



**Portland Gastro
23 33 00
Fire Fire Smoke
Dampers**

RODGERS-AERO-TECH, INC.

"Carefully attending the Engineer, Contractor and Owner"

P.O. BOX 370

207-729-0921

BRUNSWICK, MAINE 04011-0370

FAX 207-424-0103

www.hvacriaq.com

DATE: 5/5/2016

BRANCH ORDER:

OF COPIES

1

SUBMITTAL DATA : RUSKIN
PROJECT: PORTLAND GASTROENTEROLOGY CENTER
LOCATION: PORTLAND, ME.
JOB SPECIFICATION, DWGS: DATED 3/18/16
CUSTOMER: AERO HEATING & VENTILATING
MECHANICAL CONTRACTOR: JOHNSON AND JORDAN
GENERAL CONTRACTOR:
ARCHITECT: PDT ARCHITECTS
ENGINEER: STANTEC CONSULTING SERVICES

PLEASE INITIAL AND DATE ANY NOTATIONS ON SUBMITTAL SHEET

CONTENTS:

PREPARED BY: BILL FOLEY/SR

REV DATE: 4-01

FIRE SMOKE

Dimensions

Qty.	Type	Dimensions				Vari. No.
		A	B	A1	B1	
1	FSD 36LP	10	6			M102 W/SLEEVE, 120V MTR
1	"	12	12			"
1	"	16	12			"
1	"	22	8			"
1	"	14	10			"
1	"	26	12			"
1	"	16	10			"
1	FSDR25	12				"

RUSKIN®

3800 Dr. Carpenter Rd.

Kansas City, MO 64120

(816) 761-7470

FAX (816) 765-8065

FSDR25 COMBINATION FIRE SMOKE DAMPER UL555 and UL555S Leakage Class 1 Classified FOR USE IN DYNAMIC AND STATIC SYSTEMS

APPLICATION

The FSDR25 is a "true round" Class 1 leakage rated combination fire and smoke damper designed for use in metal, wood or concrete fire and smoke rated partitions and concrete floors. The FSDR25 is the ideal choice when round duct is used on a project. The damper is tested for maximum velocity of 3,000 fpm and 4" (102) static pressure. The integral frame and unique "clinch plate" design provide a low cost, easy to install, high performing damper.

STANDARD CONSTRUCTION

FRAME/SLEEVE

20 gauge (.03) galvanized steel, standard 17" (432) long.

Frame/sleeves available up to 36" (914) in length. See minimum sleeve length chart on page 2 for assistance in choosing correct frame/sleeve length.

BLADES

Two-piece 14 gauge (1.3) equivalent thickness galvanized steel.

BEARINGS

Diameter steel sleeve, pressed into frame.

BLADE SEALS

Silicone edge type sandwiched between two piece blade. Full circumference smoke seal to 450°F (232°C).

LINKAGE

Jackshaft to blade.

AXLE

1/2" (13) diameter.

CONTROLLED CLOSURE DEVICE (HEAT-ACTUATED)

EFL (Electric Fuse Link) - 165°F (74°C) standard, 212°F (100°C), 250°F (121°C), or 350°F (177°C) are options.
PFL (Pneumatic Fuse Link) - 165°F (74°C) standard, 212°F (100°C) or 285°F (141°C) are options.

DAMPER SIZES

MINIMUM SIZE

6" diameter (152).

MAXIMUM SIZE

Vertical / Horizontal Installation - 24" diameter (610).
See page 2 for dimensional information.

OPTIONS

- FM Approvals as Specification Tested Product.
- TB150 FireStat for reopenable operation in dynamic smoke management systems.
- DSDF Flow Duct Smoke Detector - Consult Ruskin.
- SP100 Switch Package to remotely indicate damper blade position.
- Sleeve/Frame of various lengths to insure field compliance with UL installation requirements.
- Access Door factory mounted in common sleeve to insure compliance with UL installation requirements.
- MCP control panels for test purposes or smoke management systems.
- Insulation Stops for connection to 1" (25) or 2" (51) double wall spiral duct.

NOTES

1. Units furnished approximately 1/8" (3) smaller than given size.
2. Dimensions shown in parentheses () indicate millimeters.

Model FSDR25 meets the requirements for fire, smoke and combination fire/smoke dampers established by:

- National Fire Protection Association NFPA Standards 90A, 90A, 90B and 101
- ICC International Building Codes
- CSFM California State Fire Marshal Fire Damper Listing (#3225-245.107) and Smoke Damper Listing (#3230-245.108)
- New York City (BSA Listing #176-82-SM)

UL CLASSIFIED

UL555 Listing R5531, UL555S Listing R5531



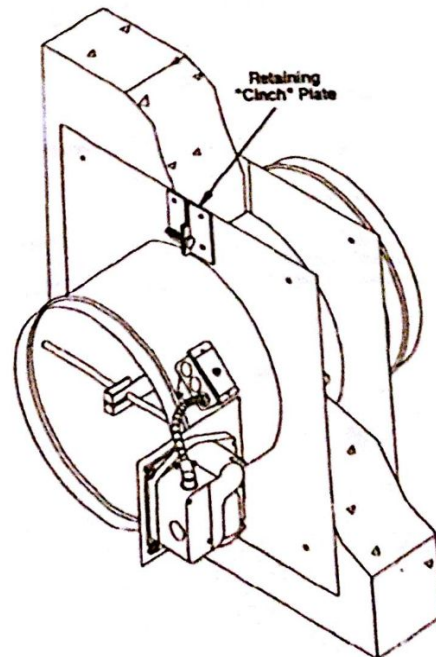
SEE COMPLETE
MARKING
ON PRODUCT

FM Approvals
Specification Tested Product
(Option)

FEATURES

The FSDR25 offers:

- EFL (Electric Fuse Link) or PFL (Pneumatic Fuse Link) heat-actuated release devices permit controlled (rather than instantaneous) closure through the damper actuator. The EFL and PFL allow the damper to automatically reopen after a test, smoke detection or power failure condition.
- EFL is standard on dampers with electric actuators.
- PFL is standard on dampers with pneumatic actuators.
- EFL's may be ordered on dampers with pneumatic actuators but require an additional EP switch.



Spec FSDR25-109/Replaces FSDR25-908

ALL STATED SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION

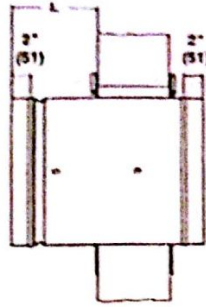
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DIMENSIONAL INFORMATION

MINIMUM SLEEVE LENGTH

Wall/Floor Thickness	Min. Sleeve Length
4" (102)	17" (432)
5" (127)	17" (432)
6" (152)	20" (508)
7" (178)	20" (508)
8" (203)	20" (508)
9" (229)	22" (559)
10" (254)	22" (559)
11" (279)	23" (584)
12" (305)	24" (610)
Over 12" (305) Thru 24" (609)	Add 1" (25) for every inch of wall/floor depth

Note: 36" (914) maximum sleeve length.



The "L" dimension is the dimension the sleeve, on the actuator side of the damper, can extend beyond the wall or floor in a standard installation. The "L" dimension is designed to provide the installer with information to make installation easier. The table below provides a range for the "L" dimension.

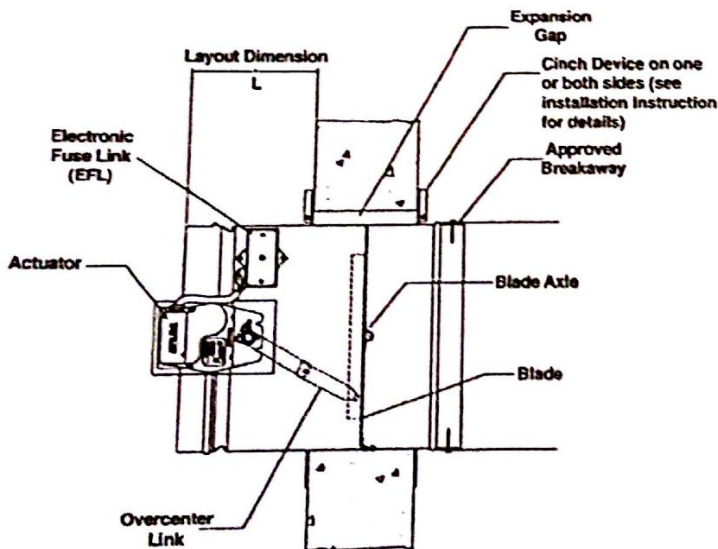
"L" DIMENSIONS

	WALL THICKNESS						
	4" (102)	5" (127)	6" (152)	7" (178)	8" (203)	9" (229)	10" (254)
Minimum	8 1/4"	8 1/4"	8 1/4"	8 1/4"	8 1/4"	8 1/4"	8 1/4"
Standard	9"	9"	9"	9"	9"	9"	9"
Maximum	10"	10"	10"	10"	10"	10"	10"

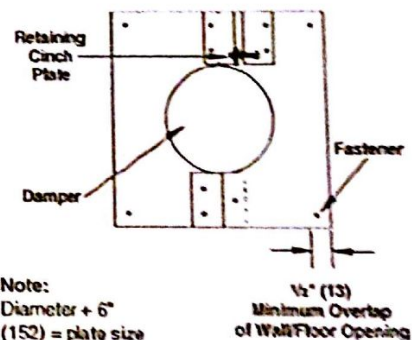
NOTE: The 2" (51) dimension is for duct connections. The "L" dimension includes the 2" (51) for duct connection.

GENERAL INSTALLATION INFORMATION

METAL/WOOD/MASONRY WALL OR CONCRETE FLOOR INSTALLATION

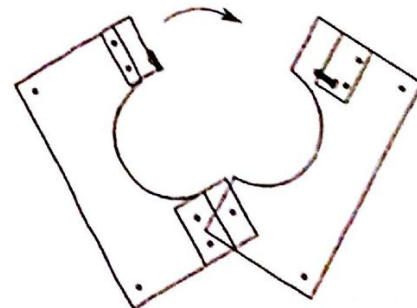


RETAINING "CINCH" PLATE



Note:
Diameter + 6"
(152) = plate size

1/2" (13)
Minimum Overlap
of Wall/Floor Opening



A square opening in wood or metal stud walls or masonry walls and floors shall be a minimum of 1" (25) and a maximum of 2 1/2" (64) larger than the damper diameter. See wood stud and metal stud framing for fire dampers installation instructions supplement for complete framing details. A round opening in masonry walls or floors shall be a minimum of 1" (25) and a maximum of 2 1/2" (64) larger than the damper diameter.

Factory supplied retaining "cinch" plates hold the damper within the wall opening. The plates must overlap the opening a minimum of 1/2" (13). The plate fits snugly around the integral sleeve. The plates are fastened directly to the wall or floor.

REFER TO THE FSDR25 INSTALLATION INSTRUCTIONS FOR COMPLETE INSTALLATION DETAILS.

Fire Damper Submittal

Qty.	Model	Size		Duct Diam	Type						Fuse Temp	V	H	Location	
		A-Wide	B-High		A	B	C	CR	CO	R					
2	IBD20	48	16			X						165	X		M101
1	-	42	24			X						165	X		
1	-	39	20			X						165	X		
1	-	30	24			X						165	X		
1	-	44	15			X						165	X		M102
1	-	28	10			X						165	X		VERIFY SIZE
1	-	30	14			X						165	X		

RUSKIN®

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IBD20, 40 and 60 CURTAIN TYPE STATIC FIRE DAMPERS 1 1/2 HOUR UL555 RATED FOR USE IN STATIC SYSTEMS

APPLICATION

Ruskin Model IBD20, 40 and 60 are 1 1/2 hour UL classified static (fans off) curtain style fire damper for use in HVAC systems that shut down during a fire event. These fire dampers are used for the protection of openings in walls, partitions or masonry floors with fire resistance ratings of less than 3 hours and have a 1 1/2 hour fire protection rating. The IBD20 can be installed vertically in walls or horizontally in masonry floors and is rated for airflow in either direction.

STANDARD CONSTRUCTION

Frame and Blades Material

Galvanized steel (in gauges required by UL listing R-5531)

Frame/Sleeve Length

IBD20 - 12" (305) long

IBD40 - 14" (356) long

IBD60 - 16" (406) long

Closure Springs

301 stainless steel constant force type (horizontal mount only)

Fusible Link

165°F (74°C) is standard.

212°F (100°C) is available as an option.

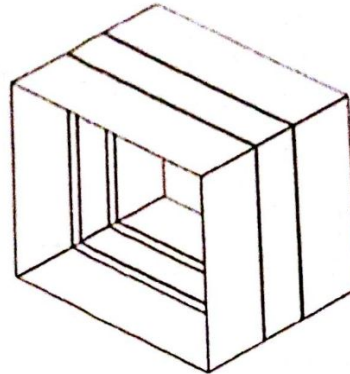
DAMPER SIZES

See pages 2 - 5 for minimum and maximum UL sizes.

See pages 6 - 9 for construction details on multiple section assemblies.

OPTIONS

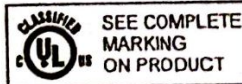
- **True Round Fire Damper** - See model FDR25
- **Stainless Steel Construction** - See model (D)IBD20SS
- **FM Approvals as Specification Tested Product**
- **SP200 Switch Package** to allow remote indication of damper blade position
- **FAST Angles** factory supplied one-side installation. Other angles of various sizes and gauges also available for one-side or two-side installation
- **Factory sealed sleeves and transitions**
- **MCP Control panels** for monitoring purpose
- **Grille Mounting** See (D)IBD20G model



Models IBD20, 40, and 60 series meet the requirements for fire dampers established by:

- **National Fire Protection Association NFPA Standards** 80, 90A, 92A, 92B, and 101
- **ICC International Building Codes**
- **CSFM California State Fire Marshal** IBD2 #3225-0245.0005
- **New York City MEA 450-06-M**

UL CLASSIFIED
UL555 Listing R5531



FM Approvals
Specification Tested Product
(Option)

Notes:

1. Dimensions shown in parentheses () indicate millimeters.
2. Dampers may require sealing of seams in the field to meet local code leakage requirements.

Spec IBD20, 40, 60-1215
Replaces IBD20, 40, 60, 230, 430.
830-612-114

ALL STATED SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION.

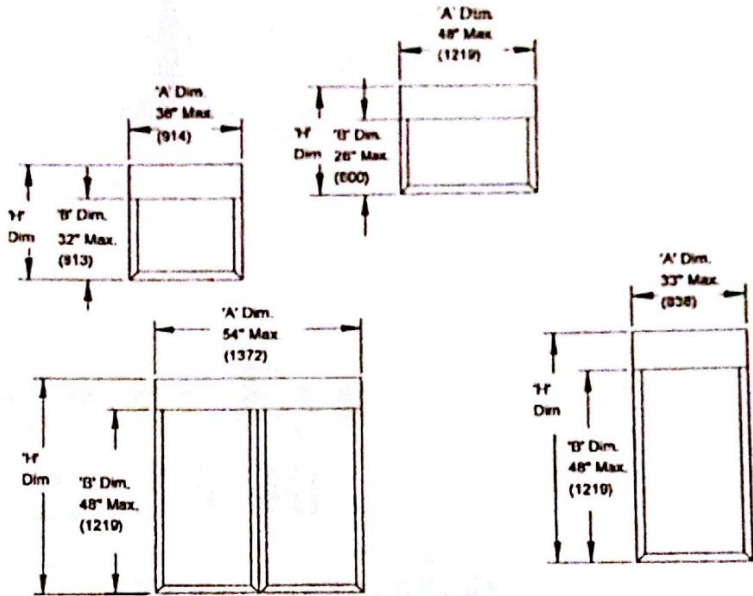
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ASSEMBLY AND DIMENSIONAL INFORMATION

B, BC, and WB STYLE DAMPERS VERTICAL INSTALLATION

SINGLE SECTION HIGH	
'B' Damper Height	'X' Dim.
4" (102) thru 12" (305)	1 3/4" (44)
12.01" (306) thru 23" (584)	2 3/4" (70)
23.01" (585) thru 34" (864)	3 3/4" (95)
34.01" (864) thru 42" (1067)	4 3/4" (121)
42.01" (1068) thru 48" (1219)	5 3/4" (146)

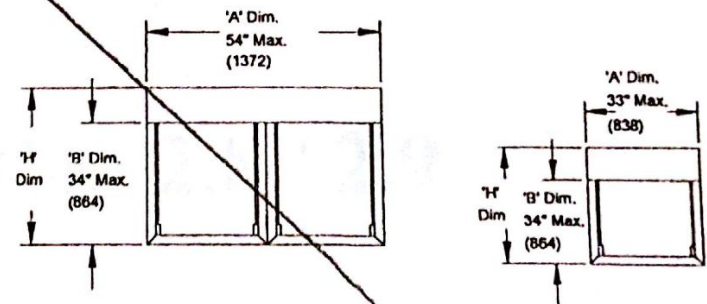
'X' dim. + 'B' dim. = 'H' dim.



HORIZONTAL INSTALLATION

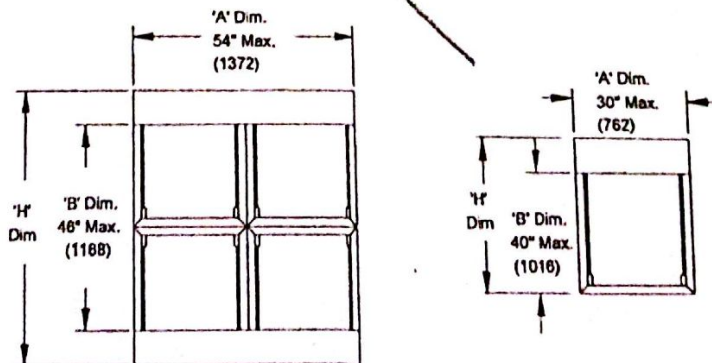
SINGLE SECTION HIGH	
'B' Damper Height	'X' Dim.
4" (102) thru 12" (305)	1 3/4" (44)
12.01" (306) thru 23" (584)	2 3/4" (70)
23.01" (585) thru 34" (864)	3 3/4" (95)
34.01" (864) thru 40" (1016)	4 3/4" (121)

'X' dim. + 'B' dim. = 'H' dim.



TWO SECTION HIGH	
'B' Damper Height	'X' Dim.
41" (1041) thru 46" (1168)	5 1/2" (140)

'X' dim. + 'B' dim. = 'H' dim.





**Maine Eye
23 33 00
Fire / Fire Smoke
Dampers**

-Section 2.8 / 2.9

RODGERS~AERO-TECH, INC.

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DATE: 6/29/2016

BRANCH ORDER:

OF COPIES 1

SUBMITTAL DATA :

RUSKIN

PROJECT:

MAINE EYE-RETINA & SURGERY CENTER

LOCATION:

PORTLAND, ME.

JOB SPECIFICATION, DWGS:

DATED 4/12/16

CUSTOMER:

AERO HEATING & VENTILATING

MECHANICAL CONTRACTOR:

JOHNSON & JORDAN

GENERAL CONTRACTOR:

ARCHITECT:

PDT ARCHITECTS

ENGINEER:

STANTEC

PLEASE INITIAL AND DATE ANY NOTATIONS ON SUBMITTAL SHEET

CONTENTS:

PREPARED BY: BILL FOLEY/SR

REV DATE: 4-01-03

SMOKE DAMPER

Quan	Type	Dimensions				Vari. No.
		A	B	A1	B1	
1	SD60	12	12			M101
1	"	14	12			
1	"	16	12			
1	"	24	12			
1	SDR25	9				
2	"	8				
2	SD60	48	30			M105 (VERIFY SIZE)

ALL W/ 120V MTRS.
MOUNTED ON SIDE
PLATES

RUSKIN®

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Kansas City, MO 64030

(816) 761-7476

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SD60 SMOKE DAMPER UL555S Leakage Class 1 Classified

APPLICATION

The SD60 is an ultra low leakage rated smoke damper used in ducts that penetrate smoke rated barriers. The high strength one-piece airtight blades insure lowest resistance to airflow with velocities up to 4000 fpm (20.3 m/s) and 8 in. wg (2 kPa). The SD60 may be installed vertically (with blades running horizontal) or horizontally and is rated for airflow and leakage in either direction.

STANDARD CONSTRUCTION	
Description	SD60
Frame	5" x 16 gauge (127 x 1.6) galvanized, single piece, hat-shaped channel frame.
Blades	One-piece airtight, nominal 6" (152) wide and 14 (2.0) gauge galvanized steel equivalent strength. Blades are approximately 6" (152) on center.
Bearings	Stainless steel sleeve type, pressed into frame.
Jamb Seals	Stainless steel, flexible metal compression type.
Blade Seals	Silicone edge type for smoke seal to 450°F (232°C) mechanically fastened to the blade edge.
Linkage	Concealed in frame.

OPERATION OPTIONS

Fail Position: Closed or Open

DAMPER SIZES

Sizes listed below are for ratings of 2000 fpm (10.2 m/s) and 4 in. wg (1 kPa). See page 3 for extended operational ratings.

MINIMUM SIZE

8" w x 6" h (203 x 152).

MAXIMUM SIZE

Single Section

48" w x 72" h (1219 x 1829).

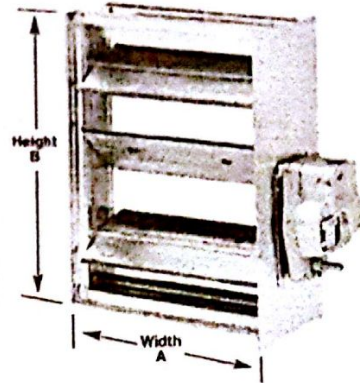
Multiple Section

144" w x 96" h (3658 x 2438), 288" w x 48" h (7315 x 1219) or 72" w x 192" h (1829 x 4877).

*Multiple section assemblies consist of 36" x 48" (914 x 1219) max single section sizes.

NOTES

- Dampers furnished approximately 1/4" (6) smaller than given opening dimensions.
- Dimensions shown in () indicate millimeters.



MAXIMUM OPERATIONAL RATINGS	
Description	SD60
UL555S Leakage Rating	Class 1
Maximum Velocity	4000 FPM (20.3 m/s)
Maximum Pressure	8 in. wg (2kPa)
Temperature	350°F (177°C)

OPTIONS

- FM Approvals as Specification Tested Product.
- DSD/DSN Smoke Detector (Flow rated or No-Flow)
- DTS-SD (Damper Test Switch) test switch for cycle testing.
- SP100 Switch Package to allow remote indication damper of damper blade position.
- Factory Sleeves of various lengths and gauges to ensure field compliance with UL installation requirements.
- MCP control panels for test purposes or smoke management systems.

Model SD60 meets the requirements for smoke dampers established by:

- National Fire Protection Association NFPA Standards 80, 90A, 92A, 92B, 101 and 105.
- ICC International Building Codes
- CSFM California State Fire Marshal Listing (#3230-0245-0131)
- New York City (MCA 252-05-C)

CLASSIFIED
UL US
SEE COMPLETE
MARKING
ON PRODUCT
UL555S Classification R5531

FM Approvals
Specification Tested Product
(Option)

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FSDR25 COMBINATION FIRE SMOKE DAMPER

UL555 and UL555S Leakage Class 1 Classified
FOR USE IN DYNAMIC AND STATIC SYSTEMS

APPLICATION

The FSDR25 is a "true round" Class 1 leakage rated combination fire and smoke damper designed for use in metal, wood or concrete fire and smoke rated partitions and concrete floors. The FSDR25 is the ideal choice when round duct is used on a project. The damper is rated for maximum velocity of 3,000 fpm and 4" (102) static pressure. The integral frame and unique "cinch plate" design provide a low cost, easy to install, high performing damper.

STANDARD CONSTRUCTION

FRAME/SLEEVE

20 gage (.9) galvanized steel, standard 17" (432) long.

Frame/sleeves available up to 36" (914) in length. See minimum sleeve length chart on page 2 for assistance in choosing correct frame/sleeve length.

BLADES

Two-piece 14 gage (1.9) equivalent thickness galvanized steel.

BEARINGS

Stainless steel sleeve, pressed into frame.

BLADE SEALS

Silicone edge type sandwiched between two piece blade. Full circumference smoke seal to 450°F (232°C).

LINKAGE

Jackshaft to blade.

AXLE

1/2" (13) diameter.

CONTROLLED CLOSURE DEVICE (HEAT-ACTUATED)

EFL (Electric Fuse Link) - 165°F (74°C) standard, 212°F (100°C), 250°F (121°C), or 350°F (177°C) are options.

PFL (Pneumatic Fuse Link) - 165°F (74°C) standard, 212°F (100°C) or 285°F (141°C) are options.

DAMPER SIZES

MINIMUM SIZE

6" diameter (152).

MAXIMUM SIZE

Vertical / Horizontal Installation - 24" diameter (610).
See page 2 for dimensional information.

OPTIONS

- FM Approvals as Specification Tested Product.
- TS150 FireStat for reopenable operation in dynamic smoke management systems.
- DSDF Flow Duct Smoke Detector - Consult Ruskin.
- SP100 Switch Package to remotely indicate damper blade position.
- Sleeve/Frame of various lengths to insure field compliance with UL installation requirements.
- Access Door factory mounted in common sleeve to insure compliance with UL installation requirements.
- MCP control panels for test purposes or smoke management systems.
- Insulation Stops for connection to 1" (25) or 2" (51) double wall spiral duct.

NOTES

1. Units furnished approximately 1/8" (3) smaller than given size.
2. Dimensions shown in parentheses () indicate millimeters.

Model FSDR25 meets the requirements for fire, smoke and combination fire/smoke dampers established by:

- National Fire Protection Association NFPA Standards 90A, 92A, 92B and 101
- ICC International Building Codes
- CSFM California State Fire Marshal Fire Damper Listing (#3225-245.107) and Smoke Damper Listing (#3230-245.108)
- New York City (BSA Listing #176-82-SM)

UL CLASSIFIED

UL555 Listing R5531, UL555S Listing R5531



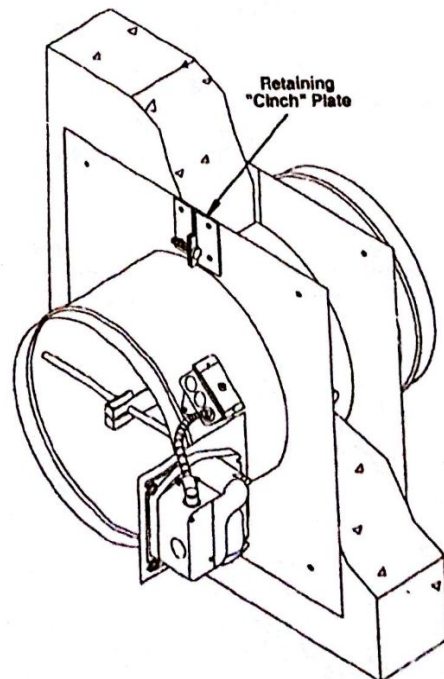
SEE COMPLETE
MARKING
ON PRODUCT

FM Approvals
Specification Tested Product
(Option)

FEATURES

The FSDR25 offers:

- EFL (Electric Fuse Link) or PFL (Pneumatic Fuse Link) heat-actuated release devices permit controlled (rather than instantaneous) closure through the damper actuator. The EFL and PFL allow the damper to automatically reopen after a test, smoke detection or power failure condition.
- EFL is standard on dampers with electric actuators.
- PFL is standard on dampers with pneumatic actuators.
- EFL's may be ordered on dampers with pneumatic actuators but require an additional EP switch.



Spec FSDR25-108/Replaces FSDR25-90A

ALL STATED SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION.

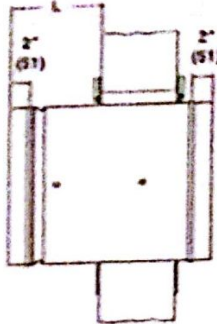
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DIMENSIONAL INFORMATION

MINIMUM SLEEVE LENGTH

Wall/Floor Thickness	Min. Sleeve Length
4" (102)	17" (432)
5" (127)	17" (432)
6" (152)	22" (559)
7" (178)	22" (559)
8" (203)	22" (559)
9" (229)	22" (559)
10" (254)	22" (559)
11" (279)	23" (584)
12" (305)	24" (610)
Over 12" (305) Thru 24" (610)	Add 1" (25) for every inch of wall/floor depth

Under 36" (914) maximum sleeve length.



The "L" dimension is the dimension the sleeve, on the actuator side of the damper, can extend beyond the wall or floor in a standard installation. The "L" dimension is designed to provide the installer with information to make installation easier. The table below provides a range for the "L" dimension.

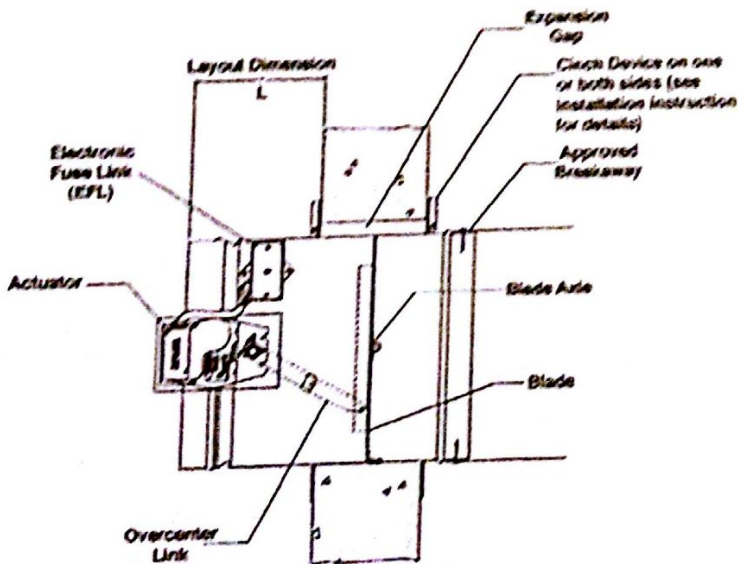
"L" DIMENSIONS

	WALL THICKNESS						
	4" (102)	5" (127)	6" (152)	7" (178)	8" (203)	9" (229)	10" (254)
Minimum	8 1/4"	8 1/4"	8 1/4"	8 1/4"	8 1/4"	8 1/4"	8 1/4"
Standard	9"	9"	9"	9"	9"	9"	9"
Maximum	10"	10"	10"	10"	10"	10"	10"

NOTE: The 2" (51) dimension is for duct connections. The "L" dimension includes the 2" (51) for duct connection.

GENERAL INSTALLATION INFORMATION

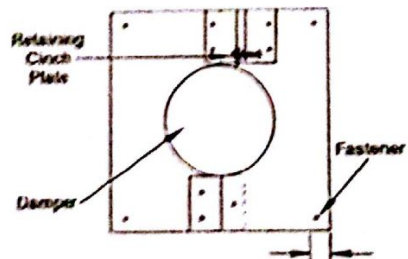
METAL/WOOD/MASONRY WALL OR CONCRETE FLOOR INSTALLATION



A square opening in wood or metal stud walls or masonry walls and floors shall be a minimum of 1" (25) and a maximum of 2 1/2" (64) larger than the damper diameter. See wood stud and metal stud framing for fire dampers installation instructions supplement for complete framing details. A round opening in masonry walls or floors shall be a minimum of 1" (25) and a maximum of 2 1/2" (64) larger than the damper diameter.

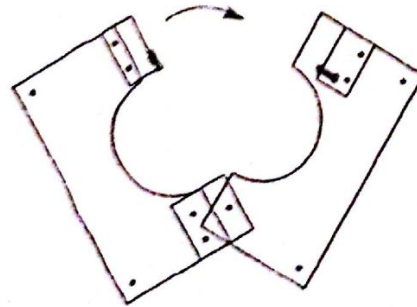
Factory supplied retaining "cinch" plates hold the damper within the wall opening. The plates must overlap the opening a minimum of 1/2" (13). The plate fits snugly around the integral sleeve. The plates are fastened directly to the wall or floor.

RETAINING "CINCH" PLATE



Note:
Diameter + 6"
(152) = plate size

1/2" (13)
Minimum Overlap
of Wall/Floor Opening



REFER TO THE FSDR25 INSTALLATION INSTRUCTIONS FOR COMPLETE INSTALLATION DETAILS.

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(816) 761-7476

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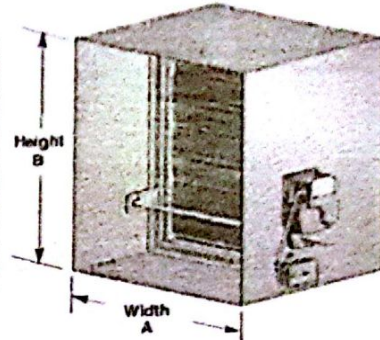
FSD60, FSD60LP COMBINATION FIRE AND SMOKE DAMPER 1 1/2 HOUR UL555 RATED, UL555S LEAKAGE CLASS 1

APPLICATION

Ruskin FSD60 Series ultra low leakage combination fire and smoke dampers provide point-of-origin fire and smoke containment. The FSD60 includes high strength one-piece airfoil blades to ensure the lowest resistance to airflow and leakage up to 4000 lpm (20.3 m/s) and 8 in. wg (2 kPa).

Ruskin FSD60LP ultra low leakage, low profile, and low pressure drop combination fire and smoke damper is provided with an integral sleeve/frame design. The FSD60LP has the lowest pressure drop of less than .03 at 1000 FPM (5.1 m/s) of any fire smoke damper.

All FSD60 series dampers may be installed vertically in walls or horizontally in masonry floors and are rated for airflow and leakage in either direction.



FSD60

STANDARD CONSTRUCTION		
Description	FSD60	FSD60LP
Frame	5" x 16 gage (127 x 1.6) galvanized, single piece, hat-shaped channel, structurally superior to 13 (2.4) gage channel frame.	Integral sleeve and frame 20 (1.0) gage galvanized single piece.
Blades	One-piece airfoil, nominal 6" (152) wide and 14 (2.0) gage galvanized steel equivalent strength. Blades are approximately 6" (152) on center.	Low profile aerodynamic shaped, double skin of 16 (1.6) and 20 (1.0) gage galvanized steel.
Bearings	Stainless steel sleeve type, pressed into frame.	Stainless steel sleeve type, pressed into frame.
Jamb Seal	Stainless steel, flexible metal compression type.	Stainless steel, flexible metal compression type.
Blade Seal	Silicone edge type for smoke seal to 450°F (232°C) and galvanized steel for flame seal to 1900°F (1038°C) mechanically fastened to the blade edge.	Stainless steel, flexible metal compression type.
Linkage	Concealed in frame.	Not Required

DAMPER SIZES

Sizes indicated below are for ratings of 2000 FPM (10.2 m/s) and 4 in. w.g. (1 kPa).

MINIMUM SIZE

FSD60LP - 6" w x 6" h (152 x 152) (actual size)
FSD60 - 8" w x 6" h (203 x 152)

MAXIMUM SIZE

FSD60LP
Single Section Vertical or Horizontal - 36" w x 14" h (914 x 356)

FSD60
Single Section Vertical - 32" w x 48" h (813 x 1219)
Single Section Horizontal - 30" w x 48" h (762 x 1219)

FSD60

Multiple Section Vertical
120" w x 96" h (3048 x 2438)

Multiple Section Horizontal
Electric Actuator - 120" w x 96" h (3048 x 2438)
Pneumatic Actuators - 144" w x 96" h (3658 x 2438)

CONTROLLED CLOSURE DEVICE (HEAT-ACTUATED)

EFL (Electric Fuse Link) - 165°F (74°C) standard, 212°F (100°C), 250°F (121°C), 350°F (177°C) available.

PFL (Pneumatic Fuse Link) - 165°F (74°C) standard, 212°F (100°C), 285°F (141°C) available.

MAXIMUM OPERATIONAL RATINGS		
Description	FSD60	FSD60LP
UL555S Leakage Rating	Class I	Class I
UL555 Hourly Rating	1 1/2 Hour	1 1/2 Hour
Maximum Velocity	4000 FPM (20.3 m/s)	2000 FPM (10.2 m/s)
Maximum Pressure	8 in. wg (2 kPa)	4 in. wg (1 kPa)
Temperature	350°F (177°C)	350°F (177°C)

OPTIONS

- FM Approvals as Specification Tested Product.
- DTS (Damper Test Switch) test switch for cycle testing.
- TS150 for reopenable operation in dynamic smoke management systems.
- DSD/DSDN Duct Smoke Detector (Flow rated or No-Flow). FSD60 only.
- SP100 Switch Package to allow remote indication of damper blade position.
- MCP control panels for testing or monitoring purposes or smoke management systems.
- Factory Sleeves of various lengths and gages to ensure field compliance with UL installation requirements. FSD60 only.
- FAST Angle factory supplied for labor saving angle one-side installation. Other angles of various sizes and gages also available for one-side or two-side installation.
- Stainless Steel Linkage - 304 stainless steel.

UL CLASSIFIED
UL555S Listing R5531

Models FSD60 and FSD60LP series meets the requirements for combination fire and smoke dampers established by:

- National Fire Protection Association NFPA Standards 80, 90A, 92A, 92B, 101 and 105
- ICC International Building Codes
- CSFM California State Fire Marshal Listing (#3235-0245.0126) • Listing (#3235-0245.0129)
- New York City (MEA 252-05-E)

NOTES

1. Dampers are furnished approximately 1/4" (6) smaller than given opening dimensions.
2. Dimensions shown in parentheses () indicate millimeters.

Spec FSD60-1013/Replaces FSD60-211

ALL STATED SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION

© Ruskin October 2013

Fire Damper Submittal

Qty.	Model	Size		Duct Diam	Type						Fuse Temp	V	H	Location	
		A-Wide	B-High		A	B	C	CR	CO	R					
1	DIBD20	48	16			X						165	X		M101
1	"	34	24			X						165	X		
1	"	18	16			X						165	X		
1	"			8							X	165	X		
1	"	16	10			X						165	X		M103
1	"	48	16			X						165	X		
1	"	26	14			X						165	X		
1	"	48	30			X						165	X		
1	"	16	12			X						165	X		
1	"	48	24			X						165	X		
1	"	48	16			X						165	X		M105

RUSKIN®

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DIBD20, 40 and 60 CURTAIN TYPE STATIC FIRE DAMPERS 1 1/2 HOUR UL555 RATED FOR USE IN DYNAMIC AND STATIC SYSTEMS

APPLICATION

Ruskin Model DIBD20, 40, & 60 are 1 1/2 hour UL classified dynamic (fans on) or static (fans off) curtain style fire dampers for use in HVAC systems that remain in operation during a fire. Fire dampers are used for the protection of openings in walls, partitions, or masonry floors with fire resistance ratings of less than 3 hours and shall have a 1 1/2 hour fire protection rating. The DIBD20, 40 & 60 can be installed vertically in walls or horizontally in masonry floors and is rated for airflow in either direction.

DYNAMIC CLOSURE RATINGS

- 4000 fpm (20.3 m/s) vertical mount only, up to 24" x 24" (610 x 610).
- 3000 fpm (15.2 m/s) vertical and horizontal mount, up to 24" x 24" (610 x 610).
- 2000 fpm (10.2 m/s) vertical or horizontal mount on all sizes.
- 4 in. w.g. (1 kPa) maximum pressure on all sizes.

STANDARD CONSTRUCTION

Frame and Blades Material

Galvanized steel or stainless steel (in gauges required by UL listing R-5531).

Closure Springs

301 stainless steel constant force or spring clip type.

Note: Vertical units 24" x 24" (610 x 610) and smaller utilize spring clips only and do not have constant force springs.

Fusible Link

165°F (74°C) is standard. 212°F (100°C) and 285°F (141°C) are available option.

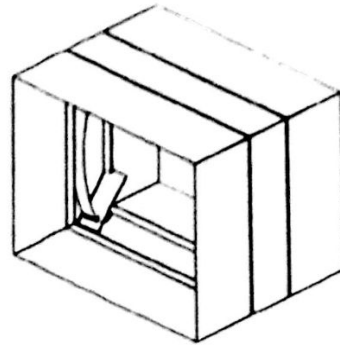
DAMPER SIZES

See pages 2 - 5 for minimum and maximum UL sizes.

See pages 6 - 9 for construction details on multiple section assemblies.

OPTIONS

- True Round Fire Damper - See model FDR25
- Stainless Steel Construction - See model (D)IBD20SS
- FM Approvals as Specification Tested Product
- SP200 Switch Package to allow remote indication of damper blade position
- FAST Angles factory supplied one-side installation. Other angles of various sizes and gauges also available for one-side or two-side installation
- Factory sealed sleeves and transitions
- MCP Control panels for monitoring purpose
- Grille Mounting See (D)IBD20G model



Models DIBD20, 40, and 60 series meet the requirements for fire dampers established by:

- National Fire Protection Association NFPA Standards 80, 90A, 92A, 92B, and 101
- ICC International Building Codes
- CSFM California State Fire Marshal IBD2 #3225-0245-0005
- New York City MEA 450-06-M

UL CLASSIFIED
UL555 Listing R5531



SEE COMPLETE
MARKING
ON PRODUCT

FM Approvals
Specification Tested Product
(Option)

Notes:

1. Dimensions shown in parentheses () indicate millimeters.
2. Dampers may require sealing of seams in the field to meet local code leakage requirements.

Spec DIBD20, 40, 60-1215
Replaces DIBD20, 40, 60
230.430, 530-612

ALL STATED SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION

Revised: December 2015

INSTALLATION INSTRUCTIONS 1½ HOUR UL CLASSIFIED CURTAIN TYPE (D)IBD20, (D)IBD40, and (D)IBD60 FIRE DAMPERS WITH INTEGRAL SLEEVES

APPLICATION

The (D)IBD20, (D)IBD40, and (D)IBD60 fire dampers include sleeves that are an integral part of the damper frame and are approved for installation without the need for a supplemental, field-installed sleeve. The fire damper models shown on this sheet are marked with a 1½ hour fire damper label and are approved for use in fire walls or masonry floors with ratings of less than 3 hours. Static and Dynamic dampers must be installed with leading edge of the closed blades within the wall or floor.

STATIC FIRE DAMPERS

Not for use in Dynamic (fans on) Systems

MODELS IBD20, IBD40, and IBD60 MAXIMUM SIZE

Single Section

Vertical Installation – 48" w x 30" h (1219 x 762) or 33" w x 72" h (838 x 1829) or 36" w x 36" h (914 x 914)

Horizontal Installation – 30" w x 45½" h (762 x 1156) or 33" w x 38" h (838 x 965)

Multiple Section Assembly

Vertical Installation – 120" w x 72" h (3048 x 1829)

Horizontal Installation – 90" w x 91" h (2286 x 2311)

DYNAMIC FIRE DAMPERS

Use in Dynamic (fans on) or Static (fans off) Systems

MODELS DIBD20, DIBD40, and DIBD60 MAXIMUM SIZE

Single Section

Vertical Installation – 33" w x 36" h (838 x 914)

Horizontal Installation – 24" w x 24" h (610 x 610)

Multiple Section Assembly

Vertical Installation – 72" w x 48" h (1828 x 1219) or 48" w x 72" h (1219 x 1828) or 120" w x 24" h (3048 x 610)

Horizontal Installation – Refer to "X" models below.

MODELS DIBD20X, DIBD40X, and DIBD60X MAXIMUM SIZE

Single Section

Vertical Installation – 18" w x 24" h (457 x 610)

Horizontal Installation – 18" w x 24" h (457 x 610) or 24" w x 18" h (610 x 457)

Multiple Section Assembly

Horizontal Installation – 36" w x 48" h (914 x 1219) or 48" w x 36" h (1219 x 914)

Notes:

1. Dimensions shown in parentheses () indicate millimeters.
2. All multiple section dampers are constructed of equal single section sizes no greater than the maximum single section sizes indicated above.

INSTALLATION SUPPLEMENTS

Refer to the appropriate Ruskin installation instructions supplements for additional information or special requirements:

- Optional Sealant of Dampers in Fire Rated Walls or Floor Openings
- Transfer Openings and Duct Terminations for 1½ Hour and 3 Hour Fire Dampers
- Optional FireStop Material
- Extension of Fire and Combination Fire and Smoke Damper Sleeves
- Fire and Combination Fire and Smoke Dampers Installation in Concrete Floor with Steel Deck
- Drivemate No. 14880 Breakaway Connections
- Flanged System Breakaway Connections
- Mullions for Dampers in Oversized Wall Openings



SEE COMPLETE MARKING
ON PRODUCT

California State Fire Marshal Listing No. 3225-245:005

1. Opening Clearance

The opening in the wall or floor shall be larger than the damper/sleeve assembly to permit installation or expansion. For two angle installations the opening shall be a minimum of $1/8$ " per foot (3 per 305) larger than the overall size of the damper/sleeve assembly. The maximum opening size shall not exceed $1/8$ " per foot (3 per 305) plus 2" (51), nor shall the opening be less than $1/4$ " (6) larger than the damper/sleeve assembly. For one angle installations, the opening shall be a minimum of $1/4$ " (6) to a maximum of 1" (25) larger than the overall size of the damper/sleeve assembly. The opening may be as much as 2" (51) larger than the damper/sleeve assembly if a 16ga (1.6) mounting angles is utilized.

2. Fasteners and Multiple Section Assembly

Use No. 10 (M5) bolts or screws, $3/16$ " (5) rivets, tack welds or spot welds as depicted in figures 3 and 4 and spaced as follows when joining individual dampers to make multiple section damper assemblies or when fastening damper to the sleeve:

Vertical Mount (In wall)	
Galvanized steel dampers	12" (305) spacing
Horizontal Mount (In floor)	
All dampers	6" (152) spacing

Multiple section horizontal mount dampers require a 14 gage thick x $4 1/2$ " (2 x 114) wide steel reinforcing plate sandwiched between the damper frames with $1/2$ " (13) long welds staggered intermittently and spaced on maximum 6" (152) centers. The reinforcing plate must be the same material as the dampers. The length must be equal to the damper width of two or more adjoining damper sections. Reinforcing plates are not required for assemblies consisting of two dampers attached end-to-end or three dampers attached side-to-side as depicted in figure 5.

3. Damper Sleeve

Sleeve thickness must be equal to or thicker than the duct connected to it. Sleeve gage requirements are listed in the SMACNA Fire, Smoke and Radiation Damper Installation Guide for HVAC Systems and in NFPA90A. If a breakaway style duct/sleeve connection is not used, the sleeve shall be a minimum of 16 gage (1.6) for dampers up to 36" (914) wide by 24" (610) high and 14 gage (1.9) for dampers exceeding 36" (914) wide by 24" (610) high. Damper sleeve shall not extend more than 6" (152) beyond the fire wall or partition unless damper is equipped with a factory installed access door. Sleeve may extend up to 16" (406) beyond the fire wall or partition on sides equipped with a factory installed access door. Sleeve shall terminate at both sides of wall within dimensions shown.

4. Damper Orientation

Use "Air Flow" and "Mount with Arrow Up" labels on Dynamic DIBD and DIBDX models for proper damper orientation. For Static IBD models use only "Mount With Arrow Up" label on damper for proper damper orientation. Static and Dynamic dampers must be installed with leading edge of the closed blades within the wall or floor.

5. Mounting Angles

Mounting angles shall be a minimum of $1 1/2$ " x $1 1/2$ " x 20 gage steel (38 x 38 x 1.0). For openings in metal stud, wood stud walls or concrete/masonry walls and floors of sizes 90" x 49" or 49" x 90" (2286 x 1245 or 1245 x 2286) and less mounting angles are only required on one side of the wall or top side of the floor. The angles must be attached to both the sleeve and the wall or floor. Mounting angles may be installed directly to the metal stud under the wall board on metal stud wall installations only. Larger openings require mounting angles on both sides of the partition and must be attached only to the sleeve. Mounting angles must overlap the partition a minimum of 1" (25). Do not weld or fasten angles together at corners of dampers. Ruskin fire dampers may be installed using Ruskin FAST angle for one angle installation or Ruskin PFMA for two angle installations.

a. Mounting Angle Fasteners

Sleeve: #10 bolts or screws, $3/16$ " (5) steel rivets or $1/2$ " (13) long welds.
Masonry/Wall or Floor: #10 self-tapping concrete screws.
Wood/Steel Stud Wall: #10 screws

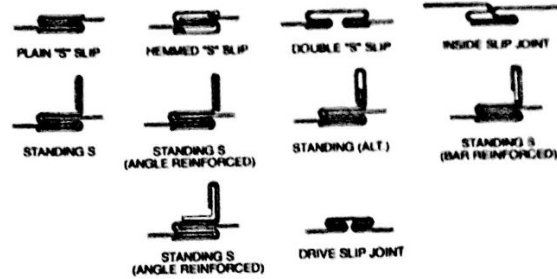
b. Mounting Angle Fastener Spacing

For one angle installations the sleeve fasteners shall be spaced at 8" (152) o.c. and the wall or floor fasteners shall be spaced at 12" (305) o.c. with a minimum of 2 fasteners on each side, top and bottom. Screw fasteners used in metal stud must engage the metal stud a minimum of $1/2$ " (13). Screw fasteners used in wood stud must engage the wood stud a minimum of $3/4$ " (19). Screw fasteners used in masonry walls or floors must engage the wall a minimum of $1 1/2$ " (38). For two angle installations the fasteners shall be spaced at 8" (203) o.c.

6. Duct/Sleeve Connections

a. Break-away Duct/Sleeve Connections

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



A maximum of two #10 sheet metal screws on each side and the bottom, located in the center of the slip pocket and penetrating both sides of the slip pocket may be used. Connections using these slip joints on the top and bottom with flat drive slips up to 20" (508) long on the sides may also be used.

b. Round and Oval Break-away Connections

Round and flat oval break-away connections must use either a 4" (102) wide drawband or #10 sheet metal screws spaced equally around the circumference of the duct as follows:

- Duct diameters 22" (559) and smaller - Maximum 3 screws.
- Duct diameters over 22" (559) and including 36" (914) - Maximum 5 screws.
- Duct diameters over 36" (914) and up to and including 191" (4851) total perimeter - Maximum 8 screws. For flat oval ducts, the diameter is considered the largest (major) dimension of the duct.

Note: When optional sealing of these joints is desired, the following sealants may be applied in accordance with the sealant manufacturer's instructions:

Design Polymers - DP 1010 Precision - PA2084T
Hardcast, Inc. - Iron Grip 601 Eco Duct Seal 44-52

c. Flanged Break-away Style Duct Sleeve Connections.

Flanged connection systems manufactured by Ductmate, Nexus or Ward are approved break-away connections when installed as shown on the Flanged System Breakaway Connections Supplement.

TDC and TDF roll-formed flanged connections using $3/8$ " (10) steel bolts and nuts, and metal cleats, as tested by SMACNA, are approved break-away connections when installed as shown on the Flanged System Breakaway Connections Supplement.

d. Non-Break-away Duct/Sleeve Connections

If other duct sleeve connections are used, the sleeve shall be a minimum of 16 gage (1.6) for dampers up to 36" (914) wide x 24" (610) high and 14 gage (2.0) for dampers exceeding 36" (914) wide x 24" (610) high.

7. Installation and Maintenance

To ensure optimum operation and performance, the damper must be installed so it is square and free from racking. Each fire damper should be maintained and tested on a regular basis and in accordance with the latest editions of NFPA 90A and local codes. Care should be exercised to ensure that such tests are performed safely and do not cause system damage.

VERTICAL INSTALLATION

Damper is properly installed when leading edge of closed blades is within the wall.

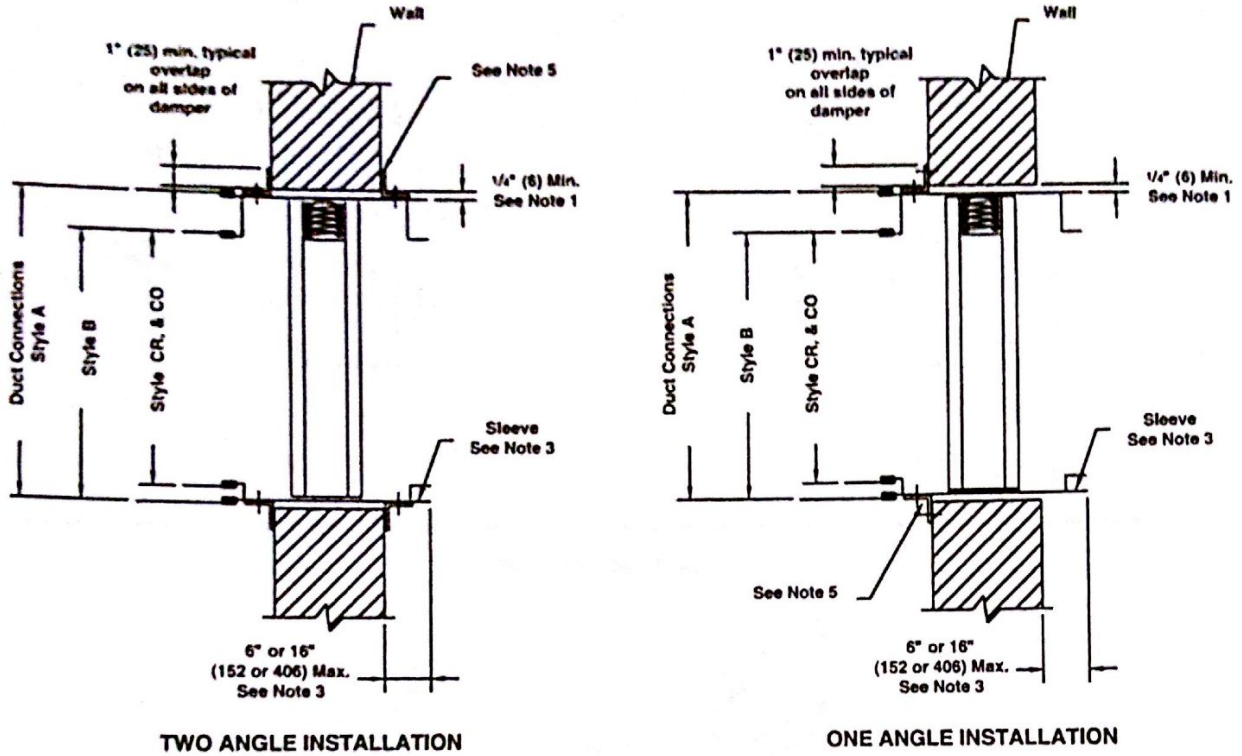


FIGURE 1

HORIZONTAL INSTALLATION

Damper is properly installed when leading edge of closed blades is within the wall.

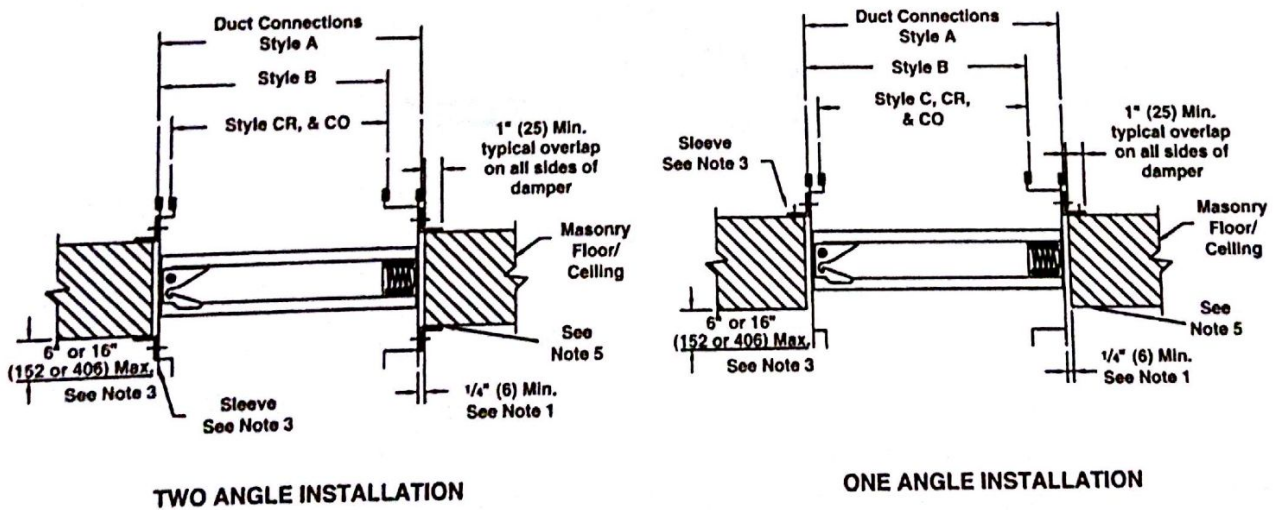


FIGURE 2

FASTENER SPACING

VERTICAL INSTALLATION

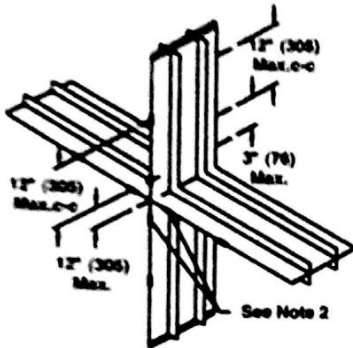


FIGURE 3

HORIZONTAL INSTALLATION

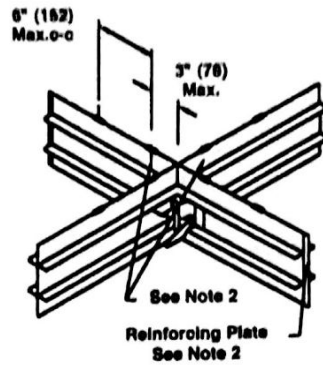


FIGURE 4

REINFORCING PLATE

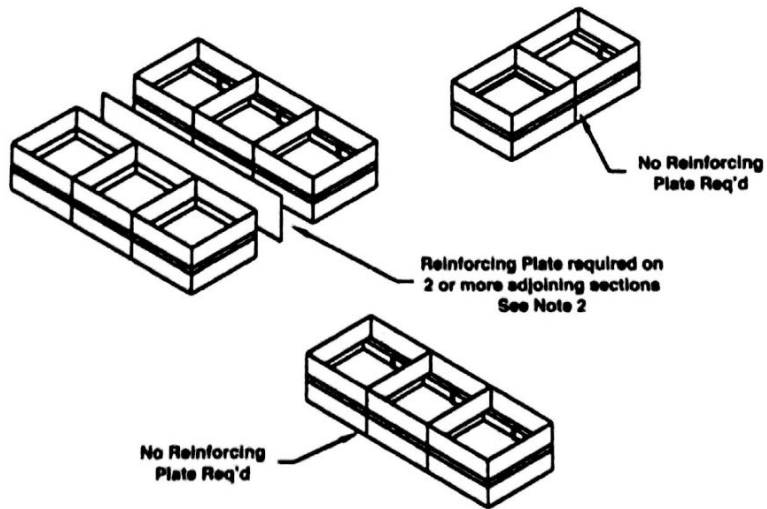


FIGURE 5

RECOMMENDED FRAMING FOR OPENINGS IN WOOD AND METAL STUD WALLS

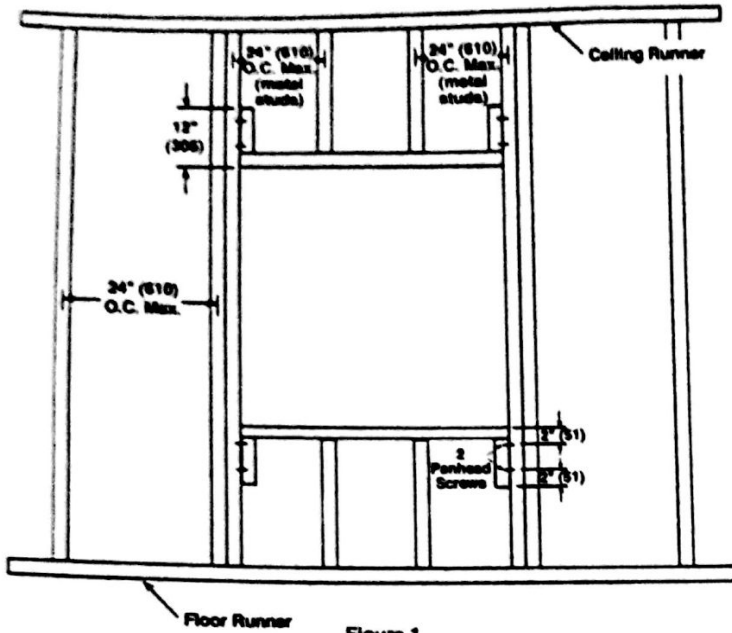


Figure 1

INSTRUCTIONS

1. Frame wall openings as shown in figure 1 or 2.
2. Double vertical studs are not required for openings 36" w x 36" h (914 x 914) or smaller.
3. All construction and fasteners must meet the requirements of the appropriate wall design and/or local codes.
4. Consult the authority having jurisdiction for other acceptable framing methods.

NOTE

The Metal Stud Construction and Wood Stud Construction figures at the bottom of the page depict mounting angles installed on both sides of the partition. A single angle may be sufficient. Refer to the instructions for single angle installation requirements.

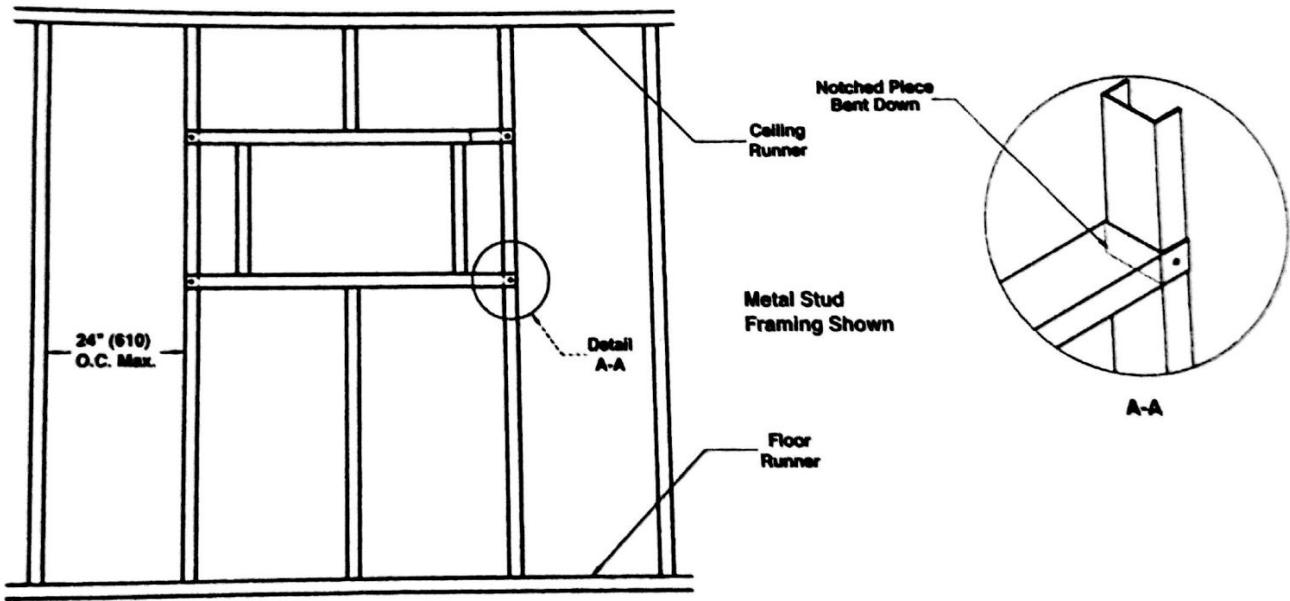
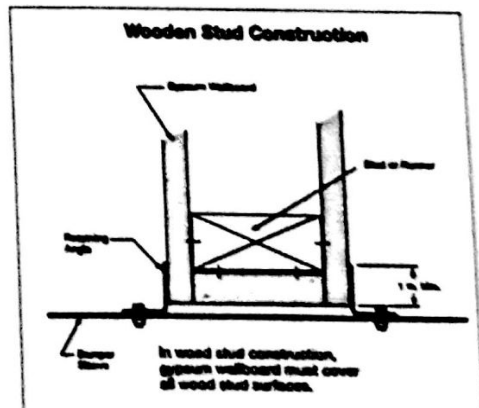
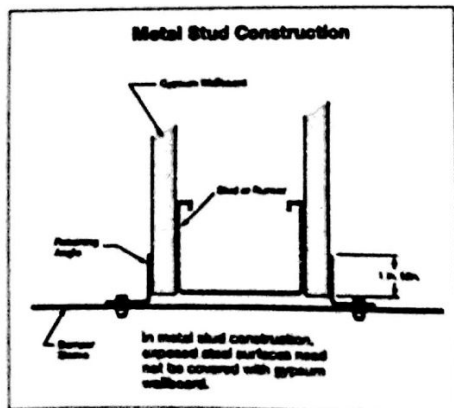


Figure 2



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FSDR25 COMBINATION FIRE SMOKE DAMPER

UL555 and UL555S Leakage Class 1 Classified
FOR USE IN DYNAMIC AND STATIC SYSTEMS

APPLICATION

The FSDR25 is a "true round" Class 1 leakage rated combination fire and smoke damper designed for use in metal, wood or concrete fire and smoke rated partitions and concrete floors. The FSDR25 is the ideal choice when round duct is used on a project. The damper is rated for maximum velocity of 3,000 fpm and 4" (102) static pressure. The integral frame and unique "cinch plate" design provide a low cost, easy to install, high performing damper.

STANDARD CONSTRUCTION

FRAME/SLEEVE

20 gage (9) galvanized steel standard 17" (432) long.

Frame/sleeves available up to 36" (914) in length. See minimum sleeve length chart on page 2 for assistance in choosing correct frame/sleeve length.

BLADES

Two-piece 14 gage (1.9) equivalent thickness galvanized steel.

BEARINGS

Stainless steel sleeve, pressed into frame.

BLADE SEALS

Silicone edge type sandwiched between two piece blade. Full circumference smoke seal to 450°F (232°C).

LINKAGE

Jackshaft to blade.

AXLE

1/2" (13) diameter.

CONTROLLED CLOSURE DEVICE (HEAT-ACTUATED)

EFL (Electric Fuse Link) - 165°F (74°C) standard, 212°F (100°C), 250°F (121°C), or 350°F (177°C) are options.

PFL (Pneumatic Fuse Link) - 165°F (74°C) standard, 212°F (100°C) or 285°F (141°C) are options.

DAMPER SIZES

MINIMUM SIZE

6" diameter (152).

MAXIMUM SIZE

Vertical / Horizontal Installation - 24" diameter (610).

See page 2 for dimensional information.

OPTIONS

- **FM Approvals** as Specification Tested Product.
- **TS150 FireStat** for reopenable operation in dynamic smoke management systems.
- **DSDF Flow Duct Smoke Detector** - Consult Ruskin.
- **SP100 Switch Package** to remotely indicate damper blade position.
- **Sleeve/Frame** of various lengths to insure field compliance with UL installation requirements.
- **Access Door** factory mounted in common sleeve to insure compliance with UL installation requirements.
- **MCP control panels** for test purposes or smoke management systems.
- **Insulation Slope** for connection to 1" (25) or 2" (51) double wall spiral duct.

NOTES

1. Units furnished approximately 1/8" (3) smaller than given size.
2. Dimensions shown in parentheses () indicate millimeters.

Model FSDR25 meets the requirements for fire, smoke and combination fire/smoke dampers established by

- **National Fire Protection Association NFPA Standards** 90A, 90A, 92B and 101
- **ICC International Building Codes**
- **CSFM California State Fire Marshal Fire Damper Listing** (#3225-245.107) and Smoke Damper Listing (#3230-245.108)
- **New York City (BSA Listing #176-82-SM)**

UL CLASSIFIED

UL555 Listing R5531, UL555S Listing R5531



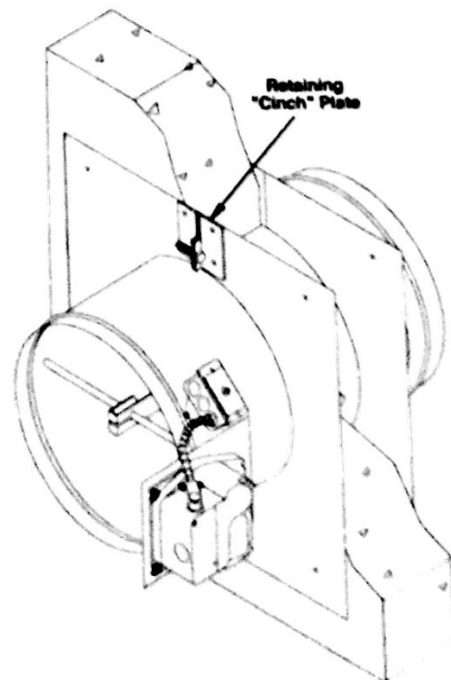
SEE COMPLETE
MARKING
ON PRODUCT

FM Approvals
Specification Tested Product
(Option)

FEATURES

The FSDR25 offers:

- **EFL (Electric Fuse Link)** or **PFL (Pneumatic Fuse Link)** heat-actuated release devices permit controlled (rather than instantaneous) closure through the damper actuator. The EFL and PFL allow the damper to automatically reopen after a test, smoke detection or power failure condition.
- EFL is standard on dampers with electric actuators.
- PFL is standard on dampers with pneumatic actuators.
- EFL's may be ordered on dampers with pneumatic actuators but require an additional EP switch.



Spec FSDR25-100/Replaces FSDR25-908

ALL STATED SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION

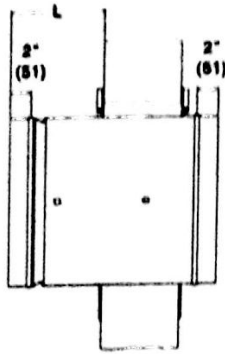
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DIMENSIONAL INFORMATION

MINIMUM SLEEVE LENGTH

Wall/Floor Thickness	Min. Sleeve Length
4" (102)	17" (432)
5" (127)	17" (432)
6" (152)	20" (508)
7" (178)	20" (508)
8" (203)	20" (508)
9" (229)	22" (559)
10" (254)	22" (559)
11" (279)	23" (584)
12" (305)	24" (610)
Over 12" (305) Thru 24" (609)	Add 1" (25) for every inch of wall/floor depth

Note: 36" (914) maximum sleeve length.



The "L" dimension is the dimension the sleeve, on the actuator side of the damper, can extend beyond the wall or floor in a standard installation. The "L" dimension is designed to provide the installer with information to make installation easier. The table below provides a range for the "L" dimension.

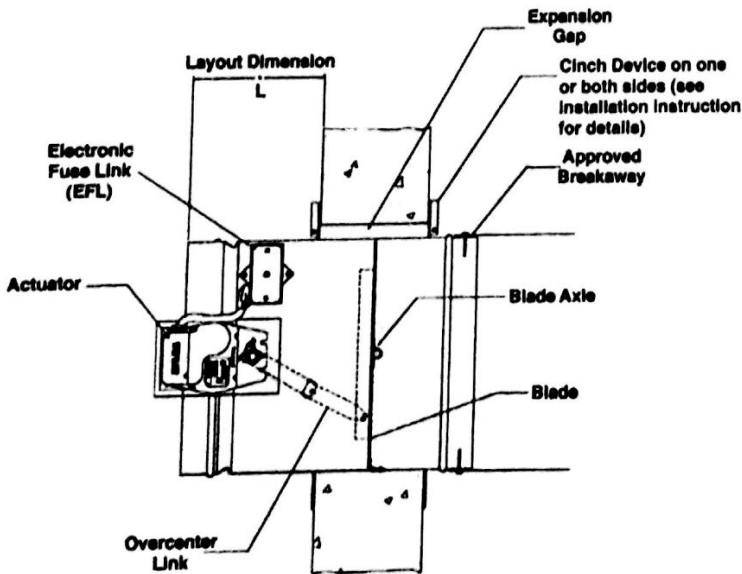
"L" DIMENSIONS

	WALL THICKNESS						
	4" (102)	5" (127)	6" (152)	7" (178)	8" (203)	9" (229)	10" (254)
Minimum	8 1/4"	8 1/4"	8 1/4"	8 1/4"	8 1/4"	8 1/4"	8 1/4"
Standard	9"	9"	9"	9"	9"	9"	9"
Maximum	10"	10"	10"	10"	10"	10"	10"

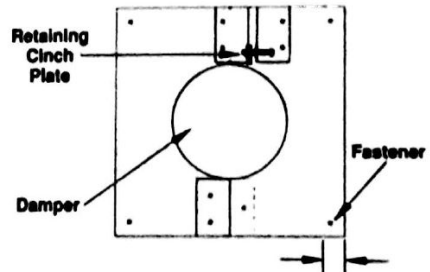
NOTE: The 2" (51) dimension is for duct connections. The "L" dimension includes the 2" (51) for duct connection.

GENERAL INSTALLATION INFORMATION

METAL/WOOD/MASONRY WALL OR CONCRETE FLOOR INSTALLATION

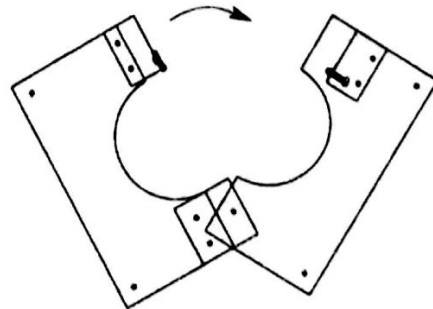


RETAINING "CINCH" PLATE



Note:
Diameter + 6"
(152) = plate size

1/2" (13)
Minimum Overlap
of Wall/Floor Opening



A square opening in wood or metal stud walls or masonry walls and floors shall be a minimum of 1" (25) and a maximum of 2 1/2" (64) larger than the damper diameter. See wood stud and metal stud framing for fire dampers installation instructions supplement for complete framing details. A round opening in masonry walls or floors shall be a minimum of 1" (25) and a maximum of 2 1/2" (64) larger than the damper diameter.

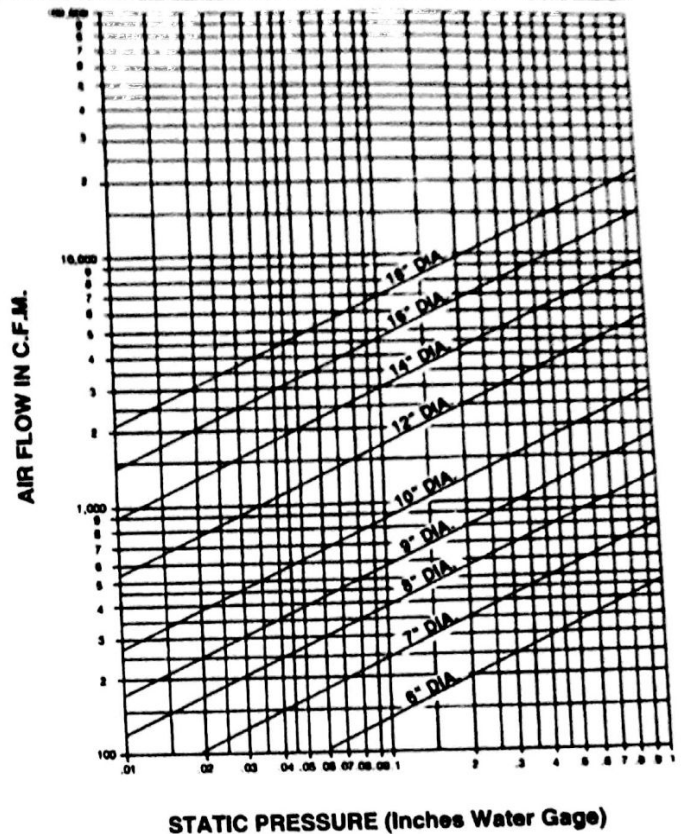
Factory supplied retaining "cinch" plates hold the damper within the wall opening. The plates must overlap the opening a minimum of 1/2" (13). The plate fits snugly around the integral sleeve. The plates are fastened directly to the wall or floor.

REFER TO THE FSDR25 INSTALLATION INSTRUCTIONS FOR COMPLETE INSTALLATION DETAILS.

PERFORMANCE DATA

To determine the pressure drop:

1. Select the damper size
2. Determine the airflow in CFM
3. The pressure drop is the point at which the horizontal airflow line intersects the diagonal, damper size line. For example, a 12" (305) damper with an airflow of 2000 CFM will have a pressure drop of .15 inches w.g.



SUGGESTED SPECIFICATION

Furnish and install at locations shown on plans, or as described in schedules, round combination fire/smoke dampers meeting or exceeding the following specifications. Frames shall be a minimum of 20 (.9) gage galvanized steel and the blade shall be two piece, equivalent to 14 (1.9) gage minimum galvanized. Bearings shall be stainless steel sleeve turning in an extruded hole in the frame. (Galvanized bearings shall not be acceptable). Blade seals shall be silicone edge designed to withstand 450°F (232°C) mechanically fastened and fully encompassing blade edge. Damper must have an integral 20 (.9) gage sleeve and 20 (.9) gage retaining plate for damper mounting. Square to round transitions are unacceptable.

Each combination fire/smoke damper shall be classified for use for fire resistance ratings of less than 3 hours, in accordance with UL standard 555, and shall further be classified by Underwriters Laboratories as a Smoke Damper for use in smoke control systems in accordance with the latest version of UL555S, and bear a UL label attesting to the same. The leakage rating under UL555S shall be leakage Class 1 (8 cfm/sq. ft. at 4" w.g.).

In addition to the leakage ratings already specified herein, the dampers and their actuators shall be qualified under UL555S to an elevated temperature of 250°F (121°C) or 350°F (177°C) depending upon the actuator. Appropriate electric/pneumatic actuators (specifier select one) shall be installed by the damper manufacturer at time of damper fabrication. Electric actuators shall be rated for energized hold open position periods of 6 months or more. Damper and actuator shall be supplied as a single entity which meets all applicable UL555 and UL555S qualifications for both dampers and actuators.

Each combination fire/smoke damper shall be equipped with a "controlled closure" quick detect heat-actuated release device to prevent duct and HVAC component damage. Instantaneous damper closure is unacceptable.

Dampers shall be Ruskin model FSDR25.

(Consult Ruskin for detailed CSI MasterFormat Specification.)

RUSKIN®

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Kansas City, MO 64030

(816) 761-7476

FAX (816) 765-8955

INSTALLATION INSTRUCTIONS FSD35, FSD36 AND FSD37 COMBINATION FIRE and SMOKE DAMPERS 1 1/2 HOUR UL555 RATED UL555S LEAKAGE RATED CLASS 1, 2 AND 3

APPLICATION

The FSD35, FSD36 and FSD37 are combination fire and smoke dampers designed to restrict the passage of flame and resist the passage of smoke. These combination fire and smoke dampers are designed for installation with the blades running horizontally. The standard installation is with the leading edge of the blade within the walls, partitions or masonry floors with ratings of less than 3 hours. For out of the wall or grille access installations refer to the GA or OW version of the FSD35 and FSD36.

FSD35 and FSD36 MAXIMUM UL CLASSIFIED SIZES – OPPOSED BLADES

- Single section vertical or horizontal – 36" w x 48" h (914 x 1219)
- Multiple section vertical – 126" w x 96" h (3200 x 2438) or 72" w x 122" h (1829 x 3099)
- Multiple section horizontal – 144" w x 96" h (3658 x 2438)

FSD37 MAXIMUM UL CLASSIFIED SIZES – OPPOSED BLADES

- Single section vertical – 32" w x 48" h (813 x 1219)
- Single section horizontal – 30" w x 48" h (762 x 1219)
- Multiple sections vertical – 120" w x 96" h (3048 x 2438)
- Multiple sections horizontal – 144" w x 96" h (3658 x 2438)

Dimensions shown in parentheses () indicate millimeters.

INSTALLATION SUPPLEMENTS

Refer to the appropriate Ruskin installation instruction supplements for additional information or special requirements:

- Optional Sealant of Dampers in Fire Rated Wall or Floor Openings
- Transfer Openings and Duct Terminations
- Optional FireStop Material
- Extension of Fire and Combination Fire and Smoke Damper Sleeves
- Fire and Combination Fire and Smoke Damper Installation in Concrete Floor with Steel Deck
- Drivemate No. 14880 Breakaway Connection
- Flanged System Breakaway Connections
- Cavity Shaft Wall Metal Stud Framing
- TS150 FireStat for "Reopenable" Combination Fire and Smoke Dampers
- SP100 Switch Package
- EFL Electric Resettable "Fuse" Link
- EFL/SP100 Electric Resettable "Fuse" Link
- PFL Pneumatic Fuse Link
- DSDF Flow Rated Duct Smoke Detector
- DSDN No-Flow Rated Duct Smoke Detector



SEE COMPLETE MARKING
ON PRODUCT

California State Fire Marshal Listing No.

FSD35 – 3235-0245:0125

FSD36 – 3235-0245:0124

FSD37 – 3235-0245:0127

NYC Department Of Building MEA 252-05-E

1. Opening Clearance

The opening in the wall or floor shall be larger than the damper/sleeve assembly. For permit installation (i.e., equipment) for two angle installations the opening shall be a minimum of 1/2" per foot (3 per 30") larger than the overall size of the damper/sleeve assembly. The maximum opening size shall not exceed 1/2" per foot (3 per 30") plus 2" (50 mm) and the opening be less than 1/2" larger than the damper/sleeve assembly. For one angle installations, the opening shall be a minimum of 1/2" (12.5) to a maximum of 1" (25) larger than the overall size of the damper/sleeve assembly. The opening may be as much as 2" (50) larger than the damper/sleeve assembly if a 1/4" (6.35) mounting angle is utilized.

2. Fasteners and Multiple Section Assembly

When joining multiple damper assemblies or fastening the damper to the sleeve, dampers shall be fastened with 1/4"-20 (M6) bolts, number 10 (N6) screws, or 1/2" (13) long welds staggered intermittently on both sides. Splice fasteners (1/2") on center and a maximum 2" (50) from the ends of the joining sections or from each corner. When joining multiple damper assemblies, a continuous 1/4" (3) bead of Dow-Corning Silastic 732 RTV or GE RTV 108 sealant shall be applied on the mullion joint. Press the surface of the sealant in place to disperse any air. Another bead of the same sealant shall be applied between the damper and sleeve in the same manner. Only one side of the damper requires caulking. Note the sealant is not required when dampers are supplied for fire damper applications only and are not required to be leakage rated. Multiple section high vertical mount dampers include a 14 gage x 5" (2 x 127) wide steel mullion plate sandwiched between the damper frames where required. The mullion plate must be the same material as the dampers.

3. Damper Sleeve

Sleeve thickness must be equal to or thicker than the duct connected to it. Sleeve gage requirements are listed in the SMACNA Fire, Smoke and Radiation Damper Installation Guide for HVAC Systems and in NFPA90A. If a breakaway style duct/sleeve connection is not used, the sleeve shall be a minimum of 16 gage (1.6) for dampers up to 36" (914) wide by 24" (610) high and 14 gage (1.9) for dampers exceeding 36" (914) wide by 24" (610) high. Damper sleeve shall not extend more than 6" (152) beyond the fire wall or partition unless damper is equipped with an actuator and/or factory installed access door. Sleeve may extend up to 16" (406) beyond the fire wall or partition on sides equipped with actuator and/or factory installed access door. Sleeve shall terminate at both sides of wall within dimensions shown.

4. Damper Orientation

Damper is designed to operate with blades running horizontally and must be installed with center line of damper frame within the wall or floor when they are in the closed position. Use "Mount With Arrow Up" label as a guide for proper damper orientation. Horizontal mount dampers may be installed with actuator above or below the floor.

5. Mounting Angles

Mounting angles shall be a minimum of 1/2" x 1/2" x 20 gage steel (38 x 38 x 1.0). For openings in metal stud, wood stud and concrete/masonry walls of sizes 90" x 49" or 49" x 90" (2286 x 1245 or 1245 x 2286) and less mounting angles are only required on one side of the wall or top side of the floor and must be attached to both the sleeve and the wall. Mounting angles may be installed directly to the metal stud under the wall board on metal stud wall installations only. Larger openings installations require mounting angles on both sides of the partition and must be attached only to the sleeve. Mounting angles must overlap the partition a minimum of 1" (25). Do not weld or fasten angles together at corners of dampers. Ruskin fire/smoke dampers may be installed using Ruskin FAST angle for one angle installation or Ruskin PFMA for two angle installations.

a. Mounting Angle Fasteners

Sleeve: #10 bolts or screws, 3/16" (5) steel rivets or 1/2" (13) long welds.
Masonry/Wall or Floor: #10 self-tapping concrete screws.
Wood/Steel Stud Wall: #10 screws

b. Mounting Angle Fastener Spacing

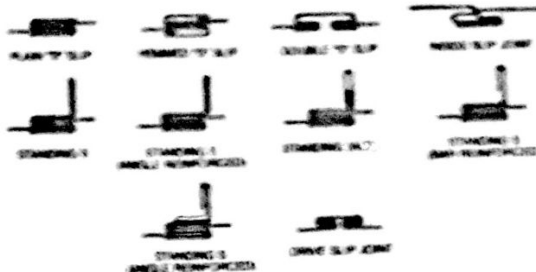
For one angle installations the sleeve fasteners shall be spaced at 6" (152) o.c. and the wall fasteners shall be spaced at 12" (305) o.c. with a minimum of 2 on each side, top and bottom. Screw fasteners used in metal stud must engage the metal stud

a minimum of 1/2" (12.5). Screw fasteners used in wood stud must engage the wood stud a minimum of 1/2" (12.5). Screw fasteners used in masonry walls or floors must engage the wall or floor a minimum of 1/2" (12.5). For two angle installations the fasteners shall be spaced at 4" (100) o.c.

6. Duct/Sleeve Connections

a. Break-away Duct/Sleeve Connections

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



A maximum of two #10 (M6) sheet metal screws on each side and the bottom, located in the center of the slip pocket and penetrating both sides of the slip pocket may be used. Connections using these slip joints on the top and bottom with flat drive slips up to 20" (508) long on the sides may also be used.

b. Round and Oval Break-away Connections

Round and flat oval break-away connections must use either a 4" (102) wide drawband or #10 (M6) sheet metal screws spaced equally around the circumference of the duct as follows:

- Duct diameters 22" (559) and smaller - maximum 3 screws.
- Duct diameters over 22" (559) and including 36" (914) - maximum 5 screws.
- Duct diameters over 36" (914) and up to and including 19 1/2" (485) total perimeter - maximum 8 screws.

For flat oval ducts, the diameter is considered the largest (major) dimension of the duct. These connections are depicted in the SMACNA Fire, Smoke, and Radiation Damper Installation Guide. Note: When optional sealing of these joints is desired, the following sealants may be applied in accordance with the sealant manufacturer's instructions:

Design Polymers - DP 1010
Hardcast, Inc. - Iron Grip 601

Precision - PA2084T
Eco Duct Seal 44-52

c. Flanged Break-away Style Duct/Sleeve Connections.

Flanged connection systems manufactured by Ductmate, Nexus or Ward are approved break-away when installed as shown on the Flanged System Breakaway Connections Supplement. TDC and TDF roll-formed flanged connections using 3/8" (10) steel bolts and nuts, and metal cleats, as tested by SMACNA, are approved break-away connections when installed as shown on the Flanged System Breakaway Connections Supplement.

d. Non-Break-away Duct/Sleeve Connections

If other duct/sleeve connections are used, the sleeve shall be a minimum of 16 gage (1.6) for dampers up to 36" (914) wide x 24" (610) high and 14 gage (2.0) for dampers 36" (914) wide x 24" (610) high.

7. Actuator Connections

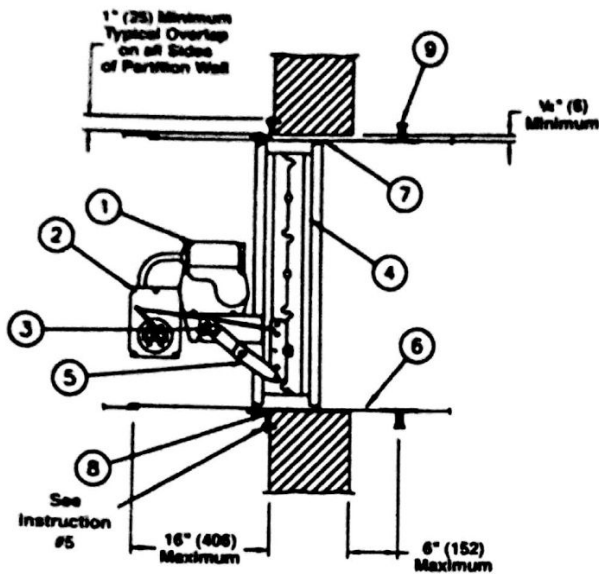
Electric and pneumatic actuators are to be connected in accordance with wiring and piping diagrams developed in compliance with applicable codes, ordinances and regulations.

8. Installation and Maintenance

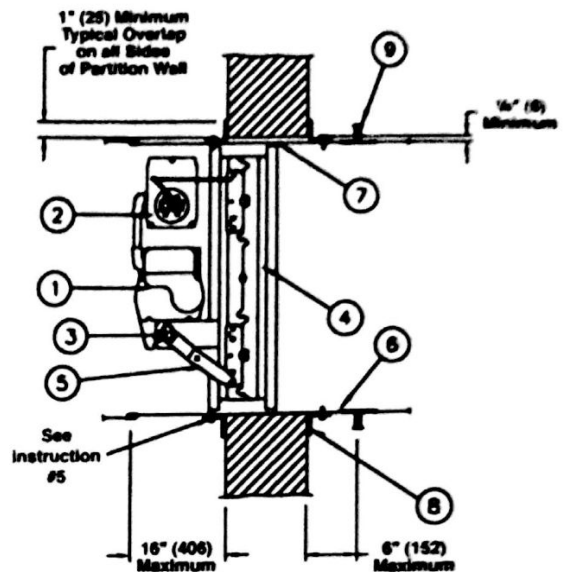
To ensure optimum operation and performance, the damper must be installed so it is square and free from racking. Each fire/smoke damper should be maintained, cycled and tested at intervals not less than every six months and in accordance with the latest editions of NFPA 90A, 92A, UL864, local codes and in accordance with actuator manufacturer recommendations. Care should be exercised to ensure that such tests are performed safely and do not cause system damage.

VERTICAL INSTALLATION

Damper may be installed with actuator on either side of the partition in accordance with the mounting label on the damper.



FAST ANGLE (ONE ANGLE) INSTALLATION
Angle may be installed on either side of the partition.



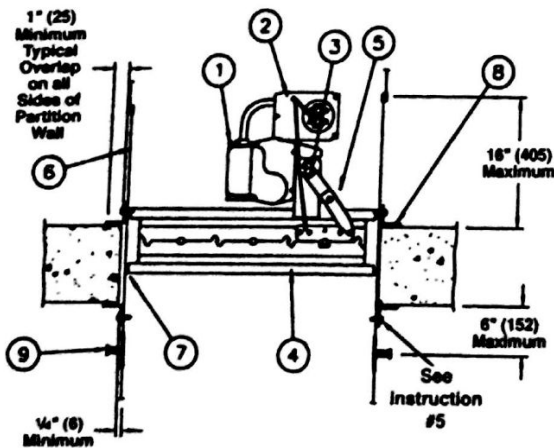
TWO ANGLE INSTALLATION
Angles are required on both sides of the partition.

ITEM	DESCRIPTION
1.	Actuator (location may vary).
2.	Optional FireStat or SP-100.
3.	Auxiliary Operating Jackshaft
4.	Damper
5.	Over-Center Link

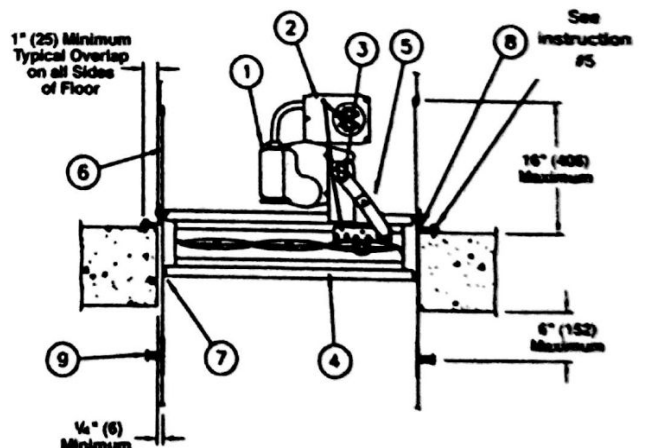
ITEM	DESCRIPTION
6.	Sleeve
7.	Caulking Material (may be on either side of damper frame).
8.	Mounting Angles (PFMA, FAST or conventional angles)
9.	Duct/sleeve connection.

HORIZONTAL INSTALLATION

Damper may be installed with actuator on either side of the floor in accordance with the mounting label on the damper.



TWO ANGLE INSTALLATION
Angles are required on both sides of the floor.



FAST ANGLE (ONE ANGLE) INSTALLATION
Angle may be installed on top of floor.

RECOMMENDED FRAMING FOR OPENINGS IN WOOD AND METAL STUD WALLS

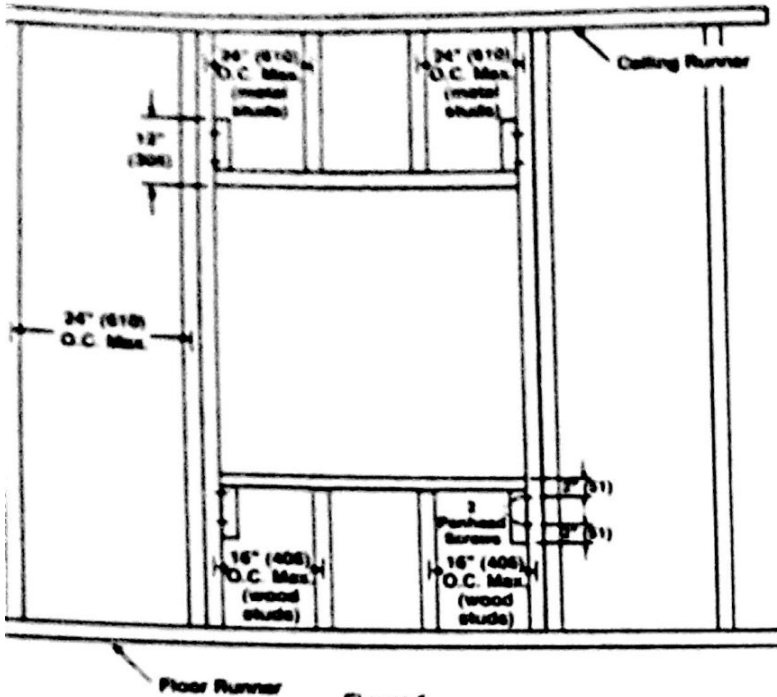


Figure 1

INSTRUCTIONS

1. Frame wall openings as shown
2. Double vertical studs are not required for openings 36" w x 36" h (914 x 914) or smaller.
3. All construction and fasteners must meet the requirements of the appropriate wall design and/or local codes.
4. Consult the authority having jurisdiction for other acceptable framing methods.

NOTE

The Metal Stud Construction and Wood Stud Construction figures at the bottom of the page depict mounting angles installed on both sides of the partition. A single angle may be sufficient. Refer to the instructions for single angle installation requirements.

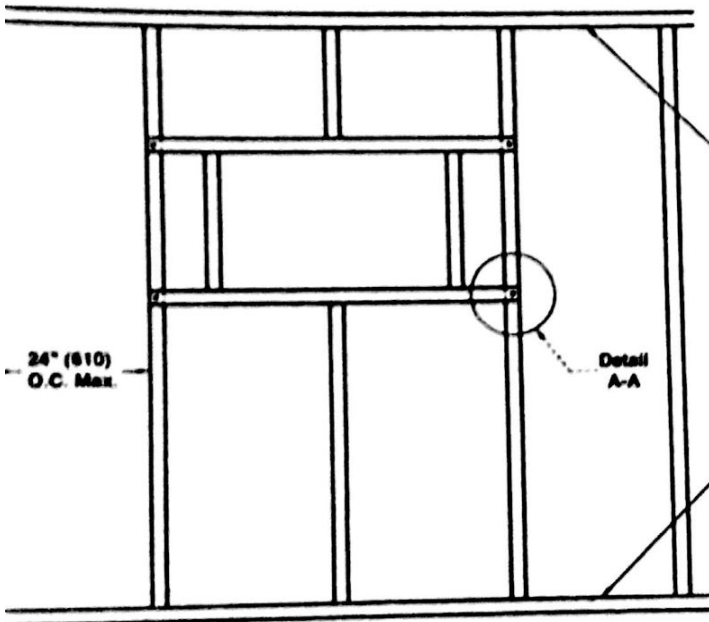
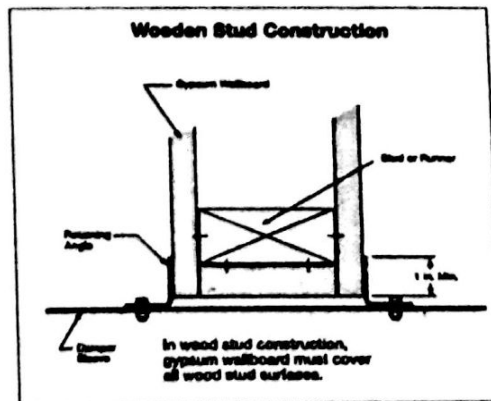
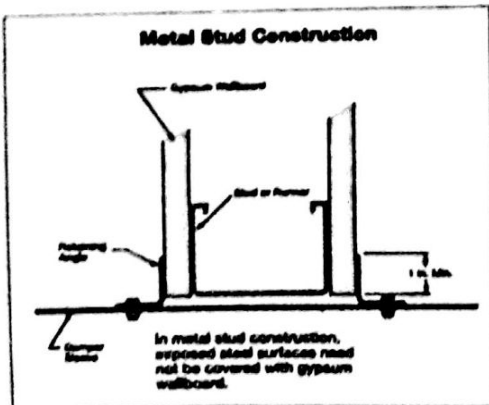
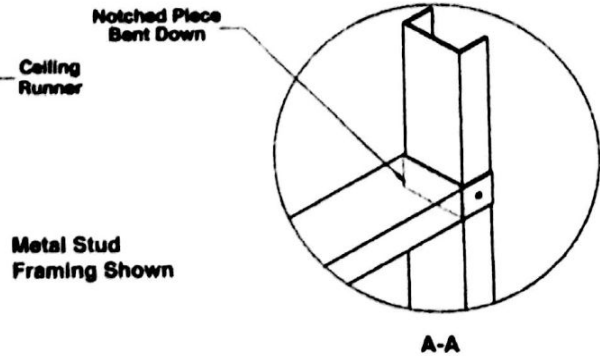
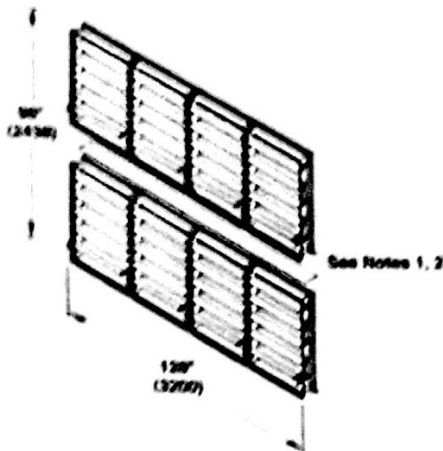


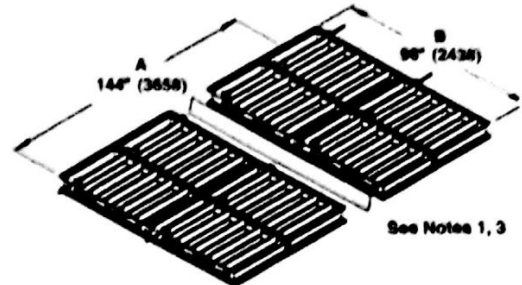
Figure 2



**MAXIMUM UL CLASSIFIED SIZE
(Vertical Installation)
F8036**



**MAXIMUM UL CLASSIFIED SIZE
(Horizontal Installation)
F8036**



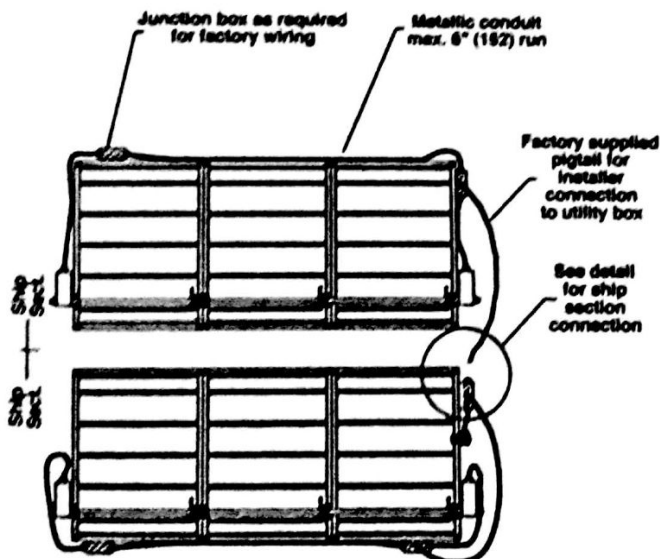
Notes:

1. All multiple section dampers are constructed of equal single section sizes no greater than the maximum single section sizes indicated above.
2. Two section high dampers require a 14 gage reinforcing plate unless overall height is less than 91" (2311) and width is less than 32" (813). When using two individually sleeved units, the

- sleeve acts as the reinforcing plate, therefore no plate is required.
3. Horizontal dampers over 3 sections wide and 1 section high require a 14 gage reinforcing plate. When using two individually sleeved units, the sleeve acts as the reinforcing plate, therefore no plate is required.

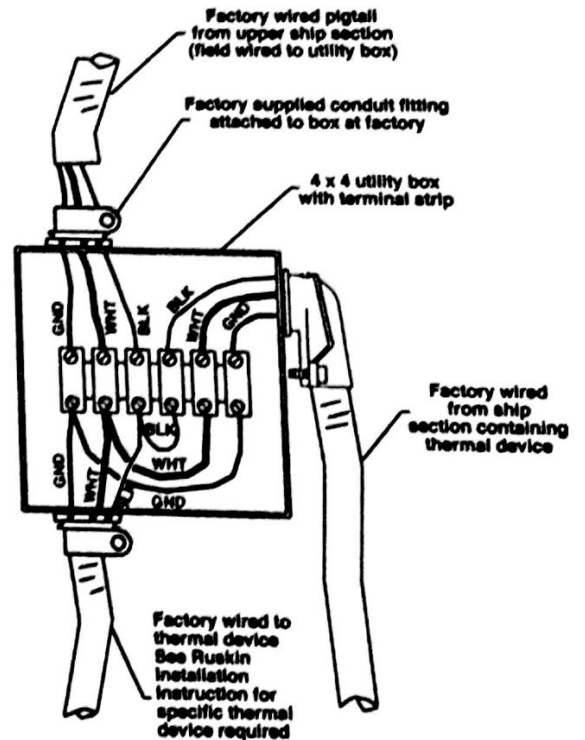
MULTIPLE ACTUATOR DAMPER ASSEMBLIES

Damper assemblies requiring more than one actuator must have all actuators wired to single heat actuated device (EFL or TS150) as shown below. This is required for simultaneous closure of all sections.



TYPICAL SHIP SECTION DETAIL

Note: All actuators must be wired to single thermal device.



SHIP SECTION FIELD CONNECTION

Note: Installer to run supply power to damper assembly thru thermal device.