# Engineering Specification

# Reliable Model H Type D PrePaK Assembled Unit

**Recommended CSI MasterFormat Specification Location: 21 13 19, Preaction Sprinkler Systems (formerly 13940)**

A self-contained, fully integrated preaction sprinkler system shall be provided. The system must be cULus Listedcomponents within a cabinet specifically designed for the intended use as an assembled unit, containing all the factory installed hydraulic and electrical components, fittings, gauges, mechanical couplings and supervisory airsupply necessary for the operation of an approved automatic preaction sprinkler system in accordance with NFPA 13 **[**year**]** edition.

Cabinet shall contain a domestically factory-assembled and tested preaction system riser assembly with galvanized electric actuation trim. Cabinet size shall be limited to an area of 4.5 ft2. The cabinet shall be 12-gauge steel with rustproof exterior powder-coated **[**black**]** **[**custom color – specify**]** finish, and rustproof interior powder-coated white finish for improved interior cabinet visibility. Cabinet enclosure shall have removable panels for access to interior components. Cabinet door shall be lined with a neoprene gasket and shall contain viewing ports for water supply pressure, supervisory air pressure, system pressure gauges, and release control panel screen that are securely mounted.

Deluge valve electric trim shall be galvanized and shall consist of all trim components necessary to enable the system to be used as a **[**Single Interlock**] [**Single Interlock, Cross-Zoned**] [**Double Interlock**] [**Double Interlock, Cross Zoned**]** preaction system. These components include a normally closed, powered open electric solenoid valve, main drain, alarm line test, water and air pressure gauges, and manual emergency release valve. Low air supervisory and water flow pressure switches shall be included as part of this assembly. All electrical devices shall be wired for Class “A” service, but shall also be fully functional with Class “B” wiring.

Supervisory air supply shall be provided by an oil-less, tank-mounted air compressor with associated pressure switch and check valve located within the cabinet. Preaction system supervisory air shall be regulated through a regulating pressure maintenance device set to a pressure of 10 psi.

A programmable releasing control panel shall be provided as part of the assembled preaction system unit. The unit shall be domestically manufactured, assembled and tested.

**NOTE: PrePaK units are available without the Potter PFC 4410 RC releasing panel. These units will still retain their listings and approvals. However, the specifier should make sure that any remote releasing control panel used with the PrePaK units is Listed/Approved and programmed/wired to ensure the required sequence of operation necessary to operate the automatic sprinkler system.**

Release panel shall be housed in an 18-gauge steel enclosure having a hinged door with a key lock and mounted entirely within the cabinet enclosure. The releasing control panel shall be a field-programmable Potter PFC-4410 RC releasing panel capable of providing programming to utilize the pre-action system for a **[**Single Interlock**] [**Single Interlock, Cross-Zoned**] [**Double Interlock**] [**Double Interlock, Cross-Zoned**] [**Custom Program for New York City Compliance**]** application as referenced in Reliable Technical Bulletin 733.

**NOTE: For NYC applications, the use of double-interlock systems is permitted only in areas subject to freezing**.

For all applications, loss of supervisory air pressure only shall provide a low-pressure supervisory alarm. All programming functions shall have the capability of being password protected. The control panel shall be mounted within the within the main cabinet and have a 32-character backlit LCD display. All diagnostic and alarm event information shall be viewable in text form on this display. Four integral SPDT relay contacts shall be available for connection to external auxiliary equipment.

Two separate 120 VAC power connections shall be provided: one connection for the releasing panel and one connection for the air compressor. Each shall have a separate power connection within the 120 VAC terminal box. All terminals from the releasing control panel shall be translated to a watertight terminal box mounted inside the cabinet. All field wiring shall be connected to this box.

Assembled unit preaction system to be 1½”Reliable Model H Type D PrePaK. Refer to Reliable Bulletin 723 for associated information.

**Deluge Valve**

Deluge valve shall be a cULus Listed 1½” assembly consisting of galvanized pipe and fittings with bronze valves. Factory assembled trim shall include a 1½” supervised control valve with integral tamper switch, waterflow pressure switch, by-pass emergency control valve for immediate release of water into the system piping, pressure gauges, and system draining provisions. The pressure switch shall be a field-adjustable, bellows-activated type pressure factory set to respond at 4 to 8 psi (.27 to .55 bar) on rising pressure. The pressure switch shall have one SPDT contact rated at 10.0 amp @ 125/250 VAC and 2.5 amp @ 6/12/24 VDC, enclosed within a NEMA 4 rated enclosure. The deluge riser assembly shall be electrically actuated, incorporating a 2” normally closed/powered to open solenoid valve requiring 24V DC for operation, and shall be self-resetting. End connections shall be 1½” NPT threaded inlet and outlet per ANSI B2.1. Deluge valve shall have a rated working pressure of 175 psi (12.1 bar) and shall be factory hydrostatic tested at 350 psi (24,1 bar). Deluge valve to be the Reliable Model H 1-1/2” Deluge Riser Assembly. Refer to Bulletin 507 for associated information.

### **Riser Check Valve**

Riser Check valve shall be a 2½” spring-loaded check valve having a rated working pressure of 250 psi (17.2 bar) and factory hydrostatic tested to a pressure of 500 psi. Valve body casting shall be gray iron per ASTM-A48 Class 30A, containing a bronze seat and stainless steel clapper per ASTM A240 with rubber gasket and EPDM rubber facing seal. End connections to be grooved by grooved per ANSI/AWWA C606. The riser check valve shall be factory tapped for 1¼” NPT main drain and ½” plugged NPT system connection. All parts of the clapper assembly to consist of stainless steel. Check valve shall be capable of holding air pressure in the system without the use of priming water.

### **Sprinklers**

**[**Insert applicable sprinkler specifications here.**]**

**Compressed Air Supply**

A tank-mounted air compressor with associated pressure switch and check valve shall be contained within the cabinet. Compressor to be GAST Model 1HAB-11T-M100X 1/6 hp, 115 VAC 60 hz, motor-mounted, oil-less piston compressor with 2-gallon tank capable of restoring the system pressure to 10 psi for up to a 180-gallon capacity system within 30 minutes. Air supply shall be regulated by an approved regulating type air maintenance device containing a field adjustable regulator having a range of 5 to 100 psi (.34 to 6,9 bar), a check valve, strainer, and a rapid fill valve. Preaction system supervisory air shall be regulated through a pressure maintenance device having its regulator set to a pressure of 10 psi.

### **Low Air Supervisory Pressure Switch**

Supervisory air pressure within the preaction system piping shall be monitored using a low air supervisory pressure switch. It shall be **[**cULus Listed**] [**FM Approved**]**. The switch shall be a field-adjustable, bellows-activated type pressure switch compatible with system devices. The pressure switch shall have the capability to provide alarm response between 4 and 20 psi but shall be factory adjusted to respond at 4 to 8 psi on rising pressure. The pressure switch shall have a field replaceable SPDT (Form C) contact(s) rated at 10.0 amp @ 125/250 VAC and 2.5 amp @ 6/12/24 VDC. Switch shall be provided with a ½” NPT male glass-reinforced nylon pressure connection and shall have a maximum pressure rating of 250 psi. Two conduit connection holes shall be provided in the mounting plate to accept standard ½” conduit fittings. The switch enclosure shall be weatherproof and carry a UL 4x/NEMA 4 rating when used with proper electrical fittings and conduit. The cover shall have the wiring diagram cast into it and incorporate tamper-resistant screws. Alarm pressure switch shall be a Potter Electric PS 10-2 pressure switch.

### **Waterflow Pressure Switch**

An alarm pressure switch installed on the alarm line trim of the deluge valve shall provide a water flow alarm. It shall be **[**cULus Listed**] [**FM Approved**]**. The switch shall be a field-adjustable, bellows-activated type pressure switch compatible with system devices. The pressure switch shall have the capability to provide alarm response between 4 and 20 psi but shall be factory adjusted to respond at 4 to 8 psi on rising pressure. The pressure switch shall have a field replaceable SPDT (Form C) contact(s) rated at 10.0 amp @ 125/250 VAC and 2.5 amp @ 6/12/24 VDC. Switch shall be provided with a ½” NPT male glass-reinforced nylon pressure connection and shall have a maximum pressure rating of 250 psi. Two conduit connection holes shall be provided in the mounting plate to accept standard ½” conduit fittings. The switch enclosure shall be weatherproof and carry a UL 4x/NEMA 4 rating when used with proper electrical fittings and conduit. The cover shall have the wiring diagram cast into it and incorporate tamper-resistant screws. Alarm pressure switch shall be a Potter Electric PS 10-2 pressure switch.

### **Detection System**

To initiate actuation of the preaction system deluge valve, a detection system shall be provided. The detection devices installed shall be compatible with the preaction system releasing control panel. **[**Insert applicable product specification**]**.

**Note: For New York City Applications, add the following: A minimum of two detectors shall be installed for each zone in the protected area. Cross zoning of preaction detection initiating circuits is prohibited. Class A method of wiring of detectors shall be used.**

### **Releasing Control Panel**

The releasing control panel shall be a Potter PFC 4410 RC field programmable releasing panel having a 32-character backlit LCD display. All diagnostic and alarm event information shall be viewable in text form on this display. All operational features of the control panel shall be field programmable using menu driven selections on the alpha-numeric display and on-board controls. No special programmer will be required and jumpers or switches to configure operational features shall not be permitted. The control panel shall be equipped with 15 preset programs for water delivery built into the panel memory, along with custom program capability. The control panel shall sound a local audible for trouble and supervisory conditions. Four separate integral SPDT relay contacts for alarm, trouble, supervisory, and waterflow conditions shall be provided for connection to external auxiliary equipment or for remote annunciation. The releasing panel enclosure shall contain two 12 VDC, 12 amp-hour stand-by batteries capable of operating the system for up to 90 hours of battery back-up. It shall be housed in an 18-gauge steel enclosure having a hinged door with a key lock and recessed mounted within the cabinet door. The releasing control panel shall include a fully supervised integral power supply/battery charger capable of providing 200 mA to the auxiliary power circuit and 2.5 A to all releasing and indicating circuit appliances combined. All programming functions shall be password protected. The releasing control panel shall have four fully supervised Class A initiating circuits capable of supporting the operation of the manufacturer’s specified number of compatible detectors on one **[**two**]** circuit(s), waterflow, and dedicated low air. It shall also include one fully supervised Class A supervisory circuit for the monitoring of the system control valve. Four fully supervised Class B output circuits shall be provided for notification appliances and for the solenoid releasing circuit. The releasing circuit shall be supervised and shall be programmable for cross-zoning operation when required.