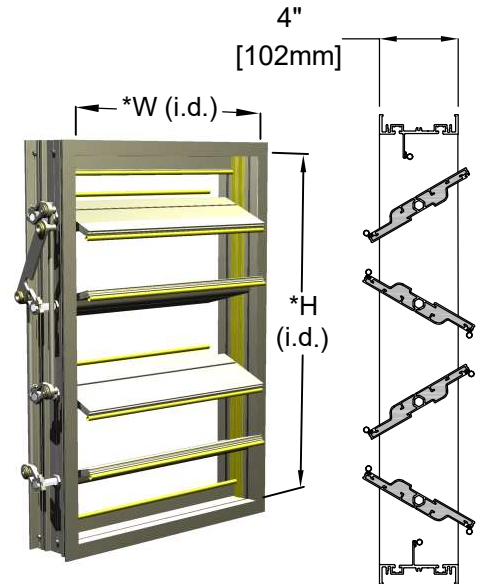


**THERMAL BROKEN DAMPER**  
 Flange Face Mated

**Design:**

This damper is designed to eliminate transfer of high heat or low cold penetration and reduces condensation. The TB-155, 156 is compliant with IECC with a leakage rating of 3 cfm / ft.<sup>2</sup> at 1" [25mm] w.g. of static pressure at a temperature of -40° F [-40°C]. (55 cmh/m<sup>2</sup> at 0.25 kpa or less) and 6 cfm / ft.<sup>2</sup> at 4" [102mm] w.g. of static pressure at a temperature of -40°F [-40°C] (110 cmh/m<sup>2</sup> at 1 kpa)

Standard Construction:		Optional:
<b>Frame:</b>	Thermally Broken, 0.125" [3.18mm] Extruded alum.	-----
<b>Blade:</b>	Heavy duty double construction extruded aluminum	-----
<b>**Blade Type:</b>	Airfoil, thermally broken & insulated	-----
<b>Linkage:</b>	Aluminum and corrosion resistant zinc plated steel	Stainless Steel <small>(in lieu of zinc plated steel)</small>
<b>Axle Bearing:</b>	Celcon inner bearing fixed to an alum. hexagon blade pin rotating within polycarbonate outer bearing inserted in frame	-----
<b>Axle Material:</b>	$\frac{7}{16}$ " [11mm] Zinc Plated Steel	Stainless Steel
<b>Blade &amp; Jamb Seals:</b>	Silicone	-----



\*Sizes are exact inside dimensions (I.D.)  
 Minimum Size: 6"w x 7"h [152mm x 179mm](single blade)  
 Maximum Size: 60"w x 72"h [1524mm x 1828mm] (single section)

\*\*Blade has an insulating factor of R3.95 and a temperature index of 57

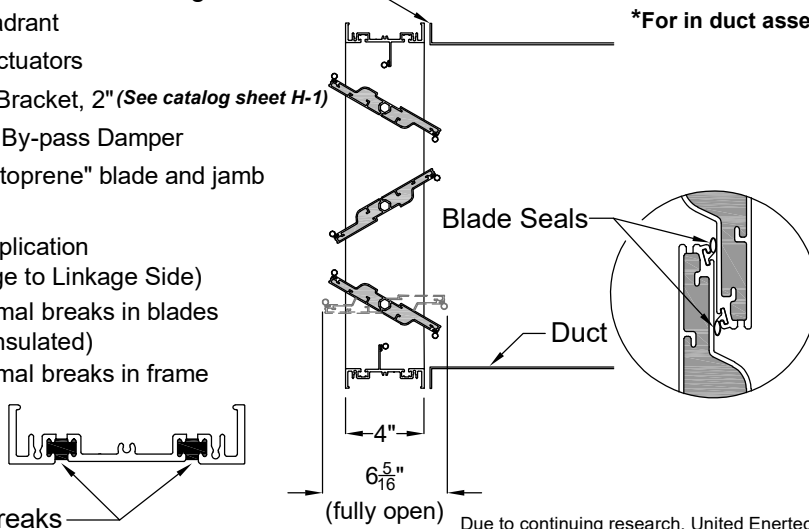
Temperature range: -40°F to 200°F (-40°C to 93.3°C)

Maximum 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
- Stand Off Bracket, 2" (See catalog sheet H-1)
- Face and By-pass Damper
- TPV "Santoprene" blade and jamb gasket
- Ducted Application (Add Flange to Linkage Side)
- Omit Thermal breaks in blades (remains insulated)
- Omit Thermal breaks in frame

Flange Mounted



\*For in duct assemblies, see in duct sizing guide (page A-12g)

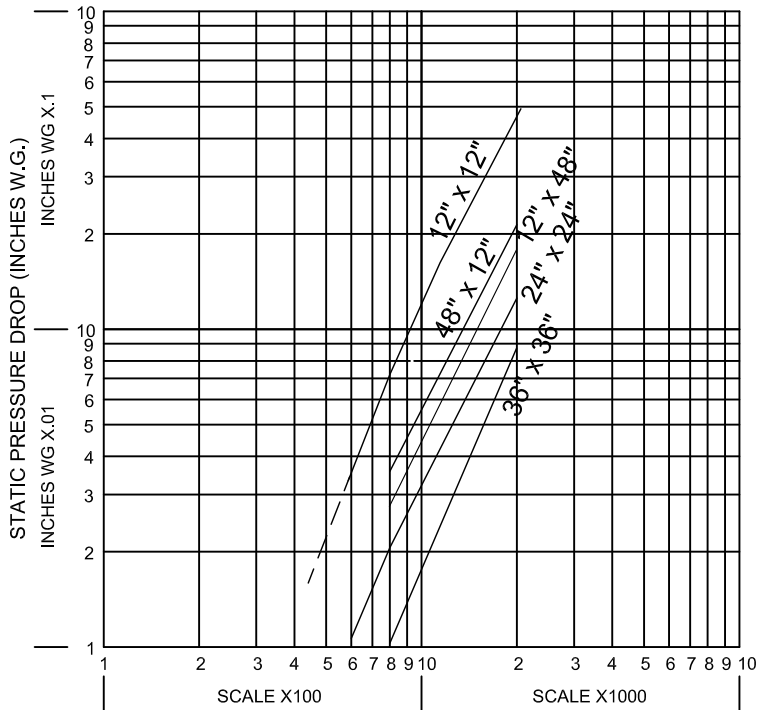
Thermal Breaks

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

Job Name:	<input type="checkbox"/> <b>MODEL TB-155 (Opposed)</b>		
Location:	<input type="checkbox"/> <b>MODEL TB-156 (Parallel)</b>		
Architect:	DRAWN BY:	DATE:	REV. DATE:
Engineer:	CLJ	February 2011	July 2020
Contractor:	REV. NO.	APPROVED BY:	DWG. NO.:
	9	BGT	<b>A-12e</b>

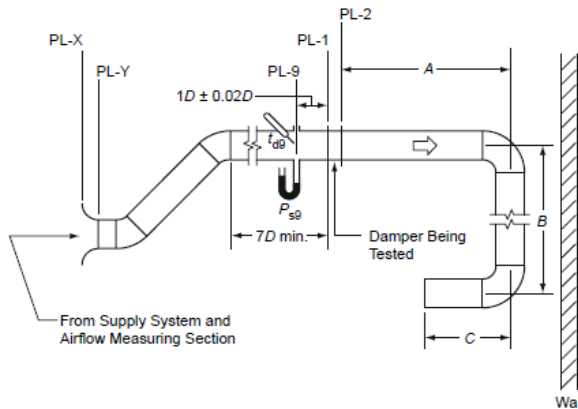
# MODEL TB-155,156 PERFORMANCE DATA

## AIR FLOW RESISTANCE



TB-155,156 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



United Enertech certifies that the TB-155 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.



United Enertech certifies that the TB-156 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 ratings only.

### 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)
390	1.99	0.005	1.25
798	4.07	0.027	6.73
1185	6.04	0.059	14.70
1586	8.09	0.105	26.15
2008	10.24	0.177	44.09

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

# MODEL TB-155 PERFORMANCE DATA (continued)

## 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 1	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 1	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 1	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 1	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

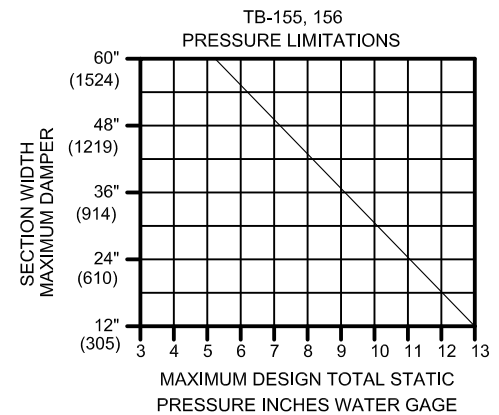
\*Torque applied to close and seat damper in during the test.

United Enertech certifies that the TB-155 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.

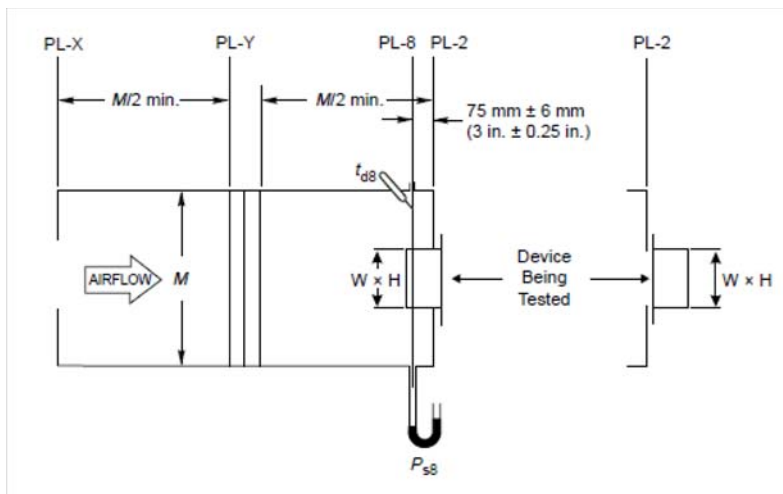


Pressure Class	Leakage, ft <sup>3</sup> /min/ft <sup>2</sup>			
	Required Rating	Extended Ranges (optional)		
	1"	4"	8"	12"
1A	3	n/a	n/a	n/a
1	4	8	11	14
2	10	20	28	35
3	40	80	112	140

All data corrected to represent standard air at a density of 0.075 lbs/ft<sup>3</sup>

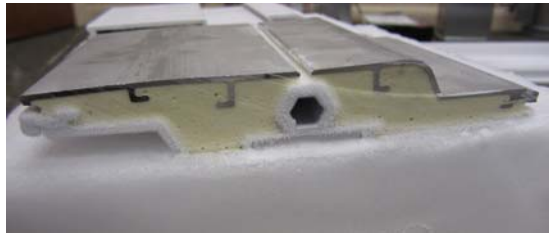


Air leakage is based on operation between 50° F to 104° F. All data corrected to represent air density of 0.075 lbs/ft<sup>3</sup>. Tested per AMCA Standard 500-D (leakage), figure 5.4 Alternate.



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

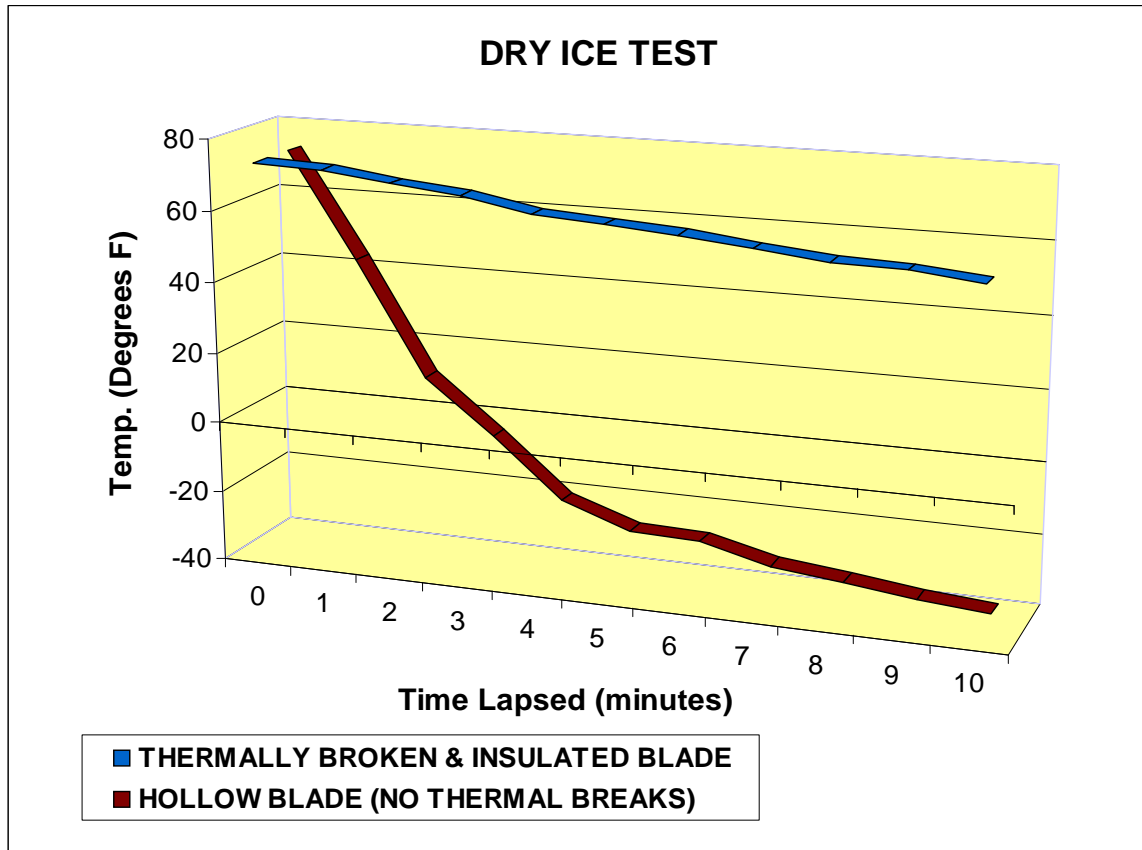
# MODEL TB-155 PERFORMANCE DATA (continued)



*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.

**\*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

## SUGGESTED SPECIFICATION

Furnish and install per plans and specifications dampers meeting the following specifications. Thermally broken blade and frame, United Enertech model TB-155 with leakage not to exceed 4cfm/sq.ft. at 4"w.g. and holding torque not to exceed 16.5 inch-lbs/sq.ft. Frame shall be .125" extruded aluminum thermally broken on all four sides with dual polyurethane resin gaps. 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. Damper manufacturer to provide catalog data, including pressure, velocity leakage and temperature limitations. Performance data shall be developed in accordance with the latest edition of AMCA Standard 500-D.