



AIR Can Save You from Drowning!

Best Practices of Air Testing

The Importance of Air Testing

Air testing is a safe way of verifying that sprinkler system piping has no *significant* openings (such as those caused by missing caps, sprinkler heads, etc.) before water is introduced into the sprinkler system. It is an integrity test designed to find gross errors before introducing water into the piping.

Depending on the project, a variety of air testing techniques may be employed. Each technique has benefits and shortfalls and no one procedure is right for all work projects. A good contractor will use a variety of inspection and testing techniques and will evaluate each job to determine the best testing procedure. Some of the variables that the contractor must consider are:

- Is the system a new installation or retrofit?
- Is there valuable/expensive equipment in the building?
- Are contents susceptible to water damage?
- Is the system CPVC or steel piping?

Types of Air Testing

Blow Back

Blow back is the most simplistic type of air testing. The sprinkler fitter physically blows, with single or multiple blows, into a port opening (e.g., pressure gauge opening, sprinkler head opening, etc.) and receives a corresponding *blow back*. This verifies that there are no significant openings in the system. This test only takes a few seconds, requires no special equipment, and can easily be incorporated into a company's standard procedures to verify piping integrity and reliability before hydrostatic testing and/or putting system into service.

Blow back testing is not without its shortfalls. Large systems, systems with many elevation changes and retrofit systems can give a false blow back. It is also a gross integrity test and will not find a fitting that is in-place but not 'tight'.

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Compressed Air

Compressed air can also be used to check for gross errors. Depending on the air pressure, smaller leaks can also be found. Safety concerns arise in using compressed air in a system especially if the building is occupied. A loose fitting or damaged pipe that 'lets go' under compressed air, may become a projectile and seriously injure people in the vicinity. In addition, air pressure testing is not yet approved by manufacturers for CPVC piping.

To get started, ask what *best practices* your company has in place...

- Does my company have formal start-up procedures that use a variety of techniques to ensure the system is tight before water is introduced?
- Does my company have a procedure for evaluating the potential of water damage on new installations and retrofit jobs? Do we consider the extent of system inspection and air testing needed to be performed before water is (re)introduced into a sprinkler system?
- Does the procedure consider the need for protection and/or removal of valuable equipment or contents during hydrostatic tests?
- For retrofits, or when the interior of the building is finished, are designated individuals walking the system looking for leaks during hydrostatic test?
- Are air testing procedures built into start-up procedures for new installation, retrofit **and** service jobs?

At a minimum, blow back testing should be done on all systems before water is (re)introduced into the piping. For retrofits, service work, and where water damage potential is high, compressed air should be used.

- What type of air device is used? Do we utilize only air devices that will not add oil into the sprinkler piping?
- How is the inspection and/or air testing documented?
- How is training of new employees handled? Is there refresher training for existing employees?

Summary

It is critical that the integrity of every sprinkler system installed or modified is verified before water is introduced into the system. For various jobs, the techniques employed to limit the exposure of water damage will differ. The constant, however, is the process in which you determine potential for water damage and need for preventive measures.

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Sample Procedure

System Integrity or Gross Error Test

- ▶ **Walk the system several times during the job.** Have different individuals inspect over the course of construction (different eyes pick up different items). At a minimum, inspect piping before pipe is enclosed and before final inspection and testing.
 - ▶ Conduct blow back test.
 - ▶ For **steel** sprinkler systems *
 - Add air pressure using equipment that will not add oil.
 - Consider adding a scent to the air.**
 - Pressurize the system up to 15 psi.
 - Open each test connection until scent is noted. Close test connection(s).
 - Confirm system pressure is holding. Start timing for '20 minute hold test'.
 - Walk the system listening for air hissing and noticing odor of added scent.
 - If any drop in pressure is found, or problems are uncovered while walking the pipes, than the additional investigation is needed to find the leak.
 - The system must hold pressure for at least 20 minutes before the hydro test can be conducted.
- * Dry pipe systems are air tested as part of the acceptance testing process. The air pressure leak test must be conducted before the hydrostatic test.
- ** Use extreme care in adding scents, especially in occupied buildings. Do not use oil based products.

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