



# Collier County Fire Prevention and Protection Code

## POLICY AND PROCEDURE MANUAL



**ARTICLE NUMBER:** FAL 03-2

**EFFECTIVE DATE:** June 1, 2003

**SUBJECT:** Acceptable locations of duct-type smoke detectors installed in supply and/or return air systems in lieu of the recommended distance of 6 to 10 duct-equivalent diameters

**OBJECTIVE:** To reiterate and provide clarification regarding the installation location of duct-type smoke detectors acceptable to the fire districts.

### **BACKGROUND:**

Within the fire alarm industry, it has been a long-standing practice to locate duct-type smoke detectors in the zone between 6 and 10 duct-equivalent diameters of straight, uninterrupted duct run. For Supply Air Systems, NFPA 72 (2002 ed.) section 5.14.4.2.1 requires detectors in the supply air duct downstream of both the fan and the filters. For Return Air Systems, NFPA 72 (2002 ed.) section 5.14.4.2.2 requires detectors where the air leaves each smoke compartment, or in the duct system before the air enters the return air system common to more than one smoke compartment.

As the flow of air through a duct is not always uniformly dispersed, and in order to obtain a representative sample, stratification and dead air space should be avoided. Although it is considered good practice to observe the recommended distance limitations of 6 to 10 duct-equivalent diameters, there are some air-handling ductwork designs where this is not possible.

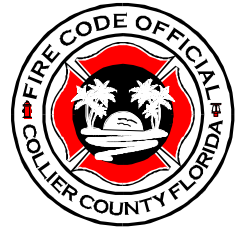
Although this distance limitation is typically observed to reduce the potential for non-uniform smoke distribution in the duct, it is not the only factor ensuring functionality of the detector. Listing requirements, manufacturer's instructions and compliance with applicable sections of NFPA 72 (2002 ed.) 5.14.4 and 5.14.5, as well as NFPA 90A (2002 ed.) 6.4 will also be given careful consideration by the local AHJ when determining compliance and performing acceptance testing.

### **POLICY/PROCEDURE:**

Therefore, and as has always been the case, duct-type smoke detectors and their sampling tubes (if applicable) must be installed in a manner consistent with their listing, and in such a way that the location of the duct-type smoke detector must be maintained within its operating range as it relates to air velocity present, temperature and relative humidity.



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Appropriate documentation to this end must be provided to the local AHJ, upon request, verifying the listing and design range parameters of the detector, and that the detector was designed and installed to allow verification of airflow from the duct to the detector. Additionally, the manometer reading must be posted on the duct at the site of the test.

## **CODE REFERENCES:**

(Updated 01/23/09) NFPA 72 (2002 ed.) 5.14.4, 5.14.5; NFPA 90A (2002 ed.) 6.4.2.1; Florida Building Code-Mechanical Section 606

## **ATTACHMENTS:**

None.

**DISTRIBUTION:** Big Corkscrew Island Fire District; East Naples Fire District; Golden Gate Fire District; Immokalee Fire District; Isle of Capri Fire District; North Naples Fire District; Ochopee Fire District; City of Marco Island Fire Department; Building Director, Collier County Community Development; Chief Inspectors, Collier County Community Development; Collier County Community Development Records; Collier Building Industry Association (CBIA); Subscribers