(ENGINEERS)

SUBMITTAL DATA

CONTROL DAMPERS
Steel Airfoil Blade
Class I thru III

Suggested Specifications:

Furnish and install at location shown on drawing or in accordance with schedules dampers meeting the following specifications: Rectangular damper shall have double thick, galvanized steel (equivalent to 14 gauge) blades with galvanized steel rollformed frame. Damper to meet the low pressure drop and low leakage equal to United Enertech Model CD-160, 161.

Standard Construction:

Frame: Rollformed Galvanized Steel

Blade: 5"-7" wide galvanized steel airfoil
(double skin construction of 14 ga equivalent thickness)

Extended shaft: 1/2" diameter

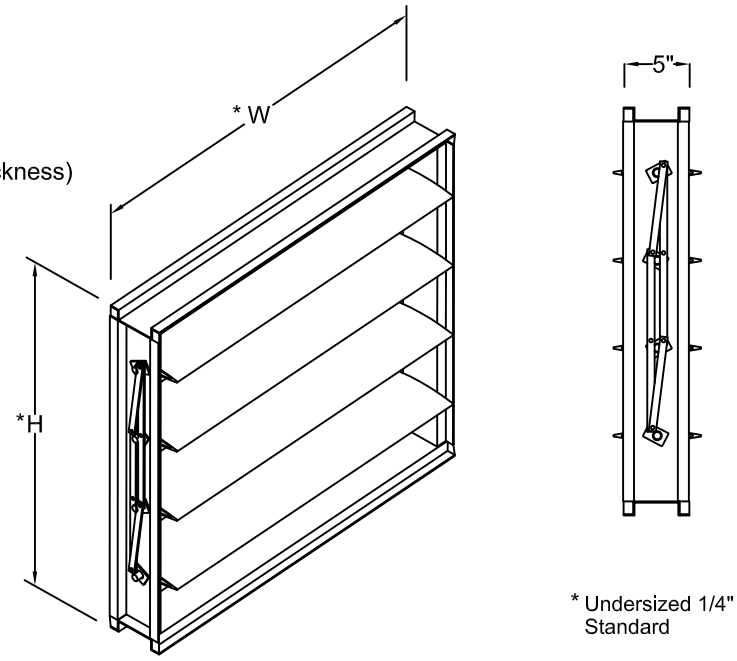
Bearing: Nylon

Linkage: Concealed in frame

Axles: Zinc plated

Blade seals: Silicone (400°F)

Jamb seals: Stainless steel (compression)



* Undersized 1/4" Standard

Options:

- ☐ Stand Off Bracket, 2"
- ☐ Header plates (end flange)
- ☐ Hand quadrant
- ☐ Chain operated
- ☐ Factory Installed Pneumatic or Electric Actuators (see cat. sheet K-1)
- ☐ Face and By-pass damper
- ☐ Position switch
- ☐ Stainless steel bearings
- ☐ Heresite coated (air dry)
- ☐ Epoxy coated (powder coated @ 415°)
- ☐ Bronze oilite bushing
- ☐ Flange frame (one side)
- ☐ Stainless Steel bushing
- ☐ Insulated (1/2" fiberglass)

Minimum Size: 8"w x 6"h
Maximum Size: 48w x 60"h (single section)
9" h and under - single blade
Maximum multi-section: unlimited

INDEPENDENT LABORATORY CERTIFIED air performance AMCA standard 500 Certaire Technical Services, LTD.

INDEPENDENT LABORATORY CERTIFIED air leakage AMCA standard 500 Certaire Technical Services, LTD.

Job Name:	☐ MODEL CD-160 (Opposed)		
Location:	☐ MODEL CD-161 (Parallel)		
Architect:	DRAWN BY: CLJ	DATE: 9-4-05	REV. DATE: 7-13-11
Engineer:	REV. NO. 18	APPROVED BY: BGT	DWG. NO.: **A-13**
Contractor:			

Imperial Units (Forward Flow)

Damper Width X Height	1 in. w.g. Class	4 in. w.g. Class	8 in. wg Class	*Torque (per sq. ft.)
12" x 12"	Class I	Class II	Class II	15 lbs-in
24" X 24"	Class I	Class I	Class I	12.59 lbs-in
36" X 36"	Class II	Class II	Class II	15.55 lbs-in
12" X 48"	Class III	Class III	Class II	12.59 lbs-in
48" X 12"	Class I	Class I	Class I	12.59 lbs-in
60" X 36"	Class II	Class II	Class II	15 lbs-in

Air leakage is based on operation between 50°F to 104°F. All data corrected to represent air density of 0.075 lbs/ft.^{3}

*Torque applied to hold damper in closed position

**Only 36" x 36" size is certified by Certaire Technical Services, LTD.

	Leakage, ft^3/min /ft^2			
	Required Rating		Extended Ranges (optional)	
Pressure / Class	1"	4"	8"	12"
I	4	8	11	14
II	10	20	28	35
III	40	80	112	140

All data corrected to represent standard air at a density of 0.075 lbs/ft.^{3}

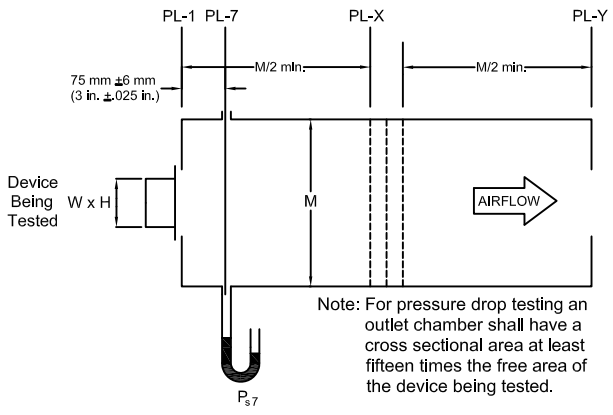


Figure 5.4- Test Device Setup with Outlet Chamber

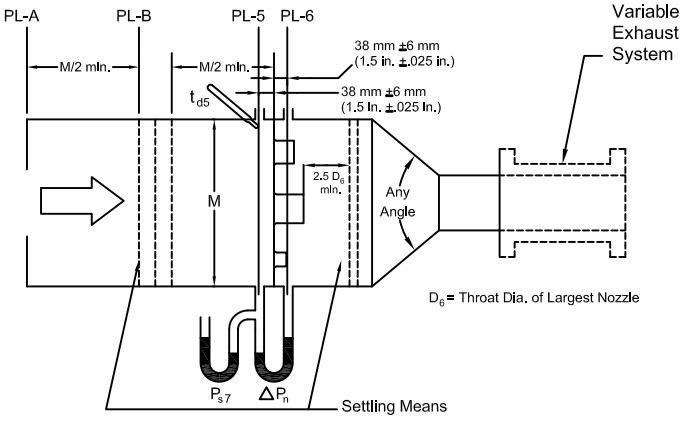


Figure 6.3- Airflow Rate Measurement Setup- Multiple Nozzle Chamber on Fan Inlet

Standard International Units (Forward Flow)

Damper Width X Height (mm)	250 Pa Class	1 KPa Class	2 KPa Class	*Torque
305 x 305	Class I	Class II	Class II	2,679 grams-cm
610 X 610	Class I	Class I	Class I	2,248 grams-cm
915 X 915	Class II	Class II	Class II	2,735 grams-cm
305 X 1220	Class III	Class III	Class II	2,248 grams-cm
1220 X 305	Class I	Class I	Class I	2,248 grams-cm
1525 X 915	Class II	Class II	Class II	2,679 grams-cm

Air leakage is based on operation between 10°C to 40°C. All data corrected to represent air density of 1.201 kg/m^3.

*Torque applied to hold damper in closed position
**Only 915 x 915 size is certified by Certaire Technical Services, LTD.

	Leakage, L/s /m^2			
	Required Rating		Extended Ranges (optional)	
Pressure / Class	0.25 kPa	1.0 kPa	2.0 kPa	3.0 kPa
I	20.3	40.6	55.9	71.1
II	50.8	102	142	178
III	203	406	569	711

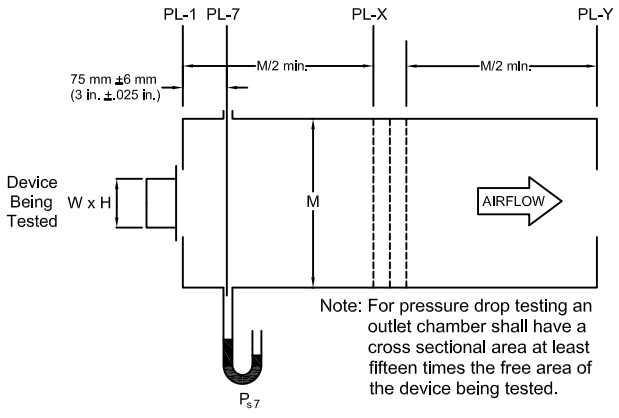


Figure 5.4- Test Device Setup with Outlet Chamber

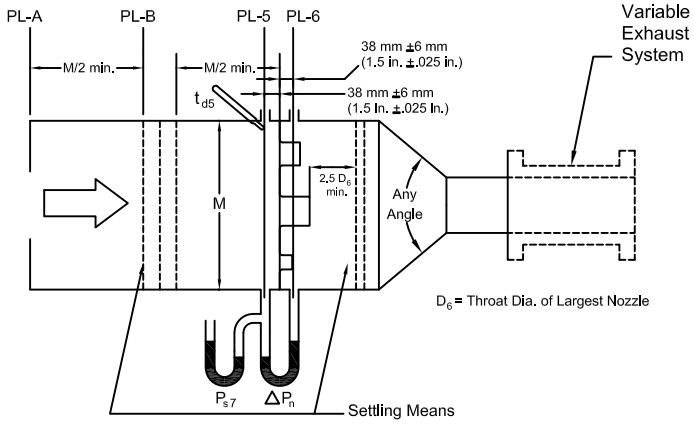
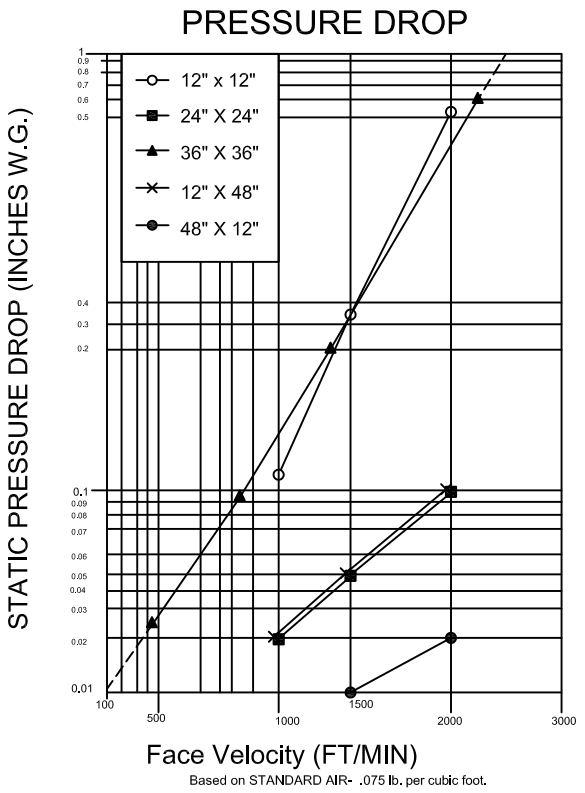
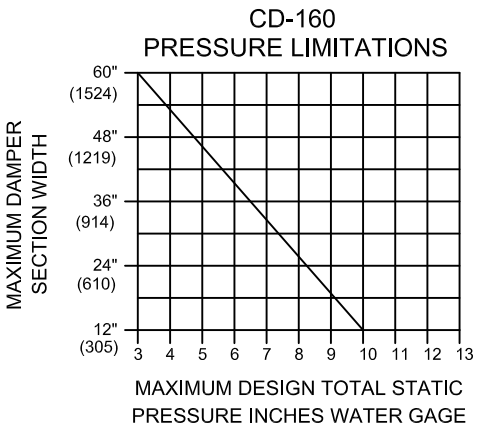


Figure 6.3- Airflow Rate Measurement Setup- Multiple Nozzle Chamber on Fan Inlet



CD-160,161 sizes: 12x12, 24x24, 48x12, 12x48, 36x36
(305x305, 610x610, 1219x305, 305x1219,914x914)

**Only 36" x 36" size is certified by Certaire Technical Services, LTD.



12 x 12

Face Velocity ft/min (m/s)	Pressure Drop in. w.g. (Pa)
1000 (5.08)	0.14 (35)
1500 (7.62)	0.32 (79)
2000 (10.16)	0.53 (132)

24 x 24

Face Velocity ft/min (m/s)	Pressure Drop in. w.g. (Pa)
1000 (5.08)	0.02 (5)
1500 (7.62)	0.05 (12)
2000 (10.16)	0.10 (25)

48 x 12

Face Velocity ft/min (m/s)	Pressure Drop in. w.g. (Pa)
1000 (5.08)	0.05 (12)
1500 (7.62)	0.13 (32)
2000 (10.16)	0.22 (55)

12 x 48

Face Velocity ft/min (m/s)	Pressure Drop in. w.g. (Pa)
1000 (5.08)	0.02 (5)
1500 (7.62)	0.05 (12)
2000 (10.16)	0.10 (25)

36 x 36

Face Velocity ft/min (m/s)	Pressure Drop in. w.g. (Pa)
1000 (5.08)	0.14 (35)
1500 (7.62)	0.35 (87)
2000 (10.16)	0.48 (120)

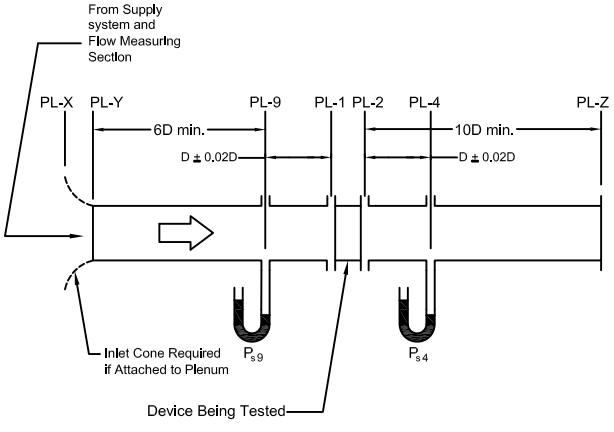


Figure 5.3- Test Device Setup with Inlet and Outlet Ducts

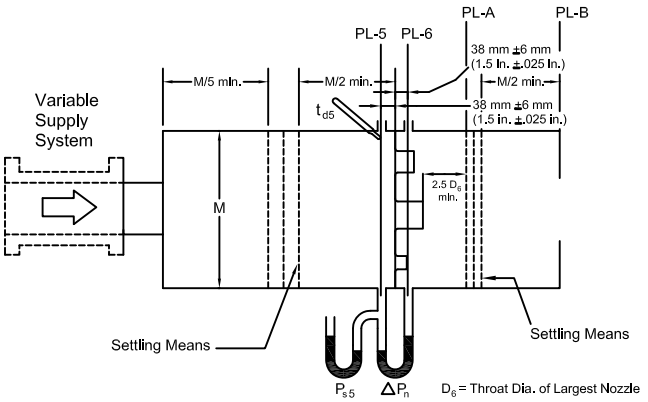


Figure 6.5- Airflow Rate Measurement Setup- Multiple Nozzle Chamber on Fan Outlet