Preaction Sprinkler Systems

Preaction systems are equipped with automatic sprinklers and are used where it is important to prevent the accidental discharge of water. These systems may also be used where an alarm is desired in advance of sprinkler operation or where it is desired to minimize the water delivery delay inherent in a standard dry-pipe system. For this reason, the following factors must be carefully assessed: detector spacing and sensitivity, sprinkler piping arrangement and ceiling construction.

Supervisory air pressure is maintained in the sprinkler piping of a preaction sprinkler system. A trouble alarm sounds if the supervisory air pressure is not maintained; however, such a condition will not cause the automatic water control valve to operate. Generally, a single check valve is installed downstream of the automatic water control valve to contain the supervisory air pressure. Except for the addition of a single check valve and the use of automatic sprinklers, components of preaction sprinkler systems are identical or similar to those of deluge sprinkler systems.

The water supply is held back by a water control valve which is operated manually or automatically by the actuation of a fire detection system. The fire detection system is required to be one of the following types: hydraulic rate-of-rise, pneumatic rate-of-rise or electric. FM Approved combinations of control valves and fire detection system(s) are listed under AUTOMATIC WATER CONTROL VALVES.

Electrically operated preaction sprinkler systems are FM Approved on a component basis. Only the major, compatible components listed for a specific valve under AUTOMATIC WATER CONTROL VALVES shall be used in designing an FM Approved system. FM Global installation acceptance may stipulate that only heat-actuated fire detection devices be used. Acceptance criteria by other jurisdictional authorities may vary.

Preaction sprinkler systems identified in the listing by an asterisk (*) have either hydraulic or pneumatic rate-of-rise fire detection and are FM Approved as complete systems*Only the listed components for a specific manufacturer shall be used in an FM Approved system.*

Viking Single Interlock Preaction Sprinkler System

Viking Single Interlock Preaction Sprinkler System. System rated working pressure is 250 psi (1724 kPa). Consists of an automatic water control valve with one of the following combinations of model, size, and end connections:

Valve Model	*Size, inches NPS*	*End connections*
E-1, E-2	2 3, 4, 6	Threaded Flanged x flanged, flanged x Grooved
E-3, E-4	1 1⁄2 1 1/2, 2, 2 1/2	Threaded Threaded, grooved x grooved
F-1, F-2	3, 4, 6 8	Flanged x flanged, grooved x grooved, flanged x grooved Flanged x flanged, grooved x grooved

Major system components include:

- Deluge valve conventional trim:
  - o Priming Valve (Normally Open)
  - o Strainer
  - o 1/16" Restricted Orifice
  - o Spring Loaded Check Valve
  - o Alarm Test Valve (Normally Closed)
  - o Auxiliary Drain Valve (Normally Closed)
  - o Model D-1 or D-4 Drip Check Valve
  - o Drain Check Valve 05781A
  - o Alarm Shut Off Valve (Normally Open)
  - o Model D-1 or D-2 or C-1 pressure-operated relief valve (PORV)
  - o Model C-1 or C-2 emergency release
  - o Priming Pressure Water Gauge and Valve

- o Water Supply Pressure Water Gauge and Valve
- o Flow Test Valve (Normally Closed)

• Water flow alarm equipment:
- o Model 07756, 07758, 09470 or 09471 alarm pressure switch and/or water motor alarm
- o Strainer

• Riser
- o Water Supply Control Valve
- o Easy Riser Check valve or rubber seated check valve
- o Sprinkler system main drain

• Supervisory air supply
- o System pressure gauge and valve
- o Soft seat check valve
- o Pressure switch

• For pneumatic release systems, the components include:
- o Model H-1 or R-1 pneumatic actuator
- o Air pressure gauge and valve
- o Soft seat check valve
- o Pressure switch
- o Model C-1 or C-2 thermostatic rate-of-rise release and/or fixed temperature release and/or pilot head (sprinkler)

• For electric release systems, the components include:
- o Solenoid valve, part no. 11591, 11592, 11593, 11594, 11596, 11601, 11602, 13843, or 13844 (normally closed)
- o System control panel
- o Electric detection system

Optional system components include:
• Speed control assembly, Model A-1
• TRIMPAC Models B-3, B-3B, B-3S, B-4, B-4B, and B-4S
• Model E-1 Accelerator
• Model D-2 Air Pressure Maintenance Device
• Model LD-1 anti column device
• Viking Total Pac enclosure, for sizes 1-1/2 through 6 inch NPS with electric release
• Single Interlocked Preaction Sprinkler Systems, which utilize the angle type main water control valves, are available factory assembled in the Viking Total Pac2 enclosure, a second generation enclosure which replaces the Total Pac. The Total Pac2 is available in several configurations: 1) the system fully enclosed on legs with an access door and a built in electrical control panel (when electric activation required); 2) the valve system fully enclosed on legs with an access door and a remote control panel; 3) the valve system assembled to a skid and used with a remote control panel.

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