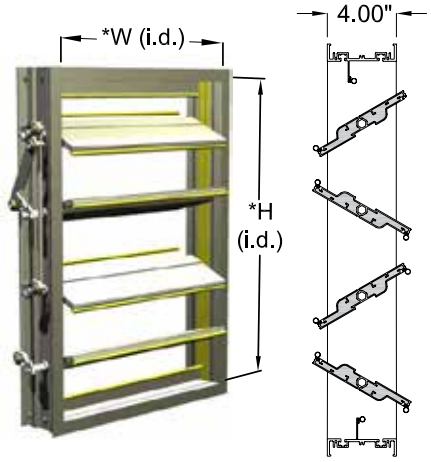
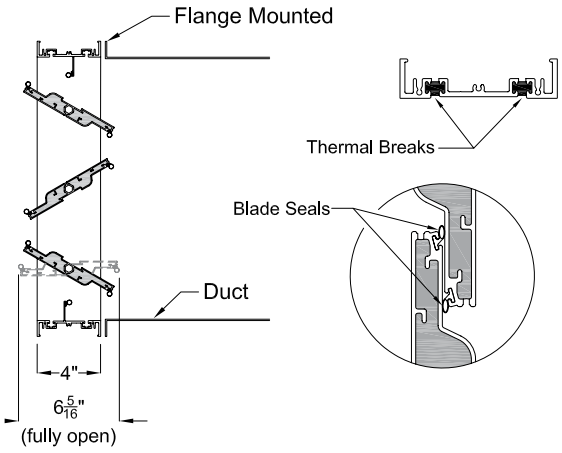
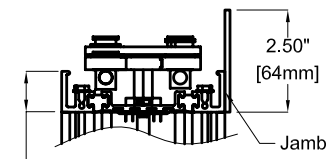
Model TB-200-AL & TB-201-AL Thermal Broken Damper

Flange Face Mated



*Sizes are exact inside dimensions (I.D.)





1"[25mm]
typ. frame width

For in duct applications note that damper linkage extends beyond the frame. Size duct as follows:

Width ID plus 3.5"
Height ID plus 2"
Reference adjacent illustration

Application

This damper is designed to eliminate transfer of high heat or low cold penetration and reduces condensation. The TB-200-AL/201-AL is compliant with IECC (Section C402) with a leakage rating of 3 cfm / ft.² at 1" [25mm] w.g. of static pressure at a temperature of -40° F [-4.4°C]. (55 cmh/m² at 0.25 kpa or less) and 6 cfm / ft² at 4" [102mm] w.g. of static pressure at a temperature of -40°F [-4.4°C] (110 cmh/m² at 1 kpa).

Standard Construction

- Frame: Thermally Broken, 0.125" [3.18mm] Extruded alum.
- Blade: Heavy duty double construction extruded aluminum
- **Blade Type: Airfoil, thermally broken & insulated
- Linkage: Aluminum and corrosion resistant zinc plated steel. Optional Stainless Steel
- Axle Bearing: Celcon inner bearing fixed to an alum. hexagon blade pin rotating within polycarbonate outer bearing inserted in frame
- Axle Material: 7/16" [11mm] Aluminum hexagon (zinc plated steel - drive blade only) Optional Stainless Steel
- Blade & Jamb Seals: Silicone

**Blade has an insulating factor of R3.95 and a temperature index of 57
Temperature range: -40°F to 200°F (-4.4°C to 93.3°C)

Min Size: 6"w x 7"h [152mm x 179mm](single blade)
Max Size: 60"w x 72"h [1524mm x 1828mm] (single section)
Max multi-section: Unlimited
Dampers larger than single section maximum are furnished in an assembly of 48"w x 72" (1219mm x 1829mm) or less equal sized individual sections

Options

- Hand Quadrant
- Factory Actuators (See catalog sheet H-1)
- Stand Off Bracket, 2"
- Face and By-pass Damper
- TPV "Santoprene" blade and jamb gasket -76°F - +340° F

Due to continuing research, MAT reserves the right to change specifications without notice.

Model TB-200-AL (Opposed), Model TB-201-AL (Parallel)

Represented by:

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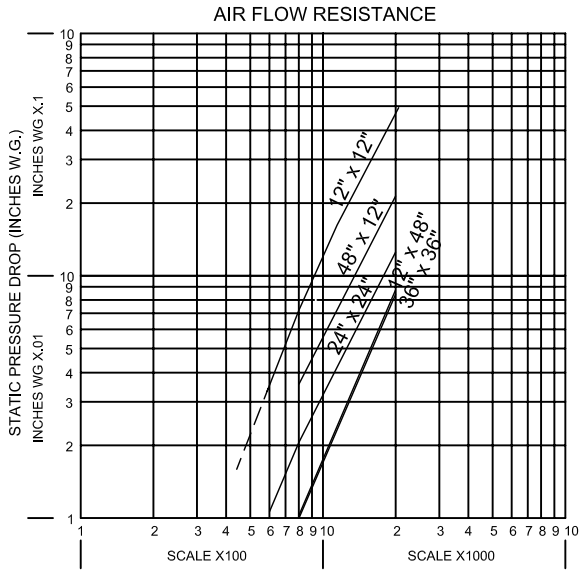
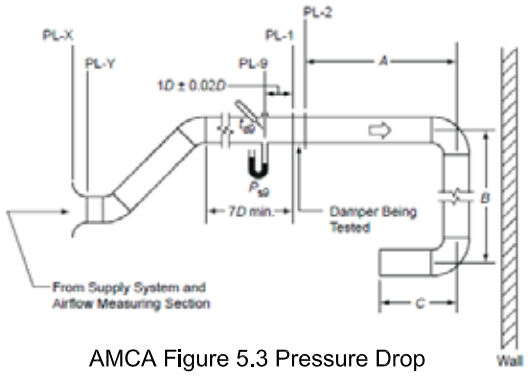
Model TB-200-AL & TB-201-AL Thermal Broken Damper

Flange Face Mated



TB-200-AL, 201-AL sizes: 12" x 12", 24" x 24", 48" x 12", 12" x 48", 36" x 36"
(305 x 305mm, 610 x 610mm, 1219 x 305mm, 305 x 1219mm, 914 x 914mm)

Pressure drop test per AMCA Standard 500-D, Figure 5.3.



AMCA Figure 5.3 Pressure Drop

Metropolitan Air Technology certifies that the TB-200-AL & 201-AF is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Rating Seal applies to Air Performance and Air Leakage ratings.

12x12 Pressure Drop			
Face Velocity		Pressure Drop	
fpm	(m/s)	inches w.g.	(Pa)
591	3.01	0.034	8.47
800	4.08	0.073	18.18
1207	6.16	0.168	41.85
1611	8.22	0.302	75.22
2024	10.32	0.487	121.30

Pressure drop test per AMCA Standard 500-D, Figure 5.3.

48x12 Pressure Drop			
Face Velocity		Pressure Drop	
fpm	(m/s)	inches w.g.	(Pa)
398	2.03	0.008	1.99
801	4.09	0.036	8.97
1193	6.08	0.077	19.18
1596	8.14	0.135	33.63
1998	10.19	0.216	53.80

Pressure drop test per AMCA Standard 500-D, Figure 5.3.

24x24 Pressure Drop			
Face Velocity		Pressure Drop	
fpm	(m/s)	inches w.g.	(Pa)
599	3.05	0.012	2.99
800	4.08	0.021	5.23
1203	6.14	0.047	11.71
1601	8.17	0.084	20.92
2004	10.22	0.129	32.13

Pressure drop test per AMCA Standard 500-D, Figure 5.3.

36x36 Pressure Drop			
Face Velocity		Pressure Drop	
fpm	(m/s)	inches w.g.	(Pa)
595	3.03	0.005	1.25
792	4.04	0.011	2.74
1193	6.08	0.030	7.47
1590	8.11	0.050	12.45
1994	10.17	0.084	20.92

Pressure drop test per AMCA Standard 500-D, Figure 5.3.

12x48 Pressure Drop			
Face Velocity		Pressure Drop	
fpm	(m/s)	inches w.g.	(Pa)
397	2.02	0.001	0.25
801	4.09	0.012	2.99
1193	6.08	0.030	7.47
1596	8.14	0.052	12.95
2000	10.20	0.087	21.67

Pressure drop test per AMCA Standard 500-D, Figure 5.3.

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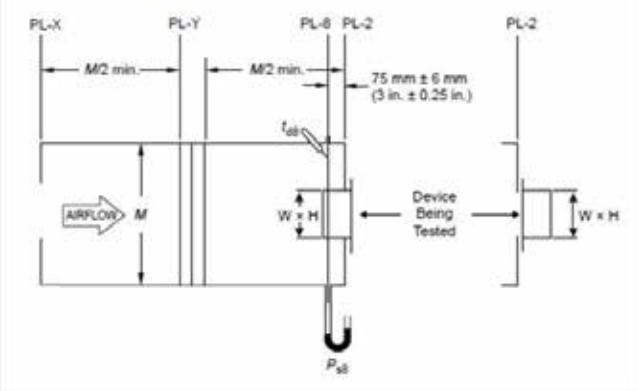
Represented by:

Model TB-200-AL & TB-201-AL Thermal Broken Damper
Performance Data Flange Face Mated

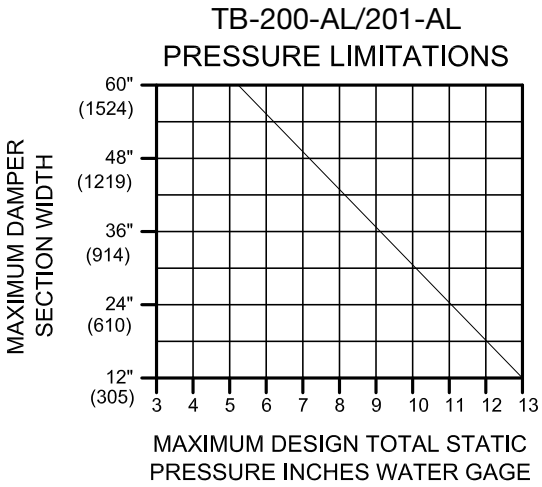
AMCA Standards

Pressure Class	Leakage, ft³/min /ft²			
	Required Rating		Extended Ranges (optional)	
	1"	4"	8"	12"
1A	3	n/a	n/a	n/a
1	4	8	11	14
2	10	20	28	35
3	40	80	112	140

All data corrected to represent standard air at a density of 0.075 lbs/ft³



AMCA Standard 500-D (leakage), figure 5.4 Alternate.



Leakage Performance

Imperial Units (TB-155, Forward Flow)

Damper Width X Height	1 in. w.g.	4 in. w.g.	8 in. w.g.	*Torque (per sq. ft.)
12" X 48"	Class 1A	Class 1	Class 1	16.5 lbs-in
36" X 36"	Class 1A	Class 1	Class 1	13.3 lbs-in
60" X 36"	Class 1A	Class 1	Class 2	9.6 lbs-in

*Torque applied to close and seat damper in during the test.

Imperial Units (TB-155, Reverse Flow)

Damper Width X Height	1 in. w.g.	4 in. w.g.	8 in. w.g.	*Torque (per sq. ft.)
12" X 48"	Class 1A	Class 1	Class 1	16.5 lbs-in
36" X 36"	Class 1A	Class 1	Class 1	13.3 lbs-in
60" X 36"	Class 1A	Class 1	Class 1	9.6 lbs-in

*Torque applied to close and seat damper in during the test.

Metric Units (TB-155, Forward Flow)

Damper Width X Height	0.25 kPa	1.0 kPa	2.0 kPa	*Torque (per sq. m.)
305 X 1220	Class 1A	Class 1	Class 1	20.2 N-m
915 X 915	Class 1A	Class 1	Class 1	16.1 N-m
1524 X 915	Class 1A	Class 1	Class 2	11.7 N-m

*Torque applied to close and seat damper in during the test.

Metric Units (TB-155, Reverse Flow)

Damper Width X Height	0.25 kPa	1.0 kPa	2.0 kPa	*Torque (per sq. m.)
305 X 1220	Class 1A	Class 1	Class 1	20.2 N-m
915 X 915	Class 1A	Class 1	Class 1	16.1 N-m
1524 X 915	Class 1A	Class 1	Class 1	11.7 N-m

*Torque applied to close and seat damper in during the test.

Air leakage is based on operation operation between 50° F to 104° F. All data corrected to represent air density of 1.201 kg/m³.

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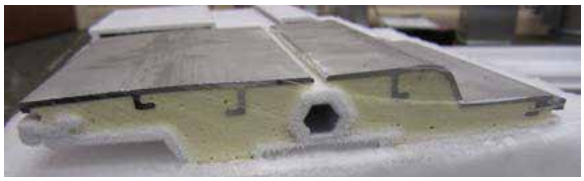
Model TB-200-AL & TB-201-AL Thermal Broken Damper Performance Data Flange Face Mated

Suggested Specifications
Furnish and install per plans and specifications dampers meeting the following specifications. Thermally broken blade and frame, MAT model TB-200-AL/201-AL, with leakage not to exceed 4cfm/sq. ft. at 1" w.g. and holding torque not to exceed 5" inch-lbs/sq. ft. on opposed blade dampers and 7" inch-lbs/sq. ft. on parallel blade dampers. Frame shall be .125" extruded aluminum thermally broken on all four sides with dual polyurethane resin gaps. External sides of frame shall be insulated with polystyrene. Airfoil blade shall consist of 6063T5 extruded aluminum and silicone blade gasket mechanically locked within an internal slot within the extrusion. Blades to be insulated with polyurethane foam. Jamb seals consist of a special silicone gasket inserted in the mechanically locked frame. Bearings are composed of a celcon inner bearing fixed within 7/16" (11.11mm) aluminum hexagon blade pin, rotating within a polycarbonate outer bearing inserted in the frame, resulting in no metal-to-metal or metal-to-plastic contact. Linkage is installed in the outer frame jamb and constructed of aluminum and corrosion resistant zinc plated steel with cup paint Trunnions screws for a slip proof grip. Damper is designed for operation in temperatures ranging between -40°F (-4.4°C) and 200°F (93°C). Dampers are to be constructed to size without blanking off. Damper shall have condensation resistance factors (CRF) of 60 for the frame & 40 for the blade.

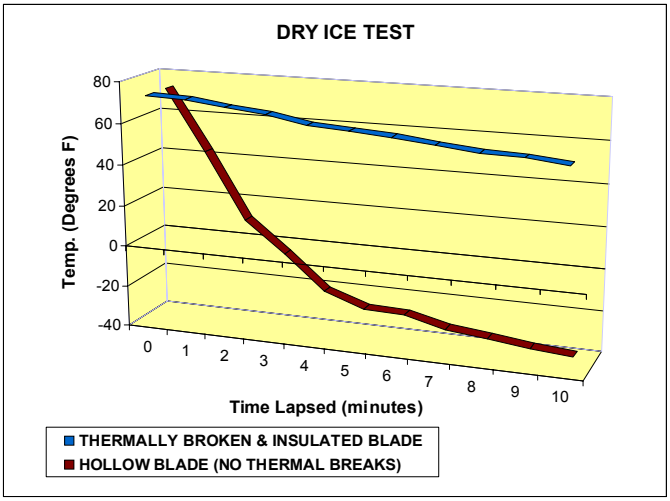
*AAMA 1503-09 TEST RESULTS
(*Test method for Thermal Transmittance and Condensation Resistance of Glazed Wall Systems)

Test conducted at Architectural Laboratories (ATI)	Condensation Resistance Factor (CRF)
Frame (thermally broken)	60
Blade (insulated and thermally broken)	48



Thermally Broken & Insulated Blade

Hollow Blade (No Thermal Breaks)



Test Notes:
1. Both specimens began testing at the ambient temperature of 73° F.
2. Temperature measurements were taken from the side opposite the ice.
3. For best thermal performance, the broken side of the damper blades should always face the cold.

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