COMBINATION SOUND ATTENUATOR EXHAUST HOOD

TYPE SONEX $_1$

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Application

Ventilation outlets placed upon deck areas may be a significant source of noise and may lead to harmful noise exposure for outside working personnel. Special attention should be paid to areas with restricted noise levels, such as lifeboat stations. In emergency situations, difficulties in comprehending messages are a safety risk in the presence of high noise levels. The Sonex unit is specially designed to reduce noise from ventilation outlets by being a combination of an exhaust hood and a sound attenuator. By 'jetting' exhaust air upwards through the unit and mixing it into the atmosphere at the top of the unit, the noise impact on the deck floor is low because of the advantage of leading the noise in an upward direction. Moreover, the Sonex is an absorptive attenuator using mineral wool as the insulation material which is non-toxic and non-combustible.

Materials and dimensions

Standard product range is from nominal diameter Ø250 mm up to and including diameter Ø1500 mm. Depending on the size, the design of the exhaust hood reduces the noise level by 15-20 dB with a maximum recommended duct velocity of 7-8 m/s. All details of the combination sound attenuator exhaust hood are made from stainless steel AISI316L.

Noise data

Noise data and pressure drop values are based on the following standards:

- ISO 7235:2003: *Acoustic measurement for ducted silencers, insertion loss, flow noise and total pressure loss.*
- ISO 5135:1997: *Determinations of sound power levels of noise from air terminal devices, dampers, and valves by measurement in reverberation room.*
- ISO 3741:1999: *Determination of sound power levels of noise sources – Precision methods for broadband noise in reverberation rooms.*
- ISO 5221:1984: *Rules for methods of measuring airflow rate in air handling duct.*
- EN 12238:2001/1: *Aerodynamic testing and rating for mixed flow applications.*

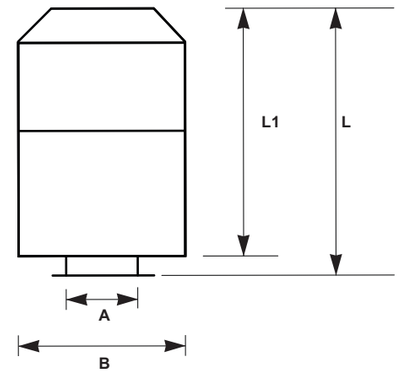
The sound reduction achieved by the Sonex will depend on the arrangement of the ducting. Measurements performed in a laboratory will vary from measurements taken on site, due to factors as structural vibrations, flanking noise, background noise ect. For the best possible result contact Acoustics for more information on self-generated noise and noise calculations according to your specific needs.

SPECIFICATIONS

Type	Nominal dia. mm A	Total length mm L
SONEX$_1$		

Example: SONEX $_1$-800-1950

DIMENSIONS



A mm	B mm	L1 mm	L mm
250	495	950	1000
315	600	1050	1100
400	850	1190	1250
500	1000	1320	1400
630	1100	1470	1550
800	1300	1870	1950
1000	1600	2200	2300
1250	1800	2600	2700

A = Nominal diameter
B = Overall diameter
L = Total length

CURVES AND TABLES

STATIC INSERTION LOSSES

Type	Nominal Dimensions mm		Static insertion losses, dB ref 2 x10 $^{-5}$ Pa							
			Octave band centre band frequency, Hz							
	A	L	63	125	250	500	1K	2K	4K	8K
SONEX$_1$	250	1000	12	9	9	19	19	18	17	16
	315	1100	13	8	9	19	18	17	16	15
	400	1250	12	8	9	19	16	15	15	14
	500	1400	11	7	8	17	15	13	14	15
	630	1550	8	5	11	19	16	16	15	15
	800	1950	8	6	11	19	15	15	14	11
	1000	2300	7	6	10	17	15	14	13	10
	1250	2700	7	4	8	16	14	13	10	9

SELF GENERATED NOISE AND PRESSURE DROP

Type	Nom dia. mm	Pressure loss ζ	SWL_A	Add Correction factors (CF),dB							
				Octave band centre band frequency, Hz							
				63	125	250	500	1K	2K	4K	8K
SONEX$_1$	250	6,2	67logQ+89	-7	-6	-4	-2	-2	-15	-21	-26
	315	5,8	64logQ+77	-6	-6	-4	-3	-2	-14	-19	-24
	400	5,3	64logQ+64	-6	-7	-3	-2	-2	-14	-18	-24
	500	4,6	65logQ+53	-4	-5	-2	-3	-2	-13	-18	-23
	630	3,9	67logQ+41	-4	-5	-3	-3	-2	-12	-20	-25
	800	3,7	68logQ+26	-3	-4	-2	-3	-2	-11	-18	-24
	1000	3,4	66logQ+16	-2	-2	-3	-1	-3	-12	-19	-23
	1250	3,3	59logQ+11	-2	-2	-3	-1	-4	-11	-17	-21

SELF GENERATED NOISE
- FREQUENCY CORRECTION (CF)

$$SWL_{frequency} = SWL_A + CF$$

PRESSURE LOSSES, Pa

See table above

Total pressure loss SONEX

$$P_t = 1/2 * \rho * \zeta * v^2$$

Pt = Total pressure loss, Pa

ζ = Pressure loss coefficient

ρ = Air density kg/m^3 (1,2kg/m3 at temperature 20^o Celsius)

v = duct velocity, m/s

Q = Air volume flow, m^3/s

SWL_A = A-weighted sound power level dBA, ref 10^{-12} Watt

$SWL_{frequency}$ = Octave band sound power level dB, ref 10^{-12} Watt