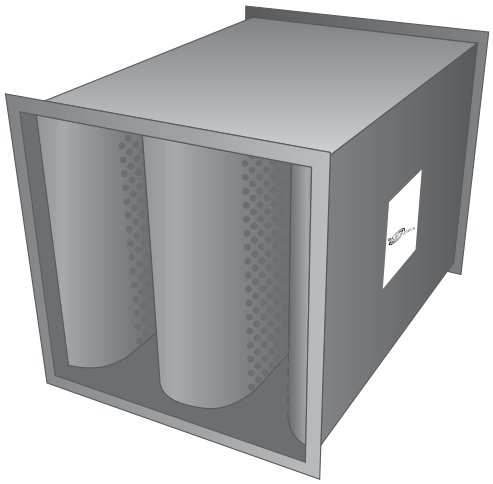
Clean-Flow™ Quiet-Duct® Silencer Type: HLFM

Low Frequency with Forward and Reverse Flow Ratings



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

HLFM silencers provide improved low frequency attenuation for medium velocity HVAC systems. The acoustic fill is totally encapsulated to prevent erosion or entrainment of particulate. A honeycomb acoustic stand-off provides additional protection and performance.

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: 5HLFM-600-450

Length	Type	Width	Height
1500mm	HLFM	600mm	450mm

Self-Noise Power Levels dB re: 10^{-12} Watts (for a 0.37m² face area silencer)

IAC HLFM 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	Self-Noise Power Levels, dB							
HLFM All Lengths (mm)	-10	58	54	58	61	62	62	65	63
	-7.5	51	49	53	56	56	59	60	53
	-5	45	42	45	43	45	49	44	37
	+5	46	42	45	43	45	49	44	37
	+7.5	56	54	57	56	52	56	57	51
	+10	68	64	65	66	61	61	64	61

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

Quiet-Duct® Face Area, m²*	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/m²							
HLFM	900	12	17	22	30	37	47	57	67
	1500	12	17	25	32	40	50	60	72
	2100	12	17	25	32	42	52	62	75
	3000	15	20	30	37	47	60	72	85
Silencer Face Velocity, m/s		2.54	3.05	3.56	4.06	4.57	5.08	5.59	6.1

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

IAC HLFM 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							
3HLFM (900)	-10	7	13	15	20	19	18	16	10
	-5	7	12	14	20	19	18	15	10
	0	9	14	15	21	19	18	15	11
	+5	7	11	14	20	18	15	15	10
	+10	7	11	14	18	17	16	14	9
4HLFM (1200)	-10	9	16	19	23	22	20	18	12
	-5	9	14	19	23	22	20	17	12
	0	11	15	19	24	22	20	17	13
	+5	10	14	19	23	22	18	17	12
	+10	10	13	18	22	21	18	16	11
5HLFM (1500)	-10	11	18	22	26	25	21	19	13
	-5	11	16	23	26	25	21	19	14
	0	12	16	23	27	25	21	19	14
	+5	12	16	23	26	25	20	18	14
	+10	13	15	22	25	24	20	17	13
6HLFM (1800)	-10	13	18	23	28	28	25	21	15
	-5	13	17	23	28	28	25	21	15
	0	14	17	23	28	27	24	20	15
	+5	14	17	23	26	26	22	18	14
	+10	14	18	23	26	25	22	17	13
7HLFM (2100)	-10	14	17	23	29	31	29	22	16
	-5	15	17	23	30	31	29	22	16
	0	15	18	23	28	29	27	20	15
	+5	15	18	22	25	27	24	18	14
	+10	15	20	23	26	26	23	17	13
8HLFM (2400)	-10	15	19	25	31	33	32	24	17
	-5	15	19	25	32	34	31	24	17
	0	15	20	25	30	32	30	22	16
	+5	15	20	25	28	31	28	21	15
	+10	16	21	25	29	30	28	21	15
9HLFM (2700)	-10	16	22	27	33	36	34	26	18
	-5	15	21	28	34	36	34	26	17
	0	15	21	28	32	35	34	25	18
	+5	15	21	27	31	34	33	24	17
	+10	16	21	26	31	33	32	24	16
10HLFM (3000)	-10	17	24	29	35	38	37	28	19
	-5	15	23	30	36	39	36	28	18
	0	15	23	30	34	38	37	27	19
	+5	15	23	30	34	38	37	27	18
	+10	17	22	28	34	37	37	28	18

Note

- The tabulated air flow in m^3/s is based upon tests 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 downstream of the test specimen. Non-compliance with these codes can add from 0.5 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 the system, sufficient allowance to compensate for these factors must be included when calculating the operating static pressure loss through the silencer. See pages 10 and 11 for further details.
- Face Velocity is the airflow (m^3/s) divided by the Face Area (m^2)
- Pressure drop for any face velocity can be calculated from the equation: PD=(Actual FV/catalogue FV)^2 x (Catalogue PD)