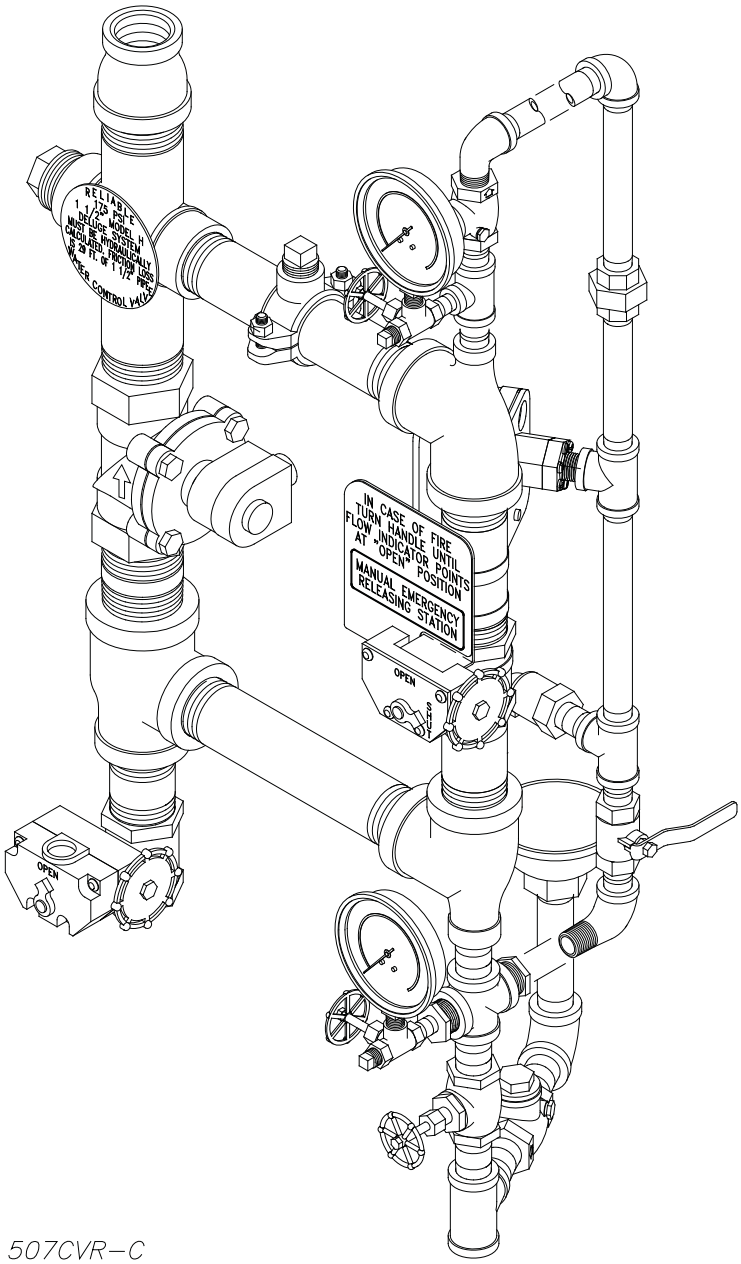
Reliable®

Model H Deluge Riser Assembly

Bulletin 507 Rev. D

Instructions for Installation, Operation, Care and Maintenance

1½" (40mm) Size Electric Actuation



507CVR–C

The Reliable Automatic Sprinkler Co., Inc., 103 Fairview Park Drive, Elmsford, New York 10523

General

Model H 1½" (40mm) Deluge Riser incorporates a solenoid operated diaphragm type valve as the primary valve in deluge, preaction, or special types of fire protection systems.

The valve is easily reset by external means which eliminates the need for removing the cover.

The trim is factory assembled for every Model H Deluge Riser. This trim provides valve supervising and waterflow alarm electric connections, pressure gauges, and system draining provisions.

Actuation by solenoid enables a full range of electrical detectors to be used for remote sensing.

Operation

Model H 1½" (40mm) Deluge Riser employs a quick opening hydraulically operated, diaphragm actuated solenoid valve.

De-energized: supply pressure is retained at the solenoid valve inlet. Flow through the valve is prevented by a plunger closing off the diaphragm pilot orifice and a diaphragm sealing against the main orifice.

Energized: the plunger is lifted off the pilot orifice and vents the pressure behind the diaphragm. The venting creates a pressure imbalance across the diaphragm, which causes the diaphragm to open the main orifice allowing flow through the solenoid valve.

Once the solenoid valve has opened, water flows from the supply through the Deluge Riser into the piping system and to the alarm initiating water flow pressure switch.

After system shutdown and draining, the Deluge Riser is easily reset, without special tools, by first restoring detection devices to the ready condition. Once the detection system is ready, the releasing control panel can be reset which automatically resets the solenoid valve. Next, the water supply pressure can be restored and the Deluge Riser will be reset. The external reset feature of the Model H 1½" (40mm) Deluge Riser provides a means for simple, economical system testing which is one essential facet of a good maintenance program.

Technical Data

1. Rated working pressure 175 psi (12,1 bar). Minimum Supply Pressure: 20 PSI (1,4 Bar)
   Note: 1 bar=100 kPa
2. End connections - American Standard Taper Pipe Threads per ANSI B2.1. Inlet and outlet 1½". Drain ¾".
3. Color-galvanized pipe and fittings with bronze valves.
4. Shipping Weight - 52 lbs. (23.3 Kg)
5. Friction Loss - expressed in equivalent length of Sch. 40 pipe, based on Hazen & Williams formula with C=120 is 29 ft. (8.84m) for the Model H Riser Assembly.
6. Installation position: Vertical
7. Listed by Underwriters Laboratories, Inc. special system water control valves - deluge type (VLFT). Listed by Underwriters' Laboratory of Canada. NYC MEA 258-93-E.

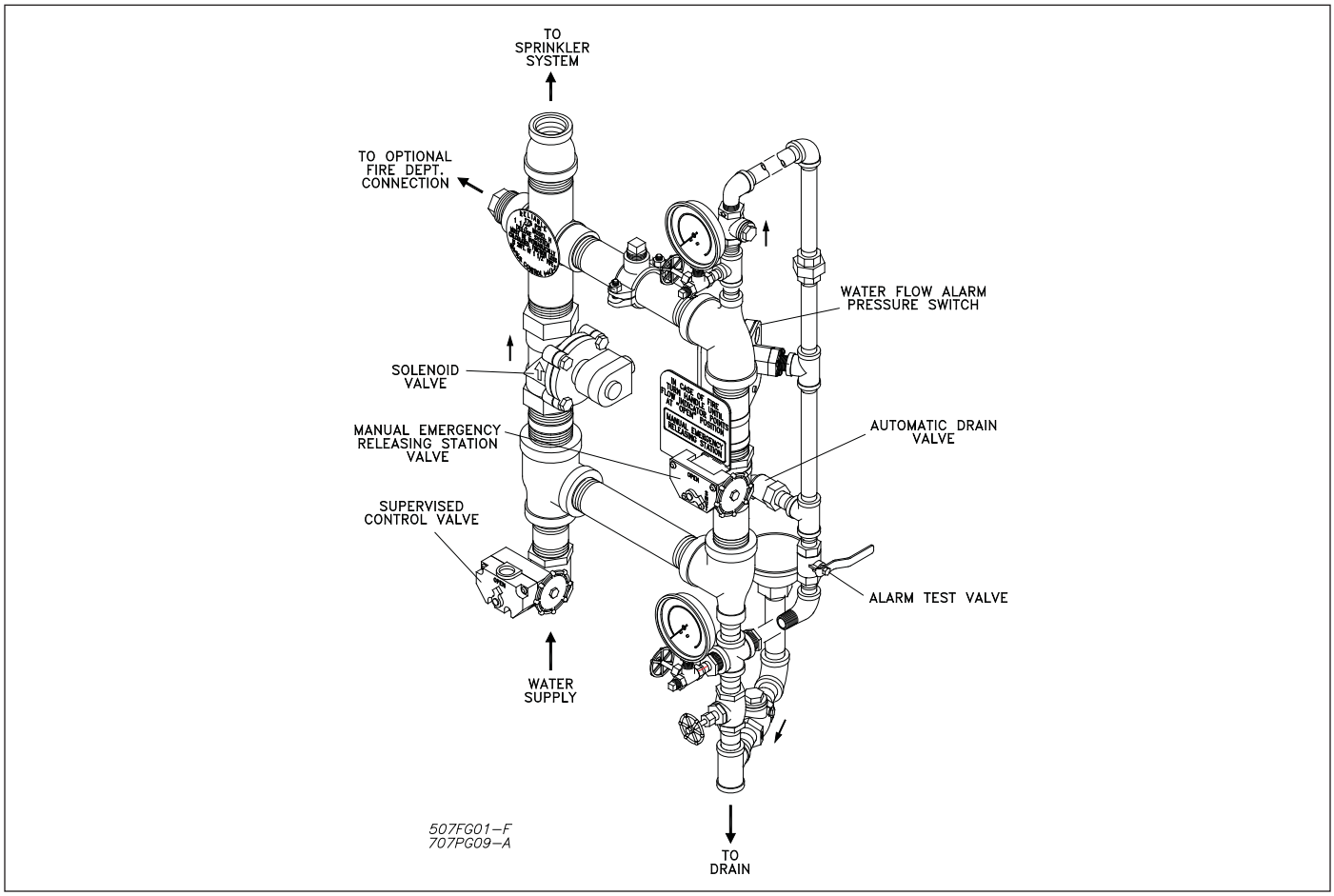


Figure 1 - Model H Deluge Riser Assembly

Installation

Model H 1½" (40mm) Deluge Riser Assembly is factory assembled as illustrated in Figure 1. The only piping connections required at the time of installation are an appropriate water supply connection, the system piping connection and a ¾" NPT (R¾) drain line connection. Installation is vertical as illustrated.

Electrical connections are required from a releasing control panel to the solenoid valve, supply water control valve supervising switch, and the water flow alarm pressure switch. Refer to Bulletin 700 for further instructions when making these connections to the Potter PFC-4410-RC Releasing/Control Panel used with Reliable Special Hazards & Special Systems. Features and options available for Electrical Deluge and Preaction Systems, including fire detection means, are described in Bulletin 700.

Resetting Deluge Riser Assembly

Refer to Figures 1 & 2

1. Close the control valve, Item 1.
2. Open drain valve, Item 3, and emergency release station, Item 2, and drain system.
3. Open all drain valves and vents at low points throughout the system, closing them when flow of water has stopped.
4. Inspect and replace any portion of the detection system subjected to fire conditions.
5. Electric actuation - open the solenoid valve, Item 4, by operating a detector or an electric manual emergency station. After residual water has drained through the solenoid valve, cause it to close by resetting the detector or manual station; and thereafter, the Releasing/Control Panel. Refer to Bulletin 700, "Special Hazards & Special Systems" for details.
6. Close the emergency releasing station, Item 2. Open slightly the control valve, closing drain valve, Item 3, when water flows from it. Close the control valve again and observe supply pressure gauge, Item 6, for any drop in pressure. No pressure drop confirms all valves are leak tight and the Riser Assembly is properly set then the control valve, Item 1, is reopened.
7. Check that the control valve is fully open, and properly supervised.

Inspection and Testing

Refer to Figures 1 & 2

1. Water supply - be sure the valve, Item 1, controlling water supply to the Deluge Riser is open fully and properly supervised in this position.
2. Other valves - check that valves, Items 2 , 3 and 37, are closed and not leaking, by performing Step 6 above.
3. The automatic drain valve, Item 38, monitors internal leakage. Push in on its plunger to be sure ball check is off its seat. If no water appears, the Deluge Riser Assembly is leak tight.
4. Operation test - Open the solenoid valve, Item 4, using the procedure in Step 5 above. Note: Operation test will cause full flow into the deluge system unless the control valve is throttled or closed prior to performing this test.
5. Reset the Riser Assembly (Steps 1-7 above).

Testing Detection System Without Flow Through Deluge Riser

1. Close the control valve, Item 1.
2. Operate detection system - refer to Bulletin 700.
3. Operation of the detection system must result in a sudden drop of water pressure indicated on supply pressure gauge, item 6. When gauge drops to zero, open drain valve until all water above the control valve drains away.
4. Reset detection system - reverse operations performed in Step 2 above. The solenoid valve closes when the Releasing/Control Panel is reset.
5. Reset the Riser Assembly (Steps 1-7 above).

Maintenance

Reliable Deluge Riser Assemblies and associated equipment shall periodically be given a thorough inspection and test. NFPA 25 provides minimum requirements for inspection, testing and maintenance. The Deluge Riser should be tested, operated, cleaned and inspected at least annually and parts replaced as required.

Maintenance Procedures

Refer to Figures 2 & 3

Steady water flow into the system, as evidenced by dripping at the automatic drain valve, is caused by water leaking past the solenoid valve or past the emergency station valve. To locate and correct the trouble, proceed as follows:

1. Maintenance of Solenoid Valve

Caution: Do not expose plastic or elastomeric materials to any type of commercial cleaning fluid. Parts should be cleaned with a mild soap and water solution.

1.1 Disassemble valve as per the Disassembly Instructions on page 6. Remove extraneous matter. Clean parts in a mild soap and water solution.

1.2 Examine surface of the plunger seal and diaphragm. If damaged, replace plunger or diaphragm.

1.3 Inspect orifices in the body, cover, and diaphragm for nicks or dirt. Clean as necessary. Damage may require a new valve or replacement parts.

1.4 Examine surfaces of the diaphragm or seal in contact with the main orifice. Clean if dirty or replace if damaged or worn.

1.5 Check all springs. If broken, replace.

1½" DELUGE RISER ASSEMBLY, P/N 6503003001 and P/N 6503003007(*), PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	Number REQ'D
1	6201201500	Valve, Butterball, 1½" (BB-SCS02)	1
2	6201001500	Valve, Butterball, 1½" (BB-SC100)	1
3	98840170	Valve, Globe, ¾"	1
4	6871080000	Valve, Solenoid, 2"	1
5	98840160	Valve, Gauge, 3-Way, ¼"	2
6	98248001	Gauge, Pressure, Water	2
7	98543230	Nipple, ½" X 3" Lg. (Galv.)	1
8	96606607	Tee, ½" X ½" X ¼" (Galv.)	1
9	96606601	Tee, ¾" (Galv.)	1
10	96606622	Tee, 1½" X ½" X 1½" (Galv.)	1
11	96606621	Tee, 1½" X ¾" X 1½" (Galv.)	1
12	96606625	Tee, 2" X 1½' X 1½" (Galv.)	1
13	98543238	Nipple, 2" X Close (Galv.)	1
14	98543275	Nipple, 1½" X 2½" Lg. (Galv.)	1
15	98543274	Nipple, 1½" (thd X grv) X 4" Lg. (Galv.)	2
16	98543276	Nipple, 1½" X 3½" Lg. (Galv.)	2
17	98543288	Nipple, 1½" X 9½" Lg. (Galv.)	1
18	98543290	Nipple, ¾" X 8½" Lg. (Galv.)	1
19	98543279	Nipple, ¾" X Close (Galv.)	5
20	98543212	Nipple, ½" X Close (Galv.)	4
21	98543227	Nipple, ¼" X Close (Galv.)	2
22	95306209	Clamping Ring (OETIKER #515)	2
23	95306210	Clamping Ring (OETIKER #575)	2
24	95106905	Plate, Base	1
25	98543204	Nipple, ½" X 6" Lg. (Galv.)	1
26	94616910	Nameplate, 1½" Deluge System	1
27	94606910	Name Plate, Manual Emergency Station	1
28	6999991339	Switch, Pressure (Eps10-1)	1
	6999992366	Switch, Pressure (Epsa10-2)(*)	
30	98614403	Plug, ¼" (Galv.)	2
31	98614401	Plug, ¾" (Galv.)	1
32	98750025	Cross, 2" X 1½" (Zinc Coated)	1
33	98085680	Coupling, 1½" Grooved With ¾" npt Outlet	1
35	95200002	Plug, 1½" (Galv.)	1
36	95106904	Plate, Base, Manual Emer. Station	1
37	98840109	Valve, Ball ½"	1
38	78653100	Valve, Ball Drip, Automatic Drain	1
39	75000075	Cup, Priming, ¾"	1
40	98174400	Elbow, ½" Street (Galv.)	2
41	98048022	Bushing, ¾" X ½" (Galv.)	1
42	98048025	Bushing, ¾" X ¼" (Galv.)	1
43	98174402	Elbow, ¾" (Galv.)	1
44	98174401	Elbow, ½" (Galv.)	1
45	98761651	Tee, ½" (Galv.)	2
46	98815200	Union, ½" (Galv.)	1
47	98750005	Cross, ¾" (Galv.)	1
48	98543216	Nipple, ½" X 3½" Lg. (Galv.)	1
49	98543228	Nipple, ½" X 4½" Lg. (Galv.)	1
50	98543209	Nipple, ½" X 2" Lg. (Galv.)	1
51	98840180	Valve, Check, ¾"	1
52	98840181	Valve, Check, ½"	1
53	98085668	Couping, Reducer 2" X 1½" (Galv.)	1

(*) Canadian Type

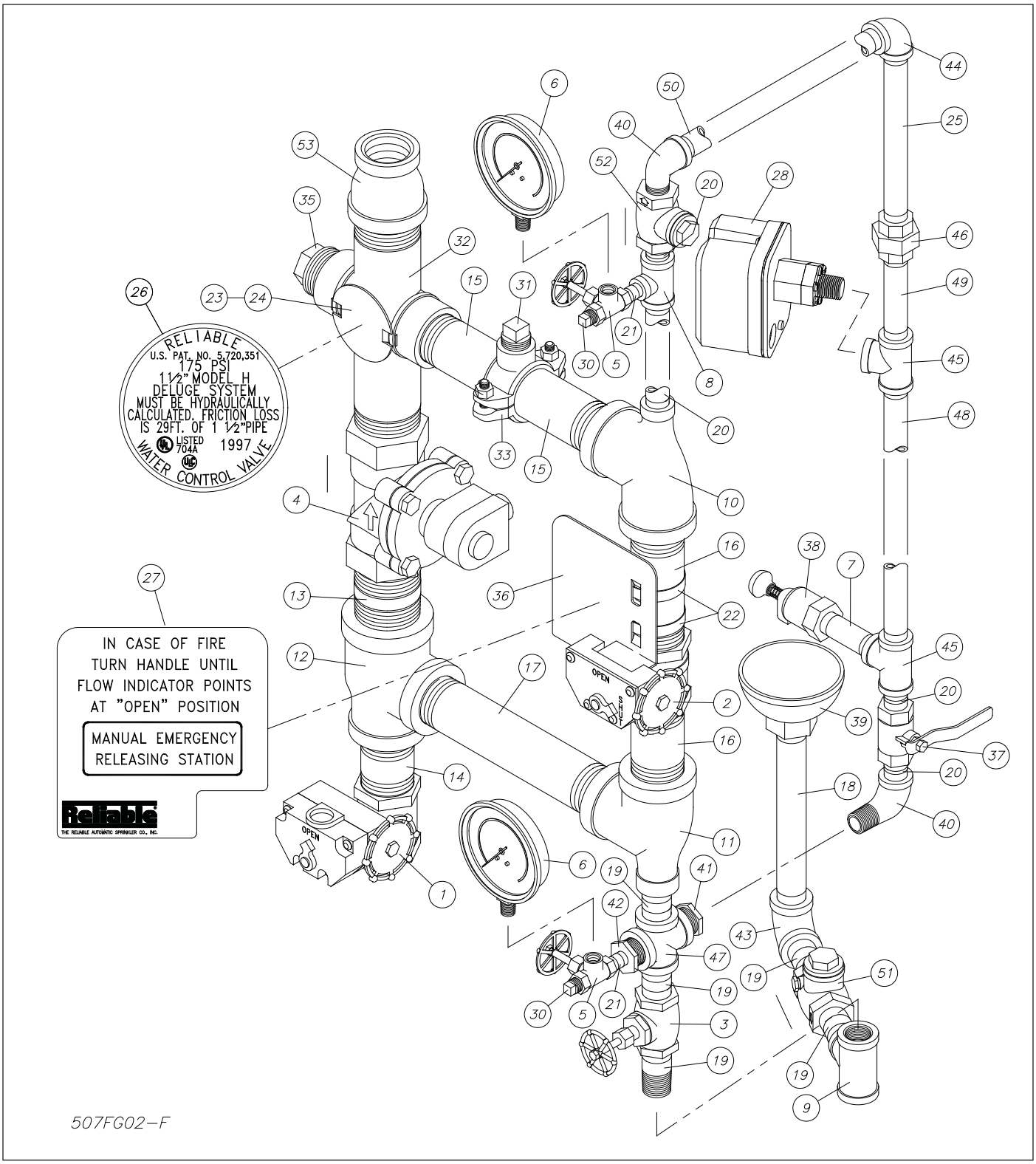


Figure 2

When difficulty in performance is experienced, contact Reliable Technical Services before any field adjustment is made. Should replacement parts be needed, use only Reliable supplied parts. When ordering specify part number, name, size, model and serial number of the unit.

DISASSEMBLY INSTRUCTIONS

WARNING: Depressurize system and turn off electrical power to the valve before attempting repair.

The valve need not be removed from the line.

To remove the coil assembly:

Unscrew the nut on the top of the coil assembly. The wave washer and coil assembly can now be removed. Maximum retightening torque on coil assembly nut is 53 inch-lbs (5.98 N-m).

To disassemble the pressure vessel (Ref. Figure 3)

Caution: Do not use a pipe wrench directly on the sleeve tube.

These valves contain a hex style flange in the sleeve assembly. A wrench may be applied directly to the hex flange in order to loosen the sleeve assembly. Unscrew the sleeve assembly. The plunger and return spring may now be removed. Maximum retightening torque is 270 inch-lbs (30.5 N-m).

Unscrew the four (4) cover screws. If the cover cannot be easily lifted off the body, laterally tap the cover or gently pry the cover from the body with a screwdriver. Care must be taken not to damage diaphragm, cover, or body. Diaphragm return spring(s), diaphragm assembly, and o-rings can now be removed. Maximum retightening torque on cover screws is 135 inch-lbs (15.25 N-m).

Replacement Parts: When ordering replacement parts kit, specify part number (P/N 6999991583). Parts included in each kit are marked with an asterisk (*). See exploded view, Figure 3.

2. Maintenance of Emergency Station Valve

This valve, Item 2, is not field serviceable. In the event that leakage is occurring it must by replaced with a new manual emergency releasing station. Replacement is made by removing the coupling, Item 33 and loosening the union, Item 46, and then unscrewing the segment of piping which begins with nipple, Item 16, at the inlet to the valve. When ordering replacement valve, Item 2, also order two clamp rings, Item 22, for remounting the nameplate base, Item 36. Make certain both new clamp rings have been slipped onto the nipple, Item 16, above the valve before the new valve is attached to this nipple. After all piping is reconnected, reposition the nameplate, as shown, and tighten the new clamp rings over the two nameplate tabs using crimping pliers to draw the bands tight.

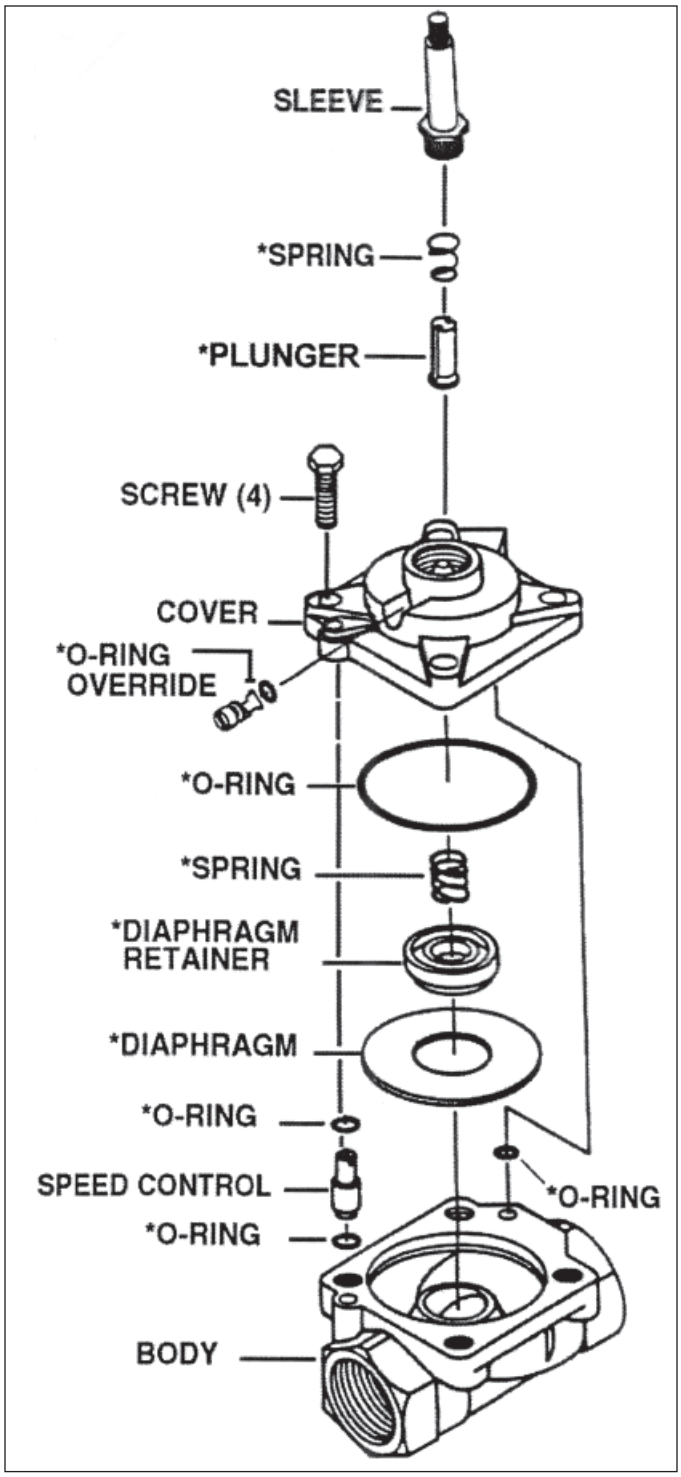


FIGURE 3

The solenoid valve is manufactured by the Skinner Valve Division of Parker Hannifin Corp. For more detailed maintenance instructions contact The Reliable Literature Department and request Form 10M 7203.

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.

Ordering Information

Specify (Ref. Figure 4):

Item No.	Component Part	Mfgr.	Description	Technical Bulletin
1	Deluge Riser Assembly	B	Model H	507
2	Releasing / Control Panel	C	Model PFC-4410-RC	Potter #5403550 Reliable 700
	Batteries		12 VDC, 12 AMP Hours (90 Hours Backup) FM 12 VDC, 7 AMP Hours (60 Hours Backup)	
	Optional Accessories		CA2Z (Class A Wiring Module for Initiating Circuits) CAM (Class A Wiring Module for Indicating Circuits) ARM-1 / ARM-2 (Auxiliary Relay Module) RA-4410-RC (Remote Annunciator)	
3	Alarm Annunciator	A	Model SSM24-8 24 VDC / Polarized Bell Model SSM24-10 24 VDC / Polarized Bell Model MA24-D 24 VDC / Polarized Sounder Model MASS24LO 24 VDC / Polarized Sounder Strobe	Reliable 700
4	Trouble Annunciator	A	Model SSM24-6 24 VDC / Polarized Bell Model MA24-D 24 VDC / Polarized Sounder	Reliable 700
5	Manual Emergency Station (Elec.)	A	Model BNG-1 (SPDT) 1 & 2 Area Detection Model BNG-1F (DPDT) Cross Zoned Detection	Reliable 700
6	Detection	Various	Smoke, Heat Detectors, etc.	Reliable 722
7	Sprinklers	B	Open Type	Reliable 104/106

System Equipment Manufacturers

(A) Notifier
(B) The Reliable Automatic Sprinkler Co., Inc.
(C) Potter Electric Signal Company

Patents

U.S. Patent number 5,720,351

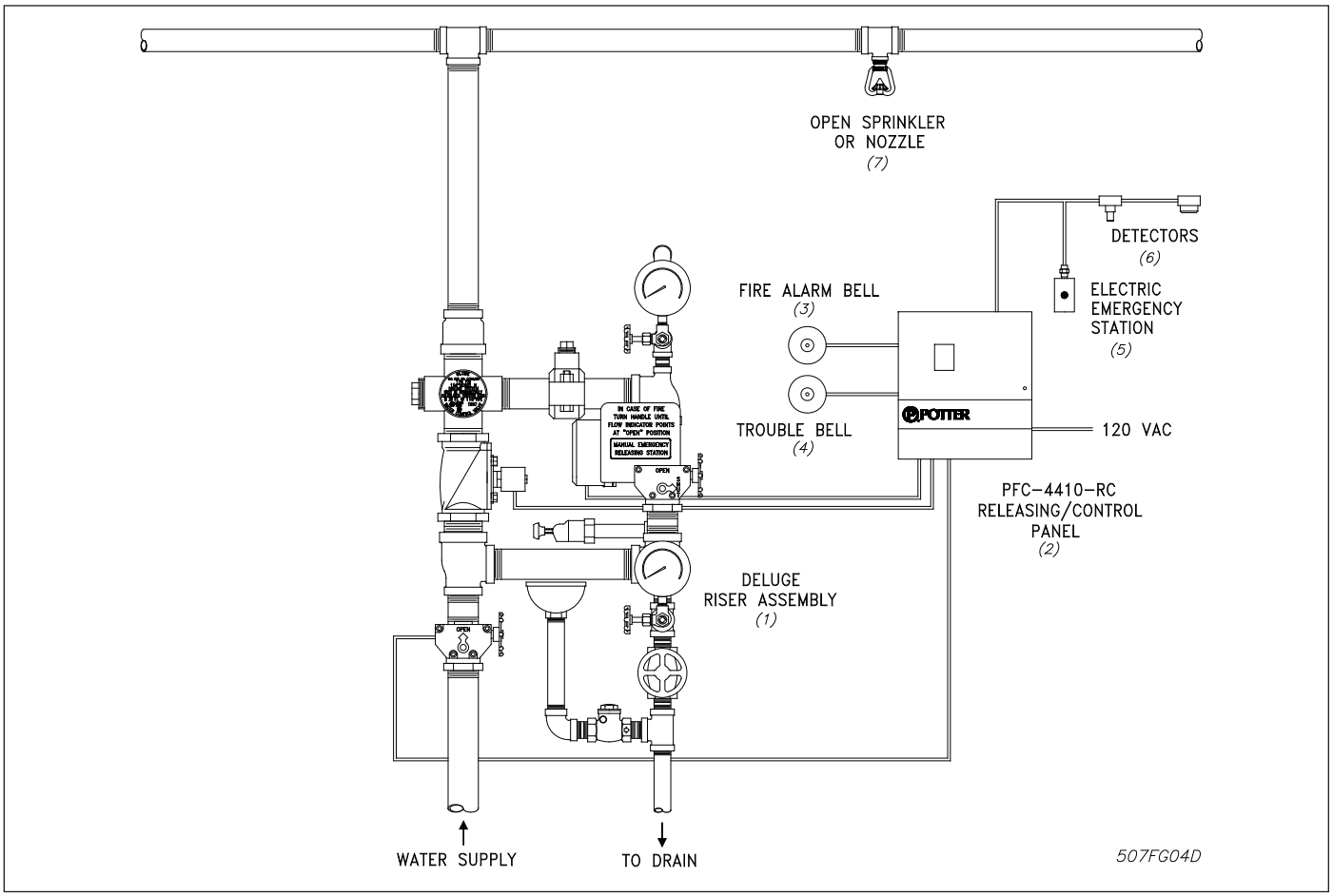
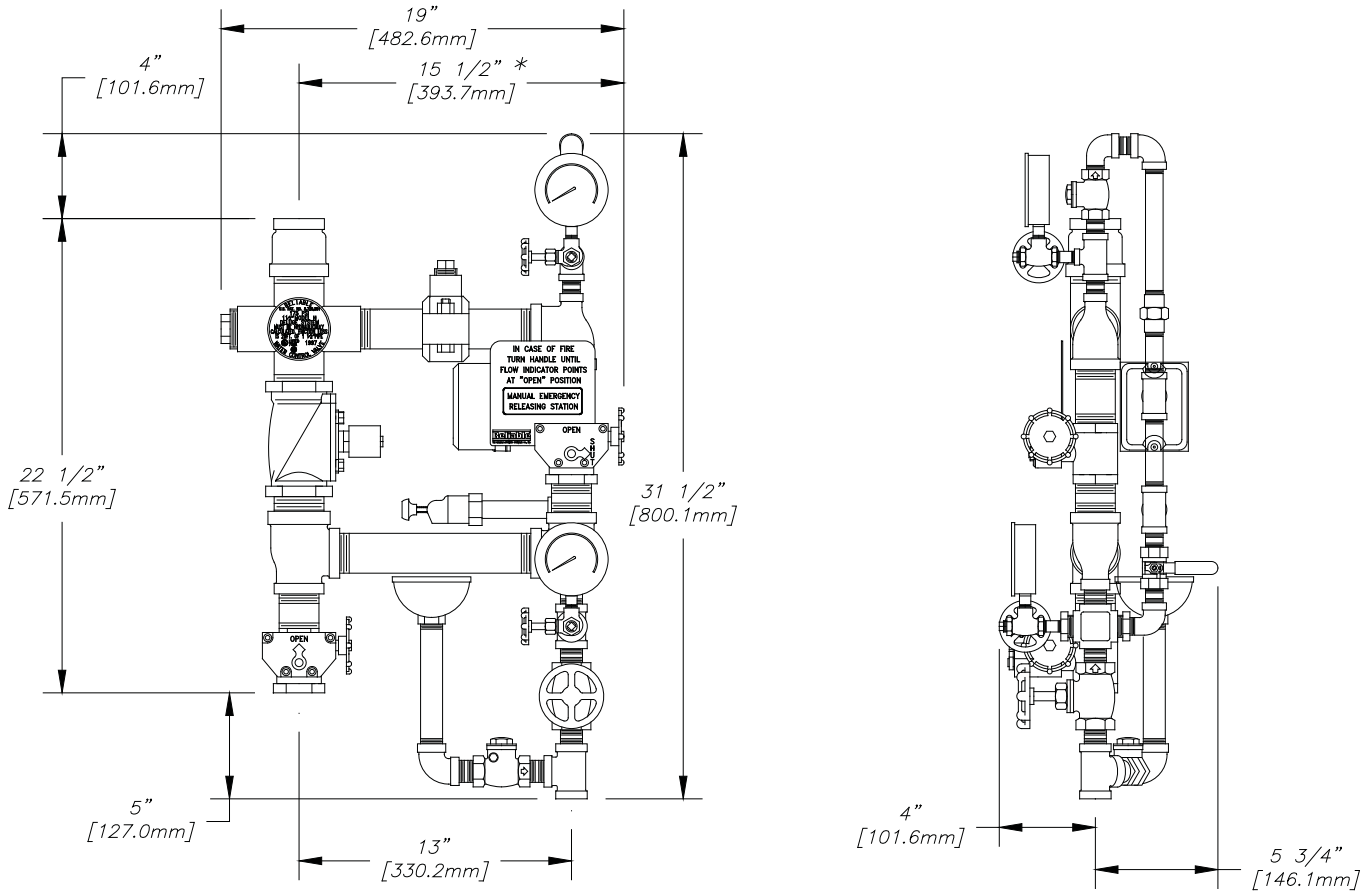


Figure 4 — Model H Deluge System

Installation Measurements



* ALLOW FOR 16" [406.4mm] SWING RADIUS WHEN INSTALLING ON A 1-1/2" NPT WATER SUPPLY LINE.

507DIM-F
707PG112T-A
721FG04

Reliable...For Complete Protection

Reliable offers a wide selection of sprinkler components. Following are some of the many precision-made Reliable products that guard life and property from fire around the clock.

- Automatic sprinklers
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- Recessed automatic sprinklers
- Concealed automatic sprinklers
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- Intermediate level sprinklers
- Open sprinklers
- Spray nozzles
- Alarm valves
- Retarding chambers
- Dry pipe valves
- Accelerators for dry pipe valves
- Mechanical sprinkler alarms
- Electrical sprinkler alarm switches
- Water flow detectors
- Deluge valves
- Detector check valves
- Check valves
- Electrical system
- Sprinkler emergency cabinets
- Sprinkler wrenches
- Sprinkler escutcheons and guards
- Inspectors test connections
- Sight drains
- Ball drips and drum drips
- Control valve seals
- Air maintenance devices
- Air compressors
- Pressure gaugesIdentification signs
- Fire department connection

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. Productsmanufactured and distributed by Reliable have been protecting life and property for over 90 years, and are installed and serviced by the most highly qualified and reputable sprinkler contractors located throughout the United States, Canada and foreign countries.

Manufactured by

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