



COMBIPIL

Combined ceiling diffuser for supply air and return air

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Function and use

COMBIPIIL is a combined ceiling diffuser for supply air and return air .

The square air diffuser consists of an outer area for introducing the supply air into the room and an inner area for extracting the return air. The introduction of the supply air is carried out by means of a high induction, horizontal air throw, radially pulsing and is suitable for VAV systems with variable volumetric flows.

The base of this diffuser is the SCHAKO ceiling impulse diffuser type PIL. The diffuser is suitable for cooling mode up to -10K.

The faceplate is made of sheet steel with high-quality powder coating in the colour RAL 9010 (white). The plenum box consists of galvanised sheet steel with fixing lugs with cylindrical return air pipe arranged inside, heat-insulated outside and an outer supply air chamber with two connection pipes for supply and return air provided on opposite sides.

The diffuser is connected to the plenum box via concealed screw mounting.

The use of the COMBI series diffusers reduces the number of air diffuser installation points required in the ceiling system. This achieves a uniform circulation of supply air and return air to and from the room. The insulation of the return air element in the COMBI box minimises the thermal losses.

Models



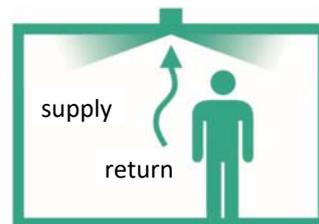
Discreet and reliable in function

Combined ceiling diffuser for supply air and return air, stable horizontal air throw pattern and good room flushing. With concealed screw mounting.

PERFORMANCE DATA

COMBIPIIL	400	500	600	625
V_{zu} (m ³ /h)	110	205	350	350
L_{WA} [dB(A)]	35	35	35	35

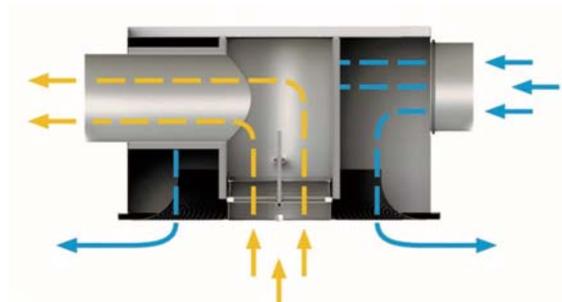
AIR THROW PATTERN



CEILING

Horizontal throw

FUNCTIONAL DIAGRAM



Processing

FACEPLATE made of sheet steel, painted to RAL 9010 (white, standard), only star-shaped perforations possible

PLENUM BOX (-SAKC) made of galvanised sheet steel with two lateral connecting pieces and fixing lugs

FACEPLATE FASTENING by means of concealed screw mounting

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

Accessories

RUBBER LIP SEAL (-GD1), only both connecting pieces (supply and return air)

DAMPER (-DK2) with cable-operated adjustment, only both connecting pieces (supply and return air)

Models

COMBIPIIL 400

$V_{ZU/AB}$ [m ³ /h]	L_{WA} [dB(A)]	Δp_t zuluft [Pa]	Δp_t Abluft [Pa]
95	30	19	9
110	35	25	12
130	40	35	17

COMBIPIIL 500

$V_{ZU/AB}$ [m ³ /h]	L_{WA} [dB(A)]	Δp_t zuluft [Pa]	Δp_t Abluft [Pa]
155	25	13	13
175	30	16	15
205	35	22	23
235	40	29	30

COMBIPIIL 600/625

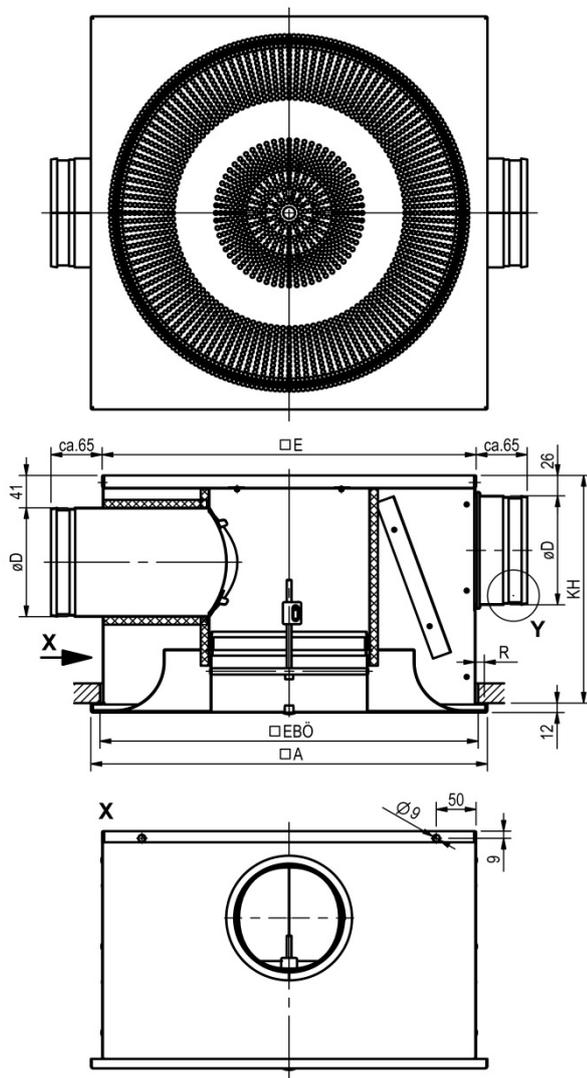
$V_{ZU/AB}$ [m ³ /h]	L_{WA} [dB(A)]	Δp_t zuluft [Pa]	Δp_t Abluft [Pa]
275	25	11	15
310	30	14	19
350	35	18	24
395	40	23	34

Dimensions and views

COMBIPIL – Dimensions

all dimensions in mm

COMBIPIL – Views



COMBIPIL – Available sizes

Size	$\square A$	$\square E$	ϕD	KH	$\square EB\bar{O}$	R
400	398	370	123	270	375	12
500	498	470	138	290	475	12
600	598	570	198	350	575	12
625	623	570	198	350	575	24

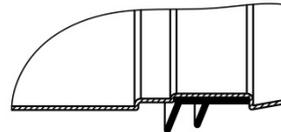
Accessories

COMBIPIL – ACCESSORIES

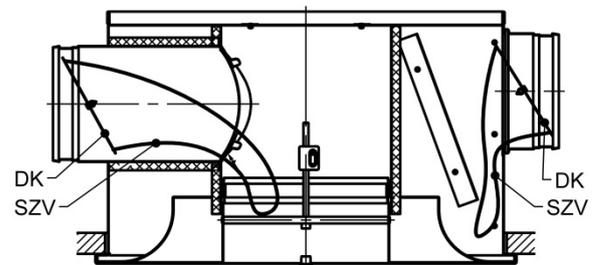
- Rubber lip seal (-GD1)
- Damper (-DK2)

ACCESSORIES - DIMENSIONS

Rubber lip seal (-GD1), only both connecting pieces
Detail Y



Damper (-DK2) with cable-operated adjustment, both connecting pieces

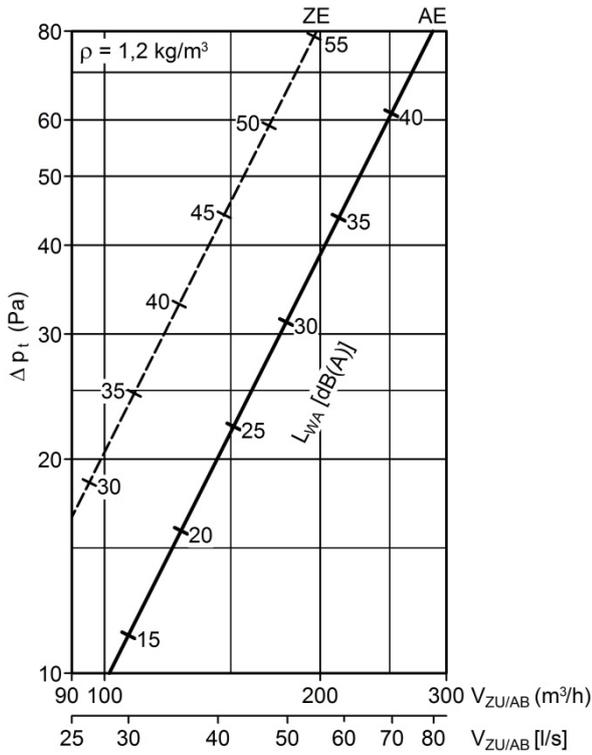


SZV = cable-operated adjustment

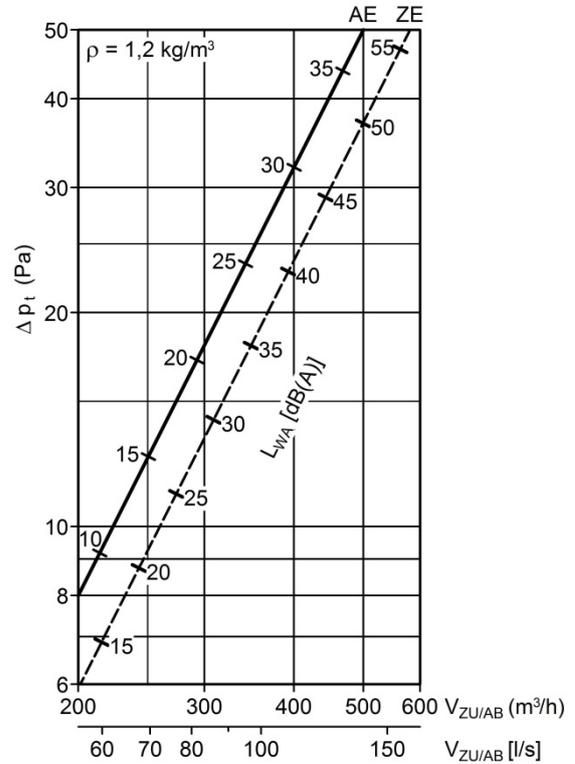
Technical data

Pressure loss and noise level

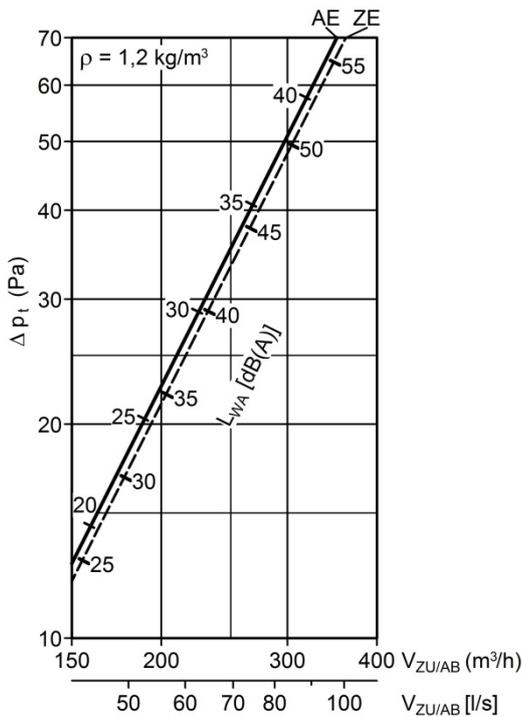
COMBIPIL-400



COMBIPIL-600/625

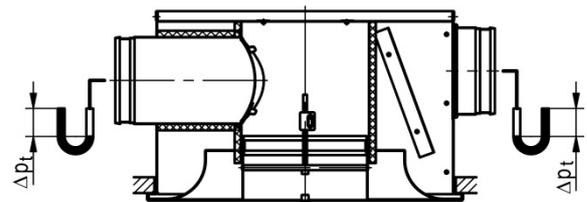


COMBIPIL-500



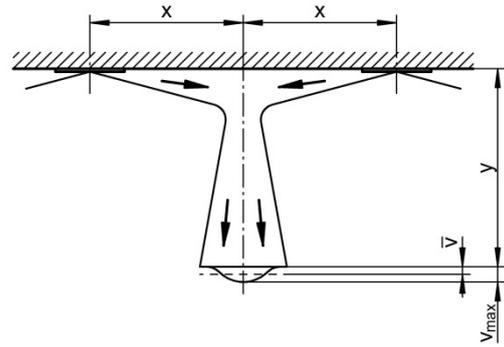
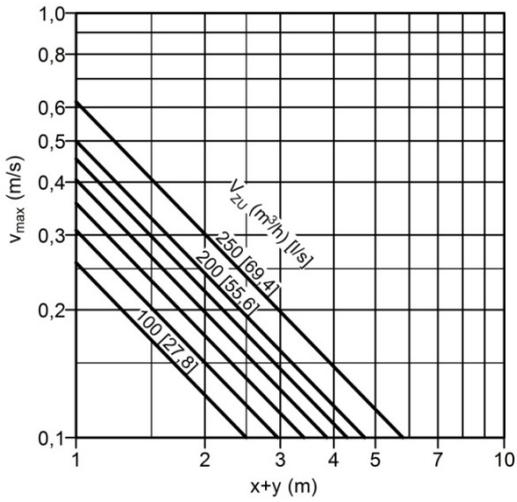
ZE = supply air unit

AE = return air unit



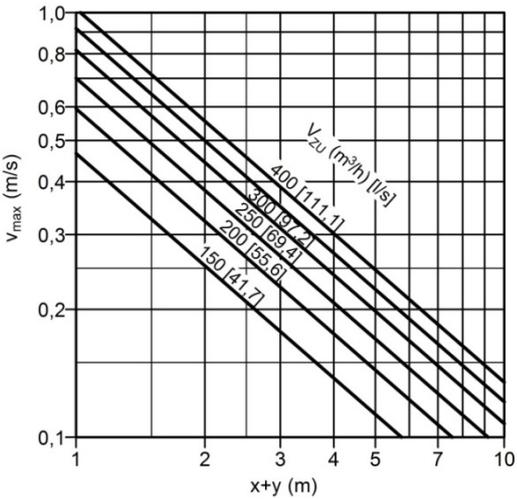
Maximum end velocity of jet

COMBIPIIL-400

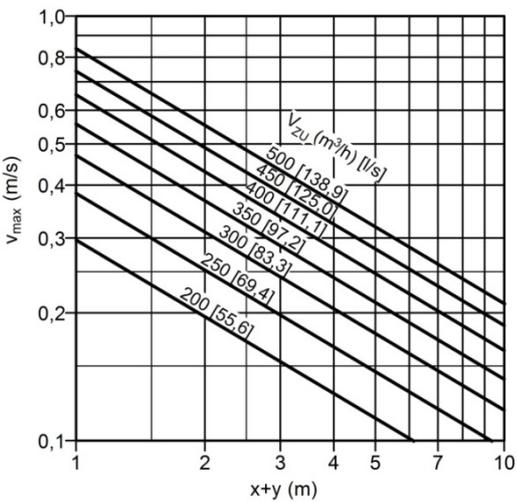


isothermal, with coanda effect / with plenum box

COMBIPIIL-500

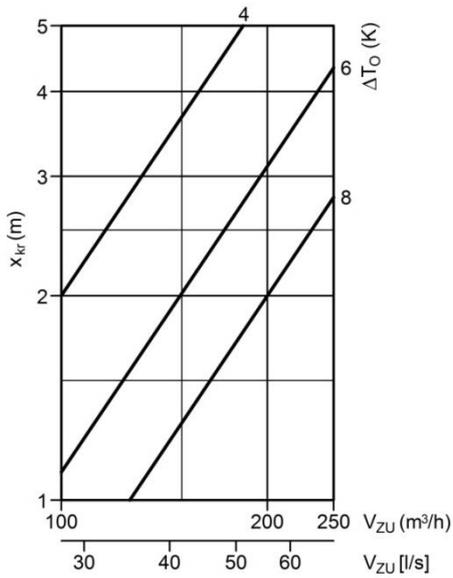


COMBIPIIL-600/625

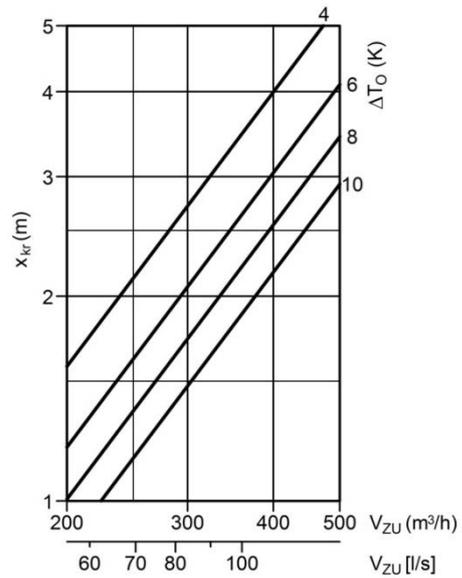


Critical throw

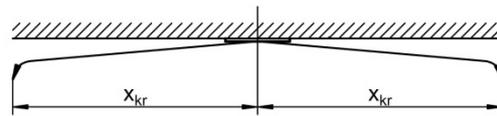
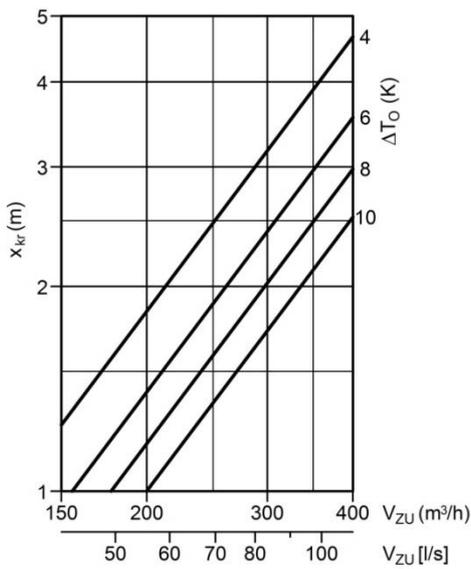
COMBIPIL-400

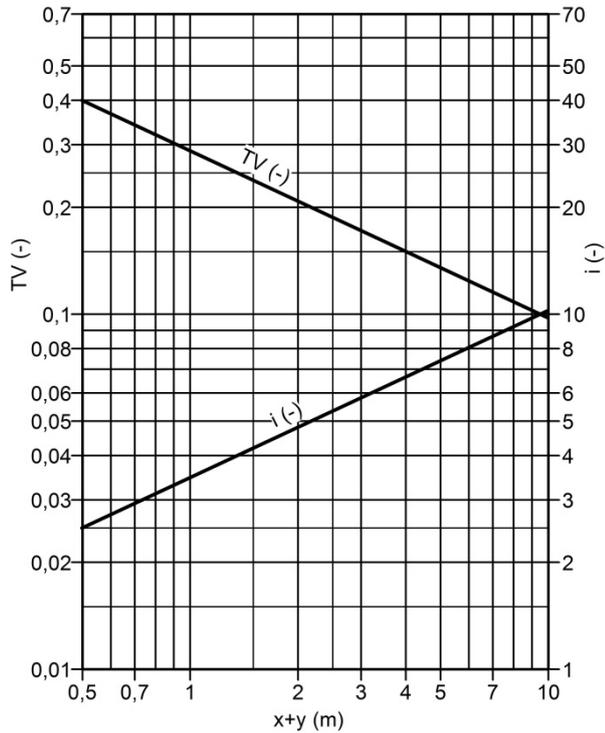
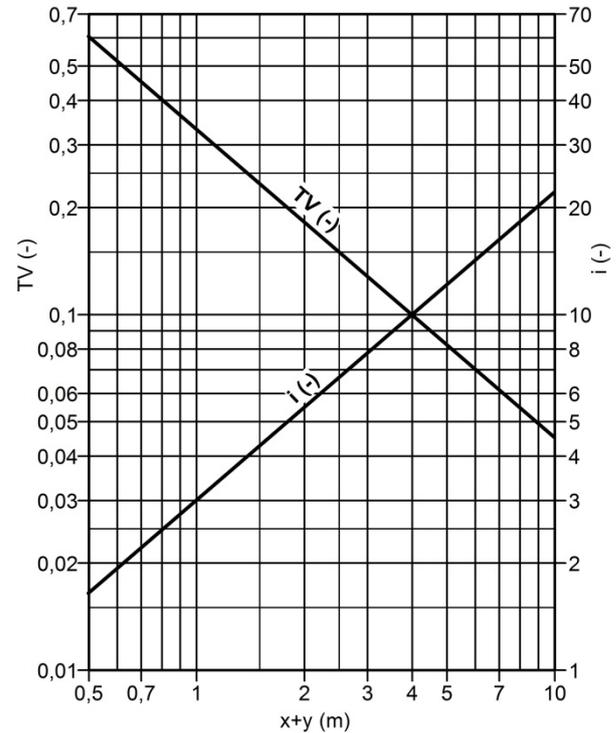
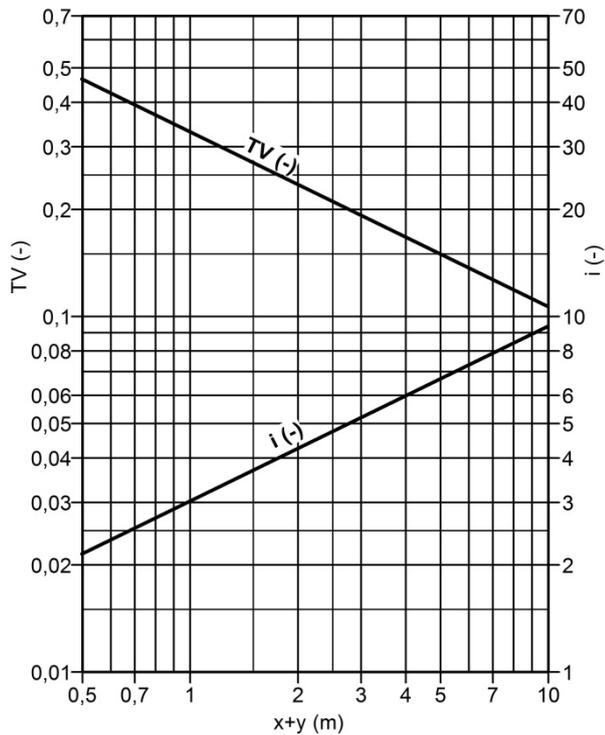


COMBIPIL-600/625



COMBIPIL-500



Temperature and induction ratios
COMBIPIL-400

COMBIPIL-600/625

COMBIPIL-500

Legend

A	=	diffuser dimension
E	=	plenum box dimension
D	=	diameter
KH	=	height of plenum box
EBÖ	=	installation opening
V_{ZU}	[m ³ /h] [l/s]	= supply air volumetric flow
V_{AB}	[m ³ /h] [l/s]	= return air volumetric flow
Δp_t	[Pa]	= pressure loss
L_{WA}	[dB(A)]	= A-weighted sound power level
ρ	[kg/m ³]	= air density
x	[m]	= horizontal throw
y	[m]	= vertical throw
x + y	[m]	= horizontal + vertical throw
v_{max}	[m/s]	= max. End velocity of jet
v_{mittel}	[m/s]	= average end velocity of jet ($v_{mittel} = v_{max} \times 0.5$)
x_{kr}	[m]	= critical throw
ΔT_0	[K]	= temperature difference between supply air temperature and room temperature ($\Delta T_0 = t_{ZU} - t_R$)
ΔT_x	[K]	= temperature difference at point x
t_{ZU}	[°C]	= supply air temperature
t_R	[°C]	= room temperature
TV	[-]	= temperature ratio ($TV = \Delta T_x / \Delta T_0$)
i	[-]	= induction ratio ($i = v_x / v_{ZU}$)
Gr	[mm]	= diffuser size

Order code

01	02	03
Type	Size	Faceplate coating
Example		
COMBIPIIL	-600	-9010

Order example:

COMBIPIIL-600-9010

Combined ceiling diffuser type COMBIPIIL | size 600 | with white faceplate RAL 9010

ORDER DETAILS

01 - Type

COMBIPIIL

02 - Size

400 = faceplate 398 x 398

500 = faceplate 498 x 498

600 = faceplate 598 x 598

625 = faceplate 623 x 623

03 - Faceplate

9010 = painted to the colour RAL 9010 (white)-**STANDARD**

xxxx = RAL colour can be freely selected (specify colour)

Order code

01	02	03	04	05
Type	Diffuser	Size	Damper	Rubber lip seal
Example				
SAKC	-PIL	-600	-DK2	-GD1

Order example:

SAKC-PIL-600-DK2-GD1

Plenum box COMBIPIL | size 600 | with damper with cable-operated adjustment, only both connecting pieces | with rubber lip seal, only both connecting pieces.

ORDER DETAILS

01 - Type

SAKC = plenum box for COMBI ceiling diffuser

02 - Diffuser

PIL = to fit COMBIPIL combined ceiling diffuser

NOTE:

Faceplate for SAKC-PIL plenum box must be ordered separately.

03 - Size

400 = suitable for faceplate 398 x 398

500 = suitable for faceplate 498 x 498

600 = suitable for faceplate 598 x 598

625 = suitable for faceplate 623 x 623

04 – Damper

DK0 = without damper - **STANDARD**

DK2 = with damper, galvanised sheet steel, only both connecting pieces (supply and return air connecting pieces), with cable-operated adjustment

05 - Rubber lip seal

GD0 = without rubber lip seal - **STANDARD**

GD1 = with rubber lip seal, only both connecting pieces (supply and return air connecting pieces)

Specification text

Combined ceiling diffuser for supply air and return air **type COMBIPIIL**

Consisting of an easy to clean square perforated sheet steel faceplate, return air in perforated design arranged in the centre, supply air in perforated design, arranged in the outer area, with an air deflection blade on the inside, suitable for VAV systems with variable volumetric flows, suitable for cooling mode up to -10K. With faceplate made of sheet steel with high-quality powder coating, painted sheet steel RAL 9010 (white - STANDARD). With concealed screw mounting.

Product: SCHAKO **type COMBIPIIL**

Accessories:

- Plenum box (-SAKC) made of galvanised sheet steel with 2 lateral connecting pieces
 - with rubber lip seal on both connecting pieces (-GD1)
 - with damper and cable-operated adjustment on both connecting pieces (-DK2)