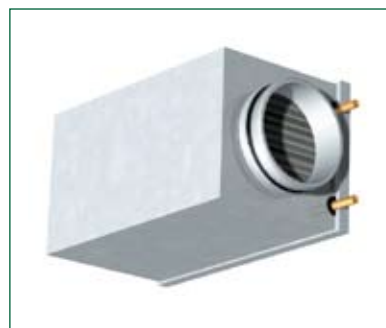


EMSS, EMSD Flow variator



EMSS and EMSD are air flow variators for OPTIVENT and OPTILAB systems. They are used to control and regulate the supply air flow and the exhaust air flow. They can be used for many different purposes, for example to regulate the temperature and the air quality in a room.

Product facts

- Available in nine sizes for duct diameters between 100 – 630 mm.
- Integrated orifice plate for air measurement.
- Both for new installation and ROT projects.

Product code example:

Flow variator for supply or exhaust air EMSS-1-125-1-1

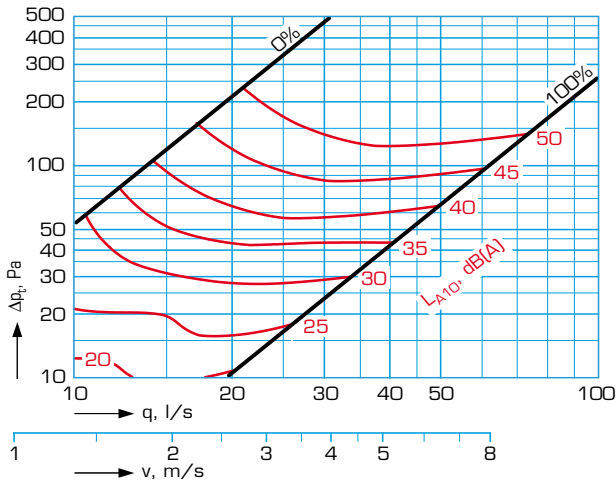
Sound attenuator EMOZ-15-125-1

Water reheater EMOZ-17-125

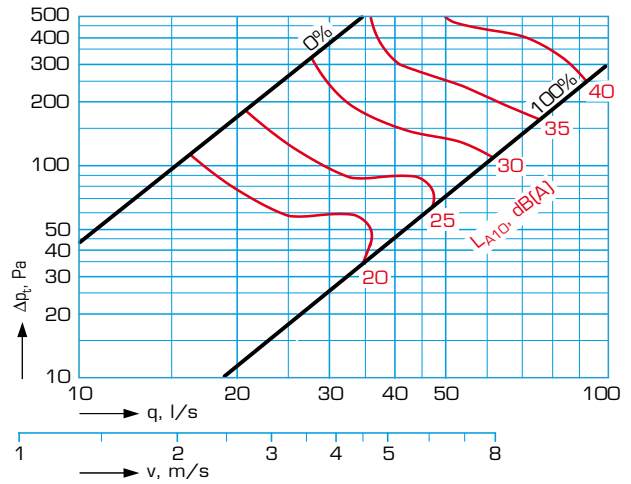
Air flow and velocity, pressure drop, sound level

Fully closed positions (0%) for dampers without blade seal. Sound pressure levels in room.

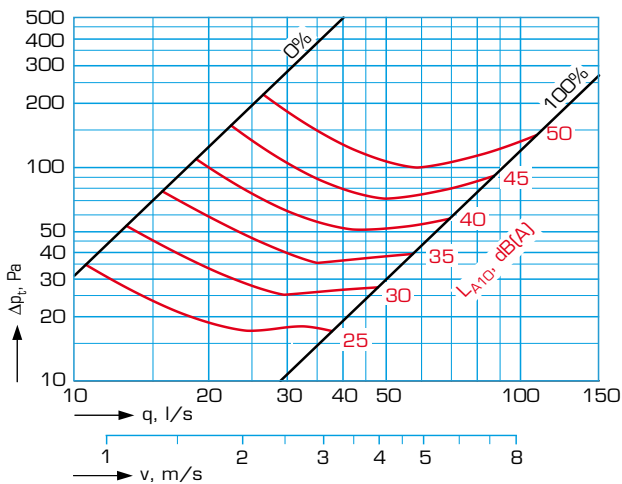
EMSS/EMSD-100



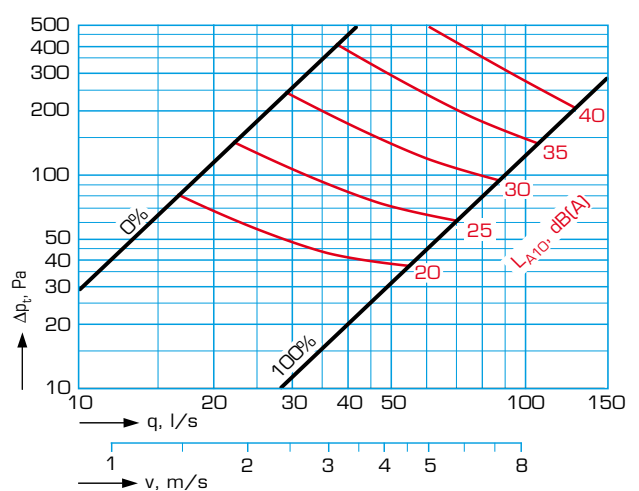
EMSS/EMSD-100 + EMOZ-15



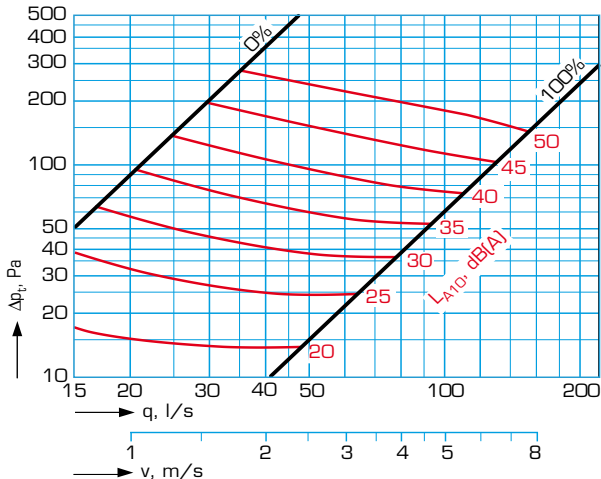
EMSS/EMSD-125



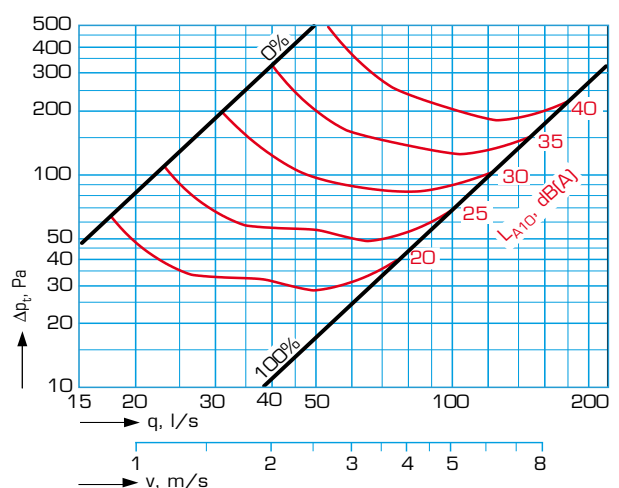
EMSS/EMSD-125 + EMOZ-15



EMSS/EMSD-160



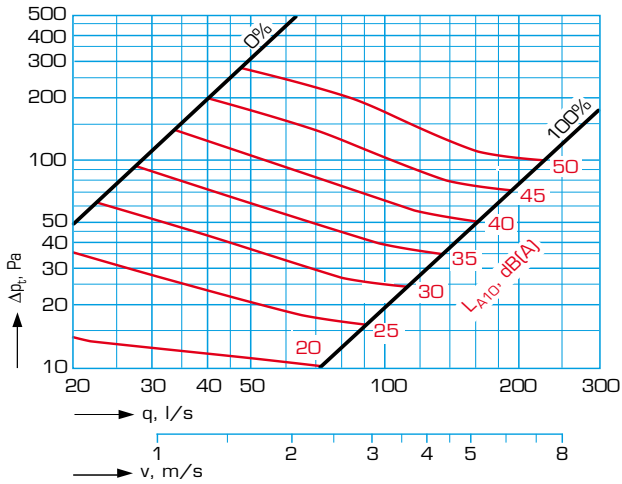
EMSS/EMSD-160 + EMOZ-15



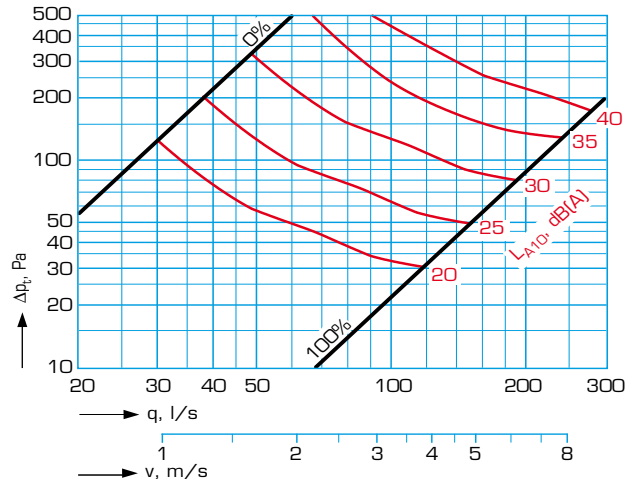
Air flow and velocity, pressure drop, sound level

Fully closed positions (0%) for dampers without blade seal. Sound pressure levels in room.

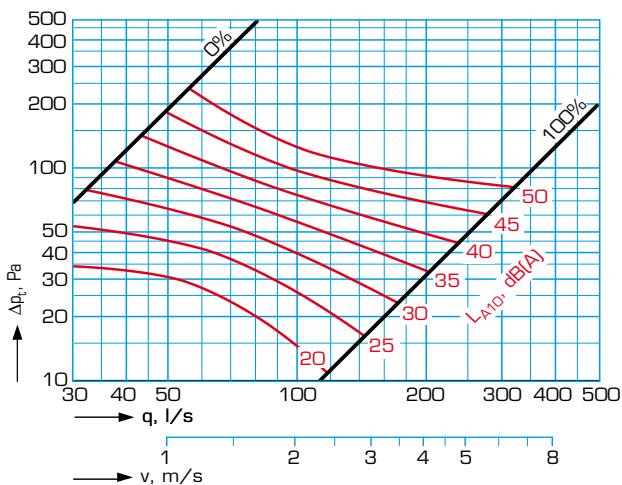
EMSS/EMSD-200



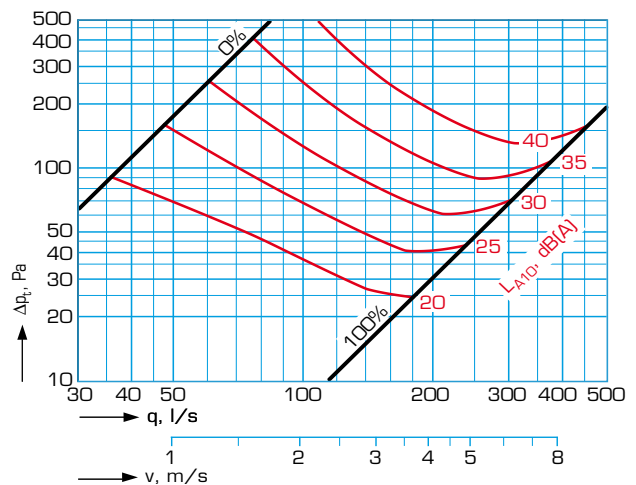
EMSS/EMSD-200 + EMOZ-15



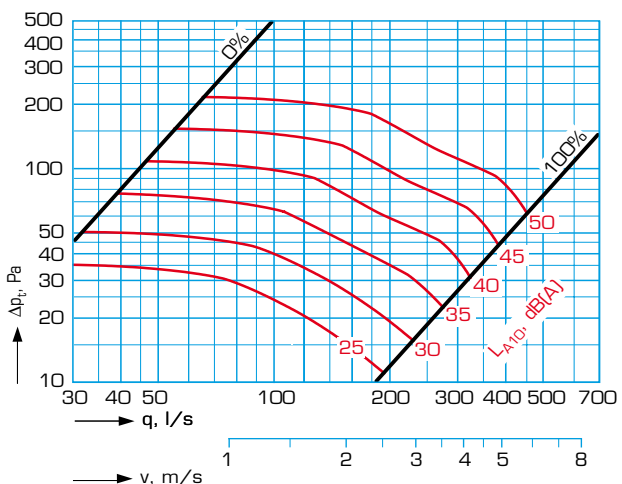
EMSS/EMSD-250



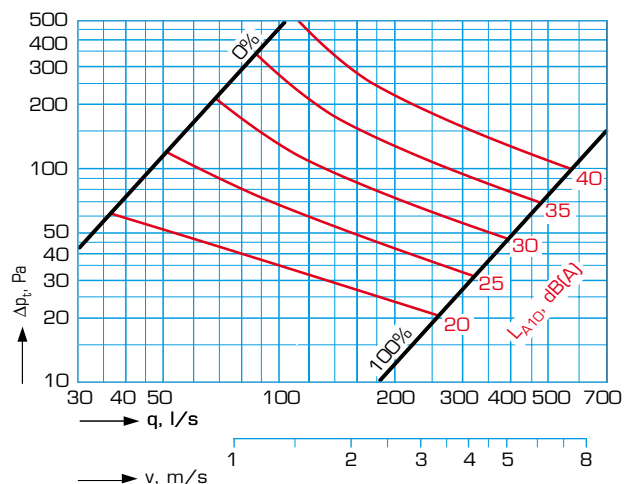
EMSS/EMSD-250 + EMOZ-15



EMSS/EMSD-315



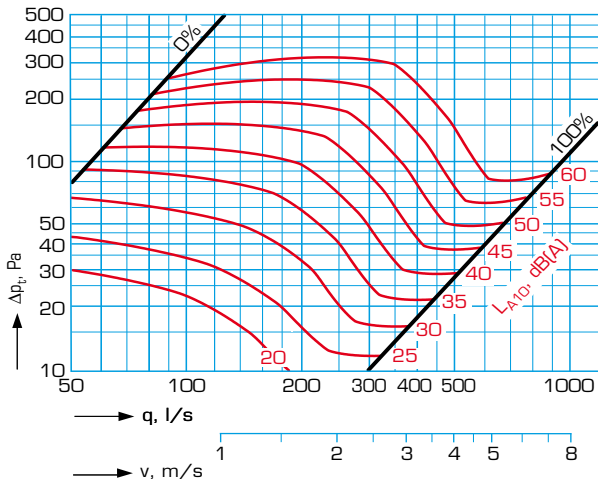
EMSS/EMSD-315 + EMOZ-15



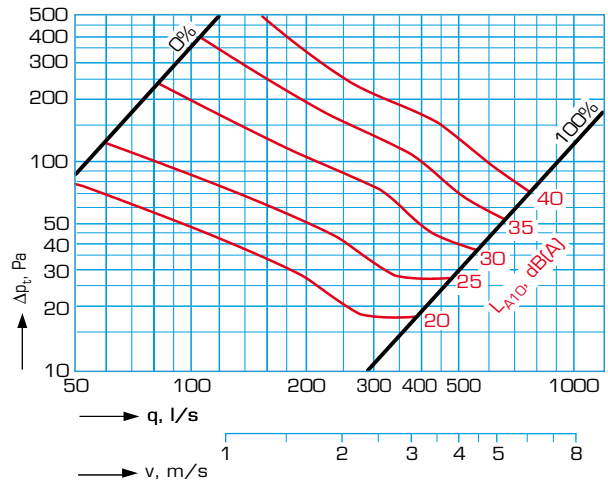
Air flow and velocity, pressure drop, sound level

Fully closed positions (0%) for dampers without blade seal. Sound pressure levels in room.

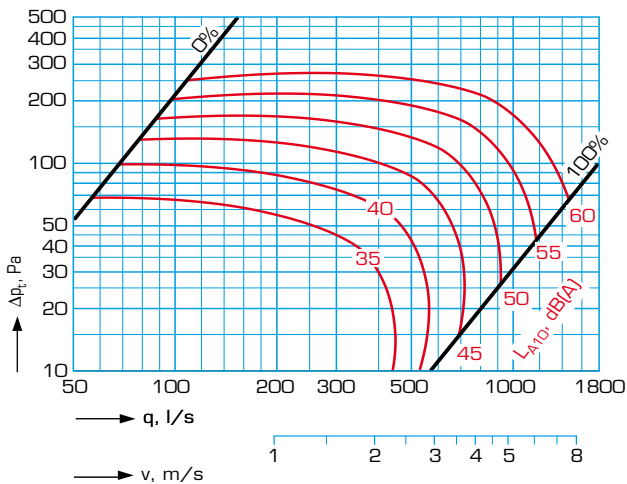
EMSS/EMSD-400



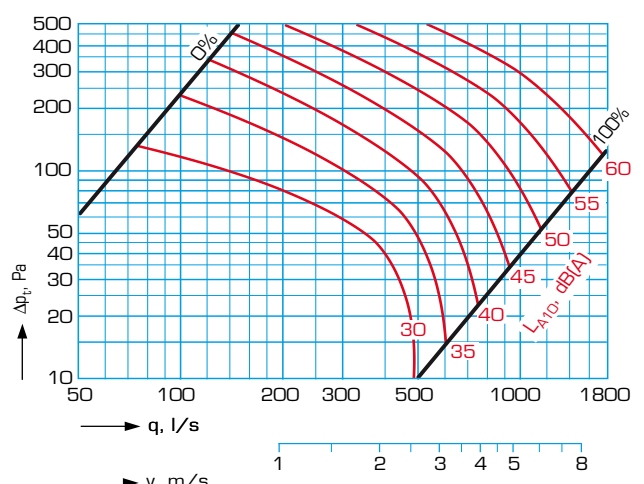
EMSS/EMSD-400 + EMOZ-15



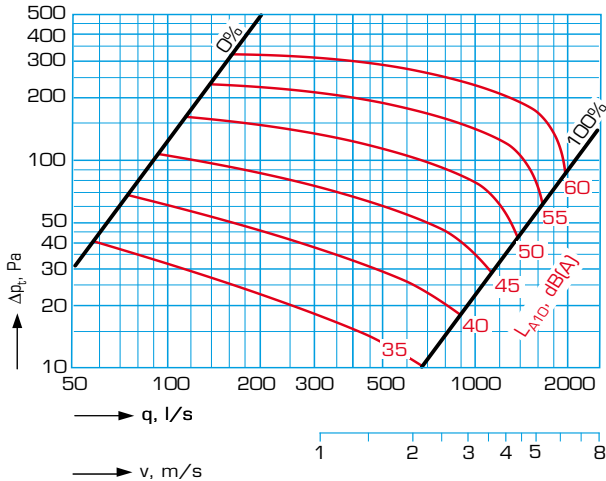
EMSS/EMSD-500



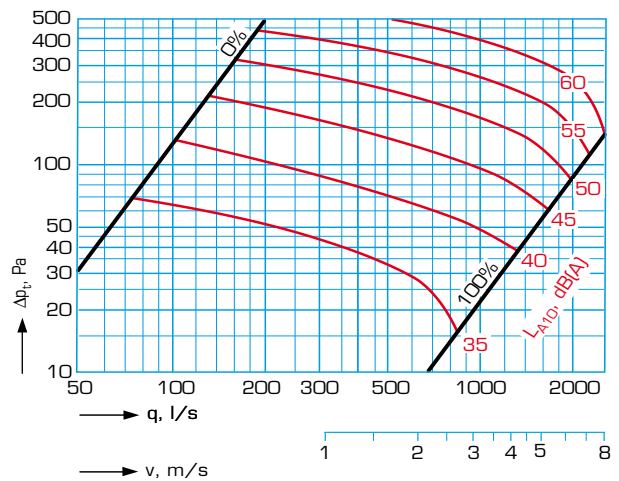
EMSS/EMSD-500 + EMOZ-15



EMSS/EMSD-630



EMSS/EMSD-630 + EMOZ-15



Technical data

Sound characteristics

EMS(S,D)	Corrections K_{oct} (dB)							
	Medium frequency by octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
100	20	17	16	11	2	-6	-14	-19
125	17	14	13	9	2	-6	-14	-18
160	18	14	11	6	1	-5	-12	-18
200	17	11	9	6	1	-5	-14	-19
250	12	11	7	5	0	-6	-14	-19
315	12	9	4	3	1	-8	-16	-19
400	11	9	5	4	-1	-7	-13	-18
500	18	16	10	4	-2	-11	-20	-25
630	12	7	8	-2	-3	-6	-7	-6
Tol±	6	3	2	2	2	2	2	3

EMS(S,D) +EMOZ-15	Corrections K_{oct} (dB)							
	Medium frequency by octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
100	28	21	16	10	0	-12	-16	-16
125	24	19	14	9	-1	-13	-17	-17
160	20	18	13	8	-1	-13	-16	-18
200	20	18	11	7	-4	-13	-13	-14
250	19	16	10	6	-4	-13	-12	-17
315	17	13	8	5	-4	-9	-11	-16
400	16	13	8	4	-6	-7	-10	-16
500	21	17	10	2	-8	-11	-16	-20
630	16	10	5	-4	-9	-9	-8	-3
Tol±	6	3	2	2	2	2	2	3

EMSS	Corrections K_c (dB)							
	Medium frequency by octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
100	7	-7	-5	-17	-30	-36	-39	-42
125	-3	-9	-18	-21	-27	-34	-40	-42
160	-4	-11	-12	-19	-25	-28	-35	-39
200	-4	-9	-18	-24	-29	-32	-39	-39
250	-11	-11	-16	-19	-26	-30	-36	-35
315	-3	-8	-22	-15	-22	-31	-33	-43
400	-7	-14	-22	-16	-26	-25	-28	-46
500	3	-6	-18	-27	-33	-37	-41	-57
630	-2	-9	-17	-32	-31	-24	-29	-39
Tol±	6	3	2	2	2	2	2	3

EMSD	Corrections K_c (dB)							
	Medium frequency by octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
100	4	-9	-9	-19	-34	-41	-44	-47
125	-5	-13	-20	-21	-32	-35	-41	-47
160	-5	-16	-12	-20	-28	-34	-38	-45
200	-4	-9	-18	-27	-34	-36	-44	-47
250	-11	-11	-16	-20	-30	-35	-43	-45
315	-4	-7	-23	-16	-26	-36	-44	-52
400	-11	-14	-22	-18	-28	-30	-39	-50
500	1	-6	-18	-28	-35	-40	-47	-57
630	-2	-10	-18	-34	-34	-29	-38	-43
Tol±	6	3	2	2	2	2	2	3

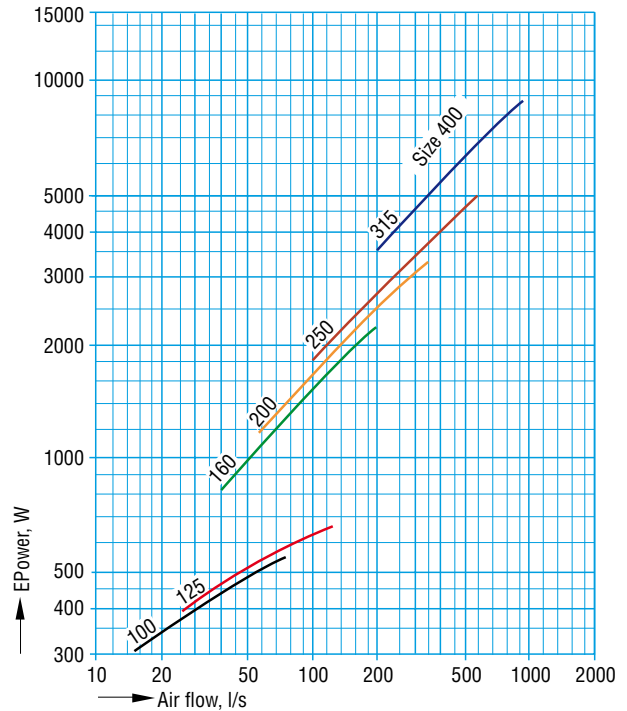
The sound power levels of the duct and sound power levels of the sound transmitted through casing of the flow variator are obtained by adding the corrections (K_{oct} or K_c) of octave bands (see tables above) to the total sound pressure level L_{p10A} dB(A) according to the following formulas:

$$L_{Woct} = L_{p10A} + K_{oct}$$

$$L_{Wc} = L_{p10A} + K_c$$

Corrections K_{oct} is average value in range of use of the flow variator.

EMOZ-17 Water reheater



The above graph applies under the following conditions:
 The heat output in W is stated at a temperature difference of $\Delta t_v = 20^\circ\text{C}$ in the water.
 Input water temperature = 55°C
 Input air temperature = 15°C

Calculation of water flow

The water flow (q , l/s) is calculated from the following formula:

$$q \text{ (l/s)} = P \text{ (W)} / 82 \text{ 300}$$

The formula assumes a temperature difference of 20 degrees in the water. The heat output P (W) is taken from the graph above.

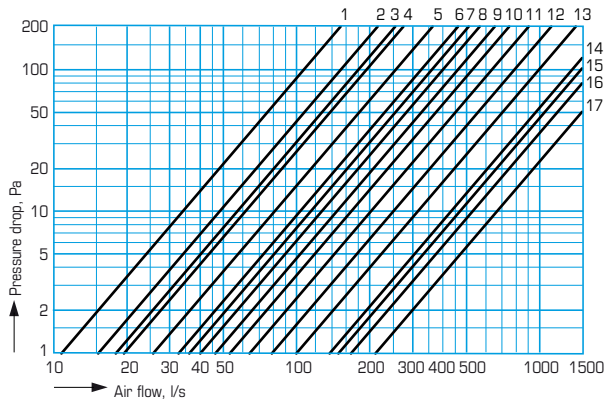
The table below gives an indication of the pressure drop in the water through the coil under normal operating conditions in accordance with the above.

Size	Max press. drop. kPa
100	0.3
125	0.3
160	3.3
200	6.0
250	2.4
315	3.4
400	3.7

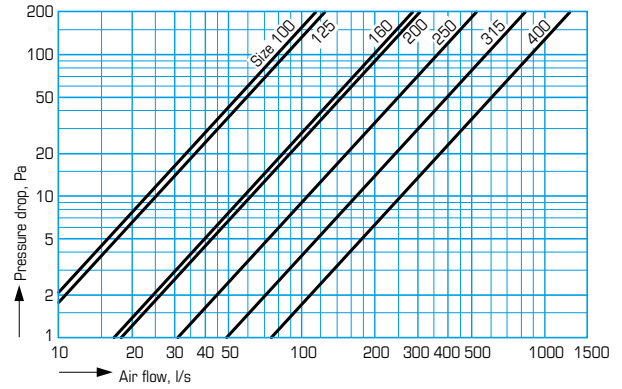
Accurate dimensioning for specific operations can be done using Fläkt Woods product selection tool. Contact nearest sales office for more information.

Technical data, dimensions and weights

Pressure difference over the electric reheater



Pressure difference over the water reheater



The damper conforms to air tightness class 3 in accordance with EN 1751:1998. The tightness class corresponds to a leakage factor of 30 l/s, (m²) when pressure difference is 1000 Pa.

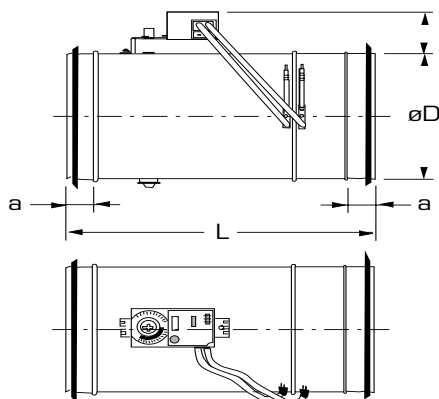
EMOZ-16 Electric reheater

Size	Voltage	Power kW	Min air flow l/s	Press. drop curve (in graph)	Output variant (in ordering code)
100	1-phase 230V	0.4	15	3	1
125	1-phase 230V	0.6	22	2	1
125	1-phase 230V	1.2	43	1	2
160	1-phase 230V	0.6	30	7	1
160	1-phase 230V	1.2	43	5	2
160	1-phase 230V	2.1	76	4	3
200	1-phase 230V	1.2	47	10	1
200	1-phase 230V	2.1	76	8	2
200	1-phase 230V	3.0	109	6	3
250	1-phase 230V	2.1	76	12	1
250	1-phase 230V	3.0	109	11	2
315	1-phase 230V	3.0	117	14	1

Size	Voltage	Power kW	Min air flow l/s	Press. drop curve (in graph)	Output variant (in ordering code)
200	2-phase 400V	3.0	109	6	1
250	2-phase 400V	3.0	109	11	1
315	2-phase 400V	3.0	117	14	1
200	3-phase 400V	3.0	109	6	1
250	3-phase 400V	3.0	109	11	1
250	3-phase 400V	6.0	217	9	2
315	3-phase 400V	3.0	117	14	1
315	3-phase 400V	6.0	217	13	2
400	3-phase 400V	6.0	217	17	1
400	3-phase 400V	9.0	326	16	2
400	3-phase 400V	12.0	435	15	3

Dimensions and weight

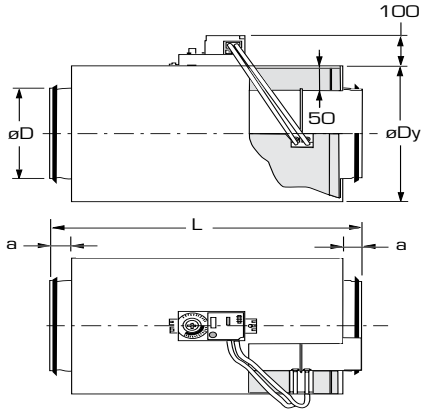
EMSS (uninsulated)



Size	øD	a	L. mm	Weight. kg
100	99	35	400	1.4
125	124	35	400	1.7
160	159	35	400	2.2
200	199	35	400	2.7
250	249	40	580	4.1
315	314	40	580	5.4
400	399	60	650	9.3
500	499	50	850	14.2
630	629	50	850	19.5

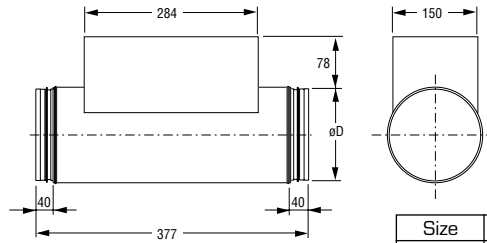
Dimensions and weights

EMSD (insulated)



Size	a	øD	øDy	L	Weight, kg
100	35	99	200	400	2.8
125	35	124	225	400	4.0
160	35	159	260	400	3.3
200	35	199	300	400	4.1
250	40	249	350	580	5.8
315	40	314	415	580	10.2
400	60	399	500	650	17.5
500	50	499	600	850	27.4
630	50	529	730	850	35.7

EMOZ-16 Reheater electric

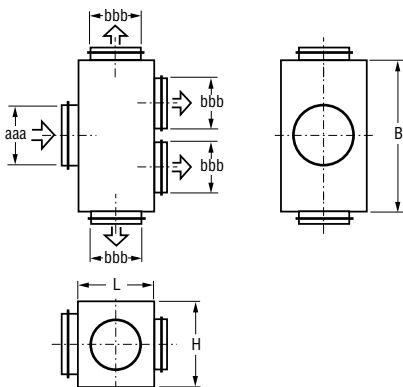


Size	øD	W, kg
100	99	2.3
125	124	2.8
160	159	3.4
200	199	4.6
250	249	6.1
315	314	7.0
400	399	10.2

EMOZ-15 Sound attenuator



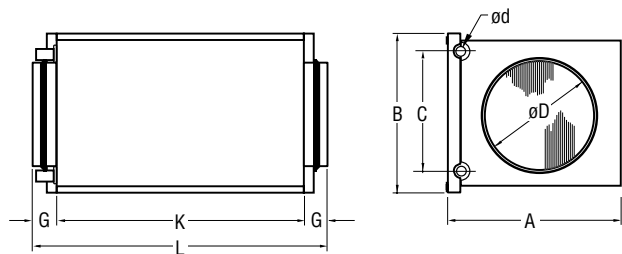
Multi outlet box EMOZ-14 (uninsulated)



Size	ød	øD	L	a	W, kg
100	99	300	600	40	7.5
125	124	315	600	40	8.2
160	159	355	600	40	13.6
200	199	400	900	40	15.2
250	249	450	900	40	19.8
315	314	515	900	40	23.2
400	399	630	1200	50	43
500	499	711	1200	65	54
630	629	812	1200	65	57

aaa= øD	bbb = ød	B	L	H	Weight, kg
125	100	270	135	180	1.6
125	125	320	160	180	2.0
160	125	320	160	215	2.2
160	160	390	195	215	2.7
200	160	390	195	255	3.0
200	200	470	235	255	3.7
250	250	580	290	310	4.2
250	250	580	290	310	5.4
315	250	580	290	375	5.9
315	315	710	355	375	7.4
400	315	710	355	460	8.4
400	400	880	440	460	11.0

EMOZ-17 Reheater water



Size	øD	ød	A	B	C	G	L	K	W, kg
100	99	10	225	183	140	40	380	300	3.4
125	124	10	225	183	140	40	380	300	3.4
160	159	10	305	258	215	40	380	300	5.1
200	199	10	305	258	215	40	380	300	5.1
250	249	22	385	333	290	40	380	300	7.7
315	314	22	460	408	365	40	380	300	10.0
400	399	22	540	483	420	70	440	300	13.5

Product description

Product description

EMS(S,D) Flow variator

- The variator can be used both for variable and constant flow and, if appropriate, forced shut-off for both the supply air and the exhaust air.
- The variator consists of an orifice plate and damper blade with a non-insulated casing (EMSS) or an insulated casing (EMSD).
- Integrating flow measurement with separate measurement nipples for control and manual measurement.
- The damper has stable bearings made of nylon and its shaft is mounted in maintenance free nylon headings. Damper equipped with a EPDM rubber blade seal conforms to air tightness class 3 and without blade seal to air tightness class 1 in accordance with EN 1751:1998.
- The casing of the EMSD has double walls and intermediate glass wool insulation with a minimum thickness of 50 mm and gives low acoustic radiation.
- Connection dimensions 100 – 630 mm.
- Components in contact with the ventilation air conform to corrosivity classes C3 or C4 in accordance with SS-EN-ISO 12944-2.
- Air tightness class B in accordance with EN1751:1998.
- All control equipment is installed on the apparatus casing.
- Manual measurement of the air flow can be performed without disturbing the control circuit via a separate pressure outlet on the orifice plate of the flow variator.
- All duct connections have spigot dimensions and are equipped with sealing rings made of rubber.



EMOZ-15 Sound attenuator

- The sound attenuator is cylindrical and has 100 mm insulation.
- The inner surface is covered with fabric woven from staple fibres and perforated sheet metal, which prevents fibre transference and allows cleaning.
- The variator and sound attenuator are tested together. This is very important for the right acoustic data, since the attenuation is impaired by the proximity to the damper and theoretical calculations give excessively low noise generation.
- Any components in contact with the ventilation air conform to corrosivity classes C3 or C4.
- The circular connection sleeves have a sealing rings made of rubber.
- Air tightness class B in accordance with EN 1751:1998.



EMOZ-17 Water reheater

- Two row coil.
- The coil body consists of copper tubes and aluminium fins.
- The casing is made of galvanized sheet metal.
- The circular connection sleeve has a sealing ring made of rubber.
- A removable hatch for cleaning and inspection is present on the coil connection side.
- Air tightness class B in accordance with EN 1751:1998
- The maximum working pressure is 1.0 MPa and the maximum water temperature is 100 °C. The battery is pressure-tested at 2.1 MPa.



EMOZ-16 Electric reheater

- Cylindrical electric reheater with connection box.
- Available with and without Thyristor.
- The reheater has one automatically (60 °C) resetting overheating protection and one which is manually (120 °C) resettable.
- The casing is made of galvanized sheet metal and the heating element is in stainless material.
- The electrical safety of the coil is tested and approved by SEMKO in accordance with SEMKO 111 FA-1982 and EN 60335-1 and EN-60335-2-30. It is also approved by SEMKO in respect of EMC and conforms to European standards EN 50081-1 and EN 50082-1.
- The circular connection sleeves have sealing rings made of rubber.
- Air tightness class B in accordance with EN 1751:1998.
- Electrical heating elements are installed in the air duct.
- Heaters are provided for single-phase, two-phase and three-phase current and in a number of power variants.



EMOZ-14 Multi outlet box

- Prefabricated non-insulated distribution box with 4 outlets with the same dimensions as the inlet or one size smaller.
- The circular connection sleeves have sealing rings made of rubber.
- Delivered loose.
- The outlet component is made of galvanized sheet metal.
- Air tightness class B in accordance with EN 1751:1998.



Product code

Product code

Flow variator, round **EMSa-b-ccc-d-e**

S = without insulation _____
 D = with insulation _____

Actuator _____
 1 = Compact FW controller
 2 = Alternative actuator (coding separately)

Size _____
 100, 125, 160, 200, 250, 315, 400, 500, 630

Material _____
 1 = Corrosivity class C3
 galvanized sheet steel
 2 = Corrosivity class C4
 (applies to parts in contact with the ventilation air)

Tightness _____
 1 = CEN1
 2 = CEN3

Control equipment

Ordering codes for electrical and control equipment; see separate codes in the section "Optivent Control equipment".

Accessories

Accessories are supplied loose, not installed (muffle joints are not included).

Sound attenuator **EMOZ-15-aaa-b**

Size _____
 100, 125, 160, 200, 250, 315, 400, 500, 630

1 = Corrosivity class C3 _____
 galvanized sheet steel
 2 = Corrosivity class C4
 (applies to parts in contact with the ventilation air)

Suitable details from Veloducts product mix

Size EMS	T-piece	Cleaning port	Weight. kg
100	BDET-1-010-010	BDEG-3-010	0.6
125	BDET-1-012-010	BDEG-3-010	0.7
160	BDET-1-016-012	BDEG-3-012	1.0
200	BDET-1-020-016	BDEG-3-016	1.5
250	BDET-1-025-020	BDEG-3-020	2.2
315	BDET-1-031-025	BDEG-3-025	3.1
400	BDET-1-040-031	BDEG-3-031	4.9
500	BDET-1-050-040	BDEG-3-040	8.0
600	BDET-1-063-040	BDEG-3-040	8.9

Water reheater, round **EMOZ-17-aaa**
 Only corrosivity class C3

Size _____
 100, 125, 160, 200, 250, 315, 400

Electric reheater, round **EMOZ-16-aaa-b-c-d**
 Only corrosivity class C3

Size _____
 100, 125, 160, 200, 250, 315, 400

Voltage _____
 1 = 1-phase, 230 V
 2 = 2-phase, 400 V
 3 = 3-phase, 400 V

Output variant _____
 1 – 3 (see table below)

Size	Voltage	Output variant (kW)		
		1	2	3
100	1-phase 230V	0.4		
125	1-phase 230V	0.6	1.2	
160	1-phase 230V	0.6	1.2	2.1
200	1-phase 230V	1.2	2.1	3.0
250	1-phase 230V	2.1	3.0	
315	1-phase 230V	3.0		
200	2-phase 400V	3.0		
250	2-phase 400V	3.0		
315	2-phase 400V	3.0		
200	3-phase 400V	3.0		
250	3-phase 400V	3.0	6.0	
315	3-phase 400V	3.0	6.0	
400	3-phase 400V	6.0	9.0	12.0

Triac _____
 0 = Without
 1 = With

Multi outlet box **EMOZ-14-aaa-bbb**
 Uninsulated with four air outlets.
 Only corrosivity class C3

Unit size¹⁾ - Outlet diameters _____
 125-100, 125-125, 160-125, 160-160, 200-160,
 200-200, 250-200, 250-250, 315-250, 315-315
 400-315, 400-400

¹⁾ Inlet diameter

Ordering example

Flow variator insulated EMSD-1-200-1-1
 Sound attenuator EMOZ-15-200-1
 Electric reheater EMOZ-16-200-1-1-0
 Multi outlet box EMOZ-14-200-160