

# Active chilled beams for bulkheads

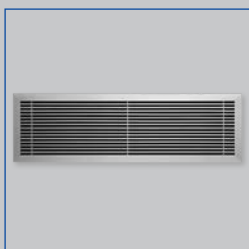
## Type DID-E2



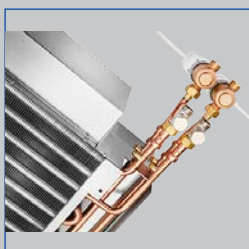
Front view with nozzles



DID-E2 without accessories and useful additions



Induced air grille and supply air grille from the TROX grille range



Water connections with control components



Eurovent certification



### Active chilled beams with one way air discharge as a quiet alternative to fan coil units with two horizontal heat exchangers variants for different output ranges

Active chilled beams for heating and cooling with 2- or 4-pipe heat exchangers for installation in ceiling bulkheads, e.g. in hotel rooms and hospital wards in the nominal lengths of 1000, 1125 and 1250 mm

- 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
- Media supply on the reverse or from the corridor side
- Compact device dimensions oriented to the basic dimensions and 2 different widths or depths for the heat exchanger to cover different output ranges
- Fixing points for various types of suspension systems/points
- Combination with different control systems, e.g. X-AIRCONTROL or control air-water systems possible

#### Optional equipment and accessories

- Integrated volume flow controller
- Standard grilles from the TROX grill range
- Various water connections, smooth CU tube, external thread G1/2" and flat seal or union nut G1/2" and flat seal
- The supply air spigot is extendable to compensate for structural tolerances

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### Application

#### Application

- Active chilled beams of Type DID-E2 for installation into ceiling bulkheads, preferably for room heights of up to 4.00 m
- Especially for hotel rooms and hospital wards
- Load removal with water enables a reduction of the primary air flow rate to the required minimum fresh air flow rate
- 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 features

- One-way air discharge
- Horizontal heat exchanger as 2-pipe or 4-pipe system
- The connection points are at the back of the unit, which is typically connected from the corridor
- The supply air spigot is extendable to compensate for structural tolerances
- Nominal sizes are based on the basic dimensions
- Integral volume flow controller as an option

#### Nominal sizes

- 1000, 1125, 1250 mm

### Description

#### Variants

Water connection

- Position right (-R) or left (-L)
- Smooth copper tube Ø12 mm
- A1: external thread ½" with flat seal
- A2: union nut ½" with flat seal

Heat exchanger

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

Nozzle variants

- HE: small
- S1: medium
- S2: large
- HP: extra large
- H2: nozzle mix (50 % S2 nozzle and 50 % HP nozzle)

Other nozzle mixes possible on request.

#### Attachments

- VC: Integrated flow rate control subassembly

#### Accessories

- Z: Extension spigot for the supply air (if a supply air grille with concealed screw fixing is used, the extension spigot for supply air is essential).
- ERS: Installation subframe for secondary air grille

#### Useful additions

- Connecting hoses, type FS
- LWS control equipment consisting of a control panel with integral room temperature sensor including controller, valves and valve actuators; and lockshields
- Grille for supply air and secondary air from the TROX grill range
- Control system X-AIRCONTROL for water-side and air-side control with the option of a connection to the central BMS
- For further information on the X-AIRCONTROL and for information relevant to design, please refer to the installation and operating manual

#### Construction features

- Spigot is suitable for circular ducts to EN 1506 or EN 13180
- 5 nozzle variants for needs-based, optimum induction
- Side-mounted bracket for attachment with various mounting systems
- A mixture of nozzles is possible
- Devices without flow rate control subassembly have a central primary air connection, devices with a flow rate subassembly have a primary air connection on the left or right

#### Materials and surfaces

- Casing, nozzle plate, supply air spigot and installation subframe for secondary air grille made of galvanised sheet steel
- Heat exchanger with copper tubes and aluminium fins
- Surface of the casing and heat exchanger optionally available in black (RAL 9005)

#### 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
- Sound power level of the air-regenerated noise measured according to EN ISO 5135

#### Maintenance

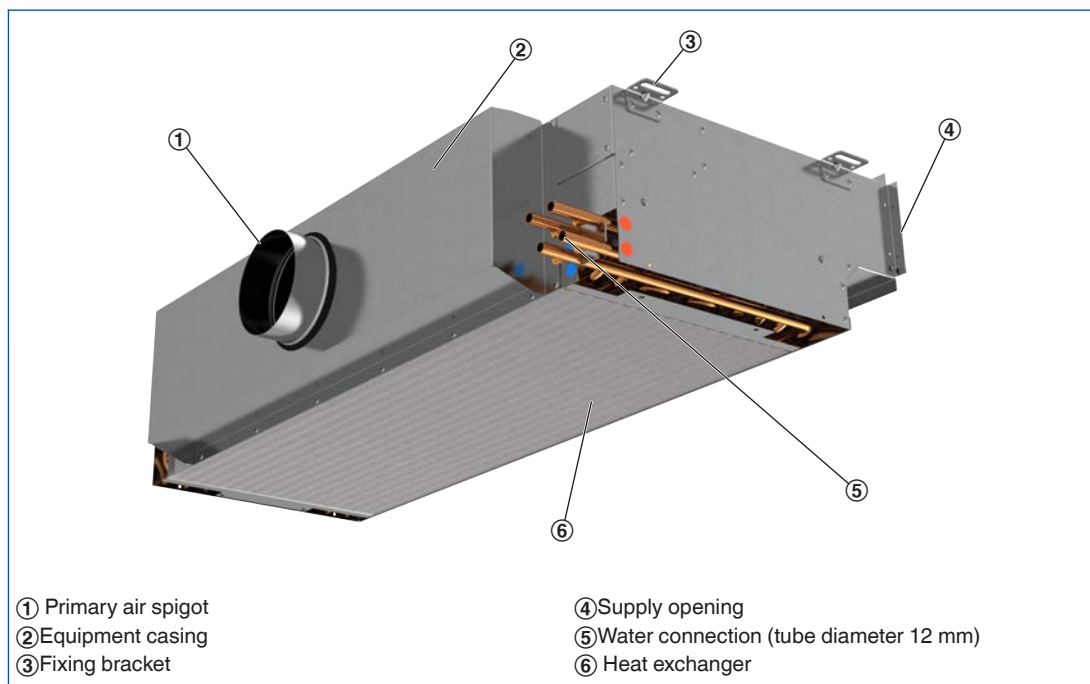
- Variants without flow rate control subassembly (VC) are low-maintenance, as there are no moving parts. The flow rate control subassembly can be accessed via a separate casing cover for maintenance purposes
- The heat exchanger can be vacuumed with an industrial vacuum cleaner if necessary
- VDI 6022, Part 1, applies (hygiene requirements for ventilation and air conditioning systems)

### Functional description

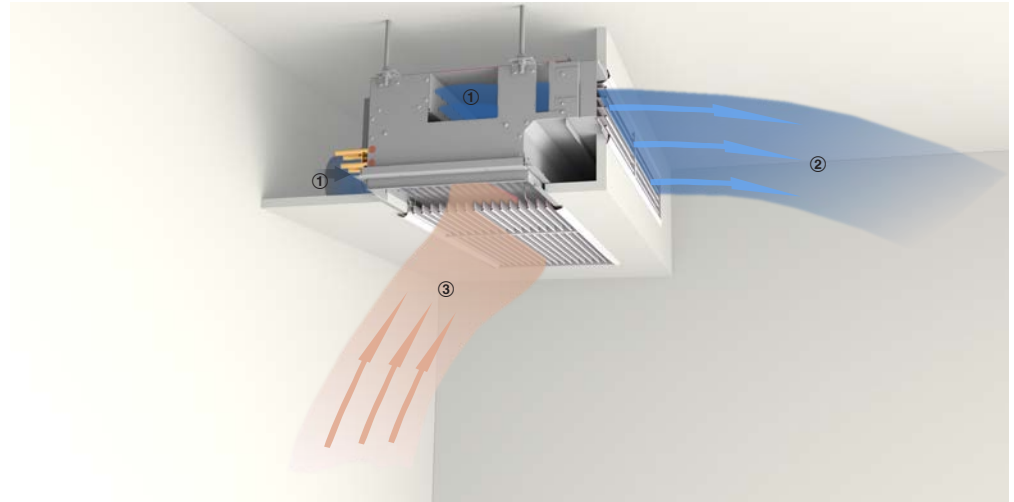
Active chilled beams provide centrally conditioned primary air (fresh air) to the room and use heat exchangers for additional cooling and/or heating. The primary air is discharged through nozzles into the mixing chamber; as a result of this, secondary air (room air) is induced via the induced air grille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

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

### Schematic illustration of DID-E2



Principle of operation DID-E2



- ① Conditioned fresh air (primary air)
- ② Supply air

- ③ Room air (secondary air)

<b>Nominal length</b>	1000, 1125, 1250 mm
<b>Length</b>	1000, 1125, 1250 mm
<b>Width</b>	519, 616, 711, 808 mm
<b>Height</b>	207, 212 mm
<b>Primary air spigot, diameter</b>	123, 158 mm
<b>Primary air volume flow rate</b>	8 – 57 l/s or 29 – 205 m <sup>3</sup> /h
<b>Cooling capacity</b>	Up to 1600 W
<b>Heating capacity</b>	Up to 1000 W
<b>Max. operating pressure, water side</b>	10 bar (in combination with connection hoses 6 bar)
<b>Max. operating temperature</b>	75 °C (in combination with connection hoses 55 °C)

The quick sizing table contains operating points for defined reference units, whereby the data for devices without flow rate control subassemblies apply. For other operating points, you may use the Easy Product Finder design programme.

### Quick sizing – heat exchanger width 320 mm and primary air spigot diameter 123 mm

L <sub>N</sub>	①	Primary air			②	Cooling				Heating			
		V <sub>Pr</sub>	V <sub>Pr</sub>	Δp <sub>t</sub>		L <sub>WA</sub>	2- and 4-pipe system				4-pipe system		
							Q <sub>tot</sub>	Q <sub>WK</sub>	Δt <sub>w</sub>	Δp <sub>w</sub>	Q <sub>tot</sub> = Q <sub>w</sub>	Δt <sub>w</sub>	Δp <sub>w</sub>
l/s	m <sup>3</sup> /h	Pa	dB(A)	W	W	K	kPa	W	K	kPa			
1000	HE	8	29	56	<15	406	309	2.4	2.1	456	7.8	0.1	
		14	50	167	27	635	468	3.7	2.1	600	10.3	0.1	
	S1	10	37	37	<15	427	303	2.4	2.1	456	7.9	0.1	
		21	76	157	26	770	515	4	2.1	635	10.9	0.1	
	S2	12	43	23	<15	415	272	2.1	2.1	435	7.5	0.1	
		30	108	146	29	907	546	4.3	2.1	654	11.2	0.1	
	HP	17	61	22	<15	485	280	2.2	2.1	453	7.8	0.1	
		43	155	144	37	1083	564	4.4	2.1	674	11.6	0.1	
	H2	14	50	21	<15	433	266	2.1	2.1	444	7.6	0.1	
		37	133	148	33	1012	567	4.4	2.1	671	11.5	0.1	
1125	HE	9	33	67	<15	406	346	2.7	2.4	508	8.7	0.1	
		15	53	172	26	674	497	3.9	2.4	643	11.1	0.1	
	S1	12	43	44	<15	492	348	2.7	2.4	514	8.8	0.1	
		23	83	162	27	835	557	4.4	2.4	690	11.9	0.1	
	S2	13	47	23	<15	448	291	2.3	2.4	473	8.1	0.1	
		33	118	146	29	984	590	4.6	2.4	711	12.2	0.1	
	HP	19	68	22	<15	535	308	2.4	2.4	498	8.6	0.1	
		48	174	145	39	1199	617	4.8	2.4	738	12.7	0.1	
	H2	16	58	22	<15	501	307	2.4	2.4	500	8.6	0.1	
		41	148	144	37	1113	617	4.8	2.4	733	12.6	0.1	
1250	HE	11	39	69	<15	532	401	3.1	2.7	574	9.9	0.1	
		17	62	173	29	764	557	4.4	2.7	714	12.3	0.1	
	S1	13	47	38	<15	532	374	2.9	2.7	556	9.6	0.1	
		26	94	154	28	925	610	4.8	2.7	754	13	0.1	
	S2	15	54	24	<15	513	333	2.6	2.7	528	9.1	0.1	
		37	132	146	30	1082	641	5	2.7	773	13.3	0.1	
	HP	21	75	22	<15	585	334	2.6	2.7	542	9.3	0.1	
		54	194	145	41	1318	669	5.2	2.7	801	13.8	0.1	
	H2	18	65	23	<15	558	340	2.7	2.7	549	9.4	0.1	
		45	162	144	35	1206	664	5.2	2.7	791	13.6	0.1	

① Nozzle variant

② Air-regenerated noise

### Reference values

Parameters	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
V <sub>w</sub>	110 l/h	50 l/h

Quick sizing – heat exchanger width 512 mm and primary air spigot diameter 158 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- and 4-pipe system				4-pipe system		
							Q̇ <sub>tot</sub>	Q̇ <sub>WK</sub>	Δt <sub>w</sub>	Δp <sub>w</sub>	Q̇ <sub>tot</sub> = Q̇ <sub>w</sub>	Δt <sub>w</sub>	Δp <sub>w</sub>
		l/s	m <sup>3</sup> /h	Pa		dB(A)	W	K	kPa	W	K	kPa	
1000	HE	9	32	75	<15	549	442	3.5	3.5	569	9.8	0.1	
		14	50	183	26	761	593	4.6	3.5	704	12.1	0.1	
	S1	12	43	51	<15	591	447	3.5	3.5	584	10.1	0.1	
		21	76	160	27	920	665	5.2	3.5	774	13.3	0.1	
	S2	13	47	28	<15	527	370	2.9	3.5	499	8.6	0.1	
		30	108	148	28	1075	714	5.6	3.5	804	13.8	0.1	
	HP	18	65	24	<15	593	375	2.9	3.5	547	9.4	0.1	
		45	162	148	35	1293	751	5.9	3.5	868	14.9	0.1	
	H2	15	54	24	<15	531	350	2.7	3.5	511	8.8	0.1	
		38	137	152	32	1207	748	5.9	3.5	838	14.4	0.1	
	1125	HE	10	36	78	<15	607	486	3.8	3.9	627	10.8	0.2
			15	54	177	26	816	635	5	3.9	759	13.1	0.2
S1		13	47	50	<15	636	478	3.7	3.9	632	10.9	0.2	
		24	86	167	27	1015	727	5.7	3.9	848	14.6	0.2	
S2		14	50	25	<15	546	378	3	3.9	526	9	0.2	
		34	122	150	29	1186	777	6.1	3.9	879	15.1	0.2	
HP		20	72	24	<15	647	406	3.2	3.9	596	10.3	0.2	
		50	180	148	36	1413	811	6.3	3.9	941	16.2	0.2	
H2		17	61	24	<15	594	389	3	3.9	566	9.7	0.2	
		42	151	149	32	1310	805	6.3	3.9	906	15.6	0.2	
1250		HE	11	40	74	<15	663	529	4.1	4.3	682	11.7	0.2
			17	62	177	26	906	698	5.5	4.3	833	14.3	0.2
	S1	15	54	51	<15	718	537	4.2	4.3	701	12.1	0.2	
		27	97	164	28	1113	789	6.2	4.3	921	15.8	0.2	
	S2	16	58	28	<15	633	439	3.4	4.3	595	10.8	0.2	
		37	135	143	30	1273	828	6.5	4.3	941	16.2	0.2	
	HP	22	80	22	<15	711	444	3.5	4.3	649	11.2	0.2	
		57	205	147	38	1565	879	6.9	4.3	1021	17.6	0.2	
	H2	19	68	24	<15	655	427	3.3	4.3	618	10.6	0.2	
		47	170	147	34	1438	869	6.8	4.3	981	16.9	0.2	

① Nozzle variant

② Air-regenerated noise

Reference values

Parameters	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	50 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-E2, with one-way air discharge are a low-noise alternative to fan coil units, providing high thermal output and 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. Five nozzle variants to optimise induction based on demand.

### Special features

- One-way air discharge
- Horizontal heat exchanger as 2-pipe or 4-pipe system
- The connection points are at the back of the unit, which is typically connected from the corridor
- The supply air spigot is extendable to compensate for structural tolerances
- Nominal sizes are based on the basic dimensions
- Integral volume flow controller as an option

### Materials and surfaces

- Casing, nozzle plate, supply air spigot and installation subframe for secondary air grille made of galvanised sheet steel
- Heat exchanger with copper tubes and aluminium fins
- Surface of the casing and heat exchanger optionally available in black (RAL 9005)

### Technical data

- Nominal length: 1000, 1125, 1250 mm
- Length: 1000, 1125, 1250 mm
- Width: 519, 616, 711, 808 mm
- Height: 207, 212 mm
- Primary air spigot, diameter: 123, 158 mm
- Primary air volume flow rate: 8 – 57 l/s or 29 – 205 m<sup>3</sup>/h
- Cooling capacity: up to 1600 W
- Heating capacity: up to 1000 W
- Maximum operating pressure, water side: 10 bar (in combination with connection hoses 6 bar)
- Maximum operating temperature: 75 °C (in combination with connection hoses 55 °C)

### Sizing data

Primary air

- $\dot{V}$  \_\_\_\_\_ [m<sup>3</sup>/h]
- $\Delta p_t$  \_\_\_\_\_ [Pa]

Air-regenerated noise

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

Cooling

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

Heating

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

DID-E2

<b>DID – E2 – 4 – S2 – R – A2 / 1000 x 512 x 123 / VC / Z / ERS / G1</b>									
1	2	3	4	5	6	7	8	9	10

1 Type

**DID-E2** Active chilled beam

2 Heat exchanger

2 2-pipe  
4 4-pipe

3 Nozzle variants

**HE** Small  
**S1** Medium  
**S2** Large  
**HP** Extra large  
**H2** Nozzle mix  
(50 % S2 nozzle and 50 % HP nozzle)

4 Position of water connections

**R** Right  
**L** Left

5 Water connections

No entry required: pipe with plain tails  
Ø12 mm  
**A1** With external thread G½" and flat seal  
**A2** With union nut G½" and flat seal

6 Nominal length x heat exchanger depth x  
Primary air spigot [mm]

**1000 x 320 x 123** to fit basic dimensions 1000 mm  
**1000 x 512 x 158** to fit basic dimensions 1000 mm  
**1125 x 320 x 123** to fit basic dimensions 1125 mm  
**1125 x 512 x 158** to fit basic dimensions 1125 mm  
**1250 x 320 x 123** to fit basic dimensions 1250 mm  
**1250 x 512 x 158** to fit basic dimensions 1250 mm

7 Volume flow control

No entry required: without  
**VC** With flow rate control subassembly

8 Supply air spigot

No entry required: without  
**Z** With extension spigot for supply air

9 Installation subframe for secondary air grille

No entry required: without  
**ERS** Installation subframe for secondary air grille from the TROX grille range

10 Surface of casing and heat exchanger

No entry required: rough, galvanised sheet steel casing - heat exchanger, copper tubes and aluminium fins  
**G1** Surface similar to RAL 9005, jet black

Order examples

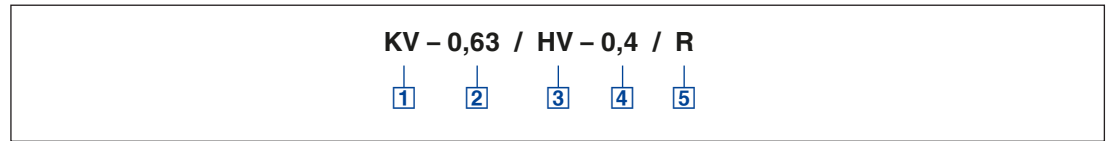
DID-E2-2-S1-R/1000x320x123

Heat exchanger	2-pipe
Nozzle variant	Medium
Arrangement of water connections	Right side
Nominal length x heat exchanger depth x primary air spigot	1000 x 320 x 123

DID-E2-4-H2-L-A2/1250x512x158/VC/Z/ERS/G1

Heat exchanger	4-pipe
Nozzle variant	Nozzle mix (50 % S2 nozzle and 50 % HP nozzle)
Arrangement of water connections	Left side
Water connection	With union nut G½" and flat seal
Nominal length x heat exchanger depth x primary air spigot	1250 x 512 x 158
Volume flow control	With flow rate control subassembly
Supply air spigot	With extension spigot for supply air
Installation subframe for secondary air grille	Installation subframe for secondary air grille, including safety cables for the grille.
Surface of casing and heat exchanger	Surface of RAL 9005, jet black

Control components



1 Cooling valve

No entry required: without  
**KV** Cooling valve including actuator

2 kVS valve – cooling valve

**0.25**  
**0.40**  
**0.63**  
**1.00**

3 Heating valve

No entry required: without  
**HV** Heating valve including actuator

4 kVS value – heating valve

**0.25**  
**0.40**  
**0.63**  
**1.00**

5 Lockshield(s)

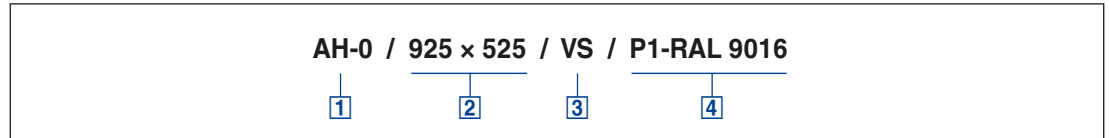
No entry required: without  
**R** With (kVS value 1.32)

Order example

**KV-0.63/HV-0.4/R**

Cooling valve	Cooling valve including actuator
<b>kVS value – cooling valve</b>	0.63
Heating valve	Heating valve including actuator
<b>kVS value – heating valve</b>	0.4
<b>Lockshield(s)</b>	With

Secondary air grille



1 Secondary air grille

No entry required: without secondary air grille  
 (suction via gap / shadow gap)

**X-GRILLE Cover**

**X-GRILLE Basic**

**AH-0**

**SL**

**TRS**

**LB** Perforated plate 50 % free area

2 Dimensions

**925 x 345**

**925 x 525**

**1050 x 345**

**1050 x 525**

**1175 x 345**

**1175 x 525**

3 Fixing

No entry required: without  
 (only with X-GRILLE Cover and TRS)

**A11** Countersunk hole (only with AH)

**VS** With concealed screw fixing

4 Surface of secondary air grille

No entry required: standard finish of the  
 respective standard grille

**P1** Powder-coated, colour RAL ... Classic

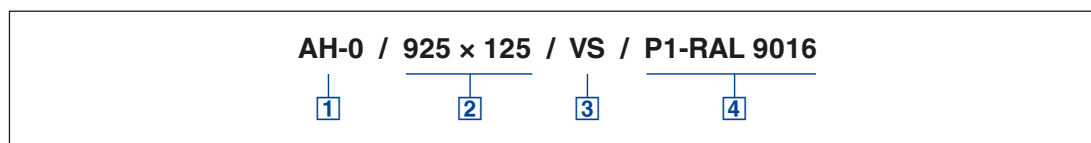
**P2** Powder coating covers,  
 Colour RAL ... Classic  
 (only applies for X-GRILLE Cover)

Order example

**SL/925x525/VS**

Secondary air grille	SL
<b>Dimensions</b>	925x525
Fixing	With concealed screw fixing
<b>Surface of secondary air grille</b>	RAL 9010

Supply air grille



1 Supply air grille

**X-GRILLE Cover**  
**X-GRILLE Basic**  
**SL**  
**TRS**

2 Dimensions

**925 × 125**  
**1050 × 125**  
**1175 × 125**

3 Fixing

No entry required: without  
(only with X-GRILLE Cover and TRS)

**A11** Countersunk hole (only with AH)

**VS** With concealed screw fixing

4 Surface of supply air grille

No entry required: standard finish of the  
respective standard grille

**P1** Powder-coated, colour RAL ... CLASSIC

**P2** Powder coating covers,  
Colour RAL ... Classic  
(only with X-GRILLE Cover)

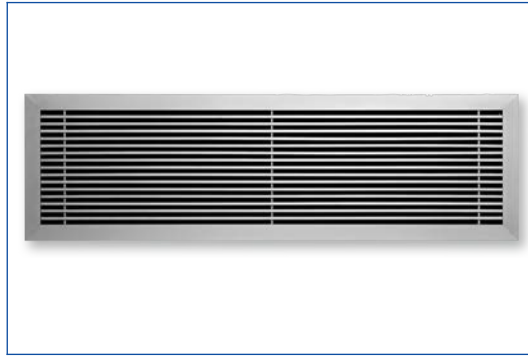
Order example

**SL/925x125/VS/P1-RAL 9016**

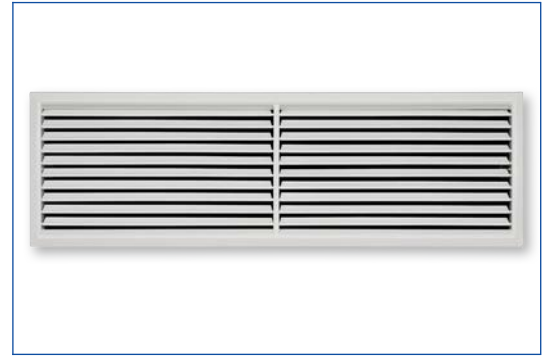
<b>Supply air grille</b>	SL
<b>Dimensions</b>	925x125
<b>Fixing</b>	VS: With concealed screw fixing
<b>Surface of supply air</b>	RAL 9016

Product examples

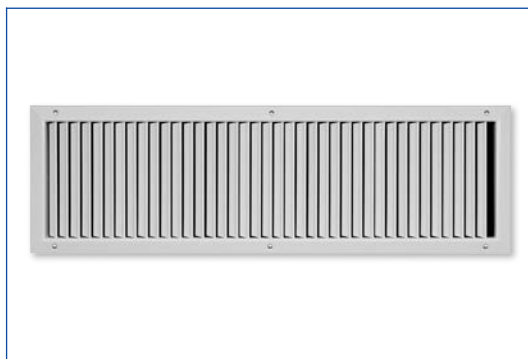
AH



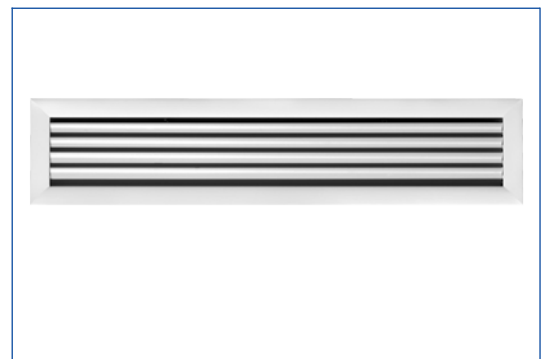
SL



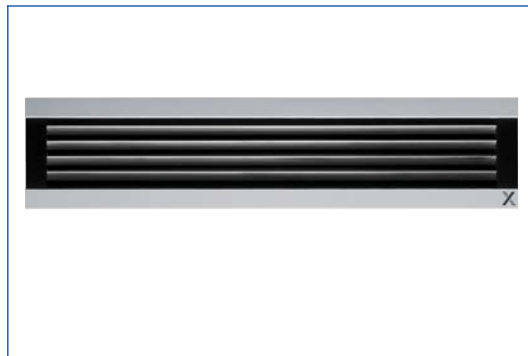
TRS



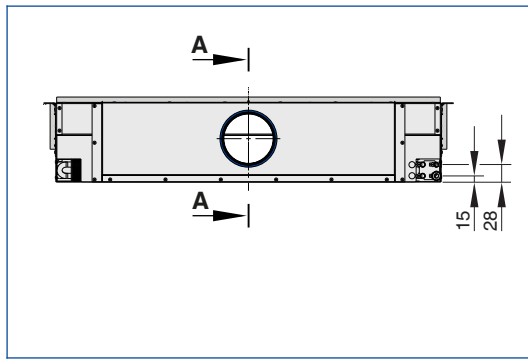
X-GRILLE-Basic



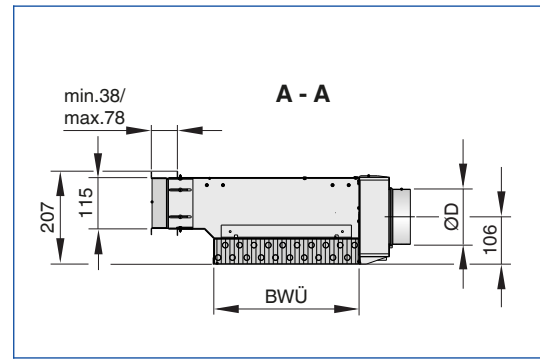
X-GRILLE-Cover



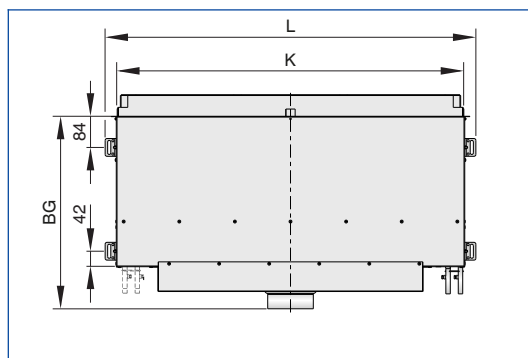
DID-E2...



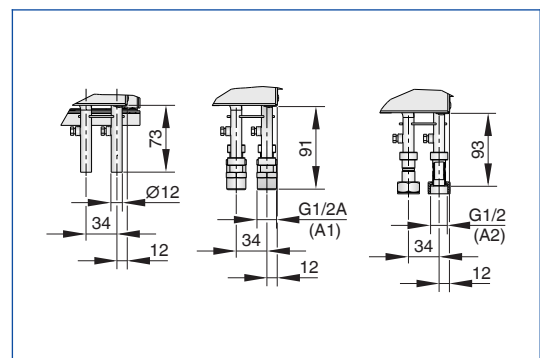
DID-E2...



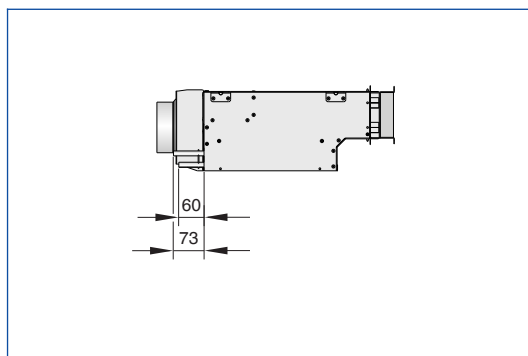
DID-E2 Water connections on the right



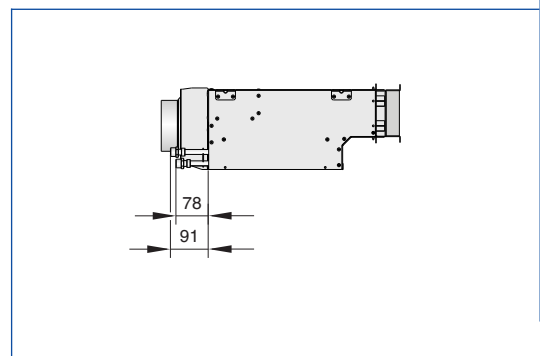
DID-E2...



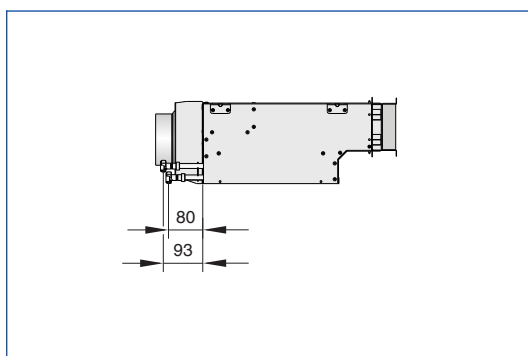
DID-E2-\* Water connections pipe with plain tails



DID-E2-\* A1 Water connections external thread G1/2"



DID-E2-\* A2 Water connections G1/2" union nut



**Dimensions [mm]**

$L_N$	L	K
1000	1000	940
1125	1125	1065
1250	1250	1190

**Dimensions [mm]**

$B_G$	$B_{WÜ}$
519	320
711	512

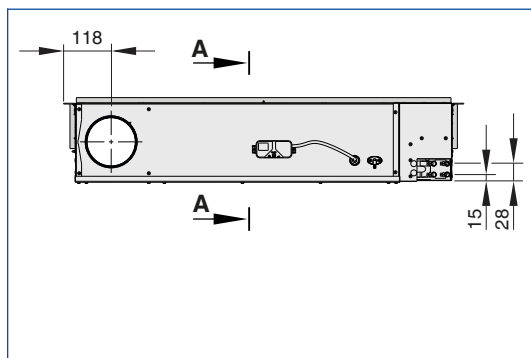
**Dimensions [mm]**

$\varnothing D$
123
158

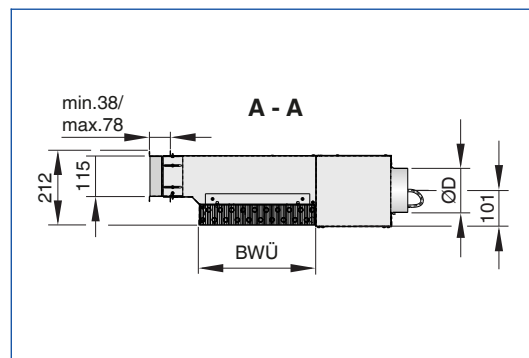
**Weight (4L, 123, R+L) [kg]**

Nominal length ( $L_N$ )	1000 x 320	1000 x 512	1125 x 320	1125 x 512	1250 x 320	1250 x 512
DID-E2	15.5	20.5	17.0	23.0	19.0	25.0
Supply air spigot Z	1.7	1.7	1.9	1.9	2.1	2.1
Installation subframe ERS	1.4	1.5	1.6	1.7	1.8	1.9
Contained water WÜ	1.5	2.5	1.8	3.0	2.1	3.5

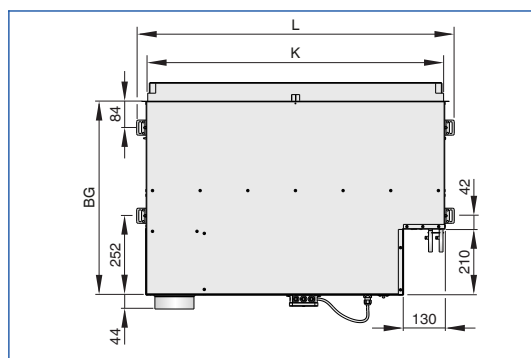
DID-E2\*-VC



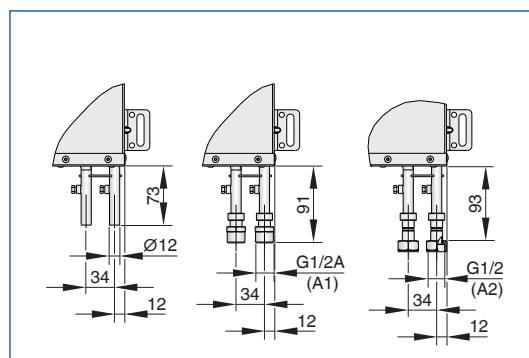
DID-E2\*-VC



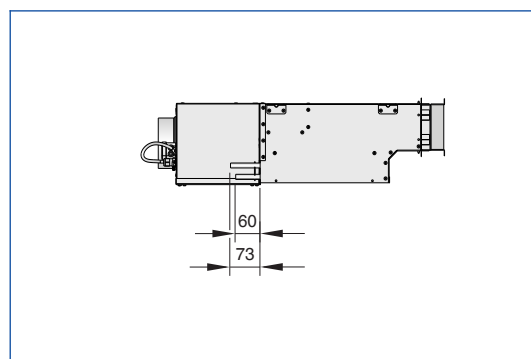
DID-E2\*-VC Water connections on the right



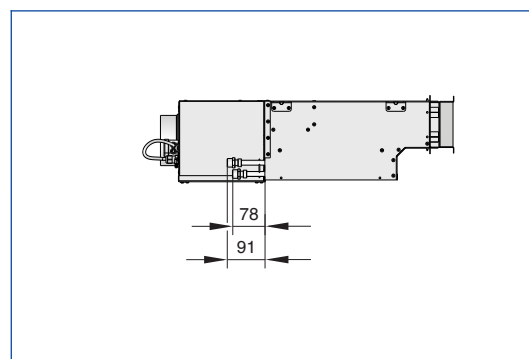
DID-E2\*-VC



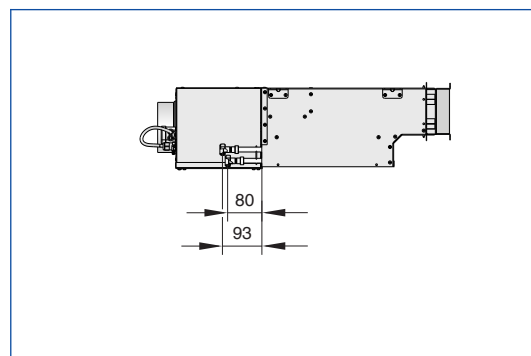
DID-E2\*- Water connections pipe with plain tails



DID-E2\*-A1 Water connections external thread G1/2"



DID-E2\*-A2 Water connections G1/2" union nut





**Dimensions [mm]**

$L_N$	L	K
1000	1000	940
1125	1125	1065
1250	1250	1190

**Dimensions [mm]**

$B_G$	$B_{WÜ}$
616	320
808	512

**Dimensions [mm]**

$\varnothing D$
123
158

**Weight (4L, 123, R+L) [kg]**

Nominal length ( $L_N$ )	1000 x 320	1000 x 512	1125 x 320	1125 x 512	1250 x 320	1250 x 512
DID-E2- <sup>+</sup> -VC	21.5	26.5	24.0	29.5	26.0	32.0
Supply air spigot Z	1.7	1.7	1.9	1.9	2.1	2.1
Installation subframe ERS	1.4	1.5	1.6	1.7	1.8	1.9
Contained water WÜ	1.5	2.5	1.8	3.0	2.1	3.5

### 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 to fit basic dimensions 1000, 1125 and 1250 mm
- Heat exchanger depths 320 mm and 512 mm
- Primary air spigot 123 mm and 158 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 (slotted hole 38 x 8.5 mm) for on-site installation by others
- Heat exchangers are fitted with water flow and water return connections at the rear, usually towards the corridor
- With the optionally available supply air spigot, which works like a sliding spigot, installation areas of 38 – 78 mm are bridged
- Secondary air can be suctioned through a grille from the TROX grille range, the perforated metal plate especially developed for the DID-E2 or through an opening or shadow gap provided by others
- Secondary air grilles must be secured with safety cables The optionally available installation subframe for secondary air grilles has safety cables that can be mounted on the grille

### 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

$t_{AN}$  [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/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]

Water side pressure drop

$\Delta p_t$  [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

### Principal dimensions

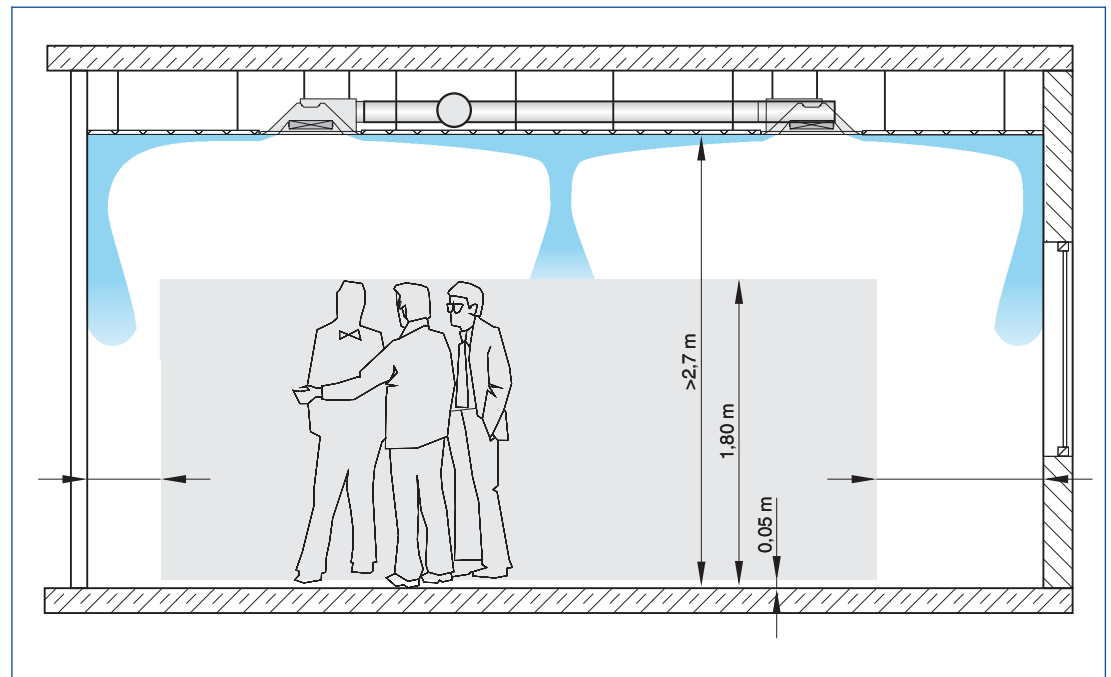
$L_N$  [mm]

Nominal length

### Mixed flow

The supply air is discharged from the air terminal device 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. The mixed flow air distribution typically provides a uniform temperature distribution and air quality within the space. The originally high velocity of the turbulent air jets decreases rapidly due to the high induction levels of mixed flow air distribution systems.

### Schematic illustration of mixed flow ventilation



### Heat exchanger

The maximum water-side operating pressure for all heat exchangers is 10 bar. When flexible hoses are used, the maximum water-side operating pressure is limited to 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.

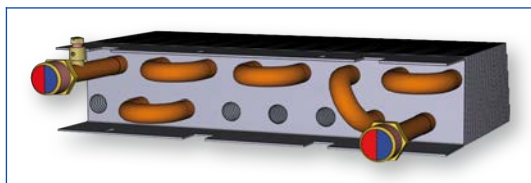
The water flow temperature (cooling circuit) should be at least 16 °C such that it does not permanently fall below the dew point. For units with a condensate drip tray, the water flow temperature may be reduced to 15 °C.

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### 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.

### Heat exchanger as 2-pipe system



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### 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.

### Heat exchanger as 4-pipe system

