



**PERFORATED CEILING DIFFUSERS
SQUARE, 'LAY-IN', HIGH INDUCTION RATIO**

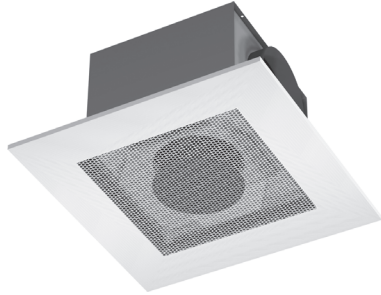
PBD TYPE



Perforated ceiling diffusers

Square, 'lay-in', high induction ratio

✓ Supply



Application

- Types PBD..04 ceiling diffusers with removable perforated face-plate are designed for (easy) installation in suspended T-bar type ceiling applications. Their horizontal discharge pattern and high induction ratio result in rapid temperature and velocity equalization and ensure confident use in cooling and/or heating in CAV or VAV applications with temperature differences up to 11°C and a relatively high amount of air changes per hour, even in rooms with low ceilings. With the integral air pattern adjustment blades a 4, 3, 2, or 1-way air pattern can be easily (re)adjusted to suit the room requirements.

Technical information

Features:

- Lay-in design allows quick/easy installation on site in most T-bar suspended ceiling systems.
- Removable face-plate to simplify maintenance and access to air pattern adjustment blades and volume control without opening the ceiling.
- High induction ratio and horizontal discharge pattern, suitable for CAV/VAV applications.
- The integral cylindrical air pattern stabilizer assures a uniform air distribution across the diffuser face independent to the inlet spigot position even with irregular duct approach. It also results in less pressure drop through the plenum box.
- Integral hinged baffles to (re)adjust the air pattern (1-way, 2-way, 3-way or 4-way).
- Deflection disc to maintain a horizontal air pattern at different volumes.

Construction:

- Lay-in panel: sheet steel with integral removable perforated face-plate.
- Standard finish: no. 4 white stove enamelled, RAL 9010.
- Deflection disc: steel, finished black to minimize visibility.
- Plenum box: (option) galvanized sheet steel with integral cylindrical air pattern stabilizer, with or without internal thermal or acoustic insulation.
- Diffuser types PBD1104 and PBD1304 are also available with a lowered plenum box.
- Non standard type available upon request.

Dimensions

Model	A	∅ C	∅ D	∅ D1	E	F	K	K_{vi}	∅ L
510	234	594	123	123	49	78	226	181	210
612	279	594	158	158	58	87	270	210	255
816	381	594	198	198	64	93	316	241	357
1020	482	594	198	248	77	106	329	254	459

Other dimensions are available on request.

Delivery format:

- Diffuser and plenum box are supplied as a single assembly packed in a carton box to minimize damage during shipping and storage at site.

Assembly:

- Installation in suspended T-bar type ceiling applications.
- The diffuser and the combination of diffuser and plenum box are provided with holes for suspension.

Regular types

- PBD0004: ceiling diffuser with removable perforated face-plate.
- PBD1104: ceiling diffuser with removable perforated face-plate, with uninsulated plenum box and air pattern stabilizer.
- PBD1104 : ceiling diffuser with removable perforated face-plate, with insulated plenum box and air pattern stabilizer.

Specify as

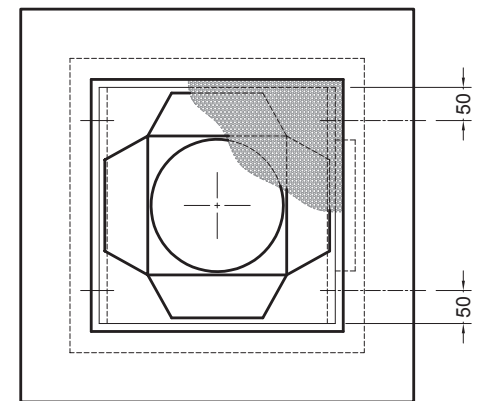
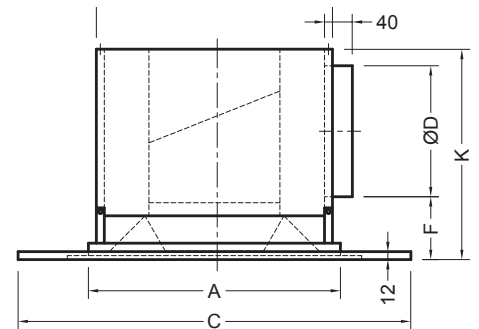
Example:

Supply and install square, supply air ceiling diffusers with lay-in panel with integral removable perforated face-plate. Complete with deflection disc, 4 integral, hinged, air pattern adjustment blades and internally insulated plenum box from galvanized sheet steel with integrate cylindrical air pattern stabilizer and volume control damper.

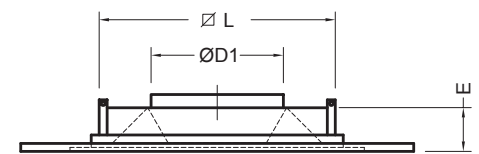
Finish, white stove enamelled, RAL 9010.

Barcol-Air type: PBD1304

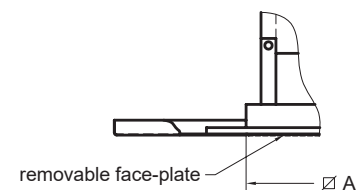
Sizes and arrangements as shown on the plans.



Type PBD1304



Type PBD0004



Detail PBD..04

Notes dimensions:

1. All dimensions are in millimetres
2. The plenum box is provided with 4 or 6 holes for suspension. The location is indicated by centre lines on the bottom view
3. $K_{vi} = K_{lowered}$ = lowered plenum box.

A lowered plenum box will be executed with an oval pressed spigot. The circumference of the oval pressed spigot is equal to the original pressed spigot diameter (∅D). The height of the plenum box is indicated in the size chart.

Perforated ceiling diffusers

Square, 'lay-in', high induction ratio

TYPE PBD

Supply ✓

Type PBD1304, diffusers with insulated plenum box

54 - 720 m³/h

Discharge pattern			4 - way			3 - way			2 - way opposite			2 - way corner			1 - way		
air volume		model	throw	Δp_s	LpA	throw	Δp_s	LpA	throw	Δp_s	LpA	throw	Δp_s	LpA	throw	Δp_s	LpA
m ³ /s	m ³ /h		m	Pa	dB(A)	m	Pa	dB(A)	m	Pa	dB(A)	m	Pa	dB(A)	m	Pa	dB(A)
0,015	54	510	0,4	4	--	0,5	5	--	0,7	6	--	0,7	7	--	1,1	11	--
		612											0,9	6	--		
0,020	72	510	0,6	8	--	0,7	9	--	0,9	11	--	1,0	12	--	1,4	20	20
		612	0,5	4	--	0,6	4	--	0,8	6	--	0,8	6	--	1,2	11	--
0,025	90	510	0,7	13	--	0,8	14	--	1,1	17	--	1,2	19	--	1,8	31	25
		612	0,6	16	--	0,7	7	--	0,9	9	--	1,1	10	--	1,5	16	24
		816											1,2	6	--		
0,030	108	510	0,8	18	--	1,0	20	--	1,3	25	20	1,5	28	22	2,1	45	30
		612	0,7	9	--	0,9	10	--	1,1	13	--	1,3	14	--	1,8	24	28
		816											1,4	8	20		
0,035	126	510	1,0	24	--	1,2	27	20	1,6	34	25	1,7	38	27	2,2	62	34
		612	0,8	12	--	1,0	13	--	1,3	17	--	1,5	18	21	2,1	32	32
		816	0,6	4	--	0,8	4	--	1,0	6	--	1,1	7	--	1,6	12	23
0,040	144	510	1,1	31	22	1,4	35	24	1,8	44	28	2,0	49	30	2,4	80	37
		612	1,0	15	--	1,2	17	--	1,5	22	23	1,7	24	25	2,4	42	35
		816	0,7	5	--	0,9	5	--	1,2	7	--	1,3	8	--	1,9	15	26
0,045	162	510	1,3	40	25	1,5	45	27	2,0	56	32	2,1	63	34			
		612	1,1	19	21	1,3	22	22	1,7	28	26	1,9	30	28	2,5	53	38
		816	0,8	6	--	1,0	7	--	1,3	9	--	1,5	10	--	2,1	19	28
0,050	180	510	1,4	49	29	1,7	55	31	2,1	69	35	2,2	77	37			
		612	1,2	24	24	1,4	27	25	1,9	35	29	2,1	38	31	2,7	66	41
		816	0,9	8	--	1,1	8	--	1,5	12	--	1,6	14	--	2,3	24	31
		1020													1,9	11	22
0,060	216	510	1,7	71	34	2,0	80	36									
		612	1,4	34	29	1,7	38	31	2,3	50	34	2,4	54	36			
		816	1,1	11	--	1,3	12	--	1,8	17	22	2,0	20	24	2,8	34	35
		1020	0,9	4	--	1,1	5	--	1,5	7	--	1,6	9	--	2,3	15	26
0,070	252	612	1,7	47	34	2,0	52	35	2,5	68	39	2,6	73	41			
		816	1,3	15	20	1,6	17	22	2,1	23	26	2,3	26	28	3,2	46	38
		1020	1,1	6	--	1,3	7	--	1,7	10	--	1,9	13	--	2,7	21	29
0,080	288	612	1,9	61	38	2,3	68	39	2,6	89	43	2,8	96	45			
		816	1,5	19	25	1,8	22	26	2,4	30	30	2,6	35	32	3,4	60	42
		1020	1,2	8	--	1,5	9	--	1,9	13	--	2,2	17	21	3,1	27	32
0,090	324	612	2,1	77	42	2,4	86	43									
		816	1,7	24	28	2,0	27	29	2,6	38	33	3,0	44	35	3,6	76	45
		1020	1,4	10	--	1,7	11	--	2,2	16	21	2,4	20	23	3,5	35	35
0,100	360	816	1,8	30	32	2,2	34	33	2,9	47	37	3,1	54	39			
		1020	1,5	12	--	1,8	14	21	2,4	20	25	2,7	25	27	3,8	43	38
0,125	450	816	2,3	47	39	2,8	53	40	3,3	73	44	3,5	84	46			
		1020	1,9	19	24	2,3	22	28	3,0	31	32	3,4	39	34	4,2	67	43
0,150	540	816	2,8	68	45	3,1	76	46									
		1020	2,3	28	30	2,8	31	33	3,6	45	37	3,8	57	39			
0,175	630	1020	2,7	38	35	3,2	42	39	3,9	61	41	4,1	77	43			
0,200	720	1020	3,0	49	40	3,6	55	43	4,2	80	45	4,4	102	47			

1. Throw data refers to diffusers mounted in a flat ceiling (without obstructions), 2.70 to 3.00 m above the floor.
2. Throw data are based on supply air 11°C below room temperature.
3. The sound pressure level data and pressure drop data apply to diffusers which have no volume control or whose volume control is fully open.
4. Sound pressure levels are based on a room absorption of 10 dB, levels less than NC 20 are indicated by "--".

5. The above table also applies to other diffusers type PBT and PBV, but in accordance to the correction tables mentioned on page 4 and 5.
6. The values for "insulated plenum box, insertion loss" do not include end reflection.
7. For non-standard applications and/or selections, please contact our technical staff.

Insulated plenum box, insertion loss

Model	Insertion loss in dB/oct.					
	125	250	500	1000	2000	4000
510	4	1	7	15	13	17
612	4	1	8	15	13	17
816	3	5	9	12	13	17
1020	2	6	9	10	14	16

Perforated ceiling diffusers

Correction tables square ceiling diffusers

✓ Supply

Correction tables for perforated square and rectangular ceiling diffusers and diffuser/plenum box combinations for air supply. The basis is formed by a table of the perforated ceiling exhaust in combination with an acoustic insulated plenum box. (PBS13/PBT13/PBV13/PBD13/PFT13).

Diffuser without plenum box

Model	4-way		3-way		2-way opposite		2-way corner		1-way	
	ΔPs	LpA	ΔPs	LpA	ΔPs	LpA	ΔPs	LpA	ΔPs	LpA
	x	+	x	+	x	+	x	+	x	+
510	0.14	-2	0.21	-1	0.36	-3	0.34	-4	0.73	-1
612	0.13	-7	0.19	-5	0.31	-2	0.33	-1	0.58	-3
816	0.13	-8	0.22	-3	0.36	-1	0.38	-1	0.71	-3
1020	0.12	-7	0.18	-5	0.28	-3	0.28	-3	0.46	-3
1224	0.13	-4	0.20	-2	0.27	-4	0.27	-4	0.42	-2

Type
PBS0004
PBT0004
PBD0004

Diffuser with unisulated plenum box

Model	4-way		3-way		2-way opposite		2-way corner		1-way	
	ΔPs	LpA	ΔPs	LpA	ΔPs	LpA	ΔPs	LpA	ΔPs	LpA
	x	+	x	+	x	+	x	+	x	+
510	1.00	3	1.00	3	1.00	2	1.00	2	1.00	2
612	1.00	3	1.00	2	1.00	2	1.00	2	1.00	2
816	1.00	3	1.00	2	1.00	2	1.00	2	1.00	2
1020	1.00	2	1.00	2	1.00	1	1.00	1	1.00	1
1224	1.00	2	1.00	2	1.00	1	1.00	1	1.00	1
2412	1.00	2	1.00	2	1.00	1			1.00	1
4812	1.00	2	1.00	2	1.00	1			1.00	1

Type
PBS1104
PBT1104
PBD1104
PDT1104
PFT1104

Diffuser with lowered front panel without plenum box

Model	4-way		3-way		2-way opposite		2-way corner		1-way	
	ΔPs	LpA	ΔPs	LpA	ΔPs	LpA	ΔPs	LpA	ΔPs	LpA
	x	+	x	+	x	+	x	+	x	+
510	0.11	-3	0.17	-3	0.29	-2	0.27	-2	0.64	0
612	0.09	-3	0.15	-2	0.25	-2	0.26	-2	0.51	0
816	0.10	-3	0.17	-2	0.29	-2	0.30	-2	0.63	0
1020	0.09	-2	0.14	-2	0.22	-1	0.22	-1	0.41	0
1224	0.10	-2	0.16	-2	0.22	-1	0.21	-1	0.37	0

Type
PCS0004
PBV0004

Correction tables for perforated square and rectangular ceiling diffusers and diffuser/plenum box combinations for air supply. The basis is formed by a table of the perforated ceiling exhaust in combination with an acoustic insulated plenum box.(PBS13/PBT13/PBV13/PBD13/PFT13).

Diffuser with lowered front panel and isolated plenum box

Model	4-way		3-way		2-way opposite		2-way corner		1-way	
	Δ Ps	LpA	Δ Ps	LpA	Δ Ps	LpA	Δ Ps	LpA	Δ Ps	LpA
	x	+	x	+	x	+	x	+	x	+
510	0.96	-3	0.95	-2	0.93	-2	0.93	-2	0.91	-1
612	0.97	-3	0.96	-2	0.94	-2	0.93	-2	0.93	-1
816	0.97	-3	0.95	-2	0.93	-2	0.92	-2	0.91	-1
1020	0.97	-2	0.96	-2	0.95	-1	0.94	-1	0.94	-1
1224	0.97	-2	0.96	-2	0.95	-1	0.95	-1	0.95	-1
2412	0.97	-2	0.96	-2	0.95	-1			0.94	-1
4812	0.97	-2	0.96	-2	0.95	-1			0.94	-1

Type PCS1304
PBV1304

Diffuser with lowered front panel with uninsulated plenum box

Model	4-way		3-way		2-way opposite		2-way corner		1-way	
	Δ Ps	LpA	Δ Ps	LpA	Δ Ps	LpA	Δ Ps	LpA	Δ Ps	LpA
	x	+	x	+	x	+	x	+	x	+
510	0.96	0	0.95	0	0.93	0	0.93	0	0.91	0
612	0.97	0	0.96	0	0.94	0	0.93	0	0.93	0
816	0.97	0	0.95	0	0.93	0	0.92	-1	0.91	0
1020	0.97	-1	0.96	0	0.95	-1	0.94	0	0.94	-1
1224	0.97	-1	0.96	0	0.95	-1	0.95	-1	0.95	-1
2412	0.97	-1	0.96	0	0.95	-1			0.95	-1
4812	0.97	-1	0.96	0	0.95	-1			0.95	-1

Type PCS1104
PBV1104



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