

CD80VG1 and CD80VG2 INDUSTRIAL CONTROL DAMPERS

STANDARD CONSTRUCTION

FRAME

8" x 2" x 14 gage (203 x 51 x 2) steel channel.

BLADE

16 (1.6) gage triple v-groove construction, 5" to 8" (127 x 203) wide.

LINKAGE

Side linkage out of airstream. 3/16" x 3/4" (5 x 19) plated steel tie bars. 3/8" (10) diameter stainless steel pivot pins with lock type retainers. 10 gage (4) galvanized steel clevis arms.

AXLES

CD80VG1 – 1/2" (13) diameter plated steel.

CD80VG2 – 3/4" (19) diameter plated steel.

BEARINGS

Stainless steel sleeve pressed into frame.

FINISH

Mill galvanized.

MAXIMUM TEMPERATURE

250°F is standard. Damper can be supplied for temperatures between 250°F and 400°F by increasing clearance between blade ends and frame. Advise Ruskin of maximum operating temperature.

MINIMUM SIZE

Single blade, parallel action – 6"w x 6"h (152 x 152).

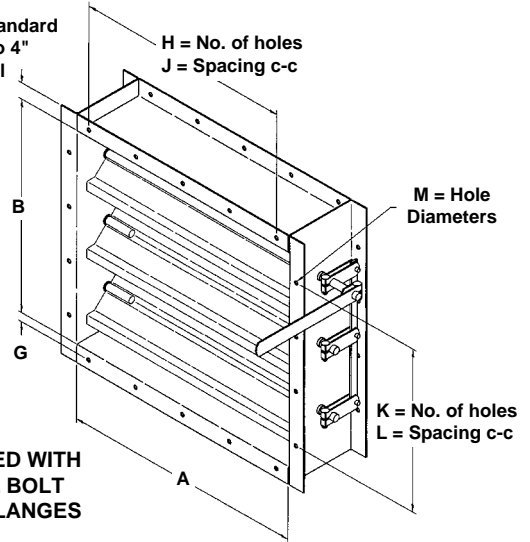
Two blade, parallel or opposed action – 6"w x 12"h (152 x 305).

MAXIMUM SIZE

48"w x 96"h (1219 x 2438).

F = 2" (51) standard or 1 1/2" (38) to 4" (102) optional

H = No. of holes
J = Spacing c-c



ILLUSTRATED WITH OPTIONAL BOLT HOLES IN FLANGES



C
8" (203)
STANDARD (PB)
PARALLEL
BLADE



C
8" (203)
STANDARD (OB)
OPPOSED
BLADE

VARIATIONS

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

- Higher temperature construction.
- Other materials.
- Special finishes.

Note: All options at additional cost.

Dimensions in parenthesis () indicate millimeters.

FRAME	BLADES	SEALS (Opt)	AXLES	BEARINGS	LINKAGE	ACCESSORIES
8" x 2" 14 GA GALVANIZED	16 GA GALVANIZED	PVC Blade Seals Max. 180°F (83°C) (OPT)	VG1: 1/2" DIA. PLATED STEEL	SS SLEEVE PRESSED	SIDE (EXTERNAL) LINKAGE	MANUAL ACT. - HQ
8" x 2" 12 GA GALVANIZED (OPT)	14 GA GALVANIZED (OPT)	EPDM BLADE SEALS 250°F MAX (OPT)	VG2: 3/4" DIA. PLATED STEEL	SS SLEEVE IN CAST HSG BOLTED TO FRAME (OPT)	FACE (EXPOSED) LINKAGE (OPT)	MANUAL ACT. - CL
8" x 2" 14 GA 304SS (OPT)	16 GA 304SS (OPT)	SILICONE BLADE SEALS 350°F MAX (OPT)	VG1: 1/2" DIA. 304SS (OPT)	BRGS BOLTED TO FRAME W/SHAFT SEAL (OPT)		ELECTRIC ACT. (OPT)
8" x 2" 14 GA 316SS (OPT)	14 GA 304SS (OPT)		VG2: 3/4" DIA. 304SS (OPT)	OUTBOARD BRGS W/SHAFT SEAL (OPT)		PNEU. ACT. (OPT)
	16 GA 316SS (OPT)	SS BLADE SEALS 400°F MAX. (OPT)	VG1: 1/2" DIA. 316SS (OPT)			BOLT HOLES ONE FLANGE (OPT)
	14 GA 316SS (OPT)	SS JAMB SEALS (OPT)	VG2: 3/4" DIA. 316SS (OPT)			BOLT HOLES BOTH FLANGES (OPT)
						1 1/2" TO 4" FLANGES (OPT)

*Stainless steel construction (unless otherwise noted) is in airstream only.

QTY.	MODEL	BLADE ACTION		DIMENSIONS										TEMP °F	TAG		
		PB	OB	A	B	C	F	G	H	J	K	L	M				
JOB		LOCATION:															
CONTRACTOR																	

CD80VG1 and CD80VG2 PERFORMANCE DATA

LEAKAGE AND PRESSURE

CD80VG1 PERFORMANCE DATA						
DAMPER WIDTH INCHES (MM)	MAX. SYSTEM PRESSURE	MAX. SYSTEM VELOCITY	Leakage w/o Seals*		Leakage with Seals*	
			Percent of Max. Flow	CFM/Sq. Ft.	Percent of Max. Flow	CFM/Sq. Ft.
48" (1219)	2.50" w.g.	3000 FPM	1.06	32.0	0.14	4.3
36" (914)	3.75" w.g.	3000 FPM	1.06	32.0	0.14	4.3
24" (610)	6.00" w.g.	3000 FPM	1.33	40.0	0.29	8.6
12" (305)	8.25" w.g.	3000 FPM	2.00	60.0	0.43	13.0

The CD80VG1 may be used in systems with total pressure exceeding 2.5" w.g. by reducing the damper section width as indicated above. For example, maximum design total pressure of 6" w.g. would require a CD80VG1 damper with maximum section width of 24".

CD80VG2 PERFORMANCE DATA						
DAMPER WIDTH INCHES (MM)	MAX. SYSTEM PRESSURE	MAX. SYSTEM VELOCITY	Leakage w/o Seals*		Leakage with Seals*	
			Percent of Max. Flow	CFM/Sq. Ft.	Percent of Max. Flow	CFM/Sq. Ft.
48" (1219)	6.75" w.g.	3500 FPM	0.91	32.0	0.12	4.3
36" (914)	9.00" w.g.	3500 FPM	0.91	32.0	0.12	4.3
24" (610)	15.50" w.g.	3500 FPM	1.14	40.0	0.25	8.6
12" (305)	20.00" w.g.	3500 FPM	1.71	60.0	0.37	13.0

The CD80VG2 may be used in systems with total pressures exceeding 6.75" 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 CD80VG2 damper with maximum section width of 36".

*Leakage information based on pressure differential of 1" w.g. tested per AMCA Std. 500 utilizing elastomer blade seals and compression jamb seals.

LEAKAGE CORRECTION FACTOR

Static Pressure (in. w.g.)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Correction Factor	1.0	1.4	1.7	2.0	2.2	2.4	2.6	2.8	3	3.2	3.3	3.5	3.6	3.7	3.9	4	4.1	4.2	4.4	4.5

DETERMINING LEAKAGE

To determine leakage at static pressure differentials higher than one inch water gage, multiply leakage at one inch (determined from appropriate table above) by correction factor for higher static pressure (determined from the Leakage Correction Factor Table).

Example:

Find leakage per square foot for a 36" wide damper equipped with optional blade and jamb seals at 3" SP. Per table, leakage for a 36" wide unit is 4.3 CFM/sq. ft. x 1.7 correction factor = 7.3 CFM/sq. ft. at 3 inches water gage.

Leakage ratings are based on AMCA Standard 500 using Test Setup Apparatus Figure 5.5. Torque applied holding damper closed at 10 in. lbs. per sq. ft. of damper with minimum of 20 in. lbs.

INSTALLATION

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

NOTE:

Dampers are designed for operation with blades running horizontally. Dampers to be installed with vertical blades require thrust collars be added at time of damper manufacture and at additional cost. Some standard features are not available with vertical bladed dampers.

**PRESSURE DROP INFORMATION
AREA FACTOR TABLE**

Height Dim. B	Dimension A – Width In Inches															Height Dim. B
	6" (152)	9" (229)	12" (305)	15" (381)	18" (457)	21" (533)	24" (610)	27" (686)	30" (762)	33" (838)	36" (914)	39" (991)	42" (1067)	45" (1143)	48" (1219)	
6" (152)	4.27	4.20	3.15	2.52	2.09	1.80	1.57	1.40	1.26	1.14	1.05	.97	.90	.84	.79	6" (152)
9" (229)	3.73	2.50	1.87	1.50	1.25	1.07	.93	.84	.75	.68	.62	.58	.54	.50	.47	9" (229)
12" (305)	2.61	1.74	1.31	1.05	.87	.75	.67	.58	.52	.47	.43	.40	.37	.35	.33	12" (305)
15" (381)	1.95	1.30	.97	.78	.65	.56	.49	.43	.39	.36	.33	.30	.28	.26	.24	15" (381)
18" (457)	1.65	1.09	.83	.66	.55	.47	.41	.36	.33	.30	.28	.25	.24	.22	.20	18" (457)
24" (610)	1.20	.81	.60	.48	.40	.35	.30	.27	.24	.22	.20	.20	.17	.16	.15	24" (610)
30" (762)	.91	.61	.46	.36	.31	.26	.23	.20	.18	.16	.15	.14	.13	.12	.12	30" (762)
36" (914)	.76	.51	.38	.31	.25	.22	.19	.17	.15	.13	.12	.12	.11	.11	.10	36" (914)
42" (1067)	.65	.43	.33	.26	.22	.18	.16	.14	.13	.12	.11	.10	.10	.09	.08	42" (1067)
48" (1219)	.57	.37	.29	.23	.19	.16	.14	.12	.12	.11	.10	.09	.08	.08	.07	48" (1219)
54" (1372)	.50	.34	.25	.20	.16	.14	.12	.12	.10	.10	.09	.08	.07	.07	.07	54" (1372)
60" (1524)	.44	.30	.22	.18	.14	.12	.12	.10	.09	.08	.08	.07	.07	.06	.06	60" (1524)
66" (1676)	.40	.27	.20	.16	.13	.12	.11	.09	.08	.08	.07	.06	.06	.06	.05	66" (1676)
72" (1829)	.37	.25	.18	.14	.12	.11	.10	.09	.08	.07	.06	.06	.06	.05	.05	72" (1829)
78" (1981)	.35	.23	.17	.13	.12	.10	.09	.08	.07	.06	.06	.05	.05	.05	.04	78" (1981)
84" (2134)	.32	.21	.16	.12	.11	.09	.08	.07	.07	.06	.06	.05	.05	.04	.04	84" (2134)
90" (2286)	.30	.20	.14	.12	.10	.09	.08	.07	.06	.06	.05	.05	.04	.04	.04	90" (2286)
96" (2438)	.29	.18	.13	.11	.10	.08	.07	.06	.06	.05	.05	.04	.04	.04	.04	96" (2438)

DETERMINING PRESSURE DROP

Use the Area Factor Table and Pressure Drop Chart to determine pressure drop through Ruskin CD80VG1/CD80VG2 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 CD80VG1 control damper handling 5000 CFM. From the Area Factor Table, the area factor is determined to be .30".

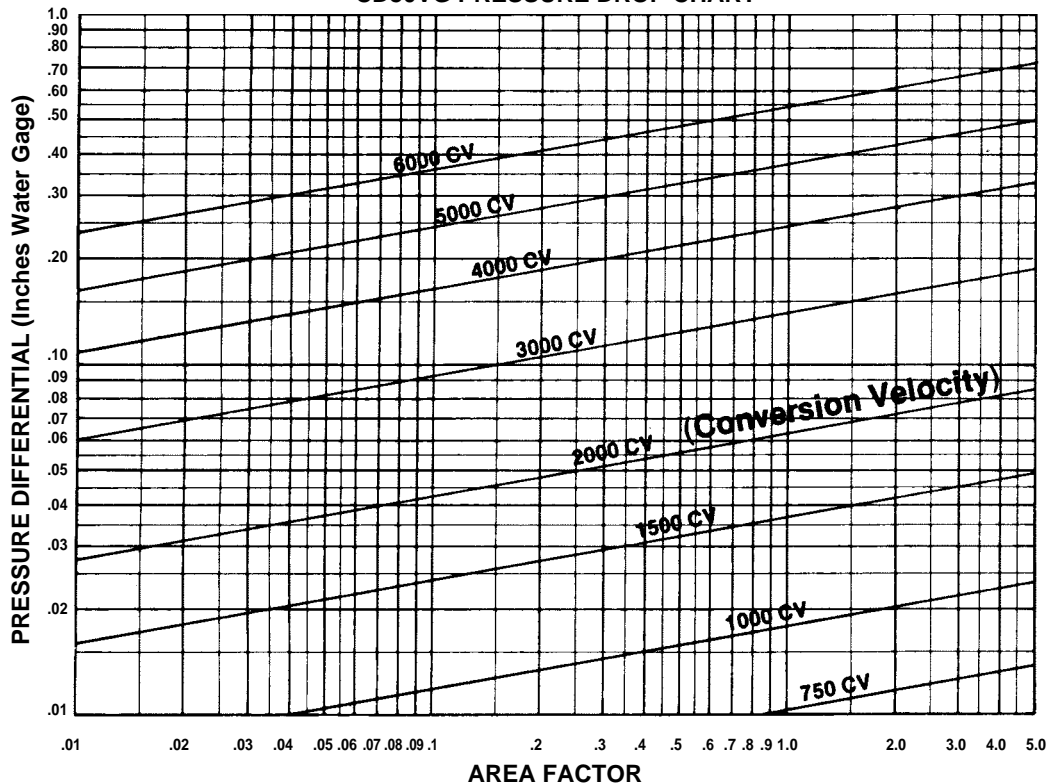
**CFM x AREA FACTOR
EQUALS CONVERSION
VELOCITY**

Therefore, CV (Conversion Velocity) = 5000 CFM x .30 = 1500. Using the Pressure Drop Chart, pressure drop = .03 inches water gage.

NOTES

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.

CD80VG PRESSURE DROP CHART



CD80VG1 SUGGESTED SPECIFICATION

Furnish and install, at locations shown in plans or in accordance with schedules, industrial grade control dampers meeting the following construction standards: Frame shall be minimum 8" deep x 2" flanged 14 gage (203 x 51 x 2), galvanized steel channel. Blades shall be triple v-groove design, maximum 8" (203) wide and minimum 16 gage (1.6) galvanized steel. Axles shall be minimum 1/2" (13) diameter plated steel rod. Bearing shall be stainless steel sleeve pressed into frame. Oil impregnated bronze or synthetic bearings are not acceptable. Linkage shall be located in jamb out of airstream and constructed of minimum 10 gage (3.5) steel clevis arms with 3/16" x 3/4" (4.8 x 19) plated steel tie bars pivoting on 3/8" (9.5) diameter stainless steel pivot pins with lock type retainers. Standard construction shall include (specifier choose) locking hand quadrant for manual operation or crank lever for motor operation.

Submittal data must include leakage, pressure drop and maximum pressure data based on AMCA Standard 500 testing. Data shall be for full range of damper sizes. Data from one size sample test is not acceptable. Damper shall be Ruskin model CD80VG1 Control Damper.

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 blade. Adhesive type seals are not acceptable. Jamb seals shall be flexible stainless steel located between blade edge and jamb for maximum sealing compression. Wind stops or sponge seals are not acceptable.

CD80VG2 SUGGESTED SPECIFICATION

Furnish and install, at locations shown in plans or in accordance with schedules, industrial grade control dampers meeting the following construction standards: Frame shall be minimum 8" deep x 2" flanged 14 gage (203 x 51 x 2), galvanized steel channel. Blades shall be triple v-groove design, maximum 8" (203) wide and minimum 16 gage (1.6) galvanized steel. Axles shall be minimum 3/4" (19) diameter plated steel rod. Bearing shall be stainless steel sleeve pressed into frame. Oil impregnated bronze or synthetic bearings are not acceptable. Linkage shall be located in jamb out of airstream and constructed of minimum 10 gage (3.5) steel clevis arms with 3/16" x 3/4" (4.8 x 19) plated steel tie bars pivoting on 3/8" (9.5) diameter stainless steel pivot pins with lock type retainers. Standard construction shall include (specifier choose) locking hand quadrant for manual operation or crank lever for motor operation.

Submittal data must include leakage, pressure drop and maximum pressure data based on AMCA Standard 500 testing. Data shall be for full range of damper sizes. Data from one size sample test is not acceptable. Damper shall be Ruskin model CD80VG2 Control Damper.

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 blade. Adhesive type seals are not acceptable. Jamb seals shall be flexible stainless steel located between blade edge and jamb for maximum sealing compression. Wind stops or sponge seals are not acceptable.



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