

PREACTION SPRINKLER SYSTEMS

Preaction systems are sprinkler systems that have compressed air, instead of water, in the piping.

Preaction systems limit the accidental discharge of water.

Any occupancy where the actual or perceived threat of accidental discharge of water is a problem could consider the installation of a preaction system.

Water does not enter the piping system **until** the preaction valve is activated.

This valve is connected to a release line, which is connected to a network of detectors spaced throughout the hazard.

Electric release lines consist of networks of electric detectors connected by low-voltage wiring running back to a listed releasing panel.

There are three basic categories of preaction systems:

NON-INTERLOCKED
SINGLE INTERLOCKED
DOUBLE INTERLOCKED

NON-INTERLOCKED

Non-Interlocked systems require **one** triggering event to occur for the valve to release water into the piping system.

Either a sprinkler head activation **or** a detector activation will trip the preaction valve.

SINGLE INTERLOCKED

Single interlocked systems require that the **release circuits activate** to open the valve.

If the **release circuit activates first**, the valve will open and **water will fill** the pipe, waiting there for a head to fuse.

If a **sprinkler head activates first**, **no** water will flow into the piping, the valve **does not open**, but air escapes the system, **activating a low air supervisory switch** and sounding a low-air alarm at the panel.

The same thing happens if you break off a sprinkler or break a pipe.

For this reason, single interlocked systems are popular where accidental discharge of water from the PIPING or sprinklers is undesirable, such as in computer or telecommunication rooms.

DOUBLE INTERLOCKED

Double interlocked systems require **both** the activation of a detector in the release line **and** the fusing of a sprinkler on the piping itself to open the preaction valve.

If just a detector goes into alarm, you only get an alarm.

If just a sprinkler head goes off, you only get a supervisory alarm.

Double interlocked systems are used where it is undesirable for water to even enter the piping until absolutely necessary, such as in seismically active areas or freezers where accidental activation could result in frozen piping and the dismantling of the system.

REVIEW

Non-interlocked systems **fill with water** upon activation of either a detector or a sprinkler.

Single-interlocked systems require the activation of **a** detector to fill the system.

If the pipe breaks or a head goes off first, there is **NO** water flow.

Double interlocked systems require **both** detectors **and** sprinklers to activate **before** the preaction valve will open.

RELEASE CIRCUITS

Various types of detectors may be used in an electric release circuit, ranging from simple heat, smoke, or air sampling detectors, to sophisticated UV/IR detectors, depending on the nature of the hazard.

But they all do the same thing--upon detection of a fire they close or open a circuit, which in turn activates various alarms back at the panel. The panel will, when conditions have been met, activate the solenoid on the preaction trim. When this solenoid opens, pressure is released from the top of the valve clapper, and the valve opens allowing water into the system.

Since these circuits are susceptible to power outages, they are required to be backed up with batteries in the panel.

Additionally, the circuitry may be supervised at the panel against shorts, broken wires, a failure of a detector or the panel itself.

Verified/Sequential Control Panels may be used to increase the reliability of the detection circuit.

Only panels approved for use with the preaction valve should be used. Usually, the detection/monitoring/controls for the Preaction system is the same detection/controls for the Clean Agent Suppression Systems.

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