Supervised Single Interlock Preaction Valve - Electric Actuation 2 thru 8 inch (DN50 thru DN200)

MODEL: SD-DVA

UL Listed.

General Description

Preaction sprinkler systems are specialized for use in locations where accidental water discharge is undesired and pre-alarm fire condition required to allow time for alternate fire suppression means, such as in museums with rare art works, manuscripts or books, libraries, archives, Data Centers, Lift Machine room, storage areas for valuable artifacts, computer and electronic equipments.

The supervised Single interlock Preaction system with Electric Actuation utilizes automatic sprinklers and a supplemental detection system. Detection system consists of preaction control panel, heat / smoke / multisensor, manual release station, etc. The release (Detection) system shall be designed to operate prior to sprinkler operation.

The followings are the main advantages of a single interlock preaction system over wet pipe system.

1) Pre-alarm fire condition will occur prior to the sprinkler operation which allows extinguishing the fire by alternate fire suppression means. (Handheld fire extinguisher etc.,)
2) Integrity of the sprinkler piping can be monitored by a supervisory low pressure alarm switch. A trouble annunciator signal will occur whenever any abnormal leakage or accidental damage occurs in the piping system. However no water will flow and the air pressure is for supervisory alarm only.
3) In the event of a fire the delay of water delivery time will be avoided because the detection system is designed to operate prior to sprinkler operation and allowing water to flow into the piping.

In supervised single interlock preaction system air is introduced into the system piping at a pressure of approximately 10 psi from an air or nitrogen source such as:

1) An air compressor
2) A plant air system (owner's air)
3) Nitrogen Cylinder Gas Supply

Any of the above sources can be used to fill the required system pressure in 30 minutes. Suitable automatic air maintenance device is used to control the pressure in the preaction system. This air pressure supervises the piping to detect leaks. The pressure switch is used for detection of low air pressure on the sprinkler pipe.

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A riser check valve in the single interlock system provides air check to the system and pressurized with a nominal supervisory air pressure of 10 Psi. The supervisory low pressure alarm switch is set to transfer its contacts at 5 Psi to the preaction control panel which in turn gives trouble signal.

If any of the detectors senses fire, operation of manual release station will give signal to preaction control panel to energize (activate) the solenoid valve. Energized solenoid valve will drain the water from the top chamber of the deluge valve and allowing water to flow into the piping. The flow of water converts the dry system into a wet system. When the fire produces enough heat to operate one or more sprinkler heads, water will flow from the operated sprinkler heads and control or suppress the fire.

Shield UL Listed Deluge valve is a quick release, hydraulically operated diaphragm actuated type of valve. It has three chambers, isolated from each other by the diaphragm operated clapper and seat seal. While in SET position, water pressure is transmitted through an external bypass check valve and hydraulic shut-off valve from the system supply side to the top chamber, so that supply pressure in the top chamber act across the diaphragm operated clapper which holds the seat against the inlet supply pressure because of the 2 : 1 differential pressure design. On detection of fire the top chamber is vented to atmosphere through the outlet port via opened actuation devices (solenoid valve). If the top chamber pressure reaches less than half the supply pressure instantaneously, the upward force of the supply pressure lifts the clapper allowing water to enter the system piping network and alarm devices. As water flows into the system, the hydraulic shut-off valve becomes pressurized and automatically shuts off the top chamber supply flow (Priming line).Shutting off the top chamber supply flow prevents the **Shield Preaction valve** from becoming re-pressurized, thereby preventing inadvertent closing of the preaction valve during a fire (If the solenoid valve become de-energized after its initial operation).

Technical Data:

Nominal Size	:	50, 80, 100, 150 & 200
Working Pressure	:	175 psi

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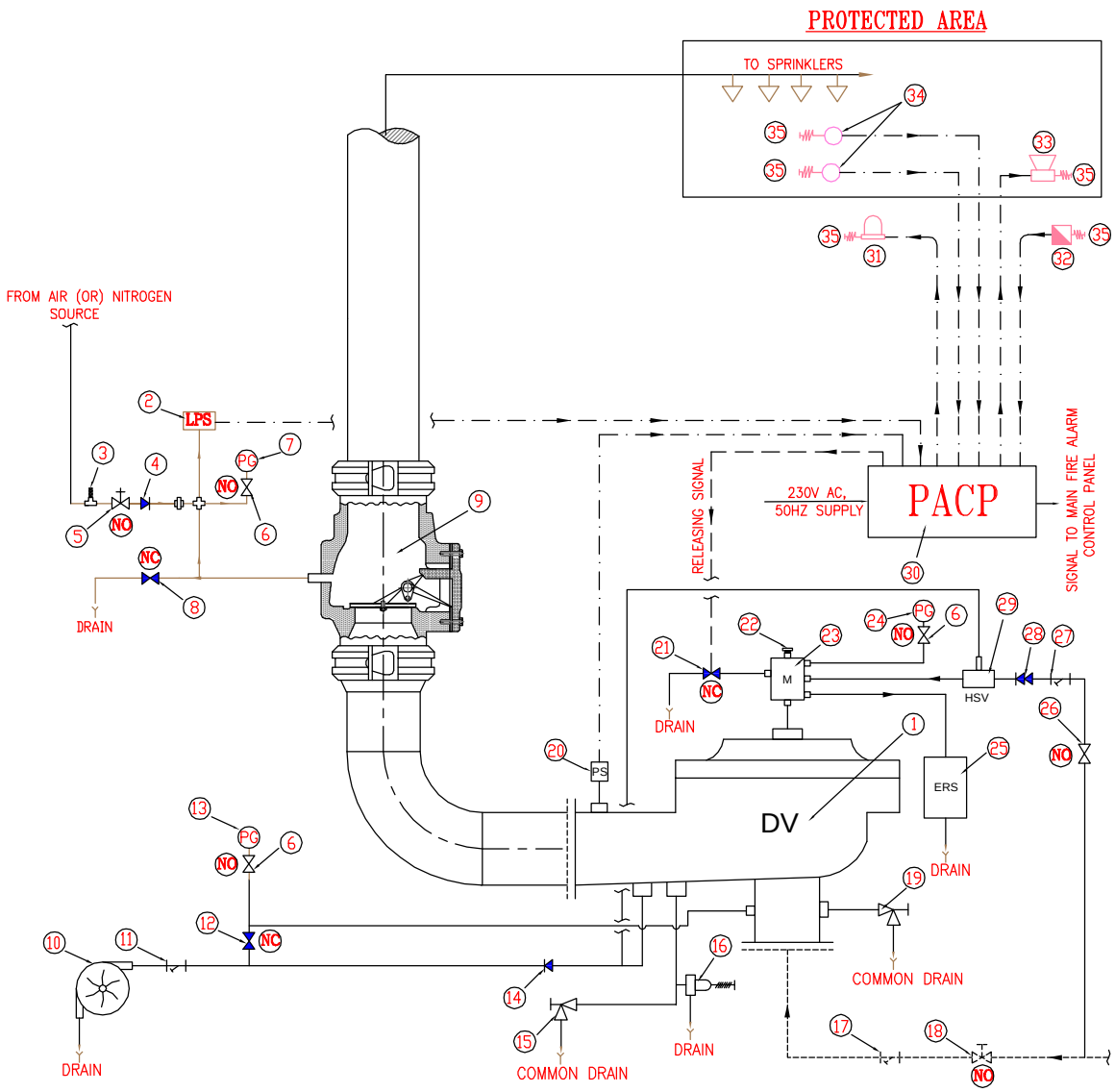

LEGENDS	
1	DELUGE VALVE
2	LOW AIR PRESSURE ALARM SWITCH
3	PRESSURE RELEIF VALVE
4	CHECK VALVE (AIR)
5	SYSTEM AIR SUPPLY VALE (GLOBE)
6	BALL VALVE
7	PRESSURE GAUGE (AIR SUPPLY)
8	SYSTEM MAIN DRAIN VALVE
9	RISER CHECK VALVE
10	WATER MOTOR ALARM GONG
11	STAINER (ALARM GONG)
12	BALL VALVE (ALARM TEST)
13	PRESSURE GAUGE (WATER SUPPLY)
14	CHECK VALVE
15	ANGLE DRAIN VALVE
16	DRIP VALVE
17	STAINER
18	SYSTEM CONTROL VALVE
19	ANGLE VALVE (MAIN DRAIN)
20	WATER FLOW ALARM PRESSURE SWITCH
21	SOLENOID VALVE
22	PLUG
23	6-WAY MANIFOLD
24	TOP CHAMBER PRESSURE GUAGE (DIAPHRAGM)
25	EMERGENCY RELEASE STATION
26	PRIMING BALL VALVE
27	STAINER (PRIMING)
28	RESTRICTION CHECK VALVE
29	HYDRAULIC SHUT-OFF VALVE
30	PRE ACTION CONTROL PANEL
31	STROBE LIGHT
32	MANUAL RELEASE
33	STROBE HORN
34	DETECTOR
35	END OF LINE
NO	NORMALLY OPEN
NC	NORMALLY CLOSED

SCHEMATIC DIAGRAM FOR SHIELD SUPERVISED SINGLE INTERLOCK PRE-ACTION SYSTEM (ELECTRIC ACTUATION)

SHIELD
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