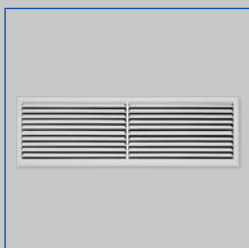


# Active chilled beams for bulkheads

## Type DID-E



Induced air and supply air grilles from our portfolio



Water connections



Eurovent certification



Tested to VDI 6022



### Active chilled beam with one-way air discharge and horizontal heat exchanger, in nominal lengths of 900, 1200 and 1500 mm

Active chilled beam for heating and cooling, with 2-pipe or 4-pipe heat exchanger, for installation into bulkheads, e.g. in hotel rooms

- Preferably for room heights up to 4.00 m
- High heating and cooling capacity with a low conditioned primary air volume flow rate and low sound power level
- High comfort levels due to low airflow velocity in the occupied zone
- Three nozzle variants to optimise induction based on demand
- Fixing points for various types of suspension

#### Optional equipment and accessories

- Control system
- Induced air spigot and supply air spigot (to facilitate attaching the grilles)
- Heat exchanger powder-coated black
- Powder coating in many different colours, e.g. RAL CLASSIC

Type		Page
DID-E	General information	DID-E – 2
	Function	DID-E – 3
	Technical data	DID-E – 5
	Quick sizing	DID-E – 6
	Specification text	DID-E – 8
	Order code	DID-E – 9
	Variants	DID-E – 10
	Dimensions and weight	DID-E – 11
	Installation details	DID-E – 12
	Basic information and nomenclature	DID-E – 13

## Application

### Application

- Active chilled beams of Type DID-E for installation into ceiling bulkheads, preferably for room heights up to 4.00 m
- Particularly suitable for hotel bedrooms and rooms on hospital wards
- 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

- Choice of any induced air grille and supply air grille from our portfolio
- One-way air discharge
- Horizontal heat exchanger as 2-pipe or 4-pipe system
- Internal nozzle plate with punched nozzles (non-combustible)
- Water connections at the narrow side, Ø12 mm Cu pipe, with plain tails or with G½" external thread, or with a G½" union nut; with flat seal

### Special characteristics

#### Nominal sizes

- 900, 1200, 1500 mm

## Description

### Variants

- Heat exchanger width is 256 or 320 mm

#### Heat exchanger

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

#### Nozzle variants

- G: Large
- U: Extra large
- 2U: Two nozzle rows, extra large nozzles

### Attachments

- Water connection A1: G½" external thread and flat seal
- Water connection A2: G½" union nut and flat seal

### Accessories

- IS: Induced air spigot
- AS: Supply air spigot
- IA: Induced and supply air spigots

### 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
- Ventilation grille
- X-AIRCONTROL control system

### Construction features

- Spigot is suitable for circular ducts to EN 1506

or EN 13180

- Three nozzle variants to optimise induction based on demand
- Four suspension points for on-site installation (by others)

### Materials and surfaces

- Casing and nozzle plate made of galvanised sheet steel
- Heat exchanger with copper tubes and aluminium fins
- Casing, primary air spigot, etc., either galvanised or in black (RAL 9005)
- Heat exchanger also in black (RAL 9005)
- Optional induced air spigot (IS) and supply air spigot (AS) made of galvanised sheet steel; black (RAL 9005) as an option

### 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)

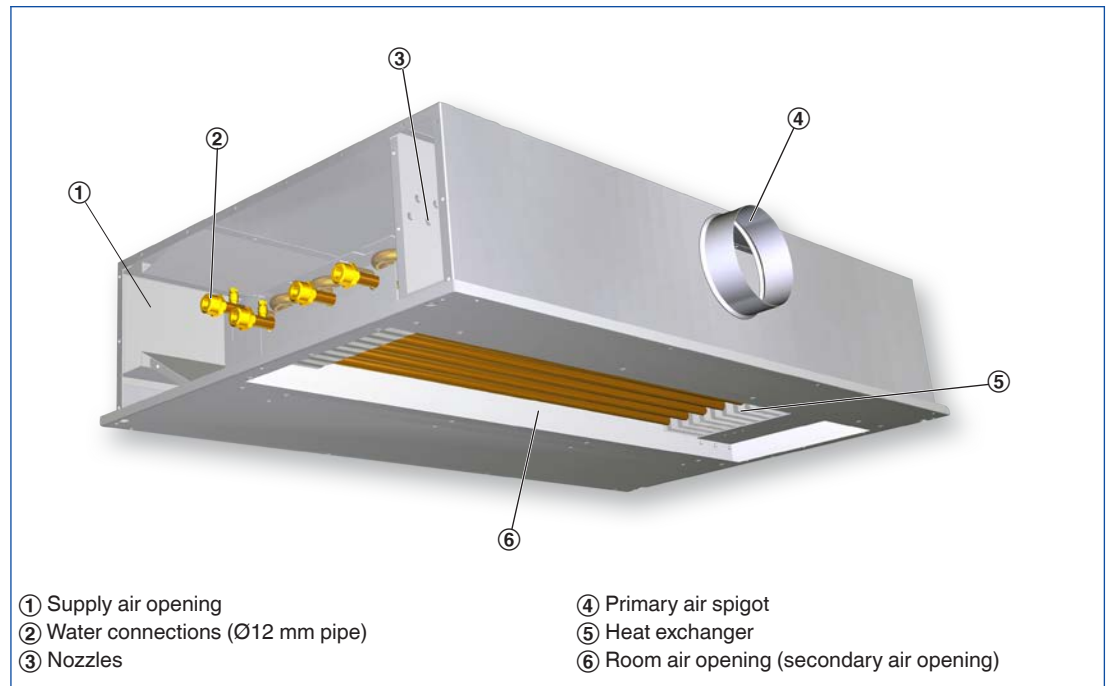
## Functional description

Active chilled beams provide centrally conditioned primary air (fresh air) to the room and use heat exchangers for additional cooling and/or heating. The primary air is discharged through nozzles into the mixing chamber; as a result of this, secondary

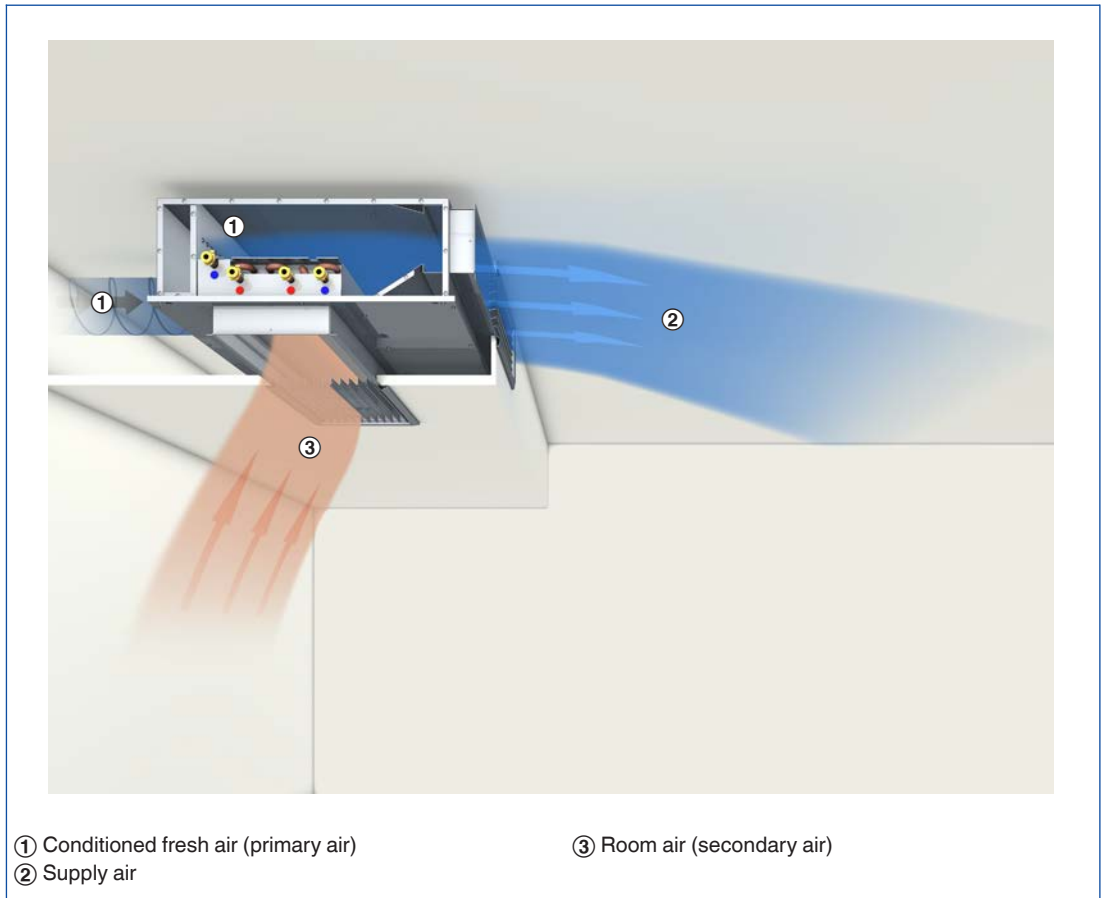
air (room air) is induced via the induced air grille and passes through the horizontal heat exchanger.

Primary and secondary air mix and are then supplied to the room horizontally through the supply air grille.

## Schematic illustration of DID-E



Principle of operation – DID-E



<b>Nominal length</b>	900, 1200, 1500 mm
<b>Length</b>	948, 1248, 1548 mm
<b>Width</b>	550, 614 mm
<b>Height</b>	200 mm (plus induced air grille)
<b>Primary air spigot, diameter</b>	158 mm
<b>Primary air volume flow rate</b>	10 – 78 l/s or 36 – 281 m <sup>3</sup> /h
<b>Cooling capacity</b>	Up to 1730 W
<b>Heating capacity</b>	Up to 1480 W
<b>Max. operating pressure, water side</b>	6 bar
<b>Max. operating temperature</b>	75 °C

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 – heat exchanger width 256 mm

L <sub>N</sub>	①	Primary air				②	Cooling				Heating		
		V̇ <sub>Pr</sub>	V̇ <sub>Pr</sub>	Δp <sub>t</sub>	L <sub>WA</sub>		2-pipe and 4-pipe systems				4-pipe system		
							Q̇ <sub>tot</sub>	Q̇ <sub>WK</sub>	Δt <sub>w</sub>	Δp <sub>w</sub>	Q̇ <sub>WH</sub> = Q̇ <sub>tot</sub>	Δt <sub>w</sub>	Δp <sub>w</sub>
		l/s	m <sup>3</sup> /h	Pa	dB(A)		W	K	kPa	W	kPa		
900	G	7	25	38	<20	262	178	1.4	1.4	313	2.4	0.5	
		12	43	111	<20	507	363	2.8	1.4	658	5.1	0.5	
		17	61	224	29	673	468	3.7	1.4	863	6.7	0.5	
	U	13	47	40	<20	470	314	2.5	1.4	565	4.4	0.5	
		21	76	105	20	692	439	3.4	1.4	805	6.3	0.5	
		29	104	200	30	865	515	4.0	1.4	958	7.5	0.5	
	2U	25	90	38	<20	622	320	2.5	1.4	577	4.5	0.5	
		41	148	103	26	957	457	3.6	1.4	842	6.6	0.5	
		57	205	200	36	1227	540	4.2	1.4	1007	7.9	0.5	
1200	G	9	32	35	<20	323	214	1.7	1.7	380	3.0	0.6	
		15	54	98	<20	617	437	3.4	1.7	801	6.3	0.6	
		21	76	192	28	815	561	4.4	1.7	1052	8.7	0.6	
	U	17	61	39	<20	600	395	3.1	1.7	721	5.6	0.6	
		28	101	106	22	891	553	4.3	1.7	1035	8.1	0.6	
		39	140	206	32	1116	646	5.1	1.7	1227	9.6	0.6	
	2U	33	119	39	<20	804	406	3.7	1.7	742	5.8	0.6	
		54	194	104	30	1273	572	4.5	1.7	1073	8.4	0.6	
		75	270	200	40	1573	668	5.2	1.7	1275	10.0	0.6	
1500	G	12	43	40	<20	444	299	2.3	2.1	537	4.2	0.7	
		20	72	117	21	793	552	4.3	2.1	1033	8.1	0.7	
		28	101	220	31	1028	690	5.4	2.1	1321	10.3	0.7	
	U	21	76	38	<20	724	471	3.7	2.1	869	6.8	0.7	
		35	126	107	24	1078	656	5.1	2.1	1249	9.8	0.7	
		49	176	210	34	1352	761	5.9	2.1	1474	11.5	0.7	
	2U	41	144	40	21	981	486	3.8	2.1	900	7.0	0.7	
		60	216	85	32	1358	635	5.0	2.1	1204	9.4	0.7	
		80	288	152	41	1699	734	5.7	2.1	1416	11.1	0.7	

① Nozzle variant

② Air-regenerated noise

### Reference values

Parameter	Cooling	Heating
t <sub>R</sub>	26 °C	22 °C
t <sub>Pr</sub>	16 °C	22 °C
t <sub>wv</sub>	16 °C	50 °C
V̇ <sub>w</sub>	110 l/h	110 l/h

Quick sizing – heat exchanger width 320 mm

L <sub>N</sub>	①	Primary air			② L <sub>WA</sub> dB(A)	Cooling				Heating		
		V̇ <sub>Pr</sub> l/s	V̇ <sub>Pr</sub> m <sup>3</sup> /h	Δp <sub>t</sub> Pa		2-pipe and 4-pipe systems				4-pipe system		
						Q̇ <sub>tot</sub> W	Q̇ <sub>wk</sub> K	Δt <sub>w</sub> K	Δp <sub>w</sub> kPa	Q̇ <sub>WH</sub> = Q̇ <sub>tot</sub> W	Δt <sub>w</sub> K	Δp <sub>w</sub> kPa
900	G	7	25	38	<20	284	199	1.6	1.6	337	2.6	0.5
		12	43	111	<20	548	403	3.2	1.6	705	5.5	0.5
		17	61	224	29	722	517	4.0	1.6	923	7.2	0.5
	U	13	47	40	<20	506	349	2.7	1.6	606	4.7	0.5
		21	76	105	20	739	485	3.8	1.6	862	6.7	0.5
		29	104	200	30	918	568	4.4	1.6	1073	8.0	0.5
	2U	25	90	38	<20	658	357	2.8	1.6	619	4.8	0.5
		41	148	103	26	1000	506	4.0	1.6	901	7.0	0.5
		57	205	200	36	1281	594	4.6	1.6	1076	8.4	0.5
1200	G	9	32	35	<20	349	240	1.9	2.2	409	3.2	0.6
		15	54	98	<20	664	483	3.8	2.2	858	6.7	0.6
		21	76	192	28	871	617	4.8	2.2	1123	8.8	0.6
	U	17	61	39	<20	643	438	3.4	2.2	772	6.0	0.6
		28	101	106	22	946	609	4.8	2.2	1105	8.6	0.6
		39	140	206	32	1178	707	5.5	2.2	1308	10.2	0.6
	2U	33	119	39	<20	849	451	3.5	2.2	795	6.2	0.6
		54	194	104	30	1780	628	4.9	2.2	1145	9.0	0.6
		75	270	200	40	1636	731	5.7	2.2	1358	10.6	0.6
1500	G	12	43	40	<20	478	333	2.6	2.7	577	4.5	0.7
		20	72	117	21	849	608	4.8	2.7	1103	8.6	0.7
		28	101	220	31	1092	754	5.9	2.7	1406	11.0	0.7
	U	21	76	38	<20	774	520	4.1	2.7	930	7.3	0.7
		35	126	107	24	1140	718	5.6	2.7	1330	10.4	0.7
		49	176	210	34	1420	829	6.5	2.7	1567	12.2	0.7
	2U	41	144	40	21	1031	537	4.2	2.7	962	7.5	0.7
		60	216	85	32	1419	696	5.4	2.7	1283	10.0	0.7
		80	288	152	41	1765	800	6.3	2.7	1505	11.8	0.7

① Nozzle variant

② Air-regenerated noise

Reference values

Parameter	Cooling	Heating
t <sub>R</sub>	26 °C	22 °C
t <sub>Pr</sub>	16 °C	22 °C
t <sub>wv</sub>	16 °C	50 °C
V̇ <sub>w</sub>	110 l/h	110 l/h

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

### Description

Active chilled beams of Type DID-E, with one-way air discharge and high thermal output, providing high thermal comfort levels.

For installation into ceiling bulkheads, preferably in rooms with a height up to 4.00 m.

The units consist of a casing with suspension points, a spigot, non-combustible nozzles, and a horizontal heat exchanger.

Three nozzle variants to optimise induction based on demand.

### Special characteristics

- Choice of any induced air grille and supply air grille from our portfolio
- One-way air discharge
- Horizontal heat exchanger as 2-pipe or 4-pipe system
- Internal nozzle plate with punched nozzles (non-combustible)
- Water connections at the narrow side, Ø12 mm Cu pipe, with plain tails or with G½" external thread, or with a G½" union nut; with flat seal

### Materials and surfaces

- Casing and nozzle plate made of galvanised sheet steel
- Heat exchanger with copper tubes and aluminium fins
- Casing, primary air spigot, etc., either galvanised or in black (RAL 9005)
- Heat exchanger also in black (RAL 9005)
- Optional induced air spigot (IS) and supply air

spigot (AS) made of galvanised sheet steel; black (RAL 9005) as an option

### Technical data

- Nominal length: 900, 1200, 1500 mm
- Length: 948, 1248, 1548 mm
- Height: 200 mm (plus induced air grille)
- Width: 550, 614 mm
- Primary air spigot, diameter: 158 mm
- Primary air volume flow rate: 10 – 78 l/s or 36 – 281 m³/h
- Cooling capacity: up to 1730 W
- Heating capacity: up to 1480 W
- Max. operating pressure: 6 bar
- Max. operating temperature: 75 °C

### Sizing data

Primary air

- $\dot{V}$  \_\_\_\_\_  
[m³/h]
- $\Delta p_t$  \_\_\_\_\_  
[Pa]

Air-regenerated noise

- $L_{WA}$  \_\_\_\_\_  
[dB(A)]

Cooling

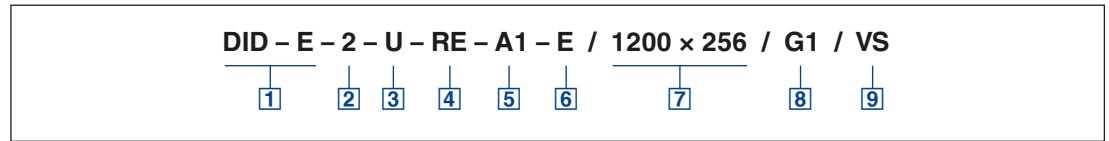
- $\dot{Q}_{ges}$  \_\_\_\_\_  
[W]

Heating

- $\dot{Q}_{ges}$  \_\_\_\_\_  
[W]



DID-E



**1** Type

**DID-E** Active chilled beam

**2** Heat exchanger

**2** 2-pipe

**4** 4-pipe

**3** Nozzle variant

**G** Large

**U** Extra large

**2U** Two rows, extra large

**4** Arrangement of water connections

**RE** Right side

**LI** Left side

**5** Water connections

No entry: Ø12 mm pipe with plain tails

**A1** With G½" external thread and flat seal

**A2** With G½" union nut and flat seal

**6** Vent

No entry: none

**E** With

**7** Nominal length × width of heat exchanger [mm]

$L_N \times B_{WT}$

**900 × 256**

**900 × 320**

**1200 × 256**

**1200 × 320**

**1500 × 256**

**1500 × 320**

**8** Surface of casing and heat exchanger

No entry: untreated

**G1** RAL 9005, black

**9** Valves and actuators

No entry: none

**VS** With valves and actuators

Order examples

**DID-E-2-G-RE/900×256**

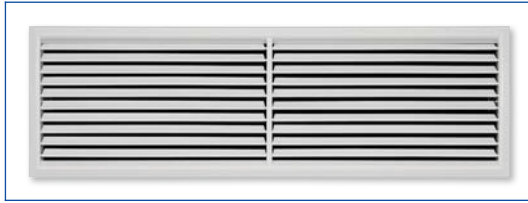
Heat exchanger	2-pipe
Nozzle variant	Large
Arrangement of water connections	Right side
Nominal length × width of heat exchanger	900 × 256 mm

**DID-E-4-2U-RE-A1-E/1200×320/G1/VS**

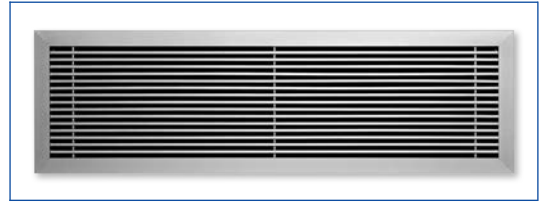
Heat exchanger	4-pipe
Nozzle variant	2 rows, extra large
Arrangement of water connections	Right side
Water connections	G½" external thread and flat seal
Extract ventilation	With
Nominal length × width of heat exchanger	1200 × 320 mm
Surface of casing and heat exchanger	RAL 9005, black
Valves and actuators	With

Product examples

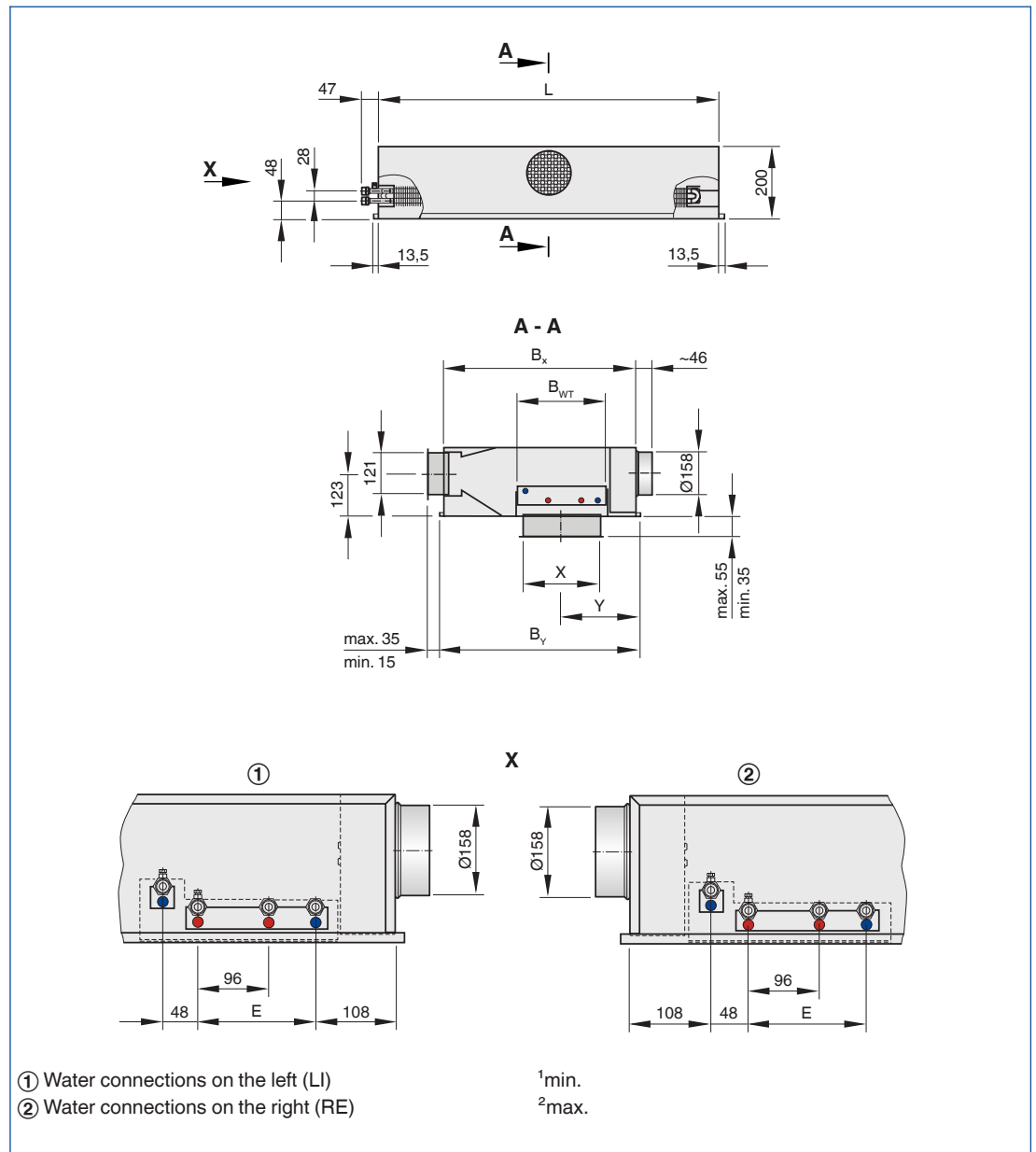
SL-A



AH-0-A



DID-E



Dimensions [mm]

L <sub>N</sub>	B <sub>WT</sub>	L	B <sub>x</sub>	B <sub>y</sub>	E	X	Y
900	256	948	550	576	160	221	225
	320	948	614	640	224	318	257
1200	256	1248	550	576	160	221	225
	320	1248	614	640	224	318	257
1500	256	1548	550	576	160	221	225
	320	1548	614	640	224	318	257

Weight [kg]

Nominal length (L <sub>N</sub> )	900 × 256	900 × 320	1200 × 256	1200 × 320	1500 × 256	1500 × 320
DID-E	18	22	21	26	25	31
Contained water (max.)	1.8	2.3	2.4	3.0	3.0	3.8
Induced air spigot	1.8	2.0	2.3	2.5	2.8	3.0
Supply air spigot	1.7	1.7	2.2	2.2	2.7	2.7

### Installation and commissioning

- Preferably for rooms with a clear height up to 4.00 m
- Installation into ceiling bulkheads
- Side entry primary air spigot
- Lengths of 948, 1248, and 1548 mm, and width of 576 mm (heat exchanger 256 mm) or 640 mm (heat exchanger 320 mm)
- Installation and connections to be performed by others; fixing, connection and sealing material to be provided by others
- Active chilled beam has 4 suspension points (Ø6.4 mm) for on-site installation (by others)
- Heat exchangers are fitted with water flow and water return connections at the narrow side
- Induced and supply air spigots (accessories) facilitate mounting the grilles (an installation subframe for the concealed screw fixing is not required)
- If the cover for the induced air opening is provided by others, e.g. with a perforated plate, that plate must have a free area of at least 65 %.

**$L_N$  [mm]**

Nominal length

**$L_{WA}$  [dB(A)]**

Sound power level

**$t_{Pr}$  [°C]**

Primary air temperature

**$t_{wV}$  [C°]**

Water flow temperature – cooling/heating

**$t_R$  [C°]**

Room temperature

**$t_R$  [C°]**

Room temperature

**$t_{AN}$  [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

**$\dot{V}_{Pr}$  [l/s]**

Primary air volume flow rate

**$\dot{V}_{Pr}$  [m³/h]**

Primary air volume flow rate

**$\dot{V}_w$  [l/h]**

Water flow rate – cooling/heating

**$\dot{V}$  [l/h]**

Volume flow rate

**$\Delta t_w$  [K]**

Temperature difference – water

**$\Delta p_w$  [kPa]**

Pressure drop, water side

**$\Delta p_t$  [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

**$\Delta t_{wM-Ref}$  [K]**

Difference between mean water temperature and reference temperature

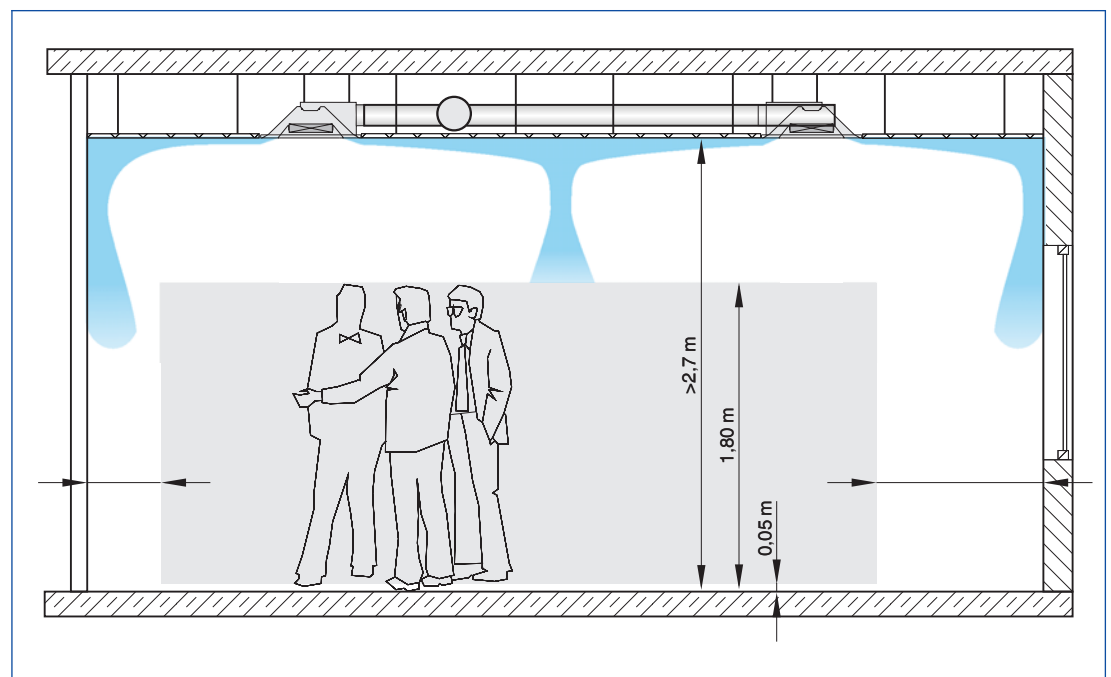
**$L_N$  [mm]**

Nominal length

### Mixed flow

The supply air is discharged from the diffuser into the space with a velocity between 2 and 5 m/s. The resulting air jet mixes with the room air, ventilating the entire space. Mixed flow systems typically provide a uniform temperature distribution and air quality within the space. The originally high velocity of the turbulent air jet decreases rapidly due to the high induction levels of mixed flow systems.

### Schematische Darstellung Mischlüftung



### Heat exchanger

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

The maximum water flow temperature (heating circuit) for all heat exchangers is 75 °C; if flexible hoses are used, the water flow temperature should not exceed 55 °C. Units for other pressures

and temperatures are available on request.

The water flow temperature (cooling circuit) should be at least 16 °C such that it does not permanently fall below the dew point. For units with a condensate drip tray the water flow temperature may be reduced to 15 °C.

### Heat exchanger as 2-pipe system

Air-water systems with a 2-pipe heat exchanger may be used for either heating or cooling. In

changeover mode it is possible to use all units within a water circuit exclusively for cooling in summer and exclusively for heating in winter.

### Wärmeübertrager 2-Leiter-System



### Heat exchanger as 4-pipe 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.

### Wärmeübertrager 4-Leiter-System

