

ECO VAV -Venturi Damper

APPLICATION

The CRD-Venturi Damper is a low leakage rated control damper used in low to high pressure and velocity system. The CRD- Venturi Damper is constructed with triple V-groove shape for velocities up to 3000 fpm (15.24 m/s) and 10 in w.g. (2.5 kPa). The CRD-VAV(ECO) may be installed vertically or horizontally position and a wide range of electric or handed actuators are available for these models.



Ratings

Pressure: 0 to 2.5 kPa (0 to 10 in. wg) pressure differential.

Velocity: 0 to 15.24 m/s (0 to 3000 fpm)

Leakage:

Class 1A @ 0.25 kPa (1 in. wg) for size 150mm (6")

Class 1 up to 2.5 kPa (10 in. wg) for size 150mm (6")

Class 3 @ 2.0kPa (8 in. wg) for size 350mm (14")



STANDARD CONSTRUCTION

FRAME : .

Stainless Steel with ETFE coating

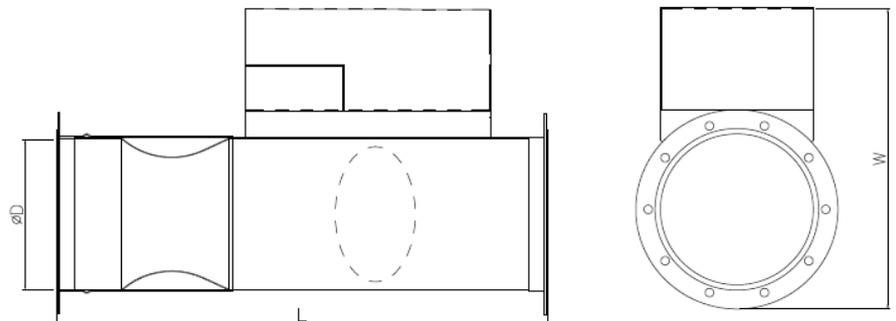
DAMPER SIZES

MINIMUM SIZE

D : 6" (150 mm).

MAXIMUM SIZE

D : 14" (350 mm)



Test setup : AMCA standard 610 , Figure 1

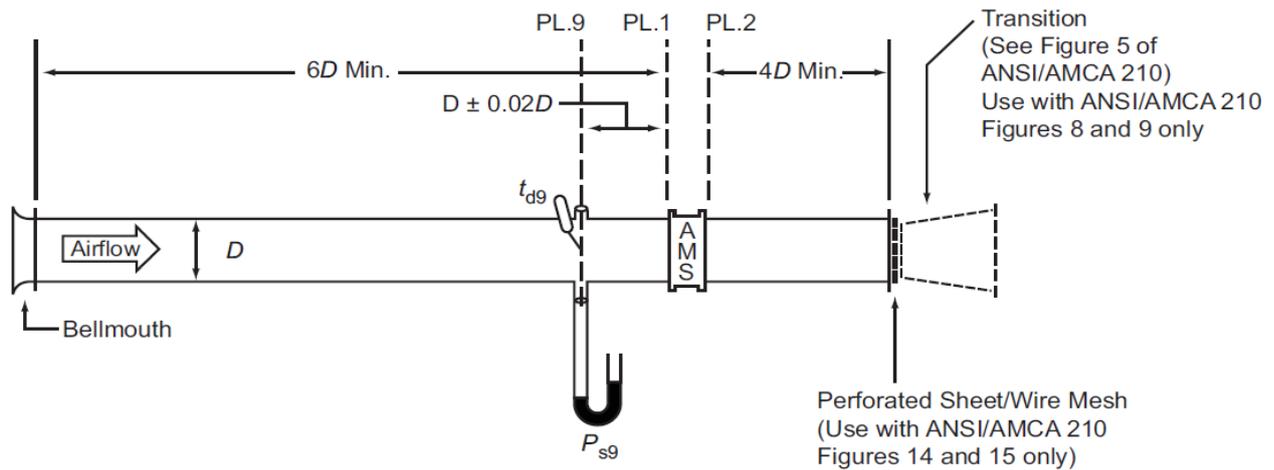


Figure 1
Straight Run 8



Chern Dar Enterprise co., Ltd. certifies the CRD- Venturi Damper Airflow Measurement station shown herein is licensed to bear the AMCA Certified Ratings Seal- Airflow Measurement Station Performance. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 611 and comply with the requirements of the AMCA Certified Ratings Program.



Test Results

Test No.	Reference Velocity (CMH)	PCI Indicated Velocity (CMH)	% Deviation
Test No. 33005-PC1 (CRD150)			
1	968	929	-4.08
2	875	846	-3.28
3	774	756	-1.95
4	662	655	-0.96
5	533	636	0.51
6	367	378	2.97
Test No. 33006-PC1 (CRD250)			
1	2297	2297	0.05
2	2081	2095	0.78
3	1854	1876	1.04
4	1598	1624	1.5
5	1303	1325	1.72
6	904	936	3.58
Test No. 33007-PC1 (CRD350)			
1	8942	8366	-6.47
2	8122	7693	-5.28
3	7952	7038	-3.66
4	6379	6289	-1.45
5	5338	5447	2.01
6	4129	4439	7.58

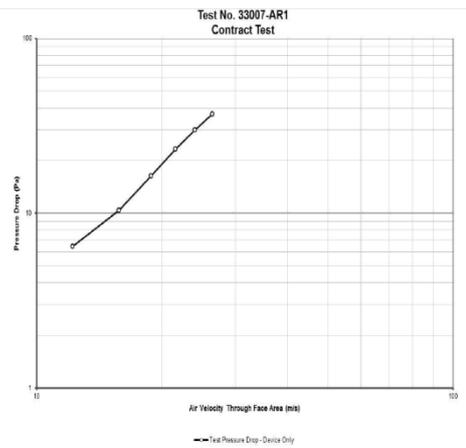
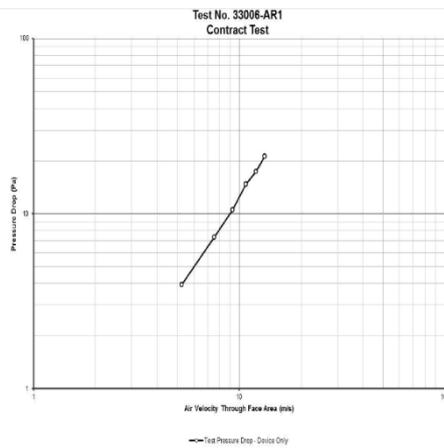
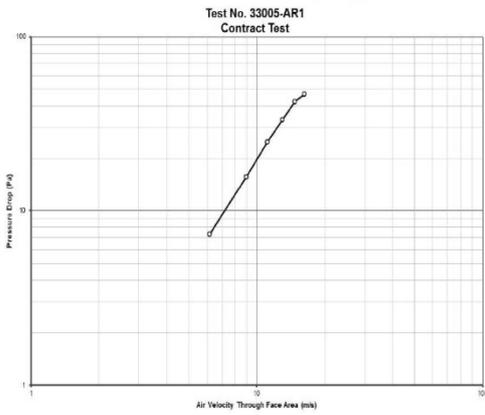
CRD150 - fig1	$Q = M \cdot K \cdot \text{SQRT}(P_{\text{ams}}(\text{Pa}))$	M = 0.55	K = 82.4(CMH)
CRD250 - fig1	$Q = M \cdot K \cdot \text{SQRT}(P_{\text{ams}}(\text{Pa}))$	M = 0.5	K = 265.165(CMH)
CRD350 - fig1	$Q = M \cdot K \cdot \text{SQRT}(P_{\text{ams}}(\text{Pa}))$	M = 0.95	K = 468(CMH)

“CRD venturi valve AMCA certified accuracy* of $\pm 7.58\%$ or better in the velocity range of

6.36 to 24.7m/s

Resistance to Airflow

CRD150		CRD250		CRD350	
Pressure Drop (Pa)	Velocity (m/s)	Pressure Drop (Pa)	Velocity (m/s)	Pressure Drop (Pa)	Velocity (m/s)
47	16.27	21	13.30	37	26.42
42	14.73	17	12.06	30	23.99
33	12.99	15	10.76	23	21.58
25	11.14	11	9.27	16	18.85
16	8.96	7	7.56	10	15.77
7	6.19	4	5.25	6	12.19



AIR LEAKAGE AND PERFORMANCE DATA



Chern Dar Enterprise co., Ltd. certifies that the CRD- Venturi Damper show herein 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 Ratings Seal applies to Air Leakage and Air Performance Ratings.

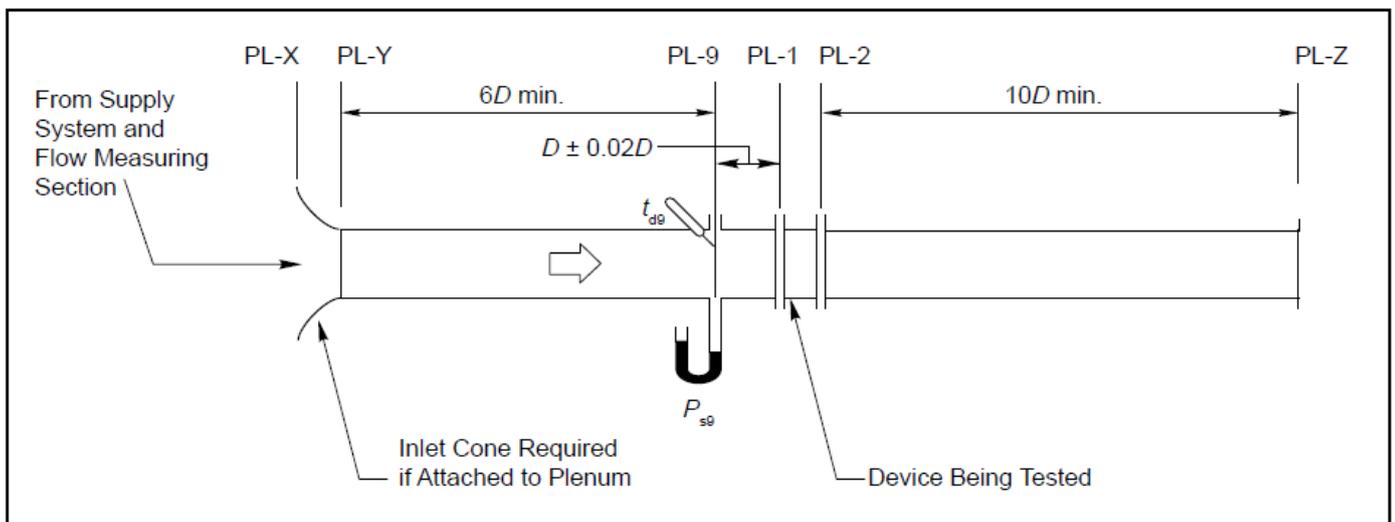
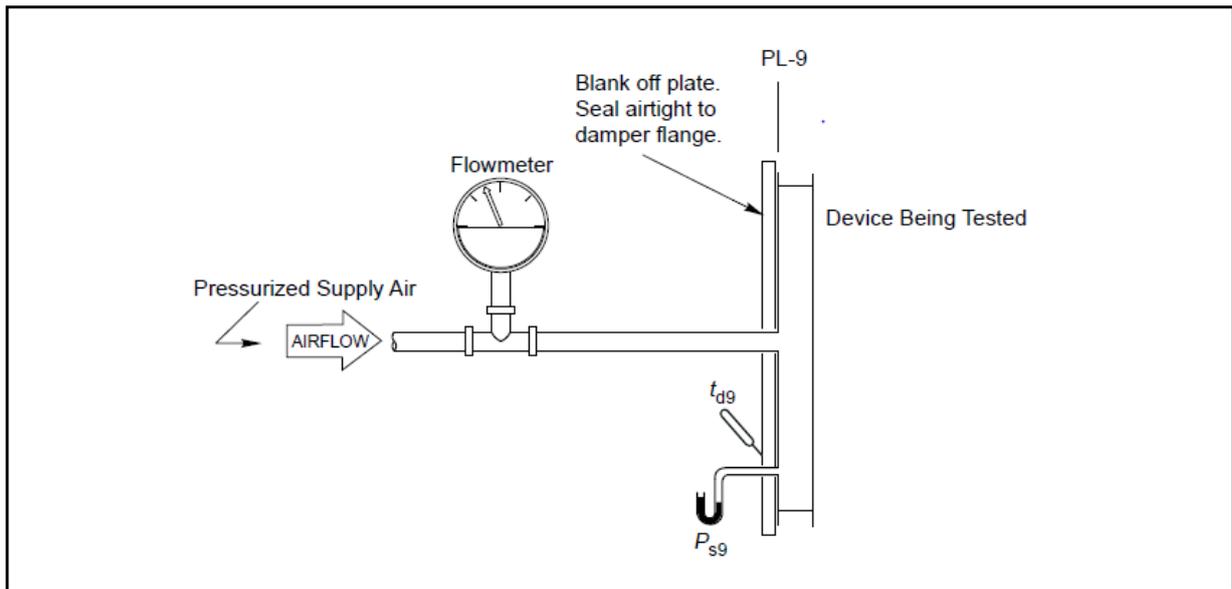


Figure 5.3 Test Device Setup with Inlet and Outlet Ducts

CRD150		CRD250		CRD350	
Velocity (m/s)	Pressure Drop (Pa)	Velocity (m/s)	Pressure Drop (Pa)	Velocity (m/s)	Pressure Drop (Pa)
11.69	67.3	11.7	48.8	11.64	25.3
9.71	53.6	9.72	35.6	9.71	17.4
7.73	36.2	7.76	22.7	7.75	11
5.81	21.5	5.83	12.3	5.81	6.5
3.82	10.0	3.88	5.4	3.87	3.2



Test Figure 5.6A
Test Damper Setup - Leakage Test with Damper under Positive Pressure

Venturi Leakage Class of Actual Test Results from Individual Sizes

Damper Size (in.)	Leakage Class				
	1 in. wg	4 in. wg	6 in. wg	8 in. wg	10 in. wg
150 mm(6 in.) Torque = 250 in-lb/ft ²	1A	I (1)	I (1)	I (1)	I (1)
350mm (14 in.) Torque = 57.5 in-lb/ft ²	1A	I (1)	I (1)	I(1)	N/A

Air Leakage testing conducted in accordance with ANSI/AMCA 500-D Figure 5.6A. Data are based on a torque of 250 in-lb/ft² (for 150mm size) and 57.5 in-lb/ ft² (for 350mm size) applied to close and seat the damper during the test. Air leakage is based on operation between 0°C - 49°C (32°F - 120°F)

Allowable Air Leakage to Achieve Classification

Pressure / Class	Leakage Class				
	1 in. wg	4 in. wg	6 in. wg	8 in. wg	10 in. wg
1A	3	N/A	N/A	N/A	N/A
I (1)	4	8	9.8	11	12.6
II (2)	10	20	24.5	28	31.6
III (3)	40	80	98	112	126.5