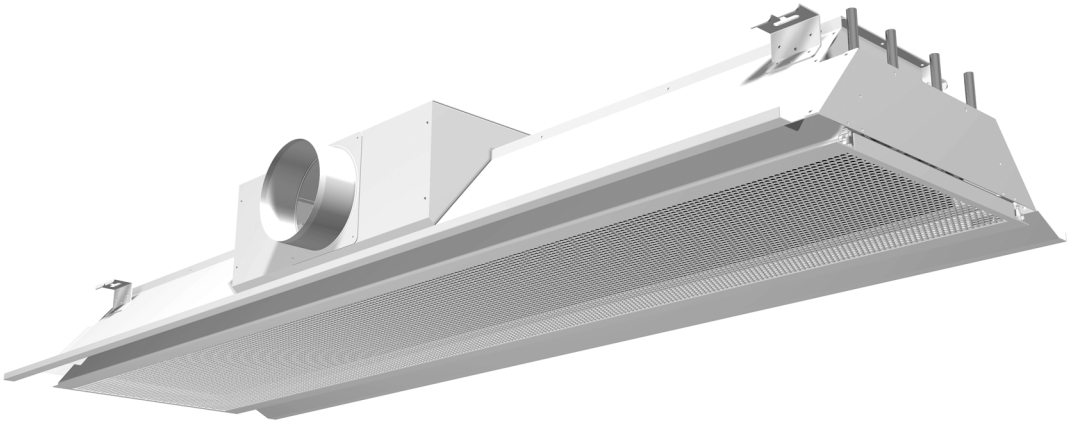
SCHAKO
KLIMA-LUFT

Installation, Mounting and Maintenance

DISA-P-600HT



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Installation, Mounting And Maintenance DISA-P-600HT

Contents

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Safety instructions

Prior to installation and commissioning of this device, please read completely through this manual. Please observe in particular the regulations and operating instructions containing the hazard symbols and safety signs. Their non-observance may result not only in damage to the device but also in personal injury. If, after reading through the manual, you have further questions, please contact the manufacturer or the local sales office.

General information

- The inspection, installation, hydraulic connection and commissioning of the device must be carried out by qualified skilled personnel only in compliance with the current regulations.
- Electric and hydraulic connections are the responsibility of the installer.
- Do not change any control or safety elements without prior approval by the manufacturer or the local sales office.

SCHAKO shall not give any warranty for damage resulting from:

- Improper use caused by ignoring the instructions given in this manual
- Non-observance of the operating conditions of the device.
- Installation and maintenance by personnel without proper qualification.
- Improper use of the device or operation under conditions not conforming to the manual.
- Use of spare parts that are not original spare parts.

Warranty

The device warranty will be for two years starting from the handover date and shall apply to all production faults. Electric components are excluded from the device warranty. However, they are covered by the corresponding warranty of the relevant manufacturer
Also excluded from the warranty is damage to the device unit caused by components that are not part of the device itself.
The warranty only covers the return and replacement of defective materials.

Recycling

It is recommended recycling the components of the device after the end of its service life, if possible,or put them to a new use.
Components that cannot be recycled must be properly disposed of by an authorized disposal company in accordance with current legal regulations.


Hazard warning


Important information


Safety information


Recycling

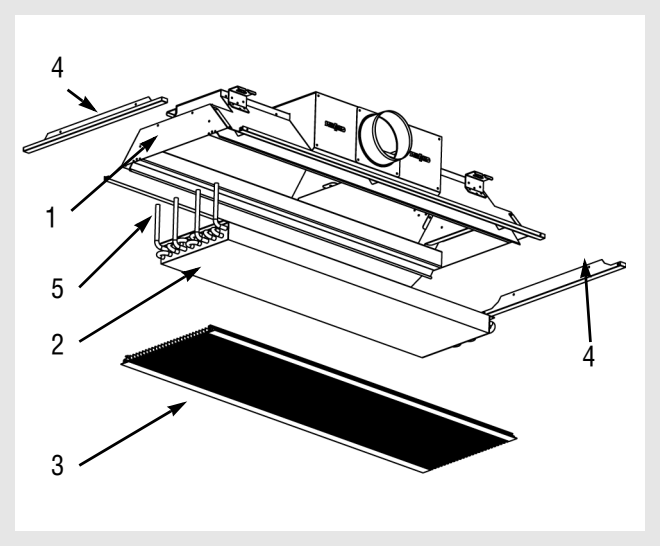

It is recommended keeping this manual at a safe location after installation and use it for future maintenance activities.

Installation, Mounting And Maintenance DISA-P-600HT

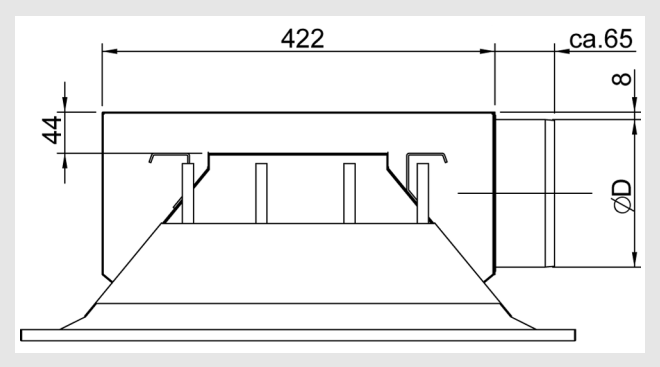
General information

Identification of the delivered model

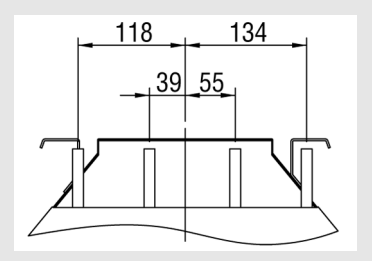
The ceiling induction diffuser type DISA-P-600HT has four different nozzle configurations B, C, D and E.



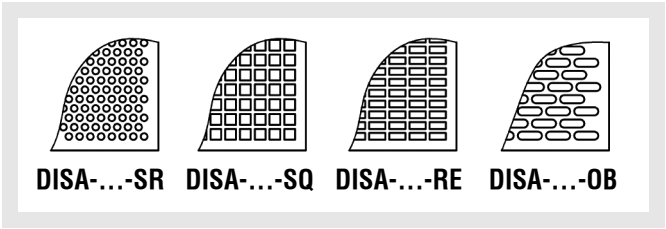
Housing (1): Galvanised sheet steel, with 1 or 2 connection pipes DN 98, 123 (standard) and ø148, position of connection pipes: Horizontal (-H).



Registers (2): 4-pipe system for cooling and heating. The registers consist of copper pipes 12 mm in thickness, aluminium ribs, and a steel frame.



Grilles (3): Perforated sheet grille design made of galvanised sheet steel (perforated sheet grille models: -**SR**, -**SQ**, -**RE** and -**OB**) made of extruded aluminium profile (-**PA**). Both painted to RAL 9010 (white, standard).

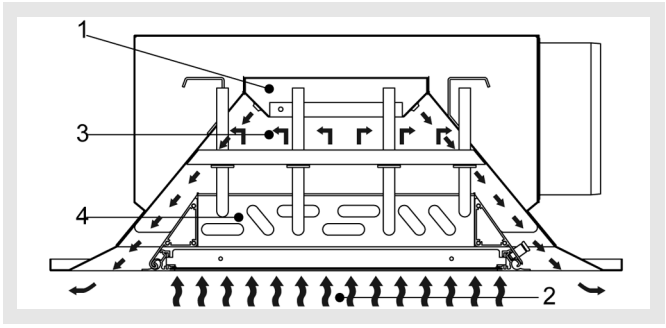


End pieces (4): sheet steel painted to RAL 9010.
Hydraulic connections (5)

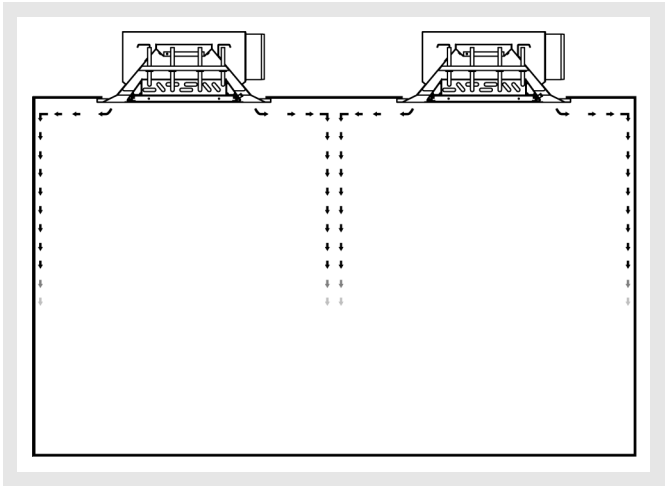
Function

The primary air (1) supplied by the plenum box induces secondary air in the room (2), which is cooled or heated by the register (4). The primary air is mixed with the secondary air. The combined (3) primary and secondary air flows are supplied to the room at low velocity via supply air slots.

Schematic diagram of the mode of action



Schematic diagram of the jet path



Installation, Mounting And Maintenance DISA-P-600HT

Installation and commissioning

Operating conditions

Prior to installation or commissioning of the device, the following operating conditions must be observed:

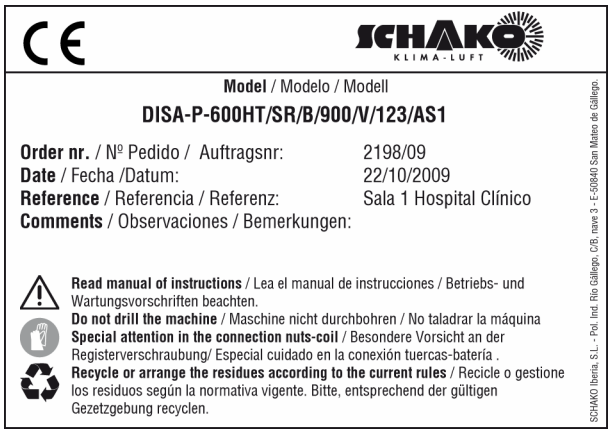
- Cooling or heating fluid: water or glycols (ethylene or propylene) at a concentration below 60%.
- Water inlet temperature: above the dew point to 80°C. (Please note that some quick connectors do not work at water temperatures above 65°C).
- Air inlet temperature: from 2 to 45°C
- Max. operating pressure: 8 bar / 125°C

To prevent deposits and corrosion, the the quality of the water for filling the registers must comply with regulations VDI 2035 and DIN 50930.

Reception of material

Upon reception of the materials, the components must be carefully checked, in order to guarantee that no transport damage has taken place. Moreover, the dimensions, composition and number of the identification plate must be checked as to whether they are as ordered.

Identification sticker:



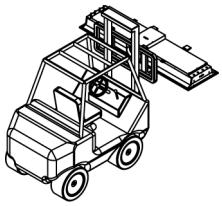
- **SR: Foldable perforated sheet - perforation Ø 6 mm -**
- **B:** Nozzle configuration - B -
- **900:** Length of the device - 900 mm -
- **V:** Connection - vertical, standard -
- **123:** of the connection pipes - 123 mm -
- **AS1:** Number of connection pieces - 1 connection pipe positioned centrally -

To prevent possible damage during transport, the devices will be delivered ex works on pallets (that correspond to the particular weight and dimensions) wrapped with tapes and transparent plastic film. It is recommended leaving this protection in place until the device is commissioned. The openings of the ducts should be sealed with dust caps to avoid penetration of dust and dirt.

Should the device exhibit production-related damage, please contact your local sales office prior to installation.

Transport, lifting and handling

Transport and handling of the unit shall take place in the position in which the unit is to be built in later on, unless expressly stated otherwise on the unit.
Transport, unloading and lifting of the unit shall take place with the necessary care and using tools that are appropriate for the weight and dimensions.



The unit shall only be moved by holding on to the housing. The weight must not rest on the water connections.

SCHAKO cannot be held liable for damage to the unit caused by improper handling or handling not mentioned here, loading or unloading.

Storage

If the device is not installed immediately after its reception, it must be stored according to the following instructions:

- The device must be stored at a dry, clean, safe location where no damage to the device can occur, i.e., outside corrosive atmospheric influences.
- Leave the protections attached ex works (film, tapes, pallets, etc.) on the device, unless they have already been removed beforehand.
- Cover the device with tarpaulins, in order to protect it from dust, moisture and extreme temperatures.
- Entries, openings and pipes must be sealed with dust caps.

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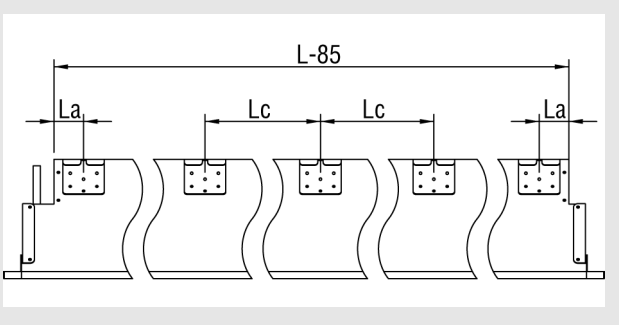
Installation site

The ceiling induction diffusers type DISA-P-600HT is suitable in particular for horizontal installation in false ceiling heights. The devices must not be installed in places with extreme moisture (e.g. laundries or swimming pools), with high dust formation, outdoors or in places subject to explosion hazards.
For correct installation, the following instructions must be followed:

- Make sure that places that are intended as openings for air admission and air discharge are free of pipes, electric cables, crossbeams, stands, etc.
- Install the unit at a site that has good air quality.
- Make sure that wall and ceiling correspond to the weight of the device and also allow correct mounting of the fastening elements in the ceiling.
- The installation site must have sufficient space and the necessary resources for carrying out mounting and maintenance activities of all device components. Ensure easy access to the valves.
- The main hydraulic pipes should be mounted above the device.

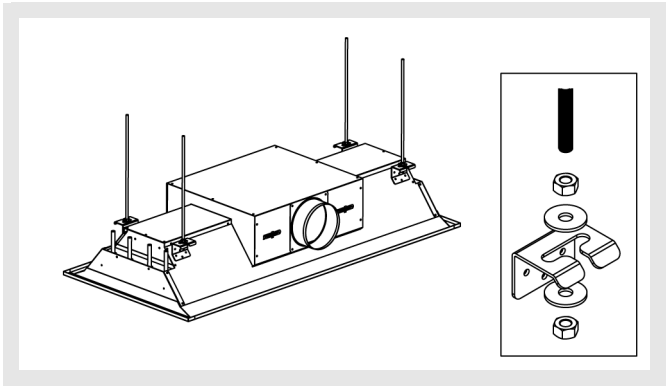
Mounting

The induction diffusers are mounted using threaded bars, nuts and washers M8 on load-carrying ceiling constructions.



L	La (mm)	Lc (mm)	H	
			1 connection piece	2 connection pieces
900	35	-	a	a
1200		-	a	a
1500		-	a	a
1800		-	a	a
2100		350	a,c	a,b
2400			a,c	a,b
2700			a,c	a,b
3000			a,c	a,b

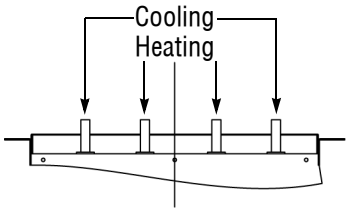
During mounting the end of the register pipes must be sealed to prevent it from dust and dirt.



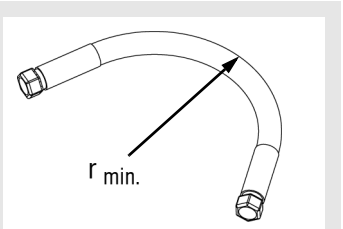
For the installation of the device, use adequate tools, devices and materials and observe the safety regulations and other current regulations.
SCHAKO cannot be held liable for damage resulting from faulty installation or the use of unsuitable fastening devices.

Hydraulic connections

As standard, the cooling circuit pipes are mounted outside and the heating circuit pipes in the middle of the register.



The hydraulic connections can be joined by soldering, pressing (in combination with support sleeves or by means of flexible hoses resistant to oxygen diffusion and push-in fittings. The use of flexible hoses is subject to the manufacturer's specifications.



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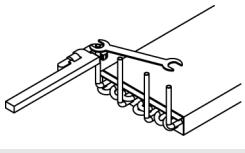
When making the hydraulic connections, suitable tools must be used to avoid excessive tightening or twisting of the register connections.



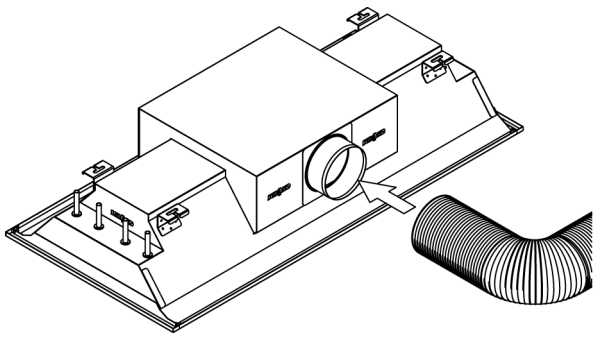
In order to achieve a uniform cooling capacity, the ceiling induction diffusers type DISA-P600HT should be connected to the cold water distribution system in parallel.

When filling the register, make sure that no air remains in the hydraulic circuit by using on-site ventilation devices.
If the unit is to be installed at a location having temperatures below zero degrees, glycol must be admixed to the coolant in a suitable ratio, to ensure that the freezing point of this liquid always stays below the minimum temperature of the operating site. Please note that the use of an antifreeze necessarily results in a loss in performance of the register.

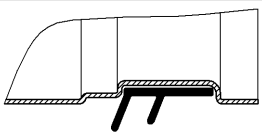
The ceiling induction diffusers type DISA-P-600HT are induction units for "dry cooling". To avoid condensation, the water inlet temperature should be higher than the dew point.

Connecting the air ducts

The air ducts are mounted with clamps, fixing lugs or the like.



Optionally, a rubber lip seal can be installed on the connection pipe, in order to ensure tightness between unit and pipes.



Mounting accessories

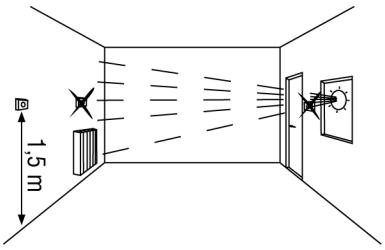
Valves and actuators

Valves and actuators are not installed ex works. For installation, the manufacturer's specifications must be observed.

Temperature controls

The temperature controls are mounted in accordance with the selected model. This is why the instructions enclosed with each model must be followed. However, in order to achieve optimum measurement by the sensors, the following basic information should be observed:

- Do not mount the temperature control close to or above a heat source (direct sunlight, lamps, television sets, radiators, etc.), in places with draught air or directly opposite to an air outlet grille.



- Temperature controls must be mounted at least 1.5 metres above the floor.
- Mounting temperature controls on walls toward the outdoors should be avoided.

Prior to drilling, please make sure that
in the wall no electric cables are present
at the place where the temperature control is mounted.

Condensate monitor

The installation of a condensation monitor depends on the selected model. Please follow the instructions enclosed with each model.

Wrong mounting of the sub-assemblies and of the device accessories can result in a substantial power loss of the unit.

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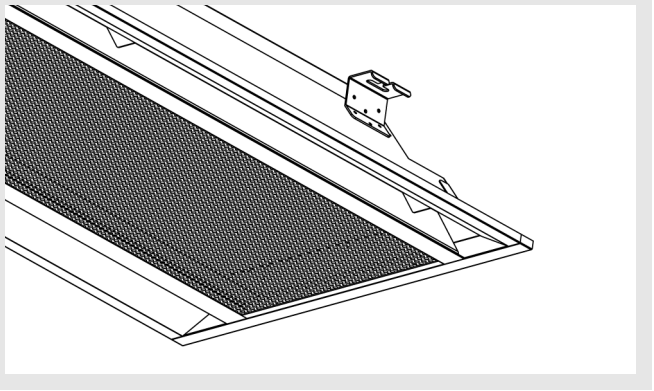
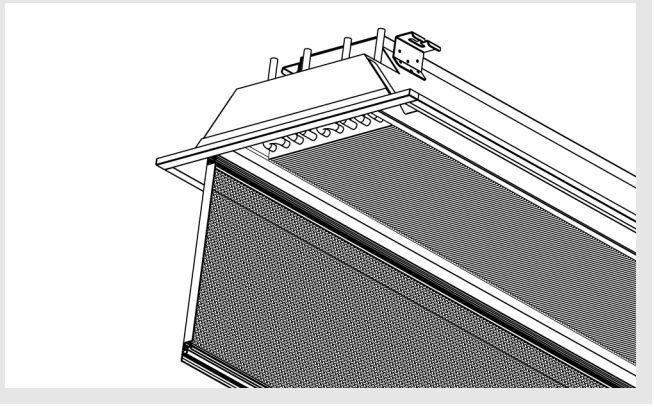
Checks

Prior to commissioning, the following items must be checked or guaranteed:

- Hydraulic connections were tightened properly and exhibit no leaks.
- Connecting and fastening elements have been sufficiently tightened.
- Adequate access for carrying out the maintenance activities has been provided.
- Use the on-site ventilation devices to ensure that no air remains in the register and the circuit.



Once the items mentioned have been completed, the correct fastening of the unit must be checked.

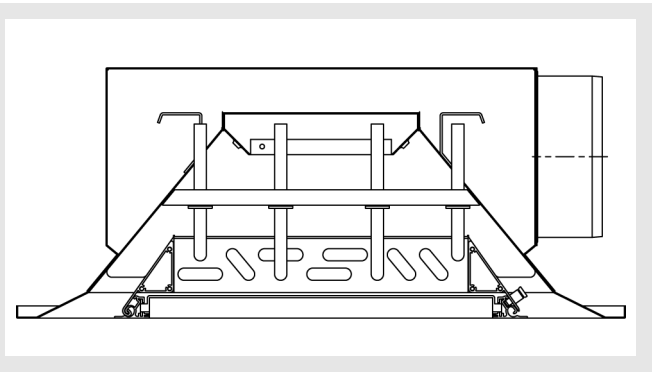


During commissioning itself, the following items must be guaranteed:

- The connecting and fastening elements have been sufficiently tightened.
- In heating mode, the temperature of the discharged supply air is not above 40°C.

Maintenance

For reasons of safety, the power supply and hydraulic circuit must be disconnected prior to any maintenance activity. If the unit was operated in heating mode, you have to wait until the register has cooled down.

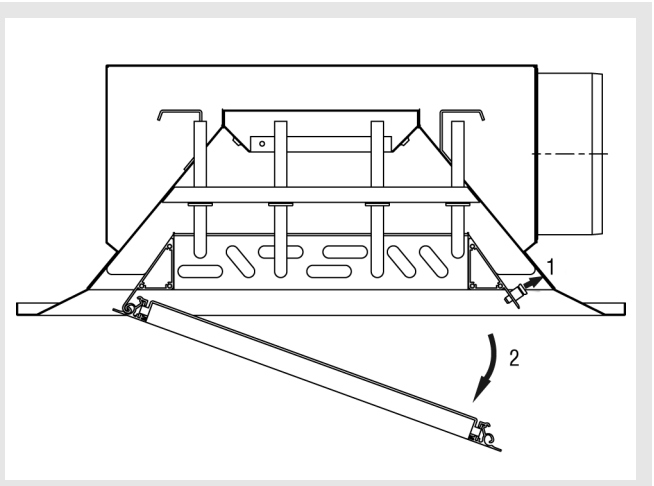


When performing maintenance activities, it is recommended wearing personal protective equipment, in order to avoid cuts and other injuries produced by sharp and pointed parts.

Disassembling the units

The entire DISA-P-600HT is equipped with a series of safety locks which allow the grille to be folded down via a rotating mechanism on one of the profiles for safe execution of maintenance.
The unit is dismounted as follows:

- Open the safety locks.
- Fold the grille down and remove it.
- This makes the grille and the register freely accessible for cleaning purposes.
- After completing the maintenance activity, you must move the grille again to its original operating position and then close the safety locks again.



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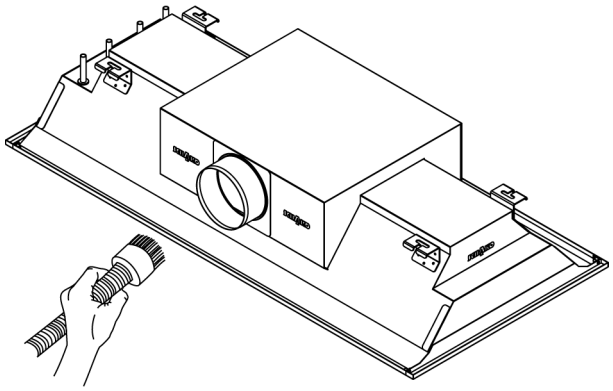
To avoid accidental rotation or folding down of the grille, please check that the locks are properly closed.

For reasons of safety, the power supply and hydraulic circuit must be disconnected prior to any maintenance activity.

Air ducts and plenum box

Clean them by blowing compressed air through them or using non-aggressive cleaners.



Registers

To guarantee the technical characteristics of the device, the registers and heat exchangers must be kept in good clean condition. To ensure this, the following maintenance activities must be carried out:

- If the register should be soiled, it must be cleaned by spraying with water or by using compressed air or by applying vacuum.
- Please do not use any scouring agents for cleaning since these materials may impair or damage the materials of the DISA-P-600HT (galvanised steel, aluminium and copper) and the surface coatings (paints and anodised surfaces).
- If there are larger differences in distance between the ribs, they must be "combed".
- Ventilate the hydraulic circuits of the register. In doing so, watch out for possible leaks of the hydraulic system.

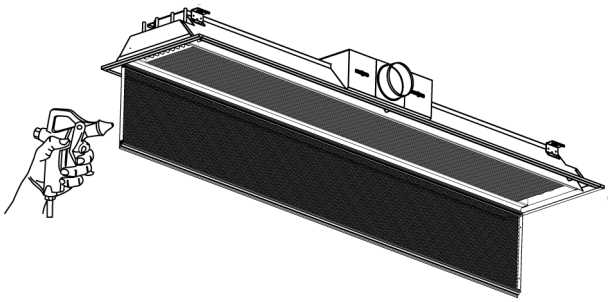
If condensates should be formed, interrupt the hydraulic circuit and perform troubleshooting.

When decommissioning the unit or shutting it down for a longer period in winter, the water must be drained from the unit, in order to avoid damage to the register due to the formation of ice. If you want to use antifreezes, you must first determine the freezing point.

After refilling the register, the installer should make sure that no air remains in the hydraulic circuit by using the on-site ventilation devices.

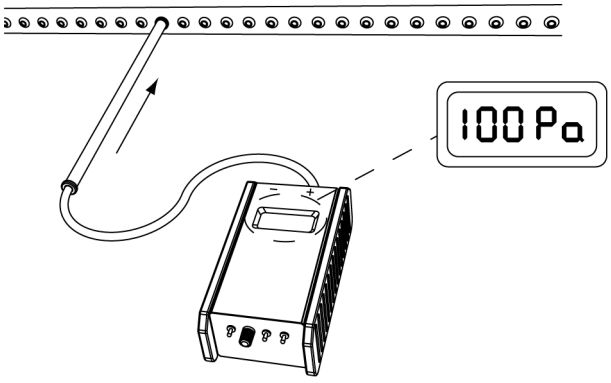
Grille

Clean them by blowing compressed air through them or using non-aggressive cleaners.



Checking the primary volumetric flow

The supplied primary volumetric flow can be easily checked by checking the static pressure with a Pa measuring instrument and the measuring tube available from us as accessory.
To this end, one end of the measuring tube provided with a rubber cap is pressed against the air outlet of one of the nozzles of the primary air box (see drawing) and the other end connected to the Pa measuring instrument using the hose connection.



The values read on the measuring instrument and the following formula can be used to determine the volumetric flow:

$$V = K\sqrt{Ps}$$

V [l/s] = Primary air flow
Ps [Pa] = Static pressure

The K value is taken from the following table:

	L (mm)							
Nozzle configuration	**900**	**1200**	**1500**	**1800**	**2100**	**2400**	**2700**	**3000**
B	0,71	1,06	1,35	1,69	1,98	2,27	2,59	2,90
C	1,32	1,96	2,50	3,14	3,68	4,21	4,80	5,39
D	1,97	2,92	3,72	4,67	5,48	6,28	7,15	8,03
E	3,32	4,91	6,26	7,86	9,21	10,56	12,03	13,51

The Pa measuring instrument is not included in the delivery.

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Troubleshooting

Problem	Possible cause	Solution
The unit does not cool or heat sufficiently	Air inlet and outlet of the inner unit clogged	Remove foreign material and clean the unit
	Air in the interior of the register	Ventilate the hydraulic system Please inform the installer
	Unfavourable installation or faults on the temperature control or sensor	Install thermostat in a different place
	Clogging in the interior of the unit or at the air inlet	Remove foreign material and clean the interior of the unit
The unit is losing water	The unit has not been installed with the correct inclination	Please inform the installer
	Condensate in the register	Modify the water inlet temperature
	The water circuit of the register is leaking	Please inform the installer
	Register damaged	
	Incorrect valve or hydraulic connection	
The unit is working with too much noise	The air intake or air blow openings or the lines are clogged.	Remove foreign material and clean the unit
	Loose screws and fastening elements	Tighten screws
	Foreign material or dirt on register surface	Remove foreign material by careful brushing .

EG-DECLARATION OF CONFORMITY

[FOR CE MARKING]

FERDINAND SCHAD KG WITH ITS HEADQUARTERS IN
Steigstraße 25-27
D-78600 Kolbinge
(GERMANY)

HEREBY DECLARES THAT THE DESIGN AND CONSTRUCTION OF THE

air treatment units

DISA-P-600HT

COMPLY WITH THE FOLLOWING REGULATIONS:

- Machinery Directive: 2006/42 EC
- Directive on General Product Safety: 2001/95/EC

APPLICABLE HARMONISED REGULATIONS:

- **DIN-EN-ISO 12100 SAFETY OF MACHINERY** - Safety of Machinery - Basic terms, general principles of design - Part 1: Basic terminology, methodology
- **DIN-EN-ISO 12100 SAFETY OF MACHINERY** - Safety of Machinery - Basic terms, general principles of design - Part 2: Technical guiding principles
- **EN-ISO 13857:2008 SAFETY OF MACHINERY** - Safety distances to prevent hazard zones from being reached by upper and lower limbs
- **EN ISO 14121-1:2007 SAFETY OF MACHINERY** - Risk assessment - Part 1: Guiding principles

Signed:

Dr. Marcus Müller.
Kolbingen, 2011