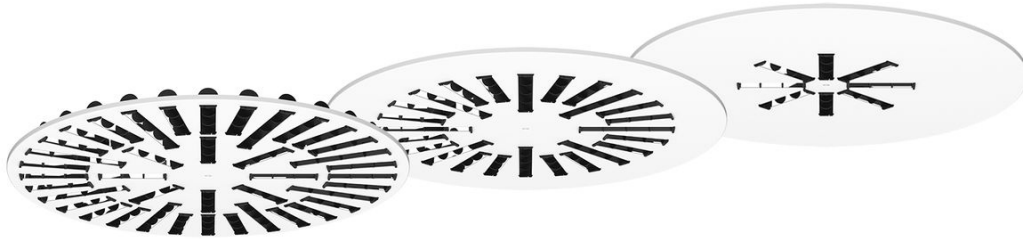


VVKR-B-R
Swirl Diffuser
Handbook



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<u>Dimensions & Weights</u>7
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Description

VVKR-B-R is a swirl diffuser with individually manually adjustable deflectors for installation in ceilings. It is intended for air supply and eventually can be used for exhaust air. The maximum recommended installation height is 4 m. The field of application are buildings like shopping halls, receptions, or offices.

Highlights

- Simple and safe design, easy installation and handling
- Can be used for extracting air with or without deflectors
- Variable air discharge patterns by deflectors adjustable from outside without tools
- Excellent induction rate also at low air flow volumes
- Supply air temperature can vary from -10K to +10K based on the room air temperature

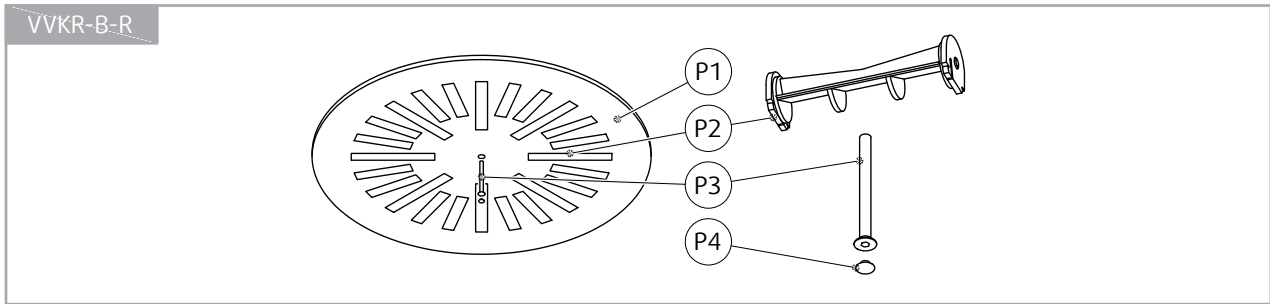
Accessory

- PB-VVK-R: Plenum Box

Design

The VVKR-B-R is made from galvanized steel sheet with powder paint surface finish. The adjustable polymer deflectors are available in black or white colour. In the middle of the diffuser there is a pre-punched hole for front plate screw fixing. A screw with a white decorative cap for its installation is provided together with a self-adhesive seal, which must be adhered at the installation site.

Product Parts



Legend

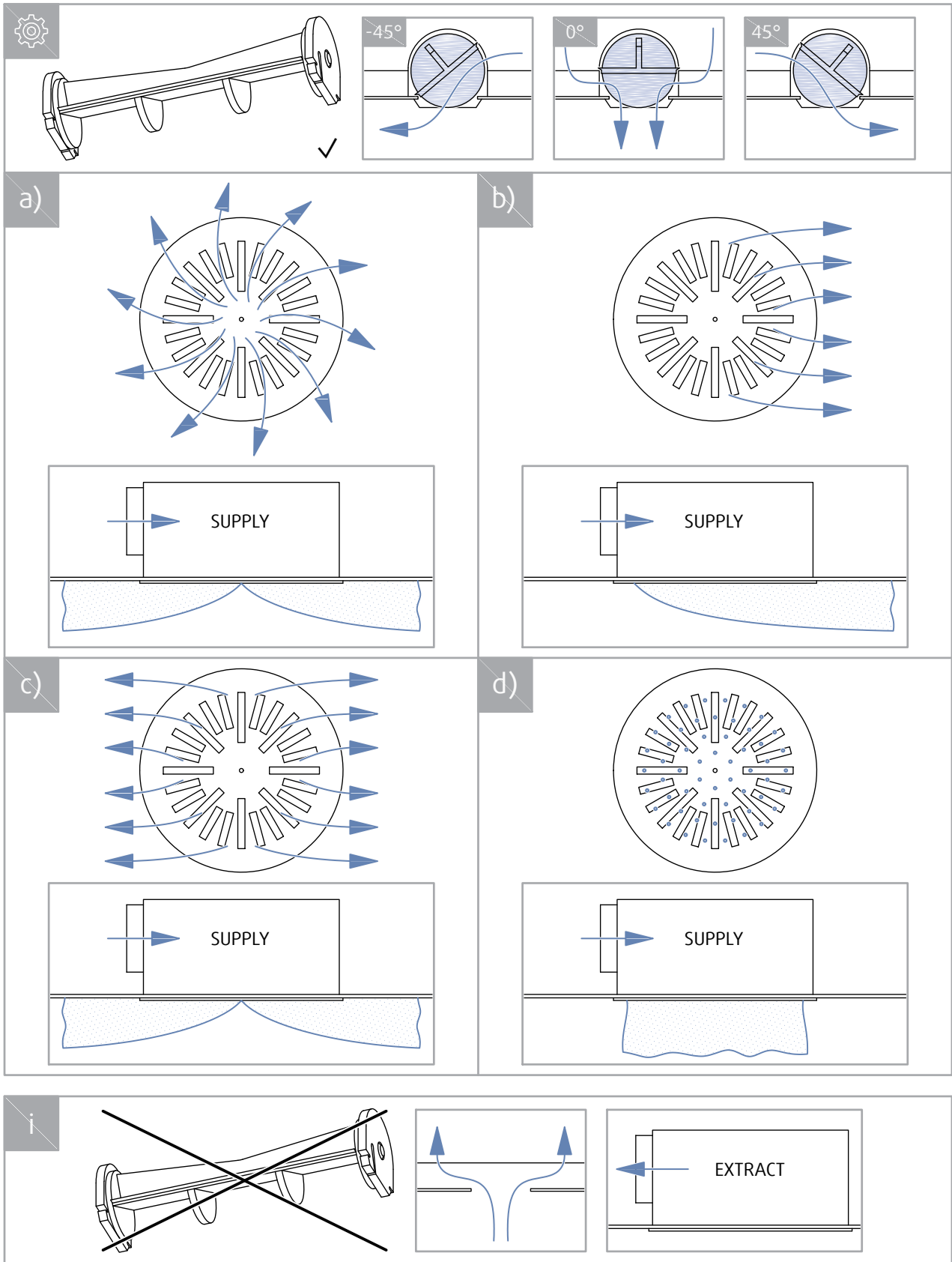
P1 Diffuser plate

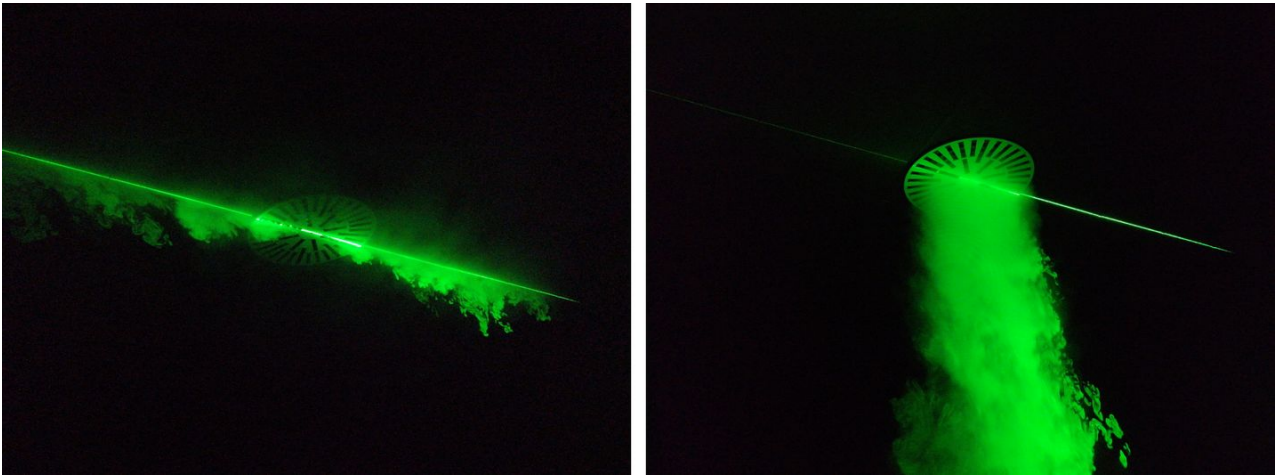
P2 Deflector

P3 Screw M6×70 mm, DIN 7991

P4 Screw cover

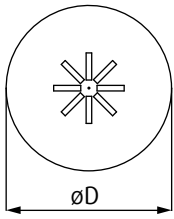
Setup Possibilities



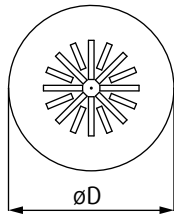


Air flow visualisation of the horizontal and vertical discharge

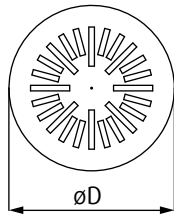
Dimensions & Weights



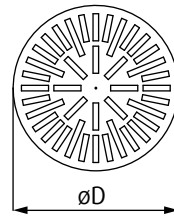
VVKR-B-R...-8



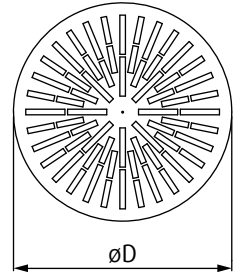
VVKR-B-R...-16



VVKR-B-R...-24



VVKR-B-R...-40



VVKR-B-R...-64

DN	øD	8 ×	16 ×	24 ×	40 ×	64 ×
	mm	kg				
300	298	0,5	-	-	-	-
400	398	0,9	0,9	-	-	-
500	498	1,4	1,4	1,3	-	-
600	598	2,7	2,0	1,9	2,3	-
625	623	2,8	2,2	2,1	2,5	-
800	798	-	-	-	-	4,2
825	823	-	-	-	-	4,4

DN ×	A _v	
	m ²	
300×8, 400×8, 500×8, 600×8, 625×8	0,00814	0,01714
400×16, 500×16, 600×16, 625×16	0,02044	0,04188
500×24, 600×24, 625×24	0,02858	0,05902
600×40, 625×40	0,04487	0,09329
800×64, 825×64	0,07761	0,15992

VVKR-B-R DN																
	PB-VVK-R DN															
	300	400	500	600	625	400	500	600	625	500	600	625	600	625	800	825
300	•															
400	•	•				•										
500	•	•	•			•	•			•						
600	•	•	•	•		•	•	•		•	•		•			
625	•	•	•	•	•	•	•	•	•	•	•	•	•			
800														•		
825														•	•	

Ordering Codes

Size DN

300

400

500

600

625

800

825

Number of deflectors

8

16

24

40

64

Colour of deflectors

B Black

SW Signal white

R Without blades (extract air)

Surface finish

SW Signal white (RAL9003, gloss 30%)

RALXXXX Other RAL colour

Example of the Ordering Code

VVKR-B-R-300-8-W-SW

Swirl diffuser with adjustable deflectors, 300 mm diameter with 8 deflectors. Deflectors and diffuser plate are signal white (SW).

Accessory

PB-VVK-R

Plenum Box



Description

The PB-VVK-R is round face plenum box with a horizontal or a vertical connection and internal or external insulation.

Design

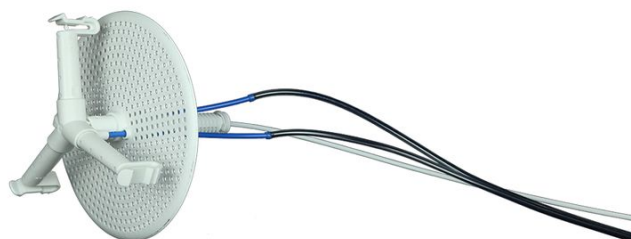
The plenum box is made of galvanized sheet as a standard.

There are 2 types of connection:

- D1: a simple spigot without a seal, with a damper
- D2: a pressed spigot with a seal including the Zeus damper

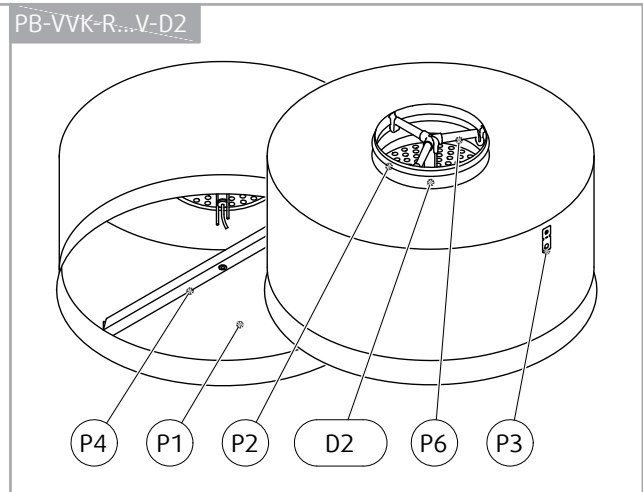
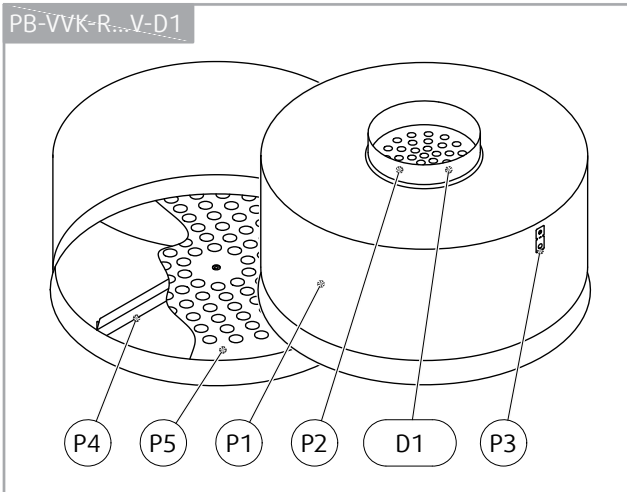
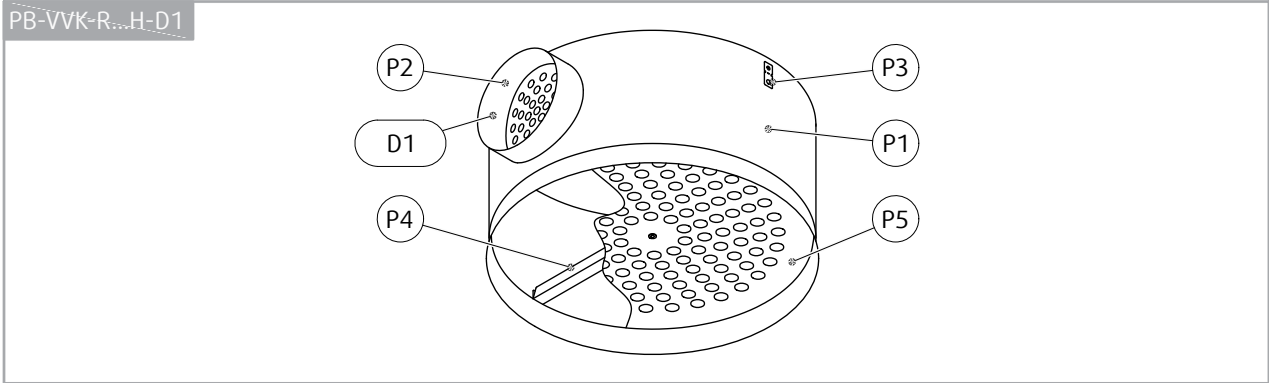
The product can be equipped by 15 mm thick internal insulation and/or 6 mm thick external insulation.

Zeus damper



Zeus is a control damper of the PB-VVK-R...D2 plenum box. It contains impulse tubes for measuring differential pressure using a portable measuring device. It can be adjusted manually using a cable gearing.

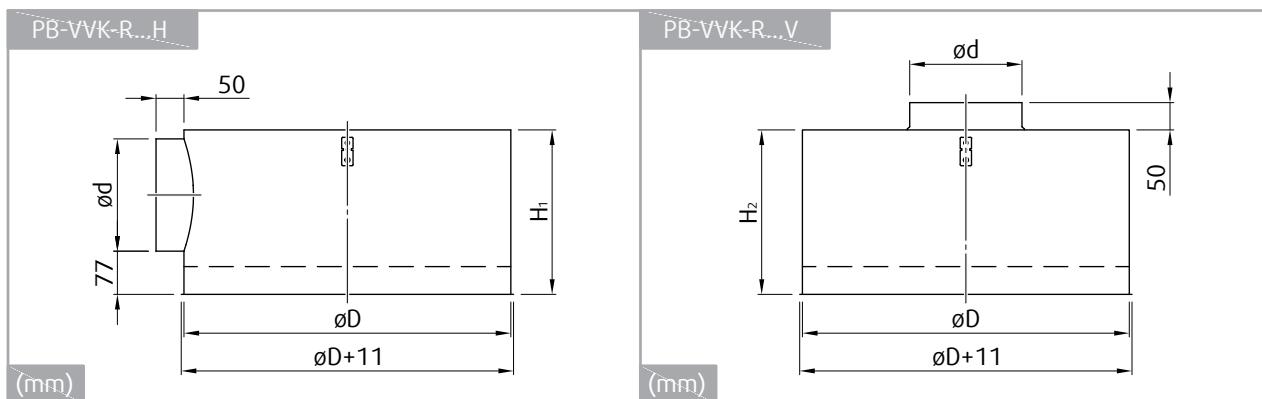
Product Parts



Legend

- P1** Casing (can be equipped by internal/external insulation)
- P2** Duct connection
- D1** Spigot without a seal
- D2** Spigot with a seal including the Zeus damper
- P3** Bendable hanger
- P4** Bridge with a connection to a diffuser
- P5** Mesh screen
- P6** Zeus damper

Dimensions



DN	$\varnothing D$	H_1		H_2		m			
		PB-VVK-R...H		PB-VVK-R...V		PB-VVK-R...H		PB-VVK-R...V	
		mm				kg			
300-160	275	250	200	158	2,29	1,97			
400-200	364	290	200	198	3,34	2,82			
500-200	470	290	200	198	4,68	3,91			
600-200	575	290	300	198	6,21	6,31			
600-250	575	340	300	248	6,68	6,23			
625-200	595	290	300	198	6,52	6,92			
625-250	595	340	300	248	7,00	6,55			
800-315	775	405	300	313	11,35	10,46			
825-315	795	405	300	313	11,83	10,88			

Ordering Codes

Size DN: Inlet-Outlet

300-160

400-200

500-200

600-200

600-250

625-200

625-250

800-315

825-315

Mesh screen

S Supply with mesh screen

E Extract without mesh screen

Connection

H Horizontal (from the side)

V Vertical (from the top)

Damper

D1 Untight spigot with damper ¹

D2 Pressed tight spigot with the Zeus damper ¹

Insulation

I2 With internal insulation ²

J With external insulation ²

NOTES:

¹ If the spigot type is not entered in the ordering code, type "D1" will be supplied by default. It is not possible to order the Zeus damper for the product PB-VVK-R with horizontal connection. Plenum boxes with a vertical spigot D2 are supplied without a mesh screen.

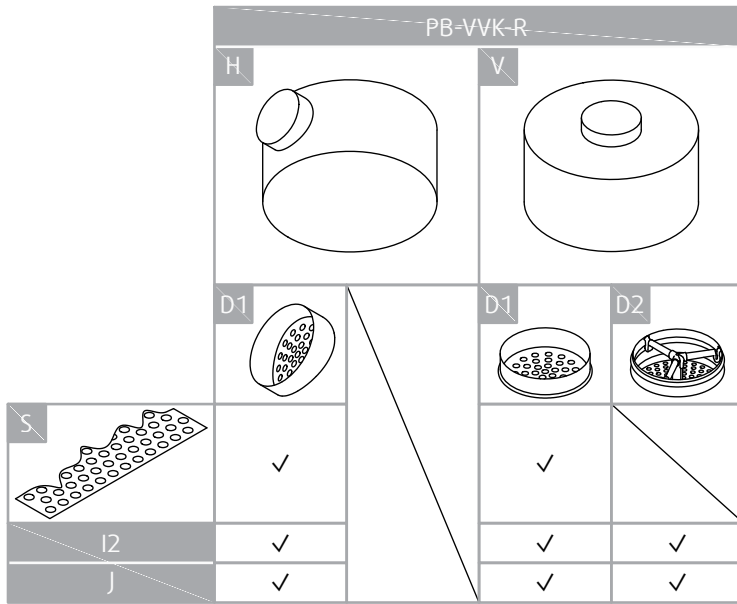
² The internal and external insulation also can be applied together. In case the insulation type is not entered in the ordering code, the product PB-VVK-R will be supplied without insulation.

Example of the Ordering Code

PB-VVK-R-300-160-E-H-D1-I2

Round plenum box with nominal dimension 300 mm, spigot with diameter 160 mm, extract without mesh screen, horizontal connection (from the side), spigot type D1, internal insulation.

Plenum box selection diagram



Quick Selection

Air flow volume q_v at different A-weighted sound power levels L_{WA}

Item	25 dB(A)		30 dB(A)		35 dB(A)	
	m ³ /h	l/s	m ³ /h	l/s	m ³ /h	l/s
VVKR-B-R-300-8-B-SW + PB-VVK-R-300-160-S-H-D1	144	40	173	48	209	58
VVKR-B-R-400-8-B-SW + PB-VVK-R-300-160-S-H-D1 / PB-VVK-R-400-200-S-H-D1	144	40	173	48	209	58
VVKR-B-R-400-16-B-SW + PB-VVK-R-400-200-S-H-D1	254	70	302	84	358	100
VVKR-B-R-500-8-B-SW + PB-VVK-R-300-160-S-H-D1 / PB-VVK-R-400-200-S-H-D1 / PB-VVK-R-500-200-S-H-D1	144	40	173	48	209	58
VVKR-B-R-500-16-B-SW + PB-VVK-R-400-200-S-H-D1 / PB-VVK-R-500-200-S-H-D1	254	70	302	84	358	100
VVKR-B-R-500-24-B-SW + PB-VVK-R-500-200-S-H-D1	305	85	368	102	442	123
VVKR-B-R-600-8-B-SW + PB-VVK-R-300-160-S-H-D1 / PB-VVK-R-400-200-S-H-D1 / PB-VVK-R-500-200-S-H-D1 / PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1	144	40	173	48	209	58
VVKR-B-R-600-16-B-SW + PB-VVK-R-400-200-S-H-D1 / PB-VVK-R-500-200-S-H-D1 / PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1	254	70	302	84	358	100
VVKR-B-R-600-24-B-SW + PB-VVK-R-500-200-S-H-D1 / PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1	305	85	368	102	442	123
VVKR-B-R-600-40-B-SW + PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1	473	131	560	156	658	183
VVKR-B-R-625-8-B-SW + PB-VVK-R-300-160-S-H-D1 / PB-VVK-R-400-200-S-H-D1 / PB-VVK-R-500-200-S-H-D1 / PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1 / PB-VVK-R-625-200-S-H-D1 / PB-VVK-R-625-250-S-H-D1	144	40	173	48	209	58
VVKR-B-R-625-16-B-SW + PB-VVK-R-400-200-S-H-D1 / PB-VVK-R-500-200-S-H-D1 / PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1 / PB-VVK-R-625-200-S-H-D1 / PB-VVK-R-625-250-S-H-D1	254	70	302	84	358	100
VVKR-B-R-625-24-B-SW + PB-VVK-R-500-200-S-H-D1 / PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1 / PB-VVK-R-625-200-S-H-D1 / PB-VVK-R-625-250-S-H-D1	305	85	368	102	442	123
VVKR-B-R-625-40-B-SW + PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1 / PB-VVK-R-625-200-S-H-D1 / PB-VVK-R-625-250-S-H-D1	473	131	560	156	658	183
VVKR-B-R-800-64-B-SW + PB-VVK-R-800-315-S-H-D1 / PB-VVK-R-825-315-S-H-D1	657	183	759	211	872	242
VVKR-B-R-825-64-B-SW + PB-VVK-R-800-315-S-H-D1	657	183	759	211	872	242

NOTE: The working points were measured with open adjustment damper.

Air flow volume q_v at different A-weighted sound pressure levels L_{pA} with 10m² absorption area

Item	20 dB(A)		25 dB(A)		30 dB(A)	
	m ³ /h	l/s	m ³ /h	l/s	m ³ /h	l/s
VVKR-B-R-300-8-B-SW + PB-VVK-R-300-160-S-H-D1	138	38	167	46	201	56
VVKR-B-R-400-8-B-SW + PB-VVK-R-300-160-S-H-D1 / PB-VVK-R-400-200-S-H-D1	138	38	167	46	201	56
VVKR-B-R-400-16-B-SW + PB-VVK-R-400-200-S-H-D1	244	68	292	81	346	96
VVKR-B-R-500-8-B-SW + PB-VVK-R-300-160-S-H-D1 / PB-VVK-R-400-200-S-H-D1 / PB-VVK-R-500-200-S-H-D1	138	38	167	46	201	56
VVKR-B-R-500-16-B-SW + PB-VVK-R-400-200-S-H-D1 / PB-VVK-R-500-200-S-H-D1	244	68	292	81	346	96
VVKR-B-R-500-24-B-SW + PB-VVK-R-500-200-S-H-D1	294	82	355	99	427	119
VVKR-B-R-600-8-B-SW + PB-VVK-R-300-160-S-H-D1 / PB-VVK-R-400-200-S-H-D1 / PB-VVK-R-500-200-S-H-D1 / PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1	138	38	167	46	201	56
VVKR-B-R-600-16-B-SW + PB-VVK-R-400-200-S-H-D1 / PB-VVK-R-500-200-S-H-D1 / PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1	244	68	292	81	346	96
VVKR-B-R-600-24-B-SW + PB-VVK-R-500-200-S-H-D1 / PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1	294	82	355	99	427	119
VVKR-B-R-600-40-B-SW + PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1	457	127	541	150	637	177
VVKR-B-R-625-8-B-SW + PB-VVK-R-300-160-S-H-D1 / PB-VVK-R-400-200-S-H-D1 / PB-VVK-R-500-200-S-H-D1 / PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1 / PB-VVK-R-625-200-S-H-D1 / PB-VVK-R-625-250-S-H-D1	138	38	167	46	201	56
VVKR-B-R-625-16-B-SW + PB-VVK-R-400-200-S-H-D1 / PB-VVK-R-500-200-S-H-D1 / PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1 / PB-VVK-R-625-200-S-H-D1 / PB-VVK-R-625-250-S-H-D1	244	68	292	81	346	96
VVKR-B-R-625-24-B-SW + PB-VVK-R-500-200-S-H-D1 / PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1 / PB-VVK-R-625-200-S-H-D1 / PB-VVK-R-625-250-S-H-D1	294	82	355	99	427	119
VVKR-B-R-625-40-B-SW + PB-VVK-R-600-200-S-H-D1 / PB-VVK-R-600-250-S-H-D1 / PB-VVK-R-625-200-S-H-D1 / PB-VVK-R-625-250-S-H-D1	457	127	541	150	637	177
VVKR-B-R-800-64-B-SW + PB-VVK-R-800-315-S-H-D1 / PB-VVK-R-825-315-S-H-D1	639	177	737	205	848	236
VVKR-B-R-825-64-B-SW + PB-VVK-R-800-315-S-H-D1	639	177	737	205	848	236

NOTE: The working points were measured with open adjustment damper.

Technical Parameters

Legend

$L_{0,2}$ (m) Air throw length with terminal velocity 0,2 m/s

L_x (m) Air throw length calculated for specific terminal velocity

x (m/s) Terminal velocity in range of 0,1 m/s ... 1 m/s

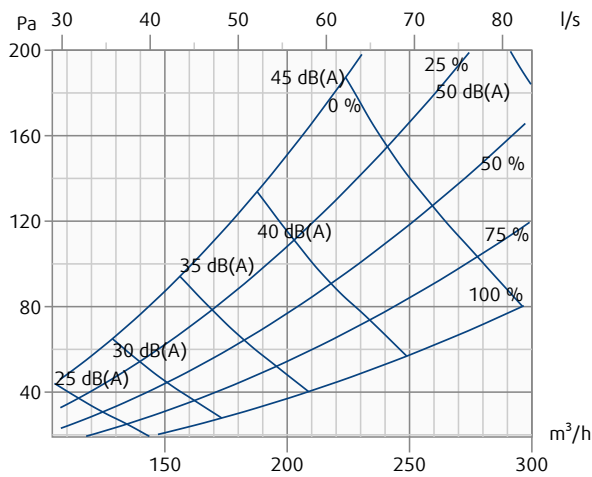
0%, 25%, 50%, 75%, 100% The plenum box damper positions in pressure drop/noise diagrams are represented as percentage. 0% is full damper restriction. 100% is fully open damper.

Calculation of Air Throw for Different Terminal Velocities

$$L_x = L_{0,2} \cdot 0,2/x$$

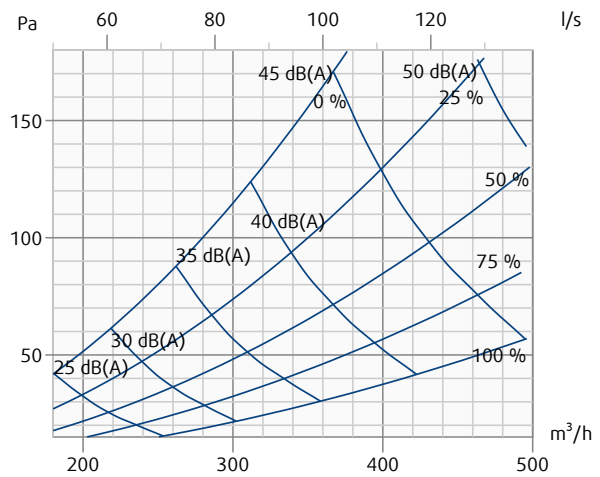
VVKR-B-R-300-8-B-SW + PB-VVK-R-300-160-S-H-D1

Pressure drop & A-weighted sound power level in dB(A)



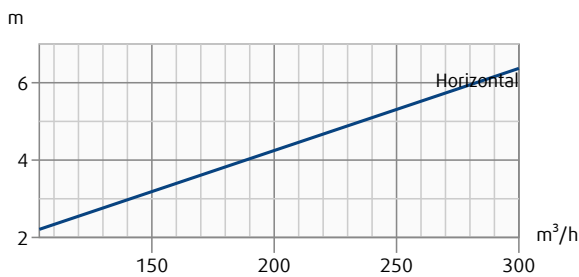
VVKR-B-R-400-16-B-SW + PB-VVK-R-400-200-S-H-D1

Pressure drop & A-weighted sound power level in dB(A)



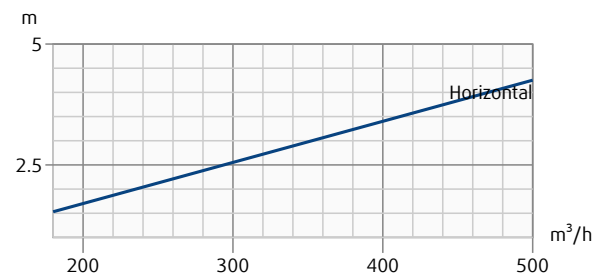
VVKR-B-R-300-8-B-SW + PB-VVK-R-300-160-S-H-D1

Throw length (terminal velocity 0.2 m/s)



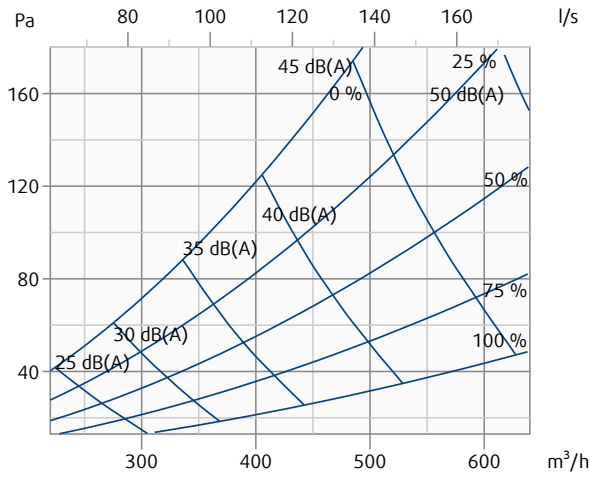
VVKR-B-R-400-16-B-SW + PB-VVK-R-400-200-S-H-D1

Throw length (terminal velocity 0.2 m/s)



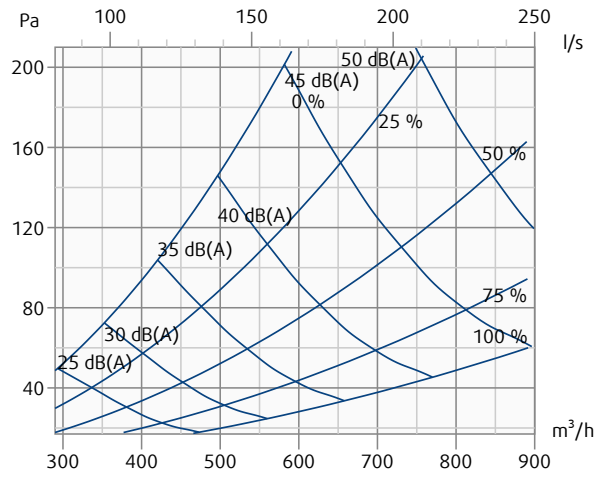
VVKR-B-R-500-24-B-SW + PB-VVK-R-500-200-S-H-D1

Pressure drop & A-weighted sound power level in dB(A)



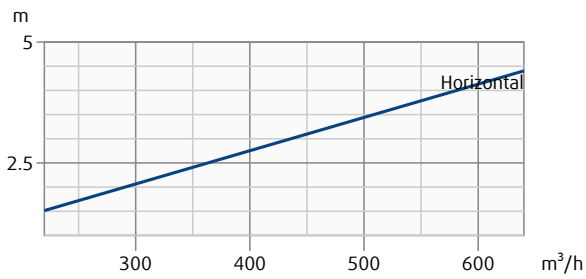
VVKR-B-R-600-40-B-SW + PB-VVK-R-600-250-S-H-D1

Pressure drop & A-weighted sound power level in dB(A)



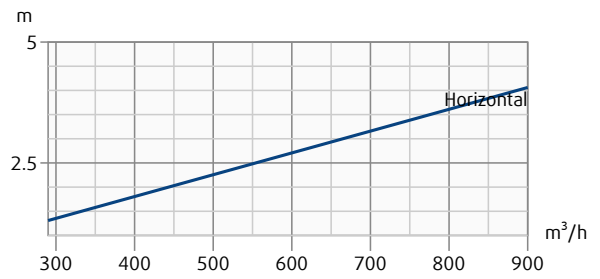
VVKR-B-R-500-24-B-SW + PB-VVK-R-500-200-S-H-D1

Throw length (terminal velocity 0.2 m/s)



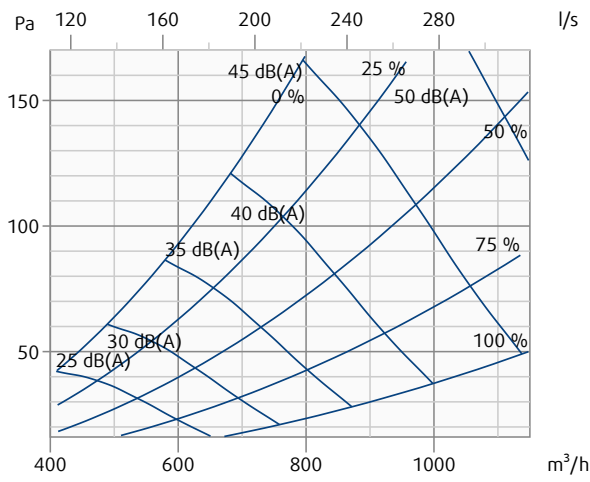
VVKR-B-R-600-40-B-SW + PB-VVK-R-600-250-S-H-D1

Throw length (terminal velocity 0.2 m/s)



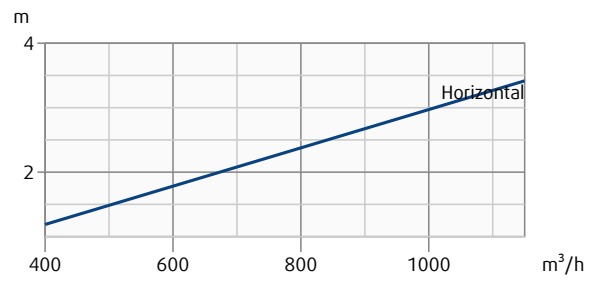
VVKR-B-R-800-64-B-SW + PB-VVK-R-800-315-S-H-D1

Pressure drop & A-weighted sound power level in dB(A)

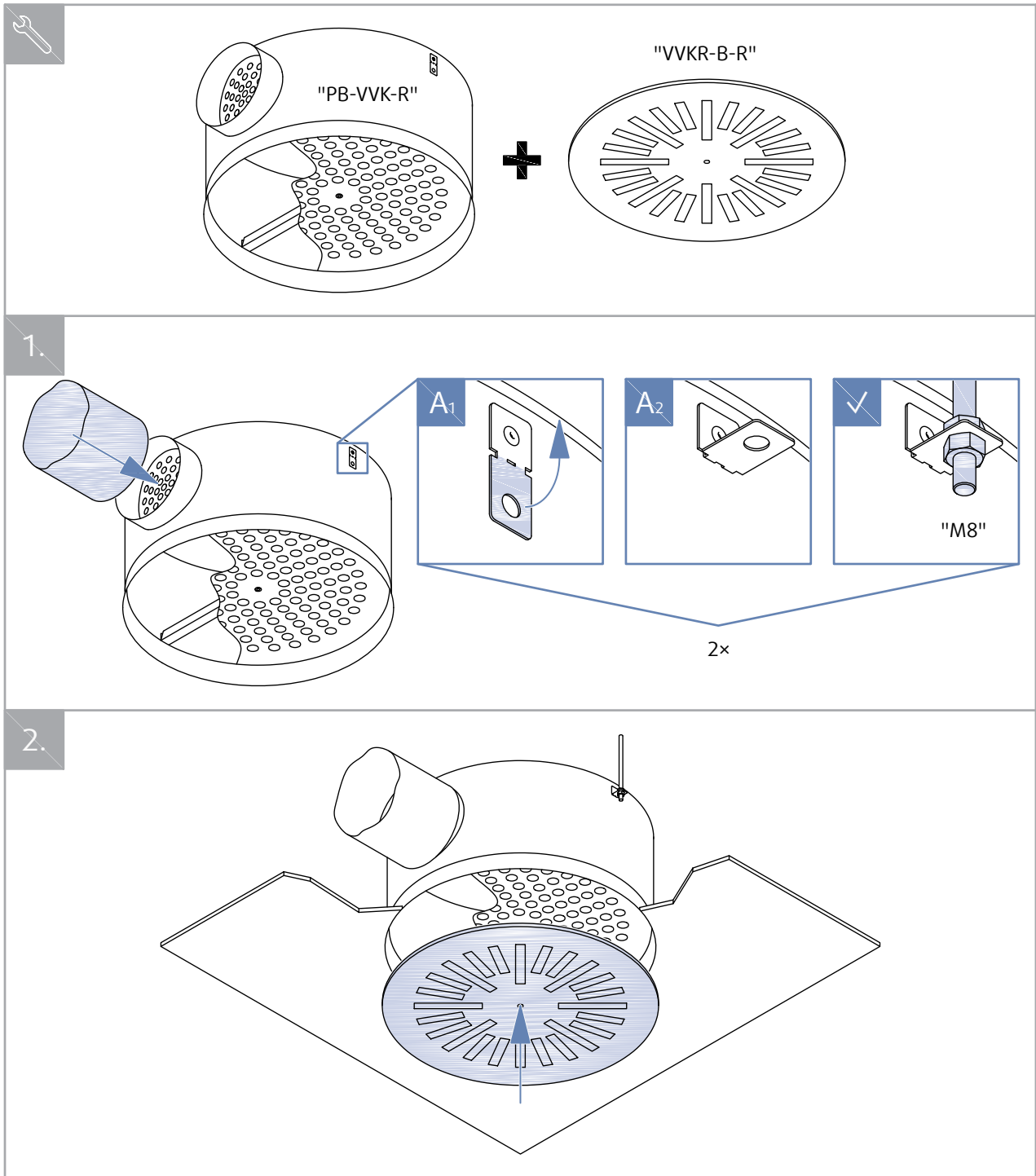


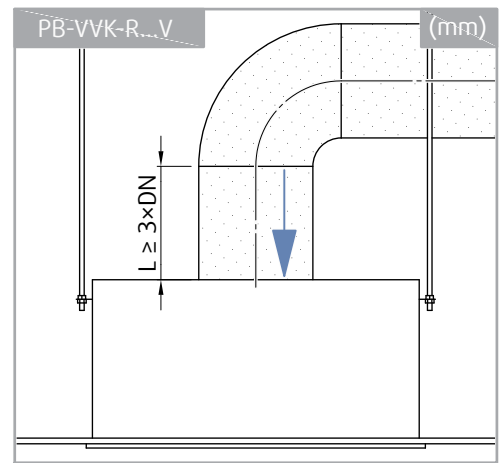
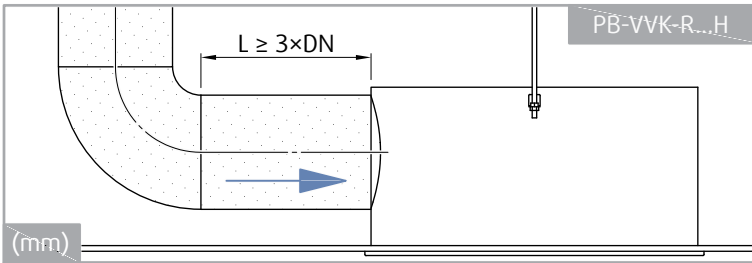
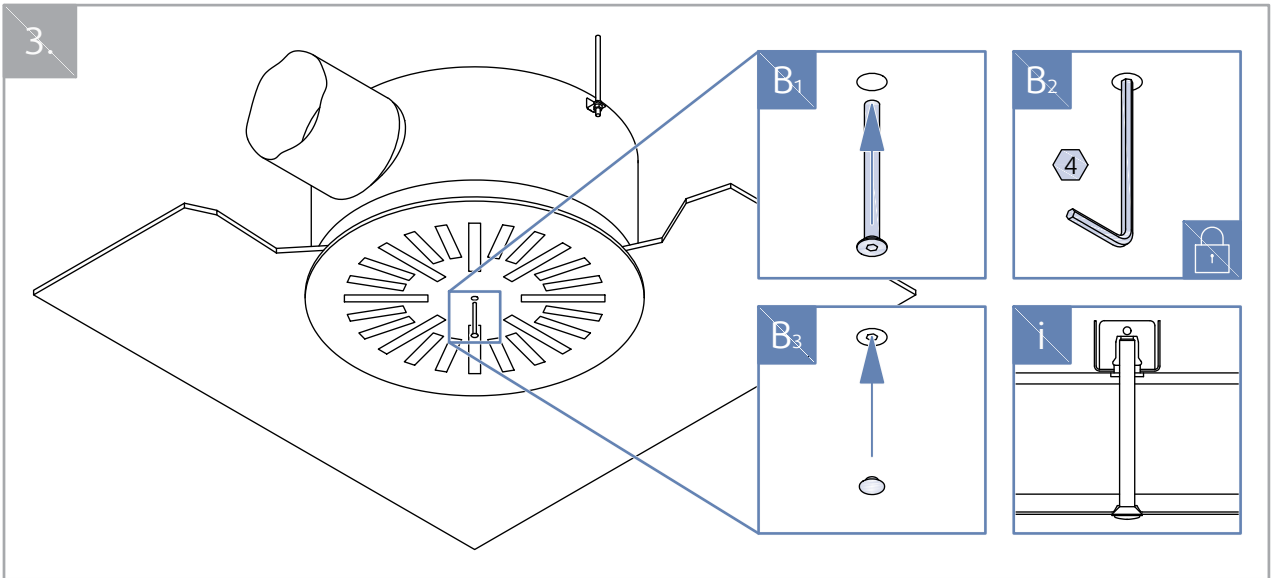
VVKR-B-R-800-64-B-SW + PB-VVK-R-800-315-S-H-D1

Throw length (terminal velocity 0.2 m/s)

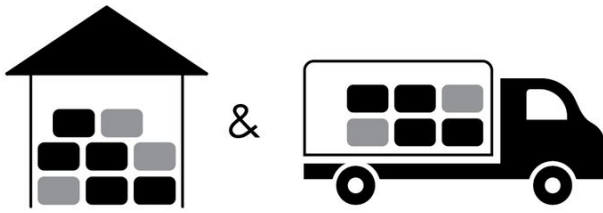



Installation






Transport, Storage and Operation



 °C -40 °C ... +50 °C

 % ≤ 95%



 °C -20 °C ... +50 °C

 % ≤ 95%

Supplement

Any deviations from the technical specifications contained herein and the terms should be discussed with the manufacturer. We reserve the right to make any changes to the product without prior notice, provided that these changes do not affect the quality of the product and the required parameters. Current information on all products is available on design.systemair.com.

