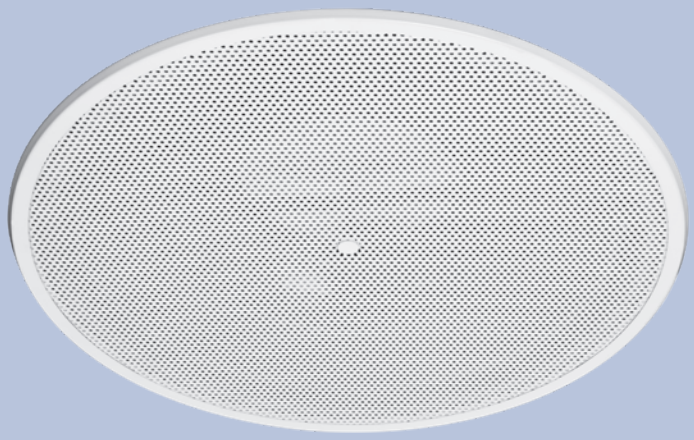
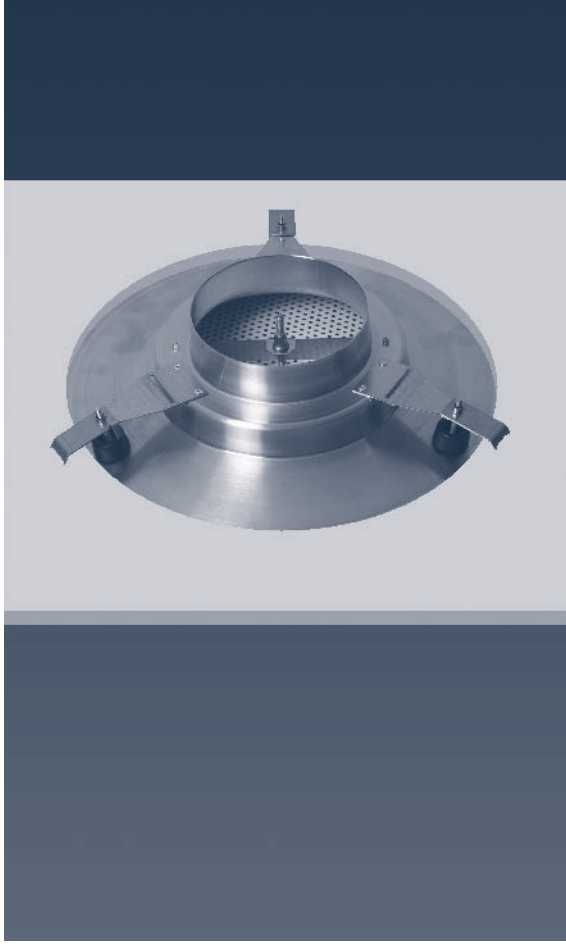
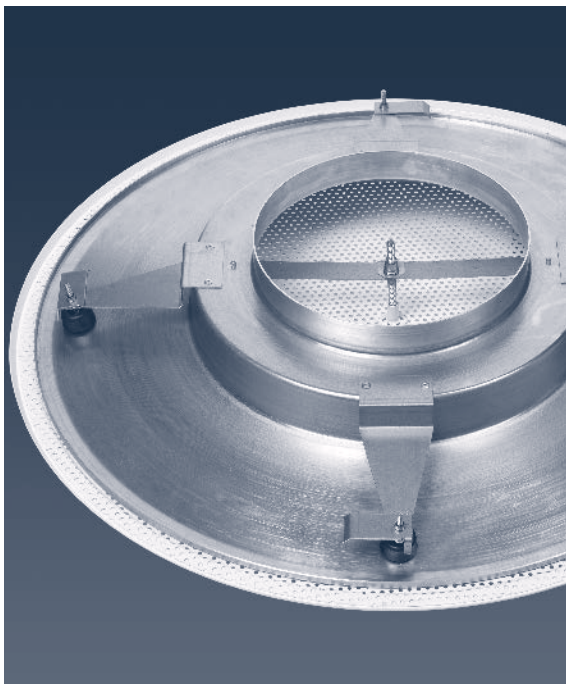






Krantz

Circular Opticlean OC-R-….

Air distribution systems

DS 4174 E 12.2019

Circular Opticlean

Preliminary remark

The Circular Opticlean complements Krantz's range of ceiling air outlets for diffuse air distribution and offers the following advantages: high level of thermal comfort, very little dirt accumulation on the ceiling, low pressure drop and low sound power level.

Construction design

The Circular Opticlean is designed for mounting in suspended ceiling systems, especially gypsum board ceilings. The circular faceplate **4** has round staggered perforations whose diameter is 3 mm and pitch 6 mm. The Circular Opticlean is connected to the duct system via a flexible duct **9** or a connection box **8**. It is fixed to the ceiling tile using fixing clips **2**.

Mode of operation

The supply air is discharged very uniformly through the perforated faceplate and spreads radially in the horizontal plane. As it induces indoor air, the air flow velocity and the difference in temperature between the supply and indoor air decrease rapidly; this results in low indoor air velocities and uniform indoor air temperatures.

The induced indoor air does not come into contact with the perforated faceplate because a layer builds up under the air outlet and acts as an air cushion. This considerably reduces the dirt accumulation on the ceiling which usually occurs with turbulent-flow air outlets.

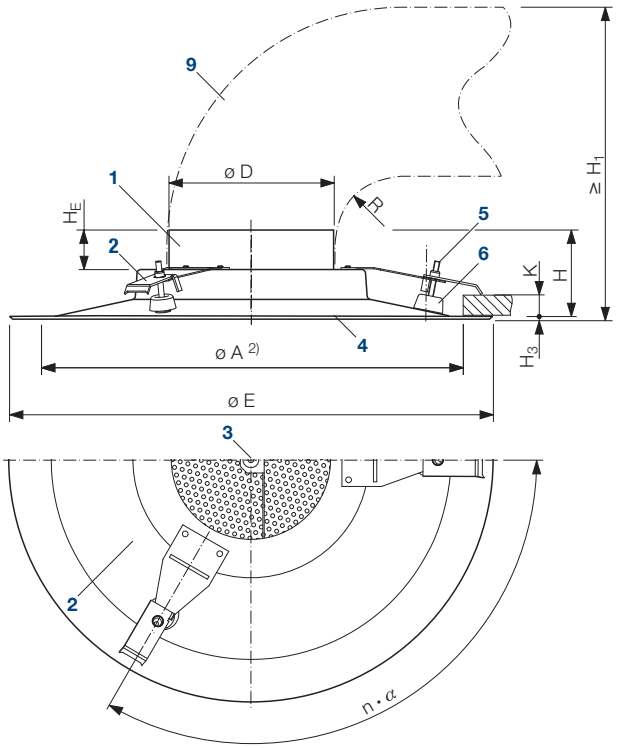
Many suspended ceiling systems incorporate lighting fixtures or loudspeakers which look like the Circular Opticlean, so this air outlet fits perfectly in the overall ceiling design.

Key

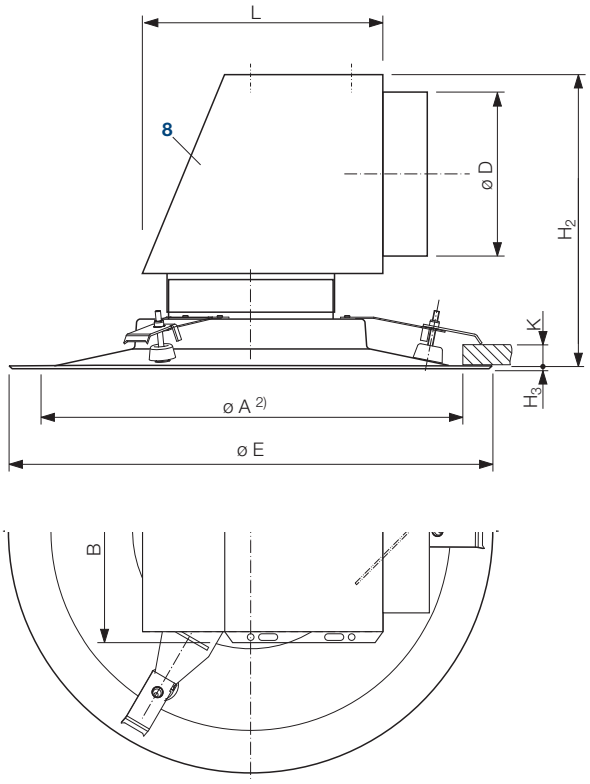
1 Air distribution element
2 Fixing clip
3 Fastener for faceplate
4 Perforated faceplate
5 Clamping screw
6 Stop buffer
8 Connection box
9 Flexible duct

1) Other ceiling thicknesses on request
2) Ceiling cutout
3) The overall height is based on a minimum bending radius of R/D = 0.5. Smaller radii are possible depending on the type of flexible duct used.

Flexible duct connection



Connection box



Size	Volume flow rate range		ø D	ø A 2)	ø E	H	H_E	H_1 3)	H_2	H_3	K 1)	n · α	L	B	Weight
	l/s	m³/h	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
200	17 – 36	60 - 130	79	198	220	53,0	30.0	175	–	2.0	10 - 25	3 * 120°	–	–	0,55
300	25 – 70	90 – 250	124	300	365	65.5	30.0	250	220	3.5	10 – 25	3 · 120°	190	205	1.04
400	36 – 111	130 - 400	159	390	411	76,6	30.0	325	265	6.0	10 - 25	3 * 120°	225	240	1,9
500	70 – 170	250 – 610	199	490	565	88.2	28.5	385	320	8.0	10 – 25	4 · 90°	265	280	2.65

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Circular Opticlean

Applications

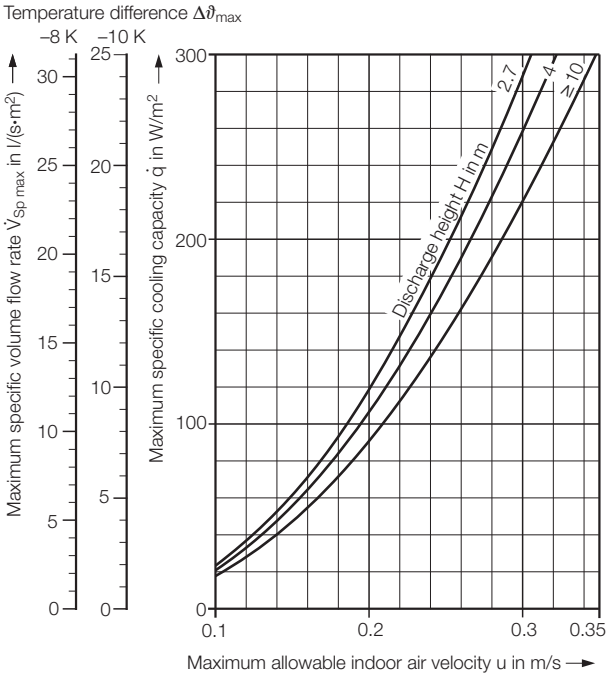
- For ceiling heights from 2.5 to 4.5 m
- Maximum temperature difference ±10 K [1]
- Volume flow rate range from 17 to 170 l/s [60 to 610 m³/h]
- Also usable as return air inlet [2]

Comfort criteria [3]

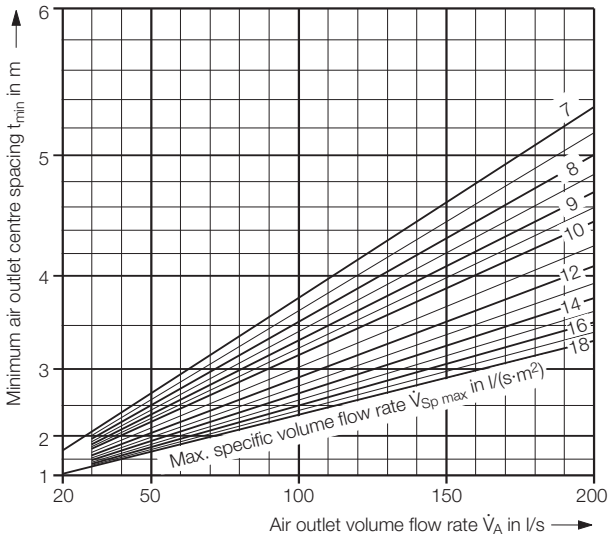
The outlet layout must comply with the maximum allowable indoor air velocities u in the occupied zone in the cooling mode. The indoor air velocity depends on the cooling load that is to be removed from the room. The maximum specific cooling capacity $\dot{q}$ depends on the discharge height and the maximum allowable indoor air velocity u (Graph 1).

Graph 1 enables to determine for the cooling mode the maximum specific volume flow rate $\dot{V}_{Sp\ max}$ in relation to the maximum specific cooling capacity and the maximum temperature difference $\Delta\vartheta_{max}$. The volume flow rate supplied to the room $\dot{V}_{Sp\ tats}$ may not exceed this value.

Graph 2 enables to determine the minimum centre spacing between two outlets on the basis of the maximum specific volume flow rate.



Graph 1: Maximum specific volume flow rate



Graph 2: Minimum air outlet centre spacing

Figure 1: Air flow pattern made visible by smoke tracer

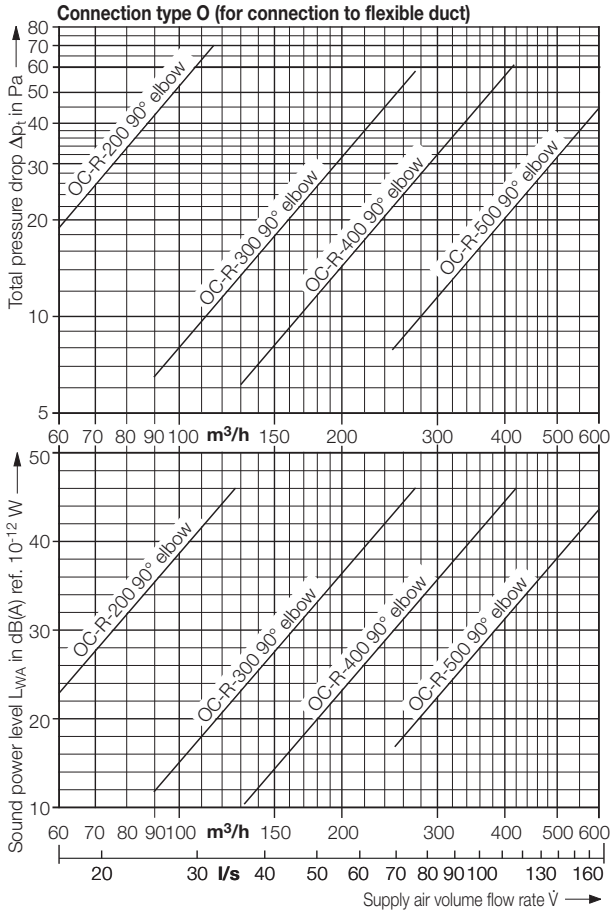
[1] When heating, +10 K with ceiling height up to 3 m, +5 K with ceiling height up to 4.5 m

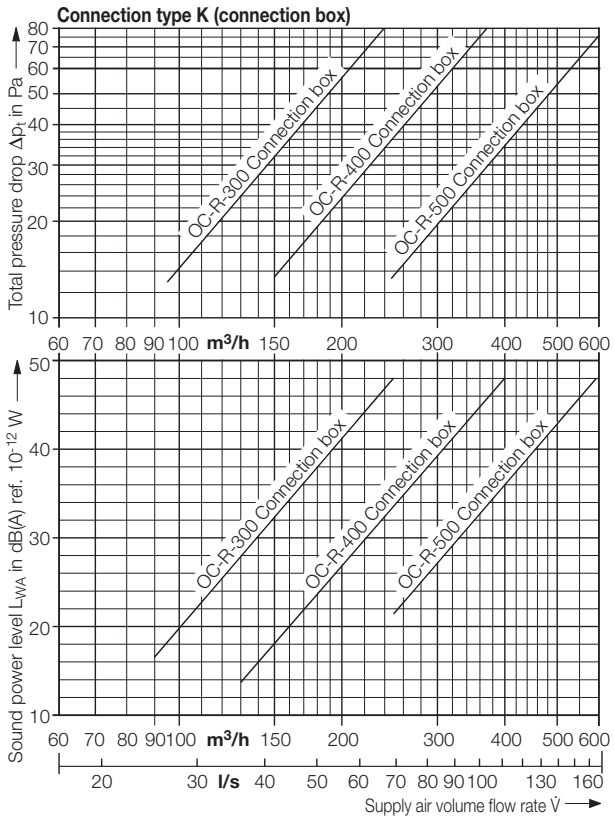
[2] When used as return air inlet, it may get dirty but is easy to clean

[3] See our brochure ref. TB 69 'Layout specifications for thermal comfort'

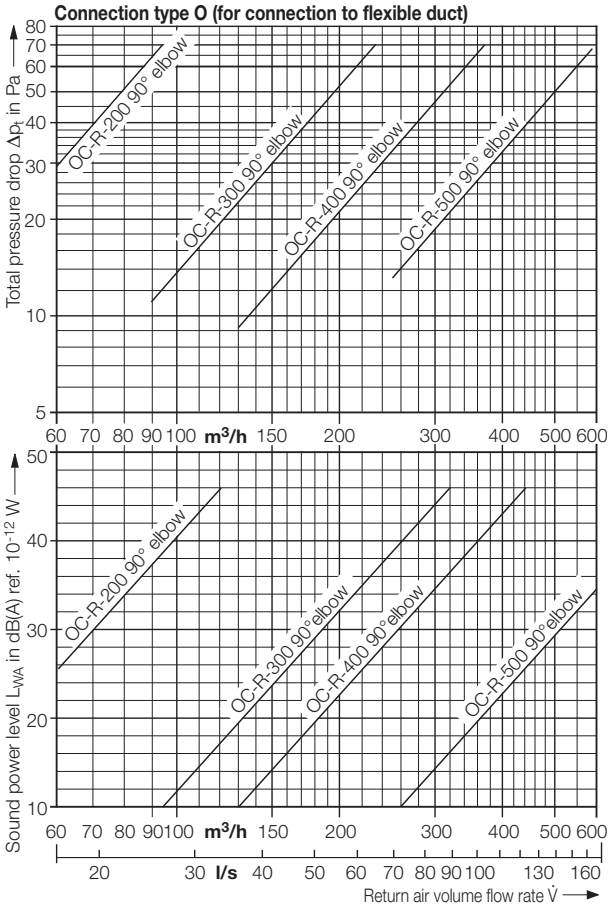
Circular Opticlean

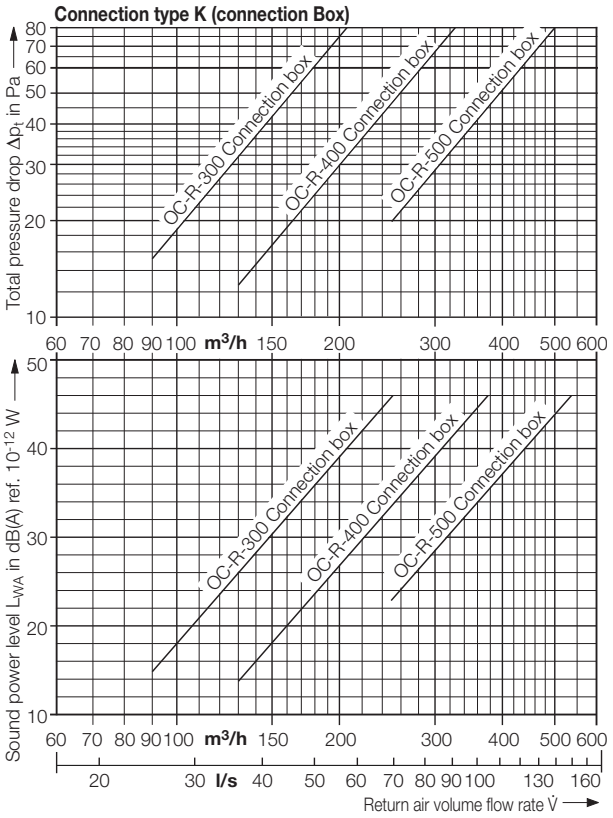
Supply air





Return air





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Circular Opticlean

Supply air

		Connection type O										Connection type K									
Air outlet volume flow rate		Total Pressure drop	Sound power level L_W in dB									Total Pressure drop	Sound power level L_W in dB								
$\dot{V}$		Δp_t	L_{WA}	Octave band centre frequency in Hz								Δp_t	L_{WA}	Octave band centre frequency in Hz							
l/s	m^3/h	Pa	dB(A)	63	125	250	500	1 K	2 K	4 K	8 K	Pa	dB(A)	63	125	250	500	1 K	2 K	4 K	8 K
Size 200																					
17	60	19,0	23	14	18	21	20	19	14	8											
22	80	33,8	32	23	27	30	29	28	23	17											
33	120	75,9	44	36	39	43	41	41	35	29											
Size 300																					
28	100	7,9	15	25	16	17	11	11	< 5			14,4	20	9	16	19	15	16	12	< 5	
42	150	17,8	27	38	29	30	24	24	17			32,4	32	20	29	31	27	29	25	15	
56	200	31,6	36	47	38	39	33	33	26			57,5	41	29	38	40	36	38	34	24	
Size 400																					
42	150	8,1	14		11	16	11	9	5	< 5		13,3	18		17	19	14	13	9	< 5	
56	200	14,4	23		20	25	20	18	14	7		23,7	27		26	29	23	22	18	11	
83	300	32,4	36		32	38	33	30	27	20		53,3	39		39	41	35	34	30	23	
Size 500																					
69	250	7,9	17	15	15	12	10	13	8	< 5		13,9	21		22	21	18	17	11	< 5	
111	400	20,2	31	30	30	27	25	28	23	14		35,7	36		37	35	32	31	26	17	
139	500	31,6	38	37	37	34	32	35	30	21		55,8	43		44	42	39	38	33	24	

Return air

		Connection type O										Connection type K									
Air outlet volume flow rate		Total Pressure drop	Sound power level L_W in dB									Total Pressure drop	Sound power level L_W in dB								
$\dot{V}$		Δp_t	L_{WA}	Octave band centre frequency in Hz								Δp_t	L_{WA}	Octave band centre frequency in Hz							
l/s	m^3/h	Pa	dB(A)	63	125	250	500	1 K	2 K	4 K	8 K	Pa	dB(A)	63	125	250	500	1 K	2 K	4 K	8 K
Size 200																					
17	60	28,9	25	8	7	16	19	21	18	17	8										
22	80	51,3	34	15	14	24	28	30	26	26	17										
33	120	115,4	46	27	25	37	40	42	39	38	29										
Size 300																					
28	100	13,3	12	6	< 5	6	6	7	7	< 5	< 5	18,8	18	16	15	17	14	14	10	< 5	< 5
42	150	29,9	24	15	11	18	18	19	19	12	< 5	42,3	30	28	27	29	26	26	22	15	7
56	200	53,1	33	23	19	27	27	27	28	21	9	75,2	39	36	36	38	35	34	31	23	14
Size 400																					
42	150	11,8	13		7	11	10	7	7	< 5	< 5	16,7	18	17	15	17	14	15	11	< 5	< 5
56	200	21,0	22		16	19	19	16	16	11	< 5	29,8	27	25	23	25	22	23	19	13	< 5
83	300	47,2	34		28	31	31	28	28	23	11	67,0	39	37	35	38	34	35	31	25	14
Size 500																					
69	250	12,8	9			10	5	< 5	< 5	< 5		20,0	23	19	21	22	18	19	13	6	
111	400	32,8	23			24	19	18	16	8		51,2	37	33	35	36	32	33	27	20	
139	500	51,3	30			31	26	25	23	13		80,0	43	40	42	42	39	40	33	27	

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Circular Opticlean

Features

- High level of thermal comfort thanks to diffuse indoor air flow
- Fulfils thermal comfort criteria for commercial applications as defined in EN ISO 7730
- Steady radial air spread
- Very uniform air discharge and formation of an air cushion; as a result, no or only very little dirt accumulation on the ceiling
- For mounting in suspended ceiling systems, e.g. gypsum board ceilings
- For ceiling heights from 2.5 to 4.5 m
- Volume flow rate range from 17 to 170 l/s [60 to 610 m³/h]
- Maximum temperature difference between the supply and indoor air ±10 K [1)]
- Also usable as return air inlet
- 4 sizes available: 200, 300, 400 and 500
- Low sound power level
- Low pressure drop
- Suitable for connection to a flexible duct or fitted with a connection box
- Connection box optionally available with volume flow damper adjustable at the connection spigot
- Faceplate and connection box made of galvanized sheet metal
- Air distribution element made of aluminium

Type code

OC – R – ___ / _ _ – ____

Opticlean | Geometry | Size | Connection type | Damper | Surface finish

Geometry
R = circular faceplate

Size
200 = Size 200
300 = Size 300
400 = Size 400
500 = Size 500

Connection type
O = no connection piece (suitable for connection to flexible duct)
K = connection box

Damper
O = no volume flow damper
S = with volume flow damper adjustable at spigot (only for design with connection box)

Surface finish
9010 = face painted to RAL 9010, semi-matt
.... = face painted to RAL ....

[1)] When heating, +10 K up to 3 m ceiling height, +5 K up to 4.5 m ceiling height

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Tender text

.... units
Circular Opticlean with horizontal air discharge, for installation in suspended ceiling systems made from mineral fibre or gypsum board, designed to generate a high-quality indoor air flow at low air velocities and uniform air temperatures; unobtrusive integration into the suspended ceiling; strong reduction of dirt accumulation on the ceiling thanks to very uniform air discharge and formation of an air cushion; also usable as return air inlet;

outlet consisting of:
- circular faceplate with round staggered perforations, 3 mm in diameter, and collar
- air distribution element with top connection spigot for connection to a flexible duct
- optional connection box with lateral connection spigot and suspension brackets, optionally fitted with volume flow damper adjustable at the spigot.

Materials:
- Faceplate made of galvanized sheet metal painted to RAL ....
- Air distribution element made of aluminium
- Connection box made of galvanized sheet metal

Make: Krantz
Type: OC – R – ___ / _ _ – ____

Subject to technical alteration.

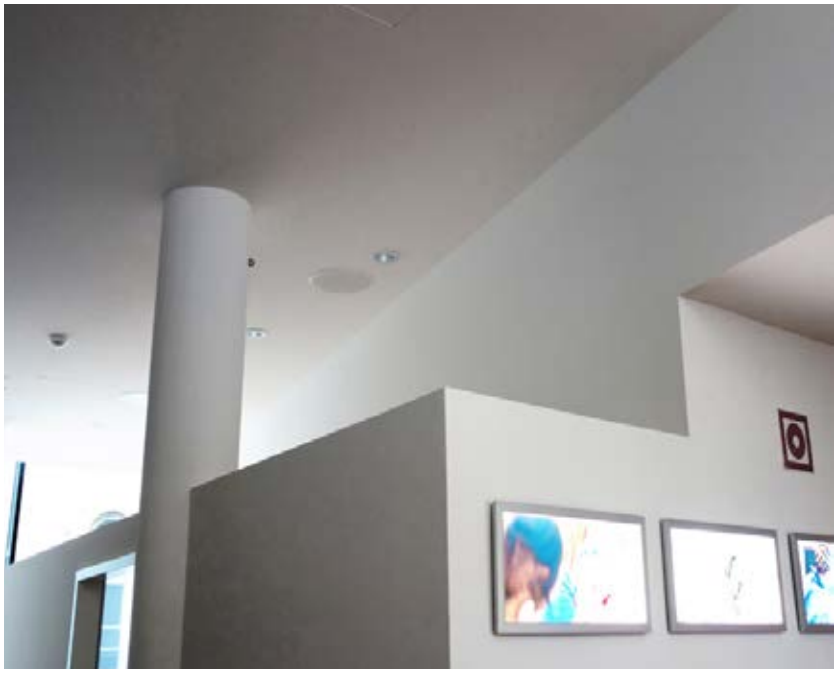

Figure 2: Circular Opticlean, mounted onto a plasterboard ceiling in a hospital

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