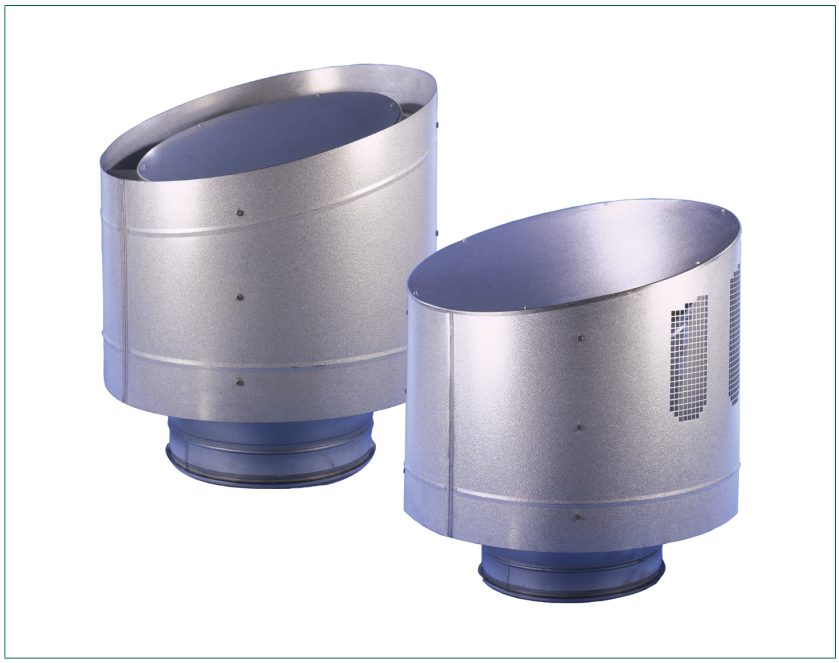
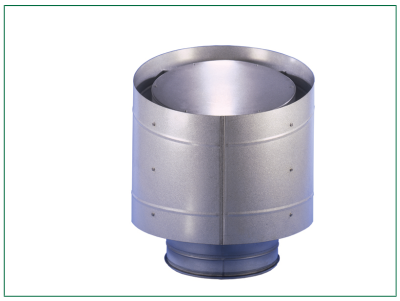
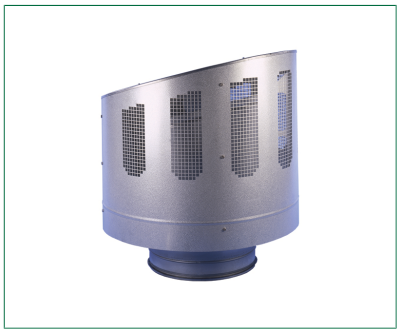
Exhaust air diffuser EYMA-2 and air intake device DYMA-1







An air intake device supplying the premises with fresh air and an exhaust air diffuser discharging the exhaust air are often the only visible signs of a building's ventilation system.

The air intake device DYMA-1 and the improved exhaust air diffuser EYMA-2 are designed to be placed on the roof of modern buildings, and they match the architecture and design language of today perfectly.

The purpose of the EYMA exhaust air diffuser is to exhaust the air straight up at a high velocity. This will prevent odours and impurities from settling near the diffuser, as well as the warm exhaust air from melting eventual snow on the surrounding roof area.

The purpose of the DYMA air intake device is to bring fresh air into the ventilation system at a low enough velocity, preventing rain water from entering the device with the air flow.

Specifications

- Low sound level
- Easy installation
- Rain water rejection performance
- Modern design

Product code example

Exhaust air diffuser

EYMA-2-025-1-1

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General

Properties

An air intake device supplying the premises with fresh air and an exhaust air diffuser discharging the exhaust air are often the only visible signs of a building's ventilation system.

The air intake device DYMA-1 and the improved exhaust air diffuser EYMA-2 are designed to be placed on the roof of modern buildings, and they match the architecture and design language of today perfectly.

The exterior design is created by Industrial Designer Eero Rislakki.

The design registration number for EYMA is 14829 and for DYMA is 23833.

Material and surface finish

The structural material of both air intake device and exhaust air diffuser is steel sheet with aluminium-zinc alloy coating. The mass of the AlZ coating is AZ 150g/m^2 (EN 10327). Under conditions of the environment category C3 (ISO 9223), the material is designed to comply with its estimated life expectancy. At request, the air intake device and the exhaust air diffuser can also be ready-painted in good-quality factory surroundings in an optional RAL colour.

Construction and function

Due to the special design of the EYMA inner cone, the rain water cannot enter the ventilation system even at times when the exhaust function is off. The rain water has a free exit onto to the roof through the gap between protective plate and casing. If the water content of the exhaust air is exceptionally high and exhaust air flow small, freezing may occur in extremely cold weather conditions. The purpose of the DYMA air intake device is to bring fresh air into the ventilation system at a low enough velocity, preventing rain water from entering the device with the air flow. This is only possible, if the correct device size is selected according to the table of dimensions and the pressure drop diagrams.

Rainwater rejection performance and air flow performance characteristics of DYMA are determined based on EN 13030:2001.

Due to the excellent design of the internal parts of DYMA, pressure drops and sound power levels remain low.

The purpose of the EYMA exhaust air diffuser is to exhaust the air straight up at a high velocity. This will prevent odours and impurities from settling near the diffuser, as well as the warm exhaust air from melting eventual snow on the surrounding roof area.

To consider while dimensioning

As the weather and wind conditions may vary heavily, there is a risk that water and snow enter the duct system during extreme conditions. This should be considered during the dimensioning and execution of the duct system.

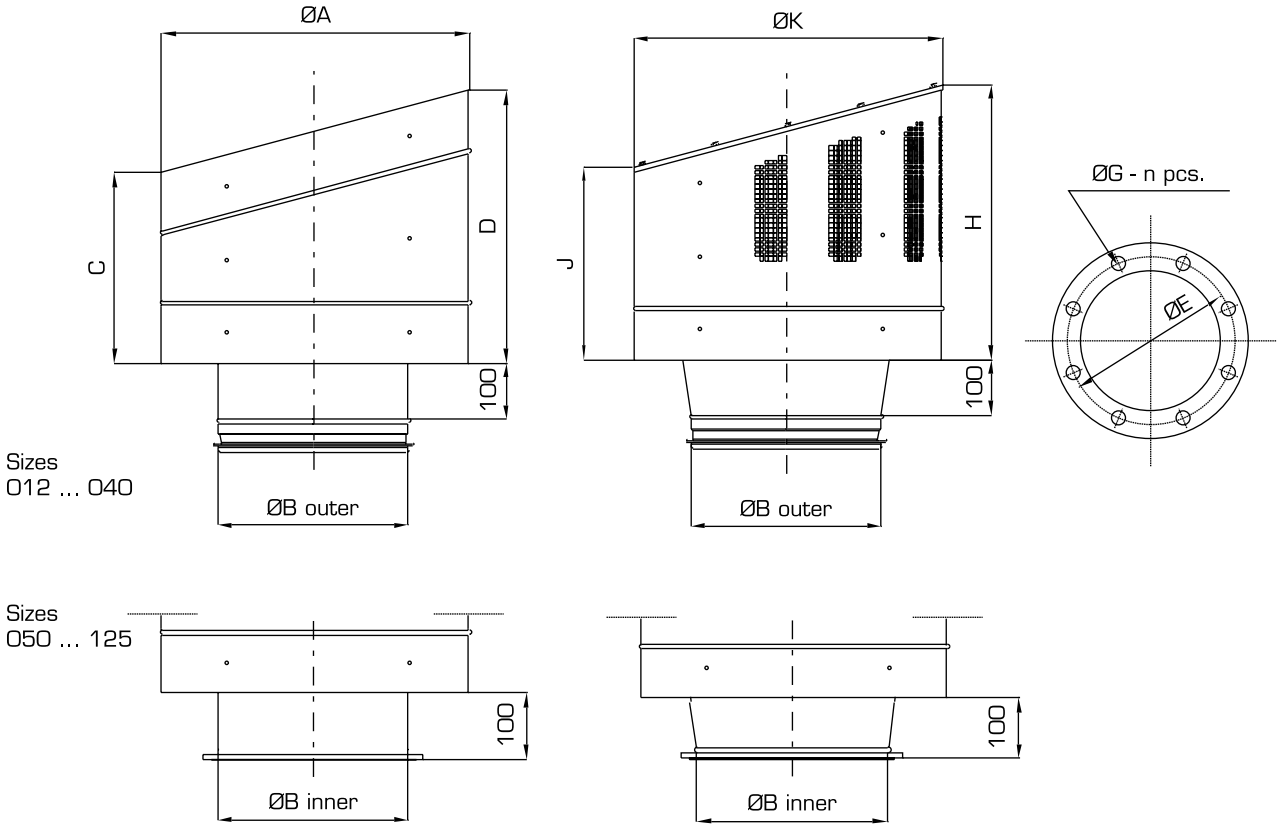
Installation

Exhaust air diffuser EYMA and air intake device DYMA are normally installed at the end of a penetration made of building material. The junction must be absolutely waterproof. The placement of exhaust air diffuser and air intake device must be carried out according to the national regulations, regarding e.g. the distance from roof surface. DYMA takes in part of the air under the lower edge of the casing.

Definitions

q_v	air flow	m^3/s
Δp_t	total pressure drop	Pa
L_{WA}	total sound power level, A-weighted	dB(A)
L_{Woct}	sound power level in octave bands	dB
K_{oct}	correction	dB
ΔL	distance attenuation	dB
L_{pA}	total sound pressure level, A-weighted	dB(A)
E	efficiency of rainwater rejection	%
v	velocity of exhaust	m/s

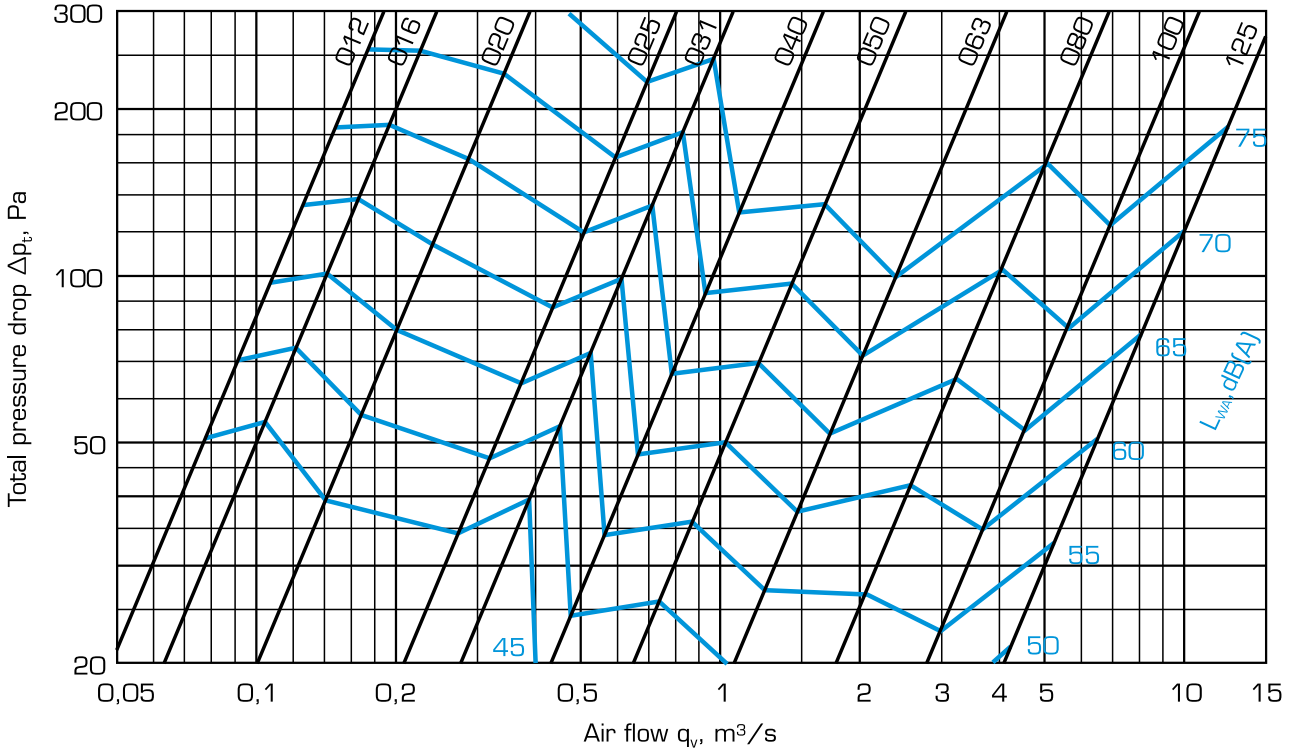
Dimensions, weights and recommendation on air flow



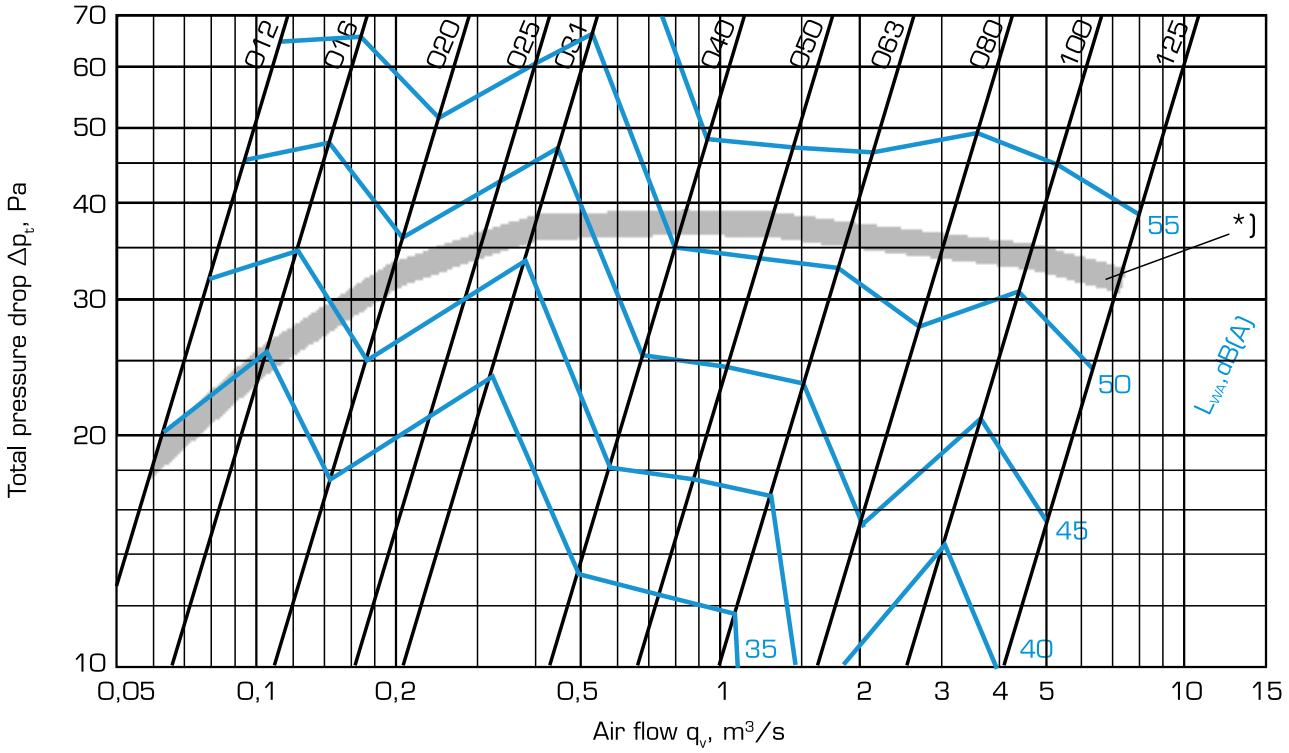
Size	ØA	ØB	C	D	ØK	J	H	Weight (kg)		max. q_v (m^3/s)	Flange		
aaa	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	EYMA-2	DYMA-1	DYMA-1	ØE (mm)	ØG (mm)	n
012	205	125	135	190	260	170	240	2.3	3.1	0.06	-	-	-
016	210	160	170	240	330	210	300	3.4	4.4	0.11	-	-	-
020	325	200	210	300	410	260	370	4.7	6.6	0.19	-	-	-
025	405	250	260	370	510	330	470	7.1	9.5	0.30	-	-	-
031	510	315	330	470	580	370	520	10.7	13.3	0.40	-	-	-
040	650	400	410	590	730	470	660	16.5	19.3	0.85	-	-	-
050	810	500	515	730	910	580	820	31.0	35.5	1.30	560	12	12
063	1025	630	640	920	1150	760	1060	50.0	56.3	1.80	690	12	12
080	1300	800	1000	1210	1460	960	1360	83.0	95.5	3.00	860	12	16
100	1620	1000	1190	1540	1820	1230	1720	145	178	4.60	1070	15	16
125	2030	1250	1400	1900	2270	1510	2120	248	285	7.40	1320	15	20

Pressure drop, sound data

EYMA-2



DYMA-1



*) Max. air flow

Technical data EYMA-2

Sound power level L_{Woct}

Size	Correction K_{oct}(dB) Middle frequency of octave band (Hz)							
	63	125	250	500	1000	2000	4000	8000
012	-4	2	4	1	0	-5	-14	-21
016	-7	0	1	0	1	-4	-13	-23
020	-4	2	3	3	0	-7	-16	-25
025	0	3	3	1	0	-6	-16	-26
031	-2	3	3	3	0	-10	-19	-25
040	-8	-4	0	0	-7	-16	-24	-33
050	-6	-3	1	0	-6	-17	-24	-31
063	-6	-3	2	1	-8	-18	-25	-30
080	-9	-6	4	-4	-13	-20	-25	-31
100	-7	-1	3	-1	-10	-16	-25	-27
125	2	6	4	-3	-9	-15	-22	-25

The sound power levels in octave bands are obtained by adding the correction factor K_{oct} in the table to the total sound power level L_{WA}, dB(A) according to the following formula:

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

Correction K_{oct} is an average in the operating range of EYMA-2.

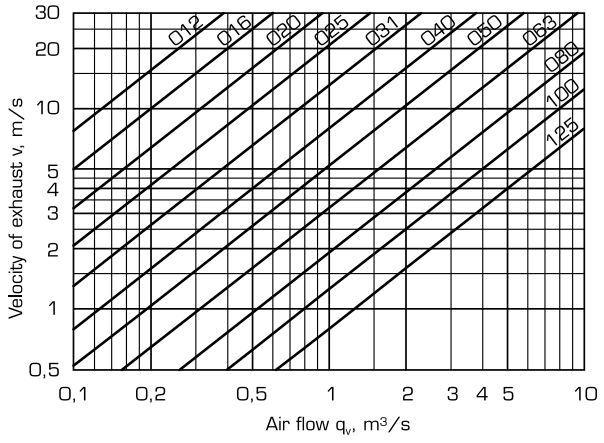
Sound pressure level L_{pA}

Distance L (m)	1	3	5	10	15	20	25	30	40
Attenuation ΔL (dB)	7	17	22	28	31	34	36	37	40

Total sound pressure level to the surroundings can be estimated for different distances by using the formula below:

$$L_{pA} = L_{WA} - \Delta L$$

Velocity of exhaust v



Technical data DYMA-1

Sound power level L_{Woct}

Size	Correction K_{oct}(dB) Middle frequency of octave band (Hz)							
	63	125	250	500	1000	2000	4000	8000
012	-4	-3	3	4	-1	-9	-20	-22
016	-1	3	5	2	0	-8	-18	-26
020	-1	5	5	3	-1	-8	-17	-25
025	-1	1	4	3	0	-8	-17	-27
031	1	5	4	3	-1	-10	-19	-26
040	4	4	2	0	-7	-15	-21	-31
050	5	3	3	0	-6	-14	-20	-25
063	5	2	3	-1	-7	-14	-20	-23
080	6	2	3	-1	-7	-12	-17	-22
100	3	2	1	-1	-4	-6	-9	-11
125	6	3	0	-4	-6	-10	-12	-13

The sound power levels in octave bands are obtained by adding the correction factor K_{oct} in the table to the total sound power level L_{WA}, dB(A) according to the following formula:

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

Correction K_{oct} is an average in the operating range of DYMA-1.

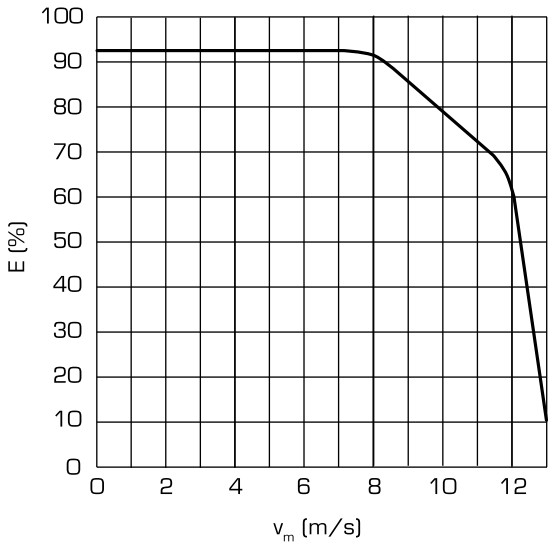
Sound pressure level L_{pA}

Distance L (m)	1	3	5	10	15	20	25	30	40
Attenuation ΔL (dB)	7	17	22	28	31	34	36	37	40

Total sound pressure level to the surroundings can be estimated for different distances by using the formula below:

$$L_{pA} = L_{WA} - \Delta L$$

Efficiency of rainwater rejection



Product code

Exhaust air diffuser	**EYMA-2-aaa-b-c**
Air intake device	**DYMA-1-aaa-b-c**

Size (aaa)
012-125
Material (b)
1 = AlZn-coated
2 = Acid proof AISI 316
3 = painted
Connection (c)
1 = Veloduct (standard delivery sizes 012 ... 040)
2 = flange (standard delivery sizes 050 ... 125)
3 = flange and counterflange
Veloduct connections should be selected for sizes 012 - 040. Flange and counterflange (EBGA) for sizes 050 - 125