NFPA 72 Testing Requirements: And the Tools to Get the Job Done

Test and Inspection Equipment: Their Proper Use and Application
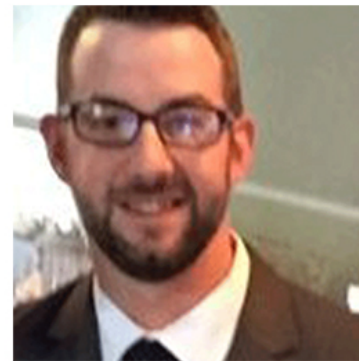
Patrick Ryan: Northeast Regional Sales Manager

Why Do You Have To Test & Inspect Fire Alarm Systems

- Per NFPA 72, Chapter 14- all fire alarm systems must be tested and inspected

- To ensure all building fire alarm systems are installed properly and working to the manufacturers specifications

- To save lives, protect property, and prevent damage

Requirements of Testing & Inspecting

- Different types of detectors require different testing
  - Functional Testing
    - Checks that the detector is functional and working properly
  - Sensitivity Testing
    - Tests the sensitivity of a smoke detector
    - Must test that each smoke detector is within its listed and marked sensitivity range

Requirements of Testing & Inspecting (Con't)

- Must use UL approved testing equipment

- NFPA 72 2016, Chapter 14, Table 14.4.3.2 lists the required tests that must be done at what frequency

  - *States and Municipalities have all adopted different editions of NFPA. The most current code is NFPA 2016/2019 which is referenced in this presentation. Please check with your AHJ (Authority Having Jurisdiction ie the local Fire Marshall) to find out what edition they are currently enforcing.*

Main Types of Detectors

- Smoke Detectors
  - Functional & Sensitivity testing
- Heat Detectors
- CO Detectors
- Duct Detectors
- Multi-Criteria Detectors

Smoke Detectors

Functional Testing

- Must be functionally tested annually

- *"Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions"- NFPA 72 2016, Table 14.4.3.2*

- Can be tested using a smoke dispenser or hand-held smoke

Smoke Detectors

Functional Testing

- Every smoke detector must be tested every year

- Canned smoke & smoke dispensers are options for testing

- Make sure to use a silicone-free smoke!

- A 1-second burst is all you need

What Products can be used for Smoke Detector Testing?

M8 – SMOKE CENTURION

- can be used by hand or with a dispenser

- Fast detector activation and clearing

SMOKE SABRE

- Only used as a handheld

- Extendable "cone" allows the ability to reach higher detectors

SOLO A10

- Non-flammable; Non-Toxic, Alcohol based

- Can be used as handheld or in enclosed delivery system

All UL Listed and Silicone Free!!

Smoke Detector Testing: Other Options:

Solo365:
Intelligent Smoke Detector Testing

- Faster, Simpler, Cleaner
- Easier to handle – 15% lighter than using an aerosol can and dispenser
- Eliminates risk of contamination
- Complies with all of the latest regulations
- Proximity sensor automatically initiates test upon recognizing detector in cup.
- LED Auto Light: will automatically light up cup in dark places
- Clearing Mode: great for eliminating false alarms

Smoke Detectors

Sensitivity Testing

- *"…ensure that each smoke detector is within its listed and marked sensitivity range."*- NFPA 72 2016, Table 14.4.3.2

- Required to do sensitivity test within 1st year of install

- Every 2 years after

- Every 5 years after the 5th year

Year 1, Year 3, Year 5, then every 5 years

Detector Sensitivity Testing: TRUTEST

- Manufacturer Approved Method of Sensitivity Testing

- Measure true sensitivity of a detector head with a controlled amount of smoke pumped through its system, introducing into the detector.

- Capable of testing both Photoelectric and Ionization detectors

- Battery operated and portable

- Comes with all accessories needed to perform sensitivity tests on detectors. Main control unit, head, (2) different size ext. cables, and charger.

- Self calibrates before every test.

- Results shown in %/Ft.

Other Sensitivity Testing Options:

System Sensor Sensitivity Tester

Gemini Sensitivity Tester

Heat Detectors

THERMOFLEX® CR Series
Rate of Rise Heat Detector

- Perform annual heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions
    - Fixed Temperature
    - Rate of Rise
    - Restorable line
- Non-restorable type- DO NOT PERFORM HEAT TEST!
- Heat guns are not listed and labeled heat sources!

How to test Heat Detectors

SOLO461 – Heat Detector Test Kit

- Heat Detector tester with the capability of testing both rate of rise and fixed heat detectors.

- Device is battery operated. Eliminating the need to drag extension chords around a facility.

- Sensors located on the side of the head activate test upon detectors presence.

- Tester has the ability to reach a heat of 194 degrees F.
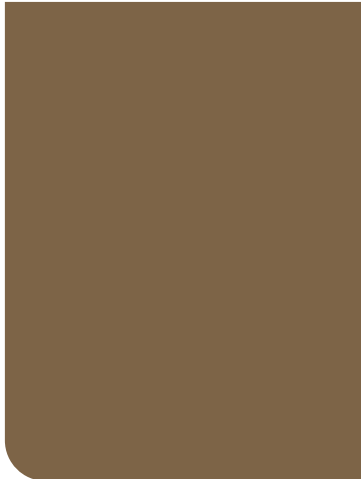
-Thermotech 302 Series

Stick Type - Heat Detector Testing

Skinner Innovations:

• **Uniquely designed for testing HIGH TEMPERATURE probe heat detectors from 140 to 950F with 5 user selectable temperature setpoints Compatible with all probe heat detectors**

CO Detectors

- Must be functionally tested annually

- *"For all system detectors installed after January 1, 2012, carbon monoxide tests shall be performed at initial acceptance and annually by the introduction of carbon monoxide into the sensing chamber or element. An electronic check (magnets, analog values, etc.) is not sufficient to comply with this requirement."- NFPA 720 2015, 8.4.5.1*

Carbon Monoxide Detector Testing: Solo C6

- *"Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with their published instructions."*

- **Solo C6:**

  - **UL Listed; Manufacturer Approved**

  - **Designed for use with system monitored CO detectors**

  - **Only CO tester approved for Systems Sensor and Interlogix CO Alarms**

  - **Uses PPM speed up function to quickly activate CO detectors**

Multi Criteria Detectors

Detector Model: PS-24H
Photoelectric Smoke / Heat Detector

- Multi-Criteria, Multi-Sensor, Combination detectors

- Must be tested annually

- Each element must be tested (Smoke/Heat/CO)

- Some detectors require multi-verification test (2 or more elements tested at the same time)

Testifire Multicriteria Detector Testers

- Worlds first multi-stimulus detector tester for smoke, heat and/or CO

- Enables fast and more efficient testing of single and multi-sensor detectors

- The production of different stimuli can be achieved either sequentially or simultaneously

- *Two Different Testifire Models:*

- *TF1001 – Ability to test smoke/heat*

- *TF2001 – Ability to test smoke/heat/CO*

Having a tough time reaching/cleaning those detectors on high ceilings?

Solo100 – 15ft Telescopic pole

Solo108 – 8ft Telescopic pole

Solo101 – 4ft Extension Pole*

*can be used on top of either telescopic poles

Detector Removal and Cleaning

Solo200 – Detector Removal Tool
A7 Air – Detector Duster
Blowout – Detector Duster

Why Use Test & Inspection Equipment? - SAFETY

- Stay on the ground! No need for ladders or lifts.

- Keep technicians safe from falling off ladders (minimize worker's comp cases)

- Protect property from falling ladders or other debris

Other Important Testing: Battery Testers

- Inspection of batteries is monthly or semi-annually depending on the battery type - refer to NFPA 72 2016 Table 14.4.3.2(9)

- Battery load testers test the condition of batteries, identifying weak or failing batteries

- Measure the battery performance under load, not just voltage or internal resistance
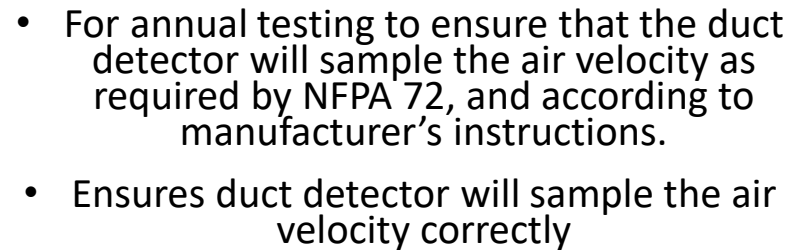
Other Battery Testing Options:

Duct Detectors

- Must be tested and working to manufacturer's specifications

- NFPA requires duct housing to be tested 4 ways:
    - Functional Test
    - Sensitivity Test
    - Pressure Differential Test
    - Air Velocity Test

Other test & inspection equipment

DUCTCHECKER

- Samples Air Stream in Duct Detectors
- Conforms with NFPA 72 Standards
- Accepted test device for annual testing for pressure and air sampling ability of duct detectors.

AVCHECKER

- For annual testing to ensure that the duct detector will sample the air velocity as required by NFPA 72, and according to manufacturer's instructions.
- Ensures duct detector will sample the air velocity correctly

Sound Testers

- Sound level meters test audible appliances for the public operating mode of an emergency voice/alarm system in accordance with manufacturers instructions

- Testing of audible alarm notification appliances must be done upon installation and semi-annually

- Make sure tester meets ANSI S1.4a requirements

Professional Test & Inspection Equipment

Speech Intelligibility Testing

Bedrock Products:
SM50: Speech Intelligibility Meter

- Speech Transmission Index (STI) speech intelligibility tester

- Measure audible signal device to confirm operability including intelligibility of voice messages

  - Easy to use touch screen

  - USB port

  - Includes custom hard case

  - Capable of taking both STIPA and full STI measurements

Bedrock Products: BTB65 Talkbox

- The Talkbox is a calibrated acoustic signal source for taking STIPA measurements and more. It can play test signals through its built-in loudspeaker, or you can use the line-out feature to play the test signals through other devices.

- Easy to use touch screen

- Loudspeaker frequency range 20 – 15,000 Hz

- Plays back signal at a standardized (calibrated) signal level of 54-72 dB(A) at 1m

- Signal level can be increased/decreased relative to environment

- ***Can be purchased with the SM50 as a bundle or as a standalone unit.**

Thank you for your time!

Patrick Ryan

Northeast Regional Manager

732-299-2402

Pat.Ryan@sdifire.com