

## 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

$V_{AB}$ (m <sup>3</sup> /h)	$L_{WA}$ [dB(A)]	$\Delta p_{tAbluft}$ (Pa)
290	30	19
350	35	28
400	40	37

### LAQ 400

$V_{AB}$ (m <sup>3</sup> /h)	$L_{WA}$ [dB(A)]	$\Delta p_{tAbluft}$ (Pa)
395	30	16
480	35	24
580	40	35

### LAQ 500

$V_{AB}$ (m <sup>3</sup> /h)	$L_{WA}$ [dB(A)]	$\Delta p_{tAbluft}$ (Pa)
680	30	13
820	35	19
990	40	28

### LAQ 600/625

$V_{AB}$ (m <sup>3</sup> /h)	$L_{WA}$ [dB(A)]	$\Delta p_{tAbluft}$ (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)

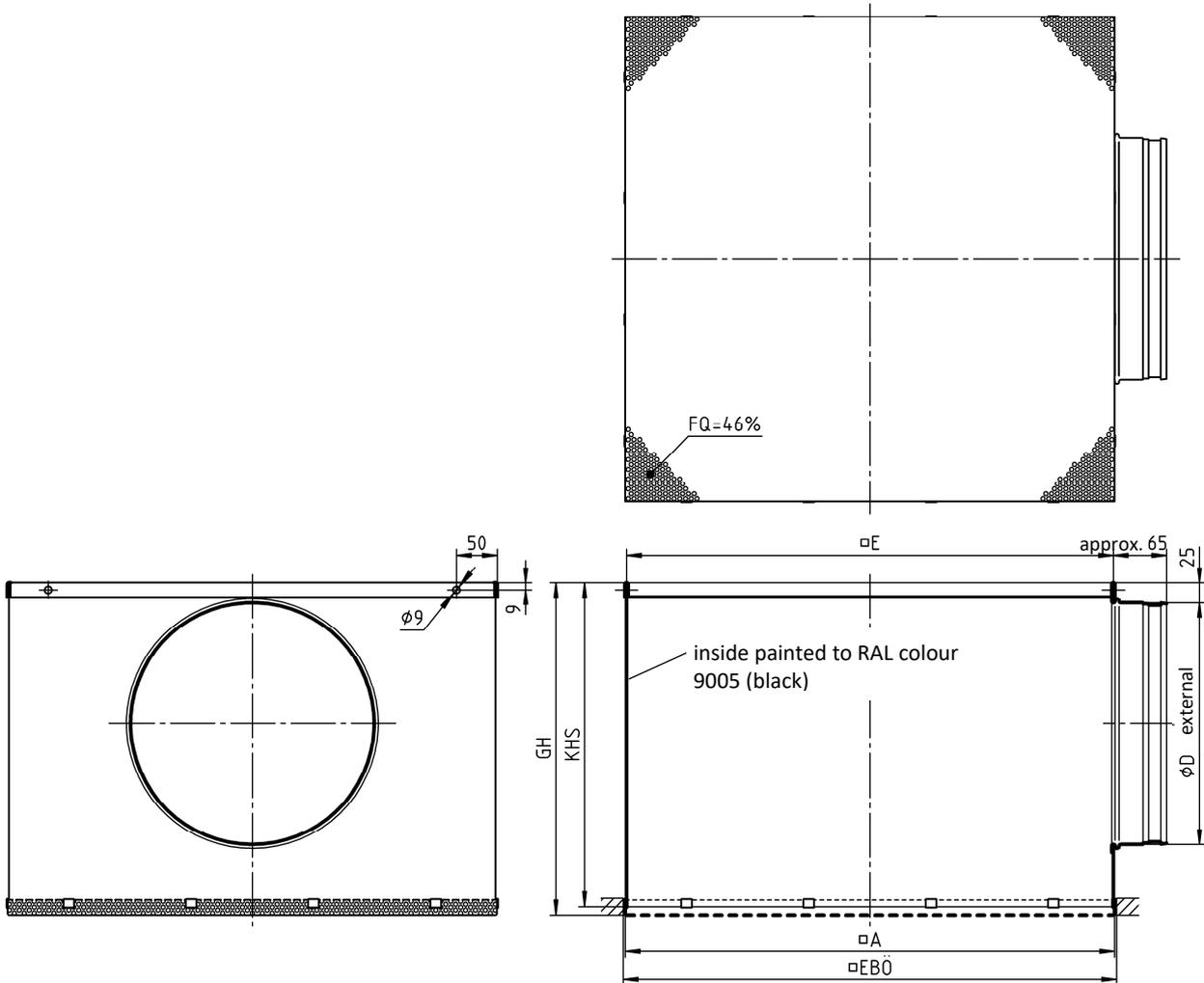
### Plenum box (-SK-Q-...)

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	øD	øD <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  
 of plenum box

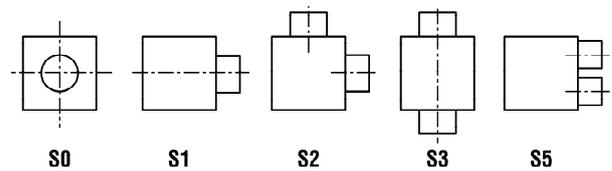
KHS = Standard height

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.

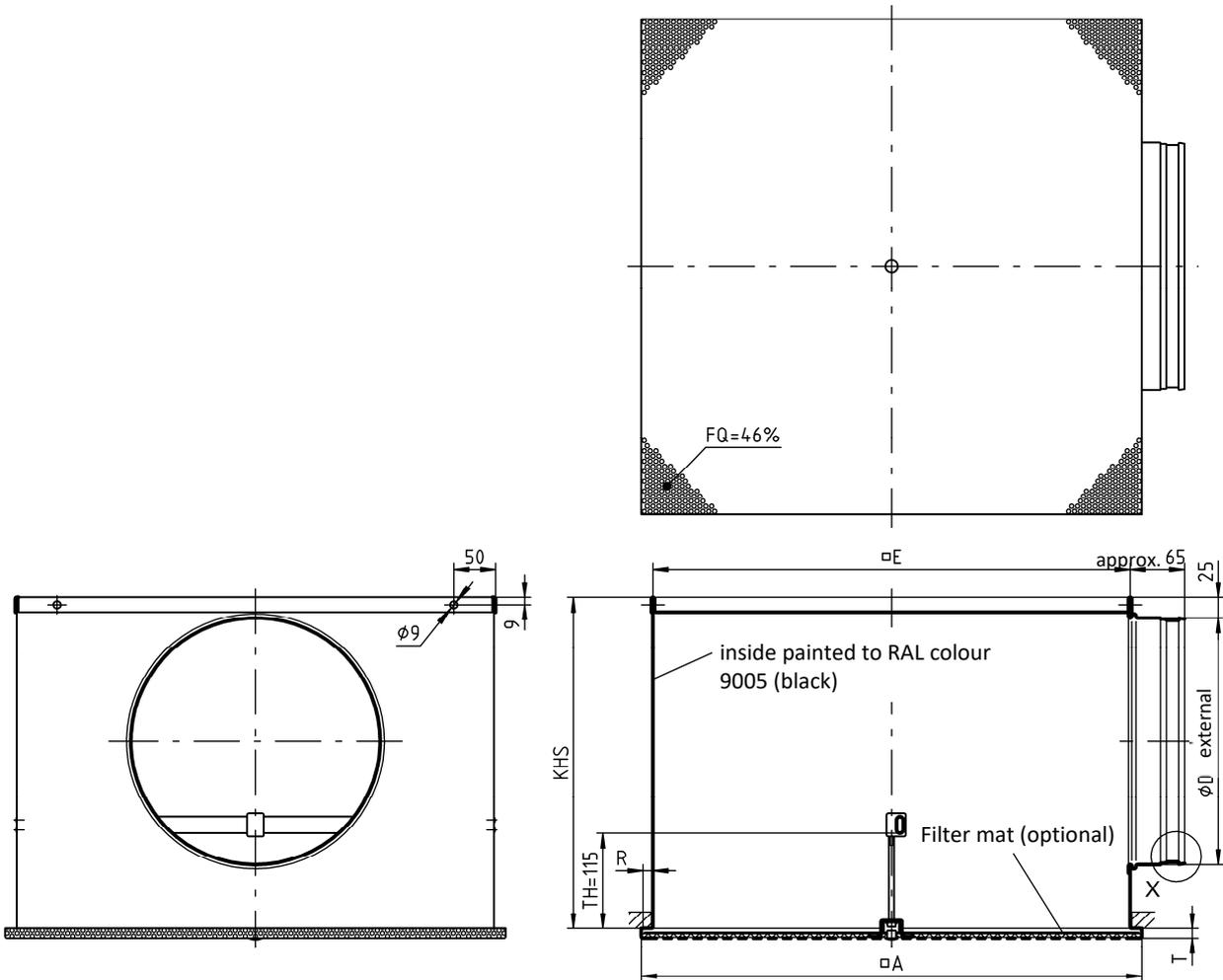
**Due to the function, the ceiling return air diffuser LAQ is only available with plenum box.**

### Spigot position



See page 7 for detail X.

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



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

NW	□A	□E	KHS	∅D	∅D <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

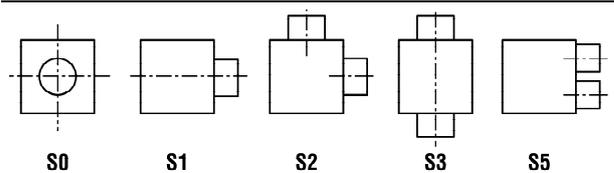
all dimensions in mm  
 of plenum box

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.

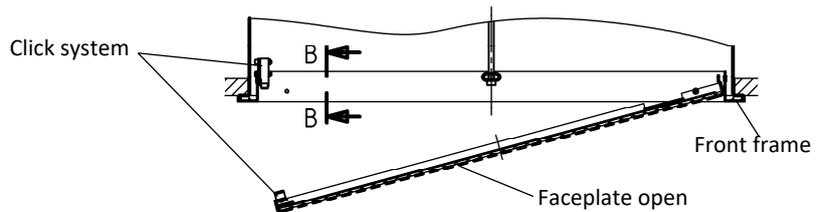
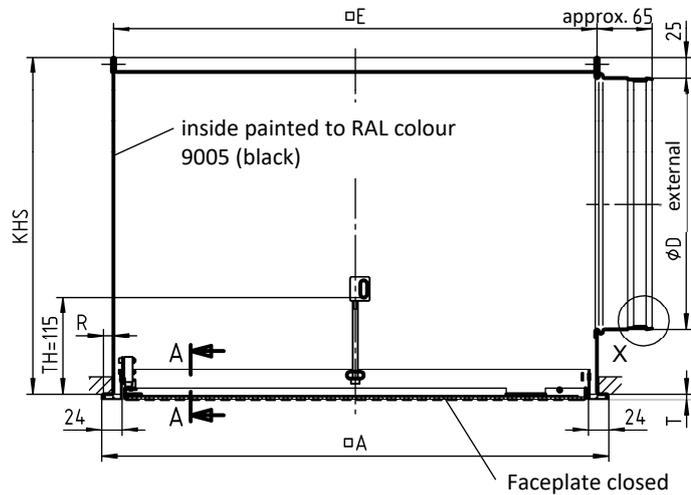
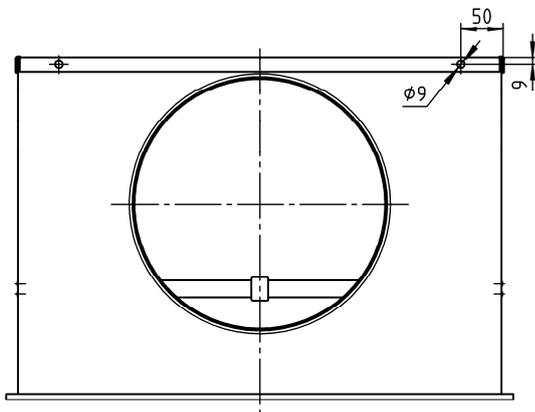
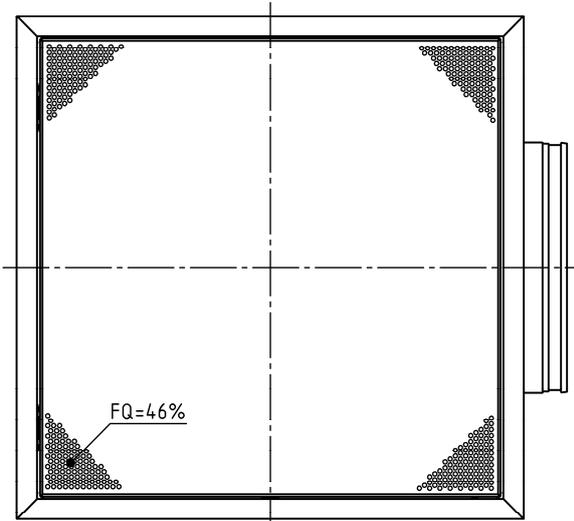
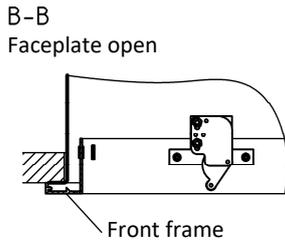
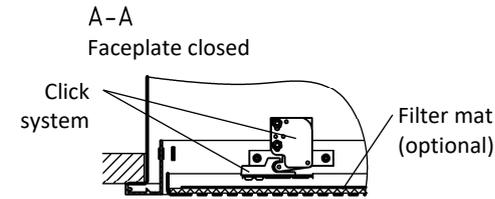
**Due to the function, the ceiling return air diffuser LAQ is only available with plenum box.**

Spigot position



See page 7 for detail X.

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



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

NW	$\square A$	$\square E$	KHS	$\phi D$	$\phi D_{max}$ 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

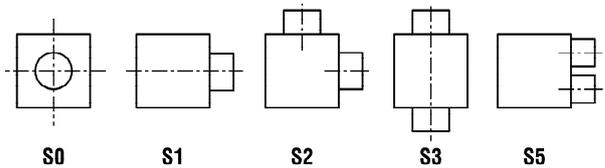
KHS = Standard height of plenum box

- 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-...

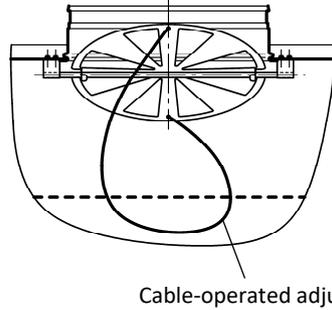
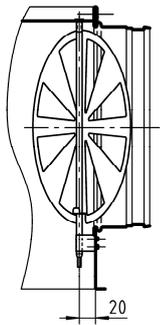
- without damper (-DK0) (standard).
- with damper (-DK1) (for spigot position -S1/-S2/-S3/-S5).
- with damper and cable-operated adjustment (-DK2) (for spigot position -S0).

#### DK1:

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

#### DK2:

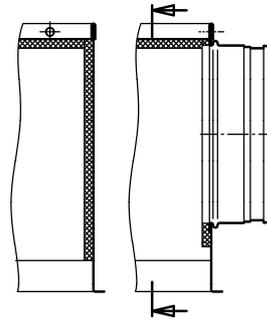
Spigot position -S0  
(not possible for LAQ-F)



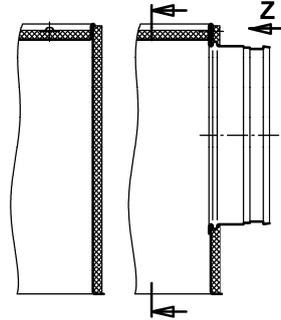
#### Insulation (-I0/-Ii/-Ia), for SK-Q-...

- without insulation (-I0) (standard)
- with internal insulation (-Ii)
- with external insulation (-Ia)

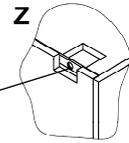
#### internal (-Ii)



#### external (-Ia)



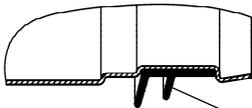
External insulation recessed in the area of the fixing lugs.



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

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

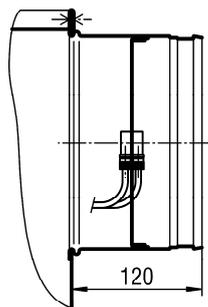
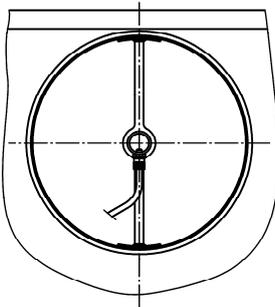
#### Detail X



Rubber lip seal

#### 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-...

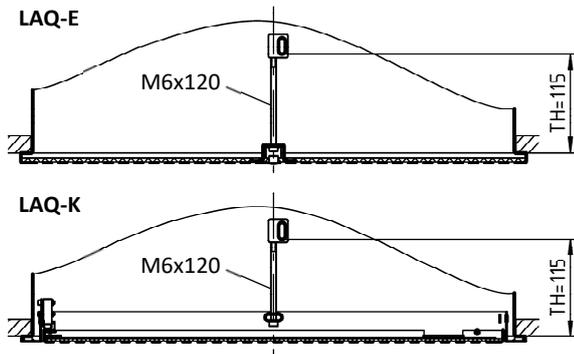
- Without ROB version (-ROB0) (standard).
- With ROB version (-ROB1). Removable diffuser plate, damper and volumetric flow meter (not possible for LAQ-F).

## 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).

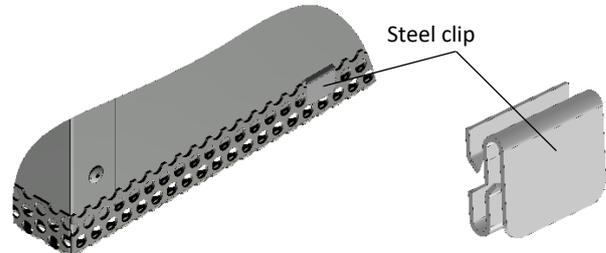


### Clip mounting (-KM)

Only possible for LAQ-F.

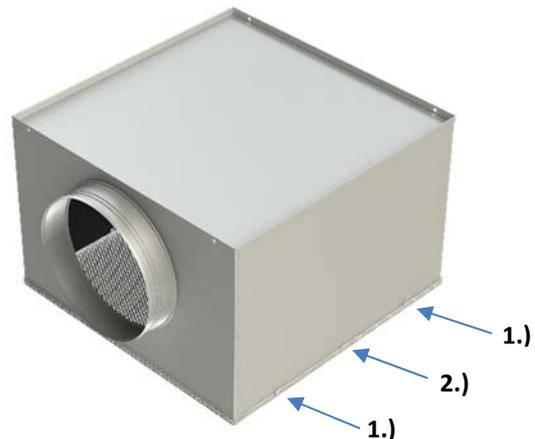
The clip mounting (-VM) is used to fasten the ceiling return air diffuser permanently to the plenum box with steel clips.

**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

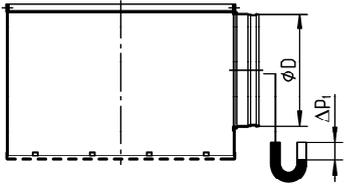
G4 – 19 Pa

Recommended end pressure loss 250 Pa.

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

**LAQ-...-SK-Q-...-A-...**

for return air, with plenum box

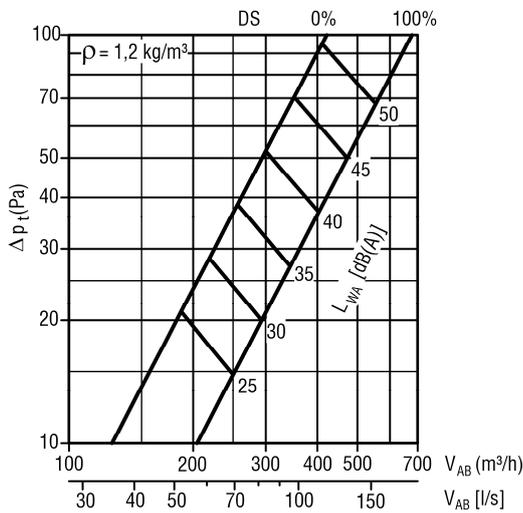


Damper position (DS):

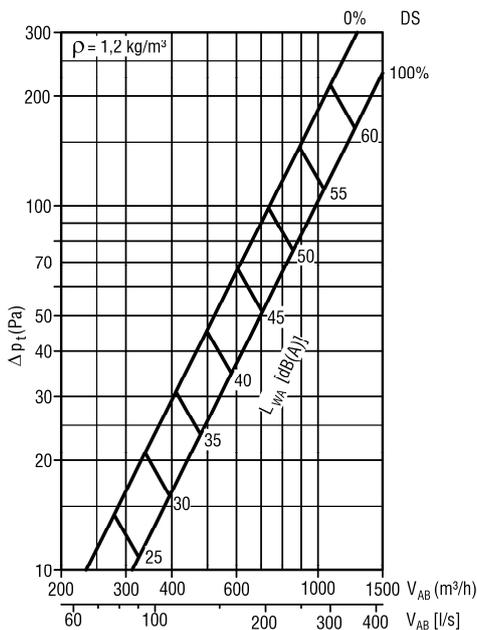
0% = CLOSED

100% = OPEN

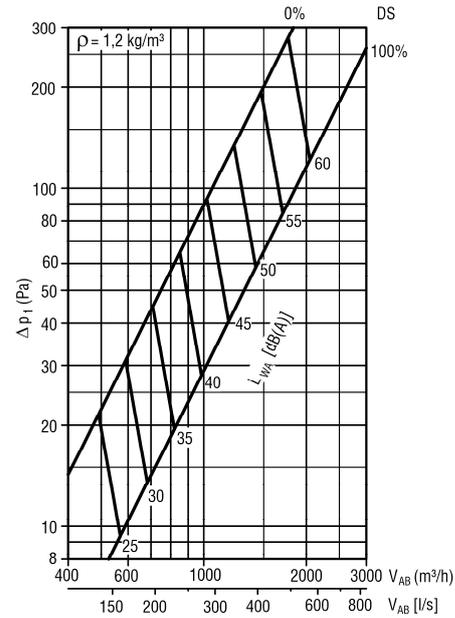
**LAQ-...-310-...**



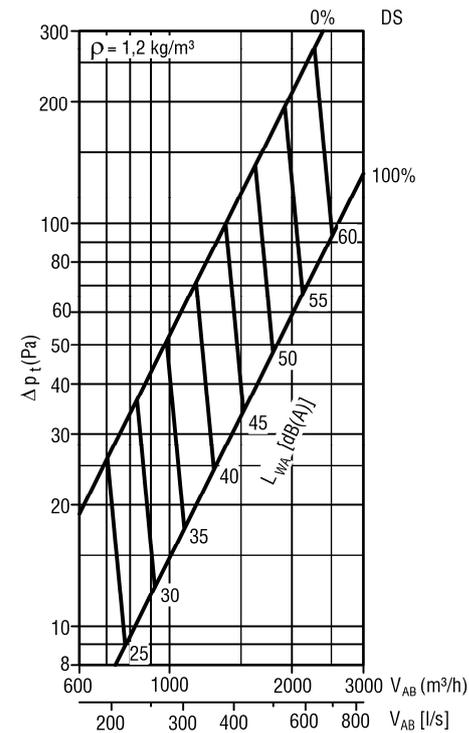
**LAQ-...-400-...**



**LAQ-...-500-...**



**LAQ-...-600/625-...**



**LEGEND**

- $V_{AB}$  (m³/h) [l/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
- $\rho$  (kg/m³) = 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	14
Rubber lip seal	Volumetric flow meter	ROB version	Insulation	Height of plenum box	Spigot diameter	Spigot position
<b>Example</b>						
-GD1	-VME0	-ROB0	-I0	-KHS	-SDS	-S1

### Sample

**SK-Q-20-A-500-KM-SV-DK1-GD1-VME0-ROB0-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

#### 02 - Model

Q = for square air diffusers

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

20 = suitable for LAQ-F

04 = suitable for LAQ-E

59 = suitable for LAQ-K

#### 04 - Type of air

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

#### 05 - Nominal size

310 = NW 310

400 = NW 400

500 = NW 500

600 = NW 600

625 = NW 625

#### 06 - Fastening

KM = clip mounting (only available for LAQ-F-...)

VM = concealed mounting (only available for LAQ-E-... and LAQ-K-...)

#### 07 - Material

SV = galvanised sheet steel (standard)

#### 08 - Damper

DK0 = without damper (standard)

DK1 = with damper, in the plenum box housing, adjustable, for simple air volume regulation.

DK2 = with damper, same as DK1 but with cable-operated adjustment (only with spigot position from above [-S0]) (not possible for LAQ-F).

#### 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 version

ROB0 = without ROB version (standard).

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

#### 12 - Insulation

I0 = without box insulation (standard)

Ii = with box insulation inside

Ia = with box insulation outside

#### 13 - Height of plenum box

KHS = standard height of plenum box

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

#### 14 - Spigot diameter

SDS = spigot diameter (standard).

xxx = spigot diameter in mm, can be freely selected (always with 3 digits).

#### 15 - Spigot position

S0 = spigot from above

S1 = 1 lateral spigot on the box (standard)

S2 = 2 lateral spigots, offset by 90°

S3 = 2 lateral spigots, offset by 180°

S5 = 2 spigots arranged next to each other

## SPECIFICATION TEXT

Perforated return air diffuser for use in return air systems. The diffuser 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 (-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).