**LAQ**

Ceiling return air diffuser

**Contents**

|                                   |    |
|-----------------------------------|----|
| Overview of product versions..... | 2  |
| Function and use .....            | 2  |
| Performance data.....             | 2  |
| Field of application .....        | 2  |
| Models.....                       | 3  |
| Processing.....                   | 3  |
| Mounting .....                    | 3  |
| Accessories .....                 | 3  |
| Dimensions .....                  | 4  |
| Dimensions of accessories.....    | 7  |
| Fastening methods .....           | 8  |
| Technical data.....               | 9  |
| Legend .....                      | 9  |
| Order code LAQ .....              | 10 |
| Order code SK.....                | 11 |
| Specification text .....          | 12 |

**PERFORMANCE DATA**

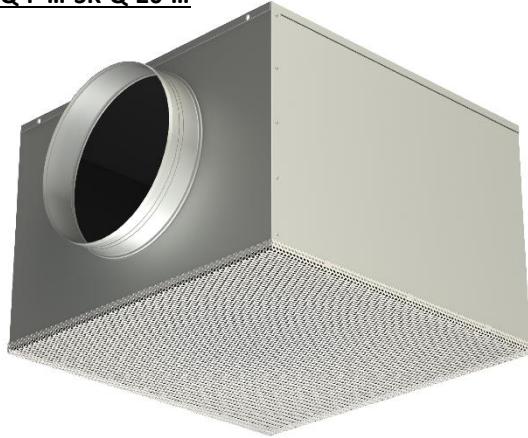
- NW 310 / 400 / 500 / 600 / 625
- Air volumes at 35 dB(A) from 350 m<sup>3</sup>/h to 1090 m<sup>3</sup>/h  
Air volumes at 35 dB(A) from 97 l/s to 303 l/s.

**SPECIAL FEATURES**

- suitable for return air only
- three models available
  - LAQ-F: Permanently mounted diffuser, with perforated faceplate, with clip mounting (-KM, non-detachable)
  - LAQ-E: Removable diffuser, with perforated faceplate, with concealed mounting (-VM) via central screw.
  - LAQ-K: Hinged diffuser, with perforated faceplate hinged on one side (click system), front frame fastened via central screw (concealed mounting -VM).

## OVERVIEW OF PRODUCT VERSIONS

### LAQ-F....-SK-Q-20...



### LAQ-E....-SK-Q-04...



### LAQ-K....-SK-Q-59...



## FUNCTION AND USE

The SCHAKO ceiling return air diffuser LAQ has been developed exclusively for use in return air systems.

The square air diffuser consists of a perforated faceplate with plenum box for extraction of the return air from the room. The return air diffuser is suitable for VVS systems with variable volumetric flows.

The faceplate consists of perforated sheet steel with high-quality powder coating in the colour RAL 9010 (white) or in other RAL colours (freely selectable). The plenum box is made of galvanised sheet steel and has fixing lugs.

The diffuser is connected to the plenum box via:

- clip mounting (-KM, non-detachable), permanently connected (only LAQ-F).
- concealed mounting (-VM), via central screw (only LAQ-E and LAQ-K).

To clean the exhaust air, LAQ-E and LAQ-K can be equipped with a filter mat (ISO Coarse 25% - ISO Coarse > 45%).

## PERFORMANCE DATA

### LAQ 310

| V <sub>AB</sub> (m <sup>3</sup> /h) | L <sub>WA</sub> [dB(A)] | Δp <sub>t Abluft</sub> (Pa) |
|-------------------------------------|-------------------------|-----------------------------|
| 290                                 | 30                      | 19                          |
| 350                                 | 35                      | 28                          |
| 400                                 | 40                      | 37                          |

### LAQ 400

| V <sub>AB</sub> (m <sup>3</sup> /h) | L <sub>WA</sub> [dB(A)] | Δp <sub>t Abluft</sub> (Pa) |
|-------------------------------------|-------------------------|-----------------------------|
| 395                                 | 30                      | 16                          |
| 480                                 | 35                      | 24                          |
| 580                                 | 40                      | 35                          |

### LAQ 500

| V <sub>AB</sub> (m <sup>3</sup> /h) | L <sub>WA</sub> [dB(A)] | Δp <sub>t Abluft</sub> (Pa) |
|-------------------------------------|-------------------------|-----------------------------|
| 680                                 | 30                      | 13                          |
| 820                                 | 35                      | 19                          |
| 990                                 | 40                      | 28                          |

### LAQ 600/625

| V <sub>AB</sub> (m <sup>3</sup> /h) | L <sub>WA</sub> [dB(A)] | Δp <sub>t Abluft</sub> (Pa) |
|-------------------------------------|-------------------------|-----------------------------|
| 920                                 | 30                      | 13                          |
| 1090                                | 35                      | 18                          |
| 1295                                | 40                      | 25                          |

Performance data without filter mat

## AIR THROW PATTERN

Ceiling, exhausting



## FIELD OF APPLICATION

Ceiling return air diffuser with perforated faceplate for the extraction of the return air

## MODELS

- LAQ-F Permanently mounted diffuser, with perforated faceplate, with clip mounting (-KM, non-detachable). Not available with filter mat.
- LAQ-E Removable diffuser, with perforated faceplate, with concealed mounting (-VM) via central screw. Can optionally be delivered with filter mat (ISO Coarse 25% - ISO Coarse > 45%).
- LAQ-K Hinged diffuser, with perforated faceplate hinged on one side (click system), front frame fastened via central screw (concealed mounting -VM). Can optionally be delivered with filter mat (ISO Coarse 25% - ISO Coarse > 45%).

## PROCESSING

### Faceplate

- Perforated sheet steel (-SB).
  - painted to the colour RAL 9010 (white) (-9010).
  - painted to a different RAL colour, freely selectable (-xxxx) (always with 4 digits).

### Front frame (only LAQ-K)

- Extruded aluminium profile, natural colour anodised (E6/EV1).
  - painted to the colour RAL 9010 (white) (-9010).
  - painted to a different RAL colour, freely selectable (-xxxx) (always with 4 digits).

### Plenum box

See accessories

**Due to the function, the ceiling return air diffuser LAQ is only available with plenum box.**

## MOUNTING

### Concealed mounting (-VM)

- only possible for LAQ-E and LAQ-K.
- fastened to the plenum box by means of the central screw M6 (hexagon socket head cap screw, according to DIN EN ISO 4762).

### Clip mounting (-KM)

- only possible for LAQ-F.
- fastened to the plenum box with steel clips.

## ACCESSORIES

### Filter mat

- without filter mat (-G0) (LAQ-F only available without filter mat)
- with filter mat, made of synthetic fibres (fibre fleece with non-breaking fibres):
  - filter class ISO Coarse 25% - 35% (-G2)
  - filter class ISO Coarse 35% - 45% (-G3)
  - filter class ISO Coarse > 45% (-G4)

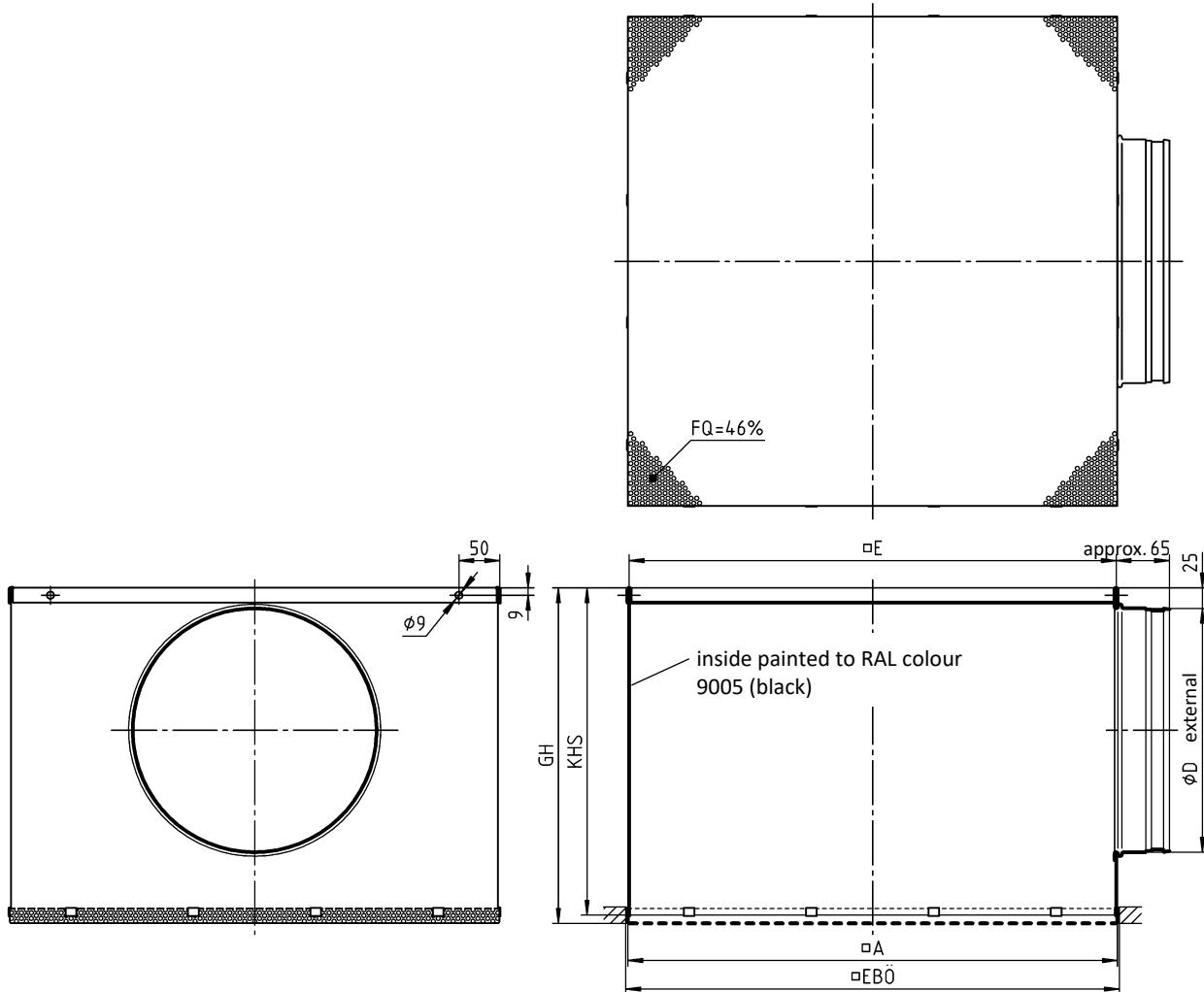
### Plenum box (-SK-Q...)

Square design, made of galvanised sheet steel (-SV, standard), inside painted to the RAL colour 9005 (black), with fixing lugs, in the nominal sizes NW 310 to 625.

- Air diffuser:
  - suitable for LAQ-F (-20).
  - suitable for LAQ-E (-04).
  - suitable for LAQ-K (-59).
- Type of air: return air (-A).
- Fastening:
  - concealed mounting (-VM) (only available for LAQ-E and LAQ-K).
  - clip mounting (-KM) (only available for LAQ-F). The ceiling air diffuser is permanently fastened to the plenum box with steel clips.
- Damper:
  - without damper (-DK0) (standard).
  - with damper (-DK1), made of galvanised sheet steel, in the plenum box housing, adjustable, for simple air volume regulation.
  - with damper (-DK2), same as DK1 but with cable-operated adjustment, with spigot position from above only (-S0) (not possible for LAQ-F).
- Rubber lip seal:
  - without rubber lip seal (-GD0) (standard).
  - with rubber lip seal (-GD1) made of special rubber, at the connection spigot.
- Volumetric flow meter:
  - Without volumetric flow meter (-VME0) (standard).
  - With volumetric flow meter (-VME1), holder made of galvanised sheet steel, measuring sensor made of plastic, connections made of aluminium.
- ROB version:
  - Without ROB version (-ROB0) (standard).
  - With ROB version (-ROB1). Removable diffuser plate, damper and volumetric flow meter (not possible for LAQ-F).
- Insulation:
  - Without insulation (-I0)
  - with internal insulation (-Ii), thermal insulation inside the plenum box.
  - with external insulation (-Ia), thermal insulation at the outside of the plenum box.
- Height of plenum box:
  - Standard height of plenum box (-KHS).
  - Height of plenum box in mm, can be freely selected (-xxx) (minimum height [KHS] with spigot position S1 / S2 / S3 / S5 = spigot diameter + 102 mm, but at least 200 mm, minimum height [KHS] with spigot position S0 at least 200 mm) (always with 3 digits).
- Spigot diameter:
  - Standard spigot diameter (-SDS).
  - Spigot diameter in mm, freely selectable (-xxx) (always with 3 digits).
- Spigot position:
  - Spigot from above (-S0).
  - 1 lateral spigot on the box (-S1) (standard).
  - 2 lateral spigots, offset by 90° (-S2).
  - 2 lateral spigots, offset by 180° (-S3).
  - 2 spigots arranged next to each other (-S5).

## DIMENSIONS

LAQ-F...-SK-Q-20...



Available sizes LAQ-F...-SK-Q-20...

| NW  | □A  | □E  | φD  | φD <sub>max</sub> for S5 | KHS | GH  | □EBÖ |
|-----|-----|-----|-----|--------------------------|-----|-----|------|
| 310 | 308 | 305 | 198 | 98                       | 300 | 310 | 310  |
| 400 | 398 | 395 | 198 | 138                      | 300 | 310 | 400  |
| 500 | 498 | 495 | 248 | 198                      | 350 | 360 | 500  |
| 600 | 598 | 595 | 298 | 248                      | 400 | 410 | 600  |
| 625 | 623 | 620 | 298 | 248                      | 400 | 410 | 625  |

all dimensions in mm

KHS = Standard height

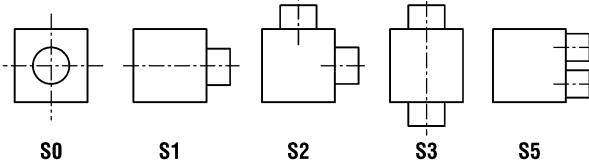
of plenum box

EBÖ = installation opening

- Minimum height [KHS] with spigot position S0 at least 200 mm.
- Minimum height [KHS] with spigot position S1 / S2 / S3 / S5 = spigot diameter + 102 mm, but at least 200 mm.

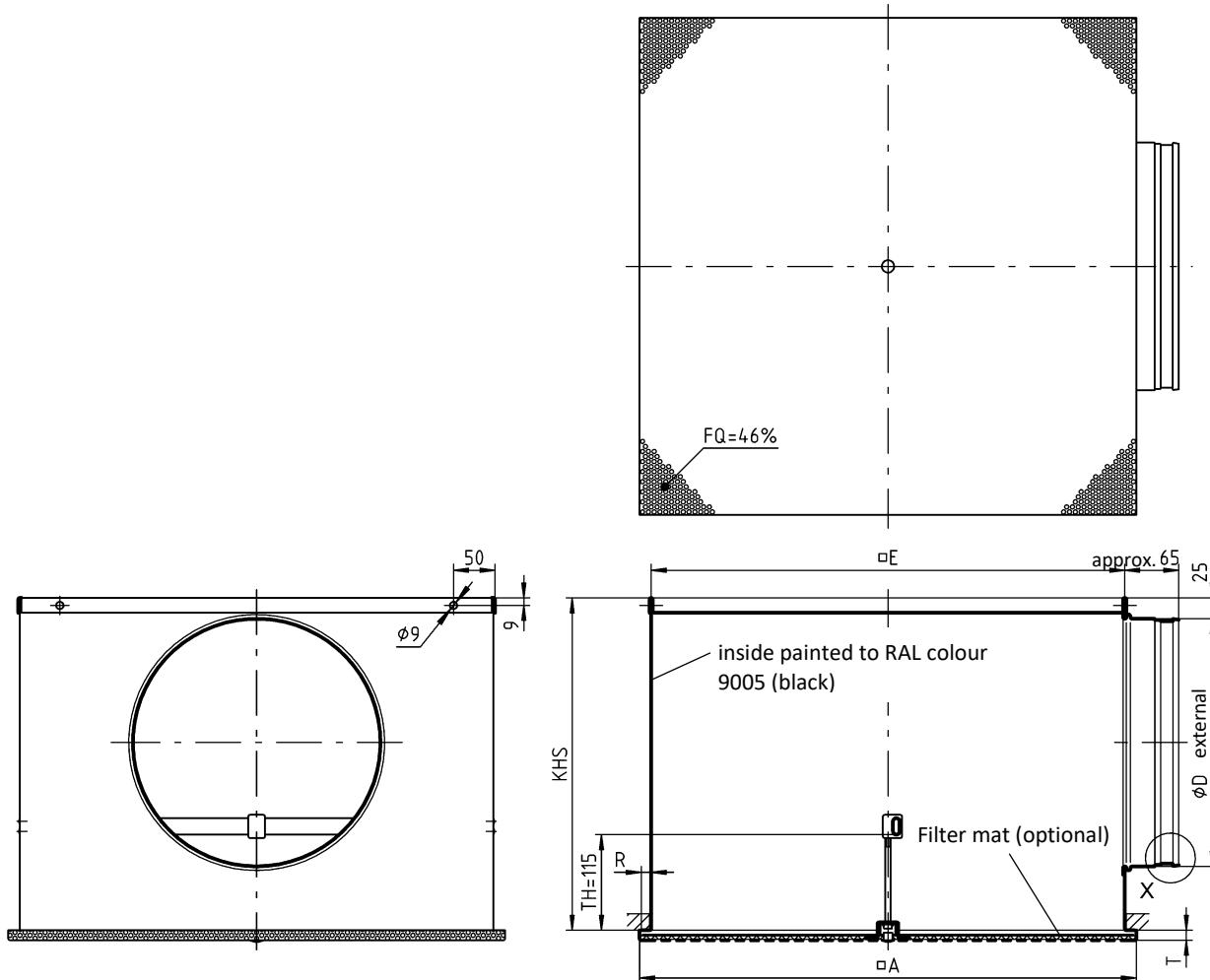
**Due to the function, the ceiling return air diffuser LAQ is only available with plenum box.**

### Spigot position



See page 7 for detail X.

LAQ-E-...-SK-Q-04-...



Available sizes LAQ-E-...-SK-Q-04...

| NW  | □A  | □E  | KHS | øD  | øD <sub>max</sub> for S5 | R  | T  |
|-----|-----|-----|-----|-----|--------------------------|----|----|
| 310 | 308 | 290 | 300 | 198 | 98                       | 8  | 12 |
| 400 | 398 | 370 | 300 | 198 | 138                      | 12 | 12 |
| 500 | 498 | 470 | 350 | 248 | 198                      | 12 | 12 |
| 600 | 598 | 570 | 400 | 298 | 248                      | 12 | 12 |
| 625 | 623 | 570 | 400 | 298 | 248                      | 24 | 12 |

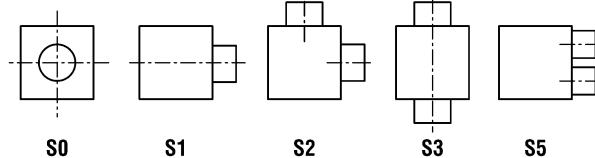
all dimensions in mm  
of plenum box

KHS = Standard height

- Minimum height [KHS] with spigot position S0 at least 200 mm.
- Minimum height [KHS] with spigot position S1 / S2 / S3 / S5 = spigot diameter + 102 mm, but at least 200 mm.

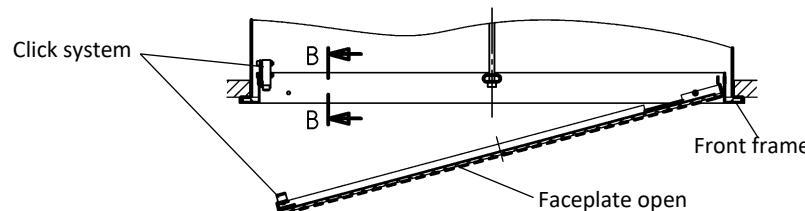
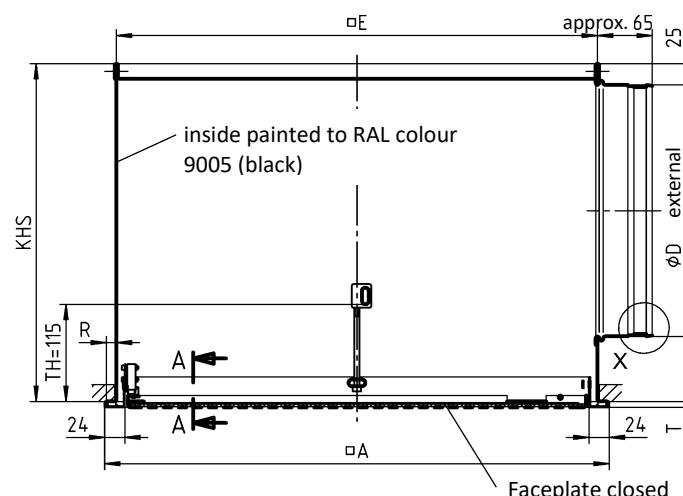
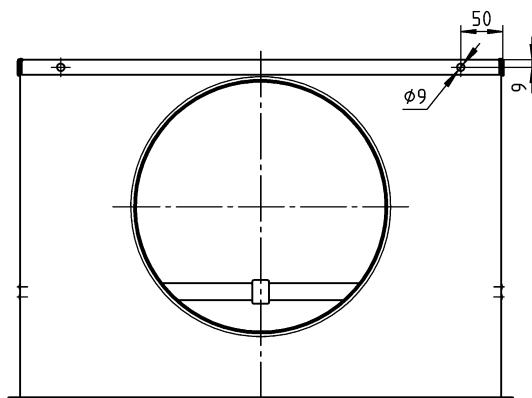
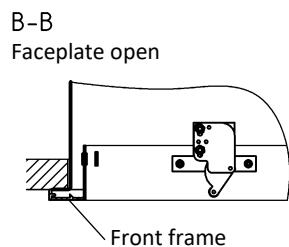
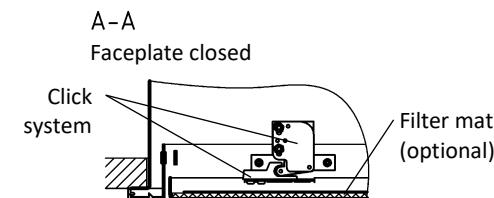
**Due to the function, the ceiling return air diffuser LAQ is only available with plenum box.**

#### Spigot position



See page 7 for detail X.

LAQ-K-...-SK-Q-59-...



Available sizes LAQ-K-...-SK-Q-59-...

| NW  | □A  | □E  | KHS | ØD  | ØD <sub>max</sub> for S5 | R  | T |
|-----|-----|-----|-----|-----|--------------------------|----|---|
| 310 | 308 | 290 | 300 | 198 | 98                       | 8  | 7 |
| 400 | 398 | 370 | 300 | 198 | 138                      | 12 | 7 |
| 500 | 498 | 470 | 350 | 248 | 198                      | 12 | 7 |
| 600 | 598 | 570 | 400 | 298 | 248                      | 12 | 7 |
| 625 | 623 | 595 | 400 | 298 | 248                      | 12 | 7 |

all dimensions in mm

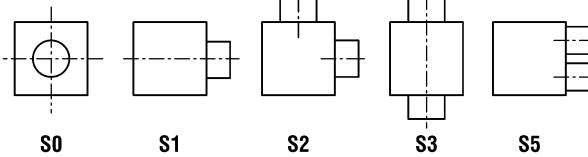
KHS = Standard height of plenum box

- Minimum height [KHS] with spigot position S0 at least 200 mm.
- Minimum height [KHS] with spigot position S1 / S2 / S3 / S5 = spigot diameter + 102 mm, but at least 200 mm.

Due to the function, the ceiling return air diffuser LAQ is only available with plenum box.

Construction subject to change  
No return possible

Spigot position



See page 7 for detail X.

## DIMENSIONS OF ACCESSORIES

### Damper (-DK0/-DK1/-DK2), for SK-Q-...

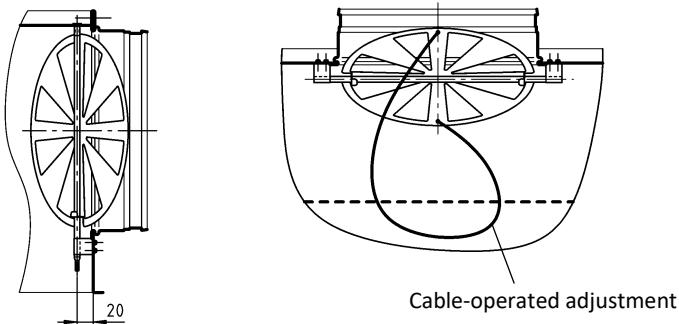
- without damper (-DK0) (standard).
- with damper (-DK1) (for spigot position -S1/-S2/-S3/-S5).
- with damper and cable-operated adjustment (-DK2) (for spigot position -S0).

#### DK1:

Spigot position -S1/-S2/-S3/-S5

#### DK2:

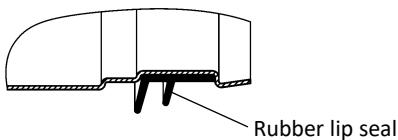
Spigot position -S0  
(not possible for LAQ-F)



### Rubber lip seal (-GD0/-GD1), for SK-Q-...

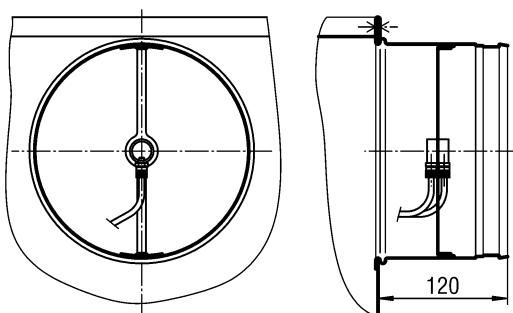
- without rubber lip seal (-GD0) (standard).
- with rubber lip seal (-GD1).

#### Detail X



### Volumetric flow meter (-VME0/-VME1), for SK-Q-...

- Without volumetric flow meter (-VME0) (standard).
- with volumetric flow meter (-VME1).



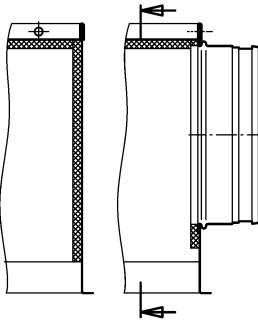
### ROB version (-ROB0/-ROB1), for SK-Q-...

- Without ROB version (-ROB0) (standard).
- With ROB version (-ROB1). Removable diffuser plate, damper and volumetric flow meter (not possible for LAQ-F).

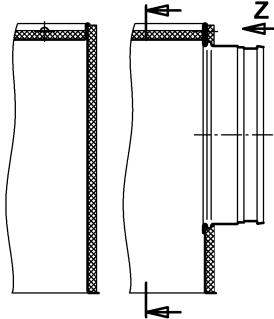
### Insulation (-I0/-li/-la), for SK-Q-...

- without insulation (-I0) (standard)
- with internal insulation (-li)
- with external insulation (-la)

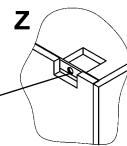
#### internal (-li)



#### external (-la)



External insulation recessed  
in the area of the fixing lugs.

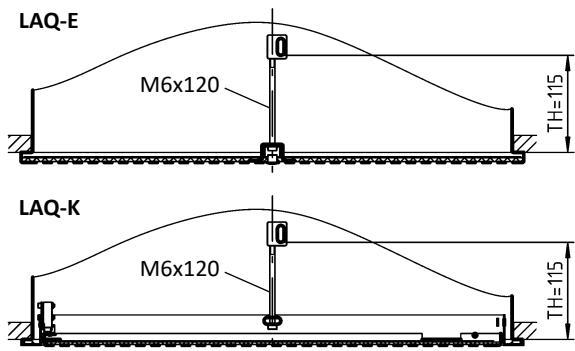


## FASTENING METHODS

### Concealed mounting (-VM)

Only possible for LAQ-E and LAQ-K.

In concealed mounting (-VM), the ceiling return air diffuser is fastened to the plenum box by means of the central screw M6 (with hexagon socket head cap screw, according to DIN EN ISO 4762).

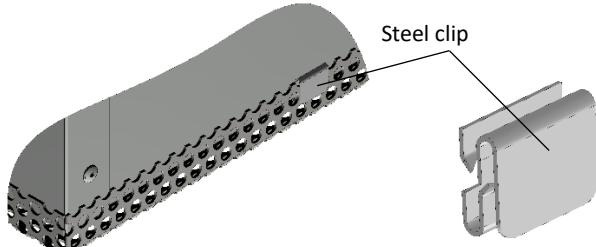


### Clip mounting (-KM)

Only possible for LAQ-F.

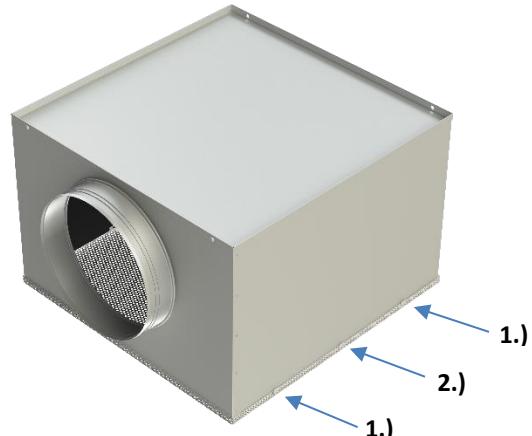
The clip mounting (-VM) is used to fasten the ceiling return air diffuser permanently to the plenum box with steel clips.

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



#### Number of steel clips:

|                  |   |                        |
|------------------|---|------------------------|
| NW 310 to NW 600 | = | 2 steel clips per side |
| NW 625           | = | 3 steel clips per side |



- 1.) Position NW 310 to NW 600
- 2.) Position only for NW 625

## TECHNICAL DATA

### Filter mat pressure loss

Initial pressure loss at 1m/s:

G2 – 14 Pa

G3 – 19 Pa

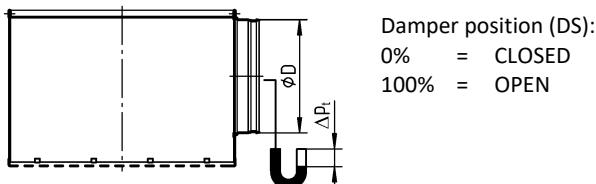
G4 – 19 Pa

Recommended end pressure loss 250 Pa.

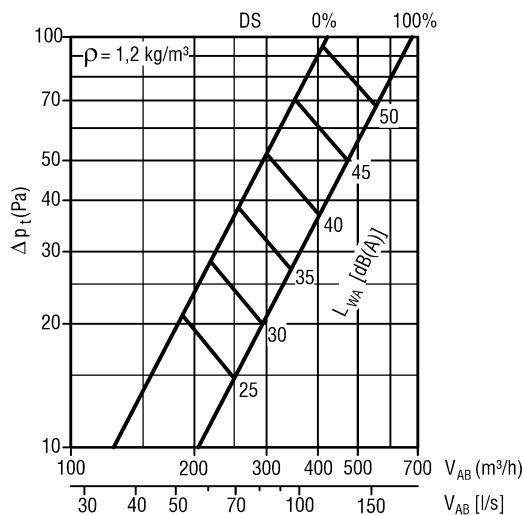
### Pressure loss and noise level (without filter mat)

#### LAQ-...-SK-Q-...-A-...

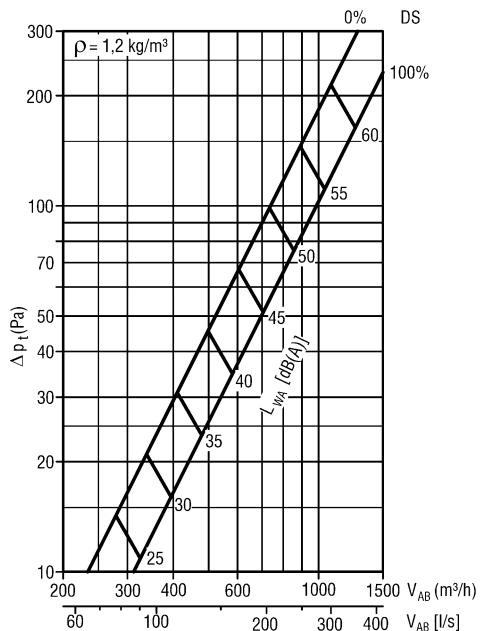
for return air, with plenum box



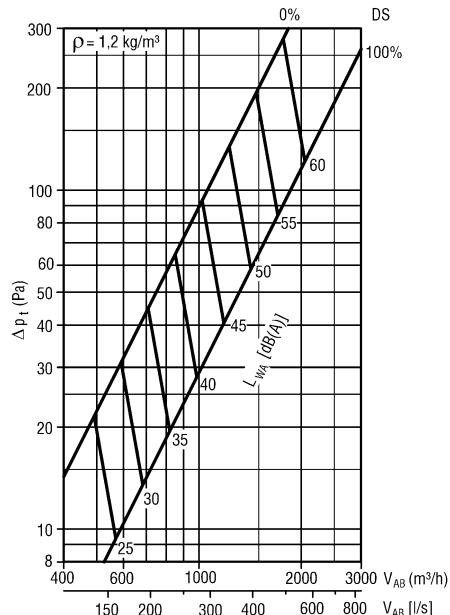
#### LAQ-...-310-...



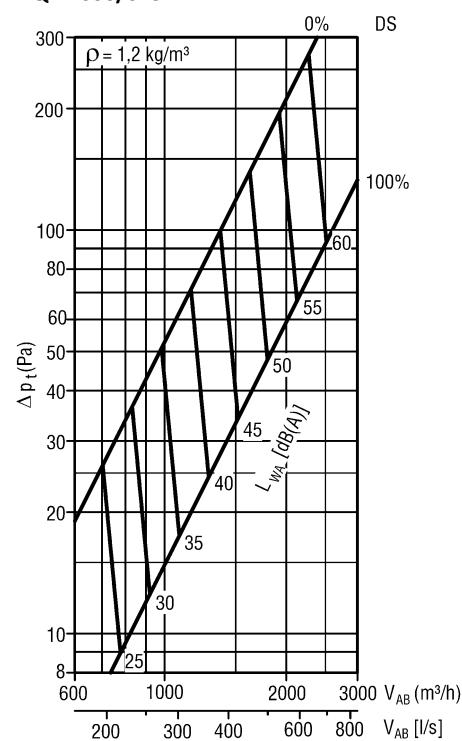
#### LAQ-...-400-...



### LAQ-...-500-...



### LAQ-...-600/625-...



### LEGEND

|              |   |  |
|--------------|---|--|
| $V_{AB}$     | ( $\text{m}^3/\text{h}$ ) [ $\text{l}/\text{s}$ ] | = return air volumetric flow                               |
| $\Delta p_t$ | (Pa)  | = Pressure loss  |
| $L_{WA}$     | [dB(A)]   | = A-weighted sound power level ( $L_{WA} = L_{WA1} + KF$ ) |
| $L_{WA1}$    | [dB(A)]   | = A-weighted sound power level relative to one parameter   |
| KF           | (-)   | = Correction factor  |
| $\rho$       | ( $\text{kg}/\text{m}^3$ )                        | = Density  |
| DS           | (-)   | = Damper position  |
| NW           | (mm)  | = Nominal size   |

## ORDER CODE LAQ

| 01             | 02    | 03           | 04       | 05    | 06         |
|----------------|-------|--------------|----------|-------|------------|
| Type           | Model | Nominal size | Material | Paint | Filter mat |
| <b>Example</b> |       |              |          |       |            |
| LAQ            | -F    | -500         | -SB      | -9010 | -G0        |

### Sample

LAQ-F-500-SB-9010-G0

Ceiling return air diffuser LAQ | permanently mounted diffuser, with perforated faceplate, with clip mounting | NW 500 | faceplate made of painted sheet steel | painted to RAL 9010 (white) | without filter mat

## ORDER DETAILS

### 01 - Type

LAQ = Ceiling return air diffuser LAQ

### 02 - Model

- F = Permanently mounted diffuser (standard), with perforated faceplate, with clip mounting (-KM, non-detachable) (not available with filter mat)
- E = Removable diffuser, with perforated faceplate, with concealed mounting (-VM) via central screw.
- K = Hinged diffuser, with perforated faceplate hinged on one side (click system), front frame fastened via central screw (concealed mounting -VM).

### 03 - Nominal size

- 310 = NW 310
- 400 = NW 400
- 500 = NW 500
- 600 = NW 600
- 625 = NW 625

### 04 - Material

- SB = sheet steel, painted (standard)

### 05 – Paint

- 9010 = RAL colour white (standard).
- xxxx = RAL colour can be freely selected (specify colour)  
(always with 4 digits).

### 06 - Filter mat (not for LAQ-F)

- G0 = without filter mat (standard) (LAQ-F only available without filter mat)
- G2 = with filter mat - filter class ISO Coarse 25% - 35%
- G3 = with filter mat - filter class ISO Coarse 35% - 45%
- G4 = with filter mat - filter class ISO Coarse > 45%

## ORDER CODE SK

| 01             | 02    | 03           | 04          | 05           | 06        | 07       | 08     |
|----------------|-------|--------------|-------------|--------------|-----------|----------|--------|
| Type           | Model | Air diffuser | Type of air | Nominal size | Fastening | Material | Damper |
| <b>Example</b> |       |              |             |              |           |          |        |
| SK             | -Q    | -20          | -A          | -500         | -KM       | -SV      | -DK1   |

| 09              | 10                    | 11          | 12         | 13                   | 14              | 15              |
|-----------------|-----------------------|-------------|------------|----------------------|-----------------|-----------------|
| Rubber lip seal | Volumetric flow meter | ROB version | Insulation | Height of plenum box | Spigot diameter | Spigot position |
| <b>Example</b>  |                       |             |            |                      |                 |                 |
| -GD1            | -VME0                 | -ROBO       | -I0        | -KHS                 | -SDS            | -S1             |

**Sample**

SK-Q-20-A-500-KM-SV-DK1-GD1-VME0-ROBO-I0-KHS-SDS-S1

Plenum box, square design I for square air diffusers | air diffuser LAQ-F | return air | NW 500 | clip mounting | galvanised sheet steel | with damper | with rubber lip seal | without volumetric flow meter | without ROB model | without insulation | standard height of plenum box | standard spigot diameter | 1 lateral spigot on the box

## ORDER DETAILS

**01 - Type**

SK = plenum box, square design

**09 - Rubber lip seal**

GD0 = without rubber lip seal (standard).

GD1 = with rubber lip seal.

**02 - Model**

Q = for square air diffusers

**10 - Volumetric flow meter**

VME0 = without volumetric flow meter (standard).

VME1 = with volumetric flow meter.

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

20 = suitable for LAQ-F

**11 - ROB version**

04 = suitable for LAQ-E

ROBO = without ROB version (standard).

59 = suitable for LAQ-K

ROB1 = with ROB model (not possible for LAQ-F).

**04 - Type of air**

A = Return air (standard) (inside painted to RAL colour 9005 [black]).

**12 - Insulation**

I0 = without box insulation (standard)

**05 - Nominal size**

Ii = with box insulation inside

310 = NW 310

Ia = with box insulation outside

400 = NW 400

**13 - Height of plenum box**

500 = NW 500

KHS = standard height of plenum box

600 = NW 600

xxx = Height of plenum box in mm, can be freely selected

625 = NW 625

(minimum height [KHS] with spigot position S1 / S2 /

S3 / S5 = spigot diameter + 102 mm, but at least 200

mm, minimum height [KHS] with spigot position S0 at least 200 mm) (always with 3 digits).

## SPECIFICATION TEXT

Perforated return air diffuser for use in return air systems. The diffusor is suitable for extraction of the room exhaust air. The ceiling return air diffuser is suitable for VVS systems with variable volumetric flows.

- Permanently mounted diffuser, with perforated faceplate made of sheet steel (-SB) painted to RAL 9010 (white, -9010) or to another freely selectable RAL colour (-xxxx). With clip mounting (-KM, non-detachable).

Not available or not suitable for use with filter mat.

Product: SCHAKO type LAQ-F-...

- Removable diffuser, with perforated faceplate made of sheet steel (-SB) painted to RAL 9010 (white, -9010) or to another freely selectable RAL colour (-xxxx). With concealed mounting (-VM), via central screw.

Can optionally be delivered with filter mat (ISO Coarse 25% - ISO Coarse > 45%).

Product: SCHAKO type LAQ-E-...

- Hinged diffuser, with perforated faceplate hinged on one side (click system), made of sheet steel (-SB) painted to RAL 9010 (white, -9010) or to another freely selectable RAL colour (-xxxx). Front frame made of extruded aluminium profiles in natural colour anodised (E6/EV1), painted to RAL 9010 (white, -9010) or to another freely selectable RAL colour (-xxxx). Front frame fastened via central screw (concealed mounting -VM).

Can optionally be delivered with filter mat (ISO Coarse 25% - ISO Coarse > 45%).

Product: SCHAKO type LAQ-K-...

### Nominal size: NW 310 to NW 625

**Due to the function, the ceiling return air diffuser LAQ is only available with plenum box.**

#### Accessories:

##### Filter mat:

- without filter mat (-G0, standard) (LAQ-F only available without filter mat)
- with filter mat, made of synthetic fibres (fibre fleece with non-breaking fibres):
  - filter class ISO Coarse 25% - 35% (-G2)
  - filter class ISO Coarse 35% - 45% (-G3)
  - filter class ISO Coarse > 45% (-G4)

Plenum box (-SK-Q-...), square design, made of galvanised sheet steel (-SV, standard), inside painted to RAL colour 9005 (black), with fixing lugs, in the nominal sizes NW 310 to 625.

##### -- Air diffuser:

- suitable for LAQ-F (-20).
- suitable for LAQ-E (-04).
- suitable for LAQ-K (-59).

##### -- Type of air: return air (-A).

#### -- Fastening:

- concealed mounting (-VM) (only available for LAQ-E and LAQ-K).
- clip mounting (-KM) (only available for LAQ-F). The ceiling air diffuser is permanently fastened to the plenum box with steel clips.

#### -- Damper:

- without damper (-DK0) (standard).
- with damper (-DK1), made of galvanised sheet steel, in the plenum box housing, adjustable, for simple air volume regulation.
- with damper (-DK2), same as DK1 but with cable-operated adjustment, with spigot position from above only (-SO) (not possible for LAQ-F)

#### -- Rubber lip seal:

- without rubber lip seal (-GD0) (standard).
- with rubber lip seal (-GD1) made of special rubber, at the connection spigot.

#### -- Volumetric flow meter:

- Without volumetric flow meter (-VME0) (standard).
- With volumetric flow meter (-VME1), holder made of galvanised sheet steel, measuring sensor made of plastic, connections made of aluminium.

#### -- ROB version:

- Without ROB version (-ROB0) (standard).
- With ROB version (-ROB1). Removable diffuser plate, damper and volumetric flow meter (not possible for LAQ-F).

#### -- Insulation:

- Without insulation (-I0)
- with internal insulation (-Ii), thermal insulation inside the plenum box.
- with external insulation (-Ia), thermal insulation at the outside of the plenum box.

#### -- Height of plenum box:

- Standard height of plenum box (-KHS).
- Height of plenum box in mm, can be freely selected (-xxx) (minimum height [KHS] with spigot position S1 / S2 / S3 / S5 = spigot diameter + 102 mm, but at least 200 mm, minimum height [KHS] with spigot position SO at least 200 mm) (always with 3 digits).

#### -- Spigot diameter:

- Standard spigot diameter (-SDS).
- Spigot diameter in mm, freely selectable (-xxx) (always with 3 digits).

#### -- Spigot position:

- Spigot from above (-SO).
- 1 lateral spigot on the box (-S1) (standard).
- 2 lateral spigots, offset by 90° (-S2).
- 2 lateral spigots, offset by 180° (-S3).
- 2 spigots arranged next to each other (-S5).