ALUMAVENT
CONTROL DAMPERS & FIRE DAMPERS

CURTAIN TYPE FIRE DAMPERS - AIR PERFORMANCE

Alumavent curtain type fire dampers impose minimal resistance to air flow in the air distribution system. The following charts display free areas for the different damper types and also static pressure loss for applicable velocities. Tests conducted in accordance with AMCA Standard 500-D, Figure 5.3 (ducted upstream and downstream). Actual pressure drop in any HVAC system is dependent upon many design factors and system influences which should be considered in addition to the pressure drop data calculated from these charts.

To determine pressure drop across open damper, calculate **free area velocity** as shown, find velocity on curve and read across for s.p. differential.

$$\text{Free Area Velocity (fpm)} = \frac{\text{cfm}}{\text{Free Area}}$$

Example:
1-36" x 24" Damper required for 8,500 cfm. (Type A)

$$\text{FAV} = \frac{8500}{5 \text{ sq. ft.}} = 1700 \text{ fpm}$$

1700 fpm located on the 'A' curve shows a pressure drop of .07 in. wg.

cfm = cubic feet per minute
fpm = feet per minute velocity
S.P. = static pressure in inches water gauge
FAV = Free Area Velocity

Imperial System Shown
To convert to SI (metric) system:

Multiply cfm by .4719 for liters per second
fpm by .00508 for meters per second
in. wg. by .2486 for kilopascals
sq. ft. by .0929 for square meters

TYPE A DAMPER FREE AREA – sq. ft.

DUCT HEIGHT In Inches (mm)	DUCT WIDTH In Inches (mm)									
	6 (152)	12 (305)	18 (457)	24 (610)	30 (762)	36 (914)	42 (1067)	48 (1219)	54 (1372)	60 (1524)
6 (152)	.14	.33	.52	.70	.89	1.1	1.3	1.5	1.7	1.8
12 (305)	.31	.72	1.1	1.5	1.9	2.4	2.8	3.2	3.6	4.0
18 (457)	.48	1.1	1.7	2.4	3.0	3.7	4.3	4.9	5.6	6.2
24 (610)	.65	1.5	2.4	3.2	4.1	5.0	5.8	6.7	7.5	8.4
30 (762)	.82	1.9	3.0	4.1	5.2	6.3	7.3	8.4	9.5	10.6
36 (914)	.99	2.3	3.6	4.9	6.3	7.6	8.9	10.2	11.5	12.8
42 (1067)	1.2	2.7	4.2	5.8	7.3	8.8	10.4	11.9	13.4	15.0
48 (1219)	1.3	3.1	4.9	6.6	8.4	10.2	11.9	13.7	15.5	17.2
54 (1372)	1.5	3.5	5.5	7.5	9.5	11.5	13.5	15.5	17.5	19.4
60 (1524)	1.7	3.9	6.1	8.3	10.6	12.8	15.0	17.2	19.4	21.7

TYPE B DAMPER FREE AREA – sq. ft.

DUCT HEIGHT In Inches (mm)	DUCT WIDTH In Inches (mm)									
	6 (152)	12 (305)	18 (457)	24 (610)	30 (762)	36 (914)	42 (1067)	48 (1219)	54 (1372)	60 (1524)
6 (152)	.17	.39	.62	.84	1.1	1.3	1.5	1.7	2.0	2.2
12 (305)	.36	.83	1.3	1.8	2.3	2.7	3.2	3.7	4.1	4.6
18 (457)	.54	1.3	2.0	2.7	3.4	4.2	4.9	5.6	6.3	7.1
24 (610)	.73	1.7	2.7	3.7	4.6	5.6	6.6	7.5	8.5	9.5
30 (762)	.92	2.1	3.4	4.6	5.8	7.0	8.3	9.5	10.7	11.9
36 (914)	1.1	2.6	4.1	5.5	7.0	8.5	9.9	11.4	12.9	14.4
42 (1067)	1.3	3.0	4.7	6.5	8.2	9.9	11.6	13.4	15.1	16.8
48 (1219)	1.5	3.5	5.4	7.4	9.4	11.4	13.3	15.3	17.3	19.2
54 (1372)	1.7	3.9	6.1	8.3	10.6	12.8	15.0	17.2	19.5	21.7

TYPE C DAMPERS HAVE FREE AREA EQUAL TO NOMINAL DUCT AREA.

To calculate Free Area of round duct:
DIAMETER^2 x .00545 = Free Area (sq ft.)