



Your Questions About Life-Safety Dampers Answered

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Session Moderator

- Joined AMCA in February 2019
- Responsible for development of AMCA's education programs; staff liaison for the Education & Training Committee
- Projects include webinars, online education modules, presentations at trade shows, AMCA Speakers Network and many other items.



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- There will be Q&A at the end of the session.
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 - You must be present for the entire session and complete a post-session online evaluation. Partial credit cannot be given for anyone who arrives late, leaves early or does not complete the evaluation.
 - There will be a QR code for the survey on screen at the end of the presentation, and a link will be emailed to everyone within 2 weeks. The survey must be completed to qualify for today's PDH credit. If you do not want PDH credit, completing the survey is optional, and your feedback is greatly appreciated.

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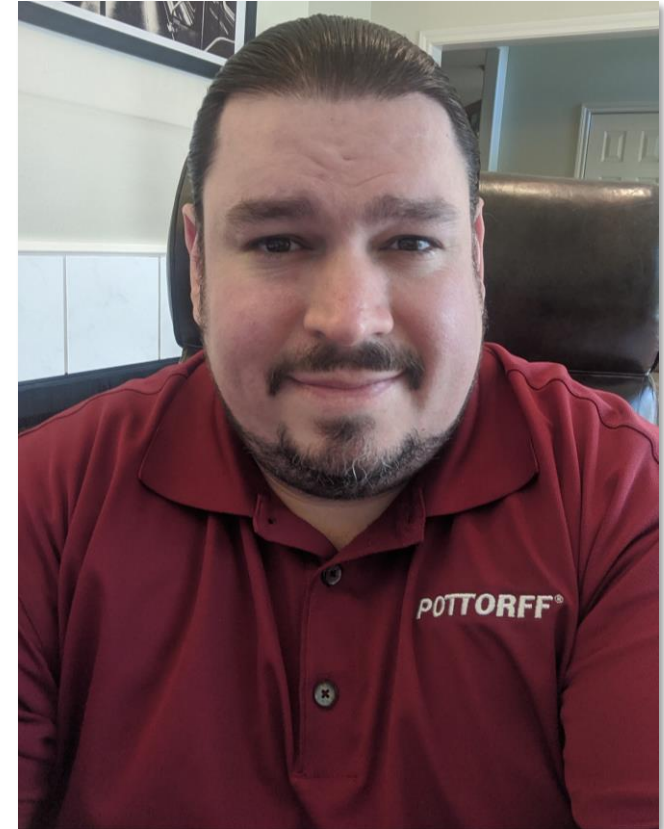
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James Carlin

Product Manager- Dampers Pottorff

- Over 16 years experience in the industry
- Previous position as a Design Engineer developing UL-rated & air control dampers, and work in the aerospace industry
- Earned a Bachelor of Engineering in Mechanical Engineering from Stevens Institute of Technology
- Active member of several AMCA committees, including the Damper Engineering Committee, Fire & Smoke Damper Subcommittee & N.A. Air Control Advocacy Committee



Your Questions About Life-Safety Dampers Answered

Purpose and Learning Objectives

The purpose of this presentation is to address the most commonly asked questions about Life-Safety Dampers.

At the end of this presentation, you will be able to:

1. Describe the common applications of Fire, Smoke, and Fire-Smoke dampers.
2. Explain the different types of installation requirements and options.
3. Identify when to modify vs. replace actuators.
4. Outline the common controls and testing options for Life-Safety dampers.

Your Questions About Life-Safety Dampers Answered

Introduction

- Life-Safety Dampers required by Building Code and other guidelines
 - IBC, IMC, NFPA, SMACNA, Local Codes
- Certification
 - UL or other 3rd party certification
 - UL Damper Marking Guide
 - UL Fire Resistance Directory
- Dampers covered
 - Fire, Smoke, Combination Fire-Smoke

Application

Fire Dampers

- Contain Fire
- UL 555

Smoke Dampers

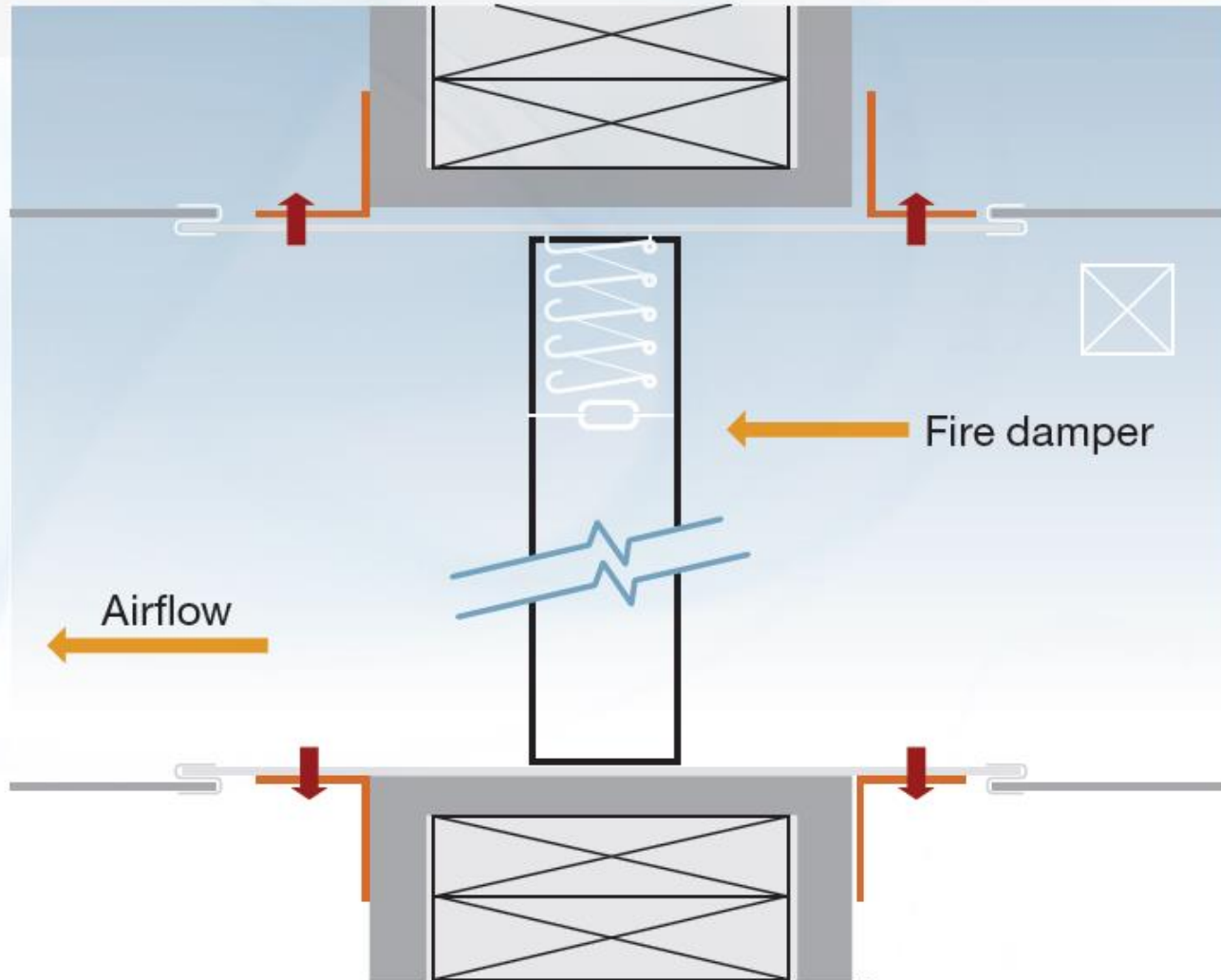
- Contain Smoke
- UL 555S

Combination Fire - Smoke Dampers

- Contain Fire and
Smoke
- UL 555 & UL 555S



Application – Ratings



1-1/2 vs. 3 Hour Fire Dampers

- Barriers Rated for < 3 hours
 - Typically 1 and 2 hour rating
 - Require 1-1/2 hour dampers
- Barriers Rated ≥ 3 hours
 - Typically 3 and 4 hour rating
 - Require 3 hour dampers

Application – Ratings

Static vs. Dynamic Fire Dampers

- Static
 - Close under NO airflow
 - Fire Dampers only
- Dynamic
 - Close under airflow
 - Fire, Fire/Smoke, Smoke Dampers



Dynamic



Static

Application – Ratings

Leakage Classes

– Class 1

- Lowest Leakage
 - 8 cfm/ft² @ 4"wg.
- Hospitals
- Schools
- Stairwells

– Class 2

- Highest allowed – IBC
 - 20 cfm/ft² @ 4"wg
- Allowed for most applications/
Jurisdictions



Application



Fusible Links



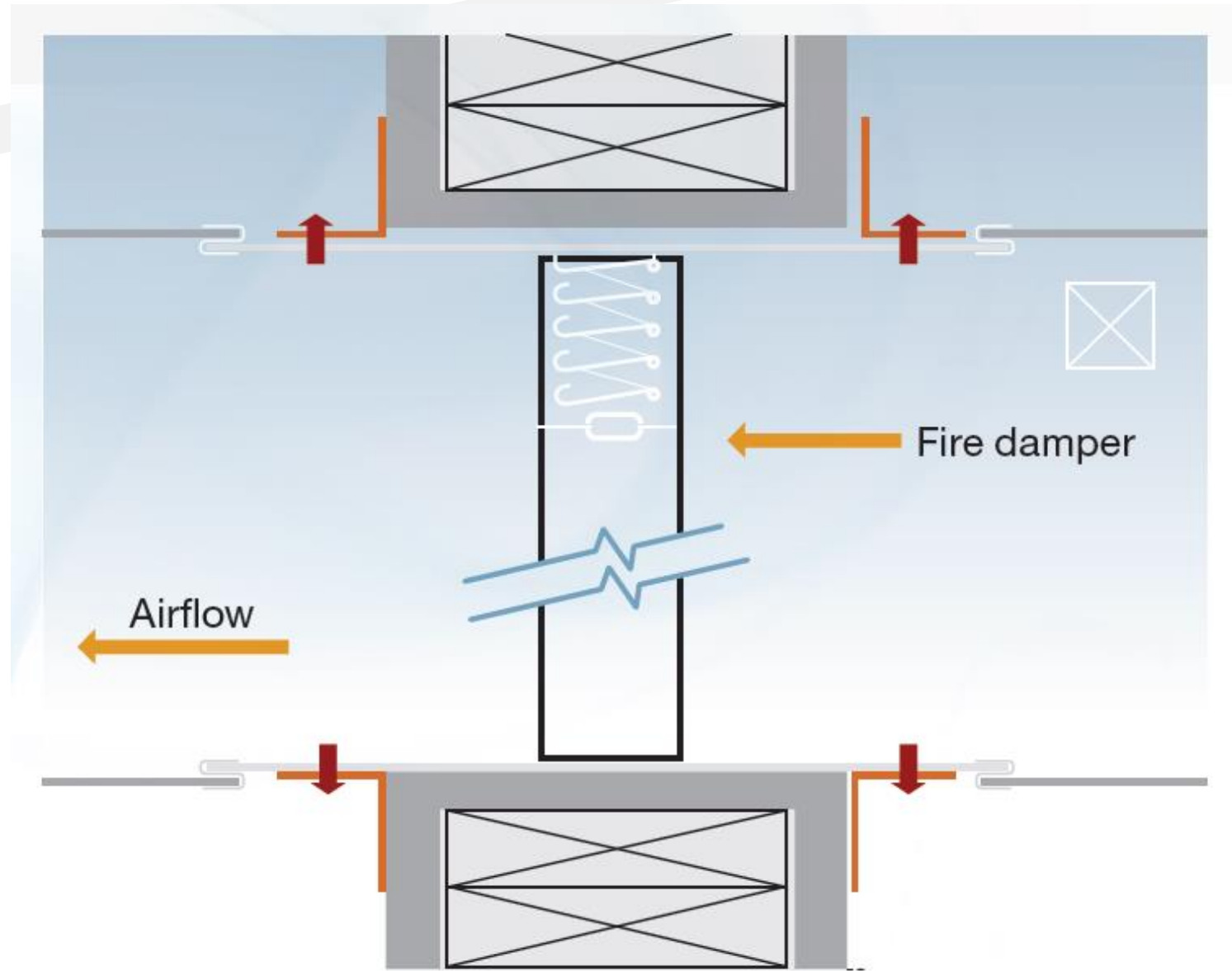
Thermostat

Temperature Responsive Device (TRD)

- Fusible Links
 - Single Use
 - Solder Connection
 - No Electricity Required
- Thermostat
 - Bi-Metallic
 - Electrically Powered

Installation

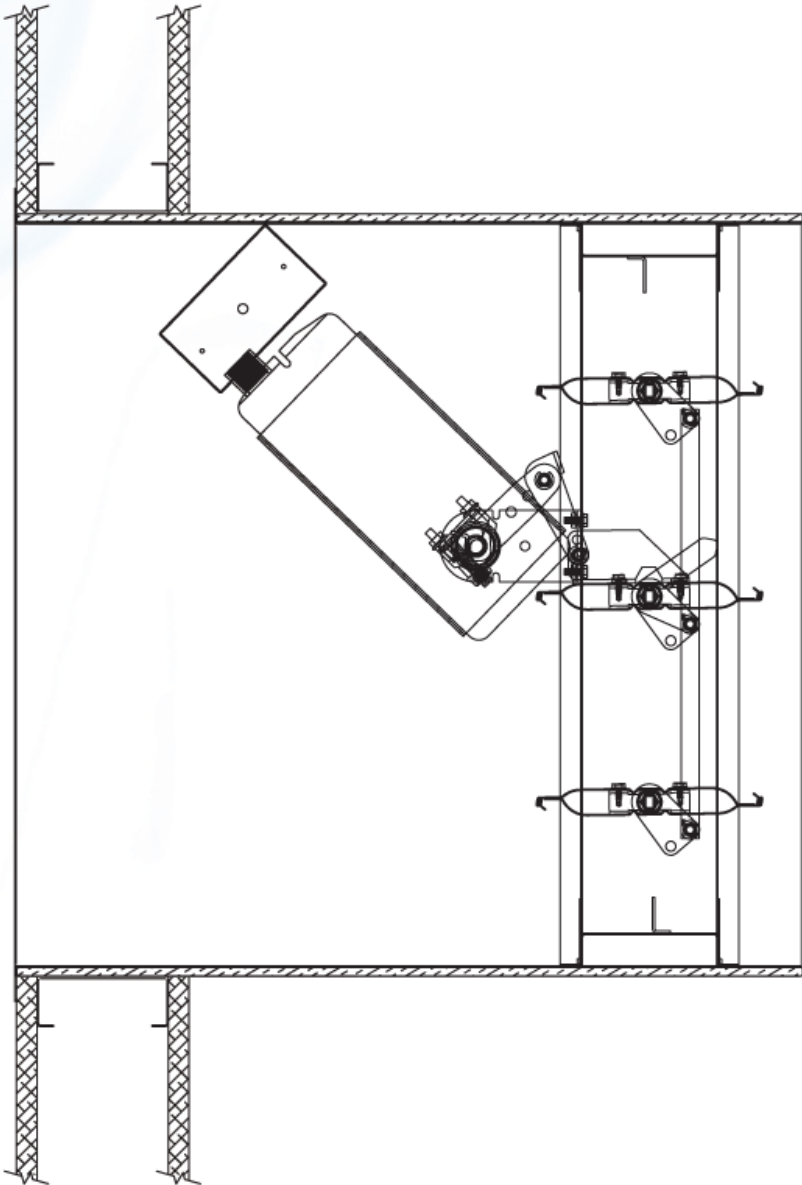
- **Traditional Fire Damper installation**
 - Dampers blades required to close within the rated barrier
 - Dampers do not need to be centered



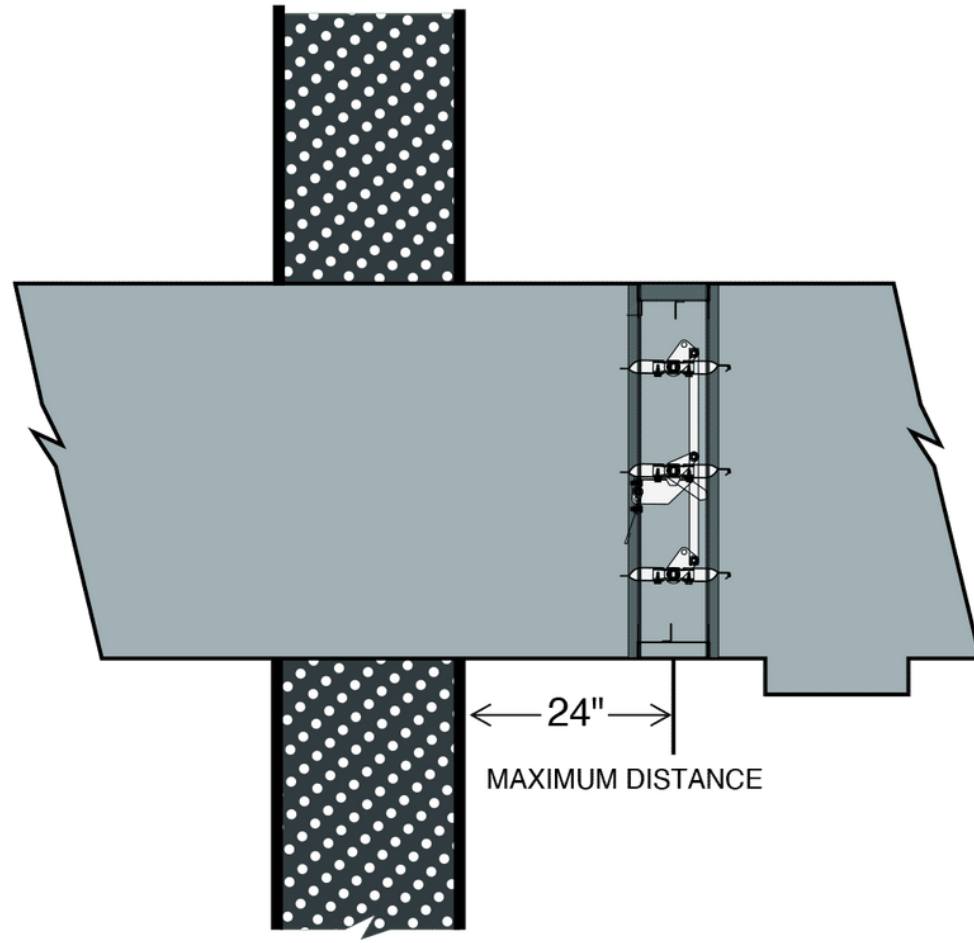
Installation – Out of Partition

Out of partition Fire or Fire-Smoke Damper installation

- Dampers blades allowed to close outside of the rated barrier
- Typically restricted in size compared to traditional dampers



Installation – Smoke Dampers



Smoke Damper Installation

– Refer to Approved Instructions

- Duct or sleeve attachment
- Maximum distance from opening
- Sealants allowed or required

Installation – Framing

Metal and Wood Stud Walls

- Refer to Manufacturer's Framing Instructions
- Openings in wood stud walls need to be lined with gypsum board



Installation – Mounting Angles



- **Mounting Angle Requirements**
 - Standard dual side
 - Optional single side
 - Minimum 1/8" gap around damper
 - Larger gaps may be acceptable
 - Allowable sealants or firestop options

Installation – Sleeve Termination

Sleeves Termination Options

- Check instructions for maximum distance allowed from wall



PLAIN "S" SLIP



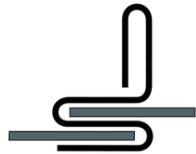
HEMMED "S" SLIP



DOUBLE "S" SLIP



INSIDE SLIP JOINT



STANDING S



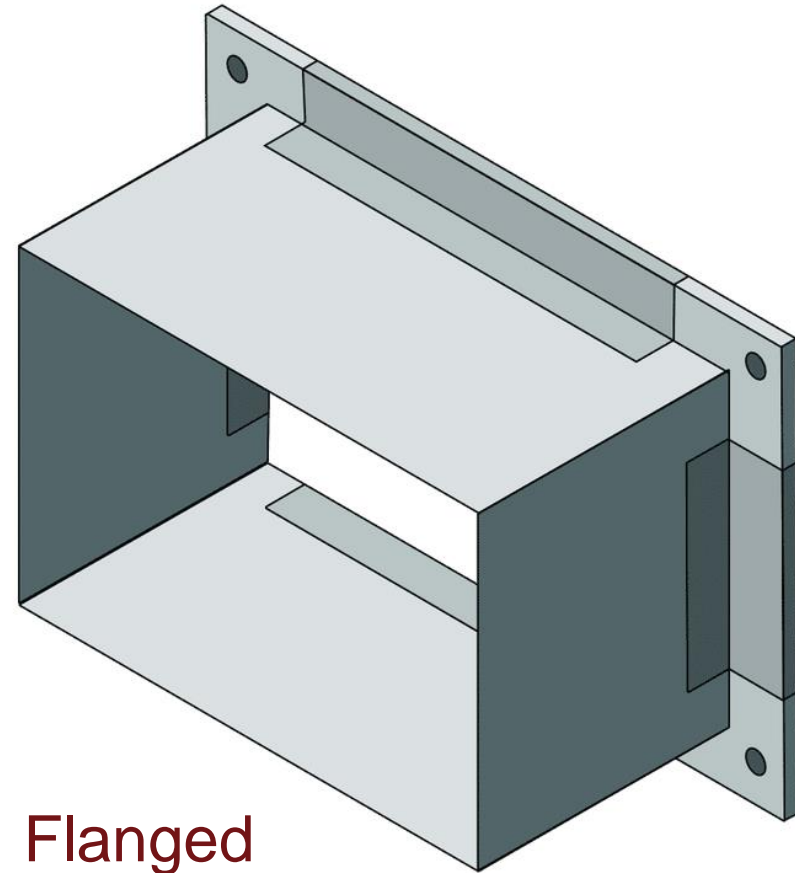
STANDING S (ALT.)



STANDING S
(BAR REINFORCED)



STANDING S
(ANGLE REINFORCED)



Flanged
Connections

Slip Connections

Actuators



- **Required to be factory installed**
 - Cycle tested prior to shipment
 - Field mounting or substitutions not covered under UL certification
 - Replacement of actuators falls outside of UL certification program
 - Replacement to be done in accordance with damper manufacturer's field service program

Actuators

- **Common Modifications**
 - Switch actuator w/out indications switches to model with switches
 - Typically same model – “Like for Like”
 - Change in actuator power
 - Typically same model – “Like for Like”
 - External mount to internal mount
 - May need local AHJ approval

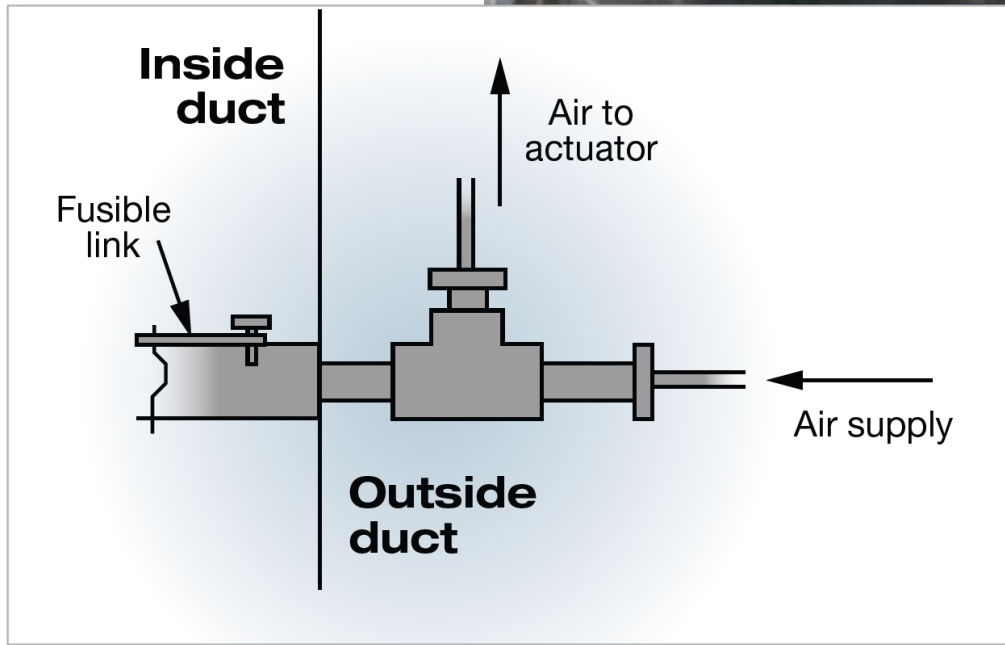


Actuators – Pneumatic or Obsolete



Replacing Non-Working Actuators

- NFPA Requirement
 - NEED to be Replaced!
- Converting from Pneumatic to Electric
- Obsolete Actuators
- Follow Manufacturer's Instructions/Guidelines
- TRD/Spring removal and replacement may be needed



**Pneumatic
Fusible
Valve**

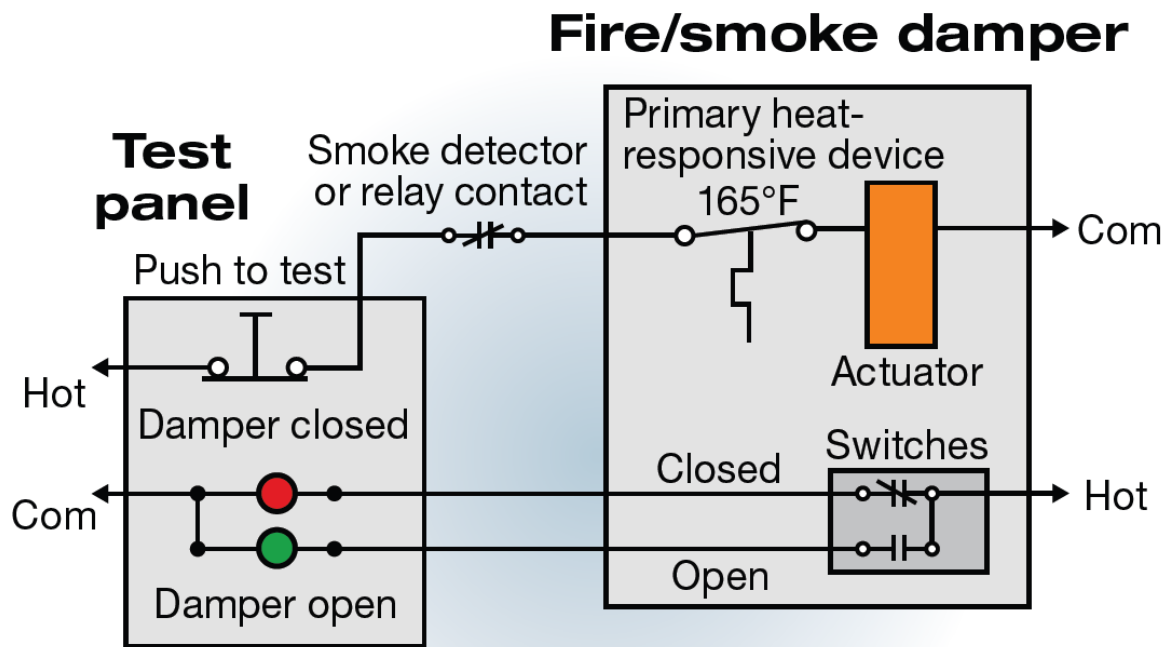
Controls – Wiring



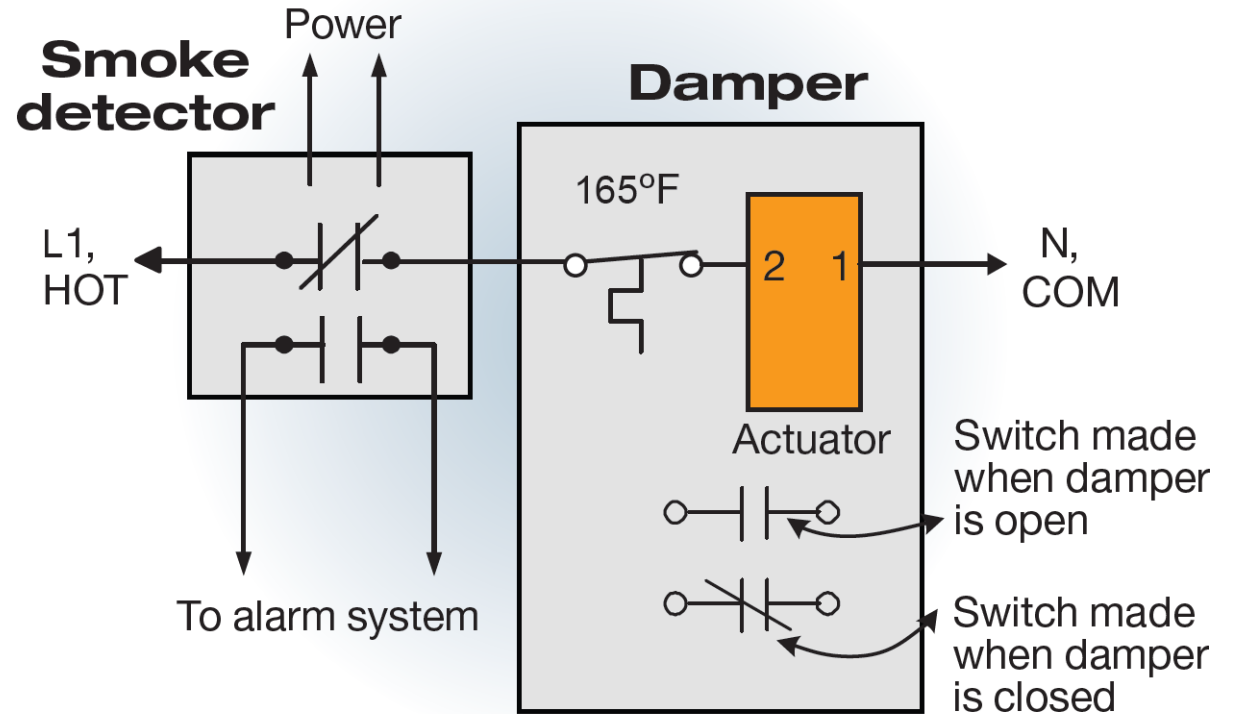
Fire-Smoke and Smoke Dampers

- Standalone
 - Wired to building power
 - Wired to smoke detector
- Smoke Control System
 - Wired to larger building management or smoke control system

Controls – Wiring



Wiring to Test Panel

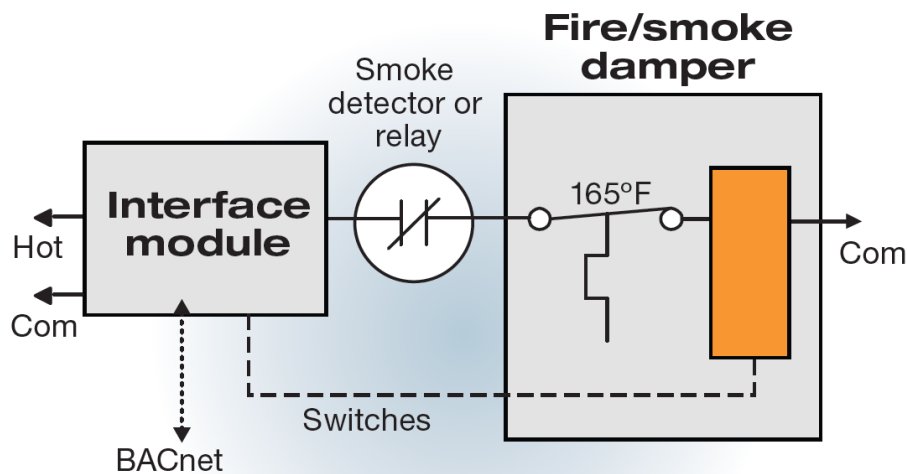


Most Common Wiring

Controls – Remote Testing

Allowed for Actuated Dampers

- Can be automated
- Dampers must have indication switches



Summary

- Proper Damper application CRITICAL
- Certification covers performance and installation
- Follow all Manufacturer's guidelines
- Actuator wiring and modifications must be done per all Manufacturer's guidelines
- Cycle Damper after installation and/or modification
- Damper testing and inspection CRITICAL
- Remote testing great option

Resources

- **AMCA International:** www.amca.org
- **AMCA *inmotion* Magazine:** www.amca.org/inmotion
 - > **2022 Edition:** *Your Questions About Life-Safety Dampers Answered*
(Free download available)
- **Underwriters Laboratories:**
 - > *Marketing and Application Guide- Dampers:* www.ul.com/resources
(Free download available)
 - > *Fire Resistance Directory :* www.iq.ulprospector.com/en
(Login creation required)
- **International Code Council (ICC) 2021 International Building Code:** www.codes.iccsafe.org (Free online view available)

Q & A

Survey QR Code:



Thank you for your time!

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Attendees will receive an email at the address provided on your 2023 AHR Expo registration, listing the total credit hours awarded and a link to a printable certificate of completion.

If you have any questions, please contact Lisa Cherney, Education Manager, at AMCA International (lcherney@amca.org).



NEXT SESSION @ 4:00PM:

*Environmental Benefits of Use
of Circulating Fans*