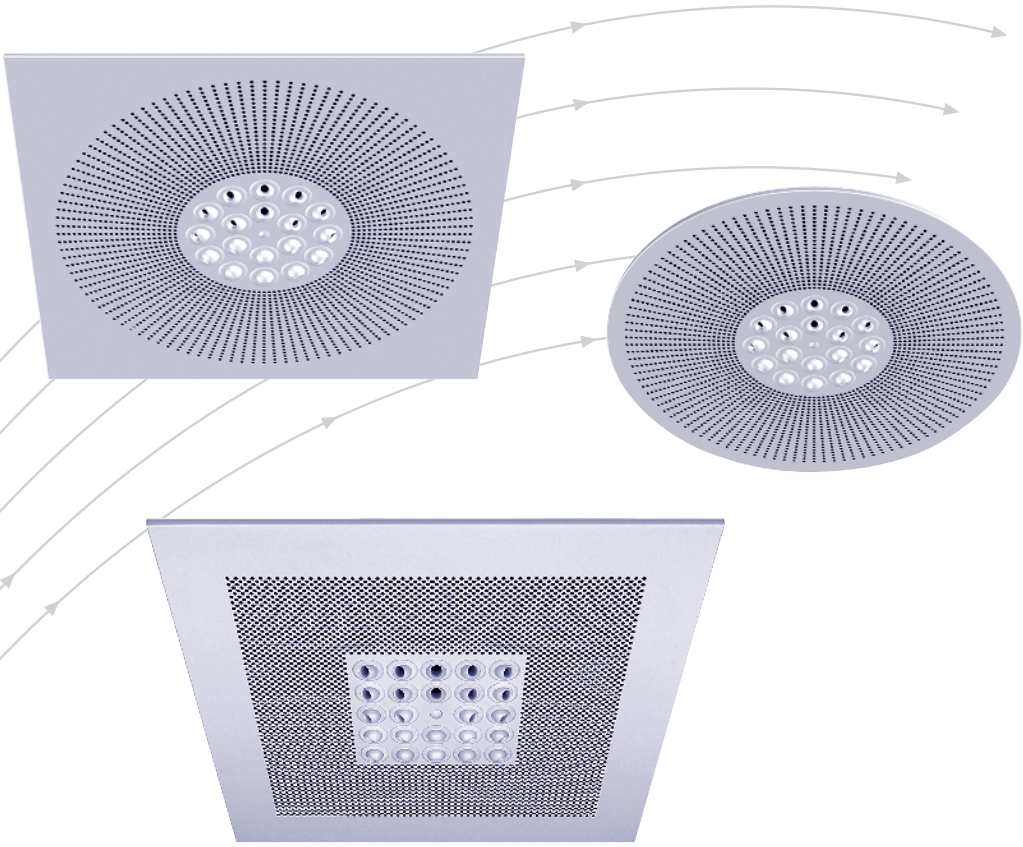
Ceiling air diffuser PASSCLEAN

Type PASS

square and circular, highly inductive, but very clean



Int. mod. prot. reg.

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Contents

Application

The PASSCLEAN ceiling air diffusers are designed for applications in areas frequented by a large number of persons. Despite optimum secondary air induction, the PASSCLEAN only contaminates the ceiling to a very minor degree.

Areas of application

– Passage zones in airports, exhibition buildings
– Shopping centres, booking halls
– Foyers, corridors

The air diffusers can be fitted harmoniously in mineral fibre and/or metal plate ceilings.
The PASSCLEAN can also be used for visual realisation, i.e. freely suspended.

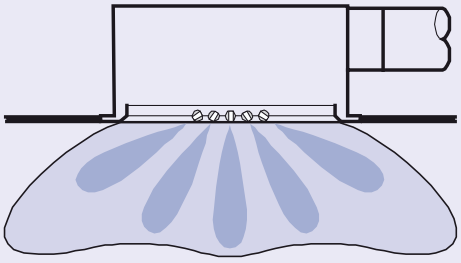
The following executions are available

square		type PASSQ
circular/square		type PASSRQ
circular		type PASSR

The executions square and circular/square replace a ceiling plate by grid ceilings of 600×600 or 625×625 mm.

Supply air characteristics

Position of supply air 9



Realisation

Type PASSQ / PASSRQ

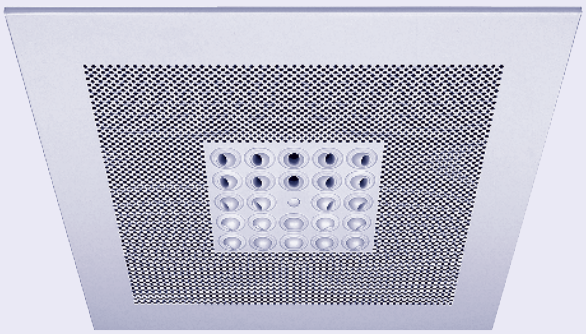
The PASSCLEAN ceiling air diffuser is made of steel plate, powder coated. A series of ball jets are arranged as a square in the middle of the plate. The ball jets are surrounded by a perforated plate. Colour RAL 9010, matt finish, 25% brilliance.
The standard plenum box is made of galvanised steel plate and designed for use with PASSCLEAN ceiling air diffuser, type PASSQ.

Informations about the plenum box see pages 5 and 6.

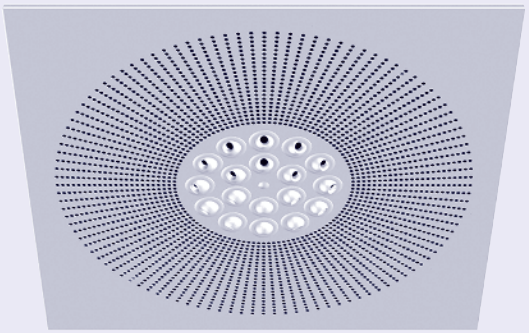
Remark
The PASSCLEAN replaces a ceiling plate.

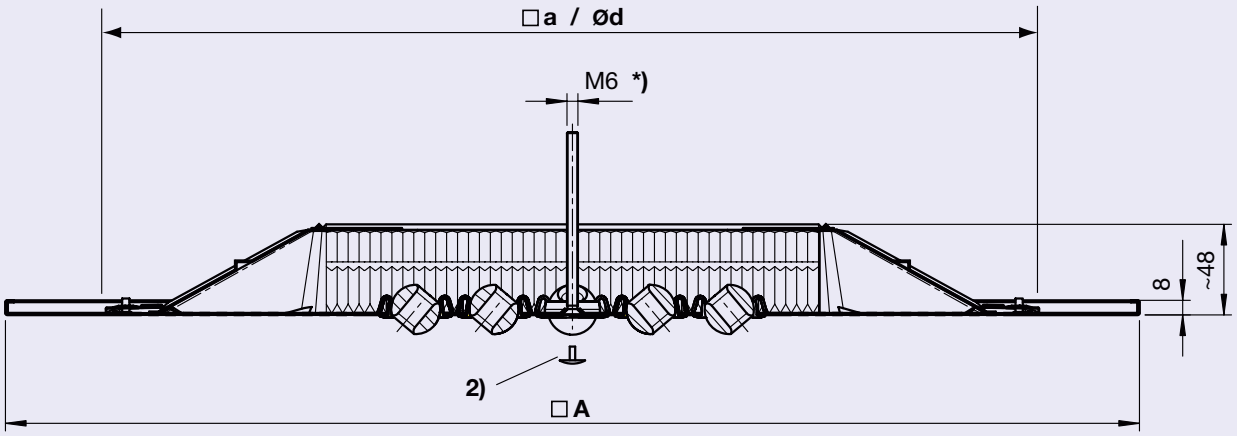
Dimensions

Type PASSQ



Type PASSRQ





2) Plastic plug
***)** Central screw M6×100 mm and plastic plug are delivered as a loose part

Type	ND	□A [mm]	□a [mm]	Ød [mm]	Grid dimension [mm]	Number of ball jets	
						□	○
PASSQ	598×500	598	474	-	600×600	24	18
	623×500	623	474	-	625×625		
PASSRQ	598×500	598	-	548	600×600	24	18
	623×500	623	-	548	625×625		

Realisation · Dimensions

Realisation

Type PASSR

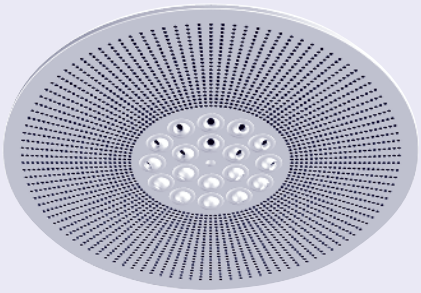
The PASSCLEAN ceiling air diffuser is made of steel plate, powder coated. A series of ball jets are arranged circularly and countersunk in the middle of the plate. The ball jets are suttounded by a perforated plate. Colour RAL 9010, matt finish, 25% brilliance.

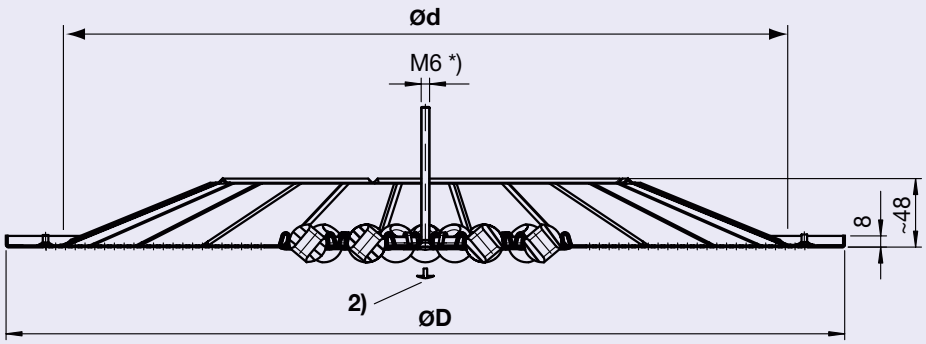
The **square** standard plenum box is made of galvanised steel plate and designed for use with PASSCLEAN type PASSR (needs a panel of a false ceiling with a recess of D – 25 mm).
Informations about the plenum box see page 6.

The **square** standard plenum box with a **circular** adapter are necessary for the visual realisation, i. e. freely suspended.

Dimensions

Type PASSR



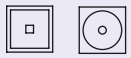


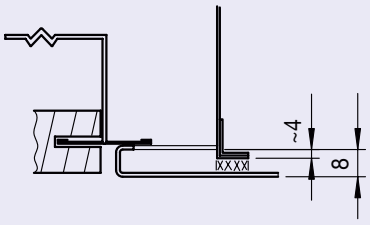
2) Plastic plug
***)** Central screw M6×100 mm and plastic plug are delivered as a loose part

Type	ND	ØD [mm]	Ød [mm]	Number of ball jets
PASSR	600×500	600	548	18

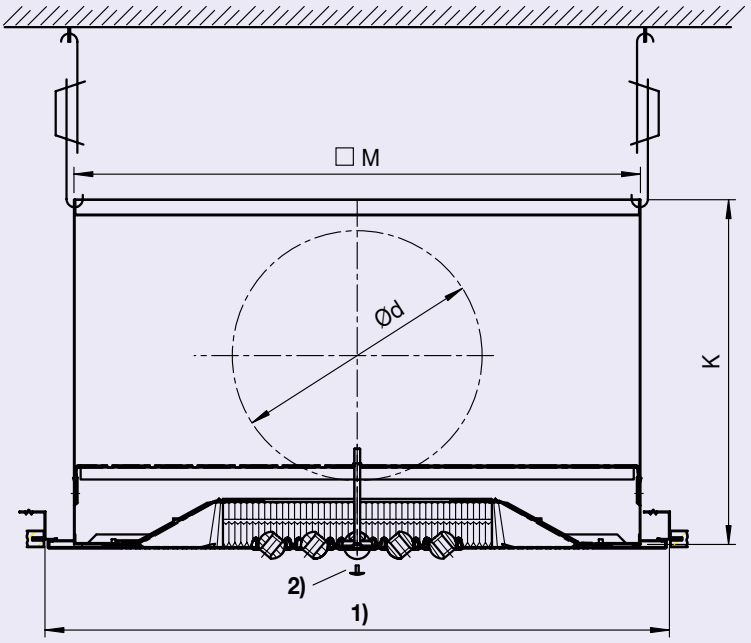
Type PASSQ / PASSRQ

for grid dimensions ☐ 600 or ☐ 625 mm
pressed onto ceiling profile **from below,**
with **square** plenum box.



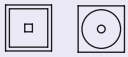


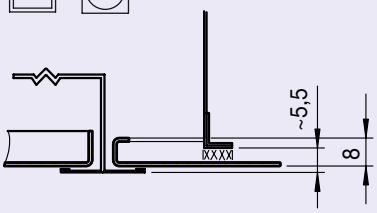
1) Grid dimension
2) Plastic plug



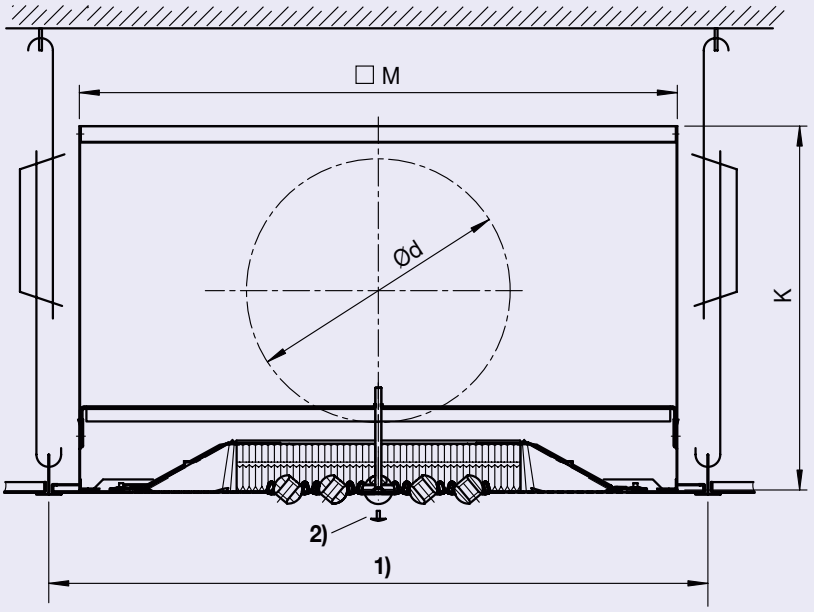
Type PASSQ / PASSRQ

for grid dimensions ☐ 600 or ☐ 625 mm
inserted in ceiling profile **from above**
with **square** plenum box.





1) Grid dimension
2) Plastic plug

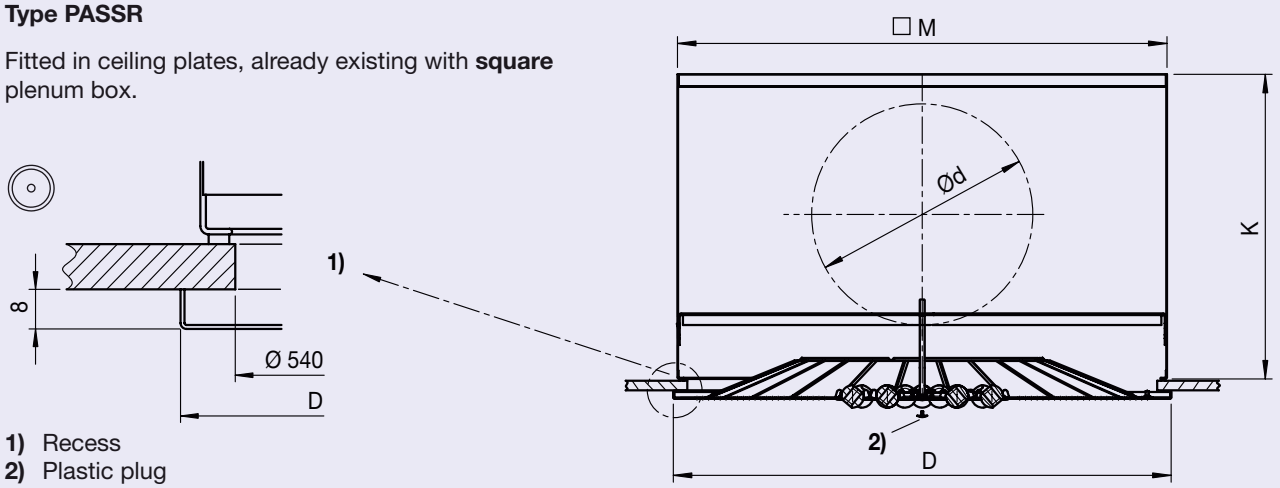


Type	ND	Grid dimension [mm]	Plenum box Details see prospect L-04-1-31e (TROX HESCO) or 2/16.4/… (TROX)			
			K	☐ M	Ød	Type
PASSQ	598×500	600×600	345	567	1 x 248	**AKH04 ZL M0 (TROX HESCO)** AK004 ZL M0 (TROX)
	623×500	625×625				
PASSRQ	598×500	600×600				
	623×500	625×625				

Installation

Type PASSR

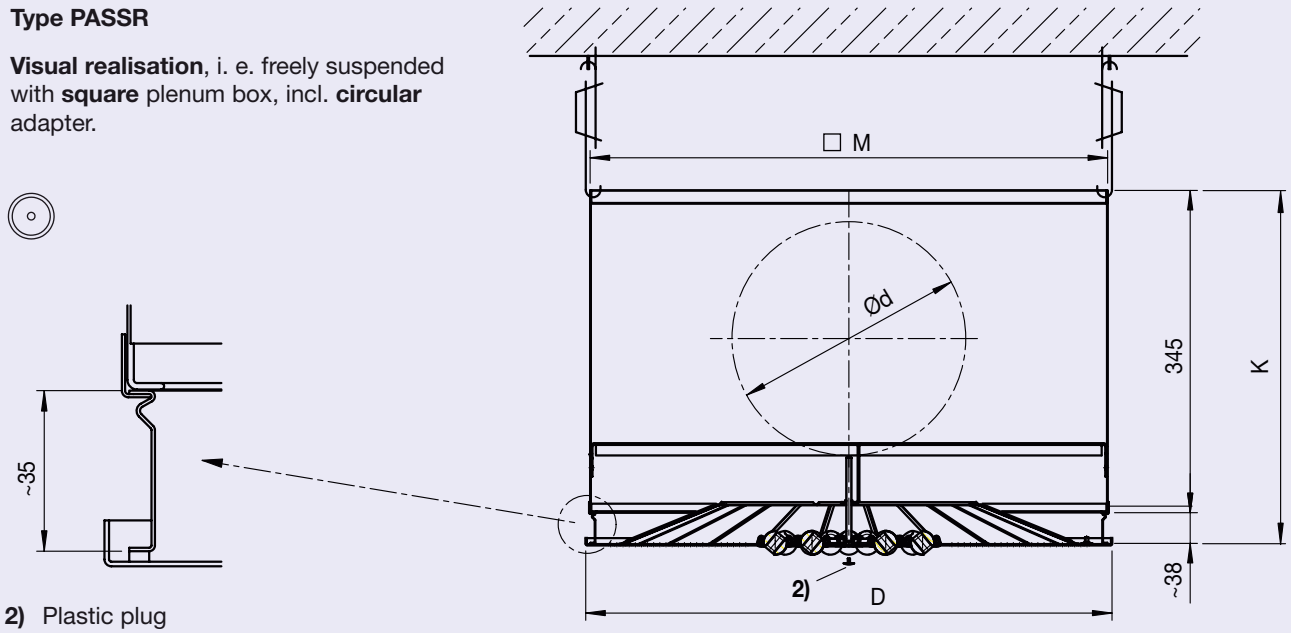
Fitted in ceiling plates, already existing with **square** plenum box.



1) Recess
2) Plastic plug

Type PASSR

Visual realisation, i. e. freely suspended with **square** plenum box, incl. **circular** adapter.



2) Plastic plug

Type	ND	Plenum box Details see prospect L-04-1-31e (TROX HESCO) or 2/16.4/… (TROX)			
		K	☐ M	Ød	Typ
PASSR	600×500	345	567	1 × 248	**AKH04 ZL M0 (TROX HESCO)** AK004 ZL M0 (TROX)

Quick selection

ND	A_{eff} [m²]	$\dot{V}$ [m³/h]	Δp_s [Pa]	L_w [dB(A)]	D_{min} [m]	V_{max/m^2} [m³/h,m²]	$v_{1.0}$ [m/s]	$v_{2.0}$ [m/s]	$v_{3.0}$ [m/s]	$v_{4.0}$ [m/s]
598×500 623×500 600×500	0.0766 m² 0.0485 m²	**400**	15	31	2.5	64	0.50	0.25		
		600 **nominal**	33	44	3.2	59	0.84	0.55	0.36	
		800	58	53	3.6	62		0.88	0.58	0.44

Key

$\dot{V}$	m³/h	Air flow rate	$\dot{V}_{max/m^2}$	m³/h,m²	Max. air flow rate per m²
Δp_s	Pa	Static pressure drop	v	m/s	Velocity of the air jet after the distances of 1.0, 2.0, 3.0, 4.0 m
L_w	dB(A)	Assessed sound power level			
D_{min}	m	Minimum distance			

$\dot{V}$	m³/h	Air flow rate
$\dot{V}_{max/m^2}$	m³/h, m²	Max. air flow rate per m²
L_W	dB(A)	Assessed sound power level
L_{Wokt}	dB	Sound power level in octave-centre frequencies
f	Hz	Frequency
ΔT	K	Difference in temperature (- or +)
Δps	Pa	Static pressure drop
RH	m	Room Height
D_{min}	m	Minimum distance
M	m	Mixing zone height
Dh	m	Horizontal distance

Correction factor for other ΔT

ΔT	-10	-5	0	+5	+10	+15	**[K]**
f	1.00	0.90	0.79	0.69 **1)**	0.58 **2)**	0.48 **3)**	**[-]**

Velocity $_{x\ [K]}$ = Velocity $_{-10\ [K]}$ * f

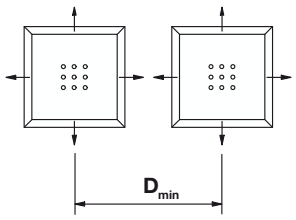
Explanations
1) min. air velocity v = 0.3 m/s, according to table value
2) min. air velocity v = 0.5 m/s, according to table value
3) min. air velocity v = 0.8 m/s, according to table value

Insertion attenuation (incl. end reflection)
Interior of box not insulated

f	125	250	500	1k	2k	4k	8k	**[Hz]**
ΔL	11	6	4	5	8	10	9	**[dB]**

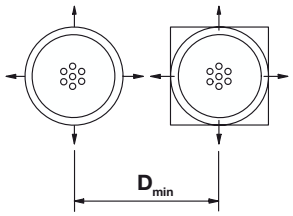
Technical Data

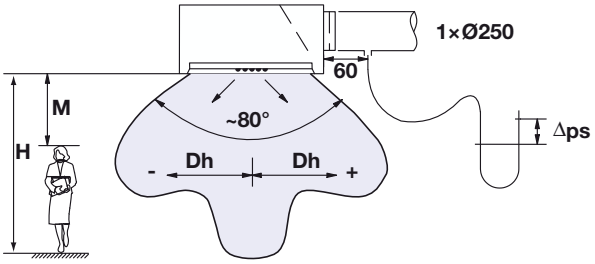
Type PASSQ
598×500
623×500



Type PASSR
600 × 500

Type PASSRQ
598×500
623×500





Pos. of discharge 9
Pos. of balls 45°

Table 1 valid for spigot 1 × Ø250

V: 400 [m³/h]	D_{min} = 2.5 [m]	L_W = 31 [dB(A)]	Δps = 15 [Pa]
ΔT: -10 [K]	V_{max/m^2} = 64 [m³/h, m²]	f	125	250	500	1k	2k	4k	8k	[Hz]
		L_{Wokt}	**36**	**30**	**31**	**26**	**19**	**16**	**15**	**[dB]**

Vertical distance	Horizontal distance Dh [m]												
M [m]	-1.50 [m/s]	-1.25 [m/s]	-1.00 [m/s]	-0.75 [m/s]	-0.50 [m/s]	-0.25 [m/s]	**0.00 [m/s]**	0.25 [m/s]	0.50 [m/s]	0.75 [m/s]	1.00 [m/s]	1.25 [m/s]	1.50 [m/s]
1.00			<0.15	0.36	0.35	0.22	**0.50**	0.22	0.35	0.36	<0.15		
1.25			<0.15	0.35	0.26	0.27	**0.51**	0.27	0.26	0.35	<0.15		
1.50			<0.15	0.29	0.19	0.25	**0.43**	0.25	0.19	0.29	<0.15		
1.75		<0.15	0.17	0.25	<0.15	0.25	**0.33**	0.25	<0.15	0.25	0.17	<0.15	
2.00													

Air velocity for other ΔT, see table page 7

Table 2 valid for spigot 1 × Ø250

V: 600 [m³/h]	D_{min} = 3.20 [m]	L_W = 44 [dB(A)]	Δps = 33 [Pa]
ΔT: -10 [K]	V_{max/m^2} = 59 [m³/h, m²]	f	125	250	500	1k	2k	4k	8k	[Hz]
		L_{Wokt}	**39**	**39**	**40**	**42**	**35**	**25**	**18**	**[dB]**

Vertical distance	Horizontal distance Dh [m]												
M [m]	-1.50 [m/s]	-1.25 [m/s]	-1.00 [m/s]	-0.75 [m/s]	-0.50 [m/s]	-0.25 [m/s]	**0.00 [m/s]**	0.25 [m/s]	0.50 [m/s]	0.75 [m/s]	1.00 [m/s]	1.25 [m/s]	1.50 [m/s]
1.00		<0.15	0.35	0.57	0.23	0.44	**0.84**	0.44	0.23	0.57	0.35	<0.15	
1.25	<0.15	0.24	0.52	0.32	0.19	0.52	**0.86**	0.52	0.19	0.32	0.52	0.24	<0.15
1.50	<0.15	0.25	0.40	0.32	<0.15	0.49	**0.93**	0.49	<0.15	0.32	0.40	0.25	<0.15
1.75	0.24	0.26	0.17	<0.15	<0.15	0.35	**0.65**	0.35	<0.15	<0.15	0.17	0.26	0.24
2.00	0.24	0.25	0.16	<0.15	<0.15	0.33	**0.55**	0.33	<0.15	<0.15	0.16	0.25	0.24
2.50	0.23	0.24	0.15	<0.15	<0.15	0.31	**0.43**	0.31	<0.15	<0.15	0.15	0.24	0.23
3.00	0.23	0.23	<0.15	<0.15	0.26	0.29	**0.36**	0.29	0.26	<0.15	<0.15	0.23	0.23
3.50	0.22	0.22	<0.15	<0.15	0.24	0.27	**0.31**	0.27	0.24	<0.15	<0.15	0.22	0.22
4.00	0.21	0.21	<0.15	<0.15	0.22	0.25	**0.27**	0.25	0.22	<0.15	<0.15	0.21	0.21
4.50	0.20	0.20	<0.15	<0.15	0.20	0.23	**0.24**	0.23	0.20	<0.15	<0.15	0.20	0.20
5.00	0.19	0.19	<0.15	<0.15	0.18	0.21	**0.22**	0.21	0.18	<0.15	<0.15	0.19	0.19

Air velocity for other ΔT, see table page 7

Table 3 valid for spigot 1 × Ø250

V: 800 [m³/h]	**D_{min} =**	**3.60**	**[m]**	**L_W =**			**53 [dB(A)]**		**Δps = 58**			**[Pa]**
ΔT: -10 [K]	**V_{max/m^2} =**	**62**	**[m³/h, m²]**	**f**	125	250	500	1k	2k	4k	8k	[Hz]
				L_{Wokt}	**49**	**49**	**48**	**50**	**46**	**36**	**25**	**[dB]**

Vertical distance	Horizontal distance Dh [m]											
M [m]	-1.50 [m/s]	-1.25 [m/s]	-1.00 [m/s]	-0.75 [m/s]	-0.50 [m/s]	-0.25 [m/s]	**0.00 [m/s]**	0.25 [m/s]	0.50 [m/s]	0.75 [m/s]	1.00 [m/s]	1.25 [m/s]	1.50 [m/s]
1.00	<0.15	0.38	0.72	0.39	0.25	0.50	**0.97**	0.50	0.25	0.39	0.72	0.38	<0.15
1.25	<0.15	0.53	0.48	0.30	0.20	0.81	**0.98**	0.81	0.20	0.30	0.48	0.35	<0.15
1.50	0.16	0.52	0.62	0.43	0.21	0.85	**1.14**	0.85	0.21	0.43	0.63	0.52	0.16
1.75	0.52	0.40	0.24	<0.15	<0.15	0.57	**0.97**	0.57	<0.15	<0.15	0.24	0.40	0.52
2.00	0.49	0.38	0.23	<0.15	<0.15	0.55	**0.88**	0.55	<0.15	<0.15	0.23	0.38	0.49
2.50	0.46	0.44	0.21	<0.15	<0.15	0.52	**0.70**	0.52	<0.15	<0.15	0.21	0.44	0.46
3.00	0.44	0.42	0.19	<0.15	<0.15	0.50	**0.58**	0.50	<0.15	<0.15	0.19	0.42	0.44
3.50	0.42	0.40	<0.15	<0.15	0.40	0.47	**0.50**	0.47	0.40	<0.15	<0.15	0.40	0.42
4.00	0.40	0.38	<0.15	<0.15	0.38	0.44	**0.44**	0.44	0.38	<0.15	<0.15	0.38	0.40
4.50	0.38	0.36	<0.15	<0.15	0.35	0.38	**0.38**	0.38	0.35	<0.15	<0.15	0.36	0.38
5.00	0.36	0.34	<0.15	<0.15	0.32	0.35	**0.35**	0.35	0.32	<0.15	<0.15	0.34	0.36
5.50	0.34	0.31	<0.15	<0.15	0.28	0.32	**0.32**	0.32	0.28	<0.15	<0.15	0.31	0.34
6.00	0.31	0.28	<0.15	<0.15	0.27	0.28	**0.28**	0.28	0.27	<0.15	<0.15	0.28	0.31
6.50	0.28	0.25	<0.15	<0.15	0.25	0.27	**0.27**	0.27	0.25	<0.15	<0.15	0.25	0.28
7.00	0.25	0.23	<0.15	<0.15	0.23	0.25	**0.25**	0.25	0.23	<0.15	<0.15	0.23	0.25

Air velocity for other ΔT, see table page 7

Example of application

Given

$\dot{V}$ = 600 m³/h, ΔT = -10 K, $\dot{V}_{max/m^2}$ = 59 m³/h, m², RH = 3.05 m

Sought

a) D_{min}
b) L_W
c) L_{Wokt}
d) Δps
e) Air velocity per 1.8 m over floor
f) Insertion attenuation

Solution see table 2

a) D_{min} = 3.2 m
b) L_W = 44 dB(A)
c) L_{Wokt} = see table 2
d) Δps = 33 Pa
e) Air velocity per 1.8 m over floor:
see table 2 at M = RH - 1.8 m = 1.25 m
f) Insertion attenuation see table page 7

Order details

Order code

No details for standard products

PASS	Q	AKH04	ZL	M0	/	... x ...	/	0	/	9	/	P1	/	RAL 9006

Type
PASSCLEAN

Q = square
RQ = circular/square
R = circular

0 = Without plenum box
AKH04 = TROX HESCO-plenum box
AK004 = TROX-plenum box
AK017 = TROX-plenum box (**circular** adapter for visual realisation)

ZL = supply air

M0 = Spigot with volume control, without lip seal (standard)
ML = Spigot with volume control, with lip seal
00 = Spigot without volume control, without lip seal
0L = Spigot without volume control, with lip seal

Nominal dimension
external dimension × active surface

external dimension × active diameter

9 = Discharge possibility 9 (bell-shaped)

0 = Powder coated according to RAL 9010, matt, 25% brilliance (standard)
P1 = Powder coated according to RAL (other RAL colours and brilliance on request)

RAL 9006 matt, 25% brilliance (special colour)

Order examples

60 off PASSQ AKH04ZLM0/623×500
75 off PASSRQ AKH04ZLM0/623×500/P1/RAL 9006 (RAL 9006, 60% brilliance)
90 off PASSR AKH04ZL M0/600×500
20 off PASSR AK017ZL M0/600×500

Text for tendering purposes

Ceiling air diffuser PASSCLEAN with two-jets of air , in the center via all-circular swiveling ball jets, in the peripheal zone via perforated plate openings. Attachment by means of central screw. Central screw will be delivered separately.

A standard plenum box of galvanised steel, with integrated cross bar for the M6 central screw, for quick and simple installation of the ceiling panel air diffuser. A connection with volume control for connecting a coiled tube or hose is included; the inlet box also contains an air distributor element.

Material

Ceiling air diffuser:	steel, colour RAL 9010, matt, 25% brilliance, ball jets of plastic material, RAL 9010
Plenum box:	galvanised steel plate

Details for the plenum box see pages 5 and 6.

The square standard plenum box, incl. **circular** adapter, is necessary for visual realisation, i. e. freely suspended.

Option
– Other RAL colours
– Quadratic cover plate with circular recess (in different
– dimensions) on request

We reserve the right to make design and shade of colour changes (06/2007)