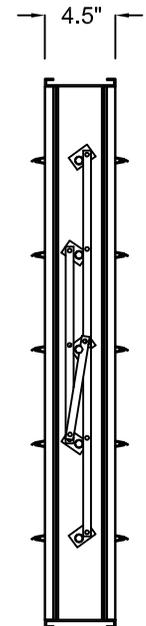
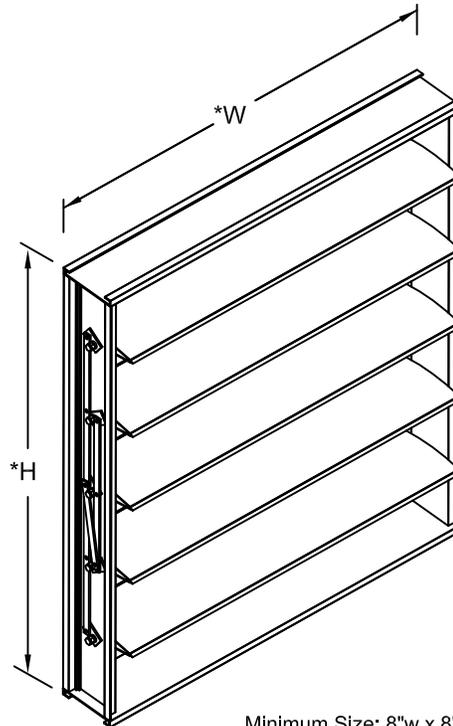


Suggested Specifications:

Furnish and install at location shown on drawing or in accordance with schedules dampers meeting the following specifications: Rectangular damper shall have 3/8" thick nose hollow airfoil blade and .081 extruded aluminum top and bottom frames. Damper to have thrust bushings and meet the low pressure drop and low leakage equal to United Enertech **MODEL CD-150, 151**. Damper bears the AMCA seal for air performance and leakage. Manufacturer must have a series of six dampers certified.

Standard Construction:

- Frame:** .081 Extruded Aluminum (6063-T5)
- Blade:** Hollow Airfoil with .375" thick end nose (6063-T5) Extruded Aluminum
- Extended shaft:** 1/2" diameter
- Bearing:** Bronze Oilite
- Linkage:** Concealed in frame
- Pivot axels:** Zinc with Thrust Bushings
- Blade seals:** Removable TPV (250° F)
- Jamb seals:** Stainless Steel (compression)



*Undersized 1/4"

Minimum Size: 8"w x 8"h
 Maximum Size: 60"w x 72"h (single section)
 Maximum multi-section: Unlimited

Options:

- .125 Extruded Aluminum Box Frame
- .125 Extruded Aluminum Flanged Frame
- Insulated (Foam-filled blades)
- Header Plates (End Flange)
- Hand Quadrant
- Factory Actuators (See catalog sheet H-1)
- Stand Off Bracket, 2"
- Face and By-pass Damper
- Chain Operate
- Position Switch
- Air Dry Heresite Coated
- Powder Coated - Epoxy



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

Job Name:	<input type="checkbox"/> MODEL CD-150 (Opposed) <input type="checkbox"/> MODEL CD-151 (Parallel)		
Location:			
Architect:			
Engineer:	DRAWN BY: CLJ	DATE: June 2003	REV. DATE: CD-150 October 2014
Contractor:	REV. NO. 22	APPROVED BY: BGT	DWG. NO.: A-9

MODEL CD-150, CD-151 PERFORMANCE DATA

Imperial Units (CD-150 Opposed Blade, Forward Flow)

Damper Width X Height	1 in. w.g.	4 in. w.g.	8 in. w.g.	*Torque (per sq. ft.)
36" X 36"	Class 1A	Class 1	Class 1	10 lbs-in
12" X 48"	Class 1	Class 1	Class 1	17.5 lbs-in
48" X 36"	Class 1A	Class 1	Class 2	10 lbs-in
60" X 36"	Class 1A	Class 2		10 lbs-in

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

Imperial Units (CD-150 Opposed Blade, Reverse Flow)

Damper Width X Height	1 in. w.g.	4 in. w.g.	8 in. w.g.	*Torque (per sq. ft.)
36" X 36"	Class 1A	Class 1	Class 1	10 lbs-in
12" X 48"	Class 1A	Class 1	Class 1	17.5 lbs-in
48" X 36"	Class 1A	Class 1	Class 2	10 lbs-in
60" X 36"	Class 1A	Class 1		10 lbs-in

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

Imperial Units (CD-151 Parallel Blade, Forward Flow)

Damper Width X Height	1 in. w.g.	4 in. w.g.	8 in. w.g.	*Torque (per sq. ft.)
36" X 36"	Class 1	Class 1	Class 1	32.5 lbs-in
12" X 48"	Class 1	Class 1	Class 1	32.5 lbs-in
48" X 36"	Class 1A	Class 1	Class 2	32.5 lbs-in
60" X 36"	Class 1A	Class 2		16 lbs-in

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

Imperial Units (CD-151 Parallel Blade, Reverse Flow)

Damper Width X Height	1 in. w.g.	4 in. w.g.	8 in. w.g.	*Torque (per sq. ft.)
36" X 36"	Class 1A	Class 1	Class 1	32.5 lbs-in
12" X 48"	Class 1	Class 1	Class 1	32.5 lbs-in
48" X 36"	Class 1A	Class 1	Class 2	32.5 lbs-in
60" X 36"	Class 2	Class 2		16 lbs-in

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

United Enertech certifies that the CD-150 and CD-151 are 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.



Air leakage is based on operation between 50° F to 104° F. All data corrected to represent air density of 0.075 lbs/ft³.

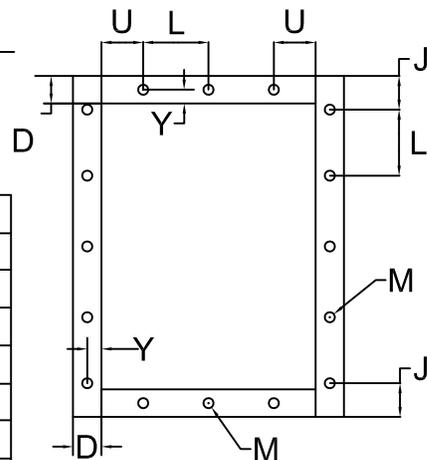
Pressure Class	Leakage, ft ³ /min /ft ²			
	Required Rating	Extended Ranges (optional)		
1A	3	n/a	n/a	n/a
1	4	8	11	14
2	10	20	28	35
3	40	80	112	140

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

FRAME CONSTRUCTION OPTIONS

Flange (D Dim): Standard- 2" Bolt holes: (Standard does not include bolt holes)
 Optional- 1-1/2"- 4" Optional- United Enertech recommended standard pattern.
 Web (C Dim): Standard- 8" 7/16" dia. holes (M dimension) - Spaced 6" C-C (L dimension)
 Optional- 8" - 12" Optional- Customer may specify within limits shown in table below.

Dim.	Standard (Min./Max)	Description
J	(D/2 min.)	First/Last Space in Jamb
F	(1 min.)	No. of holes in Jamb
L	6" (2"/12")	Hole Spacing
M	7/16" (1/4"/1 1/16")	Mounting hole Diameter
U	(3/4" min.)	First/Last Space in Head/Sill
V	(1 min.)	No. of holes in Head/Sill
Y	D/2M (3/4"/D-3/4")	Centerline of bolt hole from inside edge of frame



MODEL CD-150, CD-151 PERFORMANCE DATA

Metric Units (CD-150 Opposed Blade, Forward Flow)

Damper Width X Height (mm)	0.25 kPa	1.0 kPa	2.0 kPa	*Torque (per sq. m.)
915 X 915	Class 1A	Class 1	Class 1	12 N-m
305 X 1220	Class 1	Class 1	Class 1	22 N-m
1220 X 915	Class 1A	Class 1	Class 2	12 N-m
1524 X 915	Class 1A	Class 2		12 N-m

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

Metric Units (CD-150 Opposed Blade, Reverse Flow)

Damper Width X Height	0.25 kPa	1.0 kPa	2.0 kPa	*Torque (per sq. m.)
915 X 915	Class 1A	Class 1	Class 1	12 N-m
305 X 1220	Class 1A	Class 1	Class 1	22 N-m
1220 X 915	Class 1A	Class 1	Class 2	12 N-m
1524 X 915	Class 1A	Class 1		12 N-m

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

Metric Units (CD-151 Parallel Blade, Forward Flow)

Damper Width X Height	0.25 kPa	1.0 kPa	2.0 kPa	*Torque (per sq. m.)
915 X 915	Class 1	Class 1	Class 1	40 N-m
305 X 1220	Class 1	Class 1	Class 1	40 N-m
1220 X 915	Class 1A	Class 1	Class 2	40 N-m
1524 X 915	Class 1A	Class 2		20 N-m

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

Metric Units (CD-151 Parallel Blade, Reverse Flow)

Damper Width X Height	0.25 kPa	1.0 kPa	2.0 kPa	*Torque (per sq. m.)
915 X 915	Class 1A	Class 1	Class 1	40 N-m
305 X 1220	Class 1	Class 1	Class 1	40 N-m
1220 X 915	Class 1A	Class 1	Class 2	40 N-m
1524 X 915	Class 2	Class 2		20 N-m

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

United Enertech certifies that the CD-150 and CD-151 are 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.



Air leakage is based on operation between 50° F to 104° F. All data corrected to represent air density of 0.075 lbs/ft³.

Pressure Class	Leakage, L / s / m ²			
	Required Rating	Extended Ranges (optional)		
	0.25 kPa	1.0 kPa	2.0 kPa	3.0 kPa
1A	15.2	n/a	n/a	n/a
1	20	41	56	71
2	51	102	142	178
3	203	406	569	711

All data corrected to represent standard air at a density of 1.2 kg/m³

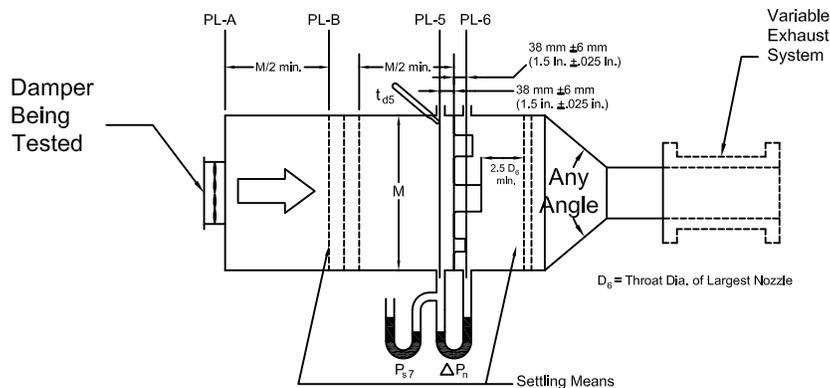
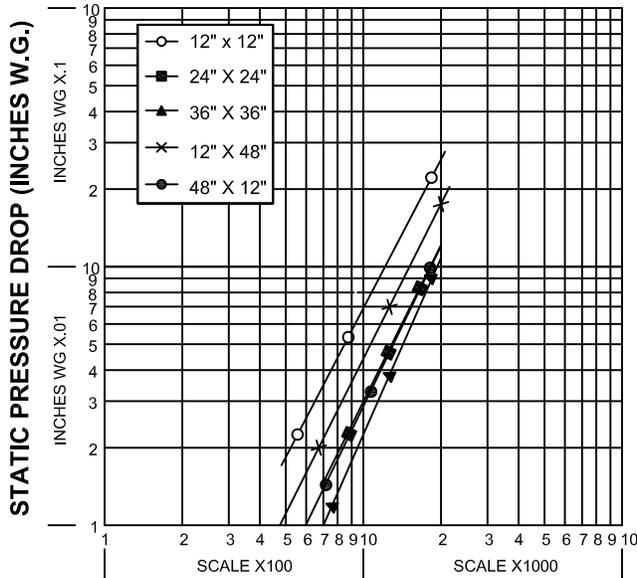


Figure 6.3- Airflow Rate Measurement Setup- Multiple Nozzle Chamber on Fan Inlet

MODEL CD-150, 151 PERFORMANCE DATA

PRESSURE DROP



DUCT/FACE AREA VELOCITY (FT/MIN)

Based on STANDARD AIR- .075 lb. per cubic foot.

CD-150,151 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.



United Enertech certifies that the CD-150 and CD-151 are 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.

12" x 12" (305mm x 305mm)

Face Velocity ft/min (m/s)	Pressure Drop in. w.g. (Pa)
1000 (5.08)	0.07 (17)
1500 (7.62)	0.16 (39)
2000 (10.16)	0.28 (69)

24" x 24" (610mm x 610mm)

Face Velocity ft/min (m/s)	Pressure Drop in. w.g. (Pa)
1000 (5.08)	0.03 (8)
1500 (7.62)	0.07 (18)
2000 (10.16)	0.13 (32)

48" x 12" (1219mm x 305mm)

Face Velocity ft/min (m/s)	Pressure Drop in. w.g. (Pa)
1000 (5.08)	0.03 (8)
1500 (7.62)	0.07 (17)
2000 (10.16)	0.12 (31)

12" x 48" (305mm x 1219mm)

Face Velocity ft/min (m/s)	Pressure Drop in. w.g. (Pa)
1000 (5.08)	0.05 (12)
1500 (7.62)	0.09 (22)
2000 (10.16)	0.18 (45)

36" x 36" (914mm x 914mm)

Face Velocity ft/min (m/s)	Pressure Drop in. w.g. (Pa)
1000 (5.08)	0.03 (7)
1500 (7.62)	0.06 (15)
2000 (10.16)	0.11 (27)

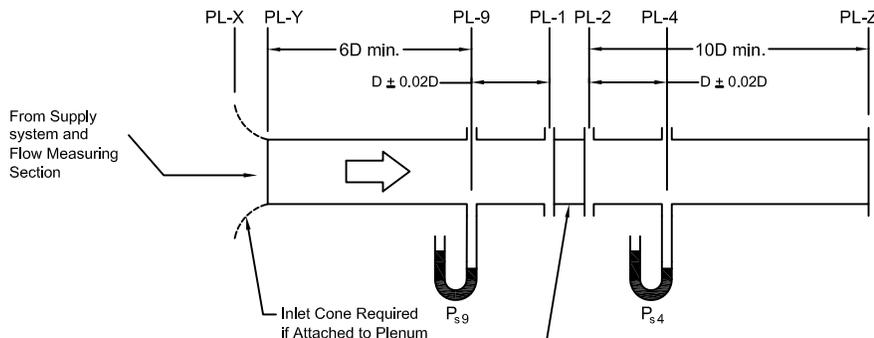
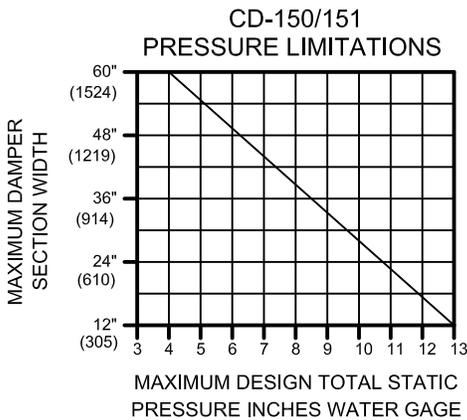


Figure 5.3- Test Device Setup with Inlet and Outlet Ducts