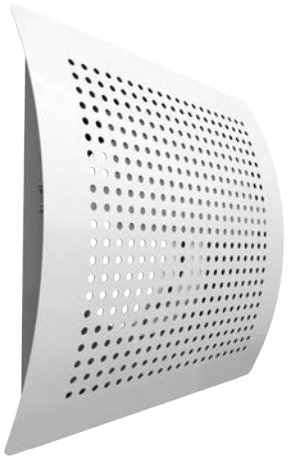
BOR-S

Residential supply air diffuser



Dimensions

BOR-S is available in connection sizes ø*DN* 100 and ø*DN* 125.

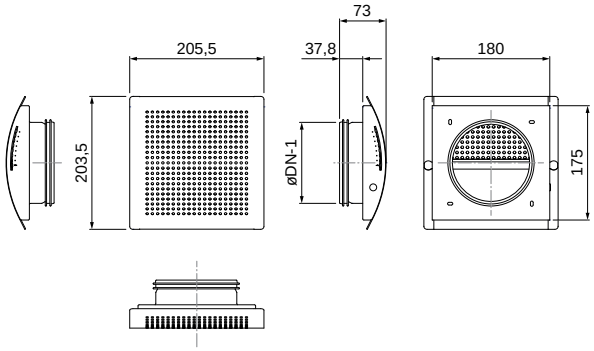
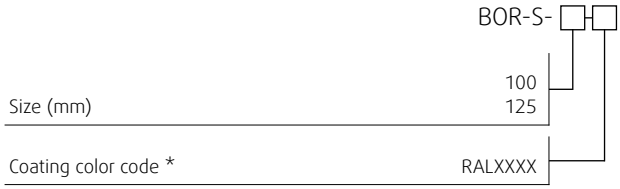


Fig. 1: BOR dimensions

NOTES:
BOR-S-100: ø = 99 mm
BOR-S-125: ø = 124 mm

Ordering Code



NOTE: * If no color defined in ordering code, BOR-S is delivered with RAL9010, gloss 30 as standard.

Design

The body of BOR-S is manufactured from galvanized steel with a convex, rectangular shaped front plate with perforation. The front plate is finished in the standard white powder-coating (RAL 9010, Gloss 30). Inside the body a flat adjustable blind is attached.

Function

BOR-S has been especially developed for providing a draught-free and low acoustic noise air supply from the rear walls of offices, hotel and residential rooms etc. The flow pattern prevents the air stream from falling into the occupied zone before it has reached an acceptable temperature. Max. temperature difference ΔT 10K is permissible.
BOR-S is also suitable for VAV systems, as the distribution pattern is maintained across the entire flow area. The product is equipped for air flow adjustment and commissioning measurement.

Technical details

The diffuser is equipped by an adjustable blind that changes the effective air flow aperture and so tunes the air flow volume. The mechanism is movable from outside by two miniature ears sliding in grooves on the sidewalls of the product. The movement has 8 fixed positions along the path defined by the notches in the groove. For adjustment only these positions provide desired noise parameters. The intermediate positions shall be avoided. The tables 1 and 2 show the k-factors of the product in each of the 8 fixed positions. Using the corresponding K-factor for the chosen adjustment along with the ΔP measured on the measurement pin (sidewall) of the product provides data for an easy actual flow calculation at commissioning.

BOR-S-100

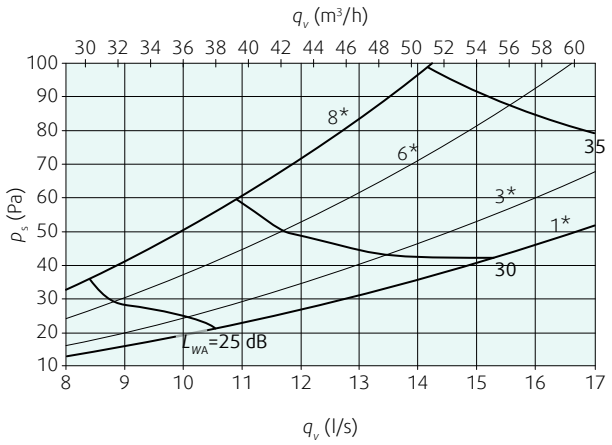


Diagram 1: Flow dependent pressure drop and A-weighted sound power level (BOR-S-100)

NOTES:
* flow adjustment position
The position 8 is the adjustment position nearest to the middle of the diffuser body. Smallest free area.
The position 1 is the adjustment position farthest from the middle of the diffuser body. Largest free area.

BOR-S-125

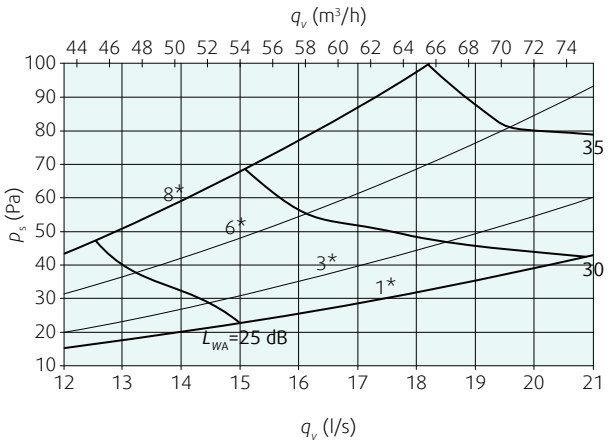


Diagram 2: Flow dependent pressure drop and A-weighted sound power level (BOR-S-125)

NOTES:
* flow adjustment position
The position 8 is the adjustment position nearest to the middle of the diffuser body. Smallest free area.
The position 1 is the adjustment position farthest from the middle of the diffuser body. Largest free area.

BOR-S-100, 125

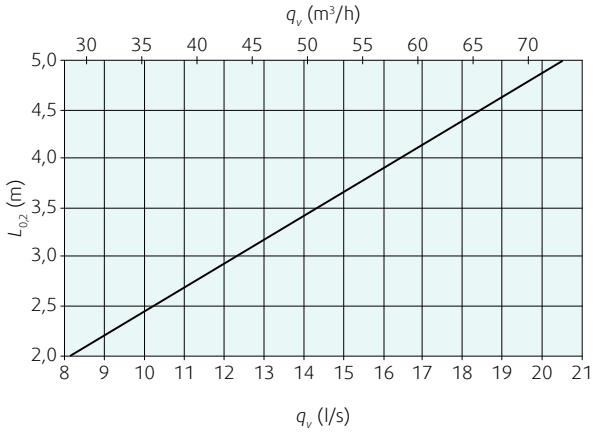


Diagram 3: Flow dependent throw lenght

k-factor (l/s)	BOR-S-100	BOR-S-125
Position 1	2,62	3,41
Position 2	2,47	3,16
Position 3	2,22	2,88
Position 4	2,07	2,66
Position 5	1,92	2,46
Position 6	1,77	2,28
Position 7	1,63	2,08
Position 8	1,49	1,89

Q (l/s) = $k \cdot \sqrt{p_d}$

Tab. 1: k-facrors for flow in l/s

NOTES: The position 8 is the adjustment position nearest to the middle of the diffuser body. Smallest free area.
The position 1 is the adjustment position farthest from the middle of the diffuser body. Largest free area.

k-factor (m³/h)	BOR-S-100	BOR-S-125
Position 1	9,44	12,28
Position 2	8,88	11,39
Position 3	8,01	10,35
Position 4	7,46	9,57
Position 5	6,91	8,84
Position 6	6,37	8,22
Position 7	5,88	7,50
Position 8	5,38	6,81

Q (m³/h) = $k \cdot \sqrt{p_d}$

Tab. 2: k-factors for flow in m³/h

NOTES: The position 8 is the adjustment position nearest to the middle of the diffuser body. Smallest free area.
The position 1 is the adjustment position farthest from the middle of the diffuser body. Largest free area.

BOR-100	q_v										
Position	(l/s)	(m³/h)	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	L_w
1	8	29	31	18	9	8	8	9	14	20	31
	10	36	37	23	15	14	13	14	16	22	38
	12	43	43	27	20	18	17	19	18	23	43
	14	50	47	30	23	22	20	21	18	23	47
	16	58	50	33	26	24	22	24	18	22	50
3	8	29	34	21	10	7	8	8	14	20	34
	10	36	41	24	16	14	14	14	17	22	41
	12	43	46	26	21	20	19	20	18	23	46
	14	50	50	28	25	25	23	23	19	23	50
	16	58	53	29	29	28	25	26	19	23	53
6	8	29	35	21	12	15	15	14	15	21	36
	10	36	36	22	16	19	20	20	19	22	37
	12	43	37	23	19	22	24	24	22	23	38
	14	50	37	24	22	25	27	28	25	23	39
	16	58	38	24	24	27	30	31	27	24	40
8	8	29	39	21	13	14	16	16	15	21	39
	10	36	40	23	18	19	21	22	20	23	41
	12	43	41	24	21	23	25	26	23	25	42
	14	50	42	26	24	25	28	30	26	26	43
	16	58	43	27	26	28	30	33	28	27	44

Tab. 3: Linear (non-weighted) sound power levels LW at octave-band frequencies (dB)

NOTES: The position 8 is the adjustment position nearest to the middle of the diffuser body. Smallest free area.
The position 1 is the adjustment position farthest from the middle of the diffuser body. Largest free area.

BOR-125	q_v										
Position	(l/s)	(m³/h)	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	L_w
1	12	43	36	19	8	7	8	9	14	20	36
	14	50	42	22	12	12	11	12	16	22	42
	16	58	47	24	16	15	14	13	16	22	47
	18	65	51	26	20	18	15	14	16	22	51
	20	72	53	27	22	20	16	15	16	21	53
3	12	43	34	18	10	8	8	8	13	20	34
	14	50	39	22	16	14	13	14	16	22	40
	16	58	43	25	20	19	17	17	17	22	43
	18	65	47	28	25	24	21	22	19	23	47
	20	72	50	30	28	28	24	24	19	22	50
6	12	43	31	19	15	14	13	12	14	20	32
	14	50	35	21	19	19	19	19	18	22	36
	16	58	38	23	22	23	23	25	21	22	39
	18	65	40	25	25	26	26	29	23	22	41
	20	72	42	26	27	28	28	32	24	22	43
8	12	43	31	20	16	15	15	16	15	20	32
	14	50	32	23	21	21	20	22	20	22	34
	16	58	33	25	24	25	24	26	23	23	36
	18	65	34	27	27	28	27	30	26	24	38
	20	72	35	28	30	31	30	33	29	24	40

Tab. 4: Linear (non-weighted) sound power levels LW at octave-band frequencies (dB)

NOTES: The position 8 is the adjustment position nearest to the middle of the diffuser body. Smallest free area.
The position 1 is the adjustment position farthest from the middle of the diffuser body. Largest free area.

Mounting

The diffuser is installed directly at the end of the spiral duct sliding in the connection spigot with gasket. The unit can be fixed on the wall by screws through holes in the edges of the body. For this the diffuser front plate must be removed by pressing the upper edge of the plate down app. 5mm and pulling the upper part of the plate away from the diffuser body (see Fig. 2).
Attaching the diffuser plate back to the body: There are two railings on the plate inside, one with a notch, another one with two notches. These define the orientation of the plate on the body, where one respectively two rivets are fixed. at the contact site for the plate railings. The notches fit to the rivets, so the orientation of the plate is correct. Put the railing at the lower end on the body edge, press the upper edge of the plate down by app. 5mm attaching the upper side of the plate to the body (see Fig. 2).
Dismounting of the unit: Turn the unit and pull straight out.

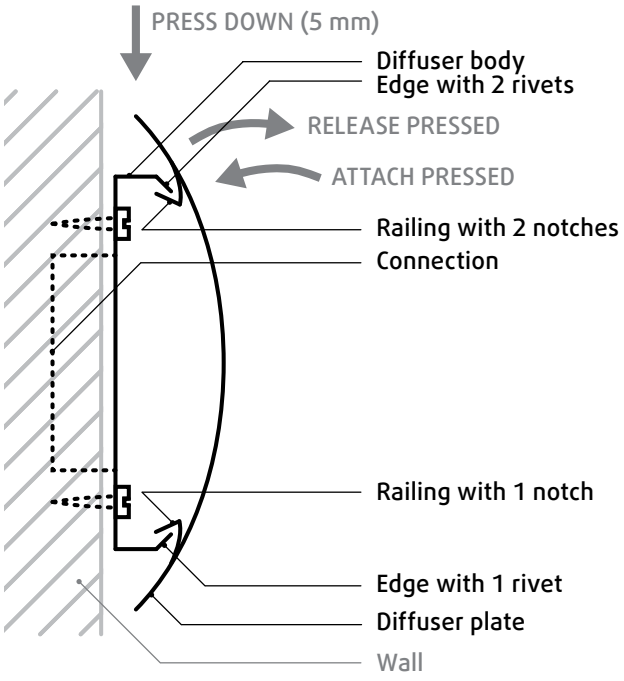


Fig. 2: Mounting and dismounting of BOR