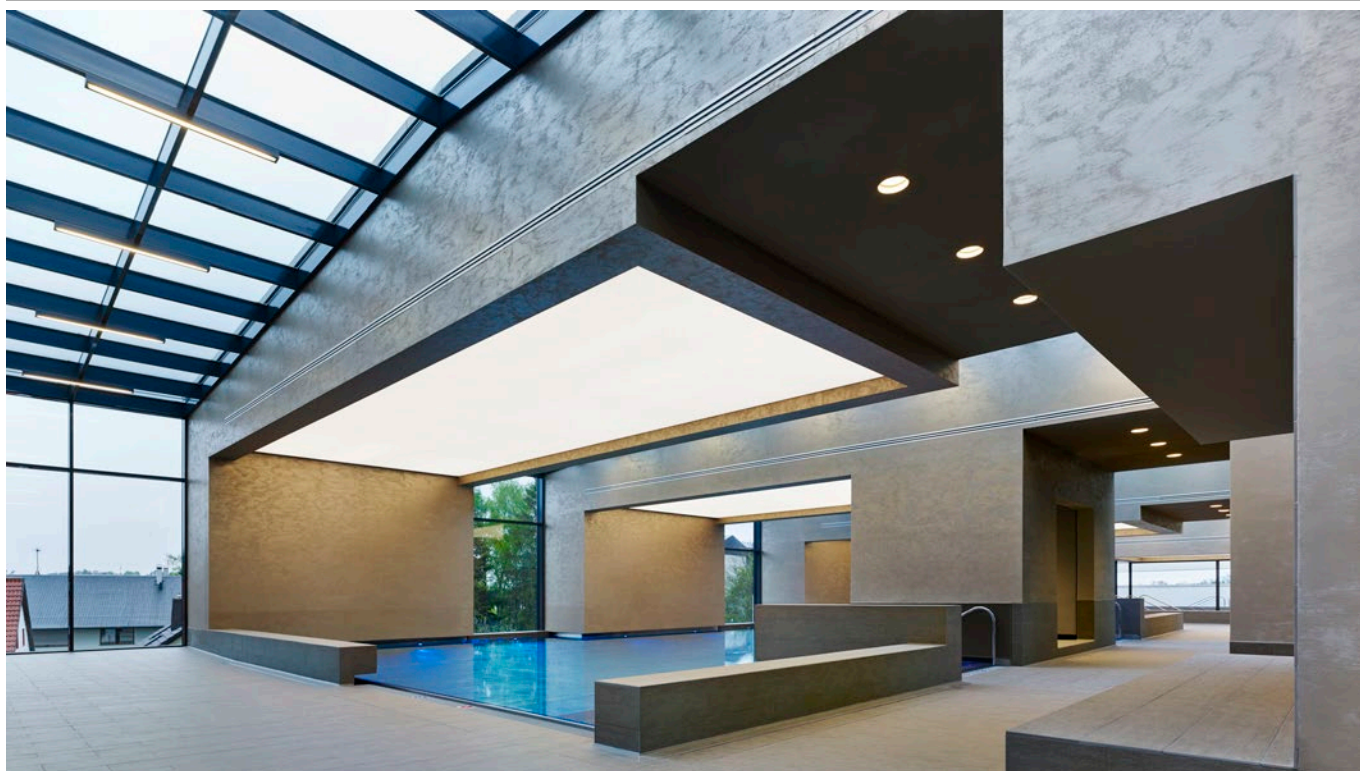


VZ-41

Linear slot diffuser for ceiling or wall – profile width 41 mm



QUICK FACTS

- Can be installed as a single module or in a continuous linear arrangement
- 1, 2, 3 or 4 slots (more slots upon request)
- High flexibility with the adjustable air deflectors
- Lightweight extruded aluminium profile
- Available with support profiles, corner modules, end angles and end pieces
- Plenum box with a horizontal or vertical duct connection
- Standard colour white RAL 9003
- Air deflectors in standard colour Jet Black RAL 9005

Number of slots	Vertical							
	$L_{WA} = 25 \text{ dB}$		$L_{WA} = 30 \text{ dB}$		$L_{WA} = 35 \text{ dB}$		$L_{WA} = 40 \text{ dB}$	
	V l/s	V (m ³ /h)	V l/s	V (m ³ /h)	V l/s	V (m ³ /h)	V l/s	V (m ³ /h)
1	26	92	30	109	36	129	42	152
2	35	127	43	154	52	186	62	224
3	46	166	55	199	66	238	79	285
4	54	196	66	237	79	286	96	346

Number of slots	Horizontal							
	$L_{WA} = 25 \text{ dB}$		$L_{WA} = 30 \text{ dB}$		$L_{WA} = 35 \text{ dB}$		$L_{WA} = 40 \text{ dB}$	
	V l/s	V (m ³ /h)	V l/s	V (m ³ /h)	V l/s	V (m ³ /h)	V l/s	V (m ³ /h)
1	24	88	29	105	34	124	41	147
2	38	137	45	163	54	195	65	233
3	47	168	56	201	67	242	81	290
4	57	206	69	248	83	298	99	358

Content

Technical description	3
Design	3
Functionality	3
Material and surface treatment	3
Adaptation	3
Accessories	3
AK-41	3
Planning	4
Installation	4
Technical data.....	5
Performance	5
Vertical distribution pattern.....	5
Horizontal distribution pattern	5
Determination of local velocities with tangential air discharge guidance	6
Determination of the air discharge velocities v_s and $v_{H,6}$	6
Installation example 1	7
Installation example 2	7
Installation example 3	7
Installation example	8
NR - Limit curves.....	8
Dimensions.....	9
Slot diffuser only.....	9
Slot diffuser with plenum box	10
Adjustable air discharge directions	11
Distribution patterns	11
Specification.....	12
Specification text.....	12

Technical description

Design

VZ-41 is a linear slot diffuser with a profile width of 41 mm, intended for wall or ceiling installation. The diffuser is available with 1 to 4 slots, and can be installed as single module or in a continuous linear arrangement, with active and passive diffusers without breaking the aesthetic uniformity. End pieces and end angles allow for versatile use of the slot diffuser, these can either be mounted on the right, left or both sides of the diffuser.

The diffuser is available with or without support profiles. The slot front rail is fitted with 75 mm long air deflectors featuring rectifier blades and double boomerang profiles, each individually adjustable.

Functionality

VZ-41 is intended for supply or extract air and is suitable for constant or variable air flow systems.

Individually adjustable air deflectors on the slot diffuser allow for easy adjustment of the distribution pattern. The air deflectors enables either a uniform air discharge or multiple smaller streams that can be directed within a 180° range. By using smaller air discharge, a rapid velocity can be achieved and a temperature reduction.

Material and surface treatment

Slot diffuser

- Made of extruded aluminium profiles.
- Standard colour:
 - RAL 9003, signal white, gloss 70
- Alternative standard colours:
 - RAL 9010, pure white, gloss 30
 - RAL 9006, white aluminium, gloss 70
 - RAL 9007, grey aluminium, gloss 30
 - RAL 9005, jet black, gloss 70
 - RAL 7035, light grey, gloss 70

End angles and end pieces

- Made of aluminium.
- Painted in the same colour as the slot diffuser.

Air deflectors

- Made of impact-resistant plastic.
- Standard colour (similar to):
 - RAL 9005, jet black
- Alternative standard colours (similar to):
 - RAL 9010, pure white
 - RAL 9003, signal white
 - RAL 9006, white aluminium
 - RAL 7035, light grey

Adaptation

- Other lengths or slots available on request.
- Other colours available on request.



VZ-41 without support profiles.



VZ-41 with support profiles and end angles.



VZ-41 with support profiles and end pieces.



VZ-41 with support profiles, end angles and plenum box AK-41.

Accessories

AK-41

Plenum box for slot diffusers with a profile width of 41 mm.

- Horizontal or vertical duct connection.
- Perforated commissioning damper in the spigot, actuated by pull cable. Can be supplied without the damper on request.
- Rubber seal.
- Made of galvanised steel.
- Available non-insulated or with sound-absorbing insulation, B-s1,d0 in accordance with EN ISO 11925-2.

VZ-41

Planning

The slot diffuser is available in the lengths 1000, 1200, 1500 and 2000 mm as standard.

VZ-41 is suitable in rooms with ceiling heights from 2.3 m to 4.0 m, with a recommended air flow range between 50 m³/h lm and 150 m³/h lm at temperature differences of +4 K to -12 K.

VZ-41 can be installed as a single module or in a continuous linear arrangement, with a combination of active and passive diffusers. The active slot diffusers are connected to the duct system using the plenum box AK-41.

Installation

For installation in continuous lengths, a connector is required (UPV40). For the passive diffusers a u-profile connection with M6 suspension is used (UPV40-M6).

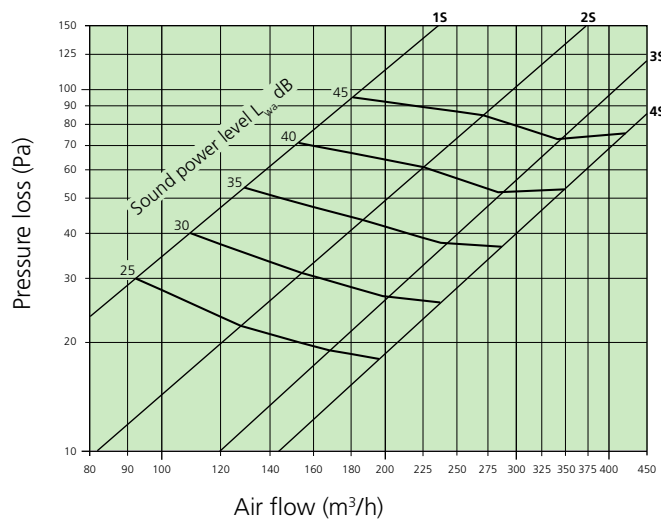
The active slot diffusers are fastened to the plenum box using one of the following fastening methods:

- Rivets.
- Traverse drywall.
- Clip fastening (for wall installation).

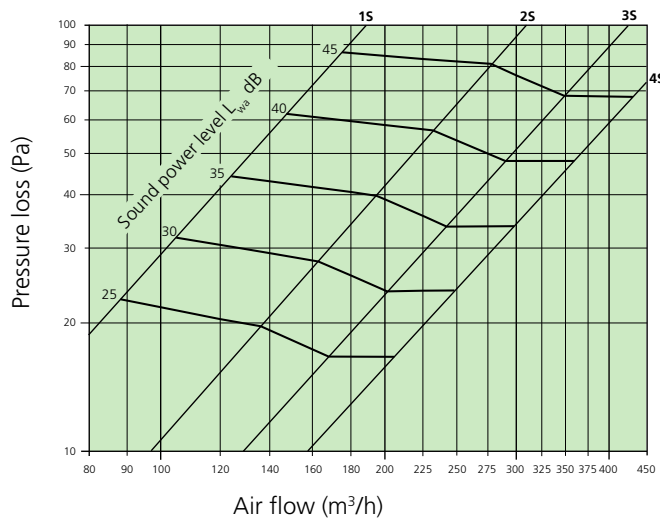
Technical data

Performance

Vertical distribution pattern



Horizontal distribution pattern

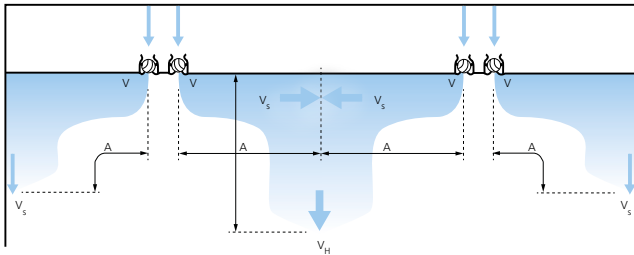


Determination of local velocities with tangential air discharge guidance

The following drawings and diagrams are valid for a tangential air discharge guidance, i.e., the supply air is distributed close to the ceiling.

The engineering graphs can be used to determine the air discharge velocities v_s of the supply air discharge at a certain distance (up to the point of impact) from the slot diffuser and, after the point of impact, the vertical velocity v_H in the occupancy zone.

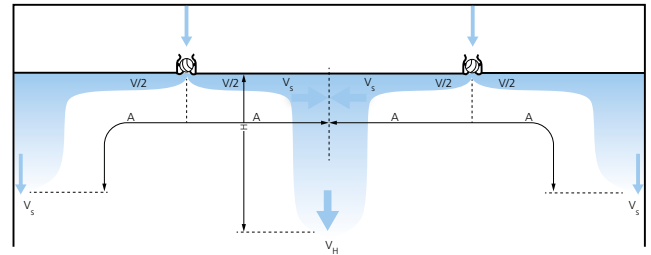
1-way air discharge guidance



The 1-way air discharge guidance for slot diffusers describes the redirection of the total air flow of a diffuser, 1-way (left or right) along the ceiling (air deflectors position 1 ceiling jet).

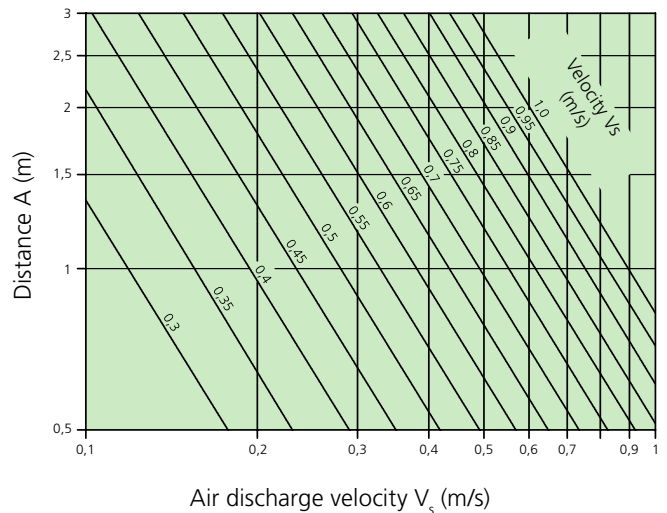
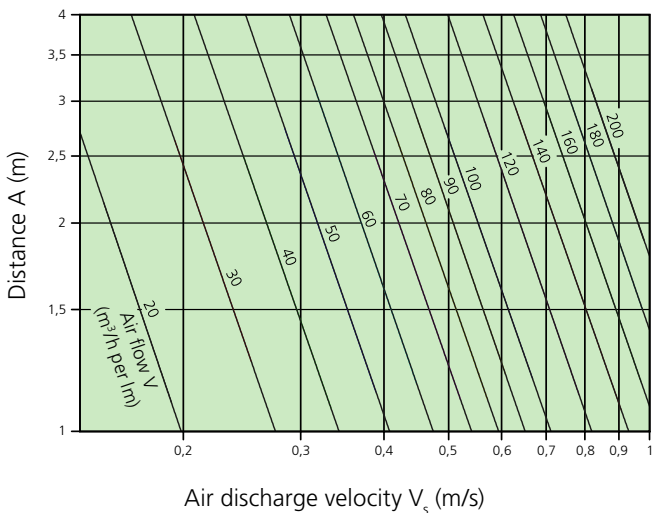
The slot diffusers can be mounted directly next to each other or, for example, on both sides of a luminaire. The distance between the two adjacent slot diffusers is irrelevant, the essential factors are the run lengths A and H of the air discharge (wall discharge and centre air discharge).

Diffuse air discharge guidance



Slot diffusers with air deflectors position 1, (alternating left / right) are used for air discharge guidance on both sides. In this case, only half the specific air flow $V/2$ (m^3/h / lm) may be used to determine the air discharge velocity v_s .

Determination of the air discharge velocities v_s and v_H



The air discharge velocity v_s (m/s) is determined at a distance A from the air diffuser (length of the air discharge along a wall or ceiling) as a function of the specific slot load (air flow per meter of slot).

Attention: In the case of diffuse distribution pattern, only half the specific air flow is to be applied.

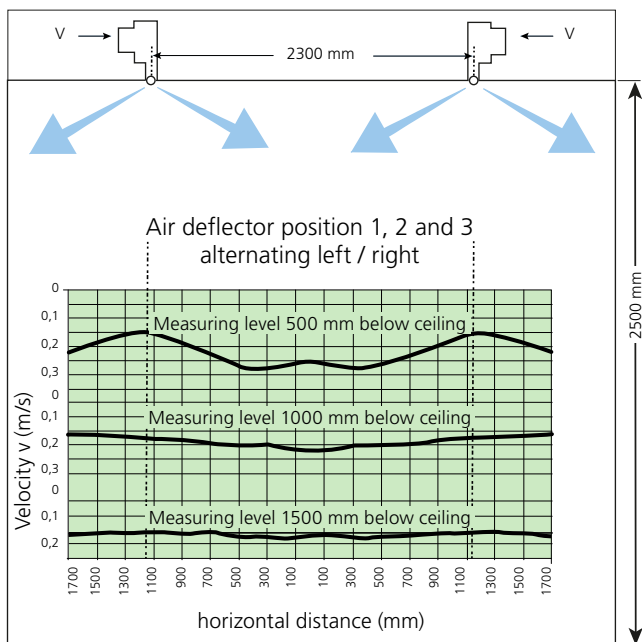
The vertical velocity v_H (m/s) is determined as a function of the ceiling distance H (m) and the previously determined velocity v_s at the point of impact.

Installation example 1

For low room heights (between 2.4 m and about 3.0 m), comparatively high cooling loads can still be covered while ensuring the comfort criteria if a diffuse distribution pattern is selected. For this purpose, the air deflectors (viewed in the longitudinal direction) must be set to distribute alternately to the "right" or "left". The jet axes of the individual air discharges are directed into the room at an angle of approx. 30° (measured from the ceiling).

The average velocities recorded at three levels below the outlets clearly show that thermal comfort is ensured despite high air exchange rates (approx. 17 h-1) and cooling loads (approx. 110 W/m²).

Air flow V = 100 m³/h lm, temperature difference ΔT = -8 K



Installation example 2

For room heights of approx. 3.0 m and higher, a diffuse distribution pattern can also be selected with a minimum distance of 1800 mm (alternately blowing out to the "right" or "left"). However, at these room heights, the jet axes of the individual air discharges must be directed into the room at an angle of approx. 45° (measured from the ceiling) in order to transport the fresh air into the occupied area as well.

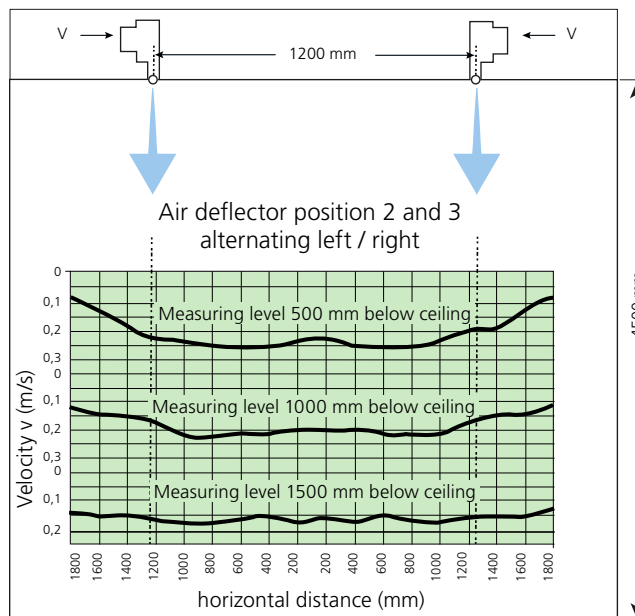
The average velocities recorded at three levels below the outlets also show in this example that thermal comfort is ensured at high air exchange rates (about 15 h-1) and cooling loads (about 110 W/m²).

Installation example 3

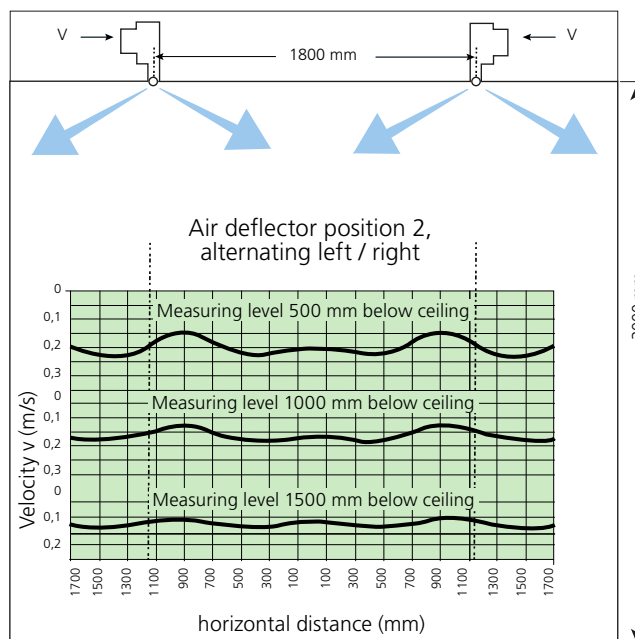
The greater the room heights become, the steeper the air discharges must be directed downward. In addition, the slot rows can be arranged at a smaller distance from each other.

The following example shows the average velocities measured at three room levels at a room height of 4.50 m. This example also shows that draft-free ventilation is ensured.

Air flow V = 80 m³/h lm, temperature difference ΔT = -8 K



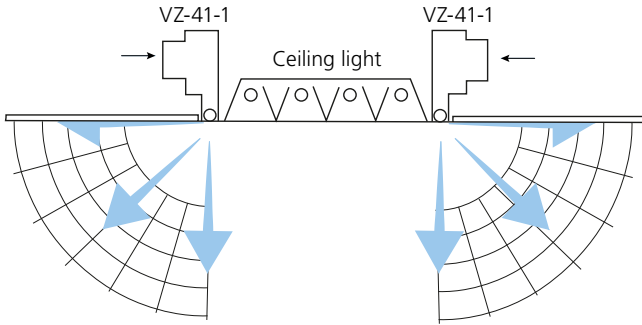
Air flow V = 80 m³/h lm, temperature difference ΔT = -8 K



Installation example

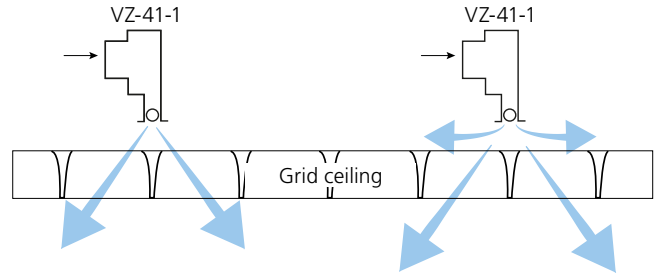
Combination slot diffuser with ceiling light

One slot diffuser VZ-41-1 each mounted on both sides of a ceiling light (distribution fanned out).



Supply air guidance via grid ceiling

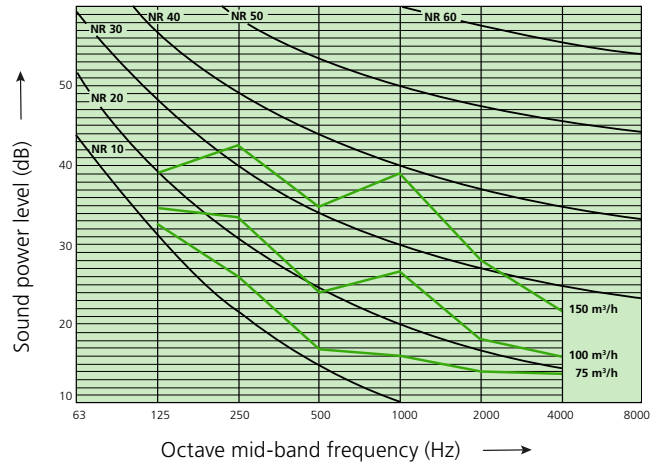
- 1.) Distribution 60°, both sides
- 2.) Distribution 60°, both sides with horizontal part



NR - Limit curves

Two different noises with formally the same A-weighted sound power level can be perceived as differently disturbing. For this reason, the sound power levels are evaluated for their frequency-dependent distribution according to the NR limit curves in the octave bands.

The diagram below shows the sound power levels in the different octave bands for three different air flows (75, 100 and 150 m³/h), measured on a VZ-41-1 with a length of 1250 mm and a connection diameter of 98 mm. (The data refer to air deflector position 2, alternately distributing out right / left). A slight increase in sound power levels occurs at air deflector position 1, and a slight decrease at positions 3 and 5. However, the range of variation is within the measurement tolerances, so it does not have to be taken into account in the project planning.



Dimensions

Slot diffuser only

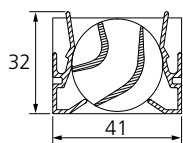


Figure 1. 1-slot, without support profiles (mm).

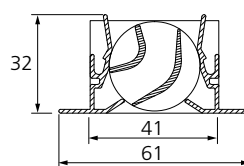


Figure 2. 1-slot, with support profiles (mm).

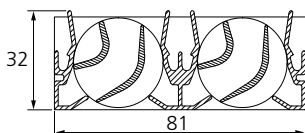


Figure 3. 2-slot, without support profiles (mm).

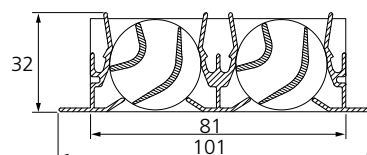


Figure 4. 2-slot, with support profiles (mm).

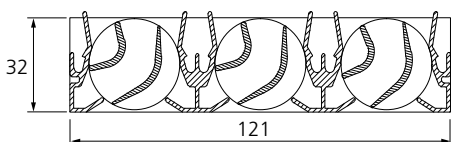


Figure 5. 3-slot, without support profiles (mm).

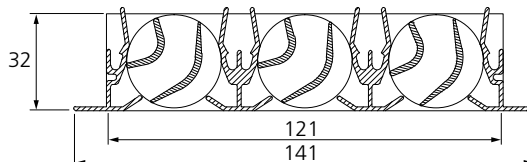


Figure 6. 3-slot, with support profiles (mm).

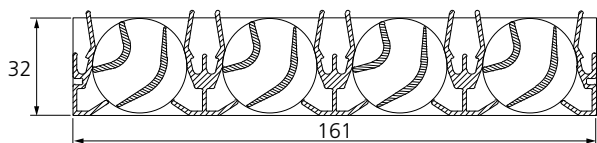


Figure 7. 4-slot, without support profiles (mm).

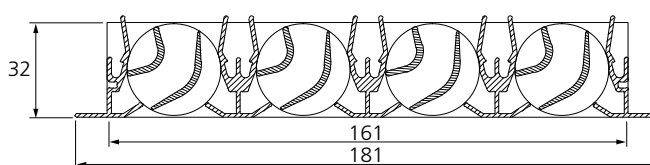


Figure 8. 4-slot, with support profiles (mm).

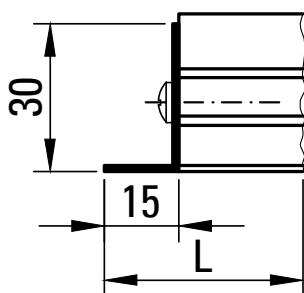


Figure 9. With end angle (mm).

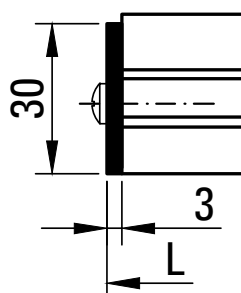


Figure 10. With end piece (mm).

Slot diffuser with plenum box

Number of slots	Plenum box variant	ø d (mm)	C (mm)	H (mm)	h (mm)	B1 (mm)	B (mm)
1	A	98	116	190	120	135	41
	B	123	116	215	145	160	
2	A	123	156	215	145	160	81
	B	138	156	230	160	175	
3	A	138	196	230	160	179	121
	B	158	196	250	180	195	
4	A	158	236	250	180	239	161
	B	198	236	290	220	239	

The specified measurements refer to the external dimensions (mm). These can be adjusted within functional limits to meet specific requirements

L = Spigot length 50 mm.

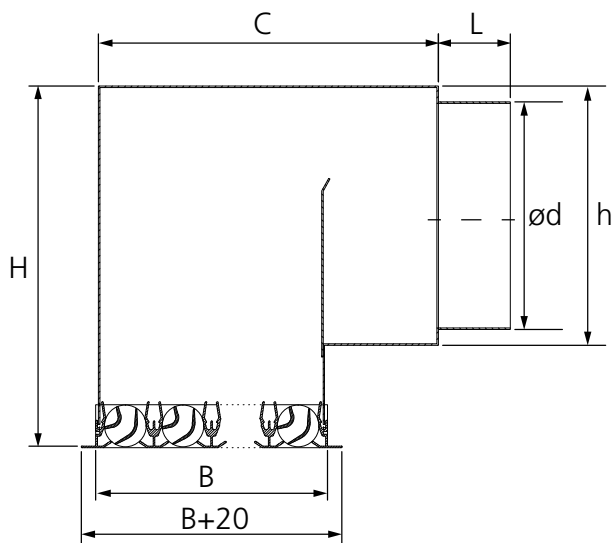


Figure 11. Dimensions, VZ-41 with plenum box, horizontal duct connection (mm). B+20 = Dimensions including support profiles.

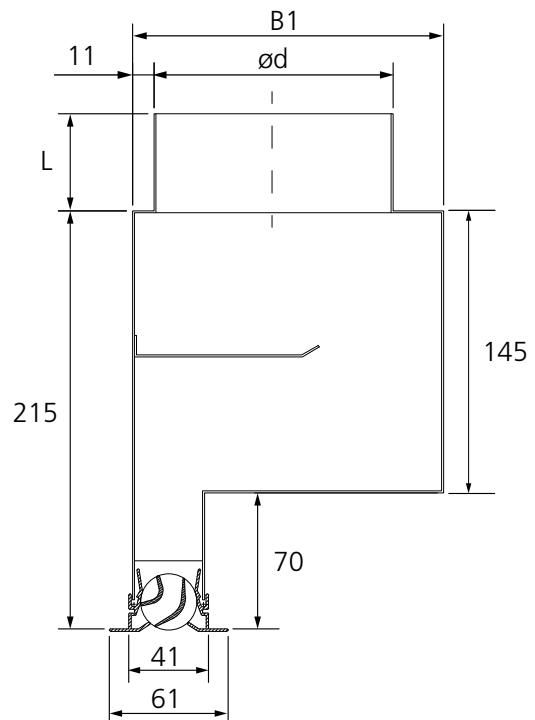
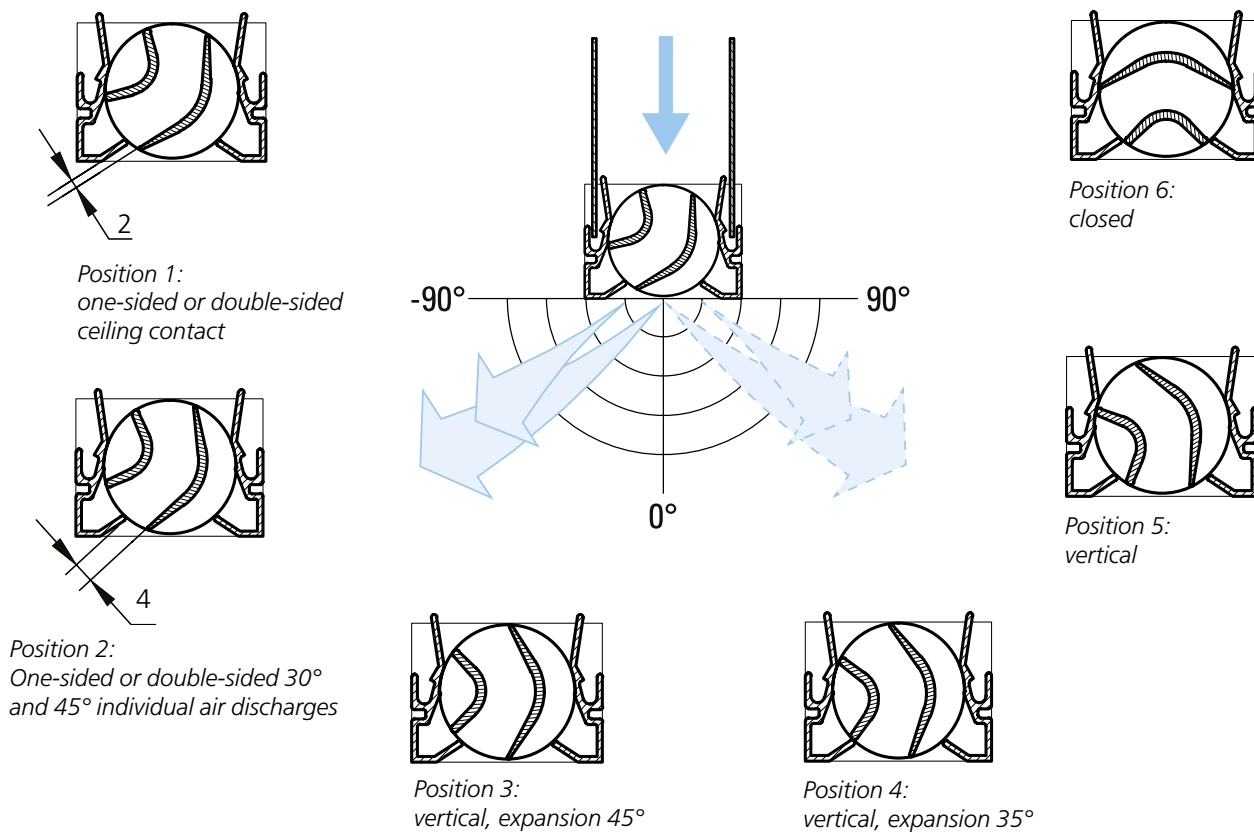
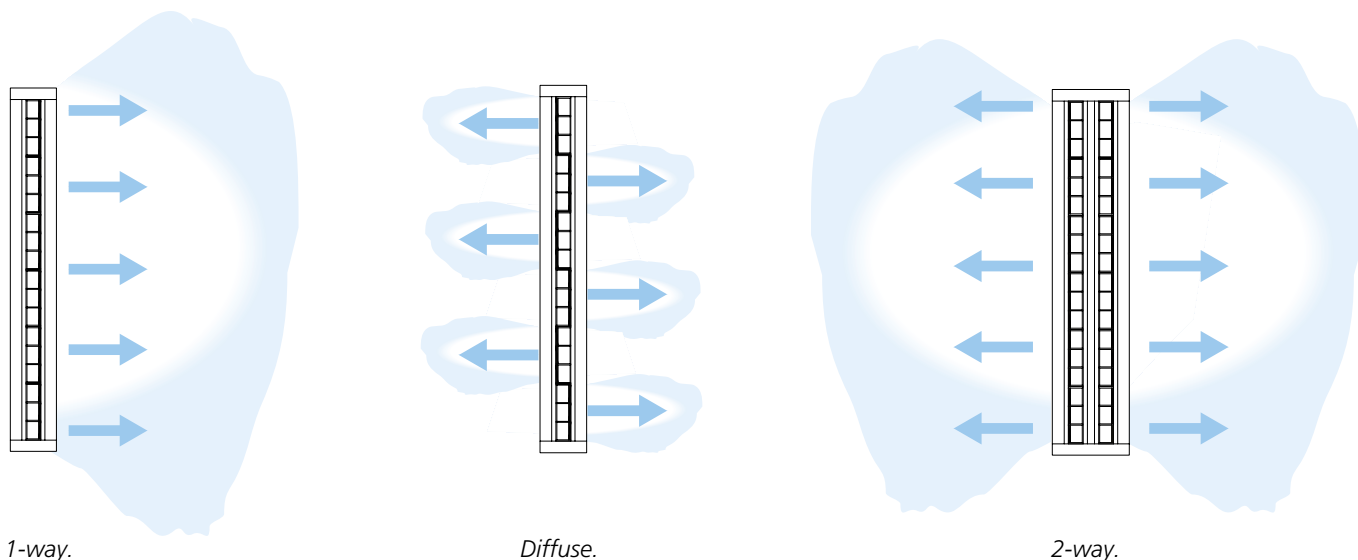


Figure 12. Dimensions, VZ-41 with plenum box, vertical duct connection (mm). 61 = Dimensions including support profiles.

Adjustable air discharge directions



Distribution patterns



Specification

For ordering, contact your local Swegon sales office.

Specification text

Slot diffuser VZ-41 with a system width of 41 mm, intended for wall or ceiling installation with the following features:

- Available with 1 to 4 slots.
- Extruded aluminium profile rails, painted in white (RAL 9003).
- Available with or without support profiles.
- Fitted with 75 mm long air deflectors, individually adjustable, made in plastic and painted black.
- Plenum box with horizontal or vertical duct connection, made of galvanised steel.
 - Perforated commissioning damper in the spigot, actuated by pull cable.
 - Available with or without internal insulation, class B-s1,d0 in accordance with EN ISO 11925-2.
 - Rubber seal.