



Ceiling Diffuser

4-DF



Ferdinand Schad KG
Steigstraße 25-27
D-78600 Kolbingen
Telephone +49 (0) 74 63 - 980 - 0
Fax +49 (0) 74 63 - 980 - 200
info@schako.de
www.schako.de

Ceiling diffuser 4-DF

Contents

Description	3
Construction	3
Model.....	3
Accessories	3
Fastening	3
Models and dimensions	4
Dimensions	4
Dimensions of accessories	5
Fastening methods	5
Technical data	6
Pressure loss and noise level	6
Supply air with plenum box	6
Maximum end velocity of jet	7
Critical throw	8
Induction ratios	9
Temperature ratios.....	9
Legend	9
Order details	10
Specification texts	11

Ceiling Diffuser Model 4-DF

Description

The **square** ceiling diffuser type 4-DF with **fixed air deflection blades** is suitable for use **in supply and return air systems**. The supply air is **delivered horizontally in four directions**. The air diffuser is fitted flush to the ceiling. The construction of the faceplate allows easy cleaning.

A volumetric flow meter can be integrated in the connection piece of the plenum box at an extra charge. The measurement error of the volumetric flow meter is $\pm 5\%$ at a connection pipe 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.

The diffusion plate as well as the damper and the volume flow measuring device (if integrated) can be removed from the plenum box type SAK in ROB version to allow the use of duct cleaning robots from the room side.

Variable volumetric flow

The ceiling diffuser type 4-DF is also highly suitable for systems with variable volumetric flows. A stable air jet is guaranteed by the high outflow velocities, thus ensuring that the air jet does not become detached abruptly from the ceiling at small volumetric flows.

Construction

Faceplate

- Sheet steel painted to RAL 9010 (white)
- Sheet steel painted to a different RAL colour (at an extra charge)
- Natural colour anodised aluminium (E6/EV1) (only available with VM mounting) (at an extra charge)

Model

4-DF - square faceplate

Accessories

Plenum box (-SAK)

- Galvanised sheet steel with integrated perforated straightener (for supply air model only) and fixing lugs
- only available in conjunction with VM mounting

Throttle damper (-DK)

- Galvanised sheet steel, in the plenum box (-SAK)
- Damper fastening made of plastic

Rubber lip seal (-GD)

- in plenum box on connection piece, made of special rubber

ROB version (-ROB)

- Removable diffuser plate, throttle damper and volumetric flow meter

Volumetric flow meter (-VME)

- Mounting made of galvanised sheet steel
- Measuring sensor made of plastic
- Aluminium connections

Internal insulation (-li)

- Thermal insulation inside the plenum box

External insulation (-la)

- Thermal insulation on the outside of the plenum box

Installation

Screw mounting (-SM)

- only for connection to fire protection unit
- with 4 raised countersunk head tapping screws (on-site)

Concealed mounting (-VM, standard)

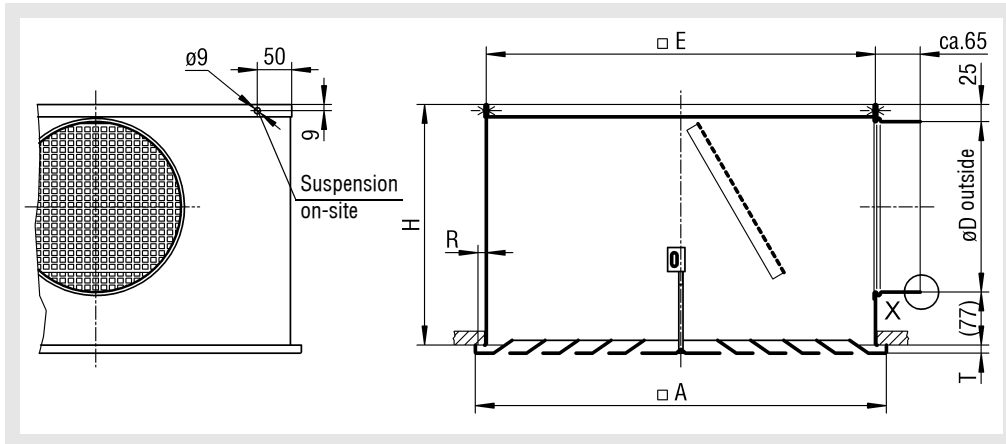
- Only available with plenum box type SAK
- fastened to the plenum box type by means of an M6 screw to DIN EN ISO 4762.

Ceiling Diffuser Model 4-DF

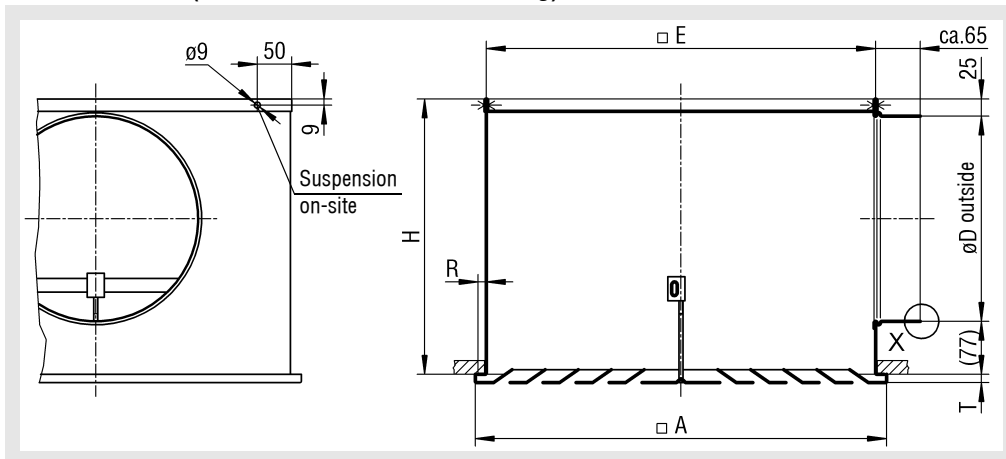
Models and dimensions

Dimensions

4-DF with SAK-Z (for supply air, with VM mounting)



4-DF with SAK-A (for return air, with VM mounting)



Available sizes

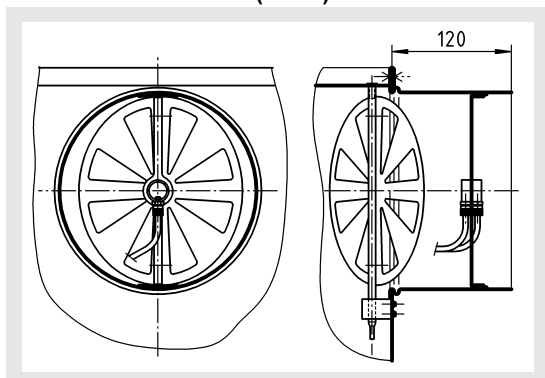
NW	□ A	□ E	R	SAK-Z		SAK-A		T
				H	øD	H	øD	
310	308	290	8	260	158	300	198	7
400	398	370	12	260	158	300	198	12
500	498	470	12	300	198	350	248	
600	598	570	12	350	248	400	298	
625	623	570	24	350	248	400	298	

Ceiling Diffuser Model 4-DF

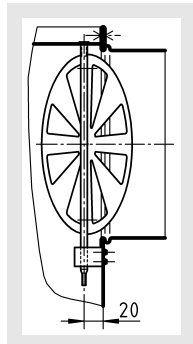
Dimensions of accessories

(at an extra charge)

Volumetric flow meter (-VME)

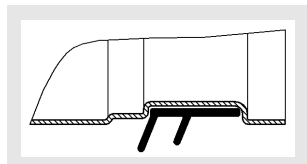


Throttle damper (-DK)

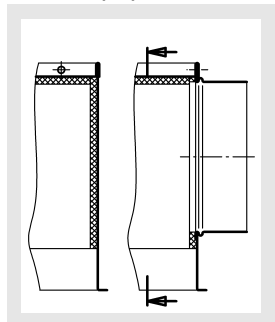


Rubber lip seal (-GD)

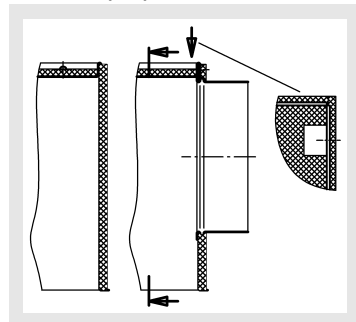
Detail X



Insulation for SAK
internal (-li)



external (-la)

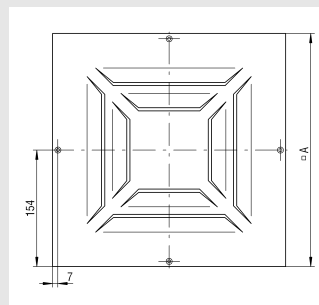


Fastening methods

Screw mounting (-SM)

only for connection to fire protection unit

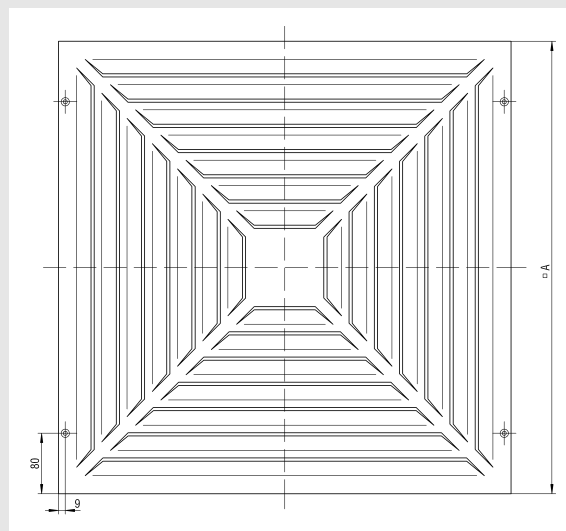
NW 310



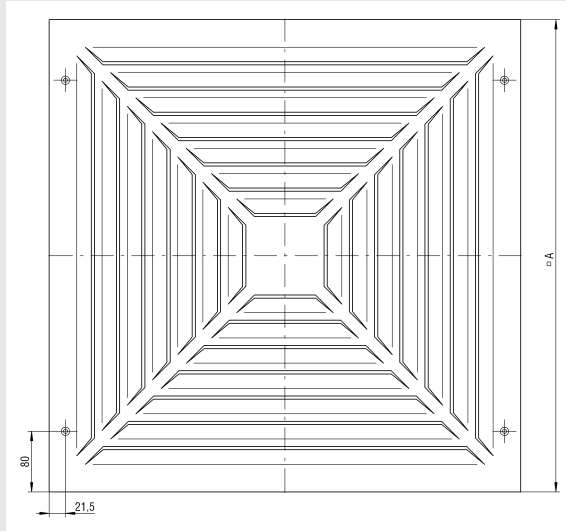
with indentation for slotted shallow-raised countersunk-head tapping screw (on-site)

- Size 310:
DIN ISO 7051 pitch 3.9
- Sizes 400-625:
DIN ISO 7051 pitch 4.8

NW 400-600



NW 625

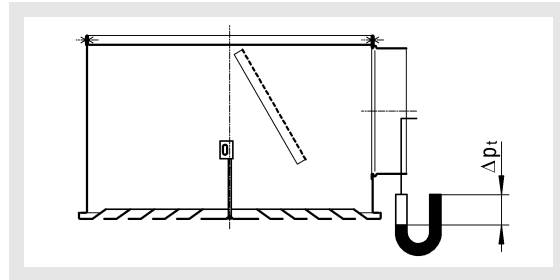


Ceiling Diffuser Model 4-DF

Technical Data

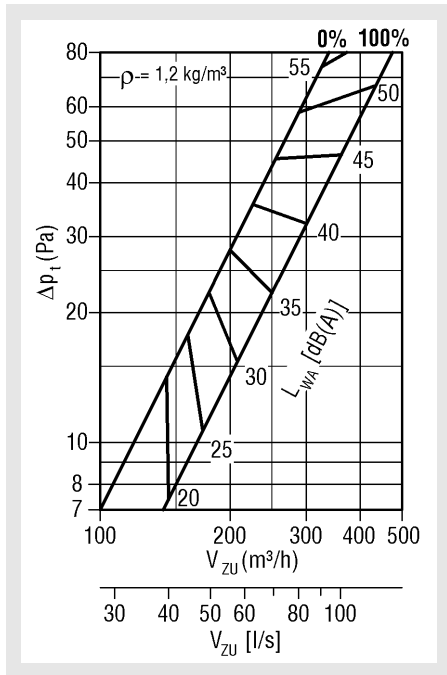
Pressure loss and noise level

Supply air with plenum box

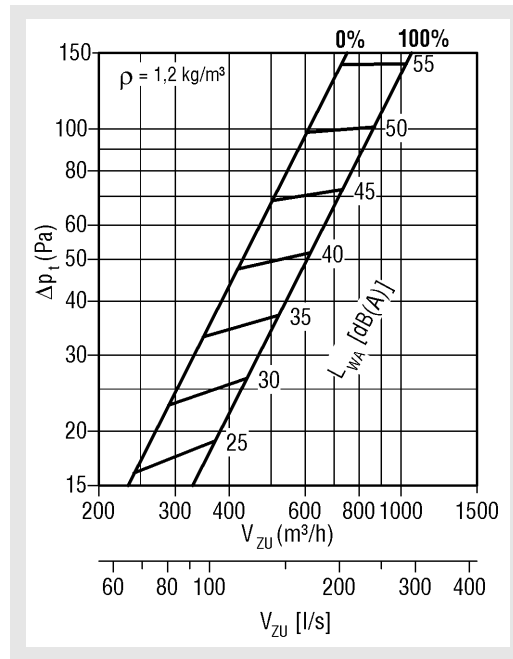


Damper position OPEN in %

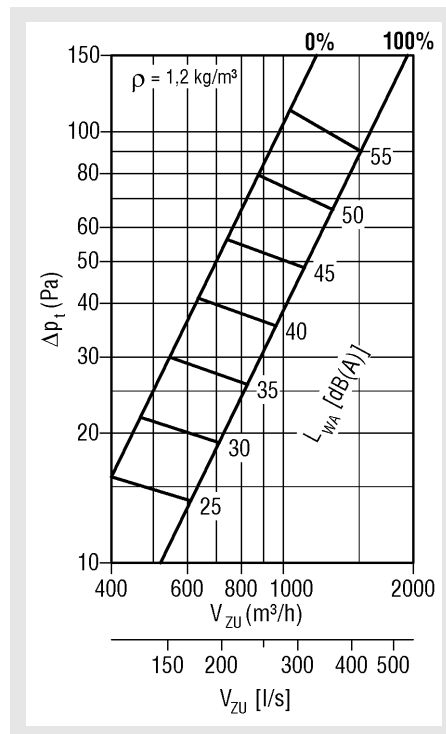
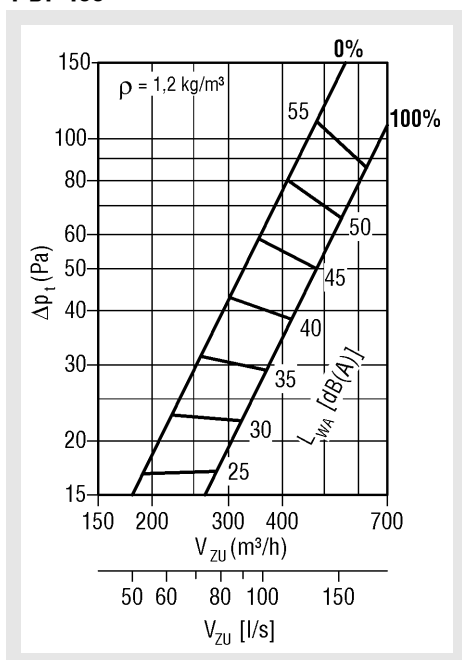
4-DF 310



4-DF 500

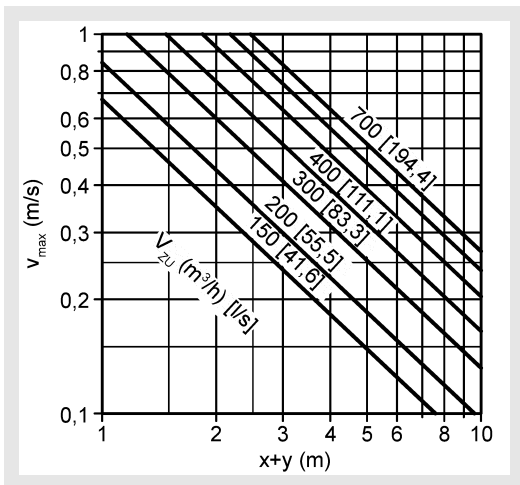


4-DF 400

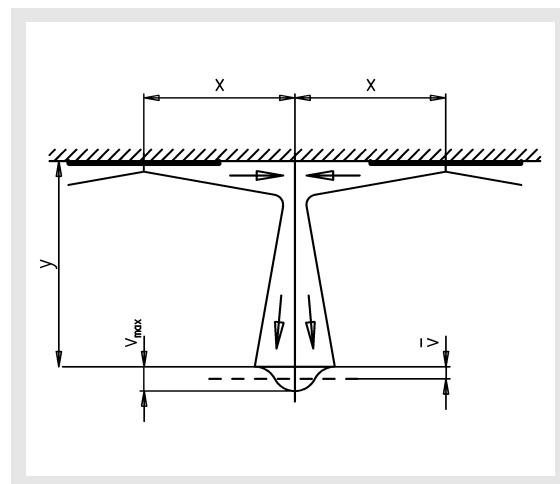
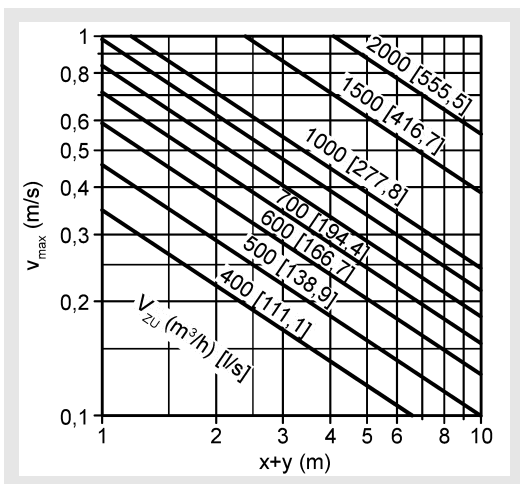
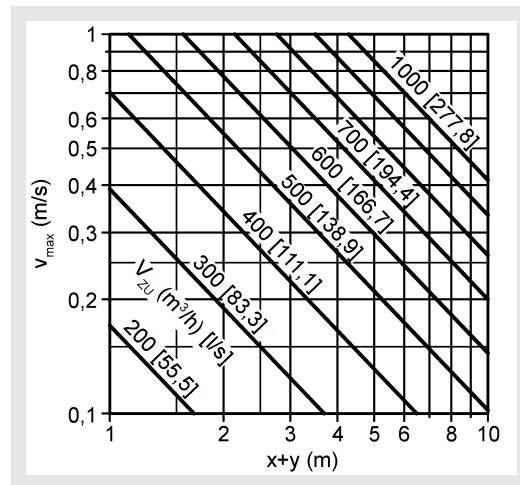


Ceiling Diffuser Model 4-DF

Maximum end velocity of jet
with plenum box
4-DF 400



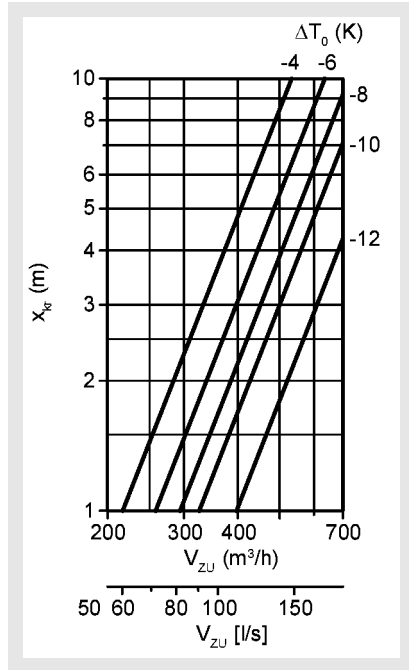
4-DF 500



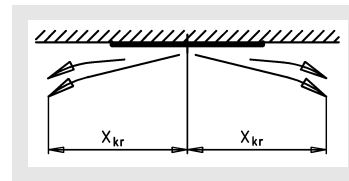
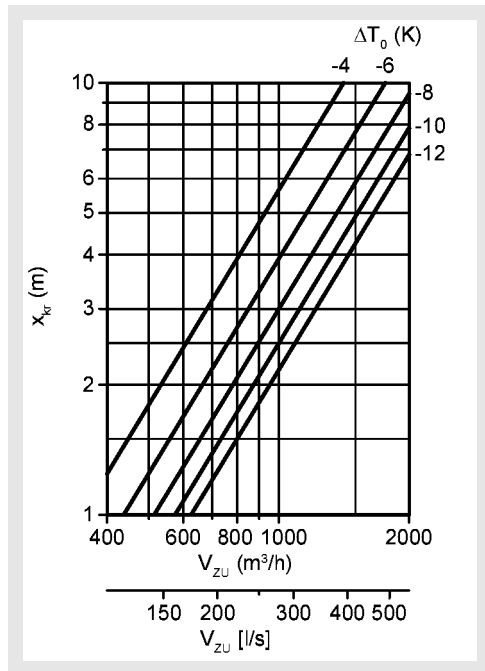
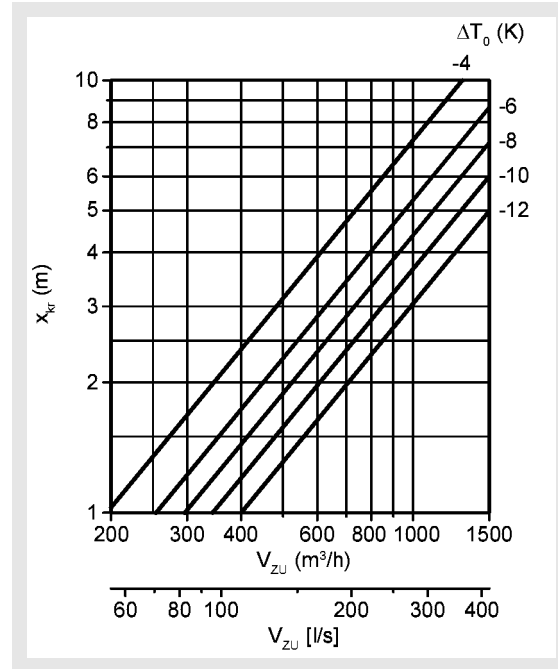
Ceiling Diffuser Model 4-DF

Critical throw

4-DF 400

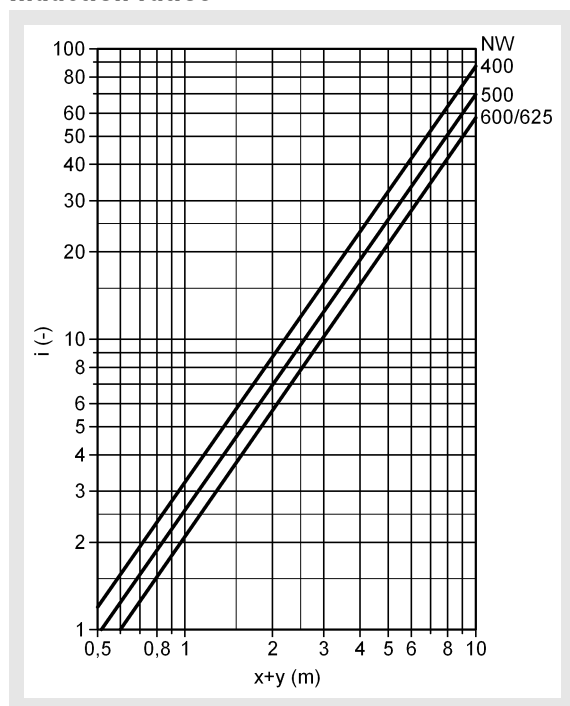


4-DF 500

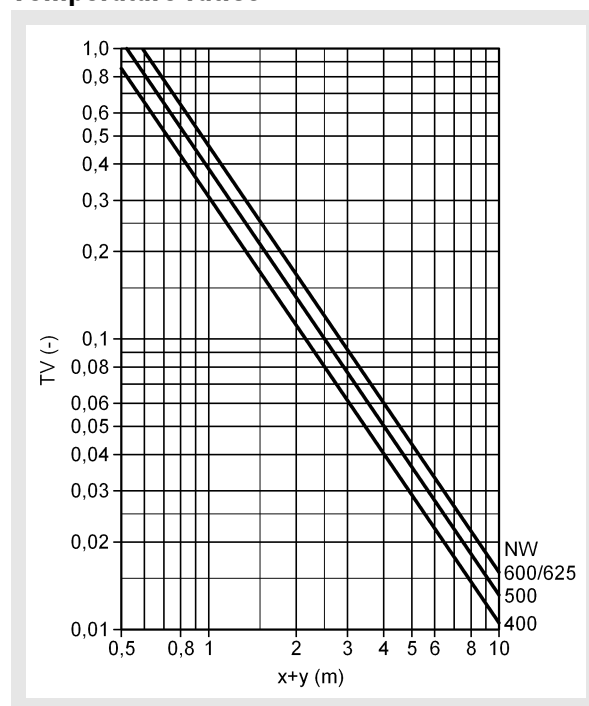


Ceiling Diffuser Model 4-DF

Induction ratios



Temperature ratios

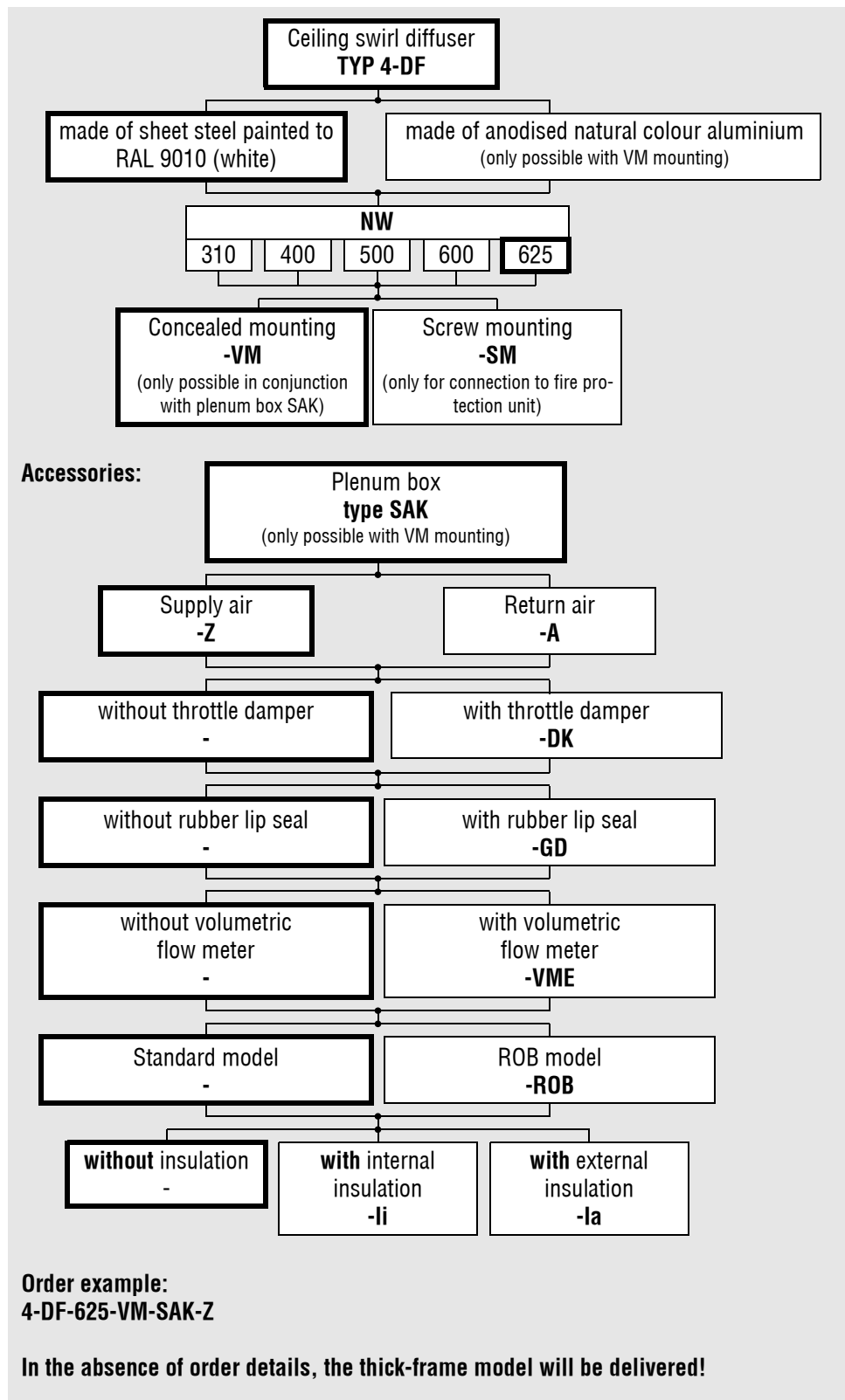


Legend

V_{ZU} (m ³ /h)	=	Supply air volume
V_{ZU} [l/s]	=	Supply air volume
Δp_t (Pa)	=	Pressure loss
L_{WA} [dB(A)]	=	A-weighted sound power level
ρ (kg/m ³)	=	density
v_{max} (m/s)	=	Maximum end velocity of jet
v (m/s)	=	Average end velocity of jet ($v = v_{max} \times 0.5$)
$x+y$ (m)	=	horizontal + vertical Throw
x_{kr} (m)	=	Critical throw
ΔT_0 (K)	=	Temperature difference between supply air temperature and room temperature ($\Delta T_0 = t_{ZU} - t_R$)
t_{ZU} (K)	=	Supply air temperature
t_R (K)	=	Room temperature
i (-)	=	Induction ratio ($i = V_x / V_{ZU}$)
TV (-)	=	Temperature ratio ($TV = \Delta T_x / \Delta T_0$)
NW (mm)	=	Nominal width
ΔT_x (K)	=	Temperature difference at point x
V_x (m ³ /h)	=	total air jet volume at point x
V_x [l/s]	=	total air jet volume at point x

Ceiling Diffuser Model 4-DF

Order details



Ceiling Diffuser Model 4-DF

Specification texts

Ceiling diffuser **type 4-DF** for supply and return air, horizontal throw in 4 directions. Particularly suitable for installation in comfort rooms with high number of air changes, for clean rooms (in connection with particle filter boxes) and for VAV installations with variable volumetric flows (between 40-100%).

Consisting of square sheet steel faceplate painted with a high-quality powder coating to a RAL colour (RAL 9010, white, standard), with integrated fixed air deflection blades, with concealed mounting (VM). For use in isothermal mode and in cooling mode (up to -14 K) and a room height of 2 - 4.5 m. Sophisticated design allows easy cleaning to VDI 6022.

Product: SCHAKO **type 4-F**

- Faceplate made of natural colour anodised aluminium (E6/EV1) (only available with VM mounting)
- with screw mounting (-SM), only for connection to fire protection unit

Accessories:

- Plenum box (-SAK) made of galvanised sheet steel, with fixing lugs (only available in conjunction with VM mounting).
 - Supply air version with integrated perforated straightener
 - Return air model without perforated straightener.
 - with throttle damper (-DK) in plenum box, adjustable from below, for simple air volume regulation without dismantling the faceplate.
 - with volumetric flow meter (-VME)
 - with ROB version (-ROB), removable diffusion plate, damper and volume flow measuring device
 - with rubber lip seal (-GD), on plenum box, made of special rubber.
 - with thermal insulation
 - internal (-li)
 - outside (-la)