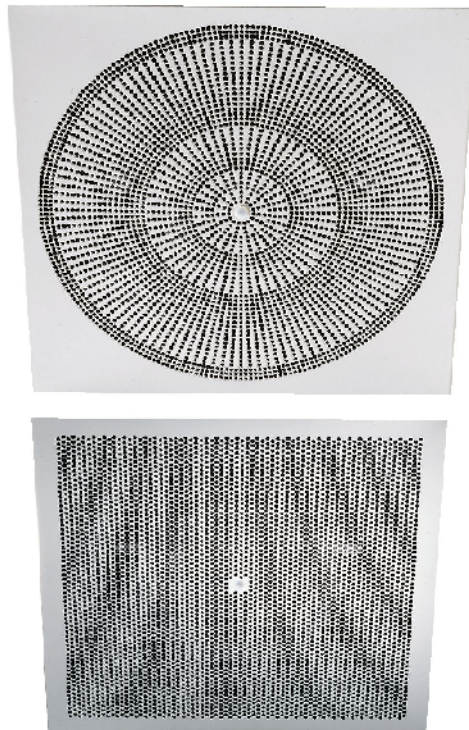


Ceiling impulse diffuser PIL-G



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Ceiling Impulse Diffuser PIL-G

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Ceiling Impulse Diffuser PIL-G

Description

The ceiling impulse diffuser **model PIL-G** is a further development of the ceiling impulse diffuser model PIL for large air volumes. It has been specially developed for use in clean rooms, operating theatres and comfort rooms up to heights of 4 m. The diffuser produces a **pulsating horizontal air throw**. The supply air is discharged along the ceiling and, upon reaching the critical throw length, gradually sinks into the occupied zone at low velocity. The pulsating air pattern results in an **efficient reduction of the velocity and of the temperature difference in the air jet**. A displacement flow is created near the diffuser, which means the ceiling and diffuser itself are less prone to particles being deposited on the diffuser or near the ceiling. An integrated air guide funnel ensures that the supply air is discharged uniformly across the whole diffuser area. The diffuser can be used for cooling up to a maximum temperature difference of -15 K. A suspended installation is possible for sizes 500 and 600/625 up to ΔT of -4K. Model 400 can only be used for suspended installation if a 500 faceplate is used. The air guide funnel has been modified to allow a throughput of much **higher air volumes** (about +50%), compared with PIL, at the **same noise level** and at **lower pressure losses** (about -30%) This means that at the same supply air volumetric flow **fewer** ceiling impulse diffusers are required. Reducing the number of diffusers required automatically reduces the mounting and regulation costs.

The regular cleaning of the air diffuser required in clean rooms and operating theatres can be done easily and quickly due to the smooth surface of the faceplate. The ceiling impulse diffuser is connected to the ductwork by using a plenum box type SAK for square models and a plenum box type SRK for round models. The supply air model has a perforated equalising grid integrated in the plenum box, resulting in a certain admission pressure to ensure uniform air distribution across the diffuser. At an extra charge, a damper adjustable from underneath can be installed for air volume control even with the diffuser already installed. For plenum boxes type SRK, 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 the diffuser already mounted.

As standard, the ceiling diffuser is fitted to a pole brace in the plenum box with a central screw (concealed mounting VM). The funnel shaped VM holder on the pole brace makes assembly of the ceiling diffuser much easier. 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 connecting piece velocity of 2-5 m/s and a straight flow pattern of at least $1 \times D$. The measurement is carried out with dismantled diffuser. By adjusting the throttle damper, the required air volume of each diffuser can be set quickly and correctly.

To allow duct cleaning robots to access from the room side, in the ROB version of the plenum boxes SAK / SRK, the diffusion plate, the throttle damper (if built-in) and the volumetric flow meter can be removed.

Caution!

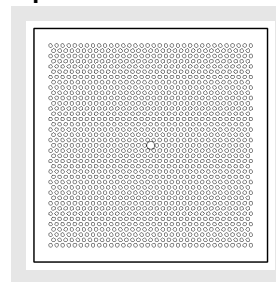
The performance of the ceiling impulse diffuser type PIL-G is only guaranteed with plenum box type SAK or SRK!

Comparison with PIL for sizes 600/625

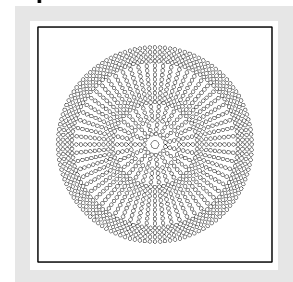
	PIL 600/625	PIL-G 600/625	difference
LWA [dB(A)]	35	35	
Δp_t (Pa)	26	18	-32%
V _{ZU} (m ³ /h)	500	760	+52%

Models:

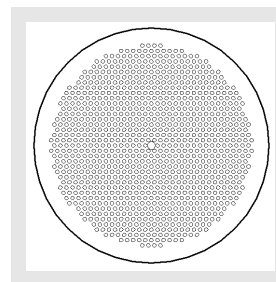
PIL-G-Q
Square model



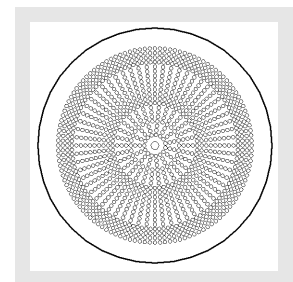
PIL-G-Q-S (not possible in aluminium)
Square model



PIL-G-R
Round model



PIL-G-R-S (not possible in aluminium)
Round model



Ceiling Impulse Diffuser PIL-G

Construction

Front plate

- perforated sheet steel painted to RAL 9010 (white)
- perforated natural colour anodised aluminium (not available in the -S model)

Baffle plate

- sheet steel painted to RAL 9005 (black)

funnel

- sheet steel painted to RAL 9005 (black)

Model

- PIL-G - gives higher volumetric flows in combination with lower pressure losses
- PIL-G-Q - square faceplate, displaced perforations
- PIL-G-Q-S - square design, star-shaped perforations (not possible in aluminium)
- PIL-G-R - round faceplate, displaced perforations
- PIL-G-R-S - round design, star-shaped perforations (not possible in aluminium)
- PIL-...-Z - Supply air

Accessories

Plenum box (-SAK)

- Galvanised sheet steel, with integrated perforated equalising grid and fixing lugs.

Plenum box (-SRK)

- Galvanised sheet steel, with integrated perforated equalising grid and fixing lugs.

Throttle damper (-DK)

- Damper fastening made of plastic
- Throttle damper made of galvanised sheet steel
- with cable-operated adjustment (-SZV) (at an extra charge)

Rubber lip seal (-GD)

- Special rubber

Volumetric flow meter (-VME)

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

Ball-impact guard (-BS)

- only possible for PIL-G-Q with SM mounting
- Steel painted to RAL 9010 (white), other RAL colours possible at an extra charge.

Internal insulation (-li)

- thermal insulation on the inside of the plenum box

External insulation (-la)

- thermal insulation on the outside of the plenum box

Fastening

Concealed mounting (-VM)

- Pole brace fixing, by means of an M6 socket head screw (to DIN EN ISO 4762) at the plenum box.

Screw mounting (-SM)

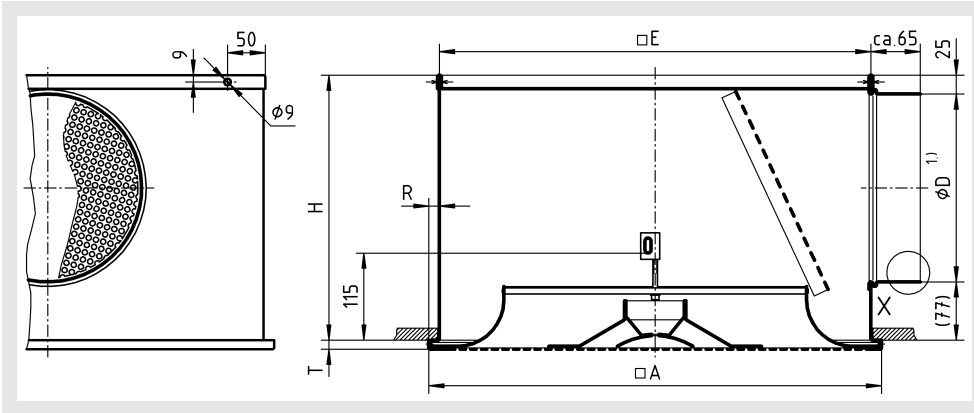
- for model with ball-impact guard only
- with raised countersunk head tapping screws (on-site)

Ceiling Impulse Diffuser PIL-G

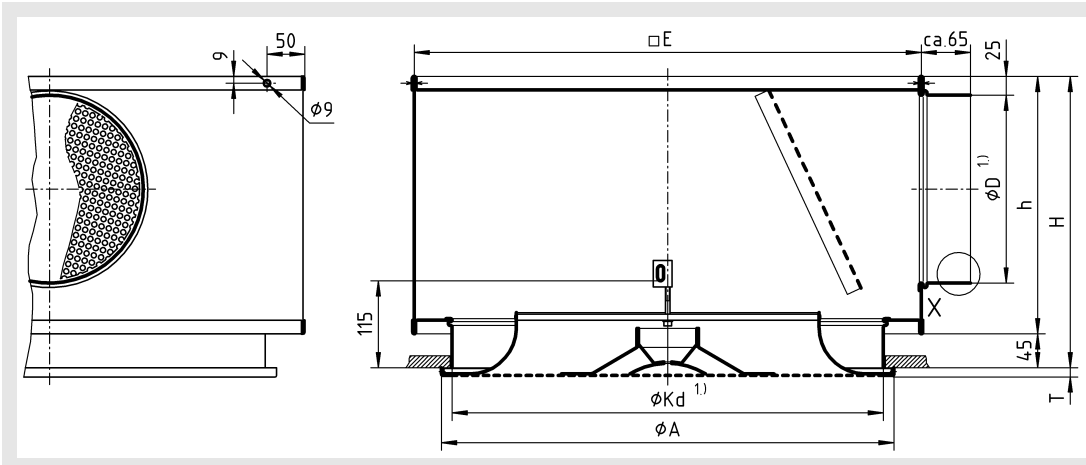
Models and dimensions

Dimensions

PIL-G-Q-Z with SAK-Z (for supply air)



PIL-G-R-Z with SRK-Z (for supply air)



1.) = outside

Available sizes PIL-G-Q-Z with SAK-Z (for supply air)

NW	□A	□E	H	øD	R	T
400	398	370	300	198	12	12
500	498	470	350	248	12	
600	598	570	415	313	12	
625	623	570	415	313	24	

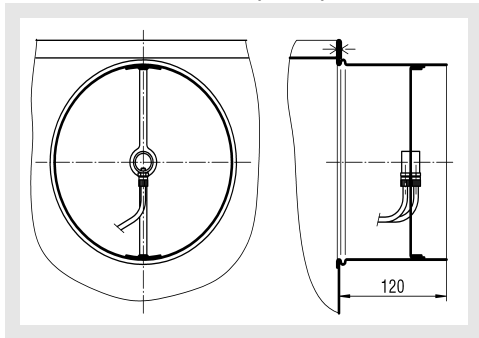
Available sizes PIL-G-R-Z with SRK-Z (for supply air)

NW	øA	øKd	□E	H	h	øD	T
400	400	370	445	335	290	198	10
500	500	470	545	385	340	248	
600	600	570	670	450	405	313	
625	625	570	670	450	405	313	

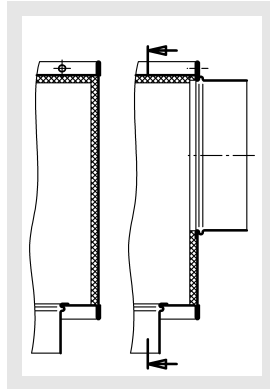
Ceiling Impulse Diffuser PIL-G

Dimensions of accessories

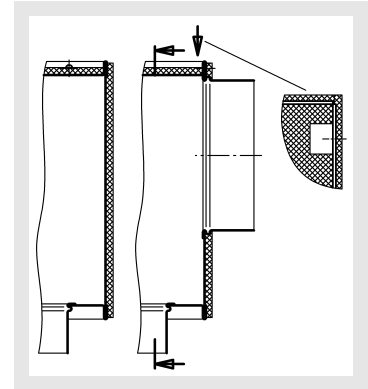
Volumetric flow meter (-VME)



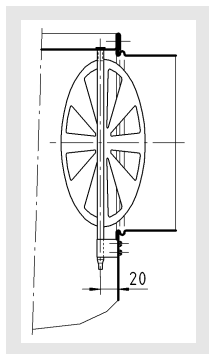
Insulation for SRK internal (-li)



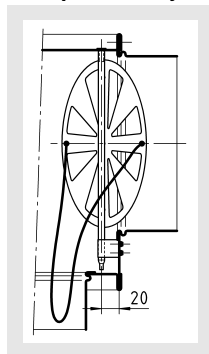
external (-la)



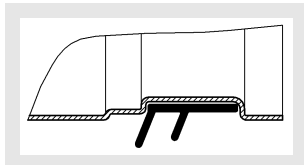
Damper (-DK) for SAK



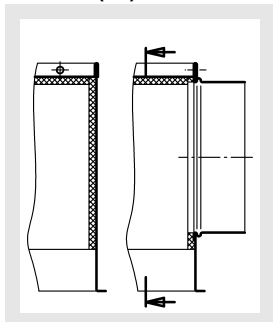
Damper (-DK) for SRK with ca- ble-operated adjustment (-SZV)



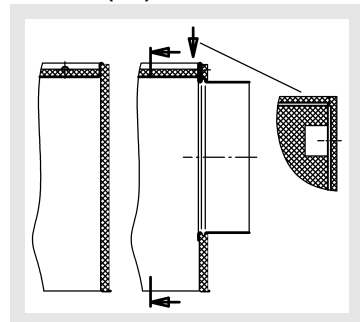
Rubber lip seal (-GD) Detail X



Insulation for SAK internal (-li)



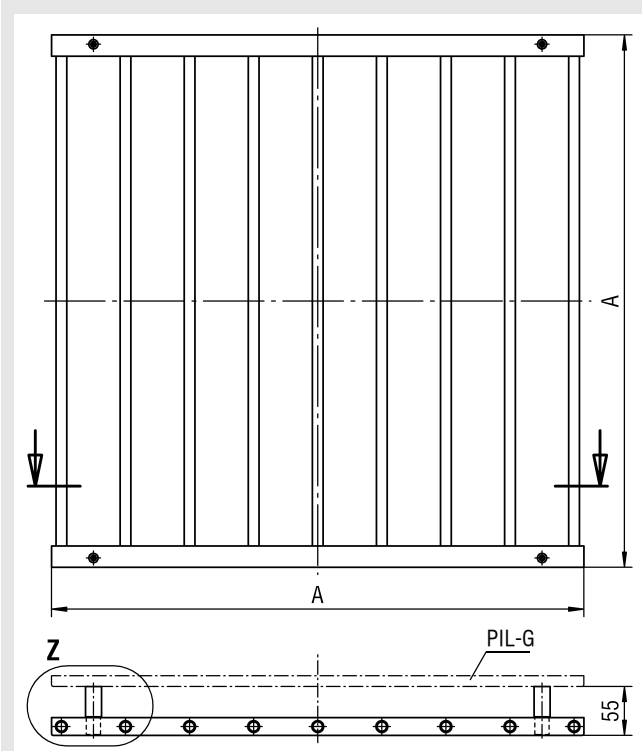
external (-la)



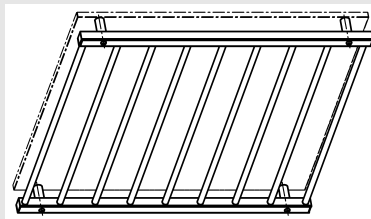
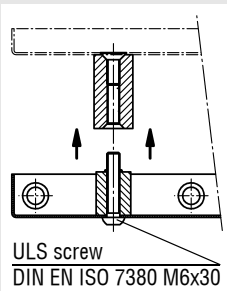
Ceiling Impulse Diffuser PIL-G

Ball-impact guard (-BS)

(only possible for PIL-G-Q with SM mounting)



Detail Z

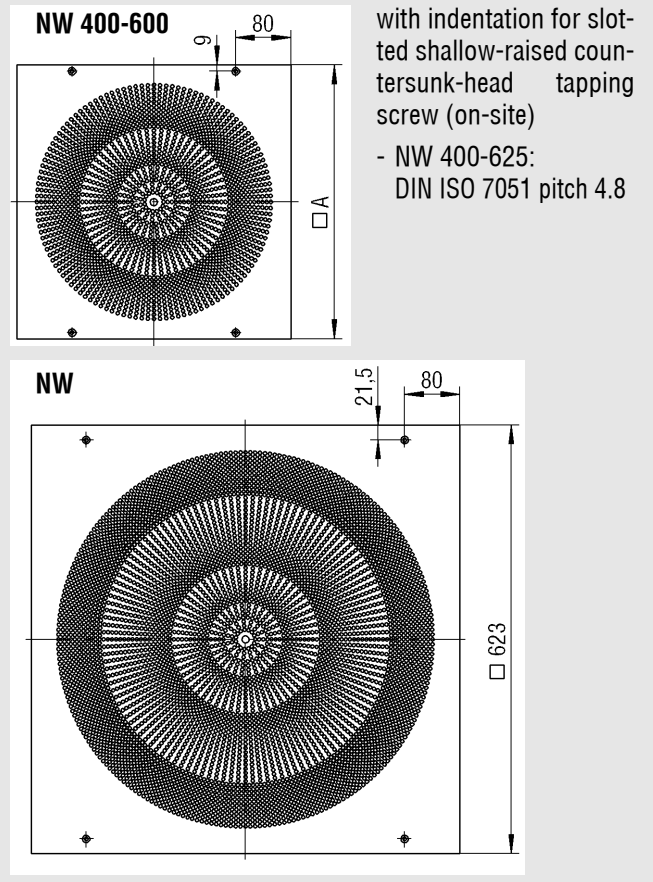


Available sizes

NW	□ A
400	398
500	498
600	598
625	623

Fastening methods

Screw mounting (-SM) (PIL-G-Q only)
for model with ball-impact guard only



Concealed mounting (-VM)

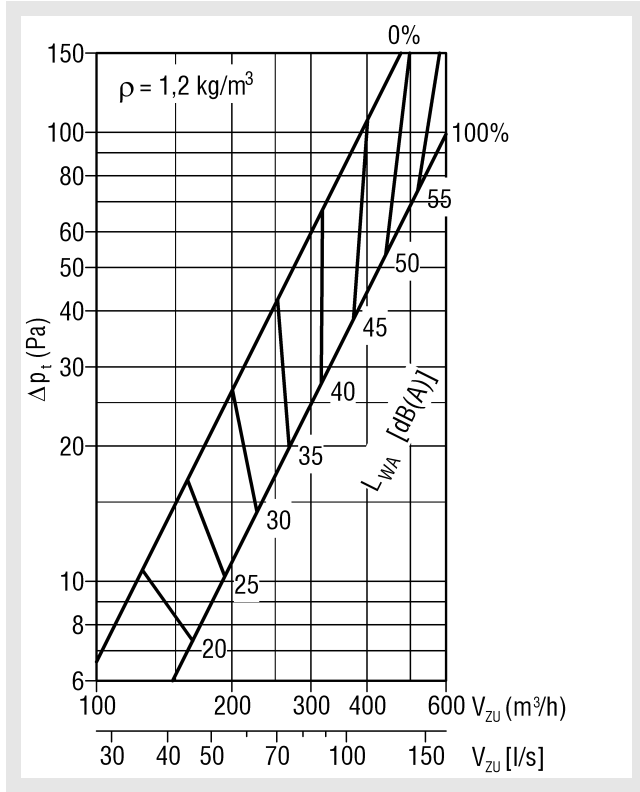
In concealed mounting, the ceiling impulse diffuser type PIL-G...-Z is fixed to the plenum box with a pole brace and an M6 socket head screw (to DIN EN ISO 4762).

Ceiling Impulse Diffuser PIL-G

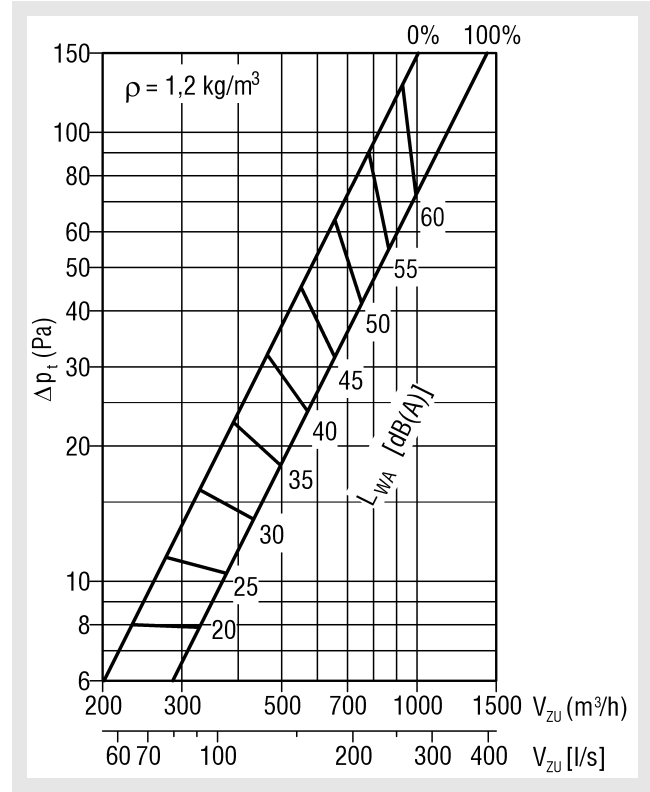
Technical data

Pressure loss and noise level

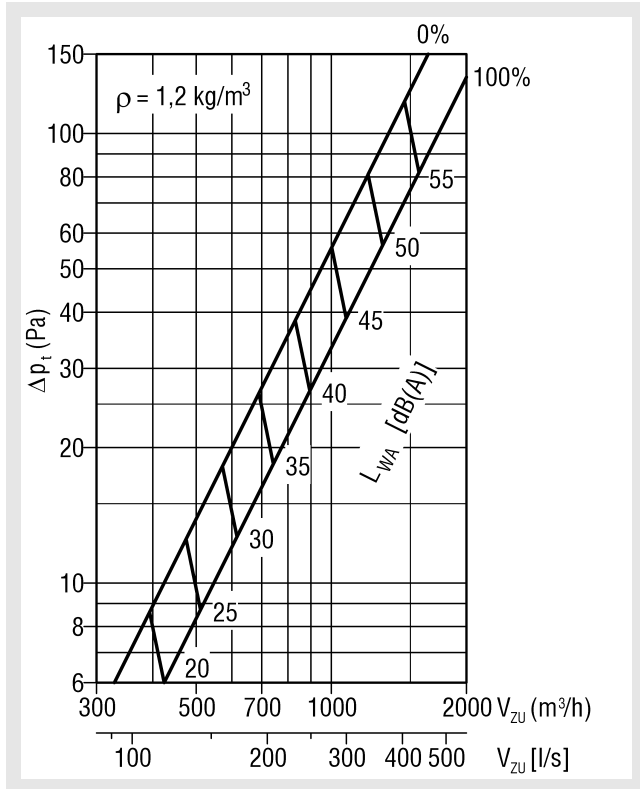
PIL-G-Z 400



PIL-G-Z 500

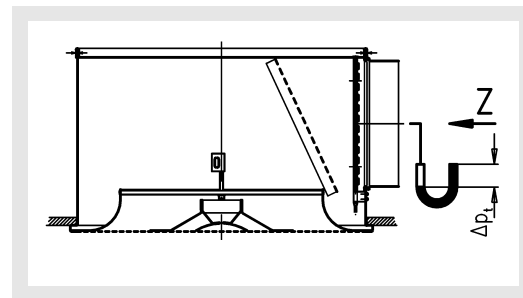


PIL-G-Z 600



Damper position:

- OPEN = 100%
- CLOSED = 0%

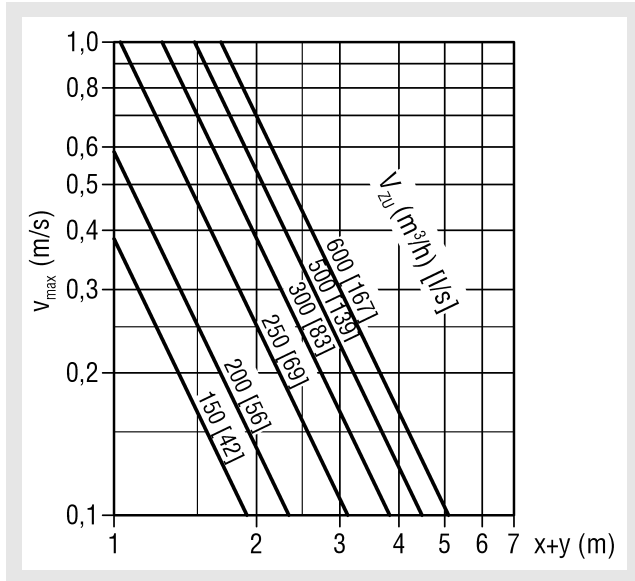


(supply air) with plenum box, pole brace and damper

Ceiling Impulse Diffuser PIL-G

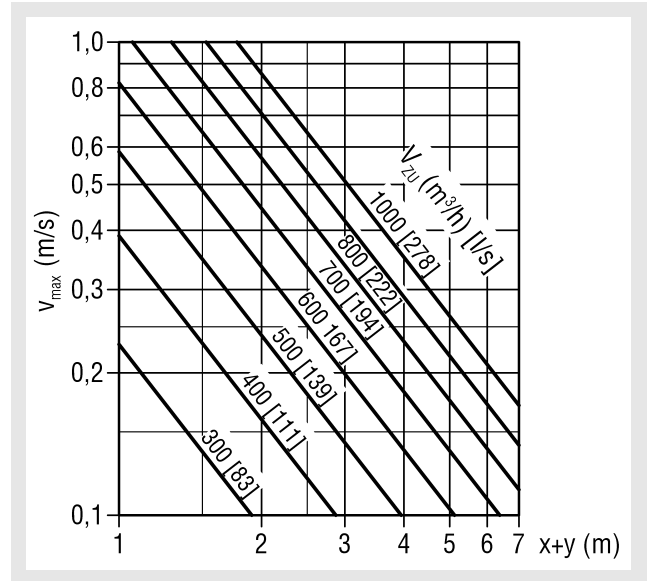
Maximum end velocity of jet

PIL-G-Z 400

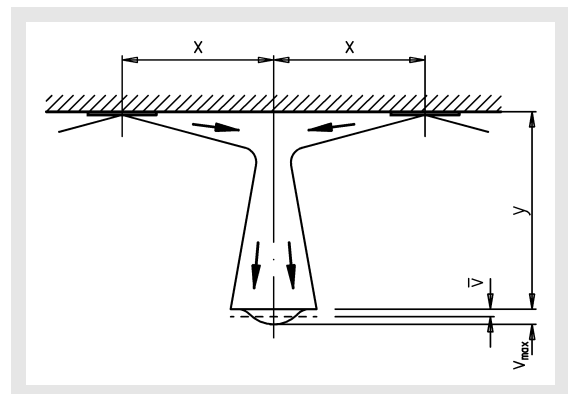
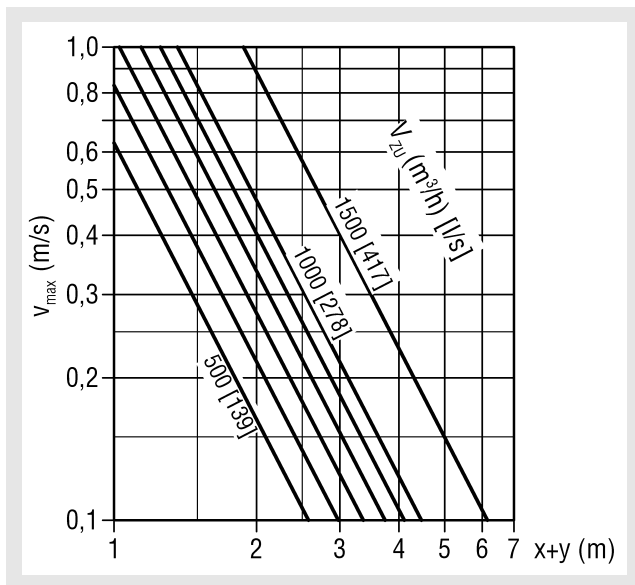


isothermal, with coanda effect / with plenum box

PIL-G-Z 500



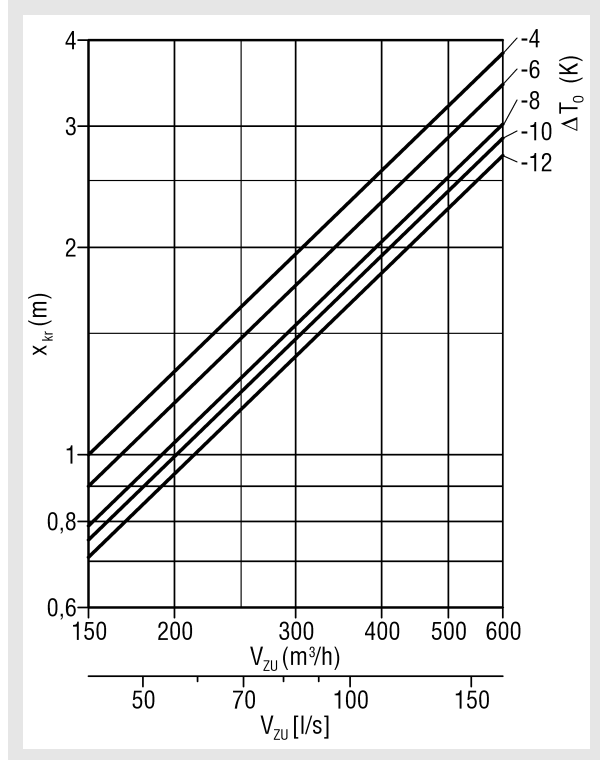
PIL-G-Z 600



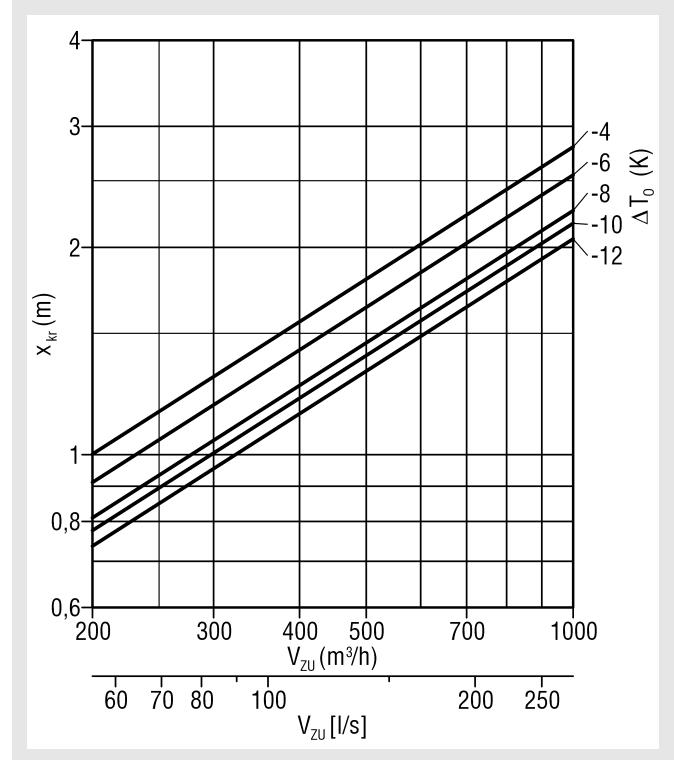
Ceiling Impulse Diffuser PIL-G

Critical throw

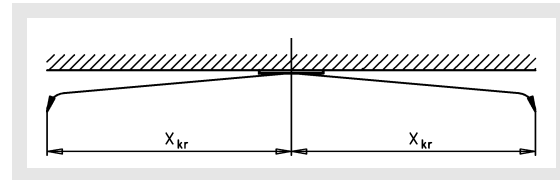
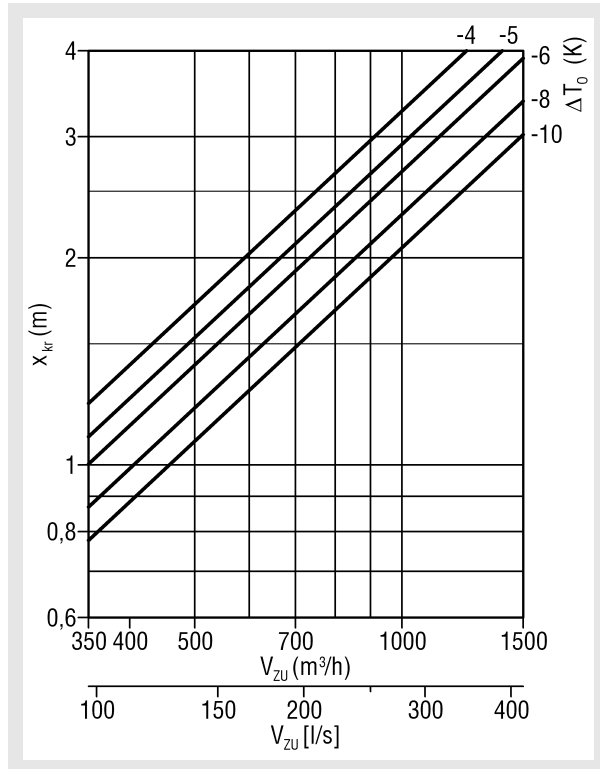
PIL-G-Z 400



PIL-G-Z 500

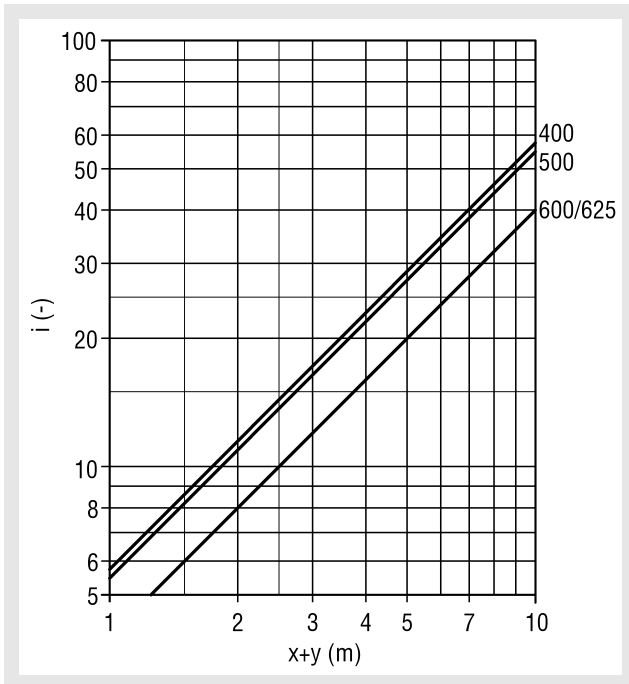


PIL-G-Z 600



Ceiling Impulse Diffuser PIL-G

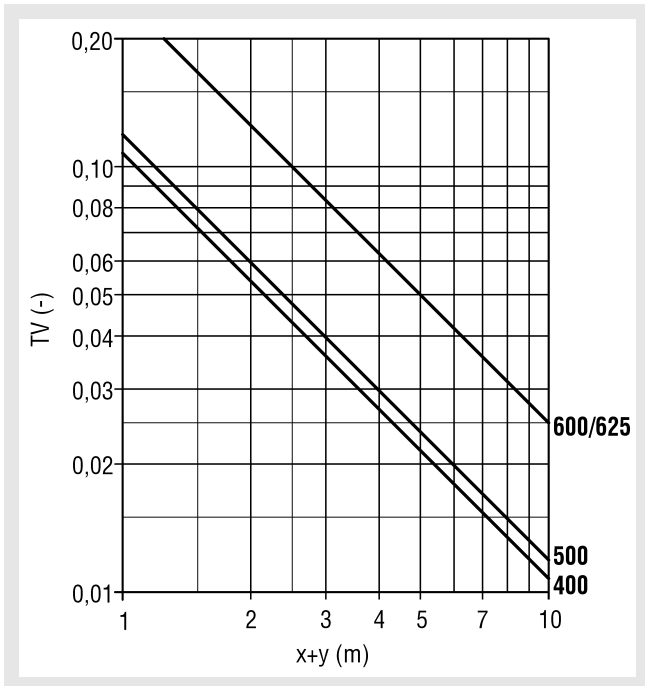
Induction ratio



Legend

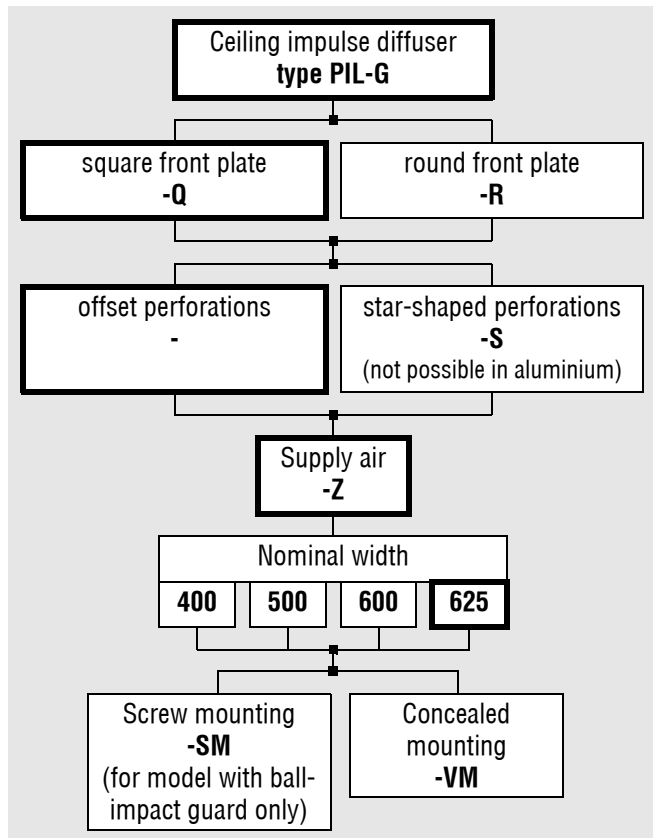
V_{ZU}	(m ³ /h) [l/s]=	Supply air volume
Δp_t	(Pa)	= Pressure loss
A	[dB(A)]	= A-weighted sound power level
ρ	(kg/m ³)	= Density
Z		= Supply air
x	(m)	= Horizontal throw
y	(m)	= Vertical throw
v_{max}	(m/s)	= Maximum end velocity of jet
v	(m/s)	= Average end velocity of jet ($v = v_{max} \times 0.5$)
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
V_x	(m ³ /h) [l/s]=	total air jet volume at point x
t_R	(°C)	= Room temperature
x+y	(m)	= horizontal + vertical throw
TV	(-)	= Temperature ratio ($TV = \Delta T_x / \Delta T_0$)
i	(-)	= Induction ratio ($i = V_x / V_{ZU}$)
NW	(mm)	= Nominal width

Temperature ratio

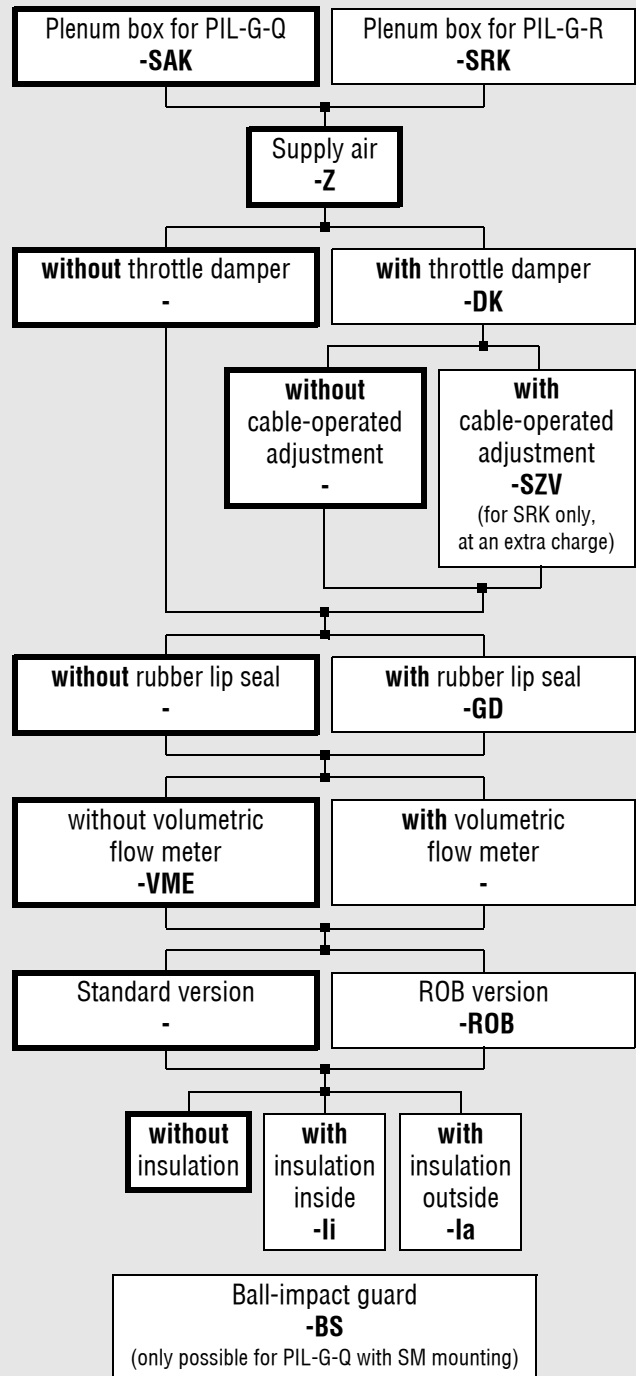


Ceiling Impulse Diffuser PIL-G

Order details



Accessories:



Order example

PIL-G-Q-Z-625-VM-SAK-Z-DK

Unless stated otherwise, the thick-frame model will be delivered!

Ceiling Impulse Diffuser PIL-G

Specification texts

Square ceiling impulse diffuser for installation in supply and exhaust air systems in clean rooms, operating theatres and comfort rooms up to 4 m high. The air guide funnel has been modified to allow a throughput of much **higher air volumes** (about +50%), compared with PIL, at the **same noise level** and at **lower pressure losses** (about -30%) This means that at the same supply air volumetric flow **fewer** ceiling impulse diffusers are required. Reducing the number of diffusers required automatically reduces the mounting and regulation costs. For high air volumes and lower pressure losses. Consisting of an easy to clean square sheet steel faceplate, with offset perforations, painted to RAL 9010 (white) or natural colour anodised aluminium. The supply air version additionally with a baffle plate and a sheet steel painted RAL 9005 (black) air guide funnel. It is fastened by concealed mounting (-VM) using a central fastening screw.

Product: SCHAKO **type PIL-G-Q-Z**

- star-shaped perforations (not possible in aluminium)
Product: SCHAKO **type PIL-G-Q-S-Z**
- with screw mounting (-SM), for model with ball-impact guard (-BS) only

Accessories:

- includes plenum box (SAK-Z), made of galvanised sheet steel, with integrated perforated equalising grid and lateral connecting piece and fixing lugs.
 - with a throttle damper (-DK) adjustable at the front side in the plenum box for air volume regulation
 - Volumetric flow meter (-VME) in connection pipe
 - ROB version: diffuser plate, damper and volumetric flow meter can be removed
 - with rubber lip seal (-GD) at the connection pipe
 - with thermal insulation
 - internal (-li)
 - external (-la)
- Ball-impact guard (-BS), made of steel with high-quality powder coating in RAL 9010 (white), other RAL colours possible at an extra charge (only possible for PIL-G-Q with screw mounting).

Round ceiling impulse diffuser for supply and return air systems in clean rooms, operating theatres and comfort rooms up to a height of 4 m. The air guide funnel has been modified to allow a throughput of much **higher air volumes** (about +50%), compared with PIL, at the **same noise level** and at **lower pressure losses** (about -30%) This means that at the same supply air volumetric flow **fewer** ceiling impulse diffusers are required. Reducing the number of diffusers automatically reduces the mounting and regulation costs. For high air volumes and lower pressure losses. Consisting of a round faceplate easy to clean, with perforation, made of perforated sheet steel painted to RAL 9010 (white) or made of anodised natural colour aluminium. Supply air version additionally with a baffle plate and a sheet steel air guide funnel painted to RAL 9005 (black). It is fastened by concealed mounting (-VM) using a central fastening screw.

Product: SCHAKO **type PIL-G-R-Z**

- star-shaped perforations (not possible in aluminium)
Product: SCHAKO **type PIL-G-R-S-Z**

Accessories:

- includes plenum box (SRK-Z), made of galvanised sheet steel, with integrated perforated equalising grid and lateral connecting piece, with fixing lugs.
 - with a throttle damper (-DK) adjustable at the front side in the plenum box for air volume regulation
 - with cable-operated adjustment (-SZV)
 - Volumetric flow meter (-VME) in connection pipe
 - ROB version: diffuser plate, damper and volumetric flow meter can be removed
 - with rubber lip seal (-GD) at the connection pipe
 - with thermal insulation
 - internal (-li)
 - external (-la)