



WASHINGTON STATE PATROL – FIRE PROTECTION BUREAU
INSPECTION SECTION

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Smoke Detector Sensitivity Testing and Smoke Entry/Alarm Response Testing

Inspection and Maintenance: All smoke detectors require visual inspection prior to any smoke testing. If needed, a smoke detector can be cleaned using a vacuum and/or dust brush without removing the cover of the alarm.

- All smoke detectors, conventional or addressable must be tested with smoke or listed aerosol.
- A fire alarm system or smoke detector that produces a sensitivity report electronically is not a substitution for the required smoke entry test.
- Any smoke detector that cannot produce an electronic sensitivity report via the fire alarm panel or listed device must have a calibrated smoke obscuration generated test preformed.

Smoke Entry/Alarm Response Testing: Smoke detectors/smoke alarms shall be tested annually, in place to ensure smoke entry into the sensing chamber and an alarm response. Testing with smoke or listed aerosol, acceptable to the manufacturer of the aerosol or the manufacturer of the smoke detector/smoke alarm and identified in their published instructions, shall be permitted as acceptable test methods. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber shall be permitted.

Sensitivity Testing: Any of the following tests shall be performed to ensure that each smoke detector is within its listed and marked sensitivity range:

- 1) Calibrated test method.
- 2) Manufacturer's calibrated sensitivity test instrument.
- 3) Listed control equipment arranged for the purpose.
- 4) Smoke detector/control unit arrangement whereby the detector causes a signal at the control unit when its sensitivity is outside its listed sensitivity range.

Sensitivity Testing Timeline:

- Sensitivity shall be checked within one year after installation and every alternate year thereafter, unless
- After the second test, if within its listed sensitivity range for two tests in a row, the test is extended to five years.
- Records of nuisance alarms shall be maintained.

Note: The calibrated smoke obscuration generated test can also be used to meet the smoke entry test requirement but the smoke entry test cannot be used to meet the calibrated smoke obscuration generated test.

When a fire alarm panel or an external tester is used to report the sensitivity of a smoke detector it has nothing to do with smoke entry, only the ability of the detector to read the level of smoke inside the photo or ion chamber to confirm it is within the NFPA specified range.

Reference NFPA 72-1999 Edition Section 7-3.2.1