



Topics to Cover:

- UL Standards for Life Safety Dampers
- Damper Ratings
- Proper Installation & Options
- Field Installation Problems and Authority Having Jurisdiction (AHJ)
- Inspection & Maintenance & why it matters

RUSKIN



CODES & STANDARDS



“Ducts and Air Transfer openings that are protected with dampers shall comply with Section 716” - Ducts and Air Transfer Openings

UL555 - Fire Dampers

UL555S - Smoke Dampers

UL555C - Ceiling Dampers

Fire Dampers

UL555

- Fire Endurance Test
- Hose Stream Test
- Operational Reliability Test
- Dynamic Closure Test



Hourly Ratings for Fire & Combination Fire/Smoke Dampers

- **1 ½ Hr – Acceptable for penetrations rated less than 3 hours (NFPA90A & IBC)**
- **3 Hr – Acceptable for penetrations rated 3 hours or greater (NFPA90A & IBC)**

STATIC RATED: Not Tested With Airflow Through Damper

Duct

Fire Damper

No Airflow

DYNAMIC RATED: Tested With Heated Airflow Through Damper

Duct

Airflow

Min. 2000FPM @ 4" w.g.

Smoke Dampers

UL555S

- Cycle Testing
- Elevated Temperature Test (250° or 350°)
- Operation Test
- Leakage Test Ratings

Leakage Class I – 8cfm @ 4" w.g.
Leakage Class II – 20cfm @ 4" w.g.
Leakage Class III – 80cfm @ 4" w.g.



Ceiling Dampers

UL555C

- Fire Endurance/ Heat Radiation Test
- Operational Reliability Test
- Dust & Salt Spray Test

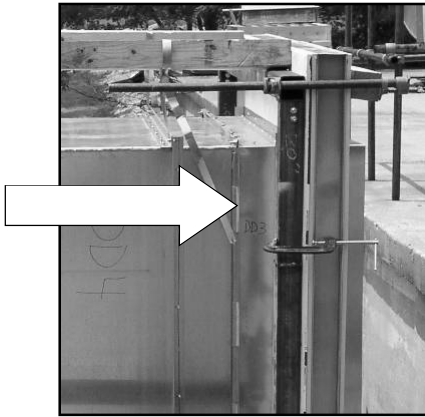






UL DUCT DROP BREAK-AWAY TEST

Duct to Damper Sleeve
Connection



FLANGED SYSTEM BREAKAWAY CONNECTIONS

WARD / DUCTMATE / NEXUS / TDC / TDF

**RUSKIN
INSTALLATION
SUPPLEMENT**



APPROVED DUCT SEALANTS

For OPTIONAL sealing of joints, any one of the 4 may be applied

- Design Polymeric - DP1010
- Hardcast, Inc. - Iron Grip 601
- Eco Duct Seal - 44-52
- Precision - PA2084T



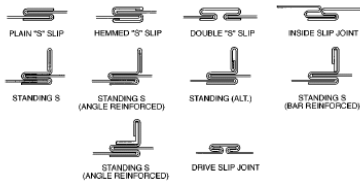
WATER BASED
LEED qualified



6. Duct/Sleeve Connections

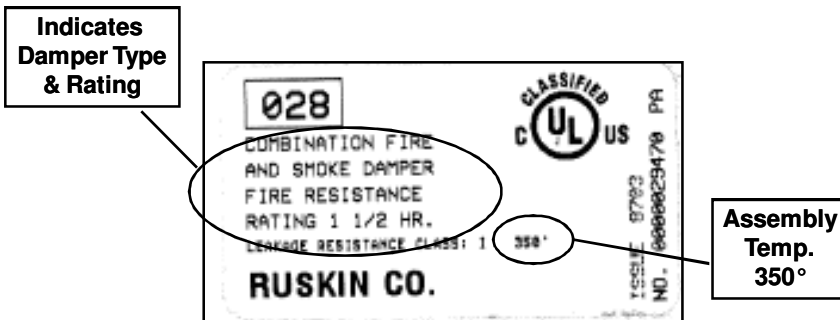
a. Break-away Duct/Sleeve Connections

Rectangular ducts must use one or more of the connections depicted below



UL Certification

- The Label Certifies the Product meets stringent testing and performance requirements
 - Covered by UL's Follow Up Service



Example of UL Label for *Ruskin* Fire/Smoke Damper

FIRE DAMPERS

Operation:

Designed to close automatically when fire (heat) is present to stop the passage of flame

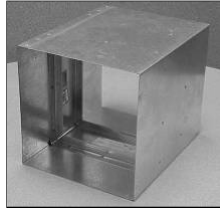


CURTAIN STYLE

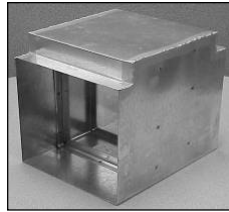


MULTI-BLADE

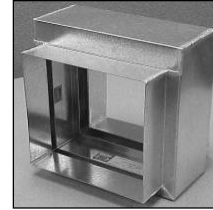
Frame Styles



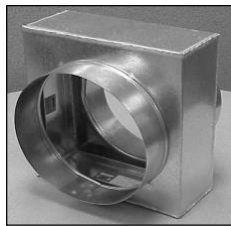
A style



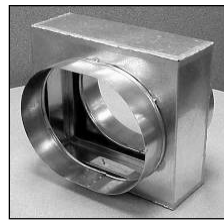
B style – More Free Area



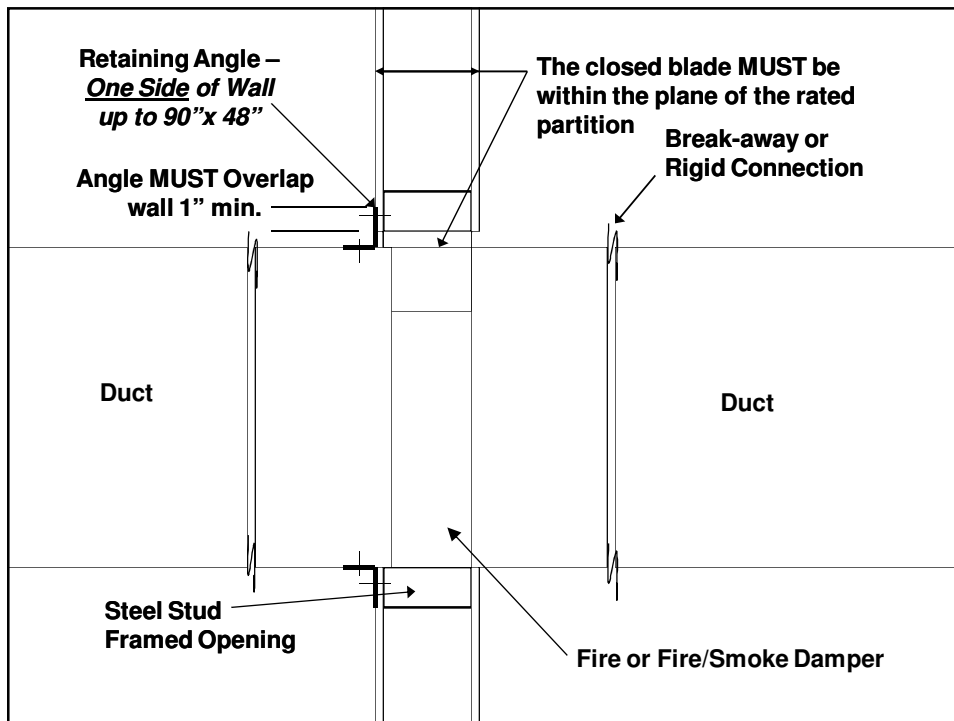
C style – Most Free Area

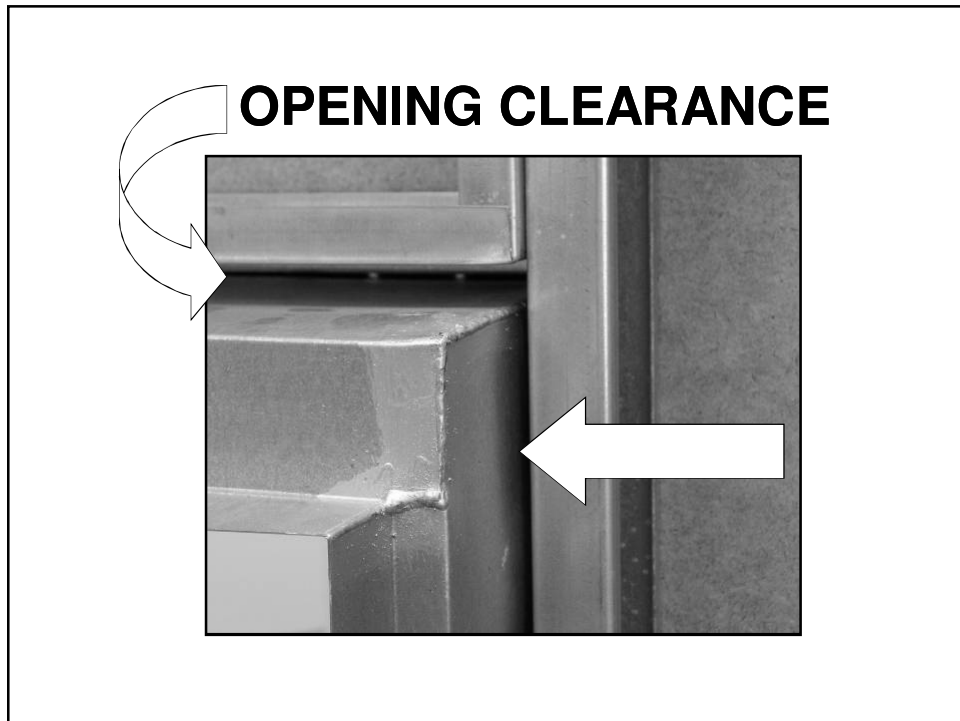
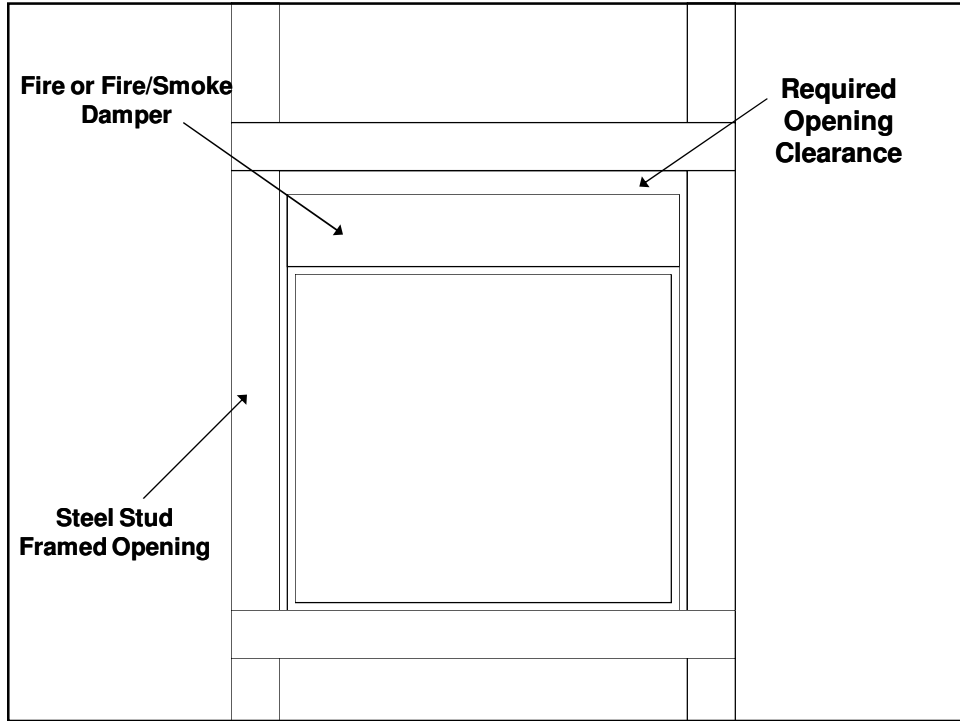


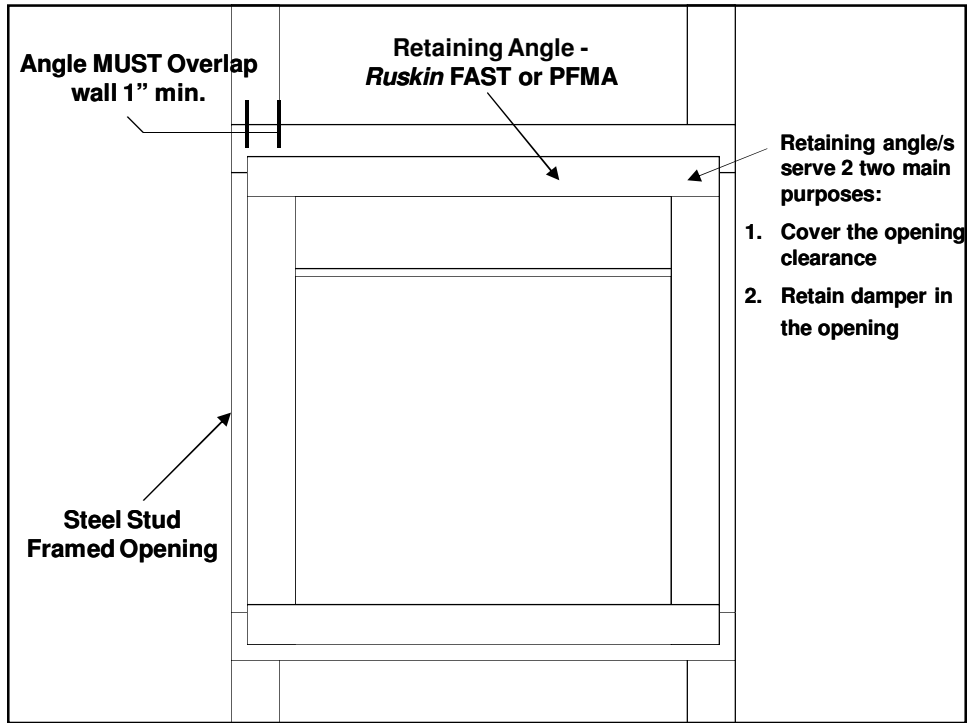
R style – Round Duct



O style – Oval Duct



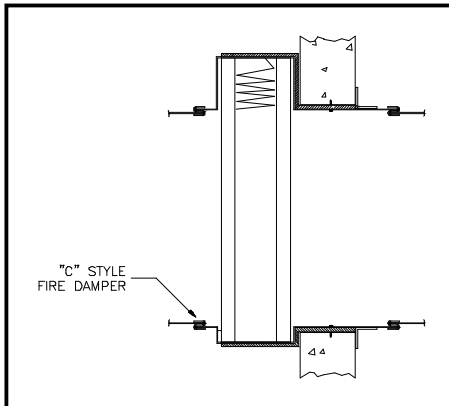
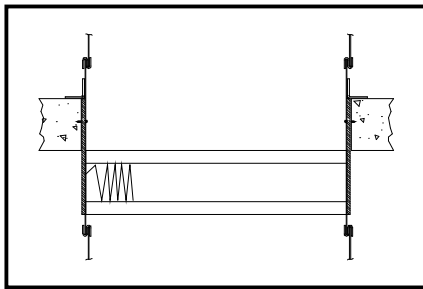




OUT OF WALL/FLOOR

Optional Installation Solutions

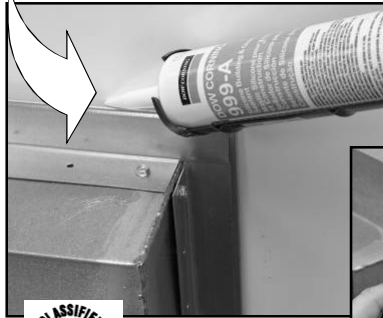
- Retrofit Applications
- Through Penetration
- Duct Termination



OPTIONAL SEALANT

AROUND THE OPENING PERIMETER

Where Retaining Angle meets the wall & sleeve

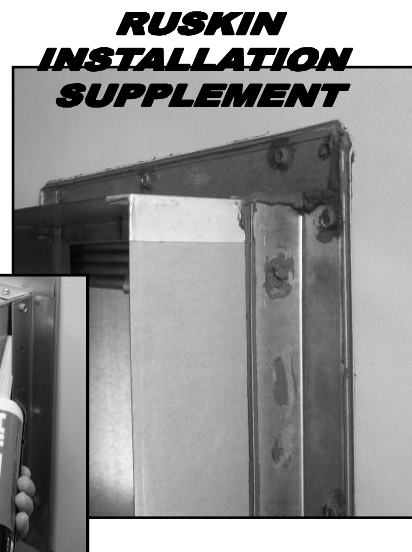


**RUSKIN
INSTALLATION
SUPPLEMENT**

OPTIONAL FIRESTOP SEALANT

AROUND THE OPENING PERIMETER

Where Retaining Angle meets the wall & sleeve

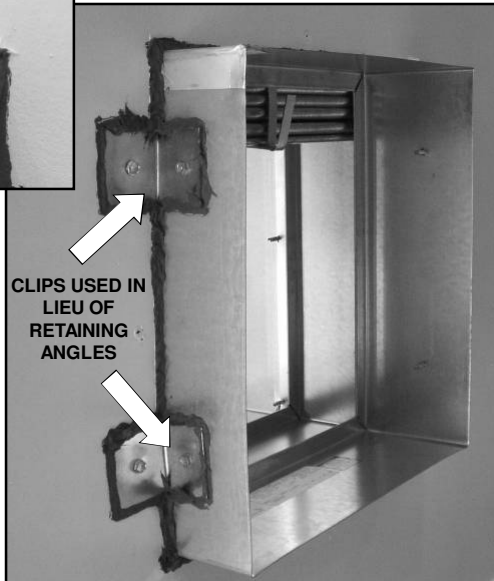


**RUSKIN
INSTALLATION
SUPPLEMENT**

OPTIONAL FIRESTOP INSTALLATION



Hilt FS-One
 SpecSeal® Series SSS or LCI
 Johns Manville Firetemp™ C1

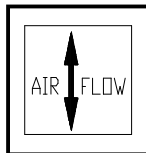


CLIPS USED IN LIEU OF RETAINING ANGLES

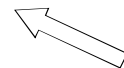
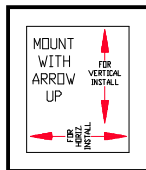
Fire Smoke Dampers

Operation:

Designed to close upon detector of smoke or at elevated temperature... to **STOP** the passage of flame and smoke



Both Directions



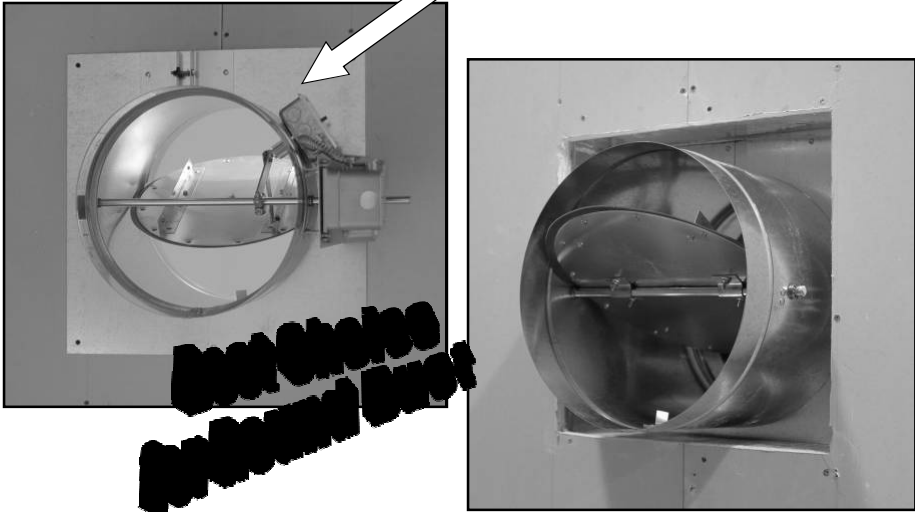
Two-position Spring Return Actuator



Electronic Heat Sensor

FSDR25
TRUE ROUND Fire/Smoke Damper

“Cinch” Plate on One-Side ONLY



NO RETAINING ANGLES NEEDED!

**“GRILLE ACCESS”
Models**



FSD35GA/ 36GA/ 60GA

**No Retaining
Angles Needed!**



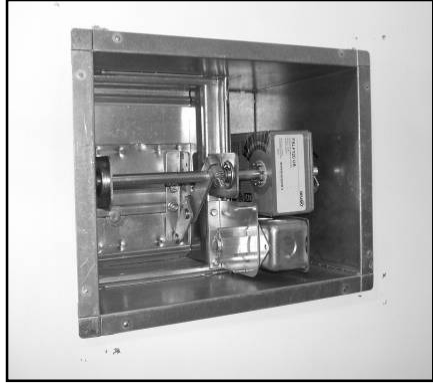
FSD36FA/ 60FA



Shaft Penetrations

FSDFA “Front Access”

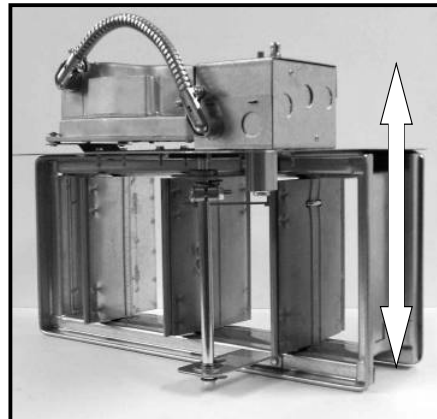
- Allows for shortest sleeve possible
- Access to actuator & other components through the grille
- Thermal insulation on damper allows out of wall installation



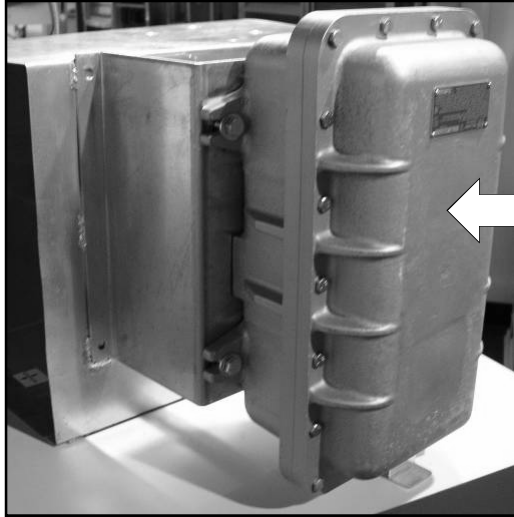
FSD60-V

Vertical Blade Fire Smoke Damper

For applications where ducts run side by side and there is no room for actuator on the side of damper.



FSD60XP HAZARDOUS LOCATIONS



Fire/Smoke
Damper
equipped with
Explosion Proof
Housing for Actuator

Marine Fire Dampers

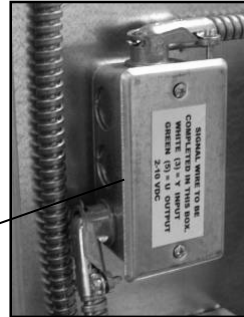
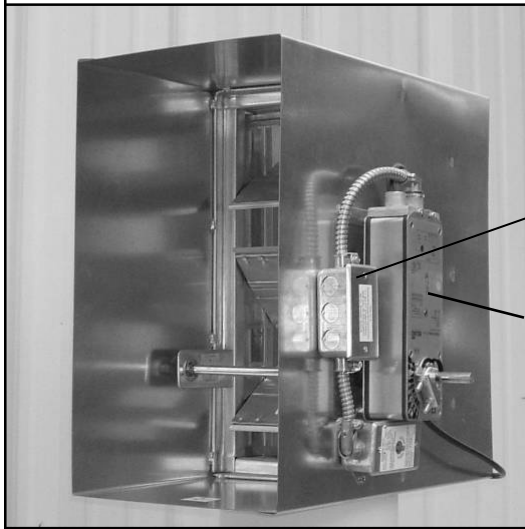


Model A60

- USCG approved
- SS or Galv. Steel construction
- Electric or Pneumatic actuators

FSD60M

MODULATING Fire/Smoke Damper



Proportional Modulating Actuator

Responds from control signal
2 to 10 VDC or 4 to 20mA
with 500Ω resistor

Control, Fire & Smoke Damper in ONE



FSD60-BAL

3-Position "Balancing"

Fire/Smoke Damper



No Control Signal Required

Built in potentiometer to 20% to 100% balance position

Allows the damper to be SET at any position for BALANCING AIRFLOW under normal operations, open for SMOKE CONTROL and provides FIRE protection simultaneously

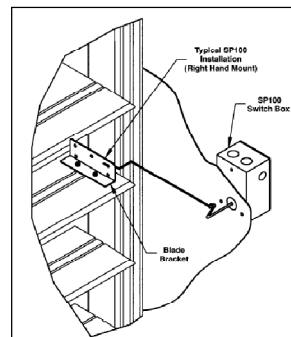
DAMPER ACCESSORIES

For Fire & Smoke Dampers

TS150 – Firestat

(Used on Combination fire/smoke dampers)

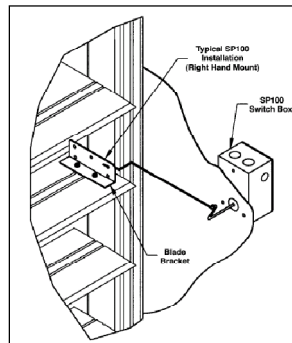
- Allows the damper to be reopened after the initial closure for dynamic smoke control.
- Equipped with blade position indicator



SP100

Available on Smoke & Fire/Smoke Dampers

- Indicates the position of the damper blades
- Allows for other equipment to be turned off or on



SP200

Available on Curtain Style Dampers

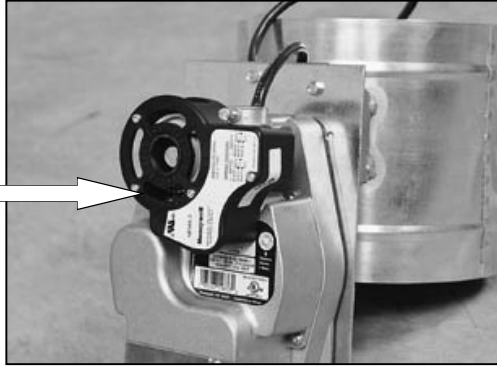
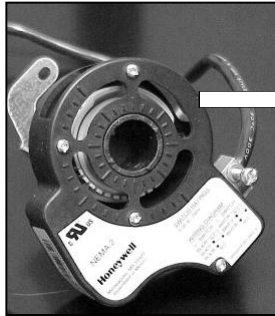
- Indicates the position of the damper blades
- Allows for other equipment to be turned off or on



SPH2

Honeywell "add-on" Auxiliary Switch
For models: ML4202, H2000 & MS4209

Mounts directly on
actuator hub

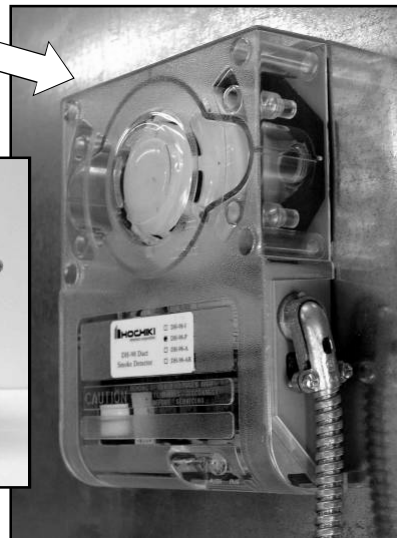


DSDF (Flow) Detector Duct Smoke

**RECOMMENDED
INSTALLATION**



Operates in duct velocity range
of 300 – 4000fpm



DSDN (No-Flow) Duct Smoke Detector

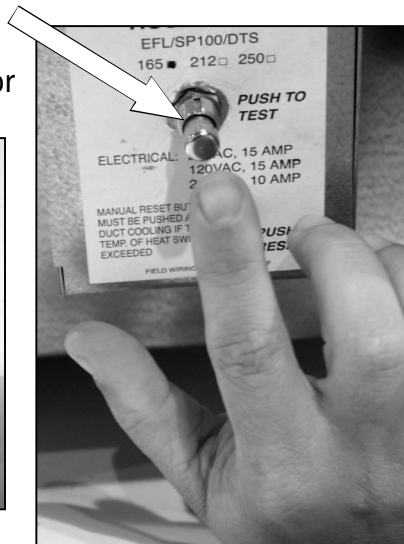
**Approved for use in
ducts**

Operates in
duct velocity of
0 – 3000fpm



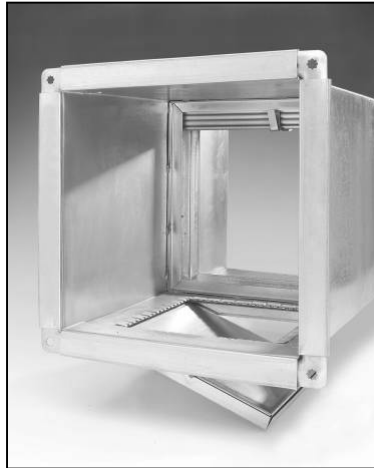
DTS Damper Test Switch

Push to test interrupts
power momentarily for
cycle testing of actuator



ACCESS DOOR

Factory Mounted in Damper Sleeve

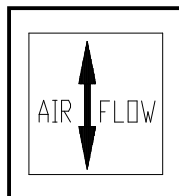


Eliminates labor in the field

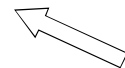
SMOKE DAMPERS

Operation:

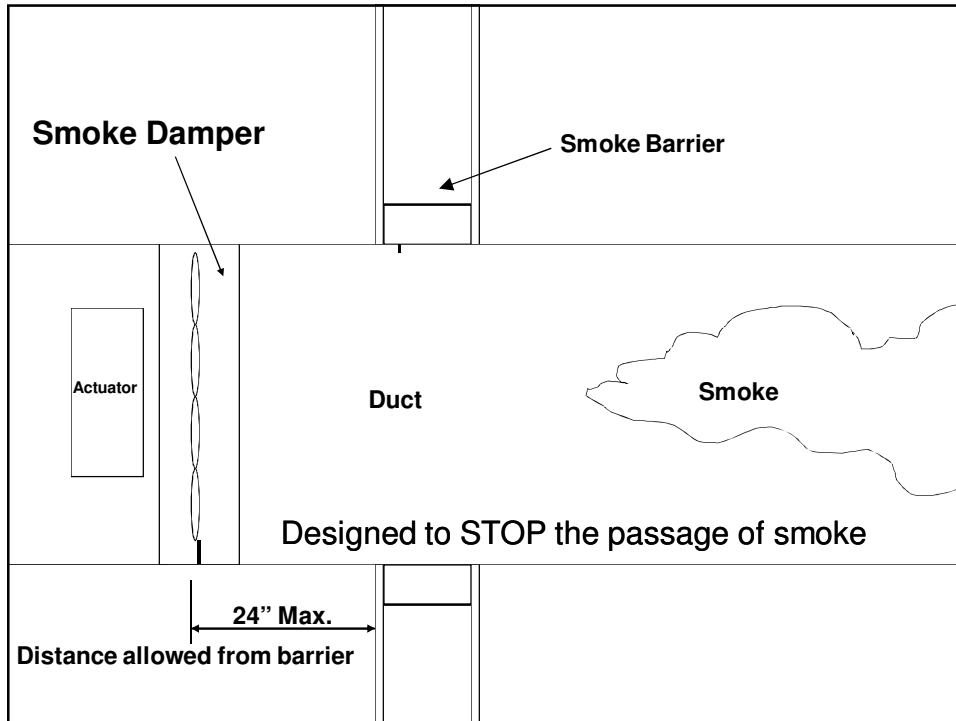
Designed to close upon
detector of smoke




***Leakage
Ratings***
Class I, II, III



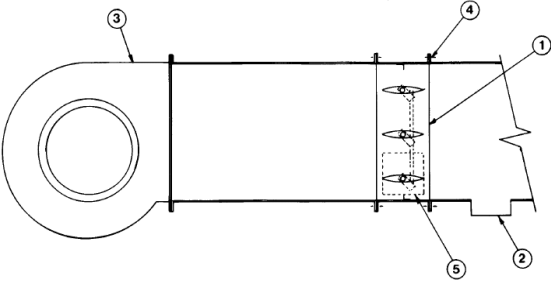
Two-position
Spring Return
Actuator




SD102 Smoke Damper



1. Industrial Type Smoke Damper
2. Mounts directly to fan, or attaches to duct
3. No 24" distance requirement when used as air handling equipment isolation damper

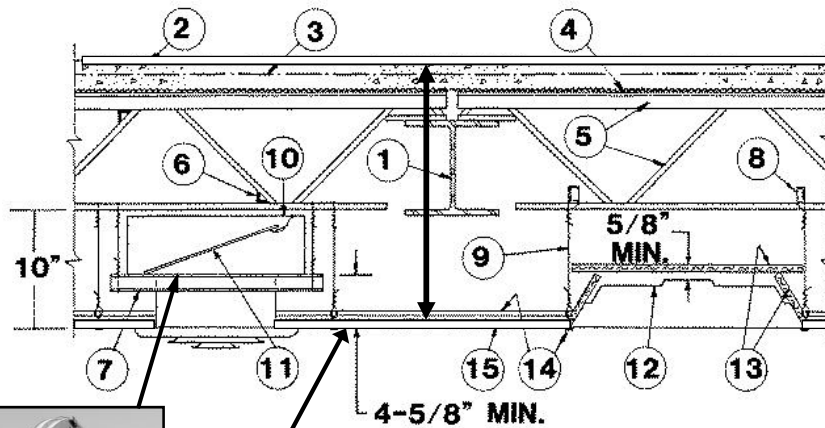




CEILING DAMPERS

A Ceiling Fire Damper is designed to limit the transfer of heat and flame to protect the structure above

Floor/Ceiling or Roof/Ceiling Assembly



Ceiling membrane

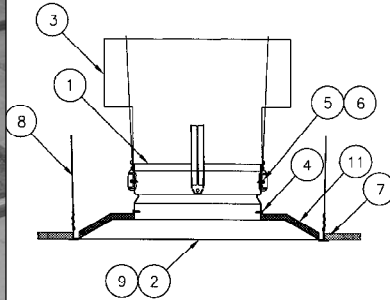
CFD's are evaluated in one of two ways for use in ANSI/UL 263 assemblies

- Investigated for use in lieu of the hinge door type damper
- Investigated for use only in one or more specific UL designs

CFD (Ceiling Fire Damper)

Also known as radiation damper

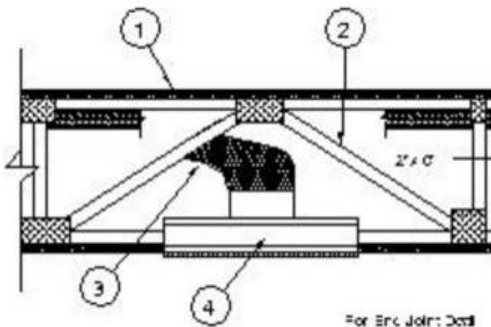
Lay-In



Ruskin CFD7 (R)T Design L-586

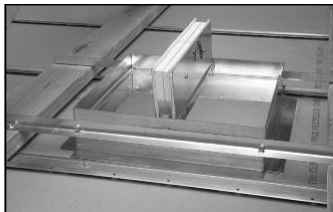


Model 7000

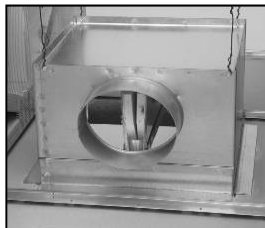


Square or Round
Available

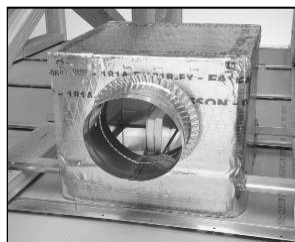
CFD7-T



UNDUCTED



STEEL PLENUM BOX

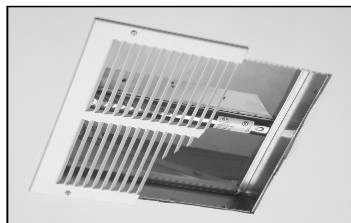


DUCTBOARD
PLENUM BOX

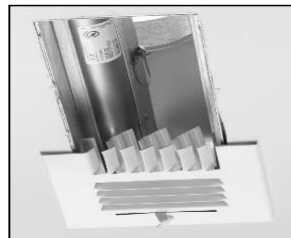


STEEL BOOT

CFD7-T



Surface Mount Grille



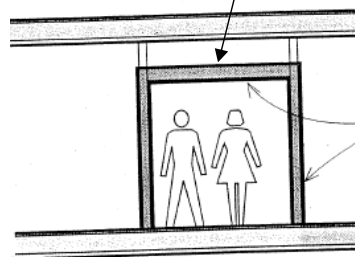
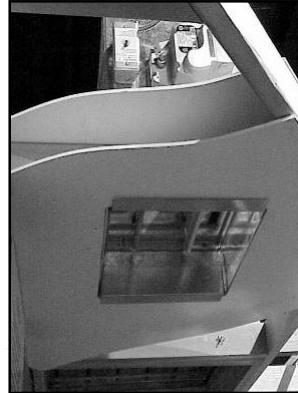
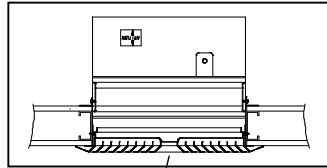
Grille with 2 1/2" OBD



Through Penetration

Tunnel Corridor Construction

Fire Smoke Damper – 1 Hr Rated



3. When the walls and ceiling form a tunnel, the wall fire rating need not extend above the top of the rated ceiling assembly.

Inspection, Testing & Maintenance

NFPA 80 - Damper to be tested and inspected 1 year after installation

NFPA 80 – Test & inspection frequency shall be every 4 years, except in hospitals where frequency is every 6 years

NFPA 80 – Operational test after installation for dynamic fire dampers and combination fire smoke dampers

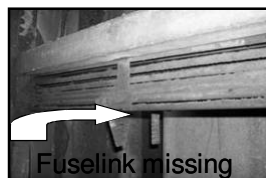
NFPA 80 – All inspections/ testing shall be fully documented

**NFPA 90A - Once every 4 years (relates to curtain fire dampers)
Appendix B -“Visual” Inspection every 2 years**

NFPA 92A - Dedicated System (Semi-Annual) and Non-Dedicated System (Annual)

NFPA 105 - Operational test shall be conducted for smoke / fire smoke dampers after installation/ balancing of HVAC system

NFPA 105 – Test & inspection frequency same as NFPA80



RUSKIN® Inspection, Testing & Maintenance

MAINTENANCE INSTRUCTIONS

All FSD and SD Dampers

ing's smoke-control system will perform as intended u
 c testing of all equipment associated with the smoke-
 n records
 ons and

MAINTENANCE

ary.
 s with a
 (see note)
 and re-o

TESTING FIRE/S

the thermal disc found

of electricity, to the act
 button on the outside o

operated under normal s

MAINTENANCE

All (D)IBD and FD TYPE FIRE DAMPERS

are that a building's life-safety system will perform as intended un
 tude parts and factors of all equipment associated with the life-sa
 ftenance. NFPA 90A recommends testing of all fire dampers eve
 r factors.

Dampers MUST be maintained to ensure operation

(refer to 10.1.1)

ar or replace
 asible link and allowing the blades to drop or close.
 t of the blade package travel path.)
 sion.

EFL/SP100/DTS
 165 212 250

PUSH TO TEST

ELECTRICAL
 AC 15 AMP
 120VAC 15 AMP
 2

MANUAL RESET BU
 MUST BE PUSHED
 DUCT COOLING TO
 TEMP. OF HEAT SENS
 ENDED

PUSH

TEST

AIR FLOW

Ruskin ValidatOr

Are Your Fire/Smoke Dampers Smart?

available

Live DEMO
 at www.ruskin.com

IECC

International Energy Conservation Code

- **502.4.5 Outdoor air intakes and exhaust openings**

Stair and elevator shaft vents and other outdoor intakes and exhaust openings integral to the building envelope shall be equipped with not less than a Class I motorized, leakage-rated damper with a maximum leakage rate of 4cfm sq./ft at 1.0 inch water gauge (w.g.) when tested in accordance with AMCA 500D.



QUESTIONS?



**THANK YOU
FOR ATTENDING !**

