, one or more automatic sprinklers shatter, venting air pressure from the actuator and causing the deluge valve to open.

The system incorporates an emergency valve that bypasses the fire detection system for manual operation. Additionally, the trim is equipped with a PSA - a device that enables local system reset, i.e., closing the FDV valve by repressurizing its control chamber.

The system is suitable for use with automatic sprinklers on the dry pilot pipeline and with open nozzles on the main spraying pipelines.



MARKETS



Commercial



Industry



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)

PNEUMATIC PRESSURE:

29-58 psi (2-4 bar)

ADVANTAGES

- Consists of only three parts: body, diaphragm, and cover plate – no wet metal spring inside the control chamber.
- Full-bore, unobstructed design.
- Simple manual reset to standby position without draining or opening the valve, and without closing the OS&Y or other valves in the system.
- Full anti-columning property allows for virtually unlimited pilot line height.
- Fail-safe, open-type valve maintained in the standby closed position by the PSA.
- Low maintenance cost: the valve can be serviced in-line, with only one replaceable part – the long-life elastomeric diaphragm.
- Complies with NFPA 25, the standard for the inspection, testing, and maintenance of water-based fire protection systems.

CHARACTERISTICS

- Hydrodynamic 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 trip is actuated by the pneumatic pressure release of the Dry Pilot Line, caused by its exposure to flame heat.
- Soft closing, upon pressurization of the valve's control chamber - by line pressure or another independent water source - prevents surges

The FDV-AP0 resets to the stand-by closed position by pressurizing the Dry Pilot Line and manually operating the PSA device.

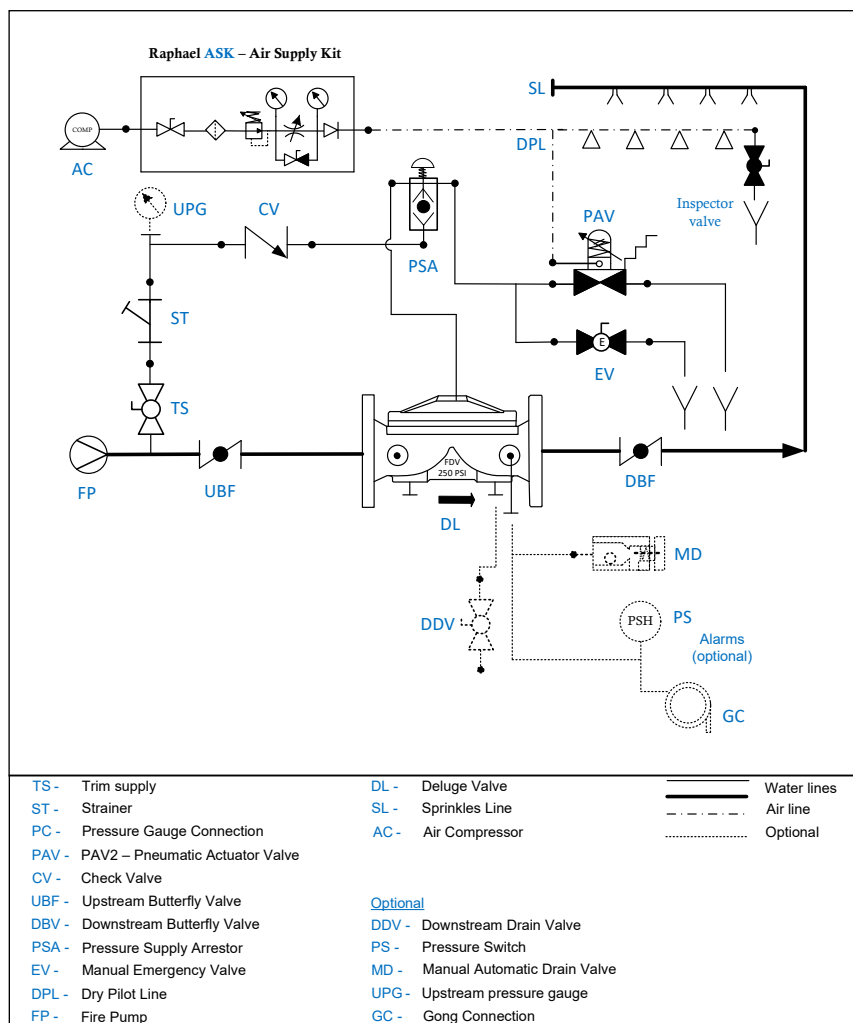
APPROVALS



Schematic drawing:

FDV-AP0

Set position



OPERATION

SET POSITION

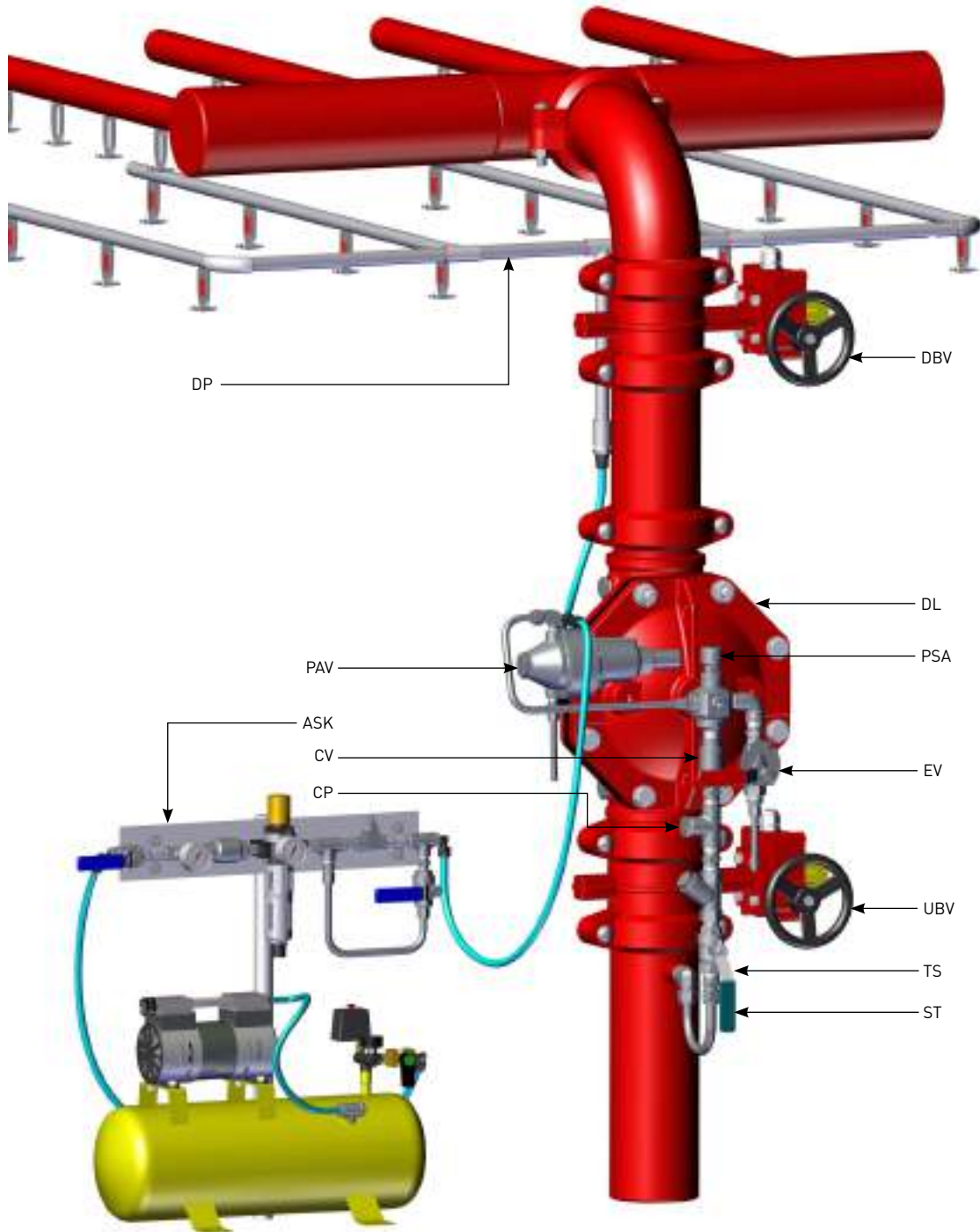
The pneumatic pressure in the Dry Pilot line keeps the pneumatic actuator (PAV) closed. Pressurized water in the deluge valve control chamber (DL) is retained by the check valve (CV), the closed PSA (PSA), the closed emergency valve (EV), and the closed pneumatic actuator (PAV). As a result, the FDV deluge valve (DL) remains closed.

FIRE SITUATION

When one or more automatic sprinklers in the Dry Pilot detection line (DP) are exposed to fire heat and open, the detection line depressurizes the actuator (PAV) control chamber. The actuator then opens and drains the deluge valve control chamber. Consequently, the FDV deluge valve (DL) opens and supplies water to the sprinkler line.

RESET POSITION

Resetting the system requires replacing all open sprinklers in the Dry Pilot detection line. The Dry Pilot line and the PAV actuator control chamber are then repressurized by the ASK to return the actuator to the closed position. Re-pressurization is performed by pressing the PSA push button. This action refills and pressurizes the FDV deluge valve control chamber, causing the valve to close.



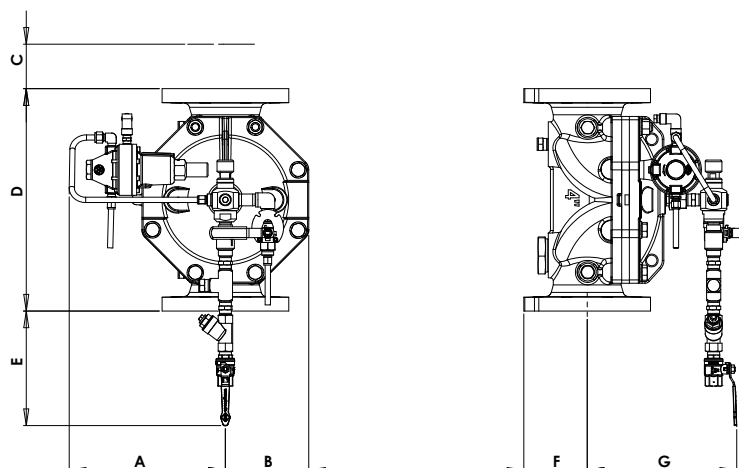
TS – Trim Supply
DL – Deluge valve
ST – Strainer
CV – Check Valve

EV – Emergency Valve
CP – Pressure gauge Connection
PAV – Pneumatic Actuator Valve
PSA – Pressure Supply Arrestor

ASK – Air Supply Kit
DP – Dry Pilot line
UBV – Upstream Butterfly Valve
DBV – Downstream Butterfly Valve

Parametric drawing:

FDV-AP0



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	195	7.6	206	8.1	238	9.4	280	11	305	12	306	12	390	15.3
B	105	4.1	105	4.1	116	4.6	150	5.9	177	6.7	231	9	308	12.1
C	46	1.8	42	1.6	22	0.8	45	1.7	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	305	12	295	10.1	243	9.6	206	8.1	174	6.8	117	4.6	22	0.8
F	52	2	58	2.3	74	2.9	114	4.5	141	5.5	172	6.7	203	8
G	227	8.9	223	8.8	252	9.9	288	11.3	356	14	387	15	479	1.6
Kg/lb	10	22	11.3	25	20	44	45	99	55	121	100	220	230	507

Factory Standard

MAIN VALVE

BODY & COVER

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

ELASTOMERS:

- NBR, 3-layered reinforced Natural Rubber
- EPDM, 3-layered reinforced

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
- Cupro-Nickel
- Monel®

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Pneumatic working pressure
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Trim materials
- Additional accessories needed:
 - Pressure gauge
 - Pressure switch
 - Drain valve (manual or automatic)
 - Gong

Pneumatically Actuated, Remote Reset, Economic Deluge Valve

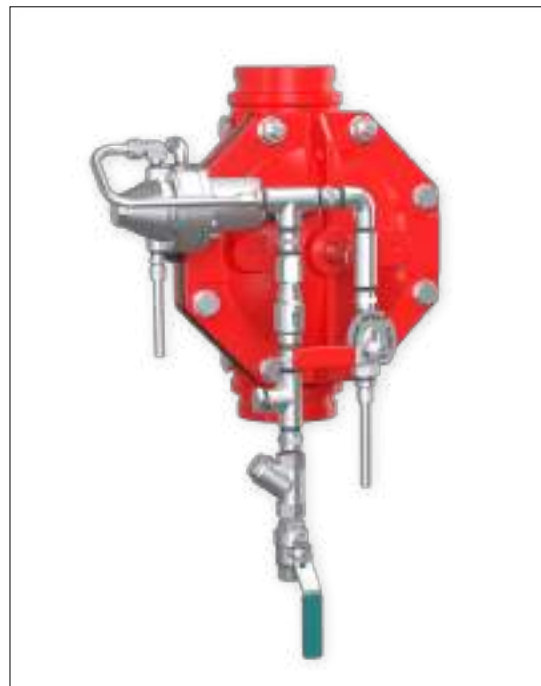
FDV-AP1

The FDV-AP1 fire protection system is based on Raphael's FDV deluge valve and is equipped with a pneumatically actuated control trim. The FDV is a fire protection control valve designed for deluge sprinkler systems, specifically intended for installation in hazardous environments. It is suitable for both vertical and horizontal installations and features a globe-pattern, line-pressure-operated design with a direct elastomeric diaphragm seal. The valve contains no balancing spring and no internal metallic components in the wetted area. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-AP1 deluge system is pneumatically actuated and can be reset remotely. When the Dry Pilot Detection Line, which is pressurized with air, is exposed to a predetermined temperature, the automatic fire sprinklers open (shatter), venting the air pressure from the detection line. The resulting pressure drop actuates the pneumatic operator, which in turn commands the deluge valve to open.

The system incorporates an emergency manual valve, allowing operation bypassing the fire detection system.

The system is suitable for use with automatic sprinklers on the dry pilot pipeline and with open nozzles on the main spraying pipelines.



MARKETS



Commercial



Industry



Marine



Storage



Residential



Airport



P.O.G.

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)

MIN. PNEUMATIC PRESSURE:

16 psi (1.1 bar)

ADVANTAGES

- Consists of only three parts: body, diaphragm, and cover plate – no wet metal spring inside the control chamber.
- Full-bore, unobstructed design.
- Simple manual reset to standby position without draining or opening the valve, and without closing the OS&Y or other valves in the system.
- 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

- Hydrodynamic 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 trip is actuated by the pneumatic pressure release of the Dry Pilot Line, caused by its exposure to flame heat.
- Soft closing, upon pressurization of the valve's control chamber - by line pressure or another independent water source - prevents surges.

The FDV-AP1 resets to the stand-by closed position by pressurizing the Dry Pilot Line.

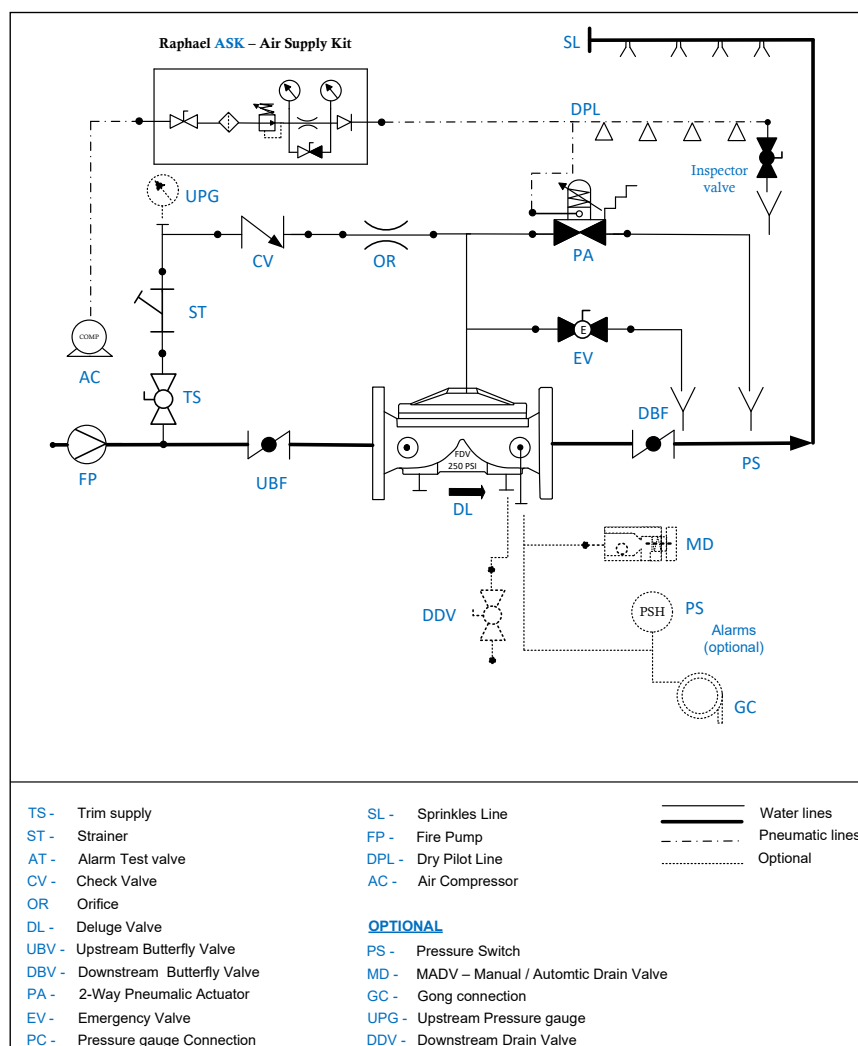
APPROVALS



Schematic drawing:

FDV-AP1

Set position



OPERATION

SET POSITION

Pressurized water in the valve's control chamber is trapped by the check valve (CV), the closed pneumatic actuator PAV-2 (PA), and the closed emergency valve (EV).

The air pressure accumulated in the dry pilot detection (DPL) line keeps the pneumatic actuator in the closed position, thereby maintaining the deluge valve closed.

FIRE SITUATION

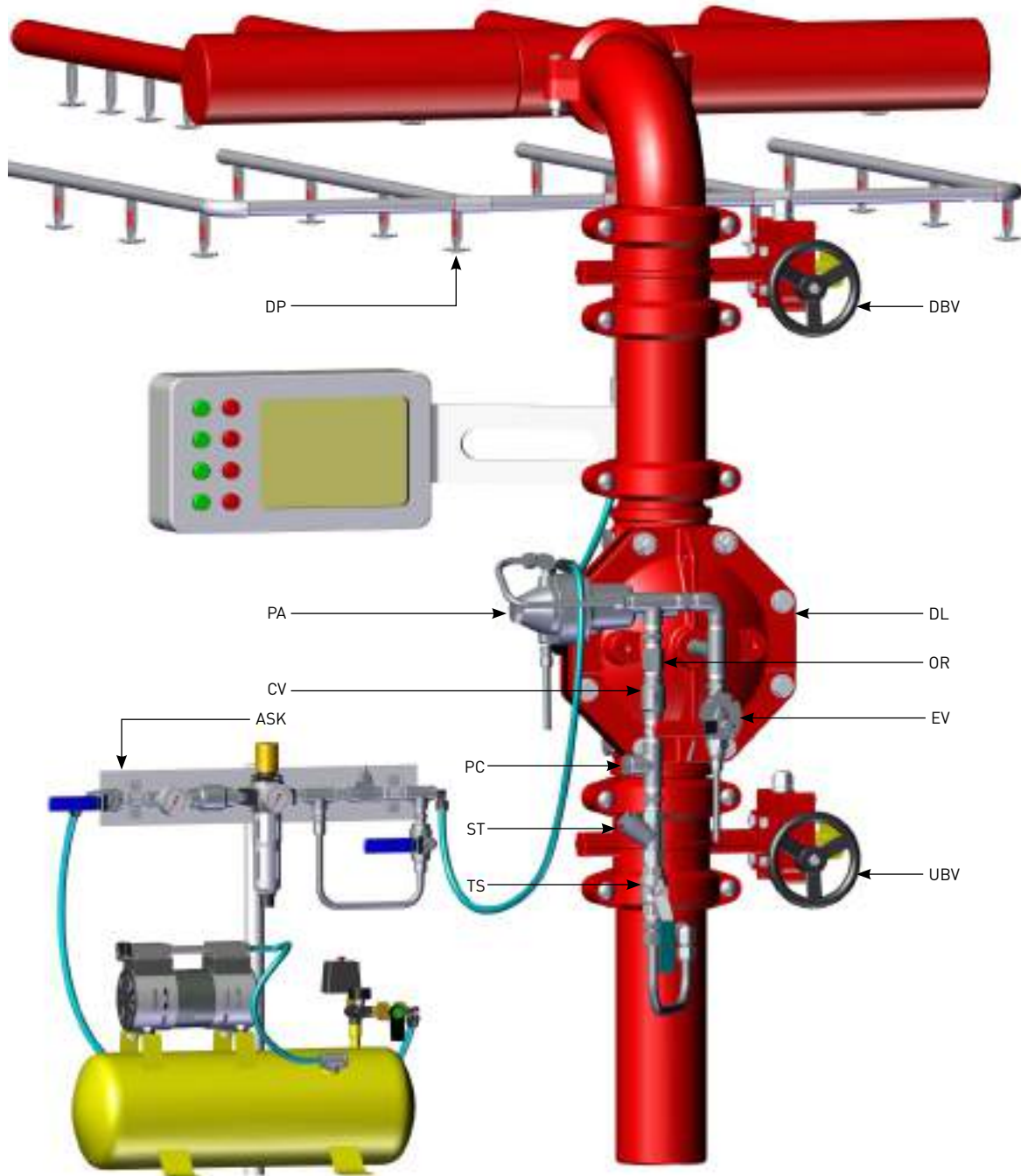
When one or more of the dry pilot detection line (DPL) automatic sprinklers are exposed to the predetermined temperature and shatter open, the detection line depressurizes, causing the pneumatic actuator (PA) to open.

The opening of the pneumatic actuator drains the deluge valve's control chamber. Consequently, the FDV deluge valve opens, allowing water to flow into the spray sprinkler line.

RESET POSITION

System reset requires replacing all shattered-open automatic fire sprinklers in the dry pilot detection line. The detection line is then re-pressurized to its set pressure.

The restored air pressure closes the pneumatic actuator (PA), which in turn closes the FDV deluge valve.



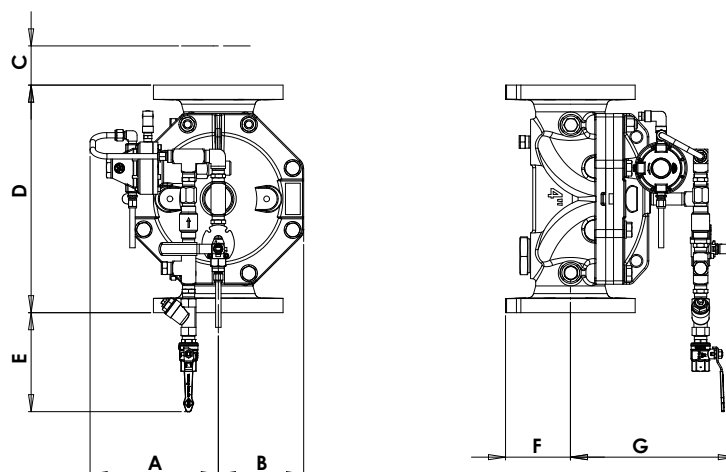
UBV - Upstream Butterfly Valve
DBV - Downstream Butterfly Valve
DL - FDV Deluge valve
TS - Trim supply valve

ST - "Y" strainer
CV - Check valve
PC - Pressure gauge Connection
OR - Orifice

EV - Emergency Valve
PA - PAV-2 Pneumatic Actuator
DP - Dry Pilot Line
ASK - Air Supply Kit

Parametric drawing:

FDV-AP1



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	194	7.6	200	7.8	180	7	225	8.8	253	9.9	305	12	324	12.7
B	58	2.2	70	2.7	116	4.5	148	5.8	177	6.9	231	9	308	12.1
C	45	1.8	42	1.6	21	0.8	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	273	10.7	263	10.3	211	8.3	173	6.8	141	5.5	88	3.5	N/A	N/A
F	52	2	58	2.2	100	3.9	114	4.5	142	5.6	172	6.8	203	8
G	232	9.1	246	9.6	276	10.8	290	11.4	357	14	363	14.3	453	17.8
Kg/lb	9.2	20.2	11	24	28.2	62.2	44	97	54.6	120	100	220	228	502

Factory Standard

MAIN VALVE

BODY & COVER

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

ELASTOMERS:

- NBR, 3-layered reinforced Natural Rubber
- EPDM, 3-layered reinforced

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
- Cupro-Nickel
- Monel®

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Pneumatic Working pressure
- System installation orientation
- Deluge valve ends and standard.
- Deluge valve material and coating.
- Trim materials
- Additional accessories needed:
Pressure gauge
Pressure switch
Drain valve (manual or automatic)
Gong

Electro-Pneumatically Actuated, Local Reset, Economic Deluge Valve

FDV-AC0

The FDV-AC0 fire protection system is based on Raphael's FDV deluge valve and is equipped with a pneumatically and electrically actuated control trim.

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

The FDV-AC0 Deluge system can be actuated both pneumatically and electrically, and it resets locally. In the event of a fire, when the pneumatic dry pilot detection line is exposed to heat, one or more of its automatic fire sprinklers shatter, releasing the air pressure from an actuator and causing the deluge valve to open. Alternatively, when a sensor of the electrical detection system activates the main control board, it opens a solenoid valve that vents the dry pilot line, thereby opening the deluge valve.

The system also incorporates an emergency valve that bypasses the fire detection systems for manual operation. Additionally, the trim is equipped with a PSA device, which enables local reset of the system—that is, closing the FDV valve locally by pressurizing its control chamber.

This system is suitable for use with automatic sprinklers on the dry pilot pipeline and with open nozzles on the main spraying pipelines.



MARKETS



Commercial



Industry



P.O.G.



Storage



Residential



Airport

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

PNEUMATIC PRESSURE:

29-58 psi (2-4 bar)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- Full-bore, unobstructed design.
- Simple manual reset to the standby position without draining or opening the valve, and without closing the OS&Y or other system valves.
- Full anti-columning capability allows virtually unlimited pilot line height.
- Fail-safe, open-type valve maintained in the standby closed position by the PSA.
- 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

- Hydrodynamic flow-pattern design ensures high flow rates with minimal head loss.
- The valve trips open automatically upon a gradual release of water pressure from its control chamber. The trip is actuated by the pneumatic pressure release of the Dry Pilot Line, caused by exposure to flame heat or by an electric sensor tripped by the fire heat.
- Soft closing, achieved by pressurizing the valve's control chamber with line pressure or another independent water source, prevents surges.

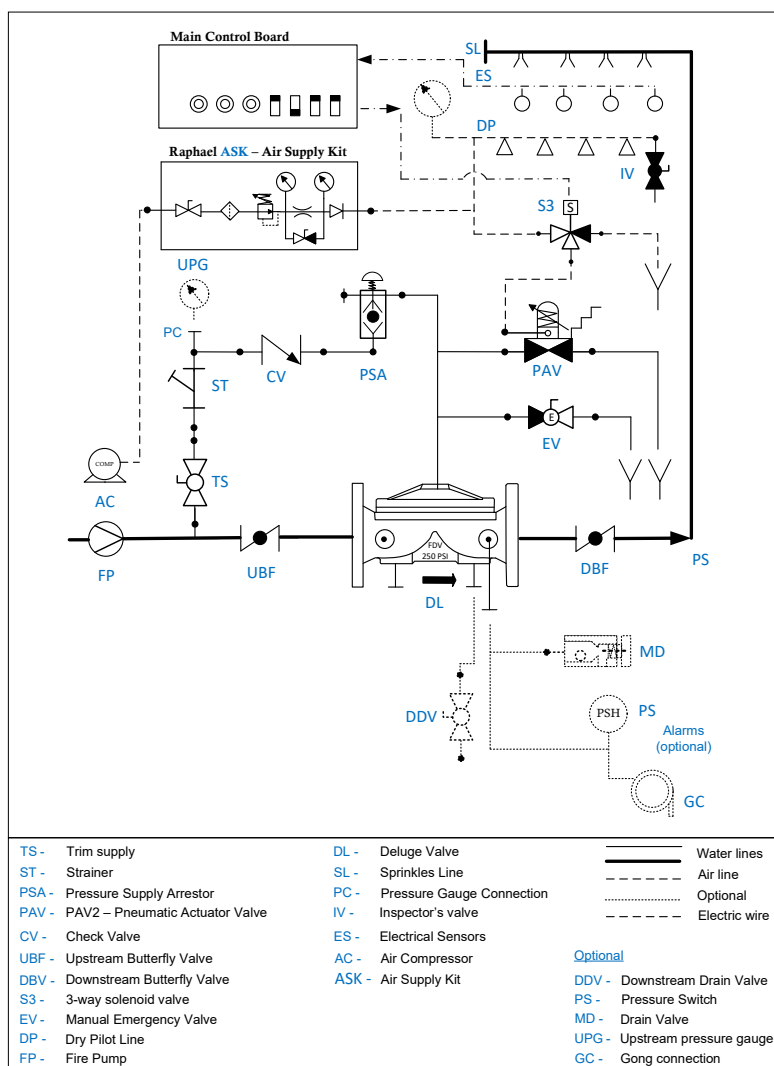
The FDV-AC0 resets to the standby closed position by pressurizing the Dry Pilot Line, de-energizing the solenoid valve through the control board and manually operating the PSA device.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

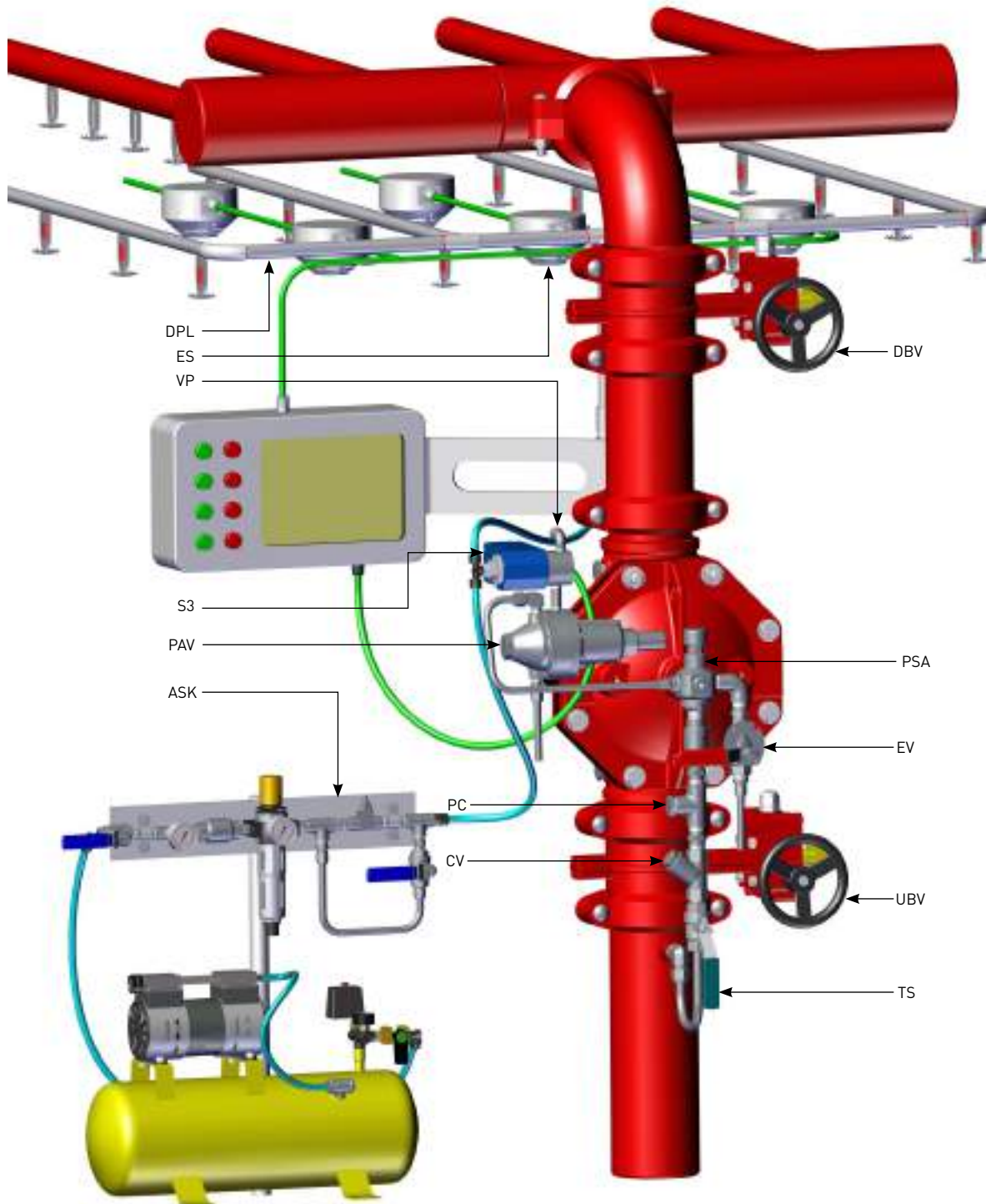
Pressurized water in the valve control chamber is retained by the check valve (CV), the closed pneumatic actuator (PAV), and the closed emergency valve (EV). Air pressure accumulated in the Dry Pilot detection line (DP) is transferred to the actuator through the 3-way solenoid valve (S3), the Deluge Valve (DL) closed.

FIRE SITUATION

When automatic sprinklers in the Dry Pilot detection line (DP) are exposed to fire and operate, the pilot line depressurizes, opening the actuator (PAV). Alternatively, the electrical detection system (ES) signals the main control board, which energizes the 3-way solenoid valve (S3). The solenoid valve bypasses the pilot line, depressurizes the actuator (PAV), and causes it to open. The FDV-AC0 control chamber drains, and the Deluge Valve (DL) opens.

RESET POSITION

System reset requires replacement of all operated sprinklers in the detection pilot line (DP). If the electrical alarm system was activated, it must be reset and the solenoid de-energized. The Dry Pilot line and the actuator control chamber (PAV) must then be re-pressurized by operating the PSA push button until the set pneumatic pressure is restored.



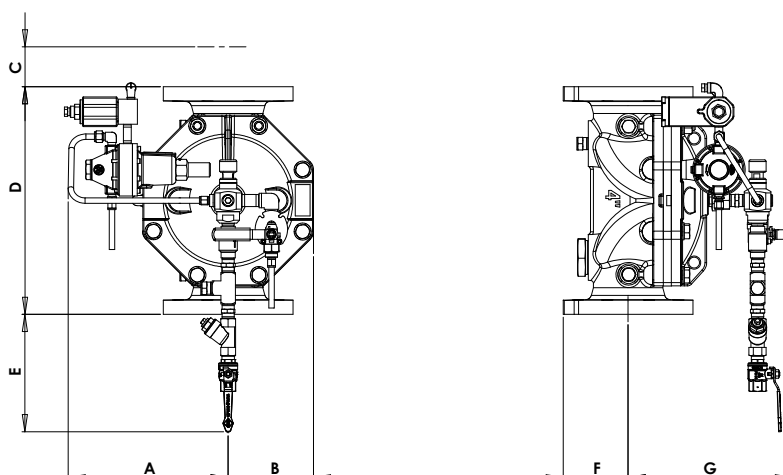
TS – Trim Supply
ST – Strainer
CV – Check Valve
S3 – 3-way solenoid valve
EV – Emergency Valve

VP – Venting Port
CP – Pressure gauge Connection
PAV – Pneumatic Actuator Valve
PSA – Pressure Supply Arrestor
ASK – Air Supply Kit

DPL – Dry Pilot line
UBV – Upstream Butterfly Valve
DBV – Downstream Butterfly Valve

Parametric drawing:

FDV-ACO



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	195	7.6	206	8.1	238	9.4	280	11	305	12	306	12	390	15.3
B	105	4.1	105	4.1	116	4.6	150	5.9	177	6.7	231	9	308	12.1
C	96	3.8	92	3.6	72	2.8	7	0.3	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	305	12	295	10.1	243	9.6	206	8.1	174	6.8	117	4.6	22	0.8
F	52	2	58	2.3	74	2.9	114	4.5	141	5.5	172	6.7	203	8
G	227	8.9	223	8.8	252	9.9	288	11.3	356	14	387	15	479	1.6
Kg/lb	10.3	22.7	12.2	26.9	29.5	65	45.3	100	56	123	101	222	230	507

Factory Standard

MAIN VALVE

BODY & COVER

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

ELASTOMERS:

- NBR, 3-layered reinforced Natural Rubber
- EPDM, 3-layered reinforced

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
- Cupro-Nickel
- Monel®

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Pneumatic working pressure
- System installation orientation
- Additional accessories needed

Electro-Pneumatically Actuated, Remote Reset, Economic Deluge Valve

FDV-AC1

The FDV-AC1 fire protection system is based on Raphael's FDV deluge valve and is equipped with both pneumatically and electrically actuated control trim. The installed FDV valve is available in a variety of optional materials and coatings, making it suitable for installations in hazardous environments.

The FDV-AC1 deluge system is pneumatically actuated and supports remote resetting.

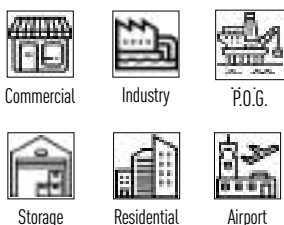
In the event of a fire, when the pneumatic dry pilot detection line is exposed to heat from flames, one or more of its automatic fire sprinklers shatter, venting air pressure from both the dry pilot line and the pneumatic actuator. This pressure drop activates the pneumatic actuator, causing the deluge valve to open.

Alternatively, if an electrical detection sensor signals the main control board, it activates a solenoid valve, which vents the dry pilot line, activates the pneumatic actuator, and opens the deluge valve.

The system includes an emergency valve that allows manual activation by bypassing both the fire detection systems and the solenoid valve. It is compatible with automatic sprinklers on the dry pilot line and open nozzles on the main spray pipelines.



MARKETS



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)

MIN. PNEUMATIC PRESSURE:

29 psi (2 bar)

ADVANTAGES

- Only three parts: body, diaphragm, and cover plate - with no wet metal spring inside the control chamber.
- Full-bore, unobstructed design.
- Simple valve reset to standby position without draining or opening the valve, and without closing the OS&Y or other system valves.
- Fail-safe open valve, maintained in a normally closed standby 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

- Hydro-dynamic pattern design ensures high flow rates with minimal head loss.
- The valve trips open automatically upon the gradual release of water pressure from its control chamber. The trip is actuated either by an electric signal sent to the valve's solenoid or by a pneumatic pressure drop in the dry pilot line caused by one or more open sprinklers.
- Soft closing, upon pressurization of the valve's control chamber by line pressure or an independent water source, prevents surges.

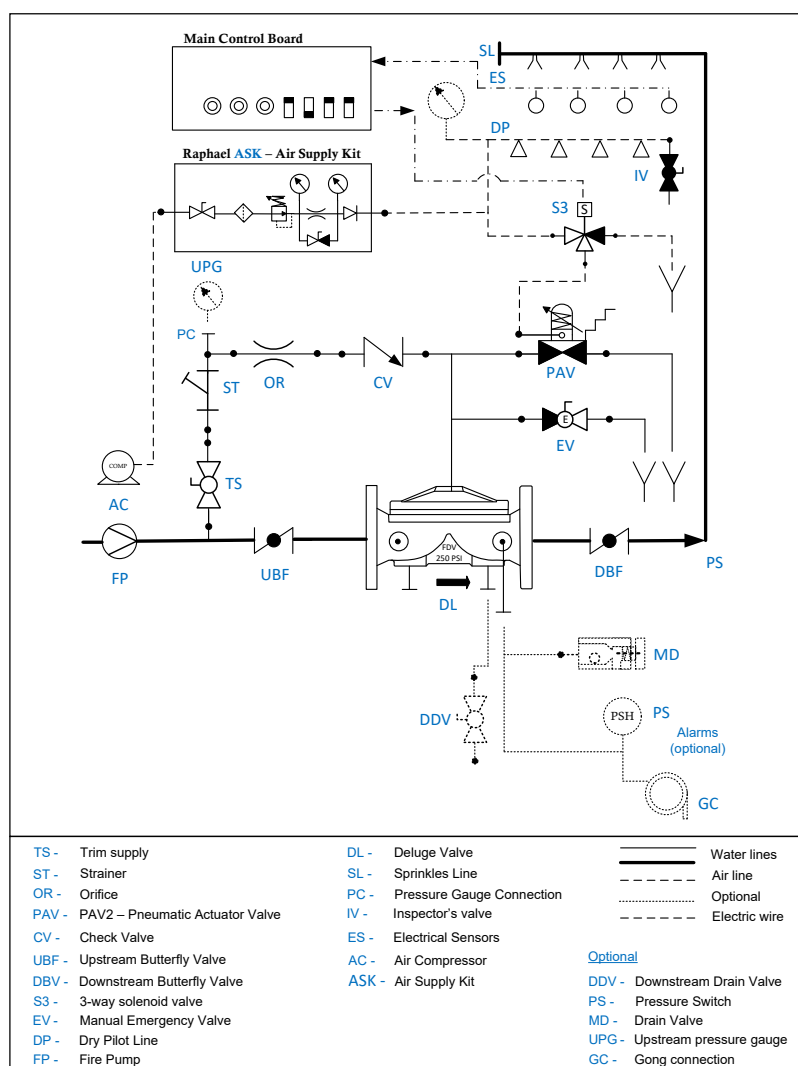
The FDV-AC1 resets to its standby closed position either by de-energizing the alarm system solenoid coil through the main control panel or by re-pressurizing the dry pilot line.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

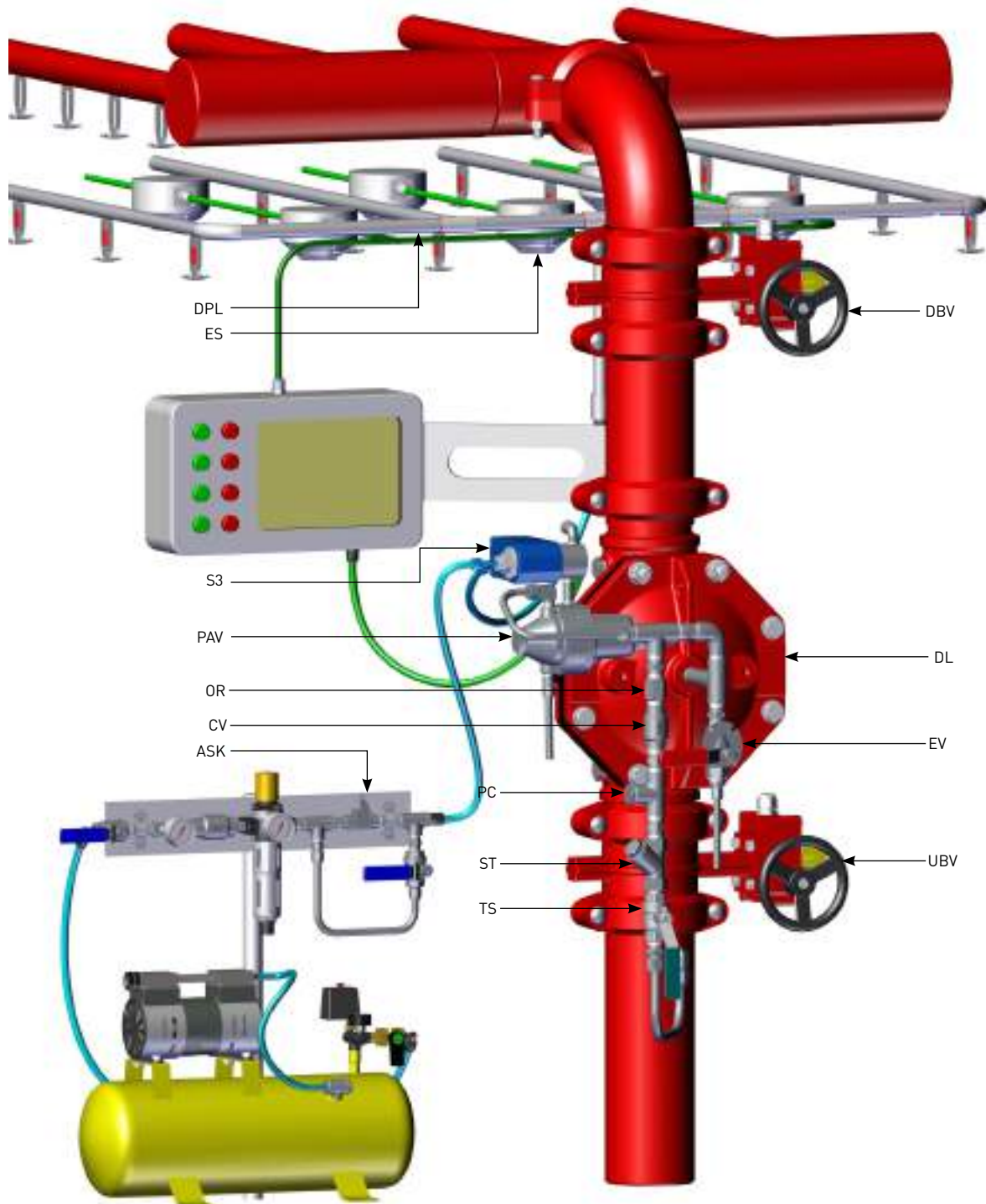
Pressurized water in the valve's control chamber is trapped by the check valve (CV), the closed pneumatic 2-way actuator (PAV), and the closed emergency valve (EV). Air pressure accumulated in the Dry Pilot detection line (DP) is conveyed to the actuator through the 3-way solenoid valve (S3), thereby keeping the Deluge valve (DL) closed.

FIRE SITUATION

When some of the Dry Pilot detection line's (DP) automatic sprinklers are exposed to the heat of flames and shatter open, the pilot line depressurizes, releasing the actuator (PAV). Alternatively, an electric detection system senses the heat and triggers the main control board, which energizes the 3-way solenoid valve (S3). The solenoid valve bypasses the Dry Pilot detection line, depressurizes the actuator (PAV) control chamber, and opens it. The open actuator drains the FDV-DC1 control chamber, causing the Deluge valve (DL) to open.

RESET POSITION

The upstream butterfly valve must be closed. Resetting the system requires replacing all shattered fire sprinklers in the detection pilot line (DP). Alternatively, the electrical alarm system must be reset and the solenoid de-energized. After the Dry Pilot line is re-pressurized, thereby closing the pneumatic actuator, the upstream butterfly valve must be reopened. The Deluge control chamber is then pressurized by the constant upstream pressure, and the Deluge valve (DL) closes.



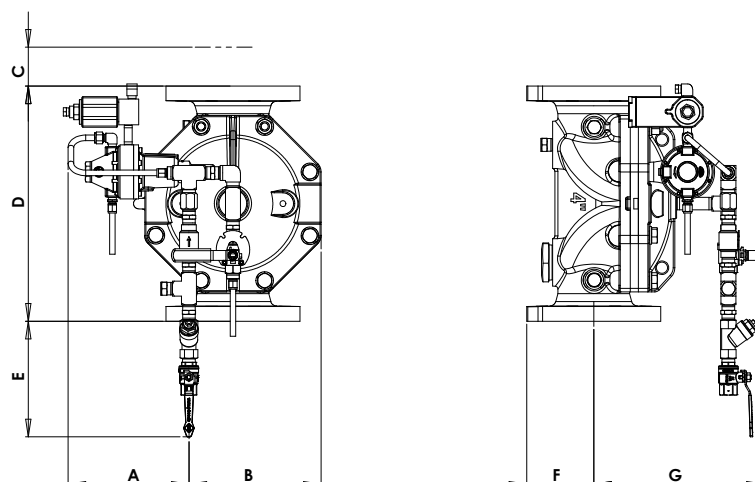
S3 - Solenoid 3 way
DL - FDV Deluge valve
TS - Trim supply valve
ST - Strainer
CV - Check valve

PA - PAV - Pneumatic Actuator
PC - Pressure gauge Connection
OR - Orifice
DBV - Downstream Butterfly Valve
UBV - Upstream Butterfly Valve

EV - Emergence Valve
ASK - Air Supply Unit
DPL - Dry Pilot Line
ES - Electric Sensors

Parametric drawing:

FDV-AC1



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	200	7.8	200	7.8	232	9.1	280	11	253	9.9	306	12	324	12.7
B	62	2.4	62	2.4	116	4.6	150	5.9	177	6.7	231	9	308	12.1
C	94	3.7	140	5.5	70	2.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D	220	8.6	220	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	295	10.1	285	11.2	243	9.6	196	7.7	164	6.5	110	4.3	N/A	N/A
F	51	2	58	2.2	100	3.9	114	4.5	141	5.5	172	6.7	203	8
G	223	8.8	245	9.6	252	9.9	292	11.5	360	1.4	394	15.5	484	97.8
Kg/lb	10	22	11.8	26	29	64	44.8	98.7	56	123	101	222	230	507

Factory Standard

MAIN VALVE

BODY & COVER

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

ELASTOMERS:

- NBR, 3-layered reinforced Natural Rubber
- EPDM, 3-layered reinforced

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:

- Brass Nickel plated
- Nickel Aluminum Bronze
- Stainless steel CF8M
- Monel®
- Cupro-Nickel

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Pneumatic working pressure
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Solenoid Voltage
- Solenoid Protection
- Trim materials
- Additional accessories needed:
 - Pressure gauge
 - Pressure switch
 - Drain valve (manual or automatic)
 - Gong

Hydraulically Actuated, Local Reset, Economic Deluge Valve

FDV - AH0

The FDV-AH0 fire protection system is based on Raphael's FDV deluge valve and is equipped with a hydraulically controlled trim. The FDV is a fire protection control valve for deluge sprinkler systems, specifically designed for installation in hazardous environments. It is suitable for both vertical and horizontal installations and features a globe-pattern, line-pressure-operated design with a direct elastomeric diaphragm seal. The valve contains no balancing spring and has no internal metallic components in the wetted area. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-AH0 deluge system is hydraulically actuated and can be locally reset. In a fire situation, when the wet pilot detection line is exposed to flame heat, one or more automatic sprinklers shatter, releasing pressure from the deluge control chamber and causing the deluge valve to open.

The system incorporates an emergency valve that bypasses the fire detection system for manual operation. Additionally, the trim is equipped with a PSA - a device that enables local system reset by repressurizing the control chamber and closing the FDV valve.

The system is suitable for use with automatic sprinklers on the wet pilot pipeline and with open nozzles on the main spraying pipelines.



MARKETS



Commercial



Industry



Marine



Storage



Residential



Airport



P.O.G.

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

ADVANTAGES

- Consists of only three parts: body, diaphragm, and cover plate – no wet metal spring inside the control chamber.
- Full-bore, unobstructed design.
- Simple manual reset to standby position without draining or opening the valve, and without closing the OS&Y or other valves in the system.
- Fail-safe, open-type valve maintained in the standby closed position by the PSA.
- 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

- Hydrodynamic 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 trip is actuated by the hydraulic pressure release of the wet Pilot Line, caused by its exposure to flame heat.
- Soft closing, upon pressurization of the valve's control chamber - by line pressure or another independent water source - prevents surges.

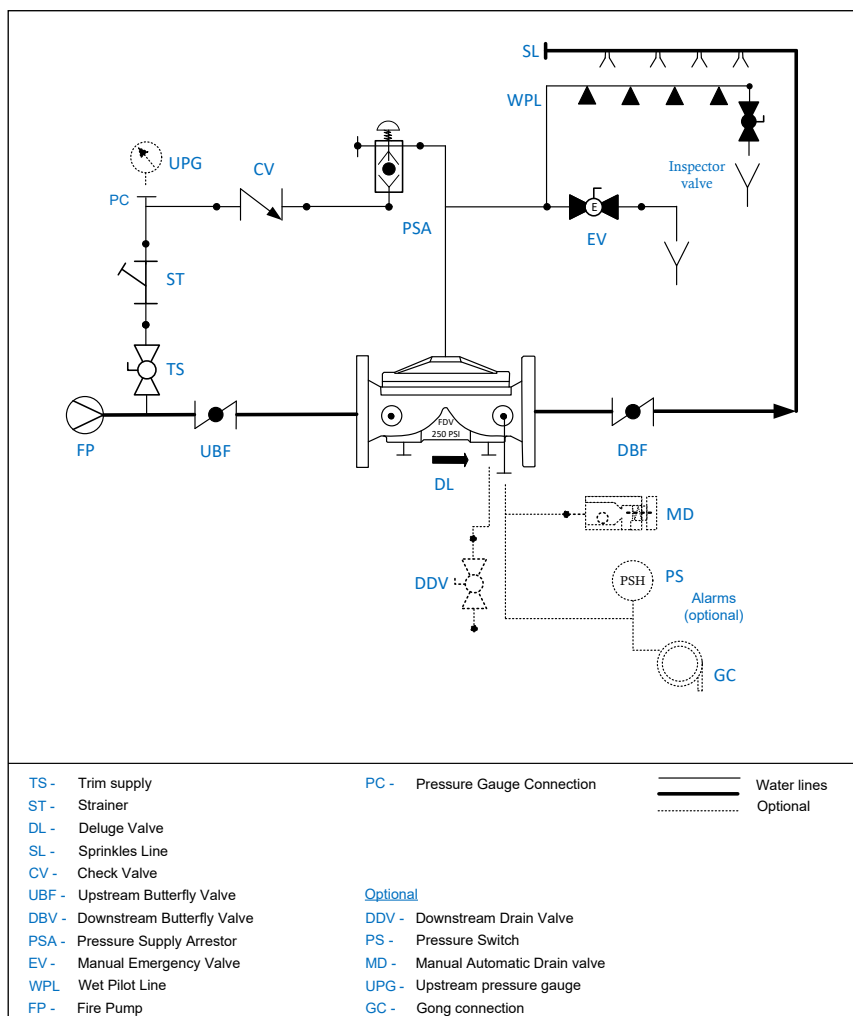
The FDV-AH0 resets to the stand-by closed position by pressurizing the wet Pilot Line and manually operating the PSA device.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

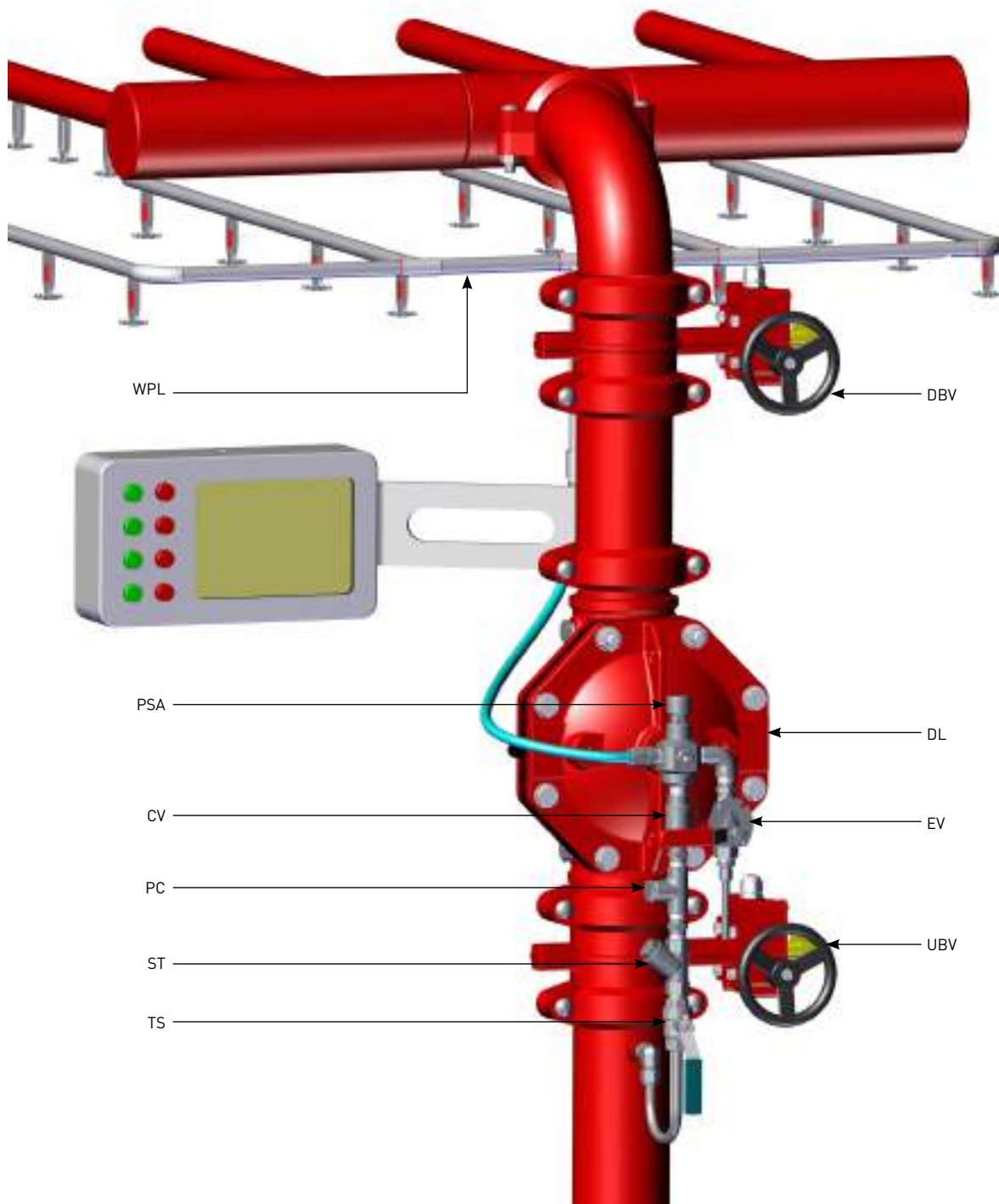
Pressurized water in the valve's control chamber is trapped by the closed PSA [PSA], the closed emergency valve [EV], and the closed automatic wet pilot detection line [WPL]. The hydraulic pressure accumulated in the wet pilot detection line keeps the FDV deluge valve [DL] closed.

FIRE SITUATION

Pressurized water in the valve's control chamber is trapped by the closed PSA [PSA], the closed emergency valve [EV], and the closed automatic wet pilot detection line [WPL]. The hydraulic pressure accumulated in the wet pilot detection line keeps the FDV deluge valve [DL] closed.

RESET POSITION

System reset requires replacement of all shattered automatic fire sprinklers in the wet pilot detection line. The wet pilot line must then be re-pressurized by the upstream supply pressure. The PSA [PSA] push button must be pressed to allow upstream pressure to re-pressurize the pilot line and close the FDV main valve.



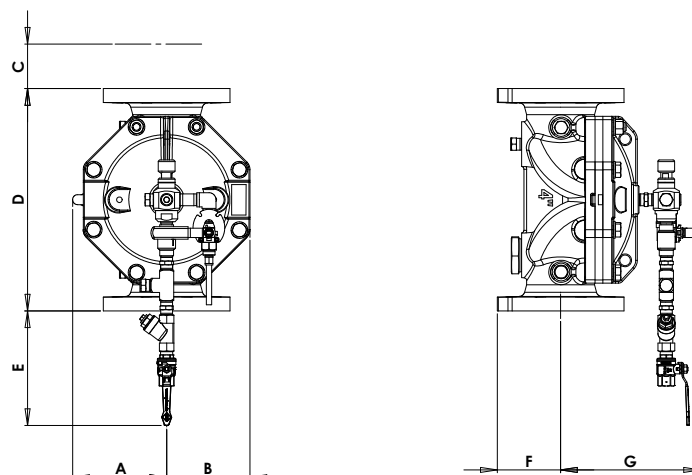
TS – Trim Supply
DL – Deluge valve
ST – Strainer
CV – Check Valve

EV – Emergency Valve
CP – Pressure gauge Connection
PSA – Pressure Supply Arrestor
WPL – Wet Pilot line

UBV – Upstream Butterfly Valve
DBV – Downstream Butterfly Valve

Parametric drawing:

FDV-AH0



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	72	2.8	81	3.2	134	5.3	170	6.7	197	7.7	250	9.8	324	12.7
B	97	3.8	105	4.1	100	3.4	150	5.9	177	6.7	230	9	307	12
C	N/A	N/A	N/A	N/A	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	305	12	295	11.6	244	9.6	206	8.1	174	6.8	120	4.7	22	0.8
F	52	2	58	2.3	100	3.9	114	4.5	141	5.5	172	6.7	203	8
G	172	6.7	186	7.3	216	8.5	251	9.9	318	12.5	353	13.9	442	17.4
Kg/lb	6	13.2	7.7	16.9	25	55	40.7	89	51	112	96	152	225	496

Factory Standard

MAIN VALVE

BODY & COVER

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

ELASTOMERS:

- NBR, 3-layered reinforced Natural Rubber
- EPDM, 3-layered reinforced

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:

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

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
- Wet pilot line Height
- Additional accessories needed:
 - Pressure gauge
 - Pressure switch
 - Drain valve (manual or automatic)
 - Gong

Hydraulically Actuated, Remote Reset Deluge Valve

FDV - AH1

The FDV-AH1 fire protection system is based on Raphael's FDV deluge valve and is equipped with a hydraulically actuated control trim. The FDV serves as a fire protection control valve for deluge sprinkler systems, specifically designed for installation in hazardous environments. It is suitable for both vertical and horizontal installations and features a globe-pattern, line-pressure-operated design with a direct elastomeric diaphragm seal.

The valve contains no balancing spring and no internal metallic components in the wetted area. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-AH1 deluge system is hydraulically actuated and remotely resettable. In the event of a fire, when the wet pilot detection line is exposed to heat from flames, one or more automatic sprinklers shatter, releasing water pressure from the actuator control chamber and causing the deluge valve to open.

The system includes an emergency valve that bypasses the fire detection system for manual operation. It is suitable for use with automatic sprinklers on the dry pilot pipeline and with open nozzles on the main spraying pipelines.



MARKETS



TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

ADVANTAGES

- Consists of only three parts: body, diaphragm, and cover plate – no wet metal spring inside the control chamber.
- Full-bore, unobstructed design.
- Simple manual reset to standby position without draining or opening the valve, and without closing the OS&Y or other valves in the system.
- Low maintenance cost: serviced in-line with only one replaceable part – the long-life elastomeric diaphragm.
- Conforms to the Inspection, Testing, and Maintenance Standard for Water-Based Fire Protection Systems (NFPA 25).

CHARACTERISTICS

- Hydrodynamic 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 trip is actuated by the hydraulic pressure release of the wet Pilot Line, caused by its exposure to flame heat.
- Soft closing, upon pressurization of the valve's control chamber - by line pressure or another independent water source - prevents surges.

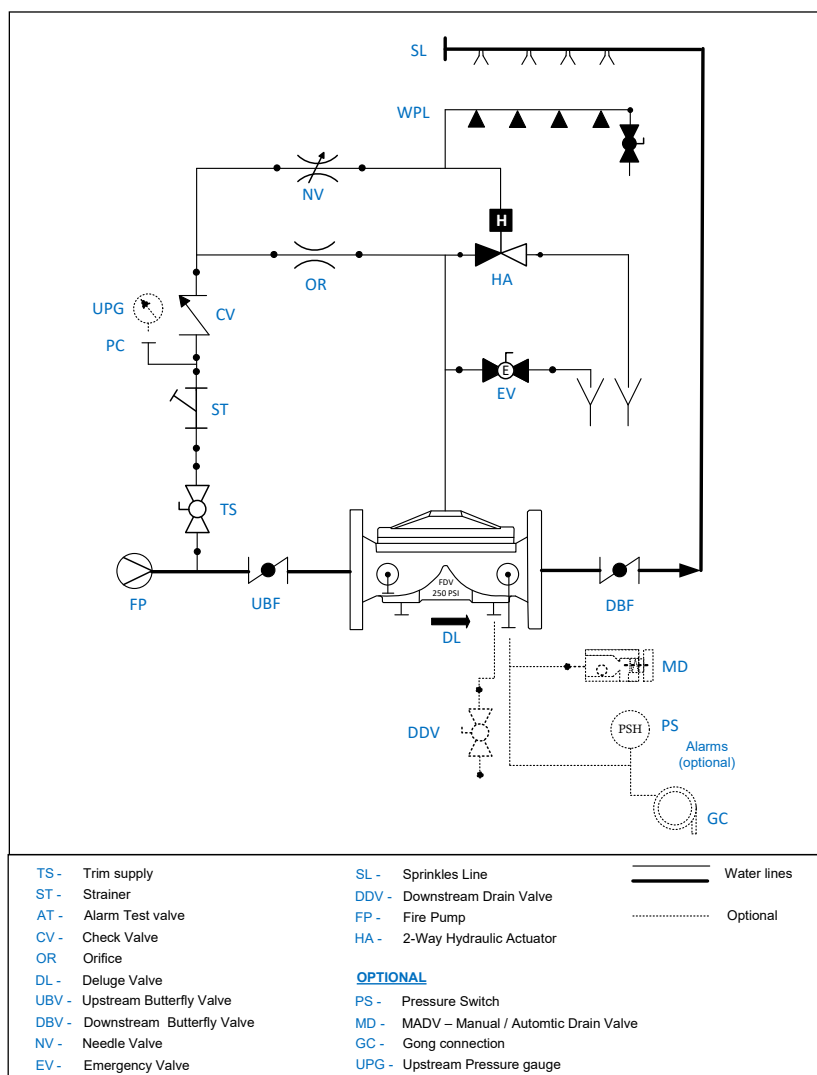
The FDV-AH1 resets to the stand-by closed position by pressurizing the wet Pilot Line.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

Pressurized water in the FDV (DL) control chamber is trapped by the check valve (CV), the closed HAV-2 actuator (HA), and the closed emergency valve (EV).

The hydraulic pressure in the Wet Pilot Detection Line (WPL) keeps the HAV-2 actuator in the closed position, thereby maintaining the FDV deluge valve closed.

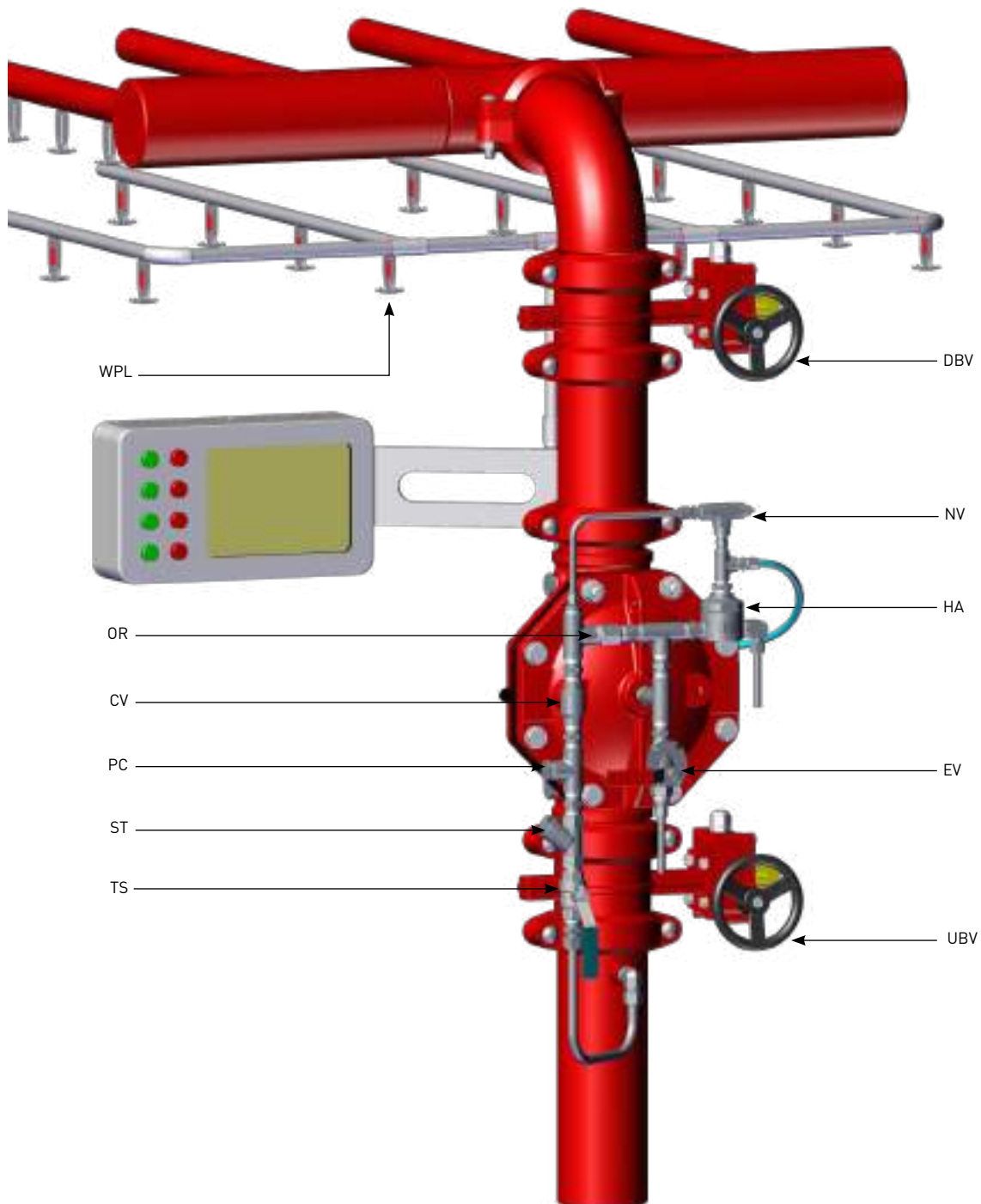
FIRE SITUATION

When one or more automatic fire sprinklers in the Wet Pilot Detection Line (WPL) are exposed to the predetermined temperature, they shatter open, causing the pilot detection line to depressurize. This opens the HAV-2 actuator (HA), which in turn drains the deluge valve's control chamber, causing the FDV deluge valve to open and admit water into the spray sprinkler line (SL).

RESET POSITION

System reset requires replacement of all shattered-open fire sprinklers in the Wet Pilot Detection Line (WPL).

The Wet Pilot Detection Line is then repressurized, which resets the HAV-2 actuator (HA) and causes the FDV deluge valve to close.



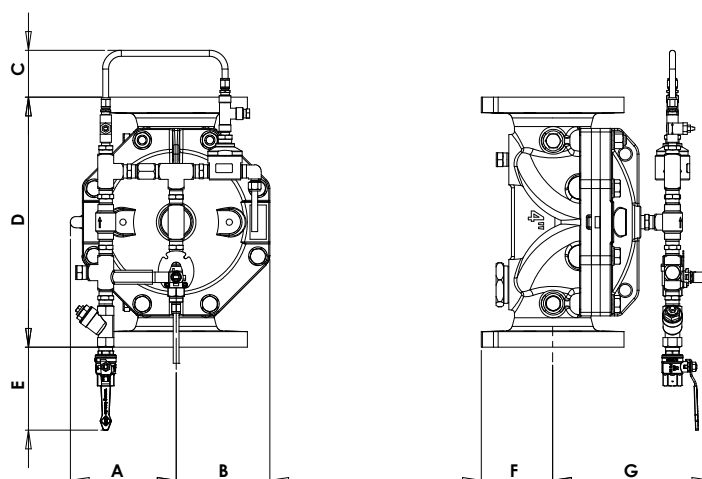
UBF - Upstream Butterfly valve
DBF - Downstream Butterfly valve
TS - Trim supply valve
SR - Y strainer

CV - Check valve
OR - Orifice
PC - Pressure gauge connection
NV - Needle valve

EV - Emergency Valve
HA - HAV-2 - Hydraulic Actuator
WPL - Wet Pilot Line

Parametric drawing:

FDV-AH1



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	160	6.3	160	6.3	160	6.3	169	6.6	197	7.7	248	9.7	324	12.7
B	136	5.3	136	5.3	136	5.3	150	5.9	177	6.7	232	9.1	308	12.1
C	174	6.8	165	6.8	112	4.4	75	2.9	43	1.7	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	230	9	221	8.7	170	6.7	132	5.2	100	3.9	47	1.8	N/A	N/A
F	51	2	58	2.3	100	3.9	115	4.5	142	5.6	172	6.7	203	8
G	177	6.9	190	7.5	220	8.6	252	9.9	323	12.7	358	14	447	17.6
Kg/lb	6.6	14.5	8.4	18.5	25.6	56.4	41.2	90	54	119	97	213	225	496

Factory Standard

MAIN VALVE

BODY & COVER

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

ELASTOMERS:

- NBR, 3-layered reinforced Natural Rubber
- EPDM, 3-layered reinforced

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:

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

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Working pressure
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Trim materials
- Additional accessories needed:
Pressure gauge
Pressure switch
Drain valve (manual or automatic)
Gong

Hydraulically Actuated, Remote Reset Deluge Valve

FDV-3W- AH1

The FDV-3W-AH1 fire protection system is based on Raphael's FDV deluge valve and is equipped with a hydraulically actuated control trim. The FDV functions as a fire protection control valve for deluge sprinkler systems and is specifically designed for installation in hazardous environments. It is suitable for both vertical and horizontal installations and features a globe-pattern, line-pressure-operated design with a direct elastomeric diaphragm seal.

The valve contains no balancing spring and no metallic components in the wetted area. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-3W-AH1 deluge system is hydraulically actuated and can be reset remotely. When one or more automatic sprinklers in the wet pilot detection line are exposed to flame heat and shatter open, the pressure in the detection line decreases. This pressure drop also reduces the pressure in the three-way actuator's control chamber, causing the actuator to change its state. In this state, the actuator drains the deluge valve's control chamber, allowing the valve to open fully and admit water into the spray sprinkler system.

When the detection line is re-pressurized, the actuator returns to its initial state. This allows upstream pressure to flow into the deluge valve's control chamber, re-pressurizing it and closing the valve. Consequently, water flow to the spray sprinkler system stops.

The deluge system includes an emergency valve that bypasses the fire detection system for manual operation. It is suitable for use with automatic sprinklers on the wet pilot line and with open nozzles on the main spray pipelines.



MARKETS



Commercial



Industry



Marine



P.O.G.



Storage



Residential



Airport

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

ADVANTAGES

- Only three parts: body, diaphragm, and cover plate. No wetted metal spring inside the control chamber.
- Full-bore, unobstructed design.
- Simple manual reset to the standby position without closing the OS&Y or other system valves.
- Open fail-safe valve, maintained in the 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

- Hydrodynamic pattern design ensures high flow rates with minimal head loss.
- The valve automatically trips open when water pressure in its control chamber is gradually released. The trip is actuated by a pressure drop in the pilot line caused by flame heat that triggers one or more automatic sprinklers to open.
- Soft closing upon re-pressurization of the valve's control chamber—by line pressure or another independent water source—prevents surges.

The FDV-3W-AH1 three-way control principle ensures full valve opening with maximum flow rate and minimal head loss.

The system resets to the standby closed position by replacing the opened sprinkler(s) and re-pressurizing the pilot line.

APPROVALS



Set position



SET POSITION

Pressurized water in the valve's control chamber is retained by the check valve (CV) and the closed emergency valve (EV), keeping the FDV deluge valve in a closed position.

The control chamber of the hydraulic actuator HAV-3 (HA) is pressurized by the Wet Pilot Line (WPL). This pressure holds the actuator open, allowing upstream water to flow into the deluge valve's control chamber and thereby maintaining the valve in its closed condition.

FIRE SITUATION

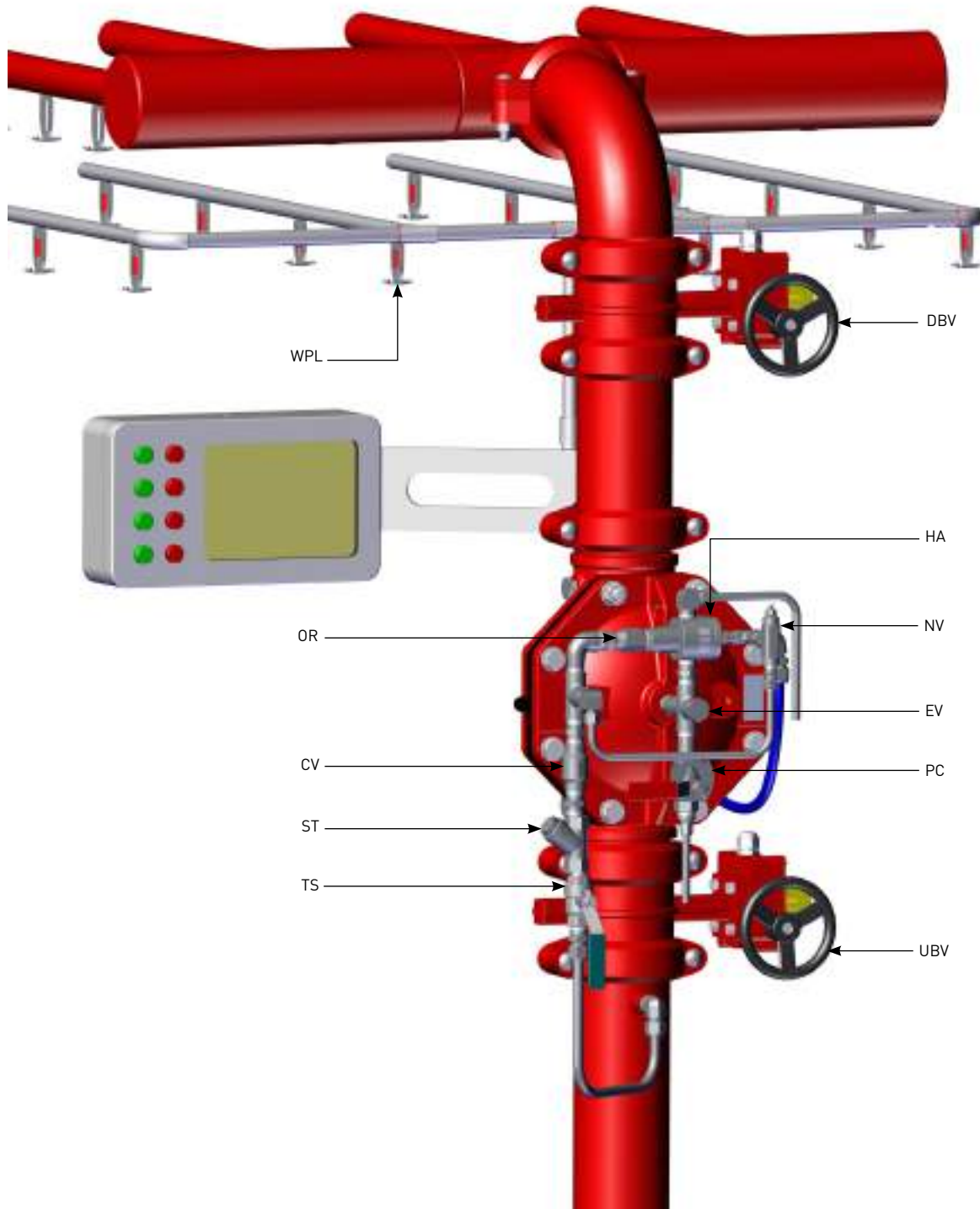
When one or more automatic sprinklers in the Wet Pilot detection Line (WPL) are exposed to fire heat and operate, the line pressure drops. As a result, the pressure in the control chamber of the 3-way hydraulic actuator (HA) also decreases, causing it to change state.

In this new position, the actuator vents the deluge valve's control chamber to drain, opening the deluge valve and allowing water to flow into the sprinkler system (SL).

RESET POSITION

To reset the system, all operated automatic sprinklers in the Wet Pilot Detection Line (WPL) must be replaced. The Wet Pilot Line and the actuator's (HA) control chamber are then re-pressurized, returning the actuator to its normal position.

In this state, the actuator permits flow from the Trim Supply valve (TS), through the orifice (OR), into the deluge valve control chamber. This re-pressurization closes the deluge valve and stops water discharge from the sprinkler system.



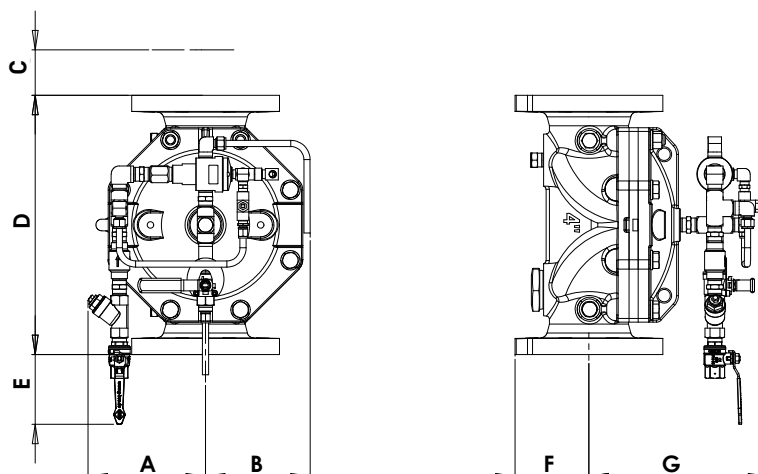
HA - Hydraulic actuator 3 way
EV - Emergency Unit
NV - Needle Valve
UBV - Upstream Butterfly Valve

DBV - Downstream Butterfly Valve
PC - Pressure gauge connection
WPL - Wet Pilot Line
CV - Check Valve

OR - Orifice
SR - "Y" Strainer
TS - Trim Supply

Parametric drawing:

FDV-3W-AH1



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	181	7	181	7	181	7	181	7	197	7.7	250	9.8	308	12.1
B	161	6.3	161	6.3	161	6.3	161	6.3	177	7	231	9	308	12.1
C	35	1.3	27	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D	202	8.0	325	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	206	8.1	196	7.7	143	5.6	107	4.2	76	3	N/A	N/A	N/A	N/A
F	52	2	58	2.3	100	3.4	114	4.5	141	5.5	172	6.8	203	7.8
G	240	9.4	253	9.9	283	11.1	320	12.6	386	15.2	420	16.5	510	20
Kg/lb	7.3	16.2	9.2	20.3	26.3	58	42	92.6	52.7	116	98	216	227	500

Factory Standard

MAIN VALVE

BODY & COVER

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

ELASTOMERS:

- NBR, 3-layered reinforced Natural Rubber
- EPDM, 3-layered reinforced

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:

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

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- System working pressure
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Trim materials
- Pilot line installation height
- Additional accessories needed
Pressure gauge
Pressure switch
Drain valve (manual or automatic)
Gong

Hydraulically & Anti-Columning Actuated, Remote Reset Deluge Valve

FDV-AA0

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

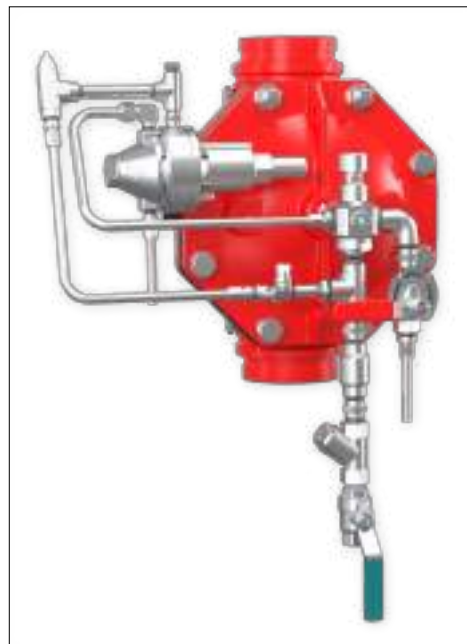
It is suitable for both vertical and horizontal installations and features a globe-pattern, line-pressure-operated design with a direct elastomeric diaphragm seal. The valve contains no balancing spring or internal metallic components in the wetted area. Its hydrodynamic flow path ensures high flow rates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

The FDV-AA0 deluge system is actuated hydraulically and reset locally.

When a hydraulic detection system - a Wet Pilot Detection Line - is exposed to a predetermined temperature, the automatic fire sprinklers shatter open, causing a pressure drop that activates a pilot valve, which in turn commands the FDV-AA0 deluge valve to open. The Anti-Columning feature ensures reliable system operation regardless of the detection line's height or its distance from the control valve. The deluge system also incorporates an emergency valve that bypasses the fire detection system for manual operation.

In addition, the FDV-AA0 system is equipped with a PSA device that manually and locally pressurizes the deluge control chamber and the wet pilot line. This keeps the valve closed, prevents re-pressurization during actuation (when the control chamber must be drained), and compensates for minor leakage-related pressure losses.

This configuration is suitable for open-nozzle water spray pipelines.



MARKETS



ADVANTAGES

- Only three parts: body, diaphragm & cover plate, no wet metal spring inside the control chamber.
- Full-bore, unobstructed design.
- Simple manual reset of the valve to standby position without draining or opening the valve itself, neither closing OS&Y or other valves in the system
- Full Anti Columning property enables a nearly unlimited pilot line height.
- Open fail safe valve, maintained in stand-by closed position by the PSA.
- Low maintenance cost: the valve is serviced in-line and only one replaceable part - the long-life elastomeric diaphragm.
- Conforms with inspection, Testing and Maintenance Standard of water-based Fire Protection Systems, NFPA 25

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)

CHARACTERISTICS

- Hydrodynamic 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 trip is actuated by the hydraulic pressure release of the Wet Pilot Line, caused by its exposure to flame heat.
- The anti-columning properties guarantee an immediate system trip, regardless of the Wet Pilot height.
- Soft closing, upon pressurization of the valve's control chamber- by line pressure or another independent water source—prevents surges

The FDV-AA0 resets to the stand-by closed position by pressurizing the Dry Pilot Line and manually operating the PSA device.

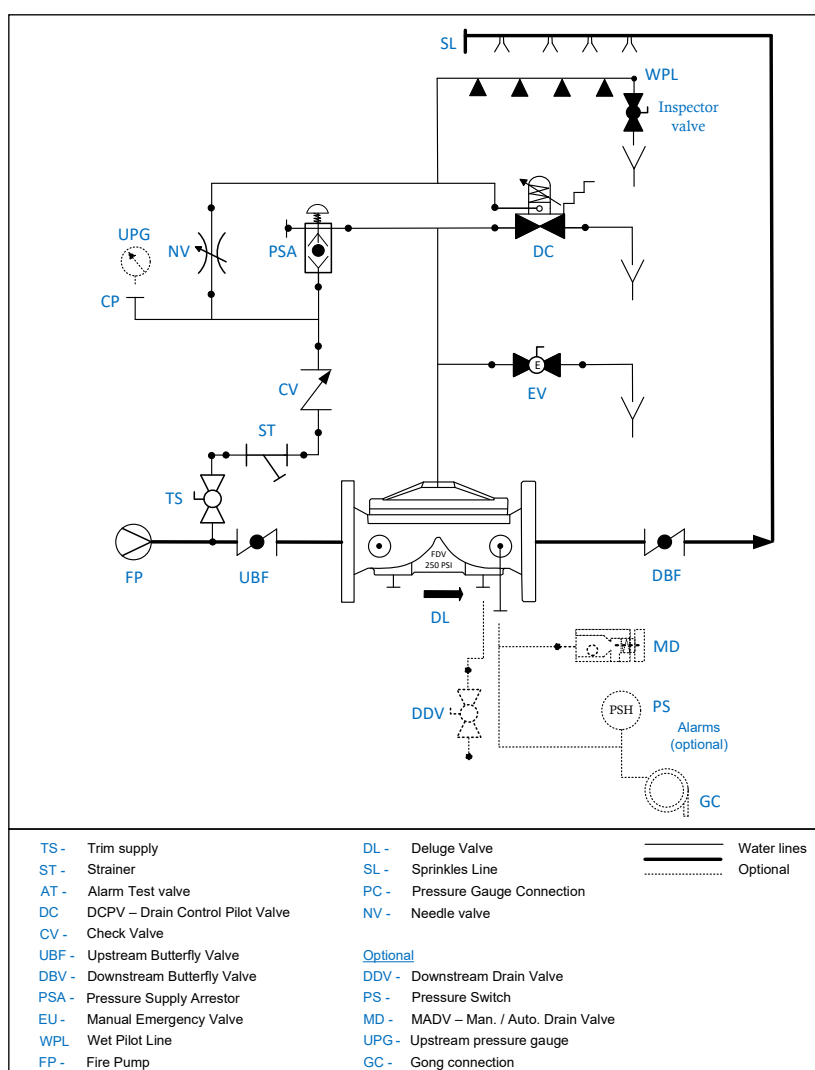
APPROVALS



Schematic drawing:

FDV-AA0

Set position



OPERATION

SET POSITION

Pressurized water in the valve's control chamber (DL) is trapped by the closed PSA (PSA), the closed emergency valve (EM) and by the closed DCPV drain pilot valve [DC]. The hydraulic pressure accumulated in the Wet pilot line keeps this device in its close position, maintaining the FDV deluge valve closed.

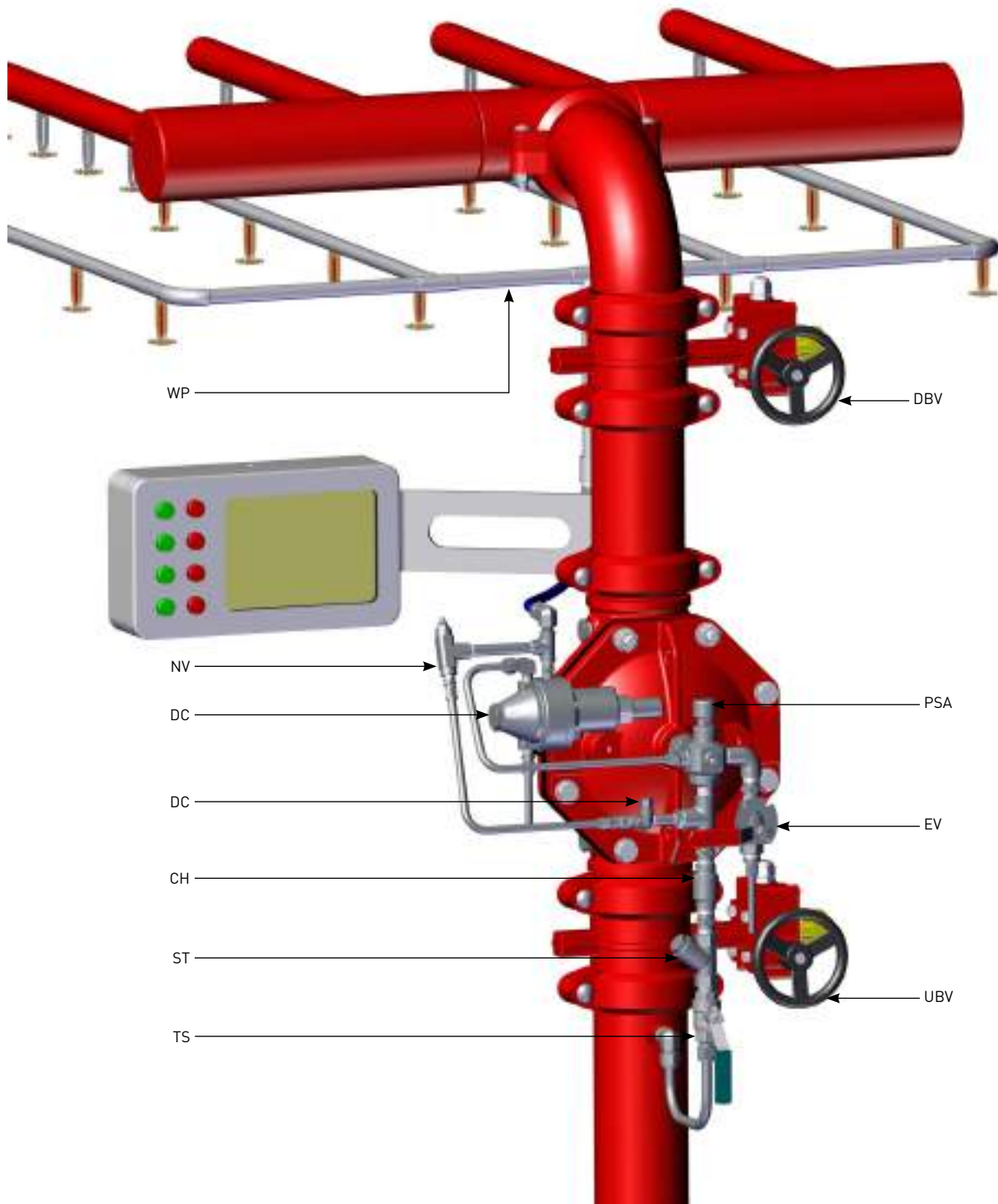
FIRE SITUATION

When some of the Wet pilot detection line's automatic fire sprinklers are subjected to the predetermined temperature levels and shutter-open, the pilot line pressure drops and the DCPV (DC) opens its drain port regardless of the residual column pressure.

Opening its drain port, the DCPV releases the FDV control chamber pressure causing it to open and admit water into the spray sprinklers pipeline.

RESET POSITION

System reset requires the replacement of all Shattered-open Fire sprinklers in the Detection pilot line (WP). The wet pilot line is then pressurized to reset the DCPV to closed position. The PSA (PSA) push button should be pressed to enable upstream pressure passage to close the FDV's main valve.



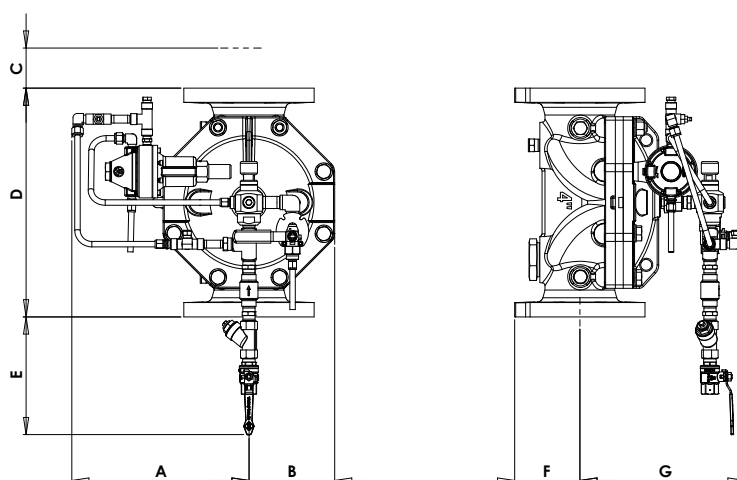
UBF - Upstream Butterfly valve
DBF - Downstream Butterfly valve
PC - Pressure Gauge Connection
WP - Wet Pilot line

TS - Trim supply valve
ST - "Y" strainer
CV - Check valve
NV - Needle Valve

PSA - Pressure Surge Arrestor
EV - Emergency Valve
DC - DCPV - Drain Control Pilot Valve

Parametric drawing:

FDV-AA0



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	225	8.8	231	9	263	10.3	310	12.2	330	13	382	15	410	16.1
B	105	4.1	105	4.1	116	4.6	150	5.9	177	6.7	231	9	308	12.1
C	66	2.6	62	2.4	42	1.6	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	305	12	295	10.1	243	9.6	206	8.1	174	6.8	120	4.7	22	0.8
F	52	2	50	2	100	3.9	114	4.5	143	5.6	172	6.7	203	8
G	187	7.36	200	7.9	232	9	269	10.6	336	13.3	370	14.5	458	18
Kg/lb	10	22	12	26.4	29.5	65	45	99	55.6	122	101	222	230	507

Factory Standard

MAIN VALVE

BODY & COVER

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

ELASTOMERS:

- NBR, 3-layered reinforced Natural Rubber
- EPDM, 3-layered reinforced

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:

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

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
- Additional accessories needed:
Pressure gauge
Pressure switch
Drain valve (manual or automatic)
Gong

Electrically Actuated, Local Reset, Pressure Reducing Deluge Valve

FDV - PEO

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 space. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-PEO is a pressure control Deluge system, actuated electrically and resets locally. However, the system's functional principle remains unchanged:

In fire situation, an electric detection system activates a solenoid valve through a control panel, to open the FDV deluge valve. Once open, the valve reduces the high inlet pressure to a predetermined fixed outlet pressure. 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 maintaining 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 - a 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 system is suitable for open-nozzle water spray pipelines.



MARKETS



Commercial



Industry



Marine



P.O.G.



Storage



Residential



Airport

TECHNICAL DATA

FLUID: Water, Brackish water, Sea water, Foam

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)

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 flowrates with minimum head loss. The valve trips open automatically upon gradual release of water pressure from its control chamber. The trip is actuated by an electric signal transmitted to the valve's solenoid from the main control panel, triggered by flame heat exposure detected by the sensor system.
- Soft closing, achieved by pressurizing the valve's control chamber using line pressure or an independent water source, prevents pressure surges.
- A pressure-reducing pilot allows full control over the downstream pressure.

The FDV-PEO resets to its standby closed position by de-energizing the alarm system solenoid coil via the main control panel and manually operating the local reset device (PSA).

APPROVALS



Set position

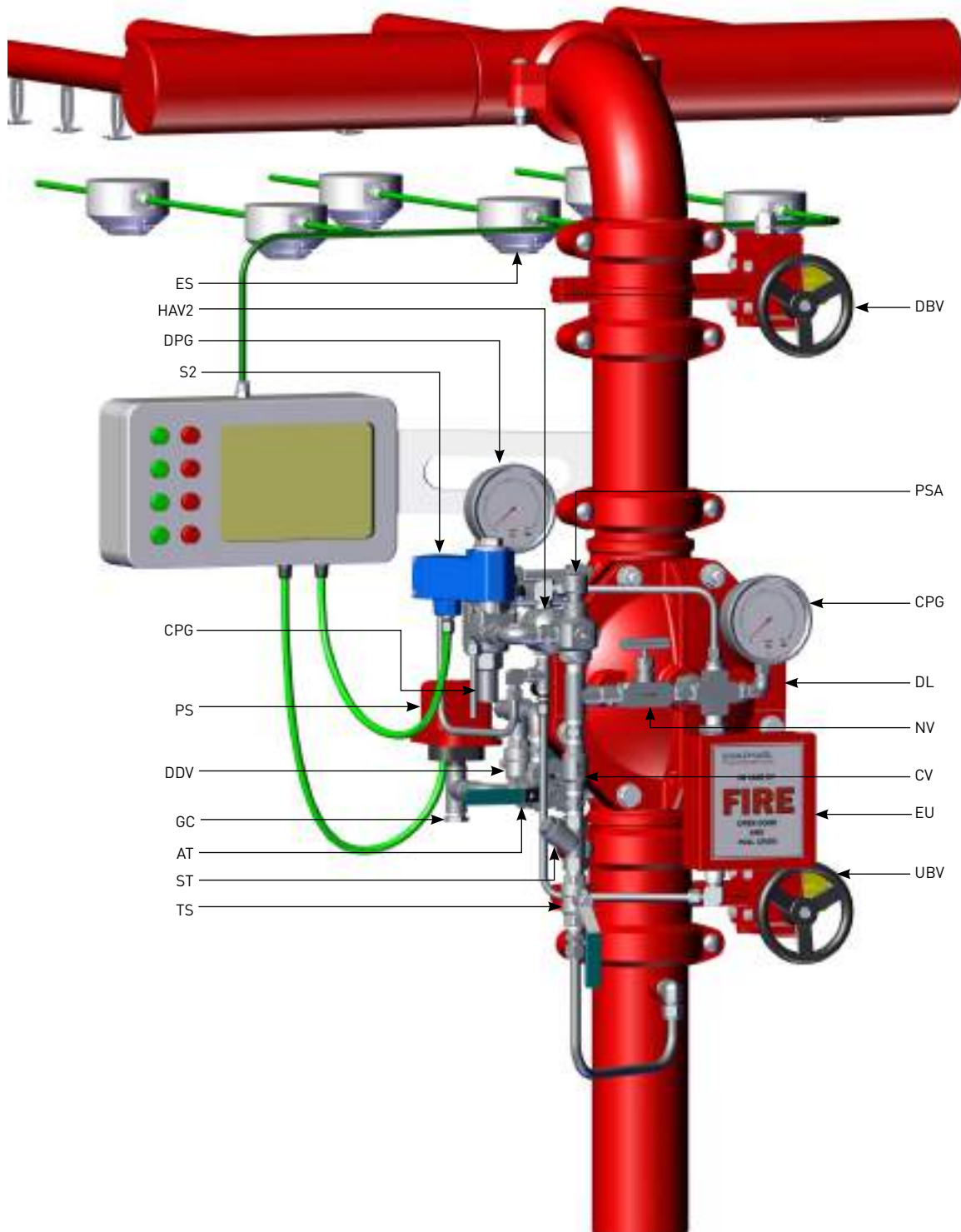


Pressurized water in the actuator's (HAV2) control chamber is trapped by the close solenoid and by the closed PSA (PSA).

Pressurized water in the valve's control chamber (DL) is trapped by the closed actuator, the closed PSA (PSA), the check valve (CV) and by the closed emergency valve (EU), maintaining the FDV deluge valve (DL) closed.

When the electric detection system (ES) senses flame heat, it activates the main control panel, which transmits an electric signal commanding the 2-way solenoid valve (S2) to open and drain the actuator's control chamber. Consequently, the actuator (HAV2) opens and drains the Deluge valve through the pressure-reducing pilot (PR). The pilot regulates the downstream pressure and maintains it at a steady set pressure.

To reset the system, the electrical alarm system must be reset to de-energize and close the solenoid valve. This action stops the drainage of the actuator's control chamber. The PSA (PSA) push button should then be pressed to allow the upstream pressure to flow through, thereby pressurizing the actuator's control chamber and closing the FDV deluge valve.



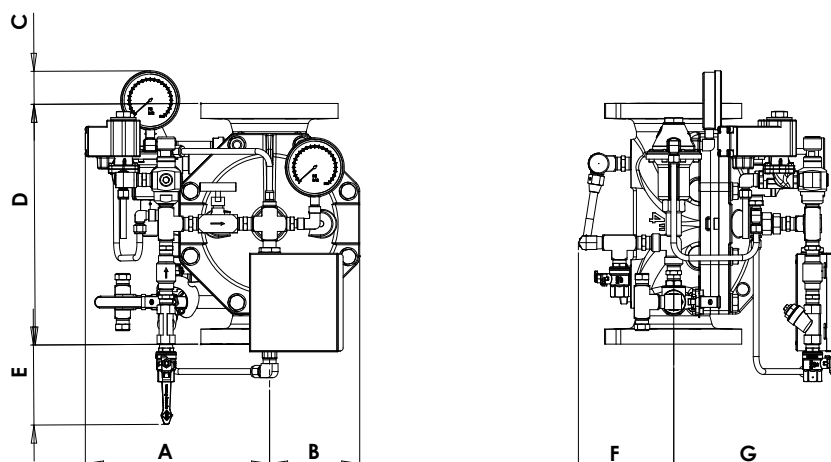
TS – Trim Supply
ST – Strainer
AT – Alarm Test valve
GC – Gong Connection
DDV – Downstream Drain Valve
HAV2 – Hydraulic actuator 2 way
PS – Pressure Switch

OR – Orifice
S2 – 2-way Solenoid
PSA – Pressure Supply Arrestor
MD – Manual Automatic Drain Valve
PR – Pressure Reducing Pilot Valve
ASK – Air Supply Kit
ES – Electric Sensors

DPG – Downstream Pressure Gauge
CPG – Control chamber Pressure Gauge
UBV – Upstream Butterfly Valve
DBV – Downstream Butterfly Valve
DL – Deluge valve

Parametric drawing:

FDV-PEO



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	260	10.2	267	10.5	297	11.7	290	11.4	315	12.4	340	13.4	395	15.5
B	122	4.8	121	4.7	135	5.3	150	5.9	178	7	232	9.1	305	12
C	103	4	103	4	93	3.6	54	2.1	45	1.77	47	1.8	44	1.7
D	204	8.0	220	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	230	9	222	8.7	170	6.7	133	5.3	100	3.9	47	1.8	N/A	N/A
F	151	5.9	151	5.9	137	5.4	158	6.2	167	6.6	191	7.5	221	8.7
G	260	10.2	208	8.1	230	9	272	10.7	340	13.3	374	14.7	490	19.3
Kg/lb	14.5	32	15.2	33.5	32.2	70.5	48	106	59	130	104	230	235	518

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
- Downstream set pressure
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Installation orientation
- Additional accessories needed
Alarm pressure switch
Gong

Electrically Actuated, Remote Reset, Pressure Reducing Deluge Valve

FDV - PE1

This deluge system is based on Raphael's FDV valve, equipped with an electrically actuated control trim. The installed FDV valve is available in a range of optional materials and coatings to meet various operational conditions. However, the system's functional principle remains unchanged: in the event of a fire, an electrical detection system activates the valve's control trim by energizing its solenoid coil. As a result, pressurized water trapped in the FDV control chamber is released, the valve opens, and the spray nozzle pipeline becomes pressurized.

This system is capable of reducing upstream pressure to a pre-set downstream pressure and maintaining it at a steady level. It responds to any downstream pressure fluctuations caused by changes in flow demand, ensuring a stable set pressure.



MARKETS



Marine



P.O.G.



Airports

TECHNICAL DATA

FLUID: Water, Brackish water, Sea water, Foam

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)

REGULATION RATIO: 5:1

SENSITIVITY:
1.45 psi (0.1 Bar)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber
- Unobstructed full-bore valve
- Simple manual reset of the valve to standby
- Open fail-safe valve, maintained in stand-by 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

- Hydro-dynamic pattern design ensures high flowrates 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 valve panel, due to a flame heat exposure of electrical detection sensors system
- A pressure reducing pilot valve enables a full control over the downstream pressure and ensures a steady set in a wide pressure range.

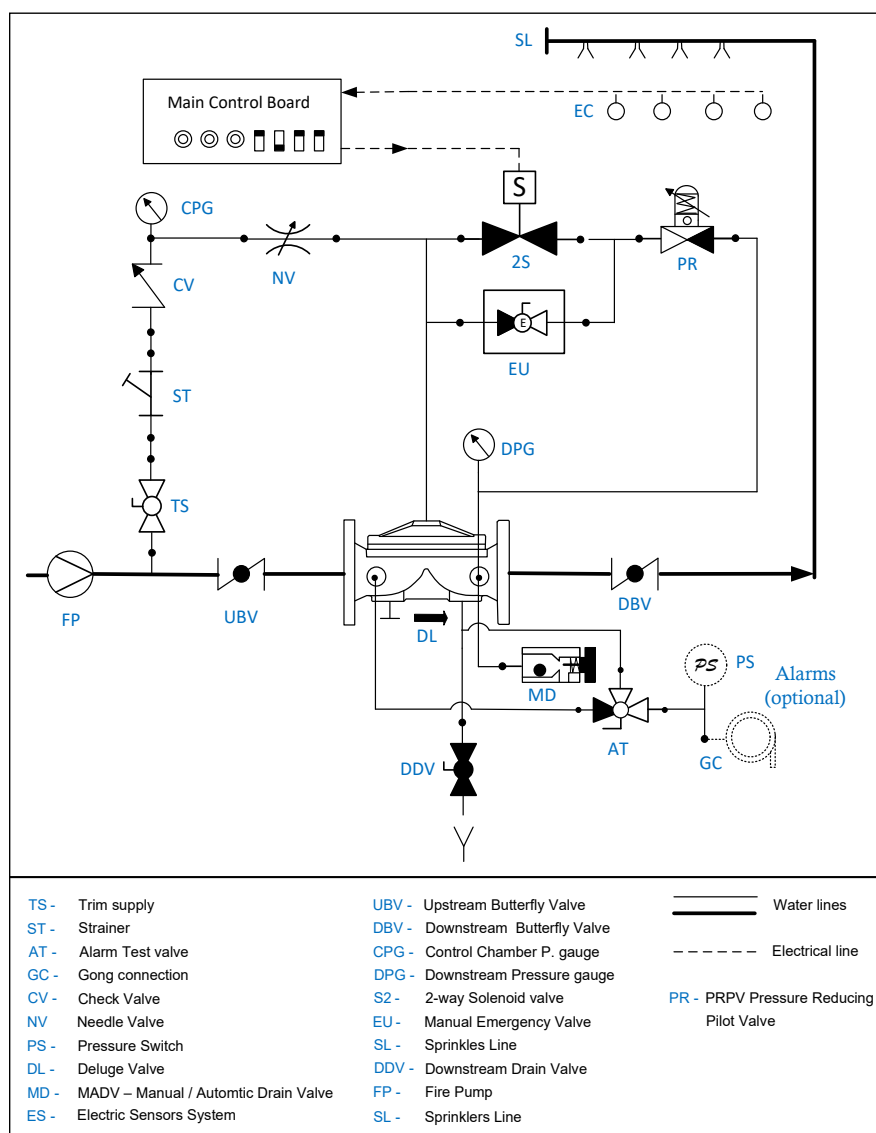
The FDV-PE1 resets to stand-by close position by de-energizing the alarm system solenoid's coil through the main control panel.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

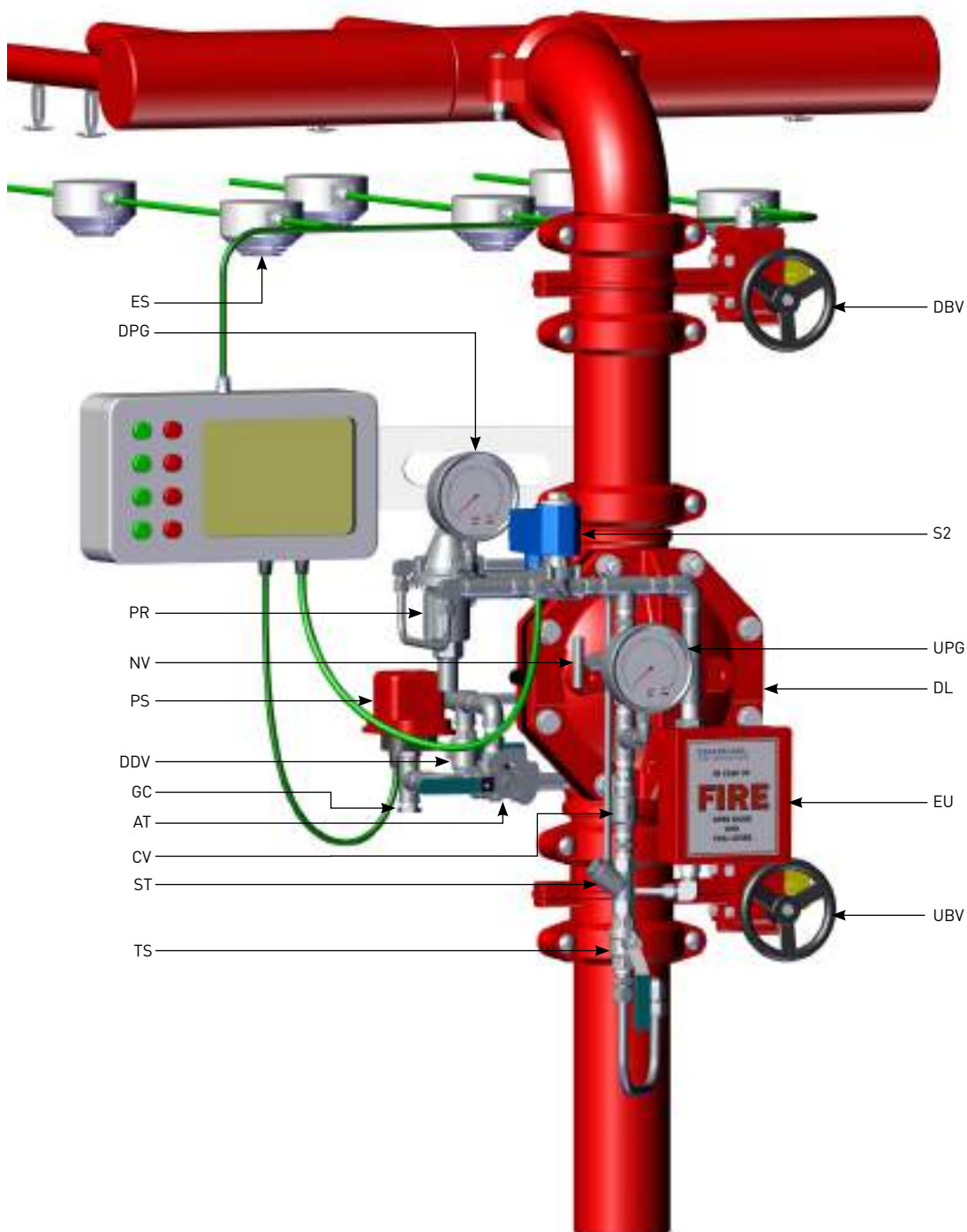
Pressurized water in the valve's control chamber [DL] is trapped by the check valve [CV], by the closed 2-way solenoid [S2] and by the closed emergency valve [EU], maintaining the FDV deluge valve [DL] closed.

FIRE SITUATION

When an electric detection system [ES] senses flames heat, it triggers the main control panel that in turn, transmits an electric signal, commanding the 2-way solenoid valve [S2] to open. The deluge valve's control chamber drains through the pressure reducing pilot [PR]. The FDV Deluge valve opens, admitting water to the spray sprinklers line [SL] at a steady, preset pressure.

RESET POSITION

System reset requires the reset of the electric alarm system to de-energize and close the 2-way solenoid valve. The FDV deluge control chamber pressurizes and the valve closes. In addition, the downstream pipe line need to be drained by operating the Drain valve [MD] manually



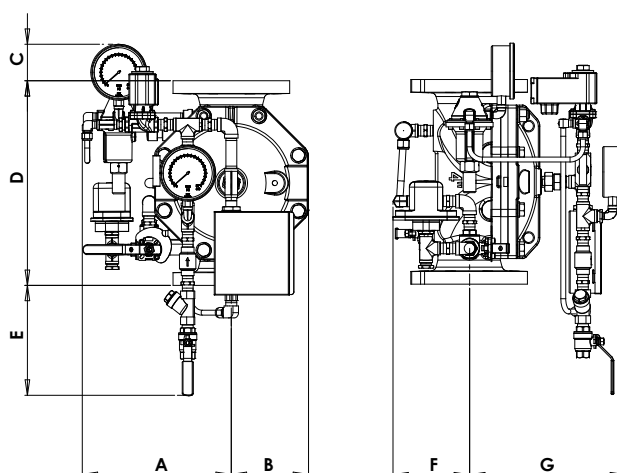
TS - Trim supply valve
ST - "Y" Strainer
CV - Check valve
AT - Alarms Test valve
GC - Gong Connection
DDV - Downstream Drain Valve

PS - Pressure Switch
NV - Needle Valve
PR - PRPV Pressure Reducing pilot
DPG - Downstream Pressure Gauge
ES - Electric Sensors
DBV - Downstream Butterfly Valve

S2 - 2-way Solenoid valve
UPG - Upstream Pressure Gauge
DL - Deluge valve
EU - MEU manual Emergency Unit
UBV - Upstream Butterfly valve

Parametric drawing:

FDV-PE1



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	284	11.2	285	11.2	303	11.9	289	11.3	315	12.4	340	13.4	395	15.5
B	122	4.8	122	4.8	141	5.5	150	5.9	177	6.9	231	9	306	12
C	107	4.2	108	4.2	65	2.5	55	2.1	75	3	79	3.1	46	1.8
D	204	8.0	220	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	288	11.3	280	11	298	11.7	190	7.4	158	6.2	103	4	N/A	N/A
F	141	5.5	141	5.5	120	4.7	150	5.9	168	6.6	191	7.5	234	9.2
G	275	10.8	288	11.3	254	10	310	12.2	350	13.7	383	15	503	19.8
Kg/lb	13.7	30.2	15.6	34.4	32.4	71.4	47.5	104	59	130	104	230	235	518

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
- Downstream set pressure
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Additional accessories needed

Pneumatically Actuated, Local Reset, Pressure Reducing Deluge Valve **FDV - PPO**

The FDV-PP0 fire protection system is based on Raphael's FDV deluge valve and features a control trim that can be actuated both, pneumatically and electrically. The FDV valve is available in a variety of materials and coatings, making it suitable for installation in hazardous environments.

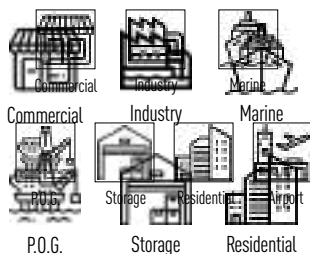
The FDV-PP0 deluge system is pneumatically actuated and can be reset locally. In the event of a fire, exposure of the pneumatic dry pilot detection line to heat causes one or more of its automatic sprinklers to shatter, venting air pressure from the actuator and triggering the deluge valve to open.

The system is capable of reducing upstream pressure to a preset downstream level and maintaining it steadily. It automatically compensates for downstream pressure fluctuations caused by changes in flow demand, ensuring consistent performance.

The deluge system includes an emergency valve that bypasses the fire detection systems for manual operation. Additionally, the trim includes a PSA device that enables local system to reset - i.e., closing the FDV valve by re-pressurizing its control chamber. This system is suitable for configurations with automatic sprinklers installed on the dry pilot line and open nozzles on the main spray lines.



MARKETS



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: up to 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.

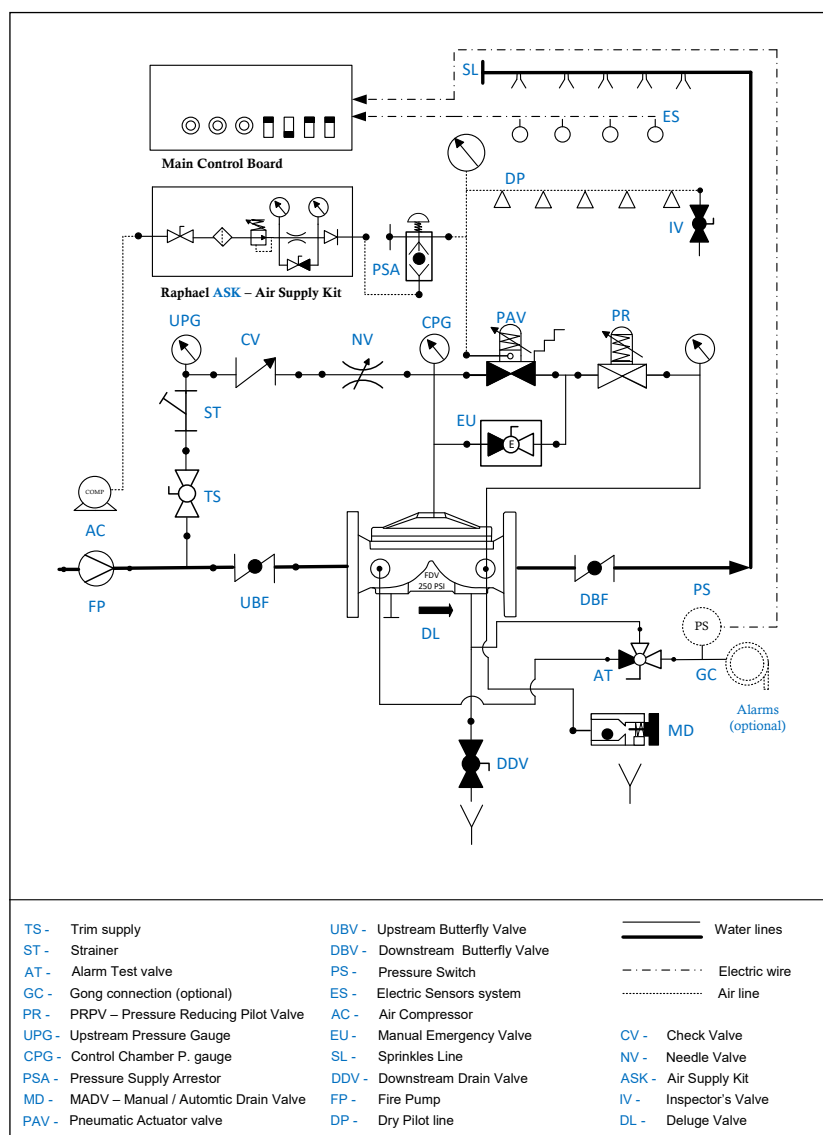
The FDV-PP0 resets to a stand-by closed position either by repressurizing the Dry Pilot Line and manually operating the PSA device.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

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

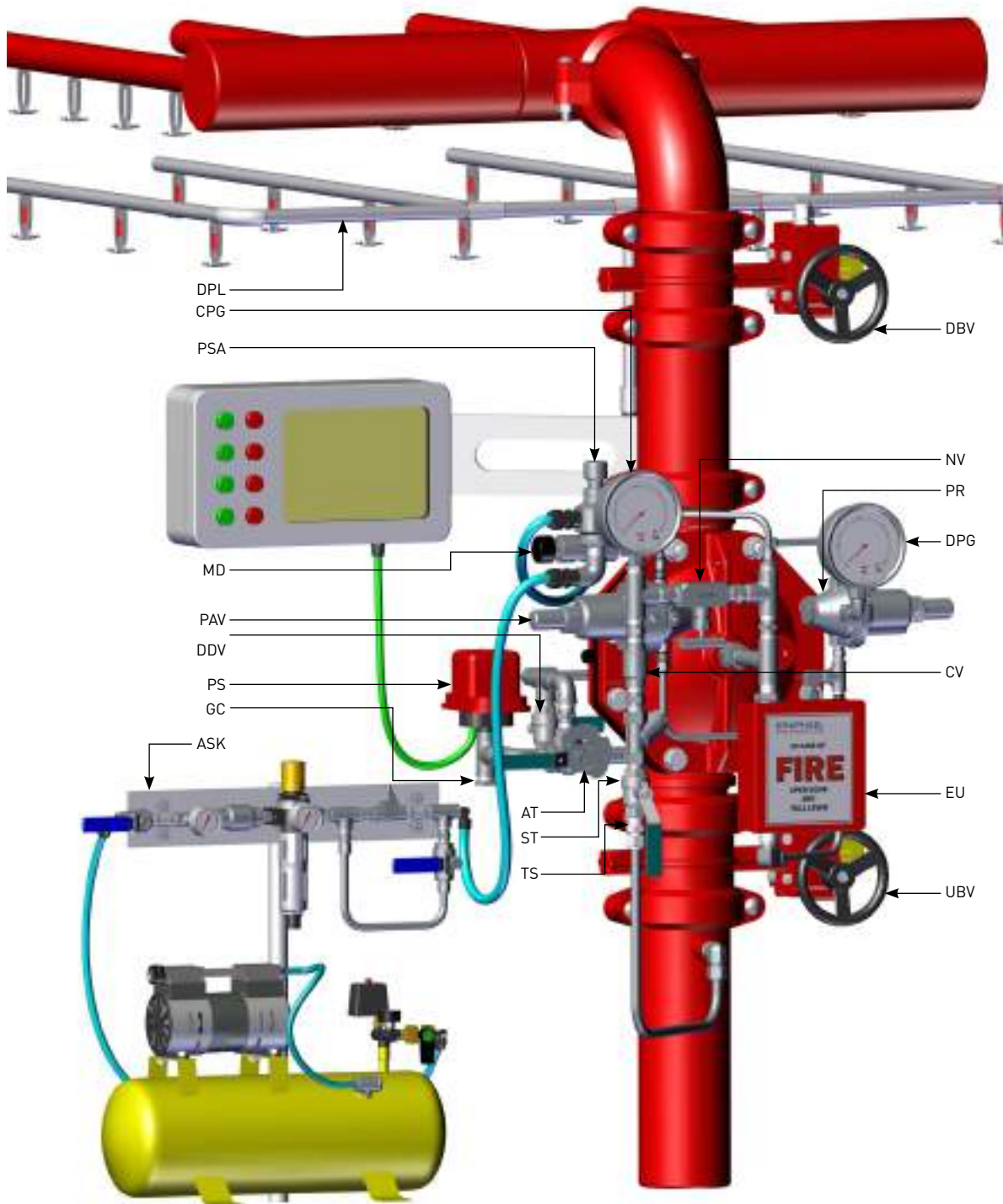
FIRE SITUATION

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. The FDV-PP0's control chamber is then drained through the pressure-reducing pilot valve (PR), resulting in the deluge valve opening and allowing water to flow into 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. In addition, the electrical alarm system must be reset. The PSA push button should be pressed, and the Dry Pilot Valve repressurized.

As a result, the pneumatic actuator becomes pressurized, and the FDV deluge valve closes.



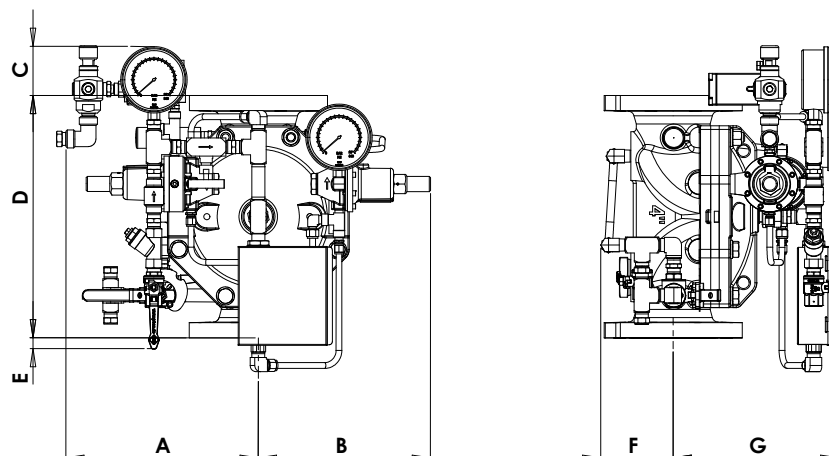
TS - Trim supply valve
ST - "Y" Strainer
AT - Alarms test valve
NV - Needle valve bypass
GC - Gong connection
PS - Pressure switch
S3 - 3-way Solenoid valve

PR - PRPV Pressure Reducing Pilot Valve
CV - Check Valve
ASK - Air Supply Kit
DDV - Downstream drain valve
PAV - PAV-2 Pneumatic Actuator
PSA - PSA - Pressure Supply Arrestor

DPL - Dry Pilot Line
CPG - Control Chamber pressure Gauge
DPG - Downstream Pressure Gauge
EU - MEU manual Emergency Unit
UBV - Upstream Butterfly Valve
DBV - Downstream Butterfly Valve

Parametric drawing:

FDV-PP0



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	254	10	255	10	255	10	296	11.6	290	11.4	340	13.4	372	14.6
B	214	4.8	214	8.4	214	8.4	247	9.7	284	11.2	323	12.7	337	13.3
C	153	6	150	5.9	128	5	61	2.4	40	1.6	10	0.4	45	1.8
D	202	8	224	8.8	325	12.8	401	15.8	462	18.2	580	22.8	768.5	30.2
E	151	10.5	151	5.9	155	6.1	93	3.6	56	2.2	N/A	N/A	N/A	N/A
F	150	4.6	150	5.9	150	5.9	128	5	120	4.7	172	6.7	220	8.5
G	194	10.2	194	7.6	194	7.6	255	10	273	10.7	380	14.9	510	20
Kg/lb	12	26.4	17.8	39.2	17.8	39.2	36.6	80.6	52.5	116	108	238	238	524

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
- Deluge valve ends
- Deluge valve coating
- Trim material
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Downstream set pressure
- Pneumatic working pressure
- System installation orientation
- Additional accessories needed

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.

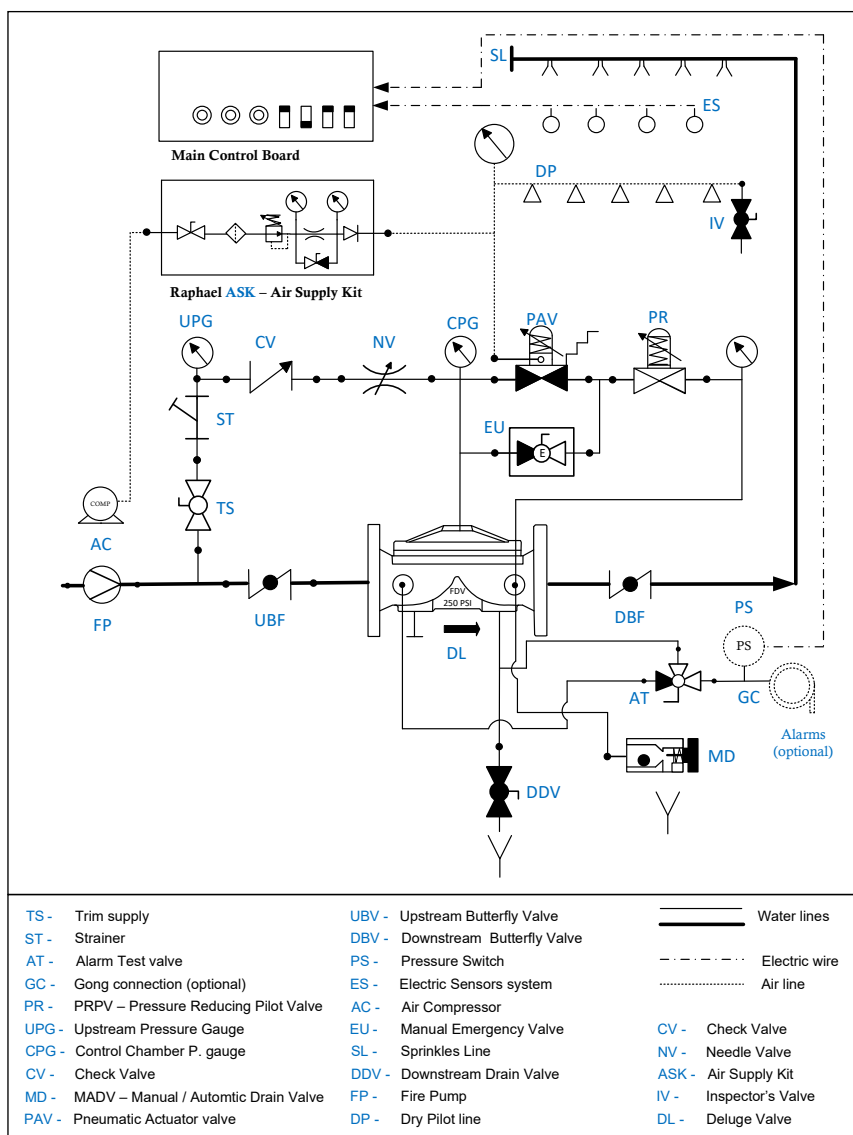
The FDV-PP1 resets to a stand-by closed position by de-energizing the solenoid coil of the alarm system through the main control panel and by pressurizing the Dry Pilot Line.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

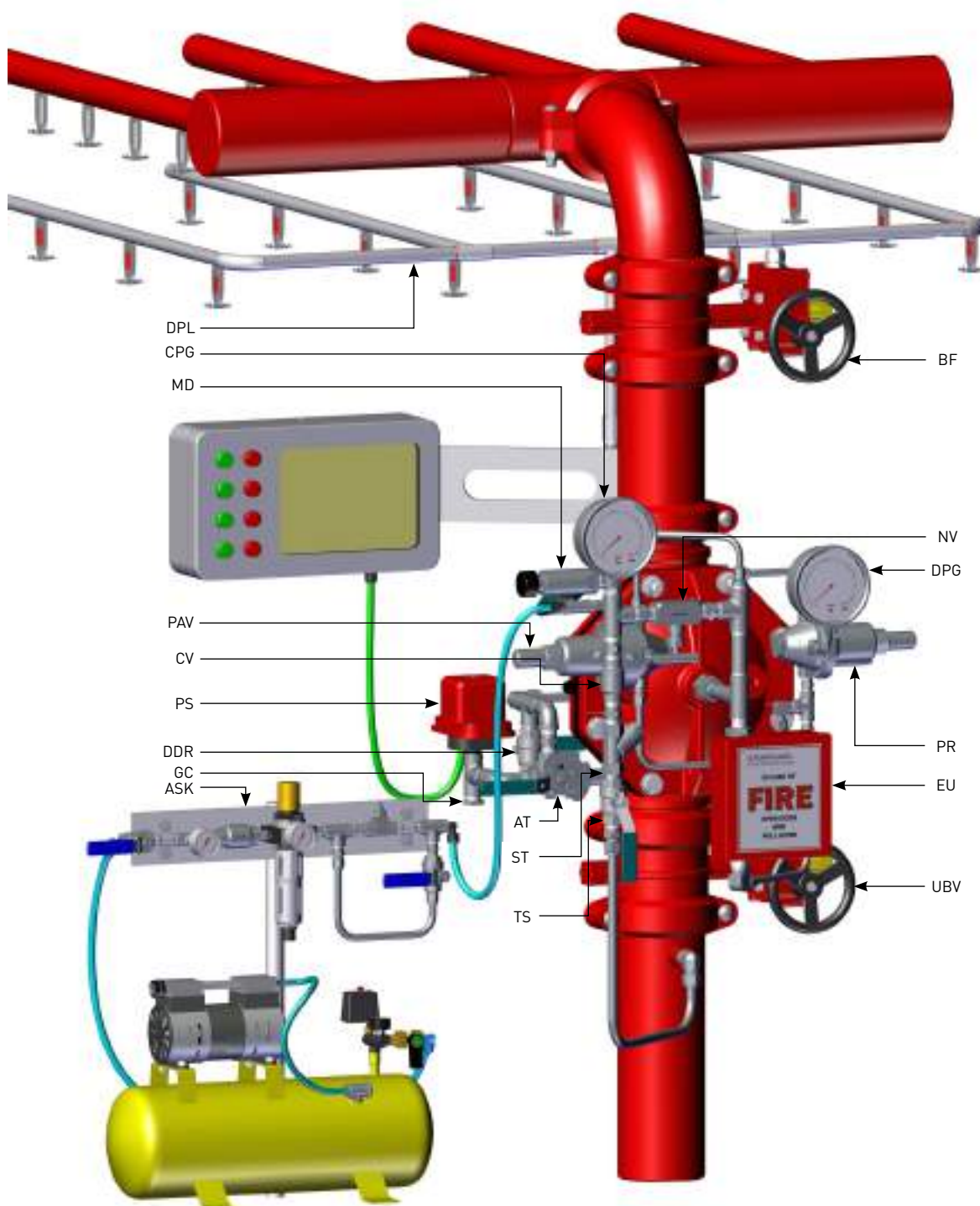
Pressurized water in the valve's control chamber (DL) is trapped by the closed pneumatic actuator (PAV), the closed emergency valve (EU), and the check valve (CV), thereby maintaining the deluge valve in its closed position.

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.



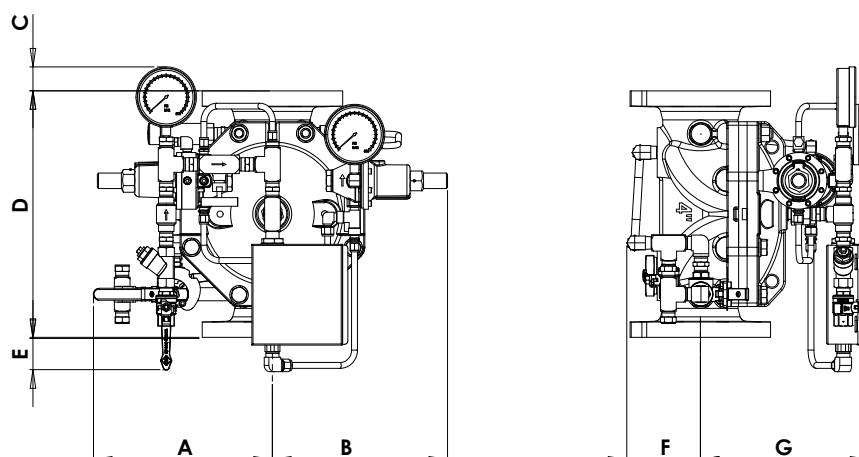
TS - Trim supply valve
ST - "Y" Strainer
AT - Alarms Test Valve
ASK - Air supply Kit
GC - Gong Connection
PS - Pressure Switch

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
- Ambiental 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

Electro-Pneumatically Actuated, Local reset, Pressure Reducing Deluge Valve

FDV - PC0

The FDV-PC0 fire protection system is based on Raphael's FDV deluge valve and features a control trim that can be actuated both, pneumatically and electrically. The FDV valve is available in a variety of materials and coatings, making it suitable for installation in hazardous environments.

The FDV-PC0 deluge system is pneumatically actuated and can be reset locally. In the event of a fire, exposure of the pneumatic dry pilot detection line to heat causes one or more of its automatic sprinklers to shatter, venting air pressure from the actuator and triggering the deluge valve to open. Alternatively, if a sensor from the electric detection system activates the main control board, it opens a solenoid valve that vents the dry pilot line, thereby opening the deluge valve.

The system is capable of reducing upstream pressure to a preset downstream level and maintaining it steadily. It automatically compensates for downstream pressure fluctuations caused by changes in flow demand, ensuring consistent performance.

The deluge system includes an emergency valve that bypasses the fire detection systems for manual operation. Additionally, the trim includes a PSA device that enables local system to reset - i.e., closing the FDV valve by re-pressurizing its control chamber. This system 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.

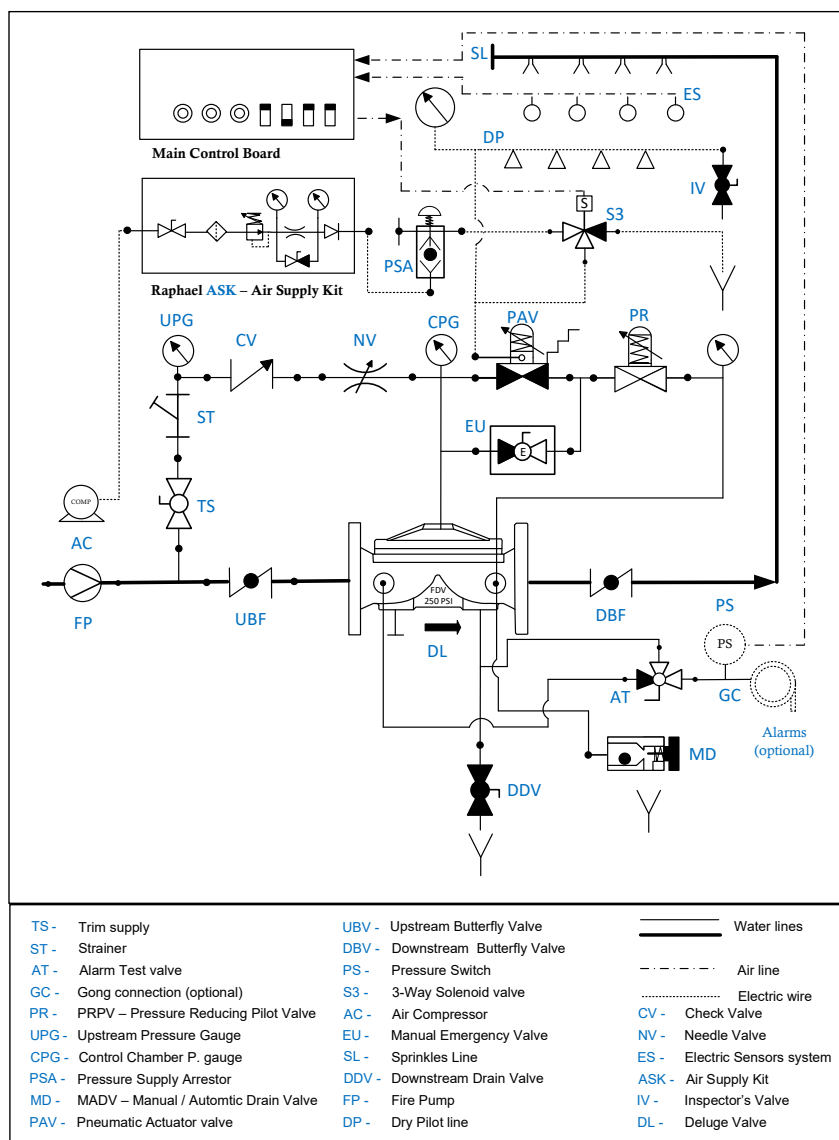
The FDV-PC0 resets to a stand-by closed position either by de-energizing the solenoid coil of the alarm system through the main control panel or by pressurizing the Dry Pilot Line and manually operating the PSA device, in accordance with the relevant triggered alarm system.

APPROVALS



Schematic drawing:

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

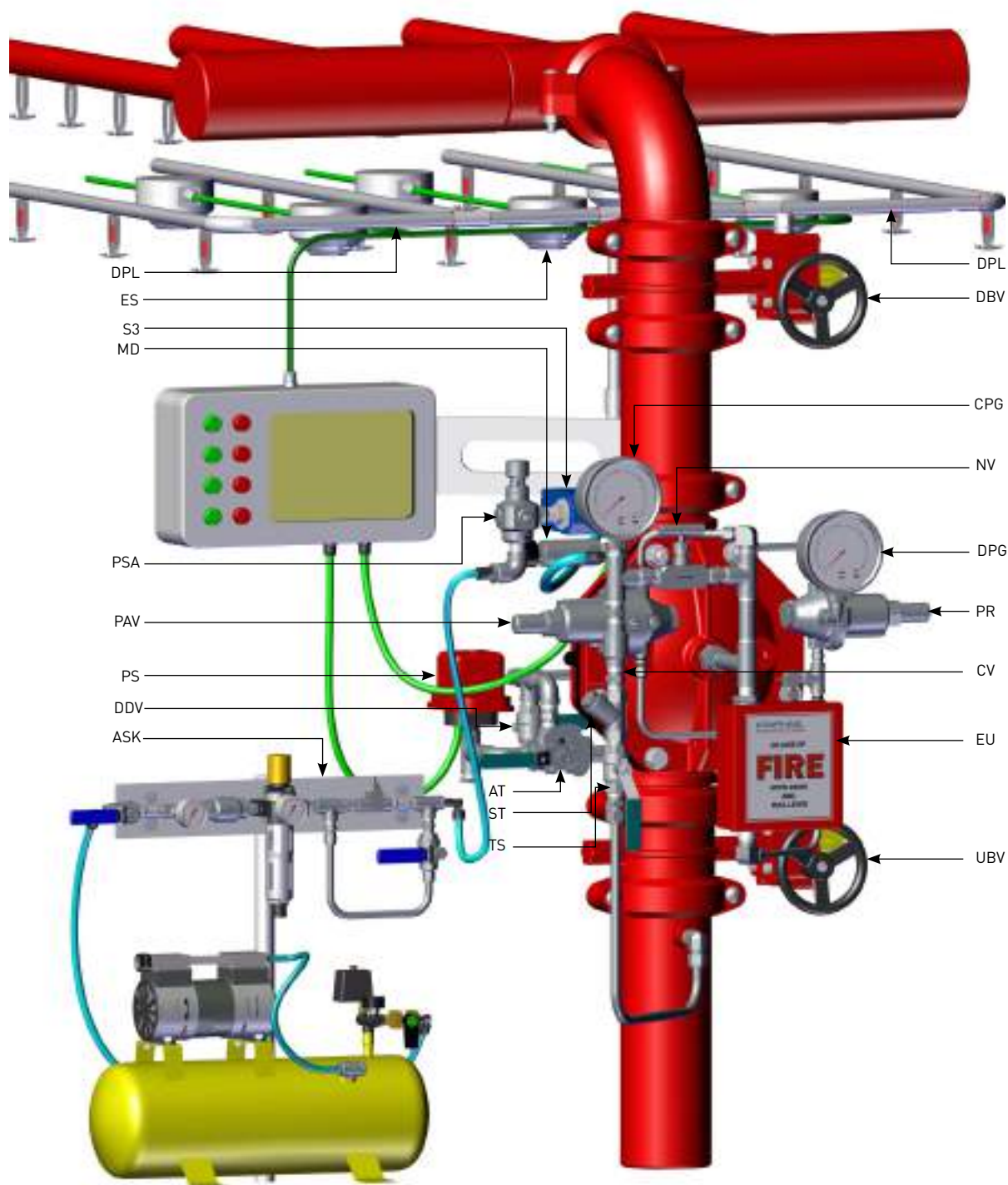
When one or more automatic fire sprinklers in the Dry Pilot (DP) detection line are exposed to a predetermined temperature and open, the pilot line depressurizes, causing the pneumatic actuator to open.

Alternatively, an electric detection system may sense heat and trigger the main control board, which in turn energizes the three-way solenoid valve (S3). This solenoid valve bypasses the Dry Pilot detection, vents the pneumatic actuator (PAV) control chamber to the atmosphere, and opens it. The FDV-PC0's control chamber is then drained through the pressure-reducing pilot valve (PR), causing the deluge valve 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. Additionally, the electrical alarm system must be reset and the solenoid valve de-energized. The PSA (PSA) push button should be pressed, and the Dry Pilot Valve repressurized.

As a result, the pneumatic actuator is pressurized, and the FDV deluge valve closes.



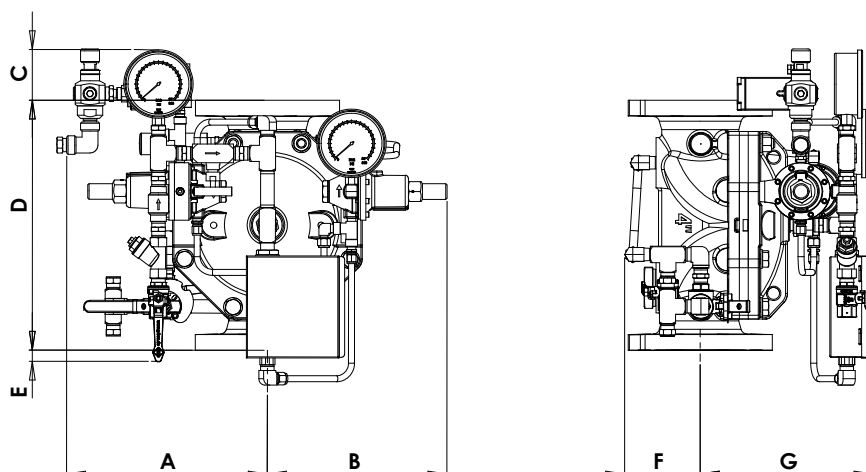
TS - Trim supply valve
ST - "Y" Strainer
AT - Alarms test valve
NV - Needle valve bypass
GC - Gong connection
PG - Pressure switch
S3 - 3-way Solenoid valve

PR - Pressure Reducing Pilot Valve
CV - Check Valve
ASK - Air Supply Kit
DDV - Downstream drain valve
PAV - PAV-2 Pneumatic Actuator
PSA - PSA - Pressure Supply Arrestor
ES - Electric Sensors

DPL - Dry Pilot Line
NV - Needle Valve
CPG - Control Chamber pressure Gauge
DPG - Downstream Pressure Gauge
EU - MEU manual Emergency Unit
UBV - Upstream Butterfly Valve
DBV - Downstream Butterfly Valve

Parametric drawing:

FDV-PC0



Dimensions Table

Size	1½", 2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	255	10	255	10	296	11.6	290	11.4	340	13.4	372	14.6
B	214	8.4	214	8.4	247	9.7	284	11.2	323	12.7	376	14.8
C	150	5.9	150	5.9	139	5.5	80	3.2	N/A	N/A	45	N/A
D	224	8.8	325	12.8	401	15.8	462	18.2	580	22.8	768.5	30.2
E	151	5.9	155	6.1	93	3.6	56	2.2	N/A	N/A	N/A	N/A
F	150	5.9	150	5.9	128	5	120	4.7	172	6.7	220	8.5
G	194	7.6	194	7.6	255	10	273	10.7	380	14.9	510	20
Kg/lb	17.8	39.2	17.8	39.2	36.6	80.6	52.5	115.7	108	238	238	524

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
- Deluge valve ends
- Deluge valve coating
- Trim material
- Ambient conditions
- Min/Max operating flow
- Min/Max operating pressure
- Downstream set pressure
- Solenoid Voltage
- Solenoid Enclosure
- Solenoid Protection
- Pneumatic working pressure
- System installation orientation
- Additional accessories needed

Electro-Pneumatically Actuated, Remote Reset, Pressure Reducing Deluge Valve

FDV - PC1

The FDV-PC1 fire protection system is based on Raphael's FDV deluge valve and incorporates a control trim that can be actuated both pneumatically and electrically. The FDV valve is available in a wide range of materials and coatings, making it suitable for installation in hazardous environments.

The FDV-PC1 deluge system is primarily pneumatically actuated and can be reset locally. In the event of a fire, heat exposure along the pneumatic dry pilot detection line causes one or more automatic sprinklers to shatter, releasing air pressure from the actuator and initiating the opening of the deluge valve. Alternatively, activation of an electric detection sensor signals the main control board to energize a solenoid valve, which vents the dry pilot line and consequently opens the deluge valve.

The system is capable of reducing upstream pressure to a preset downstream pressure and maintaining it at a constant level. It automatically compensates for downstream pressure fluctuations resulting from changes in flow demand, thereby ensuring stable and reliable performance.

The deluge system is equipped with an emergency manual valve that allows operation independent of the fire detection systems. It is suitable for configurations that combine automatic sprinklers on the dry pilot line with 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 hydrodynamic flow pattern design ensures high flow rates with minimal head loss.
- The valve opens automatically following a controlled release of water pressure from its control chamber. Actuation is achieved either by an electrical signal to the valve solenoid or by pneumatic pressure release from the Dry Pilot Line due to exposure to fire heat.
- Soft closing occurs when the valve control chamber is pressurized, either by line pressure or by an independent water source, thereby preventing pressure surges.
- A pressure-reducing pilot valve provides full control of downstream pressure and maintains a stable setpoint over a wide inlet pressure range.

The FDV-PC1 is reset to the closed standby position by de-energizing the alarm system solenoid coil via the main control panel and by repressurizing the Dry Pilot Line.

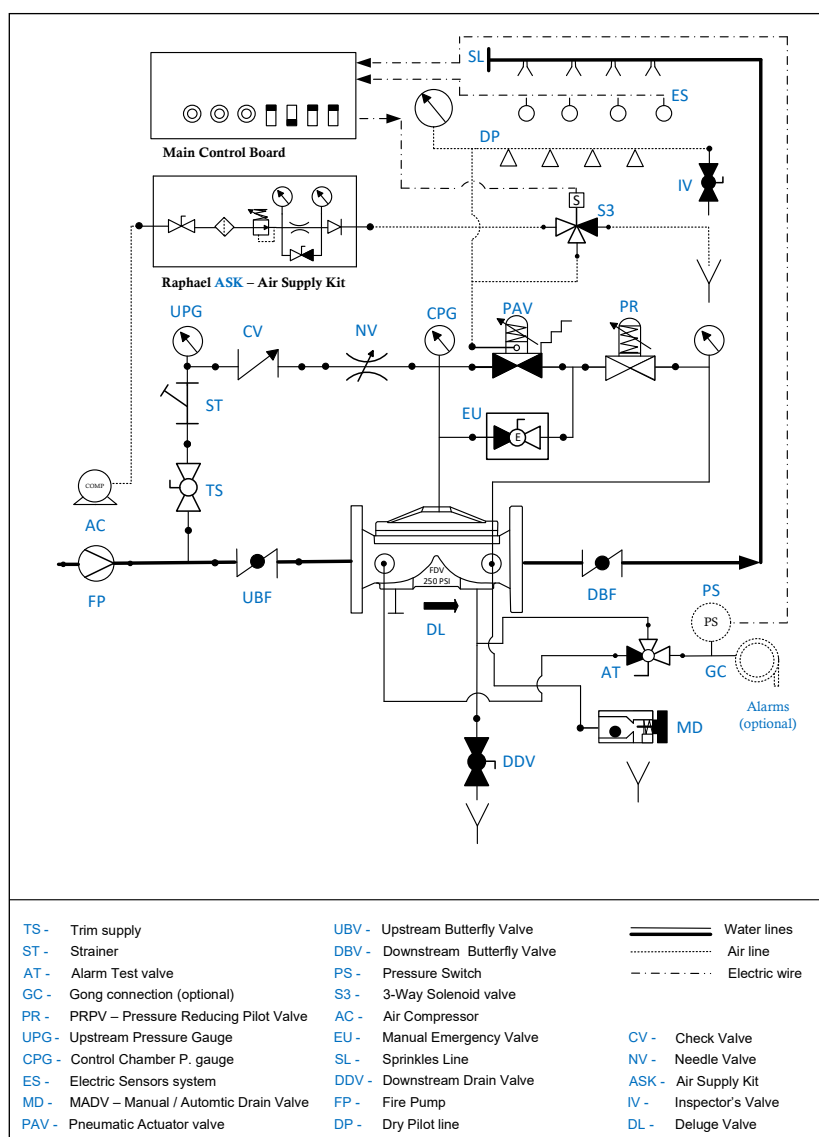
APPROVALS



Schematic drawing:

FDV-PC1

Set position



OPERATION

SET POSITION

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

FIRE SITUATION

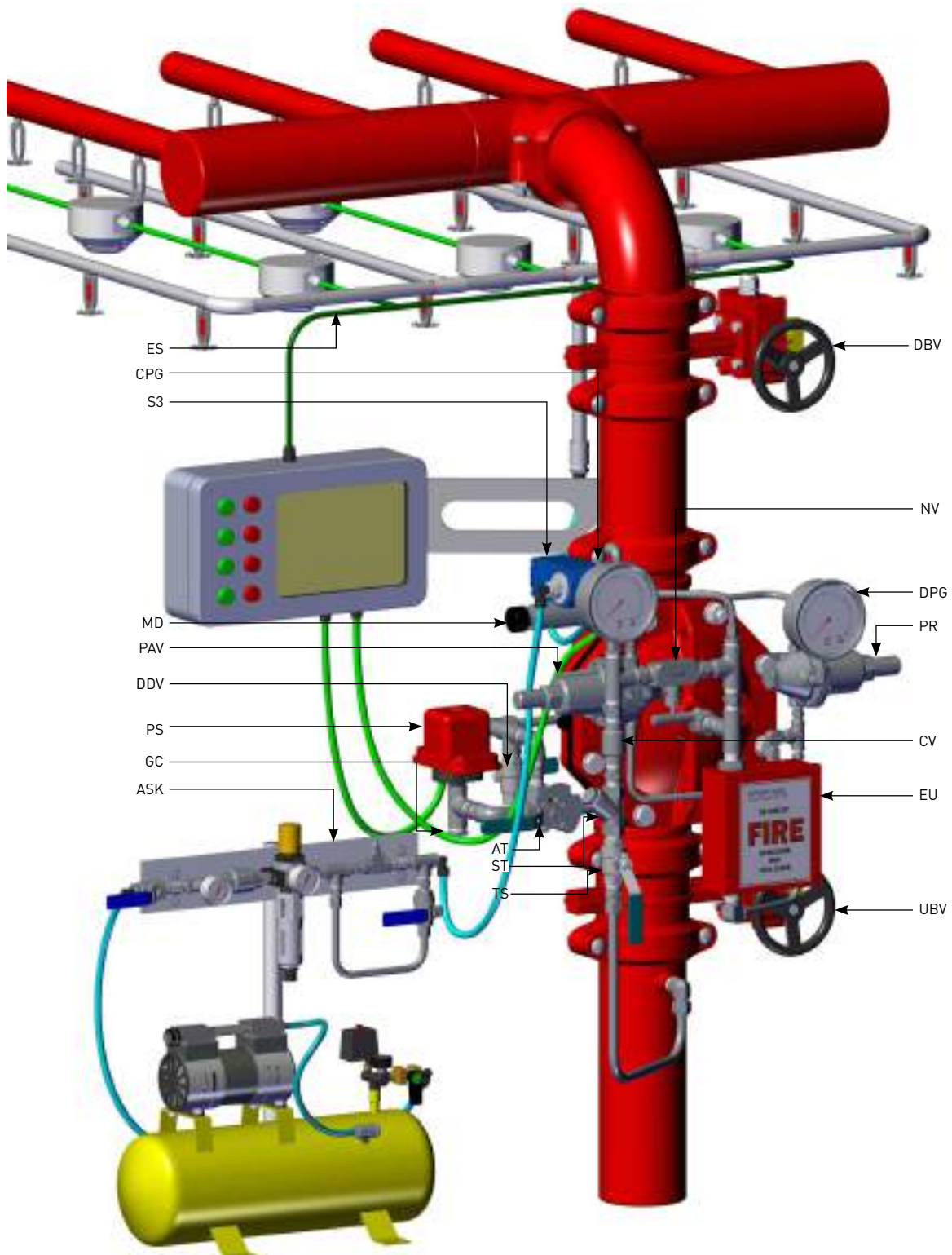
When one or more automatic fire sprinklers installed on the Dry Pilot (DP) detection line are exposed to a predetermined temperature and operate, the pilot line depressurizes, causing the pneumatic actuator (PAV) to open.

Alternatively, an electric detection system may sense heat and activate the main control board, which energizes the three-way solenoid valve (S3). The solenoid valve bypasses the Dry Pilot detection line, vents the pneumatic actuator (PAV) control chamber to atmosphere, and opens it. As a result, the FDV-PC0 control chamber is drained through the pressure-reducing pilot valve (PR), causing the deluge valve to open and supply water to the spray sprinkler line at a steady, preset pressure.

RESET POSITION

To initiate a system reset, all operated fire sprinklers on the Dry Pilot detection line must be replaced and the line repressurized.

In addition, the electrical alarm system must be reset and the solenoid valve de-energized. Consequently, the pneumatic actuator is repressurized and the FDV deluge valve returns to the closed standby position.



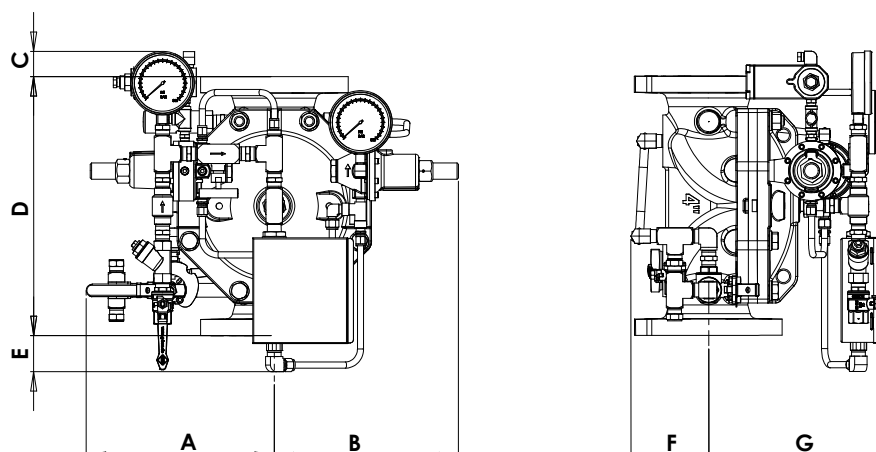
TS - Trim supply valve
ST - "Y" Strainer
AT - Alarms test valve
NV - Needle valve bypass
GC - Gong connection
PG - Pressure switch
S3 - 3-way Solenoid valve

PR - PRPV Pressure Reducing Pilot Valve
CV - Check Valve
ASK - Air Supply Kit
DDV - Downstream drain valve
PAV - PAV-2 Pneumatic Actuator
ES - Electric Sensors

DPL - Dry Pilot Line
CPG - Control Chamber pressure Gauge
DPG - Downstream Pressure Gauge
EU - MEU manual Emergency Unit
UBV - Upstream Butterfly Valve
DBV - Downstream Butterfly Valve

Parametric drawing:

FDV-PC1



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	372	14.6
B	214	8.4	218	8.6	238	9.4	284	11.2	310	1.2	304	11.9	406	16
C	144	5.6	136	5.3	84	3.3	44	1.7	14	0.5	N/A	N/A	44	1.7
D	204	8.0	220	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	133	6.1	142	5.6	93	3.6	56	2.2	N/A	N/A	N/A	N/A	N/A	N/A
F	150	5.9	129	5	120	4.7	115	0.6	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	16.4	36.1	18.6	40	35.1	77.2	51	112	70.8	156	107	235	237	522

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
- Deluge valve ends
- Deluge valve coating
- Trim material
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Downstream set pressure
- Solenoid Voltage
- Solenoid Enclosure
- Solenoid Protection
- Pneumatic working pressure
- System installation orientation
- Additional accessories needed

Hydraulically Actuated, Local Reset, Pressure Reducing Deluge Valve

FDV - PH0

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 space. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-PH0 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 shatter open, triggering the FDV-PH0 deluge valve to open. Once open, the valve reduces the high inlet pressure to a predetermined fixed outlet pressure. 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 maintaining 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 - a 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 system is suitable for open-nozzle water spray pipelines.



MARKETS



Commercial



Industry



Marine



Storage



Residential



Airport

TECHNICAL DATA

FLUID: Water, Brackish water, Sea water, Foam

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)

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

- Hydrodynamic pattern 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 an independent water source — to prevent surges.
- A pressure-reducing pilot enables full control over downstream pressure and ensures stable regulation across a wide pressure range.

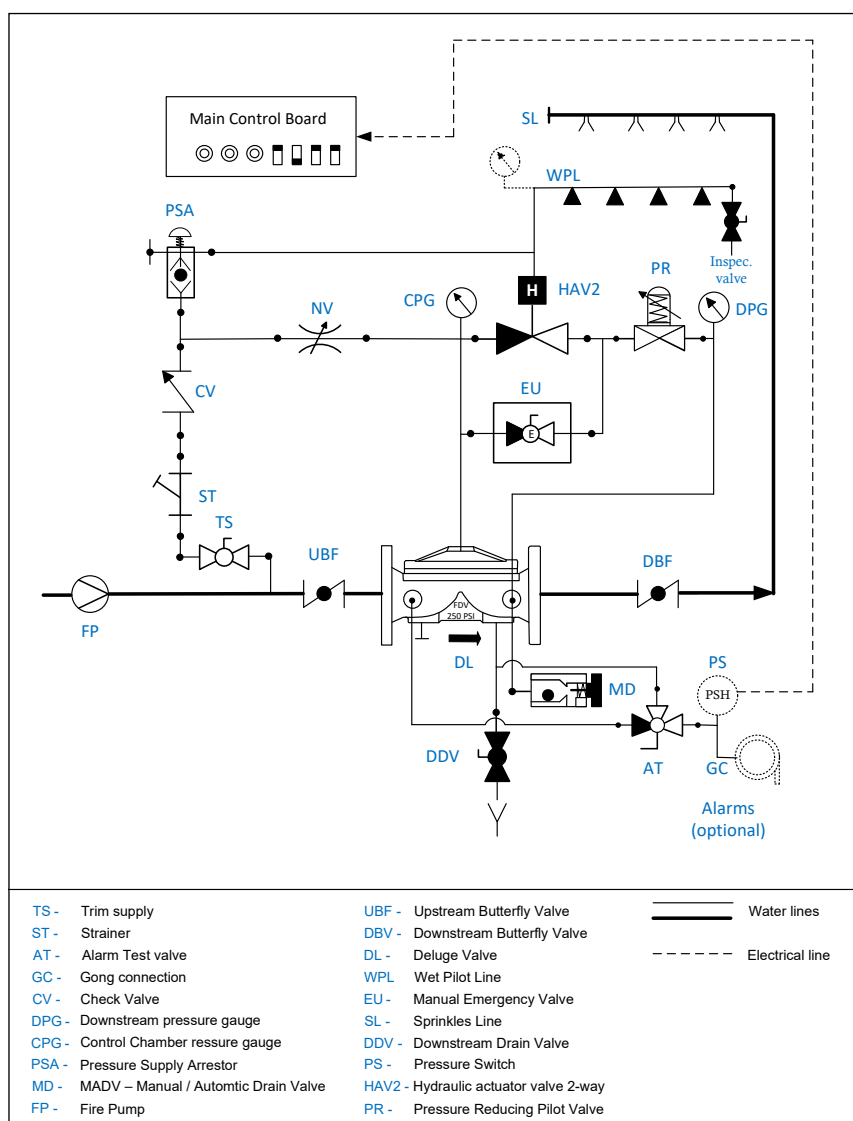
The FDV-PH0 resets to the stand-by closed position by pressurizing the Dry Pilot Line and manually operating the PSA device.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

Pressurized water in the valve's control chamber (DL) is trapped by the check valve (CV), the closed emergency valve (EU), the closed hydraulic drain actuator (HAV2), and the pressure release arrestor device (PSA).

The hydraulic pressure accumulated in the Wet Pilot detection line (WPL) keeps the hydraulic actuator in its closed position, thereby maintaining the FDV deluge valve closed.

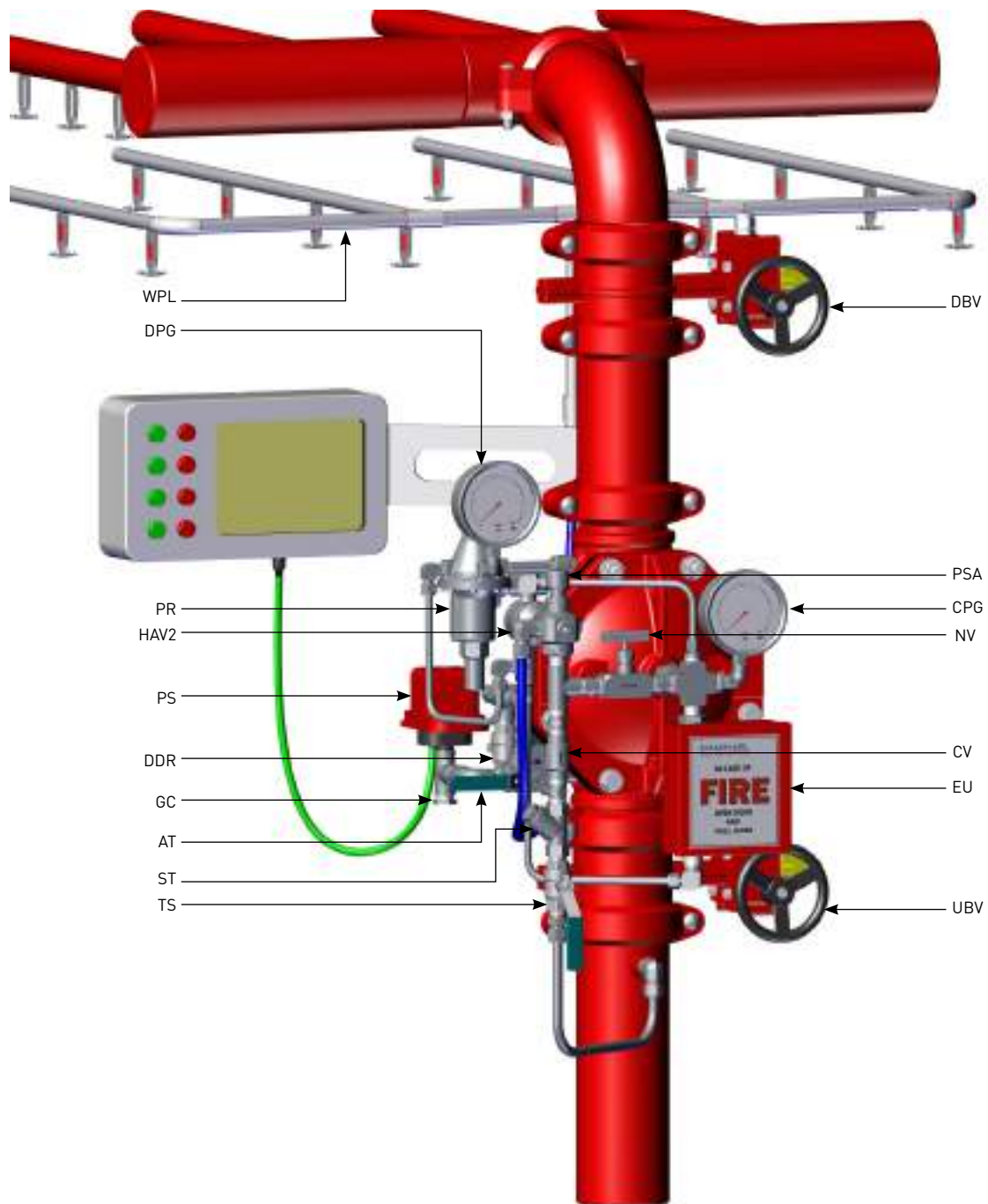
FIRE SITUATION

When the automatic fire sprinklers in the Wet Pilot detection line are exposed to flame heat and shatter open, the hydraulic actuator's control chamber depressurizes and drains the deluge valve's control chamber through the pressure-reducing pilot valve PRPV (PR).

The FDV deluge valve opens, admitting water into the spray sprinkler line (SL) at a reduced and steady preset pressure.

RESET POSITION

To reset the system, all shattered-open fire sprinklers in the Wet Pilot detection line must be replaced. Then, the Pressure Release Arrestor device (PSA) push button must be pressed to enable the re-pressurization of the Wet Pilot detection line. As a result, the hydraulic actuator closes, commanding the FDV deluge valve to close.



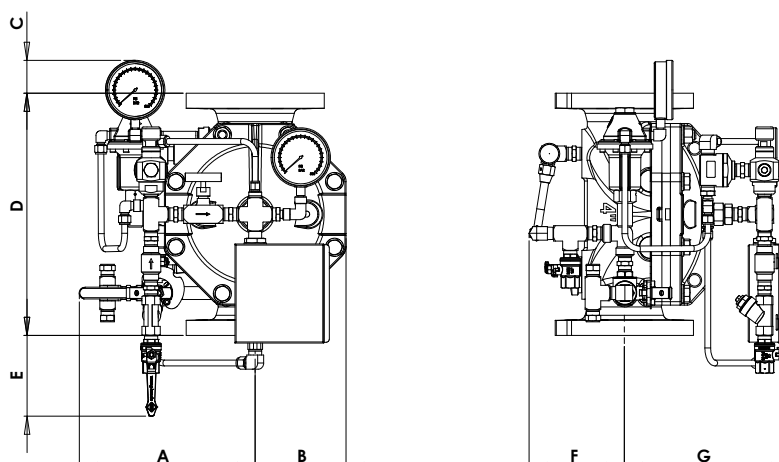
TS - Trim supply valve
ST - "Y" strainer
CV - Check valve
AT - Alarm test valve
GC - Gong Connection
DDR - Downstream drain valve

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

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

Parametric drawing:

FDV-PH0



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	260	10.2	267	10.5	297	11.7	290	11.4	315	12.4	340	13.4	395	15.5
B	122	4.8	121	4.7	135	5.3	150	5.9	178	7	232	9.1	305	12
C	101	3.9	103	4	93	3.6	54	2.1	45	1.77	47	1.8	44	1.7
D	204	8.0	220	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	232	9.1	222	8.7	170	6.7	133	5.3	100	3.9	47	1.8	N/A	N/A
F	151	5.9	151	5.9	137	5.4	158	6.2	167	6.6	191	7.5	221	8.7
G	260	10.2	208	8.1	230	9	272	10.7	340	13.3	374	14.7	490	19.3
Kg/lb	13	29	15.2	33.5	32.2	70.5	48	106	59	130	104	230	235	518

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
- 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

Hydraulically Actuated, Remote Reset, Pressure Reducing Deluge Valve **FDV - PH1**

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 space. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-PH1 is a hydraulically actuated, remotely reset, pressure-control deluge system. Its functional principle is as follows:

In a fire situation, a hydraulic detection system (a wet pilot line with automatic sprinklers) triggers a hydraulic actuator. The actuator then releases the pressurized water trapped in the FDV's control chamber, causing the valve to open.

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.



MARKETS



Commercial



Industry



Marine



P.O.G.



Storage



Residential



Airport

TECHNICAL DATA

FLUID: Water, Brackish water, Sea water, Foam

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)

REGULATION RATIO: 5:1

SENSITIVITY:
1.45 psi (0.1 Bar)

ADVANTAGES

- Only three parts: body, diaphragm, and cover plate. No wet metal springs inside the control chamber.
- Full-bore, unobstructed flow.
- Simple manual reset to the standby position, without draining or opening the valve, and without closing the butterfly valve or other valves in the system.
- Fail-safe open valve design, normally maintained in the closed standby position.
- Low maintenance cost: the valve can be serviced in-line and contains only one replaceable part — a long-life elastomeric diaphragm.
- Complies with NFPA 25 — Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.

CHARACTERISTICS

- Hydrodynamic 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 by the hydraulic pressure release of a Wet Pilot Line, triggered by exposure to flame heat.
- Soft closing, achieved by pressurizing the valve's control chamber using line pressure or another independent water source, prevents surges.
- A pressure-reducing pilot allows full control over downstream pressure and ensures a stable setpoint across a wide pressure range.

The FDV-PH1 resets to the standby closed position by pressurizing the Dry Pilot Line.

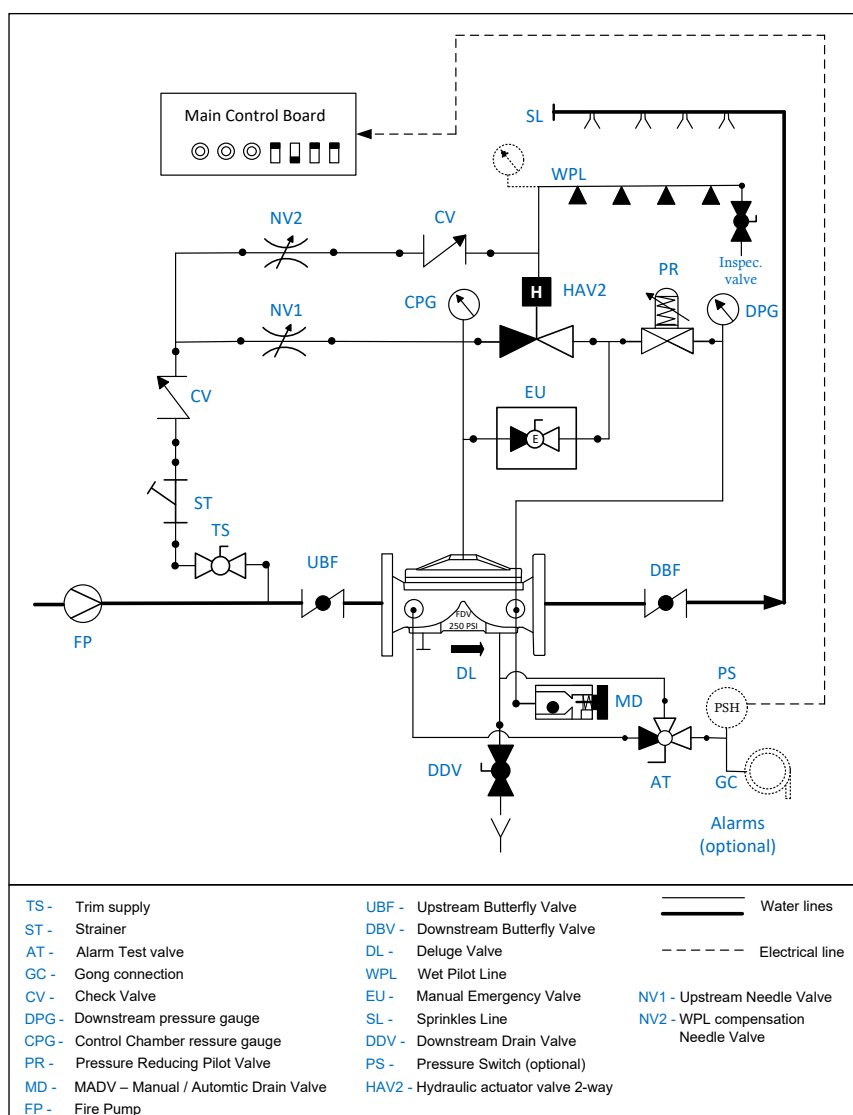
APPROVALS



Schematic drawing:

FDV-PH1

Set position



OPERATION

SET POSITION

Water is supplied by the trim supply valve (TS), passes through the “Y” strainer (ST) and the upstream check valve (CV), then flows through needle valve 1 (NV1) to fill the FDV’s control chamber. In parallel, water flows through compensation needle valve 2 (NV2) and the compensation check valve (CV), pressurizing the pilot line (WPL). Pressurized water in the control chamber is retained by the check valve, the HAV-2 actuator (HAV2), and the closed emergency valve MEU (EU), keeping the deluge valve in the closed position. The pressurized water in the wet pilot line holds the HAV-2 in its closed state.

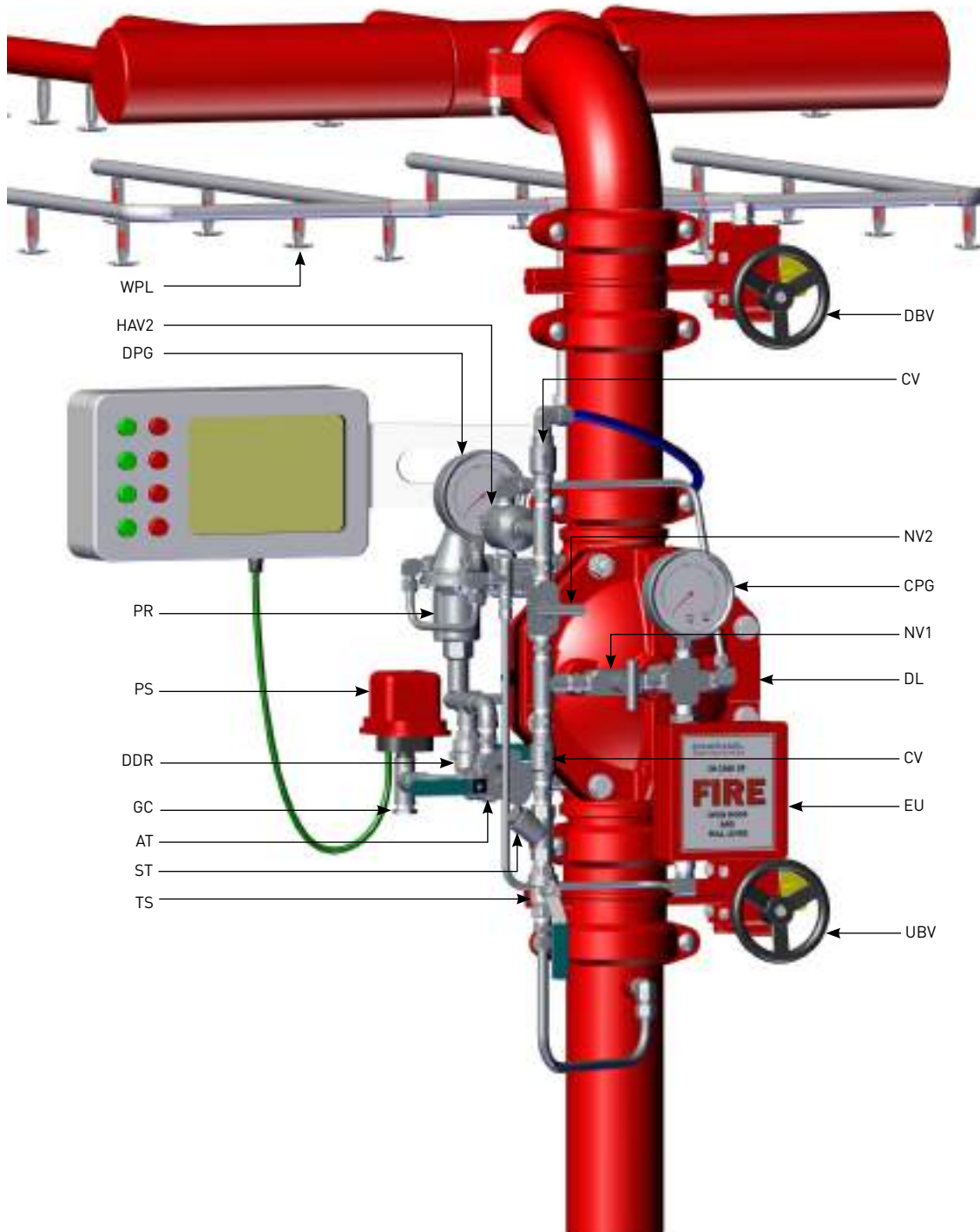
FIRE SITUATION

When one or more automatic sprinklers along the wet pilot line (WPL) are exposed to flame heat and activate (blow open), the pilot line depressurizes. Consequently, the HAV-2 actuator opens, draining the FDV control chamber through the pressure-reducing pilot valve (PR).

Once the FDV opens, water flows into the sprinkler piping. The PRPV pilot senses the downstream pressure and regulates the FDV opening, maintaining a steady preset downstream pressure. Opening the MEU door and pulling down the ball valve handle bypasses all control elements, drains the FDV control chamber, and immediately opens the valve.

RESET POSITION

To reset, replace all activated (blown-open) sprinklers in the wet pilot line, then repressurize the pilot line. When pressurization is restored, the HAV-2 closes, blocking drainage from the FDV control chamber, while upstream water continuously refills it via the trim's needle valve (NV1). The FDV then closes, returning the system to the SET position. The sprinkler piping should be drained by opening the FDV downstream drain ball valve (DDV) or by pressing the MADV push button [MD].



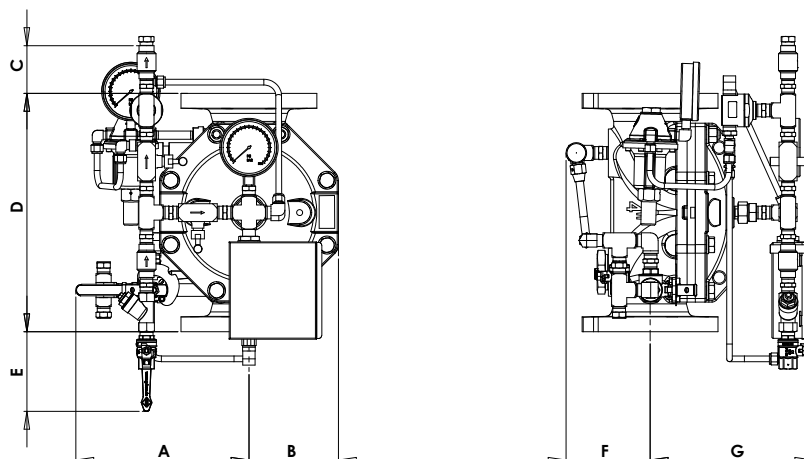
TS – Trim Supply
ST – Strainer
AT – Alarm Test valve
GC – Gong Connection
DDR – Downstream Drain Valve
PS – Pressure Switch

PR – Pressure Reducing Pilot Valve
DPG – Downstream Pressure Gauge
HAV2 – Hydraulic actuator 2 way
WPL – Wet Pilot Line
DBV – Downstream Butterfly Valve
CV – Check Valve
NV1 – Upstream Needle Valve

NV2 – WPL compensation Needle Valve
CPG – Control chamber Pressure Gauge
DL – Deluge valve
EU – Emergency Valve
UBV – Upstream Butterfly Valve

Parametric drawing:

FDV-PH1



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	290	11.4	300	11.8	290	11.4	315	12.4	338	13.3	193	7.6
B	122	4.8	122	4.8	122	4.8	150	5.9	178	7	230	9	306	12
C	180	7	172	6.8	117	4.6	80	3.1	52	2	48	1.9	45	1.77
D	204	8.0	220	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	232	9.1	218	8.6	170	6.7	132	5.1	93	3.6	48	1.9	N/A	N/A
F	156	6.1	128	5	128	5	141	5.5	158	6.2	191	7.5	203	8
G	193	7.5	206	8.1	237	9.3	273	10.7	335	13.1	374	14.7	487	19.1
Kg/lb	13.5	29.7	15.7	34.6	32.5	71.6	48.5	106	58.5	129	104	229	234	515

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
- Downstream set pressure
- System installation orientation
- Deluge valve ends and standard
- Deluge valve material and coating
- Trim materials
- Installation orientation
- Additional accessories needed
Alarm pressure switch
Gong

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

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



Commercial



Industry



Marine



Storage



Residential



Airport

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)

ADVANTAGES

- Only three parts: body, diaphragm, and cover plate. No wetted metal spring inside the control chamber.
- Full-bore, unobstructed design.
- 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.

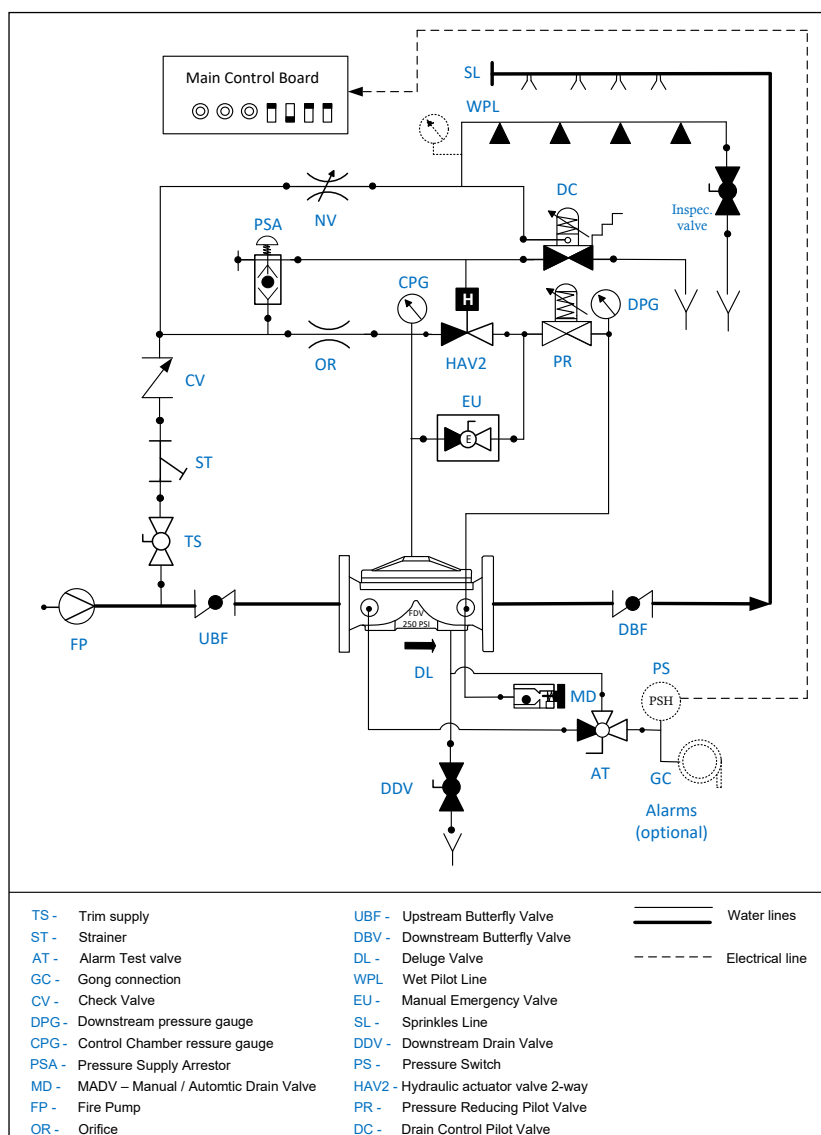
The FDV-PA0 resets to the stand-by closed position by pressurizing the Dry Pilot Line and manually operating the PSA device.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

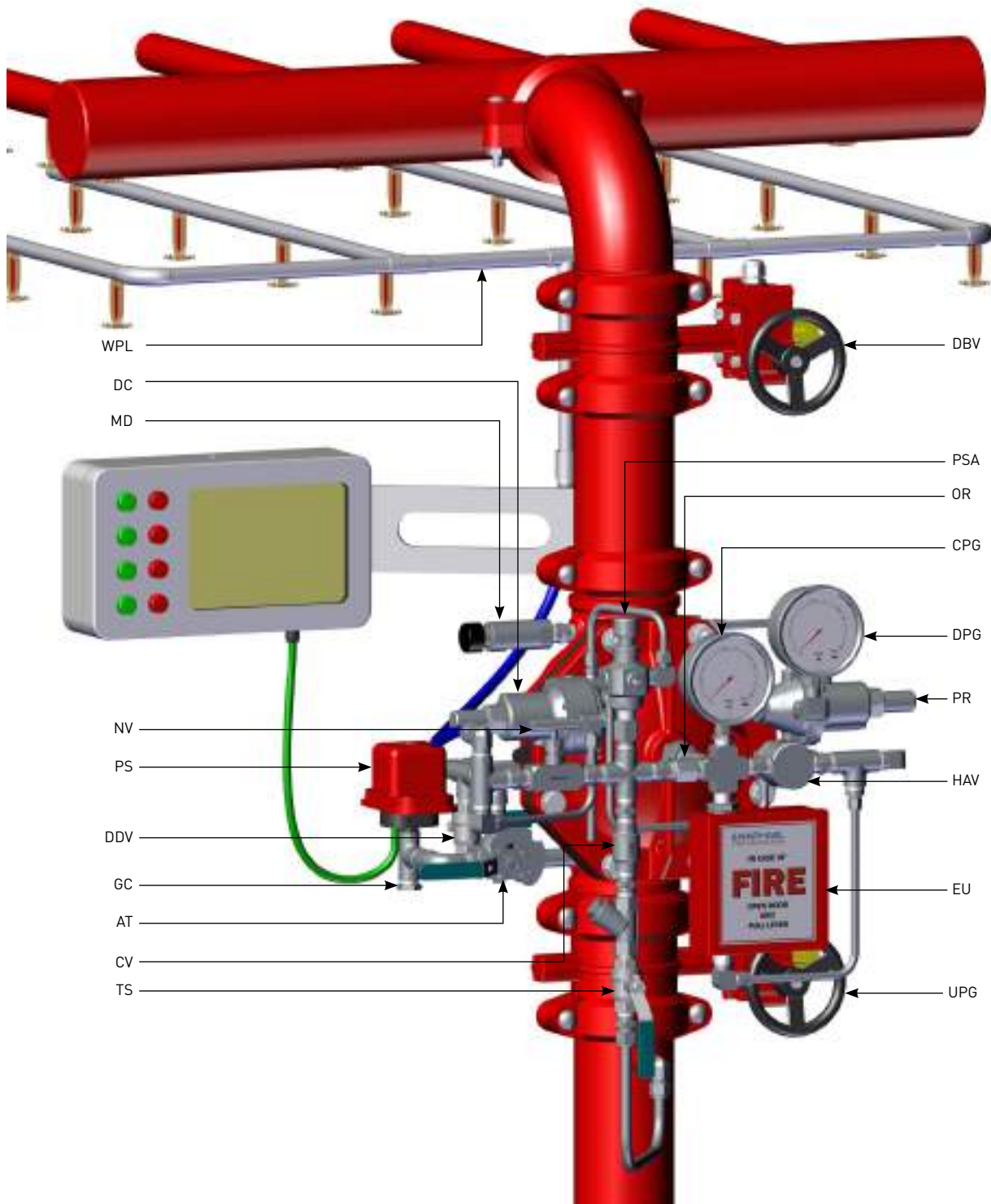
Pressurized water in the valve's control chamber (DL) is retained by the check valve (CV), the closed emergency valve (EU), and the closed HAV-2 actuator (HAV). The hydraulic pressure accumulated in the Wet Pilot Line keeps the DCPV drain pilot (DC) in its closed position, thereby maintaining the HAV-2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



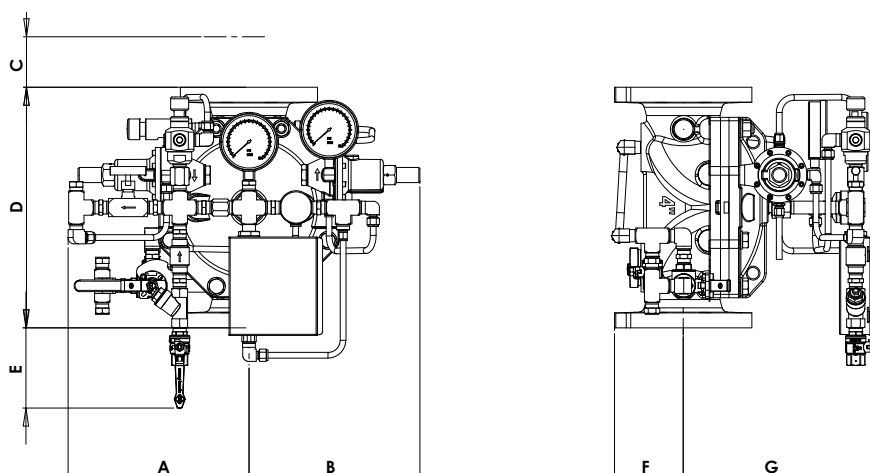
TS - Trim supply valve
ST - "Y" strainer
CV - Check valve
AT - Alarm test valve
GC - Gong Connection
DC - Drain Control Pilot Valve
DDR - Downstream drain valve

PS - Pressure Switch
HAV2 - Hydraulic Actuator Valve
PR - 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:

FDV-PA0



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





PREACTION SYSTEMS

PREACTION SYSTEMS

FPS-DIC0	132
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FPS-SCE1	140
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FPS-DCE1	156
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FPS-DIE1	164
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Double Interlock, Electro-Pneumatically Actuated, Local Reset

FPS-DIC0

The Preaction system is a fire protection (FP) combined system, consisting of a controlled FDV deluge valve and a riser check valve installed downstream. The pressurized automatic sprinkler pipeline keeps the riser check valve closed. The section between the downstream side of the closed deluge valve and the check valve clapper serves as the "intermediate chamber," where the water pressure switch and acoustic alarm are connected.

In double-interlock Preaction systems, such as the one described, full system activation is dependent on two independent fire-related events: one resulting from heat exposure, and the other from fire detection. The operation of the FPS-DIC0 system requires both pneumatic and electrical triggering.

In the event of fire, heat causes one or more automatic sprinklers to open, leading to depressurization of the sprinkler pipeline. The resulting pressure drop triggers the air pressure switch, which sends a signal to the main control board. This constitutes the first actuation event. In parallel, the pressure drop opens a pneumatic actuator located on the deluge valve control chamber drain line, which is installed in series with a normally closed solenoid valve. At this stage, the solenoid valve remains closed.

When one or more smoke detectors are activated, they send an electrical signal to the main control board. This constitutes the second actuation event. Only when both actuation events occur does the control board open the solenoid valve, which in turn causes the FDV deluge valve to open, allowing water to flow into the sprinkler pipeline.



MARKETS



Commercial



Industry



Storage



Airports



Residential

TECHNICAL DATA

FLUID:

Water, Foam

PNEUMATICS:

Air, Nitrogen

SIZE RANGE:

50 mm to 250 mm (2" to 10")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove,
Flange*Groove, Groove*Flange,
Thread*Thread

PRESSURE NOMINAL:

250 psi (17.2 bar)

ADVANTAGES

- Suitable for low temperature zone installation – water spraying pipeline is kept dry.
- Full-bore, unobstructed design
- The ASK - Air Supply Unit provides a constant air compensation in case of pipeline minor leaks.
- The Manual /Emergency local operation valve installed in a metal enclosure is fully protected from Accidental activation. When opened, it by-passes all terms.
- Open fail-safe valve property by special fail-safe device – the PSA.
- Low maintenance cost: the main valve is serviced in-line and only one replaceable part - the long-life elastomeric diaphragm. The riser check valve is maintenance free

CHARACTERISTICS

- Hydro-dynamic pattern design ensures high flow rates with minimal head loss.
- The valve opens automatically only after two independent actuation events occur. The first is an electric signal transmitted from the heat detection sensors to the valve's solenoid; the second is a pressure drop in the closed sprinklers pipeline.

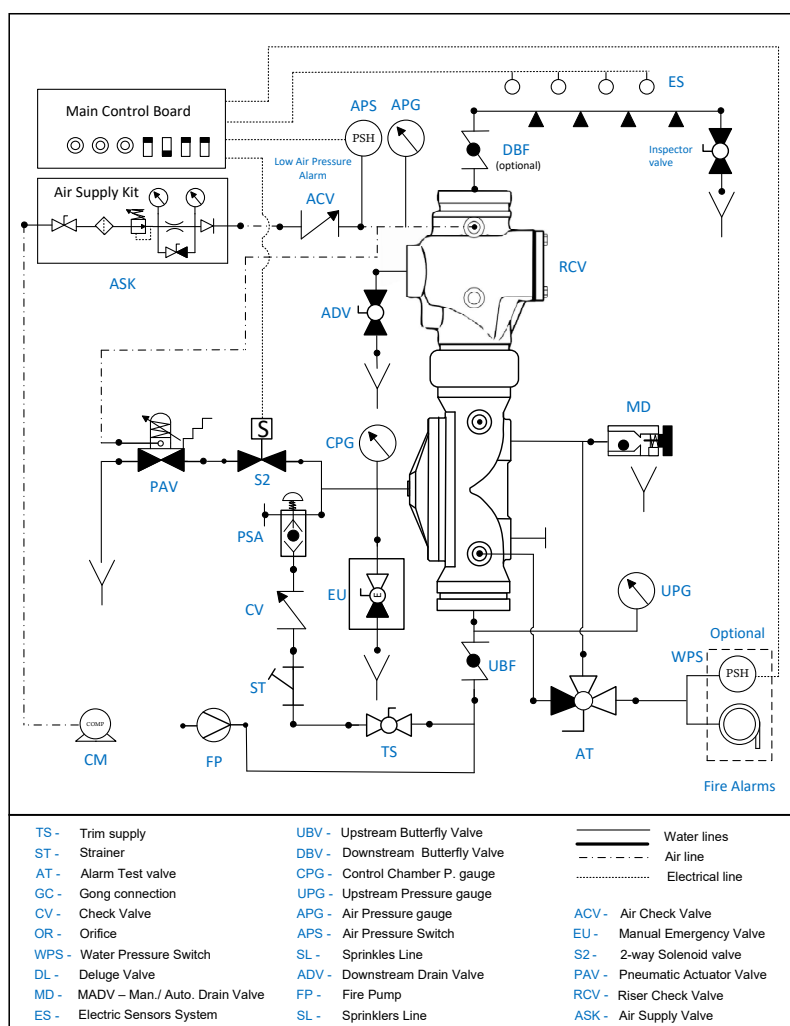
The FPS-DIC0 resets to its stand-by closed position by de-energizing the solenoid coil through the main control panel and replacing all open (shuttered) sprinklers, which enables the downstream pipeline to be re-pressurized. Additionally, the PSA push button must be pressed

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

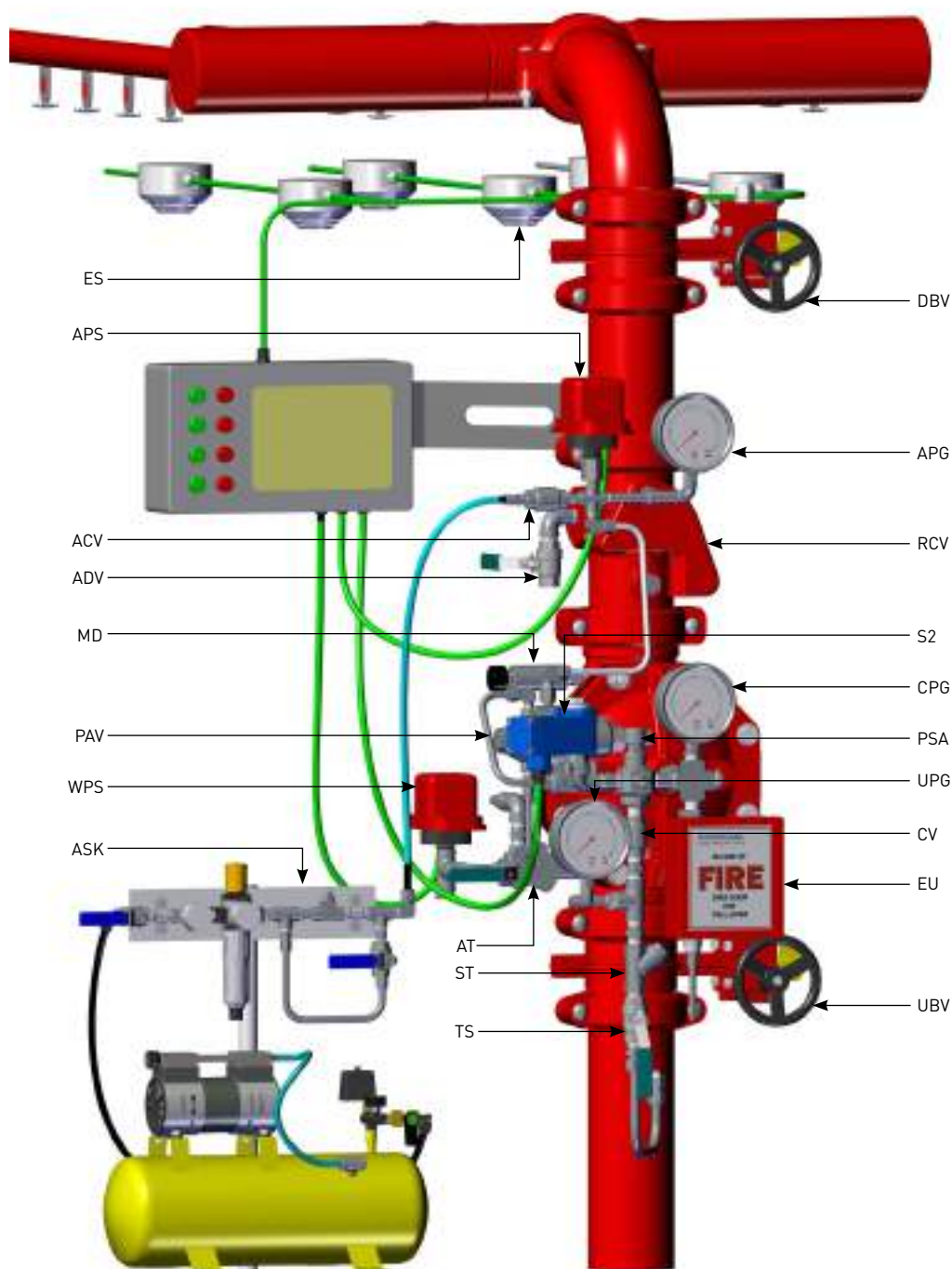
Pressurized water in the deluge valve's control chamber is trapped by the check-valve (CV), by the closed solenoid valve (S2), and by the closed emergency valve (EU), maintaining the deluge valve in its closed position. The air pressure accumulated in the downstream spraying pipeline, maintains Riser check valve (RCV) close.

FIRE SITUATION

When some of the automatic sprinklers are subjected to the predetermined temperature and shutter-open, the pipeline de-pressurizes, tripping open the closed pneumatic actuator (PAV) and closes the internal contacts of the low air pressure switch (APS). When this signal is transferred to the main control board, it is considered as the first actuation event. When the electric detection system senses heat and triggers the main control board, it energizes the 2 way solenoid valve coil. This is considered as the second event of actuation. When the solenoid and the actuator (PAV) are both open, the deluge control chamber is drained and the valve opens, admitting water through the open riser check valve to the sprinklers pipeline. All alarms are activated. The fail safe valve control chamber is pressurized by the downstream pressure, opens and constantly drains the water flow supplied from the upstream by the trim supply valve (TS).

RESET POSITION

When the solenoid valve is de-energized by the main control board it closes. The constant water flow from the trim supply valve (TS) to the deluge control chamber, pressurizes it and causes the valve to close. The full system reset requires the replacement of all Shattered-open sprinklers in the spray pipeline. Before re-pressurizing this pipeline by air, it needs to be fully drained by opening the drain valve at the riser check valve.



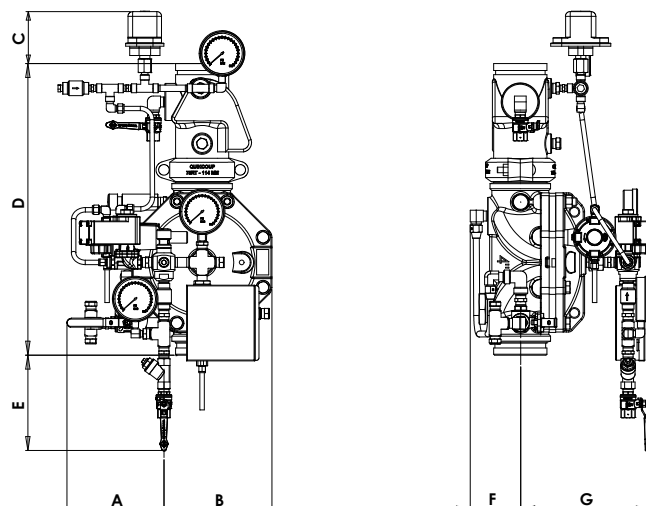
DBV - Downstream Butterfly Valve
UBV - Upstream Butterfly Valve
APS - Air Pressure switch
APG - Air Pressure Gauge
ES - Electric Sensors system
ASK - Air Supply Kit
ACV - Air Check Valve

RCV - Riser Check Valve
ADV - Air Drain Valve
CPG - Control Chamber Pressure Gauge
UPG - Upstream Pressure Gauge
S2 - Solenoid 2 way
PAV - Pneumatic actuator Valve
PSA - Pressure Supply Arrestor

MD - Manual Automatic Drain Valve
EU - Emergency Unit
CV - Check Valve
ST - "Y" Strainer
TS - Trim Supply
WPS - Water Pressure Switch (optional)
AT - Alarms Test Valve

Parametric drawing:

FPS-DICO



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	280	11	296	11.6	290	11.4	315	12.4	336	13.2	373	14.7
B	122	4.8	122	4.8	150	5.9	204	8.3	229	9	305	12
C	120	4.7	120	4.7	116	4.5	114	4.5	122	4.8	132	5.2
D	392	15.4	523	20.5	629	24.7	736	28.9	897	35.3	1200	47.2
E	295	11.6	275	10.8	206	8.1	138	5.4	156	6.1	58	2.3
F	127	5	140	5.5	145	5.7	146	5.7	157	6.1	180	7.0
G	258	10.1	317	12.4	288	11.3	385	15.1	330	13	450	17.7
Kg/lb	17.3	38.1	31	68.3	52	114	80.4	177	130	286	182	401

Factory Standard

MAIN VALVE

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M

RISKER CHECK VALVE:

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8M

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

FITTINGS:

- Stainless Steel 316
- Brass

ACCESSORIES:

- Stainless steel CF8M
- Brass

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Downstream set pressure
- Pneumatic working pressure
- System installation orientation
- Valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Installation orientation
- Additional accessories needed:
 - Water motor Alarm (Gong)
 - Water pressure switch
 - Low air pressure switch

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

Single interlock with Pressure Reducing, Electrically Actuated, Local reset

FPS-SCE0

The preaction system is a combined fire-protection (FP) system consisting of a controlled FDV deluge valve and a riser check valve installed downstream. The pressurized automatic-sprinkler pipeline keeps the riser check valve in the closed position.

The section between the downstream side of the closed deluge valve and the clapper of the check valve functions as the intermediate chamber, where both the water-pressure switch and the acoustic alarm are connected.

In single-interlock pre-action systems, such as the FPS-SCE0 described here, full system activation depends on the occurrence of a single independent fire-related event detected by the electric fire-detection sensors.

When one or more electric detectors are triggered, they send an electrical signal to the main control board. This constitutes the actuation event. Consequently, the control board energizes the solenoid valve, opening the FDV deluge valve and allowing water to flow into the sprinkler pipeline. The low-air-pressure switch is used for supervision only.

Fire suppression is activated only when one or more sprinklers open due to heat. Water is discharged exclusively through the sprinklers that have opened directly above the fire.

The trim is equipped with a PSA - a device that enables local system reset, that is, reclosing the FDV valve by re-pressurizing its control chamber. The PSA is considered a latching device and keeps the valve open even in the event of a power outage.

The FPS-SCE0 system is also capable of reducing upstream pressure to a predetermined downstream pressure and maintaining it at a steady level. The pressure-reducing pilot responds to any downstream-pressure changes caused by flow-rate variations, ensuring a stable set pressure.



MARKETS



Commercial



Industry



Storage



Airports



Residential

TECHNICAL DATA

FLUID:

Water

PNEUMATICS:

Air, Nitrogen

SIZE RANGE:

50 mm to 250 mm 2" to 10"

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove,
Flange*Groove, Groove* Flange

PRESSURE NOMINAL:

250 psi (17.2 bar)

ADVANTAGES

- Suitable for low temperature zone installation – water spraying pipeline is kept dry.
- Full-bore, unobstructed design
- The ASK - Air Supply Unit provides constant air compensation in case of pipeline minor leaks.
- The Manual /Emergency local operation valve installed in a metal enclosure is fully protected from Accidental activation. When opened, it by-passes all terms.
- Open fail-safe valve property by special fail-safe device – the PSA.
- Low maintenance cost: the valve can be serviced in-line and includes only one replaceable part — a long-life elastomeric diaphragm.

CHARACTERISTICS

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- The system trips open automatically only after one event of actuation - one or more of the electric sensors is triggered and sent an electric signal to the main board

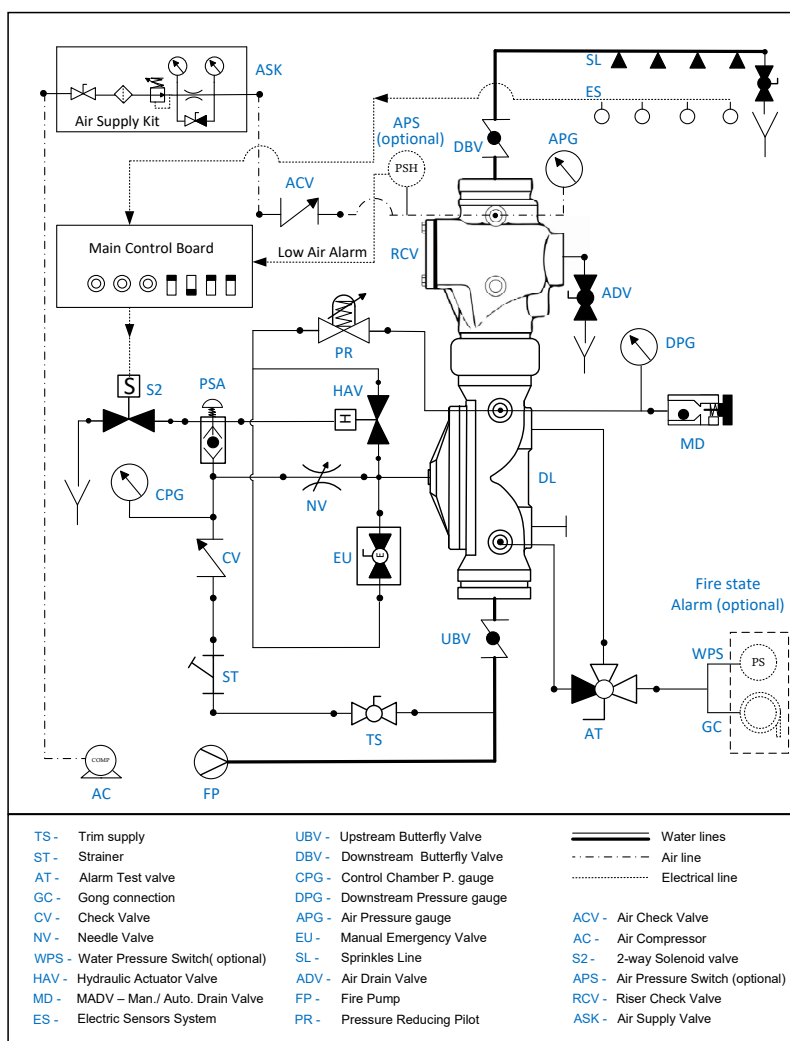
The FPS-SCE0 resets to stand-by close position, by de-energizing the solenoid valve coil through the main control panel and replacing all shuttered open sprinklers, enabling the pressurizing of downstream pipeline. In addition, by manually operating the local reset device – the PSA.

A pressure-reducing pilot enables full control over the downstream pressure and ensures a steady set in a wide pressure range.

APPROVALS



Set position



SET POSITION

Pressurized water is retained in the deluge valve's control chamber by the check valve (CV), the closed pneumatic actuator valve (HAV), the closed PSA (PSA) device, and the closed emergency valve (EU), keeping the deluge valve closed. Air pressure in the downstream spray pipeline keeps the riser check valve closed.

FIRE SITUATION

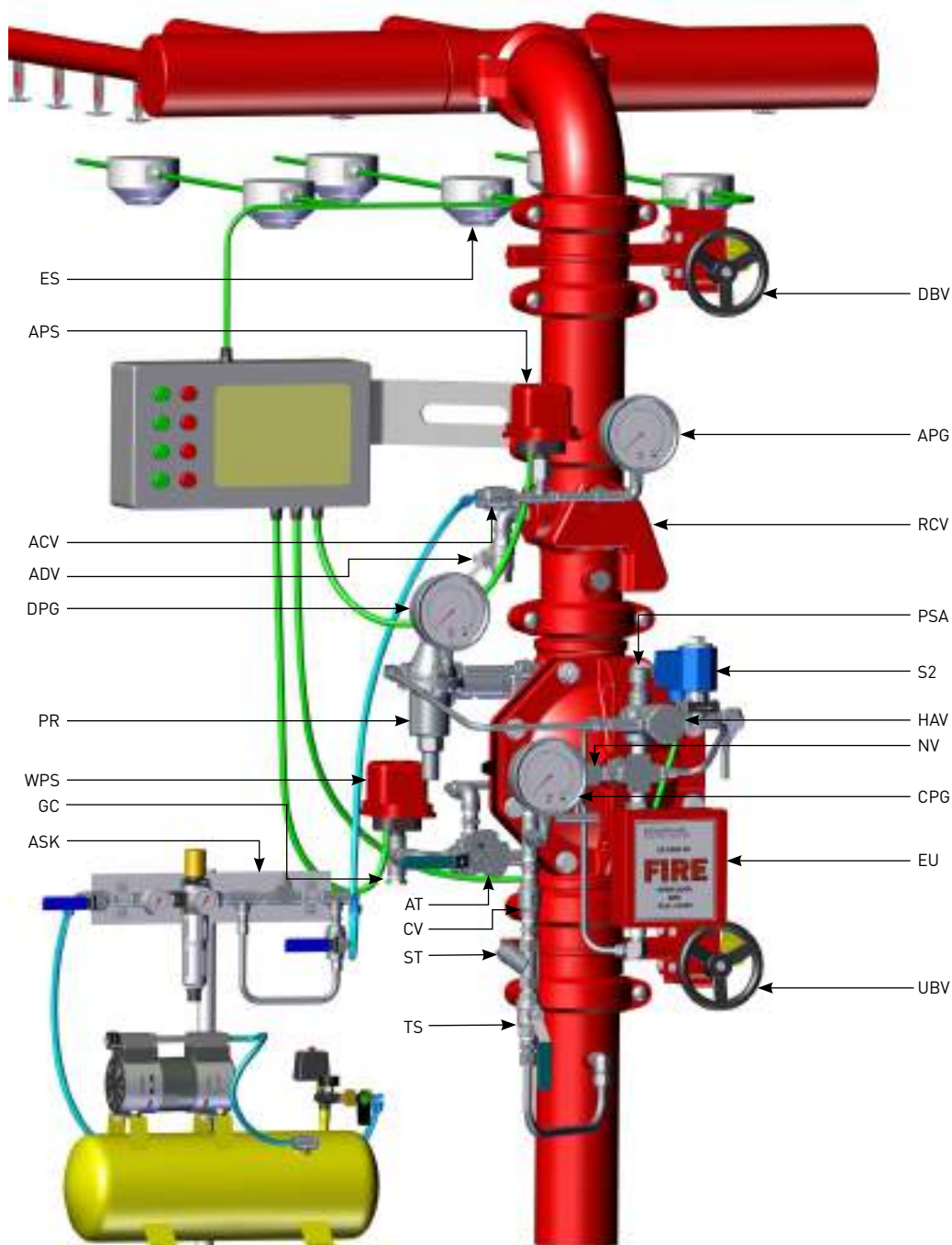
When the electric detection system senses heat, it sends a signal to the control board, recognized as the single actuation event. The control board then energizes the solenoid valve [S2], which drains the hydraulic actuator (HAV) control chamber, allowing it to open. When open, water trapped in the deluge control chamber flows through the pressure-reducing pilot to the downstream, and the deluge valve opens. Water admitted by the deluge flows through the open riser check valve to the sprinkler pipeline. This activates all alarms, including the water-pressure switch (WPS) and the water-motor gong. The low-air-pressure switch (APS), if installed, serves for supervisory purposes only.

The PSA (PSA) prevents the control HAV's control chamber from re-pressurizing and, thereby, latches the deluge valve open.

RESET POSITION

When the control board de-energizes the solenoid valve (S2) and the PSA pushbutton has been pressed, the HAV control chamber pressurizes and the actuator closes. Upstream flow through the trim supply valve (TS) and the needle valve (NV) pressurizes the deluge control chamber, causing it to close. After it closes, the PSA pushbutton can be released.

All burst-open sprinklers must be replaced. Before re-pressurizing the spray pipeline with air, it must be thoroughly drained using the air-drain valve (ADV).

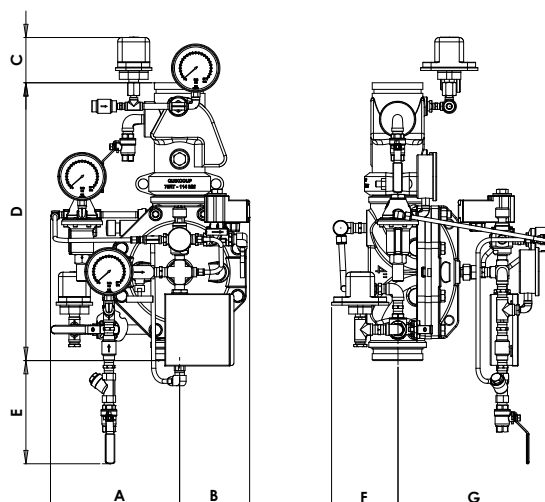


DBV - Downstream Butterfly Valve
UBV - Upstream Butterfly Valve
CPG - Control Chamber Pressure Gauge
DPG - Downstream Pressure Gauge
APG - Air Pressure Gauge
ES - Electric Sensors system
ASK - Air Supply Kit
ACV - Air Check Valve

ADV - Air Drain Valve
S2 - Solenoid 2 way
PR - Pressure Reducing Pilot Valve
PSA - Pressure Supply Arrestor
EU - Emergency Unit
CV - Check Valve
ST - "Y" Strainer
TS - Trim Supply

NV - Needle Valve
AT - Alarms Test Valve
GC - Gong Connection
HAV - Hydraulic Actuator Valve
WPS - Water Pressure Switch
APS - Air Pressure Switch (optional)
RCV - Riser Check 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	263	10.3	296	11.6	290	11.4	315	12.4	336	13.2	394	15.5
B	146	5.7	146	5.7	150	5.9	176	6.9	231	9	308	12.1
C	120	4.7	120	4.7	116	4.5	114	4.5	122	4.8	132	5.2
D	392	15.4	523	20.5	629	24.7	736	28.9	897	35.3	1200	47.2
E	222	8.7	223	8.7	138	5.4	101	3.9	49	1.9	N/A	N/A
F	108	4.2	159	6.2	145	5.7	146	5.7	157	6.1	216	8.5
G	273	10.7	302	11.8	340	13.3	404	15.9	441	17.3	517	20.3
Kg/lb	18.6	41	31	68.3	53	116	81.2	178	131	288	186	410

Factory Standard

MAIN VALVE

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M

RISKER CHECK VALVE:

- Ductile Iron

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

FITTINGS:

- Stainless Steel 316
- Brass

ACCESSORIES:

- Stainless steel CF8M
- Brass

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Pneumatic pressure
- Downstream set pressure
- System installation orientation
- Valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Installation orientation
- Additional accessories needed:
 - Water motor Alarm (Gong)
 - Water pressure switch
 - Low air pressure switch

Single interlock with Pressure Reducing, Electrically Actuated, Remote reset

FPS-SCE1

The Preaction system is a combined fire protection (FP) system consisting of a controlled FDV deluge valve and a riser check valve installed downstream. The pressurized automatic sprinkler pipeline maintains the riser check valve in the closed position. The section between the downstream side of the closed deluge valve and the clapper of the riser check valve functions as the "intermediate chamber", to which the water pressure switch and the acoustic alarm are connected.

In single-interlock pre-action systems, such as the FPS-SCE1 described here, full system activation depends on the occurrence of a single fire-related event caused by heat and detected by electric fire detection sensors.

When one or more electric detectors are triggered, they send an electrical signal to the main control board, constituting the actuation event. Only when this actuation event occurs does the control board energize the solenoid valve, thereby opening the FDV deluge valve and allowing water to flow into the sprinkler pipeline. The low air pressure switch is used for supervisory purposes only.

The FPS-SCE0 system can reduce upstream pressure to a preset downstream pressure and maintain it at a steady level. The pressure-reducing pilot responds to downstream pressure changes caused by variations in flow demand and keeps the set pressure stable.



MARKETS



Commercial



Industry



Storage



Airports



Residential

TECHNICAL DATA

FLUID: Water

PNEUMATICS: Air, Nitrogen

SIZE RANGE:

50 mm to 250 mm (2" to 10")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove,
Flange*Groove, Groove* Flange

PRESSURE NOMINAL:

250 psi (17.2 bar)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- Unobstructed, full-bore valve design.
- Simple manual reset of the valve to standby position without closing OS&Y or other valves in the system.
- 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

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- The system trips open automatically only after a single actuation event: one or more electric sensors are triggered and send an electrical signal to the main control board.

The FPS-SCE1 resets to the standby closed position by de-energizing the solenoid coil via the main control panel and replacing all sprinklers that have burst open, thereby allowing the downstream pipeline to be re-pressurized.

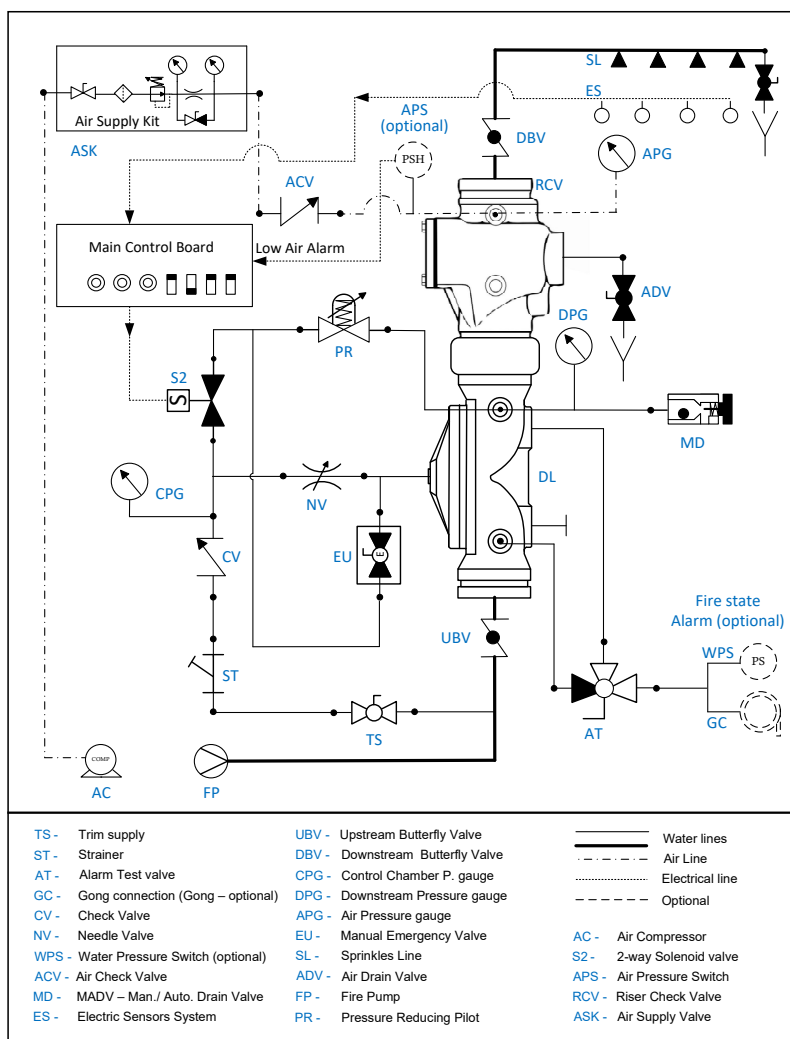
A pressure-reducing pilot provides full control of the downstream pressure and maintains a stable set pressure over a wide operating range.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

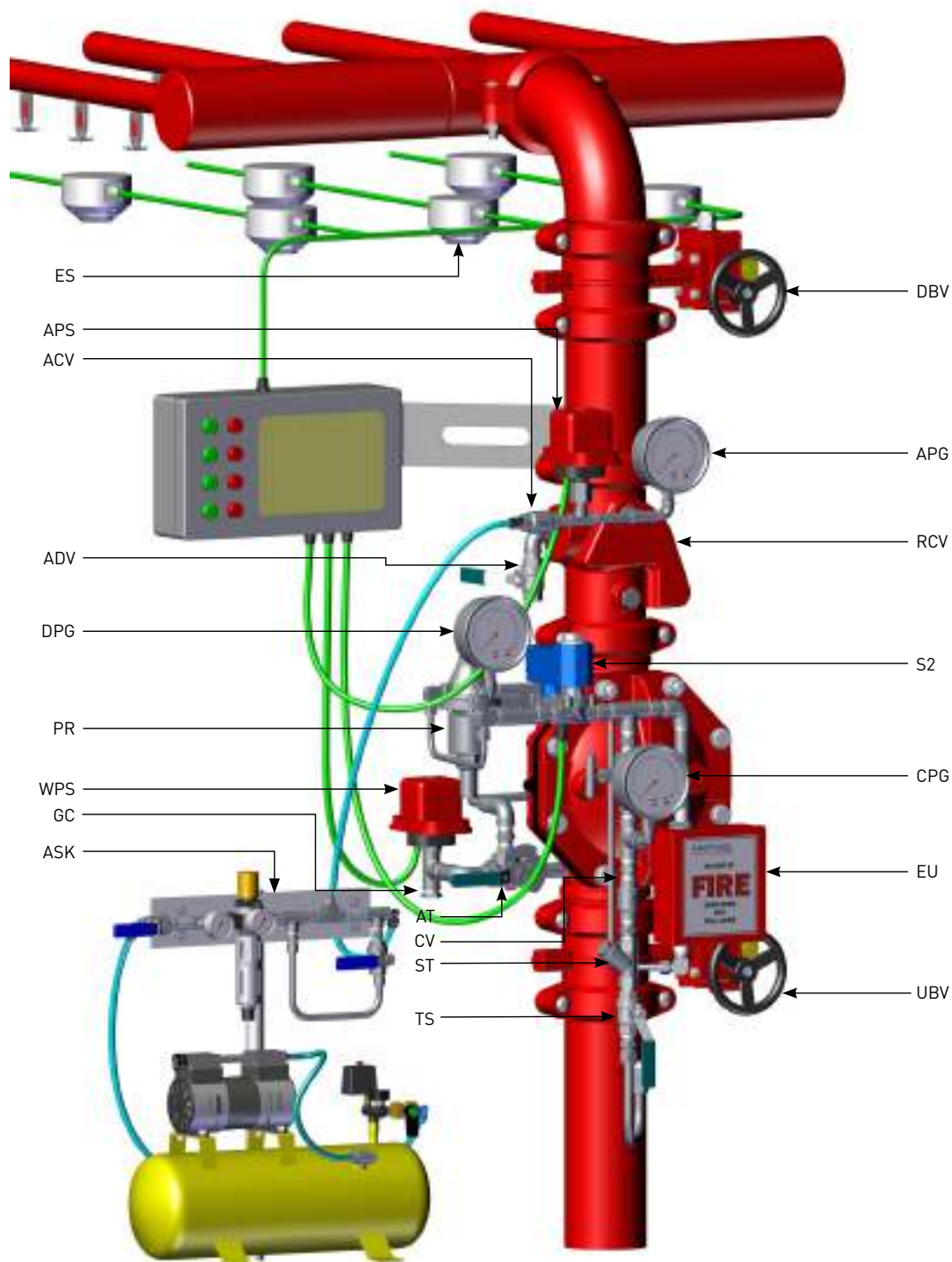
Pressurized water is retained in the deluge valve's control chamber by the check valve (CV), the closed solenoid valve (S2), and the closed emergency valve (EU), keeping the deluge valve closed. Air pressure in the downstream spray pipeline keeps the riser check valve closed.

FIRE SITUATION

When the electric detection system senses heat, it sends a signal to the control board, which is recognized as the actuation event. The control board then energizes the solenoid valve (S2), draining the deluge valve control chamber through the pressure-reducing pilot to the downstream side. Consequently, the deluge valve opens and admits water through the open riser check valve into the sprinkler pipeline. This action activates all alarms, including the water pressure switch (WPS) and the water motor gong.

RESET POSITION

When the control board de-energizes the solenoid valve (S2), upstream flow through the trim supply valve (TS) and the needle valve (NV) pressurizes the deluge valve control chamber, causing it to close. All sprinklers that have burst open must be replaced. Before re-pressurizing the spray pipeline with air, it must be completely drained by opening the air drain valve (ADV).



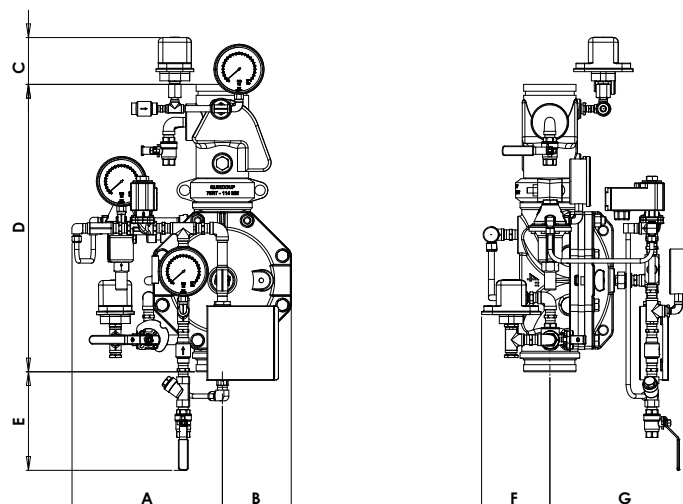
DBV - Downstream Butterfly Valve
UBV - Upstream Butterfly Valve
CPG - Control Chamber Pressure Gauge
DPG - Downstream Pressure Gauge
APG - Air Pressure Gauge
ES - Electric Sensors system

ASK - Air Supply Kit
ACV - Air Check Valve
ADV - Air Drain Valve
S2 - Solenoid 2 way
PR - Pressure Reducing Pilot Valve
EU - Emergency Unit
CV - Check Valve

ST - "Y" Strainer
TS - Trim Supply
AT - Alarms Test Valve
GC - Gong Connection
WPS - Water Pressure Switch
APS - Air Pressure Switch (optional)
RCV - Riser Check Valve

Parametric drawing:

FPS-SCE1



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	242	9.5	199	7.8	298	11.7	315	12.4	245	9.6	394	15.5
B	212	8.3	241	9.5	150	5.9	176	6.9	232	9.1	307	12
C	120	4.7	120	4.7	116	4.5	114	4.5	122	4.8	132	5.2
D	392	15.4	523	20.5	629	24.7	736	28.9	897	35.3	1200	47.2
E	295	11.6	300	11.8	190	7.5	157	6.2	105	4.1	N/A	N/A
F	108	4.2	159	6.2	145	5.7	146	5.7	157	6.1	216	8.5
G	276	10.8	276	10.8	310	12.2	347	13.6	380	14.9	503	19.8
Kg/lb	17.5	38.5	32	70.5	51.8	114	80.6	178	130	287	186	410

Factory Standard

MAIN VALVE

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M

RISKER CHECK VALVE:

- Ductile Iron

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

FITTINGS:

- Stainless Steel 316
- Brass

ACCESSORIES:

- Stainless steel CF8M
- Brass

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- System installation orientation
- Valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Installation orientation
- Additional accessories needed:
 - Water motor Alarm (Gong)
 - Water pressure switch
 - Supervisor de interruptor de baja presión

Single interlock, Electrically Actuated, Local reset

FPS-SIE0

The Preaction system is a fire protection (FP) combined system, consisting of a controlled FDV deluge valve and a riser check valve installed downstream. The pressurized automatic sprinkler pipeline maintains the riser check valve in a closed position. The section between the downstream side of the closed deluge valve and the check valve clapper functions as the "intermediate chamber," where the water pressure switch and the acoustic alarm are connected.

In single-interlock Preaction systems, such as the FPS-SIE0 described here, full system activation depends on the occurrence of a single, independent fire-related event - specifically, heat exposure detected by electric sensors.

When one or more electric detectors are triggered, they send a signal to the main control board, initiating the actuation event. Only after this event occurs does the control board energize the solenoid valve, thereby opening the FDV deluge valve and allowing water to flow into the sprinkler pipeline.

The trim is equipped with a PSA - an integrated device that enables local system reset, i.e., re-closing the FDV valve by re-pressurizing its control chamber.

Additionally, the PSA functions as a latching device, keeping the valve open even in the event of a power outage.



MARKETS



Commercial



Industry



Storage



Airports



Residential

TECHNICAL DATA

FLUID:

Water

PNEUMATICS: Air, Nitrogen

SIZE RANGE:

50 mm to 250 mm (2" to 10")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove,
Flange*Groove, Groove* Flange

PRESSURE NOMINAL:

250 psi (17.2 bar)

ADVANTAGES

- Suitable for low temperature zone installation – water spraying pipeline is kept dry.
- Full-bore, unobstructed design.
- The ASK - Air Supply Unit provides a constant air compensation in case of pipeline minor leaks.
- The Manual /Emergency local operation valve installed in a metal enclosure is fully protected from Accidental activation. When opened, it by-passes all terms.
- Open fail-safe valve property by special fail-safe device – the PSA.
- Low maintenance cost: the valve can be serviced in-line and includes only one replaceable part — a long-life elastomeric diaphragm.

CHARACTERISTICS

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- The system trips open automatically after one events of actuation:

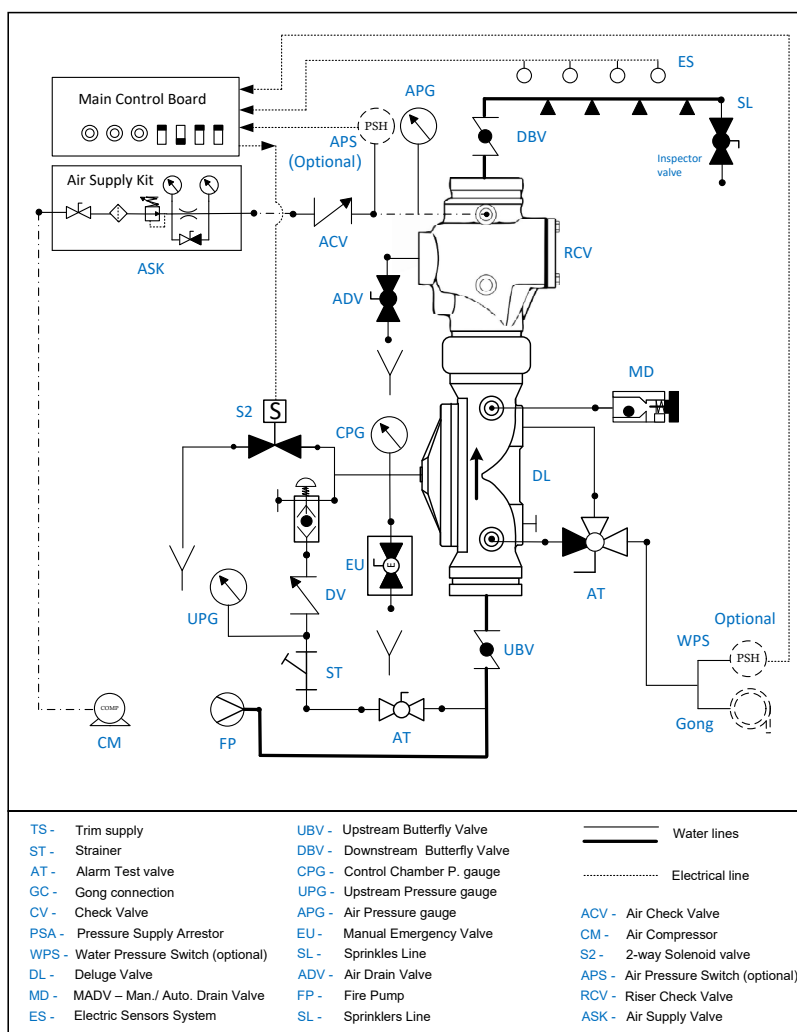
The second one or more of the electric sensors is triggered and sent an electric signal to the main board the activation of the Air pressure switch at fire situation, when air pressure drops at the sprinklers pipeline is used for supervision only.

The FPS-SIE0 resets to stand-by close position by de-energizing the solenoid coil through the main control panel and replacing all shuttered open sprinklers enabling the pressurizing of downstream pipeline. In addition, the PSA bush button must be pressed locally.

APPROVALS



Set position



SET POSITION

Pressurized water is retained in the deluge valve's control chamber by the check valve (CV), the closed solenoid valve (S2), the PSA (PSA) device and the closed emergency valve (EU), keeping the deluge valve closed. Air pressure in the downstream spray pipeline keeps the riser check valve closed.

FIRE SITUATION

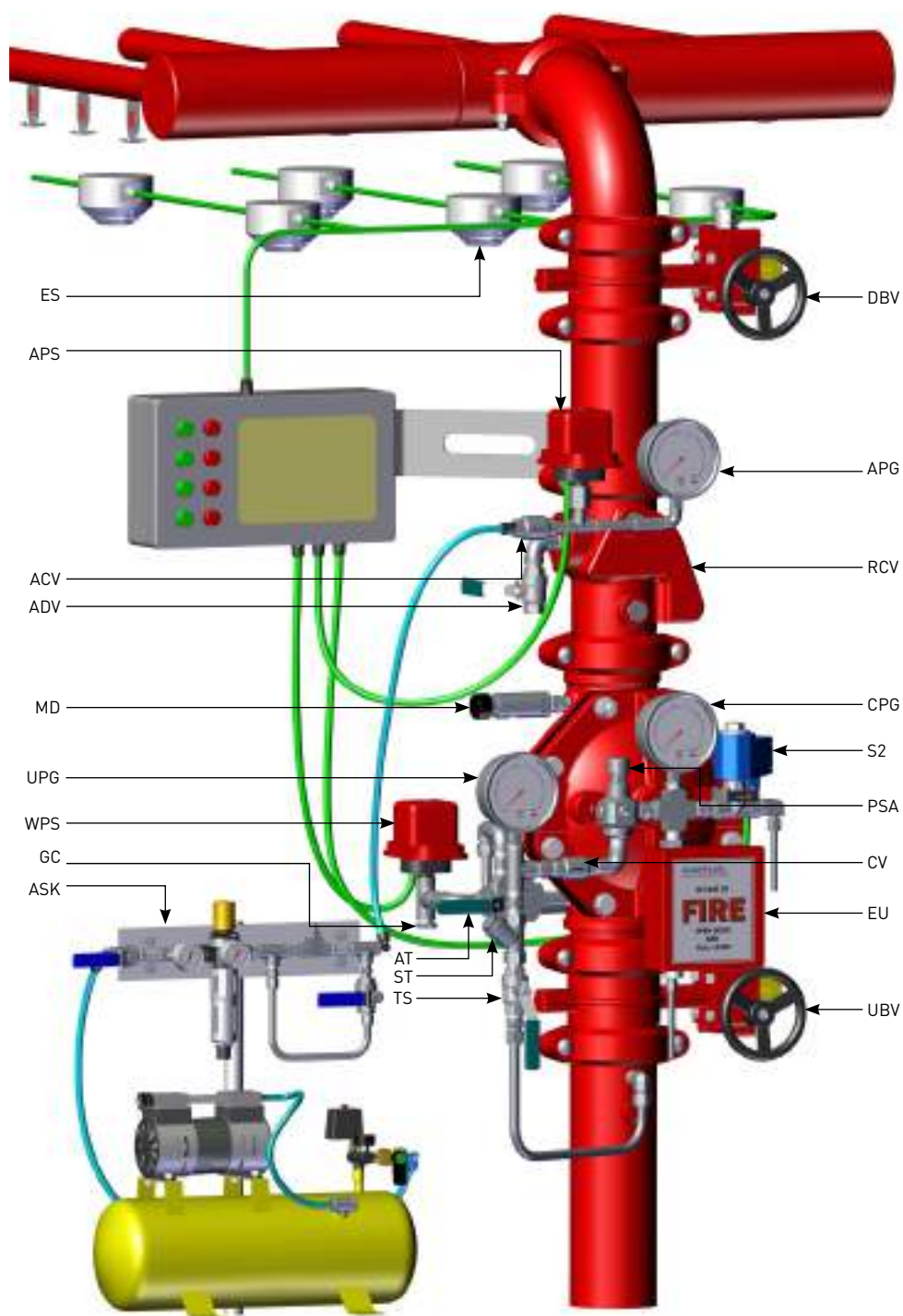
When one the electric detection system senses heat, it sends a signal to the control board - recognized as the single actuation event. The control board then energizes the solenoid valve [S2], which drains the deluge valve's control chamber, allowing it to open. Water admitted by the deluge flows through the open riser check valve to the sprinkler pipeline. This activates all alarms, including the water pressure switch (WPS) and the water motor gong. The Low air pressure switch (APS) if installed, serves for supervisory purposes only.

The PSA (PSA) avoids the control HAV's control chamber re-pressurization and by that, latches the deluge valve open.

RESET POSITION

When the control board de-energizes the solenoid valve (S2) and the PSA pushbutton was pressed, the deluge control chamber pressurizes, and the valve closes. After it closes, the PSA push button can be released.

All burst-open sprinklers must be replaced. Before re-pressurizing the spray pipeline with air, it must be thoroughly drained using the Air drain valve (ADV).



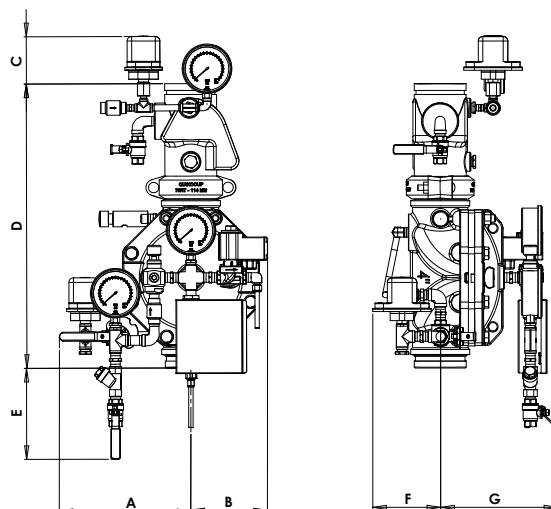
TS - Trim Supply
ST - "Y" Strainer
AT - Alarms Test Valve
GC - Gong Connection
ES - Electric Sensor
EU - Emergency Unit
CV - Check Valve

S2 - Solenoid 2 way
ASK - Air supply kit
ADV - Air Drain Valve
RCV - Riser Check Valve
APS - Air Pressure Switch
WPS - Water Pressure Switch
MD - Manual Automatic Drain Valve

APG - Air Pressure Gauge
CPG - Control Chamber Pressure Gauge
UPG - Upstream Pressure Gauge
PSA - Pressure Supply Arrestor
UBV - Upstream Butterfly Valve
DBV - Downstream Butterfly Valve

Parametric drawing:

FPS-SIE0



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	263	10.3	296	11.6	290	11.4	315	12.4	336	13.2	373	14.7
B	155	6.1	170	6.7	185	7.2	176	6.9	231	9.0	307	12
C	120	4.7	120	4.7	116	4.5	114	4.5	122	4.8	132	5.2
D	392	15.4	523	20.5	629	24.7	736	28.9	897	35.3	1200	47.2
E	221	8.7	259	10.1	219	8.6	188	7.4	137	5.4	37	1.45
F	127	5	140	5.5	145	5.7	146	5.7	157	6.1	180	7.0
G	173	6.8	202	7.9	226	8.9	292	11.5	330	13	415	16.3
Kg/lb	13.2	29.2	26.8	59.0	48.2	106	76.4	168	126	277	179	394

Factory Standard

MAIN VALVE

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M

RISKER CHECK VALVE:

- Ductile Iron

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

FITTINGS:

- Stainless Steel 316
- Brass

ACCESSORIES:

- Stainless steel CF8M
- Brass

PLEASE SPECIFY

- Working Media
- Ambient conditions
- Min/Max operating flow
- Min/Max operating pressure
- Min. pneumatic pressure
- System installation orientation
- Valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Additional accessories needed:
 - Water motor Alarm (Gong)
 - Water pressure switch

Single interlock, Electrically Actuated, Remote Reset

FPS-SIE1

The Preaction system is a fire protection (FP) combined system, consisting of a controlled FDV deluge valve and a riser check valve installed downstream. The pressurized automatic sprinkler pipeline maintains the riser check valve in the closed position. The section between the downstream side of the closed deluge valve and the clapper of the riser check valve functions as the "intermediate chamber", where the water pressure switch and the acoustic alarm are connected.

In single - interlock pre - action systems, such as the FPS - SIE0 described here, full system activation depends on the occurrence of a single independent fire - related event, specifically heat exposure detected by electric sensors.

When one or more electric detectors are triggered, they send a signal to the main control board, initiating the actuation event. Only after this event occurs does the control board energize the solenoid valve, thereby opening the FDV deluge valve and allowing water to flow into the sprinkler pipeline.



MARKETS



Commercial



Industry



Storage



Airports



Residential

TECHNICAL DATA

FLUID:

Water

PNEUMATICS: Air, Nitrogen

SIZE RANGE:

50 mm to 250 mm (2" to 10")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove,
Flange*Groove, Groove* Flange

PRESSURE NOMINAL:

250 psi (17.2 bar)

ADVANTAGES

- Suitable for low temperature zone installation – water spraying pipeline is kept dry.
- Full-bore, unobstructed design.
- The ASK - Air Supply Unit provides a constant air compensation in case of pipeline minor leaks.
- The Manual /Emergency local operation valve installed in a metal enclosure is fully protected from Accidental activation. When opened, it by-passes all terms.
- Low maintenance cost: the valve can be serviced in-line and includes only one replaceable part — a long-life elastomeric diaphragm.

CHARACTERISTICS

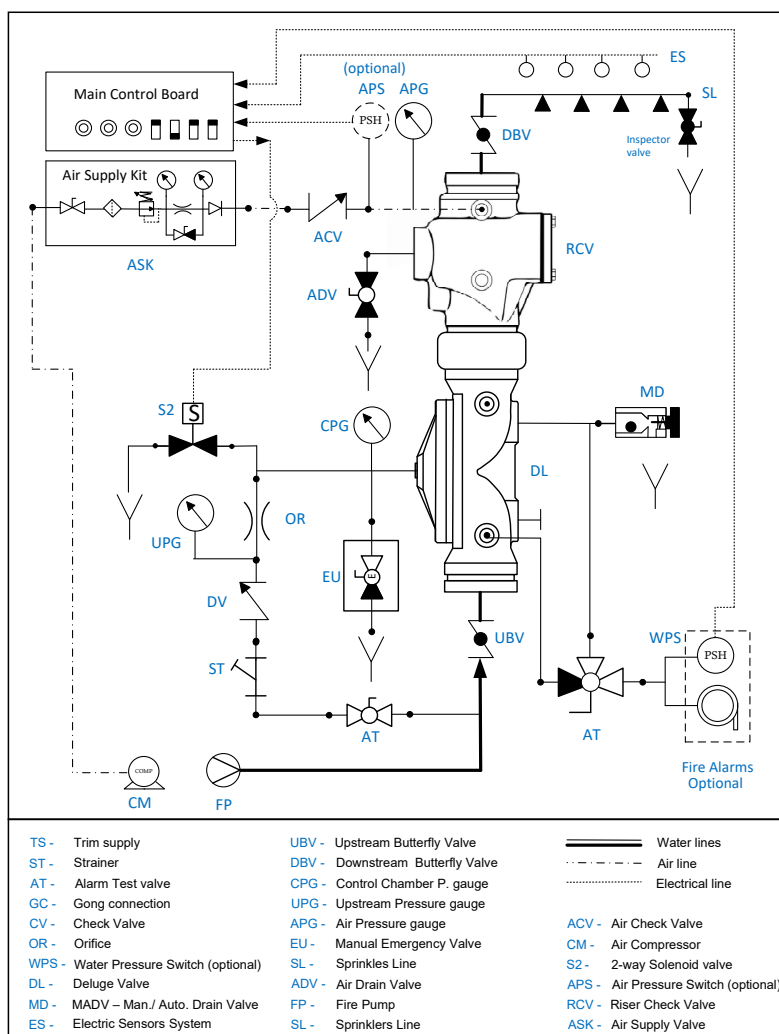
- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- The system trips open automatically after one events of actuation: one or more of the electric sensors is triggered and sent an electric signal to the main board
The activation of the Air pressure switch at fire situation, when air pressure drops at the sprinklers pipeline is used for supervision only.

The FPS-SIE1 resets to stand-by close position by de-energizing the solenoid coil through the main control panel and replacing all shuttered open sprinklers enabling the pressurizing of downstream pipeline.

APPROVALS



Set position



SET POSITION

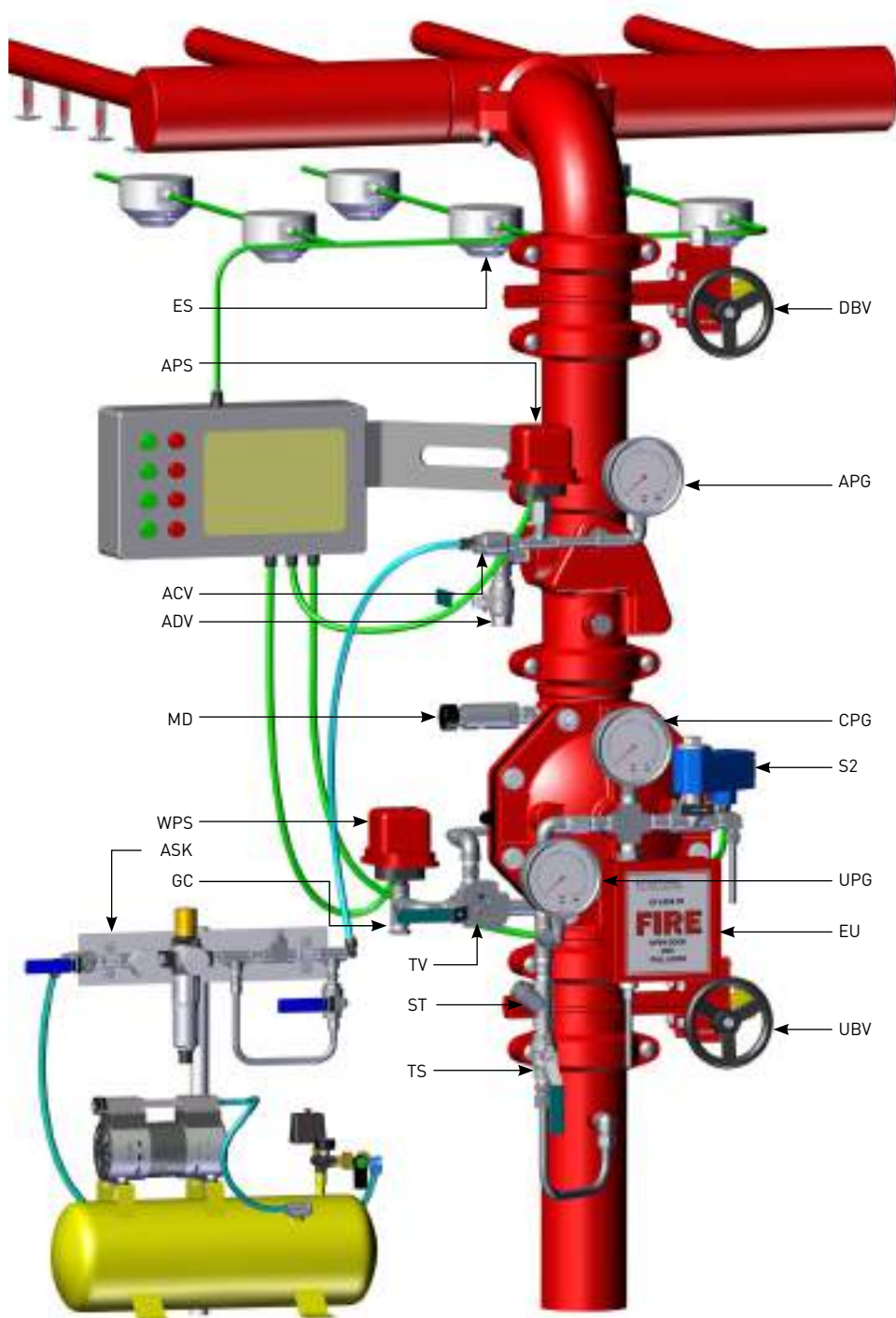
Pressurized water is retained in the deluge valve control chamber by the check valve (CV), the closed solenoid valve [S2], and the closed emergency valve (EU), keeping the deluge valve closed. Air pressure in the downstream spray pipeline keeps the riser check valve closed.

FIRE SITUATION

When the electric detection system (ES) senses heat, it sends a signal to the control board, which is recognized as the single actuation event. The control board then energizes the solenoid valve (S2), draining the deluge valve control chamber and allowing the deluge valve to open. Water admitted by the deluge valve flows through the opened riser check valve into the sprinkler pipeline. This action activates all alarms, including the water pressure switch (WPS) and the water motor gong. The low air pressure switch (APS), if installed, serves supervisory purposes only.

RESET POSITION

When the control board de-energizes the solenoid valve (S2), upstream flow through the needle valve pressurizes the deluge valve control chamber, causing the valve to close. All sprinklers that have burst open must be replaced. Before re-pressurizing the spray pipeline with air, it must be thoroughly drained using the air drain valve (ADV).



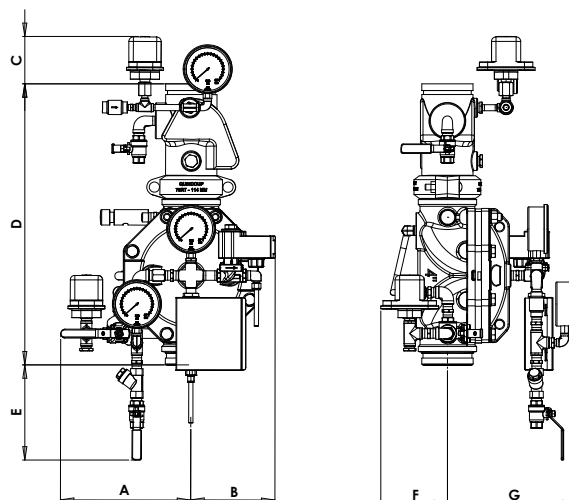
TS - Trim Supply
ST - "Y" Strainer
AT - Alarms Test Valve
GC - Gong Connection
ES - Electric Sensor
EU - Emergency Unit

S2 - Solenoid 2 way
ASK - Air supply kit
ADV - Air Drain Valve
ACV - Air Check Valve
APS - Air Pressure Switch
WPS - Water Pressure Switch

MD - Manual Automatic Drain Valve
APG - Air Pressure Gauge
CPG - Control Chamber Pressure Gauge
UPG - Upstream Pressure Gauge
UBV - Upstream Butterfly Valve
DBV - Downstream Butterfly Valve

Parametric drawing:

FPS-SIE1



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	263	10.3	296	11.6	290	11.4	315	12.4	336	13.2	373	14.7
B	155	6.1	170	6.7	185	7.2	176	6.9	231	9.0	307	12
C	120	4.7	120	4.7	116	4.5	114	4.5	122	4.8	132	5.2
D	392	15.4	523	20.5	629	24.7	736	28.9	897	35.3	1200	47.2
E	221	8.7	259	10.1	219	8.6	188	7.4	137	5.4	37	1.45
F	127	5	140	5.5	145	5.7	146	5.7	157	6.1	180	7.0
G	173	6.8	202	7.9	226	8.9	292	11.5	330	13	415	16.3
Kg/lb	13.2	29.2	26.8	59.0	48.2	106	76.4	168	126	277	179	394

Factory Standard

MAIN VALVE

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M

RISKER CHECK VALVE:

- Ductile Iron

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

FITTINGS:

- Stainless Steel 316
- Brass

ACCESSORIES:

- Stainless steel CF8M
- Brass

PLEASE SPECIFY

- Working Media
- Ambient conditions
- Min/Max operating flow
- Min/Max operating pressure
- Min. pneumatic pressure
- System installation orientation
- Valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Additional accessories needed:
 - Water motor Alarm (Gong)
 - Water pressure switch
 - Supervisory low Pressure Switch

Double interlock, Electric-Electric Actuated, Local Reset, Pressure Reducing

FPS-DCE0

The pre-action system is a combined fire-protection system consisting of a controlled FDV deluge valve and a riser check valve installed downstream. The pressurized automatic sprinkler pipeline keeps the riser check valve closed. The section between the downstream side of the closed deluge valve and the check-valve clapper functions as the intermediate chamber, where the water-pressure switch and the acoustic alarm are installed.

In double-interlock pre-action systems, such as the FPS-DCE0 described here, full system activation depends on two independent fire-related events: one caused by heat exposure and the other by fire detection. Activation of the FPS-DCE0 requires two electrical signals.

When a fire occurs, heat causes one or more automatic sprinklers to open, resulting in a pressure drop in the sprinkler pipeline. This pressure drop actuates the air-pressure switch, which sends a signal to the main control board. This constitutes the first actuation event.

At this stage, the normally closed solenoid valve in the deluge valve's control-chamber drain line remains closed.

When one or more electric detectors are triggered, they send an electrical signal to the main control board, constituting the second actuation event. Only after both events have occurred does the control board energize the solenoid valve, opening the FDV deluge valve and allowing water to flow into the sprinkler pipeline.

The trim is equipped with a PSA – a device that enables local system reset by pressurizing the valve's control chamber and thereby closing the FDV valve. The PSA functions as a latching device that keeps the valve open even during a power outage.

The FPS-DCE0 system can reduce upstream pressure to a defined downstream pressure and maintain it at a steady level. The pressure-reducing pilot responds to downstream-pressure variations caused by changes in flow demand and keeps the set pressure stable.



MARKETS



TECHNICAL DATA

FLUID:
Water

PNEUMATICS:

Air, Nitrogen

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

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

PRESSURE NOMINAL:
250 psi (17.2 bar)

APPROVALS



ADVANTAGES

- Only three parts: body, diaphragm, and cover plate. No wet metal spring inside the control chamber.
- Unobstructed full-bore valve.
- Simple manual reset of the valve to the standby position without closing the OS&Y valve or any other valve in the system.
- Open fail-safe valve, held in the standby closed position.
- Low maintenance cost: the valve is serviced in-line, and the only replaceable part is the long-life elastomeric diaphragm.
- Complies with the inspection, testing, and maintenance requirements for water-based fire-protection systems in NFPA 25.

CHARACTERISTICS

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- The system trips open automatically only after two actuation events:
The first: a drop in air pressure in the sprinkler pipeline, which actuates the air-pressure switch.
The second: one or more electric sensors are triggered and send an electrical signal to the main control board.

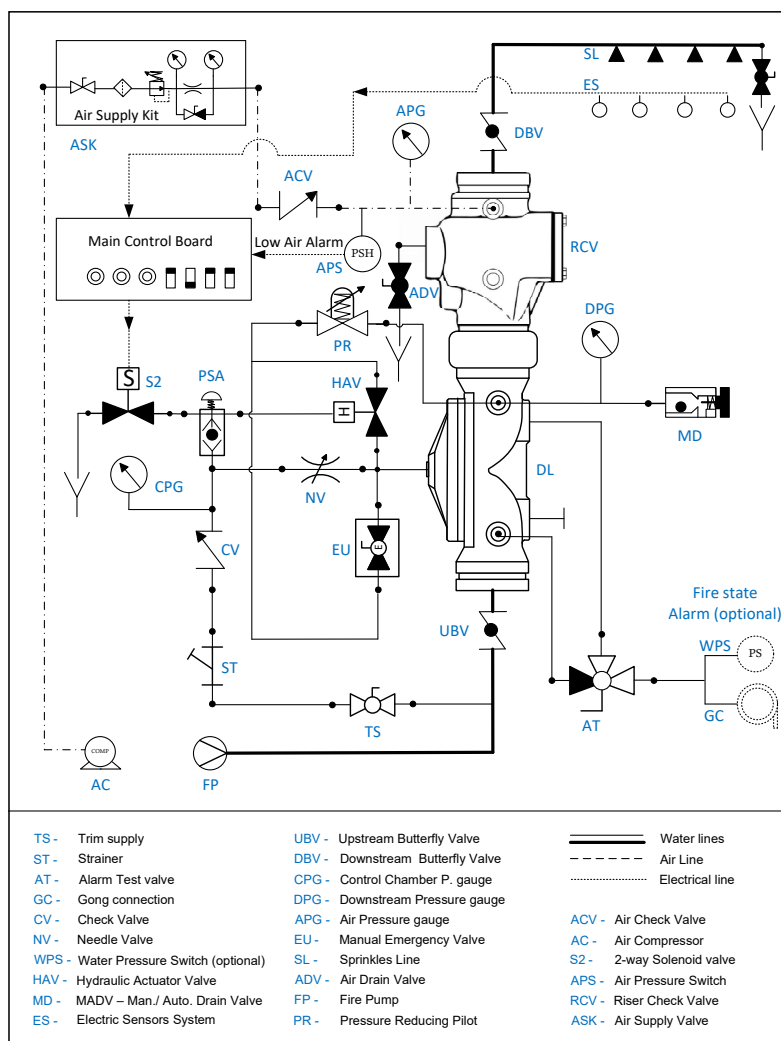
The FPS-DCE0 resets to the standby closed position by de-energizing the solenoid coil through the main control panel and replacing all opened sprinklers, which enables the downstream pipeline to be repressurized.

A pressure-reducing pilot provides full control over downstream pressure and maintains a steady set point across a wide pressure range.

The FDV-DCE0 resets to the standby closed position by de-energizing the alarm-system solenoid coil through the main control panel and manually operating the local reset device – the PSA.

Schematic drawing:

Set position



OPERATION

SET POSITION

Pressurized water is retained in the deluge valve's control chamber by the check valve (CV), the closed solenoid valve (S2), the closed PSA device (PSA), the closed hydraulic actuator (HAV), and the closed emergency valve (EV), keeping the deluge valve closed. Air pressure in the downstream spray pipeline keeps the riser check valve closed.

FIRE SITUATION

When heat activates one or more sprinklers, they open, causing the pipeline to depressurize. This actuates the low-air-pressure switch (APS), which closes its internal contacts and sends a signal to the main control board – recognized as the first actuation event.

If the electric detection system senses heat, it sends a signal to the control board – recognized as the second actuation event. The control board then energizes the solenoid valve (S2), which drains the hydraulic actuator (HAV) control chamber and allows it to open.

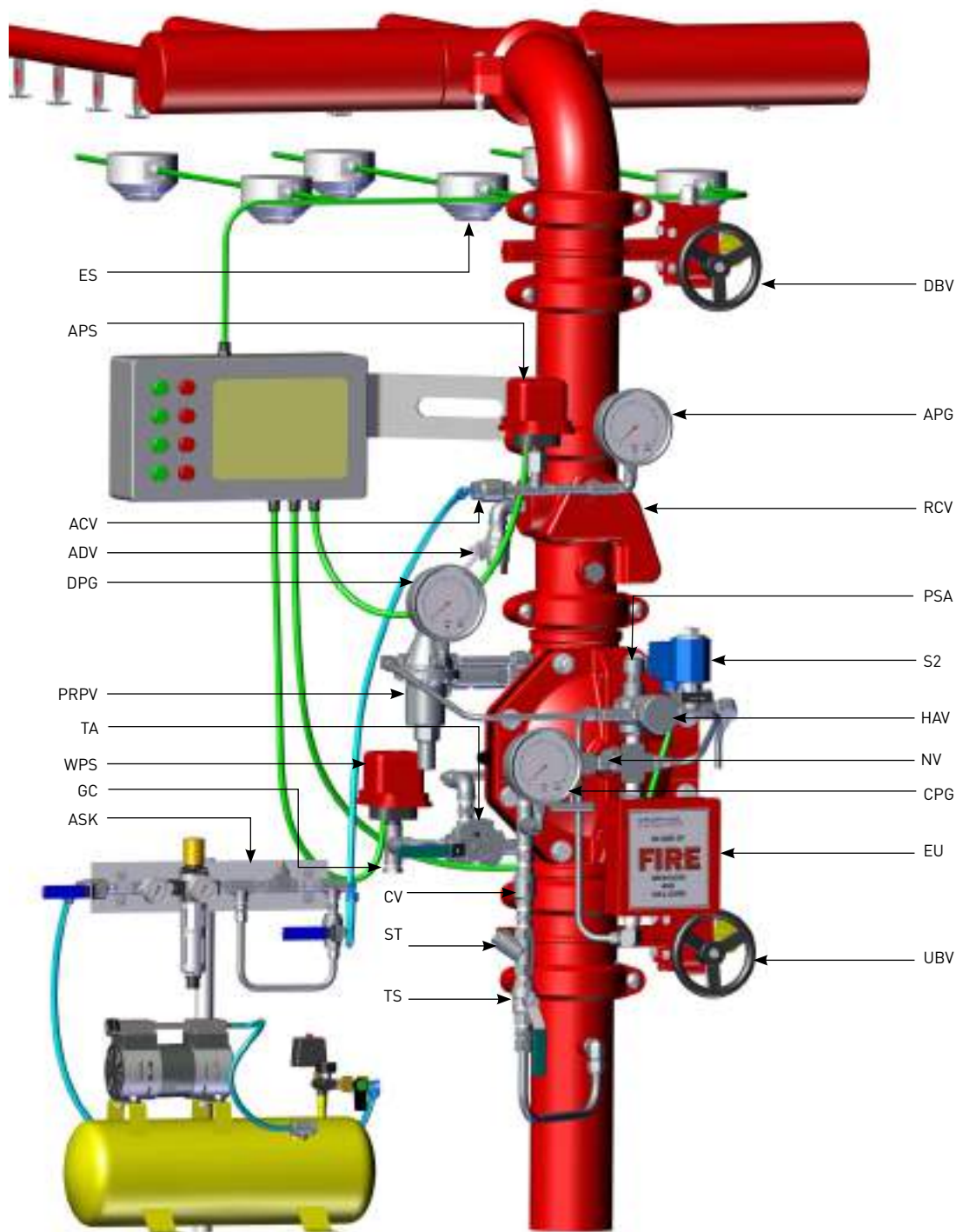
Once open, water trapped in the deluge valve's control chamber flows through the pressure-reducing pilot to the downstream side, causing the deluge valve to open. Water admitted by the open deluge valve flows through the open riser check valve to the sprinkler pipeline. This activates all alarms, including the water-pressure switch (WPS) and the water-motor gong.

The PSA prevents the control chamber from re-pressurizing, thereby latching the deluge valve open.

RESET POSITION

When the control board de-energizes the solenoid valve (S2) and the PSA pushbutton has been pressed, the HAV control chamber becomes re-pressurized and the actuator closes. Upstream flow through the trim supply valve and the needle valve re-pressurizes the deluge valve's control chamber, causing it to close. Once it closes, the PSA pushbutton can be released.

All opened sprinklers must be replaced. Before re-pressurizing the spray pipeline with air, the pipeline must be completely drained by opening the air-drain valve (ADV).



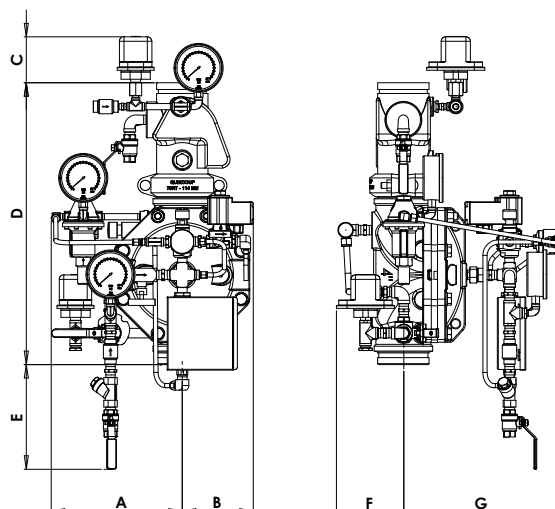
DBV - Downstream Butterfly Valve
UBV - Upstream Butterfly Valve
CPG - Control Chamber Pressure Gauge
DPG - Downstream Pressure Gauge
APG - Air Pressure Gauge
ES - Electric Sensors system
ASK - Air Supply Kit
ACV - Air Check Valve

ADV - Air Drain Valve
S2 - Solenoid 2 way
PR - Pressure Reducing Pilot Valve
PSA - Pressure Supply Arrestor
EU - Emergency Unit
CV - Check Valve
ST - "Y" Strainer
TS - Trim Supply

NV - Needle Valve
AT - Alarms Test Valve
GC - Gong Connection
HAV - Hydraulic Actuator Valve
WPS - Water Pressure Switch
APS - Air Pressure Switch [optional]
RCV - Riser Check Valve

Parametric drawing:

FPS-DCE0



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	263	10.3	296	11.6	290	11.4	315	12.4	336	13.2	394	15.5
B	146	5.7	146	5.7	150	5.9	176	6.9	231	9	308	12.1
C	120	4.7	120	4.7	116	4.5	114	4.5	122	4.8	132	5.2
D	392	15.4	523	20.5	629	24.7	736	28.9	897	35.3	1200	47.2
E	222	8.7	223	8.7	138	5.4	101	3.9	49	1.9	N/A	N/A
F	108	4.2	159	6.2	145	5.7	146	5.7	157	6.1	216	8.5
G	273	10.7	302	11.8	340	13.3	404	15.9	441	17.3	517	20.3
Kg/lb	18.6	41	31	68.3	53	116	81.2	178	131	288	186	410

Factory Standard

MAIN VALVE

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M

RISKER CHECK VALVE:

- Ductile Iron

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

FITTINGS:

- Stainless Steel 316
- Brass

ACCESSORIES:

- Stainless steel CF8M
- Brass

PLEASE SPECIFY

- Working Media
- Ambient conditions
- Min/Max operating flow
- Min/Max operating pressure
- Downstream set pressure
- System installation orientation
- Valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Installation orientation
- Additional accessories needed:
 - Water motor Alarm (Gong)
 - Water pressure switch

Double interlock, Electric-Electric Actuated, Remote Reset, Pressure Reducing

FPS-DCE1

The Pre-action system is a fire protection (FP) combined system, consisting of a controlled FDV deluge valve and a riser check valve installed downstream. The pressurized automatic sprinkler pipeline maintains the riser check valve in a closed position. The section between the downstream side of the closed deluge valve and the check valve clapper functions as the "intermediate chamber," where the water pressure switch and the acoustic alarm are connected.

In double-interlock pre-action systems, such as the FPS-DCE1 described here, full system activation depends on the occurrence of two independent, fire-related events: one caused by heat exposure and the other by fire detection. The activation of the FPS-DCE1 system requires two electrical signals.

In the event of a fire, heat causes one or more automatic sprinklers to open, resulting in a drop in pressure within the sprinkler pipeline. This pressure drop activates the air pressure switch, which sends a signal to the main control board. This constitutes the first actuation event.

When one or more Electric detectors are triggered, they send an electrical signal to the main control board, constituting the second actuation event. Only when both actuation events have occurred does the control board energize the solenoid valve, thereby opening the FDV deluge valve and allowing water to flow into the sprinkler pipeline.

The FPS-DCE1 system is capable to reduce the upstream pressure to a set downstream pressure and maintain it in a steady level. The pressure reducing pilot responds to any downstream pressure changes caused by consumption flow rate changes and keeps a stable set pressure.



MARKETS



Commercial



Industry



Storage



Airports



Residential

TECHNICAL DATA

FLUID:

Water

PNEUMATICS:

Air, Nitrogen

SIZE RANGE:

50 mm to 250 mm (2" to 10")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove, Flange*Groove, Groove* Flange

PRESSURE NOMINAL:

250 psi (17.2 bar)

ADVANTAGES

- Only three parts: body, diaphragm and cover plate. No wet metal spring inside the control chamber.
- Unobstructed full-bore valve.
- Simple manual reset to the standby position without closing the OS&Y valve or any other valve in the system.
- Open fail-safe valve, maintained in the standby closed position.
- Low maintenance cost: the valve is serviced in-line and has only one replaceable part, a long-life elastomeric diaphragm.
- Conforms to inspection, testing and maintenance requirements for water-based fire protection systems, NFPA 25.

CHARACTERISTICS

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- The system trips open automatically only after two actuation events:
The first: A drop in air pressure in the sprinkler pipeline, which activates the air-pressure switch.
The second: One or more electric sensors are triggered and send an electrical signal to the main control board.

The FPS-DCE1 resets to the standby closed position by de-energizing the solenoid coil through the main control panel and replacing all opened sprinklers, allowing the downstream pipeline to be re-pressurized.

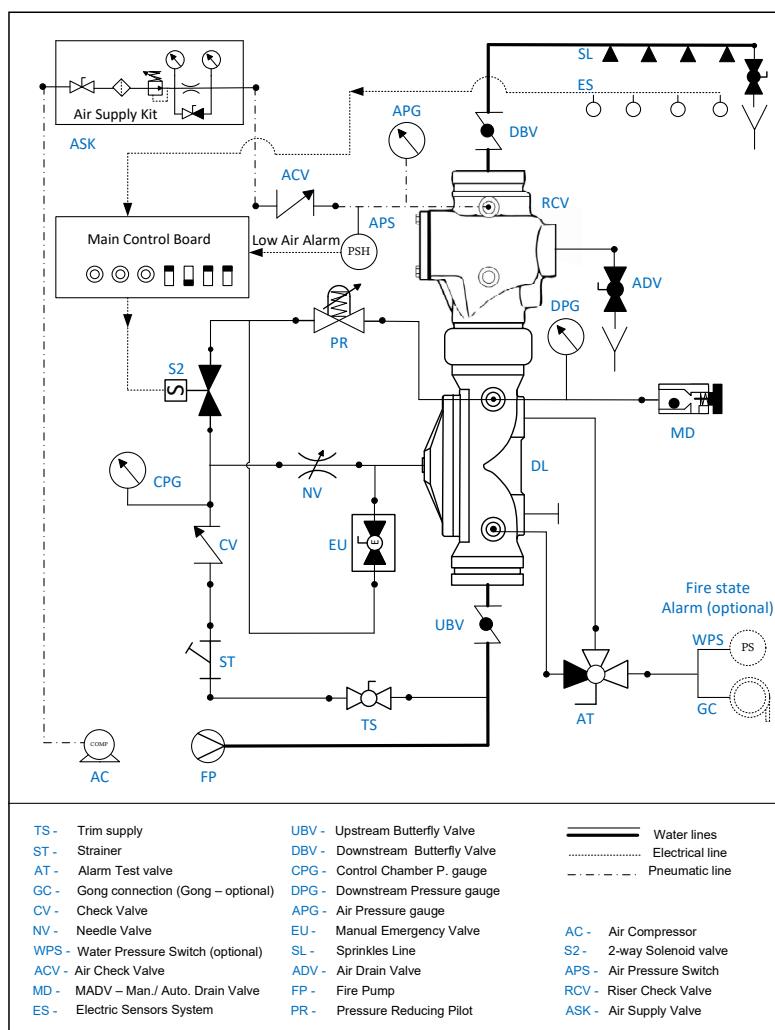
A pressure-reducing pilot provides full control over the downstream pressure and maintains a stable setpoint across a wide pressure range.

The FDV-DCE1 resets to the standby closed position by de-energizing the alarm-system solenoid coil through the main control panel.

APPROVALS



Set position



OPERATION

SET POSITION

Pressurized water is retained in the deluge valve control chamber by the check valve (CV), the closed solenoid valve (S2), and the closed emergency valve (EU), keeping the deluge valve closed. Air pressure in the downstream spray pipeline keeps the riser check valve closed.

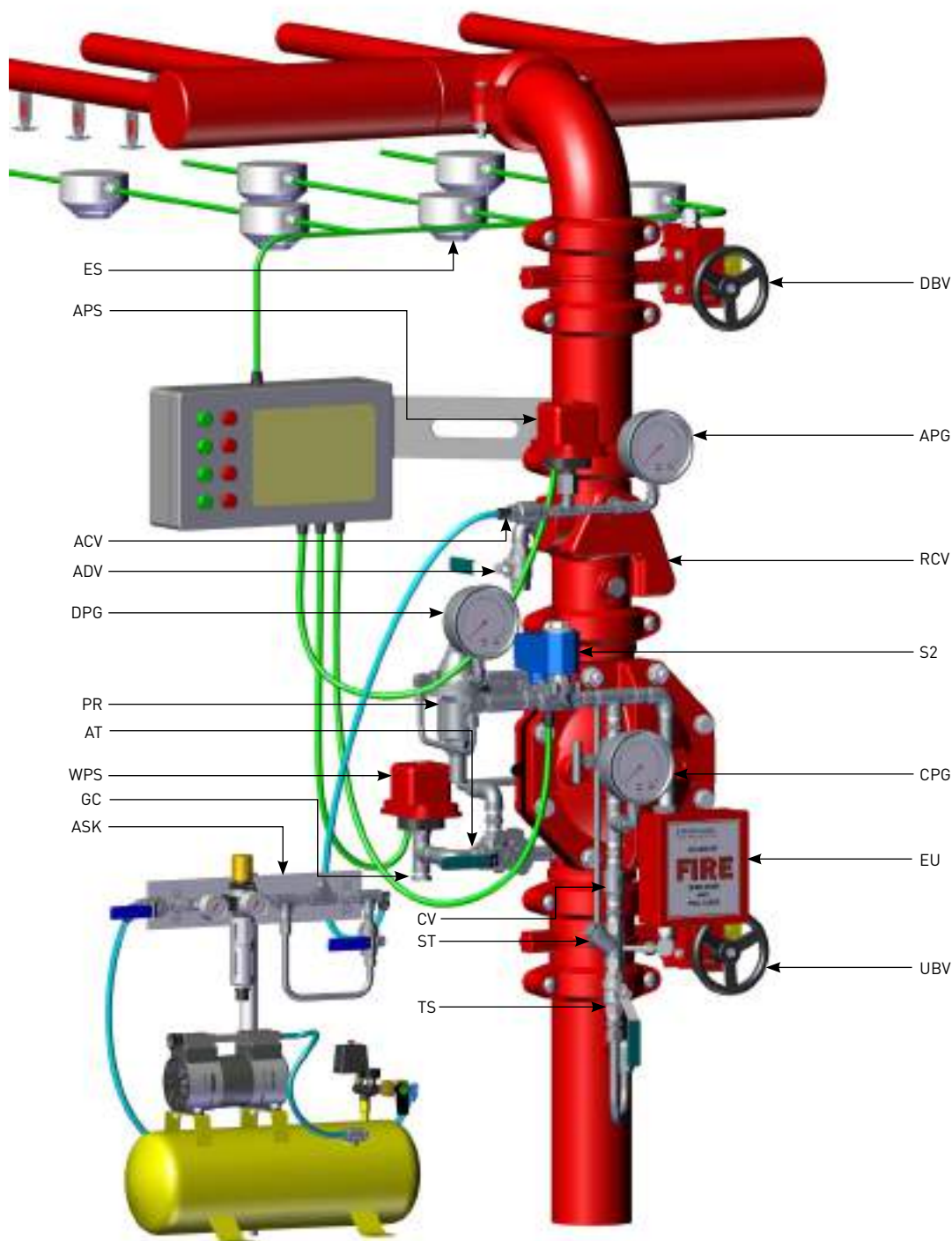
FIRE SITUATION

When heat activates one or more sprinklers, they open and release air, causing the pipeline to depressurize. This triggers the low-air-pressure switch (APS), which closes its internal contacts and sends a signal to the main control board, recognized as the first actuation event.

If the electric detection system senses heat, it sends a signal to the main control board, recognized as the second actuation event. The control board then energizes the solenoid valve (S2), which drains the deluge valve control chamber through the pressure-reducing pilot to the downstream side. As a result, the deluge valve opens and admits water through the now-open riser check valve into the sprinkler pipeline. All alarms are activated, including the water-pressure switch (WPS) and the water motor gong.

RESET POSITION

When the control board de-energizes the solenoid valve (S2), upstream flow through the trim supply valve and the needle valve re-pressurizes the deluge valve control chamber, closing the valve. All opened sprinklers must be replaced. Before re-pressurizing the spray pipeline with air, it must be completely drained by opening the air-drain valve (ADV).



DBV - Downstream Butterfly Valve

UBV - Upstream Butterfly Valve

CPG - Control Chamber Pressure Gauge

DPG - Downstream Pressure Gauge

APG - Air Pressure Gauge

ES - Electric Sensors system

ASK - Air Supply Kit

ACV - Air Check Valve

ADV - Air Drain Valve

S2 - Solenoid 2 way

PR - Pressure Reducing Pilot Valve

PSA - Pressure Supply Arrestor

EU - Emergency Unit

CV - Check Valve

ST - "Y" Strainer

TS - Trim Supply

NV - Needle Valve

AT - Alarms Test Valve

GC - Gong Connection

HAV - Hydraulic Actuator Valve

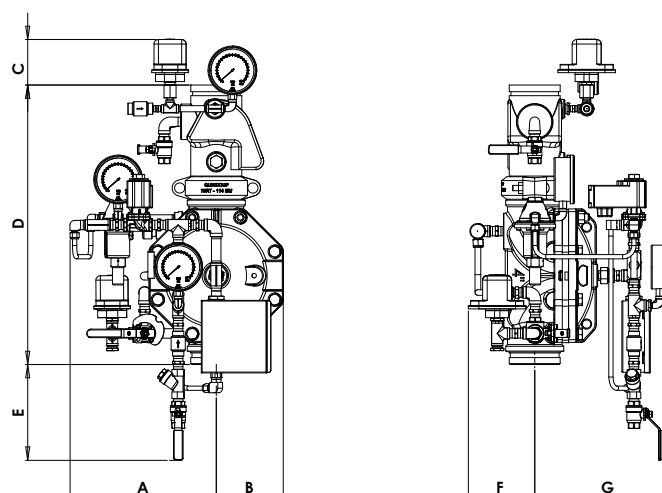
WPS - Water Pressure Switch

APS - Air Pressure Switch (optional)

RCV - Riser Check Valve

Parametric drawing:

FPS-DCE1



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	242	9.5	199	7.8	298	11.7	315	12.4	245	9.6	394	15.5
B	212	8.3	241	9.5	150	5.9	176	6.9	232	9.1	307	12
C	120	4.7	120	4.7	116	4.5	114	4.5	122	4.8	132	5.2
D	392	15.4	523	20.5	629	24.7	736	28.9	897	35.3	1200	47.2
E	295	11.6	300	11.8	190	7.5	157	6.2	105	4.1	N/A	N/A
F	108	4.2	159	6.2	145	5.7	146	5.7	157	6.1	216	8.5
G	276	10.8	276	10.8	310	12.2	347	13.6	380	14.9	503	19.8
Kg/lb	17.5	38.5	32	70.5	51.8	114	80.6	178	130	287	186	410

Factory Standard

MAIN VALVE

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M

RISKER CHECK VALVE:

- Ductile Iron

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

FITTINGS:

- Stainless Steel 316
- Brass

ACCESSORIES:

- Stainless steel CF8M
- Brass

PLEASE SPECIFY

- Working Media
- Ambient conditions
- Min/Max operating flow
- Min/Max operating pressure
- Downstream set pressure
- System installation orientation
- Valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Installation orientation
- Additional accessories needed:
 - Water motor Alarm (Gong)
 - Water pressure switch
 - Low air pressure switch

Double interlock, Electrically Actuated, Local reset

FPS-DIE0

The Preaction system is a fire protection (FP) combined system, consisting of a controlled FDV deluge valve and a riser check valve installed downstream. The pressurized automatic sprinkler pipeline maintains the riser check valve in a closed position. The section between the downstream side of the closed deluge valve and the check valve clapper functions as the "intermediate chamber," where the water pressure switch and the acoustic alarm are connected.

In double-interlock Preaction systems, such as the FPS-DIE0 described here, full system activation depends on the occurrence of two independent, fire-related events: one caused by heat exposure and the other by fire detection. The activation of the FPS-DIE0 system requires two electrical signals.

In the event of a fire, heat causes one or more automatic sprinklers to open, resulting in a drop in pressure within the sprinkler pipeline. This pressure drop activates the air pressure switch, which sends a signal to the main control board. This constitutes the first actuation event.

At this stage, a normally closed solenoid valve located on the deluge valve's control chamber drain line remains closed.

When one or more Electric detectors are triggered, they send an electrical signal to the main control board, constituting the second actuation event. Only when both actuation events have occurred does the control board energize the solenoid valve, thereby opening the FDV deluge valve and allowing water to flow into the sprinkler pipeline.

The trim is equipped with a PSA – a device that enables the local reset of the system i.e. closing the FDV valve by pressurizing the valve's control chamber. In addition, the PSA is considered as a latching device that keeps the valve open even in case of power outage.



MARKETS



Commercial



Industry



Storage



Airports



Residential

TECHNICAL DATA

FLUID: Water

PNEUMATICS: Air, Nitrogen

SIZE RANGE:

50 mm to 250 mm (2' to 10")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove,
Flange*Groove, Groove* Flange

PRESSURE NOMINAL:

250 psi (17.2 bar)

ADVANTAGES

- Suitable for low temperature zone installation – water spraying pipeline is kept dry.
- Full-bore, unobstructed design.
- The ASK - Air Supply Unit provides a constant air compensation in case of pipeline minor leaks.
- The Manual /Emergency local operation valve installed in a metal enclosure is fully protected from Accidental activation. When opened, it by-passes all terms.
- Open fail-safe valve properly by special fail-safe device – the PSA.
- Low maintenance cost: the main valve is serviced in-line and only one replaceable part - the long-life elastomeric diaphragm. The riser check valve is maintenance free.

CHARACTERISTICS

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- The system trips open automatically only after two events of actuation:
- The first: Air pressure drop at the sprinklers pipeline that activates the Air pressure switch.
- The second: one or more of the electric sensors is triggered and sent an electric signal to the main board

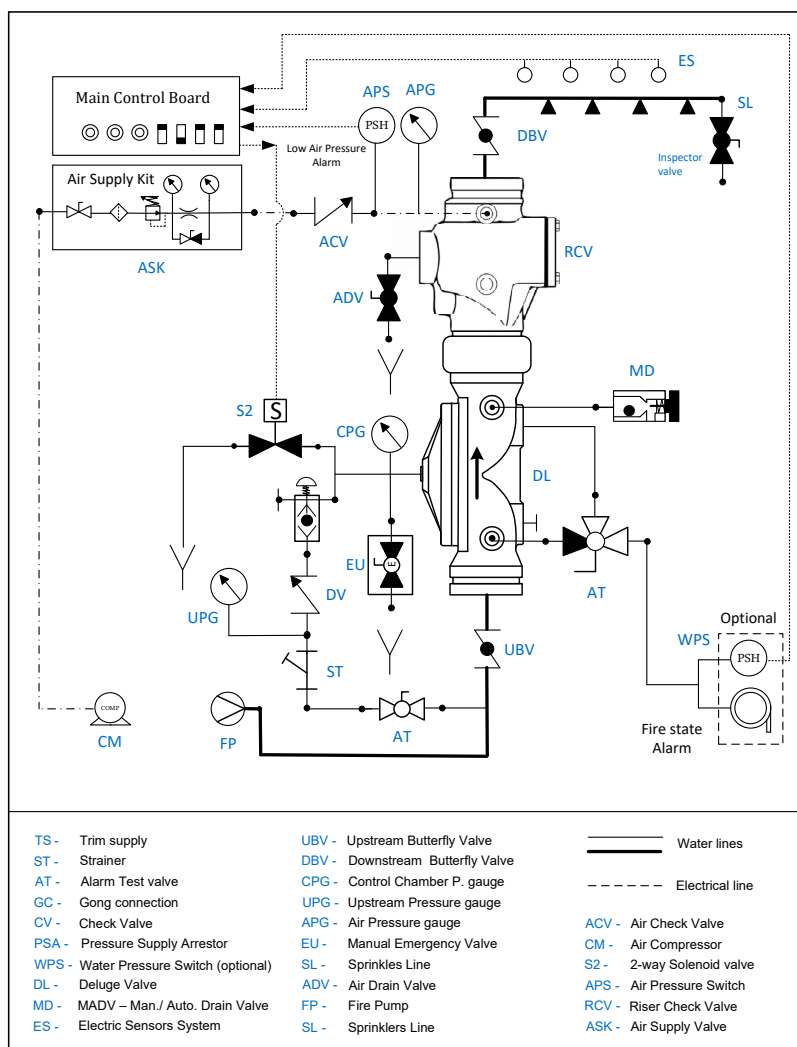
The FPS-DIE0 resets to stand-by close position by de-energizing the solenoid coil through the main control panel and replacing all shuttered open sprinklers enabling the pressurizing of downstream pipeline. In addition, the PSA bush button must be pressed locally.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

Pressurized water is retained in the deluge valve's control chamber by the check valve (CV), the closed solenoid valve (S2), the close PSA (PSA) device, by the close Hydraulic actuator (HAV) and the closed emergency valve (EU), keeping the deluge valve closed. Air pressure in the downstream spray pipeline keeps the riser check valve closed.

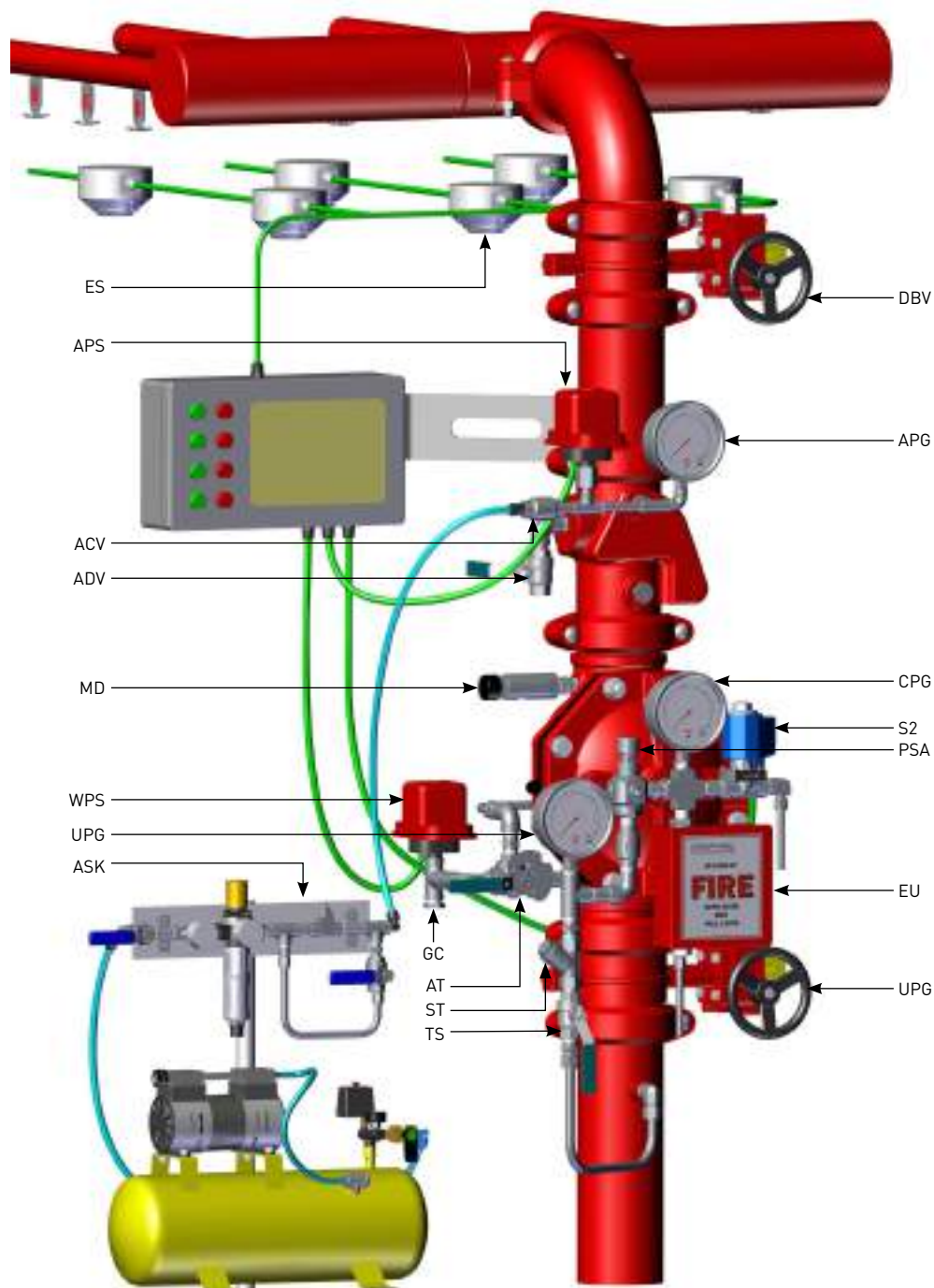
FIRE SITUATION

When heat activates one or more sprinklers, they burst open, causing the pipeline to depressurize. This triggers the low air pressure switch (APS), which closes its internal contacts and sends a signal to the main control board - recognized as the first actuation event.

If the electric detection system senses heat, it sends a signal to the control board - recognized as the second actuation event. The control board then energizes the solenoid valve (S2), which opens and drains the deluge valve's control chamber, allowing the valve to open. Water flows through the open riser check valve to the sprinkler pipeline. This activates all alarms, including the water pressure switch (WPS) and the water motor gong. The PSA avoids the control chamber pressurization and by that, latches the deluge valve open.

RESET POSITION

When the control board de-energizes the solenoid valve (S2), the valve closes. All burst-open sprinklers must be replaced. Before re-pressurizing the spray pipeline with air, it must be completely drained by opening the drain valve (ADV). The PSA (PSA) push button must then be pressed, which enables the trim supply valve (TS) to restore pressure in the control chamber and close the deluge valve.



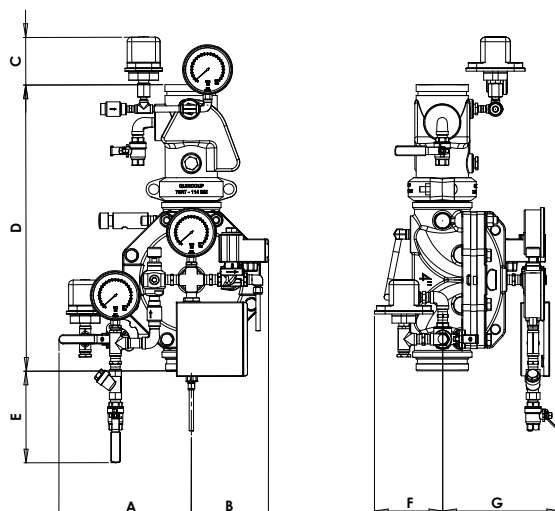
TS - Trim Supply
ST - "Y" Strainer
AT - Alarms Test Valve
GC - Gong Connection
ES - Electric Sensor
EU - Emergency Unit
S2 - Solenoid 2 way

ASK - Air supply kit
ADV - Air Drain Valve
ACV - Air Check Valve
APS - Air Pressure Switch
WPS - Water Pressure Switch
MD - Manual Automatic Drain Valve
APG - Air Pressure Gauge

CPG - Control Chamber Pressure Gauge
UPG - Upstream Pressure Gauge
PSA - Pressure Supply Arrestor
UBV - Upstream Butterfly Valve
DBV - Downstream Butterfly Valve

Parametric drawing:

FPS-DIEO



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	263	10.3	296	11.6	290	11.4	315	12.4	336	13.2	373	14.7
B	155	6.1	170	6.7	185	7.2	176	6.9	231	9.0	307	12
C	120	4.7	120	4.7	116	4.5	114	4.5	122	4.8	132	5.2
D	392	15.4	523	20.5	629	24.7	736	28.9	897	35.3	1200	47.2
E	208	8.1	158	6.2	117	4.6	87	3.4	42.6	1.7	N/A	NqA
F	127	5	140	5.5	145	5.7	146	5.7	157	6.1	180	7.0
G	173	6.8	202	7.9	226	8.9	292	11.5	330	13	415	16.3
Kg/lb	14.2	31.3	27.9	61.5	50	110	77.2	170	126	277	179	394

Factory Standard

MAIN VALVE

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M

RISKER CHECK VALVE:

- Ductile Iron

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

FITTINGS:

- Stainless Steel 316
- Brass

ACCESSORIES:

- Stainless steel CF8M
- Brass

PLEASE SPECIFY

- Working Media
- Ambient conditions
- Min/Max operating flow
- Min/Max operating pressure
- Downstream set pressure
- System installation orientation
- Valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Installation orientation
- Additional accessories needed:
 - Water motor Alarm (Gong)
 - Water pressure switch

Double interlock, Electrically Actuated, Remote reset

FPS-DIE1

The Preaction system is a fire protection (FP) combined system, consisting of a controlled FDV deluge valve and a riser check valve installed downstream. The pressurized automatic sprinkler pipeline maintains the riser check valve in a closed position. The section between the downstream side of the closed deluge valve and the check valve clapper functions as the "intermediate chamber," where the water pressure switch and the acoustic alarm are connected.

In double-interlock Preaction systems, such as the FPS-DIE1 described here, full system activation depends on the occurrence of two independent, fire-related events: one caused by heat exposure and the other by fire detection. The activation of the FPS-DIE1 system requires two electrical signals.

In the event of a fire, heat causes one or more automatic sprinklers to open, resulting in a drop in pressure within the sprinkler pipeline. This pressure drop activates the air pressure switch, which sends a signal to the main control board. This constitutes the first actuation event.

At this stage, a normally closed solenoid valve located on the deluge valve's control chamber drain line remains closed.

When one or more Electric detectors are triggered, they send an electrical signal to the main control board, constituting the second actuation event. Only when both actuation events have occurred does the control board energize the solenoid valve, thereby opening the FDV deluge valve and allowing water to flow into the sprinkler pipeline.



MARKETS



Commercial



Industry



Storage



Airports



Residential

TECHNICAL DATA

FLUID:

Water

PNEUMATICS: Air, Nitrogen

SIZE RANGE:

50 mm to 250 mm (2" to 10")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove,
Flange*Groove, Groove* Flange

PRESSURE NOMINAL:

250 psi (17.2 bar)

ADVANTAGES

- Suitable for low temperature zone installation – water spraying pipeline is kept dry.
- Full-bore, unobstructed design.
- The ASK - Air Supply Unit provides a constant air compensation in case of pipeline minor leaks.
- The Manual /Emergency local operation valve installed in a metal enclosure is fully protected from Accidental activation. When opened, it by-passes all terms.
- Low maintenance cost: the main valve is serviced in-line and only one replaceable part - the long-life elastomeric diaphragm. The riser check valve is maintenance free.

CHARACTERISTICS

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- The system trips open automatically only after two events of actuation:
The first: Air pressure drop at the sprinklers pipeline that activates the Air pressure switch.
The second: one or more of the electric sensors is triggered and sent an electric signal to the main board

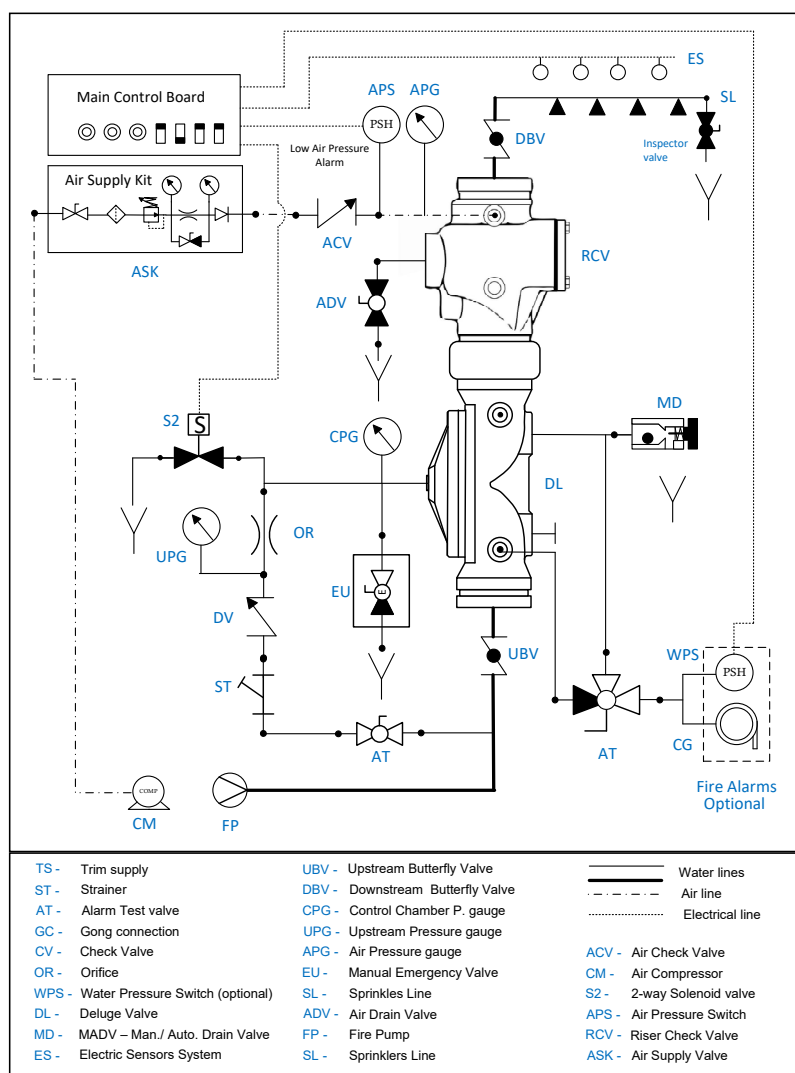
The FPS-DIE1 resets to stand-by close position by de-energizing the solenoid's coil through the main control panel and replacing all shuttered open sprinklers enabling the pressurizing of downstream pipeline.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

Pressurized water is retained in the deluge valve's control chamber by the check valve (CV), the closed solenoid valve (S2), and the closed emergency valve (EU), keeping the deluge valve closed. Air pressure in the downstream spray pipeline keeps the riser check valve closed.

FIRE SITUATION

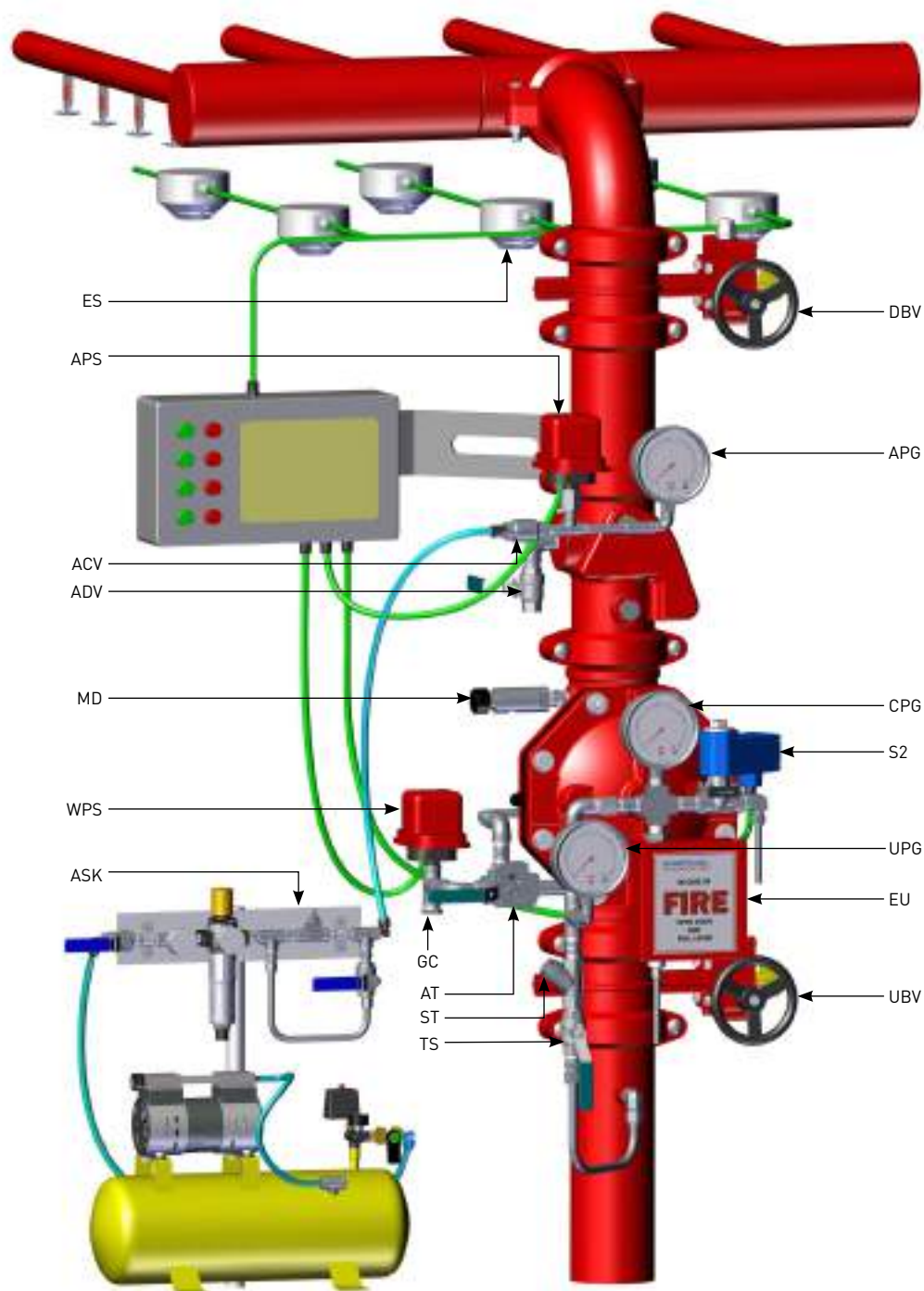
When heat activates one or more sprinklers, they burst open, causing the pipeline to depressurize. This triggers the low air pressure switch (APS), which closes its internal contacts and sends a signal to the main control board—recognized as the first actuation event.

If the electric detection system senses heat, it sends a signal to the control board—recognized as the second actuation event. The control board then energizes the solenoid valve (S2), which opens and drains the deluge valve's control chamber, allowing the valve to open. Water flows through the open riser check valve to the sprinkler pipeline. This activates all alarms, including the water pressure switch (WPS) and the water motor gong.

RESET POSITION

When the control board de-energizes the solenoid valve (S2), it closes. The trim supply valve (TS) restores pressure to the control chamber, closing the deluge valve.

To fully reset the system, all burst opened sprinklers must be replaced. Before re-pressurizing the spray pipeline with air, it must be completely drained by opening the drain valve (ADV) near the riser check valve.



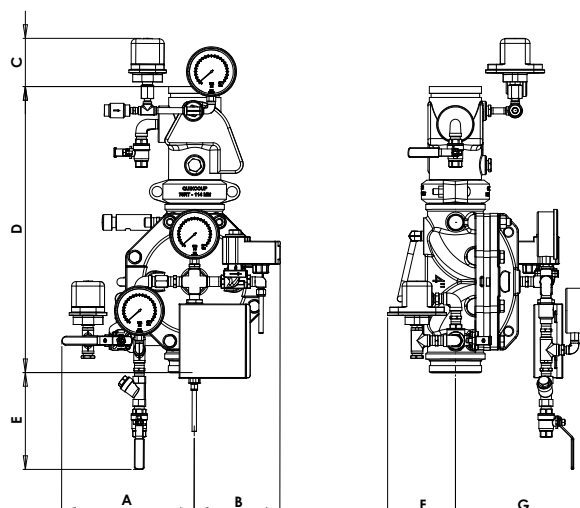
TS - Trim Supply
ST - "Y" Strainer
AT - Alarms Test Valve
GC - Gong Connection
ES - Electric Sensor
EU - Emergency Unit
S2 - Solenoid 2 way

ASK - Air supply kit
ADV - Air Drain Valve
ACV - Air Check Valve
APS - Air Pressure Switch
WPS - Water Pressure Switch
MD - Manual Automatic Drain Valve
APG - Air Pressure Gauge

CPG - Control Chamber Pressure Gauge
UPG - Upstream Pressure Gauge
UBV - Upstream Butterfly Valve
DBV - Downstream Butterfly Valve

Parametric drawing:

FPS-DIE1



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	263	10.3	296	11.6	290	11.4	315	12.4	336	13.2	373	14.7
B	155	6.1	170	6.7	185	7.2	176	6.9	231	9.0	307	12
C	120	4.7	120	4.7	116	4.5	114	4.5	122	4.8	132	5.2
D	392	15.4	523	20.5	629	24.7	736	28.9	897	35.3	1200	47.2
E	221	8.7	259	10.1	219	8.6	188	7.4	137	5.4	37	1.45
F	127	5	140	5.5	145	5.7	146	5.7	157	6.1	180	7.0
G	173	6.8	202	7.9	226	8.9	292	11.5	330	13	415	16.3
Kg/lb	13.2	29.2	26.8	59.0	48.2	106	76.4	168	126	277	179	394

Factory Standard

MAIN VALVE

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M

RISKER CHECK VALVE:

- Ductile Iron

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

FITTINGS:

- Stainless Steel 316
- Brass

ACCESSORIES:

- Stainless steel CF8M
- Brass

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Solenoid Voltage
- Solenoid Protection
- System installation orientation
- Additional accessories needed:
 - Water motor Alarm (Gong)
 - Water pressure switch

Single interlock, Pneumatically Actuated, Local reset, Preaction

FPS-SIPO

The pre-action system is a combined fire protection (FP) system consisting of a controlled FDV deluge valve and a riser check valve installed downstream. The pressurized automatic sprinkler pipeline keeps the riser check valve closed. The section between the downstream side of the closed deluge valve and the check-valve clapper serves as the intermediate chamber, where the water-pressure switch and the acoustic alarm are installed.

In single-interlock pre-action systems, such as the one described here, full system activation depends on a single fire-related event. When heat activates one or more automatic sprinklers on the dry pilot line, the pipeline depressurizes. The pressure drop opens a pneumatic actuator located on the deluge valve control-chamber drain line, causing the deluge valve to open and allowing water to flow into the sprinkler pipeline.

The resulting pressure drop also triggers the air-pressure switch, which sends a signal to the main control board for supervisory purposes only.



MARKETS



Commercial



Industry



Storage



Airports



Residential

TECHNICAL DATA

FLUID:

Water, Foam

PNEUMATICS: Air, Nitrogen

SIZE RANGE:

50 mm to 250 mm (2" to 10")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove,
Flange*Groove, Groove* Flange

PRESSURE NOMINAL:

250 psi (17.2 bar)

ADVANTAGES

- Suitable for installation in low-temperature zones, as the water-spraying pipeline is kept dry.
- Full-bore unobstructed design.
- The ASK air-supply unit provides constant air compensation in the event of minor pipeline leaks.
- The manual/emergency local-operation valve, installed in a metal enclosure, is fully protected against accidental activation. When opened, it bypasses all control functions.
- Open fail-safe valve operation is achieved by means of the special fail-safe device, the PSA.
- Low maintenance cost: the main valve is serviced in-line and has only one replaceable part, the long-life elastomeric diaphragm. The riser check valve is maintenance-free.

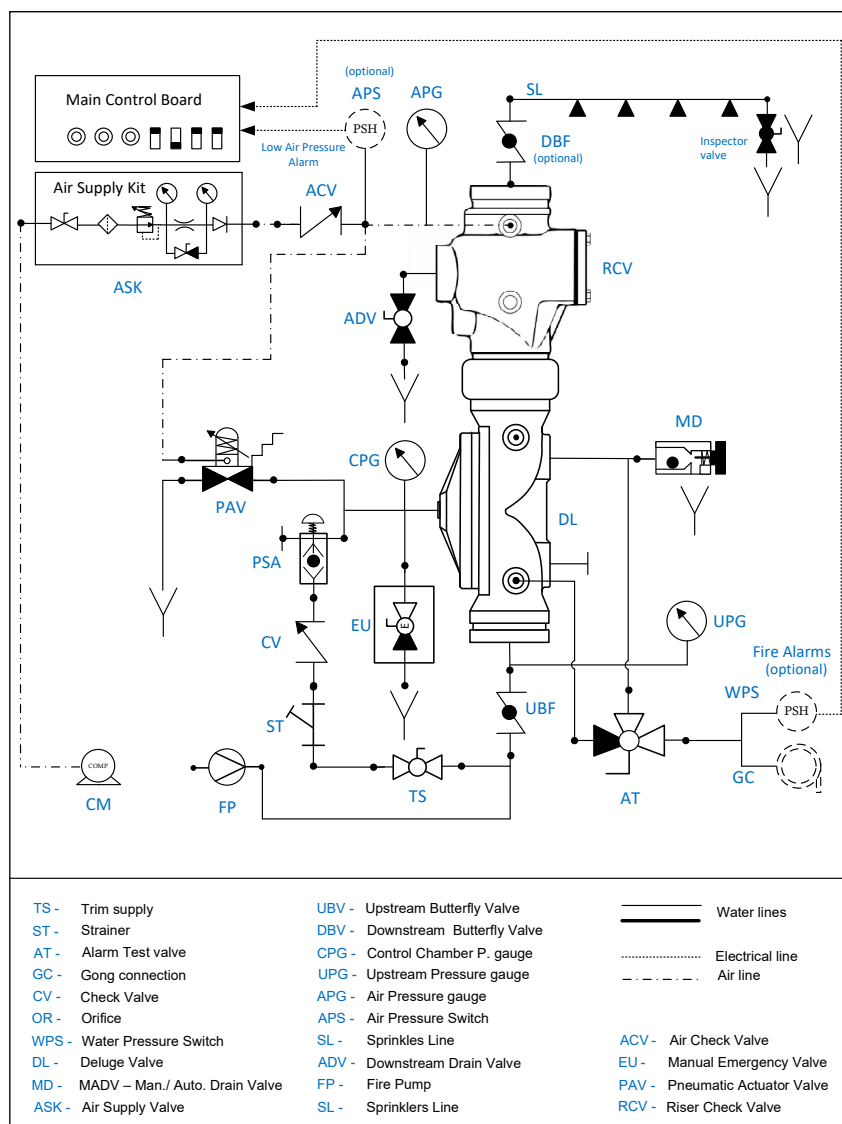
CHARACTERISTICS

- Hydro-dynamic pattern design ensures high flow rates with minimal head loss.
- The valve trips open automatically after a single actuation event. The trip is initiated by a pressure decrease in the sprinkler pipeline (the dry pilot line).
- The FPS-SIPO resets to its standby closed position after all activated (open) sprinklers along the dry pilot line are replaced, allowing both the pilot line and the downstream pipeline to be re-pressurized. In addition, the PSA push button must be pressed.

APPROVALS



Set position

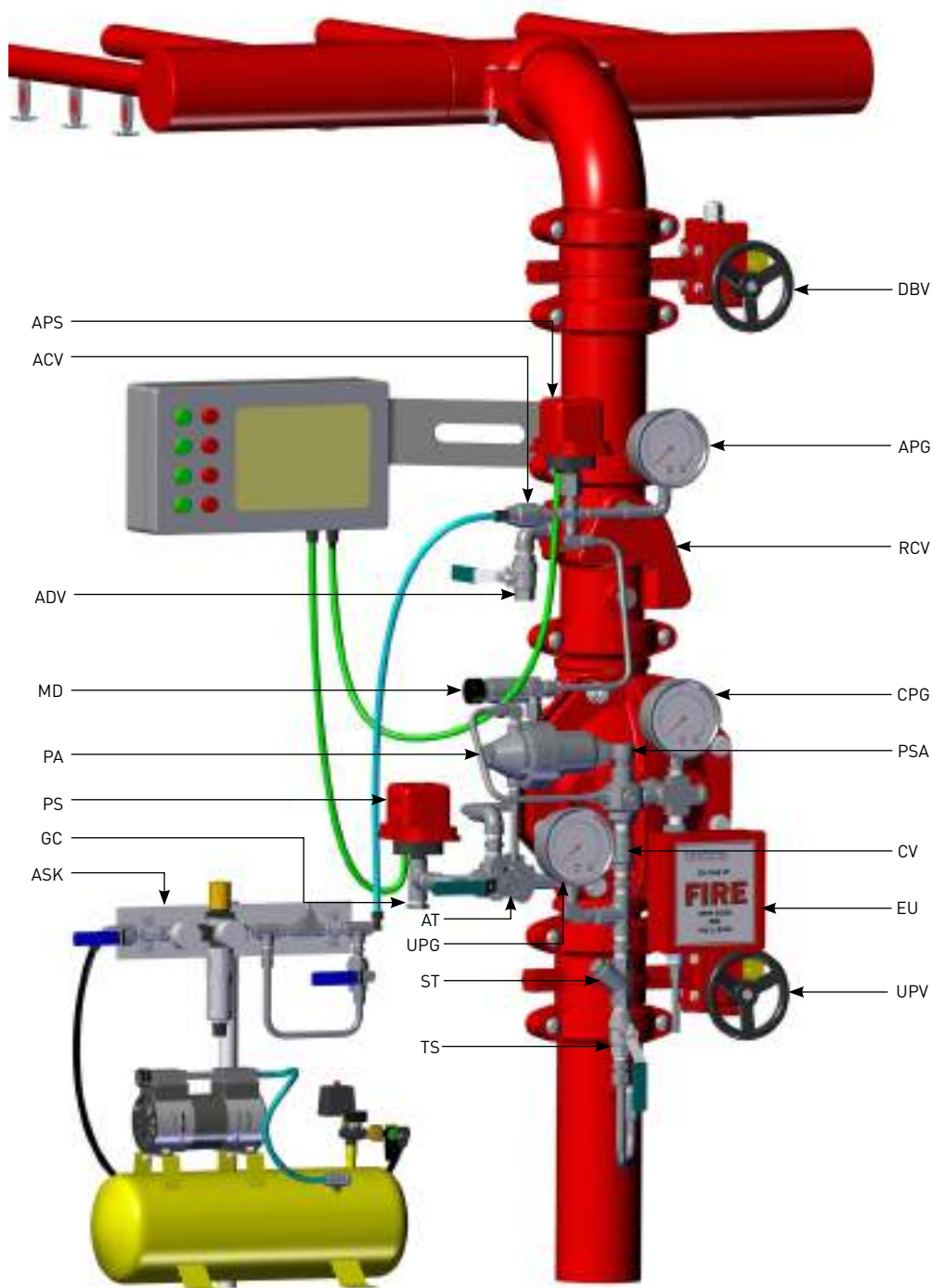


SET POSITION

Pressurized water in the deluge valve's control chamber is trapped by the PSA device (PSA), by the closed pneumatic actuator (PAV), and by the closed emergency valve (EU), maintaining the deluge valve in its closed position. The air pressure accumulated in the downstream spraying pipeline, maintains Riser check valve (RCV) close.

When some of the automatic sprinklers are subjected to the predetermined temperature and shutter-open, the pipeline depressurizes, tripping open the closed pneumatic actuator (PAV) and closes the internal contacts of the low air pressure switch (APS). When this signal is transferred to the main control board, it is considered as an actuation event. When the pneumatic actuator opens, the deluge control chamber is drained and the valve opens, admitting water through the open riser check valve to the sprinklers pipeline. All alarms are activated. The PSA (PSA) avoids upstream pressure pressurizing the deluge control chamber and by that, latching the valve into its open state.

The butterfly valve at the valves upstream needs to be closed, enabling the replacement of all shattered-open sprinklers in the spray pipeline and in the Dry pilot line. Then, both lines (SL & DPL) need to be pressurized to a set pressure. Pressurizing the Dry pilot line close the pneumatic actuator. At this stage, the PSA push button needs to be pushed to open a path for the upstream pressure to the deluge control chamber. Pressurizing the control chamber closes the valve so it is safe to open the butterfly valve (UBF).



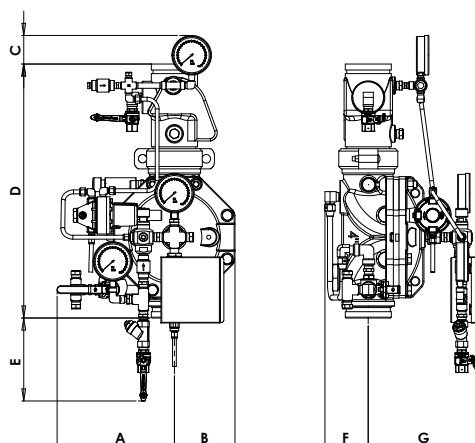
DBV - Downstream Butterfly Valve
UBV - Upstream Butterfly Valve
APS - Air pressure switch
APG - Air Pressure Gauge
DPL - Dry Pilot Line
ASK - Air Supply Kit
ACV - Air Check Valve

RCV - Riser Check Valve
ADV - Air Drain Valve
CPG - Control Chamber Pressure Gauge
UPG - Upstream Pressure Gauge
PA - Pneumatic actuator Valve
PSA - Pressure Supply Arrestor
MD - Manual Automatic Drain Valve

EU - Emergency Unit
GC - Gong Connection
CV - Check Valve
ST - "Y" Strainer
TS - Trim Supply
WPS - Water Pressure Switch (optional)
AT - Alarms Test Valve

Parametric drawing:

FPS-SIPO



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	262	10.3	297	11.6	290	11.4	314	12.3	348	13.7	394	15.5
B	122	4.8	122	4.8	150	8.9	177	6.9	232	9.1	300	11.8
C	78	3	80	3.1	70	2.7	73	2.8	90	3.5	90	3.5
D	392	15.4	523	20.5	629	24.7	736	28.9	897	35.3	1200	47.2
E	319	12.5	243	9.5	205	8	174	6.8	122	4.8	22	0.8
F	75	2.9	87	3.4	107	4.2	151	5.9	160	6.3	187	7.3
G	225	8.8	237	9.3	272	10.7	337	13.2	367	14.4	457	18
Kg/lb	16.1	35.5	30.3	66.8	51.5	114	79.5	175	129	284	181	400

Factory Standard

MAIN VALVE

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M

RISKER CHECK VALVE:

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8M

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

FITTINGS:

- Stainless Steel 316
- Brass

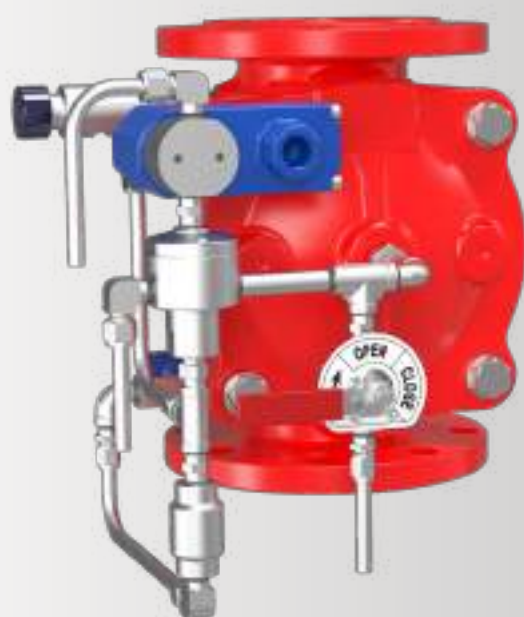
ACCESSORIES:

- Stainless steel CF8M
- Brass

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Pneumatic working pressure
- System installation orientation
- Valve ends and standard
- Deluge valve material and coating
- Trim materials
- Solenoid Voltage
- Solenoid Protection
- Additional accessories needed:
 - Water motor Alarm (Gong)
 - Water pressure switch

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





ON/OFF VALVES

MONITOR VALVES

FDV-R-3W-MH0	174
FDV-R-3W-MH1	178
FDV-R-3W-ME1	182

Hydraulically Actuated, Local Reset, Monitor Valve

FDV-R-3W-MH0

The FDV-R-3W-MH0 is a manually operated On-Off Fire Protection Monitor valve, designed to control the opening and closing of fire Monitors, in special hazard fire protection systems.

Assembled in horizontal or vertical position, the FDV-R-3W-MH0 Monitor valve is locally commanded to open/close by a manual emergency valve.

Operating this valve, commands the main valve by pressurizing or de-pressurizing its control chamber, enabling a quick and effortless operation

The globe pattern, line pressure operated FDV-R-3W-MH0 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 minimum head loss.

This valve can be supplied upon request in a PRV configuration, where the monitor's pressure is reduced, to satisfy the system's design.



MARKETS



Marine



P.O.G.



Airports



Industry



Storage

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

SIZE RANGE:

50mm to 200mm (2" to 8")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove, Thread*Thread

PRESSURE NOMINAL:

250 psi (17.2 bar)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- 3 way control principle ensure fast and reliable opening.
- Open fail safe valve in high ambient temperatures.
- Maintained in stand-by 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

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- The valve trips open by manually opening a 3 way ball valve and draining the valve's control chamber.
- Closing the manual ball valve stops the control chamber's drainage and pressurizes it. By that, the monitor valve closes.
- Soft closing controlled pressurization of the valve's control chamber, prevents surges.

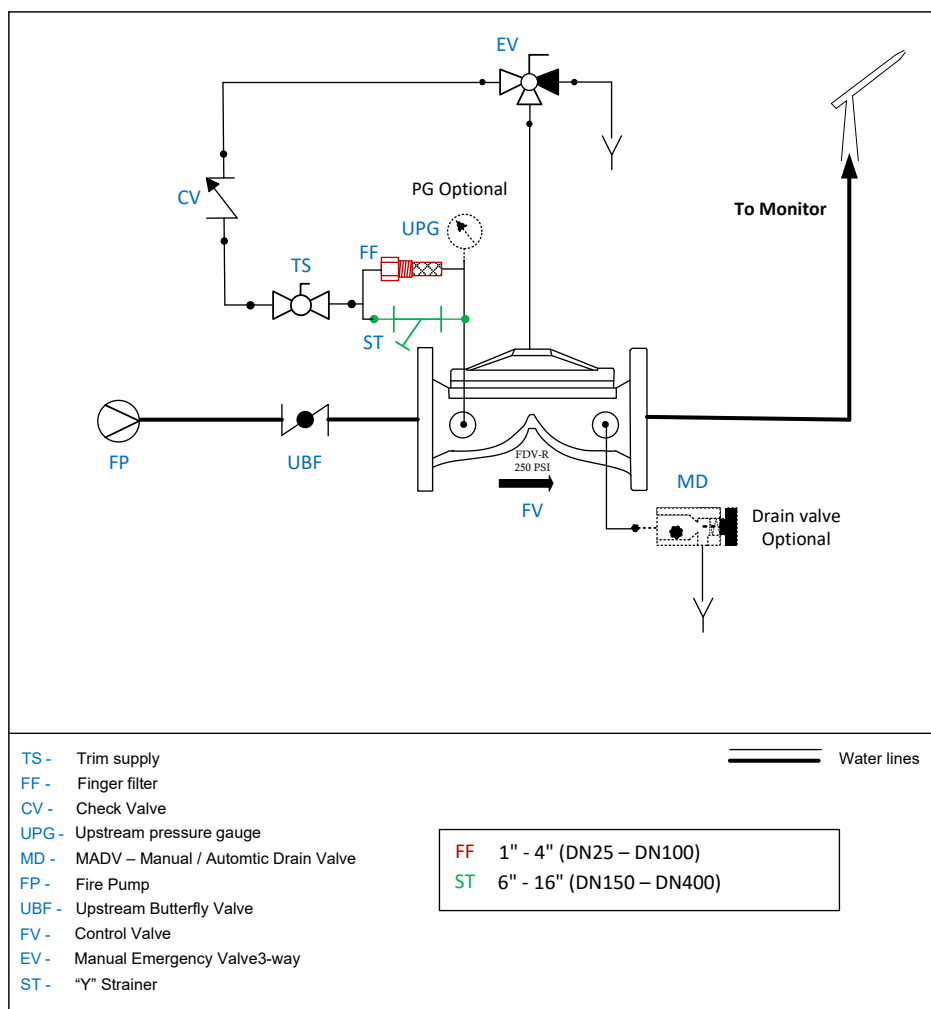
APPROVALS



Schematic drawing:

FDV-R-3W-MH0

Set position



OPERATION

SET POSITION

Pressurized water in the valve's control chamber is trapped by the Check Valve (CV), forces the valve's diaphragm against its seat and maintains the FDV-R valve close.

FIRE SITUATION

Opening the Manual Operation valve (EV), drains the FDV-R's control chamber and opens the valve (FR).

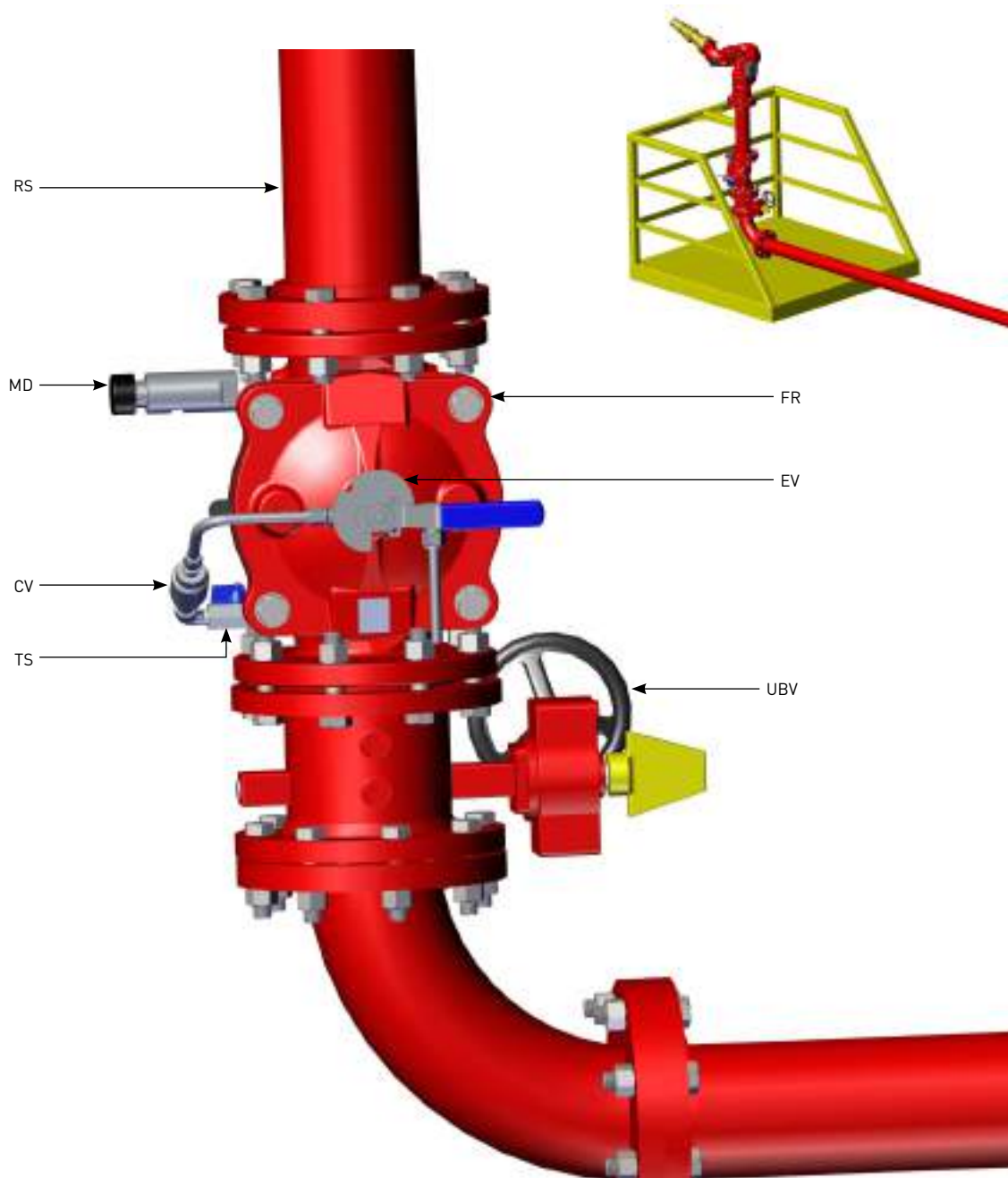
RESET POSITION

Closing the Manual Operation valve, blocks the FDV-R's control chamber drainage to atmosphere, admits upstream pressure and pressurizes it. Consequently, the valve's diaphragm is forced to its seat and the valve closes.

When closed the riser pipe (RS) is drained by the Manual / Automatic drain valve (MD) – if equipped, to the atmosphere.

Typical installation

FDV-R-3W-MH0

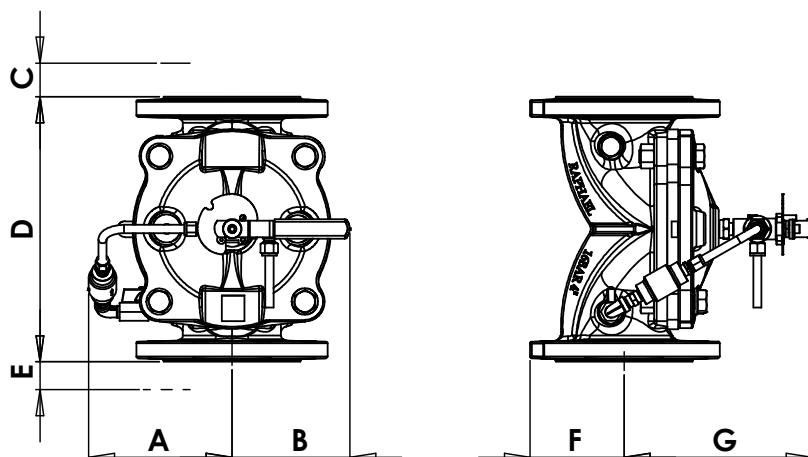


RS - Riser pipe
TS - Trim supply valve
CV - Check valve
EV - Emergency Valve

UBV - Upstream Butterfly Valve
FR - FDV-R control valve
MD - MADV - Manual Automatic Drain valve (optional).

Parametric drawing:

FDV-R-3W-MH0



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	121	4.7	135	5.3	166	6.5	192	7.5	235	9.2	267	10.5
B	136	5.3	133	5.2	137	5.4	150	5.9	177	7	233	9.1
C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D	190	7.5	283	11.1	305	12	406	16	470	18.5	645	25.4
E	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F	83	3.3	100	3.9	109	4.3	142	5.6	160	6.3	197	7.7
G	168	6.6	197	7.7	218	8.6	264	10.4	335	13.1	343	13.5
Kg/lb	8.1	17.8	17.7	39	23.4	51.5	47.7	105	55.6	123	107	235

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
- System installation orientation
- Valve's flanges standard
- Additional accessories needed:
- Drain Ball valve
- Automatic Drain valve (MADV)
- Pressure gauge (size)

Hydraulically Actuated, Remote Reset, Monitor Valve

FDV-R-3W-MH1

The FDV-R-3W-MH1 is a hydraulic controlled On-Off Fire Protection Monitor valve, designed to control the opening and closing of fire Monitors, in special hazard fire protection systems.

Assembled in horizontal or vertical position, the FDV-R-3W-MH1 Monitor valve can hydraulically commanded to open/close from a control panel, control room, or by a wet pilot line. When exposed to flames heat, its automatic sprinklers will shutter open, drain the pilot line and operate the actuator. The actuator in turns, commands the valve by pressurizing or de-pressurizing the main valve's control chamber, enabling a quick and effortless operation.

The FDV-R-3W-MH1 incorporates an emergency valve, bypassing all terms for a manual operation.

The globe pattern, line pressure operated FDV-R-3W MH1 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 minimum head loss.



MARKETS



Marine



P.O.G.



Airports



Industry



Storage

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

SIZE RANGE:

50 mm to 400 mm (2" to 12")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove, Thread*Thread

PRESSURE NOMINAL:

250 psi (17.2 bar)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- 3 way control principle ensure fast and reliable opening.
- Open fail safe valve in high ambient temperatures.
- Maintained in stand-by 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

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- The valve trips open automatically upon a gradual release of water pressure from its control chamber.
- The trip is actuated directly by a hydraulic command pressure transferred by a pilot pipeline, operating a 3-way actuator.
- Soft closing by controlled pressurization of the valve's control chamber, prevents surges.

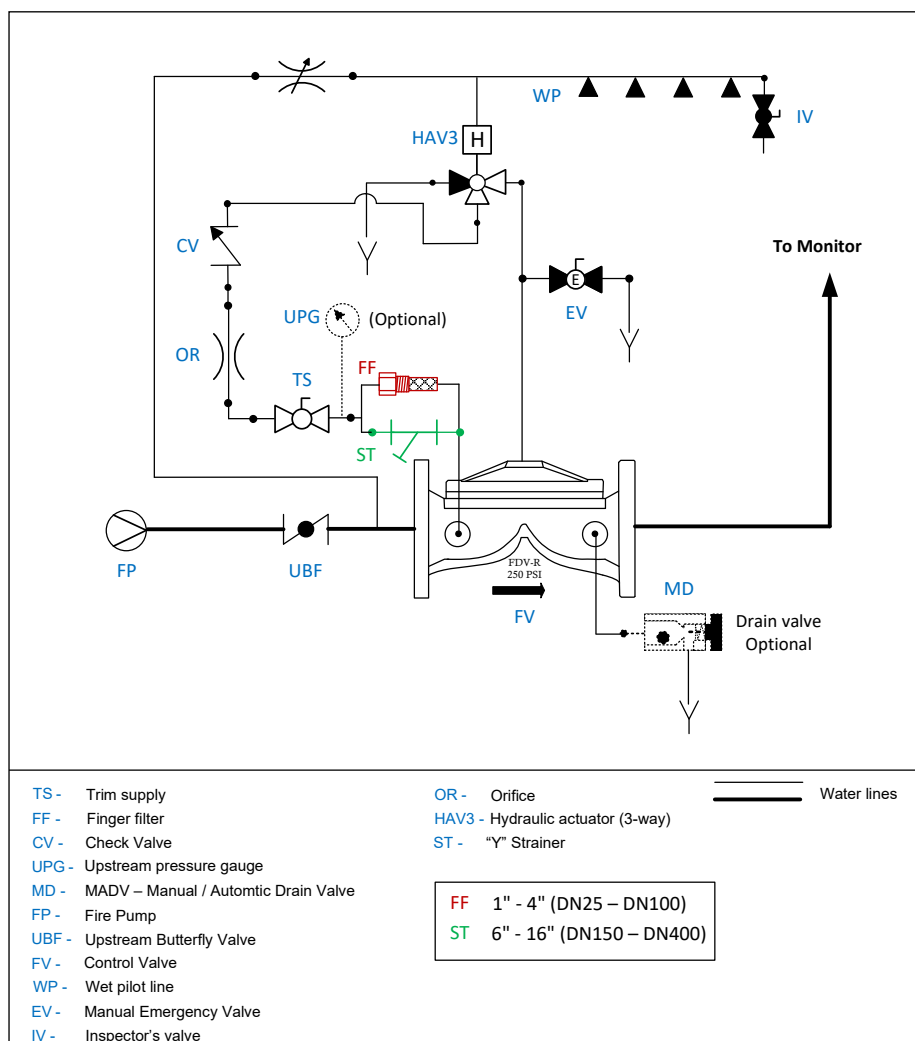
APPROVALS



Schematic drawing:

FDV-R-3W-MH1

Set position



OPERATION

SET POSITION

Pressurized water supplied by the hydraulic actuator (HAV3) valve's control chamber, is trapped by the Check Valve (CV), forces the valve's dia-phragm against its seat and maintains the FDV-R valve (FR), close.

FIRE SITUATION

A remote hydraulic command transferred by a wet pilot pipeline, de-pressurizes the Hydraulic Actuator valve's (HAV3) control Chamber.

Consequently, the actuator change state and drains the FDV-R's Control Chamber. The valve opens and admits water to the monitor riser pipeline.

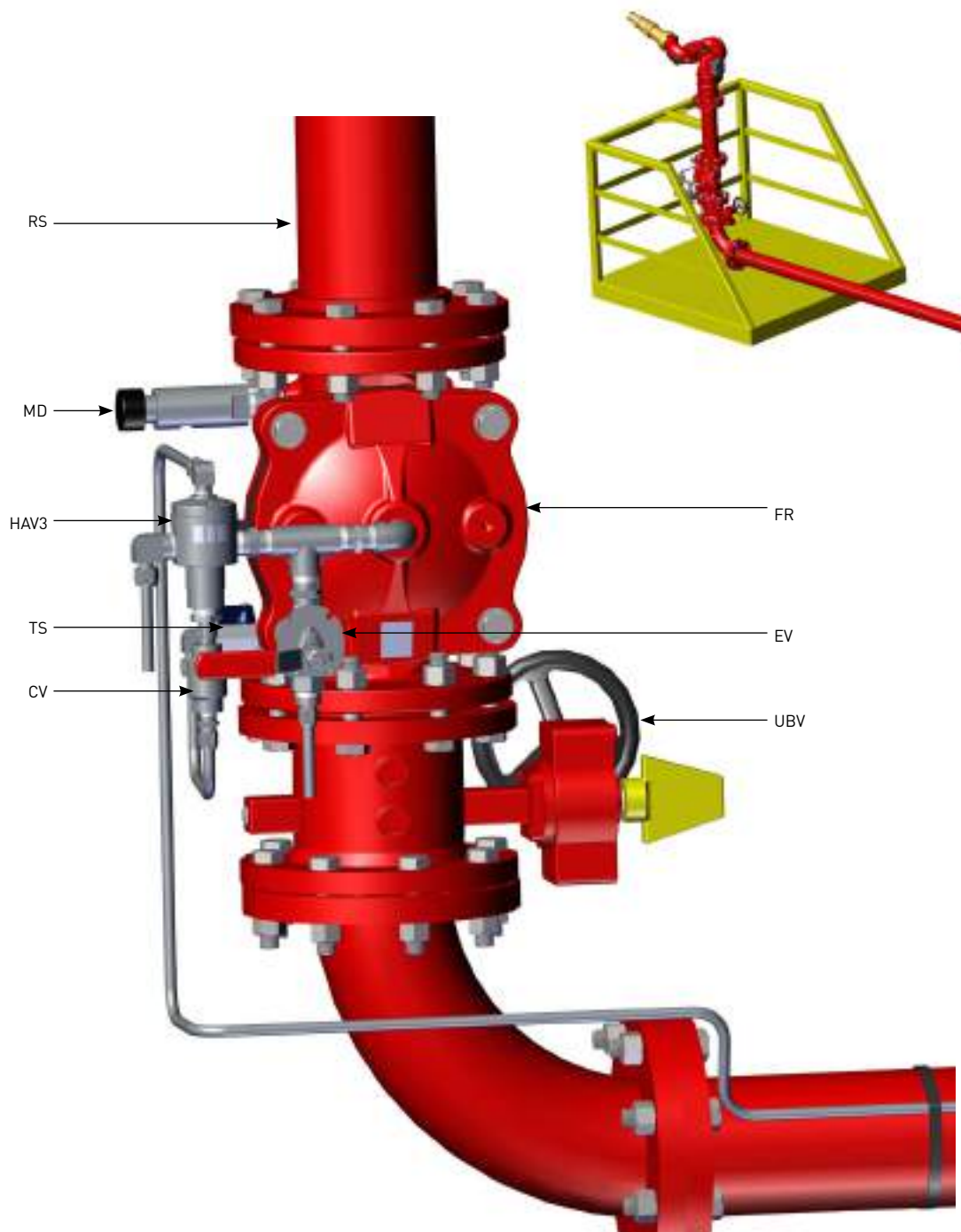
Opening the Manual Operation valve (EV), bypasses all term, drains the FDV-R's control chamber and opens the valve.

RESET POSITION

As the pilot pipeline command pressure increases, the Hydraulic Actuator stops the FDV-R's control chamber drainage and admits upstream to the VDV-R's control chamber. Consequently, the valve's diaphragm is forces against its seat and the valve closes.

Typical installation

FDV-R-3W-MH1

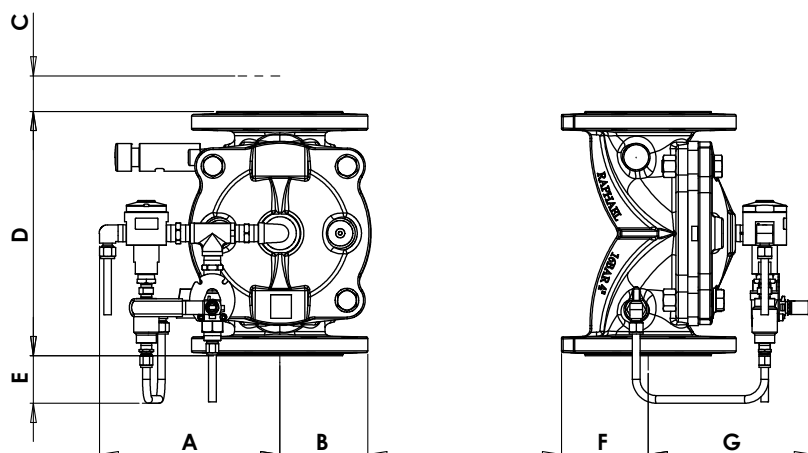


RS - Riser pipe
TS - Trim supply valve
CV - Check valve
EV - Emergency Valve

HAV3 - Hydraulic Actuator Valve (3 way)
UBV - Upstream Butterfly Valve
FR - FDV-R control valve
MD - MADV - Manual Automatic Drain valve (optional).

Parametric drawing:

FDV-R-3W-MH1



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	210	8.2	210	8.2	210	8.2	245	9.6	264	10.3	281	11.6
B	82	3.2	100	3.9	111	4.3	142	5.6	180	7	233	9.1
C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D	190	7.5	283	11.1	305	12	406	16	470	18.5	645	25.4
E	118	4.6	71	2.79	60	2.6	43	1.7	36	1.4	N/A	N/A
F	82	3.2	100	3.9	109	4.3	142	5.6	159	6.2	197	7.7
G	147	5.7	176	6.9	196	7.7	242	9.5	315	12.4	364	14.3
Kg/lb	9.8	21.6	18.8	41.4	25.5	56.2	50	110.	57.4	126	109	240

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
- Valve's flanges standard
- Additional accessories needed:
- Drain Ball valve
- Automatic Drain valve (MADV)
- Pressure gauge (size)

Electrically Actuated, Remote Reset, Monitor Valve

FDV-R-3W-ME1

The FDV-R-3W-ME1 is an electric controlled On-Off Fire Protection Monitor valve, designed to control the opening and closing of fire Monitors, in special hazard fire protection systems.

Assembled in horizontal or vertical position, the FDV-R-3W-ME1 Monitor valve is commanded to open/close from a control panel or control room, by a solenoid valve. The Solenoid in turns, commands the valve by pressurizing or de-pressurizing directly the main valve's control chamber or, a hydraulic actuator's control chamber. By that, it enables a quick and effortless operation assures a full valve's opening and maximum rate of flow.

The globe pattern, line pressure operated FDV-R-3W-ME1 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 minimum head loss.



MARKETS



Marine



P.O.G.



Airports



Industry



Storage

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

SIZE RANGE:

50 mm to 400 mm (2" to 12")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove, Thread*Thread

PRESSURE NOMINAL:

250 psi (17.2 bar)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate. No wet metal spring inside the control chamber.
- 3 way control principle ensure fast and reliable opening.
- Open fail safe valve in high ambient temperatures.
- Maintained in stand-by 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

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- The valve trips open automatically upon a gradual release of water pressure from its control chamber.
- The trip is actuated directly by a solenoid (DN50 – DN75 valves) or indirectly, by a solenoid operating an actuator (DN100 – DN400 valves).
- Soft closing by controlled pressurization of the valve's control chamber, prevents surges.

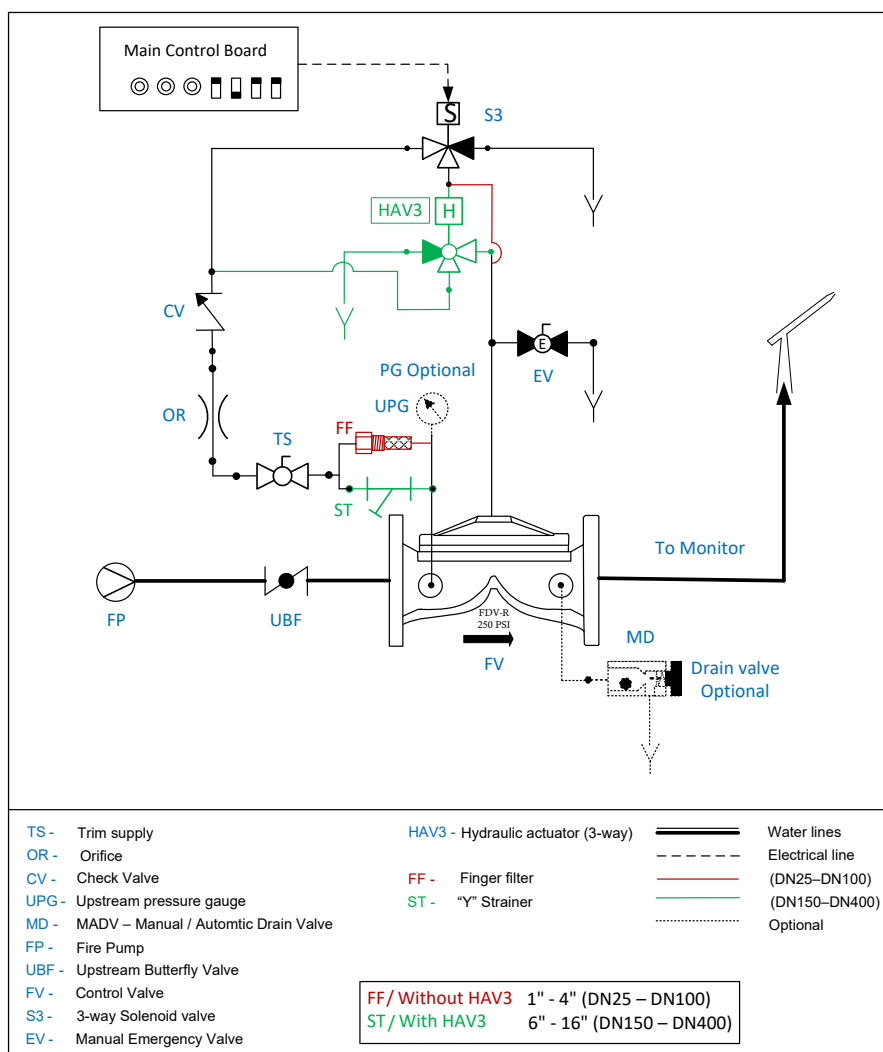
APPROVALS



Schematic drawing:

FDV-R-3W-ME1

Set position



OPERATION

SET POSITION

Pressurized water in the valve's control chamber (FR) is trapped by the Check Valve (CV), the hydraulic actuator (HAV3) and the Emergency Valve (EV) forces the valve's diaphragm against its seat and maintains the FDV-R valve (FR) close.

FIRE SITUATION

(DN50-DN80 valves) An electric signal transmitted commands the 3-way solenoid valve (S3) to drain the FDV-R's control chamber. The valve opens and admits water to the monitor pipeline.

(DN150-DN400 valves) An electric signal transmitted commands the 3-way solenoid valve (S3) to open and drain the Hydraulic actuator's control chamber. Consequently, the actuator change state and drains the FDV-R's Control Chamber. The valve opens and admits water to the monitor pipeline.

Opening the Manual Operation valve (EV), bypasses all term, drains the FDV-R's control chamber and opens the valve.

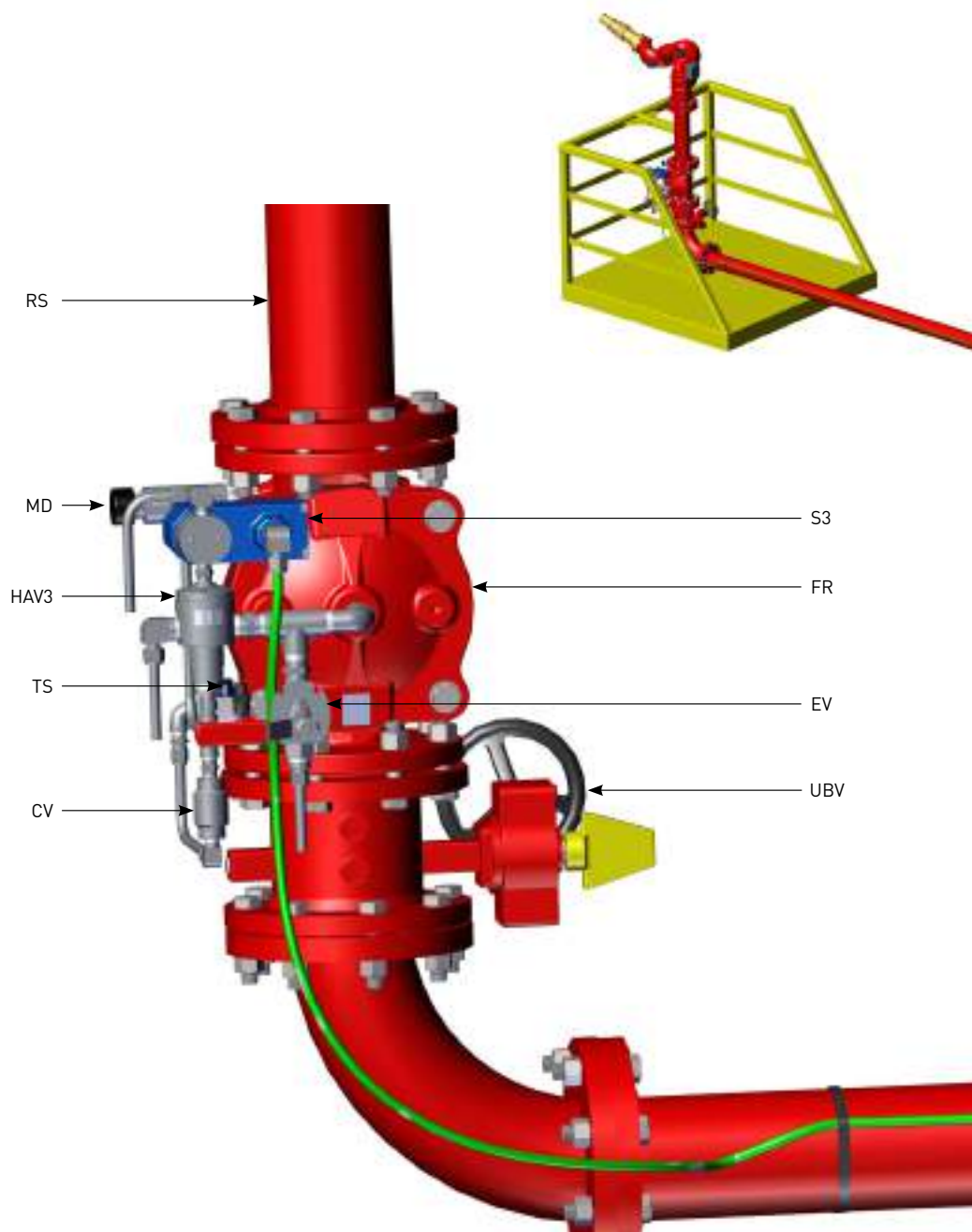
RESET POSITION

(DN50-DN100 valves) De-energizing the solenoid admits upstream to pressurize the FDV-R control chamber, forcing the valve's diaphragm against its seat and close the FDV-R valve.

(DN150-DN200 valves) De-energizing the solenoid admits upstream to hydraulic actuator control chamber (HAV3) that in turn, stops the valve's control chamber drainage and pressurizes it. Consequently, the valve's diaphragm is forced to its seat and the valve closes.

Typical installation

FDV-R-3W-ME1



RS - Riser pipe

TS - Trim supply valve

CV - Check valve

S3 - Solenoid valve (3 way)

EV - Emergency Valve

HAV3 - Hydraulic Actuator Valve (3- way)

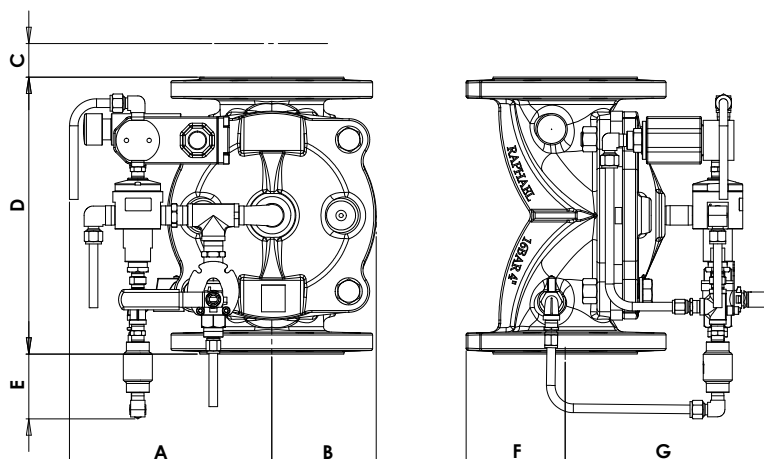
UBV - Upstream Butterfly Valve

FR - FDV-R control valve

MD - MADV - Manual Automatic Drain valve (optional).

Parametric drawing:

FDV-R-3W-ME1



Dimensions Table

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	132	5.2	194	7.6	155	6.1	260	10.2	284	11.2	300	11.8
B	81	3.1	100	3.9	111	4.3	142	5.6	177	6.7	233	9.2
C	117	4.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D	190	7.5	283	11.1	305	12	406	16	470	18.5	645	25.4
E	94	3.7	74	2.9	36	1.4	43	1.7	36	1.4	N/A	N/A
F	83	3.3	100	3.9	110	4.3	142	5.6	160	6.3	194	7.6
G	170	6.7	197	7.7	207	8.1	270	10.6	313	12.3	365	14.3
Kg/lb	9.2	20.3	18.2	40.1	24.8	55	51.2	113	59	130	110	242

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
- Solenoid Voltage
- Solenoid Enclosure
- Solenoid Protection
- Valves flanges standard
- System installation orientation
- Additional accessories needed:
- Pressure gauges
- Drain ball valve
- Automatic drain valve





CONTROL VALVES

PRESSURE CONTROL VALVES

FDV-R-PN2	188
FDV-R-RN2	192

Pressure Reducing Control Valve

FDV-R-PN2

The FDV-R-PN2 Pressure reducing valve is an automatic hydraulic control valve, designed to operate in fixed fire protection system and in peripheral FP water supply systems.

The FDV-R-PN2 pilot controlled hydraulic valve is activated by line pressure. The pilot valve has a spring-loaded membrane which is sensitive to the downstream pressure. The pilot's spring is pre-set to a desired reduced pressure. Accordingly, it maintains a constant downstream pressure by gradually opening or closing of the main valve, reducing the inlet water pressure to a pre-set desired outlet pressure. As a result, the outlet pressure is maintained constant, regardless of fluctuations in flow rate and changes in main pipeline pressure.

Designed for vertical, horizontal and angled installation, the line pressure operated FDV-R-PN2 Pressure reducing valve features a direct elastomeric diaphragm seal, with no balancing spring or internal metallic wet components in the valve body. In addition, the hydrodynamic pattern design ensures high flow rates with minimum head loss.



MARKETS



TECHNICAL DATA

FLUID: Water, Brackish water, Sea water, Foam

SIZE RANGE:

FDV-R valve (globe) -

40 mm to 400 mm (1½" to 16")

FDV-Ra valve (angled) -

50 mm to 200 mm (2" to 8")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove, Thread*Thread

PRESSURE NOMINAL:

UL - 250 psi (17.2 bar)

FM - 300 psi (20.7 bar)

REGULATION RATIO: 5:1

SENSITIVITY: 1.45 psi (0.1 Bar)

APPROVALS



ADVANTAGES

- Only three parts: body, diaphragm & cover plate, no wet metal spring inside the control chamber.
- Low maintenance cost: the valve is serviced in-line and only one replaceable part - the long-life elastomeric diaphragm.
- Conforms with inspection, Testing and Maintenance Standard of water-based Fire Protection Systems, NFPA 25.
- Reduces inlet pressure to a predetermined fixed and constant outlet pressure, regardless of fluctuations or changes in main pipeline pressure and flow rate.

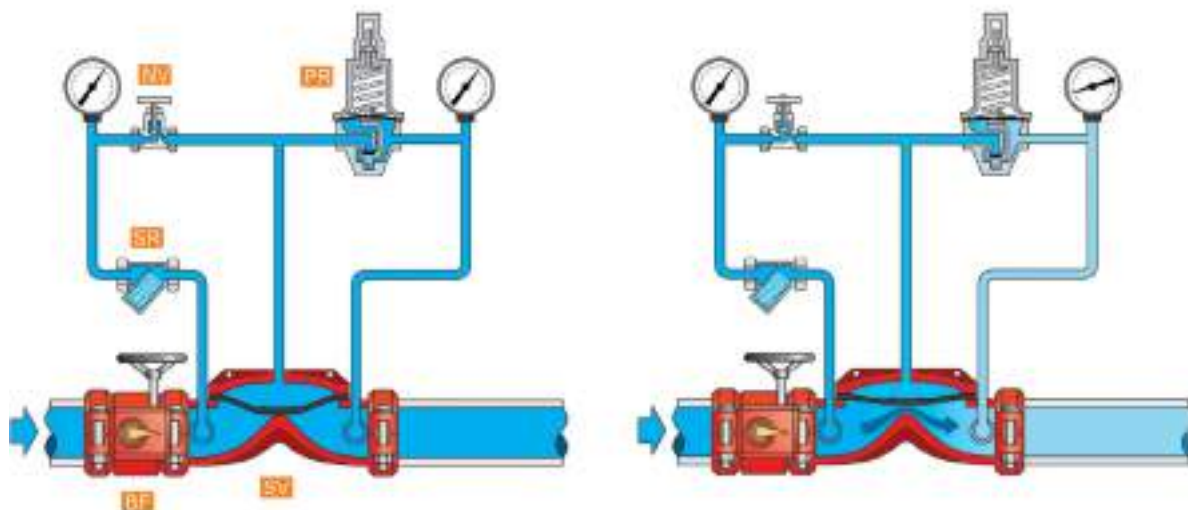
CHARACTERISTICS

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- Simple and reliable design.
- Quick respond to downstream pressure changes.
- Pressure reducing to a predetermined set of outlet pressure.

Schematic drawing:

FDV-R-PN2

Set position



PR - PRPV – Pressure Reducing
Pilot Valve

NV - Needle valve

SR - strainer

SV - FDV-R service valve

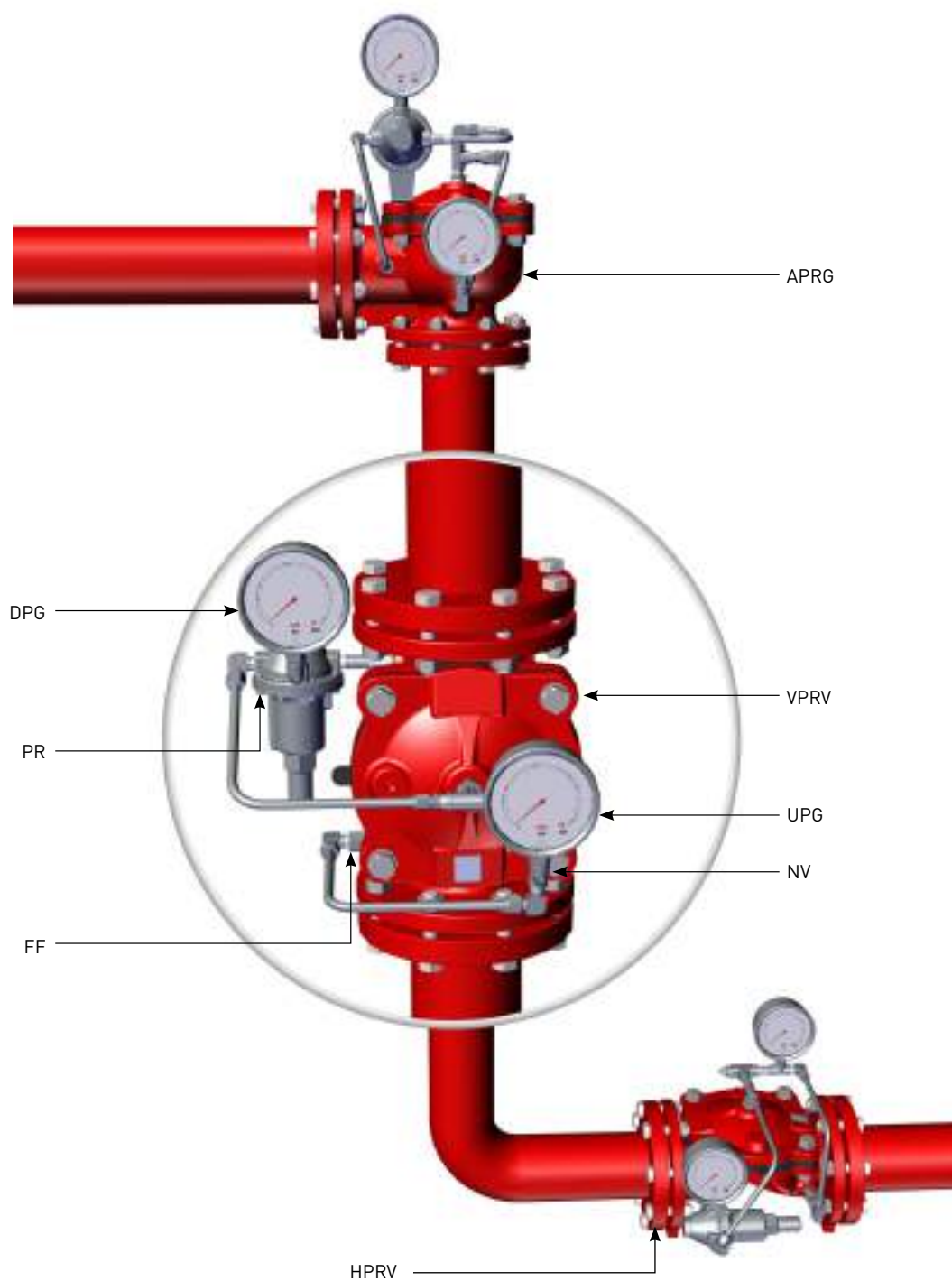
BF - Butterfly valve

SET POSITION

When the fire protection system is in the SET position, there is no flow through the system piping, and the water pressure equals the FDV-R-PN2 Pilot's set pressure. The FDV-R-PN2 valve's control chamber is pressurized by the inlet flow. Since there is no drainage from the control chamber through the Pressure Reducing Pilot Valve PRPV (PR), the pressure forces the diaphragm firmly against its seat, keeping the valve closed.

OPERATION

The FDV-R's control chamber is pressurized by a calibrated inlet flow passing through a Needle Valve (NV) and depressurized by the PRPV Pressure Reducing Pilot Valve (PR). The pilot's drain flow rate is governed by the downstream pressure, which acts through a sensing line to manipulate the pilot's diaphragm and sealing mechanism. Any variation in downstream pressure alters the balance between the control chamber's inlet and outlet flow rates. Consequently, the FDV-R valve's diaphragm position adjusts automatically to maintain the downstream pressure at the pilot's set point.



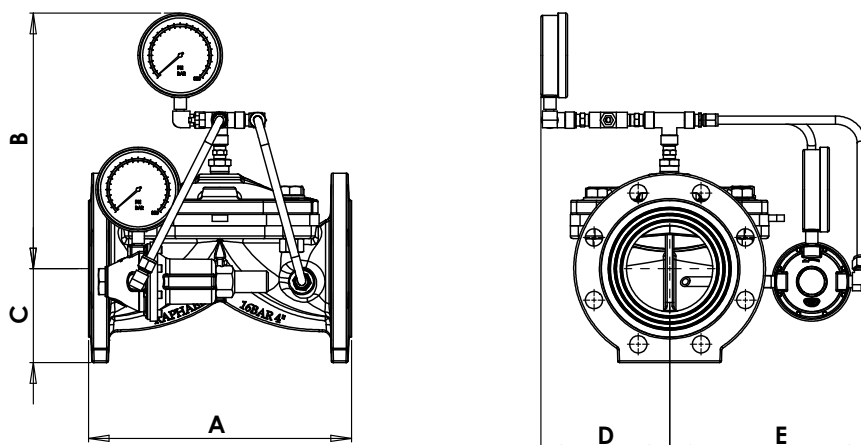
DPG – Downstream Pressure Gauge
PR – PRPV – Pressure Regulation Pilot Valve

FF – Finger Filter
NV – Needle Valve
UPG – Upstream Pressure Gauge
VPRV – Vertical Installation

APRV – Angled Installation
HPRV – Horizontal Installation

Parametric drawing:

FDV-R-PN2



Dimensions Table

Size	2"		3"		4"		6"		8"		10"		12"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	190	7.5	283	11.1	305	12	406	16	470	18.5	635	25	749	29.5
B	220	8.6	233	9.2	298	11.7	316	12.4	384	15.1	426	16.7	328	12.9
C	82	3.2	100	3.9	108	4.2	142	5.6	160	6.3	197	7.7	234	9.2
D	117	4.6	119	4.7	150	5.9	150	5.9	177	6.7	233	9.2	240	9.4
E	179	7	212	8.3	232	9.1	281	11	277	10.9	233	9.2	282	11.1
Kg/lb	10	22	19	42	26	57	50	110	57	126	109	240	141	310

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

- Valve ends
- Installation orientation
- Working Media
- Ambient conditions
- Min/Max operating flow
- Min/Max operating pressure
- Downstream set pressure
- Trim material
- Upstream set pressure
- Additional accessories needed:
- Direct acting Relief Valve

Pressure Relief Control Valve

FDV-R-RN2

The FDV-R-RN2 Globe type and FDV-Ra-RN2 Angled type Pressure Relief valves are automatic hydraulic control valves, designed to operate in fixed fire protection systems, particularly in fire pump units.

The FDV-R/Ra-RN2 hydraulic pilot-controlled valve is activated by line pressure. The pilot valve features a spring-loaded membrane that is sensitive to upstream pressure and pre-set to a desired maximum pressure. When the line pressure exceeds the set pressure, the relief valve opens, discharging any excess pressure and preventing potential damage.

Designed for both vertical and horizontal installation, the line pressure-operated FDV-R/Ra-RN2 Pressure Relief valves feature 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.



MARKETS



TECHNICAL DATA

FLUID: Water, Brackish water, Sea water, Foam

SIZE RANGE:

FDV-R valve (globe) -
40 mm to 400 mm (1½" to 16")

FDV-Ra valve (angled) -
50 mm to 200 mm (2" to 8")

AVAILABLE CONNECTIONS ENDS:

Flange*Flange, Groove*Groove,
Thread*Thread

PRESSURE NOMINAL:

UL - 250 psi (17.2 bar)
FM - 300 psi (20.7 bar)

REGULATION RATIO: 5:1

SENSITIVITY: 1.45 psi (0.1 Bar)

ADVANTAGES

- Only three parts: body, diaphragm & cover plate, no wet metal spring inside the control chamber.
- Low maintenance cost: the valve is serviced in-line and only one replaceable part - the long-life elastomeric diaphragm.
- Conforms with inspection, Testing and Maintenance Standard of water-based Fire Protection Systems, NFPA 25.
- Maintains a constant set upstream pressure securing the system from over pressure.

CHARACTERISTICS

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss.
- Simple and reliable design.
- Quick respond to downstream pressure changes.

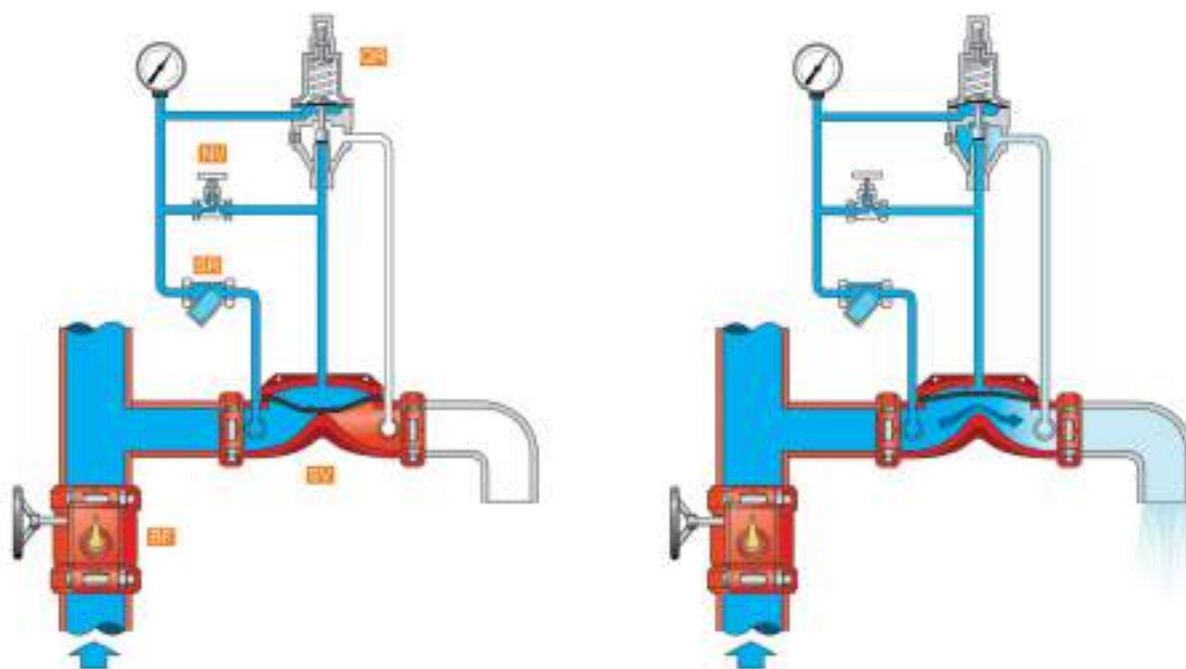
APPROVALS



Schematic drawing:

FDV-R-RN2

Set position



QR - QRPV – Quick Relief Pilot Valve
NV - Needle valve
SR - strainer

SV - FDV-R service valve
BF - Butterfly valve

SET POSITION

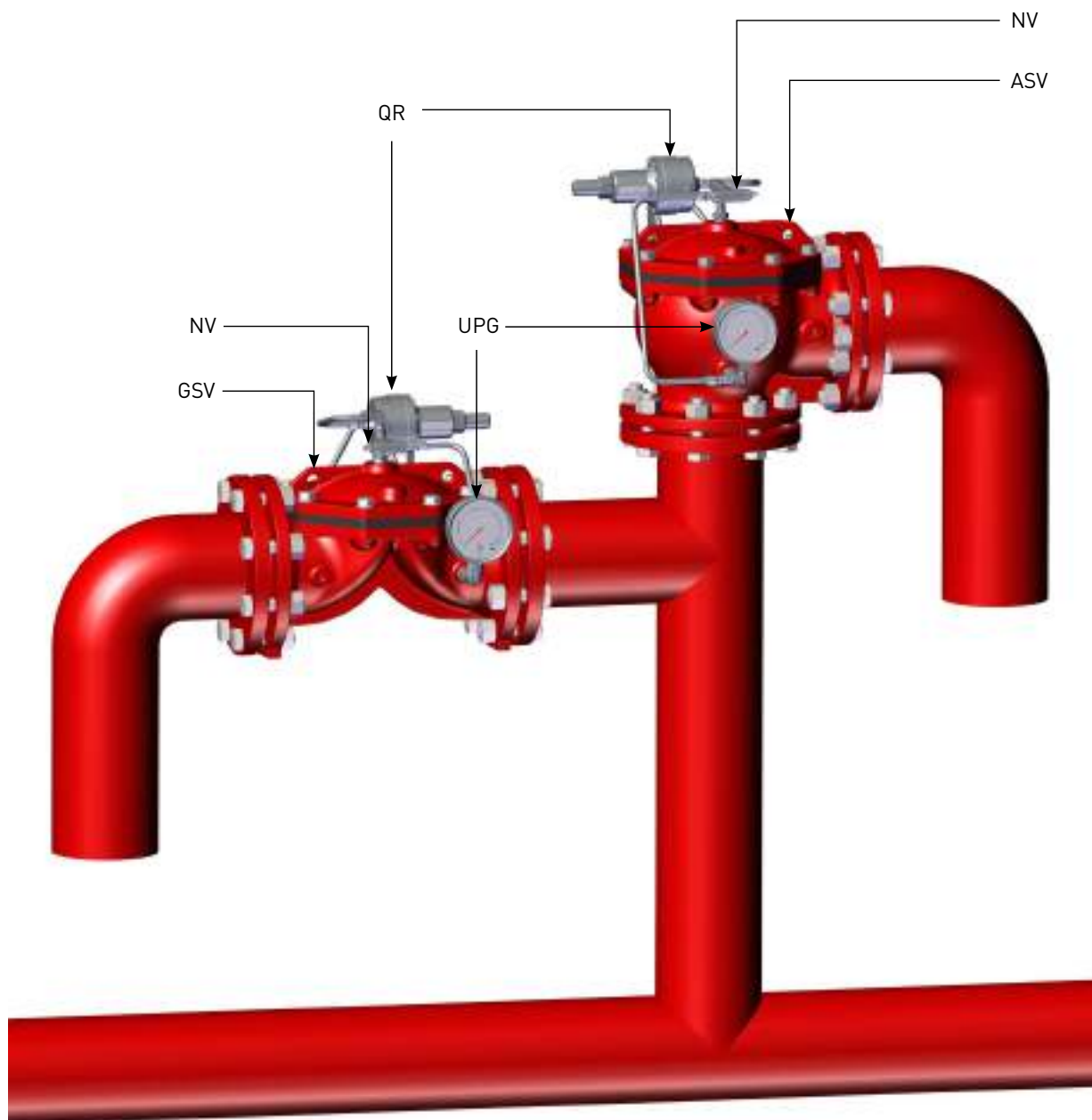
When a fire protection system is in SET position, and water pressure in the pipe system is maintained within the pre-established pressure range considered safe for operation, the FDV-R-RN2 will remain closed.

The FDV-R-RN2 valve's control chamber is pressurized by the inlet flow, pre calibrated by the Pressure Relief Pilot [QR] forcing the diaphragm against its seat, preventing the valve from opening.

OPERATION

When the Fire system trips open and Fire pump starts-up and pressure rises in the pipe system surpassing the preset maximum pressure, the FDV-R-RN2 will quickly open, to enable water discharge out of the pipe system to the valve's downstream.

The valve is controlled by the Pressure relief pilot. The pilot's is commanded by a hydraulic sensor port, connected to the pipe system, through the valve's upstream port. The pilot commands the valve to open, proportioning the adequate water passage necessary to maintain the system within the safe maximum required set pressure, regardless of system flow.



UPG – Upstream Pressure Gauge
QR – QRPV – Quick Release Pilot Valve
NV – Needle Valve

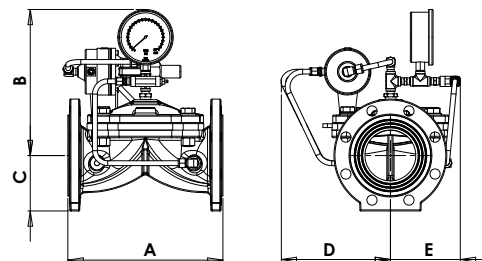
VPRV – Vertical Installation
ASV – Angled Service Valve
GSV – Globe Service Valve

Parametric drawing and Dimension Table:

FDV-R-RN2

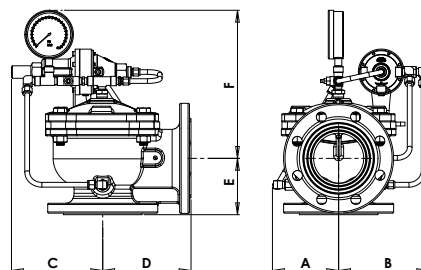
FDV-R-RN2 Globe type

Size	2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	190	7.5	283	11.1	305	12	406	16	470	18.5	635	25
B	12	0.5	31	1.2	32	1.2	5	0.2	N/A	N/A	N/A	N/A
C	217	8.5	230	9.0	282	11.1	314	12.4	386	15.1	390	15.3
D	82	3.3	100	3.9	109	4.3	142	5.6	160	6.3	197	7.6
E	63	2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F	115	4.5	140	5.5	153	6.0	200	7.9	226	8.9	277	10.6
G	128	5.0	128	5.0	156	6.1	150	5.9	178	7.0	233	9.2
Kg/lb	11.3	25	19.3	42.5	27	59.5	50.4	111	68.1	150	110	242



FDV-Ra-RN2 Angled type

Size	2"		3"		4"		6"		8"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	110	4.3	123	4.8	133	5.2	165	5.2	207	8.1
B	140	5.5	168	6.6	181	7.1	202	7.1	254	10
C	164	6.4	172	6.7	184	7.2	175	7.2	216	8.5
D	124	4.8	155	6.1	178	7.0	218	7	227	8.9
E	81	3.1	116	4.6	124	4.8	148	4.8	171	6.7
F	243	9.5	263	10.3	298	11.7	346	11.7	409	16.1
Kg/lb	8.6	19	22.7	50	29	64	50.5	111	74.7	164



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

- Pattern: Glob or angled
- Valve ends
- Instalation orientation (Globe type)
- Working Media
- Ambiantal conditions
- Min/Max operating flow
- Min/Max operating pressure
- Trim material
- Upstream set pressure
- Additional accessories needed





ENGINEERING DATA

BASIC VALVES

FDV - BASIC VALVE	198
FDV-R BASIC VALVE	204

FDV Basic Valves

Basic Valves

The FDV hydraulic control valve's solid and simple construction, in addition with its hydro-dynamically

engineered inner streamlined flow passages, makes it the valve on which a large selection of fire protection application is based on.

The FDV type is a full bore globe patterned valve featuring direct elastomeric diaphragm seal with no balancing spring or inside metallic moving wet components. The valve is designed for vertical or horizontal installation.

Its symmetric shape enables a reverse flow without any head loss change.

A selection of cast metals, coatings, diaphragms and fasteners, enables its usage in rough environment and streaming media. The FDV valve is suitable for on-shore as well as off-shore installations and can operate with fresh water, brackish water, foam and seawater.

9 optional ports provide an easy and flexible trim piping and tubing connection.



MARKETS



ADVANTAGES

- Simple and robust construction
- No inside metallic moving wet components
- 4 side, 2 bottom and 3 cover ports enable easy trim and accessories connection
- Durable material and coatings enables long lasting usage in rough conditions including off shore and seawater
- Large valve sizes and connection ends selection
- Diaphragm original design enables gradual and precise valve opening or closing
- Maintenance free between the NFPA 25 five years checks
- Stands fully in most strict fire protection design and operation demands

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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)



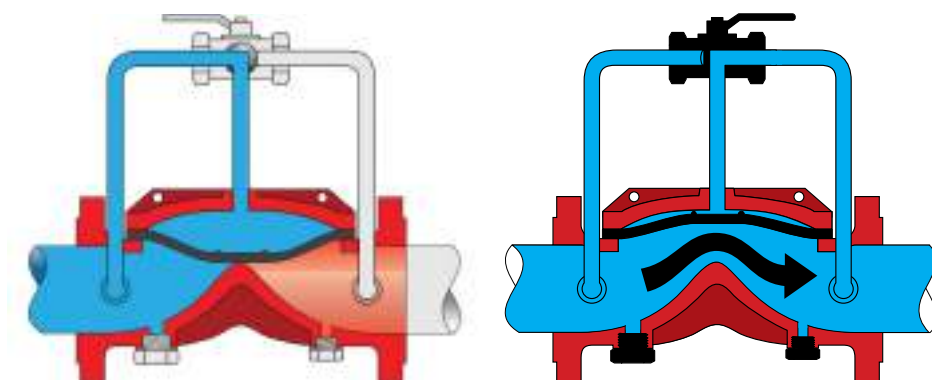
ON-Off Operation

The FDV is a normally open valve with a very low breaking through pressure of less than 5 psi.

When the valve's control chamber becomes pressurized, the force applied on the upper diaphragm surface, pushes it against the valves seat and holds the valve close. The diaphragm's springiness compensates for the low area/force ratio as the valve need to close although the downstream pressure nearly equalizes the upstream.

When the valve's control chamber is drained and de-pressurizes, the force applied by line pressure raises the diaphragm from its seat, pushes it into the control chamber space and drains the residual water out.

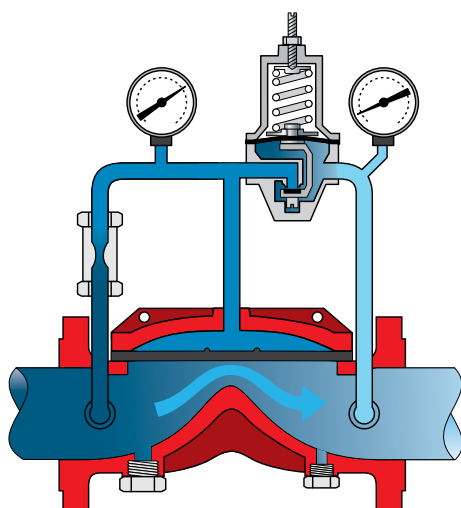
By that, water passage obstruction clears and the valves fully opens. This demonstrate a typical On-Off operation: a pressurized control chamber causes the valve to close while a drainage of this space combined with the valve's internal pressure, causes it to fully open.



Modulating Operation

Manipulating the control chamber pressure using suitable pilot valves, enables the control of the upstream pressure, downstream pressure and valve's rate of flow.

A change in the control chamber's pressure and as a result, the chamber's water volume, will place the diaphragm at a position that would narrow or enlarge the water passage cross area. Controlled diaphragm moves can be used to regulate gradually valve's flow in regard of line pressure deviation, as demonstrated in the schema below.



FDV

Optional pattern

Diameter	1.5"	2"	3"	4"	6"	8"	10"
Connection	DN40	DN50	DN80	DN100	DN150	DN200	DN250
TH-TH							
GR-GR							
GR-FL							
FL-GR							
FL-FL							

Available Options

Construction Materials & Coatings

Body & Cover	
Ductile Iron	ASTM A-536
Stainless Steel	ASTM A743, CF8M
Stainless Steel	ASTM A743, CF8
Cast Steel	ASTM A-216 Grade WCB
Nickel Aluminum Bronze	ASTM B148 UNS C95800
Diaphragm	
NR	Nylon fabric reinforced Natural Rubber
EPDM	Nylon fabric reinforced EPDM
NBR	Nylon fabric reinforced Nitrile rubber
Fasteners	
Stainless Steel 304	ASTM F593
Stainless steel 316	ASTM F593
Galvanized steel	ASTM F2329
Nickel Alloys	Monel 400; Cupro-nickel
Coating	
Internal-FBE Phenolic Epoxy+Polyester	External-FBE Phenolic Epoxy+Polyester
Internal-Vitreous Enamel	External-FBE Phenolic Epoxy+Polyester
Internal-Rilsan (Nylon 11)	External-Rilsan (Nylon 11)



Valves Construction and Applications

FDV-R	Water	Brackish Water	Sea Water	Foam
Body & Cover	Ductile Iron	Stainless Steel CF8M	Ni.AL.Br	Stainless Steel CF8
Fasteners	Galvanized Steel	Stainless Steel 316	Nickel Bronze alloys	Stainless Steel 304
Diaphragm	Natural Rubber	EPDM	EPDM	EPDM
Coating	Rilsan	Uncoated	Uncoated	Uncoated

FDV valves flow factor

NOMINAL DIAMETER		FLOW FACTOR	
INCH	MM	Kv	Cv
1.5	DN40	59	68
2	DN50	87	101
3	DN80	207	240
4	DN100	345	400
6	DN150	768	891
8	DN200	1290	1496
10	DN250	1850	2146

Kv = Valve flow coefficient (m³/h) / (bar)

Cv = Valve flow coefficient (gpm) / (psi)

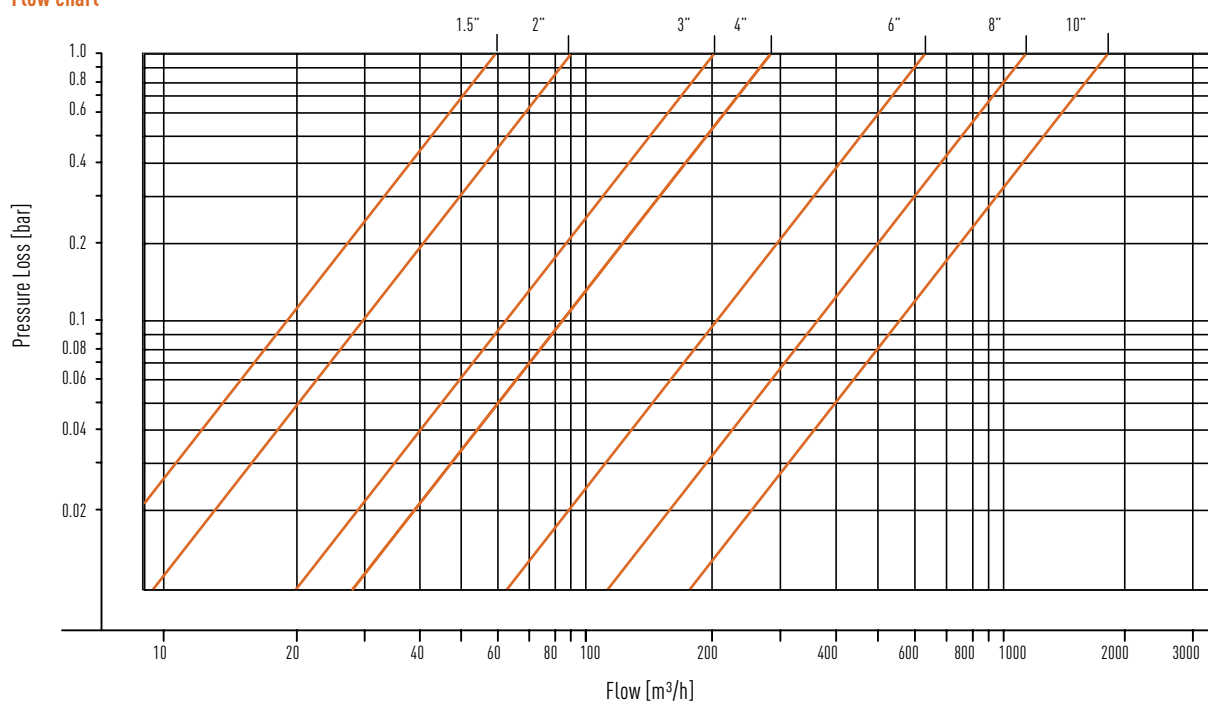
Cv = 1.16 Kv ; Kv = 0.862 Cv

Q = Flow rate in m³/h or gpm

Δp = Head loss across the valve in bar or psi

Q = Kv √Δp

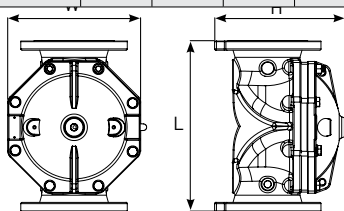
Flow chart



FDV

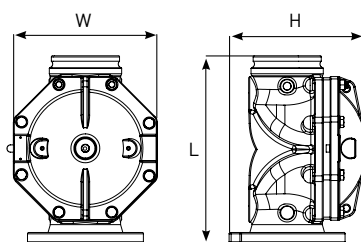
FDV FL-FL

SIZE (in)	L	H	W	Kg (lb)
DN 50 (2")	220 (8.7)	163 (6.4)	140 (5.5)	8.9 (19.6)
DN 80 (3")	325 (12.9)	205 (8.1)	235 (9.3)	21.3 (47)
DN 100 (4")	400 (15.8)	255 (10.0)	310 (12.2)	38 (84)
DN 150 (6")	465 (18.3)	338 (13.3)	354 (13.9)	56.6 (127.7)
DN 200 (8")	570 (22.4)	415 (16.3)	466 (18.3)	96 (211.6)
DN 250 (10")	768 (30.2)	560 (22.0)	616 (24.2)	218.6 (482)



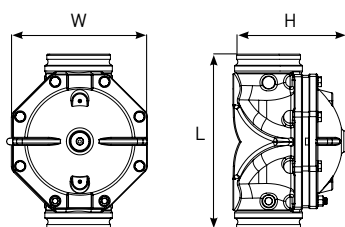
FDV FL-GR

SIZE (in)	L	H	W	Kg (lb)
DN 80 (3")	327 (12.9)	200 (7.9)	230 (9.0)	17.6 (39)
DN 100 (4")	400 (15.7)	227 (8.9)	302 (11.9)	34.2 (75.4)
DN 150 (6")	464 (18.3)	365 (14.4)	354 (13.9)	48.8 (107.6)
DN 200 (8")	570 (22.4)	416 (16.4)	466 (18.3)	86 (189.6)



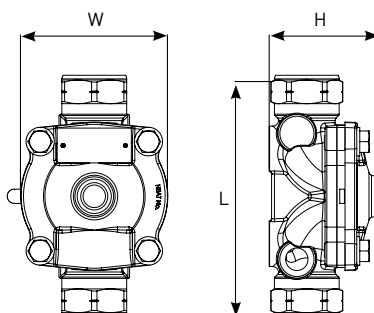
FDV GR-GR

SIZE (in)	L	H	W	Kg (lb)
DN 40 (1.5")	205 (8.0)	97 (3.8)	127 (5.0)	2.9 (6.4)
DN 50 (2")	220 (8.7)	112 (4.4)	140 (5.5)	4.5 (9.9)
DN 80 (3")	327 (12.9)	158 (6.2)	230 (9.0)	13.3 (29.3)
DN 100 (4")	400 (15.7)	212 (8.3)	302 (11.9)	27 (59.5)
DN 150 (6")	464 (18.3)	300 (11.8)	354 (13.9)	42.3 (93.6)
DN 200 (8")	570 (22.4)	364 (14.3)	466 (18.3)	75.4 (166.2)



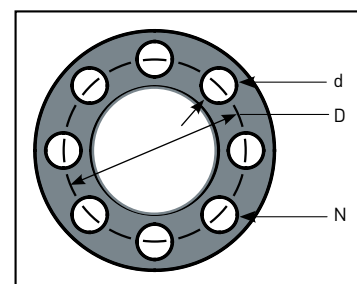
FDV TH-TH

SIZE (in)	L	H	W	Kg (lb)
DN 40 (1.5")	204 (8.0)	94 (3.7)	125 (4.9)	2.9 (6.4)
DN 50 (2")	222 (8.7)	113 (4.4)	140 (5.5)	4.97 (11)



Flange Drilling Specification - Nominal Dimensions in inches & (mm)

Nominal	ANSI B16.42 (Class 150)			ISO 7005-2 (PN 16)			ANSI B16.24 (Class 150)			ANSI B16.50 (Class 150)		
	Dim. D	Dim. d	Qty. n	Dim. D	Dim. d	Qty. n	Dim. D	Dim. d	Qty. n	Dim. D	Dim. d	Qty. n
3" (DN 80)	6.00 (152.4)	0.75 (19.0)	4	6.30 (160.0)	0.71 (18.0)	8	6.00 (152.4)	0.75 (19.0)	4	6.00 (152.4)	0.75 (19.0)	4
4" (DN 100)	7.5 (190.5)	0.75 (19.0)	8	7.5 (190.5)	0.71 (18.0)	8	7.5 (190.5)	0.75 (19.0)	8	7.5 (190.5)	0.75 (19.0)	8
6" (DN 150)	9.50 (241.3)	0.88 (22.2)	8	9.50 (241.3)	0.87 (22.0)	8	9.50 (241.3)	0.88 (22.2)	8	9.50 (241.3)	0.88 (22.2)	8
8" (DN 200)	11.75 (298.5)	0.88 (22.2)	8	11.61 (295)	0.87 (22.0)	12	11.75 (298.5)	0.88 (22.2)	8	11.75 (298.5)	0.88 (22.2)	8
10" (DN 250)	14.25 (362)	1 (25.4)	12	14 (355)	1.02 (26)	12	14.25 (362)	1 (25.4)	12	14.25 (362)	1 (25.4)	12



Port Sizing

(Port Size in NPT per ANSI B1.20.1)

Port Description	DN40 1.5"	DN50 2"	DN80 3"	DN100 4"	DN150 6"	DN200 8"	DN250 10"
Control Chamber Supply	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Bottom Downstream Drain	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Side Port	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Bottom Upstream Drain	3/4"	3/4"	1 1/4"	2"	2"	2"	2"

FDV-R Basic Valves

Basic Valves

The FDV-R type is a globe pattern valve featuring direct elastomeric diaphragm seal with no balancing spring or inside metallic moving wet components. The valve is designed for vertical or horizontal installation.

Solid and simple construction, with hydro-dynamically-engineered inner streamlined flow passage, makes it the basic valve for large selection of fire protection applications.

A wide selection of cast metals, coatings, diaphragms and fasteners, enables its usage in harsh environment and flow media. The FDV-R valve is suitable for on-shore as well as off-shore installations and can operate with fresh water, brackish water, foam and seawater.

7 optional trim ports provide an easy and flexible trim piping and tubing connection.



MARKETS



ADVANTAGES

- Simple and robust construction
- No inside metallic moving wet components
- 4 side, and 3 cover ports enable easy trim and accessories connection
- Durable material and coatings enables long lasting usage in rough conditions including foam, off shore and seawater
- Large valve sizes and connection ends selection
- Diaphragm original design enables gradual and precise valve opening or closing
- Maintenance free between the NFPA 25 five years checks
- Stands fully in most strict fire protection design and operation demands

TECHNICAL DATA

FLUID:

Water, Brackish water, Sea water, Foam

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:

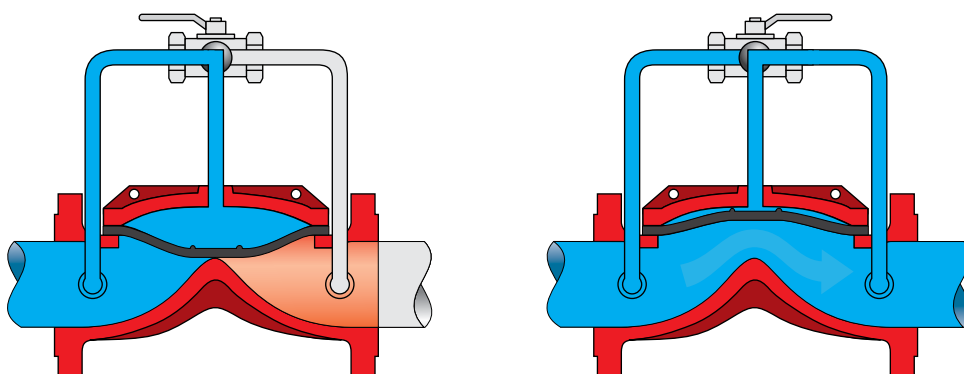
250 psi (17.2 bar)



ON-Off Operation

The FDV-R is a normally open valve with a very low breaking through pressure of less than 5 psi. When the valve's control chamber becomes pressurized, the force applied on the upper diaphragm surface, pushes it against the valves seat and holds the valve close. The diaphragm's springiness compensates for the low area/force ratio as the valve need to close although the downstream pressure nearly equalizes the upstream.

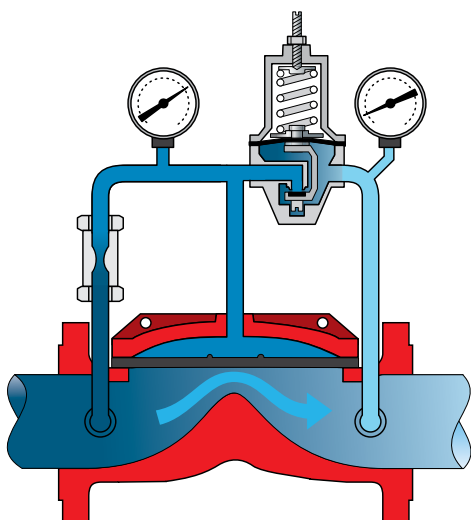
When the valve's control chamber is drained and de-pressurizes, the force applied by the line pressure, raises the diaphragm from its seat, pushes it into the control chamber space and drains the residual water out. By that, water passage obstruction clears and the valves fully opens. This demonstrate a typical On-Off operation: a pressurized control chamber causes the valve to close while a drainage of this space combined with the valve's internal pressure, causes it to fully open.



Modulating Operation

Manipulating the control chamber pressure using suitable pilot valves, enables the control of the upstream pressure, downstream pressure and valve's rate of flow.

A change in the control chamber's pressure and as a result, the chamber's water volume, will place the diaphragm at a position that would narrow or enlarge the water passage cross area. Controlled diaphragm moves can be used to regulate gradually valve's flow in regard of line pressure deviation, as demonstrated in the schema below.



FDV-R

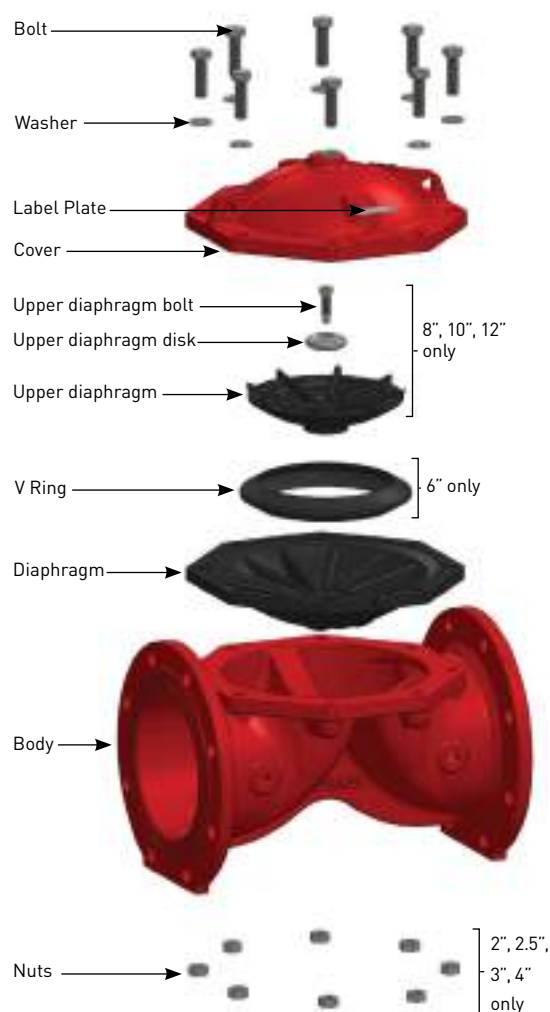
FDV-R optional Patterns

Valve	Diam.	1.5"	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"
	End. Conn.	DN40	DN50	DN65	DN80	DN100	DN150	DN200	DN250	DN300	DN350	DN400
FDV-R Globe	TH-TH											
	GR-GR											
	FL-FL											

Available Options

Construction Materials& Coatings

Body & Cover	
Ductile Iron	ASTM A-536
Stainless Steel	ASTM A743, CF8M
Stainless Steel	ASTM A743, CF8
Cast Steel	ASTM A-216 Grade WCB
Nickel Aluminum Bronze	ASTM B148 UNS C95800
Diaphragm	
NR	Nylon fabric reinforced Natural Rubber
EPDM	Nylon fabric reinforced EPDM
NBR	Nylon fabric reinforced Nitrile rubber
Fasteners	
Stainless Steel 304	ASTM F593
Stainless steel 316	ASTM F593
Galvanized steel	ASTM F2329
Nickel Alloys	Monel 400; Cupro-nickel
Coating	
Internal-FBE Phenolic Epoxy+Polyester	External-FBE Phenolic Epoxy+Polyester
Internal-Vitreous Enamel	External-FBE Phenolic Epoxy+Polyester
Internal-Rilsan (Nylon 11)	External-Rilsan (Nylon 11)



Valves Construction and Applications

FDV-R	Water	Brackish Water	Sea Water	Foam
Body & Cover	Ductile Iron	Stainless Steel CF8M	Ni.AL.Br	Stainless Steel CF8
Fasteners	Galvanized Steel	Stainless Steel 316	Nickel Bronze alloys	Stainless Steel 304
Diaphragm	Natural Rubber	EPDM	EPDM	EPDM
Coating	Rilsan	Uncoated	Uncoated	Uncoated

FDV valves flow factor

NOMINAL DIAMETER		FLOW FACTOR	
INCH	MM	Kv	Cv
1.5	DN40	40	46.4
2	DN50	70	81.2
2.5	DN65	100	116
3	DN80	170	197
4	DN100	290	336.4
6	DN150	490	568.4
8	DN200	790	916.4
10	DN250	1400	1624
12	DN300	1800	2088
14	DN350	1850	2146
16	DN400	2000	2320

Kv = Valve flow coefficient (m³/h) / (bar)

Cv = Valve flow coefficient (gpm) / (psi)

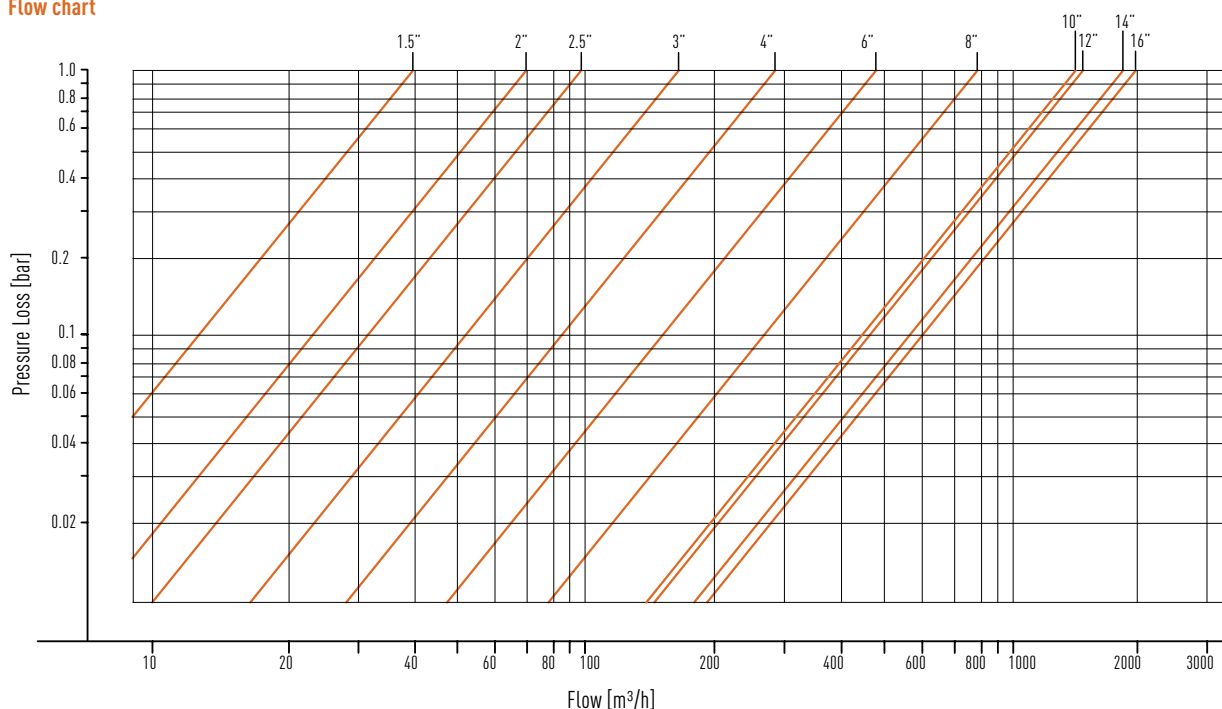
Cv = 1.16 Kv ; Kv = 0.862 Cv

Q = Flow rate in m³/h or gpm

Δp = Head loss across the valve in bar or psi

Q = Kv √Δp

Flow chart



FDV-Ra

FDV-R optional Patterns

Valve	Diam. End. Conn.	1.5"	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"
		DN40	DN50	DN65	DN80	DN100	DN150	DN200	DN250	DN300	DN350	DN400
FDV-R Angle	TH-TH											
	GR-GR											
	FL-FL											

Available Options

Construction Materials & Coatings

Body & Cover	
Ductile Iron	ASTM A-536
Stainless Steel	ASTM A743, CF8M
Stainless Steel	ASTM A743, CF8
Cast Steel	ASTM A-216 Grade WCB
Nickel Aluminum Bronze	ASTM B148 UNS C95800
Diaphragm	
NR	Nylon fabric reinforced Natural Rubber
EPDM	Nylon fabric reinforced EPDM
NBR	Nylon fabric reinforced Nitrile rubber
Fasteners	
Stainless Steel 304	ASTM F593
Stainless steel 316	ASTM F593
Galvanized steel	ASTM F2329
Nickel Alloys	Monel 400; Cupro-nickel
Coating	
Internal-FBE Phenolic Epoxy+Polyester	External-FBE Phenolic Epoxy+Polyester
Internal-Vitreous Enamel	External-FBE Phenolic Epoxy+Polyester
Internal-Rilsan (Nylon 11)	External-Rilsan (Nylon 11)



Valves Construction and Applications

FDV-R	Water	Brackish Water	Sea Water	Foam
Body & Cover	Ductile Iron	Stainless Steel CF8M	Ni.AL.Br	Stainless Steel CF8
Fasteners	Galvanized Steel	Stainless Steel 316	Nickel Bronze alloys	Stainless Steel 304
Diaphragm	Natural Rubber	EPDM	EPDM	EPDM
Coating	Rilsan	Uncoated	Uncoated	Uncoated

FDV-Ra Flow Factor

NOMINAL DIAMETER		FLOW FACTOR	
INCH	MM	Kv	Cv
2	DN50	62	72
2.5	DN65	90	104.4
3	DN80	155	179.8
4	DN100	200	232
6	DN150	470	545.2
8	DN200	750	870

Kv = Valve flow coefficient (m³/h) / (bar)

Cv = Valve flow coefficient (gpm) / (psi)

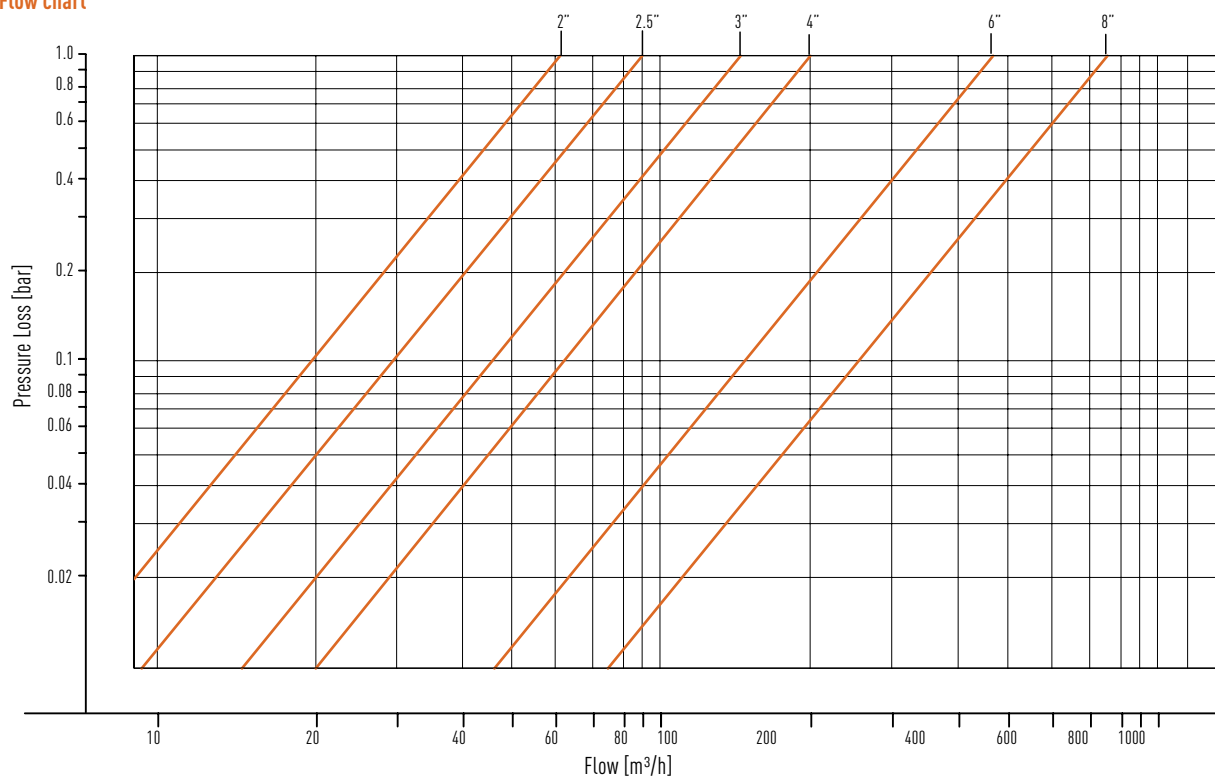
Cv = 1.16 Kv ; Kv = 0.862 Cv

Q = Flow rate in m³/h or gpm

Δp = Head loss across the valve in bar or psi

Q = Kv √Δp

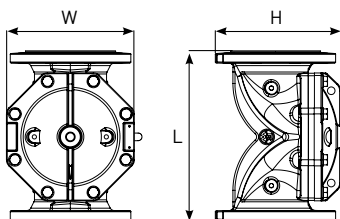
Flow chart



FDV-R

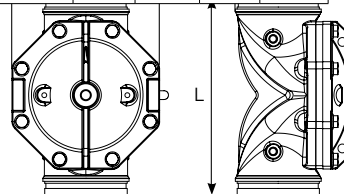
FDV-R FL-FL

SIZE (in)	L	H	W	Kg (lb)
DN 50 (2")	190 (7.5)	159 (6.3)	165 (6.5)	7.9 (17.4)
DN 65 (2.5")	216 (8.5)	173 (6.8)	185 (7.3)	9.3 (20.5)
DN 80 (3")	283 (11.1)	200 (7.8)	200 (7.8)	17.5 (35.6)
DN 100 (4")	305 (12.0)	220 (8.6)	230 (9.0)	26 (57.3)
DN 150 (6")	460 (16.0)	295 (11.6)	300 (11.8)	46 (101.4)
DN 200 (8")	470 (18.5)	383 (15.0)	354 (13.9)	67.5 (148.8)
DN 250 (10")	635 (25)	430 (16.9)	464 (18.3)	111 (244.7)
DN 300 (12")	749 (29.5)	474 (18.6)	480 (18.9)	151 (332.9)
DN 350 (14")	749 (29.5)	520 (20.5)	520 (20.5)	177 (390.2)
DN 400 (16")	860 (33.9)	711 (28.0)	616 (24.2)	327 (720.9)



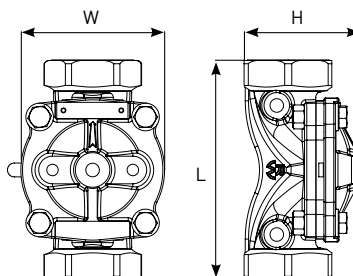
FDV-R GR-GR

SIZE (in)	L	H	W	Kg (lb)
DN 40 (1.5")	159 (6.3)	80 (3.1)	96 (3.8)	1.5 (3.3)
DN 50 (2")	190 (7.5)	96 (3.8)	125 (4.9)	3.0 (6.6)
DN 65 (2.5")	225 (8.9)	114 (4.5)	140 (5.5)	4.7 (10.4)
DN 80 (3")	290 (11.4)	140 (5.5)	200 (7.9)	10.8 (20.3)
DN 100 (4")	346 (13.6)	346 (13.6)	230 (9.0)	18.0 (36.7)
DN 150 (6")	412 (16.2)	2a39 (9.4)	302 (11.9)	33 (72.7)
DN 200 (8")	470 (18.5)	350 (13.8)	354 (13.9)	51 (112.4)



FDV-R TH-TH

SIZE (in)	L	H	W	Kg (lb)
DN 40 (1.5")	159 (6.3)	80 (3.1)	96 (3.8)	2.0 (4.4)
DN 50 (2")	190 (7.5)	196 (7.7)	125 (4.9)	3.5 (7.7)
DN 65 (2.5")	225 (8.9)	110 (4.3)	140 (5.5)	5 (11)
DN 80 (3")	290 (11.4)	138 (5.4)	200 (7.9)	24.2 (20.3)
DN 100 (4")	346 (13.6)	220 (8.7)	230 (9.0)	16.5 (36.4)

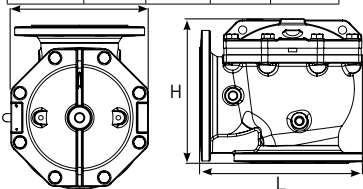


Port Description

Port Description	DN50 2"	DN65 2.5"	DN80 3"	DN100 4"	DN150 6"	DN200 8"	DN250 10"	DN300 12"	DN350 14"	DN400 16"
Diaphragm Chamber Supply	1/4"	1/4"	1/4"	1/4"	1/2"	1/2"	1/2"	1/2"	3/4"	3/4"
Upstream & Downstream side ports	1/4"	1/4"	1/4"	1/4"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"

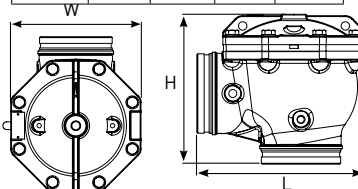
FDV-Ra FL-FL

SIZE (in)	L	H	W	Kg (lb)
DN 50 (2")	112 (4.4)	159 (6.2)	165 (6.5)	8.1 (17.9)
DN 65 (2.5")	122 (4.8)	160 (6.3)	185 (7.2)	11 (24.2)
DN 80 (3")	154 (6.0)	210 (8.2)	200 (7.9)	19 (41.9)
DN 100 (4")	177 (7.0)	230 (9.0)	230 (9.0)	26.5 (58.4)
DN 150 (6")	218 (8.6)	315 (12.4)	300 (11.8)	48.7 (107.4)
DN 200 (8")	225 (8.8)	400 (15.7)	354 (13.9)	62.5 (137.8)



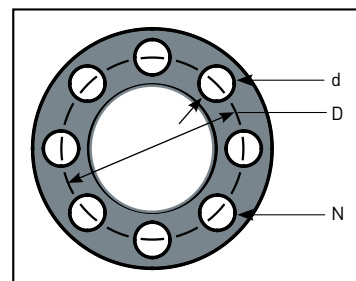
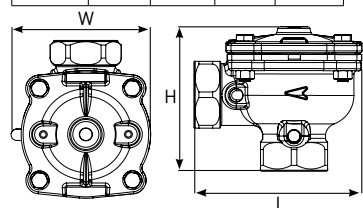
FDV-Ra GR-GR

SIZE (in)	L	H	W	Kg (lb)
DN 50 (2")	90 (3.5)	150 (5.9)	125 (4.9)	3.0 (6.6)
DN 65 (2.5")	117 (4.6)	160 (6.3)	125 (4.9)	4.7 (10.4)
DN 80 (3")	148 (5.8)	205 (8.0)	200 (7.9)	10.8 (23.8)
DN 100 (4")	150 (5.9)	227 (8.9)	230 (9.0)	18.0 (39.7)
DN 150 (6")	206 (8.1)	317 (12.5)	300 (11.8)	33 (72.7)
DN 200 (8")	225 (8.8)	400 (15.7)	354 (13.9)	51 (112.4)



FDV-Ra TH-TH

SIZE (in)	L	H	W	Kg (lb)
DN 50 (2")	90 (3.5)	150 (5.9)	125 (4.9)	4.2 (9.2)
DN 65 (2.5")	117 (4.6)	160 (6.3)	125 (4.9)	7 (15.4)
DN 80 (3")	148 (5.8)	205 (8.0)	200 (7.9)	12 (26.5)
DN 100 (4")	150 (5.9)	227 (8.9)	230 (9.0)	15.9 (35.0)



Flange Drilling Specification - Nominal Dimensions in inches & (mm)

Nominal	ANSI B16.42 (Class 150)			ISO 7005-2 (PN 16)		
	Dim. D	Dim. d	Qty. n	Dim. D	Dim. d	Qty. n
3" (DN 80)	6.00 (152.4)	0.75 (19.0)	4	6.30 (160.0)	0.71 (18.0)	8
4" (DN 100)	7.5 (190.5)	0.75 (19.0)	8	7.5 (190.5)	0.71 (18.0)	8
6" (DN 150)	9.50 (241.3)	0.88 (22.2)	8	9.50 (241.3)	0.87 (22.0)	8
8" (DN 200)	11.75 (298.5)	0.88 (22.2)	8	11.61 (295)	0.87 (22.0)	12
10" (DN 250)	14.25 (362)	1 (25.4)	12	14 (355)	1.02 (26)	12
12" (DN 300)	17 (431.8)	1 (25.4)	12	16.14 (410)	1.02 (26)	12
14" (DN 350)	18.75 (476.3)	1.125 (28.57)	12	18.50 (470)	1.02 (26)	16
16" (DN 400)	21.25 (539.8)	1.125 (28.57)	16	20.66 (525)	1.16 (29.5)	16





PRODUCT SELECTION GUIDE

PRODUCT SELECTION GUIDE

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DELUGE SYSTEMS

Deluge Applications					
Type	Actuation			Reset	
Standard	D	Electric	E	Local	0
Modulating	P	Pneumatic	P	Remote	1
Economic	A	Electro-pneumatic	C		
		Hydraulic	H		
		Anticolumning	A		

Main Valve									
Valve Size		Ends Standard		Construction Material		Coating		Elastomer material	
1 1/2"	15	ANSI #150RF (Standard)	1	Ductil Iron ASTM A-536	DIC	Epoxy Polyester powder	EP	NR (standard)	NR
2"	02	ANSI #150FF	2	Nickel Aluminum bronze ASTM B148 UNS C95800	NAB	Polyester	PE	EPDM	DM
3"	03	PN-16 FF (Standard)	3	Stainless steel ASTM A743, CF8M	SS6	Epoxy Polyester Powder & Enamel (int)	PU		
4"	04	PN-16 RF	4	Stainless steel ASTM A743, CF8	SS4	Rilsan	RL		
6"	06	TH NPT	5						
8"	08	TH BSP	6						
10"	10	GR 250 psi	7						

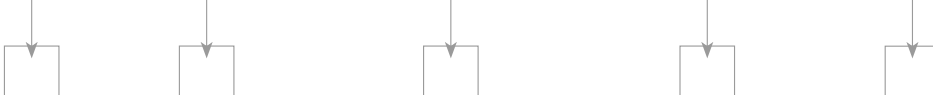
Trim							
Accessories Material		Tubing Material		Optional		Installation Orientation	
AISI 316	SS6	Copper	CUB	Alarm Pressure Switch	PS	Vertical	V
Brass	BRS	AISI 316	SS6	Ex-proof	EX	Horizontal	H
Nickel Aluminum Bronze ASTM B148 UNS C95800	NAB	Copro Niquel	CN	Drain Valves	DR		
		Monel® - nickel-cop-per alloy 400	MON	Water Motor Alarm	WM		
		Super Dublex ISO 17781	SD	Position Indicator	PI		
				Latch SOV	LS		

ON-OFF VALVES

On/Off Applications					
Actuation		Pressure Control		Latching	
Electric	E	No	0	No	0
Pneumatic	P	Yes	1	Yes	1
Hydraulic	H				
Local Manual	LM				



Main Valve									
Valve Size		Ends Standard		Construction Material		Coating		Elastomer material	
1 1/2"	15	ANSI #150RF (Standard)	1	Ductil Iron ASTM A-536	DIC	Epoxy Polyester powder	EP	NR (standard)	NR
2"	02	ANSI #150FF	2	Nickel Aluminum bronze ASTM B148 UNS C95800	NAB	Polyester	PE	EPDM	DM
3"	03	PN-16 FF (Standard)	3	Stainless steel ASTM A743, CF8M	SS6	Epoxy Polyester Powder & Enamel (int)	PU		
4"	04	PN-16 RF	4	Stainless steel ASTM A743, CF8	SS4	Rilsan	RL		
6"	06	TH NPT	5						
8"	08	TH BSP	6						
10"	10	GR 250 psi	7						
12"	12								



Trim							
Accessories Material		Tubing Material		Optional		Installation Orientation	
AISI 316	SS6	Copper	CUB	Pressure Switch	PS	Vertical	V
Brass	BRS	AISI 316	SS6	Ex-proof	EX	Horizontal	H
Nickel Aluminum Bronze ASTM B148 UNS C95800	NAB	Copro Níquel	CN	ADV	AD		
		Monel® - nickel-cop- per alloy 400	MON	Position Indicator	PI		
		Super Duplex ISO 17781	SD	Pressure Gauge	PG		
				Drain Valve	DV		



CONTROL VALVES

Pressure Control Applications			
Type	Pressure Set		
Pressure Reducing	PN2	PN2 Stdandard (7 bar)	S
Pressure Relief	RN2	RN2 Stdandard (7 bar)	L
		Other (psi)	No.



Main Valve											
Valve Size		Valve Pattern		Ends Standard		Construction Material		Coating		Elastomer material	
2"	02	Globe	G	ANSI #150RF (Standard)	1	Ductil Iron ASTM A-536	DIC	Epoxy Polyester powder	EP	NR	NR
3"	03	Angle	A	ANSI #150FF	2	Nickel Aluminum bronze ASTM B148 UNS C95800	NAB	Polyester	PE	EPDM	DM
4"	04			PN-16 FF (Standard)	3	Stainless steel ASTM A743, CF8M	SS6	Epoxy Polyester Powder & Enamel (int)	PU		
6"	06			PN-16 RF	4	Stainless steel ASTM A743, CF8	SS4	Rilsan	RL		
8"	08			TH NPT	5						
10"	10			TH BSP	6						
12"	12			GR 250 psi	7						
14"	14										
16"	16										

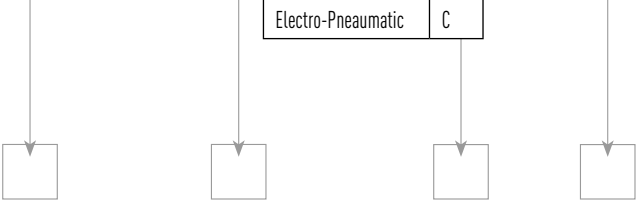


Trim			
Accessories Material		Tubing Material	
AISI 316	SS6	Copper	CUB
Brass	BRS	AISI 316	SS6
Nickel Aluminum Bronze ASTM B148 UNS C95800	NAB	Copro Niquel	CN
		Monel® - nickel-cop- per alloy 400	MON
		Super DupleX ISO 17781	SD



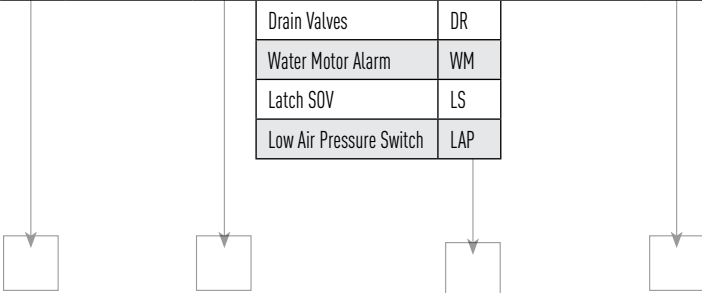
PREACTION SYSTEMS

Preaction Applications							
Interlock		Pressure Control		Actuation		Reset	
Single	S	Standard	I	Electric E	E	Local	0
Double	D	Modulating	C	Pneumatic	P	Remote	1
				Electro-Pneumatic	C		



Main Valve									
Valve Size		Ends Standard		Construction Material		Coating		Elastomer material	
1 1/2"	15	ANSI #150RF (Standard)	1	Ductil Iron ASTM A-536	DIC	Epoxy Polyester powder	EP	NR (standard)	NR
2"	02	ANSI #150FF	2	Stainless steel ASTM A743, CF8M	SS6	Polyester	PE	EPDM	DM
3"	03	PN-16 FF (Standard)	3	Stainless steel ASTM A743, CF8	SS4	Epoxy Polyester Powder & Enamel (int)	PU		
4"	04	PN-16 RF	4			Rilsan	RL		
6"	06	TH NPT	5						
8"	08	TH BSP	6						
10"	10	GR 250 psi	7						

Trim							
Accessories Material		Tubing Material		Optional		Installation Orientation	
AISI 316	SS6	Copper	CUB	Alarm Pressure Switch	APS	Vertical	V
Brass	BRS	AISI 316	SS6	Ex-proof	EX	Horizontal	H
				Drain Valves	DR		
				Water Motor Alarm	WM		
				Latch SOV	LS		
				Low Air Pressure Switch	LAP		



RAPHAEL, founded in 1949, is the first Israeli manufacturer of water control valves. RAPHAEL 's research department constantly strives to introduce new and innovative products and solutions for water control systems including water works, fire-protection and irrigation systems.



Fire Protection



Irrigation



Waterworks



Smart Solutions



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