

Model : SD-H

TECHNICAL DATA:

NOMINAL SIZE	: 150, 100 and 80 NB
RATED WORKING PRESSURE	: 12.3 Kg./Sq.Cm. (175 PSI)
THREADED OPENING	: BSPT (NPT - Optional)
MOUNTING	: Vertical or Horkzontal mounting
FACTORY HYDROSTATIC TEST PRESSURE	: 25Kg./sq.cm. (350 psi)
FLANGE CONNECTION	: ANSI B 16.5 (IS: 1538 optional)
RECOMMENDED FLOW RATE	: 150NB - 170 to 650m3/hr 100NB - 50 to 225m3/hr 80NB - 30 to 110m3/hr
FRICTIONAL LOSS IN TERMS OF EQUIVALENT LENGTH OF PIPE (C-120)	: 150NB - 35.00 meters 100NB - 35.00 meters 80NB - 10.50 meters
WET PILOT SPRINKLER HIGHT LIMITATION	: As per graph in the catalogue
NET WEIGHT WITHOUT TRIM	: 150NB - 102 Kg. 100NB - 68 Kg. 80NB - 45 Kg.
FINISH	: Fire Red
ORDERING INFORMATION	: 1. Size of valve 2. Flange specification 3. Valve trim vertical or horizontal 4. Trim type - Dry piolt, Wet pilot, Electric, Test and alarm.

Deluge Valve is known as a system control valve in a deluge system, which is used for fast application of water in a spray system. They are used to protect areas suchas power transformer installation, storage tank,conveyor protection etc. With the addition of foaming agent they do protect Aircraft hangar and inflammable liquid fire.

VALVE OPERATION

Shield 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 restriction orifice 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 differential pressure design. On detection of fire the top chamber is vented to atmosphere through the outlet port via opened actuation devices. The top chamber pressure cannot be replenished through the restricted inlet port, and the upward force of the supply pressure lifts the clapper allowing the water flow to the system piping network and alarm devices.



TRIM DESCRIPTION

a) BASIC TRIM

The basic trim is required on all Shield Deluge valve regardless of release system. It contain those components which are required in all types of installation, such as the Main drain valve, Priming connection, Dripcheck valve, Emergency release valve and pressure gauges.

b) DRY PILOT TRIM (PNEUMATIC RELEASE)

Dry pilot operation uses a pilot line of closed Sprinkler/QB detector containing air under pressure, located in the area to be protected. It requires regulated dry air supply with main supply point through restricted orifice. The air pressure to be maintained as specified in the catalogue of Dry Pilot Actuator, Model-SD-H. The pilot line is connected to air inlet side of actuator. The top chamber for the deluge valve is connected to water inlet side of actuator.

When there is an air pressure drop, or due to release of any of the release device on detection of fire, the diaphragm of actuator is lifted and allows the water to drain. This releases the water pressure in the top chamber of the deluge valve, allowing the deluge valve to open and water to flow in to the system piping & alarm devices.



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c) **WET PILOT TRIM (HYDRAULIC RELEASE)**

Wet pilot operation uses a pilot line of closed sprinklers containing pressurized water, supplied through the upstream side of the Deluge valve, through a restricted orifice. All the release lines are connected to a common release line. Due to release to any one of the release device, the water pressure in the top chamber of the Deluge valve drops, and the Deluge valve opens.

d) **ELECTRIC RELEASE**

TRIM To actuate a Deluge valve electrically, a solenoid valve is provided to drain the water from the top chamber of the Deluge valve. A pressure switch is provided to activate an electric alarm, to shut down the desired equipment or to give "Tripped" indication to the Deluge valve. In addition to this a pressure switch can also monitor "Low air pressure" and "Fire condition" when used in dry pilot air line.

e) **TEST AND ALARM TRIM WITH SPRINKLER ALARM**

This trim is supplied with the sprinkler alarm bell, which bells on actuation of the Deluge valve. A test valve is provided to test the normal operation of the sprinkler alarm bell.

RESETTING PROCEDURE FOR THE DELUGE VALVE

- (i) Close the upstream side stop valve provided below the deluge valve.
- (ii) Open both the drain valves and close when the flow of water has ceased.
- (iii) Close the release device/replace the Sprinkler if release was through Sprinkler/Q.B.Detector.
- (iv) Inspect and release if required, or close the section of the detection system subjected to "Fire condition".
- (v) In case of dry pilot detection system, open the air supply valve to build-up air pressure. open the priming valve fully. Open the upstream side of the stop valve provided below the Deluge valve. No water should flow into the system.

Note : The valve can be reset without under going above procedure, by just closing / replacing the release device as valve is auto reset type. The reset time may be long or cause vibration while closing depending on backpressure at the outlet of the valve.

CAUTION

- (a) Do not close the priming valve, down stream and upstream stop valves, while the system is in service.
- (b) The releasing device must be maintained in the open position, when actuated, to prevent the deluge valve from closure.
- (c) While using a Deluge valve in the wet pilot system the height and the length of the wet pilot detection line is to be limited as shown in the wet pilot sprinkler height limitation graph.
- (d) Do not connect the Sprinkler Alarm outlet drainline to close a common drain as it may create back pressure and Sprinkler Alarm may not function.
- (e) Deluge valve must have support to absorb sudden opening or closing vibration shock to the piping.
- (f) The responsibility of maintenance of the protection system and devices in proper operating condition lies with the owner of the system.

SYSTEM TESTING PROCEDURE

- (i) Keep the upstream side of the stop valve partially open. To avoid water flow to system side close the system side stop valve. This valve is to be kept in open position after the testing is completed.
- (ii) Let any of the release devices to trip. This will result in a sudden drop of water pressure in the deluge valve top chamber resulting the deluge valve to open. Close the upstream side stop valve immediately.
- (iii) Reset the valve as per the procedure given under heading "RESETTING PROCEDURE FOR THE DELUGE VALVE".

INSPECTION AND MAINTENANCE

Installed system piping network must be flushed properly before placing the Deluge valve in service. A qualified and trained person must commission the system. After few initial successful test an authorized person must be trained to perform inspection and testing of the system. It is recommended to have regular inspection and test run of the system as per NFPA guideline or in accordance to the organisation having local jurisdiction.

(i) WARNING

Inspection and testing is to be carried out only by authorised and trained personnel. **DO NOT TURN OFF** the water supply or close any valve to make repair(s) or test the valve, without placing a roving fire patrol in the area covered by the system. Also inform the local security personnel and central alarm station, so that there is no false alarm signal. It is recommended to carry out physical inspection of the system at least twice in a week. The inspection should verify that all the control valves are in proper position as per the system requirement and no damage has taken place to any component.

(ii) NORMAL CONDITION

- (a) All main valves are open and are sealed with tamper proof seal.
- (b) Drain valves must be kept closed.
- (c) No leak or drip is detected from the drip valve.
- (d) All the gauges except the system side water pressure gauge, should show the required pressure.
- (e) There should be no leakage in the system.

(iii) NORMAL CONDITION TEST

- (a) The system should be checked for normal condition at least once in a week.
- (b) Test the sprinkler alarm bell or electric alarm by turning the alarm test valve to the test position. The alarm should sound. This test should be carried out at least once in a week.
- (c) Depress the drip valve knob. Significant water accumulation indicates a possible seat leakage.
- (d) Conduct the water flow test as per the procedure of system testing at least once in a month.

(iv) PERIODIC CHECK

Conduct the water flow test by actuating few of the release devices provided in the system. Clean all strainer(s) and priming line restriction. This test is to be carried out at least once in three months.

ABNORMAL CONDITION

(i) ALARM FAILS TO SOUND

- (a) Check for any obstruction in the alarm test line, make certain that the sprinkler alarm is free to operate.
- (b) If an electric alarm is provided, check the electrical circuitry to the alarm.

(ii) FALSE TRIPS

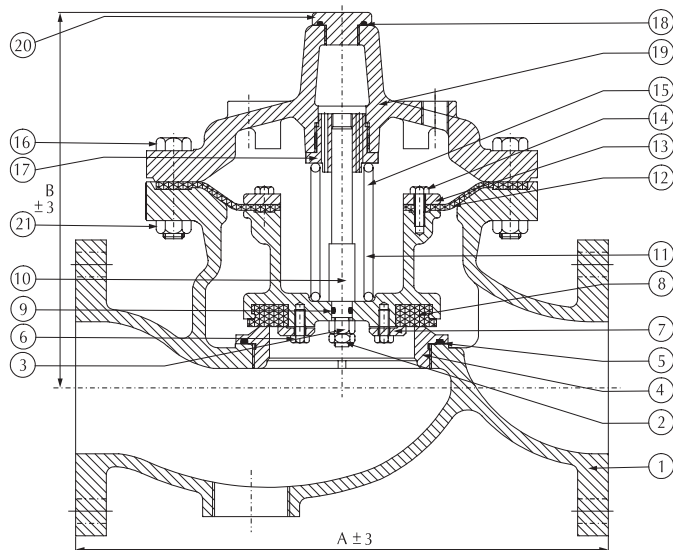
- (a) Check the priming valve, clogged priming line, restriction orifice check valve or strainer.
- (b) Leakage in the release system.
- (c) The deluge air panel orifice clogged or low supply pressure.

(iii) LEAKAGE THROUGH THE DELUGE VALVE

- (a) Damaged deluge valve seat or obstruction on the seat face by foreign object.
- (b) Leakage in release system.
- (c) Partly clogged priming line restriction orifice check valve.
- (d) Low air pressure on release system line or leakage in release system.



Shield - Deluge Valve SD-H



DIMENSION in millimeter (Approximate)

VALVE NOMINAL SIZE	'A'	'B'
150NB	462	331
100 NB	412	290
80 NB	372	272

PART LIST

ITEM	PART NO.			DESCRIPTION	QTY			MATERIAL SPECIFICATION
	150 NB	100 NB	80 NB		150 NB	100 NB	80 NB	
1	2421	2501	2781	Housing	1	1	1	Cast Steel/ASTM A216 GR WCB
2	9147	9147	9147	Lock Nut	1	1	1	Stainless Steel 304
3	9135	9135	9135	Hex Unit	1	1	1	Stainless Steel 304
4	2426	2506	2785	Seat	1	1	1	Bronze IS: 318 LTB-II/ASTM B62
5	9783	9784	9781	"O" Ring	1	1	1	Neoprene Rubber
6	9112	9112	-	Hex Head Bolt	4	4	-	Stainless Steel 304
7	2425	2505	2789	Rubber Clamp	1	1	1	Bronze IS:318 LTB-II/STM B62
8	2428	2508	2787	Rubber Seat	1	1	1	Neoprene Rubber
9	9986	9986	9986	"O" Ring	1	1	1	Neoprene Rubber
10	2432	2511	2791	Spindle	1	1	1	S.S. 304/ASTM A276 Type-304
11	2423	2503	2784	Clapper	1	1	1	Bronze IS:318 LTB-II/ASTM B62
12	2427	2507	2786	Diaphragm	1	1	1	Neoprene Rubber
13	2424	2504	2728	Clamp Ring	1	1	1	Bronze IS:318 LTB-II/ASTM B62
14	9151	9151	9151	Hex Head Bolt	8	8	8	Stainless Steel 304
15	2433	2512	2792	Spring	1	1	1	Stainless Steel 316
16	9047	9047	9058	Hex Head Bolt	12	12	12	IS:1363/STEEL ISO 4018 (Galvanised)
17	2431	2510	2793	Spindle Adaptor	1	1	1	Brass IS:319-1/ASTM B16
18	9787	9788	9982	"O" Ring	1	1	1	Neoprene Rubber
19	2429	2509	2783	Cover	1	1	1	Cast Steel/ASTM A216 GR WCB
20	2514	2514	2514	Plug	1	1	1	Steel Plated
21	9019	9019	9018	Hex Nut	12	12	12	IS:1363/Steel IS: 4018 (Galvanised)

