

What you should know about dry-pipe fire suppression systems.

Dry-pipe systems are preferred in locations where water in pipes could freeze.



Dry-pipe fire systems are installed to protect your property assets from fire losses and are the next-most common fire system installed—second only to wet fire systems. Your company should be aware of the type of fire systems that are installed, and which steps to take to ensure the systems are ready and effective to control a fire. Being proactive will help ensure that your company will not fall victim to severe property losses or prolonged business interruptions, which can rob profits.

Why dry systems versus wet?

There may be locations in your building where dry systems are installed and preferred. Wet-pipe fire systems may be non-functional in some areas, due to potential freezing of water in the pipes. This can result in large losses from water damage. Examples of these areas include freezers, attics, unheated buildings, parking garages, and outside shipping areas/loading docks.

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Dry-pipe fire systems are filled with compressed air or nitrogen and are not likely to leak water into sensitive areas, where storage of valuable products or equipment may result in large losses.

How does a dry system work?

Dry systems release air pressure, allowing the dry valve to open, and water to flow into the pipes to the opened sprinklers. NFPA regulations¹ require a dry system when ambient air temperature may dip below 40°F and wet pipes may freeze and be inoperable.

How do I identify a dry system?

Dry systems can be identified by viewing the valve assembly, which is more complex than wet systems. A dry pipe valve will usually have dry-pipe wording that is either cast into the valve body itself, on a placard on the riser, or in an annual contractor's evaluation. Dry systems can also be identified by a small air compressor, typically located on the floor, which keeps the pressure stabilized in the system.

Air compressors are critical components of a dry system.

Air compressors should be permanently mounted, hard-wired, and are required to keep constant pressure in the pipes. The compressor should have an alarm to alert of a failure in the pressure in the pipes. An alarm would mean water has entered the pipe system. A qualified contractor or repair person should be summoned immediately to evaluate and repair the system if there is a failure or if maintenance of the air compressor is required.

Don't be confused by different dry system names.

Dry systems may also be called pre-action systems, as an electronic valve holds back the water from entering the pipe. A dry system may also be called a deluge system. A deluge system is the same as a pre-action except the pipe is not pressurized with air. A deluge system valve is opened by activation of a smoke or heat detection system.

Special Concern.

Dry and pre-action systems in cold areas are vulnerable to condensing water in the pipes, which can result in ice plugs. Ice plugs can be a big problem, as they will prevent water from flowing in the pipe. The plugs can be the result of improper sloping of pipes or failure to drain the system correctly. Even well-designed systems can collect moisture and result in ice plugs over time. Only continual monitoring and maintenance can prevent damages from ice plugs and pipe freezing.

¹ <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=25>

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Dry System Needs.

What can you or your company do to ensure your dry system is ready to protect you? The best way to ensure adequate fire system performance is to have a qualified person follow the NFPA 25 Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems¹:

DAILY:

- Check the dry-pipe valve room during freezing conditions to ensure that the temperature is maintained above 40° F, if applicable. These rooms need to have a reliable source of heat. Dry pipes without water can't freeze, but the supply of water to these systems can. Ideally, redundant heaters or a heater with a temperature monitor alarm will prevent freezing and large losses.

WEEKLY:

- Evaluate readings of air pressure gauges on the air line between the compressor and the dry-pipe or pre-action valve. If the pressures are not in close alignment, there may be a blockage or gauge failure. Record the readings.

MONTHLY:

- The air pressure gauge readings near the compressor should be compared monthly to the pressure gauge readings above the dry or pre-action valve. If the gauge near the compressor trends upwards higher than the gauge near the dry pipe valve, the air line should be taken out of service and the blockage of ice or obstruction removed.

QUARTERLY:

- Check the priming water level to ensure the adequate levels of water are above the clapper valve.
- Check the velocity drip valve, located beneath the intermediate chamber, to ensure it moves freely and allows trapped water to seep out. To do this, use the push rod located in the valve opening.
- Test water alarm devices, including low pressure alarms and water motor gong, by opening the by-pass connection. This connection allows water to flow to the alarm line without opening the system.



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ANNUALLY:

- Conduct a partial main drain test by verifying that tripping the clapper valve in the open position does not allow water to flow to the pipes. This will ensure adequate water supply and no obstructions.

OTHERS:

- At a minimum of every five years, inspect dry-pipe internal condition for pipe corrosion.
- Drain the drum drips after each operation and before the onset of freezing weather to relieve trapped moisture in low area of the system.
- Inspect and maintain air compressors and related equipment annually according to manufacturer's specifications.
- Conduct a full flow trip test of the dry pipe valve every three years. This procedure trips the clapper valve and allows water to flow through the pipes from the inspector's test connection.
- Before and after any test of a sprinkler system, notify the appropriate parties of the test, including occupants, central station alarm company, fire department, and private parties.

What's in it for your company?

By ensuring your sprinkler system is well-supervised with adequate inspection, maintenance and testing, the system will be ready for operation to protect your company assets.

Make use of these additional resources.

To learn more about fire protection systems, refer to [NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection](#) and [NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems](#).

Also, ask your agent or our Loss Control Services team for our bulletins on Wet Pipe Sprinkler System Testing (CMO-0351AO) and Fire Pump Testing and Maintenance (CMO-0875AO.1).



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For your risk management and safety needs, contact Nationwide Loss Control Services: 1-866-808-2101 or LCS@nationwide.com.