FLOW TECH

AIR DISTRIBUTION SPECIALIST

SOUND ATTENUATOR

We Care For The Air You Breathe

GF

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Part of FJ Group

Sound Attenuator Index

SOUND ATTENUATORS (SA)

DESCRIPTION

Attenuators have been tested in accordance with ASTM E477.

Attenuators are constructed in accordance with DW144 H.V.C.A. duct work manual so that it is built to the same standard as the duct work.

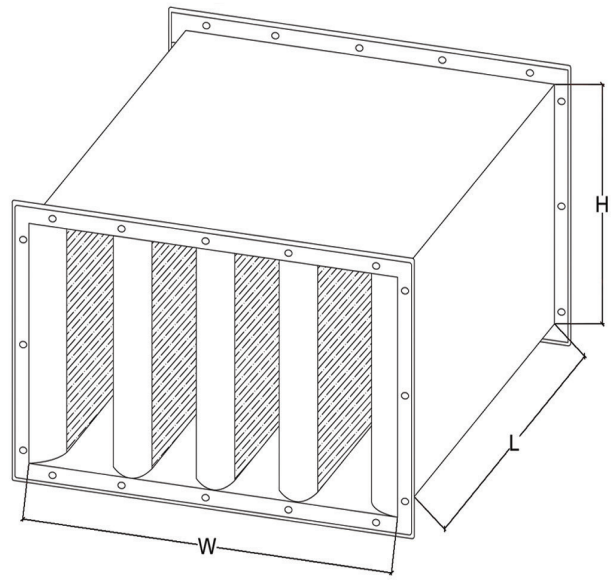
Splitters are as a standard infilled with 24 kg/m3 with a woven glass fiber fabric facing and is covered with a galvanized perforated sheet steel. This construction ensures that there is no migration of infill.

Design allows for a maximum velocity of 15m/s and 50 Pa pressure loss in passageways to ensure that no noise regeneration occurs.

Splitter section are fitted with bull-nosed ends i.e. Rounded ends in order to provide a smooth airflow on entry to the attenuator airways thereby reducing turbulence, excess pressure and the possibility of noise regeneration.

The attenuator is constructed entirely of pre-galvanized sheet steel.

All joints are sealed with a weatherproof mastic to ensure an air-tight seal and reduce the possibility of air noise.



**Material Specifications subject to change as per customer's demand.*

CONSTRUCTION

SA Dimension (mm)	Casing		Flange Size
	Gauge	Thickness	
Up to 999	21 g	0.9 mm	20
1000 to 1999	18 g	1.2 mm	30
2000 and above	16 g	1.5 mm	40

SELECTION

The first step in selecting a suitable attenuator configuration is to choose an appropriate model that meets the required insertion loss. This will determine the width and height of the attenuator. Then we need to calculate the pressure loss. The airflow through the attenuator is required for this calculation. If pressure drop is too high then the width or height or both of the attenuator needs to be increased.

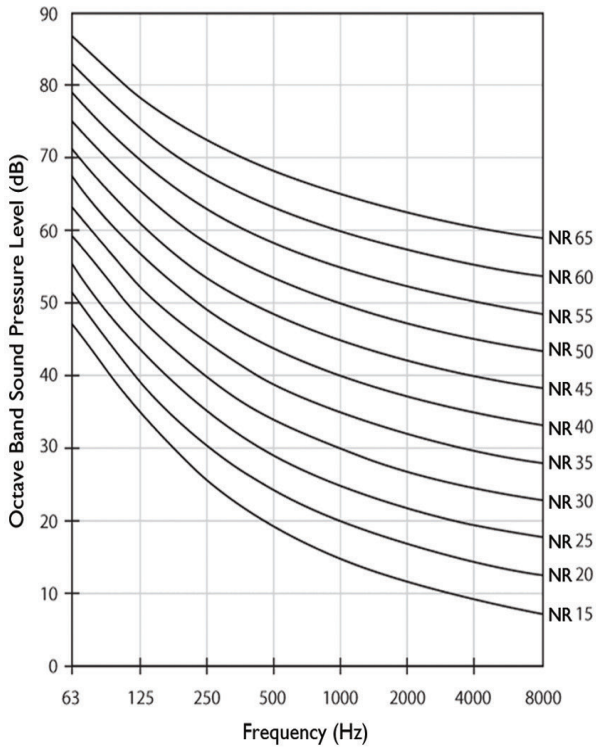
$$\text{Airway Velocity (m/s)} = \frac{\text{Airflow Quantity (m}^3\text{/s)}}{\text{Number of airways x Airway Width (m) x Height (m)}}$$

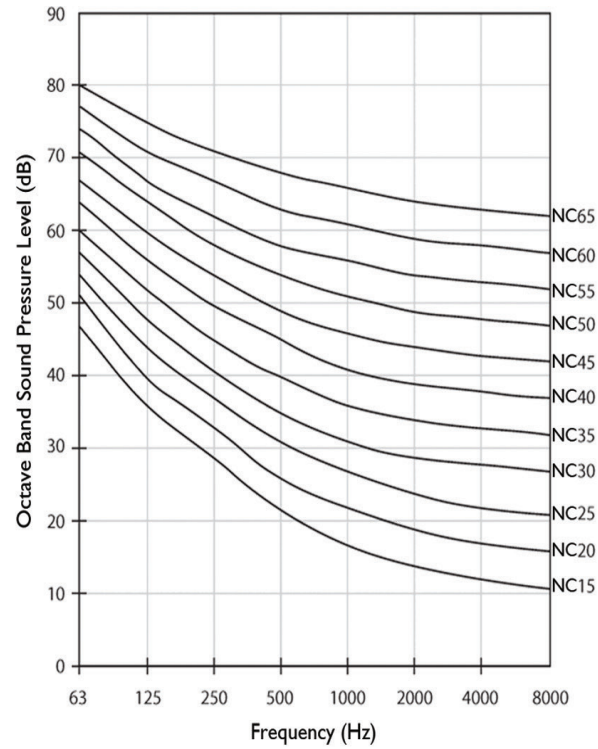
DYNAMIC INSERTION LOSS (DB) (A FEW EXAMPLES)

Model	Air Way Width	Length	63	125	250	500	1k	2k	4k
FT2K	75	600	5	9	16	24	33	30	22
FT3K	75	900	7	11	22	33	44	44	29
FT4K	75	1200	8	14	28	40	50	50	36
FT5K	75	1500	9	17	34	48	50	50	43
FT6K	75	1800	10	19	40	50	50	50	49
FT7K	75	2100	11	22	45	50	50	50	50
FT8K	75	2400	12	24	49	50	50	50	50
FT2A	100	600	6	9	14	19	32	31	23
FT3A	100	900	8	12	18	25	42	41	29
FT4A	100	1200	9	14	22	31	50	50	35
FT5A	100	1500	10	17	27	38	50	50	41
FT6A	100	1800	11	20	32	44	50	50	46
FT7A	100	2100	13	23	36	50	50	50	50
FT8A	100	2400	14	25	42	50	50	50	50
FT2C	150	600	8	11	17	25	29	25	19
FT3C	150	900	9	13	21	29	34	30	23
FT4C	150	1200	11	16	25	36	39	34	28
FT5C	150	1500	12	19	29	44	45	38	32
FT6C	150	1800	13	22	32	49	50	45	36
FT7C	150	2100	15	24	36	50	50	50	41
FT8C	150	2400	18	26	39	50	50	50	45
FT2D	175	600	5	7	10	13	23	17	16
FT3D	175	900	6	9	13	17	29	22	18
FT4D	175	1200	7	11	16	22	36	27	20
FT5D	175	1500	8	13	19	26	42	32	22
FT6D	175	1800	9	16	22	31	49	37	24
FT7D	175	2100	10	18	25	35	50	42	26
FT8D	175	2400	11	20	29	42	50	47	28
FT2G	200	600	6	8	14	18	19	16	15
FT3G	200	900	7	10	17	24	25	20	17
FT4G	200	1200	8	12	21	30	32	25	19
FT5G	200	1500	9	15	24	36	38	29	21
FT6G	200	1800	10	17	29	42	45	35	24
FT7G	200	2100	11	19	32	48	50	38	25
FT8G	200	2400	11	21	36	50	50	43	27

ACOUSTIC DESIGN

NR AND NC CURVES AND TABLES





NOISE RATING SOUND POWER LEVEL

Freq (Hz)	63	125	250	500	1k	2k	4k	8k
NR 65	87	78	72	68	65	62	61	59
NR 60	83	74	68	63	60	57	55	54
NR 55	79	70	63	58	55	52	50	49
NR 50	75	65	59	53	50	47	45	43
NR 45	71	61	54	48	45	42	40	38
NR 40	67	57	49	44	40	37	35	33
NR 35	63	52	45	39	35	32	30	28
NR 30	59	48	40	34	30	27	25	23
NR 25	55	44	35	29	25	22	20	17

Freq (Hz)	63	125	250	500	1k	2k	4k	8k
NC 65	80	75	71	68	66	64	63	62
NC 60	77	71	67	63	61	59	58	57
NC 55	74	67	62	58	56	54	53	52
NC 50	71	64	58	54	51	49	48	47
NC 45	67	60	54	49	46	44	43	42
NC 40	64	57	50	45	41	39	38	37
NC 35	60	52	45	40	36	34	33	32
NC 30	57	48	41	35	31	29	28	27
NC 25	54	44	37	31	27	24	22	21

NOTES

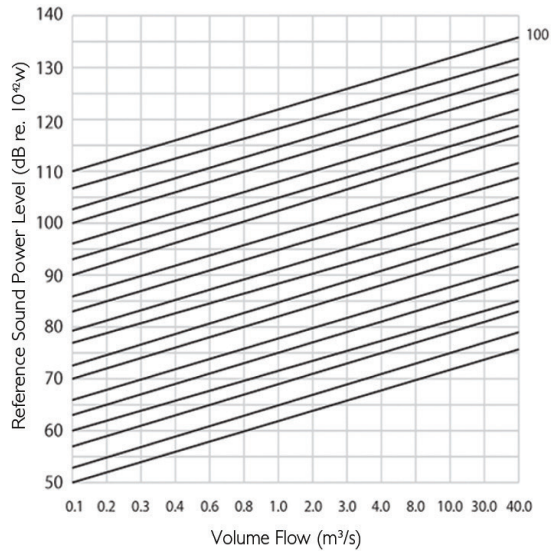
The rating listed above will give general guideline for the total service noise, but limited adjustment of certain of these criteria may be appropriate in some applications.

Where more than one noise source is present, the aggregate noise should meet the criterion NR is approximately equal to dB(A) value - 6.

RECOMMENDED NR AND NC CRITERIA FOR VARIOUS APPLICATIONS AS PER ASHRAE STANDARD

	NR / NC INDEX
Studio and Auditoria	
Sound Broadcasting (Drama)	15
Sound Broadcasting (General), TV (General)	20
Recording Studio	20
TV (Audience Studio)	25
Concert Hall Theatre	20-25
Lecture Theatre / Cinema	25-30
Hospitals	
Audiometric Room	20-25
Operating Theatre / Single Bed Ward	30
Multi Bed Ward / Waiting Room	35
Corridor / Laboratory	35-40
Wash Room / Toilet / Kitchen	35-40
Staff Room / Recreation Room	30-40
Hotels	
Bedrooms: Standard Room - Day	35
Bedrooms: Standard Room - Night	30
Bedrooms: Luxury Room - Day	30
Bedrooms: Luxury Room - Night	25
Ballroom / Banquet Room	30-35
Kitchen / Laundry	40-45
Restaurants / Shops / Stores	
Restaurant / Department Store (Upper Floor)	35-40
Night Club / Public House / Cafeteria / Canteen	40-45
Retail Store (Main Floor)	40-45
Offices	
Boardroom / Large Conference Room	25-30
Small Conference Room / Executive Office	30-35
Reception Room	30-35
Open Plan (Burolandschaft) Office	35
Drawing Office / Computer Suite	35-45
Public Buildings	
Court Room	25-30
Assembly Hall	25-35
Library / Bank / Museum	30-35
Washroom / Toilet	35-45
Swimming Pool / Sports Arena	40-50
Ecclesiastical and Academic Buildings	
Church	25-30
Classroom / Lecture Theatre	25-35
Laboratory / Workshop	35-40
Corridor / Gymnasium	35-45
Industrial	
Warehouse / Garage	45-50
Workshop (Light Engineering)	45-55
Workshop (Heavy Engineering)	50-65
Private Dwellings	
Bedroom	25
Living Room	30

FAN SWL ESTIMATED DATA



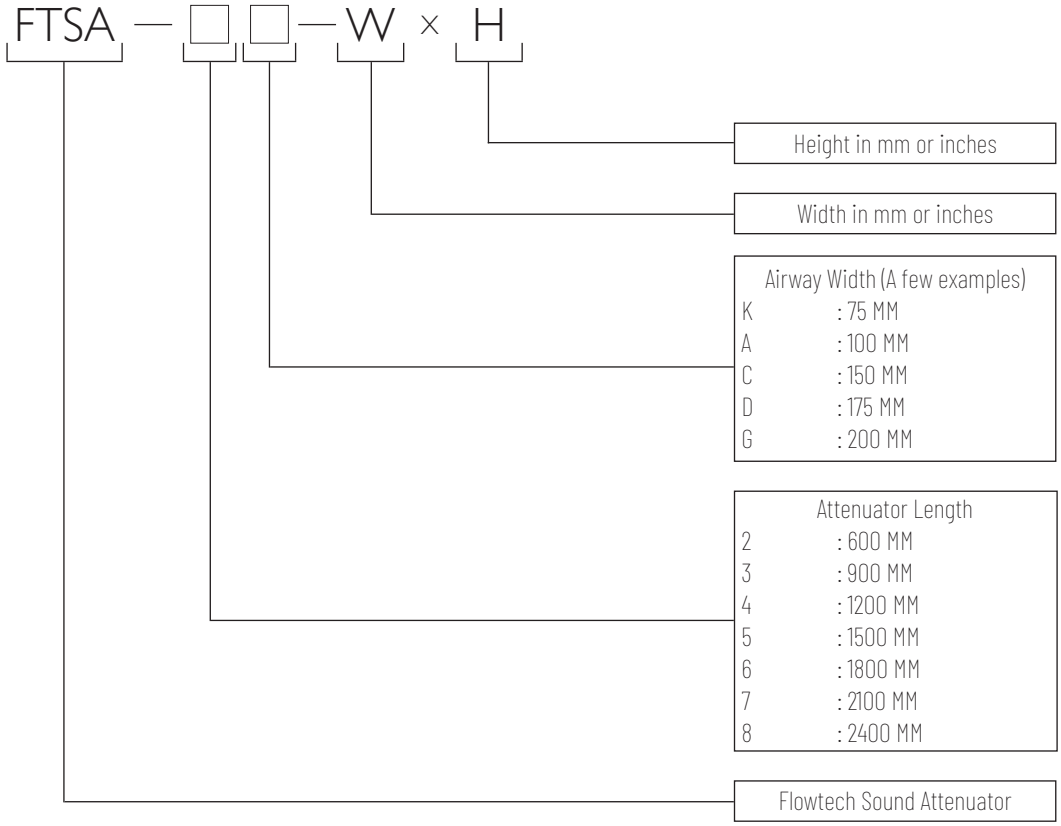
Spectrum Cerretions

Fan Type	63	125	250	500	lk	2k	4k	8k
Forward Curved Ceninifugal	-2	-7	-12	-7	-22	-27	-32	-37
Backward Curved Ceninifugal	-7	-8	-7	-12	-17	-22	-27	-32
Axial Flow	-5	-5	-6	-7	-8	-10	-13	-15

Having established the specification and on selection of the plant (which could be an air handling unit, extract fan, chiller or any other specific type of equipment that may involve the silenced passage of airflow) for the purpose it is proposed. For silencer selection of a fan, this will be the induct Sound Power Level (SWL).

The Sound Power Level of the equipment is the starting point of any acoustic calculation, while the specified noise is the required acoustic performance or in the case of the silencer the static insertion loss also.

ORDERING SYSTEM



ORDERING EXAMPLE

FTSA-2A - 1200 x 600

Refers To:

FTSA	: Flowtech Sound Attenuator
2	: 600mm Attenuator Length
A	: 100mm Airway Width
1200	: Attenuator Width in millimeters
600	: Attenuator Height in millimeters

Items Required in order to provide the final selection

1. Octave Band Sound power level of the unit. (ex. AHU)
2. Scaled Duct Layout - from the unit to the nearest outlet/inlet
   - including the serving area dimensions.