

SWIRL DIFFUSER
HIGH INDUCING, CIRCULAR OR RECTANGULAR

VFC - VFD - VFQ TYPE



Circular and square swirl diffusers

with discharge cone and fixed, radial air pattern

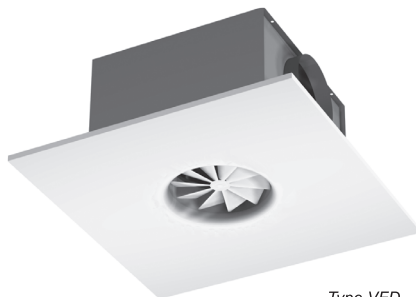
- ✓ Supply
- ✓ Return



Type VFC



Type VFQ



Type VFD

Application

- The swirl diffuser type VFC/Q/DO.O4 circular or square swirl diffuser is designed to give a horizontal feeding and discharge pattern and high induction ratio. These qualities 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 high number of air changes. Depending on architectural requirements, the swirl diffusers can be supplied with a circular or square face plate. Types VFC and VFQ are suitable for application in regular ceilings and type VFD is to be placed on a T-bar ceiling grid system. The swirl diffusers can be applied in a suspended ceiling and without ceiling influence. When applied without ceiling it's recommended only to supply chilled air.

Technical information

Features:

- Fixed blades.
- High induction ratio and horizontal discharge pattern.
- Suitable for CAV / VAV applications and air flow ranges from 100% to 25%.
- Suitable for a large number of air changes.
- Suitable for application in lowered ceilings.
- Low noise production.
- Due to the discharge cone, these swirl diffusers will assure a horizontal discharge even w/o a ceiling to create "Coanda-effect".
- Available in 5 different sizes.
- Available with circular or square face plate to suit architectural requirements.
- The integral air pattern stabilizer assures a uniform air distribution across the diffuser face independent to the inlet spigot position, even with irregular duct approach, resulting in reduced pressure drop through the plenum box.
- Removable face-plate with centre bolt.
- Volume control damper adjustable from the diffuser face.

Construction:

- Diffuser and discharge cone: sheet steel.
- Standard finish diffuser and discharge cone: no. 4 white RAL 9010 (70% gloss).
- Plenum box (optional): galvanized sheet steel for equal air distribution to diffuser. Plenum box can optionally be provided with acoustic lining.

Dimensions

Model	Ø B	Ø C (VFC)	Ø C1 (VFQ)	Ø C2 (VFD)	Ø D	Ø D1	K	K _{vl}	Ø L
125	185	225	219	594	98	122	221	201	305
160	210	250	244	594	123	157	246	201	335
200	260	300	294	594	158	197	281	221	375
250	310	350	344	594	198	247	321	246	425
315	375	415	394	594	248	312	371	281	495

- Adaptor: galvanised sheet steel with equal air distribution plate.
- We recommend using only the adaptor when the diffuser is being used for supply air. When used for return air we recommend to directly mount the diffuser onto the air duct.
- Types VFCO1O4 and VFCO3O4 are optionally available with a lowered plenum box.

Delivery format:

- Diffuser and plenum box are supplied separately.

Type designation

Circular:

- VFCOOO4: Diffuser without accessories.
- VFCO1O4: Diffuser with uninsulated plenum box.
- VFCO3O4: Diffuser with insulated plenum box.
- VFCO5O4: Diffuser with adaptor.

Rectangular (Ø 594 mm):

- VFDOOO4: Diffuser without accessories.
- VFDO1O4: Diffuser with uninsulated plenum box.
- VFDO3O4: Diffuser with insulated plenum box.
- VFDO5O4: Diffuser with adaptor.

On request smaller sizes are possible:

- VFQO1O4: Diffuser with uninsulated plenum box.
- VFQO3O4: Diffuser with insulated plenum box.
- VFQO5O4: Diffuser with adaptor.

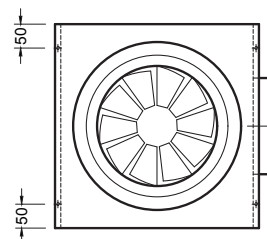
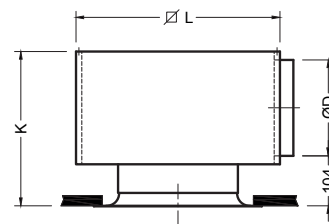
Specify as:

Example:

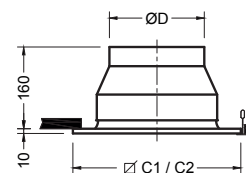
Circular swirl diffusers with discharge cone for air supply or return, suitable for mounting on the ceiling. The diffuser is to be supplied with an insulated plenum box equipped with stabilisation plate.

Finish: RAL 9010.

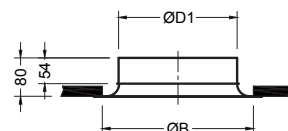
Barcol-Air type VFCO3O4.



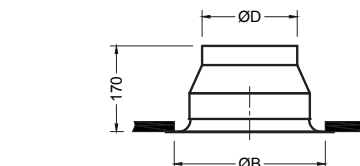
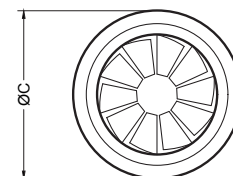
Type VFCO.04



Type VFQO5O4 / VFDO5O4



Type VFCOOO4



Type VFCO5O4

Notes:

1. All dimensions in millimetres.
2. Other dimensions and dimensions on lowered plenum boxes are available upon request.
3. B is the recommended ceiling provision size.
4. K_{vl} = K_{lowered} = lowered plenum box.

When a lowered plenum box is used it will be equipped with an oval stutz. De diameter will be equal to the original size. (ØD). The height of the lowered plenum box is mentioned in the dimension table.

Circular and square swirl diffusers

with discharge cone and fixed, radial air pattern

Type VFC
VFD
VFQ

Supply ✓

Type VFCO3O4/VFQO3O4/VFDO3O4, swirl diffuser with isolated plenum box

54 - 540 m³/h

Model	air flow		Ap _s	LpA	diffuser application in 1 or more strokes reciprocal stroke distance (B) ≥ 4 meter						diffuser application in multiple strokes reciprocal stroke distance (B) 2.6 to 3.0 meter						diffuser application in rectangular configuration (L = B)					
					reciprocal distance of diffusers (L)						reciprocal distance of diffusers (L)						reciprocal distance of diffusers (L)					
	m ³ /s	m ³ /h	Pa	dB(A)	1,2	1,5	1,8	2,4	3,0	3,6	1,5	1,8	2,1	2,4	2,7	3,0	2,7	3,0	3,3	3,6	3,9	4,2
					velocity cm/s						velocity cm/s						velocity cm/s					
125	0,015	54	19	21	12	12	13	13	12	-	18	18	17	17	16	15	16	15	13	-	-	-
	0,02	72	34	26	15	16	16	16	15	14	24	23	22	21	20	21	19	16	14	13	-	
	0,025	90	54	30	18	19	20	20	18	17	29	28	27	26	25	24	25	23	20	17	15	14
	0,03	108	77	33	22	23	23	23	22	20	36	35	33	32	30	28	30	27	23	20	18	16
	0,035	126	105	36	25	26	26	26	25	22	43	41	40	38	36	34	36	32	26	23	20	18
160	0,02	72	9	--	-	12	12	12	-	-	17	17	16	16	16	15	16	15	13	-	-	-
	0,025	90	14	--	14	14	15	15	14	13	21	20	20	20	19	18	20	18	15	14	12	-
	0,03	108	20	--	16	17	17	17	16	15	24	24	23	23	22	21	23	21	18	16	14	12
	0,04	144	35	25	21	22	22	22	21	19	33	32	31	30	29	28	30	27	23	20	18	16
	0,05	180	55	29	26	27	27	27	25	23	42	41	40	39	38	36	39	34	29	25	22	20
	0,06	216	79	32	31	33	33	33	31	27				48	46	44	48	42	35	30	26	23
200	0,025	90	5	--	-	12	12	13	12	-	18	17	17	16	16	15	15	14	12	-	-	-
	0,03	108	7	--	13	14	15	15	14	13	21	20	20	19	19	18	18	16	14	12	-	-
	0,04	144	12	--	17	18	19	19	18	17	26	26	25	25	24	23	23	21	18	16	14	13
	0,05	180	19	20	21	22	23	23	22	21	34	33	32	31	30	28	29	26	22	19	17	15
	0,06	216	27	23	25	26	27	27	26	24	42	41	40	38	37	35	35	31	26	23	20	18
	0,07	252	37	26	28	30	32	32	31	28		49	47	45	44	42	42	37	30	26	23	20
250	0,03	108	3	--	-	12	12	12	-	-	17	17	16	16	15	15	17	15	13	12	-	-
	0,04	144	5	--	14	15	16	16	15	14	22	21	21	20	20	19	22	20	17	15	13	12
	0,05	180	8	--	18	18	19	19	18	16	27	26	25	25	24	23	27	24	21	18	16	14
	0,06	216	11	--	21	22	22	22	21	19	33	32	31	30	28	27	32	29	24	21	19	17
	0,07	252	15	--	24	25	25	25	24	22	39	38	37	35	34	32	39	34	28	24	22	19
	0,08	288	19	--	27	28	29	29	27	25	46	44	43	41	39	38	45	40	33	28	24	22
315	0,04	144	2	--	-	-	12	12	-	-	16	16	15	15	14	14	16	15	13	-	-	-
	0,05	180	3	--	13	14	14	14	13	12	19	19	19	18	17	17	20	18	15	13	12	-
	0,06	216	4	--	15	16	16	17	16	14	23	22	22	21	20	20	23	21	18	16	14	12
	0,07	252	5	--	17	18	19	19	18	17	26	25	25	24	23	22	26	24	21	18	16	14
	0,08	288	7	--	20	21	21	21	20	19	30	29	28	27	26	25	30	27	23	20	18	16
	0,10	360	10	23	24	25	26	26	25	23	39	38	36	35	34	32	39	35	29	25	22	20
	0,125	450	16	27	30	32	33	33	31	28		49	47	45	43	41		45	37	31	27	24
0,15	540	24	31	37	39	40	41	38	34									46	38	33	28	

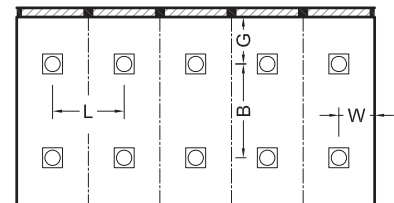
Correction table for diffuser with and w/o uninsulated plenum box and/or adaptor

Model	uninsulated plenumbox		w/o plenumbox		with adaptor	
	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
	x	+	x	+	x	+
125	1	3	0,8	-10	0,7	-5
160	1	4	0,8	-9	0,7	-3
200	1	3	0,7	-8	0,6	-4
250	1	4	0,7	-6	0,6	-1
315	1	4	0,6	-6	0,6	-1

1. Throw data is based on supply air with $\Delta T - 10 K$ in relation to the space temp. at a ceiling height of 2.70 - 3.60 m and diffuser mounted in a flat ceiling.
2. Above selection tables can also be used when the diffuser is mounted free within the room (i.e. w/o false ceiling). When used as free within the room, the diffuser is not suited for heating mode.
3. The given air velocities are measured between the diffusers and at 1.8 m above the floor.
4. LpA-values are including a room absorption of 10 dB/Oct.
5. Figures lower than 20 dB(A) are indicated by "--".
6. Air velocities lower than 12 cm/s are indicated by "-".
7. The recommended minimal distance G, between the diffuser and the wall is related as followed: $G = 2.8 - L \times 0.39$ with a minimum distance of 1800 mm.
8. The recommended minimal distance W, between the diffuser and the wall is 900 mm.
9. For non standard applications and/or selections, please contact our technical staff.

Correction for room heights

Ceiling height m	B = >4 m velocity x	B = 2.8 m velocity x	rectangular velocity x
	2,6	1,09	1,10
2,7	1,00	1,00	1,00
3,0	0,80	0,80	0,81
3,6	0,61	0,59	0,62
4,0	0,52	0,51	0,53



Insertion loss insulated plenum box

Model	insertion loss in dB/Oct.					
	125	250	500	1000	2000	4000
125	5	1	0	9	4	10
160	4	1	3	7	5	9
200	3	1	6	7	7	9
250	2	2	9	6	6	8
315	1	3	9	5	5	7

Circular and square swirl diffusers

with discharge cone and fixed, radial air pattern

✓ Return

Selection table VFQ0304 / VFQ0304 / VFDO304 type, diffuser with or without uninsulated plenum box.

54 - 540 m³/h

Model	Air flow		VFQ0004 diffuser without plenum box or adaptor		VFQ0504 diffuser with adaptor		VFQ0104 diffuser with un- insulated plenum box		VFQ0304 diffuser with insulated plenum box	
			Δp_s Pa	LpA dB(A)	Δp_s Pa	LpA dB(A)	Δp_s Pa	LpA dB(A)	Δp_s Pa	LpA dB(A)
	m ³ /s	m ³ /h								
125	0,015	54	16	--	18	--	18	23	18	20
	0,020	72	29	--	33	24	32	28	32	25
	0,025	90	46	21	51	28	49	32	49	29
	0,030	108	66	24	73	31	71	35	71	32
	0,035	126	90	26	100	34	97	38	97	35
160	0,020	72	12	--	13	--	13	22	13	--
	0,025	90	18	--	20	23	20	25	20	21
	0,030	108	26	--	29	26	29	29	29	25
	0,040	144	47	23	52	31	52	34	52	30
	0,050	180	73	27	81	35	81	38	81	34
200	0,060	216	106	30	117	39	117	41	117	37
	0,025	90	6	--	7	--	7	--	7	--
	0,030	108	9	--	10	--	10	--	10	--
	0,040	144	15	--	17	22	17	23	17	20
	0,050	180	24	--	26	26	26	27	26	24
	0,060	216	34	22	38	29	38	30	38	27
	0,070	252	46	25	52	32	52	33	52	30
250	0,080	288	61	28	68	34	68	35	68	32
	0,030	108	5	--	6	--	6	--	6	--
	0,040	144	9	--	10	--	10	--	10	--
	0,050	180	15	--	16	23	16	22	16	--
	0,060	216	21	--	23	26	23	26	23	22
	0,070	252	29	22	31	30	31	29	31	25
	0,080	288	38	25	41	32	41	32	41	28
315	0,090	324	48	28	52	35	52	34	52	31
	0,040	144	6	23	6	30	6	28	6	24
	0,050	180	9	26	10	33	10	31	10	27
	0,060	216	13	29	14	37	14	35	14	31
	0,070	252	18	32	20	40	20	37	20	33
	0,080	288	23	34	26	42	26	40	26	36
	0,100	360	36	39	40	47	40	44	40	40
	0,125	450	56	43	62	51	62	49	62	45
0,150	540	81	47	90	55	90	53	90	49	

1. LpA-values are including a room absorption of 10 dB/Oct.

2. Figures lower than 20 dB(A) are indicated by "--".

3. For non standard applications and/or selections, please contact our technical staff.



OUR TECHNOLOGY | YOUR WELLBEING

BARCOL-AIR | AIR DISTRIBUTION

Cantekoogweg 10-12 - 1442 LG Purmerend, The Netherlands

T +31 (0)299 689 300 | **E** export@barcol-air.nl

WWW.BARCOL-AIR.NL