



Dry-Pipe Sprinkler Valve Heated Enclosure

Dry-pipe automatic sprinkler systems are intended for the protection of unheated buildings and other areas subject to freezing temperatures. While the piping above the valve is filled with compressed air (or sometimes nitrogen), the dry-pipe valve and the supply piping to it contain water. Arrangements must be made to prevent freezing of the dry-pipe valve and the water supply piping.

Dry-pipe valves should be located in an accessible place as close to the overhead sprinkler piping as feasible. To accomplish both the freeze protection and the location requirements, heated enclosures around the valve and water supply piping are constructed. An example of an enclosure is illustrated. Its size should be sufficient to provide at least 30 inches of clear space to all walls and the ceiling from the dry-pipe valve and fittings. Minimum dimensions of 6' x 6' x 6' are often recommended.

The water supply pipe should enter near the center of the enclosure. If the floor rests directly on the ground without an airspace, the water supply pipe will be protected from freezing by the ground cover until it enters the enclosure. However, if the floor has an airspace beneath it, the water supply pipe will need to be in a heated enclosure from the point it leaves the ground until it enters the dry-pipe valve enclosure.

The example enclosure consists of nominal 2" x 4" wood frame walls and ceiling (1), covered by gypsum wallboard or other noncombustible material (2), and stud space filled with noncombustible insulation (3). The door (4) should be insulated or of solid core construction. To conserve heat, the door should fit snugly and have a latch. An electric light provides illumination for maintenance. A small screened vent (7) can be provided for control of condensation. A sprinkler head (6) protects the valve enclosure from fire.

Although the two-inch drain for the sprinkler system is piped to the outside, a small floor drain (8) should also be provided in the enclosure. Water spillage (or occasional leakage) usually occurs during dry-pipe valve maintenance and resetting. Preferably, the floor should slope to the drain.

A reliable source of heat should maintain at least a 40° F temperature within the enclosure. A thermostatically controlled electric resistance heater (5) is used in the illustration. Steam and hot-water heating can also be used. If the sprinkler system is supervised by an alarm service, the air temperature inside the valve enclosure should also be monitored.

Hollow concrete block or masonry construction can also be used for dry-pipe valve enclosures. Additional physical protection is provided by this construction.

The enclosure's entrance door may open to the outside rather than to the inside of the building. A good door lock should be provided on all outside doors. Sometimes dry-pipe valves will be installed as a group of two or more valves. A single, large, heated enclosure can be used to protect all the valves and water supply piping from freezing.

Valve enclosure heating equipment must be inspected daily during the cold weather, or weekly if the enclosure is equipped with a low temperature alarm. (Low temperature alarm must be inspected annually and prior to the cold weather season.)

Water supply and air pressure gauges should be inspected weekly, as well as the gauges on any quick opening devices. The entrance of the dry-pipe valve itself should be inspected monthly to ensure that no leakage is occurring. The interior of the dry-pipe valve must be inspected annually during the required drip test.

Data Sources: NFA 13, Installation of Sprinkler Systems.
NAPA 13A, Inspection, Testing and Maintenance of Sprinkler Systems.
NFPA Fire Protection Handbook, Seventeenth Edition.