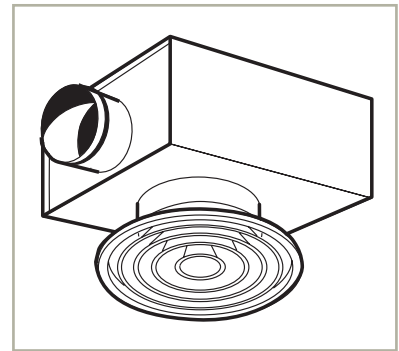
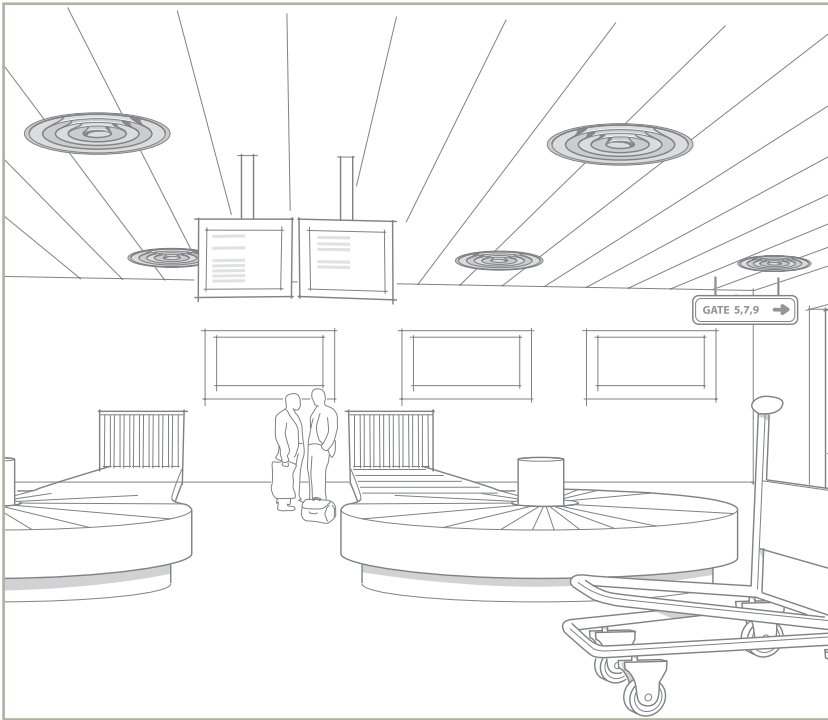


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Conical diffuser
KHAA
TECHNICAL DATA





Supply conical diffuser KHAA is recommended to be used either in commercial application buildings such as shops or industrial buildings with a large room volume and high ceiling interiors, for example warehouses.

It has a 360° diffusion pattern, and it can be installed as freely suspended or in a false ceiling. The air direction is adjustable and can be either horizontal or vertical.

The diffuser is available with connection boxes ATTD and ATTS which in combination with KHAA, gives a very low noise level.

QUICK SELECTION

ATTS + KHAA position 0mm 1:1 (open damper)

Size	ATTS connection [mm]		Airflow [l/s] when sound level is		
	Duct	Diffuser	25dB(A)	30dB(A)	35dB(A)
KHAA-12-1-1	125	125	36	42	49
KHAA-16-1-1	160	160	56	65	76
KHAA-20-1-1	200	200	82	95	110
KHAA-25-1-1	250	250	105	122	141
KHAA-31-1-1	315	315	144	169	200

ATTD + KHAA position 0mm 1:2 (open damper)

Size	ATTD connection [mm]		Airflow [l/s] when sound level is		
	Duct	Diffuser	25dB(A)	30dB(A)	35dB(A)
KHAA-12-1-1	100	125	35	41	48
KHAA-16-1-1	125	160	49	58	68
KHAA-20-1-1	160	200	78	91	106
KHAA-25-1-1	200	250	105	123	144
KHAA-31-1-1	250	315	159	186	218
KHAA-40-1-1	315	400	167	200	240

SPECIFICATIONS

- Connections from 125 to 400 mm
- 360° diffusion pattern
- The air direction is adjustable with the help of the adjustable cone insert
- Silent plenum box ATTD (ATTS) with air flow control

PRODUCT CODE EXAMPLE

Conical diffuser KHAA-40-1-1

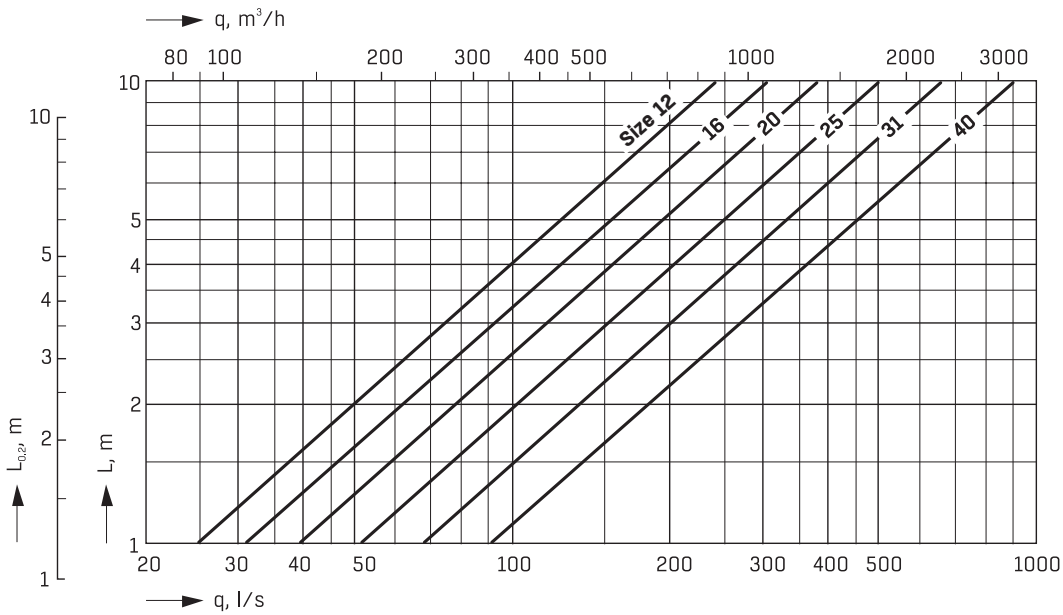
Terminal of size size 40, adjustable manually, painted in RAL 9010 colour.

Connection box ATTD-315-400-1

Duct connection diameter of 315 mm, diffuser size 40, collar outwards.

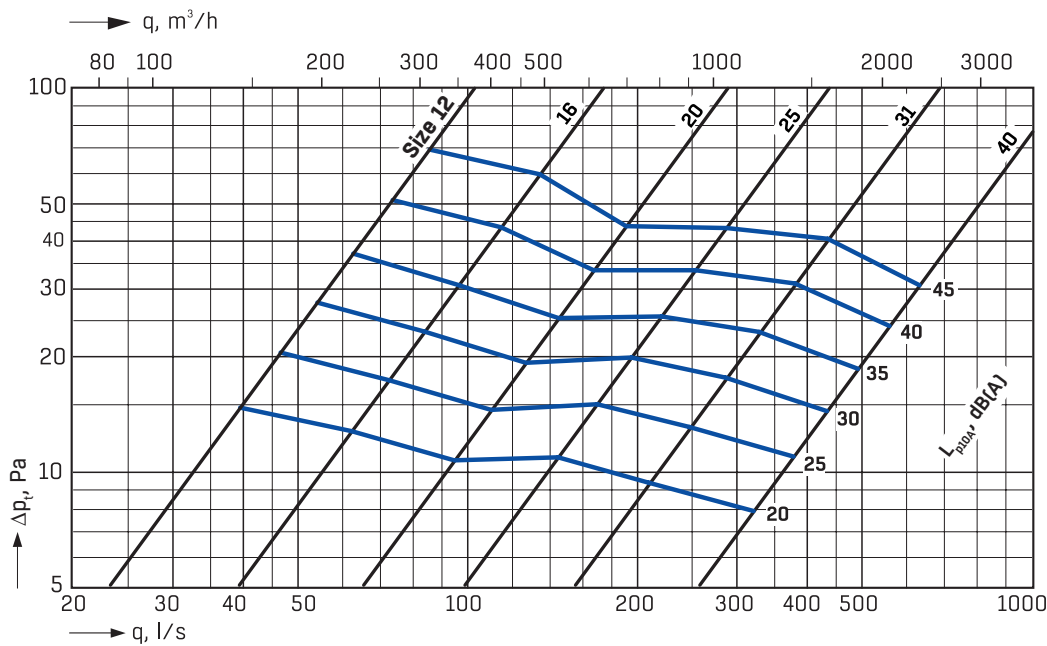
THROW LENGTH, AIR FLOW, PRESSURE DROP, SOUND LEVEL

THROW LENGTH - HORIZONTAL DIFFUSION PATTERN (WITH 0 MM POSITION)



“0 mm position” denotes setting when outer and inner cones are at the same level.

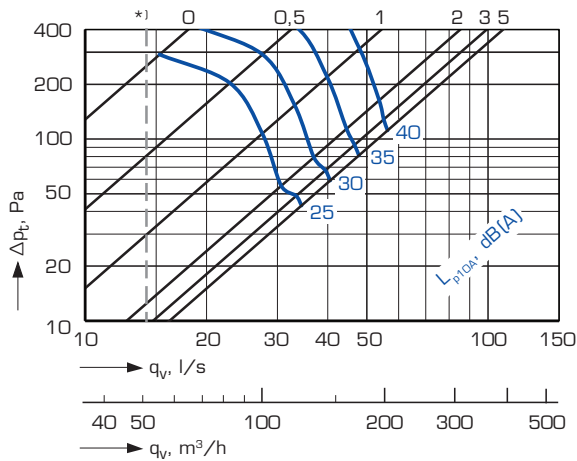
AIR FLOW, PRESSURE DROP, SOUND LEVEL - KHAA DIFFUSER WITHOUT CONNECTION BOX



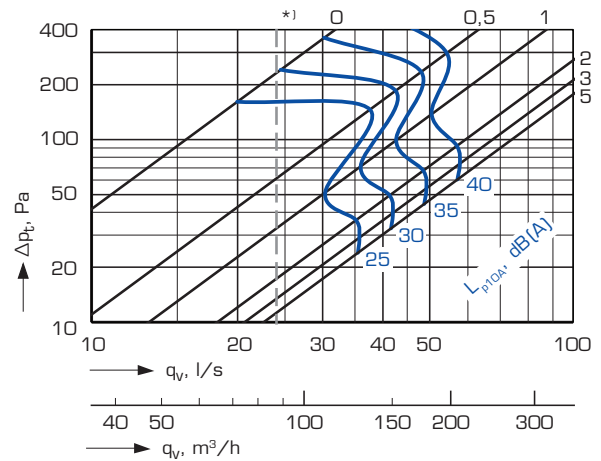
In the above graph the sound pressure levels are indicated in dB(A) for a reference room with 10 m^2 room absorption, equivalent to 4 dB room attenuation. Given data refer to diffuser set in “0 mm position”.

AIR FLOW, PRESSURE DROP, SOUND LEVEL

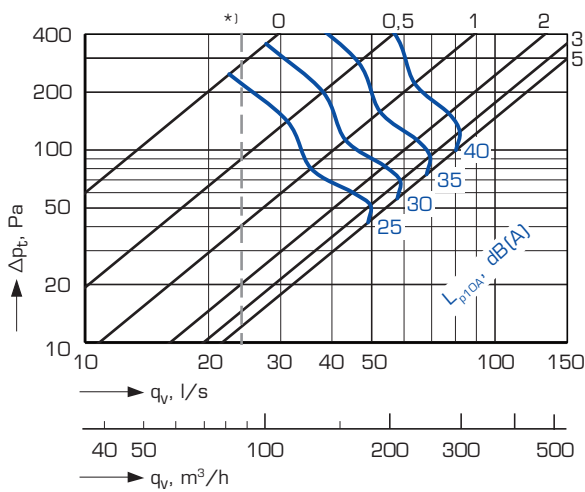
KHAA-12-1-1 + ATTD-100-125-1 - WITH 0 MM POSITION



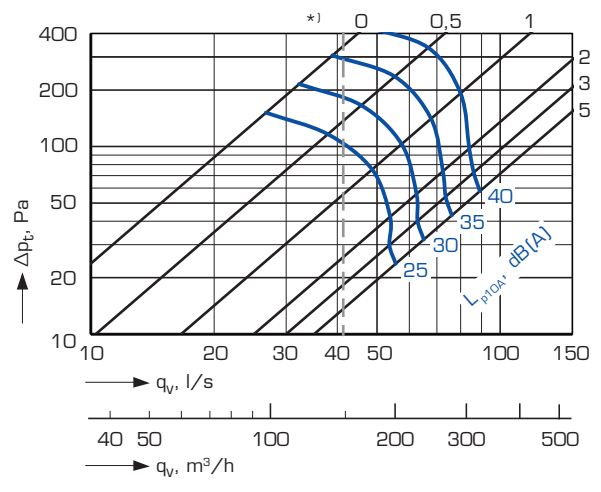
KHAA-12-1-1 + ATTS-125-125-1 - WITH 0 MM POSITION



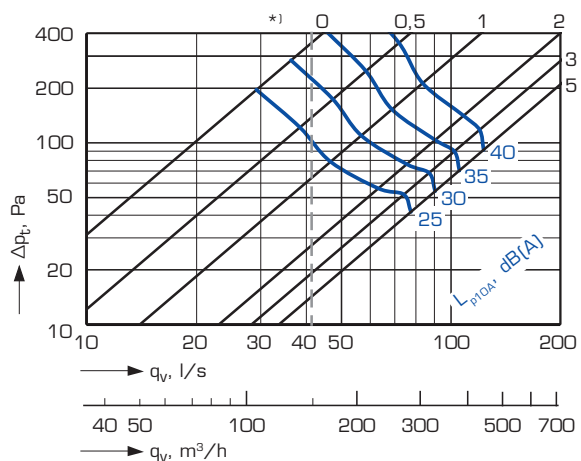
KHAA-16-1-1 + ATTD-125-160-1 - WITH 0 MM POSITION



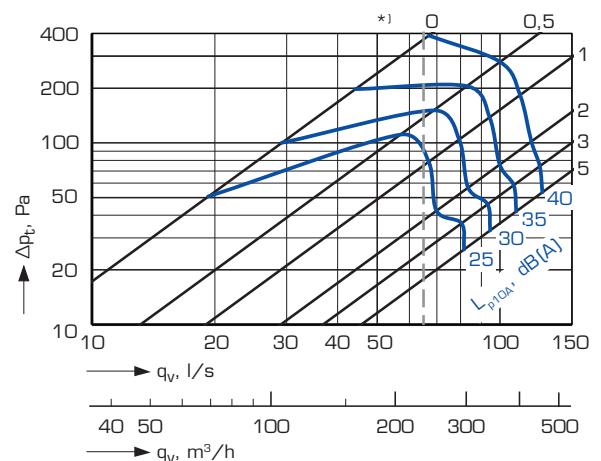
KHAA-16-1-1 + ATTS-160-160-1 - WITH 0 MM POSITION



KHAA-20-1-1 + ATTD-160-200-1 - WITH 0 MM POSITION

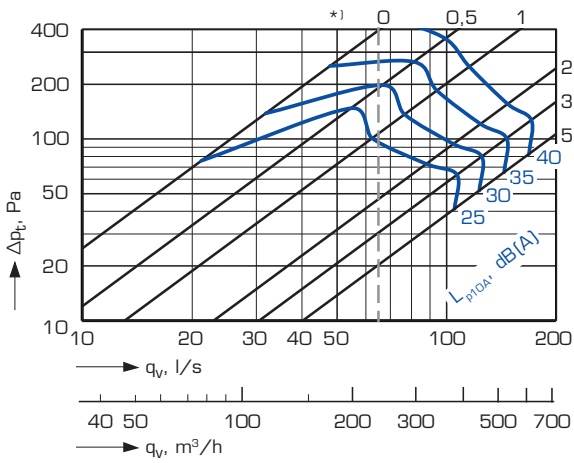


KHAA-20-1-1 + ATTS-200-200-1 - WITH 0 MM POSITION

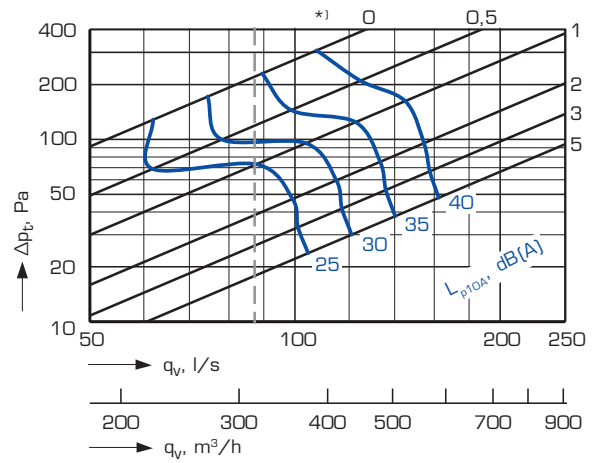


AIR FLOW, PRESSURE DROP, SOUND LEVEL

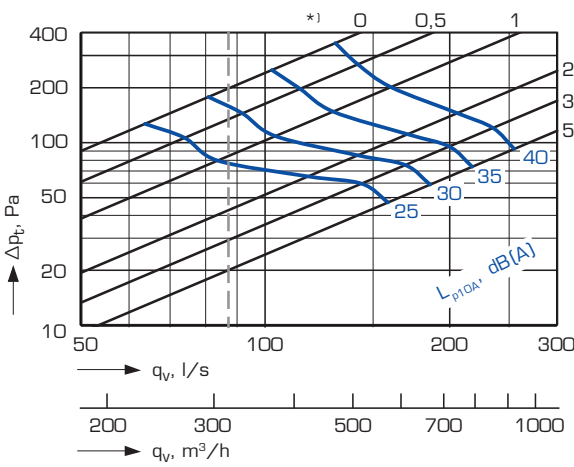
KHAA-25-1-1 + ATTD-200-250-1 - WITH 0 MM POSITION



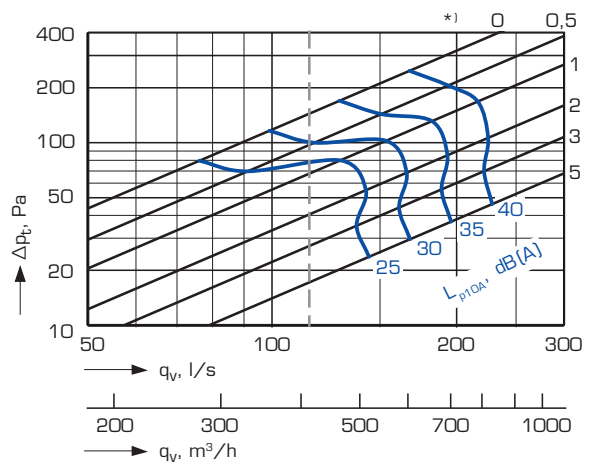
KHAA-25-1-1 + ATTS-250-250-1 - WITH 0 MM POSITION



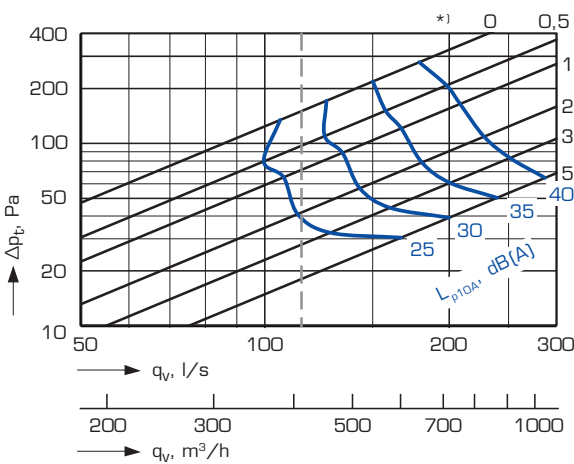
KHAA-31-1-1 + ATTD-250-315-1 - WITH 0 MM POSITION



KHAA-31-1-1 + ATTS-315-315-1 - WITH 0 MM POSITION



KHAA-40-1-1 + ATTD-315-400-1 - WITH 0 MM POSITION



*] adjustment position of damper

---- Min. airflow required to obtain sufficient measuring pressure

ACOUSTICAL DATA, DEFINITIONS

SOUND POWER LEVEL

Diffuser KHAA, position 0 mm, with connection box ATTS 1:1 (50 Pa)

Size	Correction of sound level K_{oct} in dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
12	6	9	3	-2	-1	-2	-8	-16
16	3	9	3	-2	0	-3	-9	-15
20	5	8	2	-2	1	-4	-10	-15
25	7	7	1	-1	0	-4	-11	-15
31	6	8	1	1	0	-4	-12	-15
+/-	6	3	2	2	2	2	2	3

Diffuser KHAA, position 0 mm, with connection box ATTD 1:2 (50 Pa)

Size	Correction of sound level K_{oct} in dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
12	11	10	7	-1	-2	-5	-11	-14
16	6	9	5	0	-1	-5	-10	-13
20	9	8	4	0	0	-4	-11	-14
25	6	10	3	-1	0	-5	-12	-13
31	8	12	4	1	-1	-6	-13	-14
40	9	12	4	2	-2	-8	-13	-16
+/-	6	3	2	2	2	2	2	3

Diffuser KHAA, without connection box

Size	Correction of sound level K_{oct} in dB for octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
12	-	5	3	2	-1	-4	-12	-
16	-	6	4	2	-1	-6	-14	-
20	-	6	4	2	-2	-4	-13	-
25	-	6	6	1	-3	-4	-14	-
31	-	7	5	1	-1	-4	-14	-
40	-	8	5	3	-3	-5	-14	-
+/-	-	3	2	2	2	2	2	-

The sound power levels for different octave bands are obtained by adding together the sound pressure level L_{p10A} , in dB(A), and the corrections K_{oct} for the octave bands in the table with the help of the following formula:

$$L_w = L_{p10A} + K_{\text{oct}}$$

Correction K_{oct} is the mean value for the range of application of KHAA.

SOUND ATTENUATION

Diffuser KHAA, position 0 mm, with connection box ATTS 1:1 (50 Pa)

Size	Sound attenuation ΔL in dB at [Hz] octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
12	22	11	14	20	13	12	11	13
16	19	11	10	17	9	8	9	13
20	17	8	12	12	6	7	10	13
25	14	7	9	10	8	8	9	11
31	11	5	10	5	7	9	7	11
+/-	6	3	2	2	2	2	2	3

Diffuser KHAA, position 0 mm, with connection box ATTD 1:2 (50 Pa)

Size	Sound attenuation ΔL in dB at [Hz] octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
12	20	18	13	23	17	15	14	19
16	24	12	11	18	12	15	12	17
20	20	9	10	16	14	9	14	16
25	16	7	10	14	14	11	15	18
31	12	6	8	12	11	12	14	16
40	10	6	7	11	11	11	12	15
+/-	6	3	2	2	2	2	2	3

Diffuser KHAA, without connection box

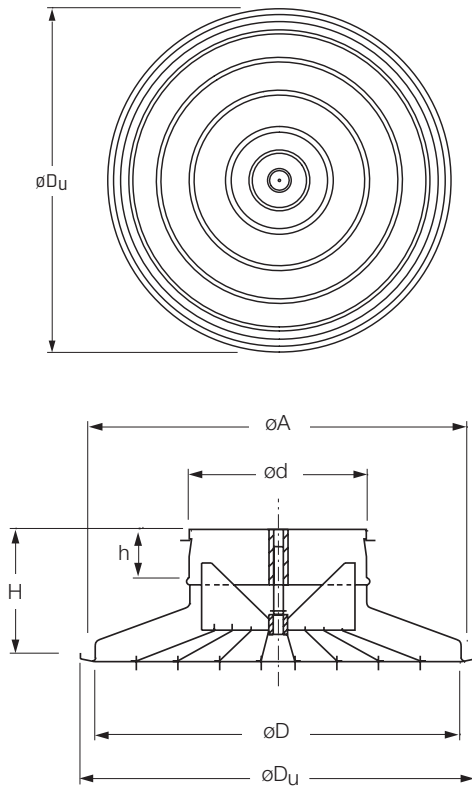
Size	Sound attenuation ΔL in dB at [Hz] octave bands, mean frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
12	-	15	10	5	1	0	0	-
16	-	13	9	3	1	0	0	-
20	-	12	8	3	0	0	0	-
25	-	10	6	2	0	0	0	-
31	-	9	6	2	0	0	0	-
40	-	8	5	1	0	0	0	-
+/-	-	3	2	2	2	2	2	-

DEFINITIONS

q_v	air flow	l/s, m ³ /h
Δp_t	total pressure drop	Pa
L_{02}	throw	m
L_{p10A}	sound pressure level with a room attenuation of 4 dB (10 m ² room absorption area)	dB(A)
L_w	sound power level	dB
K_{oct}	octave band correction	dB
ΔL	sound attenuation from the duct to the room	dB

DIMENSIONS

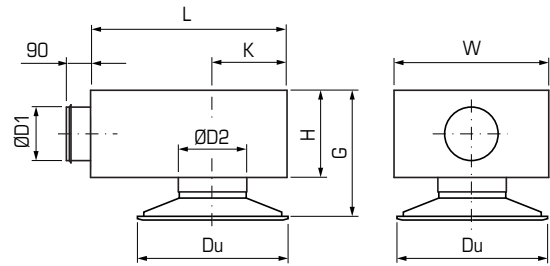
KHAA SUPPLY AIR DIFFUSER



Size	$\varnothing d$ (mm)	$\varnothing D$ (mm)	$\varnothing D_u$ (mm)	H (mm)	$\varnothing A$ (mm)	h (mm)	Weight (kg)
12	124	259	293	109	269	30	1,1
16	159	310	346	109	320	30	1,6
20	199	414	448	125	424	30	2,4
25	249	518	559	140	528	40	3,7
31	314	612	662	168	622	40	5,1
40	399	825	889	210	835	75	9,1

$\varnothing A$ = hole dimension to be cut in ceiling

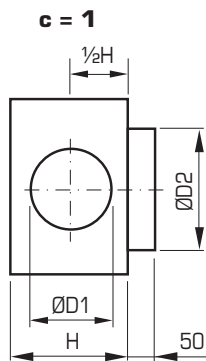
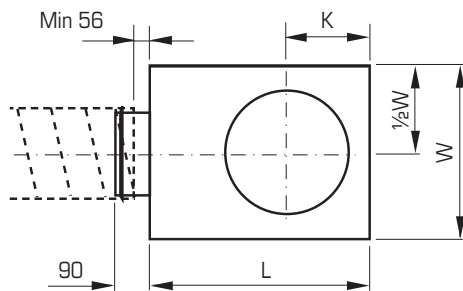
KHAA DIFFUSER + ATTD/ATTS PLENUM BOX



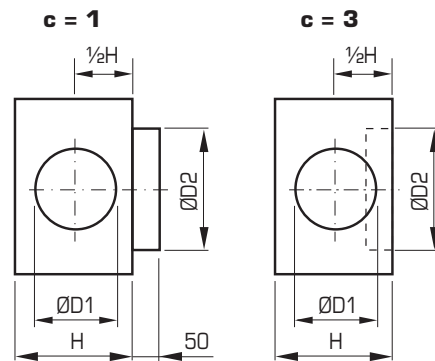
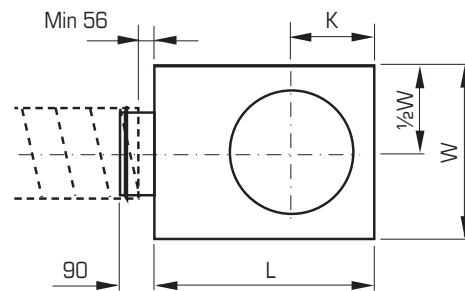
Size	$\varnothing D_u$ (mm)	$\varnothing D_1$ (mm)	$\varnothing D_2$ (mm)	L (mm)	W (mm)	H (mm)	K (mm)	G (mm)
ATTD								
100-125	293	99.3	125	350	320	170	132	299
125-160	346	124.3	160	450	320	170	152	299
160-200	448	159.3	200	480	440	205	177	350
200-250	559	199.3	250	630	480	245	210	395
250-315	662	249.3	315	680	570	295	252	473
315-400	889	314.3	400	680	570	360	252	545
ATTS								
125-125	293	124.3	125	340	300	170	133	299
160-160	346	159.3	160	380	340	195	153	324
200-200	448	199.3	200	480	380	235	178	380
250-250	559	249.3	250	530	380	285	211	435
315-315	662	314.3	315	530	480	335	253	513

DIMENSIONS, GENERAL

ATTS PLENUM BOX



ATTD PLENUM BOX



Size	ØD1 (mm)	ØD2 (mm)	H (mm)	L (mm)	W (mm)	K (mm)	Weight (kg)
125-125	124.3	125	170	340	300	133	1.6
160-160	159.3	160	195	380	340	153	2.7
200-200	199.3	200	235	480	380	178	3.7
250-250	249.3	250	285	530	380	211	4.3
315-315	314.3	315	335	530	480	253	5.5

Size	ØD1 (mm)	ØD2 (mm)	H (mm)	L (mm)	W (mm)	K (mm)	Weight (kg)
100-125	99.3	125	170	350	320	132	2.5
125-160	124.3	160	170	450	320	152	3.0
160-200	159.3	200	205	480	440	177	4.0
200-250	199.3	250	245	630	480	210	5.5
250-315	249.3	315	295	680	570	252	6.9
315-400	314.3	400	360	680	570	252	8.0

GENERAL, PRODUCT CODE

CONSTRUCTION AND FUNCTION

The KHAA air diffuser is suitable for use as a supply air terminal device in commercial and industrial application buildings. It has a 360° diffusion pattern, and it can be used both freely suspended and installed in a false ceiling. The air direction is adjustable and can be either horizontal or vertical. The diffuser is also available with ATTD (ATTS) plenum box which has a patented measurement damper which, in combination with KHAA, gives a very low noise level.

The ATTD plenum box features an extremely quiet patented measurement and adjustment damper for multipoint measuring with balanced and accurate values. The adjustment handle of the measurement and adjustment damper has a position indicator and a locking device. The measurement and adjustment damper can be easily removed (only 1:2 model) for inspection and cleaning without changing the setting or removing the sound attenuation elements. The sound attenuation elements (made of polyester fibre) are designed to direct the air flow in order to provide an air distribution that is as uniform as possible. The diffuser connection collar is either outwards or inwards in the plenum box – in the latter case, the plenum box needs less space. The ATTD plenum box is applicable for supply and exhaust air alike. In exhaust air use, the position of the measuring hose is changed to the measuring connector inside the box. The unit is also available with the extremely compact plenum box ATTS – please see the plenum box technical catalogues for more details.

MATERIAL AND SURFACE FINISH

Both diffuser and the plenum box are made from steel sheet. KHAA is powder-coated for a high surface finish. The standard colour is RAL 9010, 30% of gloss.

INSTALLATION, ADJUSTMENT AND MAINTENANCE

The instructions for installation, adjustment and maintenance are available at www.flaktgroup.com.

TECHNICAL DATA AND DIMENSIONING

For complete design details, please see the Fläktgroup product selection program SELECT. The program can be found on the Internet at www.flaktgroup.com.

SPECIFICATIONS TEXT EXAMPLE

The KHAA is a ceiling supply air unit that consists of external ring and internal adjustable rings, which position can be set due to actual demand in terms of diffusion pattern shape.

The ATTD plenum box includes a quiet, easily removable measurement and adjustment damper (ZAEF). The effective sound attenuation elements of the ATTD box direct the air flow in order to provide an air distribution that is as uniform as possible.

PRODUCT CODE

Conical diffuser **KHAA-aa-b-c**

Size (aa)

12, 16, 20, 25, 31, 40

Regulation (b)

1 = manual

Colour (c)

1 = standard RAL 9010

X = any other colour from RAL palette

Connection box

ATTD-aaa-bbb-c

Duct connection in mm (aaa)

100, 125, 160, 200, 250, 315

Diffuser connection in mm (bbb)

125, 160, 200, 250, 315, 400

Type (c)

1 = collar outwards

3 = low, collar inwards (only 1:2 model)

Connection box

ATTS-aaa-bbb-c

Duct connection in mm (aaa)

125, 160, 200, 250, 315

Diffuser connection in mm (bbb)

125, 160, 200, 250, 315

Type (c)

1 = collar outwards

EXCELLENCE IN SOLUTIONS

FläktGroup is the European market leader for smart and energy efficient Indoor Air and Critical Air solutions to support every application area. We offer our customers innovative technologies, high quality and outstanding performance supported by more than a century of accumulated industry experience. The widest product range in the market, and strong market presence in 65 countries worldwide, guarantee that we are always by your side, ready to deliver Excellence in Solutions.

PRODUCT FUNCTIONS BY FLÄKTGROUP

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Air Management & ATD's | Air Conditioning & Heating | Controls | Service

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