



QUIET-DUCT SILENCERS

TYPE: S

with FORWARD and REVERSE FLOW Ratings



IAC has produced Quiet-Duct HVAC silencers for more than 50 years, and has developed many of the terms and test standards for rating silencer performance that are used today. These standards are dynamic documents that continue to change based on new developments and discoveries in the field of acoustic engineering. Today we continue our involvement in several of the industry's governing agencies, and we remain committed to ensuring that we are always providing product that is in accordance with all of the latest standards. All published acoustic and aerodynamic performance results are based on tests conducted in strict accordance with ASTM E477-99 in IAC America's NVLAP-Accredited laboratory.

DESIGNATING A SILENCER

Model: 5 S 24 x 18

Length: 5' Type: S Width: 24" Height: 18"

Table I. Dynamic Insertion Loss (DIL) Ratings: Forward (+) / Reverse (-) Flow

IAC MODEL	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm								
3S	-2000	6	12	20	33	39	35	23	14
	-1000	5	11	17	33	38	35	25	14
	0	5	10	16	32	38	35	26	16
	1000	5	9	15	30	37	35	27	17
	2000	5	8	14	27	36	35	27	17
5S	-2000	10	20	27	45	48	43	36	22
	-1000	10	19	26	44	47	45	38	22
	0	9	17	25	43	47	46	39	24
	1000	7	17	23	42	46	46	40	25
	2000	6	16	22	40	46	46	40	25
7S	-2000	12	23	37	48	50	45	41	27
	-1000	12	22	35	47	49	47	44	28
	0	11	20	33	47	49	47	45	31
	1000	9	18	31	47	49	47	45	34
	2000	8	16	31	46	49	48	45	35
10S	-2000	14	26	43	50	51	50	45	37
	-1000	14	28	42	49	51	50	49	37
	0	13	25	42	49	52	50	49	41
	1000	12	22	41	49	52	50	49	44
	2000	11	19	40	50	52	50	49	46



(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99. Contact IAC if attenuation in excess of 50 dB is required.

Table II: Weights and Measures

Nominal Length	W/ In H/ In	6 18	6 24	6 30	6 36	6 42	6 48	12 18	12 24	12 30	12 36	12 42	12 48	24 18	24 24	24 30
3 feet	Wt/ lb.	25	35	42	49	60	70	43	52	62	74	83	93	71	86	102
5 feet		44	63	75	87	105	126	73	89	107	125	141	158	121	147	173
7 feet		61	88	102	122	147	176	102	125	150	176	199	226	170	207	243
10 feet		86	123	150	171	206	246	155	177	212	250	-	-	241	293	345

Nominal Length	W/ In H/ In	24 36	24 42	24 48	36 18	36 24	36 30	36 36	36 42	36 48	48 18	48 24	48 30	48 36	48 42	48 48
3 feet	Wt/ lb.	117	132	147	81	102	142	162	182	204	142	172	204	234	264	294
5 feet		204	230	256	142	177.5	249	284	319	355	242	294	346	408	460	512
7 feet		288	325	362	-	-	-	-	-	-	340	414	486	576	650	724
10 feet		405	-	-	-	-	-	-	-	-	482	586	690	810	-	-

Table III: Aerodynamic Performance

Model	L/ Ft	Static Pressure Drop, i.w.g.															
S	3	0.01	0.03	0.06	0.09	0.13	0.18	0.23	0.29	0.36	0.44	0.52	0.61	0.71	0.82	0.93	1.05
	5	0.02	0.04	0.07	0.10	0.15	0.20	0.26	0.33	0.41	0.49	0.59	0.69	0.80	0.91	1.04	1.17
	7	0.02	0.04	0.07	0.11	0.16	0.21	0.28	0.35	0.44	0.53	0.63	0.74	0.85	0.98	1.11	1.26
	10	0.02	0.04	0.08	0.12	0.18	0.24	0.32	0.40	0.49	0.60	0.71	0.83	0.97	1.11	1.26	1.43
Silencer Face Velocity, fpm	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	

Table IV: Self-Noise Power Levels, dB re: 10-12 Watts

IAC Model	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Silencer Face Velocity, fpm								
S All Sizes	-2,000	68	62	61	66	61	64	67	66
	-1,000	54	51	50	51	54	56	52	40
	-500	40	40	39	36	47	48	37	20
	500	36	29	35	30	31	35	22	20
	1,000	55	49	49	47	46	49	42	32
	2,000	74	69	63	64	61	63	62	56

(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99.

TAKE NOTE!

- Silencer Face Area is the cross-sectional area at the silencer entrance.
- Face Velocity is the CFM of airflow divided by the Face Area (in sq. ft.)
- Pressure Drop for any velocity can be calculated from this equation:
 $PD = (Actual\ FV/Catalog\ FV)^2 \times (Catalog\ PD)$
- Self Noise values shown are for a four-square-foot face area silencer.
- For each doubling of the face area add 3 dB to the self-noise values listed.
- For each halving of the face area subtract 3 dB from the self-noise values listed.
- Weights and measures are listed for limited number of available sizes.

THE IAC SNAP FORM

The IAC Snap Form helps evaluate the entire HVAC system and is now available on CD. The analysis starts with the acoustic criterion for the occupied space and then accounts for the system effects of each component such as terminals, mixing boxes, branch take-offs, elbows, ductwork, fan sources, plus room characteristics. Request a copy of the CD at HVAC@industrialacoustics.com

