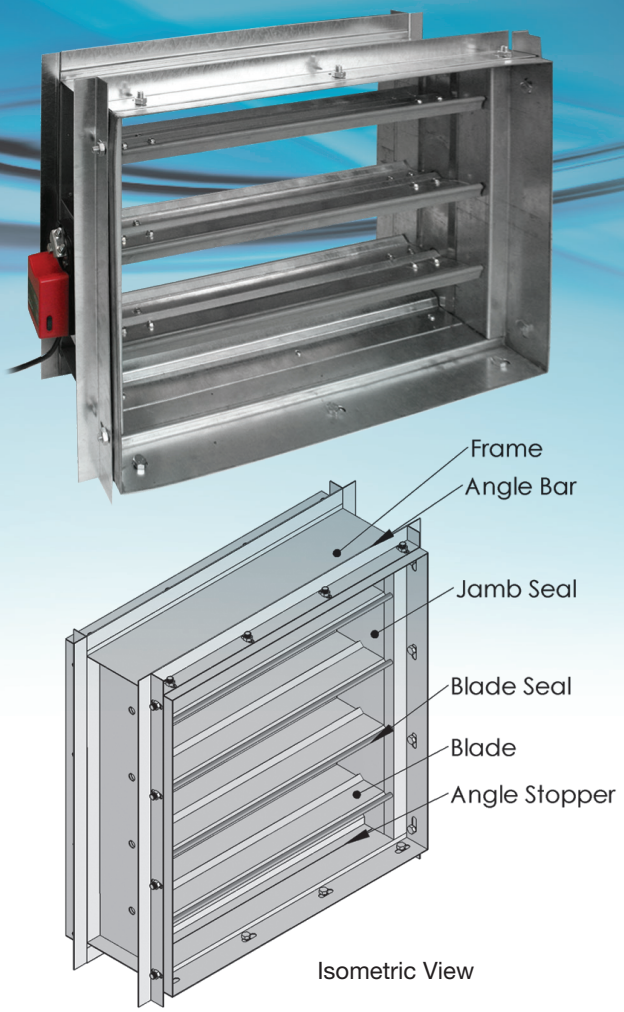


Isometric View

MFSD60-LL Motorized Fire & Smoke Damper

MFSD60-LL smoke dampers are low leakage damper constructed with triple V-groove blades designed to be used in ducts that penetrate smoke rated barriers. The MFSD60-LL may be installed vertically or horizontally of a smoke barrier and is designed for use in systems with airflow in either direction with velocity up to 2000fpm and pressure up to 4" w.g.

Materials

Frame: Galvanized steel, 1.5mm thickness.
Blade: Galvanized steel, 1.5mm thickness.
Blade Seal: Silicone strip
Jamb Seal: Reinforced stainless steel plate
Bearing: Bronze bush pressed into frame.
Axles: Hexagonal bar mild steel.

Surface Finish

Mill galvanized

Blade Action

Parallel blade

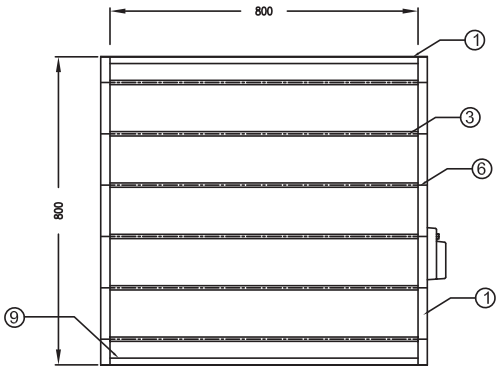
Blade Dimension Limits

- Maximum blade length = 1000mm
- Maximum blade width = 160mm

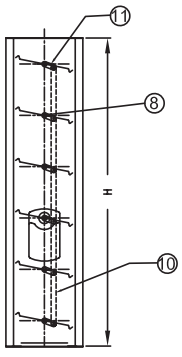
MFSD60-LL Features

- Tested in accordance to UL555S. Leakage rating Class 1.
  Blade edge seal of silicone strips seal up the gap between the blades and stoppers when the damper is fully close.
- Jamb seal of reinforced stainless steel plates seal up the gap between the blades and side frame when the damper is fully close.
- Blade edge seal of silicone strips could withstand temperature up to 255°C under ASTM D865 (70h)
- Angled stopper with single longitudinal grooves for better seal purpose.
- Rigid 'triple-vee' blade design
- Linkages are concealed in the frame to prevent malfunctioning caused by improper installation.
- Vertical (wall) or horizontal (ceiling) installation.
- Closed by means of damper actuator.

MFSD60-LL Construction Illustrations



Front View



Sectional View

MFSD60-LL Smoke Damper

MFSD60-LL Performance Data

To determine pressure drop
1. Select the damper free area (ft²) based on width (W) and height (H) from the table below.
2. Given the air velocity and damper size, substitute the free area (ft²) into the formula below and get the pressure drop value. Please take note on the unit of parameters.

Height H (mm)	Width, W (mm)										
	200	300	400	500	600	700	800	900	1000	1100	1200
200	0.20	0.34	0.47	0.61	0.74	0.87	1.01	1.14	1.28	1.41	1.55
300	0.34	0.57	0.79	1.02	1.24	1.47	1.70	1.92	2.15	2.37	2.60
400	0.50	0.83	1.17	1.50	1.84	2.17	2.50	2.84	3.17	3.50	3.84
500	0.64	1.06	1.49	1.91	2.34	2.76	3.19	3.61	4.04	4.46	4.69
600	0.78	1.29	1.81	2.33	2.84	3.36	3.88	4.39	4.91	5.43	5.94
700	0.94	1.25	1.56	1.87	2.19	2.50	2.81	3.12	3.43	3.75	4.06
800	1.07	1.79	2.51	3.22	3.94	4.65	5.37	6.08	6.80	7.52	8.23
900	1.24	2.06	2.88	3.71	4.53	5.35	6.18	7.00	7.82	8.65	9.47
1000	1.37	2.29	3.20	4.12	5.03	5.95	6.86	7.78	8.69	9.61	10.52
1100	1.23	2.25	3.27	4.29	5.32	6.34	7.36	8.39	9.41	10.43	11.45
1200	1.34	2.45	3.57	4.68	5.79	6.91	8.02	9.14	10.25	11.36	12.48

$$\Delta P = 2.75 \left(\frac{\frac{Q}{\text{Free Area}} - V}{4005} \right)^2$$

ΔP = Pressure drop (inch w.g.)
V = Duct Air velocity (fpm)
Q = Air flow rate (CFM) = Duct Area (ft2) X Duct Air Velocity (fpm)
* All data has been corrected to represent standard air at a density of 0.075 lb/ft³.
* All data has been generated in which the damper blades are fully open.

Example:
Given : Duct Air Velocity = 1000fpm
Duct Size = Damper Size = 500mm (W) X 500mm (H)
Duct Area = 2.69 ft²
Find: Pressure Drop
Q = Duct Area (ft²) X Duct Air Velocity (fpm)
= 2.69 X 1000
= 2690 CFM
Refer to the table above, free area for damper size 500mm(W) X 500mm (H) = 1.91 ft²

$$\Delta P = 2.75 \left(\frac{\frac{2690}{1.91} - 1000}{4005} \right)^2$$

ΔP = 0.0286inch w.g.
ΔP = 7.12 Pa

MFSD60-LL Leakage Test

Static Presure Drop	Leakage
Pa	L/s
250	8.3
500	13.3
750	17.5
1000	20.56

The damper meets the performance criteria of Class 1

MFSD60-LL Order Code *Unit : mm*

Mode	Neck Size (W X H X D)	Connection Type (Left)	Connection Type (Right)
MFSD60-LL	1000mm X 1000mm X 150mm	Angle bar (A) Flat Joint (F)	Angle bar (A) Flat Joint (F)

Example: MFSD60-LL-1000mmX1000mmX150mm-AA