



# Ceiling swirl diffuser

## DQJSLC



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## Ceiling swirl diffuser DQJSLC

### Contents

|                                              |           |
|----------------------------------------------|-----------|
| <b>Description .....</b>                     | <b>3</b>  |
| Construction .....                           | 3         |
| Accessories .....                            | 3         |
| Fastening .....                              | 3         |
| <b>Models and dimensions .....</b>           | <b>4</b>  |
| Air throw pattern .....                      | 4         |
| Dimensions .....                             | 5         |
| Accessories - dimensions .....               | 6         |
| Fastening methods .....                      | 6         |
| <b>Technical data .....</b>                  | <b>7</b>  |
| Pressure loss and noise level .....          | 7         |
| Maximum end velocity of jet (isotherm) ..... | 10        |
| Critical throw (cooling mode) .....          | 12        |
| Temperature and induction ratios .....       | 13        |
| <b>Legend .....</b>                          | <b>13</b> |
| <b>Order code DQJSLC .....</b>               | <b>14</b> |
| <b>Order code SK .....</b>                   | <b>15</b> |
| <b>Specification texts .....</b>             | <b>17</b> |

## Ceiling swirl diffuser DQJSLC

### Description

The ceiling swirl diffuser type DQJSLC-... developed for use in comfort rooms is suitable for mounting heights of up to 4 m. It is provided with **an external diffuser ring, which deflects part of the supply air horizontally**. The horizontal throw **forms an air cushion along the ceiling**. This air cushion **keeps any dust particles** contained in the room air **away from the ceiling**. Consequently, the ceiling is less contaminated.

The laminar flow exiting through the perforated plate is guided by the support jet created by the blades. The blades can be adjusted to achieve a **high-induction or an increased multi-directional throw**. With the highly inductive jet some of the air is directed vertically. This increases induction while the temperature and velocity are rapidly reduced. With the increased multi-directional throw the laminar throw is directed by the horizontal jet. The increased multidirectional jet achieves a long throw.

Both air patterns can be preset in factory. Unless stated otherwise in the order, the high-induction multi-directional throw will be set.

The stability of the air jet prevents the jet from becoming detached from the ceiling, even if the volumetric flow is low. This makes this diffuser also suitable for systems with variable air flow (VAV).

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 connection spigot velocity of 2-5 m/s and a straight flow pattern of at least  $1 \times D$ . The measurement is carried out with mounted 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.

### Construction

#### Nozzle part

- sheet steel painted to the RAL colour of the front plate (sizes 125 - 250)
- Aluminium painted to the RAL colour of the faceplate (size 315)

#### 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) or RAL 9005 (black)
- Aluminium painted to the RAL colour of the faceplate (subsequent adjustment of blades not possible)

### Accessories

Plenum box (SK-R-14-...)

- galvanised sheet steel

Damper (-DV)

- only for connection to flexible ducts

Damper (-DK1)

- Damper made of galvanised sheet steel
- Damper fastening made of plastic
- with cable-operated adjustment (-DK2) (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 on the outside of the plenum box

### Fastening

Screw mounting (-SM)

- Only available in conjunction with the panelled cover plate (-PA...), flexible duct connection and damper (-DV). Screws must be provided on site.

Concealed mounting (-VM, standard)

- A separate traverse bar is to be fitted when ordered without plenum box.
- Only possible in combination with a plenum box

Panelled cover plate with concealed mounting (-PV)

- Only available in conjunction with a flexible duct connection or with an additional damper (-DV)

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

## Ceiling swirl diffuser DQJSLC

### Models and dimensions

#### Air throw pattern

#### Blade setting options

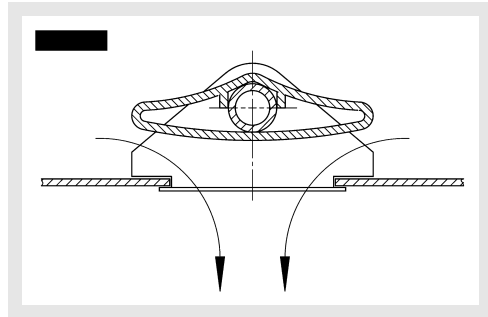
##### "increased" horizontal multi-directional throw (-A)

- all blades in position 2

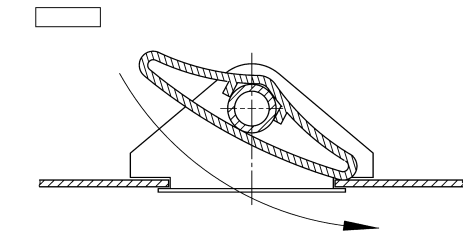
##### "high-induction" horizontal multi-directional throw (-B)

- Highly inductive throw is set as standard, blades in positions 1+2.

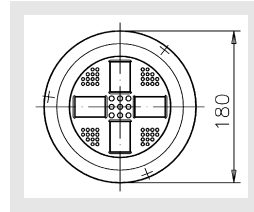
#### Blade position 1



#### Blade position 2

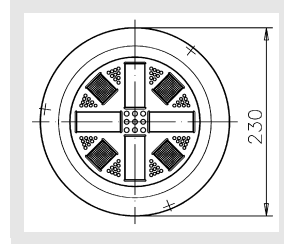


#### DQJSLC-Z-125-...

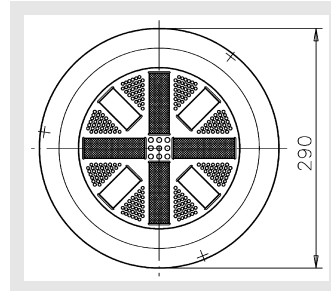


DQJSLC-Z-125-... only available with increased horizontal multi-directional throw.

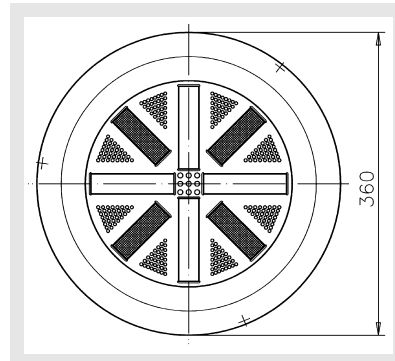
#### DQJSLC-Z-160-...



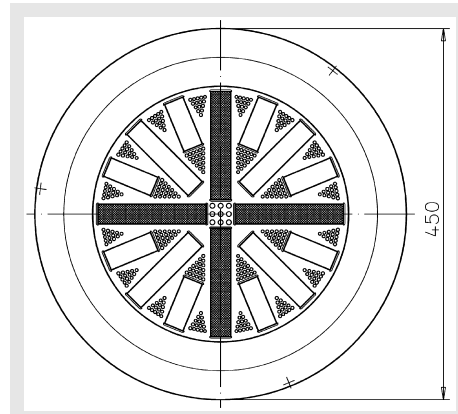
#### DQJSLC-Z-200-...



#### DQJSLC-Z-250-...



#### DQJSLC-Z-315-...



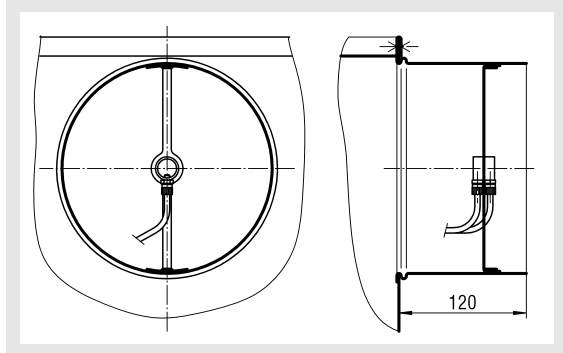


## Ceiling swirl diffuser DQJSLC

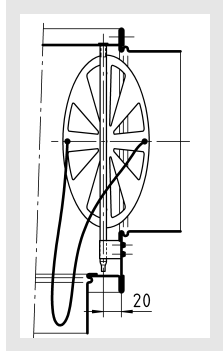
### Accessories - dimensions

(at an extra charge):

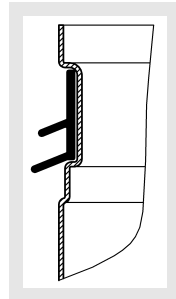
Volumetric flow meter (-VME1)



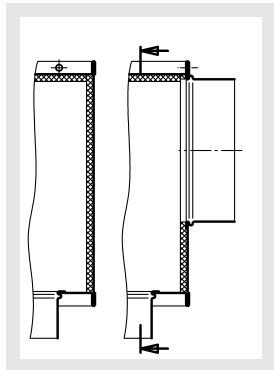
**Damper (-DK1) with  
Cable-operated adjustment  
(-DK2)**



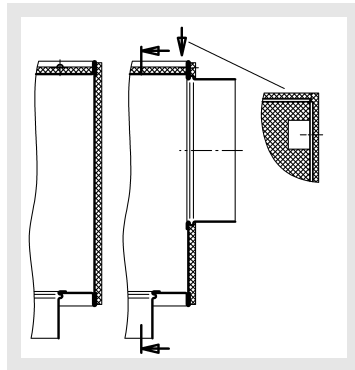
**Rubber lip seal (-GD1)  
Detail X**



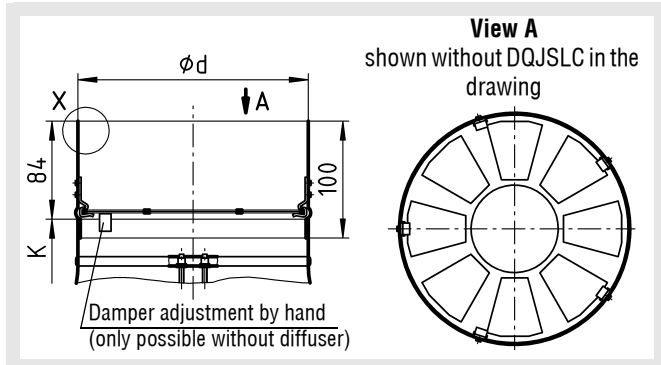
**Insulation for SK-R-14-...  
internal (-li)**



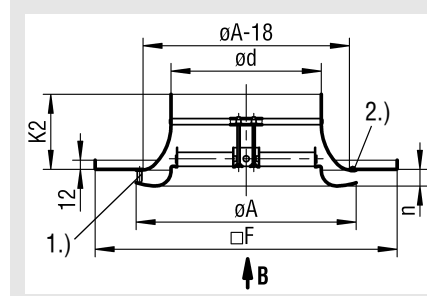
**outside(-la)**



**Damper (-DV)**



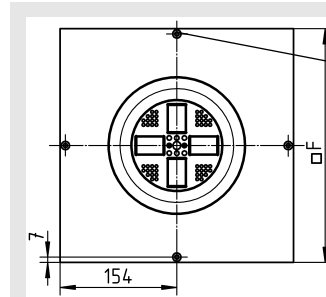
**Panelled cover plate (-PA...)**



1.) 3 distance bolts  
(drawn rotated)

2.) rivet joint  
(drawn rotated)

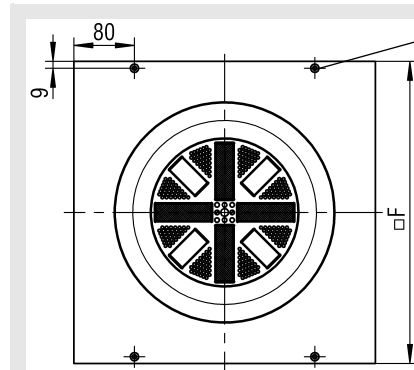
**View B  
PA310**



with indentation for slotted shallow-raised countersunk-head tapping screw DIN ISO 7051 pitch 3.9 (on site).

No indentations for panelled cover plate with concealed mounting (-PV).

**PA400 / PA500 / PA600 / PA625**



with indentation for slotted shallow-raised countersunk-head tapping screw DIN ISO 7051 pitch 4.8 (on site).

No indentations for panelled cover plate with concealed mounting (-PV).

**Available sizes**

| NW        | PA... | $\square F$ | $\phi A$ | $\phi d$ | n    | K2  |
|-----------|-------|-------------|----------|----------|------|-----|
| 125 - 160 | 310   | 308         | 180      | 123      | 19,5 | 60  |
| 125 - 250 | 400   | 398         | 230      | 158      | 20,6 | 80  |
| 125 - 315 | 500   | 498         | 290      | 198      | 21,0 | 100 |
|           | 600   | 598         | 360      | 248      | 22,5 | 125 |
|           | 625   | 623         | 450      | 313      | 23,1 | 160 |

### Fastening methods

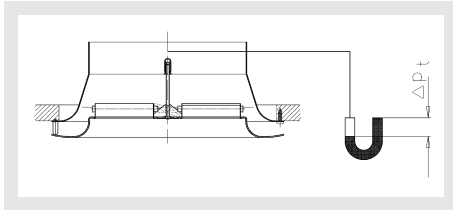
In concealed mounting (-VM), the ceiling swirl diffuser type DQJSLC-... is fastened to the plenum box type SK-R-14-Z-... by means of a pole brace and an Allen screw DIN EN ISO 4762 M6. **Panelled cover plate, flexible duct connection and damper are only available in conjunction with screw mounting. The panelled cover plate with concealed mounting is a concealed screw mounting which is carried out in the same way as for connection to a flexible duct (page 5).**

## Ceiling swirl diffuser DQJSLC

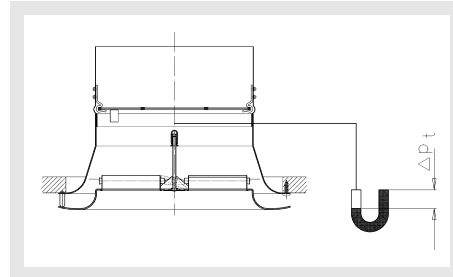
### Technical data

#### Pressure loss and noise level

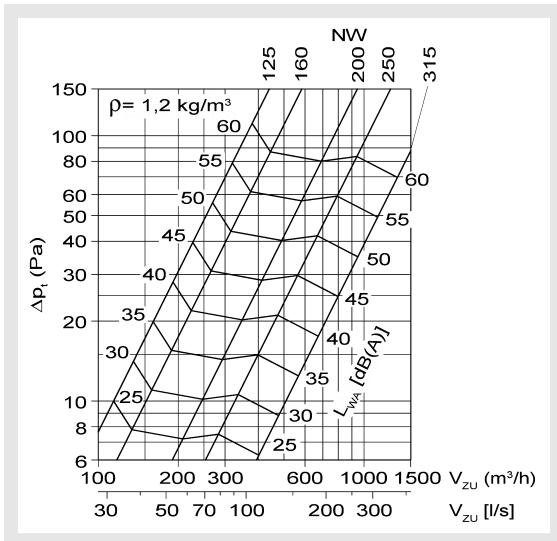
without damper / without plenum box



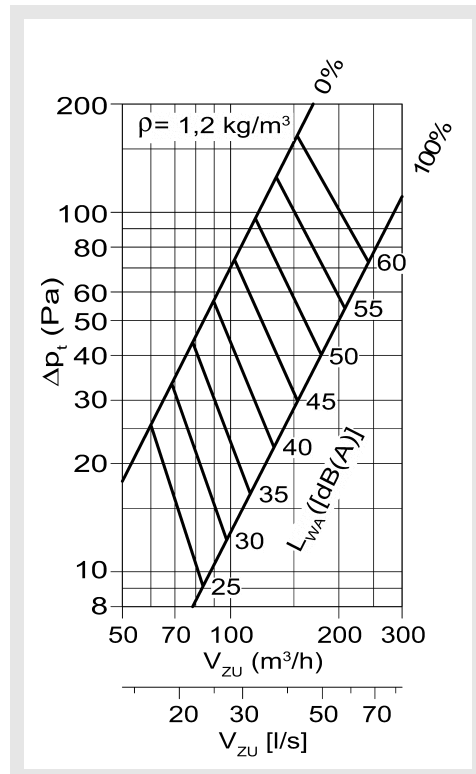
with damper (-DV) / without plenum box



DQJSLC-Z-125-315-...



DQJSLC-Z-125-...-DV



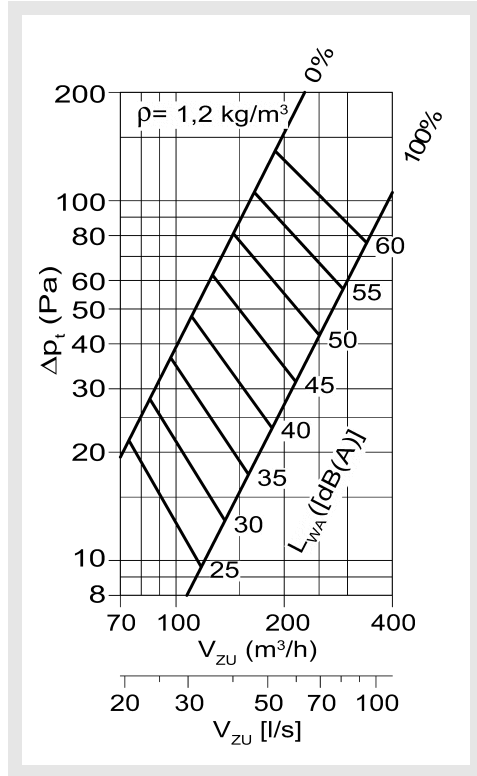
**Damper position DV:**

OPEN = 100%

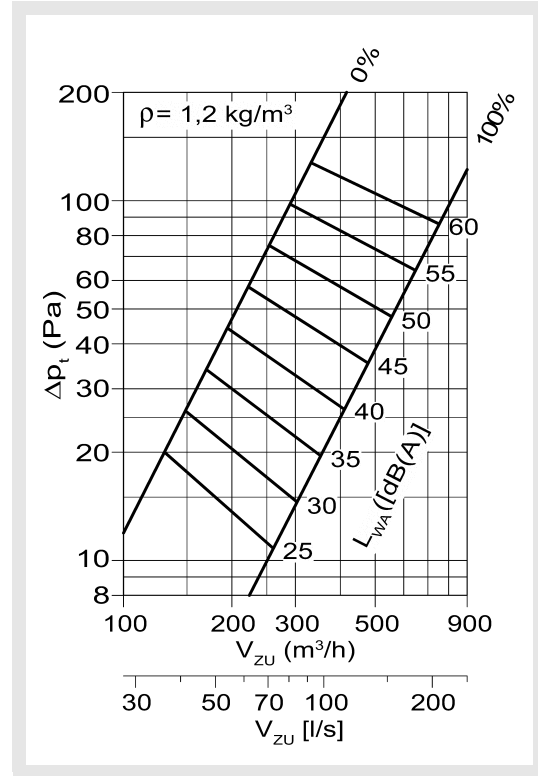
CLOSED = 0%

## Ceiling swirl diffuser DQJSLC

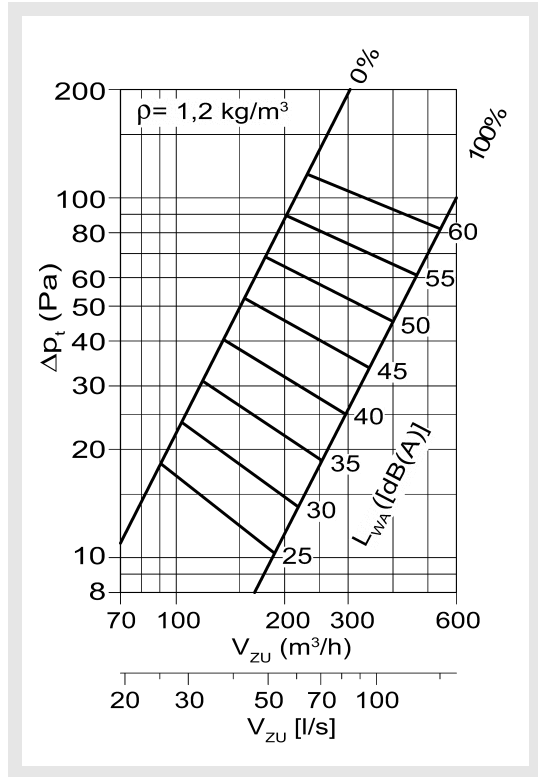
DQJSLC-Z-160-...-DV



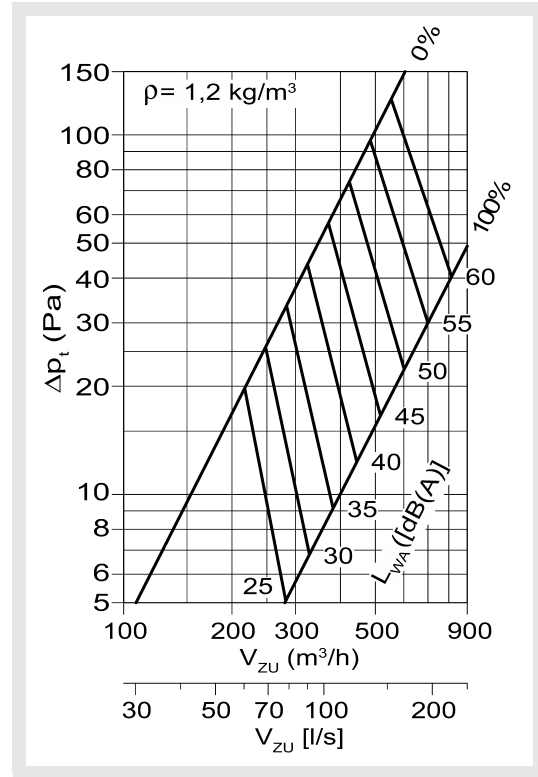
DQJSLC-Z-250-...-DV



DQJSLC-Z-200-...-DV



DQJSLC-Z-315-...-DV



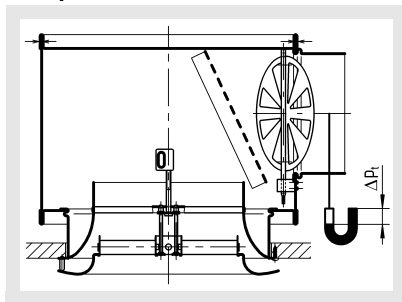
**Damper position DV:**

OPEN = 100%

CLOSED = 0%

## Ceiling swirl diffuser DQJSLC

with plenum box SK-R-14-Z-... / with damper (-DK.)

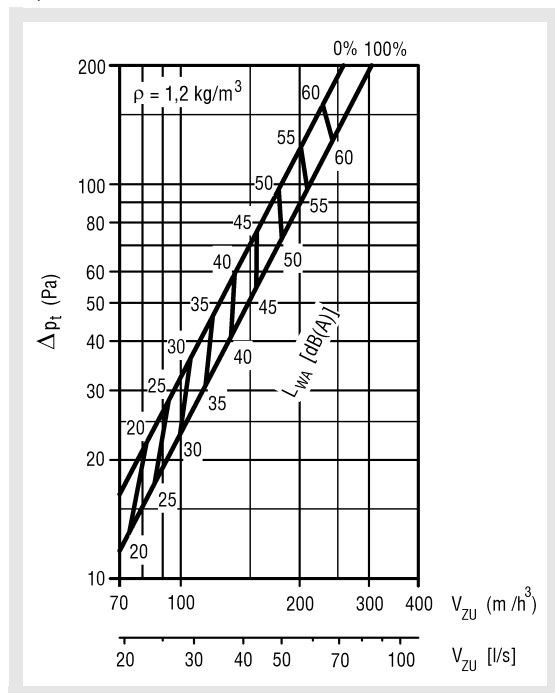


Damper position DK1 / DK2:

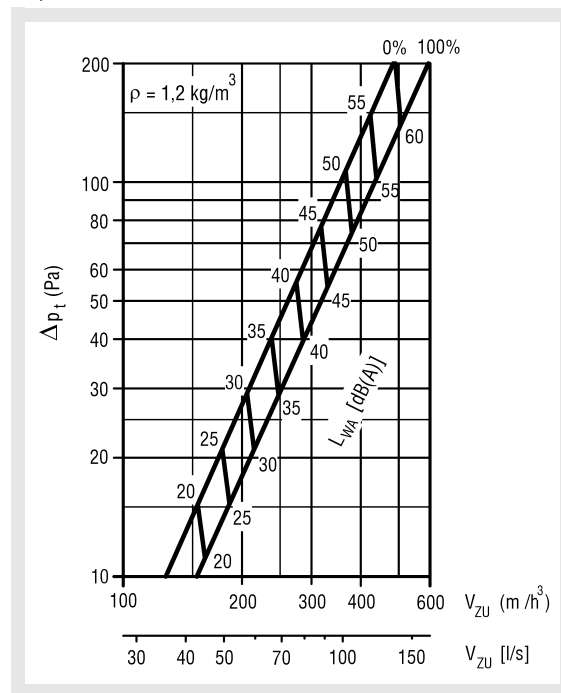
OPEN = 100%

CLOSED = 0%

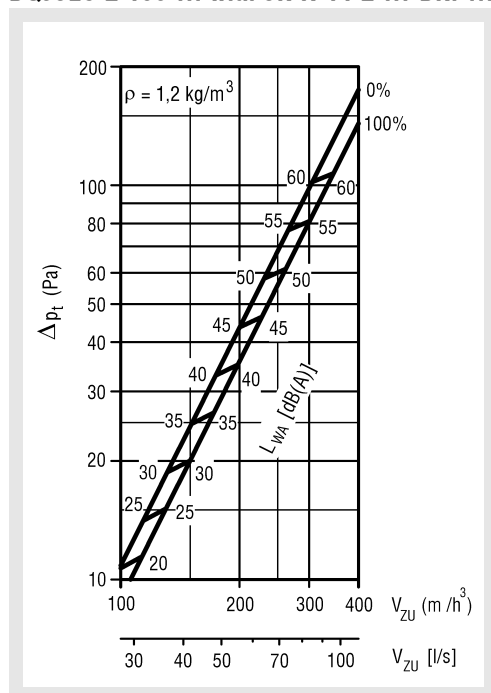
DQJSLC-Z-125-... with SK-R-14-Z-...-DK.-...



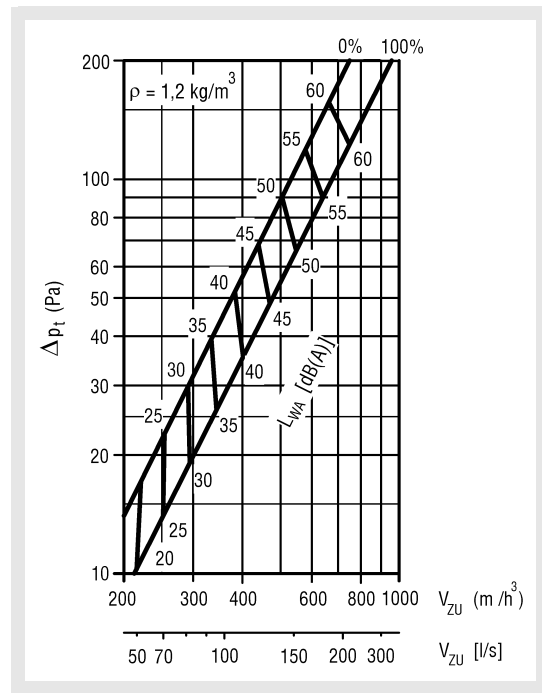
DQJSLC-Z-200-... with SK-R-14-Z-...-DK.-...



DQJSLC-Z-160-... with SK-R-14-Z-...-DK.-...

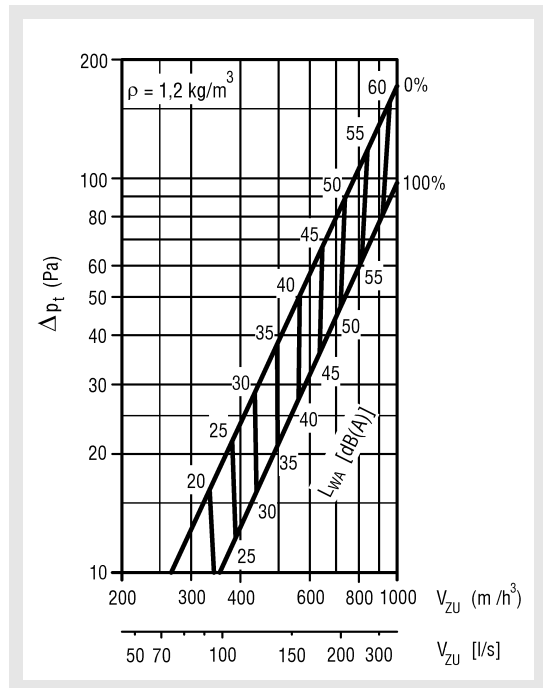


DQJSLC-Z-250-... with SK-R-14-Z-...-DK.-...



## Ceiling swirl diffuser DQJSLC

DQJSLC-Z-315-... with SK-R-14-Z-...-DK-...

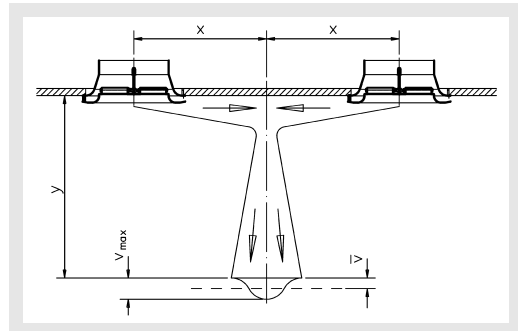


**Damper position DK1 / DK2:**

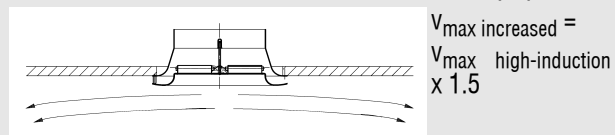
OPEN = 100%

CLOSED = 0%

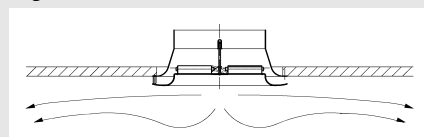
### Maximum end velocity of jet (isotherm)



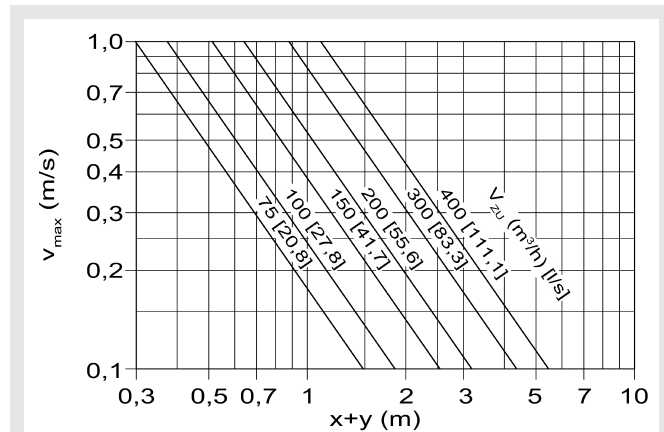
### increased horizontal multi-directional throw (-A)



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

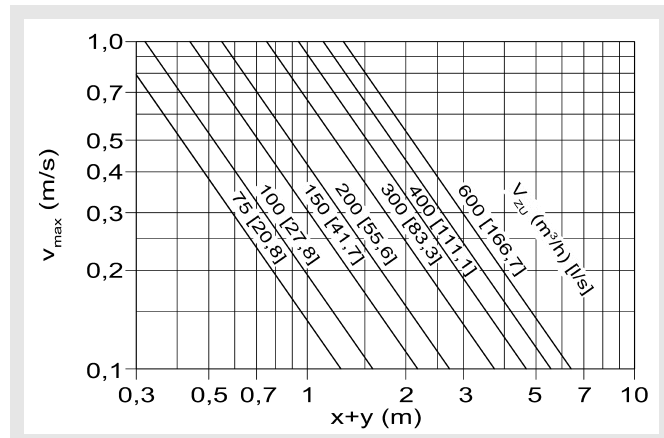


DQJSLC-Z-125-...-A...

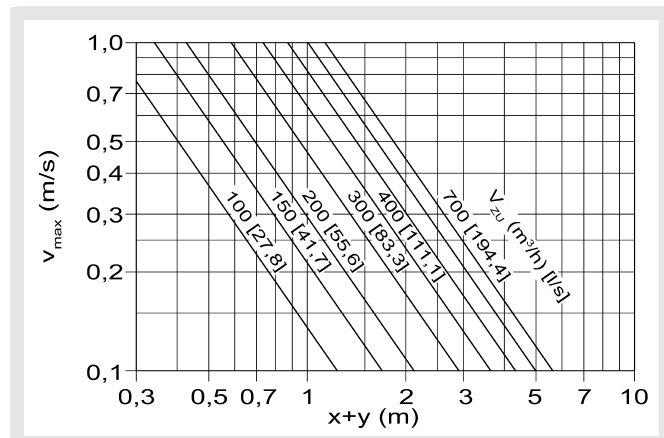


DQJSLC-Z-125-... only available with increased horizontal multi-directional throw.

DQJSLC-Z-160-...-B...

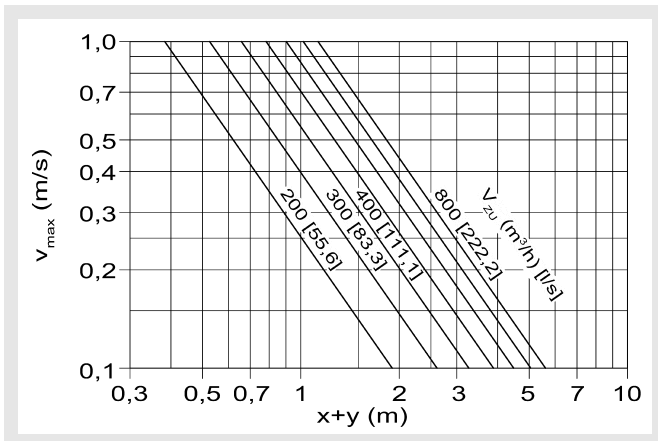


DQJSLC-Z-200-...-B...

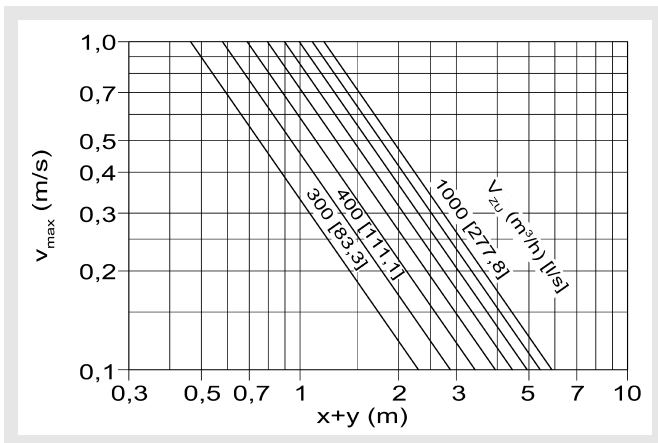


## Ceiling swirl diffuser DQJSLC

DQJSLC-Z-250-...-B-...



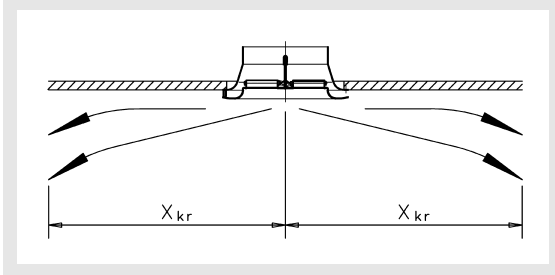
DQJSLC-Z-315-...-B-...



## Ceiling swirl diffuser DQJSLC

### Critical throw (cooling mode)

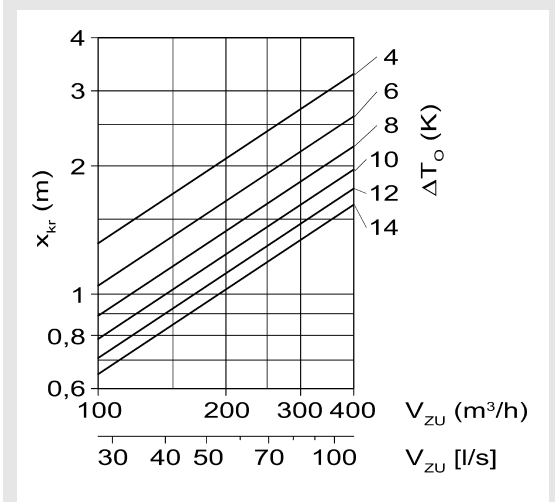
#### increased horizontal multi-directional throw (-A)



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

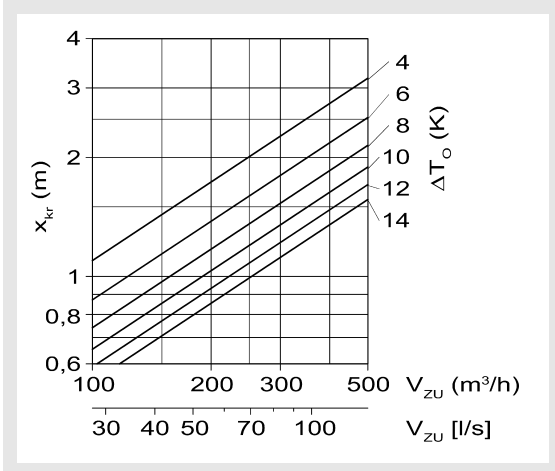
increased horizontal multi-directional throw = diagram value x 1.25

#### DQJSLC-Z-125-...-A-...

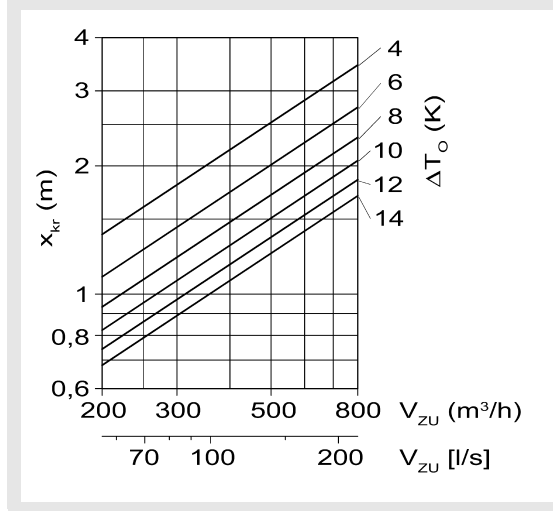


DQJSLC-Z-125-... only available with increased horizontal multi-directional throw

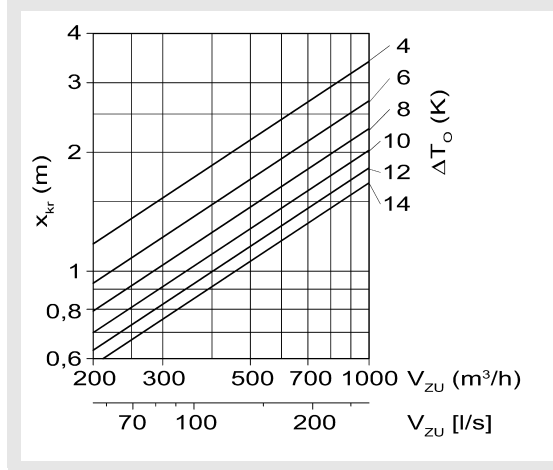
#### DQJSLC-Z-160-...-B-...



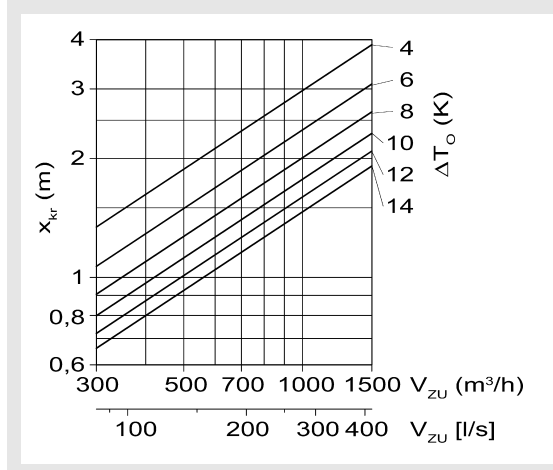
#### DQJSLC-Z-200-...-B-...



#### DQJSLC-Z-250-...-B-...

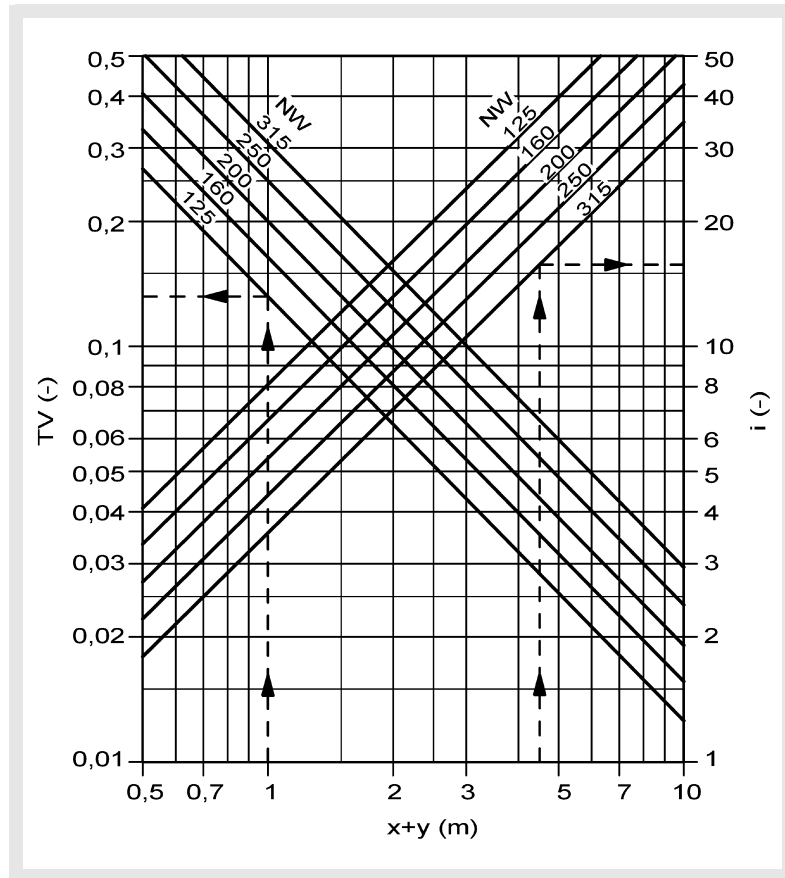


#### DQJSLC-Z-315-...-B-...



## Ceiling swirl diffuser DQJSLC

### Temperature and induction ratios



### Legend

|              |              |                                                                                                              |
|--------------|--------------|--------------------------------------------------------------------------------------------------------------|
| $V_{ZU}$     | (m³/h) [l/s] | = Supply air volume                                                                                          |
| $V_X$        | (m³/h) [l/s] | = total air jet volume at point x                                                                            |
| TV           | (-)          | = Temperature ratio ( $TV = \Delta T_X / \Delta T_0$ )                                                       |
| i            | (-)          | = Induction ratio ( $i = V_X / V_{ZU}$ )                                                                     |
| $x_{kr}$     | (m)          | = Critical jet path                                                                                          |
| $\Delta T_0$ | (K)          | = Temperature difference between supply air temperature and room temperature ( $\Delta T_0 = t_{ZU} - t_R$ ) |
| $\Delta T_X$ | (K)          | = Temperature difference at point x                                                                          |
| $t_{ZU}$     | (°C)         | = Supply air temperature                                                                                     |
| $t_R$        | (°C)         | = Room temperature                                                                                           |
| x            | (m)          | = horizontal throw                                                                                           |
| y            | (m)          | = vertical throw                                                                                             |
| x+y          | (m)          | = Horizontal + vertical throw                                                                                |
| $v_{max}$    | (m/s)        | = Maximum end velocity of jet                                                                                |
| $v_{mittl.}$ | (m/s)        | Average end velocity of jet<br>( $v_{ave} = 0.5 \times v_{max}$ )                                            |
| $\Delta p_t$ | (Pa)         | = Pressure loss                                                                                              |
| $L_{WA}$     | [dB(A)]      | = A-weighted sound power level                                                                               |
| $\rho$       | (kg/m³)      | = Density                                                                                                    |
| NW           | (mm)         | = Nominal width                                                                                              |

## Ceiling swirl diffuser DQJSLC

### Order code DQJSLC

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

| 06           | 07                | 08       | 09                   | 10     |
|--------------|-------------------|----------|----------------------|--------|
| Blade colour | Air throw pattern | Mounting | Panelled cover plate | Damper |
|              |                   |          |                      |        |
| -L9005       | -B                | -VM      | -PA000               | -D0    |

#### Sample

**DQJSLC-Z-160-SB-9010-L9005-B-VM-PA000-D0**

Ceiling swirl diffuser type DQJSLC 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

DQJSLC = 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)

##### 08 - Mounting

VM = concealed mounting (standard, available only in conjunction with SK-...)

SM = Screw mounting (only possible in conjunction with panelled cover plate, flexible duct and damper)

PV = Panelled cover plate with concealed mounting (only possible in conjunction with flexible duct or an additional damper)

##### 09 - Panelled cover plate

PA000 = without panelled cover plate (standard, not possible for -PV)

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)

##### 10 - Damper

D0 = without damper (standard)

DV = with damper (possible only for connection to flexible ducts)

## Ceiling swirl diffuser DQJSLC

### 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    | -14          | -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-14-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 DQJSLC 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)

14 = suitable for DQJSLC-...

##### 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)

##### 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 DQJSLC

### 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 DQJSLC

### Specification texts

The patented ceiling swirl diffuser type DQJSLC-... in round design with an external diffuser ring to avoid dirt deposits on the ceiling. Particularly suitable for comfort rooms and for VAV systems having variable volumetric flows (between 40 and 100%). Consisting of a perforated faceplate made of sheet steel and nozzle part made of sheet steel (sizes 125 - 250) or aluminium (size 315), both provided with a high-quality powder coating in a RAL colour (RAL 9010, white, standard), with central pivoting, aerodynamic radially fitted air deflection blades, which are individually adjustable, without any tools, from the diffuser front side without dismounting 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 significantly higher volumetric flows possible with less pressure loss, identical sound power and comparable parameters compared with swirl diffusers without perforation. Fastening by concealed mounting (-VM), made of aerodynamic aluminium profile.

Product: SCHAKO type **DQJSLC-...**

Air throw pattern:

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

Accessories:

- plenum box (SK-R-14-...), 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 dismounting 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
  - with damper (-DV, possible only for connection to flexible ducts), only possible using screw mounting (-SM) or -PV
  - Panelled cover plate (-PA...) made of sheet steel, painted to RAL 9010 (white), with screw mounting (-SM)
  - Panelled cover plate (-PA...) made of sheet steel, painted to RAL 9010 (white) with concealed mounting (-PV)