



## Deluge Valve, 2 Inch (50 mm) Model B

### GENERAL DESCRIPTION

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The 2 inch (50 mm) Model B Deluge Valve is a quick opening, hydraulically operated differential type valve designed for fire protection system service. It is used as an "automatic water control valve" in deluge, preaction, and special types of fire protection systems. The Model B Deluge Valve also provides for actuation of fire alarms upon system operation.

Operation of the Model B Deluge Valve is provided by an actuation (detection) system that is separate from the normally dry system piping. Trim configuration options for automatic operation of the Model B Deluge Valve include wet pilot actuation, dry pilot actuation, and electric actuation. Trim arrangements also provide for local emergency (manual) release of the Model B Deluge Valve.

#### WARNING

*The Model B Deluge Valve described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the integrity of this device.*

*The owner is responsible for maintaining his fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted relative to any questions.*

### TECHNICAL DATA

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#### Approvals

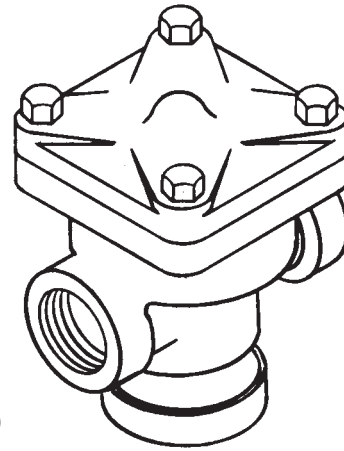
UL and ULC Listed. FM Approved.  
LPCB Approved (with either wet or dry pilot actuation and galvanized trim).

#### Maximum Working Water Pressure

175 psi (12.1 bar)

#### Physical Characteristics

The Body and Cover are natural finish bronze castings with integral machined seats for the Center Valve Assembly, and the Body Gasket is neoprene. The Center Valve Assembly consists of a bronze Center Valve, a flexible EPDM Diaphragm held in place by a bronze Diaphragm Retaining Ring assembled with three self-locking Flat Head Machine Screws, as well as an EPDM Facing held in place by a stainless steel Washer assembled with a self-locking stainless steel Hexagon Machine Screw. Correct alignment of the Center Valve assembly and the machined seats with the Body is maintained by the bronze Guide Rod which is screwed into the Cover.



#6040

### OPERATION

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The Model B Deluge Valve is a differential valve which depends upon water pressure in the Upper Chamber to hold the Center Valve Assembly closed against the water supply pressure. The nominal trip ratio is 2.5 to 1, i.e., the Model B Deluge Valve operates (opens) when the pressure in the Upper Chamber is reduced to approximately 40 percent of the water supply pressure.

When the Model B Deluge Valve is set for service, the Diaphragm Chamber is pressurized through the trim connections from the inlet side of the system's main control valve (Fig. 2). Opening of an actuation device, for example the solenoid valve in the Electric Actuation Trim (Fig. 6), releases water from the Upper Chamber faster than it can be replenished through the 1/8" (3.2 mm) Restriction in the Upper Chamber Supply Connection (Item 8 - Fig. 2). This results in a rapid pressure drop in the Upper Chamber and the force differential holding the Center Valve Assembly down in the set position is eliminated. The water supply pressure then forces the Center Valve Assembly open, permitting water to flow into the system piping, as well as through the Alarm & Test Trim (Fig. 4) to actuate system alarms.

### DESIGN CRITERIA

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#### Deluge Valve

The Model B Deluge Valve may be arranged for a 1-1/2 inch (37 mm), 2 inch (50 mm), or 2-1/2 inch (65 mm) discharge outlet. In the case of 2 or 2-1/2 inch discharge, either the 2 or 2-1/2 Inch Discharge Trim shown in Figure 3 is utilized.

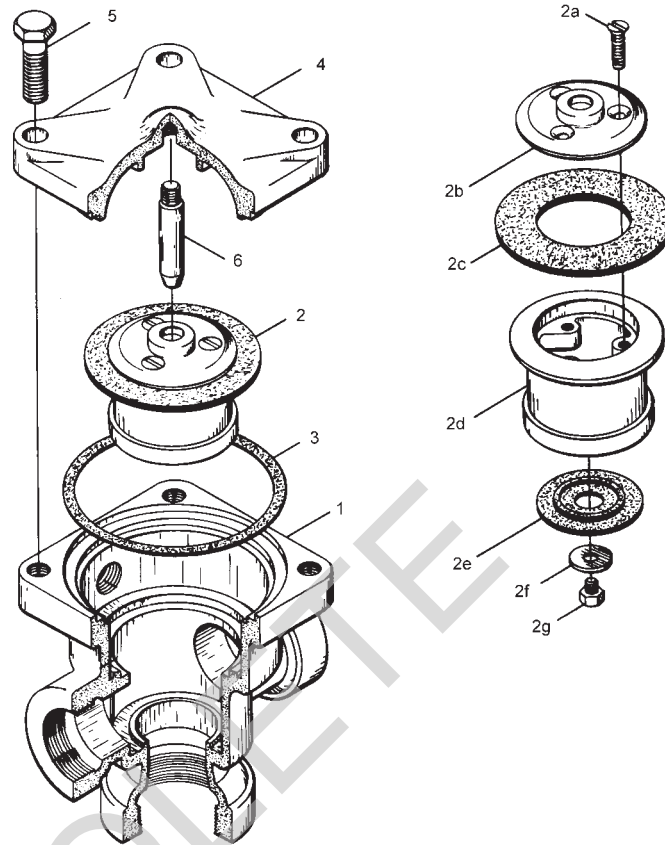
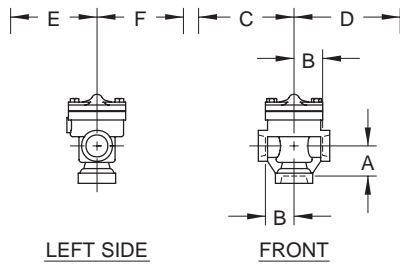
The Model B Deluge Valve is to be installed vertically, as shown in Figures 1 and 2, with the inlet connection at the bottom and the outlet connections to the side.

#### Valve Trim

The Basic Trim, Alarm & Test Trim, Dry Pilot Actuation Trim, and Electric Actuation Trim illustrated in Figures 2, 4, 5, and 6 form a part of the laboratory listings and approval of the Model B Deluge Valve and are necessary for proper operation of the Model B Deluge Valve. The trim

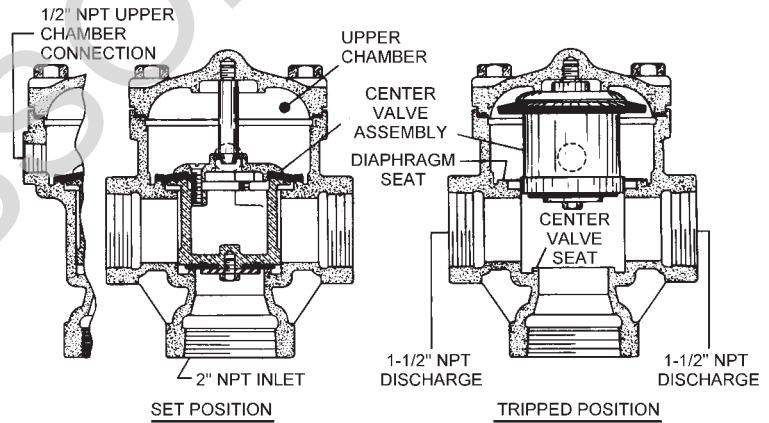
NO.	DESCRIPTION . . . .	QTY.	PART
1	Body . . . . .	1	NR
2	Center Valve Assembly . . . . .	1	920201014
2a	Self Locking Machine Screw . . . . .	3	626551045
2b	Diaphragm Retaining Ring . . . . .	1	920201004
2c	Diaphragm . . . . .	1	920201006
2d	Center Valve Facing . . . . .	1	920201012
2e	Washer . . . . .	1	920201013
2f	Self Locking Cap Screw . . . . .	1	626361100
3	Body Gasket . . . . .	1	920201007
4	Cover . . . . .	1	000000000
5	Hex Head Cap Screw 1/2"-13 UNC x 1-1/4" . . . . .	4	CH
6	Guide Rod . . . . .	1	920201005

NR: Not Replaceable  
CH: Common Hardware



Dimension . . . . .	Inches	MM
A Take Out for Inlet Connection . . . . .	2-5/8	66.5
B Take Out for Discharge Connections . . . . .	2-1/2	63.5
C To Left Outside of Trim . . . . .	8-1/2	215
D To Outside of Main Control Valve . . . . .	12	300
E To Back of Trim . . . . .	8-1/2	215
F To Front of Trim . . . . .	6	150

**FIGURE 1**  
**2 INCH MODEL B DELUGE VALVE**  
**(#6040)**



packages provide for the following items:

- Water Supply Pressure Gauge
- Upper Chamber Pressure Gauge
- Chamber Connections
- Actuation Devices (as applicable)
- Main Drain Valve
- Alarm Test Valve
- Alarm Control Valve
- Automatic Drain Valve

**Wet Pilot Actuation**  
**(Basic Trim plus Alarm & Test Trim)**

Wet Pilot Actuation provides for connection of a detection system consisting of wet pilot sprinklers (heat detectors) and manual control stations interconnected with minimum

1/2 inch (15 mm) Schedule 40 steel pipe. The pilot line is connected to the "Connection For Following Releasing Devices:" shown in Figure 2.

Wet pilot sprinklers are to be minimum 1/2 inch (15 mm) orifice listed or approved automatic sprinklers, and remote manual pull stations, where required, are to be #522891001 Manual Control Stations.

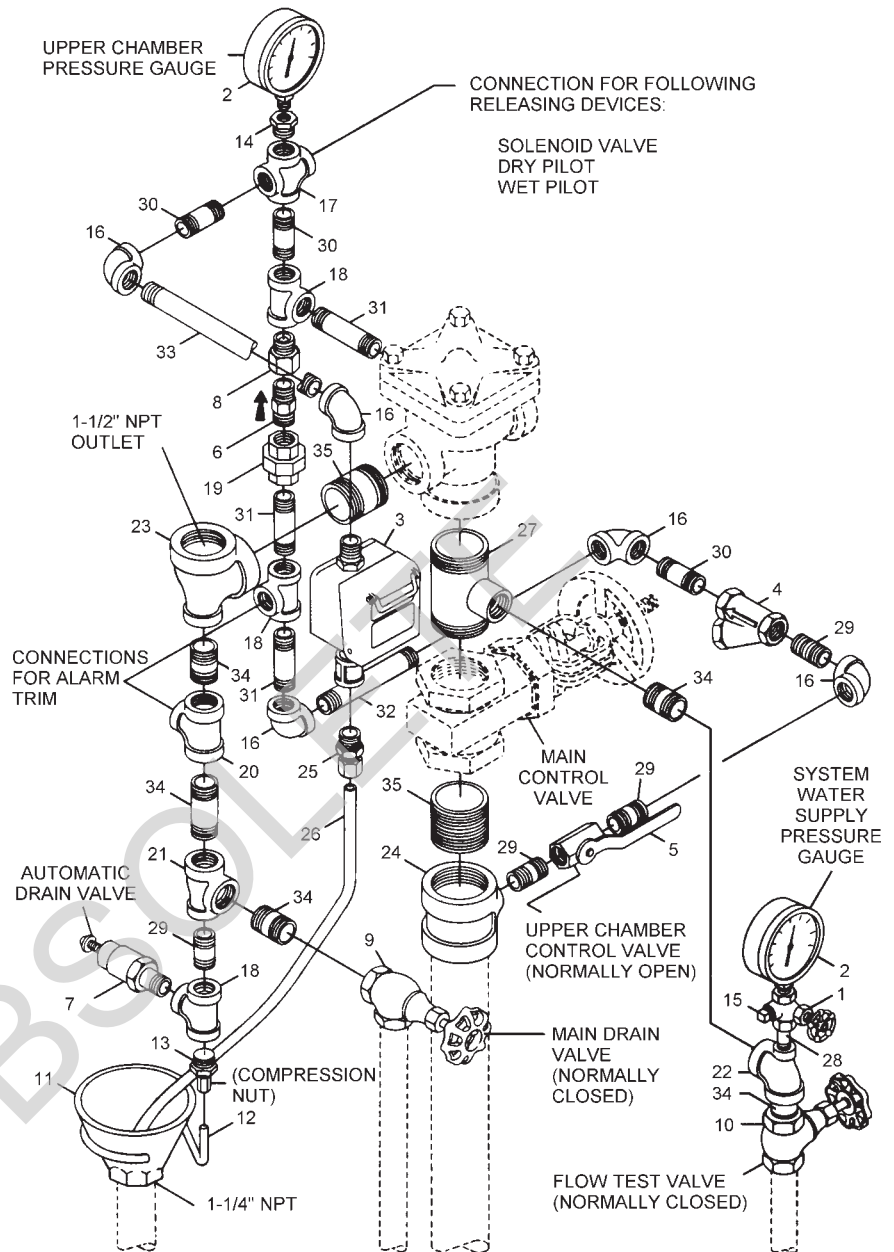
The maximum height of a wet pilot line above the Model B Deluge Valve must not exceed the limitations given in Graph A as a function of the minimum water supply pressure to the Model B Deluge Valve and the length of the pilot line to the most remote pilot sprinkler.

Provision must be made for installing a 1/2 inch (15 mm) orifice Inspector's Test Connection at the most hydraulically

NO.	DESCRIPTION . . . .	QTY.	PART
1	1/4" Gauge Test Valve . . . .	1	460051002
2	300 lb. Water Pressure Gauge . . . . .	2	923001003
3	Manual Control Station . . . .	1	522891001
4	1/2" Y-strainer . . . . .	1	523531005
5	1/2" Ball Valve . . . . .	1	923001002
6	1/2" Spring Loaded Check Valve . . . . .	1	923221002
7	Automatic Drain Valve . . . .	1	923001004
8	Priming Supply Restriction . . . . .	1	920201009
9	3/4" Angle Valve . . . . .	1	460481005
10	3/4" Globe Valve . . . . .	1	460471005
11	Drip Funnel . . . . .	1	923431007
12	Drip Funnel Bracket . . . . .	1	922111003
13	Bracket Connector . . . . .	1	922111005
14	1/2" x 1/4" Hex Bushing	1	CH
15	1/4" Plug . . . . .	1	CH
16	1/2" 90° Elbow . . . . .	5	CH
18	1/2" Tee . . . . .	3	CH
19	1/2" Union . . . . .	1	CH
20	3/4" x 3/4" x 1/2" Tee . . . .	1	CH
21	3/4" x 1/2" x 3/4" Tee . . . .	1	CH
22	3/4" x 1/4" x 3/4" Tee . . . .	1	CH
23	1-1/2" x 3/4" x 1-1/2" Tee . . . . .	1	CH
24	2" x 2" x 1/2" Tee . . . . .	1	CH
25	1/2" Tubing Connector . . . .	1	CH
26	1/2" Tube, 12" long . . . . .	1	CH
27	2" x 4" Nipple w/ 3/4" welded outlet . . . .	1	920201016
28	1/4" x 1" Nipple . . . . .	1	CH
29	1/4" x 1-1/2" Nipple . . . . .	4	CH
30	1/2" x 2" Nipple . . . . .	3	CH
31	1/2" x 3-1/2" Nipple . . . . .	3	CH
32	1/2" x 5" Nipple . . . . .	1	CH
33	1/2" x 9" Nipple . . . . .	1	CH
34	3/4" x 1-1/2" Nipple . . . . .	5	CH
35	1-1/2" x 2" Nipple . . . . .	1	CH
36	2" x close Nipple . . . . .	1	CH

CH: Common Hardware

**FIGURE 2  
BASIC TRIM (#6041)**



cally demanding location of a wet pilot line (usually adjacent to the highest and most remote wet pilot sprinkler or manual control station).

To determine the most hydraulically demanding location of a wet pilot line, when the choice between two or more locations is not readily apparent, determine for each location the elevation above the Model B Deluge Valve and the equivalent length of fittings plus pipe from the Model B Deluge Valve to the location. Then, using Graph A, determine the minimum system supply pressure required for the elevation and equivalent length of pipe at each location. Interpolate between the equivalent length plots as necessary. The location requiring the highest system supply pressure is the most hydraulically demanding location for the wet pilot line. (Reference: In no case should the re-

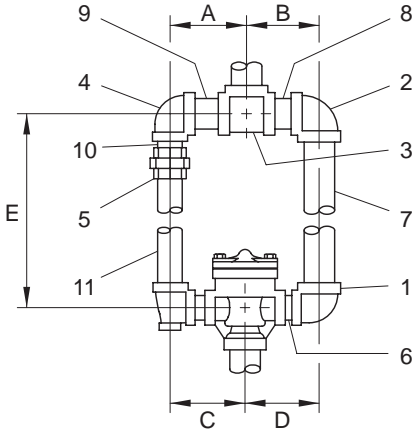
quired system supply pressure exceed the actual available minimum expected system supply pressure.)

Operation of a pilot sprinkler or opening of a manual control station results in a rapid pressure drop in the Upper Chamber of the Model B Deluge Valve, and the force differential holding the Model B Deluge Valve in the set position is eliminated.

**NOTES**

*Wet Pilot Lines must be maintained at a minimum temperature of 40°F/4°C.*

*It is recommended that internally galvanized pipe and cast iron fittings be used for wet pilot lines.*



**2 Inch Connections**

Dim.	Inches	MM
A	6.00	152.4
B	5.50	139.7
C	5.75	146.0
D	5.75	146.0
E	15.00	381.0

**2-1/2 Inch Connections**

Dim.	Inches	MM
A	5.50	139.7
B	6.50	165.1
C	5.75	146.0
D	6.25	158.8
E	15.00	381.0

**2" DISCHARGE TRIM**

NO. DESCRIPTION . . . QTY. PART

1	2" x 1-1/2" 90° Elbow . . . . .	1	CH
2	2" 90° Elbow . . . . .	1	CH
3	2" Tee . . . . .	1	CH
4	2" x 1-1/2" 90° Elbow . . . . .	1	CH
5	1-1/2" Union . . . . .	1	CH
6	1-1/2" x close Nipple . . . . .	1	CH
7	2" x 12" Nipple . . . . .	1	CH
8	2" x 2-1/2" Nipple . . . . .	1	CH
9	2" x 3" Nipple . . . . .	1	CH
10	1-1/2" x close Nipple . . . . .	1	CH
11	1-1/2" x 9" Nipple . . . . .	1	CH

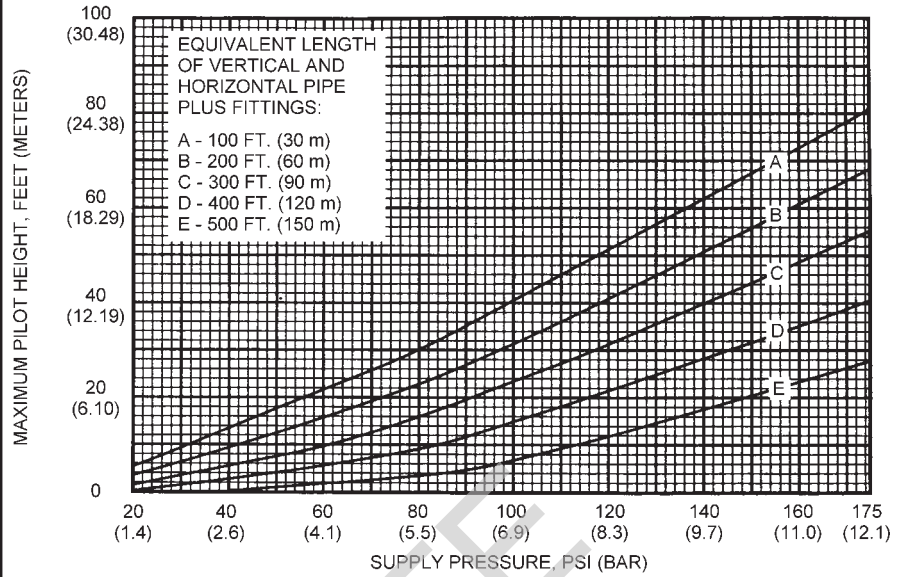
**2-1/2" DISCHARGE TRIM**

NO. DESCRIPTION . . . . QTY.PART

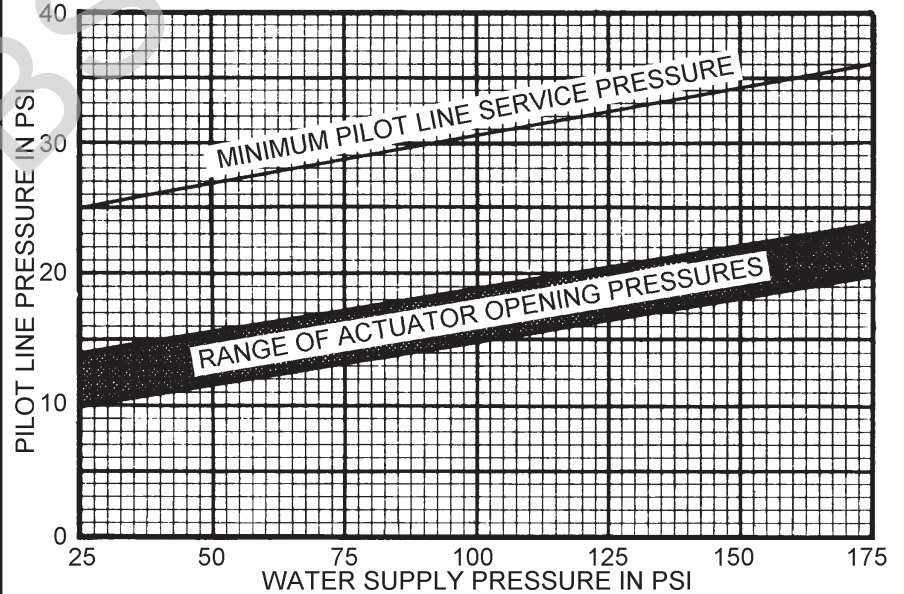
1	2-1/2" x 1-1/2" 90° Elbow . . . . .	1	CH
2	2-1/2" 90° Elbow . . . . .	1	CH
3	2-1/2" Tee . . . . .	1	CH
4	2-1/2" x 1-1/2" 90° Elbow . . . . .	1	CH
5	1-1/2" Union . . . . .	1	CH
6	1-1/2" x 2" Nipple . . . . .	1	CH
7	2-1/2" x 12" Nipple . . . . .	1	CH
8	2-1/2" x 3" Nipple . . . . .	1	CH
9	2-1/2" x 2-1/2" Nipple . . . . .	1	CH
10	1-1/2" x close Nipple . . . . .	1	CH
11	1-1/2" x 9" Nipple . . . . .	1	CH

CH: Common Hardware

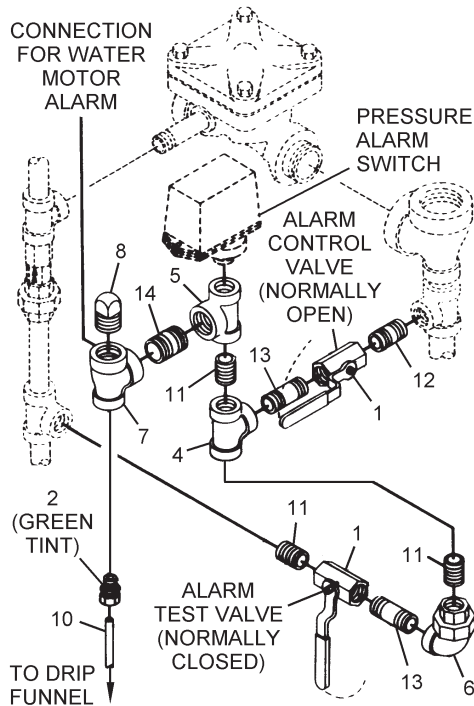
**FIGURE 3  
DISCHARGE TRIM  
2 INCH (#6045)  
2-1/2 INCH (#6046)**



**GRAPH A  
WET PILOT LINE DESIGN DATA FOR MODEL B DELUGE VALVE**



**GRAPH B  
DRY PILOT ACTUATOR PRESSURE CURVES**



NO.	DESCRIPTION . . .	QTY.	PART
1	1/2" Ball Valve . . . . .	2	923001002
2	3/32" Vent Fitting . . . . .	1	920321004
4	1/2" Tee . . . . .	1	CH
5	1/2" x 1/2" x 3/4" Tee . . . . .	1	CH
6	1/2" 90° Union Elbow . . . . .	1	CH
7	3/4" x 1/4" x 3/4" Tee . . . . .	1	CH
8	3/4" Plug . . . . .	1	CH
10	1/4" Tube, 10" long . . . . .	1	CH
11	1/2" x close Nipple . . . . .	3	CH
12	1/2" x 1-1/2" Nipple . . . . .	1	CH
13	1/2" x 2" Nipple . . . . .	2	CH
14	3/4" x 1-1/2" Nipple . . . . .	1	CH

CH: Common Hardware

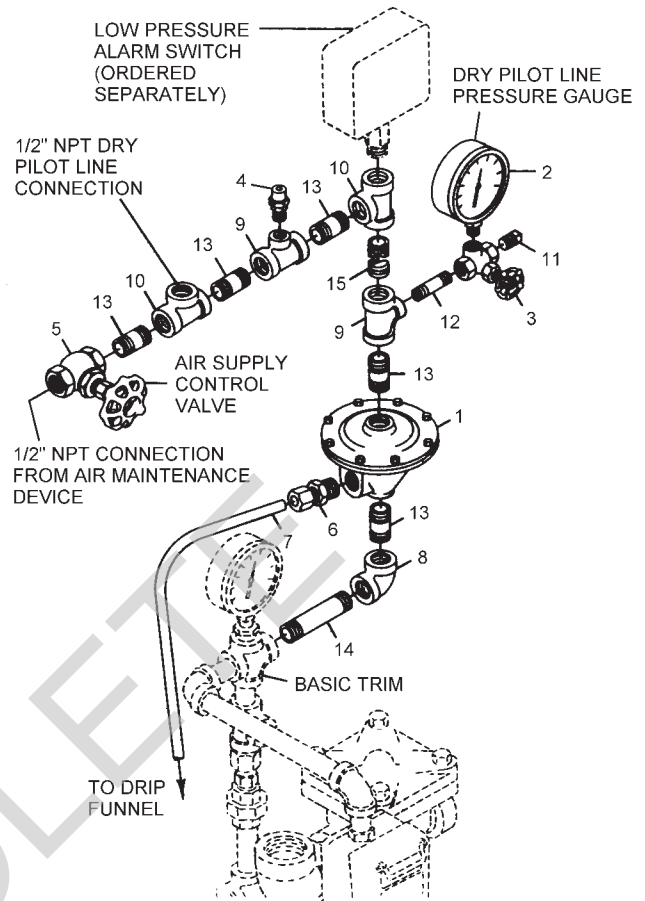
**FIGURE 4  
ALARM & TEST TRIM (#6042)**

**Dry Pilot Actuation  
(Basic Trim plus Alarm & Test Trim plus Dry Pilot Actuation Trim )**

Dry Pilot Actuation provides for installation of a detection system consisting of dry pilot sprinklers (heat detectors) and manual control stations interconnected with minimum 1/2 inch (15 mm) steel pipe. The pilot line, which is to be pressurized with air or nitrogen, is connected to the "Dry Pilot Line Connection" shown in Figure 5. Provision must be made for a 1/2 inch (15 mm) orifice, Inspector's Test Connection at the most remote location from the Model B Deluge Valve.

The Dry Pilot Actuation Trim is provided with a listed and approved Model S440 Dry Pilot Actuator. The Actuator is rated for use at a maximum pilot service pressure of 50 psi (3.4 bar) and a maximum water supply service pressure of 175 psi (12.1 bar).

Operation of a pilot sprinkler or opening of a manual control station releases pneumatic pressure from the pilot line. In turn, the Dry Pilot Actuator opens, resulting in a



NO.	DESCRIPTION . . .	QTY.	PART
1	Dry Pilot Actuator . . . . .	1	522801001
2	250 lb. Air Pressure Gauge . . . . .	1	923001005
3	1/4" Gauge Test Valve . . . . .	1	460051002
4	1/4" Pressure Relief Valve . . . . .	1	923431020
5	1/2" Globe Valve . . . . .	1	460471004
6	1/2" Tubing Connector . . . . .	1	CH
7	1/2" Tube, 24" long . . . . .	1	CH
8	1/2" 90° Elbow . . . . .	1	CH
9	1/2" x 1/2" x 1/4" Tee . . . . .	2	CH
10	1/2" Tee . . . . .	2	CH
11	1/4" Plug . . . . .	1	CH
12	1/4" x 1-1/2" Nipple . . . . .	1	CH
13	1/2" x 1-1/2" Nipple . . . . .	5	CH
14	1/2" x 3-1/2" Nipple . . . . .	1	CH
15	1/2" x 5" Nipple . . . . .	1	CH

CH: Common Hardware

**FIGURE 5  
DRY PILOT ACTUATION TRIM (#6043)**

rapid pressure drop in the Upper Chamber of the Model B Deluge Valve, and the force differential holding the Model B Deluge Valve in the set position is eliminated.

Dry pilot sprinklers are to be minimum 1/2 inch (15 mm) orifice listed or approved automatic sprinklers, and remote manual pull stations, where required, are to be #522891001 Manual Control Stations.

Graph B shows the "minimum pilot line service pressure" as a function of the water supply pressure. The pressure

in the dry pilot actuation system must be automatically maintained using one of the following maintenance devices, as appropriate.

- Star Model A Air Maintenance Device (pressure reducing type) (#1622).
- Star Model B Air Maintenance Device (compressor control type) (#1623).

**NOTES**

The dewpoint of the pilot line air pressure must be maintained below the lowest ambient temperature to which the dry pilot actuation system will be exposed. Accumulation of water in the pilot line connection to the Actuator will lower the air pressure at which the Actuator will open and possibly prevent proper operation. Also, introduction of moisture into the pilot lines exposed to freezing temperatures can create an ice buildup which could prevent proper operation of the Actuator.

An air dryer must be installed where the moisture content of the air supply is not properly controlled at less than the required value.

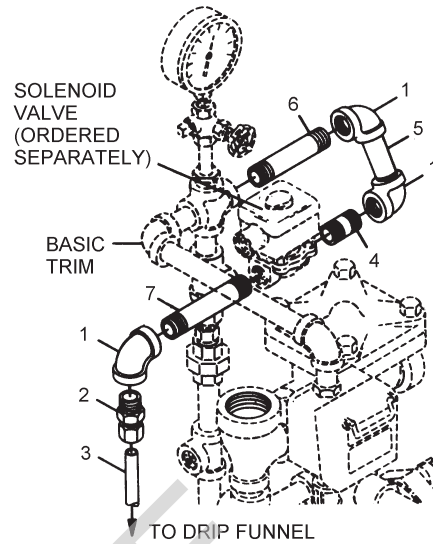
For dry pilot actuation system applications where the dewpoint must be maintained below -20°F/-29°C, it is recommended that nitrogen be used as a source of pressure in conjunction with the Model A Air Maintenance Device. In this case, a two stage nitrogen regulator will be required to maintain the nitrogen inlet pressure to the Model A Air Maintenance Device at no higher than 125 psi.

It is recommended that internally galvanized pipe and cast iron fittings be used for dry pilot lines.

Supervision of the pressure in the dry pilot actuation system and/or alarm which separately indicates operation of the detection system is recommended and may be required by the authority having jurisdiction. A dual setting low pressure alarm switch, such as #1259-4, is suitable for the service. The recommended pressure settings are as follows:

- Low pressure alarm setting at approximately 6 psi (0.4 bar) below the minimum pilot line service pressure requirement shown in Graph B.
- Fire alarm setting at approximately 15 psi (1.0 bar) below the minimum pilot line service pressure requirement shown in Graph B.

The Pressure Relief Valve (Ref. Item 4 - Fig. 5) is factory set to relieve at a pressure of approximately 45 psi (3.1 bar); however, it may be field adjusted to a lower pressure if required.



NO.	DESCRIPTION	QTY.	PART
1	1/2" 90° Elbow . . . . .	3	CH
2	1/2" Tubing Connector . . .	1	CH
3	1/2" Tube, 9" long . . . . .	1	CH
4	1/2" x 1-1/2" Nipple . . . . .	1	CH
5	1/2" x 3-1/2" Nipple . . . . .	1	CH
6	1/2" x 4" Nipple . . . . .	1	CH
7	1/2" x 4-1/2" Nipple . . . . .	1	CH

CH: Common Hardware

**FIGURE 6**  
**ELECTRIC ACTUATION TRIM (#6043)**

**Electric Actuation (Basic Trim plus Alarm & Test Trim plus Electric Actuation Trim)**

Electric Actuation is required for electric operation of the Model B Deluge Valve by a detection system consisting of electrical devices such as heat sensitive thermostats, smoke detectors, and/or electric manual pull stations.

The 24 VDC Solenoid Valve, #1911-03, must be ordered separately.

The Electric Actuation Trim is only to be used in conjunction with an electric deluge valve releasing panel (automatic control unit) that is listed or approved (as appropriate) for fire protection system releasing service. In addition, the deluge valve releasing panel is only to be operated by listed or approved (as appropriate) fire detectors.

Operation of an electrical device such as heat sensitive thermostat, smoke detector, or electric manual pull station signals the deluge valve releasing panel to energize the Solenoid Valve. In turn, the energized Solenoid Valve opens resulting in a rapid pressure drop in the Upper Chamber of the Model B Deluge Valve, and the force differential holding the Model B Deluge Valve in the set position is eliminated.

**NOTE**

Consult with the Authority Having Jurisdiction regarding installation criteria pertaining to electric actuation circuitry.

## INSTALLATION

The Model B Deluge Valve must be installed in accordance with the following instructions:

### NOTES

*Proper operation of the Model B Deluge Valve depends upon its trim being installed in accordance with the instructions given in this Technical Data Sheet. Failure to follow the appropriate trim diagram may prevent the Model B Deluge Valve from functioning properly, as well as void listings, approvals, and the manufacturer's warranties.*

*The Model B Deluge Valve must be installed in a readily visible and accessible location.*

*The Model B Deluge Valve, associated trim, and wet pilot lines must be maintained at a minimum temperature of 40°F/4°C.*

*Heat tracing of the Model B Deluge Valve or its associated trim is not permitted. Heat tracing can result in the formation of hardened mineral deposits which are capable of preventing proper operation.*

The Model B Deluge Valve is to be installed in accordance with the following criteria:

1. All nipples, fittings, and devices must be clean and free of scale and burrs before installation. Use pipe thread sealant sparingly on male pipe threads only.

### NOTE

*It is recommended that internally galvanized pipe and cast iron fittings be used for wet or dry pilot lines.*

2. Refer to Figure 3 for installation of either the 2 or 2-1/2 inch Discharge Trim, as applicable. If a 1-1/2 inch discharge is required, the 1-1/2 inch outlet connection on the right hand side of the Model B Deluge Valve must be plugged.
3. The Model B Deluge Valve must be trimmed in accordance with Figures 2 and 4, as well as Figures 5 and 6 as applicable. The Basic Trim has been designed to facilitate use of a gate valve having an end-to-end dimension of 3-7/8 inches. If another type of main control valve is to be used, the connection to the Upper Chamber Supply Control Valve may be modified accordingly.
4. Care must be taken to make sure that check valves, strainers, globe valves, etc. are installed with the flow arrows in the proper direction.
5. Drain tubing to the drip funnel must be installed with smooth bends that will not restrict flow.
6. The main drain and flow test drain may be interconnected to the drip funnel drain provided a check valve is located at least 12 inches (300 mm) below the drip funnel.
7. Suitable provision must be made for disposal of drain water. Drainage water must be directed such that it will not cause accidental damage to property or danger to persons.
8. An Inspector's Test Connection, as described in the De-

sign Criteria section, must be provided for Wet or Dry Pilot Actuation.

9. An Air Maintenance Device, as described in the Design Criteria section, must be provided for Dry Pilot Actuation.
10. A desiccant dryer, when specified for Dry Pilot Actuation, is to be installed between a drip leg and the Air Maintenance Device.
11. The Low Pressure Alarm Switch for Dry Pilot Actuation is to be adjusted as follows:
  - Low pressure alarm setting at approximately 6 psi (0.4 bar) below the minimum pilot line service pressure requirement shown in Graph B.
  - Fire alarm setting at approximately 15 psi (1.0 bar) below the minimum pilot line service pressure requirement shown in Graph B.
12. Unused pressure alarm switch connections must be plugged.
13. The Pressure Relief Valve provided with the Dry Pilot Actuation Trim is factory set to relieve at a pressure of approximately 45 psi (3.1 bar), which can typically be used for a maximum normal dry pilot actuation system pressure of 40 psi (2.8 bar). The Pressure Relief Valve may be reset; however, it must be reset to relieve at a pressure which is in accordance with the requirements of the authority having jurisdiction.
 

To reset the Pressure Relief Valve, first loosen the jam nut and then adjust the cap accordingly — clockwise for a higher pressure setting or counterclockwise for a lower pressure setting. After verifying the desired pressure setting, tighten the jam nut.
14. Conduit and electrical connections are to be made in accordance with the requirements of the authority having jurisdiction and/or the National Electric Code.

## SETTING PROCEDURE

Steps 1 through 12 are to be performed when initially setting the Model B Deluge Valve; after an operational test of the fire sprinkler system; or, after system operation due to a fire.

1. Close the Upper Chamber Supply Control Valve (Fig. 2).
2. Close the Main Control Valve. If the system is equipped with Dry Pilot Actuation, close the Air Supply Control Valve (Fig. 5).
3. Open the Main Drain Valve (Fig. 2), Flow Test Valve (Fig. 2), and all auxiliary drains in the system. Close the Main Drain Valve and auxiliary drain valves after water ceases to discharge. Leave the Flow Test Valve open.
4. Depress the plunger of the Automatic Drain Valve (Fig. 2) to verify that it is open and that the Model B Deluge Valve is completely drained.
5. Clean the Strainer (Fig. 2) in the Upper Chamber Supply Connection by removing the clean-out plug and strainer basket. The Strainer may be flushed by momentarily opening the Upper Chamber Supply Control Valve.
6. Open the Alarm Control Valve (Fig. 4) if it was closed to silence local alarms.

It is recommended that the Alarm Control Valve be wire sealed in the open position with a No. 16 twisted wire, the ends of which are secured by a lead seal. The wire seal should be looped through the hole in the handle and tightly twisted around the pipe nipple adjacent to the handle.

7. Reset the actuation system.

**Manual Actuation** — Reset the Manual Control Station (Fig. 2); however, do not close the hinged cover at this time.

**Wet Pilot Actuation** — Replace operated pilot sprinklers and/or reset the manual control stations.

**Dry Pilot Actuation** — Replace operated pilot sprinklers and/or reset the manual control stations. Re-establish dry pilot pneumatic pressure.

**Electric Actuation** — Reset the electric detection system in accordance with the manufacturer's instructions to de-energize the solenoid valve.

### NOTE

*In order to prevent the possibility of a subsequent operation of an overheated solder type sprinkler, any solder type sprinklers which were possibly exposed to a temperature greater than their maximum rated ambient must be replaced.*

8. Remove the Cover from the Model B Deluge Valve, and then remove the Center Valve Assembly. Thoroughly clean and inspect for wear or damage the Center Valve Assembly, as well as all interior surfaces of the Valve Body and Cover. Special consideration should be given to the condition of the Diaphragm and Facing. The Diaphragm and/or Facing should be replaced if there are any sign of deterioration due to age or chemicals in the water. If the water supply contains chemicals which tend

to attack an EPDM type rubber, then the frequency of the Diaphragm and facing inspection should be increased to at least annually.

Worn or damaged parts must be replaced and the Model B Deluge Valve must be reassembled in accordance with Figure 1. The Cap Screws securing the Cover should be uniformly tightened using a cross-draw sequence.

9. Open the Upper Chamber Supply Control Valve (Fig. 2) and allow time for full pressure to build up in the Upper Chamber.
10. Operate (open) the Manual Control Station (Fig. 2) to vent trapped air from the Upper Chamber. If necessary, first open the hinged cover, and then fully pull down on the operating lever. SLOWLY close the operating lever, by pushing it up after aerated water ceases to discharge from the Manual Control Station drain tubing. Close the hinged cover and insert a new break rod in the small hole through the top of the enclosing box.

If wet pilot actuation is being used, crack open the Inspector's Test Connection and any other vent valves, to relieve trapped air. After the discharge of air has stopped, close the vent valves and the Inspector's Test Connection.

11. Inspect drain connections from the Manual Control Station, Solenoid Valve, Dry Pilot Actuator, and Alarm Devices, as applicable. Any leaks must be corrected before proceeding to the next step.
12. Slowly open the Main Control Valve. Close the Flow Test Valve (Fig. 2) as soon as water discharges from the Flow Test Valve. Observe the Automatic Drain Valve (Fig. 2) for leaks. If there are leaks, determine/correct the cause of the leakage problem. If there are no leaks, the Model B Deluge Valve is ready to be placed in service and the Main Control Valve must then be fully opened.

### NOTE

*After setting a fire protection system, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.*



## MAINTENANCE AND SERVICE

The Model B Deluge Valve must be maintained and serviced in accordance with the following instructions:

The following procedures and inspections should be performed as indicated, in addition to any specific requirements of the NFPA, and any impairment must be immediately corrected. It is also recommended that fire protection systems be inspected by a qualified Inspection Service.

### NOTES

*The operational test procedure, waterflow pressure alarm test procedure, and low pressure alarm test procedure will result in operation of the associated alarms. Consequently, notification must be given to the owner and the fire department, central station, or other signal station to which the alarms are connected.*

*Before closing a fire protection system main control valve for maintenance work on the fire protection system which it controls, permission to shut down the affected fire protection systems must first be obtained from the proper authorities and all personnel who may be affected by this decision must be notified.*

### Annual Operation Test Procedure

Proper operation of the Model B Deluge Valve (i.e., opening of the Model B Deluge Valve as during a fire condition) should be verified at least once a year as follows:

1. If water must be prevented from flowing beyond the riser, perform the following steps.
  - a. Close the Main Control Valve.
  - b. Open the Flow Test Valve.
  - c. Open the Main Control Valve one turn beyond the position at which water just begins to flow from the Flow Test Valve.
  - d. Close the Flow Test Valve.
2. Determine the type of actuation/detection system, and operate the Model B Deluge Valve accordingly.

### NOTE

*Be prepared to quickly perform Steps 3, 4, and 5, if water must be prevented from flowing beyond the riser.*

**Wet Pilot Actuation** — Open the Inspector's Test Connection.

**Dry Pilot Actuation** — Open the Inspector's Test Connection.

**Electric Actuation** — Test the deluge releasing panel (automatic control unit) in accordance with the manufacturer's instructions to energize the solenoid valve.

3. Verify that the Model B Deluge Valve has tripped, as indicated by the flow of water into the system.
4. Close the Upper Chamber Supply Control Valve.
5. Close the system's Main Control Valve.
6. Reset the Model B Deluge Valve in accordance with the Valve Setting Procedure.

### Quarterly Solenoid Valve Test Procedure For Electric Actuation

Proper operation of the Solenoid Valve for electric actuation should be verified at least quarterly as follows:

1. Close the Main Control Valve.
2. Open the Flow Test Valve.
3. Test the automatic control unit (deluge releasing panel) in accordance with the manufacturer's instructions to energize the solenoid valve.
4. Verify that the flow of water from the Solenoid Valve drain connection increases to a full flow.
5. Verify that the Upper Chamber pressure has decreased to below 25% of the water supply pressure.
6. Reset the electric detection system in accordance with the manufacturer's instructions to de-energize the solenoid valve. Check the Solenoid Valve drain for leaks. Any leaks must be corrected before proceeding to the next step.
7. Slowly open the Main Control Valve. Close the Flow Test Valve as soon as water discharges from the drain connection. Observe the Automatic Drain Valve for leaks. If there are leaks, determine/correct the cause of the leakage problem. If there are no leaks, the Model B Deluge Valve is ready to be placed in service and the Main Control Valve must then be fully opened.

### Quarterly Dry Pilot Actuator Test Procedure For Dry Pilot Actuation

Proper operation of the Dry Pilot Actuator for dry pilot actuation should be verified at least quarterly as follows:

1. Close the Main Control Valve.
2. Open the Flow Test Valve.
3. Open the Inspector's Test Connection on the Dry Pilot Line.
4. Verify that the flow of water from the Dry Pilot Actuator drain connection increases to a full flow.
5. Verify that the Upper Chamber pressure has decreased to below 25% of the water supply pressure.
6. Close the Inspector's Test Connection and allow the dry pilot line pressure to re-establish. Check the Dry Pilot Actuator drain for leaks. Any leaks must be corrected before proceeding to the next step.
7. Slowly open the Main Control Valve. Close the Flow Test Valve as soon as water discharges from the drain connection. Observe the Automatic Drain Valve for leaks. If there are leaks, determine/correct the cause of the leakage problem. If there are no leaks, the Model B Deluge Valve is ready to be placed in service and the Main Control Valve must then be fully opened.

**Quarterly Waterflow Alarm Test Procedure**

Testing of the the system waterflow alarms should be performed quarterly. To test the waterflow alarm, close the Alarm Control Valve and then open the Alarm Test Valve, which will allow a flow of water to the Pressure Alarm Switch and/or Water Motor Alarm. Upon satisfactory completion of the test, close the Alarm Test Valve and then open the Alarm Control Valve.

It is recommended that the Alarm Control Valve be wire sealed in the open position with a No. 16 twisted wire, the ends of which are secured by a lead seal. The wire seal should be looped through the hole in the handle and tightly twisted around the pipe nipple adjacent to the handle.

**Quarterly Low Pressure Alarm Test Procedure And Condensate Drain Procedure For Dry Pilot Actuation**

For Dry Pilot Actuation, testing of the Low Pressure Alarm Switch and drainage of the pilot line condensate should be performed quarterly as follows.

1. Close the Upper Chamber Supply Control Valve.
2. Close the Main Control Valve.
3. Open the Flow Test Valve.
4. Drain the dry pilot line condensate as follows:
  - a. Close the Gauge Test Valve located below the Dry Pilot Line Pressure Gauge.
  - b. Remove the 1/4" Plug from the Gauge Test Valve.
  - c. Crack Open the Gauge Test Valve and allow all condensate, if any, to drain.
  - d. Close the Gauge Test Valve, replace the Plug, and then open the Gauge Test Valve.
5. Open the Inspector's Test Connection, and slowly relieve pneumatic pressure. Verify that the Low pressure Alarm Switch is operational and that the low pressure set points are as follows:
  - Low pressure alarm setting at approximately 6 psi (0.4 bar) below the minimum pilot line service pressure requirement shown in Graph B.
  - Fire alarm setting at approximately 15 psi (1.0 bar) below the minimum pilot line service pressure requirement shown in Graph B.
6. Close the Inspector's Test Connection, and allow the Dry Pilot Line to automatically repressurize.
7. Open the Upper Chamber Supply Control Valve.
8. Slowly open the Main Control Valve. Close the Flow Test Valve as soon as water discharges from the drain connection. Observe the Automatic Drain Valve for leaks. If there are leaks, determine/correct the cause of the leakage problem. If there are no leaks, fully open the Main Control Valve.

## ORDERING PROCEDURE

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Please Specify:

- 1 Model B Deluge Valve (#6040)
2. Discharge Trim, Fig. 2, as applicable:  
2 Inch (#6045)  
2-1/2 Inch (#6046)
3. Basic Trim, Fig. 3, (#6041)
4. Alarm and Test Trim , Fig. 4,(#6042)
5. Actuation Trim, as applicable:  
  
Wet Pilot Actuation (No additional trim necessary)  
Dry Pilot Actuation, Fig. 5, (#6044)  
Electric Actuation, Fig. 6, (#6043)
6. Separately ordered items:  
  
For Wet Pilot Actuation:  
Waterflow Pressure Alarm Switch (#1259-71)  
Remote Manual Control Stations,  
as applicable (#522891001)  
  
For Dry Pilot Actuation:  
Waterflow Pressure Alarm Switch (#1259-71)  
Remote Manual Control Stations,  
as applicable (#522891001)  
Low Air Pressure Alarm Switch (#1259-4)  
Air Maintenance Device:  
Model A, Pressure Reducing Type (#1622)  
Model B, Compressor Control Type (#1623)  
  
For Electric Actuation:  
Waterflow Pressure Alarm Switch (#1259-71)  
24 VDC Solenoid Valve (#1911-03)

Refer to Price List for for complete listing of Part Numbers with respect to trim finish, replacement parts, etc.

## AVAILABILITY AND SERVICE

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Star Sprinkler Inc. products and devices are available worldwide through a network of independent distributors. Please contact Star Sprinkler Inc. for information and the name and address of the Star distributor in your area.

## LIMITED WARRANTY

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Seller warrants for a period of one year from date of shipment (warranty period) that the products furnished hereunder will be free of defects in material and workmanship.

For further details on Warranty, contact Star Sprinkler, Inc.

OBSOLETE



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