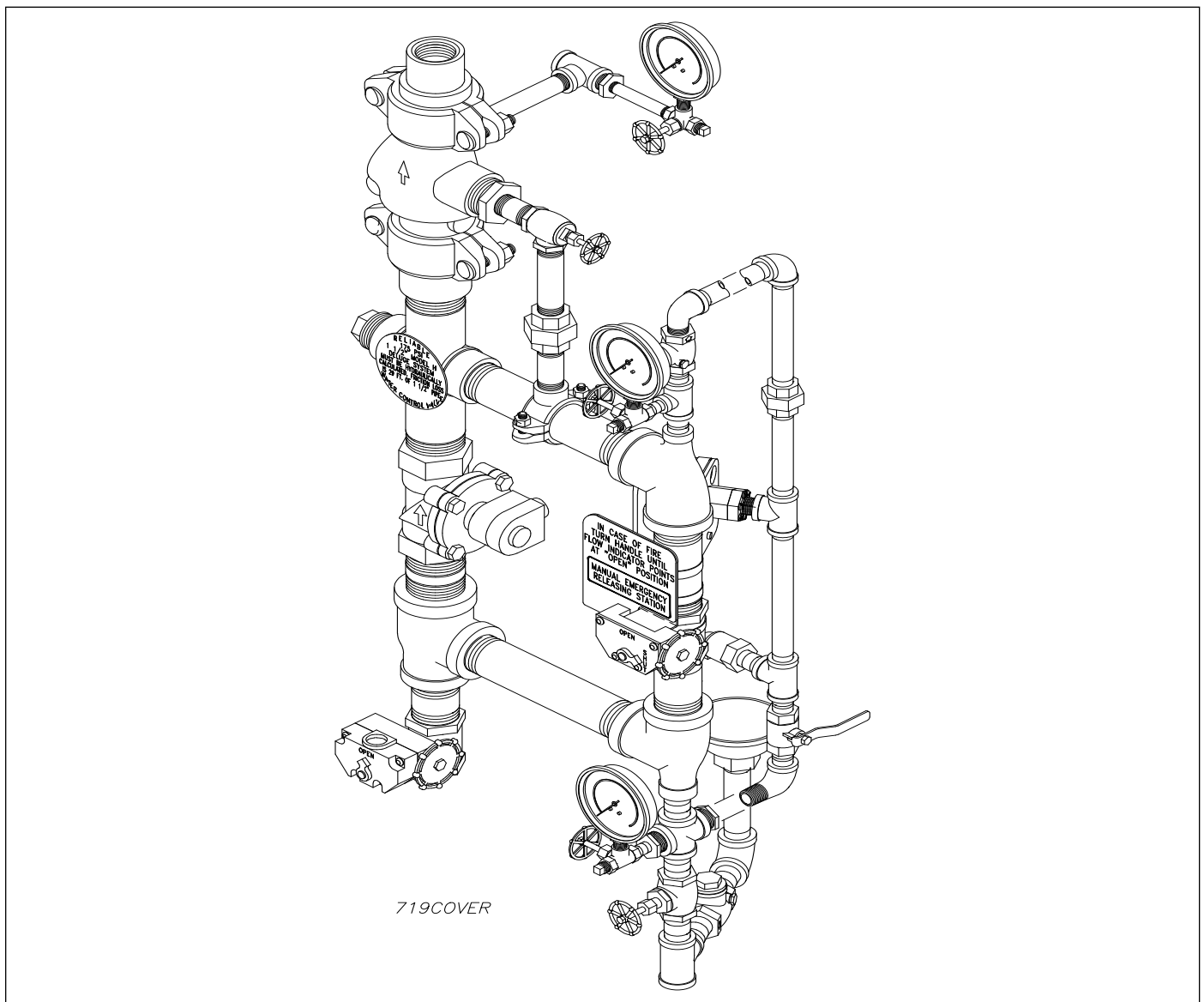




Model H Single Interlock Preaction System 1½" (40mm)

Instructions for Installation, Operation, Care and Maintenance

7 PSI (0.48 bar) Minimum Pneumatic Supervising
Pressure with Electric Actuation



General Description

Reliable Single Interlock Preaction Systems are designed for water sensitive areas which require protection from inadvertent water flow into the sprinkler system piping. Sprinkler piping in single interlock systems can effectively be supervised by means of a Reliable Model B-SI Air Compressor Panel or other pneumatic sources meeting the requirements of NFPA 13. Loss of supervising pneumatic pressure, due to a damaged sprinkler or pipe line, will not cause water to flow through a control valve and into the system piping. A significant loss of pneumatic pressure will activate a trouble-annunciating device when system pressure falls below the supervisory pressure switch settings.

When one electrical detector senses the presence of fire, the electrical releasing control panel activates fire alarm devices and latches the solenoid releasing valve in the open position (note that arranging detectors in a cross-zoned pattern will require operation of two detectors before the solenoid valve can open). The solenoid valve, when closed, is preserving supply water pressure in the inlet of the Reliable Model H Deluge Riser Assembly. Actuating the solenoid valve releases that water pressure, allowing water flow into the sprinkler system in readiness for the subsequent operation of a sprinkler.

To fully operate a cross-zoned single interlock system, two electrical detectors must activate and a sprinkler must open. During the early stages of a fire, smoke or heat activates the first detector which causes the control panel to produce a local alarm and an alarm at the main fire alarm panel. Electrical relays inside the releasing control panel can be used to shut down air moving equipment or activate security doors and other electrical devices when the panel goes into this first alarm condition. Subsequent activation of a second nearby or adjacent detector will cause the panel to energize the solenoid valve open and release water into the sprinkler piping. Water flowing into the sprinkler piping will simultaneously produce water pressure that causes the transfer of contacts in the pressure switch mounted on the system. This switch can electrically initiate the shutdown or startup of equipment, such as computers or other alarm devices. The flow of water into the sprinkler piping effectively converts the dry system into a wet pipe system. In the event the fire subsequently produces sufficient heat to operate a sprinkler head, water will flow from that sprinkler, controlling the fire.

The major benefits of a single interlock preaction system when compared with a wet pipe system are as follows:

- A. A fire alarm sounds prior to the operation of a sprinkler, which may enable extinguishing the fire by handheld means before the operation of any sprinkler head occurs.
- B. A trouble annunciator signals whenever the integrity of piping or sprinklers is accidentally or intentionally disturbed; however, no water flow or water damage will result at that time.
- C. Speedy detection and an early fire alarm are provided by fire detectors, without the delay associated with water delivery time in the event of a fire.

A Hydraulic Manual Emergency Releasing Station is standard equipment in the Model H Riser Assembly. It is identified by a nameplate attached above the releasing valve.

A Preaction Trim Kit is available to provide a bypass drain line and to attach the air or nitrogen supply required to supervise the preaction system. This kit includes a UL Listed Reliable Model G Right Check Valve™ supplied with rigid grooved pipe couplings, as illustrated in Figure 1.

Approvals

The 1½" Reliable Single Interlock Preaction System is Underwriters Laboratories, Inc. Listed in the Special System Water Control Valves - Deluge Type (VLFT) category. It is also Listed by Underwriters' Laboratory of Canada. The Model G Right Check™ Valve is Listed by UL and ULC. NYC MEA 258-93-E applies to both the Model H Assembly and the Model G Right Check Valve.

Technical Data

The 1½" Reliable Single Interlock Preaction System, with associated trim, is rated for a minimum supply pressure of 20 psi (1.4 bar) and a maximum supply pressure of 175 psi (12 bar).

Friction loss, expressed in equivalent length of Sch. 40 pipe and based on Hazen & Williams formula with C=120, and a flowing velocity of 15 ft/s (4.6 m/s), is 29 ft. (8.84 m) for the Model H Riser Assembly, and 7 ft. (2.1 m) for the 2½" (65mm) Model G Right Check™ Valve.

Shipping Weight:

Model H Riser Assembly 52 lbs. (23.6kg)

The following list of Technical Data Sheets describe the valves and devices which can be used with this system.

Deluge Riser Assembly	507
Water Flow Pressure Alarm Switch	Potter #5400928
Pressure Maintenance Device	251
Air Compressor Panel	252
Releasing/Control Panel	Potter #5401600
Model G Right Check™ Valve	806
Low Air Pressure Switch	Potter #5401524

System Design Considerations

The automatic sprinklers, air compressor, releasing devices, electric releasing control equipment, fire detection devices, manual pull stations, and signaling devices which are utilized with the Reliable Single Interlock System must be UL and/or ULC listed, as applicable. The Single Interlock Preaction Assembly and all interconnecting piping must be located in a readily visible and accessible location and in an area which can be maintained at a minimum temperature of 40°F (4°C). **NOTE: HEAT TRACING IS NOT PERMITTED.**

Hydrostatic Testing of Systems

As required by NFPA 13, fire sprinkler systems with working pressures up to and including 150 psi are to be hydrostatically tested at a water pressure of 200 psi and maintain that pressure without loss for two hours. Fire sprinkler systems with working pressures above 150 psi are required to be hydrostatically tested at 50 psi above the system working pressure and maintain that pressure without loss for two hours.

In some cases, hydrostatic testing (in accordance with the NFPA 13 requirements noted above) will result in pressures that exceed the working pressure of the valve and trim kit for the two-hour test period.

The valve and applicable trim kit have been tested, approved and listed under these conditions and as such, hydrostatic testing in accordance with NFPA 13 is acceptable. Hydrostatically testing the valve and trim to pressures higher than their rating is limited to the hydrostatic test as referenced by NFPA 13. It does not address the occurrence(s) of a “water hammer” effect, which can indeed damage the valve. A “water hammer” in the water supply piping of the valve can create pressures in excess of the rated pressure and should be avoided by all necessary means. This condition may be created from improper fire pump settings, underground construction work, or an improper venting of trapped air in the water supply piping.

System Supervising Pressure Requirements

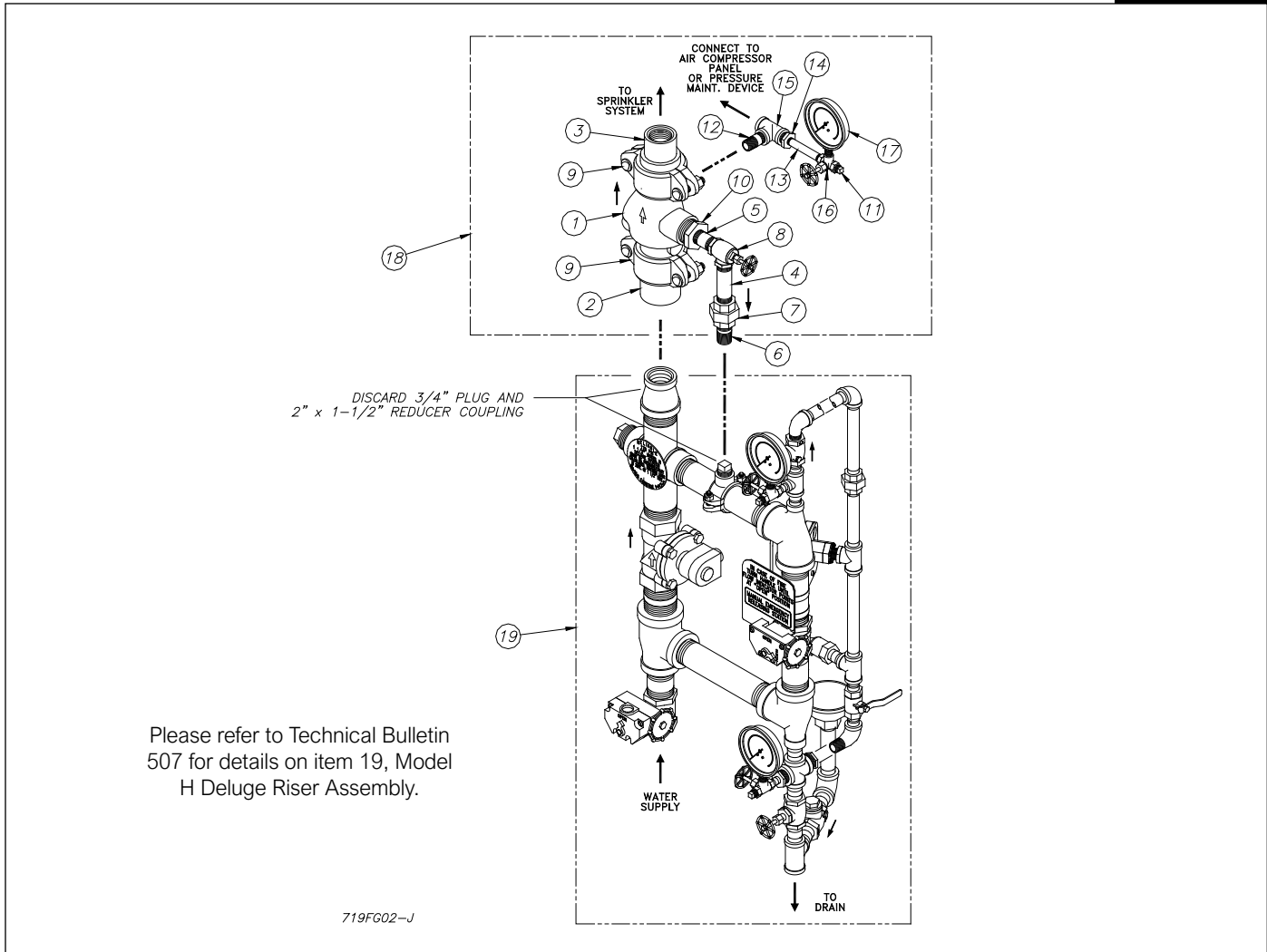
A Reliable Model B-SI Air Compressor Panel Air Compressor Panel can be used to maintain the supervising pneumatic pressure. The Air Compressor Panel contains an integral low air pressure warning light. The Reliable supervisory pressure sources are factory set to transfer contact when the supervisory pressure falls below approximately 4 psi (0.48 bar).

In some circumstances, such as when dry sprinklers are being used in a preaction system, it may be desirable to supervise the preaction system at air pressures higher than 7 psi. In this case the use of other pneumatic sources that meet the requirements of NFPA 13 is acceptable. Additional information on supervisory pressure sources can be found on Reliable Technical Bulletins 251, 252, 254, 256, and 258.

Please note that the low air/nitrogen switch is not provided with the basic trim. A Potter Electric PS15-2 or PS25-2 switch is recommended depending on the supervisory pressure needed. (Please order separately.) Additional information on supervisory pressure sources can be found on Reliable Technical Bulletins 251, 252, 256, and 258.

System Electrical Requirements

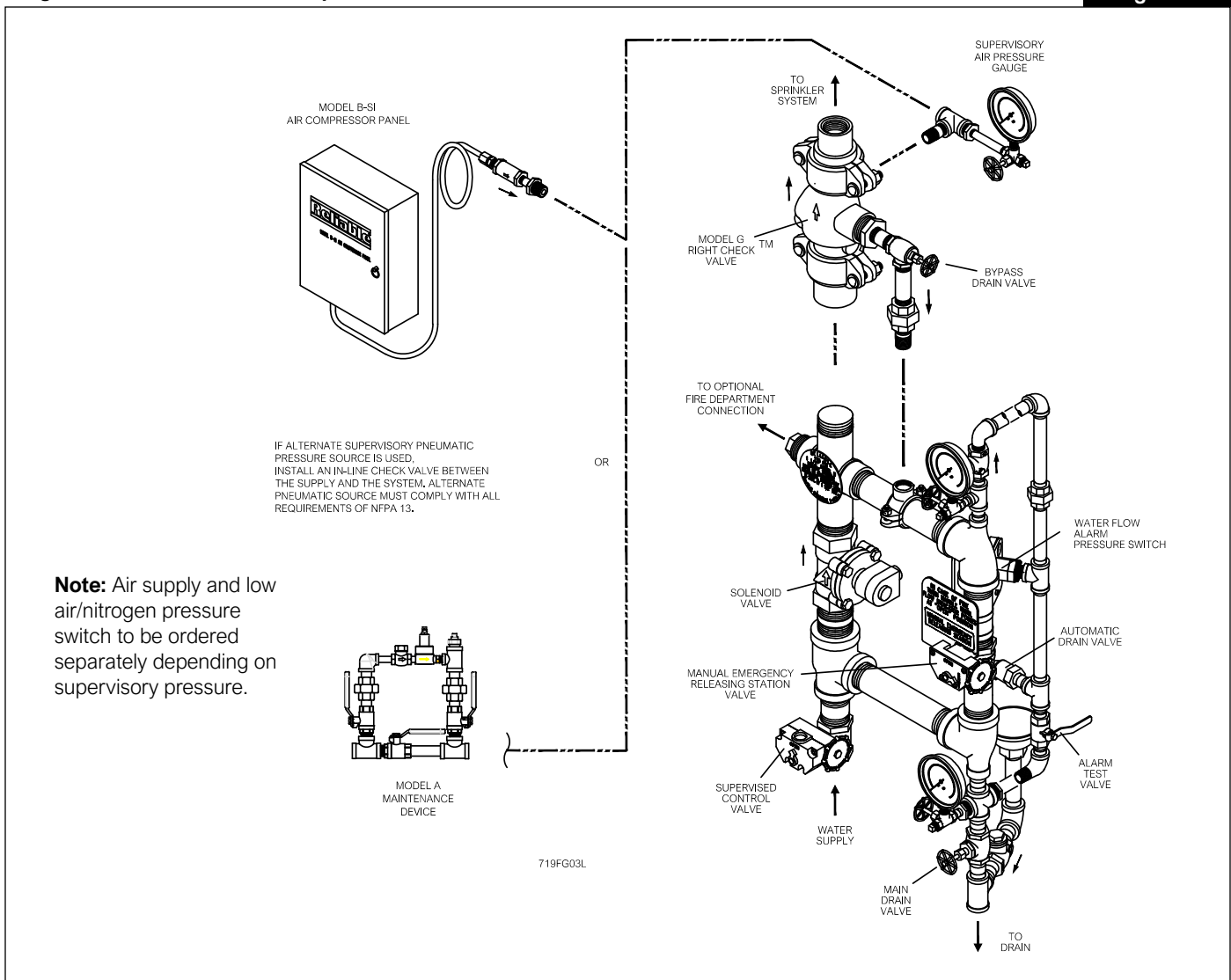
All detection, releasing, alarm, and notification devices for the Single Interlock System can be supervised by the Potter PFC-4410G3 Releasing Control Panel or other approved panel listed to operate the solenoid valve.



Preaction Trim Kit

The Preaction Trim Kit (P/N 6501200112) consists of items 1 through 17. The illustrated (Figure 2) assembly has a convenient arrangement for draining the sprinkler system through the Model H Riser Assembly drain line. Assemble the Preaction Trim Kit using a suitable Teflon-based pipe thread sealant applied to each male thread. Assemble rigid couplings by first applying a thin coat of silicone or other lubricant that does not contain hydrocarbons to the lips and outside surfaces of the gasket. Position gaskets uniformly on the valve and adjacent reducers so that all grooves are exposed. Place coupling housings over gaskets and engage the housing keys in the grooves. Insert bolts and tighten nuts alternately until housing halves are drawn together uniformly.

Item No.	Part No.	Description	No. Req'd
1	6107020000	Valve, Riser Check, 2½" Model G	1
2	98050002	Reducer, 2½" Grv. x 2" NPT, 2¾" Lg.	1
3	98050003	Reducer, 2½" Grv. x 1½" NPT, 2¾" Lg.	1
4	98543234	Nipple, ¾" x 3½" Lg. (Galv.)	1
5	98543231	Nipple, ¾" x 3" Lg. (Galv.)	1
6	98543279	Nipple, ¾" x Close (Galv.)	1
7	98815202	Union, ¾" (Galv.)	1
8	98840113	Valve, Angle, ¾"	1
9	750510100	Coupling, Rigid, 2½" NPT	2
10	98048035	Bushing 1¼" x ¾"	1
11	98614403	Plug, ¼" (Galv.)	1
12	98543212	Nipple ½" x Close (Galv.)	1
13	98543220	Nipple, ¼" x 3" Lg. (Galv.)	1
14	98048000	Bushing, Reducer, ½" x ¼" (Galv.)	1
15	98761651	Tee, ½" (Galv.)	1
16	98840160	Valve, 3-Way Gauge, ¼"	1
17	98248000	Gauge, Air Pressure	1
18	6501200112	Preaction Trim Kit	1
19	6503003001	Model H Riser Assembly	



Note: Air supply and low air/nitrogen pressure switch to be ordered separately depending on supervisory pressure.

Single Interlock Riser Installation

The recommended sequence of installation is as follows (refer to Figures 2 and 3):

1. Install the Deluge Riser Assembly portion in accordance with Bulletin 507, "Model H Deluge Riser Assembly."
2. Install the Model G Right Check™ Valve above the Model H Riser Assembly using threaded/grooved reducers and rigid grooved couplings supplied with the Preaction Trim Kit.
3. Connect the bypass drain line between the 1 NPT (R1) port on the Right Check™ Valve and the Model H Riser Assembly after removing its 3/4" NPT (R3/4) plug. Follow instructions provided in the Preaction Trim Kit.
4. Connect the air or nitrogen supply line to the 1/2" NPT (R1/2) port on the Right Check™ Valve.

System Operation

To activate a Reliable Single Interlock System, two independent events must coexist before water can flow from the system to the fire. First, an electrical detector (two detectors in a cross-zoned system) must activate to fill the system with water, and subsequently, a sprinkler head must open to discharge water on the fire. When a fire is detected, the releasing control panel energizes the solenoid valve open and water flows from the supply through the riser assembly to the system and to the alarm initiating pressure switch. The valve maintains its open position until the solenoid is de-energized.

Note: The listed release control panel used must incorporate a latching circuit to maintain the solenoid valve in the open position until the detection devices are cleared and the control panel is reset.

After system shutdown, the riser assembly is easily reset without special tools. Restore detection devices by resetting or replacing any operated device. Once detection devices are restored, reset the releasing control panel and the supply pressure (see Bulletin 507).

Maintenance

The Reliable Single Interlock System and associated equipment shall periodically be given a thorough inspection and test. NFPA 25, Inspection, Testing and Maintenance of Water Based Fire Protection Systems, provides minimum maintenance requirements. The system should be tested, operated, cleaned and inspected at least annually, and parts replaced as required. Refer to Bulletin 507 for information regarding maintenance of the solenoid valve and the manual emergency station valve.

Resetting Single Interlock System

1. Close the valve controlling water supply to the riser assembly and shut off the system air supply.
2. Open both drain valves and the manual emergency station valve to drain the system through the riser assembly.
3. Open any low point drain valves and vents throughout the system, closing all drain valves and vents when draining of water has stopped.
4. Inspect and replace any portion of the sprinkler system and detection system exposed to fire conditions. Reset detectors and the release control panel. This action will close (reset) the solenoid valve.
5. Reset the riser assembly in accordance with Bulletin 507, "Model H Deluge Riser Assembly Instructions for Installation, Operation, Care and Maintenance."
6. Restore the system supervisory pressure.
7. Verify that the supervised control valve is open, and proper monitoring has been restored. Also verify there is no leakage from the automatic drain valve, thereby confirming that supply water is not leaking into the system.

Inspection and Testing

1. Water supply - be sure the valve controlling water supply to the riser assembly is open fully and monitored properly.
2. Other trimming valves - check that all pressure gauge valves are open. Verify that gauges are indicating proper supervisory and water pressure readings.
3. Check that system supervisory pressure is not less than 7 psi (0.48 bar).
4. Test water flow alarm devices by opening alarm test valve. After closing alarm test valve, push plunger into automatic drain valve to verify that all water is drained from the alarm line.
5. The automatic drain valve monitors the possibility of leakage past the solenoid valve or manual emergency station valve. Push the plunger inward, and if no water discharges and the drip cup is dry, the riser assembly is leak tight.
6. Operation test - operate by electrical actuation.

Note: An operational test will cause water flow throughout the riser assembly and into the system.

Testing Detection System Without Causing Water Flow

1. Close the isolating valve controlling water supply to the riser assembly, and note the water pressure gauge reading. Also, close supervisory air pressure supply line to the system.
2. Operate the detection system.
3. Verify that a sudden drop of water pressure occurs when the solenoid valve opens. When the water pressure gauge drops to zero; open main drain valve, bypass drain valve and manual emergency station valve until all water drains away.
4. Reset detection devices and release control panel. The solenoid valve closes when the releasing panel is reset. Close the bypass drain valve and manual emergency station valve.
5. Open slightly the isolating valve controlling water supply to the riser assembly, closing the main drain valve when water flows steadily. Open slowly but fully the isolating valve and monitor it properly.
6. Restore the supervisory air pressure to a minimum of 7 psi (0.48 bar).

Guarantee

For guarantee, terms, and conditions, please visit www.reliablesprinkler.com

Ordering Information:

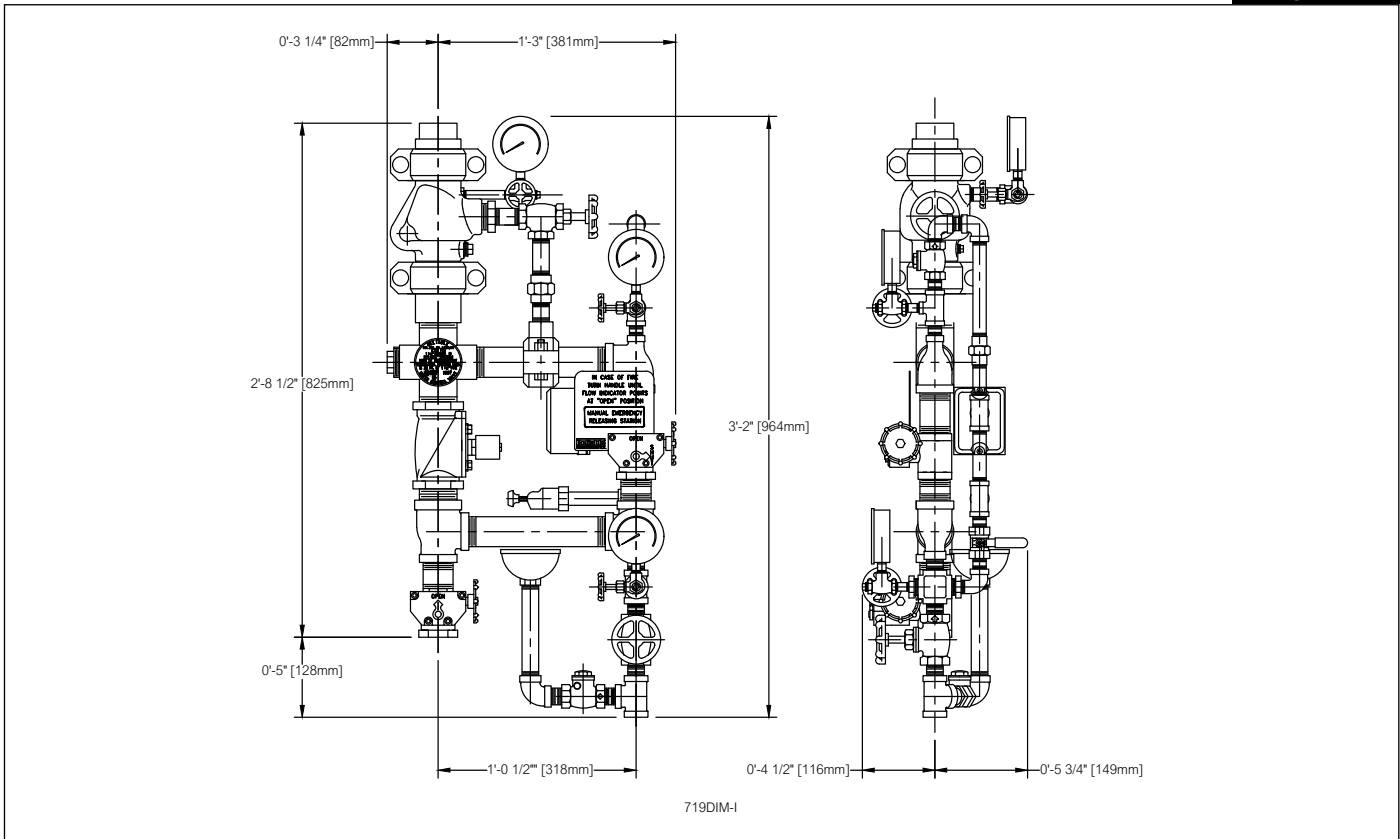
Specify:

Model H 1-1/2" Deluge Riser Assembly PN 6503003001

AND

Single Interlock Trim 1-1/2" PN 650120112

All other accessories to be ordered separately.



SOLENOID VALVE INSPECTIONS, TESTS AND MAINTENANCE

WARNING: THE OWNER IS RESPONSIBLE FOR MAINTAINING THE FIRE PROTECTION SYSTEM IN PROPER OPERATING CONDITION. ANY SYSTEM MAINTENANCE OR TESTING THAT INVOLVES PLACING A CONTROL VALVE OR DETECTION SYSTEM OUT OF SERVICE MAY ELIMINATE THE FIRE PROTECTION OF THAT SYSTEM. PRIOR TO PROCEEDING, NOTIFY ALL AUTHORITIES HAVING JURISDICTION. CONSIDERATION SHOULD BE GIVEN TO EMPLOYMENT OF A FIRE PATROL IN THE AFFECTED AREA.

WARNING: PRIOR TO OPERATING THE SOLENOID VALVE, BE SURE TO CLOSE THE SYSTEM CONTROL VALVE TO AVOID UNINTENTIONAL OPERATION OF THE DELUGE VALVE

1. Inspections: It is imperative that the system be inspected and tested in accordance with NFPA 25 on a regular basis. The frequency of the inspections may vary due to contaminated water supplies, corrosive water supplies, or corrosive atmospheres. In addition, the alarm devices, detection systems, or other connected trim may require a more frequent schedule. Refer to the system description and applicable codes for minimum requirements.
2. The valve must be inspected at least monthly for cracks, corrosion, leakage, etc., and cleaned, repaired, or replaced, or replaced as necessary.
3. If leakage is suspected through the solenoid valve, the valve diaphragms and seats should be inspected and if necessary, repaired or replaced.

WARNING: CLOSE SYSTEM CONTROL VALVE, TURN OFF POWER SUPPLY, AND DEPRESSURIZE VALVE BEFORE DISASSEMBLING VALVE. IT IS NOT NECESSARY TO REMOVE THE VALVE FROM THE PIPE LINE TO MAKE INSPECTIONS.

4. When lubricating valve components, use high grade silicone grease (Dow Corning® 111 Compound Lubricant or equal).
5. When reassembling, tighten parts to torque values indicated in the manufacturer’s maintenance instructions (packed with valve).
6. After maintenance is completed, operate the valve a few times to be sure of proper operation. A metallic “click” signifies the solenoid is operating.
7. All service must be performed by qualified personnel. Upon completion of inspections or replacement of the valve, the entire system must be checked for proper operation. See appropriate system description and testing instructions for additional information.

The equipment presented in this bulletin is to be installed in accordance with the latest published Standards of the National Fire Protection Association, Factory Mutual Research Corporation, or other similar organizations and also with the provisions of governmental codes or ordinances whenever applicable. Products manufactured and distributed by Reliable have been protecting life and property for over 100 years.

Manufactured by



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