

Tapered hole pattern



Adjustable twin nozzles



Water connections



Fixing brackets



Conforms to VDI 6022

Active chilled beams

OETK



Four-way active chilled beam for ceiling grid, dimensions 600 × 600 mm and 625 × 625 mm, with horizontal heat exchanger

Active chilled beam for heating and cooling, with 2-pipe or 4-pipe heat exchanger, for integration with various ceiling systems.

- Preferably for room heights up to 4.00 m
- High heating and cooling capacity with a low conditioned primary air volume flow and low sound power level
- High comfort levels due to low airflow velocity in the occupied zone
- 5 nozzle variants for demand-dependent induction: 4 nozzles each with different opening diameters, 1 twin nozzle with adjustable opening diameters
- Removable induced air grille, no tool required
- Induced air grille with tapered hole pattern

Optional equipment and accessories

- Control system
- Adjustable air control blades for air direction control
- Different looks due to powder-coated surfaces
- With an extended border also suitable for freely suspended installation

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General information

Application

- Active chilled beams of Type OETK for the integration into various ceiling systems, preferably for room heights up to 4.00 m
- Particularly suitable for grid ceilings with grid size 600 or 625
- Adjustable air control blades (optional) allow for the manual adjustment of the four-way air discharge
- Large volume flow rate range due to the adjustable twin nozzles (optional)
- 2-pipe or 4-pipe heat exchangers enable good comfort levels with a low conditioned primary air volume flow rate
- Energy-efficient solution since water is used for heating and cooling

Special characteristics

- Four-way air discharge
- Horizontal heat exchanger as 2-pipe or 4-pipe system
- Induced air grille with parallel drilled apertures, decreasing towards the edges
- Optional twin nozzles, adjustable, for a large volume flow rate range
- Water connection, Ø12 mm Cu pipe or coupling with G1/2" external thread and flat seal or G1/2" union nut and flat seal
- Internal nozzle plate with punched nozzles (non-combustible)
- Adjustable air control blades for air direction control as an option

Nominal sizes

- 600, 1200 mm

Variants

Heat exchanger

- 2: 2-pipe systems
- 4: 4-pipe systems

Nozzle variants

- HE: Small
- S1: Medium
- S2: Large
- HP: Extra large
- DA: Adjustable twin nozzles, all nozzles are open (factory setting)
- DS: Adjustable twin nozzles, smaller nozzles are open
- DB: Adjustable twin nozzles, large nozzles are open. DS and DB can be set according to local requirements. You should order DA and have DS or DB set by others.

Construction

- Powder-coated RAL 9010, pure white, gloss level 50 %
- P1: Powder-coated in any other RAL colour, gloss level 70 %
- P1: Powder-coated RAL 9006, white aluminium, gloss level 30 %

Attachments

- Adjustable air control blades
- Water connection A1: G" external thread and flat seal
- Water connection A2: G" union nut and flat seal

Useful additions

- Connecting hoses
- Control equipment consisting of a control panel including a controller with integral room temperature sensor; valves and valve actuators; and lockshields
- X-AIRCONTROL control system

Construction features

- Spigot is suitable for circular ducts to EN 1506 or EN 13180
- 4 fixing brackets for customer-side mounting
- 5 nozzle variants for demand-dependent induction: 4 nozzles each with different opening diameters, 1 twin nozzle with adjustable opening diameters
- Internal nozzle plate with punched nozzles (non-combustible)
- Removable induced air grille, fixed with magnets
- Securing the induced air grille with safety cables

Material and surfaces

- Casing, spigot, and perforated induced air grille made of galvanised sheet steel
- Heat exchanger with copper tubes and aluminium fins
- Exposed surfaces are powder-coated, pure white (RAL 9010), or in any other RAL colour
- Air control blades made of polypropylene, UL 94, flame retardant (V0)
- Steel nozzle plate

Standards and guidelines

- Products are certified by Eurovent (no. 09.12.432) and listed on the Eurovent website
- Declaration of hygiene conformity to VDI 6022

Maintenance

- No moving parts, hence low maintenance
- The heat exchanger can be vacuumed with an industrial vacuum cleaner, if necessary
- VDI 6022, Part 1, applies (Hygiene requirements for ventilation and air-conditioning systems and units)

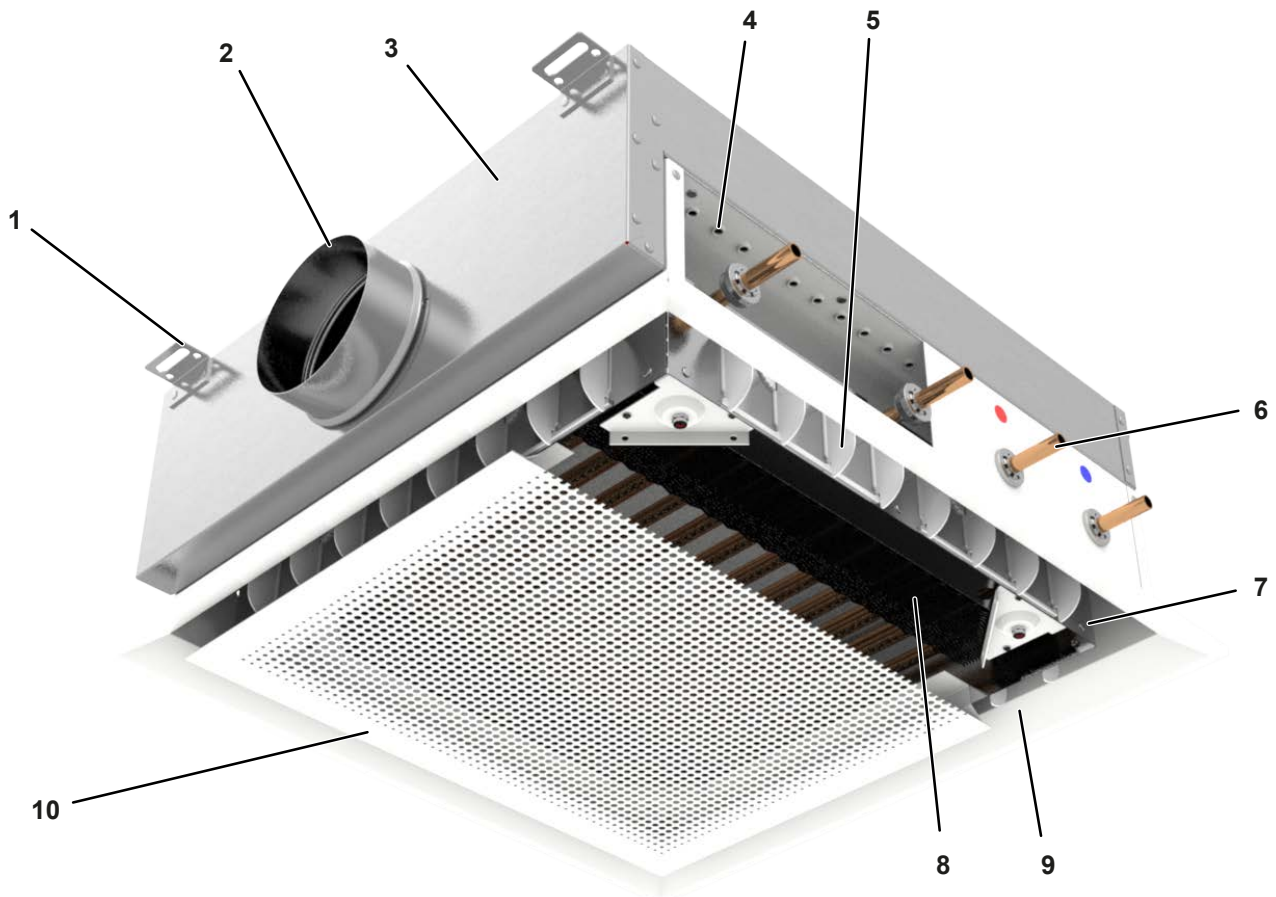
Function

Functional description

Active chilled beams provide centrally conditioned primary air (outdoor air) to the room and use heat exchangers for additional cooling and/or heating. The primary air flows through the nozzles into the mixing chambers. This induces secondary air. The

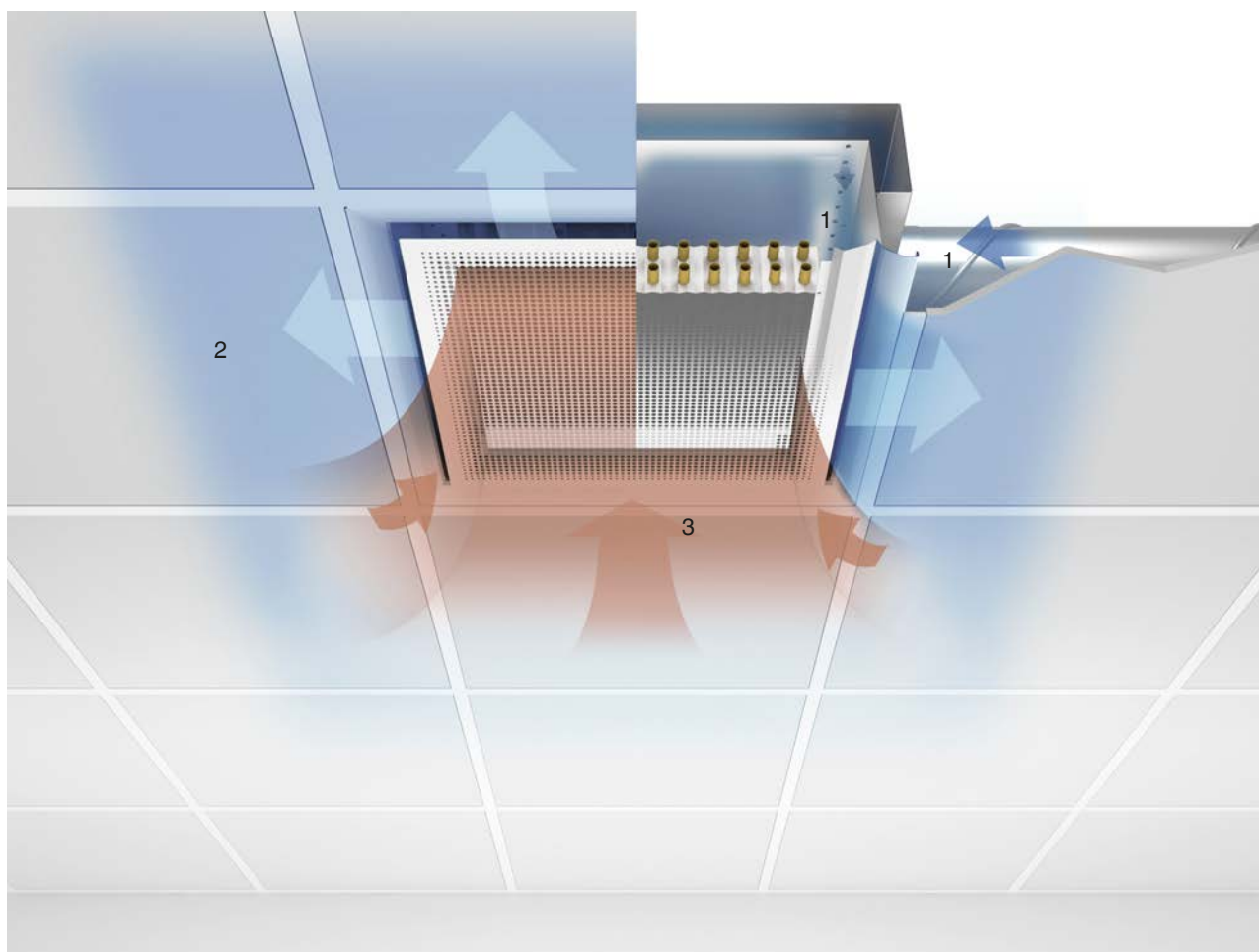
secondary air flows through the induction grille and the horizontal heat exchanger. There it is heated or cooled. Primary and secondary air mix and are then supplied to the room horizontally through the supply air slots.

Schematic illustration of OETK



- 1 Fixing brackets
- 2 Primary air spigot
- 3 Casing
- 4 Nozzle plate with punched nozzles
- 5 Air control blades (optional)
- 6 Water connections
- 7 Encasing
- 8 Heat exchanger
- 9 Front frame
- 10 Induced air grille

Principle of operation – OETK



- 1 Conditioned fresh air (primary air)
- 2 Supply air
- 3 Room air (secondary air)

Technical data

Nominal size (NG) Ceiling grid (L × W)	600 × 600, 625 × 625, 1200 × 600, 1250 × 625 [mm]
External dimensions unit (L × W)	593 × 593, 598 × 598, 618 × 618, 623 × 623, 1193 × 593, 1198 × 598, 1243 × 618, 1248 × 623 [mm]
Height unit	230/245/285 [mm]
ØD (Primary air spigot)	123/158/198 [mm]
Primary air volume flow rate	14 – 87 l/s or 50 – 310 m³/h
Cooling capacity	up to 2170 W
Heating capacity	up to 2990 W
maximum operating pressure, water side	6 bar
Maximum operating temperature	6 bar
Maximum operating temperature	75 °C

Available combinations of spigots and nozzles

NS		600 × 600 625 × 625		1200 × 600 1250 × 625		
H		230	245	230	245	285
ØD		123	158	123	158	198
Nozzle	HE	■		■		
Nozzle	S1	■			■	
Nozzle	S2		■		■	□
Nozzle	HP		■		■	□
Nozzle	DA		■		■	□

■ Standard variant

□ Selectable as an option

No entry: not available

Quick sizing

The quick sizing table contains operating points for defined reference units. For other operating points you may use the Easy Product Finder design software.

Quick sizing

Nominal sizes 600 × 600, 625 × 625

Nozzle	ØD	Primary air q_{vPr}			LWA [dB(A)]	Cooling				Heating		
						2-pipe and 4-pipe systems				4-pipe system		
		[l/s]	[m³/h]	Δp_t [Pa]		Q_{tot} [W]	Q_{WK} [W]	Δt_w [kPa]	Δp_w [kPa]	$Q_{WH} = Q_{tot}$ [W]	Δt_w [kPa]	Δp_w [kPa]
HE	123	14	50	102	26	552	384	3	1.7	387	6.7	0.1
HE	123	16	58	136	30	615	421	3.3	1.7	414	7.1	0.1
HE	123	19	68	189	35	686	458	3.6	1.7	442	7.6	0.1
S1	123	18	65	64	25	593	375	2.9	1.7	381	6.5	0.1
S1	123	24	86	112	33	735	447	3.5	1.7	432	7.4	0.1
S1	123	31	112	190	41	885	510	4	1.7	479	8.2	0.1
S2	158	20	72	34	21	564	323	2.5	1.7	351	6	0.1
S2	158	34	122	97	36	879	471	3.7	1.7	451	7.8	0.1
S2	158	43	155	156	43	1050	532	4.2	1.7	494	8.5	0.1
HP	158	31	112	37	26	731	356	2.8	1.7	379	6.5	0.1
HP	158	45	162	77	38	998	456	3.6	1.7	444	7.7	0.1
HP	158	50	180	95	41	1085	483	3.8	1.7	462	7.9	0.1
DA	158	23	83	33	18	592	315	2.5	1.7	351	6	0.1
DA	158	40	144	99	35	946	464	3.6	1.7	453	7.8	0.1
DA	158	56	202	196	46	1222	546	4.3	1.7	512	8.8	0.1
DS	158	13	47	93	27	524	367	2.9	1.7	380	6.5	0.1
DS	158	16	58	141	33	614	420	3.3	1.7	420	7.2	0.1
DS	158	19	68	194	38	687	459	3.6	1.7	450	7.7	0.1
DB	158	16	58	33	17	494	300	2.3	1.7	333	5.7	0.1
DB	158	28	101	99	34	794	456	3.6	1.7	445	7.7	0.1
DB	158	39	140	191	43	1006	538	4.2	1.7	507	8.8	0.1

Quick sizing

Nominal sizes 1200 × 600, 1250 × 625

Nozzle	ØD	Primary air q_{vPr}			LWA [dB(A)]	Cooling				Heating		
						2-pipe and 4-pipe systems				4-pipe system		
		[l/s]	[m³/h]	Δp_t [Pa]		Q_{tot} [W]	Q_{WK} [W]	Δt_w [kPa]	Δp_w [kPa]	$Q_{WH} = Q_{tot}$ [W]	Δt_w [kPa]	Δp_w [kPa]
HE	123	23	83	112	29	883	605	4.7	3.3	610	10.5	0.1
HE	123	25	90	132	31	937	636	5	3.3	636	10.9	0.1
HE	123	30	108	189	37	1062	701	5.5	3.3	692	11.9	0.1
S1	158	28	101	66	26	899	561	4.4	3.3	581	10	0.1
S1	158	37	133	115	35	1133	688	5.4	3.3	674	11.6	0.1
S1	158	48	173	194	43	1374	795	6.2	3.3	756	13	0.1
S2	158	34	122	41	24	948	540	4.2	3.3	569	9.8	0.1
S2	198	34	122	35	20	948	540	4.2	3.3	569	9.8	0.1
S2	158	54	194	104	38	1405	756	5.9	3.3	727	12.5	0.1
S2	198	54	194	88	34	1405	756	5.9	3.3	727	12.5	0.1
S2	158	74	266	195	48	1768	878	6.9	3.3	825	14.2	0.1
S2	198	74	266	166	44	1768	878	6.9	3.3	825	14.2	0.1



Nozzle	ØD	Primary air q_{vPr}			LWA [dB(A)]	Cooling				Heating		
		[l/s]	[m³/h]	Δp_t [Pa]		2-pipe and 4-pipe systems				4-pipe system		
						Q_{tot} [W]	Q_{wK} [W]	Δt_w [kPa]	Δp_w [kPa]	$Q_{wH} = Q_{tot}$ [W]	Δt_w [kPa]	Δp_w [kPa]
HP	158	51	184	47	33	1206	590	4.6	3.3	603	10.4	0.1
HP	198	51	184	34	25	1206	590	4.6	3.3	603	10.4	0.1
HP	158	65	234	75	41	1475	691	5.4	3.3	678	11.7	0.1
HP	198	65	234	55	33	1475	691	5.4	3.3	678	11.7	0.1
HP	158	75	270	100	45	1651	747	5.8	3.3	720	12.4	0.1
HP	198	75	270	73	37	1651	747	5.8	3.3	720	12.4	0.1
DA	158	39	140	40	24	937	468	3.7	3.3	535	9.2	0.1
DA	198	39	140	32	< 20	937	468	3.7	3.3	535	9.2	0.1
DA	158	60	216	95	37	1399	676	5.3	3.3	670	11.5	0.1
DA	198	60	216	76	32	1399	676	5.3	3.3	670	11.5	0.1
DA	158	80	288	168	46	1756	792	6.2	3.3	752	12.9	0.1
DA	198	80	288	135	42	1756	792	6.2	3.3	752	12.9	0.1
DS	158	23	83	99	29	878	600	4.7	3.3	612	10.5	0.1
DS	198	23	83	90	26	878	600	4.7	3.3	612	10.5	0.1
DS	158	27	97	135	34	990	665	5.2	3.3	657	11.3	0.1
DS	198	27	97	123	31	990	665	5.2	3.3	657	11.3	0.1
DS	158	32	115	189	39	1116	731	5.7	3.3	705	12.1	0.1
DS	198	32	115	173	36	1116	731	5.7	3.3	705	12.1	0.1
DB	158	26	94	34	22	743	428	3.3	3.3	502	8.6	0.1
DB	198	26	94	30	< 20	743	428	3.3	3.3	502	8.6	0.1
DB	158	45	162	101	36	1224	682	5.3	3.3	686	11.8	0.1
DB	198	45	162	88	33	1224	682	5.3	3.3	686	11.8	0.1
DB	158	63	227	198	45	1571	811	6.3	3.3	788	13.6	0.1
DB	198	63	227	173	43	1571	811	6.3	3.3	788	13.6	0.1

Reference values

Parameters	Cooling	Heating
t_R	26 °C	22 °C
t_{Pr}	16 °C	22 °C (isothermal)
t_{wv}	16 °C	50 °C
qv_w	110 l/h	50 l/h

Specification text

This specification text describes the general properties of the product. Texts for variants can be generated with our Easy Product Finder design programme.

Active chilled beams, with four-way air discharge and high thermal output, for air-water systems. For installation flush with the ceiling, preferably in rooms with a height up to 4.00 m. The units consist of a casing with mounting brackets, primary air plenum, non-combustible nozzles, and horizontal heat exchanger. 5 nozzle variants for demand-dependent induction: 4 nozzles each with different opening diameters, 1 twin nozzle with adjustable opening diameters.

Special characteristics

- Four-way air discharge
- Horizontal heat exchanger as 2-pipe or 4-pipe system
- Induced air grille with parallel drilled apertures, decreasing towards the edges
- Optional twin nozzles, adjustable, for a large volume flow rate range
- Water connection, Ø12 mm Cu pipe or coupling with G1/2" external thread and flat seal or G1/2" union nut and flat seal
- Internal nozzle plate with punched nozzles (non-combustible)
- Adjustable air control blades for air direction control as an option

Material and surfaces

- Casing, spigot, and perforated induced air grille made of galvanised sheet steel
- Heat exchanger with copper tubes and aluminium fins
- Exposed surfaces are powder-coated, pure white (RAL 9010), or in any other RAL colour
- Air control blades made of polypropylene, UL 94, flame retardant (V0)
- Steel nozzle plate

Construction

- Powder-coated RAL 9010, pure white, gloss level 50 %
- P1: Powder-coated in any other RAL colour, gloss level 70 %
- P1: Powder-coated RAL 9006, white aluminium, gloss level 30 %

Technical data

- Nominal length: 600, 1200 mm
- Length: 593, 598, 618, 623 mm (one tile), or 1193, 1198, 1243, 1248 mm (two tiles)
- Height: 230/245 mm
- Width: 593, 598, 618, 623 mm
- Primary air spigot, diameter: 123/158 mm
- Primary air volume flow rate: 14 – 87 l/s or 50 – 310 m³ /h
- Cooling capacity: up to 2170 W
- Heating capacity: up to 2990 W
- Max. operating pressure: 6 bar
- Max. operating temperature: 75 °C

Sizing data

Primary air

- q_v [m³/h]
- Δp_t [Pa]

Air-regenerated noise

- L_{WA} [dB(A)]

Cooling

- Q_{tot} [W]

Heating

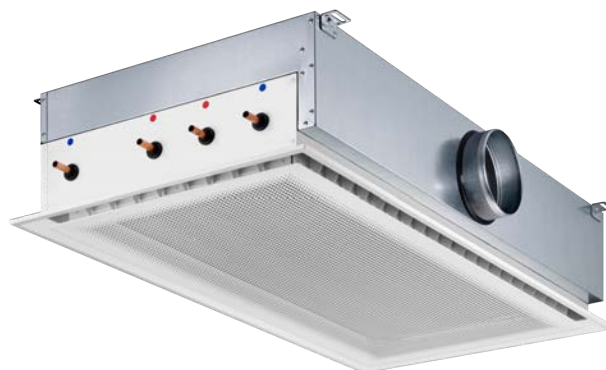
- Q_{tot} [W]

Variants

OETK: 593 × 593/LE



OETK: 1193 × 593/LE



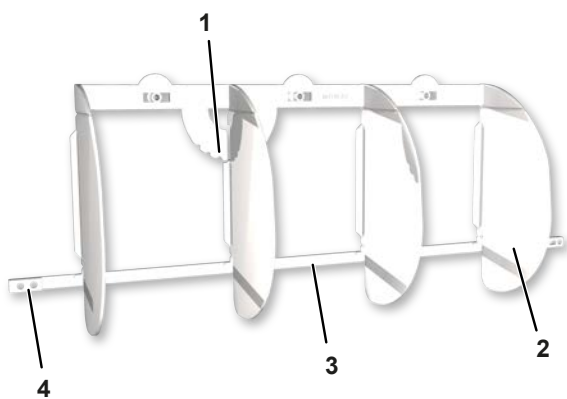
Air control blades

If high cooling capacities are required in a confined space, active chilled beams for ceilings with optionally available air control blades enable adjustable air routing. This ensures that the permissible air velocity in the occupied zone is maintained. The air control blades fan out the supply air flow, distribute it and adjust it to the respective room geometry. If the use of a room changes, the air discharge pattern can be optimised by adjusting the air control blades accordingly.

- It is possible to adjust the set of connected air control blades at the same time
- To adjust, actuate the outer elements of a blade group with both hands.
- For finer adjustment, disconnect the blades from each other
- Maximum possible adjustment is 45° to the left and right, in increments of 15°
- Factory setting: straight air discharge

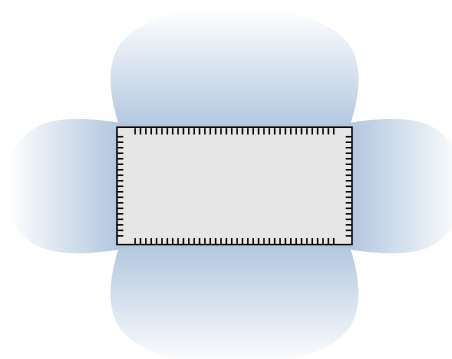
The use of air control blades results in a reduction of the water-side performance. Air control blades have to be factory fitted; it is not possible to retrofit air control blades at a later stage.

Air control blade

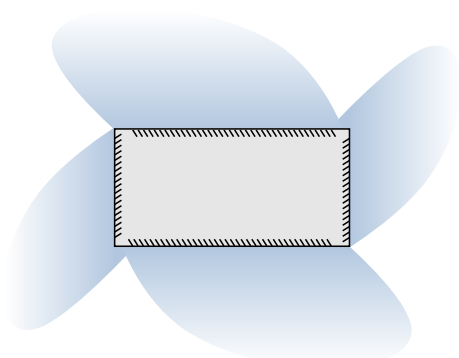


- 1 Interlock
- 2 Blade
- 3 Coupling strip
- 4 Connection

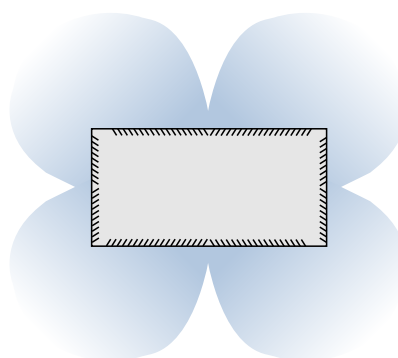
Straight air discharge



Angled air discharge



Divergent air discharge



Dimensions and weight

OETK

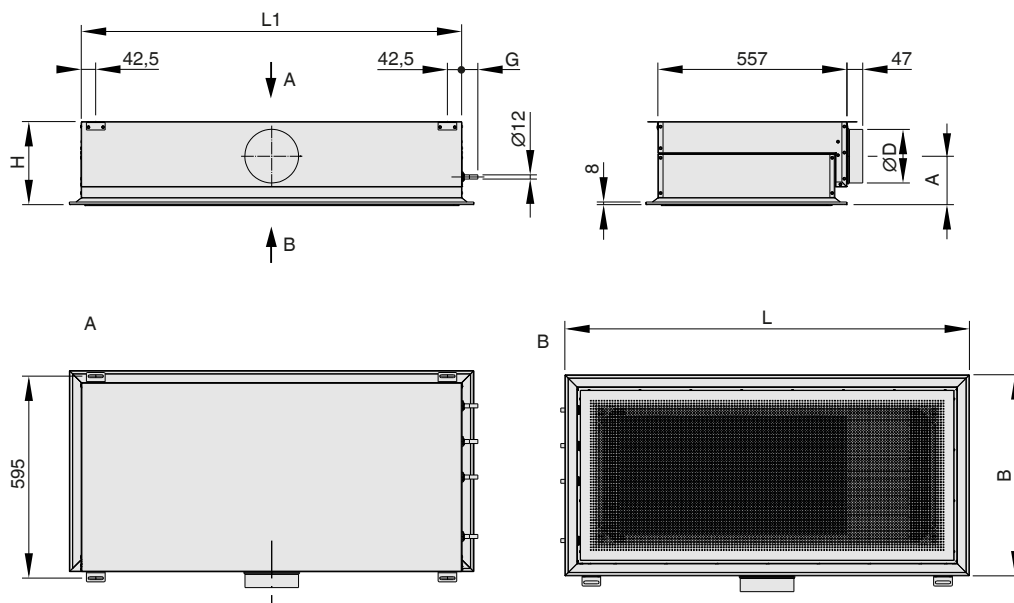


Illustration shows construction with water connections on the right.

Dimensions [mm] depending on ØD

ØD	H	A
123	230	125
158	245	143
198	285	163

Dimensions [mm] depending on nominal size

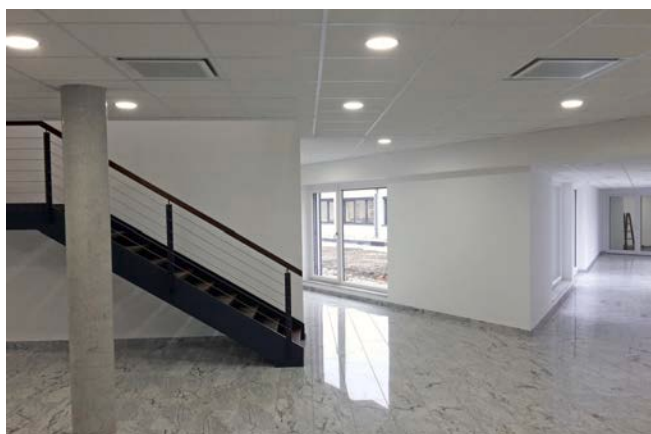
NS	L	B	L1	G
600 × 600	593	593	522	47.5
600 × 600	598	598	522	47.5
625 × 625	618	618	522	47.5
625 × 625	623	623	522	47.5
1200 × 600	1193	593	1122	47.5
1200 × 600	1198	598	1122	47.5
1250 × 625	1243	618	1147	35
1250 × 625	1248	623	1147	35

Weight [kg]

NS	kg/piece	maximum contained water
600 × 600, 625 × 625	16	2
1200 × 600, 1250 × 625	30	3

Width differences and height differences are negligible.

Product details



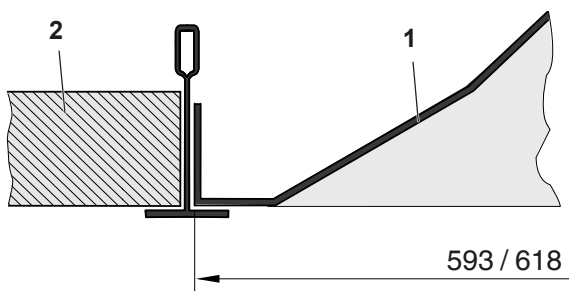
Installation and commissioning

- Preferably for rooms with a clear height up to 4.0 m
- Flush ceiling installation
- Horizontal primary air spigot
- External dimensions 593 × 593, 598 × 598, 618 × 618, 623 × 623, 1193 × 593, 1198 × 598, 1243 × 618, 1284 × 623 [mm]: suitable for ceiling grid, dimensions 600 × 600 mm and 625 × 625 mm
- Installation and connections to be performed by others; fixing, connecting and sealing material not included
- Induction diffuser has 4 mounting brackets for fixing to the ceiling by the customer
- Heat exchangers are fitted with water flow and water return connections at the narrow side
- With an extended border also suitable for freely suspended installation

Installation in T-bar profile ceilings or closed ceilings

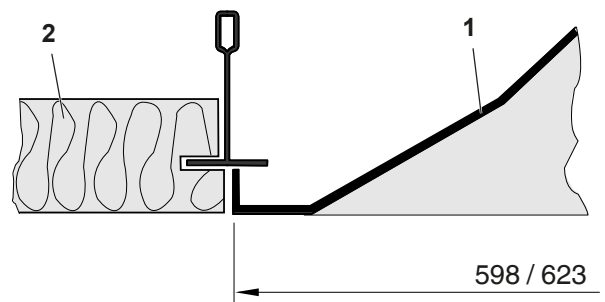
- Weight relief of the ceiling construction is to be provided via the existing fixing brackets

Ceiling installation, T-bar



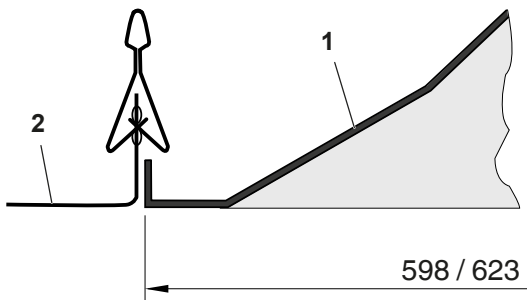
- 1 OETK unit
2 Ceiling tile

Ceiling installation, concealed T-bar



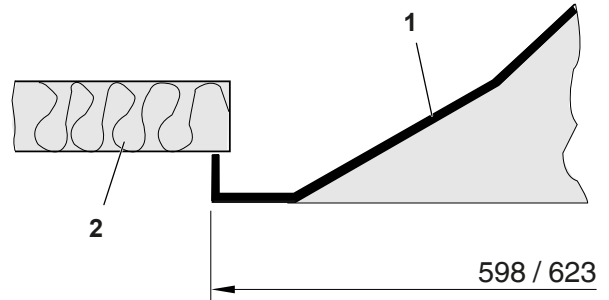
- 1 OETK unit
2 Ceiling tile

Ceiling installation, clamping profile



- 1 OETK unit
2 Ceiling tile

OETK ceiling installation, plasterboard



- 1 OETK unit
2 Plasterboard

Nomenclature

L_{WA} [dB(A)]

Sound power level

t_{Pr} [°C]

Primary air temperature

t_{WV} [°C]

Water flow temperature – cooling/heating

t_R [°C]

Room temperature

t_{ON} [°C]

Secondary air intake temperature

Q_{Pr} [W]

Thermal output – primary air

Q_{tot} [W]

Thermal output – total

Q_w [W]

Thermal output – water side, cooling/heating

qv_{Pr} [m³/h]; [l/s]

Primary air volume flow rate

qv_w [l/h]

Water flow rate – cooling/heating

qv [l/h]

Volume flow rate

Δt_w [K]

Temperature difference – water

Δp_w [kPa]

Water side pressure drop

Δp_t [Pa]

Total pressure drop, air side

$\Delta t_{Pr} = t_{Pr} - t_R$ [K]

Difference between primary air temperature and room temperature

$\Delta t_{RWV} = t_{WV} - t_R$ [K]

Difference between water flow temperature and room temperature

Δt_{Wm-Ref} [K]

Temperature difference between mean water temperature and reference temperature

L_N [mm]

Nominal length

Mixed flow

The supply air flows into the room at a relatively high speed. Due to the induction of room air, the air velocity and the temperature difference are quickly reduced. Due to the mixing, an almost constant indoor air quality develops in the entire room.

Wärmeübertrager

The maximum water-side operating pressure for all heat exchangers is 6 bar.

- Heating: The maximum water flow temperature for all heat exchangers is 75 °C. When connecting with flexible hoses, we recommend limiting the water flow temperature to 55 °C.
- Cooling: We recommend limiting the minimum water flow temperature to 16 °C. This prevents a permanent shortfall of the dew point.

Wärmeübertrager mit 2-Leiter-System

Air-water systems with a 2-pipe heat exchanger may be used for either heating or cooling. With the so-called changeover mode, for example, heating or cooling can be carried out depending on the season. 2-pipe systems are also frequently used in interior zones that are exclusively cooled.

Wärmeübertrager mit 4-Leiter-System

Air-water systems with a 4-pipe heat exchanger may be used for both heating and cooling. Depending on the season, i.e. especially in spring and autumn, it may be possible that an office has to be heated in the morning and cooled in the afternoon.