

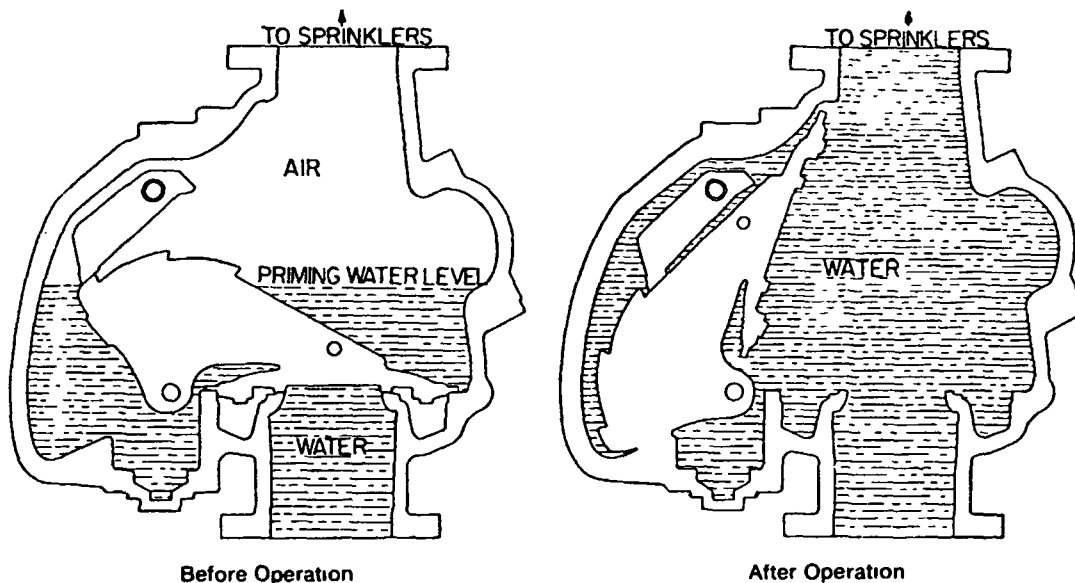


FIG 43-31 —The principle of a dry-pipe system is illustrated by these simplified drawings of a dry-pipe valve. Compressed air in the sprinkler system holds the dry valve closed, preventing water from entering the sprinkler piping until the air pressure has dropped below a predetermined point.

Courtesy National Fire Protection Association

where piping is exposed to freezing temperatures. It is essential, however, that the dry-pipe valve and water-supply line be located in a heated enclosure.

In the dry-pipe system, the piping contains compressed air that holds back the water by means of a dry-pipe valve (Fig 43-31). When a sprinkler nozzle opens, the air is released, the pressure drops, and the dry-pipe valve opens to admit water into the piping system. These sequential actions delay the actual wetting. Because of this delay, extra-hazard occupancies are difficult to protect with a dry-pipe system. In general, more water damage results with the dry-pipe system because more sprinklers open than with the wet-pipe system, that is, the fire progresses further, hence trips more sprinklers, before the extinguishing action of the water takes effect. To reduce this delay, quick-opening devices, such as exhausters or accelerators, can be added to dry-pipe systems to expel the air more rapidly.

The system air pressure should be kept 15 to 20 psi above the normal tripping pressure,

higher pressure delays the action of the dry-pipe valve. The system should not lose more than 10 psi air pressure per week, which would require repressurizing oftener than once a week, equipment that leaks more is not acceptable. (See NFPA Standards 13 and 13A for testing dry pipe systems.)

It is essential that all parts of a dry-pipe system be installed so that they can be thoroughly drained. Therefore, where it is necessary to use inverted (pendant) sprinklers or "drop piping," a special type of pendant sprinkler may be used on the piping filled with an antifreeze solution.

Preaction. Preaction systems are similar to dry-pipe systems, but react faster and, hence, minimize water damage in case of fire or mechanical damage to sprinklers or piping. Supervision of the system against mechanical damage can be accomplished by connecting to the piping an automatic, low-pressure air supply that compensates for minor system leakage. A rapid reduction in pressure resulting from, say, an accidental breakage of