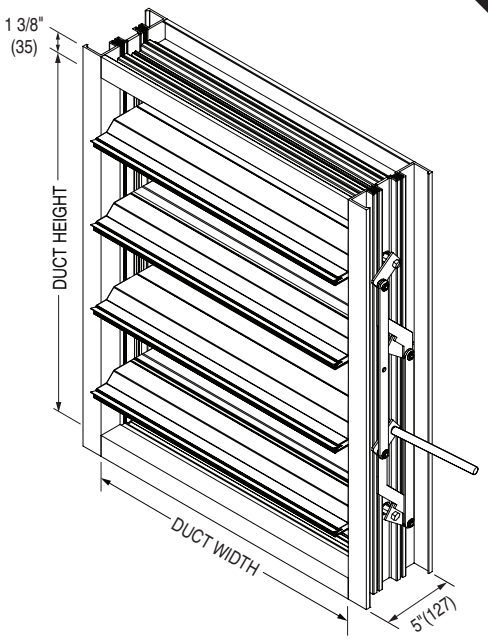
THERMALLY BROKEN CONTROL DAMPER
EXTRUDED ALUMINUM • THERMALLY BROKEN BLADES AND FRAME • HIGH PERFORMANCE
MODEL: 2200TBF

AMCA CERTIFIED

Model 2200TBF is an ultra-low leakage, high-performance thermally efficient control damper featuring extruded aluminum thermally broken insulated blades and a thermally broken frame. The 2200TBF is compliant with IECC (International Energy Conservation Code) with a leakage rating of 3 cfm/ft^2 @ 1" w.g. (15.2 L/s/m^2 @ 0.25 kPa) or less. This premium damper will minimize the transfer of thermal energy and reduce condensation in extreme temperature conditions.



STANDARD CONSTRUCTION:

FRAME: 5" x 1 3/8" x 0.125" (127 x 35 x 3.2) extruded aluminum, thermally broken. Quick Connect.

BLADES: 6063-T6 extruded aluminum thermally broken airfoil. Internally insulated with polyuerthane foam. (R-Value 5.0)

BLADE ACTION: Opposed or Parallel.

LINKAGE: Concealed side type totally enclosed within the frame and out of the air stream. Plated Steel.

BEARINGS: 1/2" (13) dia. dual action, synthetic.

AXLES: 7/16" (11) dia. plated steel, hexagonal.

DRIVE SHAFT: 6" (152) long x 1/2" (13) rigid drive shaft.

BLADE SEALS: Silicone. Mechanically fastened.

JAMB SEALS: Silicone. Mechanically fastened.

TEMPERATURE RANGE: -70°F to 200°F (-57°C to 93°C).

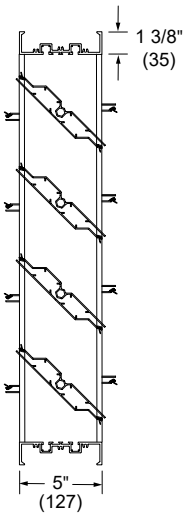
LEAKAGE: Class 1A @ 1" w.g. (0.25 kPa)
Class 1 @ 4" w.g. (1.0 kPa)

PRESSURE: Up to 8 in. w.g. (2 kPa) pressure differential.

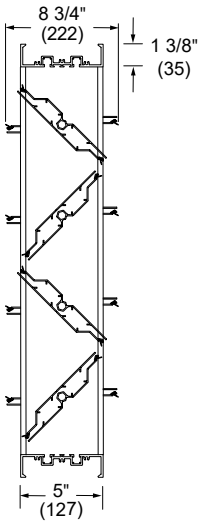
VELOCITY: Up to 4,000 fpm (20.3 m/s).

Frame Type		Quick Connect		Channel, Flange	
Blade Action		Parallel	Opposed	Parallel	Opposed
Min. Size		6" x 6" (152 x 152)	6" x 9 1/2" (152 x 241)	8" x 8" (203 x 203)	8" x 12 1/2" (203 x 318)
Max. Size	Single Section	60" x 76" (1524 x 1930)		60" x 78" (1524 x 1981)	
	Multi-Section	96" x 152" (2438 x 3861)		240" x 234" (6096 x 5944)	

❑ **PB** PARALLEL BLADE



❑ **OB** OPPOSED BLADE

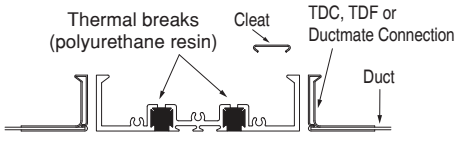


OPTIONS:

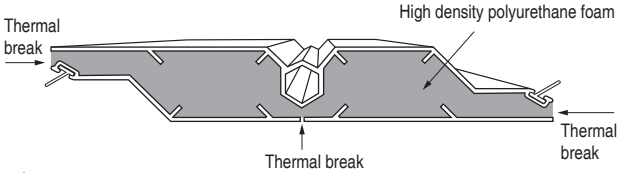
❑ SSLA Type 304 Stainless Steel Linkage/Axles
❑ Other _____ .

❑ QC Quick Connect Flange Frame:

STANDARD:



INSULATED BLADE:



When ordering the Quick Connect Frame, the inner dimensions of the damper frame correspond to the duct size.

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SCHEDULE TYPE:				
PROJECT:				
ENGINEER:	DATE	B SERIES	SUPERSEDES	DRAWING NO.
CONTRACTOR:	8 - 1 - 25	2200	6 - 24 - 25	2200TBF

Dimensions are in inches (mm).

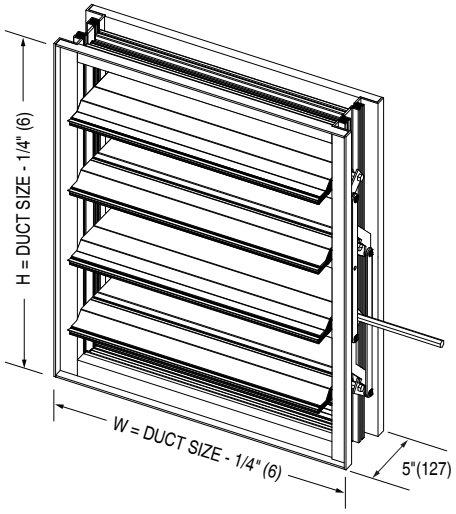
THERMALLY BROKEN CONTROL DAMPER EXTRUDED ALUMINUM • THERMALLY BROKEN BLADES AND FRAME • HIGH PERFORMANCE MODEL: 2200TBF

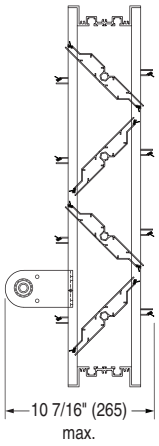
ACTUATORS:
A variety of electric actuators are available, factory mounted by Nailor. Dampers ordered with the QC Quick Connect frame are suitable for external actuator mounting only. Factory actuators are sized for up to 1500 fpm (8 m/s) and 2" w.g. (498 Pa) system pressure.

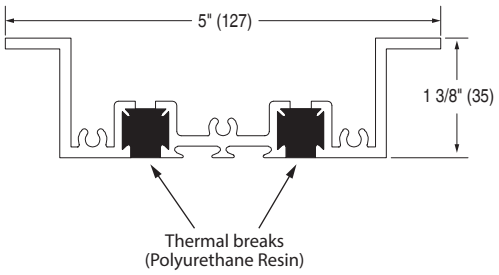
FRAME OPTIONS:

❑ HC Hat Channel Frame

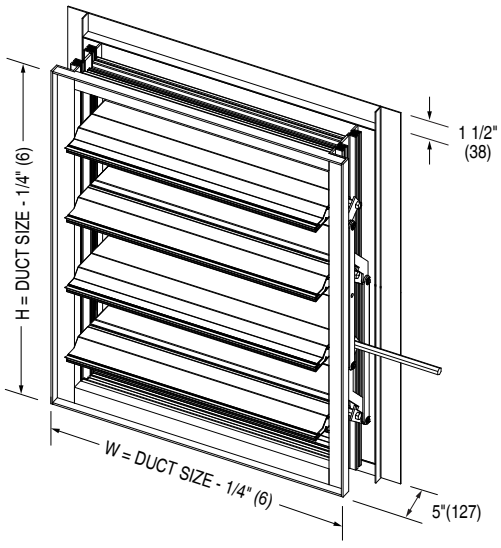
Multiple section assemblies are supplied with jackshafts.



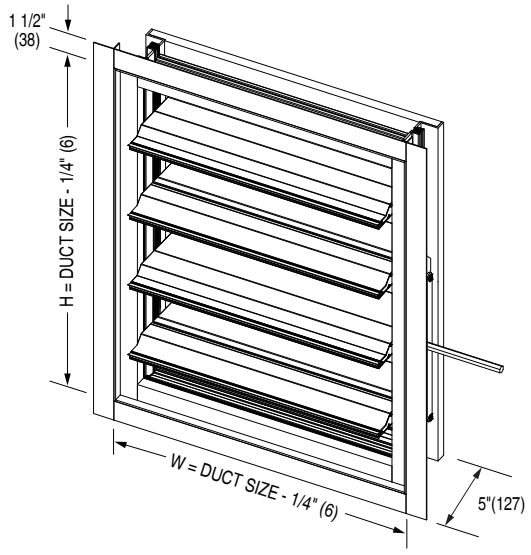




❑ FF Front Flange



❑ FR Rear Flange



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Dimensions are in inches (mm).

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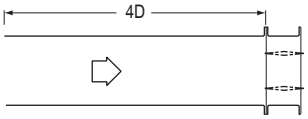
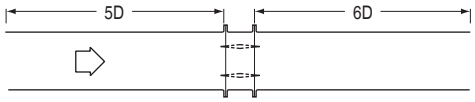
AMCA PRESSURE DROP

Dampers are tested and AMCA certified in accordance with AMCA Standard 500-D.



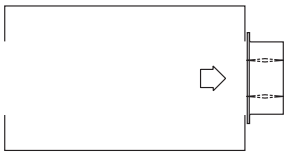
AMCA Figure 5.2 Half ducted (medium pressure drop)

12 x 12 (305 mm x 305 mm)		24 x 24 (610 mm x 610 mm)		36 x 36 (914 mm x 914 mm)		12 x 48 (305 mm x 1219 mm)		48 x 12 (1219 mm x 305 mm)	
Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)
500	.05	500	.02	500	.01	500	.01	500	.03
1000	.13	1000	.06	1000	.05	1000	.05	1000	.12
1500	.30	1500	.14	1500	.11	1500	.12	1500	.24
2000	.53	2000	.24	2000	.19	2000	.21	2000	.41
2500	.83	2500	.38	2500	.29	2500	.33	2500	.64
3000	1.21	3000	.54	3000	.42	3000	.47	3000	.91
3500	1.65	3500	.74	3500	.57	3500	.65	3500	1.23
4000	2.17	4000	.97	4000	.74	4000	.85	4000	1.57



AMCA Figure 5.3 Fully ducted (lowest pressure drop)

12 x 12 (305 mm x 305 mm)		24 x 24 (610 mm x 610 mm)		36 x 36 (914 mm x 914 mm)		12 x 48 (305 mm x 1219 mm)		48 x 12 (1219 mm x 305 mm)	
Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)
500	.006	500	.007	500	.005	500	.007	500	.01
1000	.05	1000	.03	1000	.02	1000	.009	1000	.05
1500	.12	1500	.05	1500	.04	1500	.05	1500	.10
2000	.21	2000	.09	2000	.08	2000	.10	2000	.17
2500	.34	2500	.14	2500	.12	2500	.15	2500	.26
3000	.50	3000	.20	3000	.18	3000	.21	3000	.37
3500	.69	3500	.28	3500	.24	3500	.28	3500	.51
4000	.91	4000	.37	4000	.31	4000	.39	4000	.67



AMCA Figure 5.5 Plenum mounted (highest pressure drop)

12 x 12 (305 mm x 305 mm)		24 x 24 (610 mm x 610 mm)		36 x 36 (914 mm x 914 mm)		12 x 48 (305 mm x 1219 mm)		48 x 12 (1219 mm x 305 mm)	
Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)
500	.06	500	.04	500	.04	500	.04	500	.05
1000	.19	1000	.19	1000	.16	1000	.18	1000	.19
1500	.45	1500	.43	1500	.36	1500	.42	1500	.43
2000	.81	2000	.77	2000	.65	2000	.75	2000	.76
2500	1.27	2500	1.20	2500	1.02	2500	1.16	2500	1.18
3000	1.83	3000	1.72	3000	1.48	3000	1.67	3000	1.68
3500	2.51	3500	2.35	3500	2.02	3500	2.28	3500	2.25
4000	3.29	4000	3.11	4000	2.65	4000	3.0	4000	2.91

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Nailor® Industries Inc.

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AMCA CERTIFIED AIR LEAKAGE

Damper Width inches (mm)	1 in. wg. (0.25 kPa)	4 in. wg. (1.0 kPa)	6 in. wg. (1.5 kPa)	8 in. wg. (2.0 kPa)
12" (305)	1 A	1	1	1
36" (914)	1 A	1	1	1
60" (1524)	1 A	1	N/A	N/A

Tested for leakage in accordance with ANSI/AMCA Standard 500-D, Figure 5.5.

LEAKAGE CLASS DEFINITIONS:

Leakage Class 1A: 3 cfm/ft^2 @ 1 in. w.g. (15 l/s/ m^2 @ 0.25 kPa)
Leakage Class 1: 4 cfm/ft^2 @ 1 in. w.g. (20 L/s/ m^2 @ 0.25 kPa)
8 cfm/ft^2 @ 4 in. w.g. (0.41 l/s/ m^2 @ 1.0 kPa)
11 cfm/ft^2 @ 8 in. w.g. (56 l/s/ m^2 @ 2.0 kPa)

AMCA CERTIFIED THERMAL EFFICIENCY PERFORMANCE

Model 2200TBF has a Thermal Efficiency Ratio of 910%.

A dampers thermal efficiency ratio (E) is a comparison of the thermal performance of the tested damper with that of a standard reference damper, which is a 3V blade damper with blade and jamb seals. A damper with the same thermal efficiency as the reference damper would have an E of 0%. A damper that is twice as efficient as the reference damper would have an E of 100%.

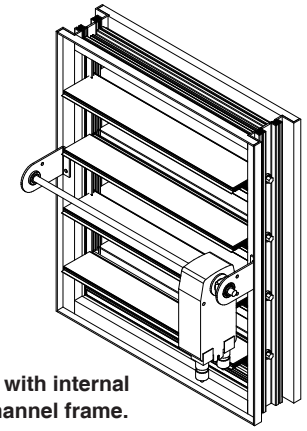
Testing was conducted in accordance with ANSI/AMCA Standard 500-D, Figure 5.10 on a 36" x 36" sample.

TORQUE

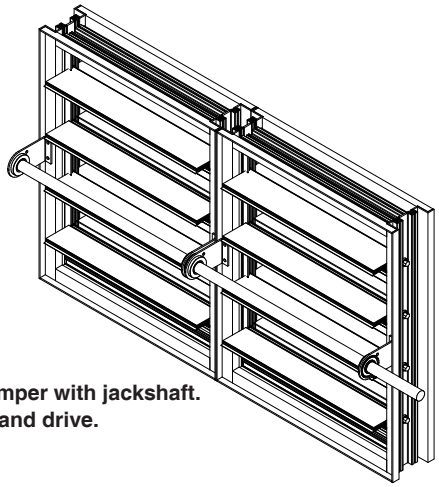
Data is based on a torque of 9.0 in.lb./ft^2 (0.56 N·m) applied to close and seat the damper during the tests.

JACKSHAFTS AND MULTIPLE SECTION DAMPERS (HC Hat Channel Frame and FF, FR Flange Frames only)

Dampers larger than the maximum single section size are made up of two or more equal size sections. Single section dampers with internal mount actuators require a jackshaft. Jackshafts are 1/2" (25) or 1" (51) diameter dependent on damper size.



Single section damper with internal mount actuator. Hat channel frame.



Two section damper with jackshaft. External right hand drive.

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