



# silencers

Elta offer 2 types of cylindrical silencers as standard; Type ENP (without pod) and EP (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 have a series of threaded holes for direct mounting to the LC/SC fan fixing flange/flexible collar.

The EP (podded versions) will provide an improved level of attenuation. The inner acoustic pod is constructed from perforated steel sheet with a sound absorbent in-fill.

Melinex lined silencers available on request.

3 options of each type can be provided with differing lengths – 1D = 1 times fan diameter, 1.5D = 1.5 times fan diameter or 2D = 2 times fan 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 LC and SC fan.

This should be carried out for the entire octave band mid-frequency spectrum as published in the Elta fans characteristic data (obtainable on request).

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

## important note!

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

The velocity through EP silencers should not exceed 15m/s.

Silencer Type	Approx dBa reduction
1DENP	7-10
2DENP	10-13
1DEP	12-15
2DEP	15-18

## dynamic insertion loss

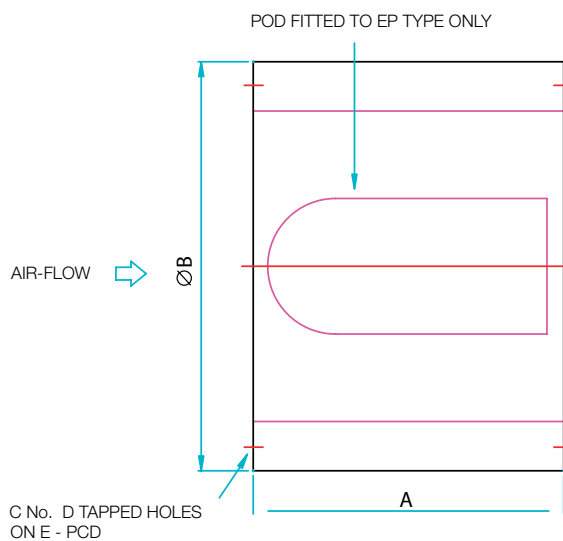
The silencer attenuation is defined as the “dynamic insertion loss”. The values quoted in the table below represent the difference between the sound power level of a fan and silencer combination (dBW) and that of the fan alone (dBW).

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 EP silencers.

Fan Sizes	Silencer Length	Silencer Type	Insertion Loss @ Octave Band (Hz)							
			63	125	250	500	1k	2k	4k	8k
315-560	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
630-800	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
900-1400	1D	ENP	-3	-4	-9	-14	-13	-7	-7	-6
		EP	-4	-6	-11	-20	-18	-15	-13	-11
	1.5D	ENP	-4	-6	-11	-17	-15	-9	-9	-7
		EP	-6	-8	-14	-23	-22	-20	-17	-13
	2D	ENP	-6	-8	-13	-21	-18	-12	-11	-9
		EP	-8	-11	-18	-26	-27	-26	-22	-16
1600-2000	1D	ENP	-4	-5	-10	-14	-11	-6	-6	-5
		EP	-8	-9	-14	-19	-17	-11	-10	-9
	1.5D	ENP	-4	-6	-11	-16	-14	-9	-8	-7
		EP	-9	-11	-17	-22	-22	-18	-13	-11
	2D	ENP	-5	-7	-12	-19	-18	-13	-11	-9
		EP	-10	-14	-21	-25	-27	-25	-16	-14

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
038-0355-*D**P	355	355	532.5	710	456	8	M8	395	11	13	14	17	18	21
068-0400-*D**P	400	400	600	800	503	8	M10	450	13	16	17	21	22	26
068-0450-*D**P	450	450	675	900	604	8	M10	500	15	18	21	25	27	31
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
068-0630-*D**P	630	630	945	1260	784	12	M10	690	26	31	38	45	48	57
068-0710-*D**P	710	710	1065	1420	864	16	M10	770	32	39	45	55	59	71
068-0800-*D**P	800	800	1200	1600	954	16	M10	860	40	49	57	70	74	90
068-0900-*D**P	900	900	1350	1800	1103	16	M12	970	55	67	78	95	102	123
068-1000-*D**P	1000	1000	1500	2000	1203	16	M12	1070	66	82	95	117	124	151
068-1120-*D**P	1120	1120	1680	2240	1320	20	M12	1190	91	117	130	165	198	253
068-1250-*D**P	1250	1250	1875	2500	1450	20	M12	1320	111	140	160	200	240	300
068-1400-*D**P	1400	1400	2100	2800	1600	20	M12	1470	140	180	240	315	300	385
068-1600-*D**P	1600	1600	2400	3200	1800	24	M16	1680	190	235	323	405	400	495
068-1800-*D**P	1800	1800	2700	3600	2000	24	M16	1880	270	352	445	590	560	732
068-2000-*D**P	2000	2000	3000	4000	2200	24	M16	2080	325	415	535	695	675	865

1, 1.5 or 2 ← See Dia A → E - With Pod or EN - Without Pod



## Determining Silencer Attenuation

To determine the sound level of a fan fitted with a silencer, the dynamic insertion loss should be subtracted from the dBW rating of the LC and SC fan across the octave band mid frequency spectrum.

The fan dBW ratings and silencer attenuation apply to in-duct operation, with a silencer connected between the fan and duct system. Where a silencer is connected directly to the free inlet, or free discharge of a fan, the low frequency attenuation may be increased by the 'End Reflection Values' shown in the table. These values are added to the dynamic insertion loss at each frequency.

## End Reflection Values

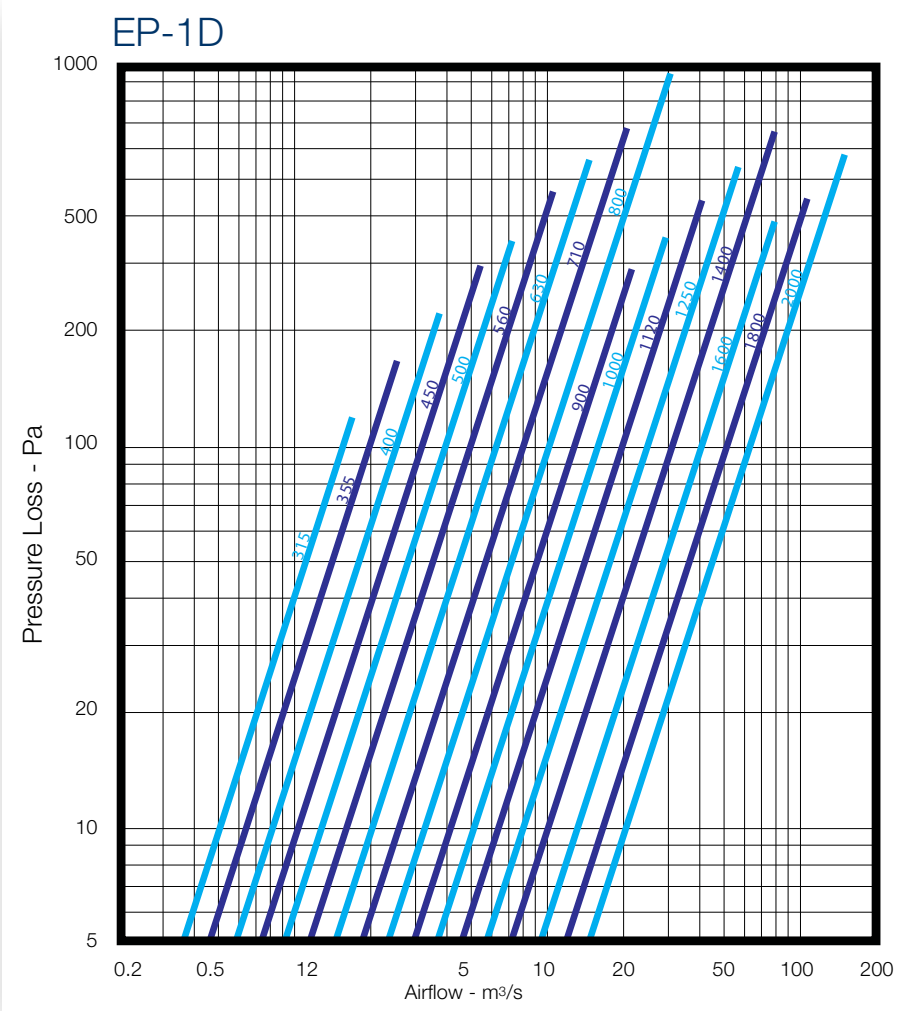
Fan Sizes	Insertion Loss @ Octave Band (Hz)			
	63	125	250	500
315	15	9	5	1
355	14	9	5	1
400	13	8	4	1
450	12	7	3	0
500	11	6	2	0
560	10	6	2	0
630	9	5	1	0
710	9	4	1	0
800	8	4	1	0
900	7	3	0	0
1000	6	2	0	0
1120	5	2	0	0
1250	5	1	0	0
1400	4	1	0	0
1600	4	1	0	0
1800	3	0	0	0
2000	2	0	0	0

Note: This data is based on theoretical considerations only, and assumes spherical free-field conditions.

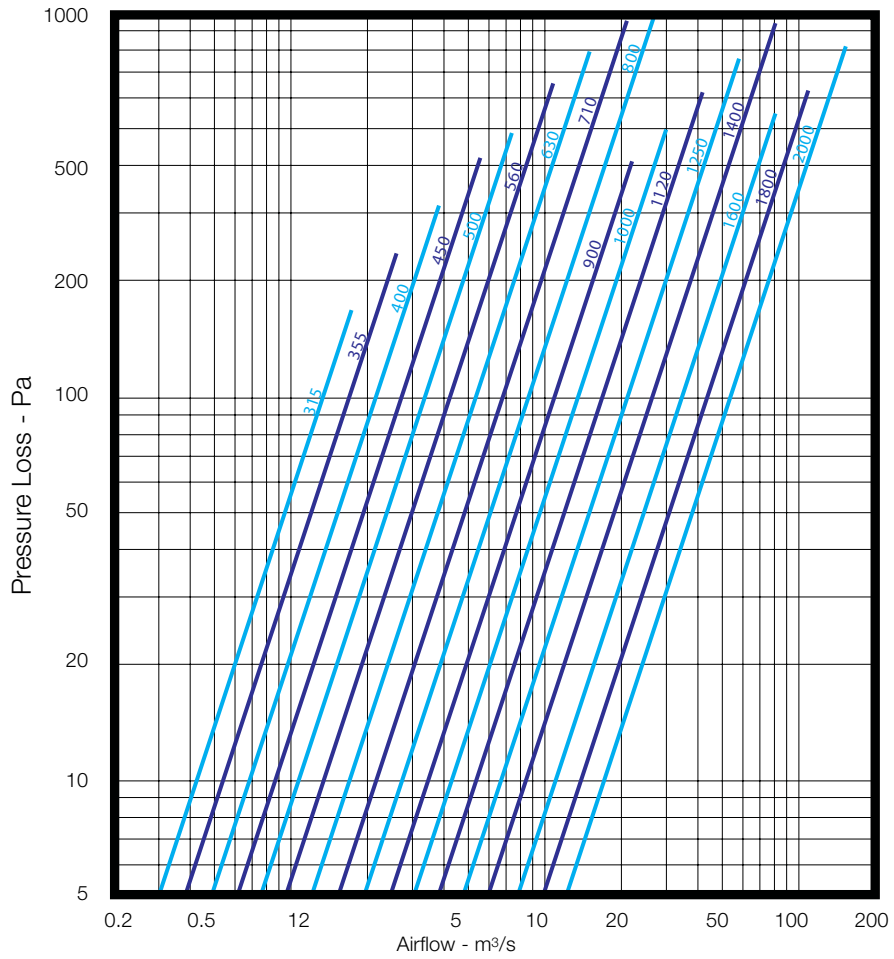
# silencer pressure loss



The graphs illustrated below provide the pressure losses for EP podded silencers at various airflows. ENP non-podded silencers do not create any meaningful losses.



### EP-1.5D



### EP-2D

