

Quiet-Duct Ultra™ / ZAPD Silencers

Section 15000 Specifications

1.01 General

- A. Furnish and install "Quiet-Duct Ultra™/ZAPD" (rectangular) 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 casings of rectangular silencers shall be made of 22 gauge type #G-90 lock-former-quality galvanized steel.
- B. Interior partitions for rectangular silencers shall be not less than 26 gauge type #G-90 galvanized lock-former-quality perforated steel.
- C. Filler material shall be 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.
- D. Combustion ratings for the silencer acoustic fill shall be not greater than the following when tested to 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. Seams shall be lock formed and mastic filled. Rectangular casing seams shall be in the corners of the silencer shell to provide maximum unit strength and rigidity. Interior partitions shall be fabricated from single-piece, margin-perforated sheets and shall have die-formed entrance and exit shapes so as to provide the maximum aerodynamic efficiency and minimum self-noise characteristics in the sound attenuator. Blunt noses or squared off partitions will not be accepted.
- B. 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. Airtight construction shall be provided by use of a duct sealing compound on the job-site material and labor furnished by the contractor.

4.01 Acoustic Performance

- A. All silencer ratings shall be determined in a duct-to-reverberant room test facility which provides for airflow in both directions 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.

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 rectangular and tubular type silencers shall be presented for tests conducted using silencers no smaller than the following cross-sections:

Rectangular, inch: 24 x 24, 24 x 30, or 24 x 36

5.01 Aerodynamic Performance

- A. IAC Quiet-Duct Ultra™ /ZAPD silencers do not introduce any additional pressure drop into the system.

6.01 Certification

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

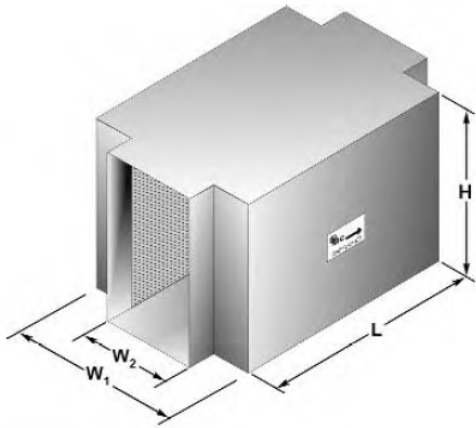
7.01 Duct Transitions

- A. When transitions are required to adapt silencer dimensions to connecting duct work they shall be furnished by the installing contractor.

Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z6A

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z6A 6 x 12

Type: Z6A **Length:** 5' **W₂:** 6" **Height:** 12"

All Z6A Silencers W₁ = 12"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z6A has a 6" wide opening and two 3" baffles on each side, having a combined total width of 12", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	1	3	7	14	9	10	4	4
	-1000	1	3	7	14	9	11	5	4
	0	1	3	7	14	8	12	6	4
	1000	1	3	7	14	7	13	7	4
	2000	1	3	6	14	8	13	7	4
5	-2000	1	5	13	26	22	20	10	7
	-1000	1	5	12	26	23	19	12	8
	0	1	5	12	26	23	21	12	7
	1000	1	5	12	26	23	22	12	6
	2000	2	5	12	26	23	22	12	7
7	-2000	2	7	17	36	29	27	13	10
	-1000	2	7	17	36	30	28	15	11
	0	2	7	17	36	29	29	16	10
	1000	2	7	16	36	29	31	17	9
	2000	2	7	16	36	30	31	17	9
10	-2000	4	10	24	50	37	37	17	13
	-1000	4	10	24	50	38	38	20	16
	0	4	10	23	49	36	41	22	14
	1000	4	10	23	49	35	43	24	12
	2000	4	10	22	49	36	43	24	13

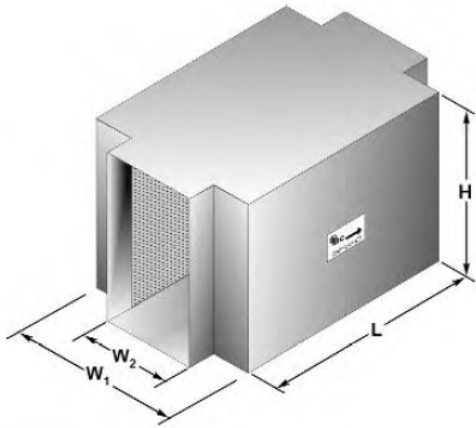


(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99. Contact IAC if attenuation in excess of 50 dB is required.

Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z6B

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z6C 6 x 12

Type: Z6B **Length:** 5' **W₂:** 6" **Height:** 12"

All Z6B Silencers W₁ = 15"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z6B has a 6" wide opening and two 4.5" baffles on each side, having a combined total width of 15", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	2	5	9	12	9	11	5	4
	-1000	2	5	9	13	9	11	5	4
	0	2	5	9	13	8	12	6	4
	1000	2	5	9	13	7	13	7	3
	2000	2	4	9	13	8	13	7	4
5	-2000	4	9	18	25	22	20	11	8
	-1000	4	9	18	25	23	19	12	9
	0	3	8	17	25	23	21	12	8
	1000	3	8	17	25	23	22	12	6
	2000	3	8	17	25	23	22	12	7
7	-2000	5	13	25	35	29	27	14	10
	-1000	5	12	25	35	30	28	16	12
	0	5	12	24	35	29	29	16	10
	1000	5	11	24	35	29	31	17	9
	2000	4	11	24	35	29	31	17	9
10	-2000	8	18	33	46	37	38	18	14
	-1000	7	17	33	46	38	39	21	16
	0	7	16	33	47	36	41	22	14
	1000	7	16	33	47	35	43	23	12
	2000	6	15	33	47	35	43	24	13

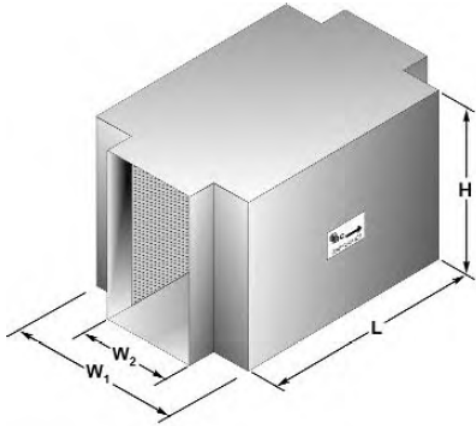


(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99. Contact IAC if attenuation in excess of 50 dB is required.

Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z6C

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z6C 6 x 12

Type: Z6C **Length:** 5' **W₂:** 6" **Height:** 12"

All Z6C Silencers W₁ = 20"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z6C has a 6" wide opening and two 7" baffles on each side, having a combined total width of 20", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	4	7	10	10	9	11	5	4
	-1000	4	7	11	10	9	12	5	4
	0	3	7	11	11	8	12	6	4
	1000	3	7	11	11	7	13	7	3
	2000	3	7	11	11	7	13	7	4
5	-2000	6	13	21	23	23	19	11	8
	-1000	6	13	21	24	23	20	12	9
	0	6	12	21	24	23	21	12	8
	1000	5	12	21	24	23	22	12	6
	2000	5	12	20	24	23	22	12	7
7	-2000	9	19	30	32	29	27	15	11
	-1000	8	18	30	32	30	28	16	12
	0	8	18	30	33	30	30	16	10
	1000	8	17	29	33	29	31	17	9
	2000	7	16	29	33	29	31	17	9
10	-2000	13	26	38	41	37	38	20	15
	-1000	12	25	38	41	38	39	21	16
	0	11	24	38	41	37	41	22	14
	1000	11	24	38	42	35	43	23	12
	2000	10	23	38	42	35	44	24	13

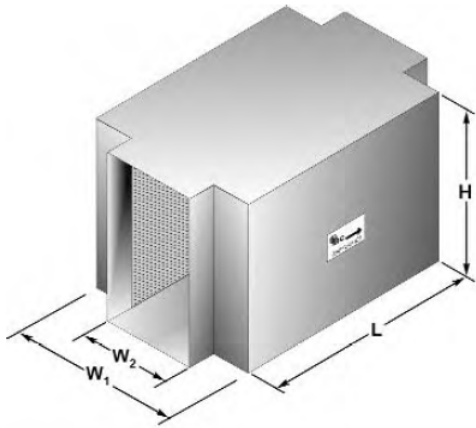


(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99. Contact IAC if attenuation in excess of 50 dB is required.

Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z6D

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z6D 6 x 12

Type: Z6D **Length:** 5' **W₂:** 6" **Height:** 12"

All Z6D Silencers W₁ = 24"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z6D has a 6" wide opening and two 18" baffles on each side, having a combined total width of 24", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	4	9	11	9	9	11	5	4
	-1000	4	8	11	9	9	12	6	5
	0	4	8	11	10	8	12	6	4
	1000	4	8	11	10	7	13	7	3
	2000	4	8	11	10	7	13	7	4
5	-2000	8	15	23	24	22	19	12	8
	-1000	7	15	22	24	23	20	12	9
	0	7	14	22	24	23	21	12	7
	1000	7	14	22	24	23	22	11	6
	2000	6	14	22	24	23	22	12	6
7	-2000	11	21	31	31	30	28	15	11
	-1000	10	21	31	31	31	28	16	12
	0	10	20	30	31	30	30	16	10
	1000	9	20	30	31	29	31	17	8
	2000	9	19	30	31	29	31	17	9
10	-2000	15	30	40	39	38	38	20	16
	-1000	14	29	40	40	39	39	21	16
	0	14	28	40	40	37	41	22	14
	1000	13	27	40	40	35	43	23	12
	2000	12	27	40	41	35	43	24	12

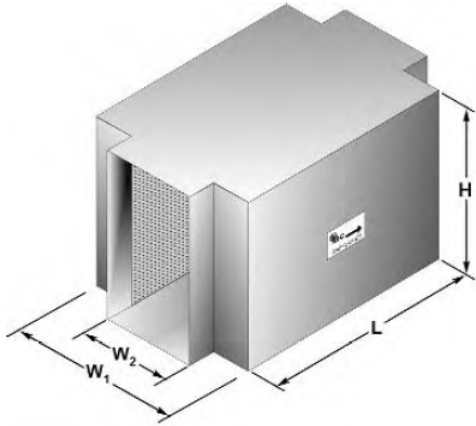


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Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z6E

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z6E 6 x 12

Type: Z6E **Length:** 5' **W₂:** 6" **Height:** 12"

All Z6E Silencers W₁ = 30"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z6E has a 6" wide opening and two 24" baffles on each side, having a combined total width of 30", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	5	10	11	10	9	11	5	4
	-1000	5	10	11	10	9	12	6	5
	0	5	9	11	10	8	12	6	4
	1000	5	9	11	10	7	13	7	3
	2000	4	9	11	10	7	13	7	3
5	-2000	9	17	23	23	23	19	12	9
	-1000	9	16	23	23	23	20	12	9
	0	8	16	23	23	23	21	12	7
	1000	8	16	23	23	23	21	11	6
	2000	8	15	23	23	23	22	12	6
7	-2000	12	23	31	32	30	28	16	12
	-1000	12	23	31	32	31	29	16	12
	0	12	22	31	32	30	30	16	10
	1000	11	22	31	32	29	31	17	8
	2000	11	21	31	32	29	31	17	9
10	-2000	17	33	41	40	38	39	21	16
	-1000	17	32	41	40	39	40	21	17
	0	16	32	41	40	37	41	22	14
	1000	16	31	41	40	35	43	23	11
	2000	15	30	41	40	35	43	23	12

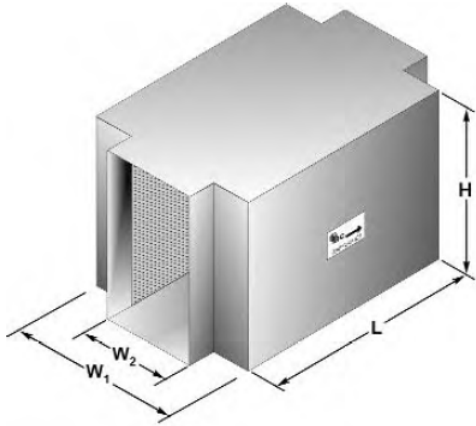


(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99. Contact IAC if attenuation in excess of 50 dB is required.

Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z9A

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z9A 6 x 12

Type: Z9A **Length:** 5' **W₂:** 9" **Height:** 12"

All Z9A Silencers W₁ = 18"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z9A has a 9" wide opening and two 4.5" baffles on each side, having a combined total width of 18", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	1	3	9	13	13	6	3	4
	-1000	1	3	8	13	14	7	4	4
	0	1	3	8	13	13	7	4	3
	1000	1	3	8	13	13	7	4	2
	2000	1	3	8	13	13	7	4	3
5	-2000	2	6	15	25	23	11	6	7
	-1000	2	6	15	25	23	11	7	7
	0	2	6	14	24	24	11	7	6
	1000	2	6	14	24	24	11	7	4
	2000	2	6	14	24	24	11	7	4
7	-2000	3	9	21	35	33	15	9	10
	-1000	3	8	21	35	34	16	11	10
	0	3	8	20	34	33	16	10	8
	1000	3	8	20	34	33	16	10	6
	2000	3	8	19	33	33	17	10	6
10	-2000	5	12	29	47	45	21	12	14
	-1000	5	12	29	46	46	22	14	14
	0	5	11	28	46	46	23	14	11
	1000	5	11	28	46	46	23	14	8
	2000	4	11	27	46	46	23	14	9

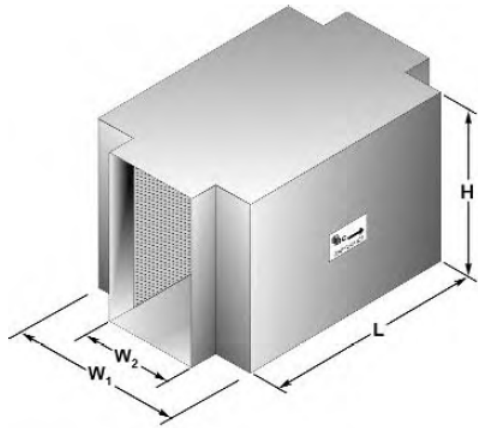


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Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z9B

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z9B 6 x 12

Type: Z9B **Length:** 5' **W₂:** 9" **Height:** 12"

All Z9B Silencers W₁ = 20"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z9B has a 9" wide opening and two 5.5" baffles on each side, having a combined total width of 20", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	2	5	9	12	13	6	3	4
	-1000	2	5	9	12	14	7	4	4
	0	2	4	9	12	14	7	4	3
	1000	2	4	9	12	13	7	4	2
	2000	2	4	9	12	13	7	4	3
5	-2000	3	8	17	24	23	11	6	7
	-1000	3	8	16	24	23	11	7	7
	0	3	8	16	24	23	11	7	6
	1000	3	7	16	23	24	11	7	4
	2000	3	7	16	23	24	11	7	4
7	-2000	5	12	24	34	33	16	9	10
	-1000	5	11	23	33	34	16	11	10
	0	4	11	23	33	33	16	10	8
	1000	4	10	23	33	33	16	10	6
	2000	4	10	22	33	33	17	10	6
10	-2000	7	16	32	44	45	22	12	14
	-1000	7	16	32	44	47	22	14	14
	0	7	15	31	44	46	23	14	11
	1000	6	15	31	44	46	23	14	8
	2000	6	14	31	44	46	23	14	9

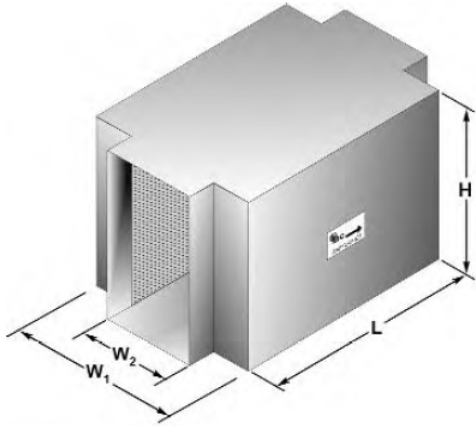


(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99. Contact IAC if attenuation in excess of 50 dB is required.

Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z9C

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z9C 6 x 12

Type: Z9C **Length:** 5' **W₂:** 9" **Height:** 12"

All Z9C Silencers W₁ = 22 1/2"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z9C has a 9" wide opening and two 6.75" baffles on each side, having a combined total width of 22.5", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	3	6	10	11	13	6	3	4
	-1000	3	6	10	11	14	7	4	4
	0	3	6	10	12	14	7	4	3
	1000	2	5	10	12	13	7	4	2
	2000	2	5	10	12	13	7	4	3
5	-2000	5	10	18	23	23	11	7	7
	-1000	4	10	18	23	23	11	7	7
	0	4	10	18	23	24	11	7	6
	1000	4	9	18	23	24	11	7	4
	2000	4	9	18	23	24	11	7	4
7	-2000	7	15	26	32	33	16	9	10
	-1000	6	14	26	32	34	16	11	10
	0	6	14	25	32	34	16	10	8
	1000	6	13	25	32	33	16	10	6
	2000	5	13	25	32	33	17	10	6
10	-2000	9	20	35	42	45	22	12	14
	-1000	9	20	34	42	47	22	14	14
	0	8	19	34	42	46	23	14	11
	1000	8	18	34	42	46	23	14	8
	2000	8	18	34	42	46	23	14	9

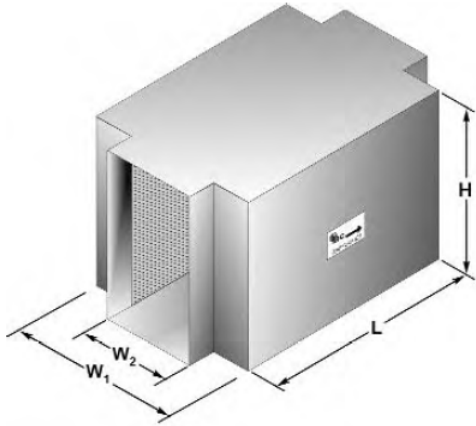


(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99. Contact IAC if attenuation in excess of 50 dB is required.

Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z9D

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z9D 6 x 12

Type: Z9D **Length:** 5' **W₂:** 9" **Height:** 12"

All Z9D Silencers W₁ = 30"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z9D has a 9" wide opening and two 10.5" baffles on each side, having a combined total width of 30", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	4	8	10	10	13	7	4	4
	-1000	4	8	10	10	14	7	4	4
	0	4	8	10	10	14	7	4	3
	1000	4	7	10	10	13	7	4	2
	2000	3	7	10	10	13	7	4	2
5	-2000	7	14	21	22	23	11	7	7
	-1000	7	14	20	22	23	11	7	7
	0	7	13	20	22	24	11	7	6
	1000	6	13	20	22	24	11	7	4
	2000	6	13	20	22	24	11	7	4
7	-2000	10	19	28	30	33	16	10	10
	-1000	10	19	28	30	34	16	11	10
	0	9	18	28	30	34	16	10	8
	1000	9	18	28	30	33	16	10	6
	2000	8	17	27	30	33	17	10	6
10	-2000	14	28	37	39	45	22	14	14
	-1000	13	27	37	39	48	22	14	14
	0	13	26	37	39	47	22	14	11
	1000	12	25	37	39	46	23	14	8
	2000	12	25	37	39	46	23	14	8

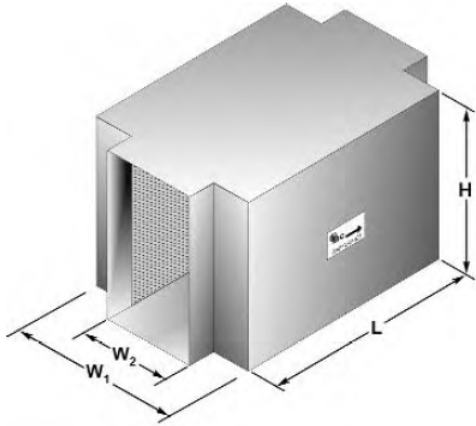


(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99. Contact IAC if attenuation in excess of 50 dB is required.

Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z9E

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z9E 6 x 12

Type: Z9E **Length:** 5' **W₂:** 9" **Height:** 12"

All Z9E Silencers W₁ = 36"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z9E has a 9" wide opening and two 13.5" baffles on each side, having a combined total width of 36", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	5	9	10	10	14	7	4	4
	-1000	5	8	10	10	15	7	4	4
	0	4	8	10	10	14	7	4	3
	1000	4	8	10	10	13	7	4	2
	2000	4	8	10	10	13	7	4	2
5	-2000	8	15	20	21	23	11	7	7
	-1000	8	15	20	21	24	11	7	7
	0	8	15	20	20	24	11	7	6
	1000	7	14	20	20	24	11	7	4
	2000	7	14	20	20	24	11	7	4
7	-2000	11	21	29	30	34	16	11	10
	-1000	11	21	29	30	34	16	11	10
	0	11	21	29	30	34	16	10	8
	1000	10	20	29	30	33	16	10	6
	2000	10	20	28	30	33	16	10	6
10	-2000	16	30	37	37	47	22	14	14
	-1000	16	29	37	37	48	22	14	14
	0	15	29	36	37	47	22	14	11
	1000	15	28	36	37	46	22	14	8
	2000	14	27	36	37	46	23	14	8

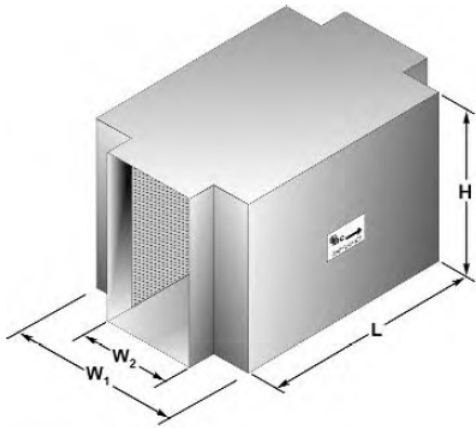


(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99. Contact IAC if attenuation in excess of 50 dB is required.

Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z12A

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z12A 6x12

Type: Z12A **Length:** 5' **W₂:** 12" **Height:** 12"

All Z12A Silencers W₁ = 24"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z12A has a 12" wide opening and two 6" baffles on each side, having a combined total width of 24", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	2	4	9	13	11	5	3	4
	-1000	2	4	9	13	11	5	3	4
	0	2	4	9	13	10	4	3	3
	1000	2	4	9	12	9	4	3	2
	2000	1	4	9	12	9	4	3	3
5	-2000	3	7	16	22	17	9	5	7
	-1000	3	7	16	22	18	9	6	7
	0	2	7	15	22	18	8	6	6
	1000	2	7	15	22	19	8	5	5
	2000	2	6	15	21	19	8	5	6
7	-2000	4	10	22	32	25	13	7	10
	-1000	4	10	22	32	26	12	8	10
	0	4	10	21	31	25	12	8	8
	1000	3	9	21	31	25	11	7	7
	2000	3	9	21	30	25	11	7	7
10	-2000	5	14	31	44	36	17	10	13
	-1000	5	14	31	43	36	17	12	13
	0	5	14	30	43	35	16	11	11
	1000	5	13	30	42	34	14	10	10
	2000	5	13	29	42	35	15	10	10

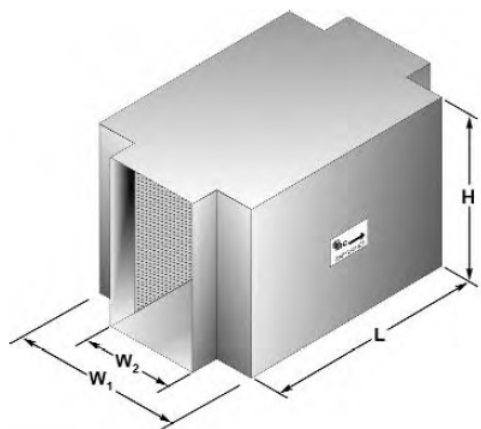


(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99. Contact IAC if attenuation in excess of 50 dB is required.

Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z12B

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z12B 6x12

Type: Z12B **Length:** 5' **W₂:** 12" **Height:** 12"

All Z12B Silencers W₁ = 30"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z12B has a 12" wide opening and two 9" baffles on each side, having a combined total width of 30", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	3	6	10	11	11	5	3	4
	-1000	3	6	9	11	11	5	3	4
	0	3	6	9	11	10	4	3	3
	1000	3	6	9	11	9	4	3	2
	2000	2	6	9	11	9	4	3	3
5	-2000	5	11	18	20	17	9	5	7
	-1000	5	11	18	20	18	9	6	7
	0	5	10	18	20	18	8	6	6
	1000	4	10	17	20	19	8	5	5
	2000	4	10	17	20	19	8	5	6
7	-2000	7	15	25	28	25	13	7	10
	-1000	7	15	25	28	26	12	8	10
	0	7	14	24	28	25	12	8	8
	1000	6	14	24	28	25	11	7	7
	2000	6	14	24	28	25	11	7	7
10	-2000	10	22	34	38	35	17	10	13
	-1000	10	21	34	38	36	17	12	13
	0	9	20	33	38	35	16	11	11
	1000	9	20	33	38	33	14	10	9
	2000	8	19	33	38	34	15	10	10

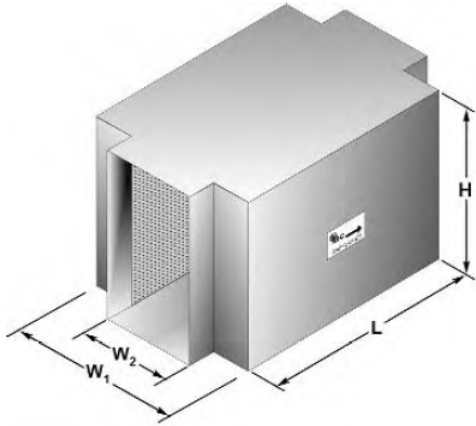


(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99. Contact IAC if attenuation in excess of 50 dB is required.

Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z12C

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z12C 6x12

Type: Z12C **Length:** 5' **W₂:** 12" **Height:** 12"

All Z12C Silencers W₁ = 40"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z12C has a 12" wide opening and two 14" baffles on each side, having a combined total width of 40", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	4	8	10	10	10	5	3	4
	-1000	4	8	9	10	11	5	4	3
	0	4	7	9	10	10	4	3	3
	1000	4	7	9	9	9	4	3	2
	2000	4	7	9	9	9	4	3	3
5	-2000	7	14	18	18	18	9	6	7
	-1000	7	14	18	18	18	9	6	7
	0	7	13	18	18	18	8	6	6
	1000	7	13	18	18	19	8	5	5
	2000	6	13	18	18	19	8	5	6
7	-2000	10	20	27	27	25	13	8	10
	-1000	10	19	26	27	26	12	9	10
	0	10	19	26	27	25	11	8	8
	1000	9	18	26	27	24	11	7	7
	2000	9	18	26	26	25	11	7	7
10	-2000	15	27	34	35	35	17	12	13
	-1000	14	26	34	34	36	16	12	13
	0	14	26	34	34	34	15	11	11
	1000	13	25	34	34	33	14	10	9
	2000	13	25	33	34	34	14	10	10

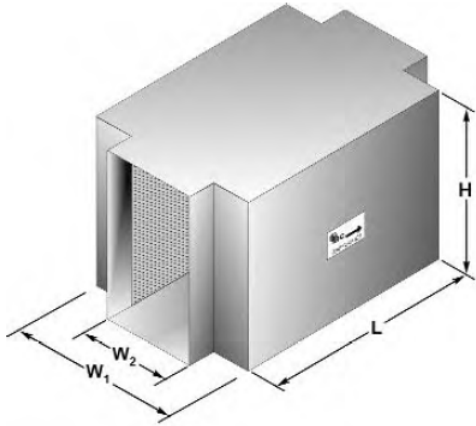


(+) Forward Flow / (-) Reverse Flow. Aero-acoustic performance data based on NVLAP accredited laboratory tests conducted in strict accordance with ASTM E477-99. Contact IAC if attenuation in excess of 50 dB is required.

Quiet-Duct Ultra™ / ZAPD Silencers

Type: Z12D

Forward & Reverse Flow Ratings



Designating Silencers

Model: 5Z12D 6x12

Type: Z12D **Length:** 5' **W₂:** 12" **Height:** 12"

All Z12D Silencers W₁ = 48"

This specific line of silencers has been designed for applications in which acoustics attenuation is required and no allowance can be made for pressure drop loss. A Zero Added Pressure Drop silencer is ideal for high velocity systems or systems that have little or no room for additional pressure drop. The IAC Quiet-Duct ZAPD series of silencers do not create any additional pressure drop in the system and have negligible Self-Noise Sound Power Levels. All Quiet-Duct Ultra™/ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

IAC Quiet-Duct Ultra™/ZAPD silencers have negligible Self Noise Sound Power levels. The Z12D has a 12" wide opening and two 18" baffles on each side, having a combined total width of 48", for effective acoustic attenuation. All ZAPD silencers have been rated with procedures certified in strict accordance with ASTM E477-99 in IAC's NVLAP Accredited Acoustical Laboratory.

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

Silencer Length (ft)	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							
3	-2000	5	8	10	10	11	5	3	4
	-1000	5	8	10	10	10	5	4	3
	0	5	8	10	10	9	4	3	3
	1000	4	8	10	10	9	4	3	2
	2000	4	8	10	10	9	4	3	2
5	-2000	8	15	18	18	18	9	6	7
	-1000	8	15	18	17	18	9	6	7
	0	8	14	18	17	18	8	6	6
	1000	8	14	18	17	19	8	5	5
	2000	7	14	17	17	19	8	5	5
7	-2000	11	21	26	25	26	12	8	10
	-1000	11	21	26	25	26	12	9	10
	0	11	21	25	25	25	11	8	8
	1000	11	20	25	25	24	11	7	7
	2000	10	20	25	25	25	11	7	7
10	-2000	16	29	35	34	36	17	12	13
	-1000	16	29	35	34	35	16	12	13
	0	15	28	34	34	34	15	11	11
	1000	15	28	34	33	33	14	10	9
	2000	15	27	34	33	34	14	10	10



(+) 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.