

Quiet-Elbow™ Silencers

Section 15000 Specifications

1.01 General

- A. Furnish and install "Quiet-Duct Elbow" style silencers of the types and sizes shown on the plans and/or listed in the schedule. Silencers shall be the product of IAC Acoustics. Any specification change must be submitted in writing and approved by the Architect/Engineer, in writing, at least 10 days prior to the bid due-date.

2.01 Materials

- A. Outer casing of the silencer shall be made of minimum 18 gauge type #G-90 lock-former-quality galvanized steel. Interior partitions for the silencer shall be not less than 22 gauge type #G-90 galvanized perforated steel.
- B. Filler material shall be of inorganic glass fiber of a proper density to obtain the specified acoustic performance and be packed under not less than 5% compression to eliminate voids due to vibration and settling. Material shall be inert, vermin- and moisture-proof.
- C. Combustion ratings for the silencer acoustic fill shall be not greater than the following when tested per ASTM E 84, NFPA Standard 255, or UL No. 723:

Flamespread Classification	20
Smoke Development Rating.....	20

3.01 Construction

- A. Units shall be constructed in accordance with the ASHRAE Guide recommendations for high pressure duct work. Casing seams shall be formed, welded, and mastic sealed. Interior acoustic baffles shall be perforated sheets with solid evase design entrance/exit shapes to provide maximum aerodynamic efficiency and minimum self-noise. Blunt shapes will not be accepted.
- B. Interior partitions shall be welded to the casing and shall be of radius design so as to provide a uniform elbow airway in the silencer.
- C. Sound attenuating units shall not fail structurally when subjected to a differential air pressure of 8 inches water gauge from inside to outside the casing.

4.01 Acoustic Performance

- A. Silencer ratings shall have been determined from data taken in a duct-to-reverberant room test facility which provides for airflow through the test silencer in accordance with ASTM Specification E477-99. The test facility shall be NVLAP accredited for the ASTM E477-99 test standard. Data from a non-accredited laboratory will not be acceptable. The test set-up and procedure shall be such that all effects due to end reflection, directivity, flanking transmission, standing waves and test chamber sound absorption are eliminated.
- B. Acoustic ratings shall include Dynamic Insertion Loss (DIL) and Self-Noise (SN) Power Levels both for FORWARD FLOW (air and noise in same direction) and REVERSE FLOW (air and noise in opposite directions) with airflow of at least 2000 fpm entering face velocity. Data for radius elbow silencers shall be presented for tests conducted using silencers no smaller than the following sizes:
Rectangular, inches: 24 x 24, 24 x 30, or 24 x 36

5.01 Aerodynamic Performance

- A. Static pressure loss of the silencer shall not exceed that listed in the schedule at the airflow indicated. Airflow measurements shall be made in accordance with ASTM specification E477-99 and applicable portions of ASME, AMCA, and ADC airflow test codes.

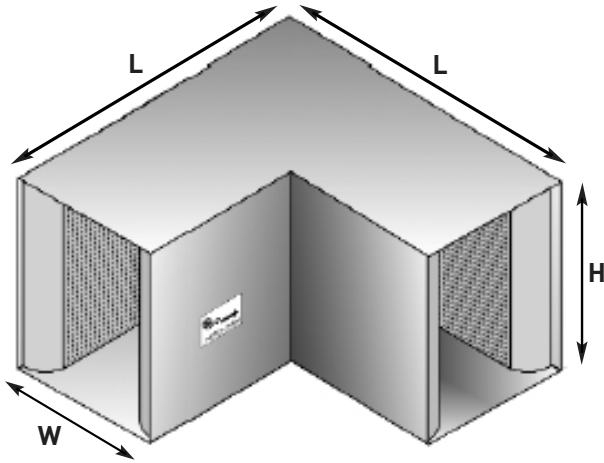
6.01 Certification

- A. With submittals, the manufacturer shall supply data on Dynamic Insertion Loss, Self-Noise Power Levels, and Aerodynamic Performance for Forward and Reverse Flow test conditions. All rating tests shall be conducted in the same facility, shall have utilized the same silencer, and the facility shall be open to inspection upon request from the Architect/Engineer.

Quiet-Elbow™ Silencers

Type: ELBM-LFS

Forward & Reverse Flow Ratings



IAC Type ELBM Modular Elbows are designed to fit where shorter type of duct runs do not allow for standard type rectangular silencers. ELBM elbows also add the benefit of improved mid-range frequency performance while keeping the pressure drop minimal. ELBM's can come as standard with fiberglass infill with the same characteristics of our Quiet-Duct Commercial Series; they can also come as 100% Environmental friendly having the same characteristics of our Quiet-Duct Ultra/Green Series and they can also come with our "Hospital Grade" type characteristics, as with our Quiet-Duct Clean-Flow Series.

Designating Silencers

Model: 5ELBM 24 x 18

Type: ELBM **Length:** 5' **Width:** 24" **Height:** 18"

Pressure Loss for ELBM silencers is 0.2" at 1000 fpm

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	Dynamic Insertion Loss, dB							
3ELBM-LFS	-2000	10	13	24	33	31	27	22	19
	-1000	10	13	24	33	31	27	22	19
	0	10	13	24	33	31	27	22	19
	1000	10	13	24	33	31	27	22	19
	2000	10	13	24	33	31	27	22	19
5ELBM-LFS	-2000	13	19	32	42	44	32	27	21
	-1000	13	19	32	42	44	32	27	21
	0	13	19	32	42	44	32	27	21
	1000	13	19	32	42	44	32	27	21
	2000	13	19	32	42	44	32	27	21
7ELBM-LFS	-2000	13	24	41	54	54	42	34	24
	-1000	13	24	41	54	54	42	34	24
	0	13	24	41	54	54	42	34	24
	1000	13	24	41	54	54	42	34	24
	2000	13	24	41	54	54	42	34	24
10ELBM-LFS	-2000	21	29	48	59	58	51	41	28
	-1000	21	29	48	59	58	51	41	28
	0	21	29	48	59	58	51	41	28
	1000	21	29	48	59	58	51	41	28
	2000	21	29	48	59	58	51	41	28



(+) 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 & Measures

IAC Model	W/In	12	12	12	12	12	12	12	24	24	24	24	24	24	24
	H/In	12	18	24	30	36	42	48	12	18	24	30	36	42	48
3ELBM-LFS	Wt/lb.	48	63	83	103	123	148	178	83	98	118	138	158	188	218
5ELBM-LFS		83	103	138	163	198	235	273	138	158	188	218	248	293	338
7ELBM-LFS		125	153	202	237	286	337.8	391	202	230	272	314	356	419	482
10ELBM-LFS		188	228	298	348	418	492	568	298	338	398	458	518	608	698

IAC Model	W/In	36	36	36	36	36	36	36	48	48	48	48	48	48	48
	H/In	12	18	24	30	36	42	48	12	18	24	30	36	42	48
3ELBM-LFS	Wt/lb.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5ELBM-LFS		133	203	243	278	318	393	443	184	218	298	378	458	538	618
7ELBM-LFS		195	293	349	398	454	559	629	266.4	314	426	538	650	762	874
10ELBM-LFS		288	428	508	578	658	808	908	390	458	618	778	938	1098	1258

Table III: Aerodynamic Performance

IAC Model	L/Ft	Static Pressure Drop, i.w.g.															
		0.04	0.05	0.07	0.09	0.11	0.14	0.17	0.20	0.24	0.28	0.32	0.36	0.41	0.46	0.51	0.57
ELBM-LFS	3'	0.04	0.05	0.07	0.09	0.11	0.14	0.17	0.20	0.24	0.28	0.32	0.36	0.41	0.46	0.51	0.57
	5'	0.04	0.05	0.07	0.09	0.11	0.14	0.17	0.20	0.24	0.28	0.32	0.36	0.41	0.46	0.51	0.57
	7'	0.04	0.05	0.07	0.09	0.11	0.14	0.17	0.20	0.24	0.28	0.32	0.36	0.41	0.46	0.51	0.57
	10'	0.04	0.05	0.07	0.09	0.11	0.14	0.17	0.20	0.24	0.28	0.32	0.36	0.41	0.46	0.51	0.57
Silencer Face Velocity, fpm		250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000

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								
ELBM-LFS	-2000	64	67	68	71	69	68	68	66
	-1000	58	61	60	62	53	57	55	59
	0	59	65	62	63	61	65	60	58
	1000	59	69	63	63	68	72	65	56
	2000	69	76	74	77	76	75	74	65

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

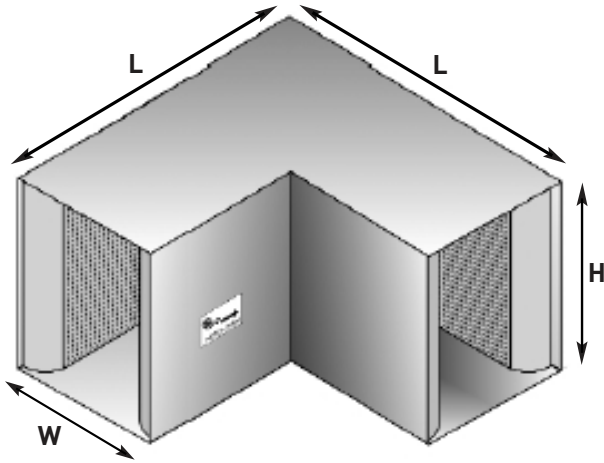
TAKE NOTE!

- 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

Quiet-Elbow™ Silencers

Type: ELBM-LFM

Forward & Reverse Flow Ratings



IAC Type ELBM Modular Elbows are designed to fit where shorter type of duct runs do not allow for standard type rectangular silencers. ELBM elbows also add the benefit of improved mid-range frequency performance while keeping the pressure drop minimal. ELBM's can come as standard with fiberglass infill with the same characteristics of our Quiet-Duct Commercial Series; they can also come as 100% Environmental friendly having the same characteristics of our Quiet-Duct Ultra/Green Series and they can also come with our "Hospital Grade" type characteristics, as with our Quiet-Duct Clean-Flow Series.

Designating Silencers

Model: 5ELBM 24 x 18

Type: ELBM **Length:** 5' **Width:** 24" **Height:** 18"

Pressure Loss for ELBM silencers is 0.2" at 1000 fpm

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	Dynamic Insertion Loss, dB							
3ELBM-LFM	-2000	5	7	17	25	22	17	15	15
	-1000	5	7	17	25	22	17	15	15
	0	5	7	17	25	22	17	15	15
	1000	5	7	17	25	22	17	15	15
	2000	5	7	17	25	22	17	15	15
5ELBM-LFM	-2000	10	13	25	35	33	22	18	18
	-1000	10	13	25	35	33	22	18	18
	0	10	13	25	35	33	22	18	18
	1000	10	13	25	35	33	22	18	18
	2000	10	13	25	35	33	22	18	18
7ELBM-LFM	-2000	15	16	32	47	43	27	21	19
	-1000	15	16	32	47	43	27	21	19
	0	15	16	32	47	43	27	21	19
	1000	15	16	32	47	43	27	21	19
	2000	15	16	32	47	43	27	21	19
10ELBM-LFM	-2000	17	23	42	57	55	33	26	21
	-1000	17	23	42	57	55	33	26	21
	0	17	23	42	57	55	33	26	21
	1000	17	23	42	57	55	33	26	21
	2000	17	23	42	57	55	33	26	21



(+) 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 & Measures

IAC Model	W/In H/In	12	12	12	12	12	12	12	24	24	24	24	24	24	24
3ELBM-LFM	Wt/Lb.	59	74	94	114	134	159	189	94	109	129	149	169	199	229
5ELBM-LFM		94	114	149	174	209	246	284	149	169	199	229	259	304	349
7ELBM-LFM		136	164	213	248	297	348.8	402	213	241	283	325	367	430	493
10ELBM-LFM		199	239	309	359	429	503	579	309	349	409	469	529	619	709

IAC Model	W/In H/In	36	36	36	36	36	36	36	48	48	48	48	48	48	48
3ELBM-LFM	Wt/Lb.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5ELBM-LFM		144	214	254	289	329	404	454	195	229	309	389	469	549	629
7ELBM-LFM		206	304	360	409	465	570	640	277.4	325	437	549	661	773	885
10ELBM-LFM		299	439	519	589	669	819	919	401	469	629	789	949	1109	1269

Table III: Aerodynamic Performance

IAC Model	L/Ft	Static Pressure Drop, i.w.g.															
		3'	0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.12	0.14	0.15	0.17
ELBM-LFM	5'	0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.12	0.14	0.15	0.17	0.19
	7'	0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.12	0.14	0.15	0.17	0.19
	10'	0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.12	0.14	0.15	0.17	0.19
Silencer Face Velocity, fpm		250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000

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								
ELBM-LFM	-2000	59	63	64	66	63	65	61	54
	-1000	55	59	58	64	55	54	48	49
	0	58	60	56	60	59	57	48	44
	1000	60	61	54	55	63	60	48	39
	2000	55	64	67	67	66	70	65	54

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

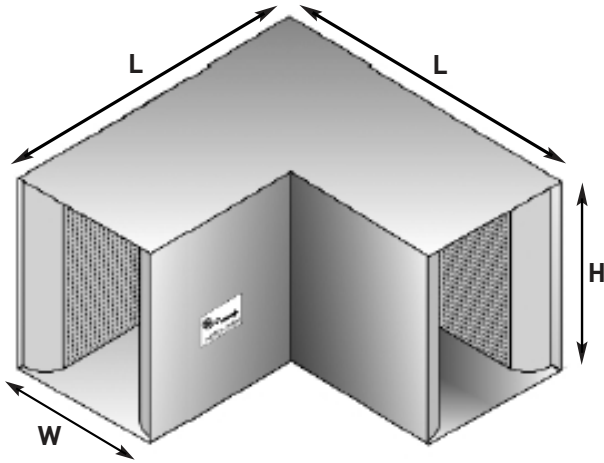
TAKE NOTE!

- 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

Quiet-Elbow™ Silencers

Type: ELBM-LFL

Forward & Reverse Flow Ratings



IAC Type ELBM Modular Elbows are designed to fit where shorter type of duct runs do not allow for standard type rectangular silencers. ELBM elbows also add the benefit of improved mid-range frequency performance while keeping the pressure drop minimal. ELBM's can come as standard with fiberglass infill with the same characteristics of our Quiet-Duct Commercial Series; they can also come as 100% Environmental friendly having the same characteristics of our Quiet-Duct Ultra/Green Series and they can also come with our "Hospital Grade" type characteristics, as with our Quiet-Duct Clean-Flow Series.

Designating Silencers

Model: 5ELBM 24 x 18

Type: ELBM **Length:** 5' **Width:** 24" **Height:** 18"

Pressure Loss for ELBM silencers is 0.2" at 1000 fpm

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	Dynamic Insertion Loss, dB							
3ELBM-LFL	-2000	4	7	14	22	20	15	14	13
	-1000	4	7	14	22	20	15	14	13
	0	4	7	14	22	20	15	14	13
	1000	4	7	14	22	20	15	14	13
	2000	4	7	14	22	20	15	14	13
5ELBM-LFL	-2000	6	10	18	31	30	19	16	16
	-1000	6	10	18	31	30	19	16	16
	0	6	10	18	31	30	19	16	16
	1000	6	10	18	31	30	19	16	16
	2000	6	10	18	31	30	19	16	16
7ELBM-LFL	-2000	8	13	24	43	36	22	18	18
	-1000	8	13	24	43	36	22	18	18
	0	8	13	24	43	36	22	18	18
	1000	8	13	24	43	36	22	18	18
	2000	8	13	24	43	36	22	18	18
10ELBM-LFL	-2000	12	18	32	51	46	26	20	20
	-1000	12	18	32	51	46	26	20	20
	0	12	18	32	51	46	26	20	20
	1000	12	18	32	51	46	26	20	20
	2000	12	18	32	51	46	26	20	20



(+) 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 & Measures

IAC Model	W/In	12	12	12	12	12	12	12	24	24	24	24	24	24	24
	H/In	12	18	24	30	36	42	48	12	18	24	30	36	42	48
3ELBM-LFL	Wt/lb.	59	74	94	114	134	159	189	94	109	129	149	169	199	229
5ELBM-LFL		94	114	149	174	209	246	284	149	169	199	229	259	304	349
7ELBM-LFL		136	164	213	248	297	348.8	402	213	241	283	325	367	430	493
10ELBM-LFL		199	239	309	359	429	503	579	309	349	409	469	529	619	709

IAC Model	W/In	36	36	36	36	36	36	36	48	48	48	48	48	48	48
	H/In	12	18	24	30	36	42	48	12	18	24	30	36	42	48
3ELBM-LFL	Wt/lb.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5ELBM-LFL		144	214	254	289	329	404	454	195	229	309	389	469	549	629
7ELBM-LFL		206	304	360	409	465	570	640	277.4	325	437	549	661	773	885
10ELBM-LFL		299	439	519	589	669	819	919	401	469	629	789	949	1109	1269

Table III: Aerodynamic Performance

IAC Model	L/Ft	Static Pressure Drop, i.w.g.															
		0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.07
ELBM-LFL	3'	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.07
	5'	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.07
	7'	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.07
	10'	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.07
Silencer Face Velocity, fpm		250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000

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								
ELBM-LFL	-2000	52	58	58	59	57	60	52	45
	-1000	44	49	49	54	48	53	39	42
	0	45	50	50	50	53	58	42	41
	1000	45	51	50	45	57	62	45	39
	2000	48	54	58	55	64	65	56	42

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

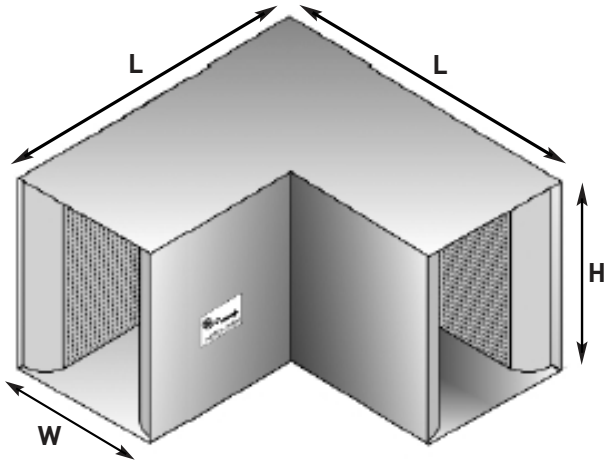
TAKE NOTE!

- 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

Quiet-Elbow™ Silencers

Type: ELBM-MS

Forward & Reverse Flow Ratings



IAC Type ELBM Modular Elbows are designed to fit where shorter type of duct runs do not allow for standard type rectangular silencers. ELBM elbows also add the benefit of improved mid-range frequency performance while keeping the pressure drop minimal. ELBM's can come as standard with fiberglass infill with the same characteristics of our Quiet-Duct Commercial Series; they can also come as 100% Environmental friendly having the same characteristics of our Quiet-Duct Ultra/Green Series and they can also come with our "Hospital Grade" type characteristics, as with our Quiet-Duct Clean-Flow Series.

Designating Silencers

Model: 5ELBM 24 x 18

Type: ELBM **Length:** 5' **Width:** 24" **Height:** 18"

Pressure Loss for ELBM silencers is 0.2" at 1000 fpm

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	Dynamic Insertion Loss, dB							
3ELBM-MS	-2000	4	7	13	25	28	28	23	16
	-1000	4	7	13	25	28	28	23	16
	0	4	7	13	25	28	28	23	16
	1000	4	7	13	25	28	28	23	16
	2000	4	7	13	25	28	28	23	16
5ELBM-MS	-2000	6	10	19	36	47	39	28	19
	-1000	6	10	19	36	47	39	28	19
	0	6	10	19	36	47	39	28	19
	1000	6	10	19	36	47	39	28	19
	2000	6	10	19	36	47	39	28	19
7ELBM-MS	-2000	10	14	25	42	53	49	36	23
	-1000	10	14	25	42	53	49	36	23
	0	10	14	25	42	53	49	36	23
	1000	10	14	25	42	53	49	36	23
	2000	10	14	25	42	53	49	36	23
10ELBM-MS	-2000	12	20	35	48	56	57	48	27
	-1000	12	20	35	48	56	57	48	27
	0	12	20	35	48	56	57	48	27
	1000	12	20	35	48	56	57	48	27
	2000	12	20	35	48	56	57	48	27



(+) 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 & Measures

IAC Model	W/In H/In	12	12	12	12	12	12	12	24	24	24	24	24	24	24
		12	18	24	30	36	42	48	12	18	24	30	36	42	48
3ELBM-MS	Wt/Lb.	70	85	105	125	145	170	200	105	120	140	160	180	210	240
5ELBM-MS		105	125	160	185	220	257	295	160	180	210	240	270	315	360
7ELBM-MS		147	175	224	259	308	359.8	413	224	252	294	336	378	441	504
10ELBM-MS		210	250	320	370	440	514	590	320	360	420	480	540	630	720

IAC Model	W/In H/In	36	36	36	36	36	36	36	48	48	48	48	48	48	48
		12	18	24	30	36	42	48	12	18	24	30	36	42	48
3ELBM-MS	Wt/Lb.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5ELBM-MS		155	225	265	300	340	415	465	206	240	320	400	480	560	640
7ELBM-MS		217	315	371	420	476	581	651	288.4	336	448	560	672	784	896
10ELBM-MS		310	450	530	600	680	830	930	412	480	640	800	960	1120	1280

Table III: Aerodynamic Performance

IAC Model	L/Ft	Static Pressure Drop, i.w.g.															
		ELBM-MS	3'	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.08
5'	0.01		0.01	0.01	0.02	0.02	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.10
7'	0.01		0.01	0.01	0.02	0.02	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.10
10'	0.01		0.01	0.01	0.02	0.02	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.10
Silencer Face Velocity, fpm		250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000

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								
ELBM-MS	-2000	66	69	66	66	64	65	61	52
	-1000	59	64	60	60	58	59	54	45
	0	58	62	57	57	56	57	52	43
	1000	57	59	54	54	54	55	50	40
	2000	64	66	61	61	62	62	57	48

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

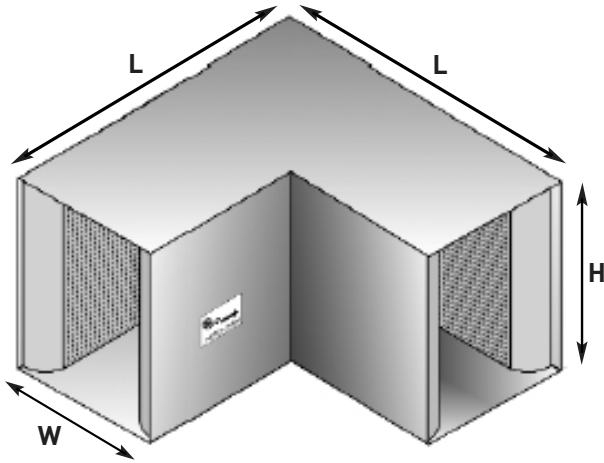
TAKE NOTE!

- 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

Quiet-Elbow™ Silencers

Type: ELBM-ML

Forward & Reverse Flow Ratings



IAC Type ELBM Modular Elbows are designed to fit where shorter type of duct runs do not allow for standard type rectangular silencers. ELBM elbows also add the benefit of improved mid-range frequency performance while keeping the pressure drop minimal. ELBM's can come as standard with fiberglass infill with the same characteristics of our Quiet-Duct Commercial Series; they can also come as 100% Environmental friendly having the same characteristics of our Quiet-Duct Ultra/Green Series and they can also come with our "Hospital Grade" type characteristics, as with our Quiet-Duct Clean-Flow Series.

Designating Silencers

Model: 5ELBM 24 x 18

Type: ELBM **Length:** 5' **Width:** 24" **Height:** 18"

Pressure Loss for ELBM silencers is 0.2" at 1000 fpm

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	Dynamic Insertion Loss, dB							
3ELBM-ML	-2000	2	5	11	23	22	18	15	13
	-1000	2	5	11	23	22	18	15	13
	0	2	5	11	23	22	18	15	13
	1000	2	5	11	23	22	18	15	13
	2000	2	5	11	23	22	18	15	13
5ELBM-ML	-2000	3	8	16	34	35	26	19	15
	-1000	3	8	16	34	35	26	19	15
	0	3	8	16	34	35	26	19	15
	1000	3	8	16	34	35	26	19	15
	2000	3	8	16	34	35	26	19	15
7ELBM-ML	-2000	4	12	21	42	43	33	23	17
	-1000	4	12	21	42	43	33	23	17
	0	4	12	21	42	43	33	23	17
	1000	4	12	21	42	43	33	23	17
	2000	4	12	21	42	43	33	23	17
10ELBM-ML	-2000	8	18	28	48	52	45	28	17
	-1000	8	18	28	48	52	45	28	17
	0	8	18	28	48	52	45	28	17
	1000	8	18	28	48	52	45	28	17
	2000	8	18	28	48	52	45	28	17



(+) 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 & Measures

IAC Model	W/In	12	12	12	12	12	12	12	24	24	24	24	24	24	24
	H/In	12	18	24	30	36	42	48	12	18	24	30	36	42	48
3ELBM-ML	Wt/Lb.	70	85	105	125	145	170	200	105	120	140	160	180	210	240
5ELBM-ML		105	125	160	185	220	257	295	160	180	210	240	270	315	360
7ELBM-ML		147	175	224	259	308	359.8	413	224	252	294	336	378	441	504
10ELBM-ML		210	250	320	370	440	514	590	320	360	420	480	540	630	720

IAC Model	W/In	36	36	36	36	36	36	36	48	48	48	48	48	48	48
	H/In	12	18	24	30	36	42	48	12	18	24	30	36	42	48
3ELBM-ML	Wt/Lb.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5ELBM-ML		155	225	265	300	340	415	465	206	240	320	400	480	560	640
7ELBM-ML		217	315	371	420	476	581	651	288.4	336	448	560	672	784	896
10ELBM-ML		310	450	530	600	680	830	930	412	480	640	800	960	1120	1280

Table III: Aerodynamic Performance

IAC Model	L/Ft	Static Pressure Drop, i.w.g.																
		ELBM-ML	3'	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04
5'	0.00		0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.04	0.05
7'	0.00		0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.04	0.05
10'	0.00		0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.04	0.05
Silencer Face Velocity, fpm		250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	

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								
ELBM-ML	-2000	62	66	62	63	63	64	55	47
	-1000	55	61	56	57	57	58	48	42
	0	54	62	52	52	53	55	49	41
	1000	52	62	48	47	49	51	49	39
	2000	59	64	55	54	57	59	55	43

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

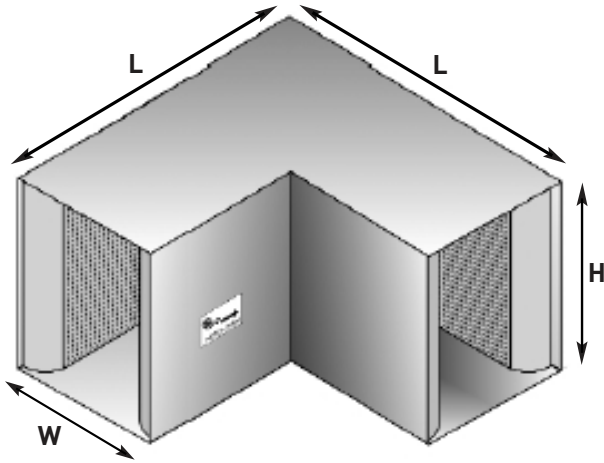
TAKE NOTE!

- 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

Quiet-Elbow™ Silencers

Type: ELBM-S

Forward & Reverse Flow Ratings



IAC Type ELBM Modular Elbows are designed to fit where shorter type of duct runs do not allow for standard type rectangular silencers. ELBM elbows also add the benefit of improved mid-range frequency performance while keeping the pressure drop minimal. ELBM's can come as standard with fiberglass infill with the same characteristics of our Quiet-Duct Commercial Series; they can also come as 100% Environmental friendly having the same characteristics of our Quiet-Duct Ultra/Green Series and they can also come with our "Hospital Grade" type characteristics, as with our Quiet-Duct Clean-Flow Series.

Designating Silencers

Model: 5ELBM 24 x 18

Type: ELBM **Length:** 5' **Width:** 24" **Height:** 18"

Pressure Loss for ELBM silencers is 0.2" at 1000 fpm

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	Dynamic Insertion Loss, dB							
3ELBM-S	-2000	7	12	17	34	40	40	33	22
	-1000	7	12	17	34	40	40	33	22
	0	7	12	17	34	40	40	33	22
	1000	7	12	17	34	40	40	33	22
	2000	7	12	17	34	40	40	33	22
5ELBM-S	-2000	8	18	25	46	50	51	46	31
	-1000	8	18	25	46	50	51	46	31
	0	8	18	25	46	50	51	46	31
	1000	8	18	25	46	50	51	46	31
	2000	8	18	25	46	50	51	46	31
7ELBM-S	-2000	10	20	36	51	55	53	50	39
	-1000	10	20	36	51	55	53	50	39
	0	10	20	36	51	55	53	50	39
	1000	10	20	36	51	55	53	50	39
	2000	10	20	36	51	55	53	50	39
10ELBM-S	-2000	13	23	43	58	60	58	56	50
	-1000	13	23	43	58	60	58	56	50
	0	13	23	43	58	60	58	56	50
	1000	13	23	43	58	60	58	56	50
	2000	13	23	43	58	60	58	56	50



(+) 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 & Measures

IAC Model	W/In H/In	12	12	12	12	12	12	12	24	24	24	24	24	24	24
3ELBM-S	Wt/lb.	82	97	117	137	157	182	212	117	132	152	172	192	222	252
5ELBM-S		117	137	172	197	232	269	307	172	192	222	252	282	327	372
7ELBM-S		159	187	236	271	320	371.8	425	236	264	306	348	390	453	516
10ELBM-S		222	262	332	382	452	526	602	332	372	432	492	552	642	732

IAC Model	W/In H/In	36	36	36	36	36	36	36	48	48	48	48	48	48	48
3ELBM-S	Wt/lb.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5ELBM-S		167	237	277	312	352	427	477	218	252	332	412	492	572	652
7ELBM-S		229	327	383	432	488	593	663	300.4	348	460	572	684	796	908
10ELBM-S		322	462	542	612	692	842	942	424	492	652	812	972	1132	1292

Table III: Aerodynamic Performance

IAC Model	L/Ft	Static Pressure Drop, i.w.g.															
		ELBM-S	3'	0.02	0.03	0.04	0.06	0.07	0.09	0.11	0.13	0.15	0.18	0.20	0.23	0.26	0.29
5'	0.02		0.03	0.04	0.06	0.07	0.09	0.11	0.13	0.15	0.18	0.20	0.23	0.26	0.29	0.33	0.36
7'	0.02		0.03	0.04	0.06	0.07	0.09	0.11	0.13	0.15	0.18	0.20	0.23	0.26	0.29	0.33	0.36
10'	0.02		0.03	0.04	0.06	0.07	0.09	0.11	0.13	0.15	0.18	0.20	0.23	0.26	0.29	0.33	0.36
Silencer Face Velocity, fpm		250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000

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								
ELBM-S	-2000	74	75	71	76	68	70	70	69
	-1000	67	70	65	70	62	64	63	62
	0	68	73	66	69	66	68	63	57
	1000	68	76	67	67	69	72	63	51
	2000	75	81	72	75	76	77	72	60

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

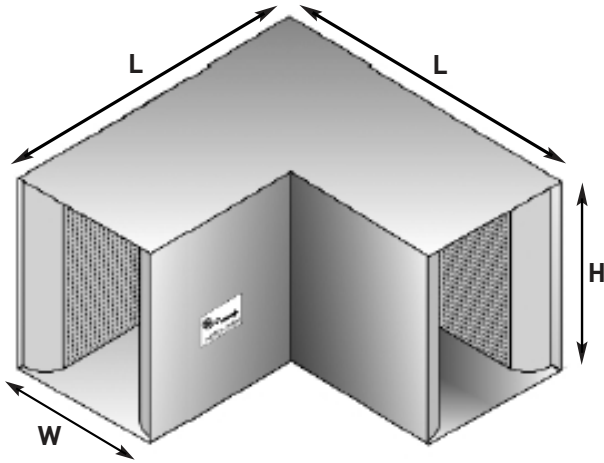
TAKE NOTE!

- 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

Quiet-Elbow™ Silencers

Type: ELBM-ES

Forward & Reverse Flow Ratings



IAC Type ELBM Modular Elbows are designed to fit where shorter type of duct runs do not allow for standard type rectangular silencers. ELBM elbows also add the benefit of improved mid-range frequency performance while keeping the pressure drop minimal. ELBM's can come as standard with fiberglass infill with the same characteristics of our Quiet-Duct Commercial Series; they can also come as 100% Environmental friendly having the same characteristics of our Quiet-Duct Ultra/Green Series and they can also come with our "Hospital Grade" type characteristics, as with our Quiet-Duct Clean-Flow Series.

Designating Silencers

Model: 5ELBM 24 x 18

Type: ELBM **Length:** 5' **Width:** 24" **Height:** 18"

Pressure Loss for ELBM silencers is 0.2" at 1000 fpm

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	Dynamic Insertion Loss, dB							
3ELBM-ES	-2000	4	8	16	31	39	39	29	22
	-1000	4	8	16	31	39	39	29	22
	0	4	8	16	31	39	39	29	22
	1000	4	8	16	31	39	39	29	22
	2000	4	8	16	31	39	39	29	22
5ELBM-ES	-2000	8	13	21	41	55	54	41	29
	-1000	8	13	21	41	55	54	41	29
	0	8	13	21	41	55	54	41	29
	1000	8	13	21	41	55	54	41	29
	2000	8	13	21	41	55	54	41	29
7ELBM-ES	-2000	8	18	36	54	59	58	51	37
	-1000	8	18	36	54	59	58	51	37
	0	8	18	36	54	59	58	51	37
	1000	8	18	36	54	59	58	51	37
	2000	8	18	36	54	59	58	51	37
10ELBM-ES	-2000	10	26	43	61	59	62	56	43
	-1000	10	26	43	61	59	62	56	43
	0	10	26	43	61	59	62	56	43
	1000	10	26	43	61	59	62	56	43
	2000	10	26	43	61	59	62	56	43



(+) 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 & Measures

IAC Model	W/In	12	12	12	12	12	12	12	24	24	24	24	24	24	24
	H/In	12	18	24	30	36	42	48	12	18	24	30	36	42	48
3ELBM-ES	Wt/lb.	94	109	129	149	169	194	224	129	144	164	184	204	234	264
5ELBM-ES		129	149	184	209	244	281	319	184	204	234	264	294	339	384
7ELBM-ES		171	199	248	283	332	383.8	437	248	276	318	360	402	465	528
10ELBM-ES		234	274	344	394	464	538	614	344	384	444	504	564	654	744

IAC Model	W/In	36	36	36	36	36	36	36	48	48	48	48	48	48	48
	H/In	12	18	24	30	36	42	48	12	18	24	30	36	42	48
3ELBM-ES	Wt/lb.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5ELBM-ES		179	249	289	324	364	439	489	230	264	344	424	504	584	664
7ELBM-ES		241	339	395	444	500	605	675	312.4	360	472	584	696	808	920
10ELBM-ES		334	474	554	624	704	854	954	436	504	664	824	984	1144	1304

Table III: Aerodynamic Performance

IAC Model	L/Ft	Static Pressure Drop, i.w.g.															
		ELBM-ES	3'	0.01	0.02	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.14	0.16	0.18
5'	0.01		0.02	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.14	0.16	0.18	0.20	0.22
7'	0.01		0.02	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.14	0.16	0.18	0.20	0.22
10'	0.01		0.02	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.14	0.16	0.18	0.20	0.22
Silencer Face Velocity, fpm		250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000

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								
ELBM-ES	-2000	62	67	68	70	68	71	72	67
	-1000	54	60	60	66	60	68	59	60
	0	55	61	56	59	59	62	54	51
	1000	55	62	51	52	57	56	48	41
	2000	61	69	63	61	64	67	63	54

(+) 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