



HARDING FIRE PROTECTION

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SPRINKLER SYSTEMS (revised 2007)

Wet system – The sprinkler heads are closed and the sprinkler piping is flooded at all times. Water will be discharged from a sprinkler head as soon as the sprinkler head is activated (opened). This system is typically found in office buildings and heated warehouses.

Dry system – The sprinkler heads are closed and sprinkler piping is dry and filled with pressurized air to approx. 35 psi. When a sprinkler head is activated (opened) the air pressure inside the sprinkler piping is released and at about 10 psi. the dry sprinkler valve opens (5:1 ratio) allowing water to flow into the sprinkler piping. The water will be immediately discharged through the activated sprinkler head. This system is typically found in unheated parking garages.

Deluge system – The sprinkler heads are open and a deluge sprinkler valve, in the closed position, holds back the water from entering the sprinkler piping. When the deluge valve is opened, manually, electrically or pneumatically, water flows into the sprinkler piping and is discharged through all of the sprinkler heads. This system is typically found in aircraft hangars, for exterior protection of ships or to protect the exteriors of buildings against a fire.

Pre-action system - The sprinkler heads are closed, the piping is filled with air pressure and a pre-action (deluge) sprinkler valve holds back the water from entering the sprinkler piping. A sensing device (detector or pilot sprinkler head) must be activated. The sprinkler valve opens and water immediately flows into the sprinkler piping and discharges through an activated sprinkler head. This system is typically found in a computer room.

Double interlocked pre-action system – Similar to the “pre-action system” but there is a second interlock device that must operate before water can flow into the sprinkler system.

Two independent actions must take place before water can be discharged.

- 1) A sensing device (i.e. smoke or heat detector) must be activated, which in turn operates a solenoid
- 2) As the air pressure in sprinkler piping begins to drop and a low-pressure alarm activate.

If the air pressure inside the sprinkler piping continues to drop below approx.. 15 psi the air actuator valve at the main sprinkler valve releases.

Once conditions 1) and 2) are met, the main deluge valve opens and water immediately flows into the sprinkler piping and discharges through the activated sprinkler. This system is typically found in telecommunications equipment and power areas.

Note:

- 1) The fire detection system that is part of a pre-action or double interlocked pre-action sprinkler system could be configured so that one sensing device on two separate detection zones would have to be activated before sprinkler valve could be opened. This configuration is referred to as “cross zoning”. A “cross zoned” detection system could be used to provide a further level of protection against the accidental discharge of water from a sprinkler system if a fire situation did not actually exist. A “cross zoned” detection system can also be used to operate automatic smoke control fans and dampers.