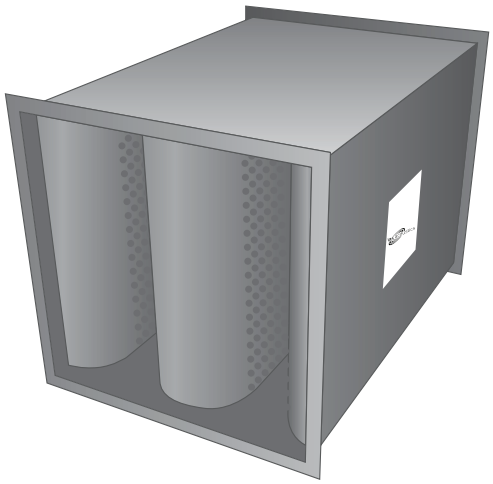
Quiet-Duct® Silencer Type: ES

With Forward and Reverse Flow Ratings



Standard modular widths are multiples of 300mm, other widths are also available.

For many years, the IAC S silencer has been the industry standard for maximum noise reduction with minimum silencer length. The type ES (Energy Saver) silencer provides the same high level of acoustic performance combined with a marked decrease in energy consumption.

Supplied as Standard

- Aerodynamic inlet and discharge to splitter elements to reduce pressure drop and conserve energy
- Perforated galvanised steel facings to all splitter elements to protect acoustic media from damage and erosion

Designating Silencers: Example

Model: 5ES-600-600

Length	Type	Width	Height
1500mm	ES	600mm	600mm

Weight

Average weight 100kg/m^3

Self-Noise Power Levels dB re: 10^{-12} Watts (for a 0.37m^2 face area silencer)

IAC ES Model	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Silencer Face Velocity, m/s								
ES All Lengths	-10	56	54	58	60	61	65	69	64
	-7.5	47	47	52	55	57	63	64	54
	-5	41	41	45	47	52	60	48	38
	+5	42	35	33	32	34	33	27	22
	+7.5	50	47	44	41	43	45	43	41
	+10	60	57	54	50	49	53	53	50

Face Area Adjustment Factors (add or subtract from Lw values above)

Quiet-Duct® Face Area, m^2*	0.05	0.09	0.19	0.37	0.74	1.5	3.0	6.0	12.0
Lw Adjustment Factor, dB	-9	-6	-3	0	+3	+6	+9	+12	+15

* For intermediate face areas, interpolate to the nearest whole number

Aerodynamic Performance

IAC Model	Length (mm)	Static Pressure Drop N/m^2							
ES	900	2	5	10	15	20	27	35	45
	1500	2	5	10	15	22	30	37	47
	2100	2	7	12	20	30	42	55	70
	3000	5	10	17	27	40	55	70	90
Silencer Face Velocity, m/s		1.02	1.52	2.03	2.54	3.05	3.56	4.06	4.57

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

IAC ES Model (length in mm)	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Silencer Face Velocity, m/s	Dynamic Insertion Loss, dB							
3ES (900)	-10	5	8	18	31	38	36	22	16
	-5	3	8	17	31	38	36	22	17
	0	3	6	16	29	38	35	22	18
	+5	2	5	14	27	36	34	23	17
	+10	2	5	12	25	34	34	23	18
4ES (1200)	-10	8	12	22	36	45	42	24	17
	-5	7	12	21	36	44	43	27	19
	0	6	9	19	34	44	43	27	19
	+5	5	9	17	32	44	42	29	20
	+10	4	9	16	30	42	42	29	21
5ES (1500)	-10	10	16	25	41	52	48	26	17
	-5	10	15	24	40	50	50	31	20
	0	9	12	22	38	51	50	33	22
	+5	7	12	19	37	51	49	35	23
	+10	6	12	19	35	49	49	35	24
6ES (1800)	-10	11	18	32	47	52	51	32	19
	-5	11	18	30	46	52	52	37	23
	0	10	16	28	44	52	52	40	26
	+5	7	14	25	44	52	51	41	28
	+10	6	14	24	42	52	50	42	29
7ES (2100)	-10	11	20	39	53	51	53	37	21
	-5	11	21	36	51	53	53	43	25
	0	10	19	33	50	53	53	46	29
	+5	7	16	31	50	53	52	46	32
	+10	6	15	29	48	54	50	48	34
8ES (2400)	-10	12	24	39	53	52	53	39	22
	-5	12	25	39	51	52	53	45	25
	0	10	22	36	51	53	53	47	31
	+5	8	19	34	51	52	53	47	34
	+10	6	18	32	50	53	51	49	36
9ES (2700)	-10	14	27	40	53	53	53	41	23
	-5	12	29	41	51	52	53	46	26
	0	11	25	40	51	52	53	48	31
	+5	8	22	38	51	52	53	48	35
	+10	7	21	35	51	52	53	49	37
10ES (3000)	-10	15	31	40	53	54	53	43	24
	-5	13	33	44	51	51	53	48	26
	0	11	28	43	52	52	53	49	32
	+5	9	25	41	52	51	54	49	37
	+10	7	24	38	53	51	54	50	39

Note

- The tabulated airflow in m/s is based upon tests conducted in the IAC Acoustics R&D Laboratory, in accordance with applicable sections of internationally recognised airflow test codes. These codes require specific lengths of straight duct both upstream and downsteam of the test specimen. Non-compliance with these codes can add from ½ to several velocity heads depending on specific conditions. The downstream measurements are made far enough downstream to include static regain. Therefore, if silencers are installed immediately before or after elbows, transitions or at the intake or discharge of a system, sufficient allowance to compensate for these factors must be included when calculating the operating static pressure loss through the silencer. See pages 10 & 11 for further details.
- Silencer Face Area is the cross-sectional area at the silencer entrance or exit
- Face velocity (FV) in m/s is the airflow in m^3/s divided by the silencer face area in m^2
- Pressure drop (PD) for any face velocity can be calculated from the equation: PD = (Actual FV / Catalogue FV)^2 x (Catalogue PD)