

Ceiling induction diffuser DISA



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DISA

Ceiling induction diffuser

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DISA

Ceiling induction diffuser

Description

The ceiling induction outlet was designed in particular for air-water air conditions. The ventilation of the rooms is over one or two slots openings which blow a small primary air volume draught free into the room. By reducing the primary air volumes to a necessary minimum, less fresh air needs to be processed and transported. So an energy saving ventilation and cooling is reached. For cooling, the room air is induced through an opening of the front plate, lead through the cooling register and cooled. The induced secondary air volume is approx. 3 to 4 times larger than the primary air volume. The cooled room air is let into the room, based on the higher density, over one or two slots. This secondary air volume flow is turned horizontally and taken with the primary air volume flow. After leaving the ceiling, the total air jet sinks slowly with low velocity into the occupied area.

To monitor if the dew point is falling short, a moisture sensor is installed (on site). If there is a danger that the dew point is falling short, increase pre-run temperature. By regulating the through flow volume or the pre-run temperature the cooling capability can be varied. The high cooling capacity for each outlet has the advantage that compared to cooling ceiling, only a few

DISA outlets must be installed in a room. The cool register is tested up to a pressure of 6 Pa. The water throughput is 100 - 150l/h.

To regulate the the installation, an automatic volume flow regulator type VRM or a damper flap type DKA can be installed on the ceiling induction outlet.

Advantages

- * Supply air is lead over a one or two slots line. Under optimum use of the Coanda effect is the primary and the cooled secondary air volume guided horizontally under the ceiling and lead to the occupied area, creating a room roll.
- * The cool register is in a closed connection unit, so reducing the contamination risk, giving a permanent high efficiency.
- * The primary air has no contact to the light housing. Optimized efficiency of the light is reached. Heating up of the primary air volume is prevented.
- * Grids fitting in current ceiling modules.
- * Strip design available (angle to align the outlets arranged on site).

Assembly

The ceiling induction outlet DISA is without suspension arrangement to fit flush to ceilings or to fit under ceilings. At an extra cost, four riveting nuts M6 are available for the plenum box to suspend over threaded rods.

Furthermore, the ceiling induction outlet is available with or without length profile (-LP). When ordering the DISA outlet the length profile must be ordered, too, as a subsequent assembly is not possible.

Installation

To reach an even cooling, the cool register is fitted parallel to the cold water set in the ceiling induction outlets.

The connection of the ceiling induction outlet on the air conditioning system is done with a connection piece.

When fitting the ceiling induction outlet DISA take note that for maintenance purposes, access from the room side must be possible without problems.

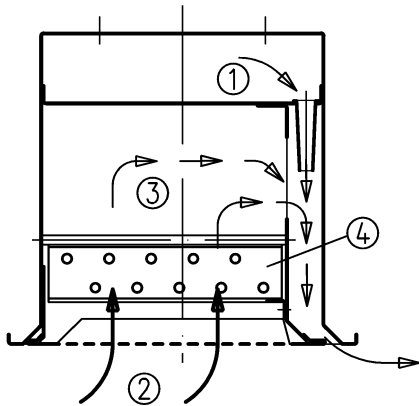
DISA

Ceiling induction diffuser

Quick selection
DISA - 1 (1 slot)

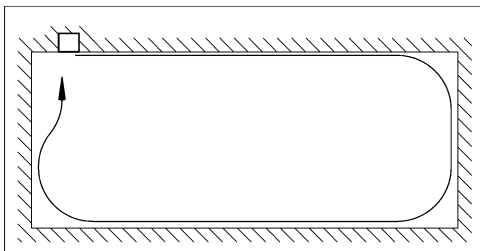
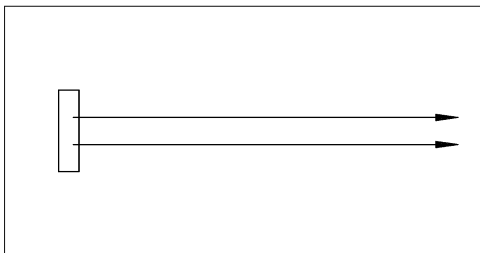
L	1200	1720
L_{WA} [dB(A)]	35	35
Δp_t (Pa)	48	39
V_{ZU} (m ³ /h)	91	118
V_{ZU} [l/s]	25	33

Diagram to visualise the process
DISA-1 (1 slot)



- 1 Primary air
- 2 Warm secondary air
- 3 Cooled secondary air
- 4 Cooling register

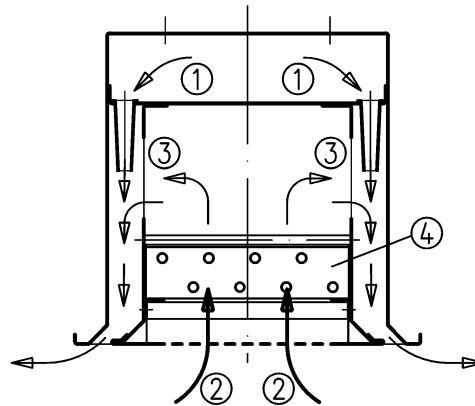
Diagram to visualise the jet path
DISA-1 (1 slot)



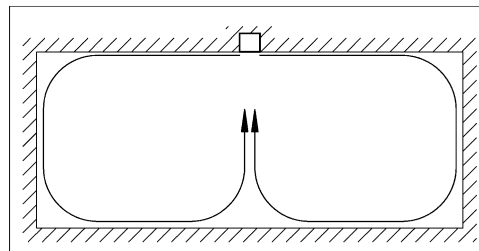
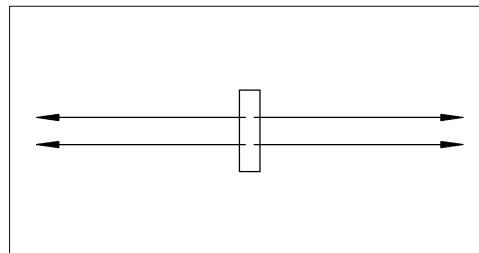
DISA-2 (2-slots)

L	1200	1720
L_{WA} [dB(A)]	35	35
Δp_t (Pa)	47	45
V_{ZU} (m ³ /h)	98	119
V_{ZU} [l/s]	27	33

DISA-2 (2-slots)



DISA-2 (2-slots)



DISA

Ceiling induction diffuser

Construction

faceplate	- perforated and removable, made of painted sheet steel in RAL 9010 (white).
casing	- sheet steel painted in RAL 9010 (white, with connection pieces sideways right (-AS1, standard), at extra cost sideways left (-AS2), from the front (-AS3) or from above (-AS4)
integrated lamp (-L)	- manufactured by Philipps (with light design is the bulb T5 or T7 supplied)
cool register (2-conductor) or cool / heat register (-KH, 4 conductor)	- with frame of galvanised sheet steel copper pipes and aluminium blades. Connection with G 1/2"
outer thread (standard) or with G 1/2" inner thread with airing valve (-I, at extra cost) collector	- steel

Model

DISA-1/-2	- 1 or 2 slots
DISA-...-LP	- housing with length profile
DISA-...-L	- with lamp (without bulb)

Accessories

riveting nut M6 (-EM)	- mounting
rubber gasket (-GD)	- in spigot

Fixing

at extra cost	- four riveting nuts M6 over threaded rods
standard	- without mounting device

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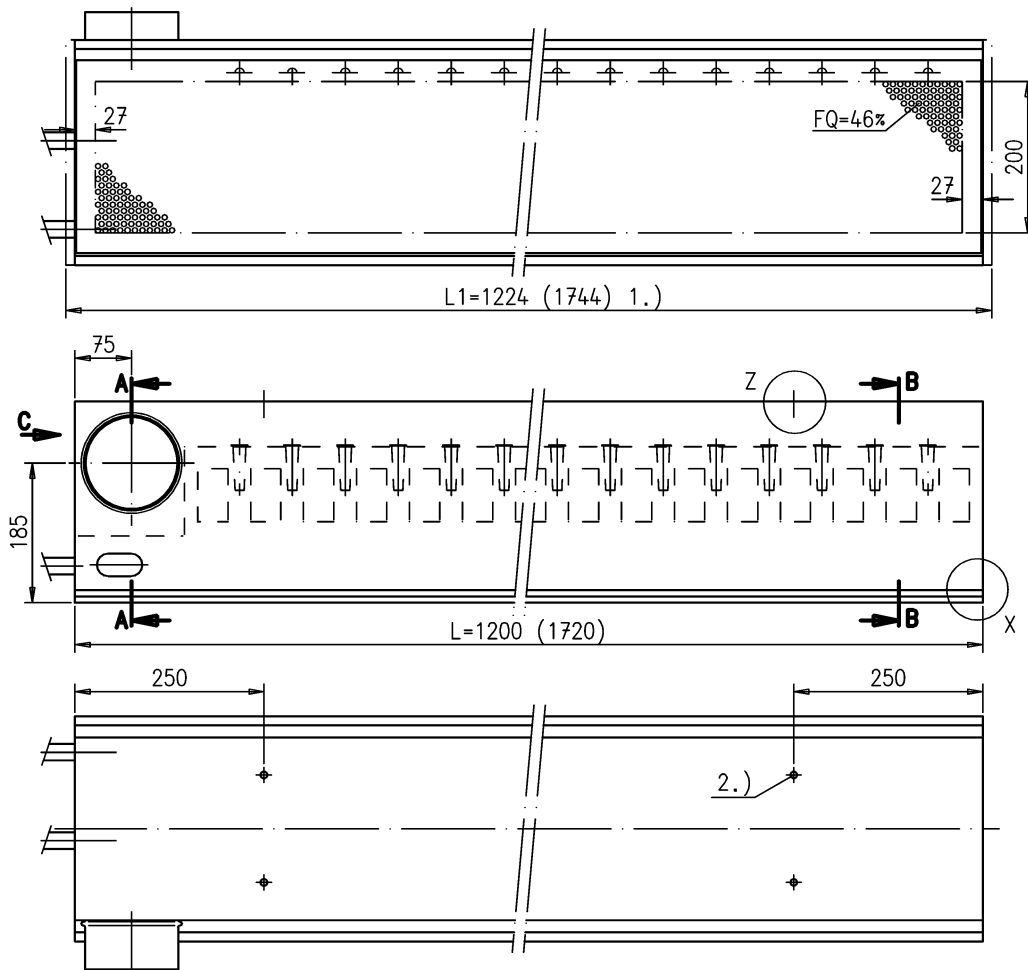
Ceiling induction diffuser

Models and dimensions

Dimensions

DISA-1

Connection pieces layout sideways right (-AS 1)

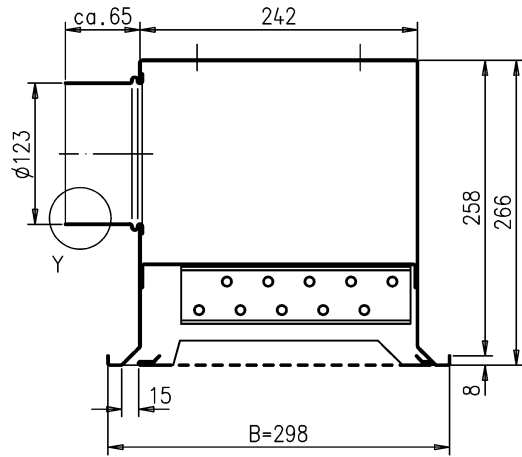


- 1) With length profile
 - 2) Riveting nuts M6 (at extra cost)
- FQ = free cross section

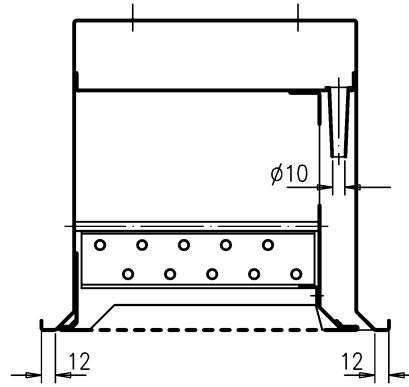
DISA

Ceiling induction diffuser

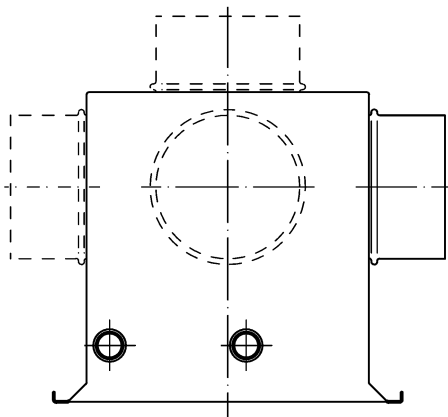
section A-A



section B-B



view C



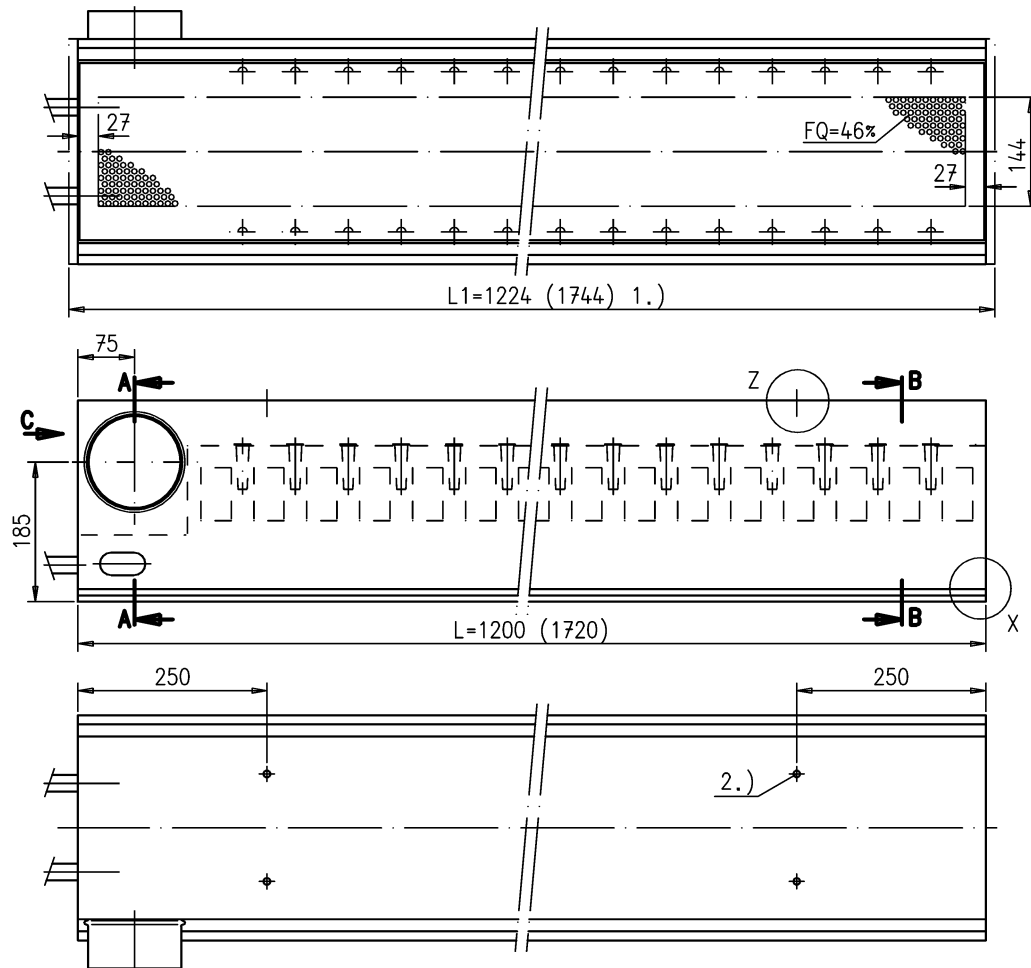
with all connection pieces designs

DISA

Ceiling induction diffuser

DISA-2

Connection pieces layout sideways right (-AS 1)

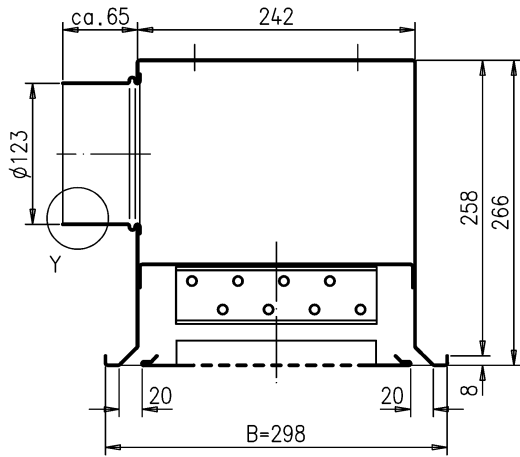


- 1) with length profile
 - 2) riveting nuts M6 (at extra cost)
- FQ = free cross section

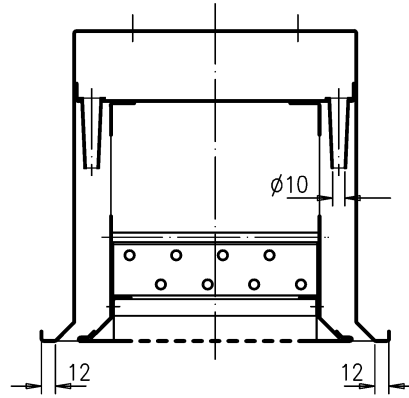
DISA

Ceiling induction diffuser

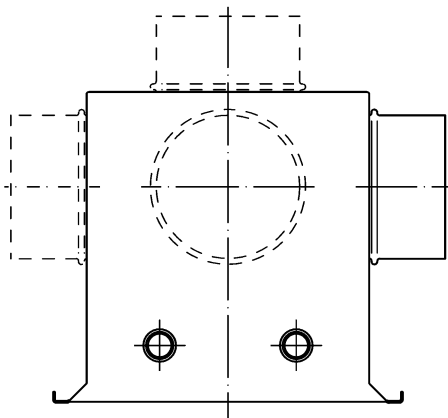
section A-A



section B-B

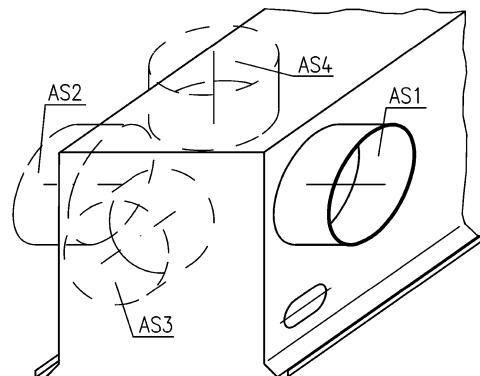


DISA-2
view C



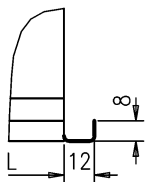
with all connection pieces designs

DISA-1 / -2
connection pieces layout



- AS1 = sideways right (standard)
- AS2 = sideways left
- AS3 = from the front
- AS4 = from above

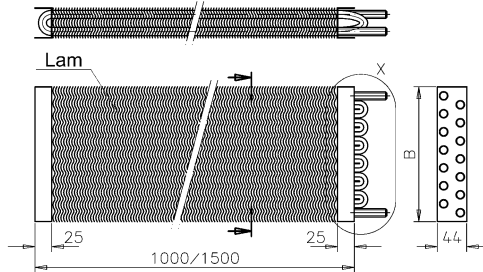
with length profile
detail X



DISA

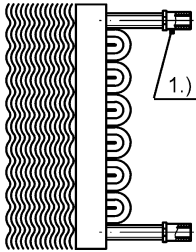
Ceiling induction diffuser

Cool register, 2 conductor
(standard)



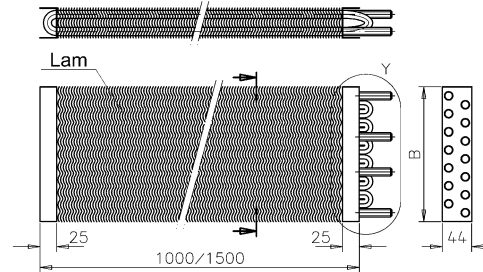
Cool or cool / heat register
with two-sided flange, operation pressure 8 bar,
test pressure 16 bar

detail X



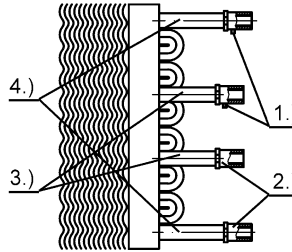
1.) Ventilation valve
(Nut with inner threaded connection)

Cool / heat register, 4 conductor
(-KH, at extra cost)



Lam = Blades

detail Y



1.) Ventilation valve
(Nut with inner threaded connection)
2.) Water advance flow
3.) Heating circulation
4.) Cooling circulation

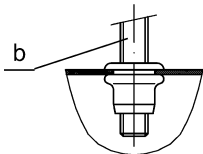
Available sizes

	B
DISA 1	200
DISA 2	175

Accessories - dimensions

with riveting nuts M6 (-EM)

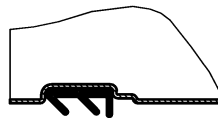
Detail Z



b = on site

with rubberlip seal (-Gd)

Detail Y

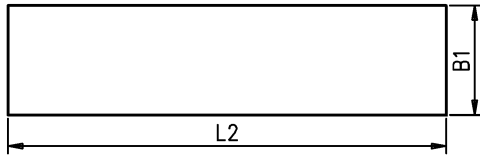


DISA

Ceiling induction diffuser

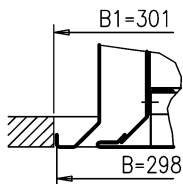
Fixing possibilities

Assembly opening

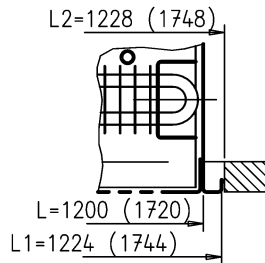
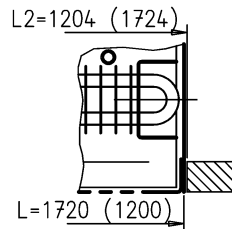


Flush ceiling fitting

Width

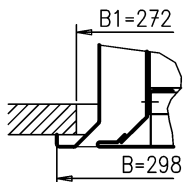


Length
without length profile with length profile

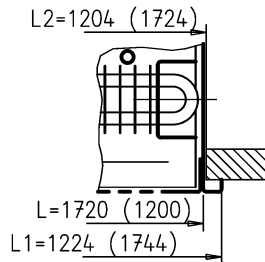
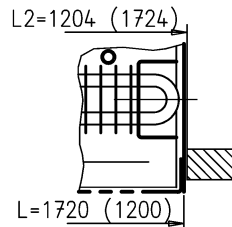


Fitting under ceiling

Width



Length
without length profile with length profile



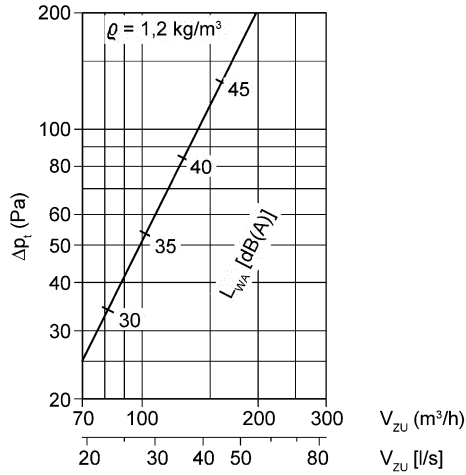
DISA

Ceiling induction diffuser

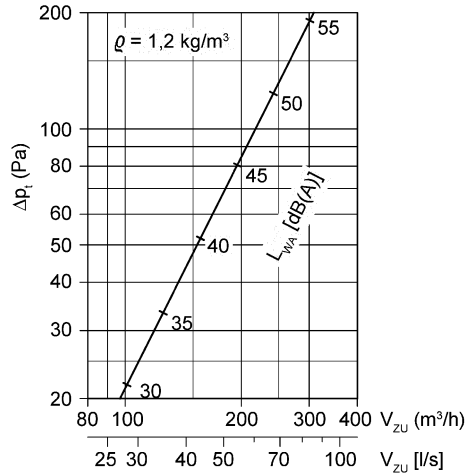
Technical data

Pressure loss and noise level

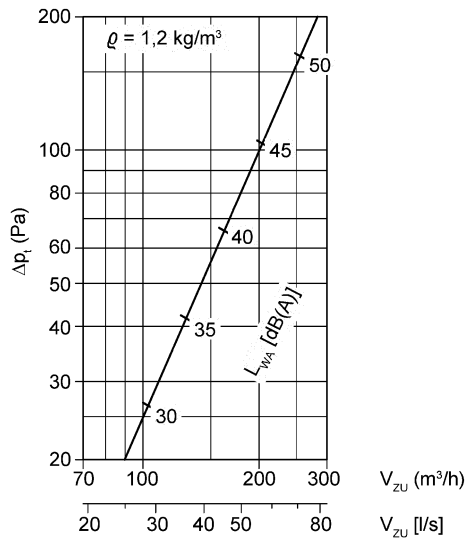
DISA-1, L = 1200



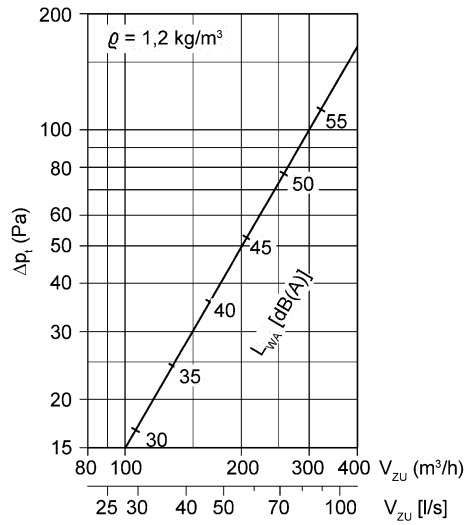
DISA-2, L = 1200



DISA-1, L = 1720



DISA-2, L = 1720

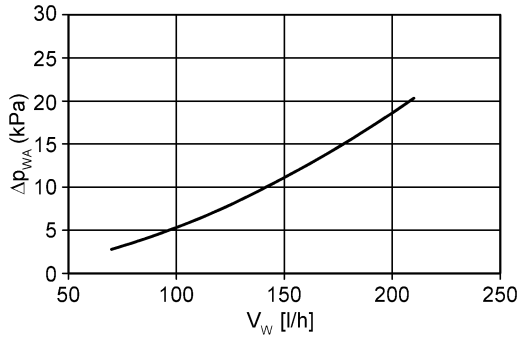


DISA

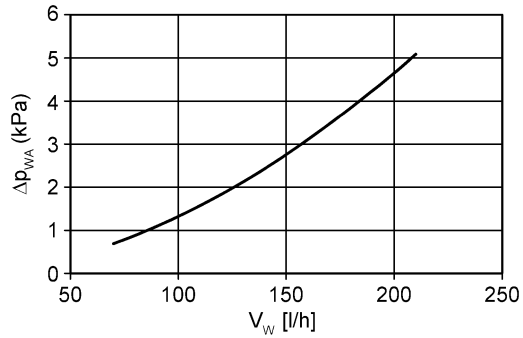
Ceiling induction diffuser

Heating water pressure loss

DISA 1200

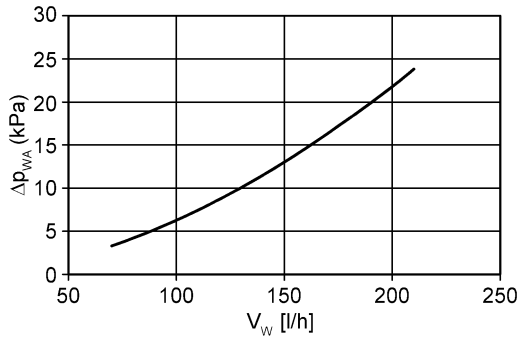


DISA 1720

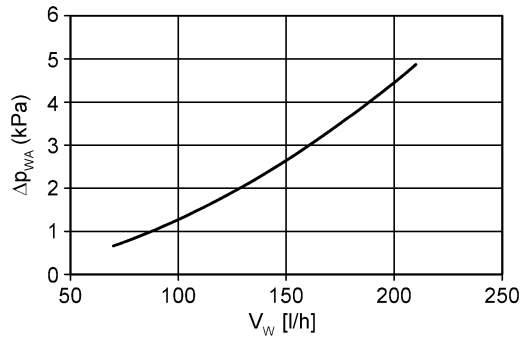


Cooling water pressure loss

DISA 1200

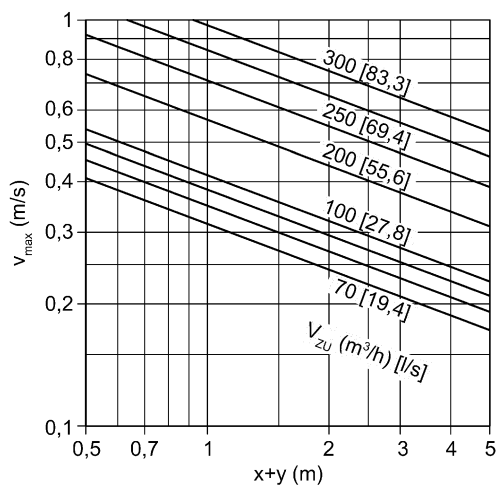


DISA 1720

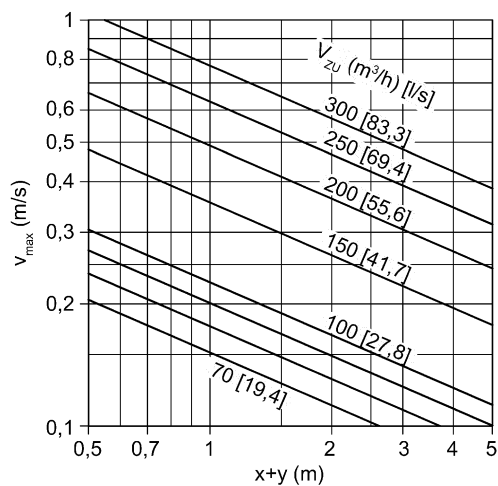


Maximum end velocity

DISA-1, L = 1200



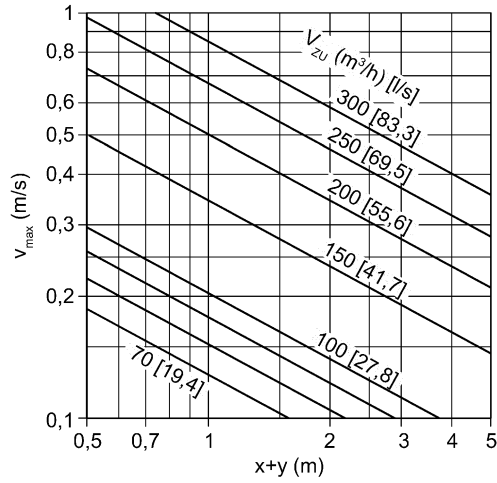
DISA-2, L = 1200



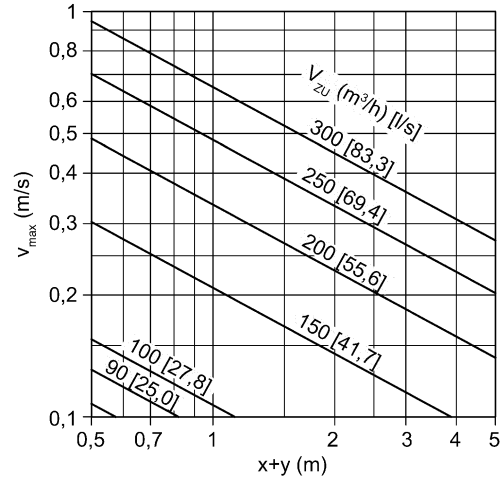
DISA

Ceiling induction diffuser

DISA-1, L = 1720

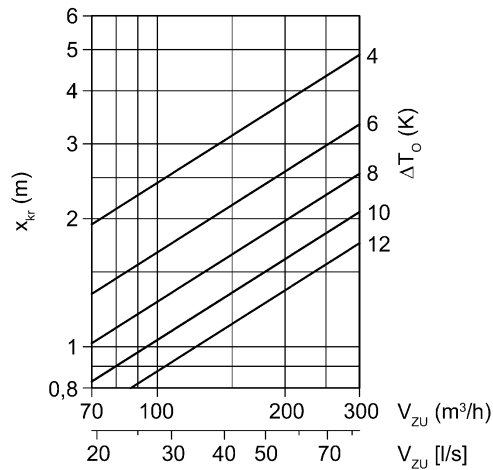


DISA-2, L = 1720

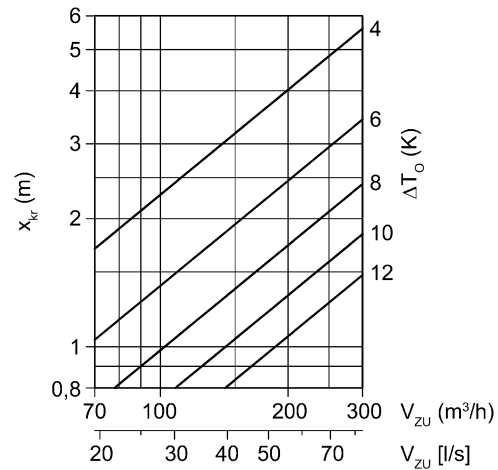


Critical throw

DISA-1



DISA-2

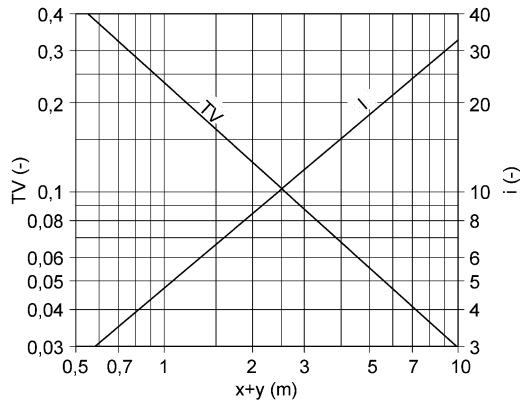


DISA

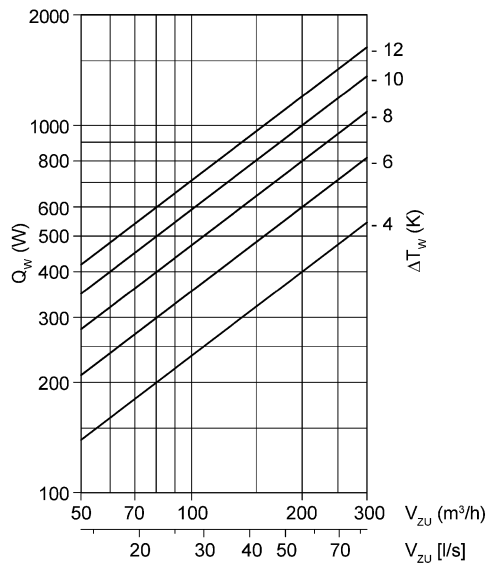
Ceiling induction diffuser

Temperature ratio

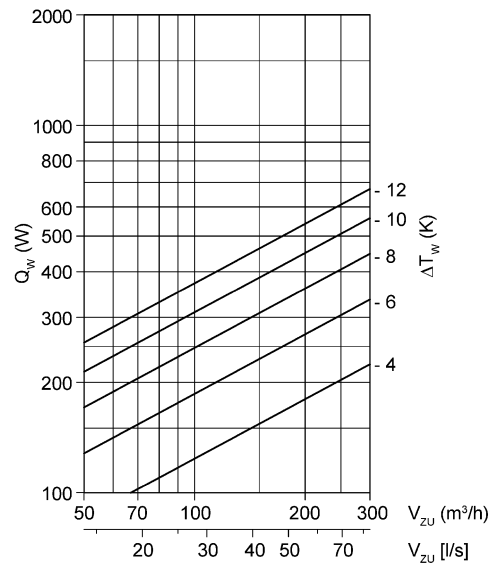
DISA-1 / -2, L = 1200 / 1720



Secondary cooling capacity (water side) DISA-1, L = 1200



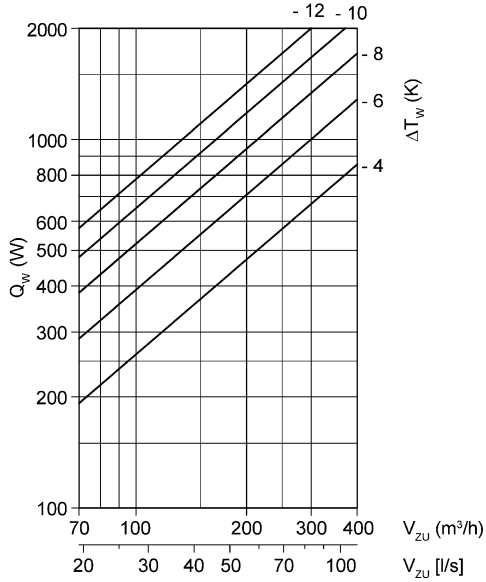
DISA-2, L = 1200



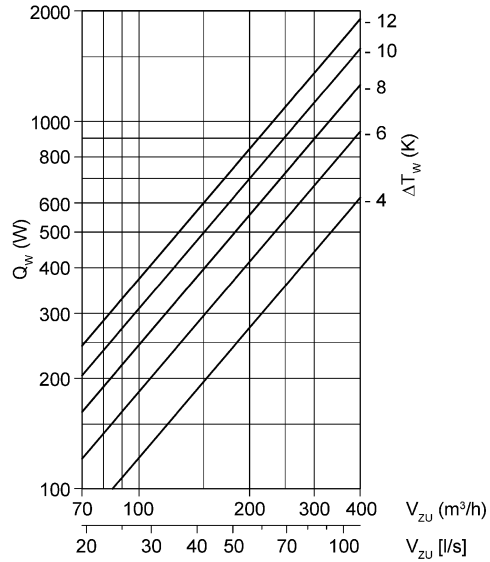
DISA

Ceiling induction diffuser

DISA-1, L = 1720

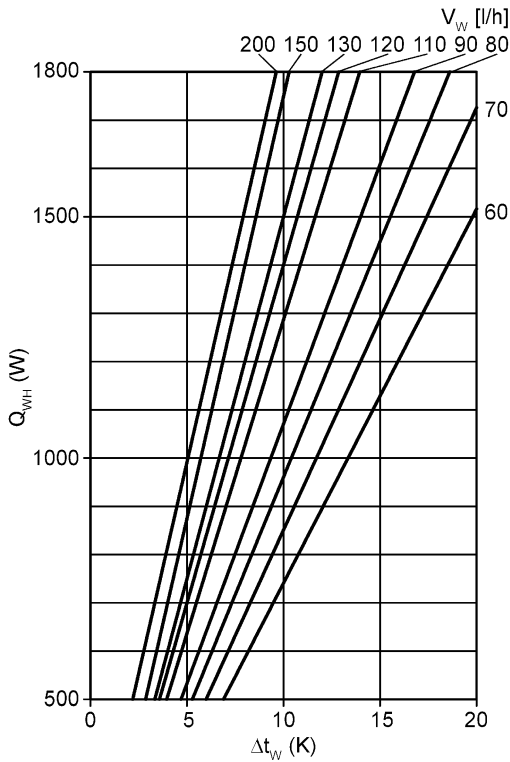


DISA-2, L = 1720

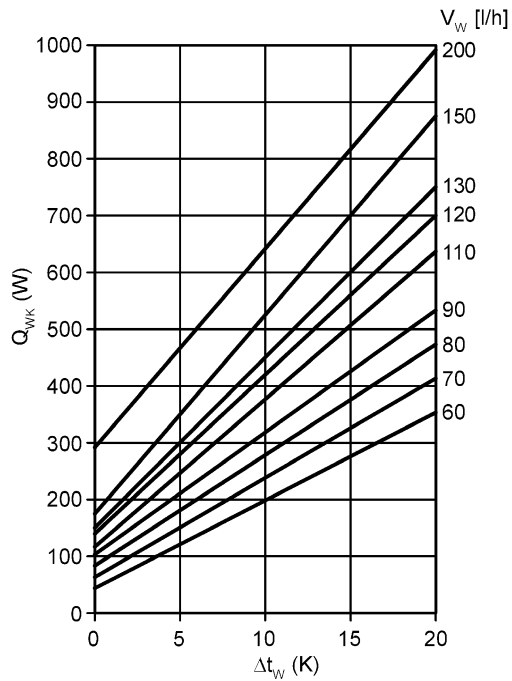


Further datas

Heating water expansion
DISA 1200 / 1720



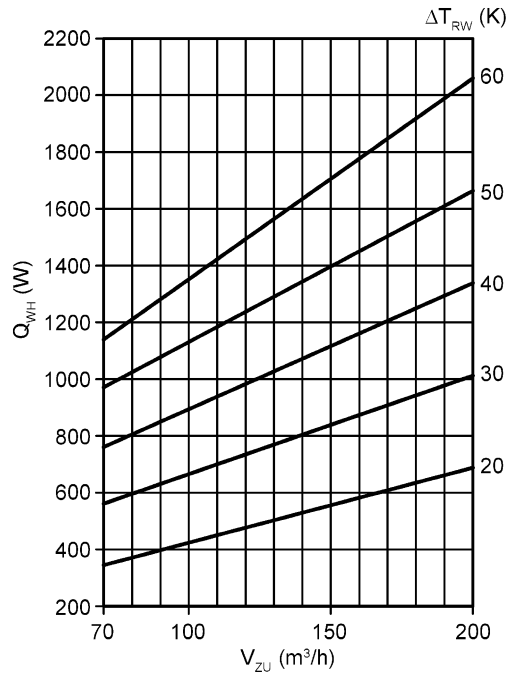
Cooling water expansion
DISA 1200 / 1720



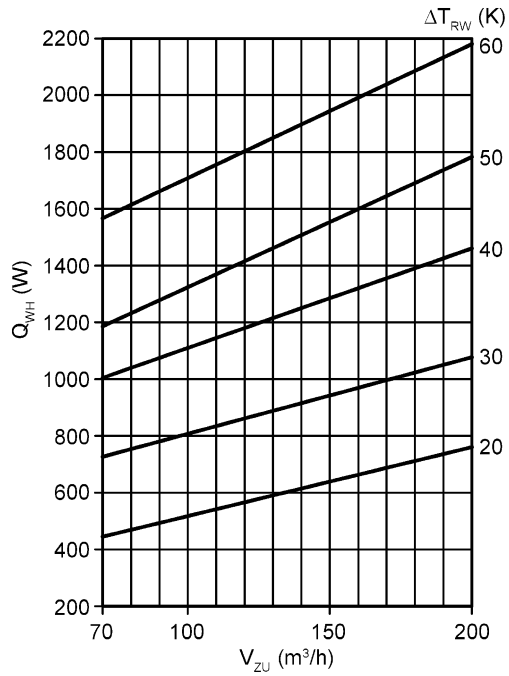
DISA

Ceiling induction diffuser

Water heating capacity
DISA 1200



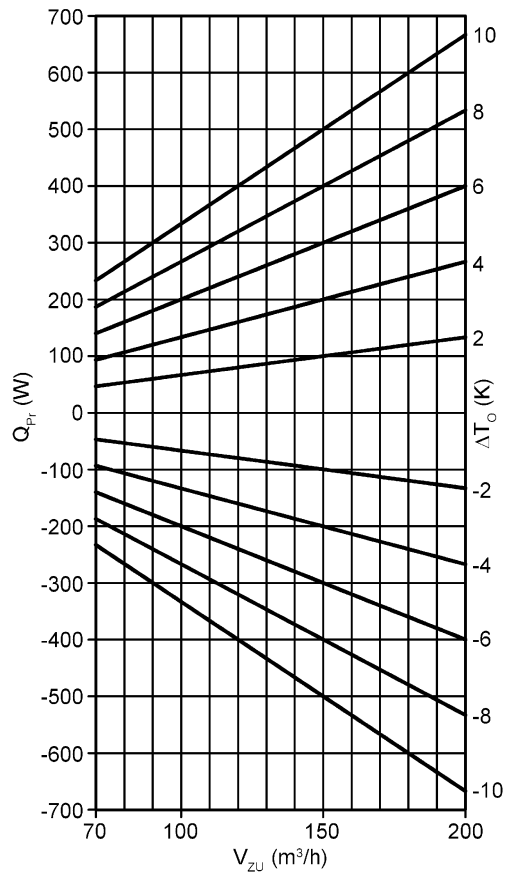
DISA 1720



DISA

Ceiling induction diffuser

Primary air capacity
DISA 1200 / 1720



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Ceiling induction diffuser

Legend

V_{supp} (m ³ /h)	=	Primary supply air
V_{supp} (l/s)	=	Primary supply air
ρ (kg/m ³)	=	Density
Δp_1 (Pa)	=	Pressure loss
L_{WA} [dB(A)]	=	A-rated sound power level
$x+y$ (m)	=	Horizontal and vertical jet path
V_{max} (m/h)	=	Max. final jet velocity
x_{kr} (m)	=	Critical jet path
ΔT_0 (K)	=	Temperature difference between supply air and room temperature
ΔT_x (K)	=	Temperature difference at point x
ΔT_w (K)	=	Temperature difference between room air and water pre-run temperature
Q_L (W)	=	Cooling capacity - air
Q_w (W)	=	Cooling capacity - water
TV (-)	=	Temperature ratio (TV = $\Delta T_x / \Delta T_0$)
i (-)	=	Induction ratio ($i = V_x / V_{\text{supp}}$)
V_x (m ³ /h)	=	Total jet volume on point x
L (mm)	=	Length

DISA

Ceiling induction diffuser

Specification texts

Ceiling induction outlet, 1 slot, for a flush fit into ceilings or under ceilings, with a front slot to guide the primary volume flow. With perforated, removable front plate made of painted sheet steel in RAL 9010 (white).

The housing with spigot consists of painted sheet steel in RAL 9010 (white, without length profile). With integrated induction unit consisting of cooling register (2 guides) with a galvanised sheet steel frame, copper pipes and aluminium blades. Spigot with G1/2" outer thread.

Housing with spigot:

- sideways right (-AS1, standard)
- sideways left (-AS2)
- from the front (AS3)
- from above (AS4)

Manufacture: SCHAKO **type DISA -1**

Outlet length:

- 1200
- 1720
- Ceiling induction outlet 2 slots

Manufacture: SCHAKO **type DISA -2**

- with length profile (-LP).
- cool and heating register (-KH, 4 guides).
- register connection G 1/2" inner thread (-I, with ventilation valve).
- with front plate integrated light (-L).

Accessories:

- with rubberlip seal (-GD) on spigot.
- with riveting nuts M6 (-EM) for suspension.