# VERTICAL BLADDER TANK PRE-PIPED

## DESCRIPTION

NAFFCO Pre-piped Vertical Bladder Tank is a complete selfcontained proportioning system consisting of a bladder tank, ratio controller, and assembled piping. It is designed to inject foam concentrate into the water supply of a fire protection system and automatically proportions over a wide range of flow and pressures without the use of external power supply.

NAFFCO Pre-piped Vertical Bladder Tank utilize water supply to pressurize the bladder and force the foam concentrate into the ratio controller. Once the system is in operation, water supply simultaneously feeds the bladder tank and ratio controller. The water applied to the outside surface of the bladder will subsequently displace the foam concentrate contained inside the bladder through the foam outlet pipe and into the metering orifice of the ratio controller. The water flowing through the ratio controller will create a low-pressure area between its inlet nozzle and to its downs stream section. The low-pressure causes the foam concentrate to flow proportionately to the water flow through the metering orifice. This ensures correct proportioning of the foam concentrate and water over a wide range of flow conditions.

## TECHNICAL SPECIFICATIONS

NAFFCO Pre-piped Vertical Bladder Tank is designed and constructed in accordance to ASME code section VIII for unfired pressured vessels. The rated working pressure of the tank is 175 PSI (12.1 bar) and tested to at least 227 PSI (15.69 bar)

The tanks are fabricated to nominal capacity and overall dimension are indicated in corresponding data sheet. The tank shall be constructed of steel complying with ASME code having a Tensile strength of not less than 70000PSI (4827 bar). The tank contain a flexible bladder manufactured of vinyl based polymer as per ASTM D-412 with a Tensile strength of at lest 3000PSI and ASTM D-624 with tear strength of at least 420lbs/in.

Each tank has perforated PVC schedule 80 center discharge piping located within the bladder to ensure that the foam concentrate flow to the bottom discharge. A section of 1 inch diameter rubber hose installed between the bladder and tank shell which extend from the water vent to the water drain connection to prevent bladder obstruction at these openings. Bladder Tank with Ratio Controller:

The ratio controller (RC) is flanged style and is pre-piped to the bladder tank. The RC mounting is done using Schedule 40 pipe between two 150# flat flanges of the same nominal size as the RC. The RC is made of cast bronze or stainless steel and rated for a working pressure of 200 PSI (14 bar). A ¼" (6.35 mm) female NPT port for sensing water pressure at the inlet to the ratio controller water orifice is incorporated into the casting. Each ratio controller automatically proportion over the range indicated on flow range chart without any manual adjustment.

All external piping is schedule 40, and it is Stainless Steel for foam concentrate and carbon steel for water. Brass or bronze ball valve lever operated type will be supplied. A check valve is installed in the foam concentrate line. Tank include all necessary drain and vent valves, concentrate fill piping, and tank content/identification labels.

## FEATURES

- Require less space than foam pump skid
- Designed for maximum agent discharge
- Permanently welded lifting lugs for easy tank movement and positioning
- Tanks are Externally Red enamel coated and
- Internally Coal tar Epoxy coated.

## APPLICATION

- Storage Tank Protection (floating roof/Fixed roof)
- Bund areas
- Loading racks
- Foam-water sprinkler systems
- Offshore platforms
- Jetty port
- Aircraft Hangars
- Diesel Engine Generator Room
- Chemical Warehouse

## OPTIONS

- Paint color code/special finishes
- Piping material (S.S./Brass/Carbon steel)
- Coal tar epoxy coating the interior shell of the tank when use in salt-water environment
- Sight glass

## MODERN MANUFACTURING PROCESS

The circumferential as well as the longitudinal body seam are SMAW+SAW welded as per approved welding procedure in accordance with ASME codes. The interior weld joints are made smooth, cleaned, and free from sharp edge. The tank has flexible bladder constructed to suit inside tank dimensions.

## INSTALLATION, INSPECTION AND MAINTENANCE

An installation, inspection and maintenance manual is packed with each unit. The manual provides detail schematic, initial procedure, inspection and maintenance procedures. The instruction manual must be read carefully and followed during installation and commissioning of the system.

After few initial successful tests an authorized person must be trained to perform inspection and testing of the system. It is recommended to carry out physical inspection of the system regularly, the inspection should verify that no damages have taken place to any component and all the valves are in their proper position as per the system requirement. The system should be fully tested at least once in a year and in accordance with applicable NFPA code or in accordance to the guidelines of the organization having local jurisdiction.

Do not turn off the system or any valve to repair or test the system, without placing a roving Fire Patrol in the area covered by the system. The patrol should continue until the system is put back in service. Also inform the local security personnel and the control room so that a false alarm is not signaled.

## CAUTION

- Do not weld on the tank as it may damage the bladder fitted inside the tank.
- Release pressure before an inspection and maintenance of the system.
- Sight gauge is not pressure tight, so before taking concentrate level reading, tank pressure must be released.
- The bladder tank is to be installed under a shade to avoid direct sunlight on the equipment.
- While designing a foam system, step shall be taken to allow for removal of the internal centre tube(s). The centre tubes are full length and/or height of the bladder tank.
- ASME Code may require over pressure protection before pressurizing the system. NAFFCO does not supply an over pressure relief valve with the tanks. It shall be the owner's responsibility to provide over pressure protection for the tank in accordance to ASME Code.
- Foam concentrate filling procedure must be followed. Incorrect filling procedure may damage the bladder. NAFFCO product have limited warranty and incorrect fill procedure will void the warranty.

## NOTE

- The foam concentrate is to be filled in the bladder very carefully to avoid rupture of the bladder. The filling guidelines provided with the equipment must be strictly adhered.
- Air supply with regulator (0 to 1.0 kg/sq. cm) required during filling procedure, to be arranged by installer / user.
- Water supply at 0-1.5 kg/sq. cm required for tank filling during commissioning, to be arranged by installer / user.
- Concentrate fill pump need to be arranged by installer / user.
- A minimum length of 5 (five) times the pipe diameter of unobstructed straight pipeline should be provided at the inlet and outlet of the ratio controller, where pipe diameter is the nominal size of the ratio controller.

## MAINTENANCE MANUAL

A maintenance manual will be supplied with each tank. The manual will contain a system schematic installation instruction, concentrate filling procedure, inspection and maintenance procedure, sight gauge use instructions, and service repair procedure and field inspection.

***NOTE:** Listings, Approvals and/or Certifications for NAFFCO foam concentrate and/or equipment are valid only when used with other NAFFCO foam concentrates or equipment in a manner as outlined in the applicable Listing, Approval and/or Certification.*

## TECHNICAL INFORMATION

| | |
|---|---|
| **Tank Shell** | Carbon Steel, SA 516 Gr.70. |
| **Bladder** | Vinyl Based Polymer |
| **Pressure Relief Valve (Optional)** | Brass Construction with Set Pressure @ 15 bar |
| **Internal Piping** | Perforated PVC, sch. 80, |
| **Flanges** | ASTM A105, Class 150 |
| **Water Pipe** | Carbon Steel. sch. 40. |
| **Foam Pipes** | Stainless Steel. sch. 40. |
| **Vent/Drain/NRV Valves** | Brass/Bronze. |
| **Sight Glass Valve** | Sight Gauge with Shut Off & Drain Valve |
| **Painting External** | Zinc Rich Primer with Red Enamel Finish |
| **Painting Internal** | Zinc Rich Primer with Coal Tar Epoxy Paint |

## DESIGN DATA

| | |
|---|---|
| **Tank mounting** | Vertical |
| **Concentrate Storage Capacity** | 50-1200 Gallon (see tables) |
| **Flow Range** | 78 - 9500 LPM |
| **Foam Concentrate** | AFFF 3%,6% |
| **Design Pressure** | 175PSI (12.09 bar) |
| **Test Pressure** | 227PSI (15.69 bar) |
| **Ratio Controller Size** | 2½",3", 4" & 6" |
| **Storage Temperature** | +2°C - +49°C |
| **Foam Concentrate Proportioning Orifice** | 3%, 6% |

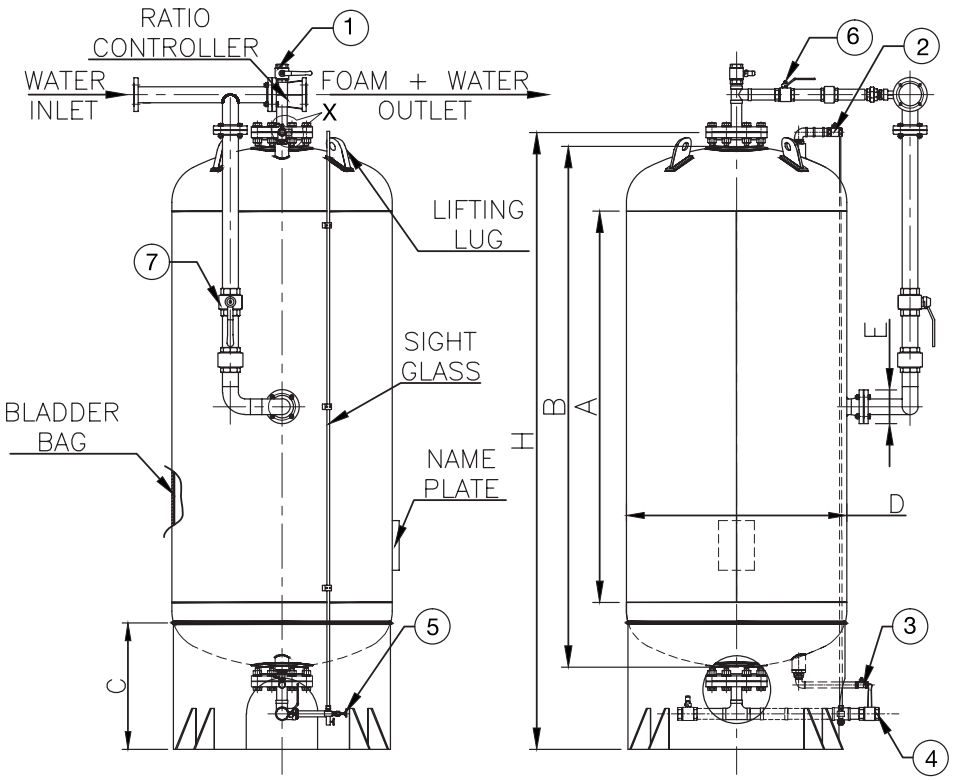
***NOTE:** The UL listing does not include Proportioning of 6% Foam Concentrate and 2½" Ratio Controller.*

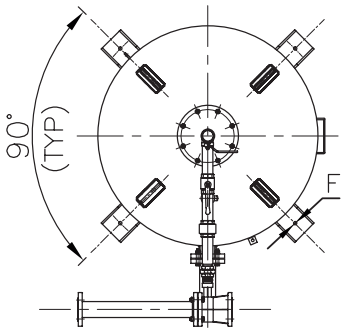
## RATIO CONTROLLER DETAILS

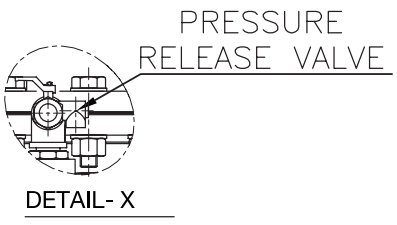
| **SIZE** | **INLET / OUTLET FLANGE** | **LENGTH** (mm) | **ORIFICE DIA.** *(mm)* | |
|---|---|---|---|---|
| | | | 3% | 6% |
| 65NB | ANSI CLASS 150 | 190 | 6.9 | 9.5 |
| 80NB | | 266 | 10.7 | 15.04 |
| 100NB | | 332 | 15.7 | 21 |
| 150NB | | 342 | 28.7 | 44.5 |

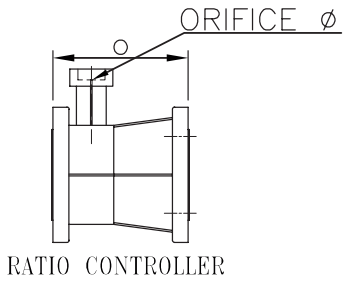
## RATIO CONTROLLER SIZE & FLOW RATE

| **SIZE** | **FLOW RATE , 3%** *(as per UL)* | **FLOW RATE , 3%** *(as per FM)* | **FLOW RATE, 6%** *(as per FM)* |
|---|---|---|---|
| 65NB | 100 - 1550 LPM | 78 - 1036 LPM | 159 - 984 LPM |
| 80NB | 260 - 3000 LPM | 270 - 3000 LPM | 270 - 3000 LPM |
| 100NB | 650 - 6000 LPM | 660 - 5750 LPM | 633 - 3922 LPM |
| 150NB | 1200 - 12000 LPM | 1090 - 9530 LPM | 674 - 4012 LPM |




## VALVE TYPE & POSITION

| No. | DESCRIPTION | NORMAL POSITION |
|---|---|---|
| 1 | Concentrate Vent/Fill | Closed |
| 2 | Tank Water Vent | Closed |
| 3 | Water Drain/Fill | Closed |
| 4 | Concentrate Drain/Fill | Closed |
| 5 | Sight Glass Valve | Closed |
| 6 | Concentrate Outlet | Open |
| 7 | Water Inlet | Open |
| 8 | Hydraulic Operated Foam Concentrate Controller | Closed |

***NOTE:** Hydraulic Operated Foam Concentrate Controller is an optional supply only with FM Approved Model.*

## DIMENSIONAL DATA

| BLADDER TANK CAPACITY *(GLN)* | A *(mm)* | B *(mm)* | C *(mm)* | D *(mm)* Outside Dia. | E *(Inlet Flange to Tank)* | F | H *(mm)* | Wall Thickness |
|---|---|---|---|---|---|---|---|---|
| 50 | 900 | 1276 | 420 | 536 | 3" | 4 Holes Ø19, PCD 690 | 1665 | 8 |
| 100 | 1145 | 1571 | 480 | 640 | 3" | 4 Holes Ø19, PCD 770 | 1985 | 8 |
| 150 | 1200 | 1728 | 510 | 840 | 3" | 4 Holes Ø19, PCD 980 | 2135 | 8 |
| 200 | 1200 | 1728 | 510 | 840 | 3" | 4 Holes Ø19, PCD 980 | 2135 | 8 |
| 300 | 1160 | 1788 | 565 | 1040 | 3" | 4 Holes Ø19, PCD 1190 | 2226 | 8 |
| 400 | 1400 | 2050 | 575 | 1083 | 3" | 4 Holes Ø19, PCD 1235 | 2475 | 8 |
| 500 | 1865 | 2515 | 575 | 1083 | 3" | 4 Holes Ø19, PCD 1235 | 2940 | 8 |
| 600 | 1650 | 2380 | 700 | 1239 | 3" | 4 Holes Ø19, PCD 1390 | 2910 | 10 |
| 700 | 1900 | 2680 | 700 | 1239 | 3" | 4 Holes Ø19, PCD 1390 | 3160 | 10 |
| 800 | 2200 | 2930 | 700 | 1239 | 3" | 4 Holes Ø19, PCD 1390 | 3460 | 10 |
| 900 | 1338 | 2258 | 940 | 1620 | 3" | 4 Holes Ø19, PCD 1750 | 2930 | 10 |
| 1000 | 1428 | 2348 | 940 | 1620 | 3" | 4 Holes Ø19, PCD 1750 | 3020 | 10 |
| 1100 | 1578 | 2498 | 940 | 1620 | 3" | 4 Holes Ø19, PCD 1750 | 3170 | 10 |
| 1200 | 1910 | 2830 | 940 | 1620 | 3" | 4 Holes Ø19, PCD 1750 | 3502 | 10 |

***NOTE:***

- *All dimensions are approximate and may vary.*
- *All tank and valve openings will be plugged for Shipping.*
- *Fill funnel and sight glass tube will be packed and shipped separately.*
- *Contents label will be supplied to customer by NAFFCO and applied by customer to area provided on caution label.*
- *When designing a building to house bladder tanks, provisions must be made to allow for the removal of the internal piping and bladder.*

# FILMPLUS NF3UL-C6 AFFF 3%

## FEATURES

- UL Listed Foam Liquid Concentrate
- Made from C6 based Fluorosurfactants
- Suitable for use with either fresh or salt water
- Suitable for use with both aspirating foam and standard water fog nozzles
- Suitable for use with deluge or closed head foam water sprinkler systems
- If inadvertently frozen, thawing will render product completely serviceable again
- Suitable for use with fiber glass, polyethylene or stainless steel. It is not compatible with galvanized pipe or fittings in an undiluted form
- Suitable for use with siliconized dry chemical extinguishing agents
- U. L. recommended minimum application rate on hydrocarbon type fuels is 0.10gpm/$ft^2$ .

## DESCRIPTION

**FILMPLUS NF3UL-C6 AFFF 3%** is a superior quality aqueous film forming foam which is designed to extinguish hydrocarbon fuel fires. It is formulated based on C6 fluorosurfactants which are safer to the environment.

AFFF foam concentrate are designed for rapid fire knockdown by producing a thin aqueous film which helps to prevent the release of fuel vapors. The foam blanket from which the film forming liquid drains separates oxygen from the fuel surface, extinguishes the fire and prevents re-ignition. The water content of the foam provides a cooling effect.

The aqueous film is produced by the fluorocarbon surfactant reducing the surface tension of the foam solution to a point where the solution can be supported by the surface tension of the fuel.

**FILMPLUS NF3UL-C6 AFFF 3%** provides excellent penetrating and wetting qualities when used on Class A fires. This is important when extinguishing deep seated fires in wood, paper, rubber and other ordinary combustibles.

## PROPORTIONING

**FILMPLUS NF3UL-C6 AFFF 3%** is designed for use with the following types of proportioning equipment.

- Fixed or portable in-line eductors
- In-line balanced pressure and pump pressure proportioning skid
- Bladder tank proportioning systems
- Handline, air-aspirating nozzles with fixed eductor pickup tube
- Around the pump proportioners

## DISCHARGE DEVICES

**FILMPLUS NF3UL-C6 AFFF 3%** is suitable for use with the following discharge devices.

- Foam chambers
- Air-aspirating and non air-aspirating sprinkler heads or spray nozzles
- Standard water fog nozzles for handlines and monitors
- Air-aspirating foam nozzles
- Foam makers for use with either floating roof storage tanks or dike/bund protection systems

## APPLICATIONS

**FILMPLUS NF3UL-C6 AFFF 3%** will provide quality protection for a wide range of hazardous areas such as:

- Crash fire rescue
- Storage tanks (non-polar solvent type fuels only)
- Truck/Rail loading or unloading facilities
- Processing/Storage facilities
- Docks/Marine tankers
- Flammable liquid containment area
- Mobile equipment

## TYPICAL SPECIFICATION

| | |
|---|---|
| **Product** | AFFF |
| **Use Concentration** | 3% |
| **Specific Gravity @ 20°C** | 1.02 ± 0.02 |
| **pH @ 20°C** | 8.0 ± 1.0 |
| **Viscosity @ 20°C** | < 5 cSt |
| **Pour Point** | Flows at 0°C |
| ***Foam Expansion** | >7 |
| ***Foam Drainage 25%** | 2 minutes min. |

**Expansion & Drainage values depend on the equipment & the application conditions*

## PERFORMANCE

The fire performance of **FILMPLUS NF3UL-C6 AFFF 3%** is measured against Underwriters Laboratories Standard UL 162-7th Edition.

## ENVIROMENTAL IMPACT

**FILMPLUS NF3UL-C6 AFFF 3%** is biodegradable, low in toxicity and can be treated in sewage treatment plants.

## STORAGE AND HANDLING

**FILMPLUS NF3UL-C6 AFFF 3%** may be stored in its shipping container without change in its original physical or chemical characteristics. Shelf life is expected to be 10 years or more when stored at recommended temperatures and in original containers or suitable storage tanks. It does not show significant sedimentation or precipitation in storage or after temperature cycling. Freezing and thawing have no effect on performance and the concentrate proportion satisfactorily in ordinary equipment at temperatures above +1.7°C

Synthetic foam concentrate should only be stored in stainless steel (Type 304L or 316), reinforced fiberglass polyester with a vinyl ester resin internal layer coating or plastic containers.

## ORDERING INFORMATION

**FILMPLUS NF3UL-C6 AFFF 3%** is available in 20 Liters Jerry Can (or) 200 Liters Drum. Other packing as per customer requirements can also be done.

- Part No. FILMPLUS NF3UL-C6 AFFF 3% - J 20L
- Part No. FILMPLUS NF3UL-C6 AFFF 3% - D 200L

## APPROVAL

UL (USA) Quality Standard UL 162

- Foam Quality Tests
- Class B Fire Test
- Foam Identification Tests
- Test of Shipping Containers

# OPEN SPRINKLER HEAD

## Model: NH 500

### APPLICATION

The Foam-Water Sprinklers are used in the deluge foam system to protect the risk where foam is required to be applied from overhead sprinklers and is to be followed with plain water in a standard sprinkler pattern.

Foam-Water Sprinklers protect the loading and unloading area in the event of a spill fire with low expansion foam systems. These are useful in other wide applications i.e. Air Craft Hangers, Warehousing

### SPECIFICATION

Foam-Water Sprinklers are open and air aspirating type. The pattern of coverage is similar to the conventional sprinkler head. The Foam-Water Sprinkler has standard orifice with K-factor of 42.

Foam-Water Sprinklers are designed to operate at a minimum of 2 bar pressure and maximum of 4.2 bar. The Foam-Water Sprinkler with K-42 will deliver about 61 LPM at 2 bar pressure. The standard coverage per Foam-Water Sprinkler is 9.3sq.m. (100 sq.ft.)

### SYSTEM DESIGN

The following are a few guidelines for minimum requirement of foam system design.

- Foam solution discharge rate : Area of hazard X application rate.
- Minimum foam solution application rate required as per NFPA is 6.5LPM/sq.m. for the floor area of hazard to be protected.

### INSTALLATION & MAINTENANCE

The Foam-Water Sprinkler must be handled with due care. For best results, the storage as well as any further shipment be made in original packing only. Foam-Water Sprinkler which is visibly damaged should not be installed. Use Teflon tape of soft thread sealant on male thread of the sprinkler.

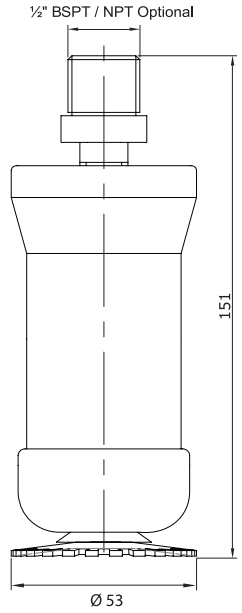
The sprinkler must be tightened in to fitting. Excessive tightening torque may result into serious damage to sprinkler arms and the deflector which may affect spray pattern of the nozzle and it's performance.

It is recommended that water foam spray system be inspected regularly by authorised technical personal. The nozzle must be checked for atmospheric effects, external and internal obstruction, blockage if any. The nozzles should be cleaned or replaced if required. The system must be operated with optimum water flow at least twice in a year or as per the provisions of NFPA or as per authority having jurisdiction. The owner is responsible for the testing, inspection and maintenance of the Foam-Water Sprinkler and system.

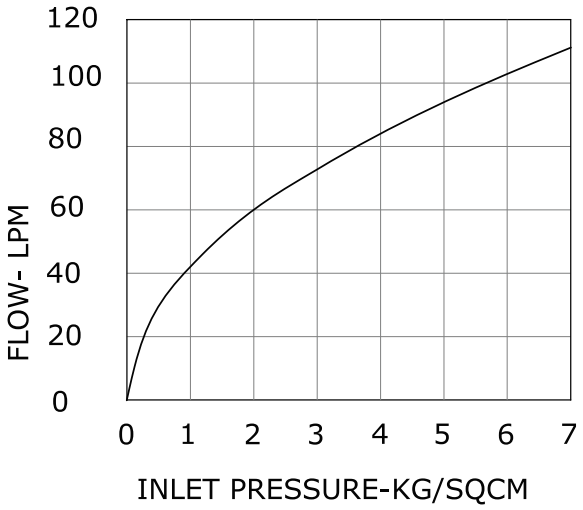

### TECHNICAL DATA

| | |
|---|---|
| **Material** | Brass |
| **Inlet Size** | ½" BSPT (½" NPT Optional) |
| **Working Pressure** | Max. 12 Bar (175 PSI) |
| **Mounting** | Pendent |
| **Operating Pressure** | 2.1 Bar (30 PSI) minimum<br>4.2 Bar (60 PSI) maximum |
| **K-Factor** | K42- standard<br>Other K-factor can be provided as optional without UL Listing |
| **Finish** | Natural |
| **Weight** | 0.460 Kg Approx |

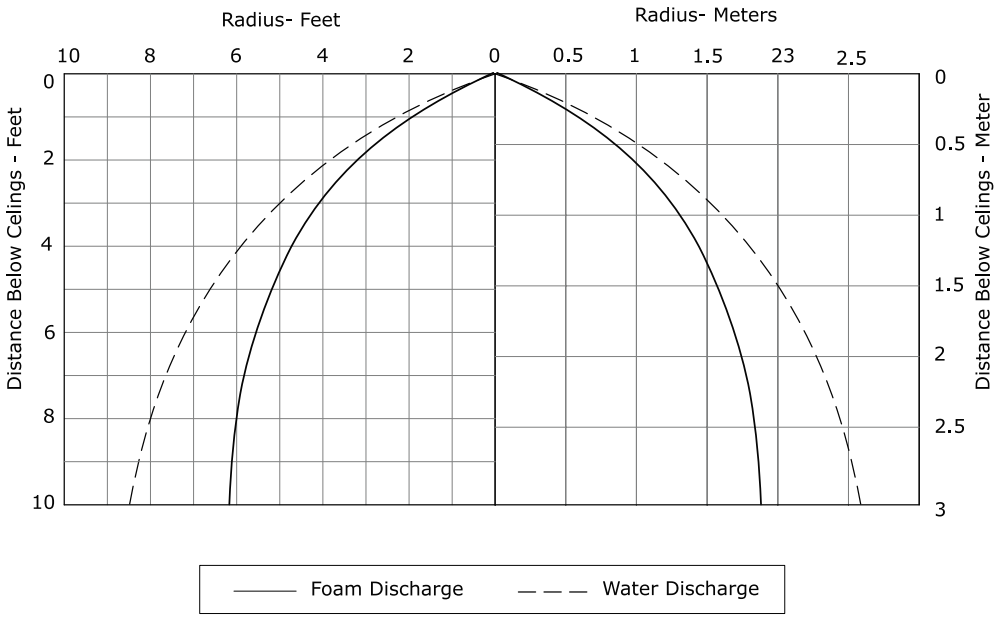
## DIMENSION




## PRESSURE VS FLOW PERFORMANCE CURVE




## DISCHARGE PATTERN



# DELUGE VALVE

## MODEL: SD-DVA

### TECHNICAL DATA :

| | |
|---|---|
| Nominal Size | 200, 150, 100, 80 & 50NB |
| Material | Cast Iron |
| Maximum Working Pressure | 12 Bar (175 Psi) |
| Threaded Opening | BSPT |
| Testing Pressure | 350 PSI |
| Mounting | 90° pattern inlet to outlet vertical mounting |
| Factory Hydrostatic Test Pressure | 25 Kg./sq.cm. (350 Psi) |
| Flange Connection | ANSI B 16.1 FF # 125 (Flange drilling matching to ANSI B 16.5 # 150) |
| Trim | Galvanized Steel with Brass Valves |
| Wet Pilot Sprinkler Height Limitation | As per graph in the catalogue |
| Net Weight without Trim | 200NB - 214 Kg<br>150NB - 131 Kg<br>100NB - 77 Kg<br>80NB - 50 Kg<br>50NB - 47 Kg |
| Finish | Red RAL 3000 |
| Ordering Information | Specify:<br>1) Size of valve<br>2) Trim type - Dry PilotWet Pilot Electric Release Test & Alarm |

### DESCRIPTION

Deluge Valve is known as a system control valve in a deluge system, used for fast application of water in a spray system. Deluge valve protects areas such as power transformer installation, storage tank, conveyor protection and other industrial application etc. With the addition of foaming agent deluge valve can be used to protect aircraft hangar and inflammable liquid fire.

### VALVE OPERATION

Deluge valve is a quick release, hydraulically operated diaphragm 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 acts across the diaphragm operated clapper which holds the seat against the inlet supply pressure because of differential pressure design.

On detection of fire the top chamber is vented to atmosphere through the outlet port via opened actuation device(s). The top chamber pressure cannot be replenished through the restricted inlet port, thus it reaches less than half the supply pressure instantaneously and the upward force of the supply pressure lifts the clapper allowing water to enter the system piping network and alarm devices.

### TRIM DESCRIPTION

a) BASIC TRIM

The basic trim is required on deluge valve regardless of the release system. It contain those components which are required in all types of installation, such as the main drain valve, priming connection, drip check valve, emergency release valve and pressure gauges.

b) DRY PILOT TRIM (PNEUMATIC RELEASE)

Dry pilot operation uses a pilot line of closed Sprinklers / QB detectors 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 pilot line is connected directly to the top of Positive Drain Actuator (PDA). The bottom of PDA is connected to the top chamber of the deluge valve. When the air pressure drops, due to release of any of the release devices on detection of fire, the diaphragm of PDA is lifted and allows the water to drain. This reduces the water pressure in the top chamber of the deluge valve and when the pressure in the top chamber reaches 50% of the supply pressure, the deluge valve opens.

The direct drain of PDA starts when the top chamber pressure of deluge valve reaches approximately 0.7 Kg/sq.cm. This positive drain will not permit the deluge valve to close unless the PDA is set manually. The recommended air supply pressure is as per below table.

| LINE WATER PRESSURE Kg./ Sq.cm. MAXIMUM | AIR PRESSURE IN DETECTION LINE Kg./ Sq.cm. | |
|---|---|---|
| | MINIMUM | MAXIMUM |
| 2 | 1.2 | 3.0 |
| 4 | 1.5 | 3.0 |
| 6 | 2.0 | 3.5 |
| 8 | 2.5 | 3.5 |
| 10 | 3.0 | 3.5 |
| 12 | 3.5 | 4.0 |

c) WET PILOT TRIM (HYDRAULIC RELEASE)

Wet pilot operation uses a pilot line of closed sprinklers containing pressurised 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 of any one of the release devices, the water pressure in the top chamber of the deluge valve reaches 50% of the supply pressure, the deluge valve opens.

## CAUTION

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 given in the wet pilot sprinkler height limitation graph.

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 panel.

In addition to this two nos of pressure switches can be used to monitor “Low air pressure” and “Fire condition” when used in dry pilot airline.

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.

Note: Trim without Test and Alarm trim, without Drain & drip valve can be supplied for which please contact marketing.

## RESETTING PROCEDURE

1. Close the upstream side stop valve provide below the deluge valve.
2. Open both the drain valves and close them when the flow of water has ceased.
3. Inspect and release if required, or close the section of the detection system subjected to “Fire condition”.
4. In case of dry pilot detection system, open the air supply valve to build-up air pressure as shown in TABLE-1. Open the priming valve fully and press hold the knob of PDA till the water pressure gauge indicate full service line pressure and then release the PDA knob. Open the upstream side of the stop valve provided below the deluge valve. No water should flow into the system, this can be checked by depressing the drip check valve knob.

## CAUTION

- Do not close the priming valve, downstream and upstream stop valves, while the system is in service.
- The releasing device must be maintained in the open position, when actuated, to prevent the deluge valve from closure.
- 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 limitation graph.
- Do not connect the Sprinkler Alarm outlet drain line to close a common drain as it may create back pressure and Sprinkler Alarm may not function.
- Deluge valve must have support to absorb sudden opening or closing vibration shock to the piping.
- The responsibility of maintenance of the protection system and devices in proper operating condition lies with the owner of the system.
- Deluge Valve & its trim shall be maintained at a minimum temperature of 4°C, Heat tracing is not permitted.
- Deluge Valve must be used in pressurised system

## SYSTEM TESTING PROCEDURE

1. Keep the upstream side of the stop valve partially open. Open the upstream side of the drain valve, to maintain a minimum pressure of 3 Kg./sq. cm on the upstream side of the deluge valve. To avoid water damage close the system side stop valve. This valve is to be kept in open position after the testing is completed.
2. Open the system side drain valve of the deluge valve.
3. 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. The water flowing through the downstream side drain valve confirms that the deluge valve has actuated, immediately close the upstream side stop valve.

4. Once testing is over reset the valve as per procedure given under heading "RESETTING PROCEDURE FOR THE DELUGE VALVE".

## INSPECTION AND MAINTENANCE

All the newly 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 tests an authorised person must be trained to perform inspection and testing of the system. It is recommended to have regular inspection and test run the system as per NFPA guidelines or in accordance with the guideline laid down by 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 protected by the system. Also inform the local security personnel and central alarm station, so that a false alarm is not signaled. 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

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

### (iii) NORMAL CONDITION TEST

- The system should be checked for normal condition at least once a month.
- 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.
- Depress the drip valve knob. Significant water accumulation indicates a possible seat leakage.
- 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 six months.

## ABNORMAL CONDITION

### (i) ALARM FAILS TO SOUND

- Check for any obstruction in the alarm test line, Ensure that the sprinkler alarm is freely operating.
- If an electric alarm is provided, check the electrical circuitry to the alarm.

### (ii) FALSE TRIPS

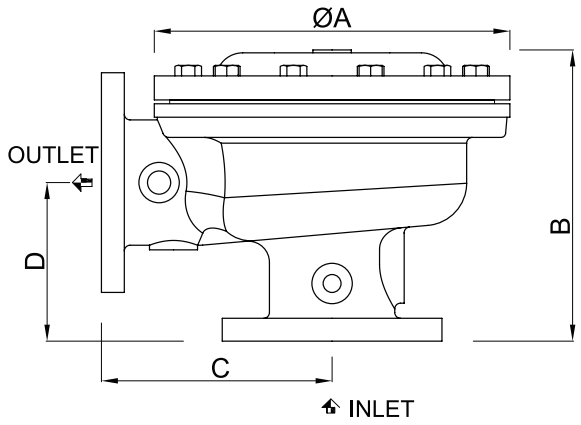
- Check for clogging in priming line, restriction orifice check valve, priming valve & strainer.
- Leakage in the release system.
- The deluge air panel orifice clogged or low supply pressure.

### (iii) LEAKAGE THROUGH THE DELUGE VALVE

- Damaged deluge valve seat or obstruction on the seat face by foreign object.
- Leakage in release system.
- Partly clogged priming line, restriction check valve.
- Low air pressure on system line or leakage in release system.
- PDA seat leakage due to seat damage or obstruction on seat face by foreign objects (in dry pilot system only)
- Leakage through bypass valve if installed in the system.

### NOTE:

- UL Listing is valid only when Deluge Valve is installed with trim set as per trim drawing.
- The trip time of deluge valve on of device through detection network, will depend on volume of detection network. If the trip time of deluge valve is more, then it can be substantially reduced by installing check valve in branch of release line in the detection network. The check valve flow shall be towards releasing device.
- The pneumatic system must have restricted orifice at air or gas supply point. The restriction nozzle are supplied with dry pilot actuation trim.
- The Solenoid Valve provided for electric operation of the deluge valve and all released device must have minimum of 9.5mm orifice diameter, otherwise the deluge valve trip time will be quite high or deluge valve may not trip.




## DIMENSIONS

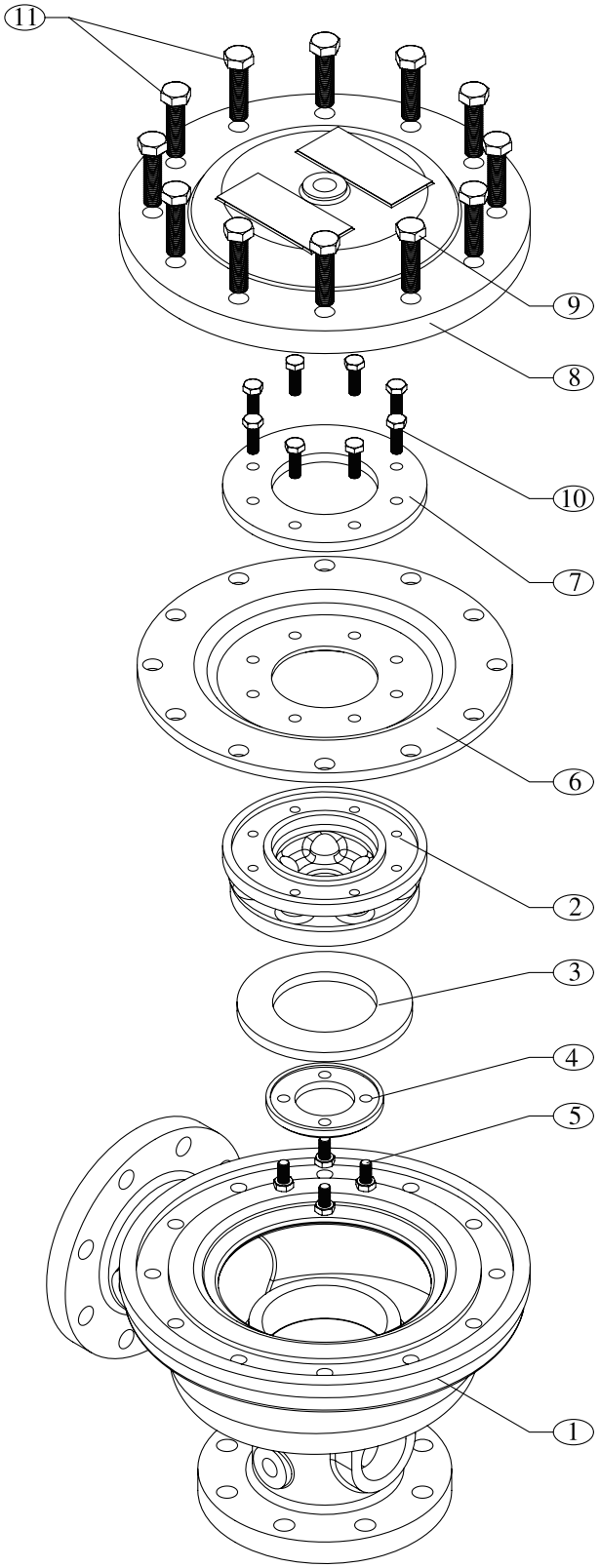
| SIZE | A | B | C | D |
|---|---|---|---|---|
| 200 NB | 540 | 455 | 330 | 230 |
| 150 NB | 464 | 382 | 300 | 200 |
| 100 NB | 370 | 304 | 240 | 165 |
| 80 NB | 316 | 272 | 210 | 135 |
| 50 NB | 316 | 272 | 210 | 135 |

## DELUGE VALVE PART LIST

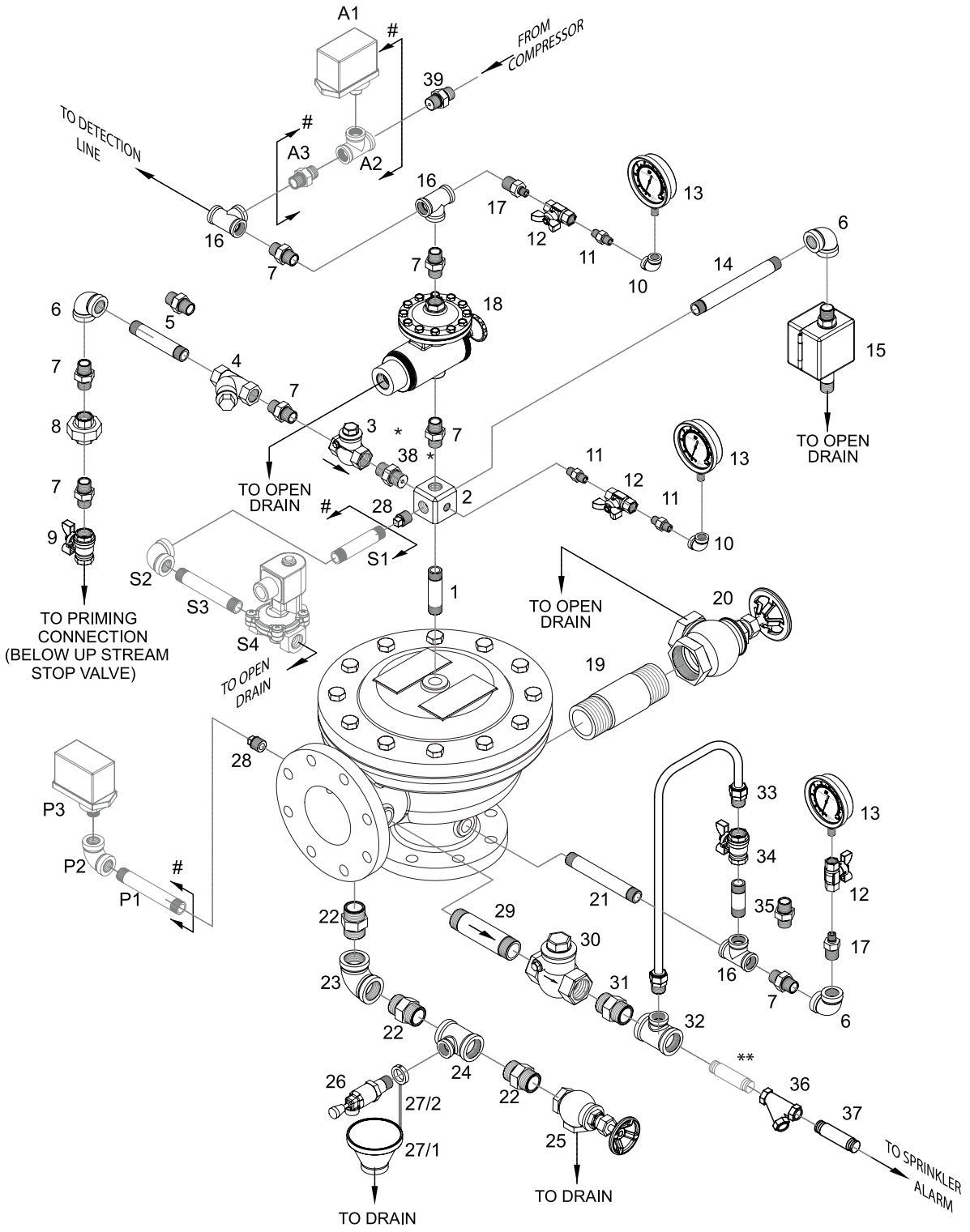
| ITEM | PART NO. | | | | | DESCRIPTION | QTY. | | | | | MATERIAL SPECIFICATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 200 NB | 150 NB | 100 NB | 80 NB | 50 NB | | 200 NB | 150 NB | 100 NB | 80 NB | 50 NB | |
| 1 | NA | NA | NA | NA | NA | Housing | 1 | 1 | 1 | 1 | 1 | Cast Iron |
| 2 | A2002 | A1502 | A1002 | A8002 | A5002 | Clapper | 1 | 1 | 1 | 1 | 1 | Ductile Iron |
| 3 | A2003 | A1503 | A1003 | A8003 | A5003 | Rubber Seat | 1 | 1 | 1 | 1 | 1 | Neoprene Rubber |
| 4 | A2004 | A1504 | A1004 | A8004 | A5004 | Rubber Clamp | 1 | 1 | 1 | 1 | 1 | Ductile Iron* |
| 5 | A2005 | A1505 | A1005 | A8005 | A5005 | Bolt (M10X20) | 6 | 4 | 4 | 3 | 3 | Stainless Steel |
| 6 | A2006 | A1506 | A1006 | A8006 | A5006 | Diaphragm | 1 | 1 | 1 | 1 | 1 | Neoprene Rubber |
| 7 | A2007 | A1507 | A1007 | A8007 | A5007 | Clamp Ring | 1 | 1 | 1 | 1 | 1 | Ductile Iron* |
| 8 | NA | NA | NA | NA | NA | Cover | 1 | 1 | 1 | 1 | 1 | Cast Iron |
| 9 | A2009 | A1509 | --- | ---- | --- | Bolt (M20X70) | 14 | 14 | --- | --- | --- | Carbon Steel |
| | --- | --- | A1009 | --- | --- | Bolt (M16x60) | --- | --- | 10 | --- | --- | Carbon Steel |
| | --- | --- | --- | A8009 | A5009 | Bolt (M16X55) | --- | --- | --- | 10 | 12 | Carbon Steel |
| 10 | A2010 | A1510 | A1010 | A8010 | A5010 | Bolt (M10X30) | 12 | 12 | 8 | 8 | 8 | Stainless Steel |
| 11 | A2011 | A1511 | --- | --- | --- | Bolt (M20X50) | 2 | 2 | --- | --- | --- | Carbon Steel |
| | --- | --- | A1011 | --- | --- | Bolt (M16X50) | --- | --- | 2 | --- | --- | Carbon Steel |
| | --- | --- | --- | A8011 | --- | Bolt (M16X45) | --- | --- | --- | 2 | --- | Carbon Steel |

NA- Parts replacement not available.
* Ductile Iron is standard supply, bronze & stainless steel is optional supply.

## DELUGE VALVE MODEL - SD-DVA



## PNEUMATIC & ELECTRIC RELEASE TRIM WITH TEST & ALARM TRIM FOR DELUGE VALVE




Note: When electric trim is supplied then Sl.No. 28 Plug not required.
# Electric Trim optional.
** Suit at site by installer.
* Supplied fitted together.

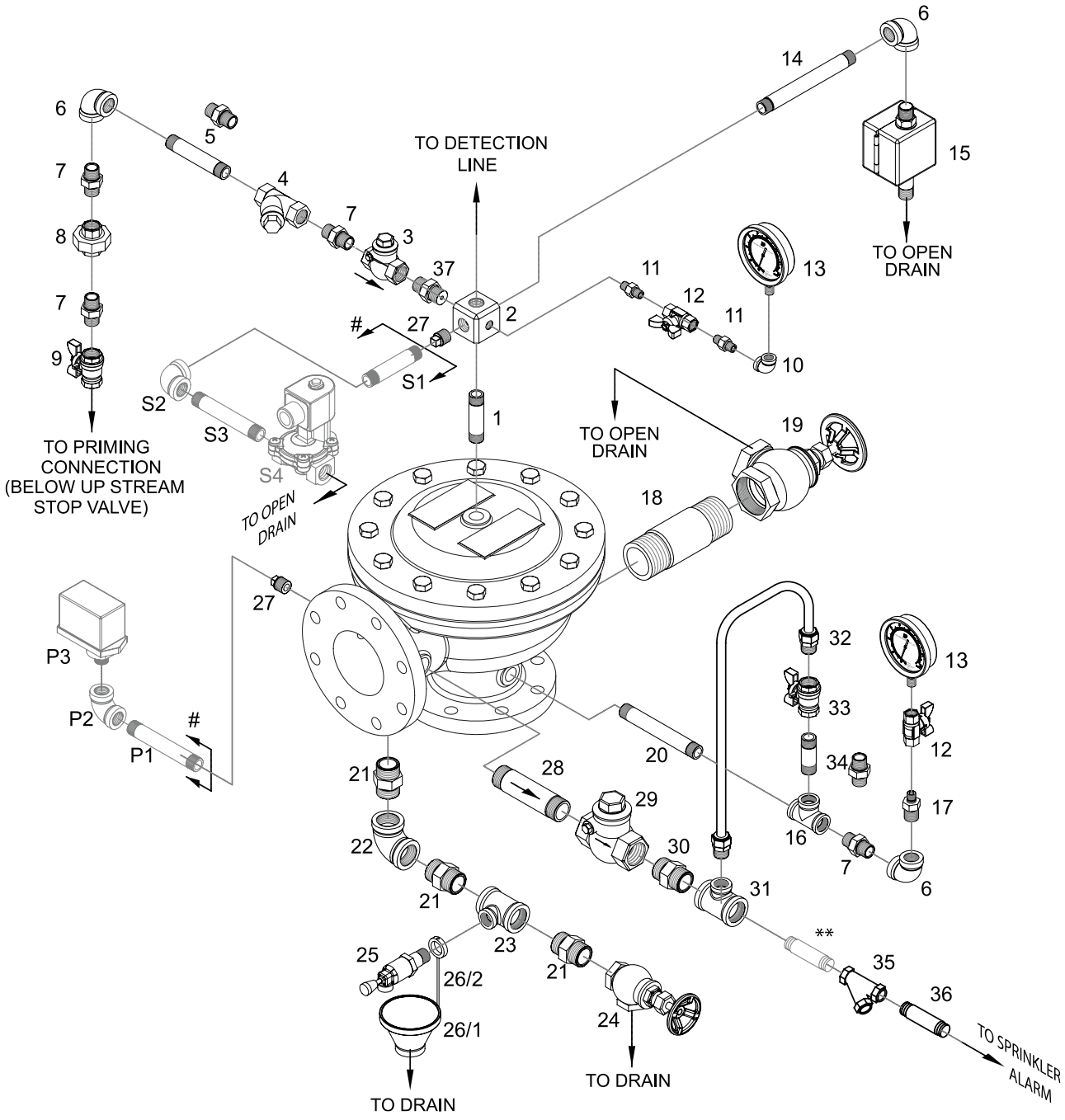
## PNEUMATIC & ELECTRIC RELEASE TRIM WITH TEST & ALARM TRIM FOR DELUGE VALVE

| ITEM NO. | CODE NO. | DESCRIPTION | SIZE | QTY | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 200NB | 150 NB | 100 NB | 80 NB | 50 NB |
| 1 | A01 | Pipe Nipple | ½" X 80 mm Long | 1 | 1 | 1 | 1 | 1 |
| 2 | A02 | 6 Way Manifold | --- | 1 | 1 | 1 | 1 | 1 |
| 3 | A03 | Swing Check Valve* | ½" | 1 | 1 | 1 | 1 | 1 |
| 4 | A04 | Y Strainer | ½" | 1 | 1 | 1 | 1 | 1 |
| 5 | A05/1 | Pipe Nipple | ½" X 110 mm Long | 1 | 1 | ---- | ---- | ---- |
| 5 | A05/2 | Hex Nipple | ½" | --- | ---- | 1 | 1 | 1 |
| 6 | A06 | Elbow | ½" | 3 | 3 | 3 | 3 | 3 |
| 7 | A07 | Hex Nipple | ½" | 7 | 7 | 7 | 7 | 7 |
| 8 | A08 | Union | ½" | 1 | 1 | 1 | 1 | 1 |
| 9 | A09 | Ball Valve | ½" | 1 | 1 | 1 | 1 | 1 |
| 10 | A10 | Elbow | ¼" | 2 | 2 | 2 | 2 | 2 |
| 11 | A11 | Hex Nipple | ¼" | 3 | 3 | 3 | 3 | 3 |
| 12 | A12 | Gauge Valve | ¼" | 3 | 3 | 3 | 3 | 3 |
| 13 | A13 | Pressure Gauge | ¼" | 3 | 3 | 3 | 3 | 3 |
| 14 | A14/1 | Pipe Nipple | ½" X 300 mm Long | 1 | ---- | ---- | ---- | ---- |
| 14 | A14/2 | Pipe Nipple | ½" X 255 mm Long | ---- | 1 | ---- | ---- | ---- |
| 14 | A14/3 | Pipe Nipple | ½" X 210 mm Long | ---- | ---- | 1 | ---- | ---- |
| 14 | A14/4 | Pipe Nipple | ½" X 180 mm Long | ---- | ---- | ---- | 1 | 1 |
| 15 | A15 | Emergency Release station | --- | 1 | 1 | 1 | 1 | 1 |
| 16 | A16 | Tee | ½" | 3 | 3 | 3 | 3 | 3 |
| 17 | A17 | Reducing Hex Nipple | ½" X ¼" | 2 | 2 | 2 | 2 | 2 |
| 18 | A18 | Positive Drain Actuator | --- | 1 | 1 | 1 | 1 | 1 |
| 19 | A19/1 | Pipe Nipple | 2" X 110 mm Long | 1 | 1 | 1 | --- | --- |
| 19 | A19/2 | Pipe Nipple | 1-¼" X 110 mm Long | --- | --- | --- | 1 | 1 |
| 20 | A20/1 | Angle Valve | 2" | 1 | 1 | 1 | --- | --- |
| 20 | A20/2 | Angle Valve | 1 -¼" | --- | --- | --- | 1 | 1 |
| 21 | A21/1 | Pipe Nipple | ½" X 150 mm Long | 1 | 1 | --- | --- | --- |
| 21 | A2½ | Pipe Nipple | 1//2" X 130 mm Long | --- | --- | 1 | 1 | 1 |
| 22 | A22/1 | Hex Nipple | 1" | 3 | 3 | 3 | --- | --- |
| 22 | A22/2 | Hex Nipple | ¾" | --- | --- | --- | 3 | 3 |
| 23 | A23/1 | Elbow | 1" | 1 | 1 | 1 | --- | --- |
| 23 | A23/2 | Elbow | ¾" | --- | --- | --- | 1 | 1 |
| 24 | A24/1 | Reducing Tee | 1" X ½" X 1" | 1 | 1 | 1 | --- | --- |
| 24 | A24/2 | Reducing Tee | ¾" x ½" X ¾" | --- | --- | --- | 1 | 1 |

* Supplied fitted together.

| ITEM NO. | CODE NO. | DESCRIPTION | SIZE | QTY | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 200NB | 150 NB | 100 NB | 80 NB | 50 NB |
| 25 | A25/1 | Angle Valve | 1” | 1 | 1 | 1 | --- | --- |
| 25 | A25/2 | Angle Valve | ¾” | --- | --- | --- | 1 | 1 |
| 26 | A26 | Drip Valve | ½” | 1 | 1 | 1 | 1 | 1 |
| 27/1 | A27/1 | Funnel | --- | 1 | 1 | 1 | 1 | 1 |
| 27/2 | A27/2 | Funnel Holder | --- | 1 | 1 | 1 | 1 | 1 |
| 28 | A28 | Plug | ½” | 2 | 2 | 2 | 2 | 2 |
| 29 | A29 | Pipe Nipple | ¾” X 100 mm Long | 1 | 1 | 1 | 1 | 1 |
| 30 | A30 | Swing Check Valve | ¾” | 1 | 1 | 1 | 1 | 1 |
| 31 | A31 | Hex Nipple | ¾” | 1 | 1 | 1 | 1 | 1 |
| 32 | A32 | Reducing Tee | ¾” X ½” X ¾” | 1 | 1 | 1 | 1 | 1 |
| 33 | A33/1 | Copper Tube Assembly | ½” | 1 | --- | --- | --- | --- |
| 33 | A33/2 | Copper Tube Assembly | ½” | --- | 1 | --- | --- | --- |
| 33 | A33/3 | Copper Tube Assembly | ½” | --- | --- | 1 | --- | --- |
| 33 | A3¾ | Copper Tube Assembly | ½” | --- | --- | --- | 1 | 1 |
| 34 | A34 | Ball Valve | ½” | 1 | 1 | 1 | 1 | 1 |
| 35 | A35/1 | Pipe Nipple | ½” X 80 mm Long | 1 | --- | --- | --- | --- |
| 35 | A35/2 | Hex Nipple | ½” | --- | 1 | 1 | 1 | 1 |
| 36 | A36 | Y Type Strainer | ¾” | 1 | 1 | 1 | 1 | 1 |
| 37 | A37 | Pipe Nipple | ¾” X 80 mm Long | 1 | 1 | 1 | 1 | 1 |
| 38 | A38 | Orifice Nozzle (Priming Line)* | ½” | 1 | 1 | 1 | 1 | 1 |
| 39 | A39 | Orifice Nozzle (Air Line) | ½” | 1 | 1 | 1 | 1 | 1 |
| Electric Trim for Pressure Switch (Optional) | | | | | | | | |
| P1 | A40 | Pipe Nipple | ½” X 135 mm Long | 1 | 1 | 1 | 1 | 1 |
| P2 | A41 | Elbow | ½” | 1 | 1 | 1 | 1 | 1 |
| P3 | A42 | Pressure Switch (DV Outlet) | ½” | 1 | 1 | 1 | 1 | 1 |
| A1 | A43 | Pressure Switch (Air Line) | ½” | 1 | 1 | 1 | 1 | 1 |
| A2 | A44 | Tee | ½” | 1 | 1 | 1 | 1 | 1 |
| A3 | A45 | Hex Nipple | ½” | 1 | 1 | 1 | 1 | 1 |
| Electric Trim for Solenoid Valve (Optional) | | | | | | | | |
| S1 | A46 | Pipe Nipple | ½” X 130 mm Long | 1 | 1 | 1 | --- | --- |
| S1 | A47 | Pipe Nipple | ½” X 130 mm Long | --- | --- | --- | 1 | 1 |
| S2 | A48 | Elbow | ½” | 1 | 1 | 1 | 1 | 1 |
| S3 | A49 | Pipe Nipple | ½” X 180 mm Long | 1 | 1 | 1 | --- | --- |
| S3 | A50 | Pipe Nipple | ½” X 135 mm Long | --- | --- | --- | 1 | 1 |
| S4 | A51 | Solenoid Valve | ½” Size, Two Way | 1 | 1 | 1 | 1 | 1 |

## HYDRAULIC & ELECTRIC RELEASE TRIM WITH TEST & ALARM TRIM FOR DELUGE VALVE



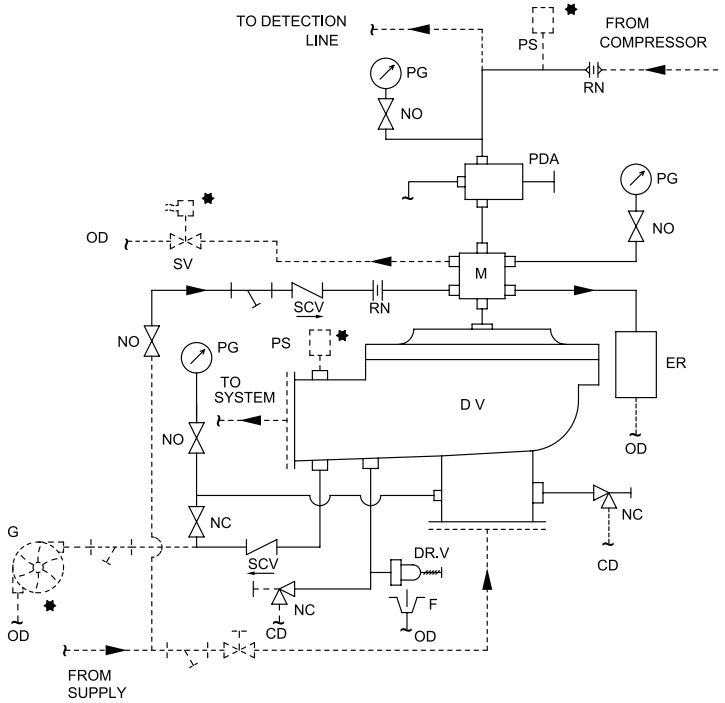

Note: When electric trim is supplied then Sl.No. 28 Plug not required.
# Electric Trim optional.
** Suit at site by installer.

## HYDRAULIC & ELECTRIC RELEASE TRIM WITH TEST & ALARM TRIM FOR DELUGE VALVE

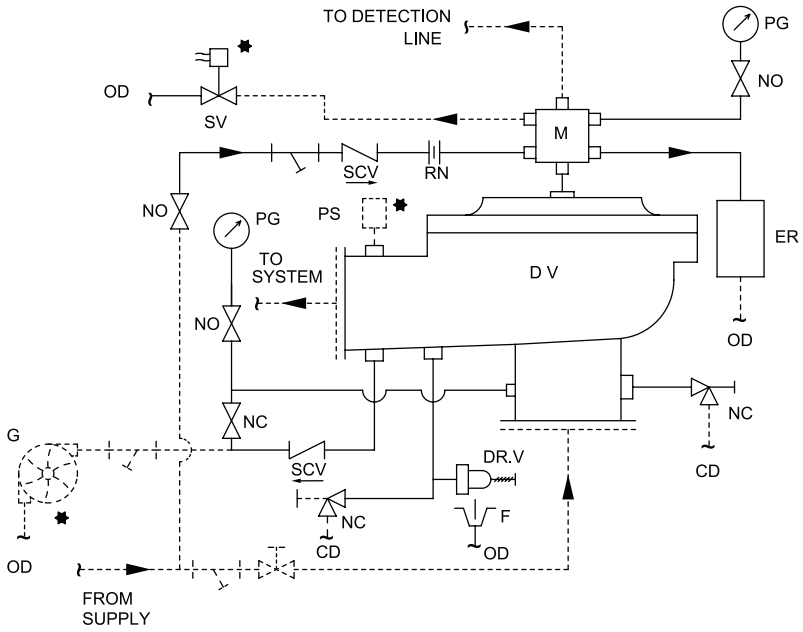
| ITEM NO. | CODE NO. | DESCRIPTION | SIZE | QTY | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 200NB | 150 NB | 100 NB | 80 NB | 50 NB |
| 1 | A01 | Pipe Nipple | ½" X 80 mm Long | 1 | 1 | 1 | 1 | 1 |
| 2 | A02 | 6 Way Manifold | --- | 1 | 1 | 1 | 1 | 1 |
| 3 | A03 | Swing Check Valve | ½" | 1 | 1 | 1 | 1 | 1 |
| 4 | A04 | Y Strainer | ½" | 1 | 1 | 1 | 1 | 1 |
| 5 | A05/1 | Pipe Nipple | ½" X 110 mm Long | 1 | 1 | ---- | ---- | ---- |
| 5 | A05/2 | Hex Nipple | ½" | --- | ---- | 1 | 1 | 1 |
| 6 | A06 | Elbow | ½" | 3 | 3 | 3 | 3 | 3 |
| 7 | A07 | Hex Nipple | ½" | 4 | 4 | 4 | 4 | 4 |
| 8 | A08t | Union | ½" | 1 | 1 | 1 | 1 | 1 |
| 9 | A09 | Ball Valve | ½" | 1 | 1 | 1 | 1 | 1 |
| 10 | A10 | Elbow | ¼" | 1 | 1 | 1 | 1 | 1 |
| 11 | A11 | Hex Nipple | ¼" | 2 | 2 | 2 | 2 | 2 |
| 12 | A12 | Gauge Valve | ¼" | 2 | 2 | 2 | 2 | 2 |
| 13 | A13 | Pressure Gauge | ¼" | 2 | 2 | 2 | 2 | 2 |
| 14 | A14/1 | Pipe Nipple | ½" X 300 mm Long | 1 | ---- | ---- | ---- | ---- |
| 14 | A14/2 | Pipe Nipple | ½" X 255 mm Long | ---- | 1 | ---- | ---- | ---- |
| 14 | A14/3 | Pipe Nipple | ½" X 210 mm Long | ---- | ---- | 1 | ---- | ---- |
| 14 | A14/4 | Pipe Nipple | ½" X 180 mm Long | ---- | ---- | ---- | 1 | 1 |
| 15 | A15 | Emergency Release station | --- | 1 | 1 | 1 | 1 | 1 |
| 16 | A16 | Tee | ½" | 1 | 1 | 1 | 1 | 1 |
| 17 | A17 | Reducing Hex Nipple | ½" X ¼" | 1 | 1 | 1 | 1 | 1 |
| 18 | A19/1 | Pipe Nipple | 2" X 110 mm Long | 1 | 1 | 1 | --- | --- |
| 18 | A19/2 | Pipe Nipple | 1 - ¼" X 110 mm Long | --- | --- | --- | 1 | 1 |
| 19 | A20/1 | Angle Valve | 2" | 1 | 1 | 1 | --- | --- |
| 19 | A20/2 | Angle Valve | 1 -¼" | --- | --- | --- | 1 | 1 |
| 20 | A21/1 | Pipe Nipple | ½" X 150 mm Long | 1 | 1 | --- | --- | --- |
| 20 | A2½ | Pipe Nipple | ½" X 130 mm Long | --- | --- | 1 | 1 | 1 |
| 21 | A22/1 | Hex Nipple | 1" | 3 | 3 | 3 | --- | --- |
| 21 | A22/2 | Hex Nipple | ¾" | --- | --- | --- | 3 | 3 |
| 22 | A23/1 | Elbow | 1" | 1 | 1 | 1 | --- | --- |
| 22 | A23/2 | Elbow | ¾" | --- | --- | --- | 1 | 1 |
| 23 | A24/1 | Reducing Tee | 1" X ½" X 1" | 1 | 1 | 1 | --- | --- |
| 23 | A24/2 | Reducing Tee | ¾" x ½" X ¾" | --- | --- | --- | 1 | 1 |
| 24 | A25/1 | Angle Valve | 1" | 1 | 1 | 1 | --- | --- |
| 24 | A25/2 | Angle Valve | ¾" | --- | --- | --- | 1 | 1 |
| 25 | A26 | Drip Valve | ½" | 1 | 1 | 1 | 1 | 1 |
| 26/1 | A27/1 | Funnel | --- | 1 | 1 | 1 | 1 | 1 |
| 26/2 | A27/2 | Funnel Holder | --- | 1 | 1 | 1 | 1 | 1 |
| 27 | A28 | Plug | ½" | 2 | 2 | 2 | 2 | 2 |
| 28 | A29 | Pipe Nipple | ¾" X 100 mm Long | 1 | 1 | 1 | 1 | 1 |

| ITEM NO. | CODE NO. | DESCRIPTION | SIZE | QTY | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 200 NB | 150 NB | 100 NB | 80 NB | 50 NB |
| 29 | A30 | Swing Check Valve | ¾” | 1 | 1 | 1 | 1 | 1 |
| 30 | A31 | Hex Nipple | ¾” | 1 | 1 | 1 | 1 | 1 |
| 31 | A32 | Reducing Tee | ¾” X ½” X ¾” | 1 | --- | 1 | 1 | 1 |
| 32 | A33/1 | Copper Tube Assembly | ½” | 1 | --- | --- | --- | --- |
| 32 | A33/2 | Copper Tube Assembly | ½” | --- | 1 | --- | --- | --- |
| 32 | A33/3 | Copper Tube Assembly | ½” | --- | --- | 1 | --- | --- |
| 32 | A3¾ | Copper Tube Assembly | ½” | --- | --- | --- | 1 | 1 |
| 33 | A34 | Ball Valve | ½” | 1 | 1 | 1 | 1 | 1 |
| 34 | A35/1 | Pipe Nipple | ½” X 80 mm Long | 1 | 1 | 1 | 1 | 1 |
| 34 | A35/2 | Hex Nipple | ½” | --- | 1 | 1 | 1 | 1 |
| 35 | A36 | Y Type Strainer | ¾” | 1 | 1 | 1 | 1 | 1 |
| 36 | A37 | Pipe Nipple | ¾” X 80 mm Long | 1 | 1 | 1 | 1 | 1 |
| 37 | A38 | Orifice Nozzle (Priming Line) | ½” | 1 | 1 | 1 | 1 | 1 |
| Electric Trim for Pressure Switch (Optional) | | | | | | | | |
| P1 | A40 | Pipe Nipple | ½” X 135 mm Long | 1 | 1 | 1 | 1 | 1 |
| P2 | A41 | Elbow | ½” | 1 | 1 | 1 | 1 | 1 |
| P3 | A42 | Pressure Switch (DV Outlet) | ½” (M) | 1 | 1 | 1 | 1 | 1 |
| Electric Trim for Solenoid Valve (Optional) | | | | | | | | |
| S1 | A46 | Pipe Nipple | ½” X 130 mm Long | 1 | 1 | 1 | --- | --- |
| S1 | A47 | Pipe Nipple | ½” X 130 mm Long | --- | --- | --- | 1 | 1 |
| S2 | A48 | Elbow | ½” | 1 | 1 | 1 | 1 | 1 |
| S3 | A49 | Pipe Nipple | ½” X 180 mm Long | 1 | 1 | 1 | --- | --- |
| S3 | A50 | Pipe Nipple | ½” X 135 mm Long | --- | --- | --- | 1 | 1 |
| S4 | A51 | Solenoid Valve | ½” Size, Two Way | 1 | 1 | 1 | 1 | 1 |

## ELECTRIC & PNEUMATIC RELEASE TRIM - SCHEMATIC



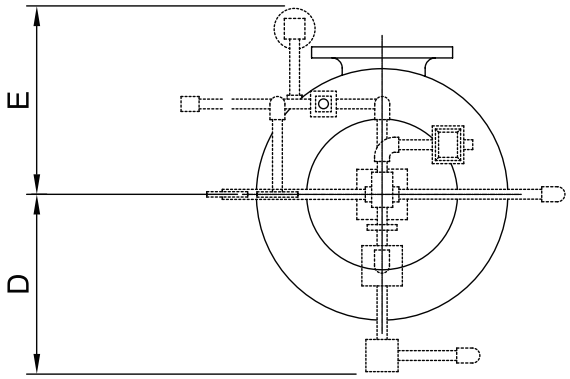
## ELECTRIC & HYDRAULIC RELEASE TRIM - SCHEMATIC

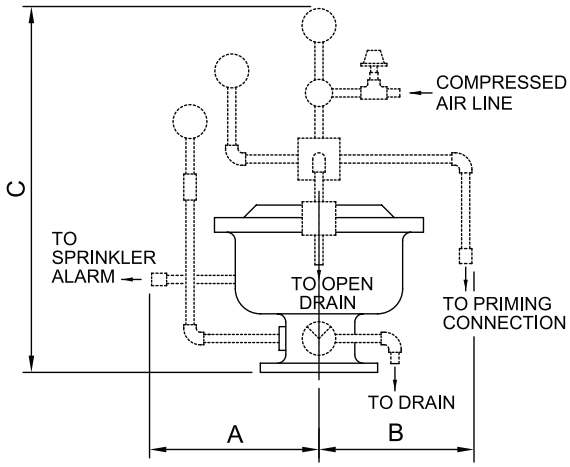



### Abbreviation & Symbols

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ⋈ | Valve | ⊿ | Angle Valve | PS | Pressure Switch | DRV | Drip Valve |
| NR | Non Return Valve | DV | Deluge Valve | ⋈ | Stop Valve | F | Funnel |
| ER | Emergency Release Box | | Optional | CD | Commen Drain | --- | By User |
| M | Six Way Manifold | ✸ | Sprinkler Alarm | SCV | Swing Check Valve | OD | Open Drain |
| RN | Restriction Nozzle | PG | Pressure Gauge | SV | Solenoid Valve | ⊢▽ | Strainer |
| PDA | Positive Drain Actuator | NO | Normally Open | NC | Normally Closed | | |

## PNEUMATIC AND ELECTRIC RELEASE TRIM

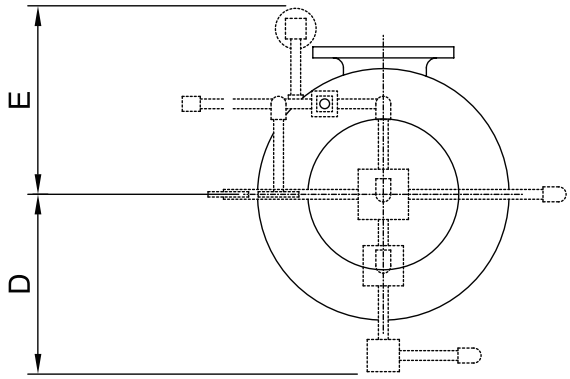


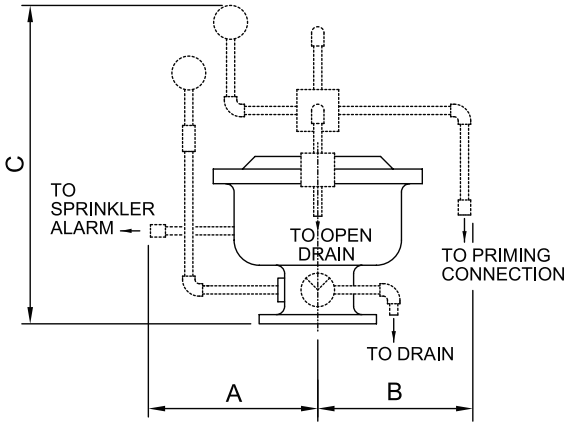




Installation measurement in mm.
(Approximate)

| SIZE | 200 NB | 150 NB | 100 NB | 80 NB | 50 NB |
|---|---|---|---|---|---|
| A | 390 | 370 | 370 | 350 | 350 |
| B | 525 | 500 | 450 | 450 | 450 |
| C | 1050 | 1025 | 950 | 930 | 930 |
| D | 510 | 500 | 450 | 450 | 450 |
| E | 500 | 480 | 420 | 410 | 410 |

## HYDRAULIC AND ELECTRIC RELEASE TRIM

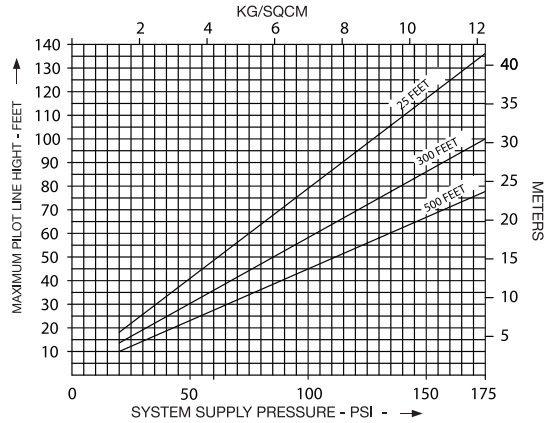


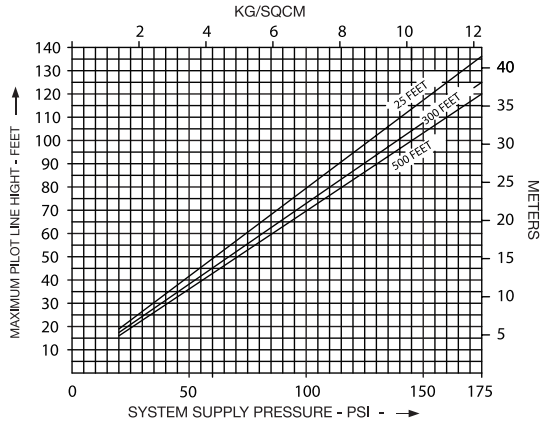

Installation measurement in mm.
(Approximate)

| SIZE | 200 NB | 150 NB | 100 NB | 80 NB | 50 NB |
|---|---|---|---|---|---|
| A | 390 | 370 | 370 | 350 | 350 |
| B | 525 | 500 | 450 | 450 | 450 |
| C | 875 | 800 | 750 | 700 | 700 |
| D | 510 | 500 | 450 | 450 | 450 |
| E | 500 | 480 | 420 | 410 | 410 |

## WET PILOT SPRINKLER HEIGHT LIMITATION OF 200 NB

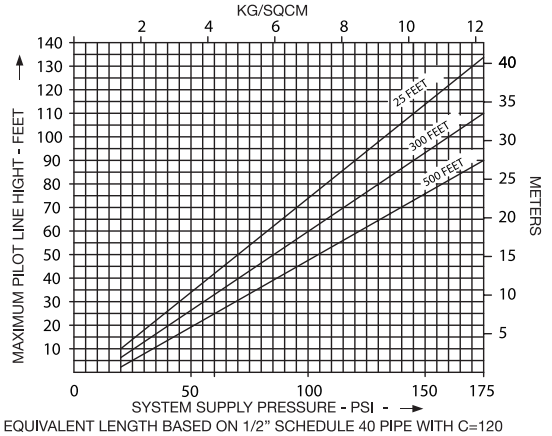


EQUIVALENT LENGTH BASED ON 1/2" SCHEDULE 40 PIPE WITH C=120

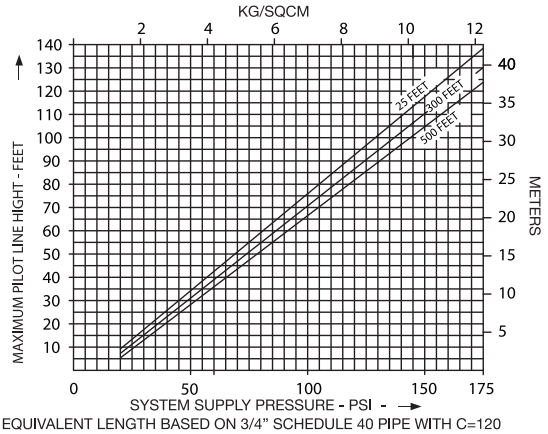


EQUIVALENT LENGTH BASED ON 3/4" SCHEDULE 40 PIPE WITH C=120

## WET PILOT SPRINKLER HEIGHT LIMITATION OF 150 NB

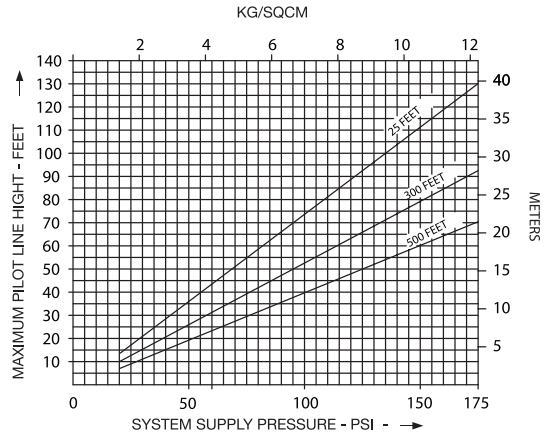


EQUIVALENT LENGTH BASED ON 1/2" SCHEDULE 40 PIPE WITH C=120

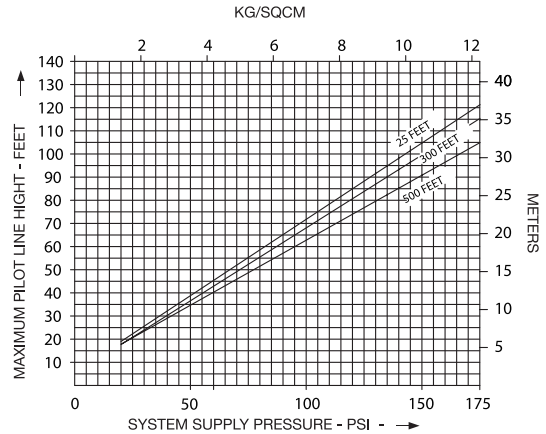


EQUIVALENT LENGTH BASED ON 3/4" SCHEDULE 40 PIPE WITH C=120

## WET PILOT SPRINKLER HEIGHT LIMITATION OF 100 NB

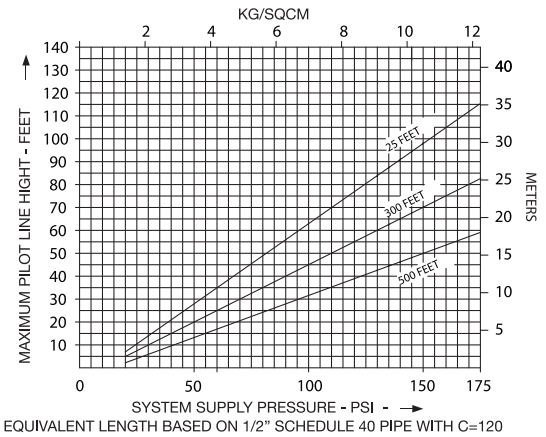


EQUIVALENT LENGTH BASED ON 1/2" SCHEDULE 40 PIPE WITH C=120

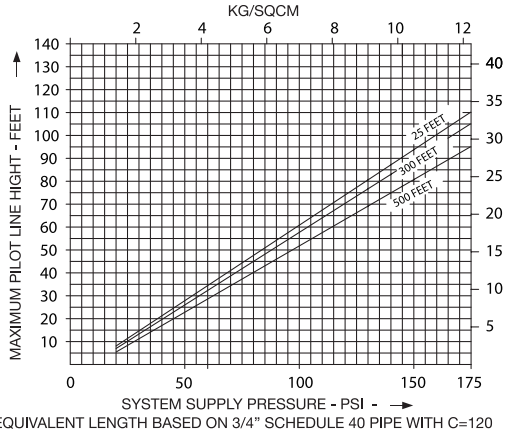


EQUIVALENT LENGTH BASED ON 3/4" SCHEDULE 40 PIPE WITH C=120

## WET PILOT SPRINKLER HEIGHT LIMITATION OF 80 NB

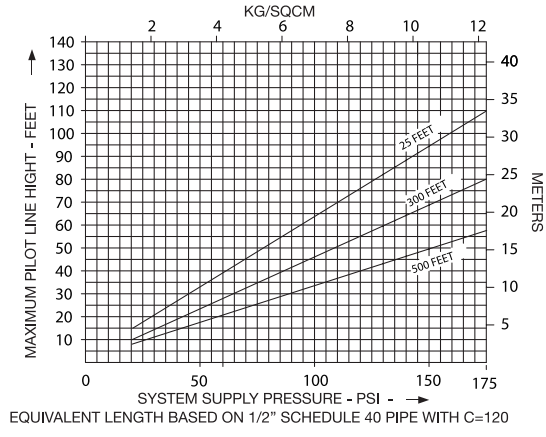



EQUIVALENT LENGTH BASED ON 1/2" SCHEDULE 40 PIPE WITH C=120

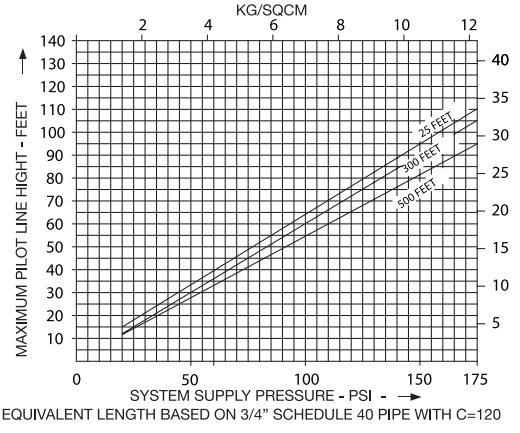



EQUIVALENT LENGTH BASED ON 3/4" SCHEDULE 40 PIPE WITH C=120

## WET PILOT SPRINKLER HEIGHT LIMITATION OF 50 NB

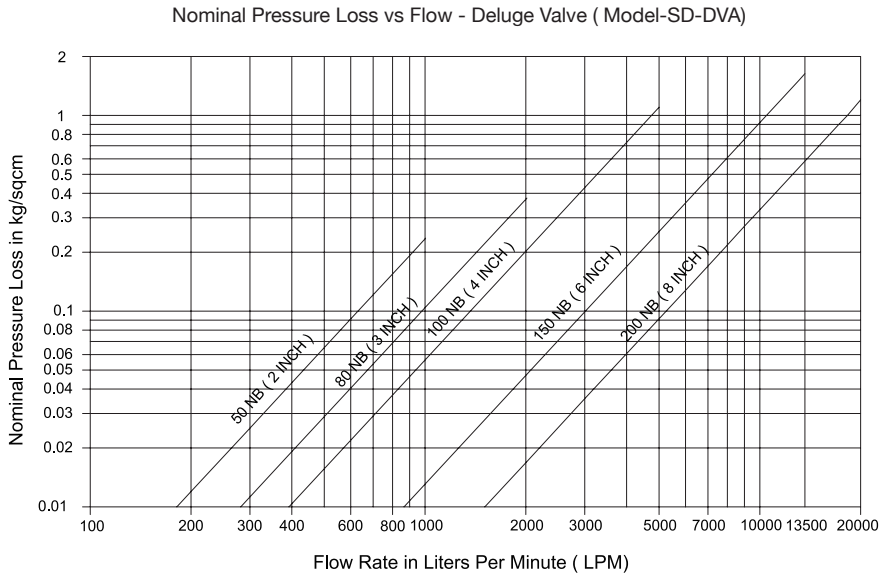



EQUIVALENT LENGTH BASED ON 1/2" SCHEDULE 40 PIPE WITH C=120




EQUIVALENT LENGTH BASED ON 3/4" SCHEDULE 40 PIPE WITH C=120

## NOMINAL PRESSURE LOSS VS FLOW - DELUGE VALVE MODEL SD-DVA

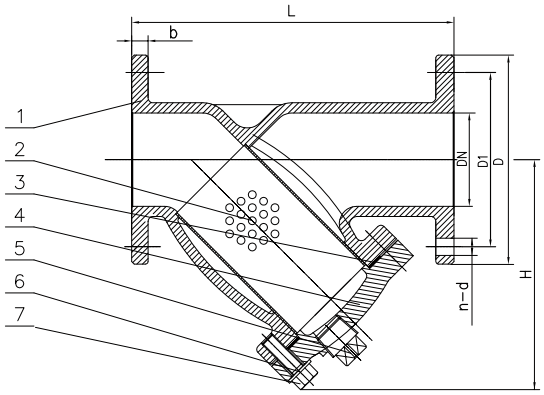


# Y STRAINER

## MODEL: SD-YS300FF-D

- Working pressure: 300 psi
- Connection ends: Flange to ASME B16.1 Class 125
- Temperature range: 0ºC to 80ºC Rubber Gasket
  -10ºC to 350ºC Graphite Gasket
- Coating: Fusion bonded epoxy coating internally and externally in accordance with ANSI/AWWA C550

| PART NO. | PART NAME | ASTM SPEC. |
|---|---|---|
| 1 | Valve Body | ASTM A536, 65-45-12 |
| 2 | Screen | AISI 304 |
| 3 | Gasket | EPDM |
| 4 | Bonnet | ASTM A536, 65-45-12 |
| 5 | Plug | Bronze ASTM B584 |
| 6 | Bolt | Carbon Steel Zinc Plated |
| 7 | Flat Washer | Carbon Steel Zinc Plated |




| Size | L | D | D1 | b | nxd | H | Net. Wt. Kg. | Screen Details | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Screen hole diam-eter | Sleve No. | Free flow area (%) |
| 2” | 200 | 152 | 120.5 | 16 | 4 x19.1 | 155 | 8.70 | 4 | 25 | 48 |
| 2½” | 254 | 178 | 139.5 | 17.5 | 4 x19.1 | 165 | 12.20 | 4 | 25 | 48 |
| 3” | 257 | 191 | 152.5 | 19 | 4 x19.1 | 180 | 13.84 | 5 | 19 | 59 |
| 4” | 308 | 229 | 190.5 | 24 | 8 x19.1 | 229 | 23.88 | 5 | 19 | 59 |
| 5” | 397 | 254 | 216 | 24 | 8 x 22.2 | 285 | 43.79 | 6 | 14 | 63 |
| 6” | 470 | 279 | 241.5 | 25.5 | 8 x 22.2 | 311 | 43.79 | 6.3 | 13 | 64 |
| 8” | 549 | 343 | 298.5 | 28.5 | 8 x 22.2 | 394 | 75.27 | 6.3 | 13 | 64 |
| 10” | 654 | 406 | 362 | 30.5 | 12 x 25.4 | 487 | 109.25 | 6.3 | 13 | 64 |
| 12” | 759 | 483 | 432 | 32 | 12 x 25.4 | 547 | 173.10 | 6.3 | 13 | 64 |

Unit : mm

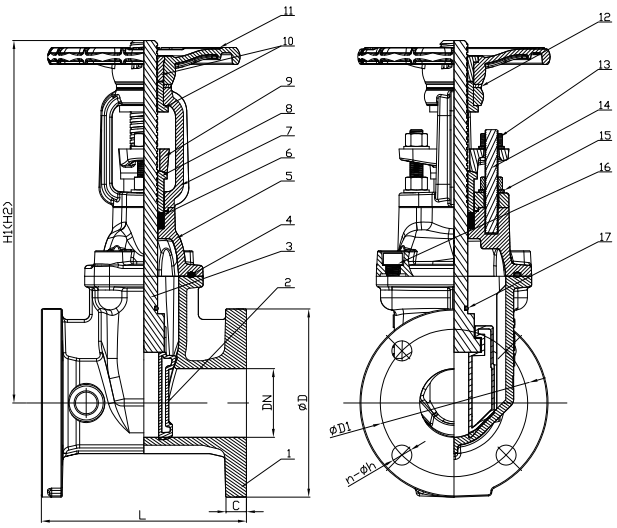
# OS & Y RESILIENT WEDGE GATE VALVE

## MODEL: SD-OSY200FF-D

- Working pressure: 200 psi
- Connection ends: Flange to ASME B16.1 Class 125
- Temperature range: 0ºC to 80ºC
- Coating: Fusion bonded epoxy coating internally and externally in accordance with ANSI/AWWA C550

| PART NO. | PART NAME | ASTM SPEC. |
|---|---|---|
| 1 | Valve Body | ASTM A536, 65-45-12 |
| 2 | Resilient Wedge Disc | ASTM A536, 65-45-12+EPDM |
| 3 | Stem | AISI420 |
| 4 | Bonnet Gasket | EPDM |
| 5 | Bonnet | ASTM A536, 65-45-12 |
| 6 | Washer | Brass Hpb59-1 |
| 7 | Yoke | ASTM A536, 65-45-12 |
| 8 | Stem Bushing | Brass Hpb59-1 |
| 9 | Gland | ASTM A536, 65-45-12 |
| 10 | Stem Nut | Brass Hpb59-1 |
| 11 | Hand Wheel | ASTM A536, 65-45-12 |
| 12 | Washer | Brass Hpb59-1 |
| 13 | Gland Nut | Carbon Steel Zinc Plated |
| 14 | Stud | Carbon Steel Zinc Plated |
| 15 | Flat Washer | Carbon Steel Zinc Plated |
| 16 | Nut | Carbon Steel Zinc Plated |
| 17 | O Ring | EPDM |

* Optional for Stem AISI316




| Size | L | H1 | H2 | D | D1 | C | n x ø h | Net. Wt. Kg. |
|---|---|---|---|---|---|---|---|---|
| 2” | 178 | 318 | 370 | 152 | 120.7 | 16 | 4 x19.1 | 14.38 |
| 2.5” | 190 | 343 | 410 | 178 | 139.7 | 17.5 | 4 x19.1 | 17.42 |
| 3” | 203 | 386 | 468 | 191 | 152.4 | 19.1 | 4 x19.1 | 22.83 |
| 4” | 229 | 436 | 538 | 229 | 190.5 | 19.1 | 8 x19.1 | 31.56 |
| 5” | 254 | 516 | 640 | 254 | 215.9 | 19.1 | 8 x 22.2 | 41.86 |
| 6” | 267 | 576 | 730 | 279 | 241.3 | 19.1 | 8 x 22.2 | 52.23 |
| 8” | 292 | 749 | 950 | 343 | 298.5 | 22.2 | 8 x 22.2 | 91.04 |
| 10” | 330 | 904 | 1158 | 406 | 362 | 23.8 | 12 x 25.4 | 133.44 |
| 12” | 356 | 1030 | 1335 | 483 | 431.8 | 25.4 | 12 x 25.4 | 197.50 |

* 5” - Only UL Listing

Unit : mm

# SUPERVISORY SWITCH FOR VALVE

## MODEL: SD-SVS OSY SERIES

### FEATURES

- The supervisory switch is used to monitor the open position of an Outside Screw and Yoke (OS&Y) type gate valve.
- User-friendly mounting bracket fits newer valve yokes
- Fine adjustment feature for fast, easy installation
- Three position switch detects tampering and valve closure

### SPECIFICATIONS

| | |
|---|---|
| Weight | 0.6 Kg |
| Enclosure | Cover : Die Cast<br>Base : Die Cast<br>Finish : Red Powder Coated<br>All parts have corrosion resistant finishes. |
| Cover Tamper | Tamper Resistant Screws<br>Cover Tamper Switch Available<br>3 Amps / 5 Amps at 125/250VAC |
| Contact Rating | **SD-SVS OSY-1** : One Set of SPDT<br>**SD-SVS OSY-2** : Two Sets of SPDT<br>**SD-SVS OSY-3** : Two Sets of SPDT and Cover Tamper<br>10.0 Amps at 125/250 VAC<br>2.5 Amps at 30VDC Resistive |
| Conduit Entrance | One Knockouts and one hole for ½" conduit provided |
| Temperature Range | - 32°F to 120°F ( 0°C to 49°C) |
| Service Use | • Automatic Sprinkler: NFPA 13<br>• One or Two Family Dwelling: NFPA 13D Residential<br>• Occupancies up to 4 Stories: NFPA 13R National Fire Alarm<br>• Code: NFPA 72 |

### DESCRIPTION

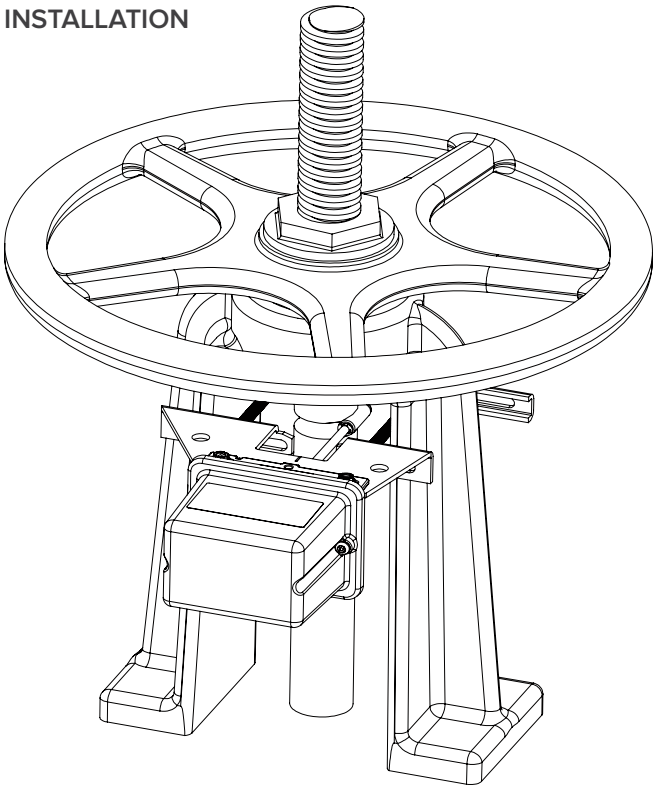
The SD-SVS OSY Series is used to monitor the open position of an OS&Y (outside screw and yoke) type gate valve. This device is available in three models; the SD-SVS OSY-1, containing one set of SPDT contacts, the SD-SVS OSY-2, containing two sets of SPDT contacts and the SD-SVS OSY-3, containing two sets of SPDT and cover tamper. These switches mount conveniently to most OS&Y valves ranging in size from 2" to 12" (50mm to 300mm). They will mount on some valves as small as ½" (12.5mm). Supervisory Switch shall be installed on each valve as designated on the drawings

and/or as specified herein. Switches shall be mounted so as not to interfere with the normal operation of the valve and shall be adjusted to operate within two revolutions of the valve control or when the stem has moved no more than one-fifth of the distance from its normal position. The mechanism shall be contained in a die cast metal housing that provides a side entrance for ½" conduit and incorporates the necessary facilities for attachment to the valve. A grounding provision is provided. The switch assembly shall include two switches each with a rated capacity of 10 Amp @ 125/250VAC and 2.5 Amp @ 24 VDC. The supervisory switch shall be Underwriters Laboratories listed for indoor or outdoor use.

### TESTING

The operation of the Supervisory Switch and its associated protective monitoring system shall be inspected, tested, and maintained in accordance with all applicable local and national codes and standards and/or the Authority Having Jurisdiction (manufacturer recommends quarterly or more frequently). A minimum test shall consist of turning the valve wheel towards the closed position. The Supervisory Switch shall operate within the first two revolutions of the wheel. Fully close the valve and ensure that the Supervisory Switch does not restore. Fully open the valve and ensure that the Supervisory Switch restores to normal only when the valve is fully opened.

## INSTALLATION



*Note: If the valve stem is pre-grooved with ⅛" minimum depth; proceed to step 6.*

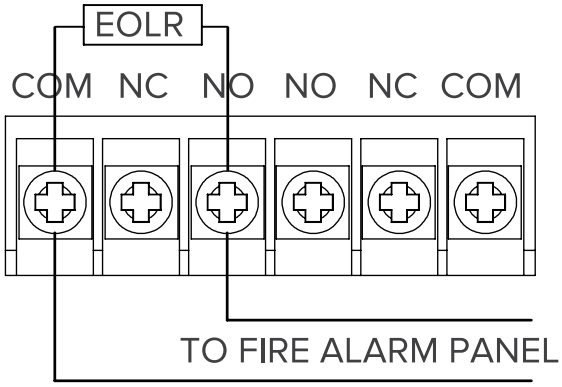
1. With the valve in the FULL OPEN position, locate the Supervisory Switch across the valve yoke as far from the valve gland as possible so that the spring loaded trip rod of the supervisory switch is pulled against the non-threaded portion of the valve stem. Position the supervisory switch with the bracket near the hand wheel as shown in figure if possible to avoid creating a pinch point between the wheel and the supervisory switch.
2. Mount the supervisory switch loosely with the carriage bolts and clamp bar supplied.
3. Loosen the locking screw that holds the trip rod in place and adjust the rod length. When adjusted properly, the rod should extend past the valve screw, but not so far that it contacts the clamp bar. Tighten the locking screw to hold the trip rod in place and properly seal the enclosure.

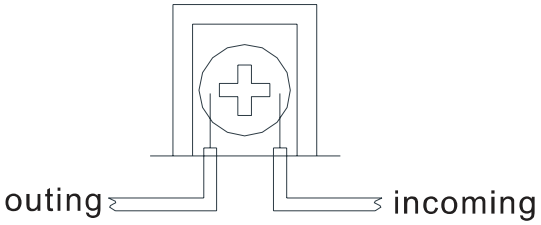
   *Note: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one (1) inch long notched section. Reinstall trip rod and repeat Step 3 procedure.*
4. Mark the valve stem at the center of the trip rod.
5. Remove the supervisory switch. Utilizing a ⅜" or ½" diameter straight file, file a ⅛" minimum depth groove centered on the mark on the valve stem. Deburr and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.

   *Note: A groove depth of up to approximately 3/16" can make it easier to install the supervisory switch so that it does not restore as it rolls over by the threads of the valve stem.*
6. Mount the supervisory switch on the valve yoke with the spring loaded trip rod of the supervisory switch pulled against the valve stem and centered in the groove of the stem. If possible, position the supervisory switch with the flat side of the bracket toward the hand wheel, to help avoid creating a pinch point between the wheel and supervisory switch
7. Final adjustment can be made by slightly loosening the two screws on the bracket and using the fine adjustment feature. The adjustment is correct when the plungers on the switches are depressed by the actuator and there is no continuity between the COM and NO terminals on the switches.
8. Tighten the adjustment screws and mounting hardware securely. Check to insure that the rod moves out of the groove easily and that the switches activate within two turns when the valve is operated from the FULL OPEN towards the CLOSED position.
9. Reinstall the cover and tighten the cover screws to properly seal the enclosure.

*Caution: Close the valve fully to determine that the stem threads do not activate the switch. The switch being activated by the stem threads could result in a false valve open indication.*

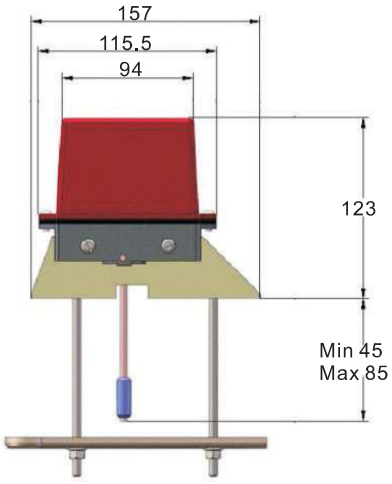
## TYPICAL CONNECTION

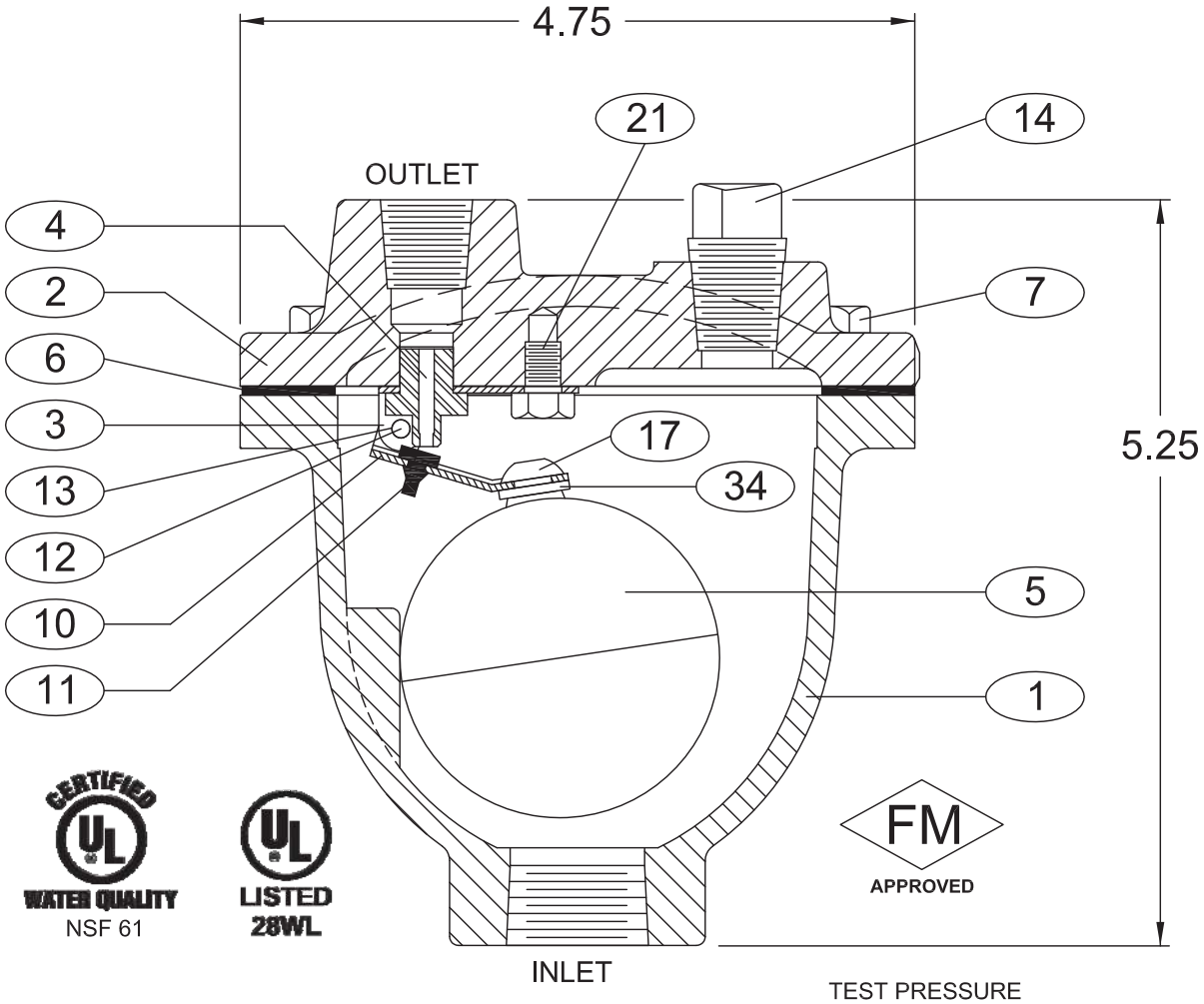



*An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire becomes dislodged from under the terminal.*

## DIMENSIONS




TEST PRESSURE
1.5 TIMES COLD WORKING PRESSURE

SEE DRAWING NO. VM-15A-M FOR STANDARD MATERIALS OF CONSTRUCTION

| VALVE SIZE | MODEL NUMBER | INLET SIZE | OUTLET SIZE | MAX. W.P. P.S.I. | ORIFICE SIZE |
|---|---|---|---|---|---|
| 1/2" | 15A | 1/2" NPT | 1/2" NPT | 175 | 1/16" |
| 3/4" | 15A.2 | 3/4" NPT | 1/2" NPT | 175 | 1/16" |
| 1" | 15A.3 | 1" NPT | 1/2" NPT | 175 | 1/16" |

| | | | |
|---|---|---|---|
| 1 | BODY | 11 | ORIFICE BUTTON |
| 2 | COVER | 12 | PIVOT PIN |
| 3 | LEVER FRAME | 13 | RETAINING RING (NOT SHOWN) |
| 4 | SEAT | 14 | PIPE PLUG |
| 5 | FLOAT | 17 | FLOAT RETAINER |
| 6 | GASKET | 21 | LOCATOR |
| 7 | COVER BOLT | 34 | LOCK WASHER |
| 10 | FLOAT ARM | | |

# AIR RELEASE VALVE

DATE 4-15-11

DRWG. NO. VMC-15A

VAL-MATIC VALVE AND MANUFACTURING CORP.

# AIR RELEASE VALVE

## SERIES NO. 15A

### STANDARD MATERIALS OF CONSTRUCTION

| PART NO. | PART NAME | MATERIAL |
|---|---|---|
| 1 | BODY | CAST IRON ASTM A126, CLASS B |
| 2 | COVER | CAST IRON ASTM A126, CLASS B |
| 3 | LEVER FRAME | STAINLESS STEEL T316, ASTM A240 |
| 4 | SEAT | STAINLESS STEEL T316, ASTM A276 |
| 5 | FLOAT | STAINLESS STEEL T316, ASTM A240 |
| 6 | GASKET | COMPRESSED NON-ASBESTOS FIBER |
| 7 | COVER BOLT | ALLOY STEEL SAE, GRADE 5 |
| 10 | FLOAT ARM | STAINLESS STEEL T316, ASTM A240 |
| 11 | ORIFICE BUTTON | VITON |
| 12 | PIVOT PIN | STAINLESS STEEL T316, ASTM A479 |
| 13 | PIN RETAINER | STAINLESS STEEL PH 15-7 MO |
| 14 | PIPE PLUG | STEEL |
| 17 | FLOAT RETAINER | STAINLESS STEEL T316, ASTM F879 |
| 21 | LOCATOR | STAINLESS STEEL T316, ASTM F593 |
| 34 | LOCK WASHER | STAINLESS STEEL T316, ASTM A240 |

NOTE: ALL SPECIFICATIONS AS LAST REVISED.

Revised 1-29-03

| MATERIALS OF CONSTRUCTION | DATE 2/23/87 |
|---|---|
| VAL-MATIC® VALVE AND MANUFACTURING CORP. | DRWG. NO. VM-15A-M |

SHIELD A-XT NEW!

# Extinguishant Control Panel

Shield A-XT is a new generation extinguishant releasing panel which is UL,FM listed

The simple, programmable configuration options and easy to install construction make Shield A-XT panels the ideal choice for small to medium sized systems using all extinguishant agents.


## Programmable Functions

**Access Level 2**

- Test Zones 1 to 3
- Disable Zones 1 to 3
- Disable 1st Stage Alarms
- Disable Pre-activated 1st Stage Relay
- Disable Pre-activated 2nd Stage Relay
- Disable Extract Fan Output
- Disable Manual Release Input
- Disable Extinguishant Sub System
- Activate Extract Fan Output
- Activate Alarm Delays

**Access Level 3**

- Sounder Delay
- Coincidence Detection
- Disable Panel Features
- Zone Alarm Delays (Detectors)
- Zone Alarm Delay (Call Points)
- Configure Zone for I.S Barrier Use
- Zone Short Circuit Alarm
- Zone Non Latching
- Zone Inputs Delay
- Extinguishant Release Time Delay
- Extinguishant Release Duration Timer
- Extinguishant Reset Delay Timer

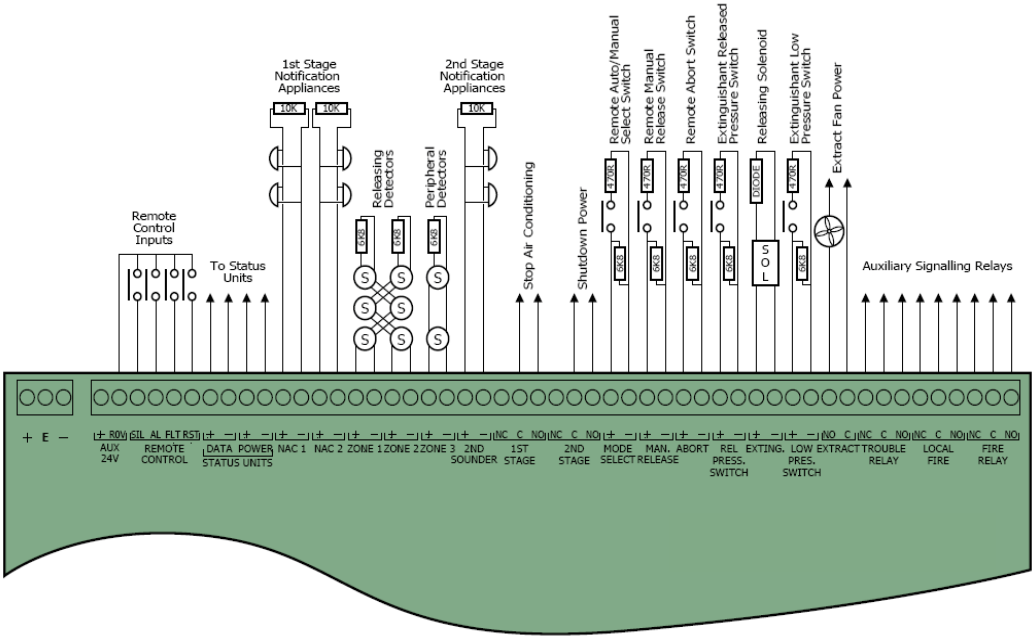
## Features

- UL864 and FM listed
- Three initiation circuits as standard
- Any single zone or any combinations of zones can be configured to release
- Configurable first stage NAC delays
- Configurable detection delays
- Zero time delay upon manual release option
- Compatible with I.S. barriers
- Non-latching zone input option to receive signals from other systems such as aspirating equipment
- Configurable extinguishant delays up to 60 seconds in 5 second steps
- Configurable extinguishant duration up to 5 minutes in 5 second steps
- Countdown timer shows time remaining until release
- Supports up to seven, four wire status indicators
- Built in Extract Fan control

## Product Overview

- Designed and manufactured to t he highest standards in a quality controlled environment and with UL & FM approvals, the Shield A-XT releasing panel offers outstanding value and performance for all small to medium fixed firefighting installations
- With three detection zones as standard, extinguishant release can be configured to activate from any combination of detection zone inputs to allow (among other combinations) any two from three type activations such as would be required for detection in ceiling void, room and floor void applications.
- The extensive configuration options of the Shield A-XT allow the functionality of the system to be extensively modified
- The panel contains a large LED display to enable easy configuration and control which also displays the time remaining until extinguishant release for added user safety.
- The countdown timer is duplicated on up to seven remote status units to provide local indication of the system status.
- With all of the electronics mounted on a single, easily removable, steel plate Shield A-XTpanels are both robust and easy to install.
- Shield A-XT is supplied in an enclosure that matches the design and colour of the elite RS range and is available in standard red or optional grey.

# Specifications




## Technical

| | |
|---|---|
| **Construction** | - 1.2mm mild sheet steel |
| **IP Rating** | - IP30 |
| **Finish** | - Epoxy powder coated |
| **Colour - lid & box** | - Red RAL 3002 (optional grey BS 00 A 05 semi-matt) |
| **Mains supply** | - 230V AC or 115V AC |
| **Mains supply fuse** | - 1.6 Amp (F1.6A L250V) |
| **Power supply rating** | - 3 Amps total including battery charge 28V +/- 2V |
| **Maximum ripple current** | - 200 millivolts |
| **Battery type (Yuasa NP)** | - Two 12 Volt 7Ah sealed lead acid in series |
| **Battery charge voltage** | - 27.6VDC nominal (temperature compensated) |
| **Battery charge current** | - 0.7A maximum |
| **Battery fuse** | - 20mm, 3.15A glass |
| **Maximum current draw from batteries** | - 3 Amps |
| **Quiescent current of panel in mains fail** | - 0.095A |
| **R0V output** | - Fused at 500mA with electronic fuse |
| **Sounder outputs** | - 24V Fused at 500mA with electronic fuse |
| **Fault relay contact rating** | - 30VDC 1A Amp maximum |
| **Fire relay contact rating** | - 30VDC 1A Amp maximum |
| **Local fire relay contact rating** | - 30VDC 1A Amp maximum |
| **First stage contact rating** | - 30VDC 1A Amp maximum |
| **Second stage contact rating** | - 30VDC 1A Amp maximum |
| **Extract contact rating** | - 30VDC 1A Amp maximum |
| **Zone quiescent current** | - 2mA maximum |
| **Terminal capacity** | - 12 AWG |
| **Number of detectors per zone** | - Dependent on type (maximum 32) |
| **NAC rating** | - 0.5A per circuit |
| **Detection circuit end of line** | - 6K8 5% ½ Watt resistor |
| **Monitored input end of line** | - 6K8 5% ½ Watt resistor |
| **Sounder circuit end of line** | - 10K 5% ¼ Watt resistor |
| **Extinguishant output EOL** | - 1N4004 Diode |
| **No. of initiating circuits** | - 3 |
| **No. of NAC circuits** | - 2 x 1st Stage, 1 x 2nd Stage |
| **Extinguishant release output** | - Fused at 1 Amp |
| **Extinguishant release delay** | - Adjustable 0 to 60 seconds (in 5 second steps) |
| **Extinguishant release duration** | - Adjustable 60 to 300 seconds (in 5 second steps) |
| **SIL, AL, FLT, RST inputs** | - Switched -ve, max resistance 100 Ohms |
| **Zone normal threshold** | - 8K ohms to 1K ohm |
| **Detector alarm threshold** | - 999 ohms to 400 ohms |
| **Call point alarm threshold** | - 399 ohms to 100 ohms |
| **Short circuit threshold** | - 99 ohms to 0 ohms |
| **Monitored inputs normal threshold** | - 8K ohms to 1K ohm |
| **Monitored inputs alarm threshold** | - 999 ohms to 100 ohms |
| **Monitored inputs Short circuit threshold** | - 99 ohms to 0 ohms |
| **Status unit/Ancillary board connection** | - Two wire RS485 connection |
| **Status unit power output** | - Fused at 500mA with electronic fuse |

## Panels

| Product Code | Description | Size (mm) |
|---|---|---|
| S115R-EXT | Surface mounting panel - Red 115V | 368 x 310 x 90 |
| S230R-EXT | Surface mounting panel - Red 230V | 368 x 310 x 90 |
| S115G-EXT | Surface mounting panel - Grey 115V | 368 x 310 x 90 |
| S230G-EXT | Surface mounting panel - Grey 230V | 368 x 310 x 90 |


SHIELD

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United Kingdom

## S-C2011

## Photo-Electric Smoke Detector


SIGNALING UL LISTED ULC LISTED

SHIELD Photo-Electric Smoke Detector incorporates a pulsing LED located within the housing of the detector. The detector housing is identical to that of the Ionization Detector but has an indicator LED which is clear in quiescent state but produces red light in alarm.

- Responds well to slow-burning, smoldering fires
- Well suited for bedrooms and escape routes
- Unaffected by wind or atmospheric pressure
- Wide operating voltage

| Technical Data | |
|---|---|
| **Detector Type** | Photoelectric |
| **Working Voltage** | 9 – 33 V DC |
| **Maximum Alarm Current** | 17 mA at 9 V, 52 mA at 24 V |
| **Surge Current** | 0 mA |
| **Supervisory Current** | 40–50 µA at 9 V, 45–55 µA at 24 V |
| **Test Method** | Magnet or Gemini 501 |
| **Installation Temperature** | 0°C to 60°C |
| **Dimensions** (diameter x height) | 100 mm x 50 mm |
| **Weight** | 99 g |

## S-C2013

## Heat Detector ( 135°F / 57°C)


SIGNALING UL LISTED ULC LISTED

SHIELD Heat Detector monitors temperature by using a dual thermistor network which provides a voltage output proportional to the external air temperature. There are nine heat detectors in the series range designed to suit a wide variety of operating conditions.

- Can be used for applications where smoke detectors are unsuitable
- Ideal for environments that are dirty or smoky under normal conditions
- Wide operating voltage

| Technical Data | |
|---|---|
| **Detector Type** | Heat Rate-of-Rise / Fixed Temperature |
| **Working Voltage** | 9 – 33 V DC |
| **Maximum Alarm Current** | 17 mA at 9 V, 52 mA at 24 V |
| **Surge Current** | 0 mA |
| **Supervisory Current** | 40–50 µA at 9 V, 45–55 µA at 24 V |
| **Heating Element Rating** | Ordinary (135°F/57°C) |
| **Test Method** | Magnet or Hair Dryer |
| **Installation Temperature** | Minimum 32°F (0°C),<br>Maximum At Least 20°F (11°C) Below Rating |
| **Dimensions** (diameter x height) | 100 mm x 50 mm |
| **Weight** | 80 g |

Note: Specifications are subject to change without notice

# Fire Alarm Bell

**Fire Alarm System**

## Features

- Low current consumption - only 20mA
- Quickly and easily installed
- Excellent sound, up to 100dBA @ 1 mt
- Suitable for indoor and outdoor use
- Easy installation and connection
- Operating Voltage:
  - 6VDC, 12VDC, 24V DC
  - 120VAC, 220VAC

## Description

The FB-1000 series Bells are of aluminum construction and have a very high sound output matched with extremely low power consumption with 20mA for 6 alarm bell.

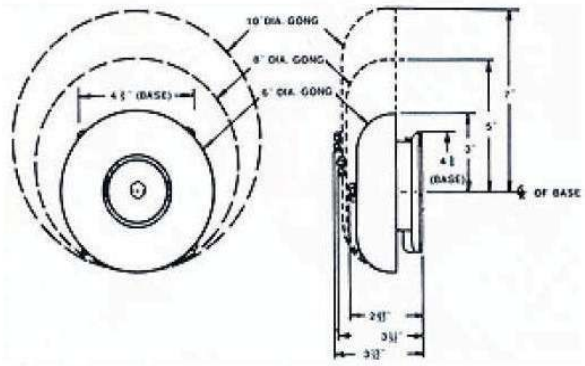
The FB-1000 series can be used for internal and external installation using the specially designed weather-proof bells having an back box giving either single or double threaded entry for maximum flexibility in installation. Weatherproof bells are supplied as a full fixing kit with gasket and screws.

### Technical Specifications

| Part Number | FB-1000C6 | FB-1000C6/WP | FB-1000C8 | FB-1000C8/WP |
|---|---|---|---|---|
| Description | 6" (150mm) | 6" (150mm) wp | 8" (200mm) | 8" (200mm) wp |
| Protection Rating | IP 33 | IP 65 | IP 33 | IP 65 |
| Approval | UL 464 | | | |
| Sound Level Output | Evacuate Sound :95 - 97 dB (at 10FT) | | | |
| Operating Voltage | Power Supply 24 Vdc - 220 VAC | | | |
| Rated Current | 20 mA to 100 mA | | | |
| Operating Temperature | -10°C~ +50°C @ 95 % Relative Humidity | | | |
| Application | Indoor | Outdoor | Indoor | Outdoor |
| Material and Colour | Alumininum /Red | | | |
| Wiring | 2 wire for Power Cable (Polarized ) | | | |

**Alarm Bell Installation**

The Alarm Bell base should be installed to comply with all local codes having a jurisdiction in your area or NFPA 72 National Fire Alarm Code, NFPA 70 National Electrical Code. It is installed onto a standard one 4" square standard outlet gang electrical box.




**Wiring and Connection**

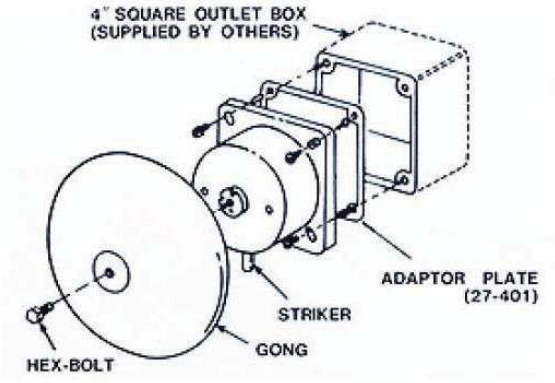
Connect the wires to the required terminal according to the wire color. The red cable and the black cabled. The cable must be fire rated type and the size depends on the distance and application. Minimum size gauge 1.0mm²(18 AWG)

## Selection of compatible Control Panels

Compatible with all Shield Conventional panel and Shield Intelligent panel using sounder output and Intelligent Sounder Driver Module (AI-514)

**Ordering Information:**

| Part Number | Description |
|---|---|
| FB-1000C6 | 6" Alarm Bell |
| FB-1000C6/WP | 6" Alarm Bell Weather proof |
| FB-1000C8 | 8" Alarm Bell |
| FB-1000C8/WP | 8" Alarm Bell Weather proof |




## Limited Warranty

**SHIELD** warrants that the product will be free of charge for repairing or replacing from defects in design, materials and workmanship during the warranty period. This warranty does not cover any product that is found to have been improperly installed or used in any way not in accordance with the instructions supplied with the product. Anybody, including the agents, distributors or employees, is not in the position to amend the contents of this warranty. Please contact your local distributor for products not covered by this warranty.

# Selectable-Output Horns, Strobes, and Horn Strobes


*SpectrAlert® Advance selectable-output horns, strobes, and horn strobes are rich with features guaranteed to cut installation times and maximize profits.*

## Features

- Plug-in design with minimal intrusion into the back box
- Tamper-resistant construction
- Automatic selection of 12- or 24-volt operation at 15 and 15/75 candela
- Field-selectable candela settings on wall and ceiling units: 15, 15/75, 30, 75, 95, 110, 115, 135, 150, 177, and 185
- Horn rated at 88+ dBA at 16 volts
- Rotary switch for horn tone and three volume selections
- Universal mounting plate for wall and ceiling units
- Mounting plate shorting spring checks wiring continuity before device installation
- Electrically compatible with existing SpectrAlert products
- Compatible with MDL sync module

**The SpectrAlert Advance series** offers the most versatile and easy-to-use line of horns, strobes, and horn strobes in the industry. With white and red plastic housings, wall and ceiling mounting options, and plain and FIRE-printed devices, SpectrAlert Advance can meet virtually any application requirement.

Like the entire SpectrAlert Advance product line, horns, strobes, and horn strobes include a variety of features that increase their application versatility while simplifying installation. All devices feature plug-in designs with minimal intrusion into the back box, which make installations fast and foolproof while virtually eliminating costly and time-consuming ground faults. Furthermore, a universal mounting plate with an onboard shorting spring tests wiring continuity before the device is installed, protecting devices from damage.

In addition, field-selectable candela settings, automatic selection of 12- or 24-volt operation, and a rotary switch for horn tones with three volume selections enables installers to easily adapt devices to suit a wide range of application requirements.

## Agency Listings

SIGNALING UL LISTED
S4011 (chimes, horn strobes, horns)
S5512 (strobes)

FM APPROVED
3023572

MEA approved
MEA452-05-E

7125-1653:186 (indoor strobes)
7125-1653:188 (horn strobes, chime strobes)
7135-1653:189 (horns, chimes)

# SpectrAlert Advance Specifications

## Architect/Engineer Specifications

### General

SpectrAlert Advance horns, strobes, and horn strobes shall mount to a standard 4 × 4 × 1½-inch back box, 4-inch octagon back box, or double-gang back box. Two-wire products shall also mount to a single-gang 2 × 4 × 1⅞-inch back box. A universal mounting plate shall be used for mounting ceiling and wall products. The notification appliance circuit wiring shall terminate at the universal mounting plate. Also, SpectrAlert Advance products, when used with the Sync•Circuit™ Module accessory, shall be powered from a non-coded notification appliance circuit output and shall operate on a nominal 12 or 24 volts. When used with the Sync•Circuit Module, 12-volt-rated notification appliance circuit outputs shall operate between 9 and 17.5 volts; 24-volt-rated notification appliance circuit outputs shall operate between 17 and 33 volts. Indoor SpectrAlert Advance products shall operate between 32 and 120 degrees Fahrenheit from a regulated DC or full-wave rectified unfiltered power supply. Strobes and horn strobes shall have field-selectable candela settings including 15, 15/75, 30, 75, 95, 110, 115, 135, 150, 177, and 185.

### Strobe

The strobe shall be a System Sensor SpectrAlert Advance Model _____ listed to UL 1971 and shall be approved for fire protective service. The strobe shall be wired as a primary-signaling notification appliance and comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system.

### Horn Strobe Combination

The horn strobe shall be a System Sensor SpectrAlert Advance Model _____ listed to UL 1971 and UL 464 and shall be approved for fire protective service. The horn strobe shall be wired as a primary-signaling notification appliance and comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system. The horn shall have three audibility options and an option to switch between a temporal three-pattern and a non-temporal (continuous) pattern. These options are set by a multiple position switch. On four-wire products, the strobe shall be powered independently of the sounder. The horn on horn strobe models shall operate on a coded or non-coded power supply.

### Synchronization Module

The module shall be a System Sensor Sync•Circuit model MDL listed to UL 464 and shall be approved for fire protective service. The module shall synchronize SpectrAlert strobes at 1 Hz and horns at temporal three. Also, while operating the strobes, the module shall silence the horns on horn strobe models over a single pair of wires. The module shall mount to a 4 11/16 × 4 11/16 × 2 1/8-inch back box. The module shall also control two Style Y (class B) circuits or one Style Z (class A) circuit. The module shall synchronize multiple zones. Daisy chaining two or more synchronization modules together will synchronize all the zones they control. The module shall not operate on a coded power supply.

## Physical/Electrical Specifications

| | |
|---|---|
| **Standard Operating Temperature** | 32°F to 120°F (0°C to 49°C) |
| **Humidity Range** | 10 to 93% non-condensing |
| **Strobe Flash Rate** | 1 flash per second |
| **Nominal Voltage** | Regulated 12 DC/FWR or regulated 24 DC/FWR[1] |
| **Operating Voltage Range[2]** | 8 to 17.5 V (12 V nominal) or 16 to 33 V (24 V nominal) |
| **Input Terminal Wire Gauge** | 12 to 18 AWG |
| **Ceiling-Mount Dimensions (including lens)** | 6.8″ diameter × 2.5″ high (173 mm diameter × 64 mm high) |
| **Wall-Mount Dimensions (including lens)** | 5.6″ L × 4.7″ W × 2.5″ D (142 mm L × 119 mm W × 64 mm D) |
| **Horn Dimensions** | 5.6″ L × 4.7″ W × 1.3″ D (142 mm L × 119 mm W × 33 mm D) |
| **Wall-Mount Back Box Skirt Dimensions (BBS-2, BBSW-2)** | 5.9″ L × 5.0″ W × 2.2″ D (151 mm L × 128 mm W × 56 mm D) |
| **Ceiling-Mount Back Box Skirt Dimensions (BBSC-2, BBSCW-2)** | 7.1″ diameter × 2.2″ high (180 mm diameter × 57 mm high) |
| **Wall-Mount Trim Ring Dimensions (sold as a 5 pack) (TR-HS, TRW-HS)** | 5.7″ L × 4.8″ W × 0.35″ D (145 mm L × 122 mm W × 9 mm D) |
| **Ceiling-Mount Trim Ring Dimensions (sold as a 5 pack) (TRC-HS, TRCW-HS)** | 6.9″ diameter × 0.35″ high (175 mm diameter × 9 mm high) |

**Notes:**

1. Full Wave Rectified (FWR) voltage is a non-regulated, time-varying power source that is used on some power supply and panel outputs.
2. P, S, PC, and SC products will operate at 12 V nominal only for 15 and 15/75 cd.

# UL Current Draw Data

**UL Max. Strobe Current Draw (mA RMS)**

| | | 8–17.5 Volts | | 16–33 Volts | |
|---|---|---|---|---|---|
| | Candela | DC | FWR | DC | FWR |
| Standard Candela Range | 15 | 123 | 128 | 66 | 71 |
| | 15/75 | 142 | 148 | 77 | 81 |
| | 30 | NA | NA | 94 | 96 |
| | 75 | NA | NA | 158 | 153 |
| | 95 | NA | NA | 181 | 176 |
| | 110 | NA | NA | 202 | 195 |
| | 115 | NA | NA | 210 | 205 |
| High Candela Range | 135 | NA | NA | 228 | 207 |
| | 150 | NA | NA | 246 | 220 |
| | 177 | NA | NA | 281 | 251 |
| | 185 | NA | NA | 286 | 258 |

**UL Max. Horn Current Draw (mA RMS)**

| | | 8–17.5 Volts | | 16–33 Volts | |
|---|---|---|---|---|---|
| Sound Pattern | dB | DC | FWR | DC | FWR |
| Temporal | High | 57 | 55 | 69 | 75 |
| Temporal | Medium | 44 | 49 | 58 | 69 |
| Temporal | Low | 38 | 44 | 44 | 48 |
| Non-temporal | High | 57 | 56 | 69 | 75 |
| Non-temporal | Medium | 42 | 50 | 60 | 69 |
| Non-temporal | Low | 41 | 44 | 50 | 50 |
| Coded | High | 57 | 55 | 69 | 75 |
| Coded | Medium | 44 | 51 | 56 | 69 |
| Coded | Low | 40 | 46 | 52 | 50 |

**UL Max. Current Draw (mA RMS), 2-Wire Horn Strobe, Standard Candela Range (15–115 cd)**

| | 8–17.5 Volts | | 16–33 Volts | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DC Input | 15 | 15/75 | 15 | 15/75 | 30 | 75 | 95 | 110 | 115 |
| Temporal High | 137 | 147 | 79 | 90 | 107 | 176 | 194 | 212 | 218 |
| Temporal Medium | 132 | 144 | 69 | 80 | 97 | 157 | 182 | 201 | 210 |
| Temporal Low | 132 | 143 | 66 | 77 | 93 | 154 | 179 | 198 | 207 |
| Non-Temporal High | 141 | 152 | 91 | 100 | 116 | 176 | 201 | 221 | 229 |
| Non-Temporal Medium | 133 | 145 | 75 | 85 | 102 | 163 | 187 | 207 | 216 |
| Non-Temporal Low | 131 | 144 | 68 | 79 | 96 | 156 | 182 | 201 | 210 |
| **FWR Input** | | | | | | | | | |
| Temporal High | 136 | 155 | 88 | 97 | 112 | 168 | 190 | 210 | 218 |
| Temporal Medium | 129 | 152 | 78 | 88 | 103 | 160 | 184 | 202 | 206 |
| Temporal Low | 129 | 151 | 76 | 86 | 101 | 160 | 184 | 194 | 201 |
| Non-Temporal High | 142 | 161 | 103 | 112 | 126 | 181 | 203 | 221 | 229 |
| Non-Temporal Medium | 134 | 155 | 85 | 95 | 110 | 166 | 189 | 208 | 216 |
| Non-Temporal Low | 132 | 154 | 80 | 90 | 105 | 161 | 184 | 202 | 211 |

**UL Max. Current Draw (mA RMS), 2-Wire Horn Strobe, High Candela Range (135–185 cd)**

| | 16–33 Volts | | | | | 16–33 Volts | | | |
|---|---|---|---|---|---|---|---|---|---|
| DC Input | 135 | 150 | 177 | 185 | FWR Input | 135 | 150 | 177 | 185 |
| Temporal High | 245 | 259 | 290 | 297 | Temporal High | 215 | 231 | 258 | 265 |
| Temporal Medium | 235 | 253 | 288 | 297 | Temporal Medium | 209 | 224 | 250 | 258 |
| Temporal Low | 232 | 251 | 282 | 292 | Temporal Low | 207 | 221 | 248 | 256 |
| Non-Temporal High | 255 | 270 | 303 | 309 | Non-Temporal High | 233 | 248 | 275 | 281 |
| Non-Temporal Medium | 242 | 259 | 293 | 299 | Non-Temporal Medium | 219 | 232 | 262 | 267 |
| Non-Temporal Low | 238 | 254 | 291 | 295 | Non-Temporal Low | 214 | 229 | 256 | 262 |

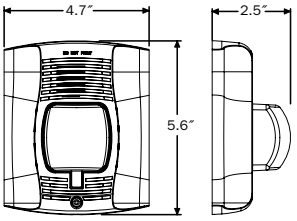
# Horn Tones and Sound Output Data

**Horn and Horn Strobe Output (dBA)**

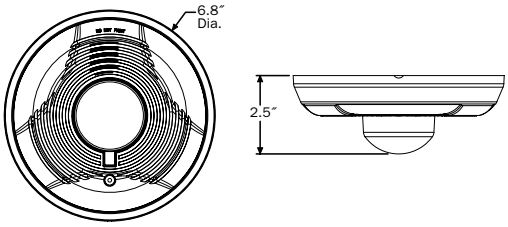
| | | | 8–17.5 Volts | | 16–33 Volts | | 24-Volt Nominal | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Reverberant | | Anechoic | |
| Switch Position | Sound Pattern | dB | DC | FWR | DC | FWR | DC | FWR | DC | FWR |
| 1 | Temporal | High | 78 | 78 | 84 | 84 | 88 | 88 | 99 | 98 |
| 2 | Temporal | Medium | 74 | 74 | 80 | 80 | 86 | 86 | 96 | 96 |
| 3 | Temporal | Low | 71 | 73 | 76 | 76 | 83 | 80 | 94 | 89 |
| 4 | Non-Temporal | High | 82 | 82 | 88 | 88 | 93 | 92 | 100 | 100 |
| 5 | Non-Temporal | Medium | 78 | 78 | 85 | 85 | 90 | 90 | 98 | 98 |
| 6 | Non-Temporal | Low | 75 | 75 | 81 | 81 | 88 | 84 | 96 | 92 |
| 7† | Coded | High | 82 | 82 | 88 | 88 | 93 | 92 | 101 | 101 |
| 8† | Coded | Medium | 78 | 78 | 85 | 85 | 90 | 90 | 97 | 98 |
| 9† | Coded | Low | 75 | 75 | 81 | 81 | 88 | 85 | 96 | 92 |

†Settings 7, 8, and 9 are not available on 2-wire horn strobe.

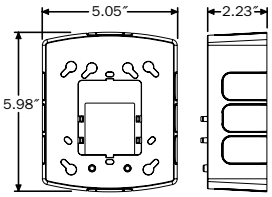
## SpectrAlert Advance Dimensions



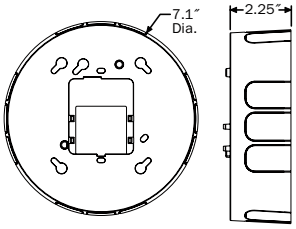

Wall-mount horn strobes




Ceiling-mount horn strobes




Wall back box skirt




Ceiling back box skirt

## SpectrAlert Advance Ordering Information

| Model | Description |
|---|---|
| **Wall Horn Strobes** | |
| P2R*† | 2-Wire Horn Strobe, Standard cd‡, Red |
| P2RH* | 2-Wire Horn Strobe, High cd, Red |
| P2W* | 2-Wire Horn Strobe, Standard cd, White |
| P2WH* | 2-Wire Horn Strobe, High cd, White |
| P4R* | 4-Wire Horn Strobe, Standard cd, Red |
| P4RH | 4-Wire Horn Strobe, High cd, Red |
| P4W | 4-Wire Horn Strobe, Standard cd, White |
| **Wall Strobes** | |
| SR*† | Strobe, Standard cd, Red |
| SRH*† | Strobe, High cd, Red |
| SW* | Strobe, Standard cd, White |
| SWH* | Strobe, High cd, White |
| **Ceiling Horn Strobes** | |
| PC2R* | 2-Wire Horn Strobe, Standard cd, Red |
| PC2RH | 2-Wire Horn Strobe, High cd, Red |
| PC2W*† | 2-Wire Horn Strobe, Standard cd, White |
| PC2WH* | 2-Wire Horn Strobe, High cd, White |
| PC4R | 4-Wire Horn Strobe, Standard cd, Red |
| PC4RH | 4-Wire Horn Strobe, High cd, Red |
| PC4W | 4-Wire Horn Strobe, Standard cd, White |

| Model | Description |
|---|---|
| **Ceiling Strobes** | |
| SCR | Strobe, Standard cd, Red |
| SCRH | Strobe, High cd, Red |
| SCW* | Strobe, Standard cd, White |
| SCWH | Strobe, High cd, White |
| **Horns** | |
| HR | Horn, Red |
| HW | Horn, White |
| **Accessories** | |
| BBS-2 | Back Box Skirt, Wall, Red |
| BBSW-2 | Back Box Skirt, Wall, White |
| BBSC-2 | Back Box Skirt, Ceiling, Red |
| BBSCW-2 | Back Box Skirt, Ceiling, White |
| TR-HS | Trim Ring, Wall, Red |
| TRW-HS | Trim Ring, Wall White |
| TRC-HS | Trim Ring, Ceiling, Red |
| TRCW-HS | Trim Ring, Ceiling, White |

**Notes:**

* Add "-P" to model number for plain housing (no "FIRE" marking on cover), e.g., P2R-P.

† Add "-SP" to model number for "FUEGO" marking on cover, e.g., P2R-SP.

‡ "Standard cd" refers to strobes that include 15, 15/75, 30, 75, 95, 110, and 115 candela settings. "High cd" refers to strobes that include 135, 150, 177, and 185 candela settings.

SYSTEM SENSOR®

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