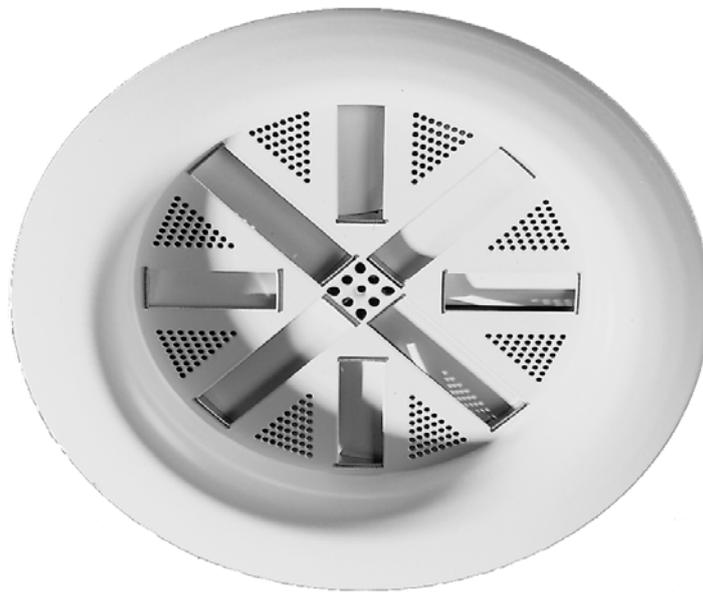




## Ceiling swirl diffuser DQJSL



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# Ceiling swirl diffuser DQJSL

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## Ceiling swirl diffuser DQJSL

### Description

The ceiling swirl diffuser DQJSL-... is suitable in particular for use in rooms up to a height of 4 m. The blades can be adjusted to achieve a horizontal as well as a vertical throw pattern. This swirl diffusers ensure optimal air distribution in heating and cooling. Individual areas can be shielded by setting the blades to a certain position. This may become necessary if obstacles obstruct the air flow.

The adjustable blades have the shape of support profiles. The air guiding blades are aerodynamic thus giving the diffuser its low noise qualities and can easily be adjusted on site after having been fitted. Blades can be adjusted even in the assemble condition on site.

The laminar flow exiting through the perforated plate is deflected by the air jet created by the blades to achieve the required throw directions. The optimal ratio between the perforations and blades ensures a stable jet path in both horizontal and vertical air pattern thus offering perfect air distribution. The unit is particularly suitable for VAV systems and can still function properly with a turn down ratio of 100 - 40%. Unless stated otherwise in the order, the high-induction multi-directional throw will be set.

The **perforation in the faceplate increases the free cross-section** compared with swirl diffusers without perforation. This results in a **substantial increase in the air output per diffuser**. The reason for this is that, depending on the diffuser size, the throughput through the diffuser is increased by up to 50% at the same noise level, thus **requiring fewer diffusers**.

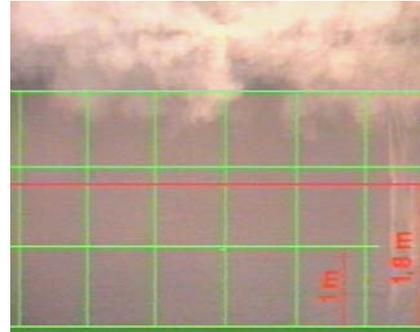
A volumetric flow meter can be integrated into the spigot of the plenum box at an extra charge. The measurement error of the volumetric flow meter is  $\pm 5\%$  at a spigot velocity of 2-5 m/s and a straight flow pattern of at least  $1 \times D$ . The measurement is carried out with integrated diffuser.

By adjusting the throttle damper, the required air volume of each diffuser can be set quickly and correctly. For plenum boxes type SK-R-..., the ceiling diffuser must be removed, before the damper can be adjusted. Alternatively, a cable-operated adjustment can be ordered at an extra charge, which allows the damper to be adjusted on the room side even with mounted diffuser.

### Smoke test

#### Ceiling swirl diffuser type DQJSL-Z-250-...

#### Cooling mode



Air jet direction:	100% horizontal
Supply air volume:	200 m <sup>3</sup> /h
Temperature difference:	- 8 K

#### Heating mode



Air jet direction:	100% vertical
Supply air volume:	200 m <sup>3</sup> /h
Temperature difference:	+ 10 K

## Ceiling swirl diffuser DQJSL

### Construction

#### Faceplate

- Sheet steel painted to RAL 9010 (white)
- Sheet steel painted to a different RAL colour (at an extra charge)

#### Blades

- Plastic, similar to RAL colour 9010 (white (-LW9010)) or RAL 9005 (black (-LS9005))
- Aluminium painted to the RAL colour of the faceplate (subsequent adjustment of blades not possible (-ALxxxx))

### Accessories

#### Plenum box (SK-R-13-...)

- Galvanised sheet steel, with integrated perforated straightener (supply air model only) and fixing lugs.

#### Damper (-DK1)

- Damper made of galvanised sheet steel
- Damper fastening made of plastic

#### Damper (-DK2)

- same as DK1, but with cable-operated adjustment (at an extra charge)

#### Rubber lip seal (-GD1)

- Special rubber

#### Panelled cover plate (-PA...)

- Sheet steel painted to RAL 9010 (white)

#### Volumetric flow meter (-VME1)

- Holder made of galvanised sheet steel
- Measuring sensor made of plastic
- Aluminium connections.

#### Internal insulation (-li)

- thermal insulation at the inside of the plenum box

#### External insulation (-la)

- thermal insulation at the outside of the plenum box

### Fastening

#### Screw mounting (-SM)

- only available in conjunction with the panel cover plate (-PA...). Screws must be provided on site.

#### Concealed mounting (-VM, standard)

- fastened to the plenum box type SK-R-...-Z-... by means of a pole brace and an Allen screw DIN EN ISO 4762 M6. A separate counter pole brace for fastening the ceiling swirl diffuser must be fitted when ordered without a plenum box.

**Attention: The max. torque of the fastening screw is 0.4 Nm**

## Ceiling swirl diffuser DQJSL

### Models and dimensions

#### Air throw pattern

##### Blade setting options

##### "increased" horizontal multi-directional throw (-A)

- all blades in position 2

##### "high-induction" horizontal multi-directional throw (-B)

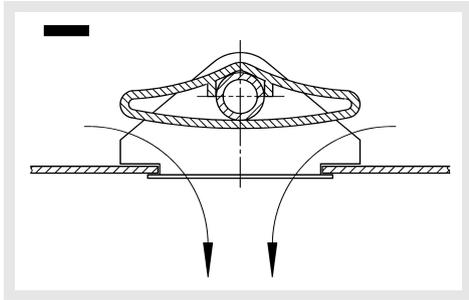
- blades in positions 1+2 preset as standard

##### vertical air throw (-V)

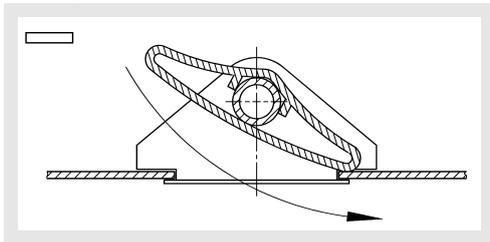
- all blades in position 1.

Highly inductive throw is preset in the factory.

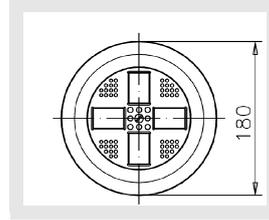
#### Blade position 1



#### Blade position 2

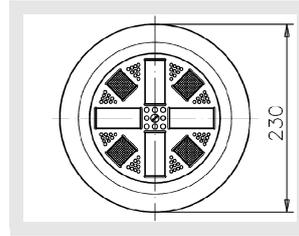


#### DQJSL-...-125-...

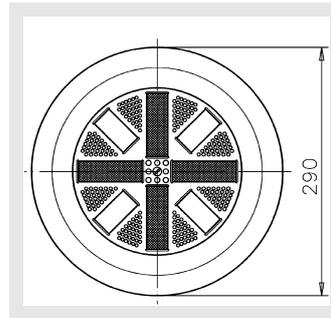


DQJSL-...-125-... only available with vertical or increased horizontal multi-directional throw.

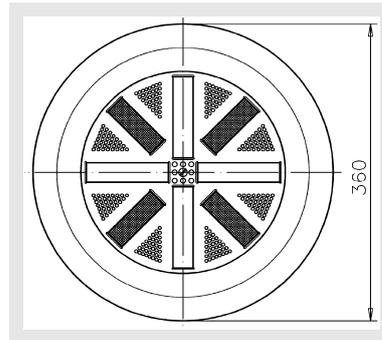
#### DQJSL-...-160-...



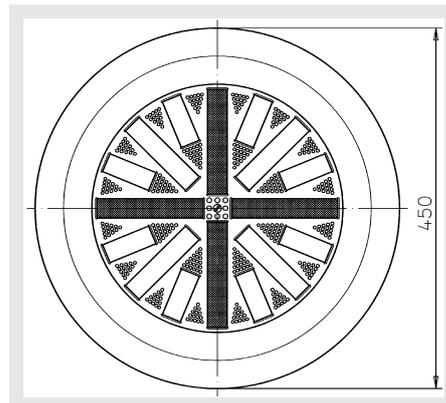
#### DQJSL-...-200-...



#### DQJSL-...-250-...



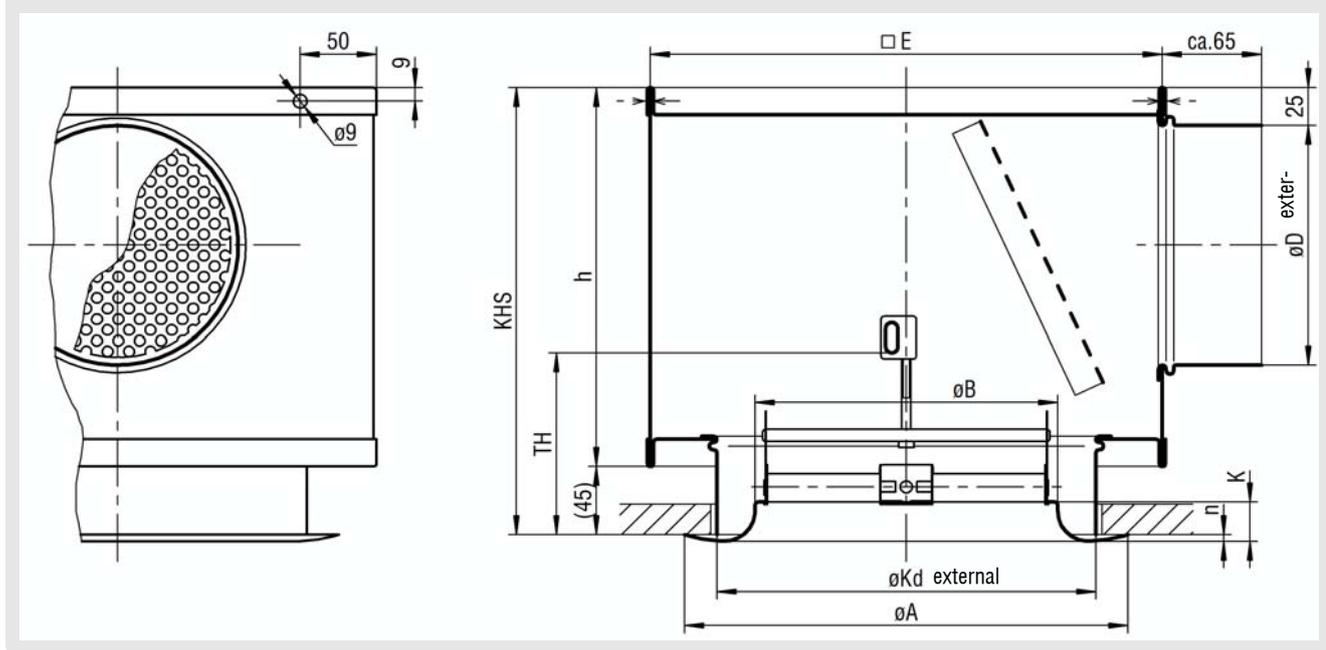
#### DQJSL-...-315-...



## Ceiling swirl diffuser DQJSL

### Dimensions

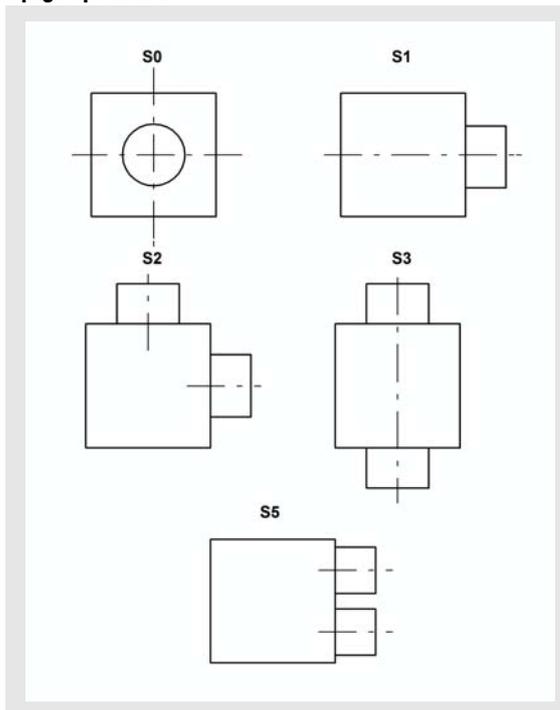
DQJSL-Z... mit SK-R-13-Z... (for supply air)



### Available sizes

NW	øA	øB	K	n	øKd	□E	KHS	øD	h	TH	øD <sub>max</sub> for ...-S5
125	180	123	16	2,9	148	245	260	123	215	90	78
160	230	158	21	3,8	198	290	295	158	250	100	98
200	290	198	26	4,4	248	335	295	158	250	120	123
250	360	248	33	4,9	313	405	335	198	290	140	158
315	450	313	41	5,5	398	545	385	248	340	190	198

### Spigot position



KHS= standard height of plenum box  
 Special height of plenum box =  $\text{øD} + 137 \text{ mm}$ , but at least 235 mm

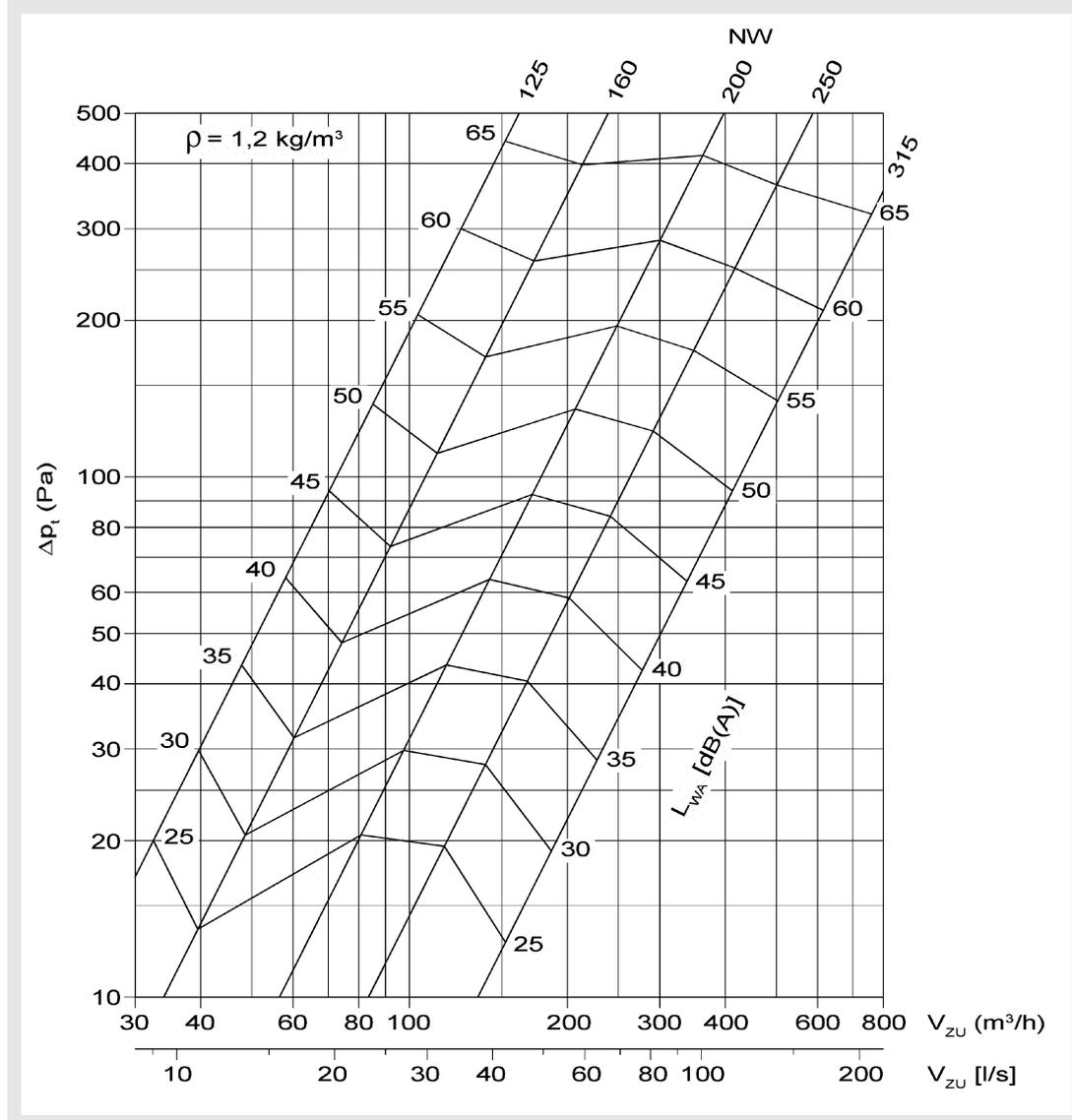


## Ceiling swirl diffuser DQJSL

### Technical data

#### Pressure loss and noise level

DQJSL-... with SK-R-13-Z-..., damper "CLOSED"



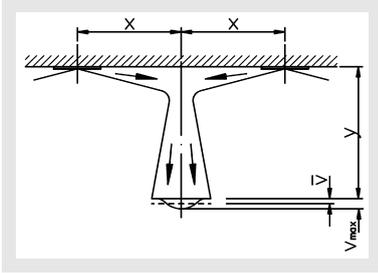
#### Damper "OPEN"

L<sub>WA</sub>: -2 dB

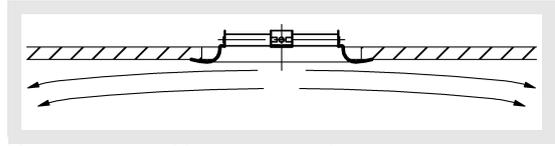
Δp<sub>t</sub>: -10 Pa

## Ceiling swirl diffuser DQJSL

### Maximum end velocity of jet

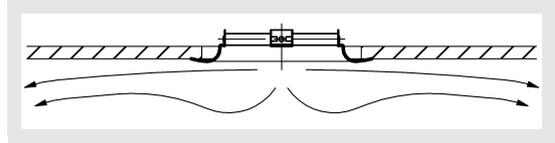


### increased horizontal multi-directional throw

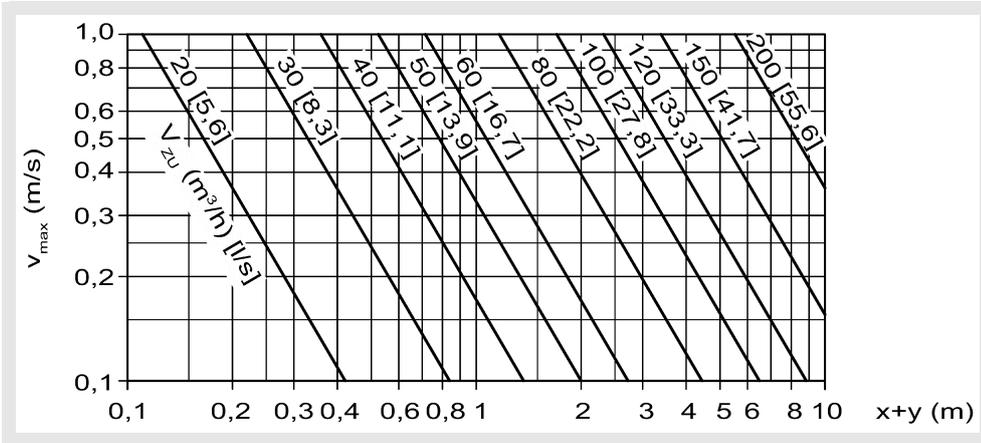


$$V_{\text{max increased}} = V_{\text{max high ind}} \times 1.5$$

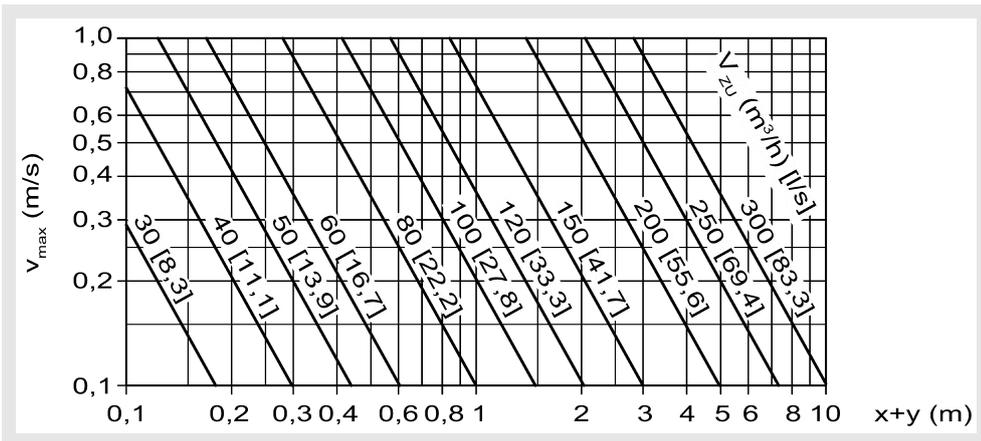
### high-induction horizontal multi-directional throw



### (isothermal), increased horizontal multi-directional throw DQJSL-Z-125-...

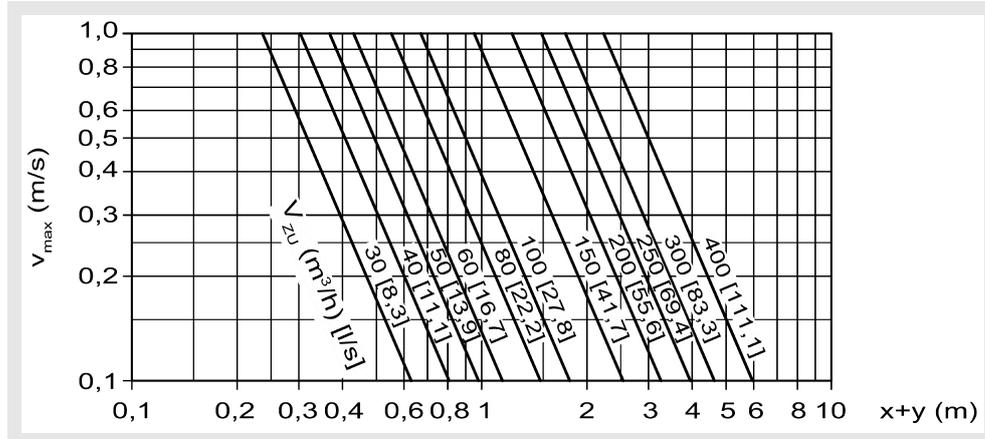


### (isothermal), high-induction horizontal multi-directional throw DQJSL-Z-160-...

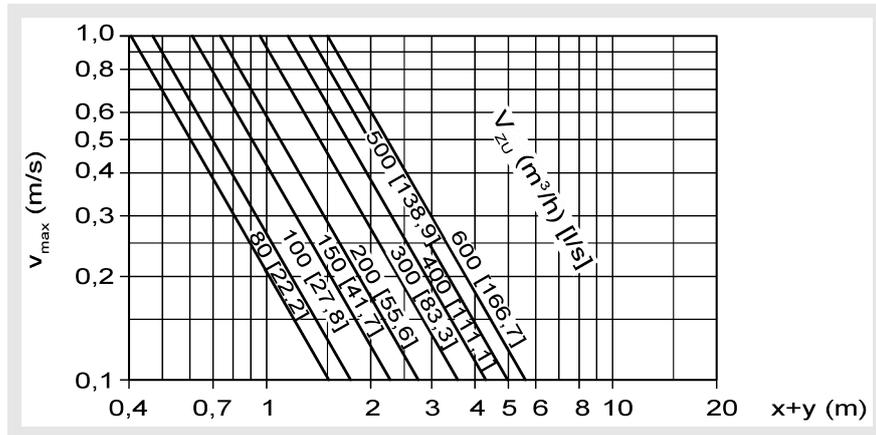


## Ceiling swirl diffuser DQJSL

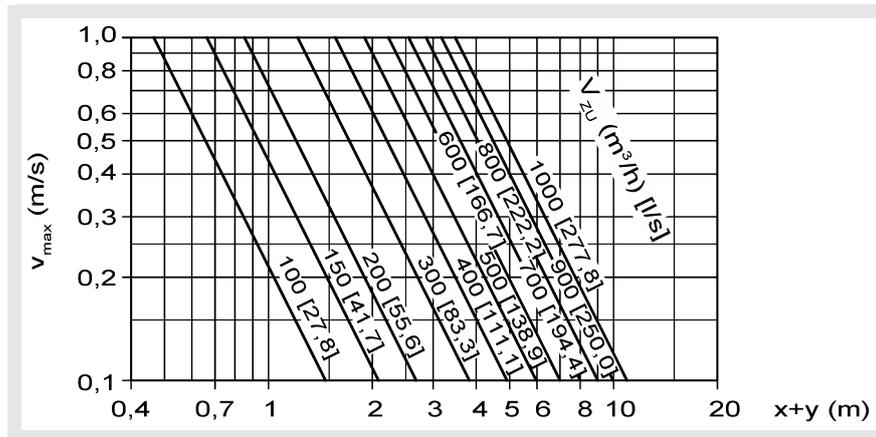
(isothermal), high-induction horizontal multi-directional throw  
DQJSL-Z-200-...



(isothermal), high-induction horizontal multi-directional throw  
DQJSL-Z-250-...



(isothermal), high-induction horizontal multi-directional throw  
DQJSL-Z-315-...

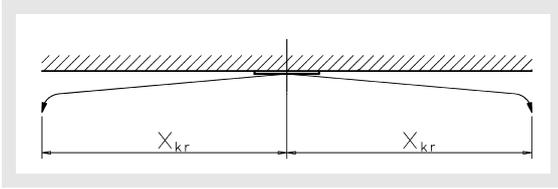


# Ceiling swirl diffuser DQJSL

## Critical throw

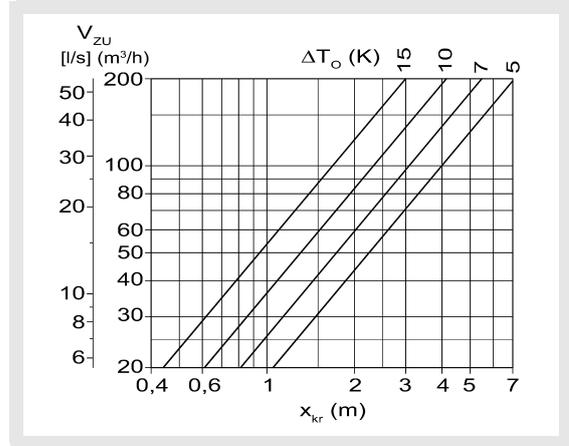
(Cooling mode)

high-induction horizontal multi-directional throw

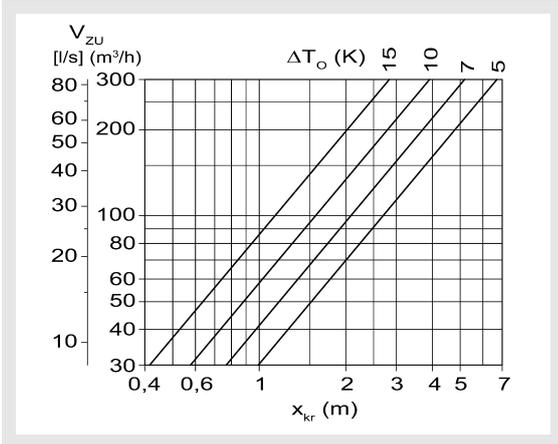


increased horizontal multi-directional throw = diagram value x 1.25

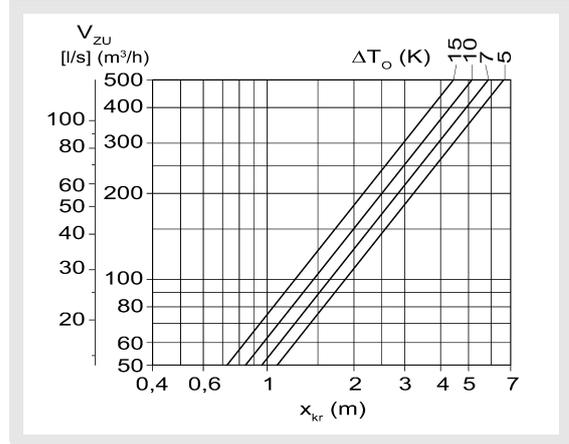
### DQJSL-Z-125-...



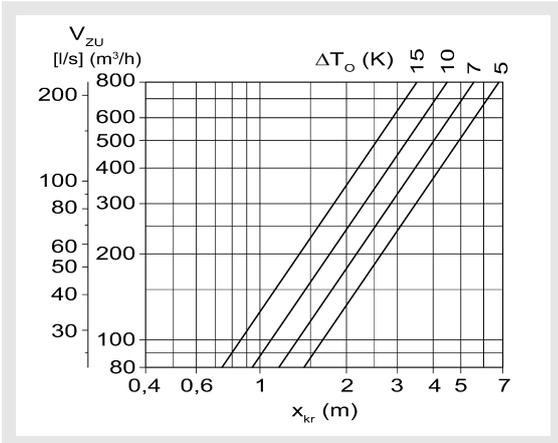
### DQJSL-Z-160-...



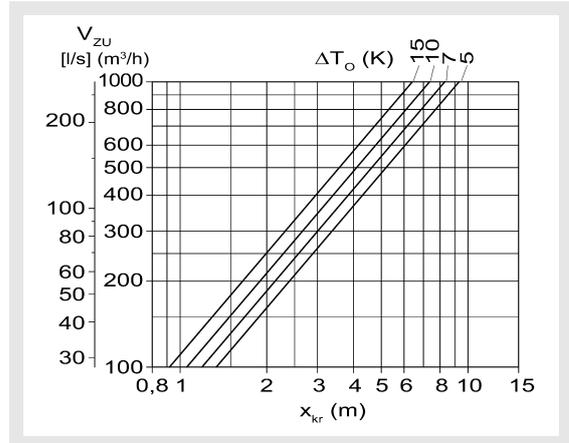
### DQJSL-Z-200-...



### DQJSL-Z-250-...



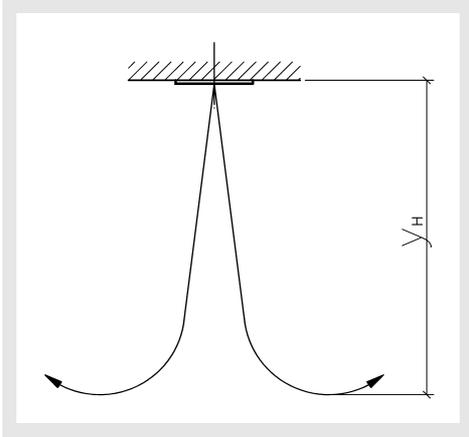
### DQJSL-Z-315-...



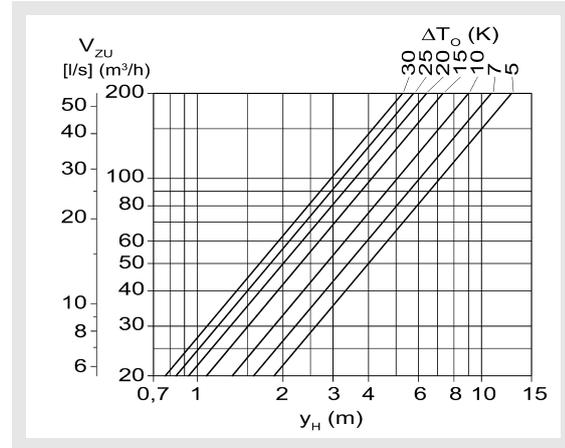
## Ceiling swirl diffuser DQJSL

### Maximum penetration

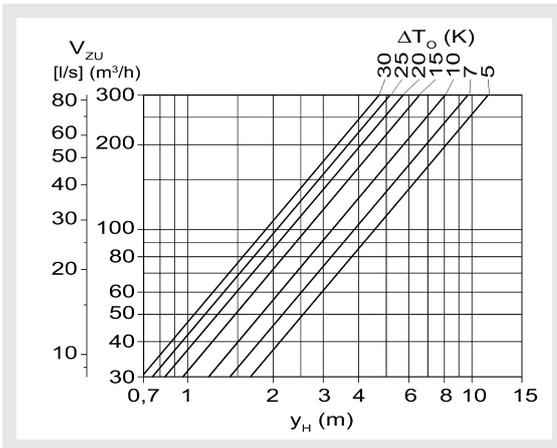
Heating mode



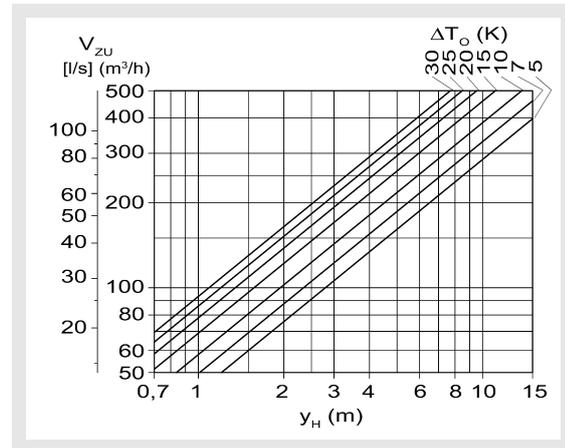
### DQJSL-Z-125-...



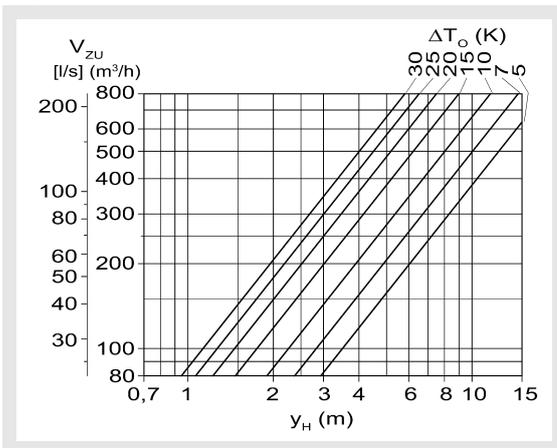
### DQJSL-Z-160-...



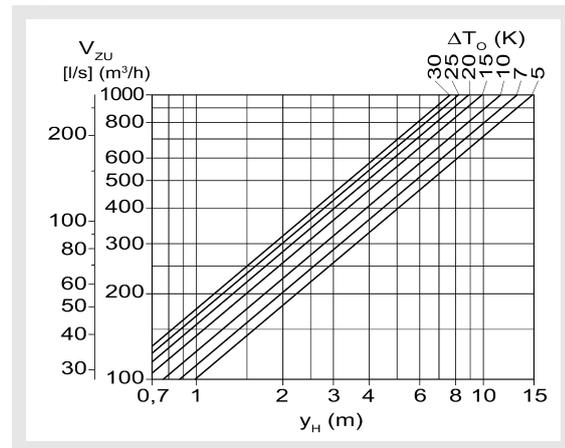
### DQJSL-Z-200-...



### DQJSL-Z-250-...

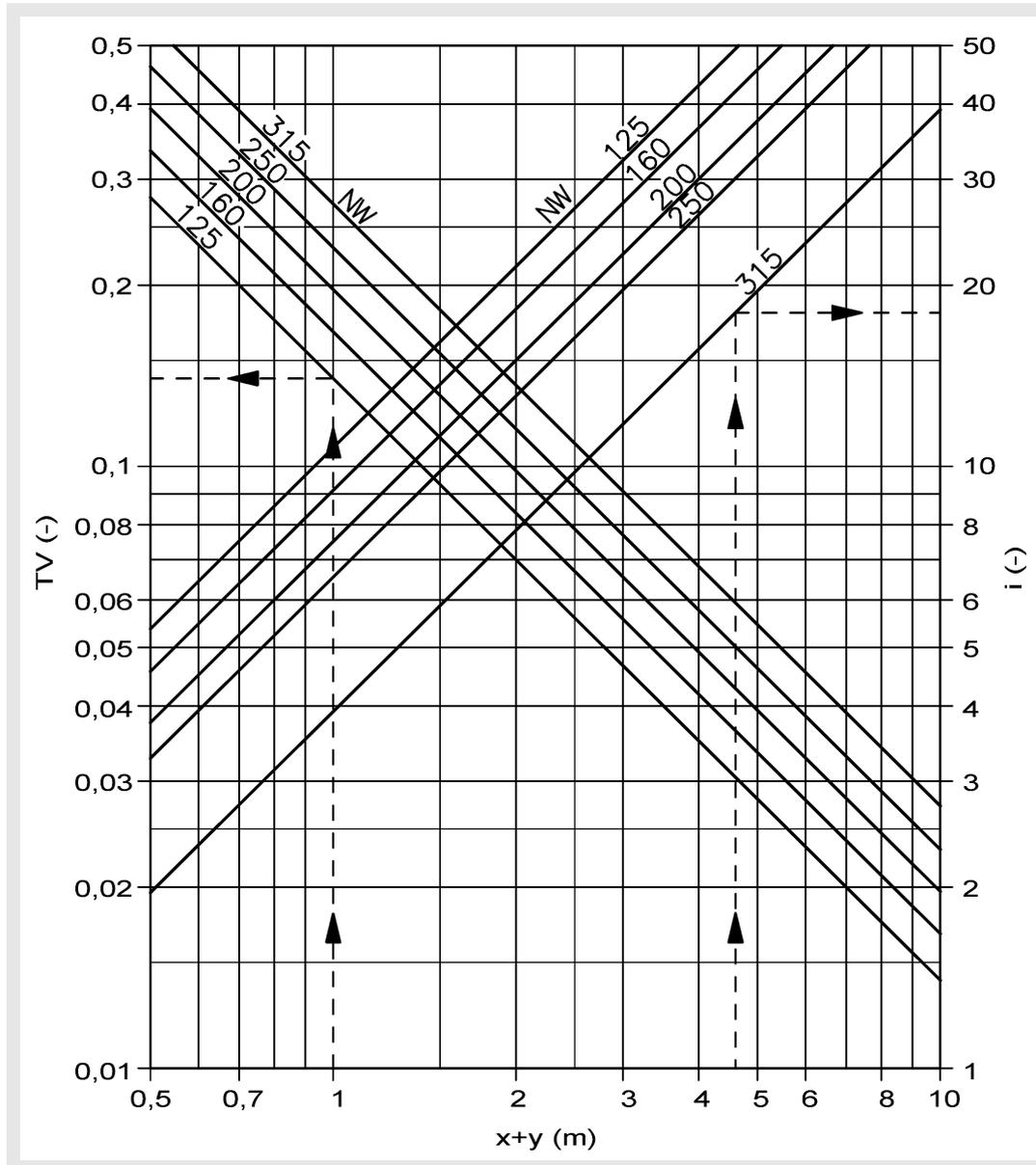


### DQJSL-Z-315-...



## Ceiling swirl diffuser DQJSL

### Temperature and induction ratios



### Legend

$V_{ZU}$	(m <sup>3</sup> /h)	= Supply air volume	$i$	(-)	= Induction ratio ( $i = V_X / V_{ZU}$ )
$V_{ZU}$	[l/s]	= Supply air volume	$y_H$	(m)	= Maximum penetration in heating mode
$\Delta T_0$	(K)	= Temperature difference between supply air temperature and room temperature ( $\Delta T_0 = t_{ZU} - t_R$ )	$x_{kr}$	(m)	= Critical throw
$t_{ZU}$	(°C)	= Supply air temperature	$v_{max}$	(m/s)	= Maximum end velocity of jet
$t_R$	(°C)	= Room temperature	$v_{mittel}$	(m/s)	= Average end velocity of jet ( $v = 0.5 \times v_{max}$ )
$x$	(m)	= horizontal throw	$\Delta p_t$	(Pa)	= Pressure loss
$y$	(m)	= vertical throw	$L_{WA}$	[dB(A)]	= A-weighted sound power level
$x+y$	(m)	= horizontal + vertical throw	$\rho$	(kg/m <sup>3</sup> )	= Density
$TV$	(-)	= Temperature ratio ( $TV = \Delta T_X / \Delta T_0$ )	NW	(mm)	= Nominal value
$V_X$	(m <sup>3</sup> /h)	= total air jet volume at point x	$\Delta T_X$	(K)	= Temperature difference at point x
$V_X$	[l/s]	= total air jet volume at point x			

## Ceiling swirl diffuser DQJSL

### Order code DQJSL

01	02	03	04	05
Type	Air throw	Nominal size	Material	Paint
<b>Example</b>				
DQJSL	-Z	-160	-SB	-9010

06	07	08	09
Blade colour	Air throw pattern	Mounting	Panelled cover plate
-L9005	-B	-VM	-PA000

#### Sample

#### DQJSL-Z-160-SB-9010-L9005-B-VM-PA000

Ceiling swirl diffuser type DQJSL with round faceplate | supply air | NW160 | faceplate made of sheet steel | faceplate painted to RAL9010 | blade colour similar to RAL9005 black | air throw pattern B | concealed mounting | without panelled cover plate | without damper

#### Order details

##### 01 - Type

DQJSL = Ceiling swirl diffuser with round faceplate

##### 02 - Air throw

Z = Supply air

##### 03 - Nominal size

125 = NW125

160 = NW160

200 = NW200

250 = NW250

315 = NW315

##### 04 - Material

SB = Sheet steel (standard)

##### 05 - Paint

9010 = RAL colour white (standard)

xxxx = RAL colour can be freely selected

##### 06 - Blade colour

L9005 = Blades made of plastic similar to RAL 9005 (black)

L9010 = Blades made of plastic similar to RAL9010 (white)

Axxxx = aluminium, RAL colour can be freely selected

##### 07 - Air throw pattern

A = all blades in position 2 (increased horizontal multi-directional throw, standard for NW125)

B = all blades in positions 1 + 2 (standard, high-induction horizontal air throw, only for NW160-315)

V = all blades in position 1 (vertical air throw)

##### 08 - Mounting

VM = Concealed mounting (standard)

SM = Screw mounting (available only in conjunction with panelled cover plate)

##### 09 - Panelled cover plate

PA000 = without panelled cover plate (standard)

PA310 = with panelled cover plate 310 (NW125-160)

PA400 = with panelled cover plate 400 (NW125-250)

PA500 = with panelled cover plate 500 (NW125-315)

PA600 = with panelled cover plate 600 (NW125-315)

PA625 = with panelled cover plate 625 (NW125-315)

## Ceiling swirl diffuser DQJSL

### Order code SK

01	02	03	04	05	06	07
Plenum box	Model	Air diffuser	Type of air	Nominal size	Fastening	Material
<b>Example</b>						
SK	-R	-13	-Z	-160	-VM	-SV

08	09	10	11	12	13	14	15
Damper	Rubber lip seal	Volumetric flow meter	ROB Model	Insulation	Height of plenum box	Spigot diameter	Spigot position
-DK2	-GD1	-VME1	-ROB0	-I0	-KHS	-SDS	-S1

#### Sample

**SK-R-13-Z-160-VM-SV-DK2-GD1-VME1-ROB0-I0-KHS-SDS-S1**

Plenum box, square design I for round air diffusers with round diffuser support I air diffuser DQJSL I supply air I NW160 I with concealed mounting I galvanised sheet steel I with damper with cable I with rubber lip seal I with volumetric flow meter I without ROB model I without box insulation I standard height of plenum box I standard spigot diameter I 1 lateral spigot

#### Order details

##### 01 - Plenum box

SK = Plenum box, square design

##### 02 – Model

R = for round air diffusers with round diffuser support

##### 03 - Air diffuser (must be ordered separately)

13 = suitable for DQJSL-...

##### 04 - Type of air

Z = Supply air

##### 05 - Nominal size

125 = NW125

160 = NW160

200 = NW200

250 = NW250

315 = NW315

##### 06 - Fastening

VM = Concealed mounting (standard)

SM = Screw mounting (available only in conjunction with panelled cover plate)

##### 07 - Material

SV = Galvanised sheet steel (standard)

##### 08 - Damper

DK0 = Without damper (standard)

DK1 = With damper

DK2 = With damper + cable

##### 09 - Rubber lip seal

GD0 = Without rubber lip seal (standard)

GD1 = With rubber lip seal

##### 10 – Volumetric flow meter

VME0 = Without volumetric flow meter (standard)

VME1 = With volumetric flow meter

##### 11 – ROB model

ROB0 = Without ROB version (standard)

##### 12 - Insulation

I0 = Without insulation (standard)

Ii = With box insulation inside

Ia = With box insulation outside

##### 13 – Height of plenum box

KHS = Height of plenum box standard

xxx = Height of plenum box in mm (Height<sub>min</sub>= spigot diameter + 137 mm, but at least 235 mm)

## Ceiling swirl diffuser DQJSL

### 14 – Spigot diameter

SDS = Spigot diameter standard

xxx = Spigot diameter in mm

### 15 – Spigot position

S0 = Spigot from above

S1 = 1 lateral spigot on the box (standard)

S2 = 2 spigots offset by 90°

S3 = 2 spigots offset by 180°

S5 = 2 spigots arranged next to each other

## Ceiling swirl diffuser DQJSL

### Specification texts

Ceiling swirl diffuser type DQJSL in round design. Particularly suitable for comfort rooms and for VAV systems having variable volumetric flows (between 40 and 100%). Cooling and heating modes are possible. Consisting of a perforated faceplate made of sheet steel provided with a high-quality powder coating in a RAL colour (RAL 9010, white, standard), with central pivoting, aerodynamic and radial fitted deflection blades, which are individually adjustable (without any tools) from the diffuser side without dismantling the diffuser, in support profile design made of plastic similar to RAL colour 9010 (white), RAL 9005 (black) or aluminium, painted individually or to the same RAL colour as the faceplate (subsequent adjustment of blades not possible). Free cross-section, resistance and sound power level constant in all blade positions. Throughput of up to 50% higher volumetric flows possible with identical sound power and comparable size compared with swirl diffusers without perforation. Fastening by concealed mounting (VM), made of aerodynamic aluminium profile.

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

Air throw pattern:

- increased horizontal multi-directional throw (-A)
- high-induction horizontal multi-directional throw (only sizes 160 - 315) (-B)
- vertical air throw (-V)

Accessories:

- plenum box (SK-R-13-...), made of galvanised sheet steel, with fixing lugs, supply air model with integrated perforated straightener.
  - with damper (-DK1) in plenum box, adjustable from below, for simple air volume regulation without dismantling the faceplate.
    - adjustable from below with cable (-DK2)
  - with volumetric flow meter (-VME1).
  - with rubber lip seal (-GD1), at the connection spigot made of special rubber.
  - with thermal insulation
    - internal (-li)
    - external (-la)
  - Height of plenum box can be freely selected, xxx in mm, minimum height = spigot diameter +137 mm, but at least 235 mm
  - Spigot diameter can be freely selected, xxx in mm
  - Spigot position:
    - S0= spigot from above
    - S1= 1 lateral spigot on the box (standard)
    - S2= 2 spigots offset by 90°
    - S3= 2 spigots offset by 180°
    - S5 = 2 spigots arranged next to each other
- Panelled cover plate (-PA...) made of sheet steel, painted to RAL 9010 (white), with screw mounting (-SM).