

DEMAND CONTROL VENTILATION

Silencers



Elta are able to provide 2 types of cylindrical silencers as standard; Type DENP (without pod) and DEP (with pod).

Construction

Both types are rigidly constructed in galvanised sheet steel, with a highly absorbent sound attenuating lining between the outer casing and the inner perforated steel lining. The end faces of the silencer has a series of threaded holes for direct mounting to the fixing flange/flexible collar. The DEP (podded versions) will provide an improved level of attenuation. The inner acoustic pod is constructed from perforated steel sheet with a sound absorbent infill.

Melinex lined silencers must be used to prevent grease impregnation into the acoustic media for kitchen extract applications as prescribed in DW/172 HVAC Specification For Kitchen Ventilation Systems.

3 options of each type can be provided with differing lengths:

- 1D = 1 times diameter
- 1.5D = 1.5 times diameter (manufactured to order)
- 2D = 2 times diameter

Silencer Attenuation

To determine the sound level of a fan fitted with a silencer, the dynamic insertion loss should be subtracted from the sound power level spectrum (dBW) of the QUBe fan. This should be done for the entire octave band mid-frequency spectrum tabulated on pages 15 and 17.

The fan dBW ratings and silencer attenuation apply equally to in duct applications, with a silencer connected between the fan and the duct system.

Dynamic Insertion Loss

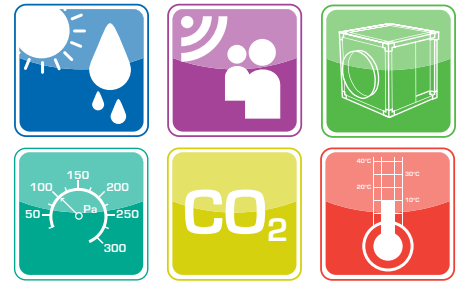
The silencer attenuation is defined as the “dynamic insertion loss”. The values quoted in the table opposite represent the difference between the sound power level of a fan and silencer combination (dBW) and that of the fan alone (dBW).



The dynamic insertion losses shown are the attenuations recorded under ideal working conditions. The achieved attenuation will vary according to the air velocity and flow pattern in the airways. Noise regeneration can occur at higher velocities, especially in DEP silencers.

Splitter Silencers

In highly noise sensitive areas, where the circular silencers cannot achieve the necessary attenuation levels, Elta can design and build optional splitter silencers for greater effect.



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Silencer Data

Dynamic Insertion Loss

Fan Sizes	Silencer Length	Silencer Type	Insertion Loss @ Octave Band Hz							
			63	125	250	500	1k	2k	4k	8k
315 500 560	1D	ENP	-2	-5	-6	-9	-13	-11	-6	-6
		EP	-4	-6	-8	-11	-18	-19	-17	-14
	1.5D	ENP	-3	-6	-9	-13	-18	-14	-9	-8
		EP	-5	-8	-10	-16	-22	-22	-20	-18
	2D	ENP	-4	-8	-12	-17	-23	-17	-12	-10
		EP	-7	-10	-12	-21	-26	-26	-24	-22
710	1D	ENP	-3	-4	-9	-15	-15	-8	-7	-6
		EP	-4	-6	-8	-17	-23	-20	-18	-10
	1.5D	ENP	-4	-6	-11	-18	-18	-10	-9	-7
		EP	-6	-8	-12	-22	-27	-25	-23	-14
	2D	ENP	-6	-8	-13	-22	-22	-13	-12	-9
		EP	-8	-11	-16	-27	-32	-31	-29	-19

(Contact Elta Fans for Insertion Losses for melinex lined silencers.)

End Reflection Values

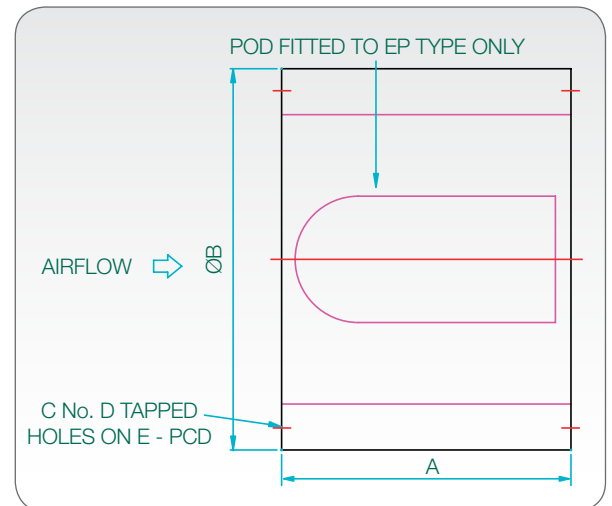
Fan Sizes	End Reflection @ Octave Band Hz			
	63	125	250	500
315	15	9	5	1
500	11	6	2	0
560	10	6	2	0
710	9	4	1	0

End Reflection Values

Where a silencer is connected directly to a free inlet or free outlet side of a fan some of the low-frequency sound energy will be reflected back into the duct. The values in the table above show the additional attenuation in each octave band in this case. It should be noted that this data is based on theoretical considerations only, and assumes spherical free-field conditions.

Silencer Data

Fan	dBA Attenuation		ΔP (Pa) 1DEP	dBA Attenuation		ΔP (Pa) 2DEP
	1DENP	1DEP		2DENP	2DEP	
SQU1/4-3	-10	-13	7	-17	-20	11
SQU2/4-3	-10	-13	7	-17	-20	11
SQU3/4-3	-10	-13	8	-16	-20	13
SQU4/4-3	-11	-15	12	-16	-23	20
SQU4/6-3	-11	-15	10	-16	-23	16



Product Code	Fan Dia	A 1D	A 1.5D	A 2D	B	C	D	E	Weight kg					
									1DENP	1DEP	1.5DENP	1.5DEP	2DENP	2DEP
068-0315-*D**P	315	315	472.5	630	416	8	M8	355	9	11	12	14	15	17
068-0500-*D**P	500	500	750	1000	657	12	M10	560	18	22	25	30	32	37
068-0560-*D**P	560	560	840	1120	714	12	M10	620	22	26	30	36	39	46
068-0710-*D**P	710	710	1065	1420	864	16	M10	770	32	39	45	55	59	71

1, 1.5 or 2
See Dimension A
E - With Pod or
EN - Without Pod

• All dimensions are in mm

Elta Fans Limited has a policy of continuous product development and improvement and therefore reserves the right to supply products which may differ from those illustrated and described in this publication. Confirmation of dimensions and data will be supplied on request.