

Ceiling Slot Diffuser DSC



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Ceiling Slot Diffuser Model DSC

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Ceiling Slot Diffuser Model DSC

Description

The DSC ceiling slot diffuser is suitable for use in rooms 2.6 to 4 m high. The air deflection blades adjustable from below allow a multitude of air distribution patterns. Thus, the air exit direction can be adjusted **from a vertical throw in heating mode to a horizontal throw in cooling mode**. In cooling mode, a one- or two-way air throw pattern or a multi-direction throw pattern can be set. The support profile section blades create such a stable jet that, for the two-way air throw or multi-direction air throw, just one blade has to be set alternately in one throw direction. This **achieves maximum induction** while the temperature and velocity are effectively reduced. Due to the central housing of the support profile blades, **the free cross-section always remains the same. Accordingly, when the blades are adjusted, the pressure loss and sound power level remain constant**. A subsequent change of the air outlet direction on-site is possible at any time, even when the diffuser has already been fitted. If the desired air throw is specified in the order, it will be set at the factory. Unless stated otherwise, the blade position IV (multi-direction throw) will be set. The large free cross-section allows a high air throughput compared with other slot diffusers. The stable air jet and the high induction allow the DSC slot diffuser to be used in cooling mode up to a $\Delta T_0 \leq -12$ K.

The resistance created by the blades ensures that the supply air is distributed equally across the whole length of the diffuser.

The ceiling slot diffuser can be manufactured as **1-, 2-, 3- or 4-slot model** and is available either **as single piece or in band design**. Accessories such as end pieces, corner angles and cross sections are also available. The slot diffuser can be integrated into different ceiling types and also into air-handling lights by using various frame profiles.

The return air model is fitted with a black perforated plate for easy cleaning from below through the slots instead of air deflection blades.

It is connected to the ductwork via a plenum box. At an extra charge, a throttle damper adjustable from below can be installed in the connection pipe for air volume regulation. The connection pipe of the plenum box can also be insulated either internally or externally. The slot diffuser can be fitted with a hit-and-miss damper for air volume regulation directly in the ductwork if there are space problems in the false ceiling area..

The ceiling slot diffuser is suitable for VAV systems from 100 to 40% turn down ratio.

Construction

End plate

- Plastic painted to the same colour as blades

Blades

- Plastic (PVC - hard) RAL 9005 (black, standard)
- Plastic (PVC - hard) RAL 9010 (white)
- Aluminium painted to the same RAL colour as the frame profile (at an extra charge). The painted blades cannot be adjusted subsequently

Blade holding device

- Aluminium ducts

Blade divider

- Plastic painted to RAL 9005 (black standard) or RAL 9010 (white)

Frame

- Natural colour anodised aluminium
- Aluminum painted to RAL 9010 (white)

Model

DSC	- Standard model
DSC-S	- with narrow frame profile (special profile S)
DSC-P	- with special frame profile
DSC-...-A	- Return air, without air deflection blades
DSC-...-Z	- Supply air
DSC-...-Z-LI	- Blades vertical throw
DSC-...-Z-LIIL	- Blades one-way horizontal throw left
DSC-...-Z-LIIR	- Blades one-way horizontal throw right
DSC-...-Z-LIIL	- Blades two-way horizontal throw
DSC-...-Z-LIV	- Blades multi-directional throw (Standard)
DSC-...-... 401	- 1-slot version
DSC-...-... 402	- 2-slot version
DSC-...-... 403	- 3-slot version
DSC-...-... 404	- 4-slot version

Ceiling Slot Diffuser Model DSC

Accessories

Plenum box (-ASK)

- Galvanised sheet steel

Dummy profile (-BP)

- Aluminium painted to the same colour as frame

Throttle damper (-DK)

- Galvanised sheet steel, in plenum box (-ASK)

Corner angle 90° (-EW)

- Aluminium (same colour as frame)

M4 riveting nuts (-EM)

- Brass

End pieces (-ES, pair)

- Supplied unassembled as standard. If there are order details regarding fitting, mounting will take place at the manufacturer's.

- Aluminium (same colour as frame)

Rubber lip seal (-GD)

- Special rubber

Cross point (-KP)

- Sheet steel painted to the same colour as frame

Hit-and-miss damper (SS-K)

- Electrolytically galvanised sheet steel (only possible without plenum box (-ASK))

Fishplate (-VL)

- Supplied unassembled as standard.
- Aluminium (same colour as frame)

Additional profile

- Aluminium (same colour as frame)
- Z I: Mounting of ceiling panels (for DSC-S)
- Z II: Mounting of panelled ceilings (for DSC-S)
- Z III: Mounting of ceiling panels (for DSC-S)
- Z V: Mounting of light ceilings (for DSC-S)

Internal insulation (-li)

- Thermal insulation inside the plenum box

External insulation (-la)

- Thermal insulation on the outside of the plenum box

Fastening

Permanent connection

- As standard for the versions DSC, DSC-S and DSC-P with plenum box

Clamp fastening (-KB)

- possible for the version DSC and DSC-P without plenum box

Screw mounting (-SM)

- possible for the version DSC and DSC-P without plenum box, screws on site
- not possible for the version DSC-S

Concealed mounting (-VM)

- possible for the versions DSC, DSC-S and DSC-P and for the additional profiles

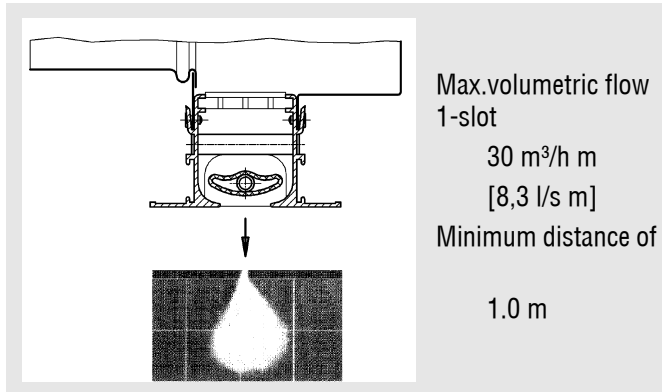
Ceiling Slot Diffuser Model DSC

Models and dimensions

Throw pattern

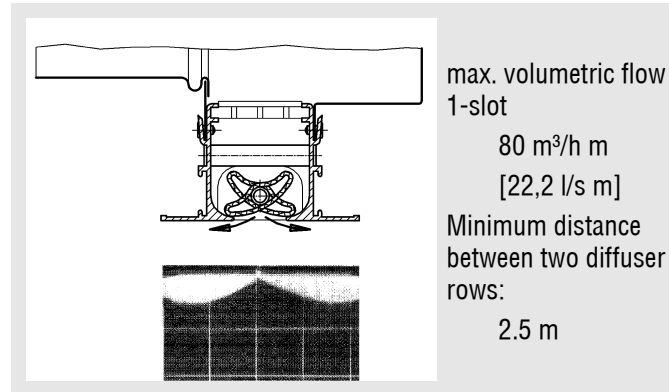
Blade position I (-LI)

Vertical throw



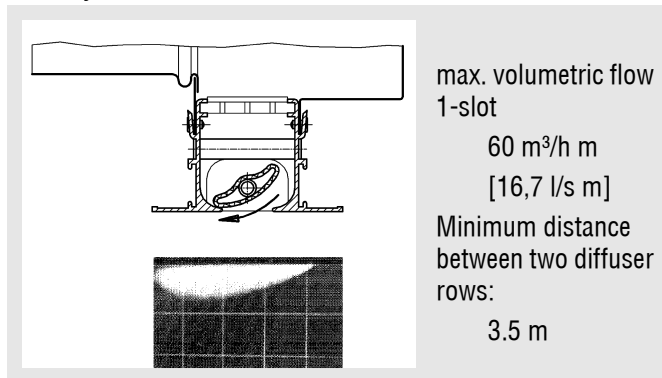
Blade position III (-LIII)

two-way horizontal throw



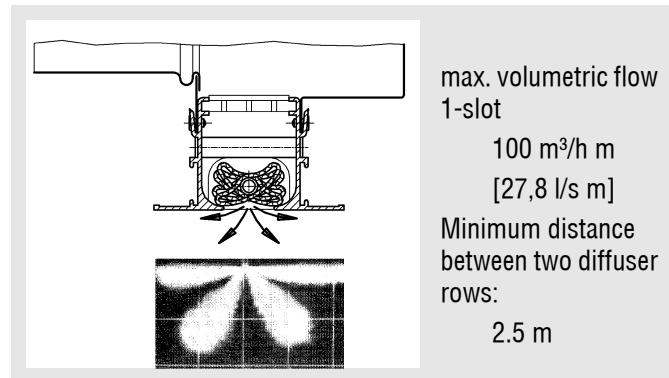
Blade position II (-LII)

one-way horizontal throw left



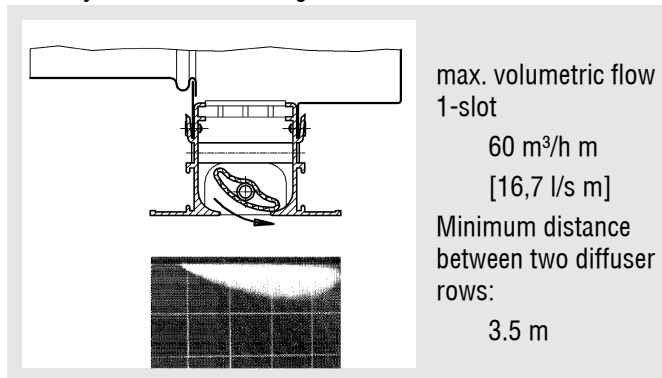
Blade position IV (-LIV)

multi-directional throw



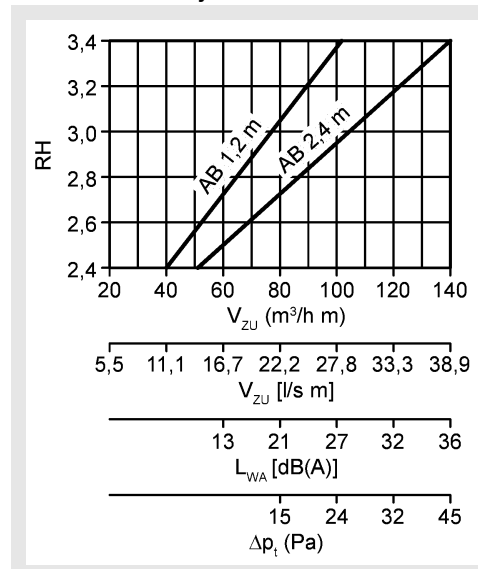
Blade position II (-LIIR)

one-way horizontal throw right



Quick selection blade position IV

1 slot end velocity of 0.2 m/s



The maximum volumetric flows and the minimum distances are for a 3.0 m room height and a temperature difference of -8 K (max. air change rate of 12 between two diffusers)
As standard, blade position IV is set.

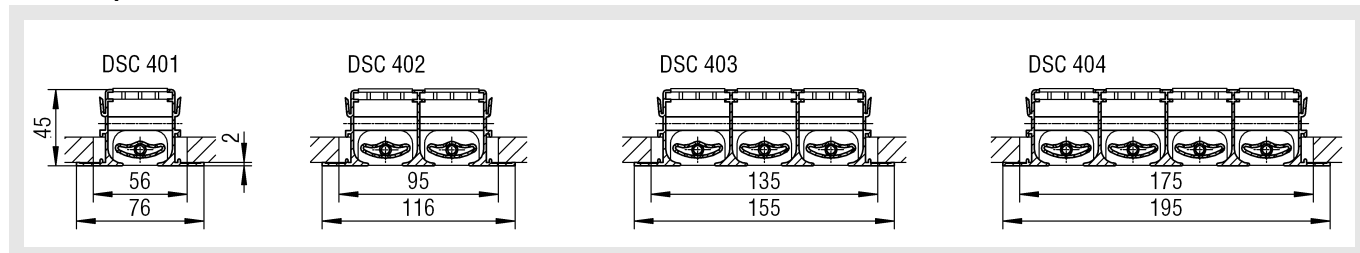
RH = Room height

AB = Diffuser distance

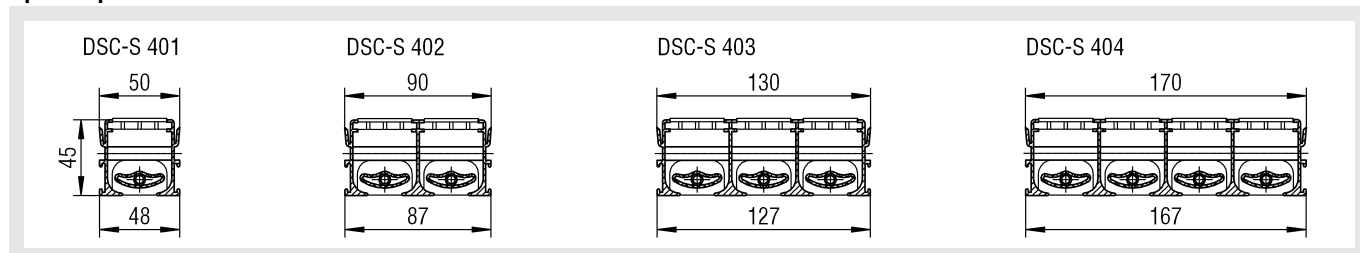
Ceiling Slot Diffuser Model DSC

Dimensions

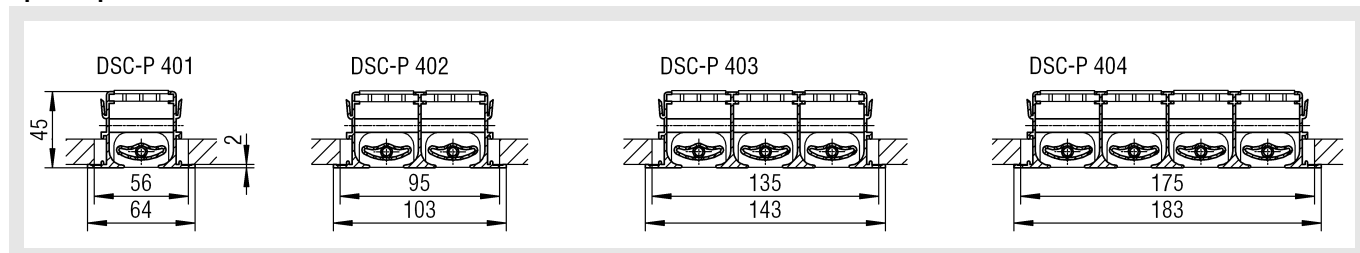
Standard profile



Special profile "S"



Special profile "P"



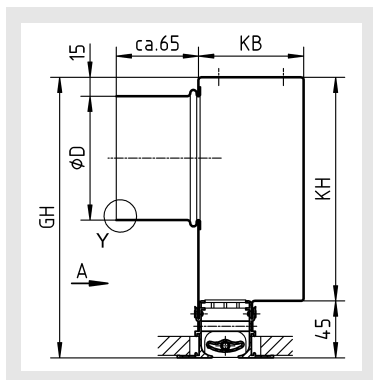
The return air diffuser type DSC-A has a perforated plate instead of the air deflection blades. The plate can be easily cleaned from below through the slots. To allow the volume setting mounted on top also to be cleaned more easily, the perforated plate is interrupted in each in the area of the connection pipes on a length L of $\varnothing D + 2$.

Ceiling Slot Diffuser Model DSC

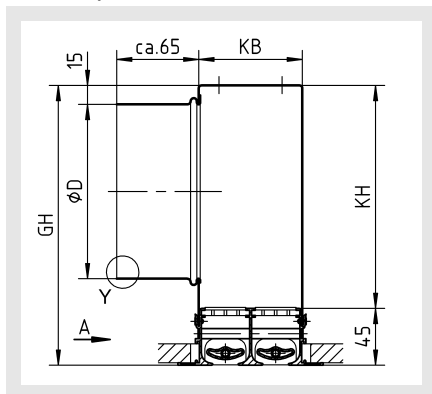
Dimensions of accessories

Plenum box (-ASK)

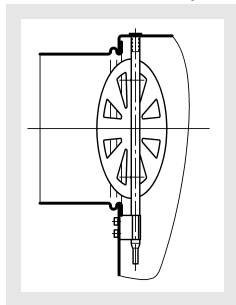
DSC 401



DSC 402/404

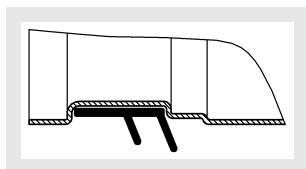


Throttle damper (-DK)



Rubber lip seal (-GD)

Detail Y



For the connection piece of $\varnothing 123$ mm, the plenum box height can be reduced to 205 mm and for the connection piece of $\varnothing 98$ mm to 180 mm, respectively, at an extra charge.

Intermediate lengths and other connection piece diameters on request.

At an extra charge, the plenum box neck can be extended from the standard length to up to 200 mm by means of a non-adjustable neck piece.

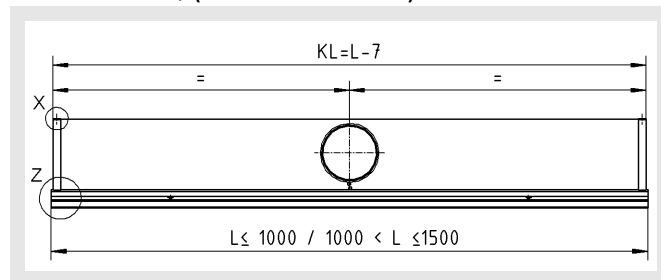
Length and arrangement of the connection pieces

View A

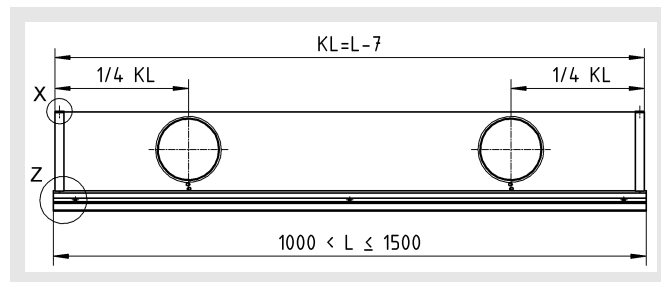
with 1 connection piece

$L \leq 1000$, (DSC 401-404)

$1000 < L \leq 1500$, (DSC 401 / DSC 402)



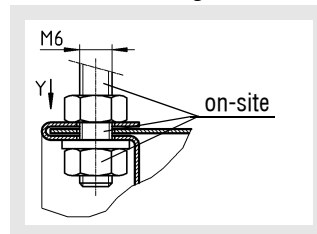
with 2 connection pieces



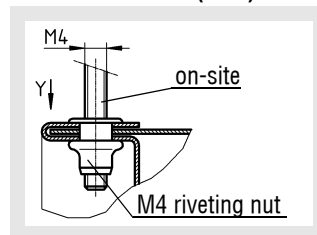
Slot diffusers of type DSC are manufactured as standard in the lengths $L = 1000$ m or 1500 mm.

Detail X

Diffuser mounting standard:



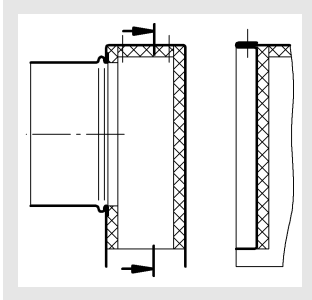
with lock nut M4 (-EM) at an extra charge:



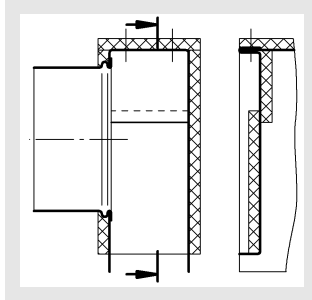
	KB	GH	KH	$\varnothing D$	
				$L \leq 1000\text{mm}$	$1000 < L \leq 1500\text{mm}$
DSC 401	83	220	175	$\varnothing 98$	$\varnothing 123$
DSC 402	83	220	175	$\varnothing 138$	$\varnothing 138$
DSC 403	122	220	175	$\varnothing 138$	2 x $\varnothing 138$
DSC 404	163	280	235	$\varnothing 158$	2 x $\varnothing 138$

Ceiling Slot Diffuser Model DSC

Insulation for ASK inside(-li)

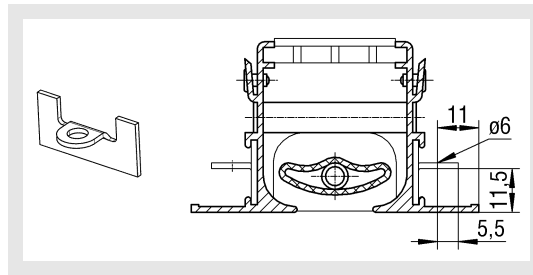


outside(-la)



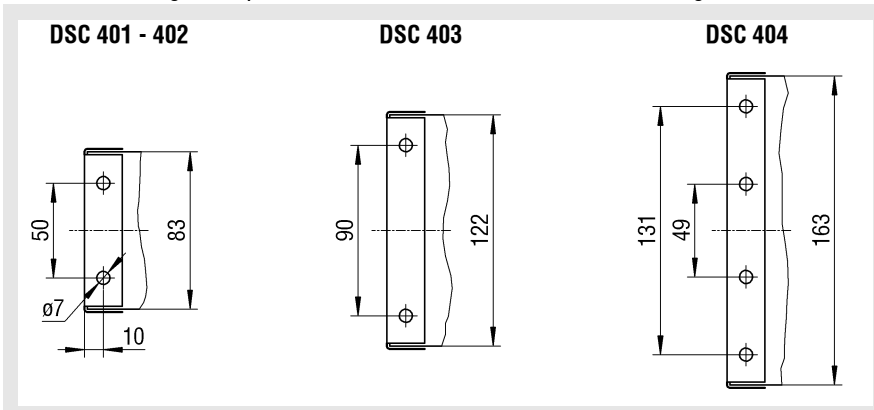
Fixing brackets

Without plenum box, fixing lugs are included in the delivery of the DSC and DSC-P 4.

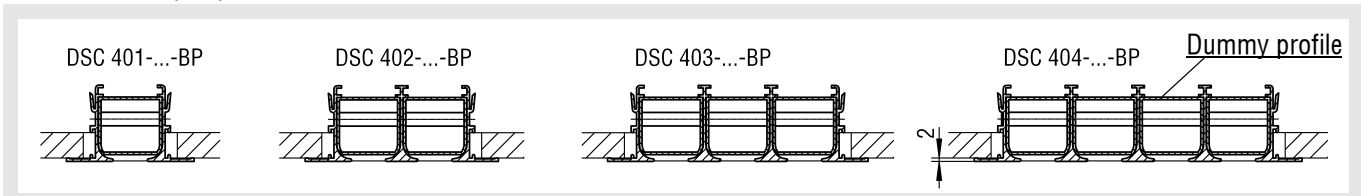


View Y

At an extra charge, the plenum boxes can be fitted with M4 riveting nuts to facilitate ceiling mounting.

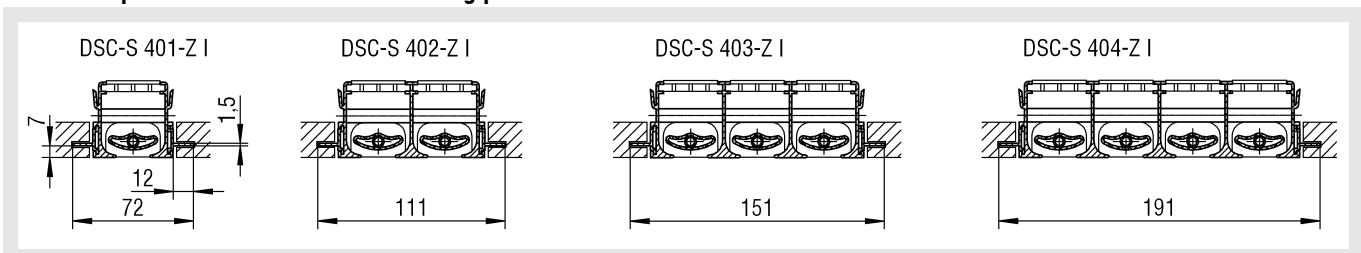


Dummy profile (-BP)

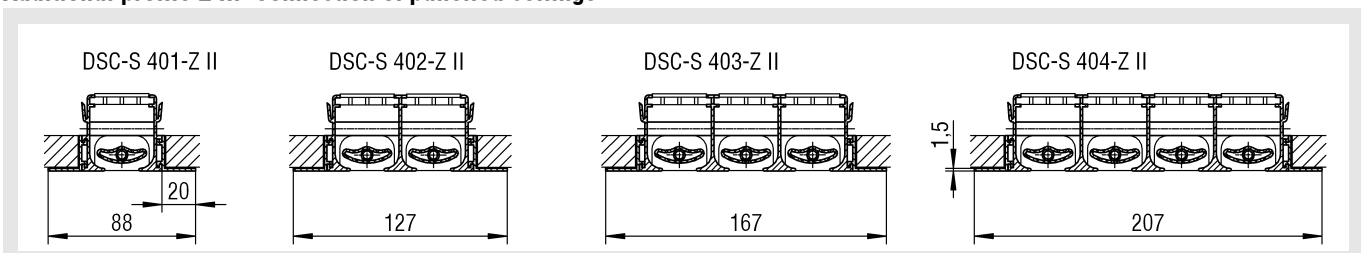


Additional profiles for DSC-S

Additional profile Z I: Connection of ceiling panels

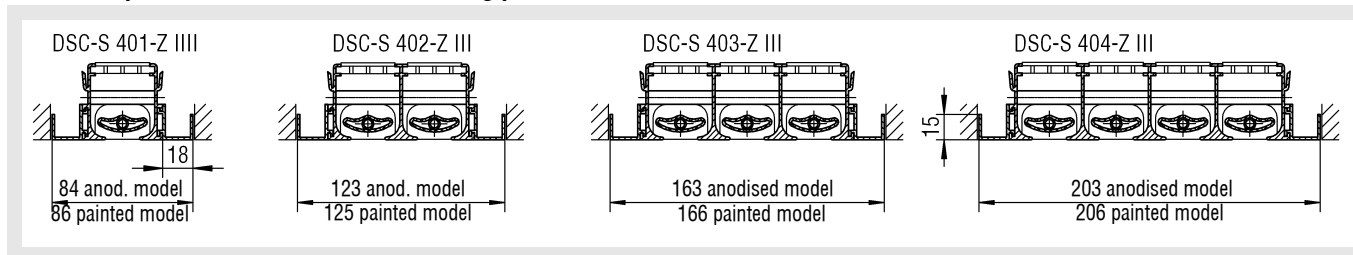


Additional profile Z II: Connection of panelled ceilings

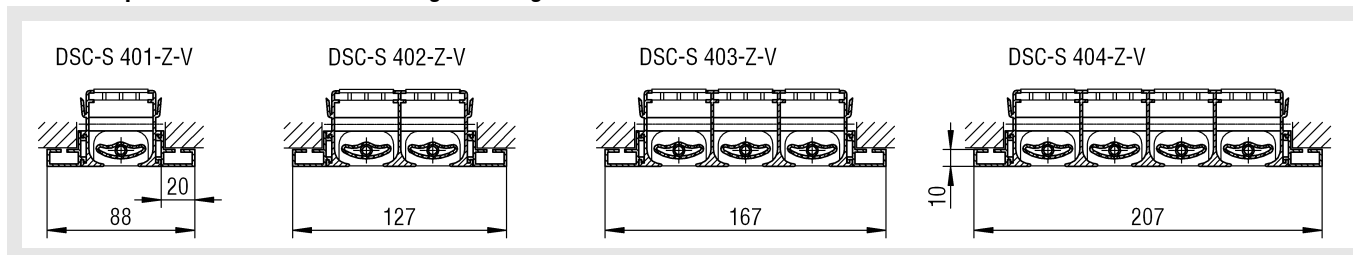


Ceiling Slot Diffuser Model DSC

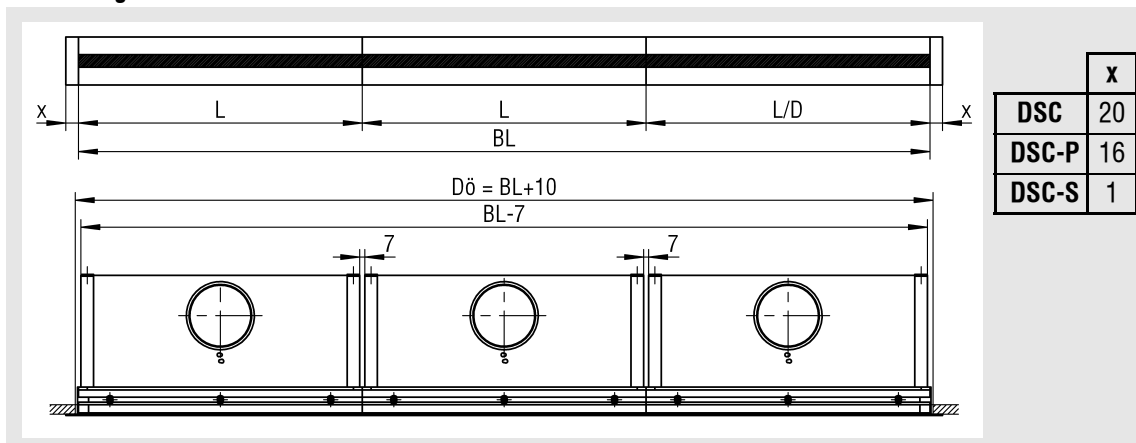
Additional profile Z III: Connection of ceiling panels



Additional profile Z V: Connection of light ceilings



Band design



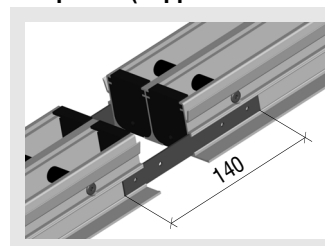
BL = Length of band

L/D = Length difference

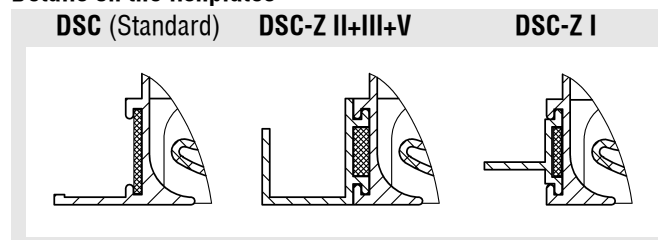
Dö = Ceiling opening dimension

When the ceiling slot diffuser type DSC is designed as a band > 2000 mm, the total length BL is assembled from standard lengths L = 1500 mm. The difference pieces <1500 mm to >400 mm are fitted with a plenum box. The difference pieces <400 mm are supplied as dummy pieces without plenum box. A different band division is possible after consultation and when required by the customer.

Fishplates (supplied unassembled)



Details on the fishplates



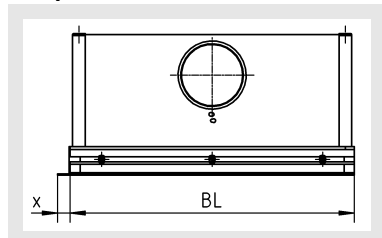
Ceiling Slot Diffuser Model DSC

End piece (-ES)

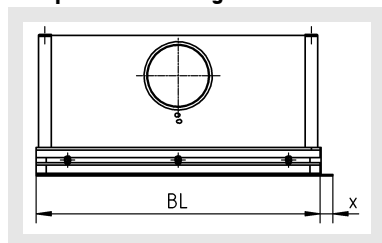
To give the impression of a continuous frame, lateral front end pieces can be fitted.

These end pieces are supplied loosely as standard. If there are order details regarding fitting, mounting will take place at the manufacturer's.

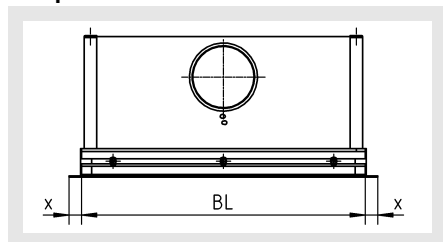
End piece on the left



End piece on the right



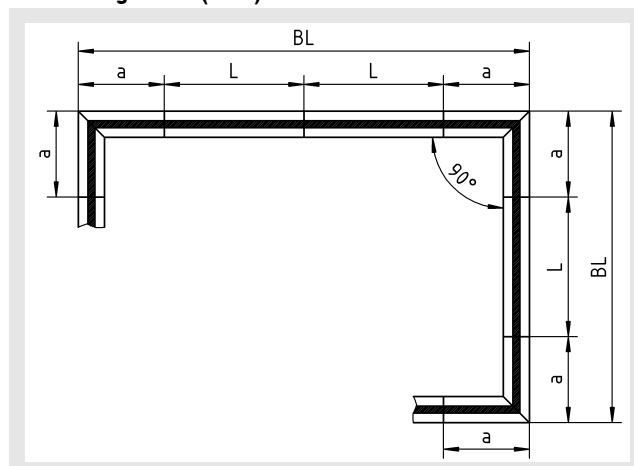
End piece on both sides



Please specify in your order whether end pieces are to be fitted on both sides of the diffuser or on the left or right side.

	x
DSC	20
DSC-P	16
DSC-S	1

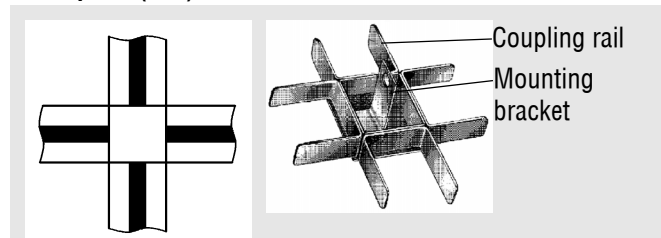
Corner angle 90° (-EW)



	a
DSC 401	250
DSC 402	250
DSC 403	250
DSC 404	400

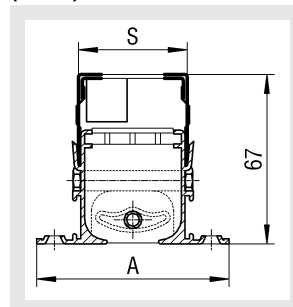
Corner angles can only be supplied as dummy sections, i.e., without a plenum box. The standard corner angle has a 90° angle and has a side length of 250 mm (for 1-slot, 2-slot and 3-slot versions) or 400 mm (for 4-slot version), other angles being available on request.

Cross point (-KP)



Cross points for DSC and DSC-S are available in 1-slot version. The guides at the diffuser and the coupling rails provide high stability and rectangularity.

Hit-and-miss damper (SS-K)



Available sizes

	A	S
DSC 401	76	43
DSC 402	116	82
DSC 403	155	122
DSC 404	195	162

(only possible without a plenum box)

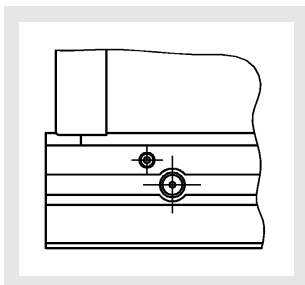
Ceiling Slot Diffuser Model DSC

Fastening methods

Permanent connection

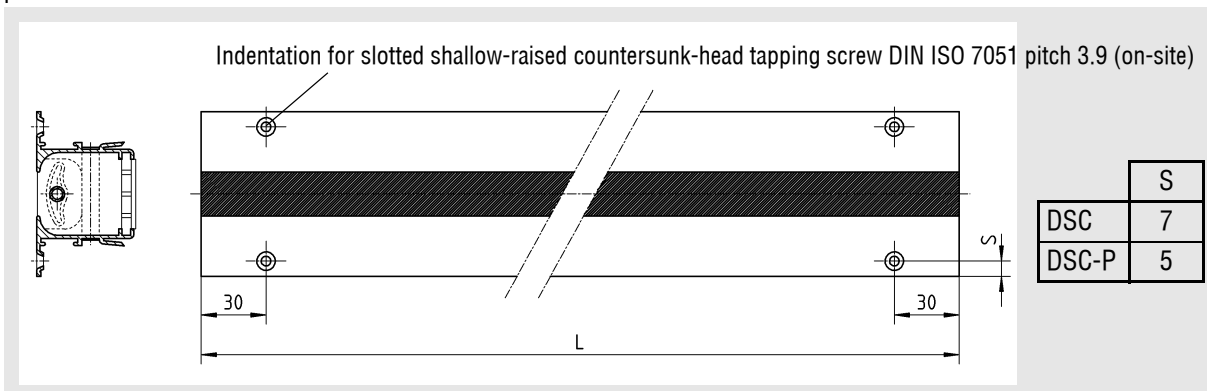
Standard for DSC, DSC-P and DSC-S with plenum box

Detail Z



Screw mounting (-SM)

possible for DSC and DSC-P



Arrangement, number and size of the bores is the same as with the 2-, 3- and 4-slot diffusers.
(not possible for model DSC-S)

Ceiling Slot Diffuser Model DSC

**Concealed mounting (-VM) without a plenum box.
without a hit-and-miss damper
damper**

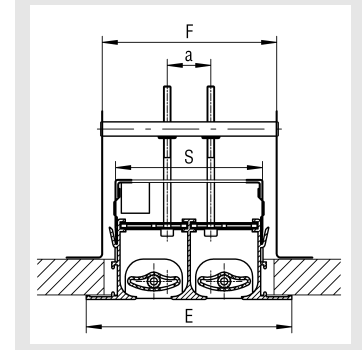
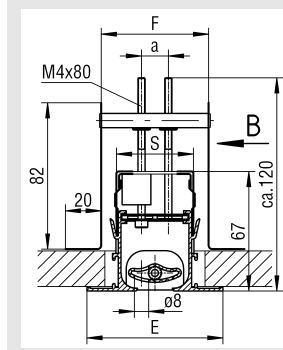
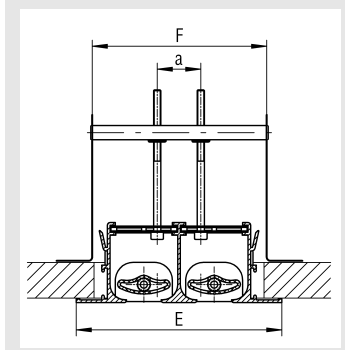
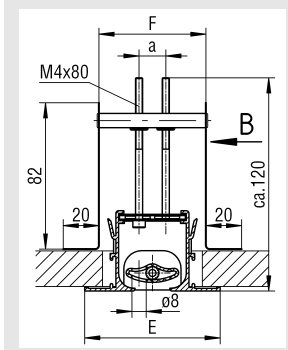
DSC 401-VM

DSC 402-404-VM

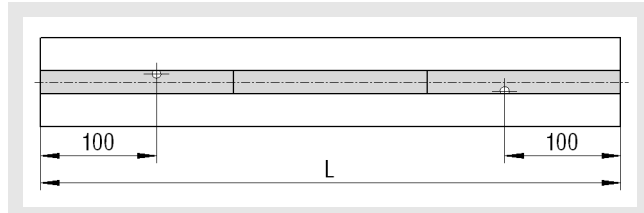
**with a hit-and-miss damper
(SS-K)**

DSC 401-SS-K-VM

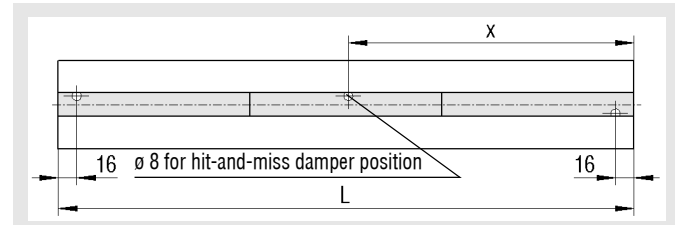
DSC 402-404-SS-K-VM



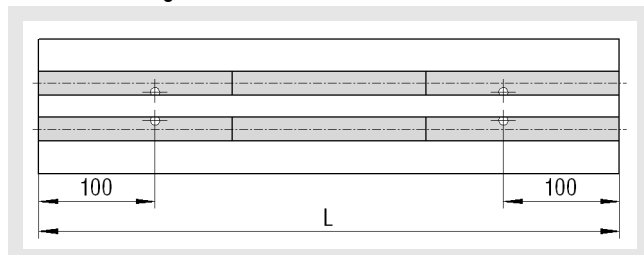
**Screw arrangement for VM mounting
DSC 401 (1-slot)
with 2 fastening screws**



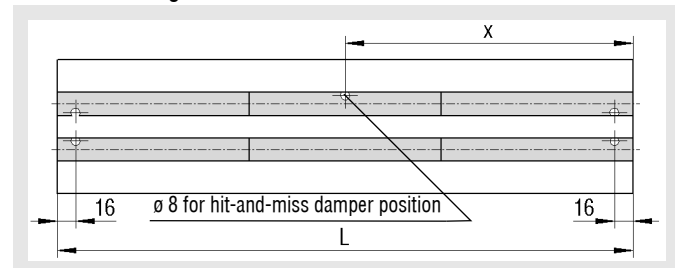
**Screw arrangement with hit-and-miss damper for VM mounting
DSC 401 (1-slot)
with 2 fastening screws**



**DSC 402-404 (2- to 4-slot)
with 4 fastening screws**



**DSC 402-404 (2- to 4-slot)
with 4 fastening screws**

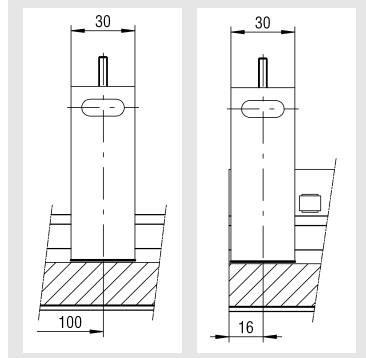


	E	F	S	a
DSC-401	76	60	43	15
DSC-402	116	100	82	25
DSC-403	155	140	122	64
DSC-404	195	180	162	104

View B

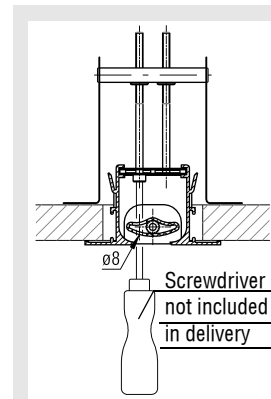
without SS-K

with SS-K



**Perforation for
hit-and-miss damper adjustment**

	L < 1000		L > 1000	
	x	z	x	z
DSC-401	1/2 L	1	1/2 L	1
DSC-402	1/2 L	1	1/2 L	1
DSC-403	1/2 L	1	1/4 L	2
DSC-404	1/2 L	1	1/4 L	2

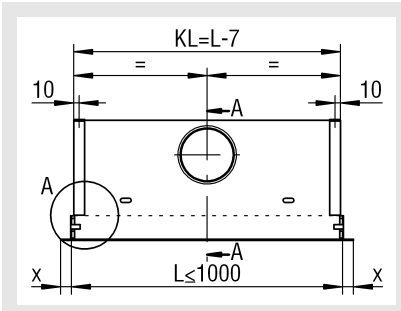


z = Number of holes for hit-and-miss damper adjustment

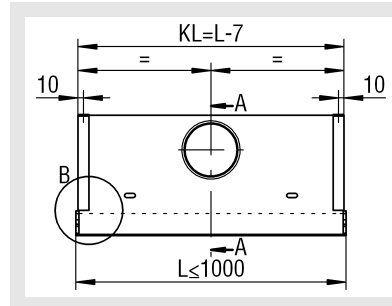
Fastening screw M4x80 is delivered loose.

Ceiling Slot Diffuser Model DSC

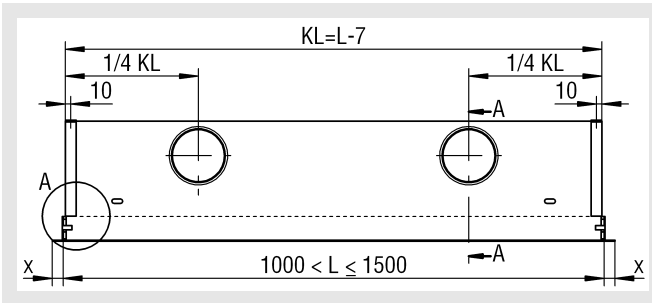
Concealed mounting (-VM) with a plenum box.
 $L \leq 1000$, with 1 spigot
 with end pieces



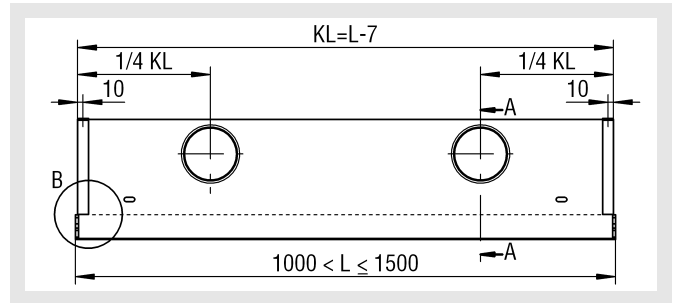
without end pieces



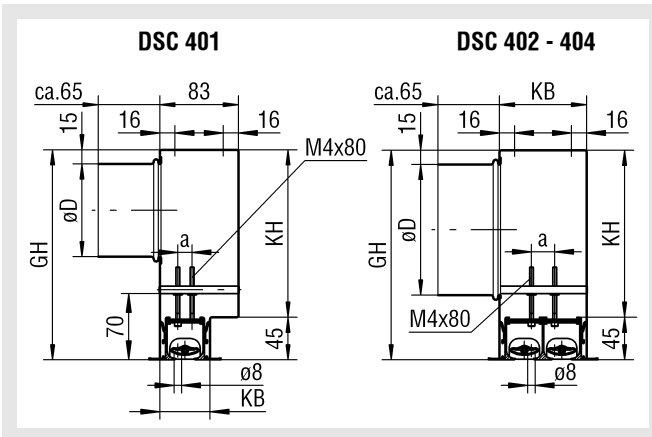
$1000 < L \leq 1500$, with 2 connection pieces (DSC 403 - 404)
 with end pieces



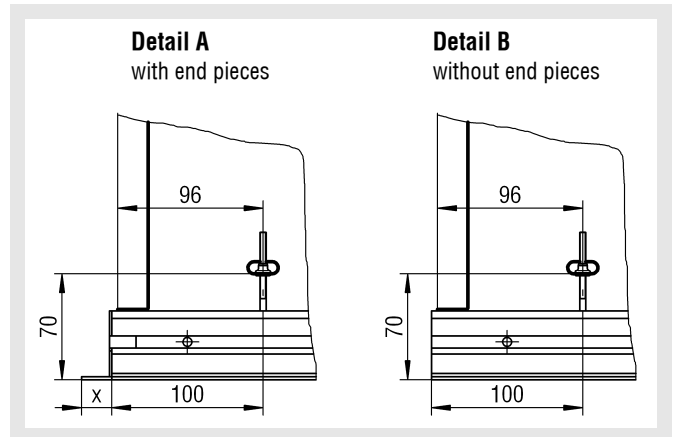
without end pieces



Section A-A



Details

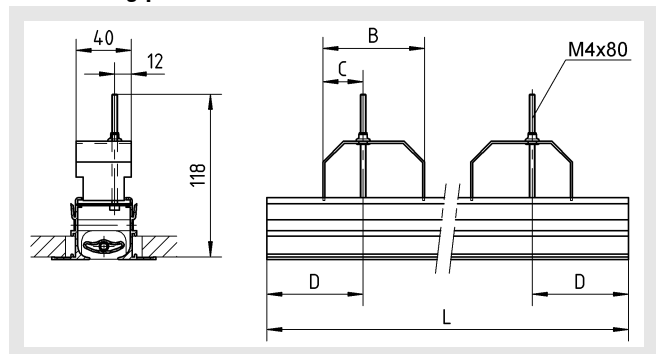


	x
DSC	20
DSC-P	16

	KB	GH	KH	a	øD	
					$L \leq 1000\text{mm}$	$1000 < L \leq 1500\text{mm}$
DSC 401	53	220	175	15	ø98	ø123
DSC 402	92	220	175	25	ø138	ø138
DSC 403	132	220	175	64	ø138	2 x ø138
DSC 404	172	280	235	104	ø158	2 x ø138

Ceiling Slot Diffuser Model DSC

Clamp fastening (-KB) in mounting position

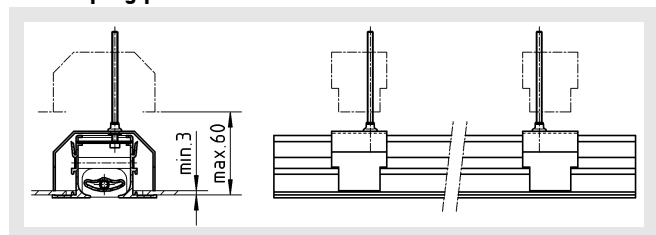


	DSC 401 DSC-P 401	DSC 402 DSC-P 402	DSC 403 DSC-P 403	DSC 404 DSC-P 404
B	74	114	154	194
C	29	45	69	85
D	100	100	100	100

(not possible for model DSC-S!)

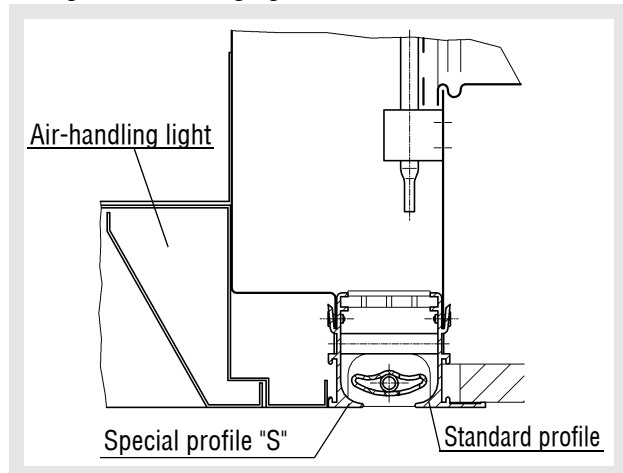
For room side installation in finished pressure ceilings.

in clamping position



Installation

Fitting to air-handling lights



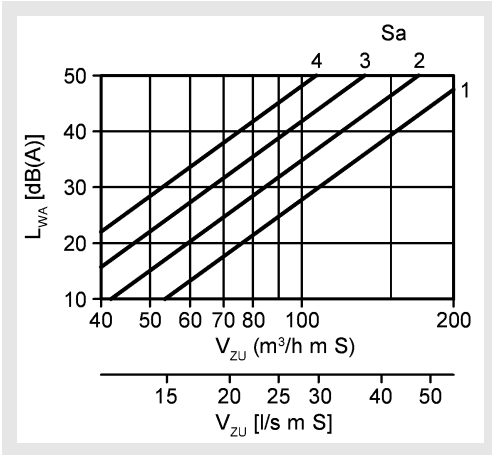
When attaching slot diffusers to air-handling lights, the external profile can be attached on one side and the special profile "S" on the other side, to obtain a perfectly flush fit.

Ceiling Slot Diffuser Model DSC

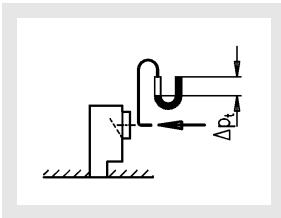
Technical Data

Pressure loss and noise level

Sound level, with damper (supply air), L=1000

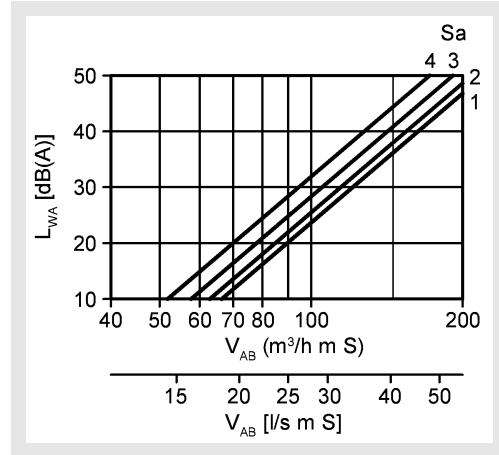


Damper position "OPEN"

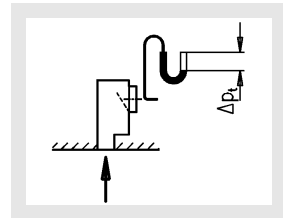


Correction for damper "CLOSED" + 4 dB(A)

Sound level, with damper (return air), L=1000



Damper position "OPEN"

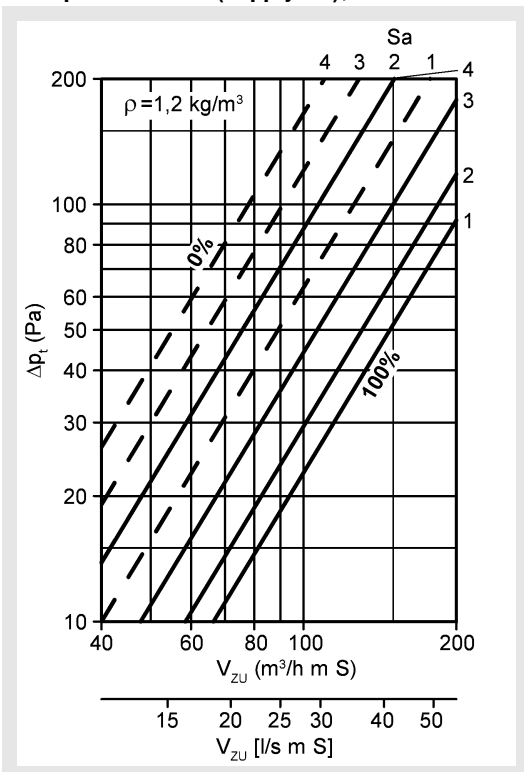


Correction for damper "CLOSED" + 16 dB(A)

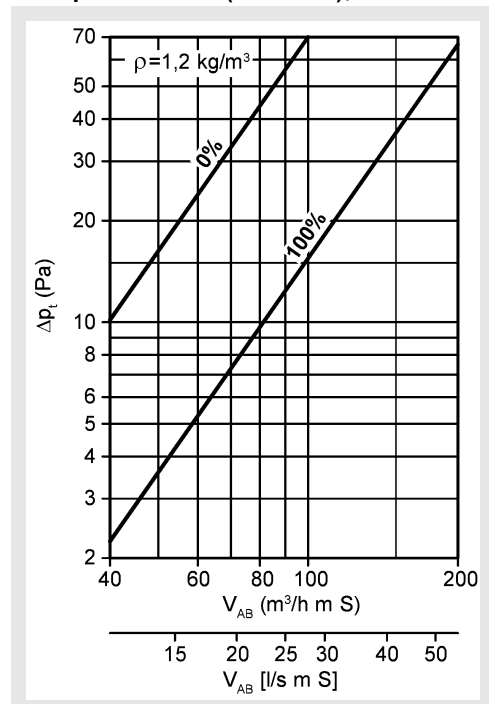
Length correction (supply and return air)

L (m)	1	1,5	2	2,5	3	4	5
KF [dB(A)]	0	1,8	3	4	4,7	6	7

Total pressure loss (supply air), L = 1000



Total pressure loss (return air), L = 1000



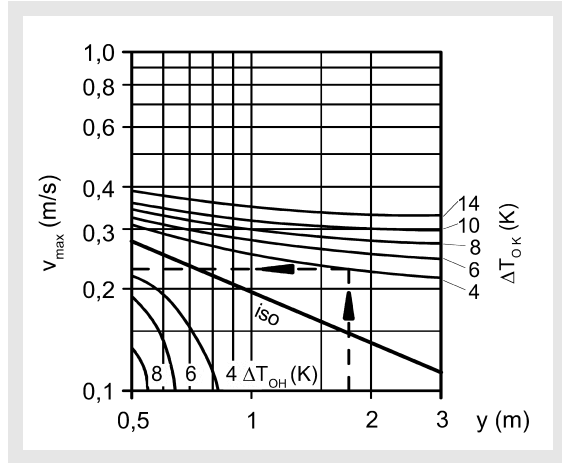
Damper position: OPEN = 100%
CLOSED = 0%

Ceiling Slot Diffuser Model DSC

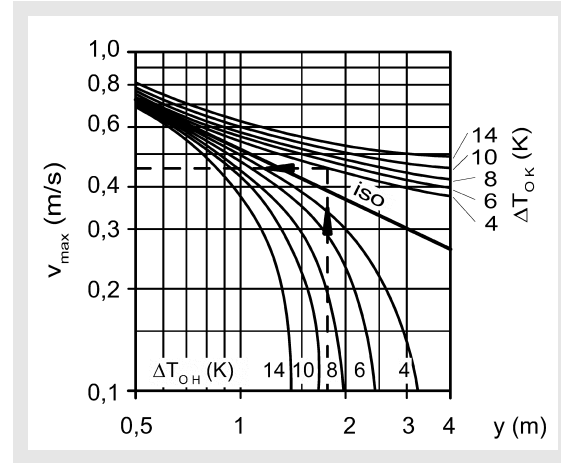
Maximum end velocity of jet

Blade position I

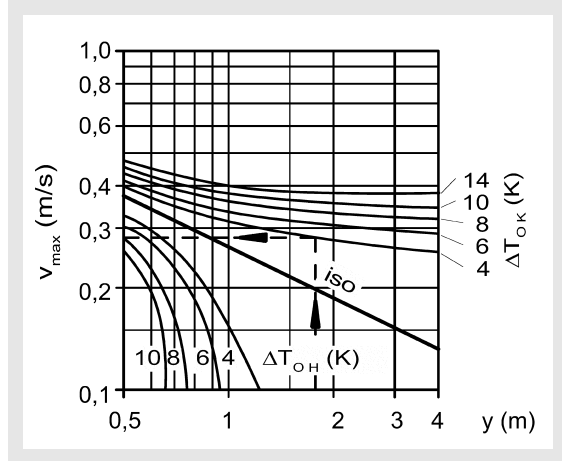
$V_{ZU} = 30 \text{ m}^3/\text{h m S}$ [8.3 l/s m S]



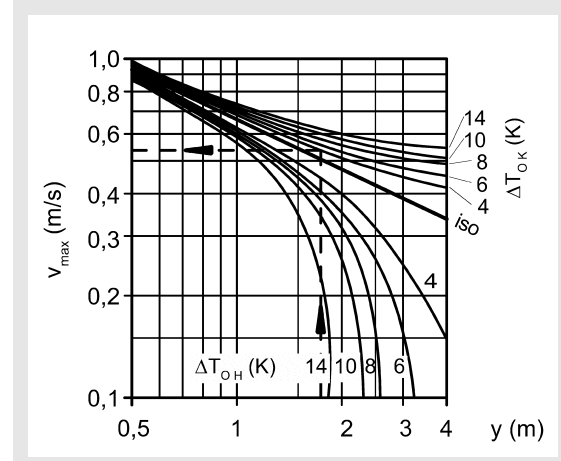
$V_{ZU} = 80 \text{ m}^3/\text{h m S}$ [22.2 l/s m S]



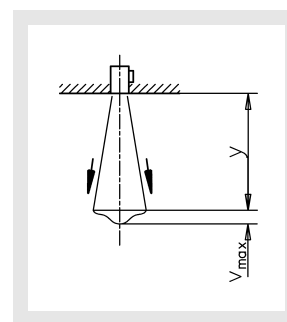
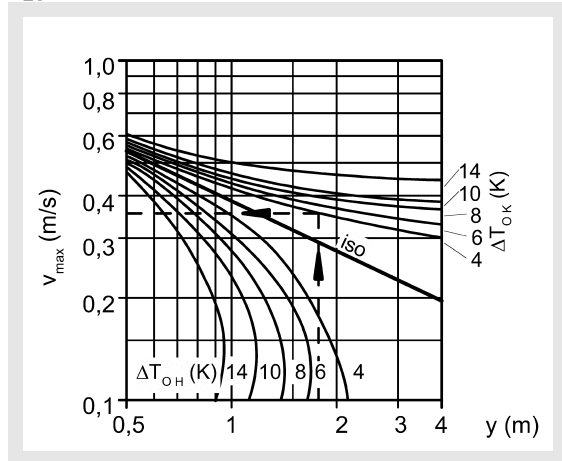
$V_{ZU} = 40 \text{ m}^3/\text{h m S}$ [11.1 l/s m S]



$V_{ZU} = 100 \text{ m}^3/\text{h m S}$ [27.8 l/s m S]



$V_{ZU} = 60 \text{ m}^3/\text{h m S}$ [16.7 l/s m S]

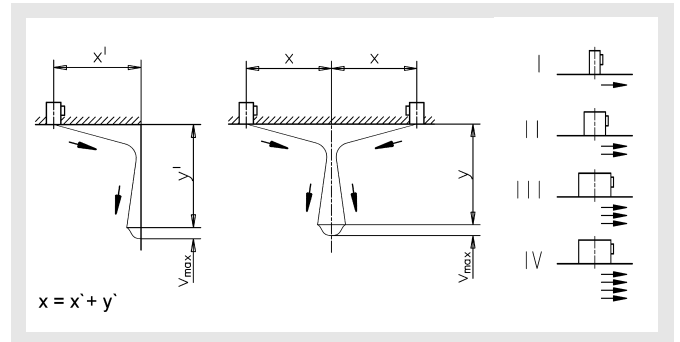
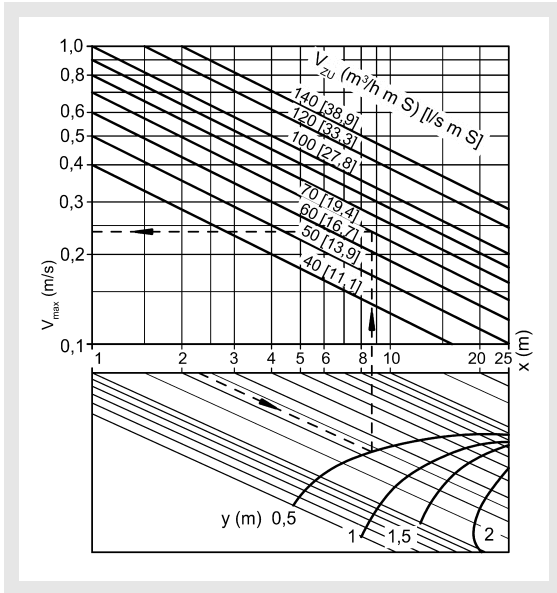


1-slot version x 1
2-slot version x 1.3

3-slot version x 1.6
4-slot version x 1.9

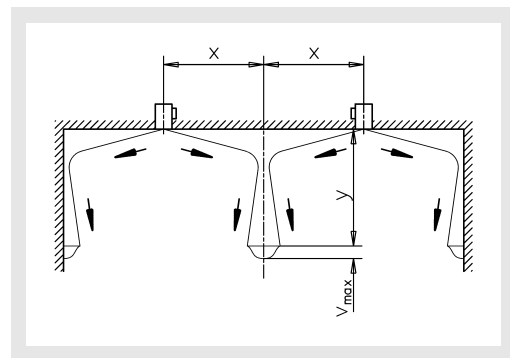
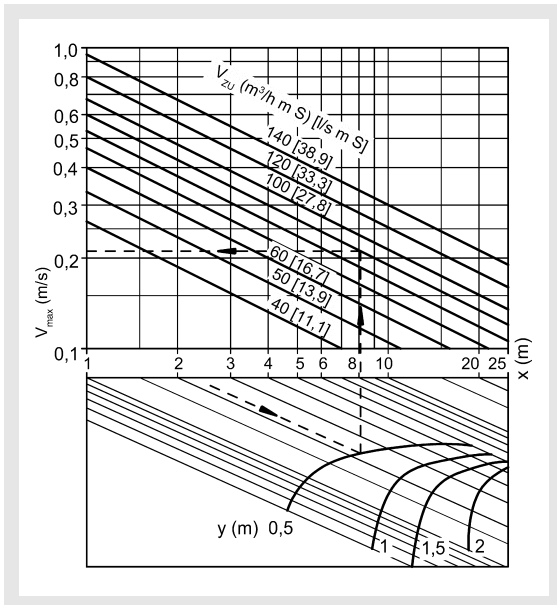
Ceiling Slot Diffuser Model DSC

Ceiling slot diffuser type DSC-Z (supply air)
Blade position II, one-way throw



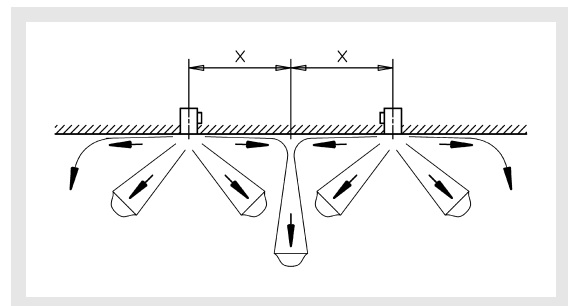
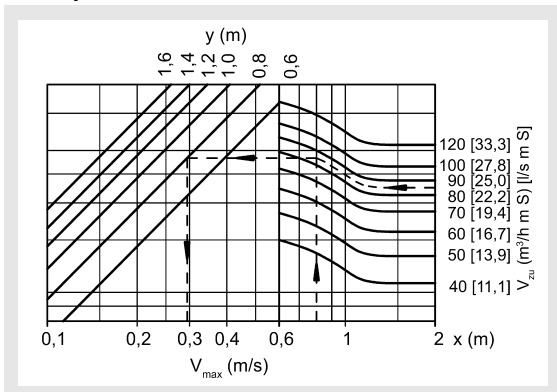
- I 1-slot version: $v_{max} \times 1$
- II 2-slot version: $v_{max} \times 1.4$
- III 3-slot version: $v_{max} \times 1.7$
- IV 4-slot version: $v_{max} \times 2.0$

Ceiling slot diffuser type DSC-Z (supply air)
Blade position III, two-way throw



- 1-slot: $v_{max} \times 1$
- 2-slot: $v_{max} \times 1.4$
- 3-slot: $v_{max} \times 1.86$
- 4-slot: $v_{max} \times 2.0$

Ceiling slot diffuser type DSC-Z (supply air)
Blade position IV, multi-directional throw



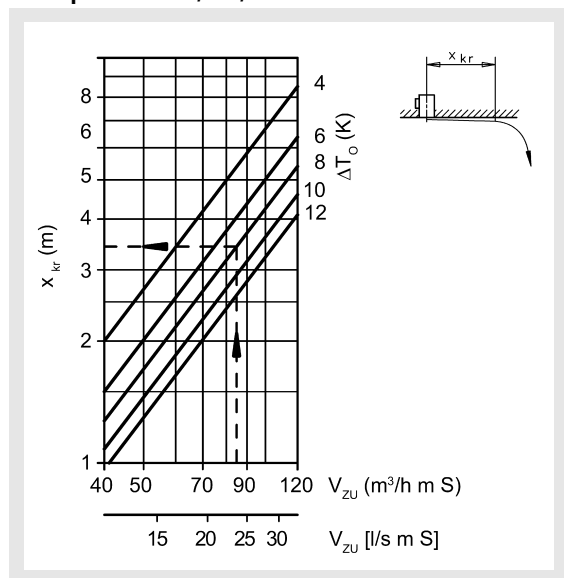
- 1-slot: $v_{max} \times 1$
- 2-slot: $v_{max} \times 1.4$
- 3-slot: $v_{max} \times 1.45$
- 4-slot: $v_{max} \times 2.0$

Ceiling Slot Diffuser Model DSC

Critical throw

Ceiling slot diffuser type DSC-Z (supply air)

Blade positions II / III / IV

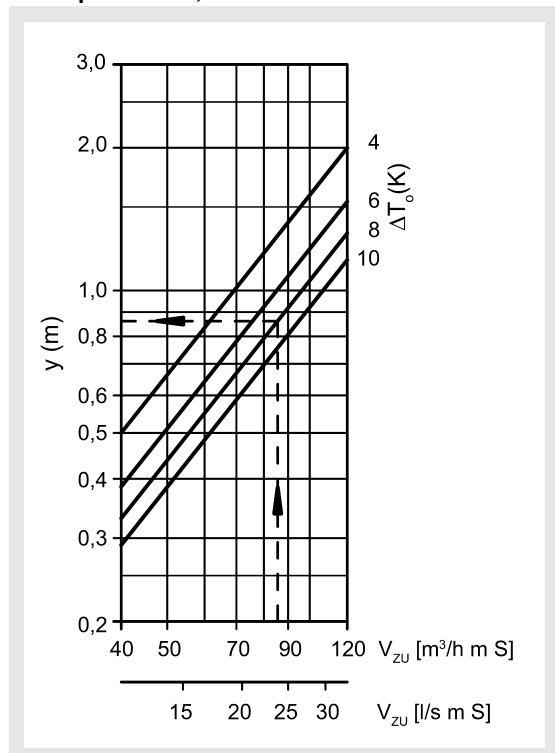


1-slot:	$x_{kr} \times 1$
2-slot:	$x_{kr} \times 1.26$
3-slot:	$x_{kr} \times 1.44$
4-slot:	$x_{kr} \times 1.64$

Maximum penetration

Ceiling slot diffuser type DSC-Z (supply air)

Blade position IV, multi-directional throw



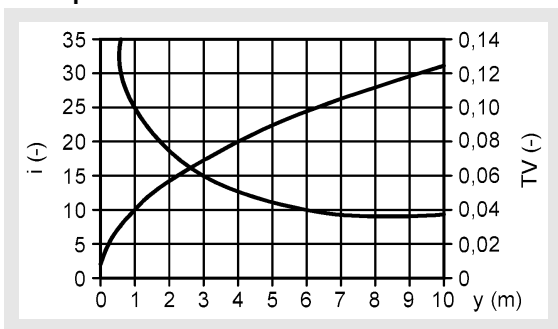
1-slot:	$y \times 1$
2-slot:	$y \times 1.1$
3-slot:	$y \times 1.2$
4-slot:	$y \times 1.3$

Ceiling Slot Diffuser Model DSC

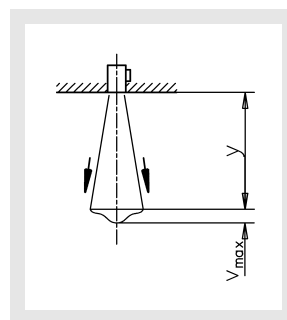
Temperature ratios

Ceiling slot diffuser type DSC-Z (supply air)

Blade position I



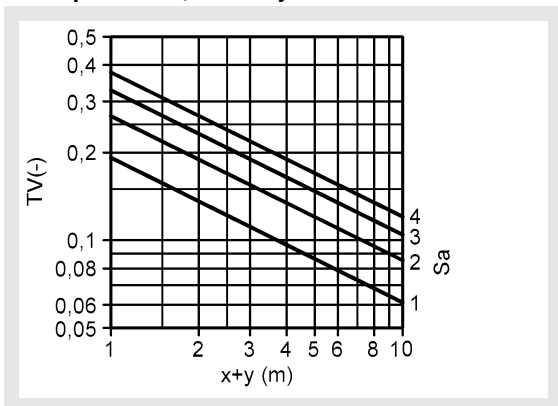
(temperature and induction ratio)



- 1-slot version x 1
- 2-slot version x 1.3
- 3-slot version x 1.6
- 4-slot version x 1.9

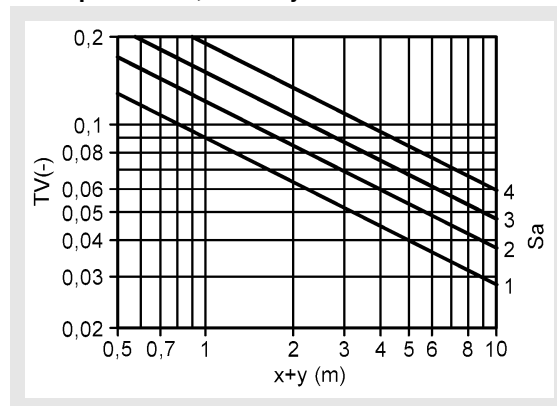
Ceiling slot diffuser type DSC-Z (supply air)

Blade position II, one-way throw



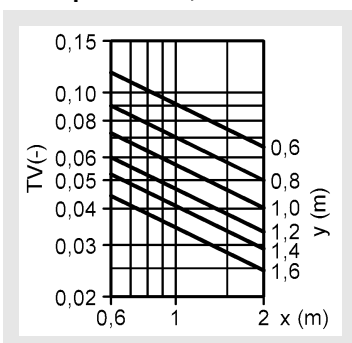
Ceiling slot diffuser type DSC-Z (supply air)

Blade position III, two-way throw



Ceiling slot diffuser type DSC-Z (supply air)

Blade position IV, multi-directional throw



- 1-slot: TV x 1
- 2-slot: TV x 1,4
- 3-slot: TV x 1,7
- 4-slot: TV x 2,0

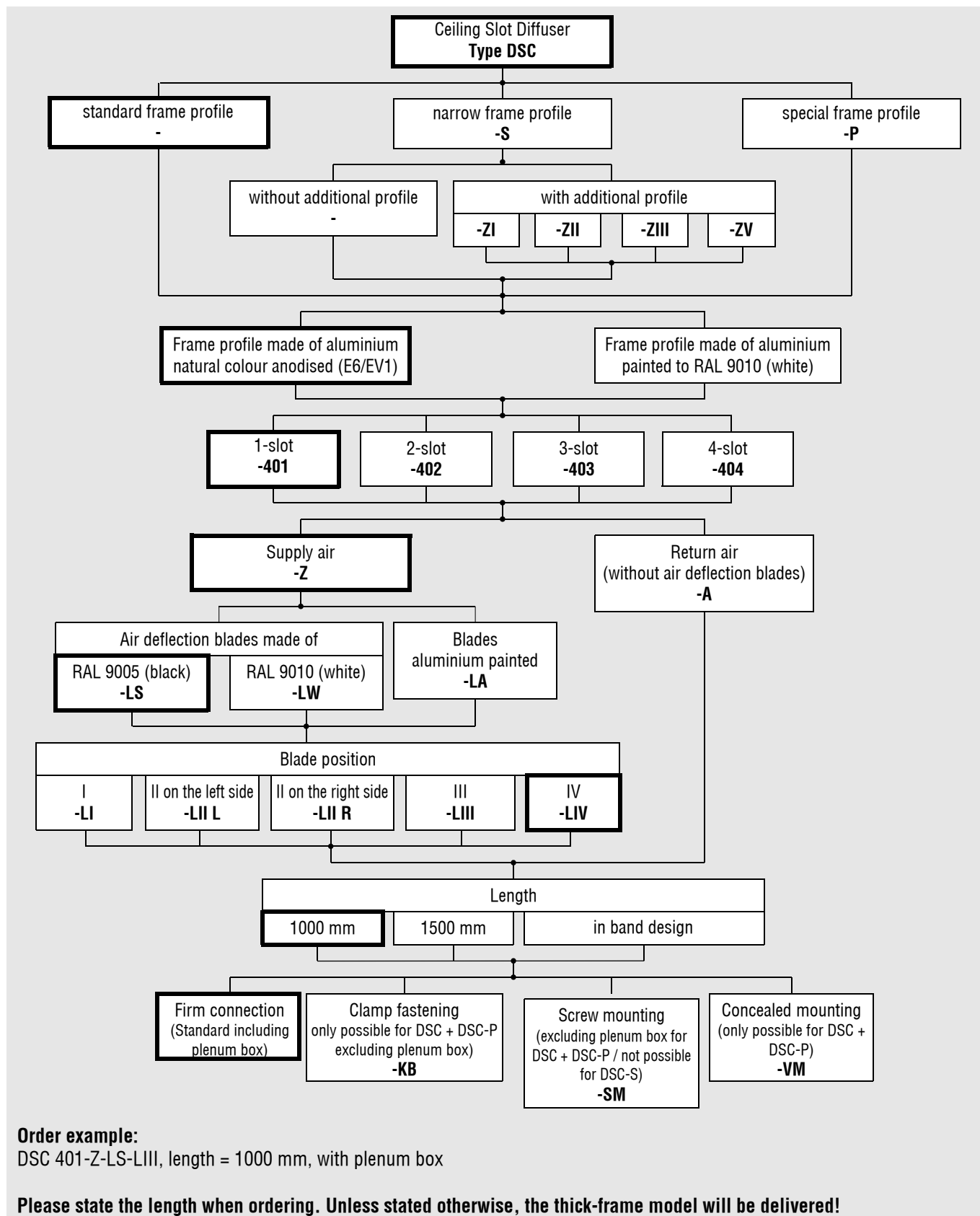
Ceiling Slot Diffuser Model DSC

Legend

v_{\max} (m/s)	= Maximum end velocity of jet
v (m/s)	= Average end velocity of jet ($v = v_{\max} \times 0.5$)
ΔT_{OK} (K)	= Temperature difference between supply air temperature and room temperature in cooling mode
ΔT_{OH} (K)	= Temperature difference between supply air temperature and room temperature in heating mode
y (m)	= Vertical throw
i (-)	= Induction ratio ($i = V_X / V_{ZU}$)
V_X (m ³ /h)	= total air jet volume at point x
V_X [l/s]	= total air jet volume at point x
V_{ZU} (m ³ /h)	= Supply air volume
V_{ZU} [l/s]	= Supply air volume
V_{ZU} (m ³ /h m S)	= total air volume per meter per slot
V_{ZU} [l/s m S]	= total air volume per meter per slot
TV (-)	= Temperature ratio ($TV = \Delta T_X / \Delta T_0$)
ΔT_X (K)	= Temperature difference at point x
ΔT_0 (K)	= Temperature difference between supply air temperature and room temperature ($\Delta T_0 = t_{ZU} - t_R$)
iso (-)	= isothermal
Sa (-)	= Number of slots
x_{kr} (m)	= Critical throw
x (m)	= Horizontal throw
$x+y$ (m)	= horizontal + vertical throw
V_{AB} (m ³ /h m S)	= total air volume per meter per slot
V_{AB} [l/s m S]	= total air volume per meter per slot
L_{WA} [dB(A)]	= A-weighted sound power level
P_{dyn} (Pa)	= dynamic pressure
P_t (Pa)	= static pressure
Δp_t (Pa)	= Total pressure loss
ρ (kg/m ³)	= Density
AL (-)	= Length of the diffuser
KF (-)	= Correction factor
L (mm)	= Length
KH (mm)	= Height of plenum box
GH (mm)	= total height
KB (mm)	= Width of plenum box
t_{ZU} (°C)	= Supply air temperature
t_R (°C)	= Room temperature

Ceiling Slot Diffuser Model DSC

Order details



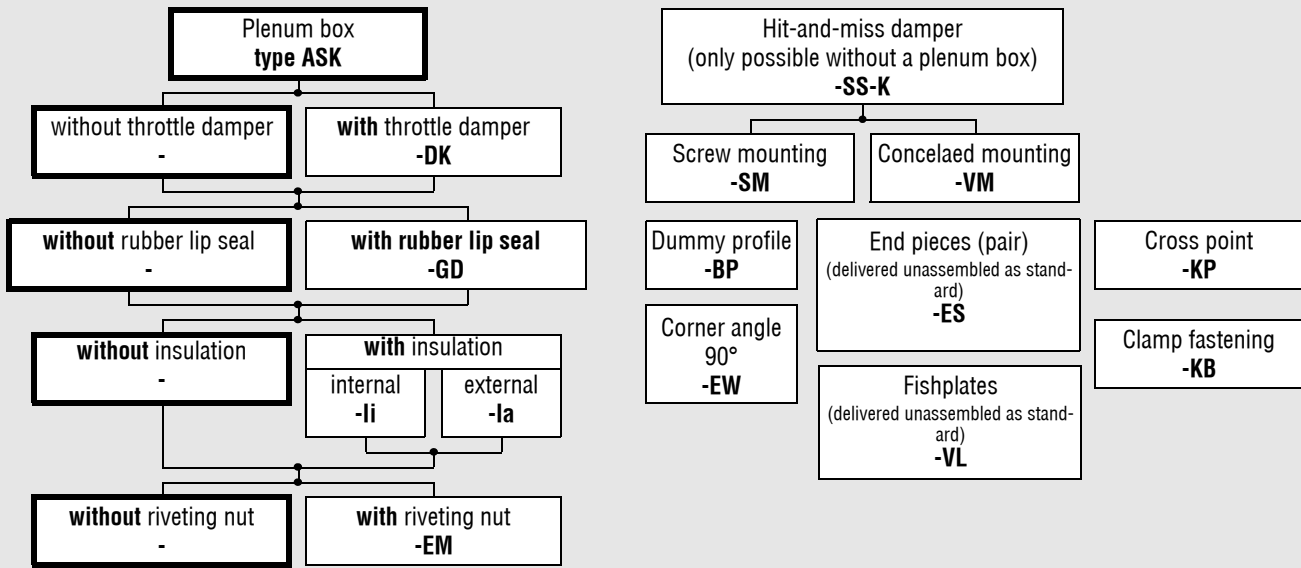
Order example:

DSC 401-Z-LS-LIII, length = 1000 mm, with plenum box

Please state the length when ordering. Unless stated otherwise, the thick-frame model will be delivered!

Ceiling Slot Diffuser Model DSC

Accessories:



Ceiling Slot Diffuser Model DSC

Specification texts

Highly inductive ceiling slot diffuser, free cross-section, resistance and sound power level constant in all blade positions. Frame made of extruded natural colour anodised aluminium (E6/EV1) or aluminium painted to RAL 9010 (white) and pivoting air deflection blades in support profile form made of plastic (hard PVC).

- RAL 9005 (black),
- RAL 9010 (white) or
- Aluminium painted to the same RAL colour as the frame profile Subsequent adjustment of blades not possible.

Volumetric flows in m ³ /h at:	35 dB(A)	40 dB(A):
DSC 401	131	156
DSC 402	203	242
DSC 403	234	279
DSC 404	253	302

Product: SCHAKO type **DSC-...-Z**

Model (number of slots)

- 1-slot (-401)
- 2-slot (-402)
- 3-slot (-403)
- 4-slot (-404)

Blade position:

- LI, vertical throw
- LIIL, one-way horizontal throw left
- LIIR: one-way horizontal throw right
- LIII, two-way horizontal throw
- LIV, multi-directional throw

Length:

- 1000 mm
- 1500 mm
- in band design

- Return air model without air deflection blades, but with black perforated plate as cover screen.

Product: SCHAKO type **DSC-...-A**

- with narrow frame profile

Product: SCHAKO type **DSC-S**

- with special frame profile

Product: SCHAKO type **DSC-P**

Fastening:

Firm connection

- Standard for the DSC, DSC-S and DSC-P with ASK for mounting plenum box and slot diffuser complete.

Clamp fastening (-KB)

- possible for the version DSC and DSC-P without plenum box

Screw mounting (-SM)

- possible for the version DSC and DSC-P without plenum box, screws on site
- not possible for the version DSC-S

Concealed mounting (-VM)

- possible for the versions DSC, DSC-S and DSC-P and for the additional profiles

Accessories:

- with plenum box (-ASK) made of galvanised sheet steel and lateral connection piece and fixing lugs.
- with a throttle damper (-DK) adjustable from the front in the plenum box for air volume regulation
- with rubber lip seal (-Gd)
- with thermal insulation
 - internal (-li)
 - external (-la)
- with riveting nuts (M4) for suspension (-EM)
- with end pieces (-ES, pair) (supplied unassembled as standard)
- with fishplates (-VL) (supplied unassembled as standard)
- with corner angles 90° (-EW)
- with cross point (-KP)
- with additional profile (for DSC-S)
 - Z I (-Z I), connection of ceiling panels
 - Z II (-Z II), connection of the panelled ceilings.
 - Z III (-Z III), connection of ceiling panels.
 - Z V (-Z V), connection of the lighting ceiling.
- with hit-and-miss damper (-SS-Kk), only possible without a plenum box.
 - concealed mounting (-VM, standard for DSC-S with/without additional profile)
 - screw mounting (-SM, Standard for DSC and DSC-P)
- with dummy profile (-BP)