RUSKIN®

3900 Dr. Greaves Rd. • Kansas City, MO 64030 • (816) 761-7476 • FAX (816) 765-8955

CD30VG1 and CD30VG2 HEAVY DUTY CONTROL DAMPERS

STANDARD CONSTRUCTION

FRAME
3" x 1" x 12 gage (76 x 25 x 2.8) galvanized steel U-channel.

BLADES
16 (1.6) gage galvanized triple-V-groove, 8" (203) maximum width.

AXLES
CD30VG1 – 1/2" (13) diameter plated steel.
CD30VG2 – 3/4" (19) diameter plated steel.

BEARINGS
Stainless steel pressed into frame.

LINKAGE
Face linkage in airstream.

FINISH
Mill galvanized.

MAXIMUM TEMPERATURE
250°F (121°C) is standard. Damper can be supplied for temperatures between 250°F (121°C) and 400°F (204°C) by increasing clearance between blade ends and frame. Advise Ruskin of maximum operating temperature.

MINIMUM SIZE
Single blade, parallel action – 5"w x 5"h (127 x 127).
Two blade, parallel or opposed action – 8"w x 14"h (203 x 356).

MAXIMUM SIZE
Single section – 48"w x 96"h (1219 x 2438).
Multiple section assembly – Unlimited size.

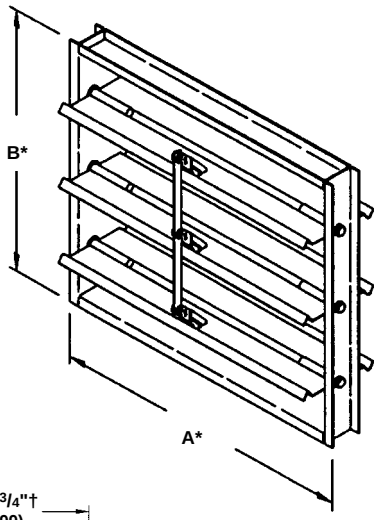
Dimensions in parenthesis ( ) indicate millimeters.

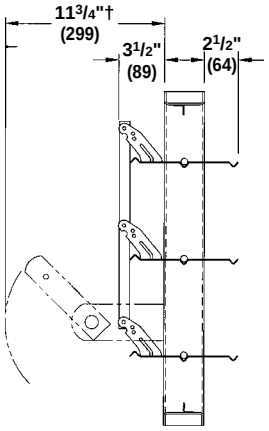
*Unit furnished approx. 1/4" (6) smaller than given "opening" dimensions.

VARIATIONS

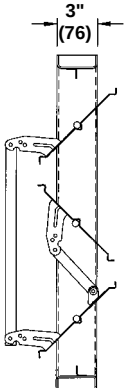
Additional variations to those listed in table are available. Contact Ruskin for pricing.

- Heavier/Higher Temperature Construction.
- Special Finishes.





PARALLEL BLADE (PB)



OPPOSED BLADE (OB)

†Jackshaft used only on multiple section dampers.

FRAME		BLADES		SEALS (Opt)		AXLES		ACCESSORIES (Opt.)	
3" x 1" x 12 (76 x 25 x 2.8) gage galvanized U-Channel		16 (1.6) gage galvanized		PVC Coated Woven Polyester Fabric Blade Seals 180°F (83°C)		Plated Steel		Hand Quadrant (HQ)	
3" x 1" x 14 (76 x 25 x 2) gage galvanized Hat Channel (Opt.)		14 (2) gage galvanized (Opt.)				304SS (Opt.)		Pneumatic Actuator	
3" x 1" x 12 (76 x 25 x 2.8) gage 304SS U-Channel (Opt.)		16 (1.6) gage 304SS (Opt.)		EPDM Blade Seals 250°F (121°C)		Aluminum (Opt.)		Electric Actuator	
3" x 1" x .125 (76 x 25 x 3.2) thick aluminum U-Channel (Opt.)		.080 (2) thick aluminum (Opt.)		Silicone Blade Seals 400°F (204°C)		Full Length (Opt.)			
				SS Jamb Seals		Bolted to Blade (Opt.)			

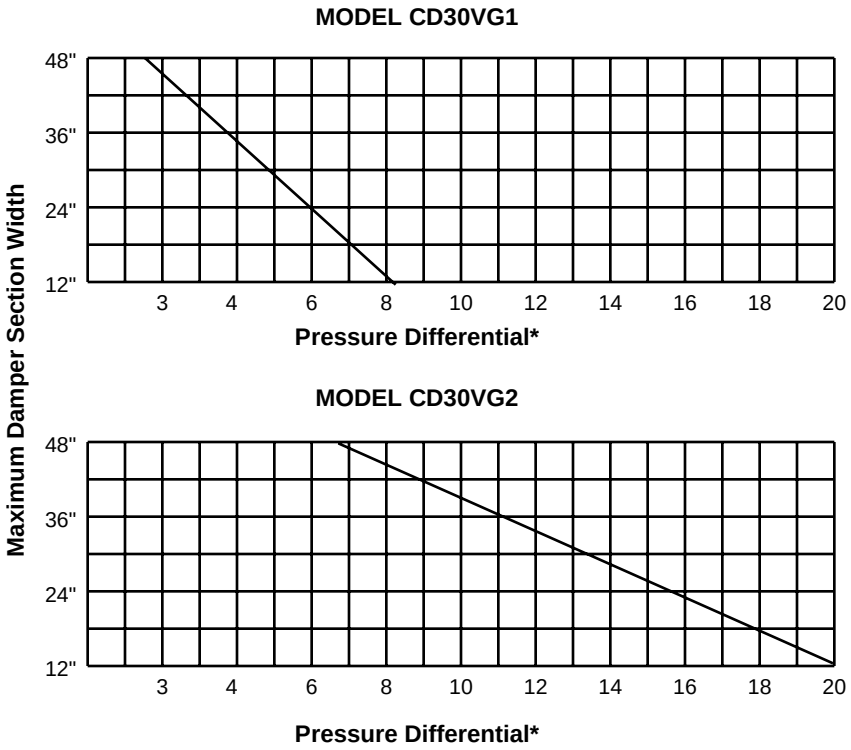
QTY.	MODEL	DIMENSIONS		BLADE ACTION		COMMENTS	TAG
		A	B	PB	OB		

JOB **LOCATION:**

CONTRACTOR

CD30VG1 and CD30VG2 PERFORMANCE DATA

CD30VG PRESSURE LIMITATIONS



The CD30VG1 may be used in systems with total pressure exceeding 2.8" w.g. by reducing the damper section width as indicated above. For example, maximum design total pressure of 6" w.g. would require a damper with maximum section width of 24".

The CD30VG2 may be used in systems with total pressure exceeding 6.8" w.g. by reducing the damper section width as indicated in the chart. A maximum design total pressure of 9" w.g., for example, would require a damper with maximum section width of 42".

***NOTE:** Damper should be specified for fan shut off pressure. Pressure differential is **not** system pressure but is the maximum pressure the damper will encounter with blades closed.

CD30VG1 PERFORMANCE DATA

Damper Width Inches (MM)	Maximum System Pressure	Maximum System Velocity	Leakage without Seals*		Leakage with Seals*	
			Percent of max. flow	CFM/ sq. ft.	Percent of max. flow	CFM/ sq. ft.
48" (1219)	2.8" w.g.	3000 fpm	1.06	32.0	0.14	4.3
36" (914)	3.8" w.g.	3000 fpm	1.06	32.0	0.14	4.3
24" (610)	6.0" w.g.	3000 fpm	1.33	40.0	0.29	8.6
12" (305)	8.2" w.g.	3000 fpm	2.00	60.0	0.43	13.0

Dampers may tolerate higher pressures and velocities than those listed here. Conservative ratings are presented intentionally in an effort to avoid misapplication. Consult Ruskin or your Ruskin representative when a damper is to be applied in conditions exceeding recommended maximums.

CD30VG2 PERFORMANCE DATA

Damper Width Inches (MM)	Maximum System Pressure	Maximum System Velocity	Leakage without Seals*		Leakage with Seals*	
			Percent of max. flow	CFM/ sq. ft.	Percent of max. flow	CFM/ sq. ft.
48" (1219)	6.8" w.g.	3500 fpm	0.91	32.0	0.12	4.3
36" (914)	11.0" w.g.	3500 fpm	0.91	32.0	0.12	4.3
24" (610)	15.5" w.g.	3500 fpm	1.14	40.0	0.25	8.6
12" (305)	20.0" w.g.	3500 fpm	1.71	60.0	0.37	13.0

*Leakage information based on pressure differential of 1" w.g. tested per AMCA Std. 500.

Consult Ruskin if higher velocities are required.

PRESSURE DROP

AREA FACTOR TABLE

Height Dim. B	Dimension A – Width In Inches											
	8" (203)	12" (305)	16" (406)	20" (508)	24" (610)	28" (711)	30" (762)	32" (813)	36" (914)	40" (1016)	44" (1118)	48" (1219)
9" (229)	4.57	2.75	1.96	1.52	1.25	1.06	.979	.968	.957	.903	.813	.738
10" (254)	3.84	2.28	1.62	1.27	1.04	.880	.813	.877	.774	.731	.657	.598
12" (305)	3.19	1.94	1.39	1.08	.880	.744	.690	.708	.625	.590	.531	.482
14" (356)	2.52	1.52	1.08	.842	.690	.564	.542	.542	.498	.440	.406	.369
16" (406)	2.08	1.25	.889	.690	.564	.477	.444	.438	.386	.365	.329	.299
20" (508)	1.62	.969	.696	.542	.443	.374	.347	.335	.295	.279	.251	.228
24" (610)	1.32	.799	.571	.444	.364	.309	.287	.271	.239	.225	.203	.185
28" (711)	1.08	.649	.464	.361	.296	.249	.232	.219	.193	.182	.164	.149
32" (813)	.950	.568	.406	.316	.259	.218	.202	.190	.168	.158	.142	.129
36" (914)	.842	.505	.361	.280	.229	.193	.180	.168	.147	.139	.125	.114
40" (1016)	.732	.439	.313	.244	.199	.168	.156	.145	.128	.121	.109	.099
44" (1118)	.663	.397	.284	.221	.180	.152	.142	.132	.117	.126	.098	.090
48" (1219)	.607	.364	.260	.203	.165	.140	.129	.120	.106	.100	.091	.082
54" (1372)	.502	.285	.209	.165	.144	.117	.108	.101	.091	.080	.073	.067
60" (1524)	.448	.255	.187	.148	.129	.104	.096	.090	.080	.072	.065	.059
66" (1676)	.406	.230	.170	.133	.116	.094	.087	.082	.072	.065	.059	.053
72" (1829)	.371	.211	.156	.122	.102	.086	.080	.075	.066	.059	.053	.048
78" (1981)	.365	.205	.152	.115	.100	.080	.075	.070	.062	.055	.050	.045
84" (2134)	.361	.200	.149	.110	.093	.078	.073	.068	.060	.052	.050	.043
90" (2286)	.333	.196	.138	.104	.087	.073	.068	.061	.056	.051	.046	.041
96" (2438)	.290	.181	.128	.097	.080	.070	.063	.058	.052	.050	.042	.039

DETERMINING PRESSURE DROP

Use the Area Factor Table and Pressure Drop Chart to determine pressure drop through Ruskin CD30VG1/CD30VG2 control dampers.

1. Determine area factor for damper by entering the Area Factor Table through duct width and height.
2. Find the conversion velocity (CV) by multiplying the selected size damper's area factor by the flow rate in CFM: **CV = Area Factor x CFM.**
3. Enter the Pressure Drop Chart at the determined area factor and proceed up to appropriate conversion velocity (CV) line. Then, read across to static pressure drop at left side of chart.

Example:

Find the pressure drop across a 24" wide x 24" high Model CD30VG2 control damper handling 8241 CFM. From the Area Factor Table, the area factor is determined to be .364.

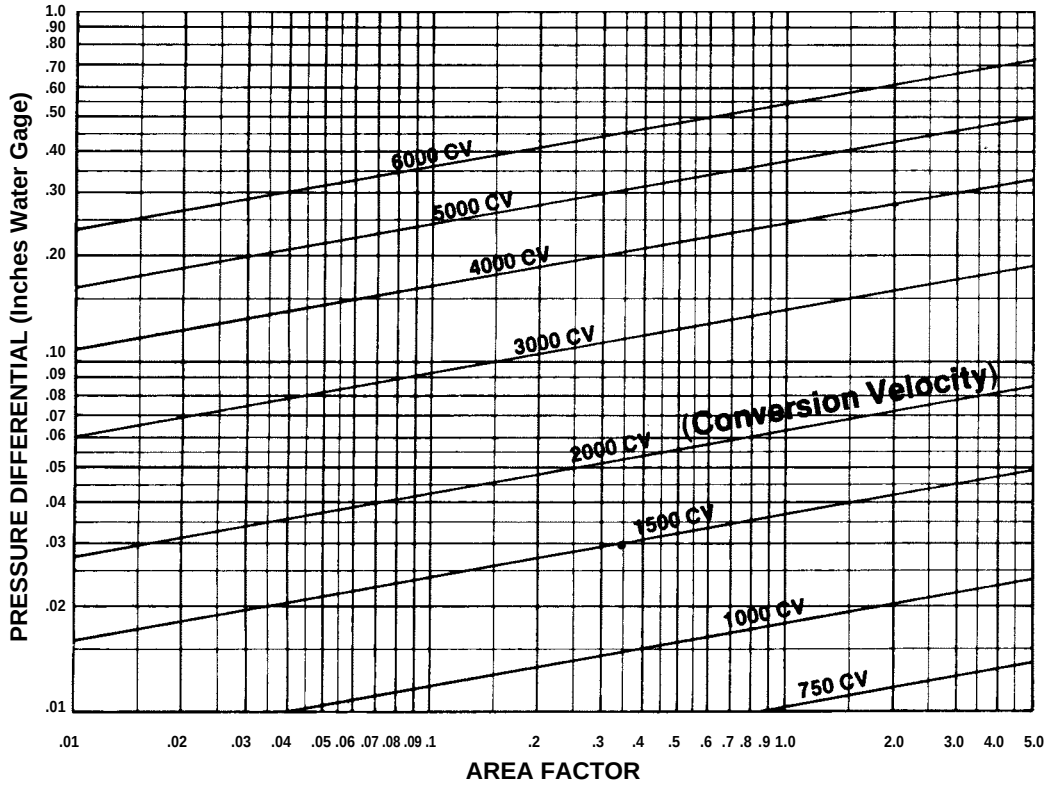
CFM x AREA FACTOR EQUALS CONVERSION VELOCITY

Therefore, CV (Conversion Velocity) = 8241 CFM x .364 = 3000. Using the Pressure Drop Chart, pressure drop = .125 inches water gage.

NOTE:

1. Ratings are based on AMCA Standard 500 using Test Setup Apparatus Figure 5.3 (damper is installed with duct upstream and downstream).
2. Static Pressure and Conversion Velocities are corrected to .075 lb./cu. ft. air density.

CD30VG PRESSURE DROP CHART



CD30 SERIES SUGGESTED SPECIFICATION

Furnish and install, at locations shown on plans or in accordance with schedules, industrial grade induct mount control dampers meeting the following minimum construction standards. Damper frame shall be 3" deep x 1" x 12 gage (76 x 25 x 2.8) galvanized steel. Blades shall be formed triple-V-groove construction, maximum 8" (203) wide and minimum 16 (1.6) gage galvanized steel. Axle material shall be plated steel rod (specifier select based on model) 1/2" (13) (or) 3/4" (19) diameter. Bearings shall be stainless steel sleeve pressed into frame. Oil impregnated bronze, synthetic, or bolt on style are not acceptable. Linkage shall be located on damper blade face in airstream for easy access and maintenance. External linkage out of airstream is not acceptable. Maximum pressure drop across a 48" x 48" (1219 x 1219) unit shall not exceed .06" w.g. at 32,000 CFM. Standard damper design shall allow application in system with (specifier select based on model) 2.8" (or) 6.8" SP across a minimum 48" (1219) long blade. Submittal data must include published leakage, pressure drop, velocity, and maximum pressure data based on AMCA Standard 500 testing. Data shall be for a full range of damper sizes. Data from one size sample is not acceptable. Damper shall be Ruskin model (specifier select) CD30VG1 (or) CD30VG2.

ADD TO SPECIFICATION IF REQUIRED:

Dampers shall be equipped with blade and jamb seals for low leakage application. Blade seals shall be mechanically attached to the blade. Adhesive type seals are not acceptable. Jamb seals shall be flexible stainless steel located between the blade edge and jamb for maximum sealing compression. Windstops or sponge seals are not acceptable. Leakage shall not exceed 4.3 CFM per square foot at 1" SP.

INSTALLATION

For proper operation, damper must be installed square and free from racking. Opposed blade dampers must be operated from a power blade or drive axle.

Dampers are self supporting only in largest single section size. Multiple section assemblies require bracing to support assembly weight and to hold against system pressure. Ruskin recommends appropriate bracing at every horizontal and vertical mullion.

NOTE: Dampers are designed for operation with blades running horizontally. Dampers are not recommended for installation with blades running vertically.

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