Active Chilled Beams

Type DID312

Air discharge two way

TROX® TECHNIK

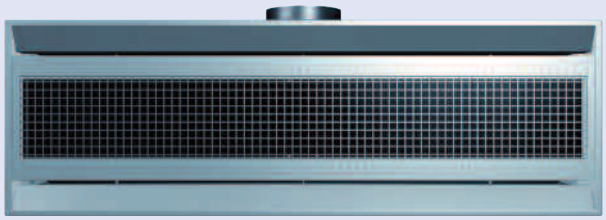
The art of handling air

EUROVENT CERTIFIED PERFORMANCE

Contents · Description

Type DID312 - LR

Type DID312 - GL



Type DID312 - LQ

Type DID312 - GQ

Active chilled beams Type DID312 using air-water systems provide a comfortable air conditioning of rooms with a high cooling load. They combine the aerodynamic properties of ceiling diffusers with the energy benefits of load dissipation using water.

Due to its low height construction, Type DID312 is particularly suited for low false ceiling voids in new buildings and for the refurbishment of existing buildings with clear room heights of approximately 2.6 m to 4.0 m.

Special characteristics

- High cooling capacity with low conditioned fresh air flow rates
- Four options of induced air grille design
- Vertically mounted heat exchangers with condensate drip trays for low chilled water flow temperatures
- Heat exchangers for two or four pipe systems
- Heating and/or cooling is possible
- Supply-extract-air combination available

The active chilled beams contain an internal plate with punched nozzles, two vertical heat exchangers with condensate drip trays, and a spigot for the connection of the conditioned fresh air.

Further, current information on design can be found on our Website and in our “Air-water systems” design manual.

Our “Easy Product Finder” online design programme is also available on the Internet for the design and selection of our products.

Certification of EUROVENT

TROX is participating in the Eurovent Certification Progamme for Chilled Beams. Products are certified under the number 09.12.432 and presented on the Eurovent Website.

Functional description

Active chilled beams supply conditioned fresh air (primary air) to the space from a central plant room to maintain indoor air quality whilst providing additional cooling and/or heating using heat exchangers.

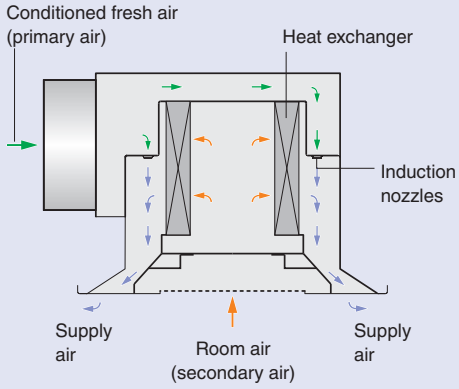
The primary air is discharged into the beam mixing chamber via nozzles. As a result of this secondary air is induced via an inlet grille and then passes through vertically mounted heat exchangers into the mixing chambers. Both air flows mix and the total supply air is discharged horizontally into the space through integral slot diffusers.

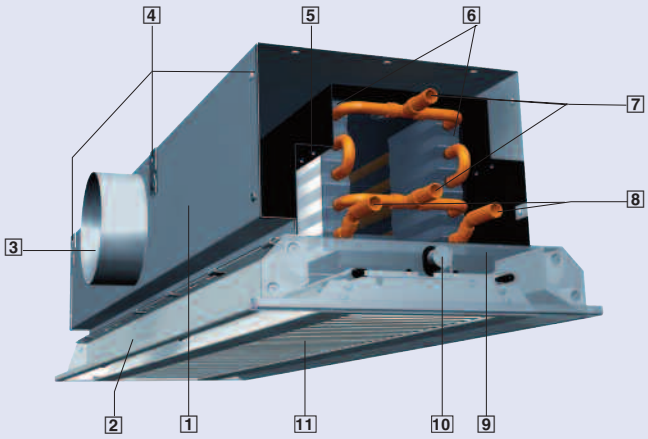
There are eight nominal lengths each having three nozzle options. This allows the optimum selection to meet fresh air flow rate and thermal capacity requirements whilst exhibiting low differential pressures and sound power level characteristics.

There are two types of heat exchanger, one is a two pipe system for cooling, heating can be provided using a changeover mode. The other is a four pipe system which enables any room to be cooled or heated independently of other rooms.

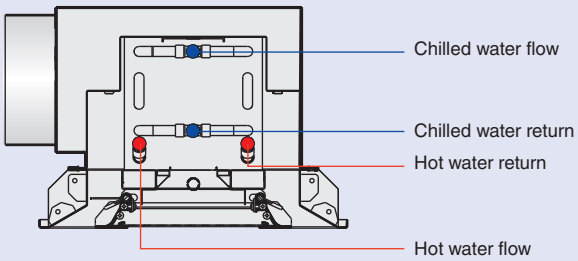
Condensate drip trays are located beneath the heat exchangers to collect any condensate resulting from undershooting the dew point temperature in the cooling mode. Long-term operation below the dew point (wet operation) must be avoided.

Principle of operation

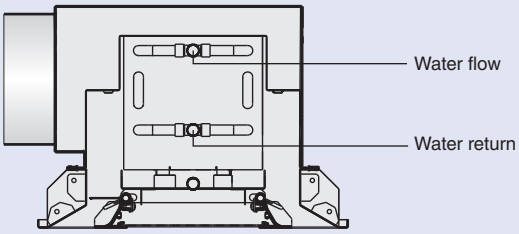




Four pipe system
Heating and cooling



Two pipe system
Heating or cooling



1 Casing
2 Face frame
3 Side entry spigot (primary air)
4 Hanging brackets
5 Plate with punched nozzles
6 Heat exchanger
7 Chilled water connections
8 Hot water connections
9 Condensate drip tray
10 Drainage pipe for condensate
11 Hinged induced air grille

Construction · Dimensions

Characteristics

- Fresh air range 5 to 70 l/s, 18 to 252 m³/h
- For clear room heights from approximately 2.6 to 4.0 m
- Flush ceiling installation
- Side entry fresh air connection
- Lengths from 893 to 3000 mm and widths 293, 300, and 312 mm, thus suitable for all ceiling systems
- Nozzles in three sizes to optimise induction
- Nozzles punched in sheet metal plate, non-combustible
- Heat exchangers for two or four pipe systems with condensate drip tray for low chilled water flow temperatures
- Supply-extract-air combination available
- Maximum operating pressure: 6 bar
- Maximum operating temperature: 75 °C

  Other operating pressures and temperatures upon request.

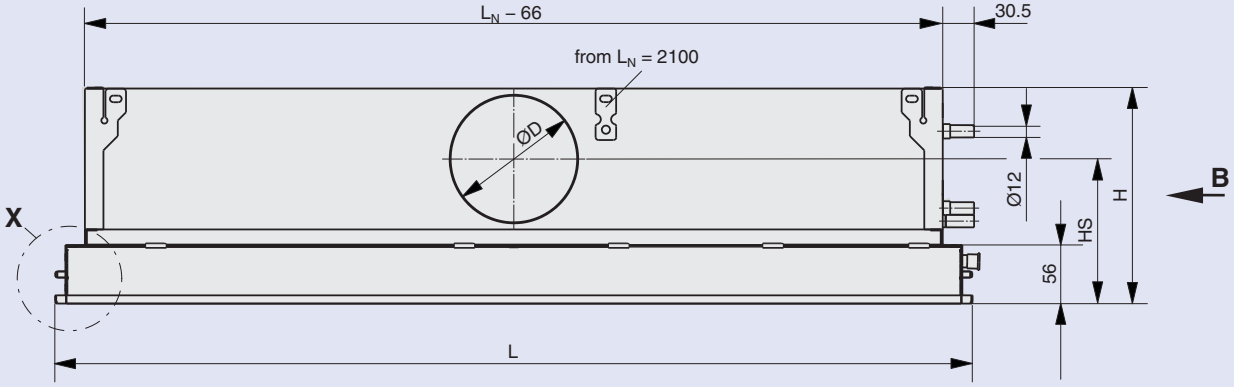
Construction features

- Spigot connections suitable for circular connecting ducts according to EN 1506 or EN 13180
- 4 or 6 hanging brackets for on-site installation
- Safety wires to support the induced air grille
- Water connections on the side, Ø12 mm plain end or with external thread G½", flat end seal

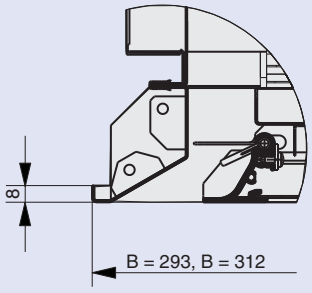
Materials

- Casing, face frame, nozzle plate, and perforated induced air grille (LR/LQ) made of galvanised sheet steel
- Frame and blades of the induced air grille (GL,GQ) made of aluminium profiles
- Heat exchanger made of copper tubes and formed aluminium fins
- Visible surfaces powder-coated white (RAL 9010) or another RAL colour
- Heat exchanger alternatively black (RAL 9005)
- Nozzle plate powder-coated black (RAL 9005)

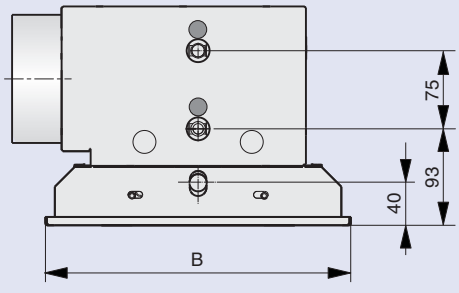
Dimensions



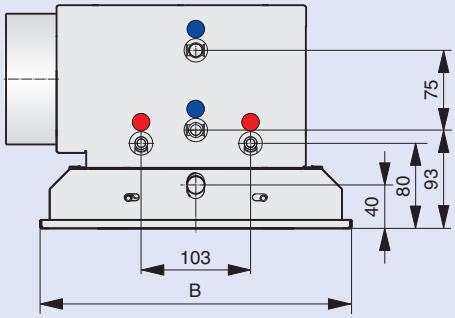
Detail X
B = 293, B = 312



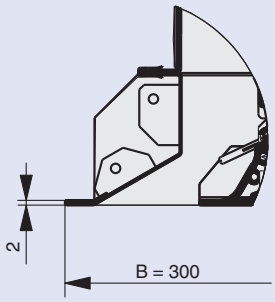
View B
Two pipe system



View B
Four pipe system



Detail X
B = 300



Dimensions in mm
B
293
300
312

L = total length (diffuser face)
L_N = nominal length
B = Face frame width

Dimensions in mm				
L_N	Available sizes L	ØD	H	HS
900	893 – 1500	123	210	140
1200	1193 – 1800			
1500	1493 – 2100			
1800	1793 – 2400			
2100	2093 – 2700	158	241	155
2400	2393 – 3000			
2700	2693 – 3000			
3000	2993 – 3000			

Characteristics

- Integral extract air casing for removal of extract air through the ceiling
- Flow rate range 5 to 50 l/s, 18 to 180 m^3/h
- Extract air spigot on the same side as or opposite the primary air spigot

Materials

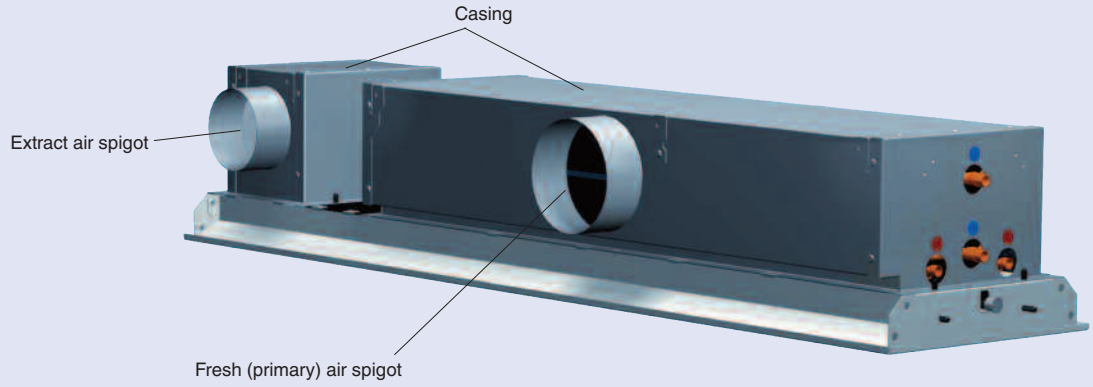
- Casing with extract air spigot made of galvanised sheet steel

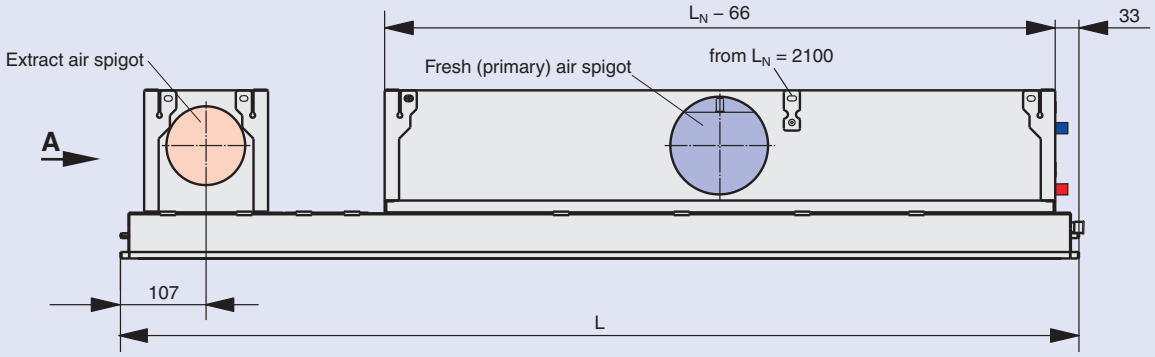
Dimensions in mm
B
293
300
312

L = total length (diffuser face)
L_N = nominal length
B = Face frame width

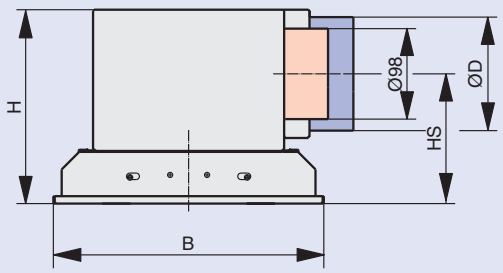
Dimensions in mm				
L_N	Available sizes L	ØD	H	HS
900	1090 – 1500	123	210	140
1200	1390 – 1800			
1500	1690 – 2100			
1800	1990 – 2400			
2100	2290 – 2700	158	241	155
2400	2590 – 3000			
2700	2890 – 3000			

Type DID312...-RR-AV





View A



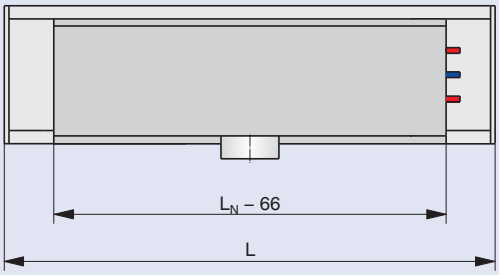
Casing configurations

Supply air

Construction variant		
Casing	**Water connections**	**Order code**
Centred	Right	MR
Centred	Left	ML
Right	Right	RR
Right	Left	RL
Left	Right	LR
Left	Left	LL

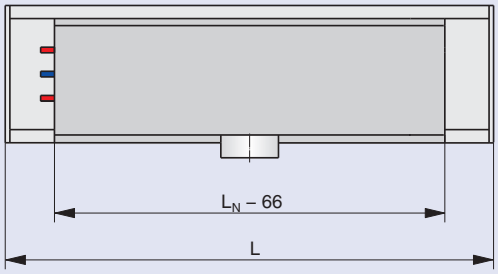
Type DID312...-MR

Casing: centred
Water connections: right



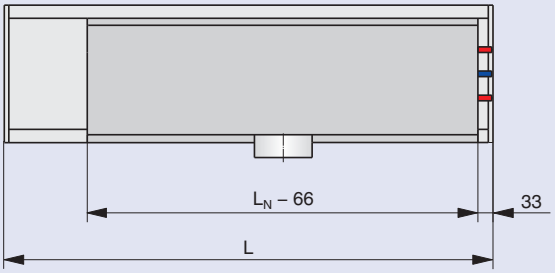
Type DID312...-ML

Casing: centred
Water connections: left



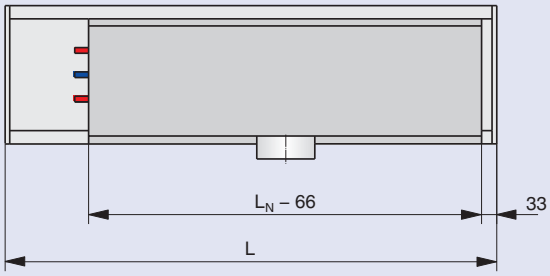
Type DID312...-RR

Casing: right
Water connections: right



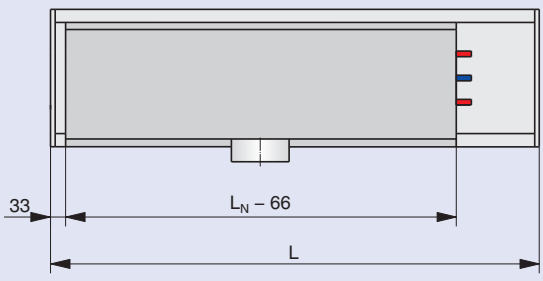
Type DID312...-RL

Casing: right
Water connections: left



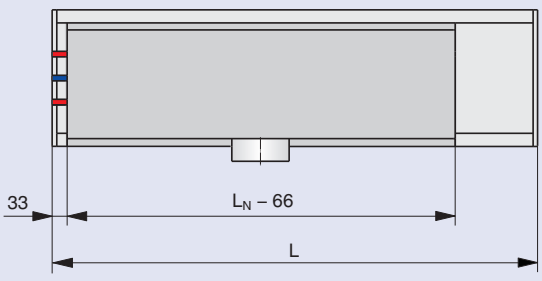
Type DID312...-LR

Casing: left
Water connections: right



Type DID312...-LL

Casing: left
Water connections: left



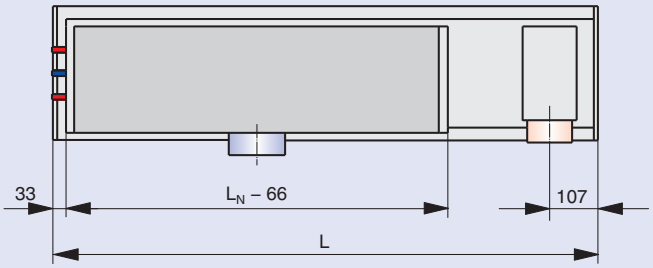
Casing configurations

Supply-extract-air combination

Construction variant			
Casing	**Water connec-tions**	**Extract air spigot**	**Order code**
Right	Right	Front	RR-AV
Right	Right	Rear	RR-AH
Left	Left	Front	LL-AV
Left	Left	Rear	LL-AH

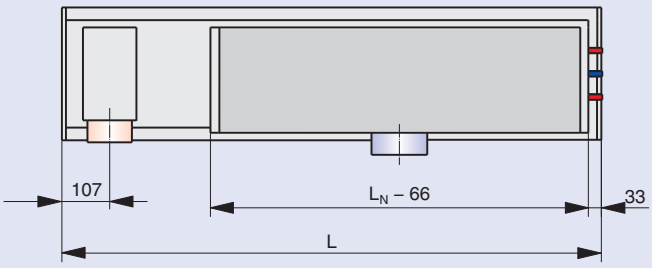
Type DID312...-LL-AV

Casing: left extract air spigot: front
Water connections: left



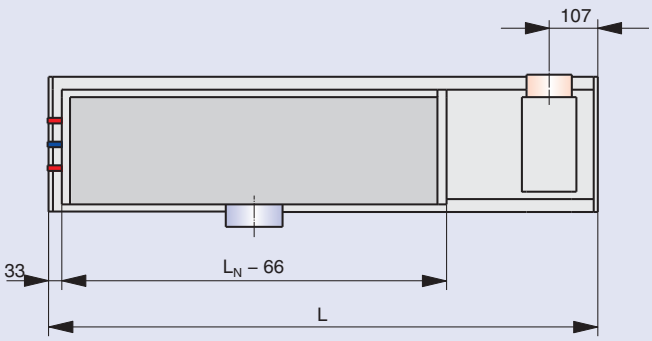
Type DID312...-RR-AV

Casing: right extract air spigot: front
Water connections: right



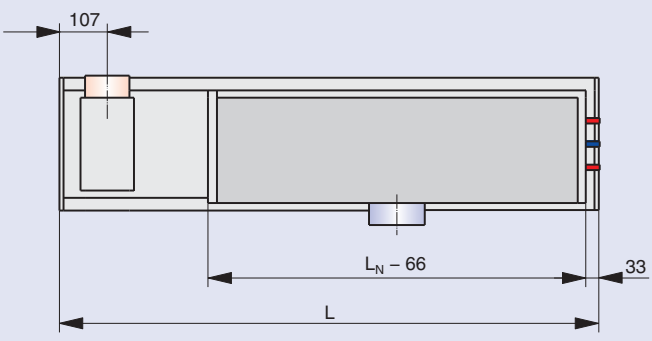
Type DID312...-LL-AH

Casing: left extract air spigot: rear
Water connections: left



Type DID312...-RR-AH

Casing: right extract air spigot: rear
Water connections: right



Installation

The customer must install the active chilled beams, make all connections, and provide the hanging system, connection and sealing materials.

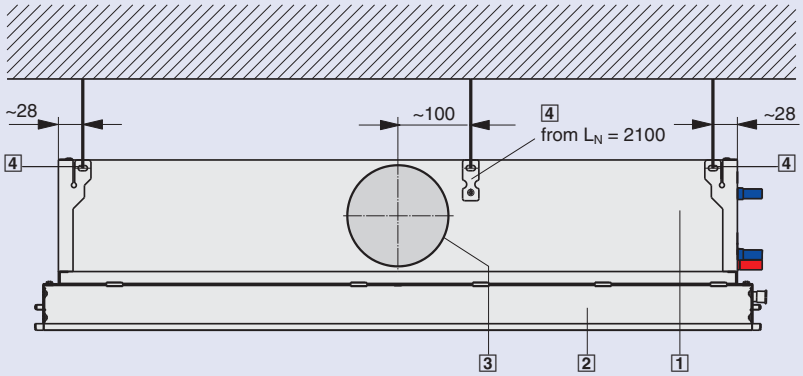
Only trained expert personnel should install and make the appropriate connections.

All legal regulations for site work must be complied with.

The active chilled beam has four hanging brackets (six on nominal length 2100 and above) for suspending the unit from the ceiling slab using threaded rods, wires or metal hangers. Use only certified hanging systems.

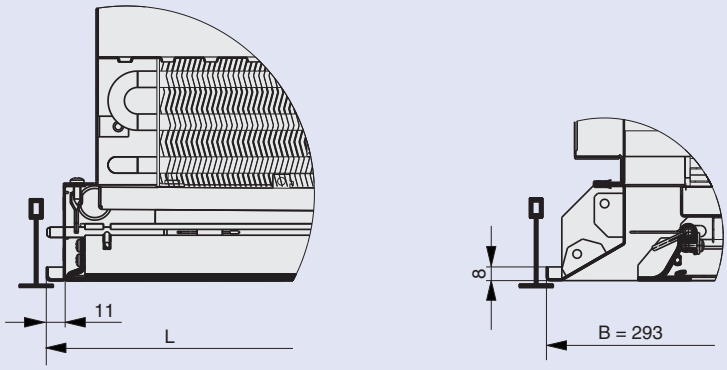
The primary air is connected to the inlet spigot. The two heat exchangers have common flow and return connections on the side of the unit (four connections in the case of a four pipe system). The actual connections can either be rigid – soldered or screw, or flexible – using push fit hoses. It is important to ensure adequate venting and draining facilities are provided.

Flexible hoses can be supplied as accessories see separate technical leaflet.

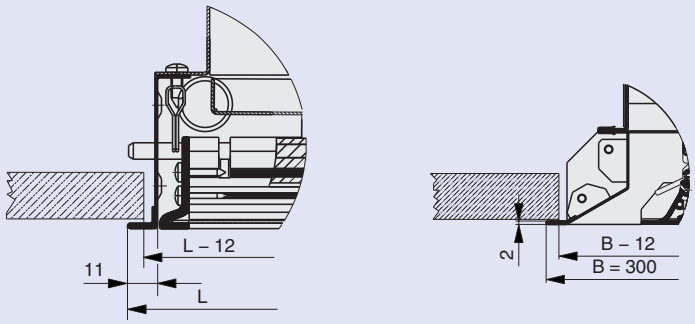


1 Casing
2 Face frame
3 Side entry spigot
4 Hanging brackets

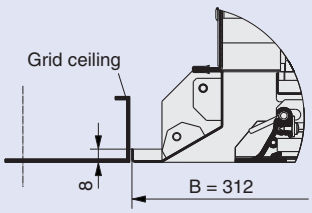
Installation into T-bar ceilings



Installation into plasterboard ceilings



Installation into grid ceilings



Maintenance

As is the case with all diffusers that induce room air, depending on the cleanliness of the room air, deposits may accumulate on the surfaces of the diffuser. If required, clean the diffuser with commercial, non-aggressive cleaning agents.

Clean the heat exchanger with an industrial vacuum cleaner. For maintenance, also see VDI 6022, Sheet 1 – “Hygiene Requirements on Ventilation Systems”.

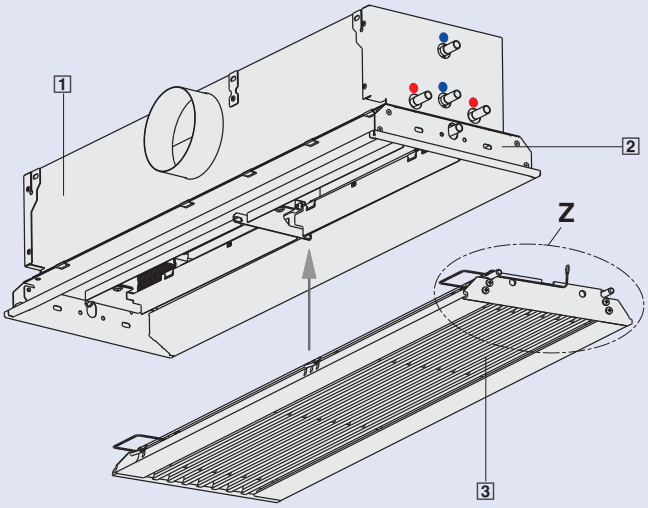
Removal of the induced air grille

The heat exchangers are accessible when the induced air grille has been hinged down or removed.

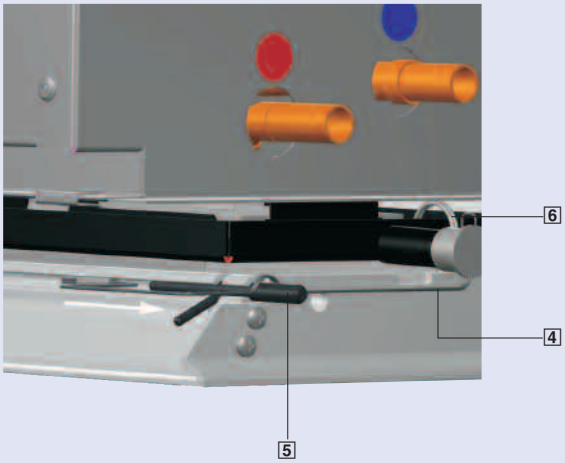
To hinge down the induced air grille on its long side by about 80° release two or three fixing bolts (depending on the length of the beam), this enables the grille to pivot downwards.

If the fixing bolts on the opposing side are also released, the induced air grille can be completely removed. The induced air grille is secured using two safety wires.

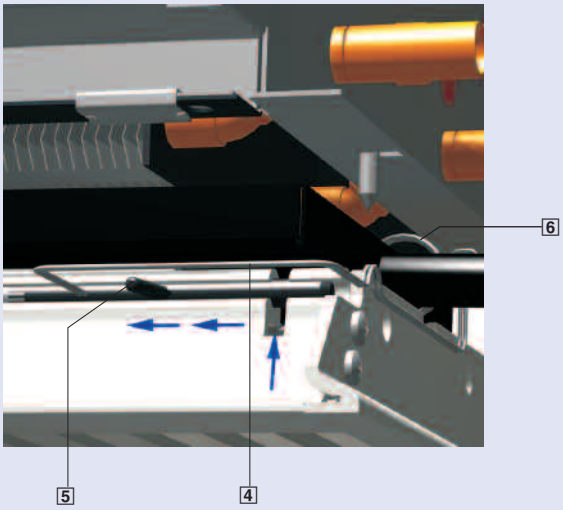
After repositioning the induced air grille, engage the fixing bolts and make sure they are in the locked position.



Detail Z
Locked position



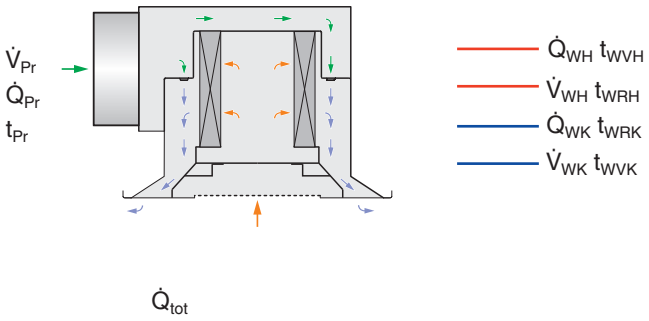
Detail Z
Unlocked position

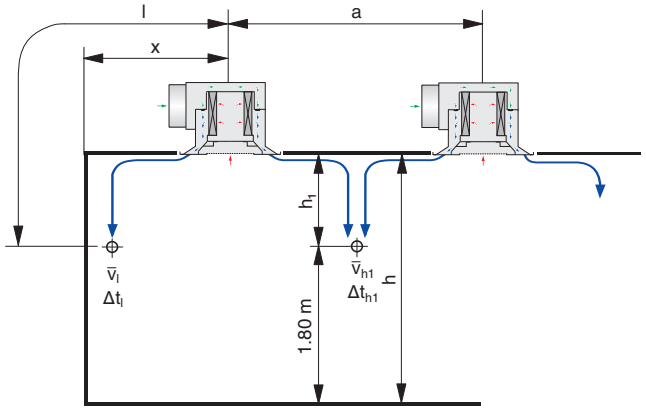


1 Casing
2 Face frame
3 Induced air grille
4 Safety wire
5 Fixing bolts
6 Circlip for the safety wire

L from 893 to 2099 mm: four fixing bolts per unit
From L = 2100 mm: six fixing bolts per unit

Nomenclature





Δt_l	in K :	Temperature difference between room air and core at distance $l = x + h_1$
Δt_{h1}	in K :	Temperature difference between room air and core at distance $l = a/2 + h_1$
Δt_{Pr}	in K :	Temperature difference between room air and conditioned fresh air
Δt_W	in K :	Temperature difference between water flow and return
Δt_{RWV}	in K :	Temperature difference between room air and water flow
Δp_t	in Pa :	Total differential pressure
Δp_W	in kPa :	Water-side pressure differential
t_R	in °C :	Room temperature
t_{WVK}	in °C :	Water flow temperature – cooling
t_{WRK}	in °C :	Water return temperature – cooling
t_{WVH}	in °C :	Water flow temperature – heating
t_{WRH}	in °C :	Water return temperature – heating
t_{Pr}	in °C :	Temperature of the conditioned fresh air
$\dot{Q}_{WK}$	in W :	Water cooling capacity
$\dot{Q}_{WH}$	in W :	Water heating capacity
$\dot{Q}_{tot}$	in W :	Total cooling capacity $\dot{Q}_{Pr} + \dot{Q}_{WK}$
$\dot{Q}_{Pr}$	in W :	Conditioned fresh air cooling capacity
$\dot{V}_{WK}$	in l/h :	Water flow rate – cooling
$\dot{V}_{WH}$	in l/h :	Water flow rate – heating
$\dot{V}_{Pr}$	in l/s :	Conditioned fresh air flow rate per unit
$\dot{V}_{PrN}$	in (l/s)/m :	Conditioned fresh air flow rate per meter based on nominal length
$\dot{V}_{Ext}$	in l/s :	Extract air flow rate
$\bar{v}_l$	in m/s :	Maximum time average air velocity at wall at distance $l = x + h_1$
$\bar{v}_{h1}$	in m/s :	Maximum time average air velocity between two diffusers at distance $l = a/2 + h_1$
L_{WA}	in dB(A) :	A-weighted sound power level
a	in m :	Spacing between two diffusers
l	in m :	Horizontal plus vertical distance from diffuser, discharge down the wall (1.8 m above the floor), $l = x + h_1$
h_1	in m :	Distance from the ceiling to the occupied zone (1.8 m above the floor)
h	in m :	Room height
x	in m :	Distance from the diffuser centre line to the wall

All sound power levels are based on 1 pW.
All noise levels determined in a reverberation chamber.
Technical data based on an air density of 1.2 kg/m^3.

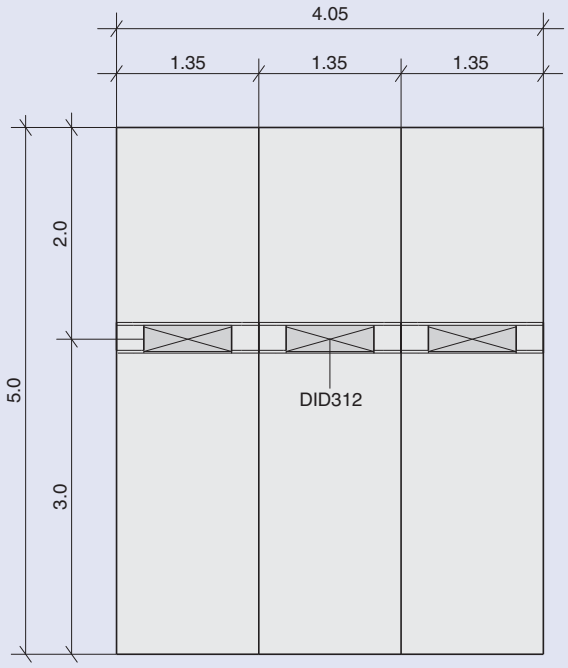
Selection example

First step in selecting active chilled beams is based on the quick selection table (Page 12).
Listed capacities are valid only for the reference values.

Second step, if the operating values differ from the reference ones, corrections must be made using diagrams and tables pages 13 to 15.

Our “Easy Product Finder” online design programme is also available on the Internet for easy and detailed design of our products.

Following example shows the unit selection using this leaflet.



Dimensions in mm

Given

Flexible office, width 3 modules

Room width:	4.05 m
Room depth:	5 m
Room height:	3 m
Occupancy:	2 persons
Cooling load:	75 W/m²
Room temperature (Summer):	26 °C
Conditioned fresh air temperature:	16 °C
Chilled water flow temperature:	16 °C

Fresh air flow rates

According to EN 15251, low-pollution building, Category II,

Building:	0.7 (l/s)/m²
People:	7.0 (l/s)/Person

Calculation procedure

Fresh air flow rate:

20.3 m² × 0.7 (l/s)/m²	= 14.2 l/s
2 persons × 7 (l/s)/person	= 14 l/s
Total	= 28.2 l/s
Cooling load: 20.3 m² × 75 W/m²	= 1523 W

Data for quick selection, page 12

DID312 3 units
Each unit:

Fresh air flow rate	28.2/3	= 9.4 l/s
Cooling capacity	1523/3	= 508 W
Maximum possible nominal length		= 1200 mm

Data for aerodynamic, page 14

Fresh air flow rate per meter based on nominal length	9.4/1.2	≅ 8 l/s

Selected type:

Nominal length: 1200 mm
Type of nozzle: Z
Each with a fresh air flow rate of 10 l/s

DID312-DE-GQ-2-Z-LL/1720×1200×293

Result of design				
Capacities and comfort parameters	**Source**	**Formula**	**Calculation**	**Value**
Total cooling capacity each unit	Quick selection			475 W
Water cooling capacity at 150 l/h	Quick selection			354 W
Air cooling capacity		$\dot{Q}_{tot} - \dot{Q}_{WK}$	475 – 354	121 W
Total cooling capacity of 3 units			3 × 475	1425 W
Cooling capacity too low, thus increase of water flow rate, try 220 l/h				
Correction factor for 220 l/h	Page 13			1.11
Water cooling capacity at 220 l/h			354 × 1.11	393 W
Project total cooling capacity			3 × (121 + 393)	1542 W
Water-side temperature difference	Diagram 1			approx. 1.5 K
Water-side pressure differential	Diagram 2			approx. 3.7 kPa
Distance from the diffuser		$l = x + h_1$	2 + (3 –1.8)	3.2 m
Maximum air velocity at the wall	Diagram 5	$\bar{v}_l$	0.23 × 0.98[1]	approx. 0.23 m/s
Air velocity in the occupied zone (0.5 m from the wall)		approx. 50 % of $\bar{v}_l$	0.5 × 0.23	< 0.12 m/s
Temperature reduction	Diagram 5	$\Delta t_l/\Delta t_{Pr}$ $\Delta t_{Pr} \times \Delta t_l/\Delta t_{Pr}$	10 × 0.072 × 0.93[1]	0.072 0.7 K
Supply air temperature in the occupied zone		$t_R - \Delta t_l$	26 – 0.7	25.3°C

[1] Refer to correction factors page 15.

Quick selection

L_N	Type of nozzle	Fresh air			Cooling				Heating			Air-regenerated Noise
					Two and four pipe system				Four pipe system			
		$\dot{V}_{Pr}$		Δp_t	$\dot{Q}_{tot}$	$\dot{Q}_{WK}$ (water)	Δt_W	Δp_W (water)	$\dot{Q}_{WH}=\dot{Q}_{tot}$ (water)	Δt_W	Δp_W (water)	L_{WA}
		l/s	m^3/h	Pa	W	W	K	kPa	W	K	kPa	dB(A)
900	Z	5	18	55	267	207	1.2	1.6	327	4.7	0.3	23
		7	25	108	342	258	1.5		372	5.3		31
		10	36	220	431	311	1.8		418	6.0		41
	M	7	25	44	289	205	1.2		304	4.4		21
		11	40	109	413	281	1.6		361	5.2		33
		16	58	231	534	341	2.0		407	5.8		43
	G	13	47	45	398	241	1.4		334	4.8		23
		21	76	116	569	316	1.8		396	5.7		36
		25	90	165	644	342	2.0		418	6.0		40
1200	Z	6	22	47	322	250	1.4	1.8	416	6.0	0.3	21
		10	36	129	475	354	2.0		504	7.2		35
		15	54	290	613	433	2.5		571	8.2		45
	M	9	32	43	369	260	1.5		397	5.7		22
		15	54	120	556	375	2.1		482	6.9		35
		21	76	235	699	446	2.6		536	7.7		44
	G	16	58	42	494	301	1.7		429	6.2		23
		23	83	86	654	377	2.2		491	7.0		33
		30	108	146	792	430	2.5		535	7.7		40
1500	Z	8	29	48	421	324	1.9	2.1	526	7.5	0.4	23
		11	40	91	537	405	2.3		593	8.5		31
		16	58	193	687	494	2.8		668	9.6		41
	M	11	40	39	446	313	1.8		485	7.0		21
		18	65	103	666	449	2.6		585	8.4		34
		26	94	215	857	543	3.1		655	9.4		43
	G	21	76	45	636	383	2.2		539	7.7		25
		29	104	86	814	465	2.7		605	8.7		34
		38	137	148	989	530	3.0		658	9.4		41
1800	Z	9	32	42	472	363	2.1	2.3	603	8.6	0.5	21
		16	58	131	724	531	3.0		740	10.6		36
		19	68	185	807	577	3.3		779	11.2		41
	M	14	50	43	557	389	2.2		587	8.4		23
		23	83	117	824	547	3.1		701	10.0		36
		35	126	270	1090	668	3.8		791	11.3		47
	G	25	94	52	774	460	2.6		642	9.2		27
		34	122	88	950	540	3.1		705	10.1		34
		41	148	128	1087	592	3.4		747	10.7		39
2100	Z	11	40	44	583	451	1.8	5.2	747	7.1	1.1	25
		17	61	104	814	509	2.4		880	8.4		36
		21	76	159	935	682	2.7		942	9.0		42
	M	16	58	39	648	455	1.8		706	6.7		25
		26	94	102	963	649	2.5		848	8.1		37
		36	130	195	1205	770	3.0		939	9.0		46
	G	31	112	45	935	562	2.2		788	7.5		29
		42	151	83	1180	673	2.6		878	8.4		37
		58	209	158	1485	786	3.1		971	9.3		45
2400	Z	12	43	41	634	489	1.9	5.6	826	7.9	1.3	25
		18	65	93	873	656	2.6		964	9.2		35
		23	83	152	1029	751	2.9		1043	10.0		42
	M	19	68	44	761	532	2.1		809	7.7		27
		28	101	95	1043	705	2.8		935	8.9		37
		36	130	156	1245	811	3.2		1013	9.7		43
	G	35	126	48	1050	628	2.5		884	8.4		30
		48	173	90	1338	757	3.0		987	9.4		38
		60	216	140	1568	844	3.3		1058	10.1		44
2700	Z	13	47	39	683	526	2.1	6.1	907	8.7	1.4	24
		20	72	92	964	722	2.8		1070	10.2		35
		25	90	143	1119	818	3.2		1147	11.0		41
	M	20	72	39	798	556	2.2		876	8.4		26
		29	104	82	1082	742	2.9		1009	9.6		35
		39	140	148	1350	879	3.4		1114	10.6		43
	G	38	137	47	1138	680	2.7		972	9.3		30
		52	187	88	1449	822	3.2		1085	10.4		38
		63	227	129	1664	904	3.5		1149	11.0		43
3000	Z	15	54	42	778	597	2.3	6.5	1002	9.6	1.5	26
		21	76	83	1018	764	3.0		1137	10.9		34
		27	97	136	1207	881	3.4		1233	11.8		41
	M	20	72	32	791	550	2.2		914	8.7		24
		32	115	82	1195	809	3.2		1097	10.5		36
		41	148	135	1428	934	3.6		1188	11.4		42
	G	45	152	56	1320	777	3.0		1081	10.3		33
		58	209	94	1600	901	3.5		1179	11.3		39
		70	252	136	1831	987	3.9		1248	11.9		44

For reference values which are the basis of the above table see page 13

Water-side capacity

Correction factors – Cooling										
$\dot{V}_{WK}$ in l/h		70	90	110	130	150	180	220	250	280
L_N	900	0.73	0.83	0.90	0.96	1.00	1.06	1.11	1.14	1.16
	1200	0.74	0.83	0.90	0.96	1.00	1.06	1.11	1.14	1.16
	1500	0.71	0.81	0.95	0.95	1.00	1.07	1.13	1.16	1.18
	1800	0.70	0.80	0.95	0.95	1.00	1.07	1.13	1.17	1.20
	2100	0.61	0.70	0.84	0.84	0.89	0.95	1.00	1.03	1.05
	2400	0.62	0.70	0.83	0.83	0.88	0.94	1.00	1.04	1.07
	2700	0.60	0.69	0.82	0.82	0.87	0.95	1.00	1.04	1.07
	3000	0.59	0.68	0.82	0.82	0.87	0.96	1.00	1.04	1.07

Correction factors – Heating									
$\dot{V}_{WH}$ in l/h		30	40	50	60	75	90	110	130
L_N	900	0.79	0.88	0.95	1.00	1.06	1.11	1.14	1.17
	1200	0.78	0.87	0.94	1.00	1.07	1.11	1.15	1.18
	1500	0.76	0.86	0.94	1.00	1.07	1.12	1.17	1.20
	1800	0.75	0.85	0.93	1.00	1.08	1.13	1.19	1.22
	2100	0.67	0.76	0.83	0.89	0.95	1.00	1.05	1.08
	2400	0.65	0.75	0.82	0.88	0.95	1.00	1.05	1.09
	2700	0.63	0.73	0.81	0.87	0.95	1.00	1.06	1.10
	3000	0.62	0.73	0.81	0.87	0.94	1.00	1.06	1.10

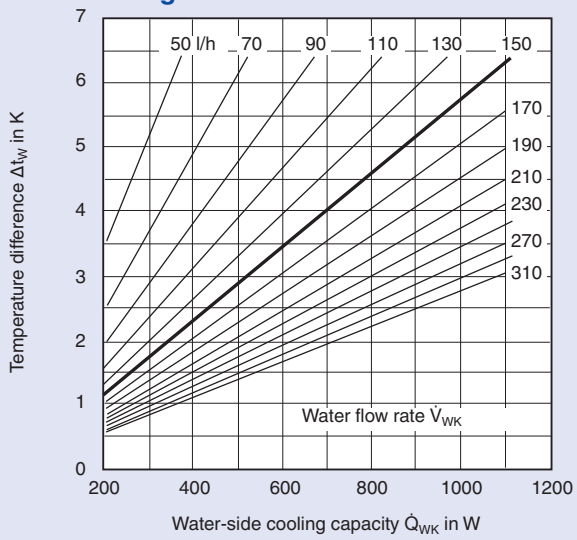
Reference values – Cooling

t_R = 26 °C
t_{Pr} = 16 °C
t_{WVK} = 16 °C
$\dot{V}_{WK}$ = 150 l/h (L_N = 900 to 1800)
$\dot{V}_{WK}$ = 220 l/h (L_N = 2100 to 3000)

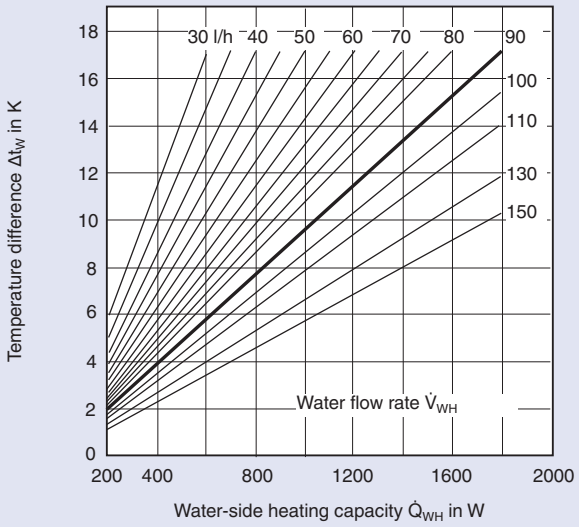
Reference values – Heating

t_R = 22 °C
t_{Pr} = 22 °C (isothermal)
t_{WVH} = 50 °C
$\dot{V}_{WH}$ = 60 l/h (L_N = 900 to 1800)
$\dot{V}_{WH}$ = 90 l/h (L_N = 2100 to 3000)

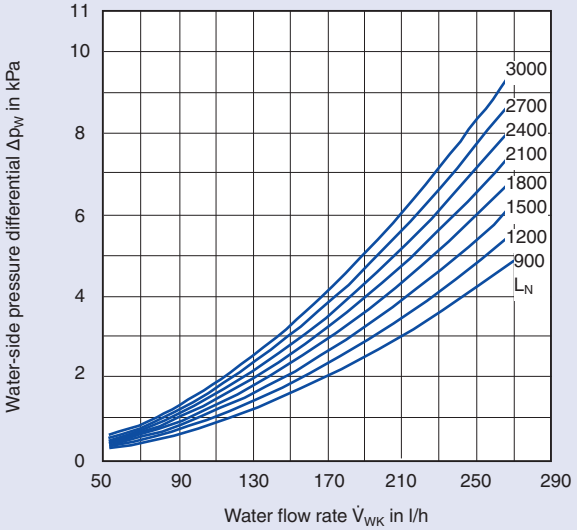
1 Cooling



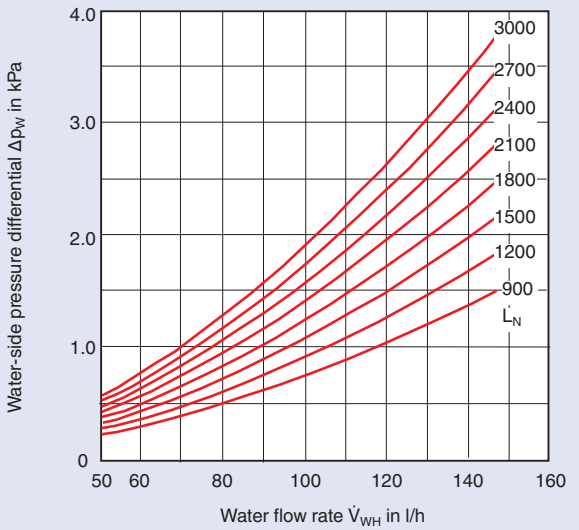
3 Heating



2 Cooling



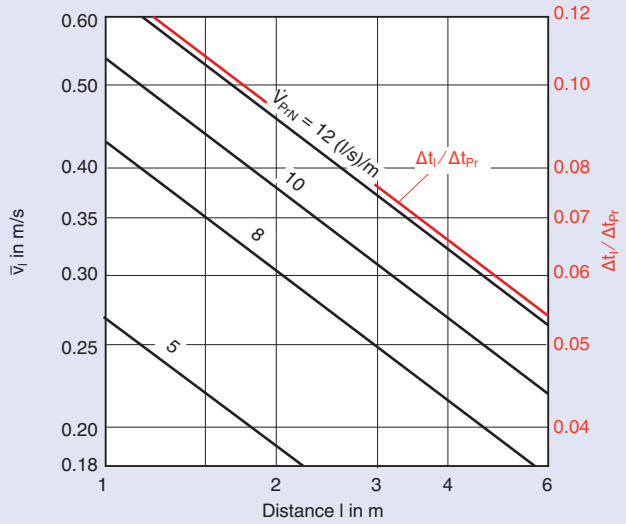
4 Heating



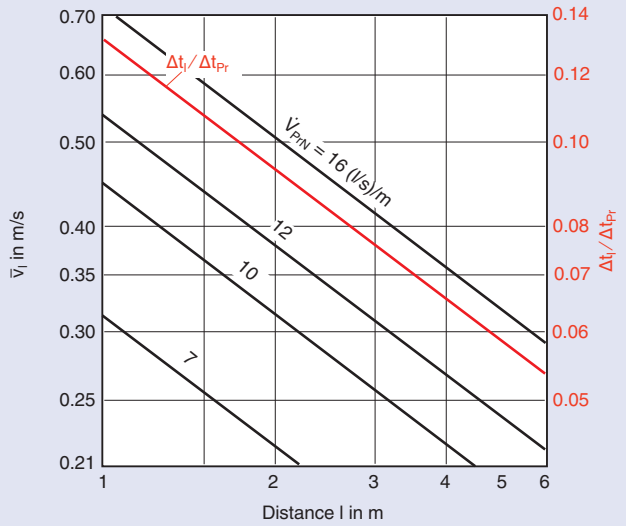
Aerodynamic data

Supply air

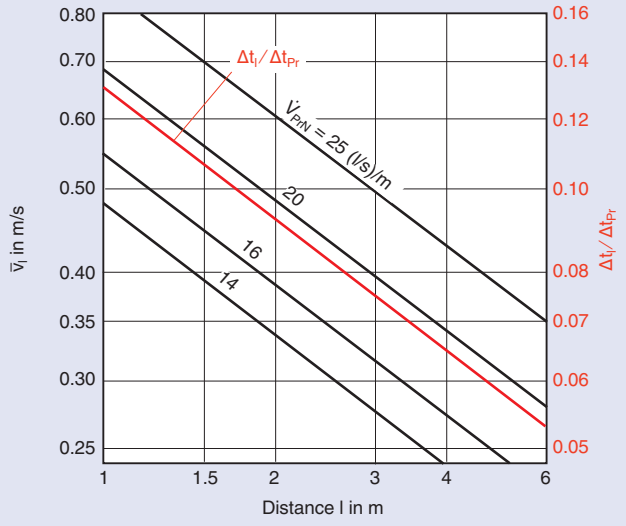
5 Nozzle type Z



6 Nozzle type M

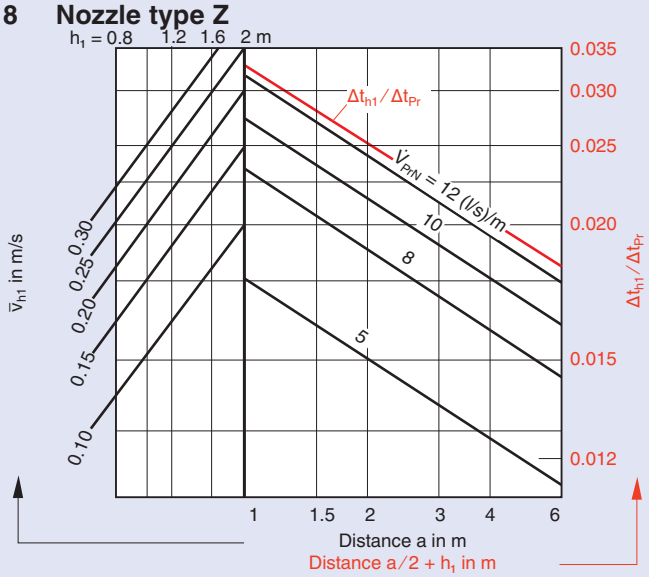


7 Nozzle type G

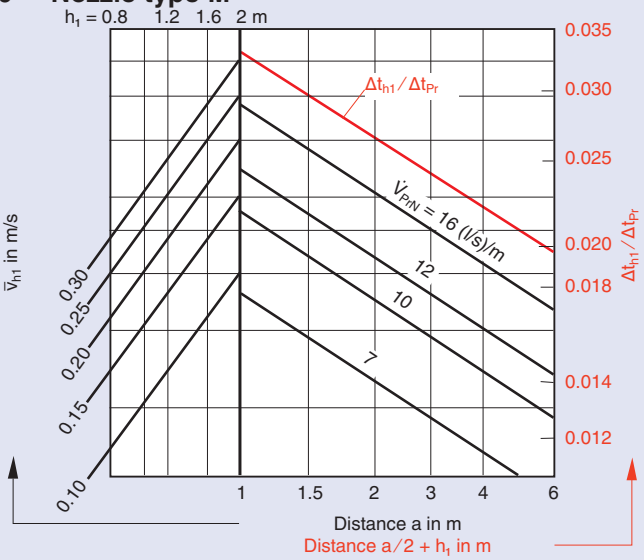


Use fresh air flow rate per meter based on nominal length $\dot{V}_{PrN}$ for diagrams 5 to 10.

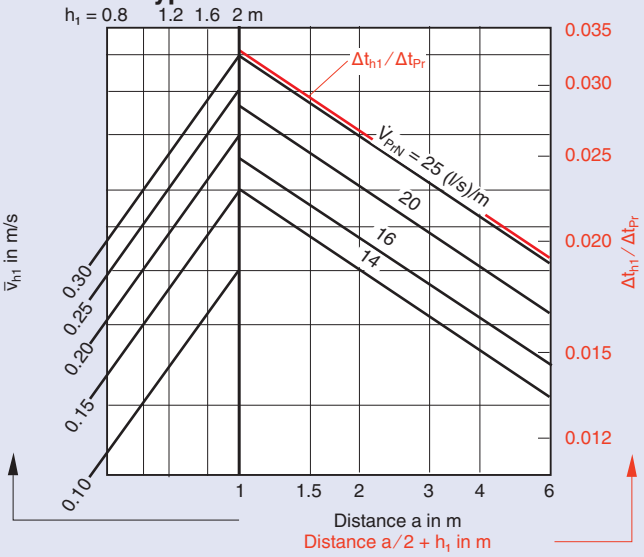
8 Nozzle type Z



9 Nozzle type M



10 Nozzle type G



Correction factors for diagrams 5 to 10 see top of page 15.

Correction factors for diagrams 5 to 10, on page 14

Correction factors for the diagram values as a function of nominal length								
L_N in mm	900	1200	1500	1800	2100	2400	2700	3000
$\bar{v}_l$, $\bar{v}_{h1}$ from diagram	0.90	0.95	1.00	1.04	1.08	1.12	1.15	1.18
$\Delta t_l / \Delta t_{Pr}$, $\Delta t_{h1} / \Delta t_{Pr}$ from diagram	0.93	0.97	1.00	1.02	1.03	1.04	1.04	1.04

The tabulated air velocities $\bar{v}_l$ and $\bar{v}_{h1}$ are based on a regular distribution of heat loads in the space.
Strong asymmetric distribution will result in variations to the tabulated values.

DID312 - Extract air			
$\dot{V}_{Ext}$		Δp_t	L_{WA}
in l/s	in m³/h	in Pa	in dB(A)
5	18	1	<10
10	36	3	<10
15	54	7	<10
20	72	12	15
25	90	18	23
30	108	26	30
35	126	35	35
40	144	46	39
45	162	58	43
50	180	72	47

Order Details

Specification text

Active chilled beams with high thermal capacities for air-water systems. Suited for flush ceiling installation in rooms with heights from approximately 2.6 to 4.0 m. Consisting of a casing with hanging brackets, connecting spigot, non-combustible nozzles, and two heat exchangers.

Special characteristics:

– Four options of induced air grille design
– Vertically mounted heat exchangers with condensate drip trays for low chilled water flow temperatures
– Heat exchangers for two or four pipe systems
– Supply-extract-air combination available

Nozzles in three sizes to optimise induction. Water-side connecting tails with 12 mm outer diameter plain end.

Beam variant:

– Water-side connecting tails with G½" external thread, flat end seal
– Supply-extract-air combination with additional connecting spigot for extract air

Materials

Casing, face frame and nozzle plate made of galvanised sheet steel. Heat exchanger made of copper tubes and formed aluminium fins. Frame and blades of the induced air grille (GL,GQ) made of aluminium profiles. Perforated induced air grille (LR/LQ) made of galvanised sheet steel.

Visible surfaces of the face of the beam powder-coated white (RAL 9010) or other RAL colour. Heat exchanger optionally black (RAL 9005), nozzle plate powder-coated black (RAL 9005).

Order code

DID312 - DE - GQ - 2 - Z - LL - AV - A1	/	1800 × 1200 × 293	/	P1	/	RAL 9016	/	G3
1 2 3 4 5 6 7		8 9		10		11		12

1 Type

2 Induced air grille
- -GL Longitudinal blades
- -GQ Transverse blades
- -LR Perforated metal (circular holes)
- -LQ Perforated metal (square holes)

3 Heat exchanger
- -2 Two pipe system
- -4 Four pipe system

4 Nozzle variant
- -Z
- -M
- -G

5 Arrangement of the casings and connections
- -LL[1]
- -LR
- -ML
- -MR
- -RL
- -RR[1]

6 Extract air spigot
- None, no entry required
- -AV Front
- -AH Rear

7 Water connections
- Pipe end Ø12 mm, smooth, no entry required
- -A1 External thread G½", flat end seal

8 Total length (diffuser face) × nominal length

893 – 1500 × 900
1193 – 1800 × 1200
1493 – 2100 × 1500
1793 – 2400 × 1800
2093 – 2700 × 2100
2393 – 3000 × 2400
2693 – 3000 × 2700
2993 – 3000 × 3000

Supply-extract-air combination

1090 – 1500 × 900
1390 – 1800 × 1200
1690 – 2100 × 1500
1990 – 2400 × 1800
2290 – 2700 × 2100
2590 – 3000 × 2400
2890 – 3000 × 2700

9 Face frame width
- 293
- 300
- 312

10 Exposed surface[2]
- Powder-coated, white (RAL 9010, gloss level 50 %), no entry required
- P1 Powder-coated RAL ...

11 Colour

For P1 only
- RAL 9006 White aluminium, gloss level 30 %
- RAL ... Other colours, gloss level 70 %

12 Surface of heat exchanger
- Untreated, no entry required
- G3 Black (RAL 9005)

[1] Supply-extract-air combination possible

[2] Colours in RAL CLASSIC collection

Order example

Make: TROX

Type: DID312-DE -GQ -2 -Z -LL -AV -A1 / 1800 × 1200 × 293 / P1 / RAL 9016 / G3