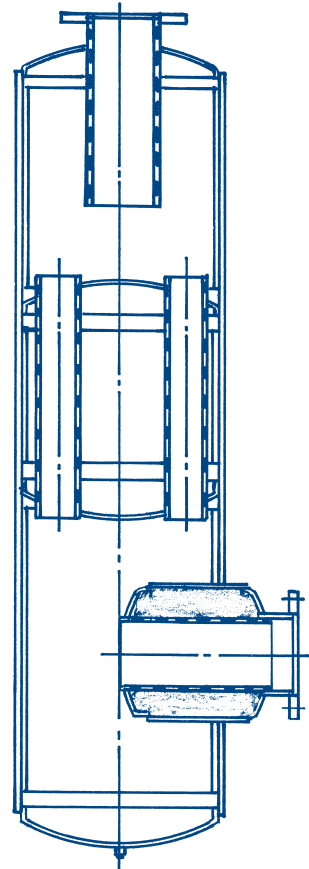




Specialists in Industrial Silencing

Stoddard Silencers, Inc.
1017 Progress Drive • Grayslake, Illinois 60030
Telephone (847) 223-8636 • FAX (847) 223-8638
E-Mail - info@stoddardsilencersinc.com
Web page - www.stoddardsilencersinc.com

ROTARY BLOWER DISCHARGE SILENCERS





Series "D"

Rotary Blower Discharge Silencers

Discharge silencers are essential to good system performance on all rotary blower systems. The belief that the discharge creates less noise than the inlet is erroneous because the discharge pulsations and noise are normally contained in a closed system.

The rotary positive blower does not compress the air as it moves from the blower inlet to the blower discharge. Compression takes place when line pressure backs up into the open port — thus compressed air is then pushed out into the line. This action takes place in a very short period of time and produces steep wave forms that can be destructive to piping and other equipment unless properly treated.

Blower displacement and speed are the major

parameters in designing discharge silencers that perform their assigned function and will live throughout the useful life of the blower. Normally for good silencing the discharge silencer should have an internal volume to blower displacement ratio of 18 to 1.

Blower speed dictates the model used. When the blower speed is below the transition speed the multi-chamber type is recommended to properly treat the noise emitted from the blower discharge. When the blower speed is above the transition speed, the intensity of the high frequencies is increased, requiring a modified design incorporating acoustic materials to absorb these frequencies. Normally acceptable discharge silencer pressure drop is in the range of 3 to 12 inches of water.

Discharge Silencer Size Selection Chart

Discharge Silencer Size	ICFM Range at Blower Inlet					
	4 PSIG 112° F	6 PSIG 134° F	8 PSIG 156° F	10 PSIG 178° F	12 PSIG 200° F	15 PSIG 233° F
1	0 - 38	0 - 40	0 - 42	0 - 44	0 - 46	0 - 49
1½	39 - 89	41 - 95	43 - 101	45 - 106	47 - 110	50 - 117
2	90 - 148	96 - 158	102 - 167	107 - 175	111 - 183	118 - 194
2½	149 - 210	159 - 224	168 - 237	176 - 249	184 - 260	195 - 275
3	211 - 325	225 - 347	238 - 367	250 - 385	261 - 402	276 - 426
4	326 - 564	348 - 601	368 - 636	386 - 667	403 - 697	427 - 738
5	565 - 881	602 - 939	637 - 994	668 - 1042	698 - 1090	739 - 1153
6	882 - 1265	940 - 1348	995 - 1427	1043 - 1497	1091 - 1565	1154 - 1656
8	1266 - 2204	1349 - 2349	1428 - 2486	1498 - 2608	1566 - 2726	1657 - 2885
10	2205 - 3474	2350 - 3702	2487 - 3918	2609 - 4110	2727 - 4296	2886 - 4548
12	3475 - 4983	3703 - 5301	3919 - 5619	4111 - 5895	4297 - 6162	4549 - 6523
14	4984 - 6421	5302 - 6842	5620 - 7241	5896 - 7596	6163 - 7941	6524 - 8405
16	6422 - 8452	6843 - 9006	7242 - 9531	7597 - 9998	7942 - 10451	8406 - 11063
18	8453 - 10749	9007 - 11453	9532 - 12121	9999 - 12716	10452 - 13292	11064 - 14070
20	10750 - 13769	11454 - 14671	12122 - 15526	12717 - 16288	13293 - 17026	14071 - 18022
22	13770 - 16186	14672 - 17246	15527 - 18252	16289 - 19147	17027 - 20015	18023 - 21186
24	16187 - 19313	17247 - 20579	18253 - 21779	19148 - 22847	20016 - 23883	21187 - 25280

Discharge Silencer Model Selection Chart

Blower Gear Size	Discharge Transition Speed - RPM (2700 FPM)*	Below Transition Speed		Above Transition Speed	
		Standard Silencing	High Degree Silencing	Standard Silencing	High Degree Silencing
2	5152	D12	D13	D32	D71 D33
2½	4125				
3	3435				
3½	2945				
4	2580				
5	2060				
6	1720				
7	1470				
8	1285				
10	1030				
12	860				
14	735				
16	645				
18	573				
20	515				

*Transition speeds shown are for two lobe rotary blowers. For three lobe blowers use 67% of the rpm shown.

Discharge Silencer Pressure Drop Calculations

Tabulated Pressure Drop in Inches of Water for Various Velocities Thru Silencer - Models D12, D13, D32, D33

Blower Discharge		Silencer Discharge Velocity - FPM						
PSIG	°F	3000	3500	4000	4500	5000	5500	6000
4	112	2.77	3.78	4.95	6.24	7.70	9.33	11.09
5	123	2.87	3.90	5.12	6.45	7.97	9.64	11.47
6	134	2.96	4.03	5.28	6.65	8.22	9.94	11.83
7	145	3.04	4.14	5.43	6.85	8.46	10.23	12.18
8	156	3.13	4.26	5.58	7.04	8.69	10.51	12.51
9	167	3.21	4.37	5.72	7.22	8.91	10.78	12.83
10	178	3.29	4.47	5.86	7.39	9.13	11.04	13.14
11	189	3.36	4.57	5.99	7.56	9.34	11.30	13.44
12	200	3.43	4.67	6.13	7.72	9.54	11.54	13.73
13	211	3.50	4.77	6.25	7.88	9.73	11.78	14.01
14	222	3.57	4.86	6.37	8.04	9.92	12.00	14.29
15	233	3.64	4.95	6.49	8.18	10.10	12.23	14.55

Discharge Silencer Pressure Drop Calculations (Data Required - Blower ICFM, Discharge Pressure & Temperature)

- Determine Discharge velocity in feet per minute for silencer size selected from sizing chart.

$$\text{Discharge Velocity} = \frac{5.17 \times \text{ICFM} \times (460 + \text{Discharge Temp. } ^\circ\text{F})}{(\text{Silencer Size})^2 \times (14.7 + \text{Discharge Press. PSIG})}$$

$$\text{Discharge Velocity} = \frac{5.17 \times \text{_____} \times (460 + \text{_____ } ^\circ\text{F})}{(\text{_____})^2 \times (14.7 + \text{_____ PSIG})}$$

$$\text{Discharge Velocity} = \text{_____ FPM}$$

- Convert Discharge Velocity (FPM) to Velocity Pressure. (inches of water)

$$\text{Velocity Pressure} = \left(\frac{\text{Discharge Velocity}}{4000} \right)^2$$

$$\text{Velocity Pressure} = \left(\frac{\text{_____}}{4000} \right)^2$$

$$\text{Velocity Pressure} = \text{_____ inches of water}$$

- Determine Discharge Silencer Pressure Drop - (inches of water)

$$\text{Pressure Drop} = \text{Velocity Pressure} \times C \times \frac{(14.7 + \text{Disch. Press. PSIG})}{(460 + \text{Disch. Temp. } ^\circ\text{F})}$$

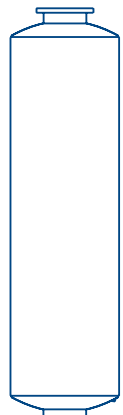
$$\text{Pressure Drop} = \text{_____} \times C \times \frac{(14.7 + \text{_____})}{(460 + \text{_____})}$$

$$\text{Pressure Drop} = \text{_____ inches of water}$$

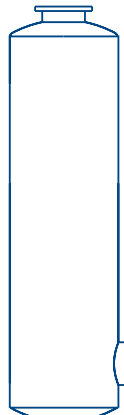
"C" - Pressure Drop Constant for Discharge Silencers

Model	C	Model	C
D32 / D32H	151	D12 / D12H	151
D32T	162	D13 / D13H	151
D33 / D33H	151	D31H	151
D33T	162	D71 / D71J	27

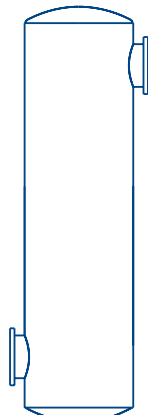
Basic Silencer Configurations



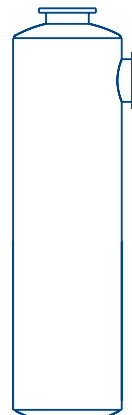
In-Line Configuration



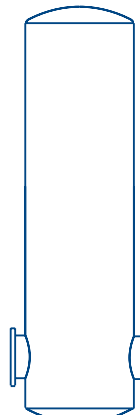
"H" Configuration



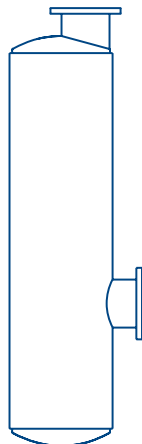
"R" Configuration



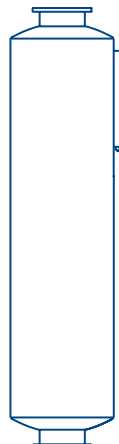
"G" Configuration



"T" Configuration



"HX" Configuration

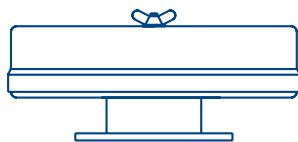


Spark Arrester

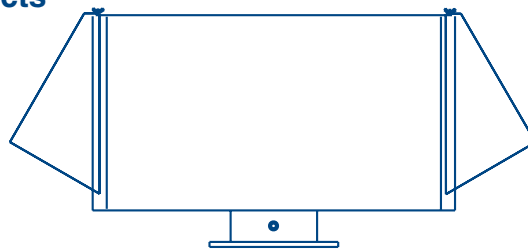
Flanged, NPT and plain pipe tubes inlet, outlet are available

See Accessory Bulletin "A" for optional mounting brackets, raincaps, and other accessories

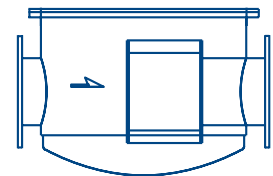
Other Stoddard Silencers Products



F64 Air Filters
Up to 5600 CFM



F21 Panel Air Filters
2500 CFM and Up



F65 In-Line Air Filters
Up to 5600 CFM



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