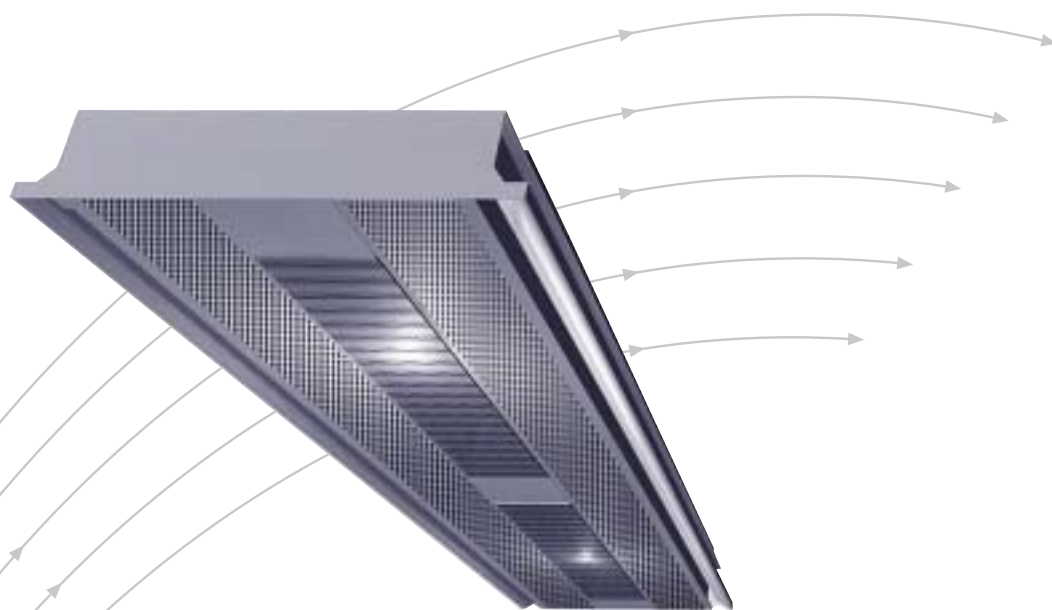


# Active Chilled Beams

- Type DID600B-L
- with integrated continuous light fitting



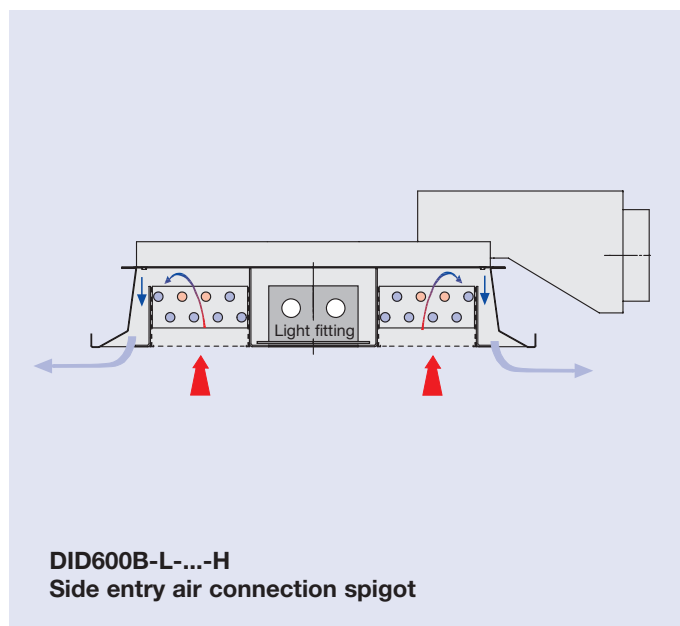
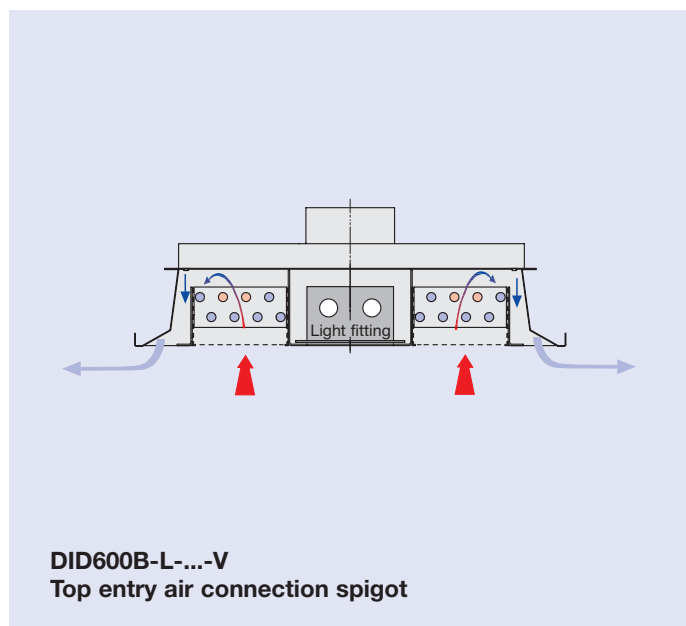
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# Contents · Description

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## Description

TROX Active Chilled Beams type DID600B-L with integrated continuous light fitting use a combination of air and water systems. They combine the air flow characteristics of ceiling diffusers with the energy benefits of load dissipation using water (heating/cooling).

The primary air volume flow required for fresh air supply enters the upper plenum box through a connecting spigot and is then discharged into the mixing zone via nozzles which are fitted into a diaphragm plate.

The induced air is for hygiene reasons drawn from the room instead from the ceiling void. When the air passes through the water coil it is cooled down (chilled water operation) or warmed up (warm water operation). In the mixing section of the DID600B-L the induced air is mixed with the primary air and the total discharged into the room via slots. The DID600B-L can be used for cooling and/or heating. An additional spigot for extract of exhaust air can be fitted adjacent to the primary air duct (supply and extract air construction).

In terms of technology and appearance the DID600B-L active chilled beam offers a sophisticated solution for modern air conditioning and lighting requirements.

### Caution!

**The chilled water supply temperature must be selected such that it never falls below room dewpoint.**

## Max. pressure:

for 2-pipe and 4-pipe system

6 bar at 90°C

7 bar at 20°C

Other operating pressures available on request

The type DID600B-L chilled beams are particularly suitable for use in low ceiling void spaces because of their shallow construction. Thus they are suitable not only for use in new buildings but are also excellent for refurbishment projects. When connected appropriately, they can be used for both individual room control or form a grouped zone control. The DID600B-L is available with either top or side entry air connection spigot for supply and extract air. Between the upper and lower casing there is a diaphragm plate which contains two longitudinal rows of nozzles. These discharge nozzles are available in three different sizes, the selection depending on the volume flow rates required.

## Materials

Casing, including the top plenum and perforated plate induction grilles are made of galvanised steel sheet.

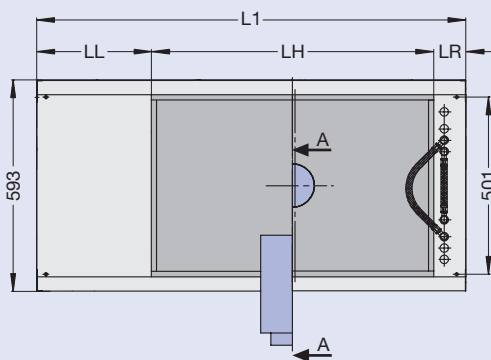
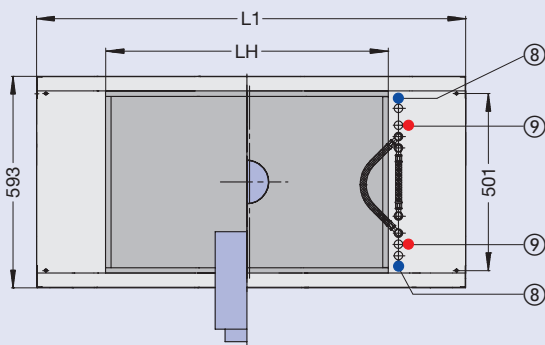
The standard finish of the casing and the induction grilles is powder-coated white (RAL 9010), nozzle plate finished in black (RAL 9005), the top casing (plenum) and coil remain untreated – the coil can optionally be finished in black (RAL 9005).

The heat exchanger consists of copper tubes with formed aluminium fins. Flexible hoses are available as accessories, and are made of special plastic with stainless steel sheathing.

- ⑩a Supply air top entry connecting spigot }  $L_N$  900 up to 1800 =  $\varnothing$  123
- ⑩b Supply air side entry connecting spigot }  $L_N$  2100 up to 3000 =  $\varnothing$  158
- ② Top of casing (plenum)
- ③ Discharge nozzles
- ④ Casing
- ⑤ Coil (pipe- $\varnothing$  12 mm)
- ⑥ Perforated plate induction grille
- ⑦ Discharge slots
- ⑧ Label chilled water (blue)
- ⑨ Label warm water (red)
- ⑩a Extract air top connecting spigot
- ⑩b Extract air side connecting spigot

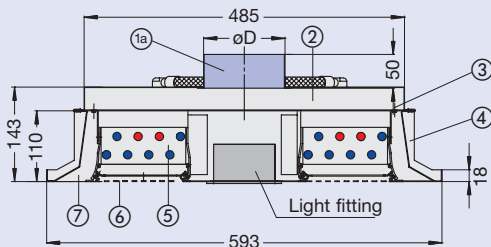
$L_1$  = Total length (diffuser face)  
 $L_N$  = Nominal length  
 (for dimensions of unit see page 5)

## Construction with supply air spigot



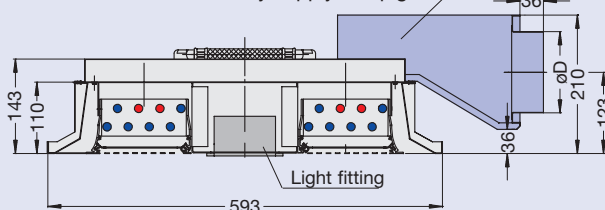
### View A - A

Construction with top entry supply air spigot

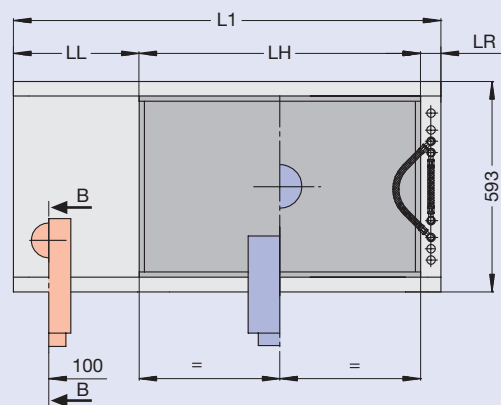
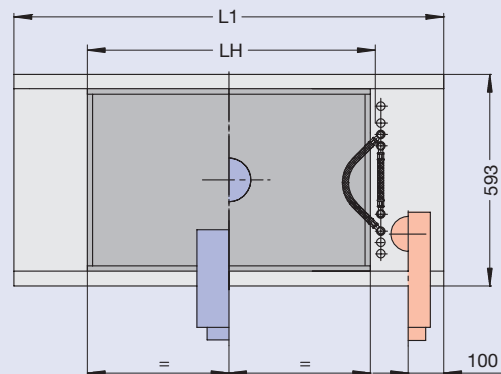


### View A - A

Construction with side entry supply air spigot

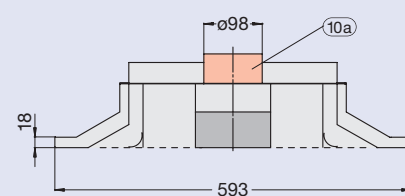


## Construction with supply and extract air spigot



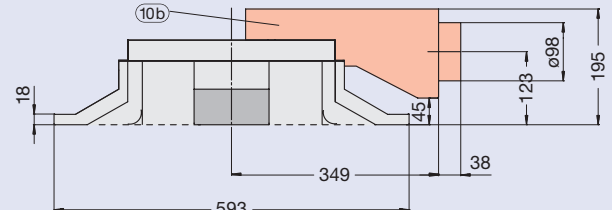
### View B - B

Construction with top extract air spigot



### View B - B

Construction with side extract air spigot





## For construction and casing arrangements see pages 3 and 4

|                |                | V - S                                |     | H - SV         |     | H - SH         |      |      |      |  |  |
|----------------|----------------|--------------------------------------|-----|----------------|-----|----------------|------|------|------|--|--|
| Supply air     |                | Arrangement of the top active plenum |     |                |     |                |      |      |      |  |  |
|                |                | Extends over total length (standard) |     |                |     |                |      |      |      |  |  |
| L <sub>N</sub> | L <sub>H</sub> | L <sub>L</sub>                       |     | L <sub>R</sub> |     | L <sub>1</sub> |      |      |      |  |  |
|                |                | min                                  | max | min            | max | min            | max  | min  | max  |  |  |
| 1500           | 1400           | 40                                   | 43  | 54             | 58  | 1493           | 1500 |      |      |  |  |
| 1800           | 1700           | 40                                   | 43  | 54             | 58  | 1793           | 1800 | 1800 |      |  |  |
| 2100           | 2000           | 40                                   | 43  | 54             | 58  | 2093           | 2100 | 2100 |      |  |  |
| 2400           | 2300           | 40                                   | 43  | 54             | 58  | 2393           | 2400 | 2400 |      |  |  |
| 2700           | 2600           | 40                                   | 43  | 54             | 58  | 2693           | 2700 | 2700 | 2700 |  |  |
| 3000           | 2900           | 40                                   | 43  | 54             | 58  | 2993           | 3000 | 3000 | 3000 |  |  |

|                |                | V - L  |                | H - LV |       | H - LH |                |      |      |     |      |
|----------------|----------------|--|----------------|--------|-------|--------|----------------|------|------|-----|------|
| Supply air     |                | Arrangement of top active plenum (plenum shorter than L <sub>1</sub> ) |                |        |       |        |                |      |      |     |      |
|                |                | left   |                |        |       |        |                |      |      |     |      |
| L <sub>N</sub> | L <sub>H</sub> | L <sub>L</sub>   | L <sub>R</sub> |        |       |        | L <sub>1</sub> |      |      |     |      |
|                |                |  | min            | min    | min   | max    | min            | min  | min  | max |      |
| 900            | 800            | 43   | 650.5          |        |       | 657.5  | 1493           |      |      |     | 1500 |
| 1200           | 1100           | 43   | 350.5          | 584.5  |       | 657.5  | 1493           | 1727 |      |     | 1800 |
| 1500           | 1400           | 43   | 58.5           | 284.5  |       | 657.5  | 1501           | 1727 |      |     | 2100 |
| 1800           | 1700           | 43   | 58.5           | 58.5   |       | 657.5  | 1801           | 1801 |      |     | 2400 |
| 2100           | 1800           | 43   | 58.5           | 58.5   | 650.5 | 657.5  | 2101           | 2101 | 2693 |     | 2700 |
| 2400           | 2300           | 43   | 58.5           | 58.5   | 350.5 | 657.5  | 2401           | 2401 | 2693 |     | 3000 |
| 2700           | 2600           | 43   | 58.5           | 58.5   | 58.5  | 357.5  | 2701           | 2701 | 2701 |     | 3000 |

|                |                | V - M  |      | H - MV |      | H - MH |  |  |  |  |  |
|----------------|----------------|--|------|--------|------|--------|--|--|--|--|--|
| Supply air     |                | Arrangement of top active plenum (plenum shorter than L <sub>1</sub> ) |      |        |      |        |  |  |  |  |  |
|                |                | middle   |      |        |      |        |  |  |  |  |  |
| L <sub>N</sub> | L <sub>H</sub> | L <sub>1</sub>   |      |        |      |        |  |  |  |  |  |
|                |                | min  | min  | min    | max  |        |  |  |  |  |  |
| 900            | 800            | 1493   | 1727 |        | 1800 |        |  |  |  |  |  |
| 1200           | 1100           | 1493   | 1727 |        | 1800 |        |  |  |  |  |  |
| 1500           | 1400           | 1501   | 1727 |        | 2100 |        |  |  |  |  |  |
| 1800           | 1700           | 1801   | 1801 |        | 2400 |        |  |  |  |  |  |
| 2100           | 2000           | 2101   | 2101 | 2693   | 2700 |        |  |  |  |  |  |
| 2400           | 2300           | 2401   | 2401 | 2693   | 3000 |        |  |  |  |  |  |
| 2700           | 2600           | 2701   | 2701 | 2701   | 3000 |        |  |  |  |  |  |

|                |                | V - R  |     | H - RV |     | H - RH         |                |      |      |     |      |
|----------------|----------------|--|-----|--------|-----|----------------|----------------|------|------|-----|------|
| Supply air     |                | Arrangement of top active plenum (plenum shorter than L <sub>1</sub> ) |     |        |     |                |                |      |      |     |      |
|                |                | right  |     |        |     |                |                |      |      |     |      |
| L <sub>N</sub> | L <sub>H</sub> | L <sub>L</sub>   |     |        |     | L <sub>R</sub> | L <sub>1</sub> |      |      |     |      |
|                |                | min  | min | min    | max |                | min            | min  | min  | max |      |
| 900            | 800            | 636  |     |        | 643 | 58             | 1493           |      |      |     | 1500 |
| 1200           | 1100           | 336  | 570 |        | 643 | 58             | 1493           | 1727 |      |     | 1800 |
| 1500           | 1400           | 43   | 270 |        | 643 | 58             | 1501           | 1727 |      |     | 2100 |
| 1800           | 1700           | 43   | 43  |        | 643 | 58             | 1801           | 1801 |      |     | 2400 |
| 2100           | 1800           | 43   | 43  | 636    | 643 | 58             | 2101           | 2101 | 2693 |     | 2700 |
| 2400           | 2300           | 43   | 43  | 336    | 643 | 58             | 2401           | 2401 | 2693 |     | 3000 |
| 2700           | 2600           | 43   | 43  | 43     | 343 | 58             | 2701           | 2701 | 2701 |     | 3000 |

All dimensions in mm with normal tolerances for sheet construction!

|                        |                | V - L - AR   |                | H - LV - ARV |       | H - LH - ARV |                |      |      |     |      |
|------------------------|----------------|--|----------------|--------------|-------|--------------|----------------|------|------|-----|------|
| Supply and extract air |                | Arrangement of the top active plenum (plenum shorter than L <sub>1</sub> ) |                |              |       |              |                |      |      |     |      |
|                        |                | left   |                |              |       |              |                |      |      |     |      |
| L <sub>N</sub>         | L <sub>H</sub> | L <sub>L</sub>   | L <sub>R</sub> |              |       |              | L <sub>1</sub> |      |      |     |      |
|                        |                |  | min            | min          | min   | max          | min            | min  | min  | max |      |
| 900                    | 800            | 43   | 650.5          |              |       | 657.5        | 1493           |      |      |     | 1500 |
| 1200                   | 1100           | 43   | 350.5          | 584.5        |       | 657.5        | 1493           | 1727 |      |     | 1800 |
| 1500                   | 1400           | 43   | 252.5          | 284.5        |       | 657.5        | 1695           | 1727 |      |     | 2100 |
| 1800                   | 1700           | 43   | 252.5          | 252.5        |       | 657.5        | 1995           | 1995 |      |     | 2400 |
| 2100                   | 2000           | 43   | 252.5          | 252.5        | 650.5 | 657.5        | 2295           | 2295 | 2693 |     | 2700 |
| 2400                   | 2300           | 43   | 252.5          | 252.5        | 350.5 | 657.5        | 2595           | 2595 | 2693 |     | 3000 |
| 2700                   | 2600           | 43   | 252.5          | 252.5        | 252.5 | 357.5        | 2895           | 2895 | 2895 |     | 3000 |

|                        |                | V - M - AL   |      | H - MV - ALV |      | H - MV - ARV |  | H - MH - ALV |  | H - MH - ARV |  |
|------------------------|----------------|--|------|--------------|------|--------------|--|--------------|--|--------------|--|
| Supply and extract air |                | Arrangement of the top active plenum (plenum shorter than L <sub>1</sub> ) |      |              |      |              |  |              |  |              |  |
|                        |                | middle   |      |              |      |              |  |              |  |              |  |
| L <sub>N</sub>         | L <sub>H</sub> | L <sub>1</sub>   |      |              |      |              |  |              |  |              |  |
|                        |                | min  | min  | min          | max  |              |  |              |  |              |  |
| 900                    | 800            | 1493   | 1727 |              | 1800 |              |  |              |  |              |  |
| 1200                   | 1100           | 1493   | 1727 |              | 1800 |              |  |              |  |              |  |
| 1500                   | 1400           | 1890   | 1890 |              | 2100 |              |  |              |  |              |  |
| 1800                   | 1700           | 2190   | 2190 |              | 2400 |              |  |              |  |              |  |
| 2100                   | 2000           | 2490   | 2490 | 2693         | 2700 |              |  |              |  |              |  |
| 2400                   | 2300           | 2790   | 2790 | 2790         | 3000 |              |  |              |  |              |  |

|                        |                | V - R - AL   |     | H - RV - ALV |     | H - RH - ALV   |                |      |      |     |      |
|------------------------|----------------|--|-----|--------------|-----|----------------|----------------|------|------|-----|------|
| Supply and extract air |                | Arrangement of the top active plenum (plenum shorter than L <sub>1</sub> ) |     |              |     |                |                |      |      |     |      |
|                        |                | right  |     |              |     |                |                |      |      |     |      |
| L <sub>N</sub>         | L <sub>H</sub> | L <sub>L</sub>   |     |              |     | L <sub>R</sub> | L <sub>1</sub> |      |      |     |      |
|                        |                | min  | min | min          | max |                | min            | min  | min  | max |      |
| 900                    | 800            | 636  |     |              | 643 | 58             | 1493           |      |      |     | 1500 |
| 1200                   | 1100           | 336  | 570 |              | 643 | 58             | 1493           | 1727 |      |     | 1800 |
| 1500                   | 1400           | 43   | 270 |              | 643 | 58             | 1695           | 1727 |      |     | 2100 |
| 1800                   | 1700           | 43   | 238 |              | 643 | 58             | 1995           | 1995 |      |     | 2400 |
| 2100                   | 1800           | 43   | 238 | 636          | 643 | 58             | 2295           | 2295 | 2693 |     | 2700 |
| 2400                   | 2300           | 43   | 238 | 336          | 643 | 58             | 2595           | 2595 | 2693 |     | 3000 |
| 2700                   | 2600           | 43   | 238 | 238          | 343 | 58             | 2895           | 2895 | 2895 |     | 3000 |

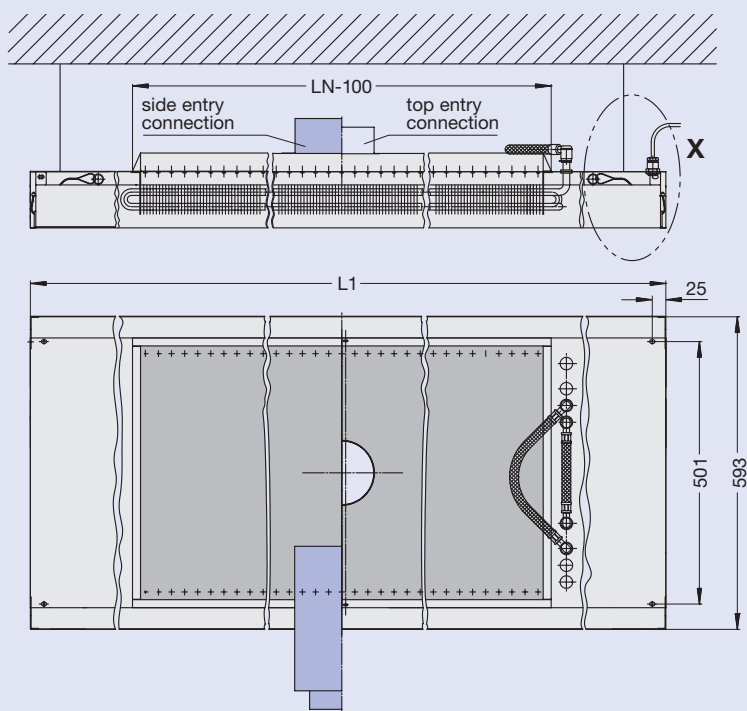
- 1 Light fitting 28 or 54 watt
- 1 Light fitting 35 watt
- 2 Light fittings 28 or 54 watt

# Assembly

## Assembly

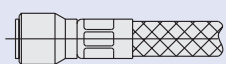
The two long sides of the DID600B-L are each provided with two suspension holes or for L1 = 1500 4 holes are provided on each side. The assembly is installed on site using wire or metal hangers which must have the Building Authority certificate of approval. When the DID600B-L has been installed, 4 locking devices can be loosened with a screw driver (detail X) and the induction grilles can be lowered down lengthways. The induction grilles are each supported by two safety cables.

The coils are accessible when the induction grilles are removed. The coil connections are on the outside of the DID600B-L unit. The connection options to the flow and return pipes are, solid soldered, push-fit or compression fittings (internal or external threaded end fittings). The air connection is either from the side or from the top, depending on the construction.



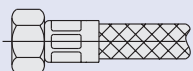
### Flexible hose (FS12)

for water connection Ø12 mm



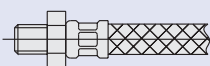
**S**

with push-fit connector  
Ø 12 mm,  
L = 500, 750, 1000 mm



**U**

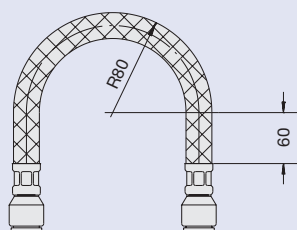
with union nut 1/2",  
compression fitting,  
L = 500, 750, 1000 mm



**A**

with external thread 1/2",  
compression fitting,  
L = 500, 750, 1000 mm

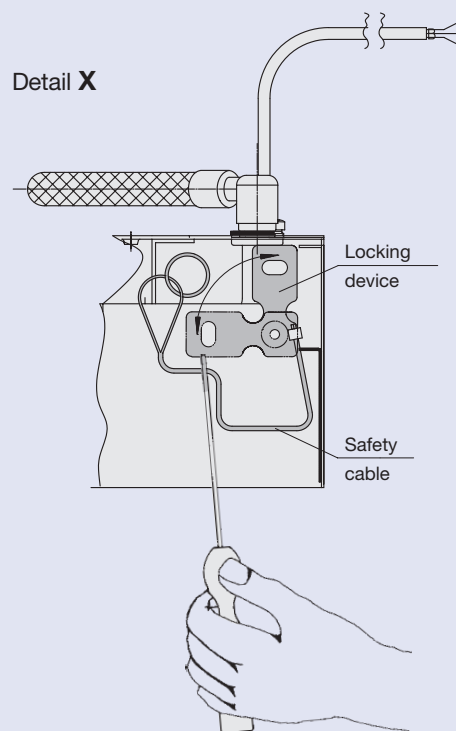
min. bend radius



### Available connectors

| both ends | combination |
|-----------|-------------|
| FS12-S    | FS12-S/U    |
|           | FS12-S/A    |

### Detail X



- The DID600B-L unit is fitted with a border extrusion which is suitable for the usual range of ceiling constructions.
- This ensures the best possible ceiling design.

## Installation into ceiling grid

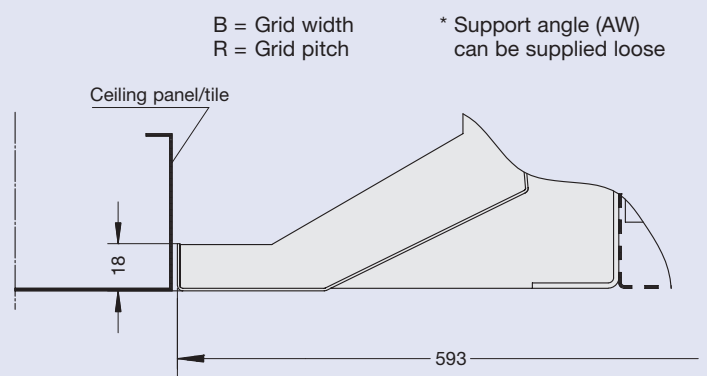
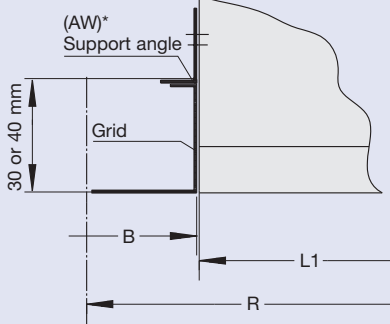
The DID600B-L can be installed on site at the ends using the support angles which are available as an accessory. The support angles are supplied loose and can be fitted as appropriate for the grid on site. With this method it is no longer necessary to level the DID600B-L units.

## Installation in T-bar ceilings or closed ceilings

These options allow for installation in a visible T-bar ceiling arrangement or in plasterboard or other closed ceiling systems.

The weight of the unit must be supported separately from the ceiling to avoid stability problems. Suspension holes are provided for this. The same requirement applies to preventing the units themselves from sagging.

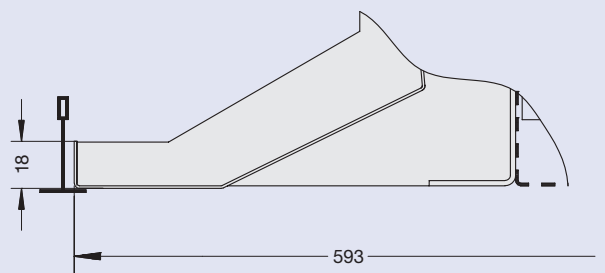
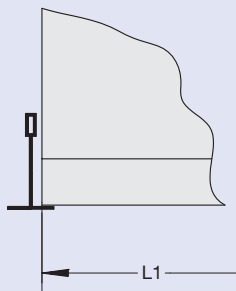
### Installation in ceiling grid



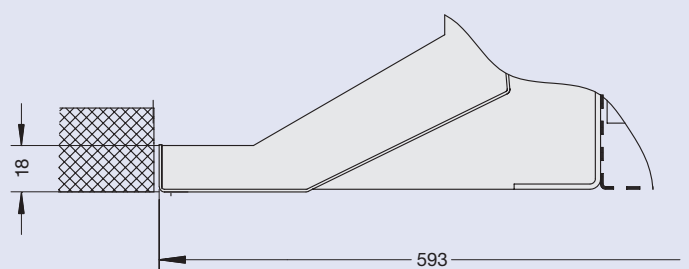
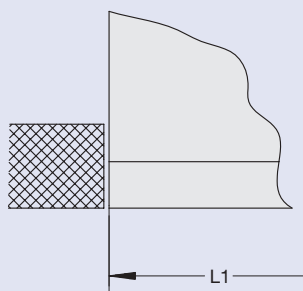
B = Grid width  
R = Grid pitch

\* Support angle (AW)  
can be supplied loose

### Installation in T-bar ceilings



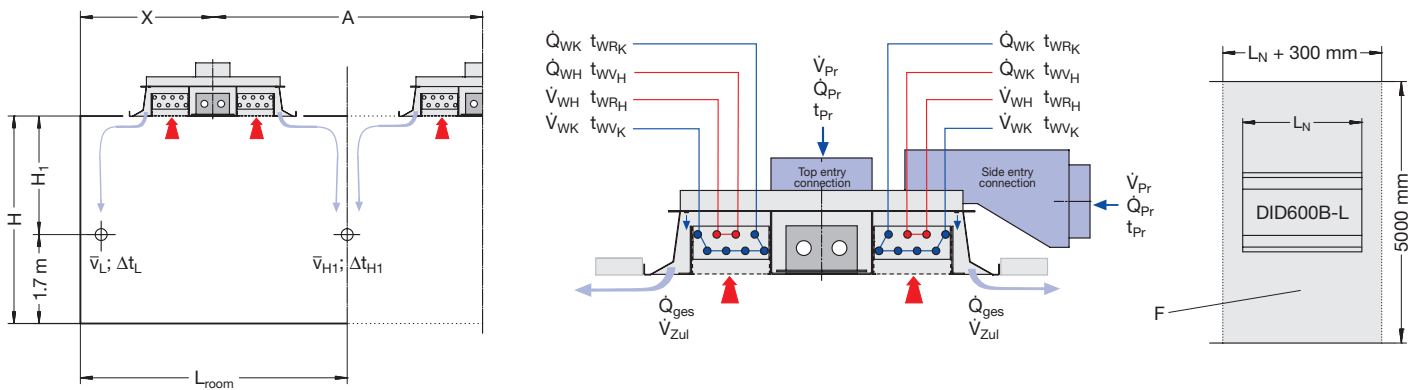
### Installation in plasterboard ceilings or closed ceilings



Depending on the quality of the room air, there is the possibility of dust deposits as with all room air induction units. If necessary, the unit can be cleaned with ordinary, non-aggressive household cleaners. The coil can be cleaned with an industrial vacuum cleaner.

(See also VDI 6022, page 1 – “Hygiene requirements for room air-conditioning systems”)

# Nomenclature



|                  |                       |  |
|------------------|-----------------------|--|
| $\Delta t_L$     | in K:                 | Temp. diff. between room air $t_R$ and core $t_L$ at distance $L = X + H_1$                                    |
| $\Delta t_{H1}$  | in K:                 | Temp. diff. between room air $t_R$ and core $t_{H1}$ at distance $L = A/2 + H_1$                               |
| $\Delta t_{Pr}$  | in K:                 | Temp. diff. between room air and primary air   |
| $\Delta t_z$     | in K:                 | Temp. diff. between room air and supply air into space   |
| $\Delta t_W$     | in K:                 | Water temperature difference   |
| $\Delta t_{RWV}$ | in K:                 | Temp. diff. between room air and water flow temperature  |
| $\Delta p_t$     | in Pa:                | Primary air pressure drop  |
| $\Delta p_W$     | in kPa:               | Water pressure drop  |
| $t_R$            | in °C:                | Room temperature   |
| $t_{WK}$         | in °C:                | Water flow temperature – cooling   |
| $t_{WRK}$        | in °C:                | Water return temperature – cooling   |
| $t_{WH}$         | in °C:                | Water flow temperature – heating   |
| $t_{WRH}$        | in °C:                | Water return temperature – heating   |
| $t_{Pr}$         | in °C:                | Primary air temperature  |
| $\dot{Q}_{WK}$   | in W:                 | Water cooling capacity   |
| $\dot{Q}_{WH}$   | in watt:              | Water heating capacity   |
| $\dot{Q}_{ges}$  | in watt:              | Total cooling capacity $\dot{Q}_{Pr} + \dot{Q}_S$  |
| $\dot{Q}_{Pr}$   | in watt:              | Primary air cooling capacity   |
| $\dot{Q}_S$      | in watt:              | Water side thermal capacity (for cooling $\dot{Q}_S = \dot{Q}_{WK}$ – for heating $\dot{Q}_S = \dot{Q}_{WH}$ ) |
| $\dot{q}_{Zul}$  | in W/m <sup>2</sup> : | Specific cooling capacity based on reference area F  |
| $\dot{V}_{WK}$   | in l/h:               | Water volume flow rate – cooling   |
| $\dot{V}_{WH}$   | in l/h:               | Water volume flow rate – heating   |
| $\dot{V}_{Zul}$  | in l/s:               | Supply air volume flow rate to space   |
| $\dot{V}_{Pr}$   | in l/s:               | Primary air volume flow rate   |
| $\bar{v}_L$      | in m/s:               | Time average air velocity at distance L  |
| $\bar{v}_{H1}$   | in m/s:               | Time average air velocity at distance $A/2 + H_1$  |
| $L_{WA}$         | in dB(A):             | A-weighted sound power level   |
| A                | in m:                 | Spacing between 2 diffusers  |
| L                | in m:                 | Horizontal plus vertical distance from diffuser, discharge down the wall $L = X + H_1$                         |
| $X_{krit}$       | in m:                 | Horizontal distance from diffuser at which the supply air begins to separate from ceiling                      |
| $H_1$            | in m:                 | Distance ceiling – occupied zone ( $H = 1.7$ )   |
| H                | in m:                 | Room height or height of installation  |
| X                | in m:                 | Distance from diffuser centre line to the wall   |
| $L_N$            | in mm:                | Nominal length   |
| F                | in m <sup>2</sup> :   | Reference area $(L_N + 0.3) \times 5$  |

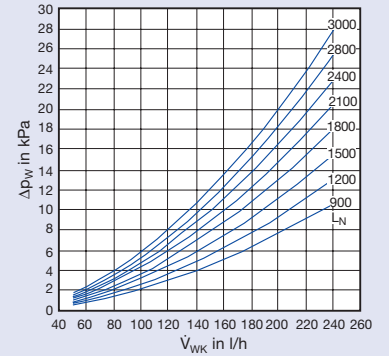
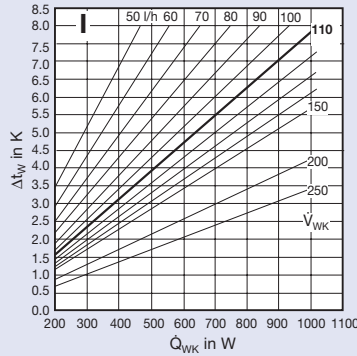
# Performance overview – cooling

## with 2-pipe and 4-pipe system

| Correction factors    |      |      |      |      |      |      |      |      |      |
|-----------------------|------|------|------|------|------|------|------|------|------|
| $\dot{V}_{WK}$ in l/h |      | 50   | 70   | 90   | 110  | 140  | 180  | 200  | 250  |
| $L_N$                 | 900  | 0.70 | 0.84 | 0.93 | 1.00 | 1.07 | 1.13 | 1.15 | 1.19 |
|                       | 1200 | 0.68 | 0.82 | 0.93 | 1.00 | 1.08 | 1.15 | 1.17 | 1.22 |
|                       | 1500 | 0.66 | 0.81 | 0.92 | 1.00 | 1.09 | 1.16 | 1.19 | 1.25 |
|                       | 1800 | 0.65 | 0.81 | 0.92 | 1.00 | 1.09 | 1.18 | 1.21 | 1.27 |
|                       | 2100 | 0.53 | 0.65 | 0.75 | 0.82 | 0.90 | 0.97 | 1.00 | 1.05 |
|                       | 2400 | 0.51 | 0.64 | 0.73 | 0.81 | 0.89 | 0.97 | 1.00 | 1.06 |
|                       | 2700 | 0.50 | 0.63 | 0.72 | 0.80 | 0.88 | 0.97 | 1.00 | 1.06 |
|                       | 3000 | 0.49 | 0.61 | 0.71 | 0.79 | 0.88 | 0.97 | 1.00 | 1.07 |

### Reference values

$t_{wVK} = t_{Pr} = 16^\circ\text{C}$   
 $\dot{V}_{WK} = 110 \text{ l/h}$  ( $L_N$  900 up to 1800)  
 $\dot{V}_{WK} = 200 \text{ l/h}$  ( $L_N$  2100 up to 3000)  
 $\Delta t_{Pr} = t_{Pr} - t_{R} = -10 \text{ K}$   
 $\Delta t_{RWV} = t_{wVK} - t_{R} = -10 \text{ K}$



| $L_N$ | Type of nozzles | $\dot{V}_{Pr}$ |                   | $\dot{Q}_{Pr}$ (air) watt | $\dot{Q}_s$ (water) watt | $\dot{Q}_{ges}$ watt | $\Delta t_w$ K | $\dot{q}_{Zul}$ W/m <sup>2</sup> | $\dot{V}_{Pr}/m^2$    |                                     | $L_{WA}$ entry from top dB(A) | entry from side dB(A) | $\Delta P_i$ (air) Pa | $\Delta P_w$ (water) kPa |
|-------|-----------------|----------------|-------------------|---------------------------|--------------------------|----------------------|----------------|----------------------------------|-----------------------|-------------------------------------|-------------------------------|-----------------------|-----------------------|--------------------------|
|       |                 | l/s            | m <sup>3</sup> /h |                           |                          |                      |                |                                  | l/(s·m <sup>2</sup> ) | m <sup>3</sup> /(h·m <sup>2</sup> ) |                               |                       |                       |                          |
| 900   | K               | 3              | 11                | 36                        | 148                      | 184                  | 1.2            | 31                               | 0.5                   | 1.8                                 | < 20                          | < 20                  | 29                    | 2.5                      |
|       |                 | 7              | 25                | 84                        | 338                      | 422                  | 2.6            | 70                               | 1.2                   | 4.2                                 | 32.5                          | 32.5                  | 156                   |                          |
|       |                 | 11             | 40                | 133                       | 428                      | 560                  | 3.3            | 93                               | 1.8                   | 6.6                                 | 45.1                          | 45.1                  | 386                   |                          |
|       | M               | 6              | 22                | 72                        | 202                      | 275                  | 1.6            | 46                               | 1.0                   | 3.6                                 | < 20                          | < 20                  | 24                    |                          |
|       |                 | 13             | 47                | 157                       | 370                      | 526                  | 2.9            | 88                               | 2.2                   | 7.8                                 | 34.0                          | 35.0                  | 112                   |                          |
|       |                 | 19             | 68                | 229                       | 444                      | 673                  | 3.5            | 112                              | 3.2                   | 11.4                                | 44.6                          | 45.6                  | 239                   |                          |
|       | G               | 11             | 40                | 133                       | 251                      | 383                  | 2.0            | 64                               | 1.8                   | 6.6                                 | < 20                          | 20.8                  | 25                    |                          |
|       |                 | 19             | 68                | 229                       | 358                      | 587                  | 2.8            | 98                               | 3.2                   | 11.4                                | 32.0                          | 36.0                  | 75                    |                          |
|       |                 | 27             | 97                | 326                       | 422                      | 747                  | 3.3            | 125                              | 4.5                   | 16.2                                | 41.7                          | 45.7                  | 151                   |                          |
| 1200  | K               | 3              | 11                | 36                        | 90                       | 126                  | 0.7            | 17                               | 0.4                   | 1.4                                 | < 20                          | < 20                  | 17                    | 3.1                      |
|       |                 | 8              | 29                | 96                        | 395                      | 491                  | 3.1            | 66                               | 1.1                   | 3.8                                 | 31.4                          | 31.4                  | 124                   |                          |
|       |                 | 13             | 47                | 157                       | 520                      | 676                  | 4.1            | 90                               | 1.7                   | 6.2                                 | 44.9                          | 44.9                  | 326                   |                          |
|       | M               | 8              | 29                | 96                        | 260                      | 356                  | 2.0            | 48                               | 1.1                   | 3.8                                 | < 20                          | < 20                  | 24                    |                          |
|       |                 | 15             | 54                | 181                       | 439                      | 620                  | 3.4            | 83                               | 2.0                   | 7.2                                 | 33.1                          | 34.1                  | 85                    |                          |
|       |                 | 23             | 83                | 277                       | 545                      | 823                  | 4.3            | 110                              | 3.1                   | 11.0                                | 45.0                          | 46.0                  | 201                   |                          |
|       | G               | 15             | 54                | 181                       | 331                      | 512                  | 2.6            | 68                               | 2.0                   | 7.2                                 | 22.5                          | 26.5                  | 28                    |                          |
|       |                 | 23             | 83                | 277                       | 439                      | 716                  | 3.4            | 96                               | 3.1                   | 11.0                                | 34.4                          | 38.4                  | 65                    |                          |
|       |                 | 30             | 108               | 362                       | 501                      | 863                  | 3.9            | 115                              | 4.0                   | 14.4                                | 41.8                          | 45.8                  | 110                   |                          |
| 1500  | K               | 4              | 14                | 48                        | 132                      | 180                  | 1.0            | 20                               | 0.4                   | 1.6                                 | < 20                          | < 20                  | 21                    | 3.8                      |
|       |                 | 9              | 32                | 109                       | 442                      | 551                  | 3.5            | 61                               | 1.0                   | 3.6                                 | 30.9                          | 30.9                  | 106                   |                          |
|       |                 | 15             | 54                | 181                       | 600                      | 781                  | 4.7            | 87                               | 1.7                   | 6.0                                 | 45.1                          | 45.1                  | 294                   |                          |
|       | M               | 10             | 36                | 121                       | 314                      | 435                  | 2.5            | 48                               | 1.1                   | 4.0                                 | < 20                          | < 20                  | 25                    |                          |
|       |                 | 18             | 65                | 217                       | 516                      | 733                  | 4.0            | 81                               | 2.0                   | 7.2                                 | 34.4                          | 35.4                  | 80                    |                          |
|       |                 | 26             | 94                | 314                       | 625                      | 938                  | 4.9            | 104                              | 2.9                   | 10.4                                | 44.6                          | 45.6                  | 167                   |                          |
|       | G               | 19             | 68                | 229                       | 405                      | 634                  | 3.2            | 70                               | 2.1                   | 7.6                                 | 26.9                          | 30.9                  | 30                    |                          |
|       |                 | 25             | 90                | 301                       | 489                      | 791                  | 3.8            | 88                               | 2.8                   | 10.0                                | 34.5                          | 38.5                  | 51                    |                          |
|       |                 | 32             | 115               | 386                       | 560                      | 945                  | 4.4            | 105                              | 3.6                   | 12.8                                | 41.4                          | 45.4                  | 84                    |                          |
| 1800  | K               | 5              | 18                | 60                        | 172                      | 232                  | 1.3            | 22                               | 0.5                   | 1.7                                 | < 20                          | < 20                  | 24                    | 4.4                      |
|       |                 | 11             | 40                | 133                       | 521                      | 653                  | 4.1            | 62                               | 1.0                   | 3.8                                 | 34.3                          | 33.3                  | 115                   |                          |
|       |                 | 17             | 61                | 205                       | 673                      | 878                  | 5.3            | 84                               | 1.6                   | 5.8                                 | 46.5                          | 45.5                  | 275                   |                          |
|       | M               | 12             | 43                | 145                       | 366                      | 511                  | 2.9            | 49                               | 1.1                   | 4.1                                 | < 20                          | 21.0                  | 25                    |                          |
|       |                 | 21             | 76                | 253                       | 587                      | 840                  | 4.6            | 80                               | 2.0                   | 7.2                                 | 34.5                          | 36.5                  | 76                    |                          |
|       |                 | 29             | 104               | 350                       | 695                      | 1045                 | 5.4            | 100                              | 2.8                   | 9.9                                 | 43.5                          | 45.5                  | 146                   |                          |
|       | G               | 22             | 79                | 265                       | 458                      | 724                  | 3.6            | 69                               | 2.1                   | 7.5                                 | 26.1                          | 32.1                  | 28                    |                          |
|       |                 | 29             | 104               | 350                       | 556                      | 906                  | 4.3            | 86                               | 2.8                   | 9.9                                 | 33.8                          | 39.8                  | 49                    |                          |
|       |                 | 36             | 130               | 434                       | 626                      | 1060                 | 4.9            | 101                              | 3.4                   | 12.3                                | 39.8                          | 45.8                  | 76                    |                          |
| 2100  | K               | 6              | 22                | 72                        | 237                      | 310                  | 1.0            | 26                               | 0.5                   | 1.8                                 | < 20                          | < 20                  | 26                    | 14.6                     |
|       |                 | 12             | 43                | 145                       | 669                      | 814                  | 2.9            | 68                               | 1.0                   | 3.6                                 | 34.1                          | 33.1                  | 105                   |                          |
|       |                 | 18             | 65                | 217                       | 884                      | 1101                 | 3.8            | 92                               | 1.5                   | 5.4                                 | 45.4                          | 44.4                  | 236                   |                          |
|       | M               | 14             | 50                | 169                       | 485                      | 654                  | 2.1            | 55                               | 1.2                   | 4.2                                 | 20.6                          | 22.6                  | 25                    |                          |
|       |                 | 23             | 83                | 277                       | 771                      | 1048                 | 3.3            | 87                               | 1.9                   | 6.9                                 | 34.4                          | 36.4                  | 68                    |                          |
|       |                 | 32             | 115               | 386                       | 940                      | 1325                 | 4.0            | 110                              | 2.7                   | 9.6                                 | 43.6                          | 45.6                  | 132                   |                          |
|       | G               | 26             | 94                | 314                       | 624                      | 937                  | 2.7            | 78                               | 2.2                   | 7.8                                 | 29.2                          | 35.2                  | 30                    |                          |
|       |                 | 32             | 115               | 386                       | 731                      | 1117                 | 3.1            | 93                               | 2.7                   | 9.6                                 | 35.0                          | 41.0                  | 46                    |                          |
|       |                 | 38             | 137               | 458                       | 815                      | 1274                 | 3.5            | 106                              | 3.2                   | 11.4                                | 39.8                          | 45.8                  | 64                    |                          |
| 2400  | K               | 7              | 25                | 84                        | 281                      | 365                  | 1.2            | 27                               | 0.5                   | 1.9                                 | < 20                          | < 20                  | 28                    | 16.4                     |
|       |                 | 13             | 47                | 157                       | 716                      | 872                  | 3.1            | 65                               | 1.0                   | 3.5                                 | 34.1                          | 33.1                  | 98                    |                          |
|       |                 | 19             | 68                | 229                       | 942                      | 1171                 | 4.0            | 87                               | 1.4                   | 5.1                                 | 44.7                          | 43.7                  | 208                   |                          |
|       | M               | 16             | 58                | 193                       | 545                      | 738                  | 2.3            | 55                               | 1.2                   | 4.3                                 | 22.0                          | 24.0                  | 25                    |                          |
|       |                 | 25             | 90                | 301                       | 832                      | 1133                 | 3.6            | 84                               | 1.9                   | 6.7                                 | 34.5                          | 36.5                  | 62                    |                          |
|       |                 | 34             | 122               | 410                       | 1007                     | 1417                 | 4.3            | 105                              | 2.5                   | 9.1                                 | 43.0                          | 45.0                  | 115                   |                          |
|       | G               | 30             | 108               | 362                       | 705                      | 1067                 | 3.0            | 79                               | 2.2                   | 8.0                                 | 31.9                          | 37.9                  | 31                    |                          |
|       |                 | 35             | 126               | 422                       | 793                      | 1215                 | 3.4            | 90                               | 2.6                   | 9.3                                 | 36.2                          | 42.2                  | 43                    |                          |
|       |                 | 40             | 144               | 482                       | 867                      | 1349                 | 3.7            | 100                              | 3.0                   | 10.7                                | 39.9                          | 45.9                  | 56                    |                          |
| 2700  | K               | 8              | 29                | 96                        | 324                      | 420                  | 1.4            | 28                               | 0.5                   | 1.9                                 | < 20                          | < 20                  | 30                    | 18.1                     |
|       |                 | 14             | 50                | 169                       | 759                      | 928                  | 3.3            | 62                               | 0.9                   | 3.4                                 | 34.0                          | 33.2                  | 92                    |                          |
|       |                 | 21             | 76                | 253                       | 1024                     | 1277                 | 4.4            | 85                               | 1.4                   | 5.0                                 | 45.5                          | 44.5                  | 207                   |                          |
|       | M               | 18             | 65                | 217                       | 603                      | 820                  | 2.6            | 55                               | 1.2                   | 4.3                                 | 23.3                          | 25.3                  | 26                    |                          |
|       |                 | 27             | 97                | 326                       | 889                      | 1215                 | 3.8            | 81                               | 1.8                   | 6.5                                 | 34.6                          | 36.6                  | 58                    |                          |
|       |                 | 37             | 133               | 446                       | 1085                     | 1531                 | 4.7            | 102                              | 2.5                   | 8.9                                 | 43.4                          | 45.4                  | 108                   |                          |
|       | G               | 34             | 122               | 410                       | 783                      | 1193                 | 3.4            | 80                               | 2.3                   | 8.2                                 | 34.2                          | 40.2                  | 33                    |                          |
|       |                 | 37             | 133               | 446                       | 836                      | 1283                 | 3.6            | 86                               | 2.5                   | 8.9                                 | 36.6                          | 42.6                  | 39                    |                          |
|       |                 | 41             | 148               | 494                       | 899                      | 1394                 | 3.9            | 93                               | 2.7                   | 9.8                                 | 39.4                          | 45.4                  | 47                    |                          |
| 3000  | K               | 9              | 32                | 109                       | 366                      | 474                  | 1.6            | 29                               | 0.5                   | 2.0                                 | 20.1                          | < 20                  | 32                    | 19.9                     |
|       |                 | 16             | 58                | 193                       | 849                      | 1042                 | 3.7            | 63                               | 1.0                   | 3.5                                 | 36.1                          | 35.1                  | 100                   |                          |
|       |                 | 23             | 83                | 277                       | 1102                     | 1379                 | 4.7            | 84                               | 1.4                   | 5.0                                 | 46.2                          | 45.2                  | 207                   |                          |
|       | M               | 20             | 72                | 241                       | 659                      | 900                  | 2.8            | 55                               | 1.2                   | 4.4                                 | 24.4                          | 26.4                  | 26                    |                          |
|       |                 | 30             | 108               | 362                       | 968                      | 1329                 | 4.2            | 81                               | 1.8                   | 6.5                                 | 35.7                          | 37.7                  | 58                    |                          |
|       |                 | 39             | 140               | 470                       | 1143                     | 1613                 | 4.9            | 98                               | 2.4                   | 8.5                                 | 43.0                          | 45.0                  | 98                    |                          |
|       | G               | 38             | 137               | 458                       | 858                      | 1317                 | 3.7            | 80                               | 2.3                   | 8.3                                 | 36.3                          | 42.3                  | 34                    |                          |
|       |                 | 40             | 144               | 482                       | 893                      | 1375                 | 3.8            | 83                               | 2.4                   | 8.7                                 | 37.7                          | 43.7                  | 37                    |                          |
|       |                 | 43             | 155               | 518                       | 941                      | 1460                 | 4.0            | 88                               | 2.6                   | 9.4                                 | 39.7                          | 45.7                  | 43                    |                          |

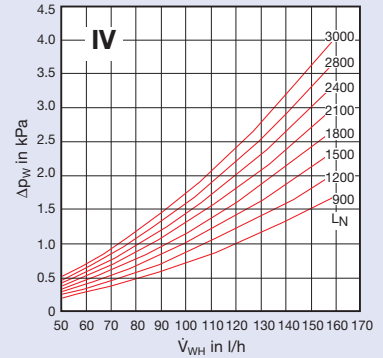
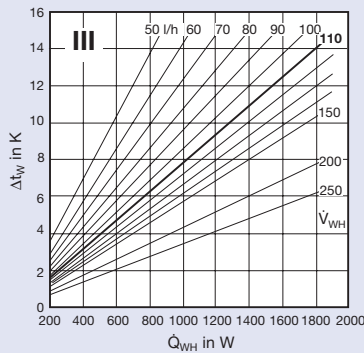
# Performance overview – heating

with 4-pipe system

| Correction factors    |      |      |      |      |      |      |      |      |
|-----------------------|------|------|------|------|------|------|------|------|
| $\dot{V}_{WH}$ in l/h |      | 30   | 50   | 70   | 90   | 110  | 130  | 150  |
| $L_N$                 | 900  | 0.70 | 1.00 | 1.19 | 1.32 | 1.40 | 1.46 | 1.51 |
|                       | 1200 | 0.69 | 1.00 | 1.20 | 1.33 | 1.43 | 1.50 | 1.56 |
|                       | 1500 | 0.68 | 1.00 | 1.21 | 1.36 | 1.46 | 1.54 | 1.60 |
|                       | 1800 | 0.68 | 1.00 | 1.22 | 1.37 | 1.48 | 1.57 | 1.63 |
|                       | 2100 | 0.45 | 0.67 | 0.82 | 0.92 | 1.00 | 1.06 | 1.11 |
|                       | 2400 | 0.44 | 0.66 | 0.81 | 0.92 | 1.00 | 1.06 | 1.11 |
| 2700                  | 0.43 | 0.65 | 0.80 | 0.91 | 1.00 | 1.07 | 1.12 |      |
| 3000                  | 0.43 | 0.64 | 0.80 | 0.91 | 1.00 | 1.07 | 1.13 |      |

Reference values

- $t_R = t_{Pr} = 22^\circ\text{C}$  (isothermal)
- $\dot{V}_{WH} = 50$  l/h ( $L_N$  900 up to 1800)
- $\dot{V}_{WH} = 110$  l/h ( $L_N$  2100 up to 3000)
- $\Delta t_{RW} = t_{W_{WH}} - t_R = 28$  K

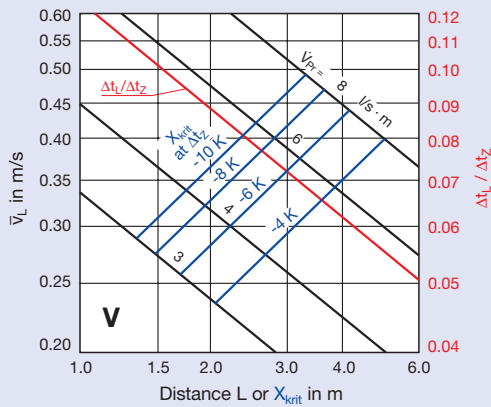


| $L_N$ | Type of nozzles | $\dot{V}_{Pr}$ |                   | $\dot{Q}_s = \dot{Q}_{ges}$<br>(water)<br>watt | $\Delta t_W$<br>K | $\dot{q}_{Zul}$<br>W/m <sup>2</sup> | $\dot{V}_{Pr}/m^2$    |                                     | $L_{WA}$ entry from side<br>top dB(A) | $\Delta P_1$ (air)<br>Pa | $\Delta P_W$ (water)<br>kPa |
|-------|-----------------|----------------|-------------------|--|-------------------|-------------------------------------|-----------------------|-------------------------------------|---------------------------------------|--------------------------|-----------------------------|
|       |                 | l/s            | m <sup>3</sup> /h |  |                   |                                     | l/(s·m <sup>2</sup> ) | m <sup>3</sup> /(h·m <sup>2</sup> ) |                                       |                          |                             |
| 900   | K               | 3              | 11                | 254  | 4.4               | 42                                  | 0.5                   | 1.8                                 | < 20                                  | < 20                     | 29                          |
|       |                 | 7              | 25                | 502  | 8.6               | 84                                  | 1.2                   | 4.2                                 | 32.5                                  | 32.5                     | 156                         |
|       |                 | 11             | 40                | 618  | 10.6              | 103                                 | 1.8                   | 6.6                                 | 45.1                                  | 45.1                     | 386                         |
|       | M               | 6              | 22                | 320  | 5.5               | 53                                  | 1.0                   | 3.6                                 | < 20                                  | < 20                     | 24                          |
|       |                 | 13             | 47                | 556  | 9.6               | 93                                  | 2.2                   | 7.8                                 | 34.0                                  | 35.0                     | 112                         |
|       |                 | 19             | 68                | 658  | 11.3              | 110                                 | 3.2                   | 11.4                                | 44.6                                  | 45.6                     | 239                         |
| G     | 11              | 40             | 392               | 6.7  | 65                | 1.8                                 | 6.6                   | < 20                                | 20.8                                  | 25                       |                             |
|       | 19              | 68             | 545               | 9.4  | 91                | 3.2                                 | 11.4                  | 32.0                                | 36.0                                  | 75                       |                             |
|       | 27              | 97             | 635               | 10.9   | 106               | 4.5                                 | 16.2                  | 41.7                                | 45.7                                  | 151                      |                             |
| 1200  | K               | 3              | 11                | 198  | 3.4               | 26                                  | 0.4                   | 1.4                                 | < 20                                  | < 20                     | 17                          |
|       |                 | 8              | 29                | 591  | 10.2              | 79                                  | 1.1                   | 3.8                                 | 31.4                                  | 31.4                     | 124                         |
|       |                 | 13             | 47                | 751  | 12.9              | 100                                 | 1.7                   | 6.2                                 | 44.9                                  | 44.9                     | 326                         |
|       | M               | 8              | 29                | 410  | 7.1               | 55                                  | 1.1                   | 3.8                                 | < 20                                  | < 20                     | 24                          |
|       |                 | 15             | 54                | 659  | 11.3              | 88                                  | 2.0                   | 7.2                                 | 33.1                                  | 34.1                     | 85                          |
|       |                 | 23             | 83                | 805  | 13.8              | 107                                 | 3.1                   | 11.0                                | 45.0                                  | 46.0                     | 201                         |
| G     | 15              | 54             | 514               | 8.8  | 69                | 2.0                                 | 7.2                   | 22.5                                | 26.5                                  | 28                       |                             |
|       | 23              | 83             | 666               | 11.4   | 89                | 3.1                                 | 11.0                  | 34.4                                | 38.4                                  | 65                       |                             |
|       | 30              | 108            | 752               | 12.9   | 100               | 4.0                                 | 14.4                  | 41.8                                | 45.8                                  | 110                      |                             |
| 1500  | K               | 4              | 14                | 272  | 4.7               | 30                                  | 0.4                   | 1.6                                 | < 20                                  | < 20                     | 21                          |
|       |                 | 9              | 32                | 667  | 11.5              | 74                                  | 1.0                   | 3.6                                 | 30.9                                  | 30.9                     | 106                         |
|       |                 | 15             | 54                | 866  | 14.9              | 96                                  | 1.7                   | 6.0                                 | 45.1                                  | 45.1                     | 294                         |
|       | M               | 10             | 36                | 495  | 8.5               | 55                                  | 1.1                   | 4.0                                 | < 20                                  | < 20                     | 25                          |
|       |                 | 18             | 65                | 771  | 13.3              | 86                                  | 2.0                   | 7.2                                 | 34.4                                  | 35.4                     | 80                          |
|       |                 | 26             | 94                | 918  | 15.8              | 102                                 | 2.9                   | 10.4                                | 44.6                                  | 45.6                     | 167                         |
| G     | 19              | 68             | 625               | 10.8   | 69                | 2.1                                 | 7.6                   | 26.9                                | 30.9                                  | 30                       |                             |
|       | 25              | 90             | 742               | 12.8   | 82                | 2.8                                 | 10.0                  | 34.5                                | 38.5                                  | 51                       |                             |
|       | 32              | 115            | 838               | 14.4   | 93                | 3.6                                 | 12.8                  | 41.4                                | 45.4                                  | 84                       |                             |
| 1800  | K               | 5              | 18                | 342  | 5.9               | 33                                  | 0.5                   | 1.7                                 | < 20                                  | < 20                     | 24                          |
|       |                 | 11             | 40                | 779  | 13.4              | 74                                  | 1.0                   | 3.8                                 | 34.3                                  | 33.3                     | 115                         |
|       |                 | 17             | 61                | 969  | 16.7              | 92                                  | 1.6                   | 5.8                                 | 46.5                                  | 45.5                     | 275                         |
|       | M               | 12             | 43                | 574  | 9.9               | 55                                  | 1.1                   | 4.1                                 | < 20                                  | 21.0                     | 25                          |
|       |                 | 21             | 76                | 873  | 15.0              | 83                                  | 2.0                   | 7.2                                 | 34.5                                  | 36.5                     | 76                          |
|       |                 | 29             | 104               | 1017   | 17.5              | 97                                  | 2.8                   | 9.9                                 | 43.5                                  | 45.5                     | 146                         |
| G     | 22              | 79             | 706               | 12.1   | 67                | 2.1                                 | 7.5                   | 26.1                                | 32.1                                  | 28                       |                             |
|       | 29              | 104            | 839               | 14.4   | 80                | 2.8                                 | 9.9                   | 33.8                                | 39.8                                  | 49                       |                             |
|       | 36              | 130            | 933               | 16.1   | 89                | 3.4                                 | 12.3                  | 39.8                                | 45.8                                  | 76                       |                             |
| 2100  | K               | 6              | 22                | 565  | 4.4               | 47                                  | 0.5                   | 1.8                                 | < 20                                  | < 20                     | 26                          |
|       |                 | 12             | 43                | 1233   | 9.6               | 103                                 | 1.0                   | 3.6                                 | 34.1                                  | 33.1                     | 105                         |
|       |                 | 18             | 65                | 1565   | 12.2              | 130                                 | 1.5                   | 5.4                                 | 45.4                                  | 44.4                     | 236                         |
|       | M               | 14             | 50                | 928  | 7.3               | 77                                  | 1.2                   | 4.2                                 | 20.6                                  | 22.6                     | 25                          |
|       |                 | 23             | 83                | 1406   | 11.0              | 117                                 | 1.9                   | 6.9                                 | 34.4                                  | 36.4                     | 68                          |
|       |                 | 32             | 115               | 1685   | 13.2              | 140                                 | 2.7                   | 9.6                                 | 43.6                                  | 45.6                     | 132                         |
| G     | 26              | 94             | 1171              | 9.2  | 98                | 2.2                                 | 7.8                   | 29.2                                | 35.2                                  | 30                       |                             |
|       | 32              | 115            | 1352              | 10.6   | 113               | 2.7                                 | 9.6                   | 35.0                                | 41.0                                  | 46                       |                             |
|       | 38              | 137            | 1493              | 11.7   | 124               | 3.2                                 | 11.4                  | 39.8                                | 45.8                                  | 64                       |                             |
| 2400  | K               | 7              | 25                | 658  | 5.1               | 49                                  | 0.5                   | 1.9                                 | < 20                                  | < 20                     | 28                          |
|       |                 | 13             | 47                | 1326   | 10.4              | 98                                  | 1.0                   | 3.5                                 | 34.1                                  | 33.1                     | 98                          |
|       |                 | 19             | 68                | 1671   | 13.1              | 124                                 | 1.4                   | 5.1                                 | 44.7                                  | 43.7                     | 208                         |
|       | M               | 16             | 58                | 1039   | 8.1               | 77                                  | 1.2                   | 4.3                                 | 22.0                                  | 24.0                     | 25                          |
|       |                 | 25             | 90                | 1516   | 11.9              | 112                                 | 1.9                   | 6.7                                 | 34.5                                  | 36.5                     | 62                          |
|       |                 | 34             | 122               | 1803   | 14.1              | 134                                 | 2.5                   | 9.1                                 | 43.0                                  | 45.0                     | 115                         |
| G     | 30              | 108            | 1317              | 10.3   | 98                | 2.2                                 | 8.0                   | 31.9                                | 37.9                                  | 31                       |                             |
|       | 35              | 126            | 1466              | 11.5   | 109               | 2.6                                 | 9.3                   | 36.2                                | 42.2                                  | 43                       |                             |
|       | 40              | 144            | 1588              | 12.4   | 118               | 3.0                                 | 10.7                  | 39.9                                | 45.9                                  | 56                       |                             |
| 2700  | K               | 8              | 29                | 749  | 5.9               | 50                                  | 0.5                   | 1.9                                 | < 20                                  | < 20                     | 30                          |
|       |                 | 14             | 50                | 1412   | 11.0              | 94                                  | 0.9                   | 3.4                                 | 34.2                                  | 33.2                     | 92                          |
|       |                 | 21             | 76                | 1813   | 14.2              | 121                                 | 1.4                   | 5.0                                 | 45.5                                  | 44.5                     | 207                         |
|       | M               | 18             | 65                | 1146   | 9.0               | 76                                  | 1.2                   | 4.3                                 | 23.3                                  | 25.3                     | 26                          |
|       |                 | 27             | 97                | 1619   | 12.7              | 108                                 | 1.8                   | 6.5                                 | 34.6                                  | 36.6                     | 58                          |
|       |                 | 37             | 133               | 1939   | 15.2              | 129                                 | 2.5                   | 8.9                                 | 43.4                                  | 45.4                     | 108                         |
| G     | 34              | 122            | 1457              | 11.4   | 97                | 2.3                                 | 8.2                   | 34.2                                | 40.2                                  | 33                       |                             |
|       | 37              | 133            | 1546              | 12.1   | 103               | 2.5                                 | 8.9                   | 36.6                                | 42.6                                  | 39                       |                             |
|       | 41              | 148            | 1650              | 12.9   | 110               | 2.7                                 | 9.8                   | 39.4                                | 45.4                                  | 47                       |                             |
| 3000  | K               | 9              | 32                | 836  | 6.5               | 51                                  | 0.5                   | 2.0                                 | 20.1                                  | < 20                     | 32                          |
|       |                 | 16             | 58                | 1568   | 12.3              | 95                                  | 1.0                   | 3.5                                 | 36.1                                  | 35.1                     | 100                         |
|       |                 | 23             | 83                | 1948   | 15.2              | 118                                 | 1.4                   | 5.0                                 | 46.2                                  | 45.2                     | 207                         |
|       | M               | 20             | 72                | 1250   | 9.8               | 76                                  | 1.2                   | 4.4                                 | 24.4                                  | 26.4                     | 26                          |
|       |                 | 30             | 108               | 1756   | 13.7              | 106                                 | 1.8                   | 6.5                                 | 35.7                                  | 37.7                     | 58                          |
|       |                 | 39             | 140               | 2040   | 15.9              | 124                                 | 2.4                   | 8.5                                 | 43.0                                  | 45.0                     | 98                          |
| G     | 38              | 137            | 1591              | 12.4   | 96                | 2.3                                 | 8.3                   | 36.3                                | 42.3                                  | 34                       |                             |
|       | 40              | 144            | 1648              | 12.9   | 100               | 2.4                                 | 8.7                   | 37.7                                | 43.7                                  | 37                       |                             |
|       | 43              | 155            | 1727              | 13.5   | 105               | 2.6                                 | 9.4                   | 39.7                                | 45.7                                  | 43                       |                             |

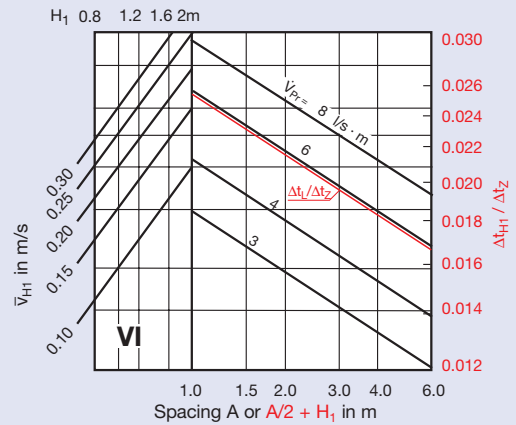
Correction factors for diagram values depending on length of unit  $L_N$

| $L_N$<br>in mm   | 900  | 1200 | 1500 | 1800 | 2100 | 2400 | 2700 | 3000 |
|--|------|------|------|------|------|------|------|------|
| $\bar{v}_L, \bar{v}_{H1}, X_{krit.}$<br>from diagram               | 0.92 | 0.96 | 1.0  | 1.04 | 1.07 | 1.11 | 1.14 | 1.17 |
| $\Delta t_L, \Delta t_z, \Delta t_{H1}/\Delta t_z$<br>from diagram | 0.87 | 0.94 | 1.0  | 1.05 | 1.09 | 1.13 | 1.17 | 1.20 |

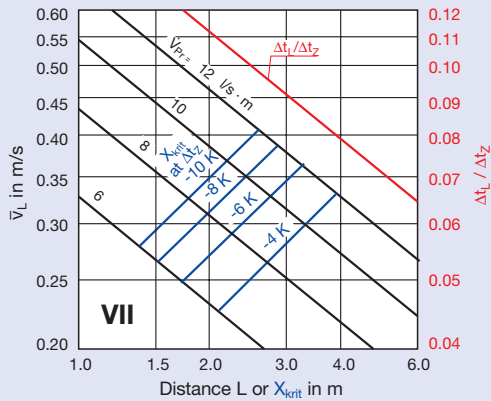
Nozzle type K



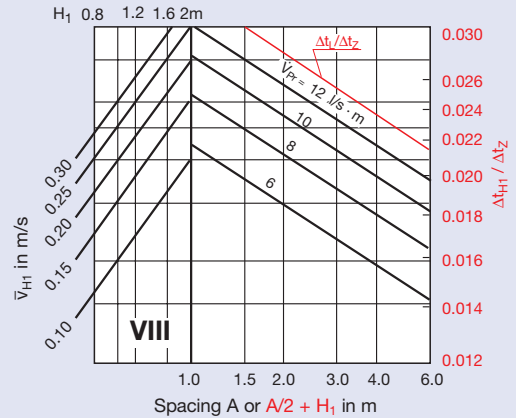
Nozzle type K



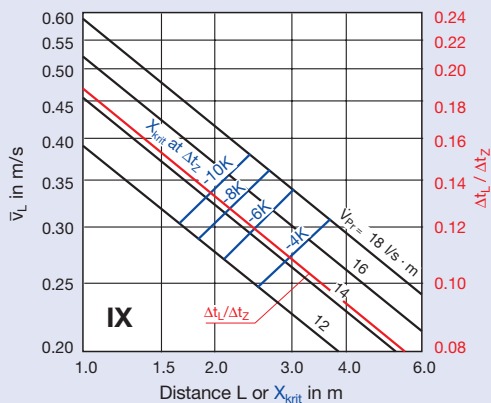
Nozzle type M



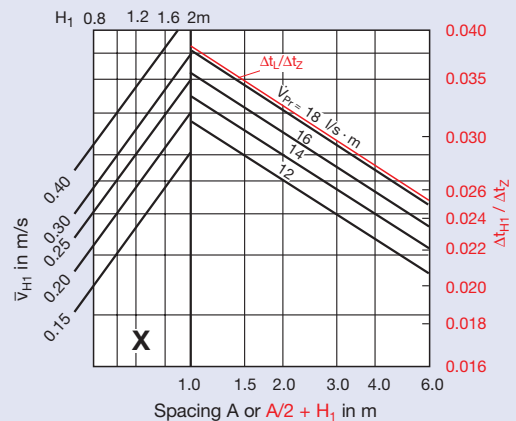
Nozzle type M



Nozzle type G



Nozzle type G



# Order details

## Specification text

Trox active chilled beam type DID600B-L with integrated continuous light fitting offers a sophisticated solution for demanding air conditioning and lighting requirements.

It is suitable for dealing with high internal heat loads using a combination of air and water.

It consists of the top plenum which serves as primary air duct and a diaphragm plate with nozzles in two longitudinal rows (different nozzle sizes are available). The coils are fitted underneath the primary air plenum and diaphragm plate. The induction grilles below the coils are perforated plates.

The coil can be used either for heating or cooling (2-pipe system) as well as heating and cooling (4-pipe system). The external diameter of the bare coil tube ends is 12 mm.

Primary and conditioned induced air are mixed in the unit and discharged horizontally with coanda effect into the room via the two slots formed by the external frame and the internal extrusions. There are holes in the casing to enable the unit to be hung by the customer. The DID600B-L is particularly suitable for use in low ceiling void spaces because of its shallow construction and thus also excellent for refurbishment projects.

A construction incorporating an extract air spigot can be provided. Spigots for supply and extract air can be either side or top mounted. Support angles and flexible hoses are available as accessories for the DID600B-L unit.

The type DID600B-L active chilled beam includes a 1- or 2-tube light fitting make Zumtobel Staff or a 1-tube light fitting make RIDI. In the case when the light fitting is provided by the customers the required space is left open.

### Materials

Casing, including the top plenum and perforated plate induction grilles are made of galvanised steel sheet.

The standard finish of the casing and the induction grilles is powder-coated white (RAL 9010), nozzle plate finished in black (RAL 9005), the coil remains untreated or can optionally be finished in black (RAL 9005).

The heat exchanger consists of copper tubes with formed aluminium fins. Flexible hoses are available as accessories, and are made of special plastic with stainless steel sheathing.

## Order code

**DID600B-L - 2 - K - H - MV - ALV** / **1800 x 1500** / **0** / **0** / **P1** / **RAL 9016** / **G3** / **1-ZL28-1**

### Coil:

Two-pipe 2 }  
Four-pipe 4 }

### Nozzle options:

small K }  
medium M }  
large G }

Spigot and casing arrangements (see page 4)

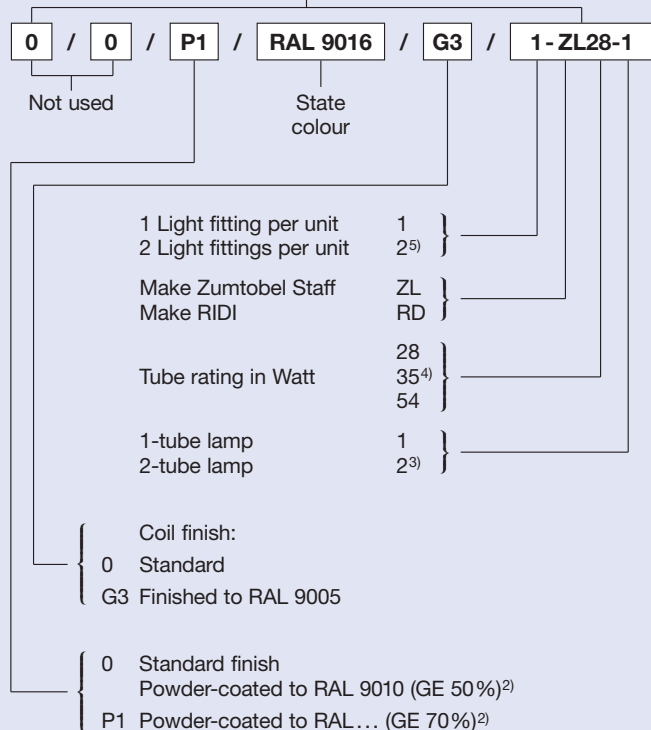
### Note:

$L_1 = 1493 \dots 3000$  mm  
 $L_N$  only available in standard lengths  
 $L_1$  maximum 7 mm shorter than  $L_N$

- 1) For casing arrangement M, MV and MH only
- 2) GE = Gloss level
- 3) Not with make Ridi
- 4) Only for  $L_1$  larger than 1727 mm
- 5) Only for  $L_1$  larger than 2693 mm, not with 35 watt

|                                  |
|----------------------------------|
| 1500 x 900<br>1800 <sup>1)</sup> |
| 1500 x 1200<br>1800              |
| 1500 x 1500<br>1800<br>2100      |
| 1800 x 1800<br>2100<br>2400      |
| 2100 x 2100<br>2400<br>2700      |
| 2400 x 2400<br>2700<br>3000      |
| 2700 x 2700<br>3000              |
| 3000 x 3000                      |
| $L_1 \times L_N$<br>(mm)         |

These codes do not need to be completed for standard products



## Accessory: Flexible hose (FS12) (see page 6)

| Available connectors |             |                |
|----------------------|-------------|----------------|
| both ends            | combination | lengths in mm  |
| FS12-S               | FS12-S/U    | 500, 750, 1000 |
|                      | FS12-S/A    |                |

## Order example

Make: TROX

Type: DID600B-L-2-K-H-MV-ALV / 1800 x 1500 / P1 / RAL 9016 / G3