INSTALLATION, MOUNTING AND MAINTENANCE

NBS

Fan coil unit

GENERAL INFORMATION

--- Prior to 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. Non-observance can result in damage to the device and personal injuries.
--- If, after reading through the manual, you have further questions, please contact the manufacturer or the local sales office.
--- The inspection, installation, connection and commissioning of the device must be carried out by qualified skilled personnel only in compliance with the current regulations.
--- Do not spray the device with liquids.
--- Do not operate the device with wet or moist hands.
--- Do not change any control or safety elements without prior approval by the manufacturer or the local sales office.
--- Electric and hydraulic connections and their correct functioning are the responsibility of the installer.

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.

LIMITATION OF LIABILITY

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.

EXPLANATION OF SYMBOLS


Hazard warning


Important information


Caution, electric power


Safety information


Recycling

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IDENTIFICATION OF THE DELIVERED MODEL

The NBS series of air-conditioning units consists of two model series: the modular NBS-100 and the compact NBS-150.

Register (a): Option of installing a single register (cooling or heating) or two registers (cooling and heating). They consist of copper pipes, aluminium ribs, a ventilation system and a steel frame. The water connections are located on the right-hand or left-hand side.

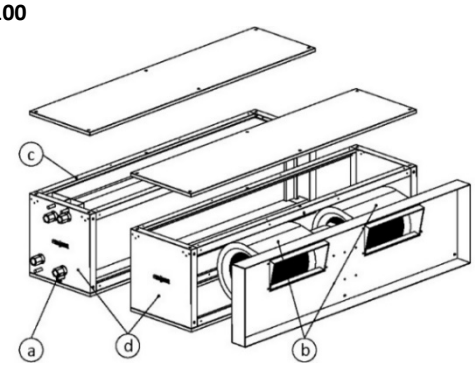
Motorised fan (b): Double-sided intake-operated dynamically balanced centrifugal blower with forward bent blades. With 5 speed levels (NBS-100) and with 3 speed levels (NBS-150).

Filter (c): Has filter of efficiency ISO Coarse (ISO 16890) and consists of a galvanised steel frame and a synthetic filter medium.

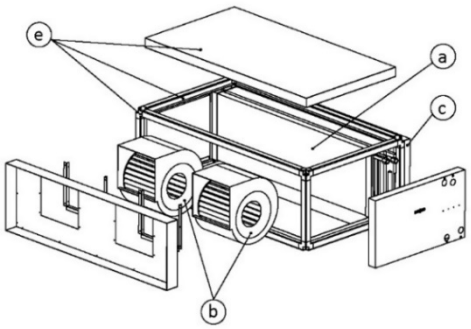
Housing of the -100 series (d): Made of of galvanised sheet steel profiles and plates and heat and sound insulation 12 mm in thickness. It is equipped with mounting brackets for ceiling fastening.

Housing of the -150 series (e): Consists of aluminium profiles, galvanised sheet steel, plastic corner pieces and a circumferential seal to guarantee tightness. The covers in sandwich design consist of a heat and sound insulation of 28 mm. The vibration dampers should be dimensioned on the basis of the weight of the device, divided by the number of fastening points.

NBS-100

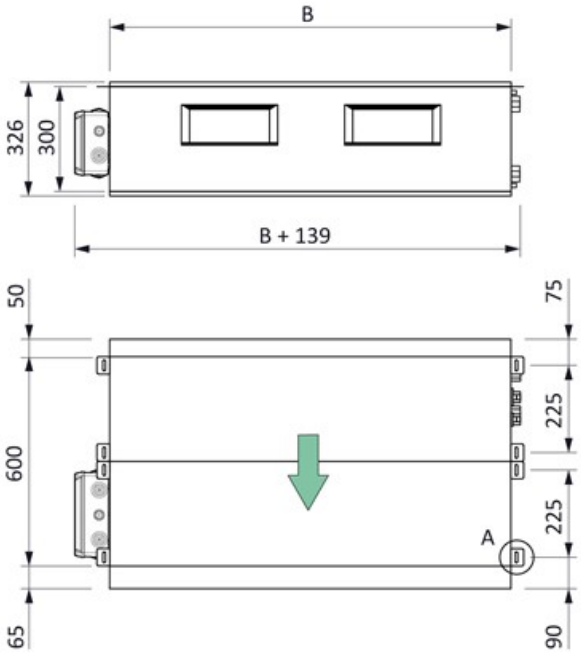


NBS-150

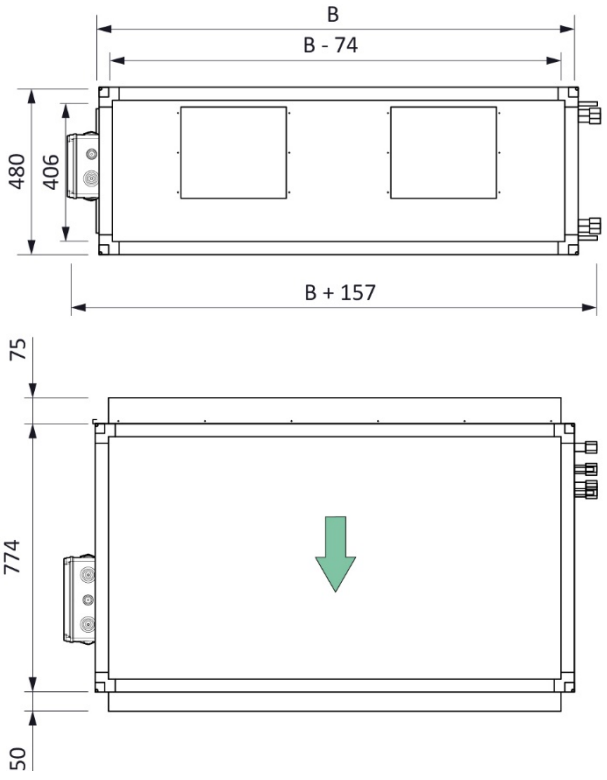


DIMENSIONS

NBS-100



NBS-150



Model	**B** (mm)
-100-1	680
-100-2	1150
-100-3	1660
-150-1	874
-150-2	1374
-150-3	1824

Construction subject to change.
No return possible.

INSTALLATION AND COMMISSIONING

OPERATING CONDITIONS

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

--- Coolant or heating fluid: water or glycols (ethylene or propylene) at a concentration below 60%.
--- Water inlet temperature: from 6 to 45°C.
--- Max. air outlet temperature: 40 °C
--- Max. operating pressure: 8 bar
--- Maximum relative humidity in the environment: 60%

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

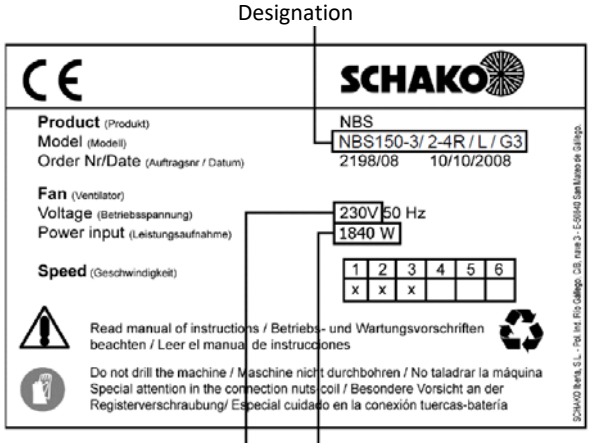
MATERIAL RECEPTION

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 sticker must be checked as to whether they are as ordered.

Identification label

Designation



Operating voltage power consumption

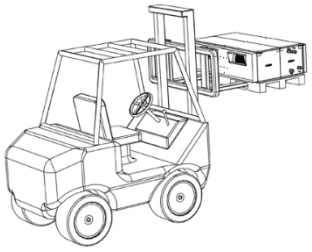
Should the device exhibit production-related damage, please contact your local sales office prior to installation.

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.

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.



	Weights (kg)				
	Device unit	Plenum box (300 mm)	Mixing unit	Cooling register	Heating register
-100-1	36	9	19	1.9	1.0
-100-2	56	13	24	3.4	1.7
-100-3	75	17	30	5.0	2.6
-150-1	57	11	20	3.5	1.7
-150-2	77	15	26	5.8	3.0
-150-3	98	19	33	7.8	4.0

The unit shall only be kept in position or moved by holding on to the housing. The weight must not rest on the condensate pan or 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.

Please separate and recycle the packaging materials in accordance with regulations.

STORAGE

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

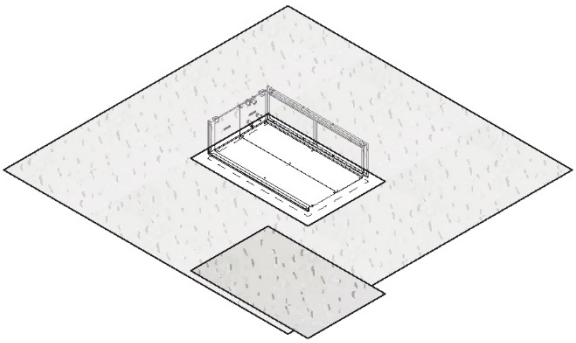
--- The device must be stored at a dry, clean, safe location where no damage to the device can occur, i.e., outside corrosive atmospheric influences.
--- Leave the protections attached ex works (film, tapes, pallets, etc.) on the device, unless they have already been removed beforehand.
--- Cover the device with tarpaulins, in order to protect it from dust, moisture and extreme temperatures.
--- Rotate the fan rotor at regular intervals.
--- Protect the electric components adequately. In case of storage over a prolonged period of time, remove the electric unit and store it at a dry location.
--- Entries, openings and pipes must be hermetically sealed with dust caps.

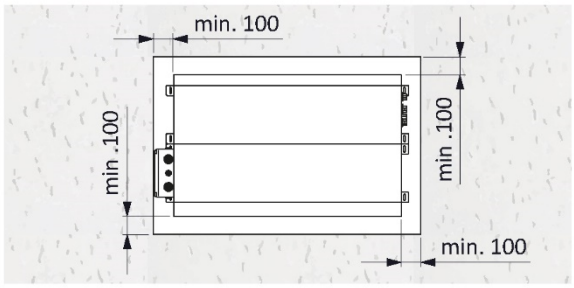
MOUNTING POSITION

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.
--- Make sure that there is sufficient clearance distance to the wall and no obstacles are present on the outside of the wall that could impair optimum air circulation (plants, furniture, curtains, etc.).
--- Install the device such that the air flow is not directed directly at persons staying there.
--- The installation site must have sufficient space and the necessary resources for carrying out mounting and maintenance activities of all device components.





	Recommended size for inspection opening (mm)
-100-1	880 x 915
-100-2	1350 x 915
-100-3	1860 x 915
-150-1	1074 x 1099
-150-2	1574 x 1099
-150-3	2024 x 1099

INSTALLATION

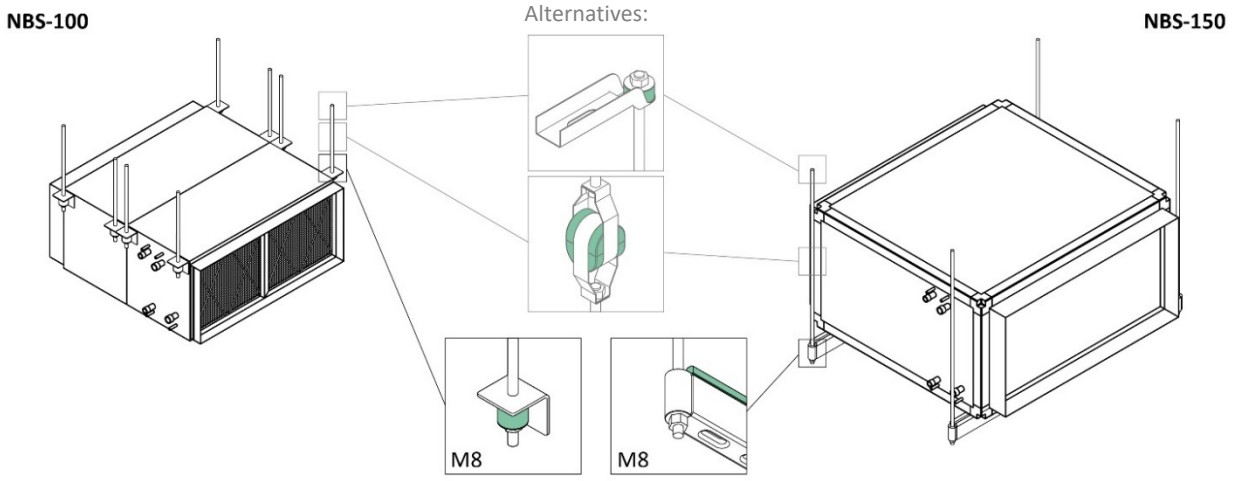
The NBS units have been designed for mounting on the ceiling by means of anchoring elements (e.g. set screws). To avoid damage to the unit and structure-borne noise transmission, it is also recommended using vibration dampers.

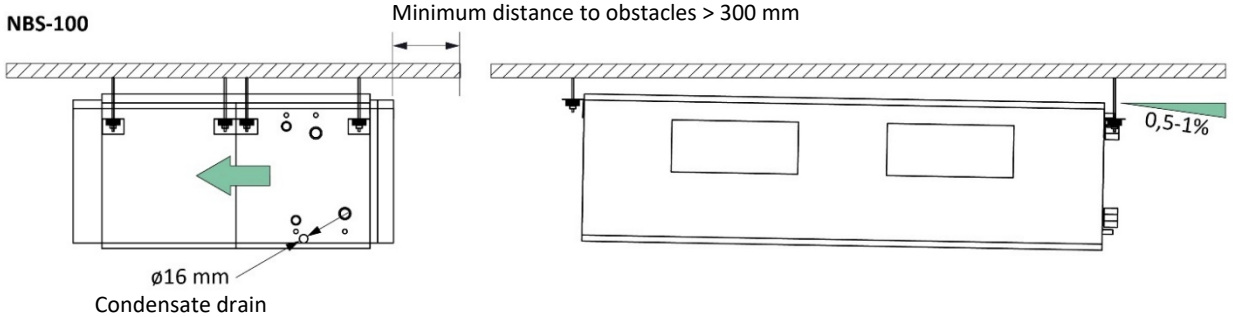
The device must be mounted at an inclination of 0.5 % - 1 % to ensure draining of the water of condensation. Non-observance of the device inclination may result in serious damage to the device and cause water to enter the air ducts. Check whether the condensate pan is completely emptied by partly filling it.

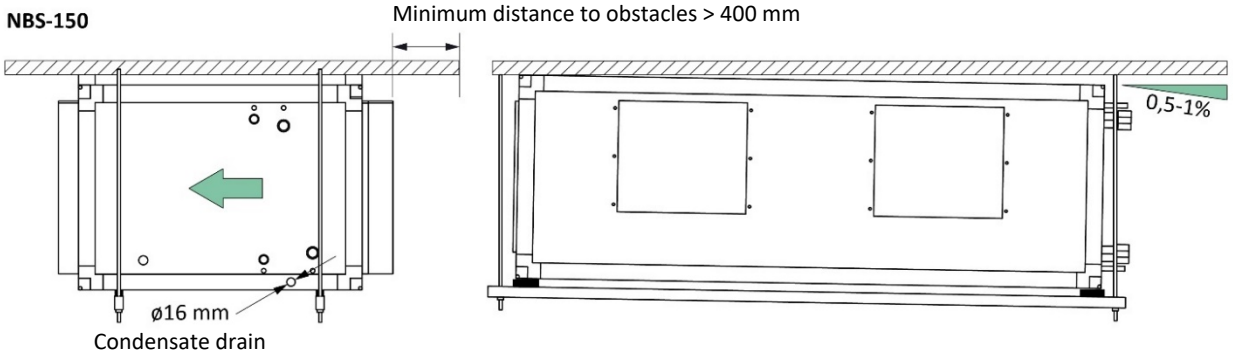
The threaded rods, screws or vibration damping fixing elements required for installation are not included in the delivery. The vibration dampers should be dimensioned on the basis of the weight of the device, divided by the number of fastening points. SCHAKO cannot be held liable for damage resulting from faulty installation or the use of unsuitable fastening devices.

Before making electric or hydraulic connections, the power supply must be disconnected and secured against being switched on again.

For the installation of the device, use adequate tools, devices and materials and observe the safety regulations and other current regulations.





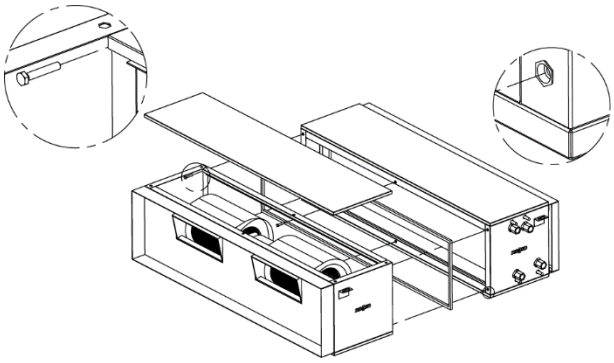


CONNECTING THE SUB-ASSEMBLIES

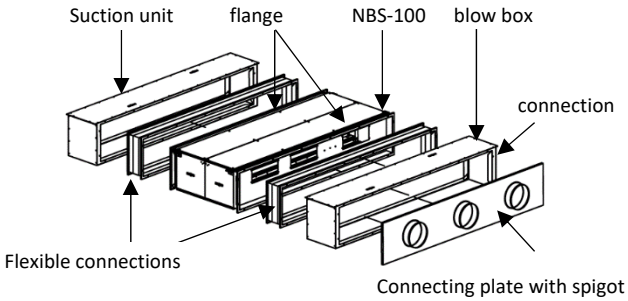
Before assembling the individual sub-assemblies, their condition must first be checked.

This is followed by arranging the modules in the same order in which they are to be assembled. This is followed by moving them next to each other, arranging them and finally joining them using the screws and nuts enclosed with the unit by passing them through the lateral or bottom openings of the modules.

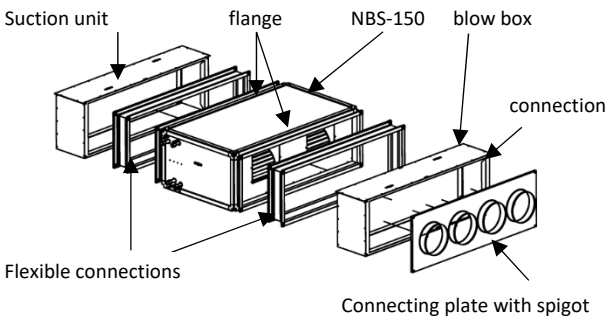
As standard, i.e., without express order, the assembly of the sub-assemblies takes place ex works.



NBS-100



NBS-150

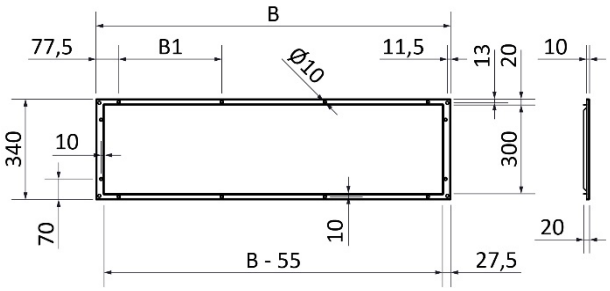


Flexible connections / flange

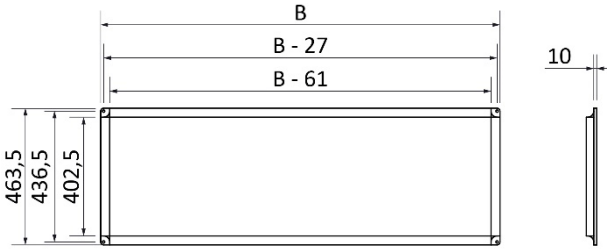
Flexible connections that prevent a transmission of vibrations to the system can be additionally delivered as an option.

Flange

NBS-100

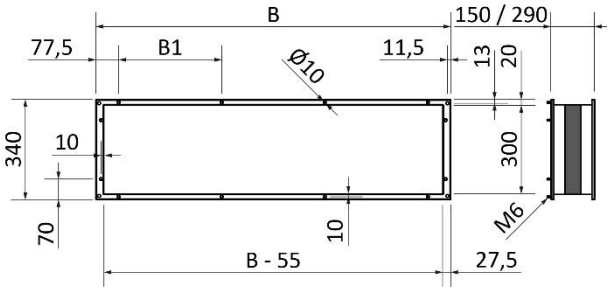


NBS-150

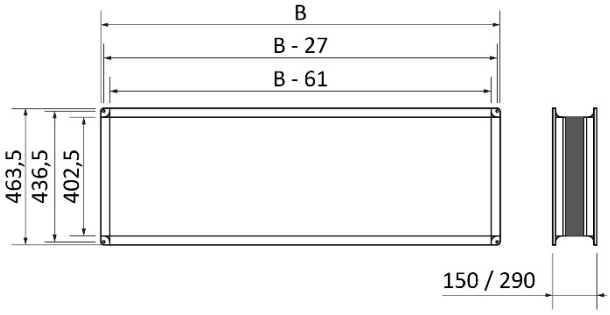


Flexible connections

NBS-100



NBS-150



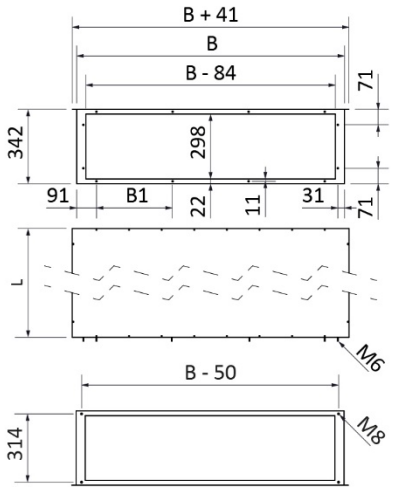
Model	B (mm)	B1 (mm)	Number of bores
-100-1	735	290	10 (+4 METU)
-100-2	1205	350	12 (+4 METU)
-100-3	1715	312	16 (+4 METU)
-150-1	857	-	4
-150-2	1357		
-150-3	1807		

Supply air and return air boxes

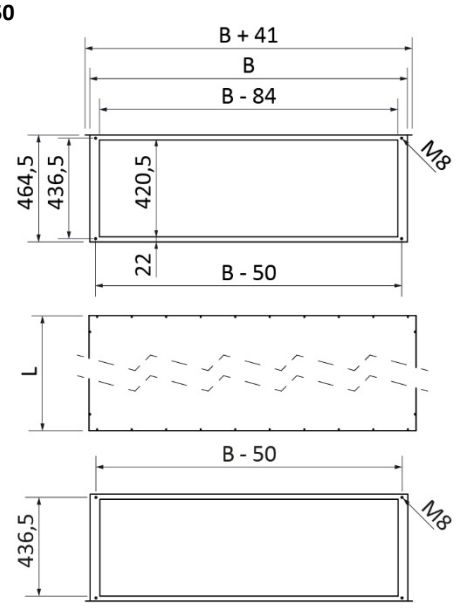
In the NBS-100, the plenum boxes are connected as follows:
--- Place the plenum box in front of the main element (flange or flexible connection) it is supposed to be connected to and align them.
--- Screw down both, making sure to obtain a firm connection.

In the NBS-150, the plenum boxes, after prior alignment, are mounted by screwing them to the flange of the main unit.

NBS-100



NBS-150



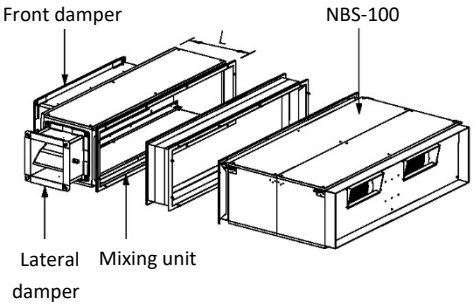
	B (mm)	**B1** (mm)	**bores**
-100-1	762	290	10
-100-2	1232	350	12
-100-3	1742	312	16
150-1	880	-	4
150-2	1380		
150-3	1830		

Before connecting the plenum boxes, make sure that the seal at the plenum box frame is in good condition.

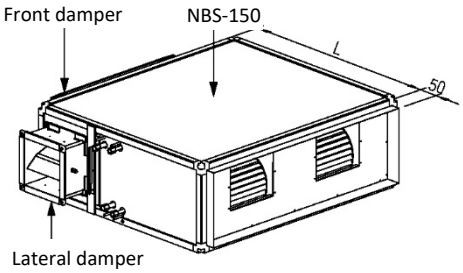
Upon customer request, the plenum box of the NBS-100 and NBS-150 can be delivered pre-installed ex works.

Mixing unit

NBS-100



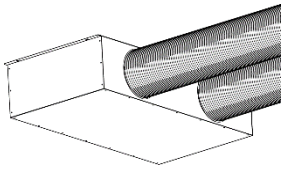
NBS-150



	L (mm)	**Front damper**	**Lateral damper**
-100-1	370	HK 401 x 201	HK 201 x 201
-100-2		HK 711 x 201	
-100-3		HK 894 x 201	
-150-1	1180	HK 503 x 201	HK 252 x 252
-150-2		HK 797 x 201	
-150-3		HK 1003 x 201	

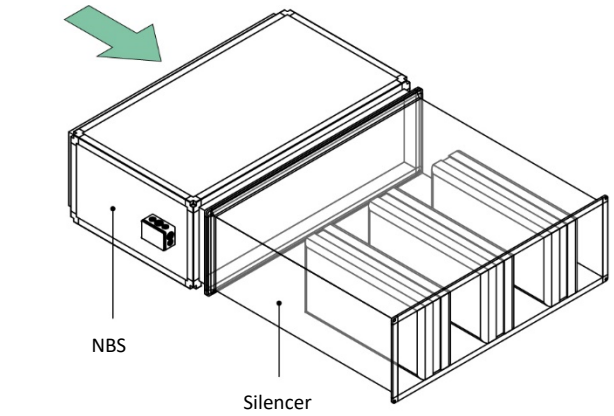
Connecting the air ducts

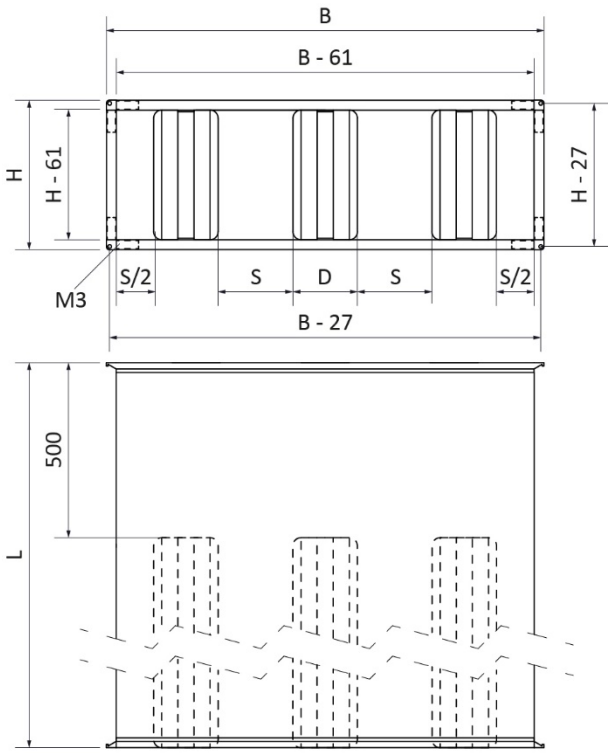
The NBS (if specified in the order) is equipped with a mounting frame for attaching the air duct. For plenum boxes with connection spigot, the air ducts are mounted by means of clamps, fishplates or the like.



To give the system greater tightness, it is recommended using seals on the air ducts.

Silencer



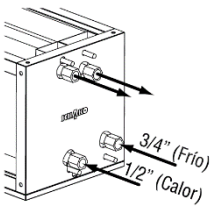


	B (mm)	**H** (mm)	**D** (mm)	**N**	**L** (mm)
-100-1	739	341.0	100	4	1000 1250 1500 1750 2000 2250 2500 3000
			200	2	
-100-2	1209		100	8	
			200	4	
-100-3	1719		100	11	
			200	6	
-150-1	857	463.5	100	5	
			200	3	
-150-2	1357		100	9	
			200	5	
-150-3	1807		100	12	
			200	6	

N = maximum number of baffles | S = gap width

HYDRAULIC CONNECTIONS

Upon customer request, the water connection to the registers can be established in air flow direction on the left or right-hand side of the unit. The water inlet is at the bottom and the water outlet at the top.



The pipe connections of the device should be insulated on-site to prevent the formation of condensates.

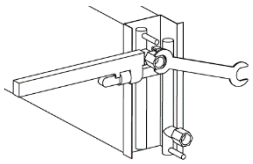
The register threads correspond to standard EN 10226:
Heating: external pipe thread EN 10226 R1/2.
Cooling: external pipe thread EN 10226 R 3/4.

The registers are equipped ex works with a manual bleed valve. Any further devices for ventilation must be provided on-site.

If flexible connections are to be used, observe the bend radius specified by the manufacturer.

When making the hydraulic connections, suitable tools must be used, to avoid a rotation or other movements of the register connection and excessive tightening of the connections.

Avoid putting the register connections under stress as a result of the weight of the connection pipes.



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 prevent the coolant from becoming frozen. Please note that the use of an antifreeze results in a loss in efficiency of the register.

Use the ventilation devices to ensure that no air remains in the water circuit.

For operation with external air, appropriate measures must be taken on-site to guarantee that the registers cannot freeze.

ELECTRIC CONNECTIONS

Prior to the electrical installation, you have to make sure that the rated mains voltage is 230 V AC, 50/60 Hz and is single-phase.

SCHAKO recommends the exclusive use of copper cables, since the device connections have not been designed for accommodating other types of cables. If they are used nevertheless, galvanic corrosion or generation of heat could take place at the connection point, thus resulting in damage to the unit.

The electric connections must be made by qualified electricians only, observing the current standards and regulations as well as the low-voltage regulations.

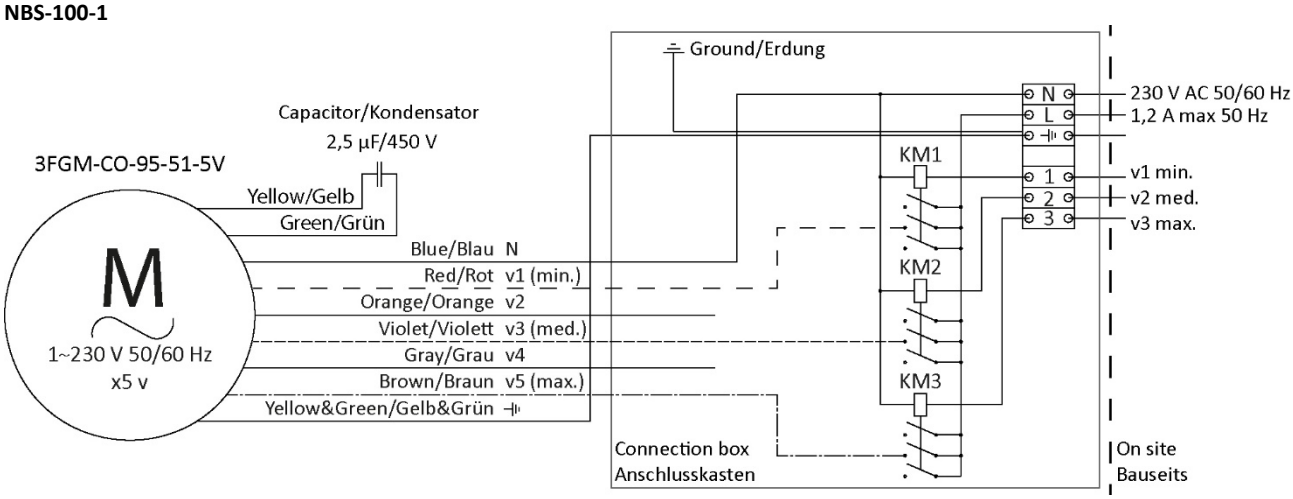
Connect the NBS via an earthing cable.

SCHAKO cannot be held liable for faulty electrical connections or if the power supply cable is replaced with a different cable having different characteristics.

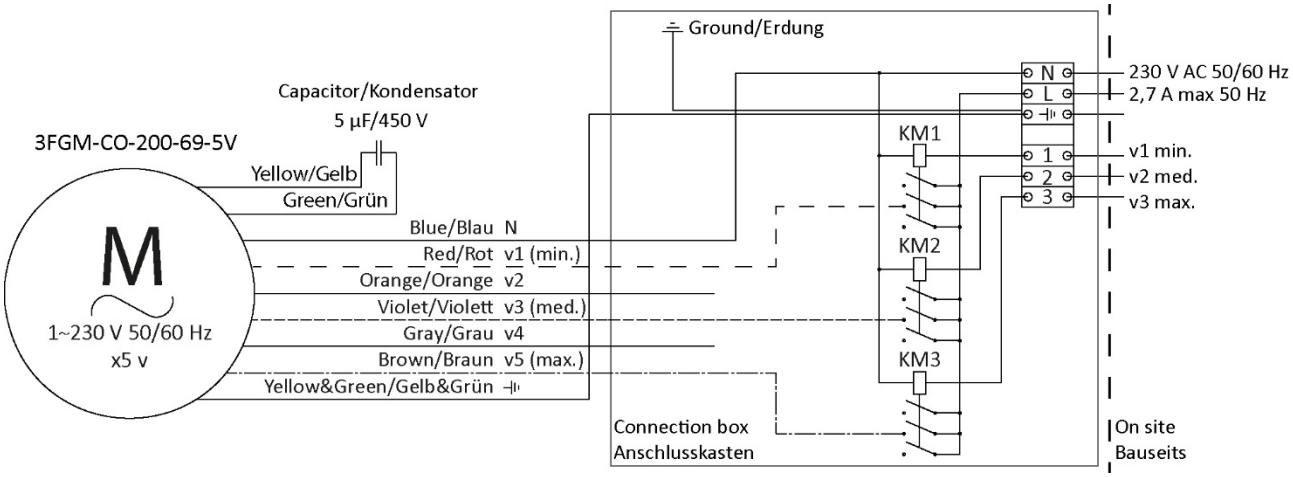
According to DIN EN 60335-1, an all-pole disconnecting device must be provided by the customer,

Product size	-100-1	-100-2	-100-3	-150-1	-150-2	-150-3
Supply voltage	230 V AC, 50/60 Hz single-phase			230 V AC, 50 Hz single-phase		
Type of insulation	Type B			Type B		
Type of motor	5 speeds			3 speeds		
Type of protection	IP20			IP55		
Max. allowed current intensity (A)	1.20 A	2.70 A	3.70 A	1x 3.40 A	2x 3.40 A	3x 3.40 A
Air temperature range (°C)	-20 ˚C < T < +40 ˚C			-20 ˚C < T < +40 ˚C		

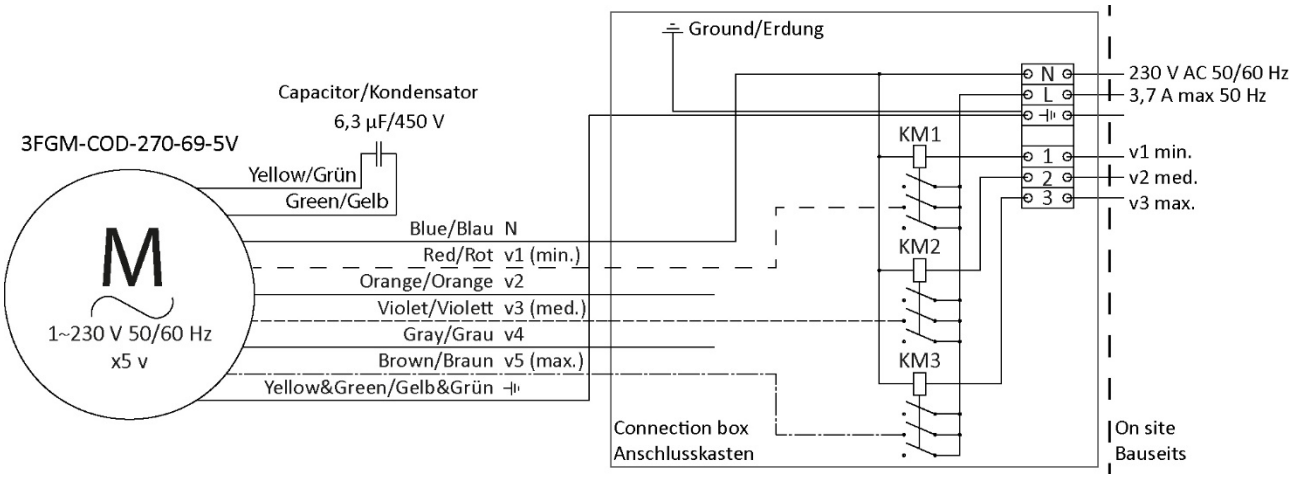
NBS-100-1



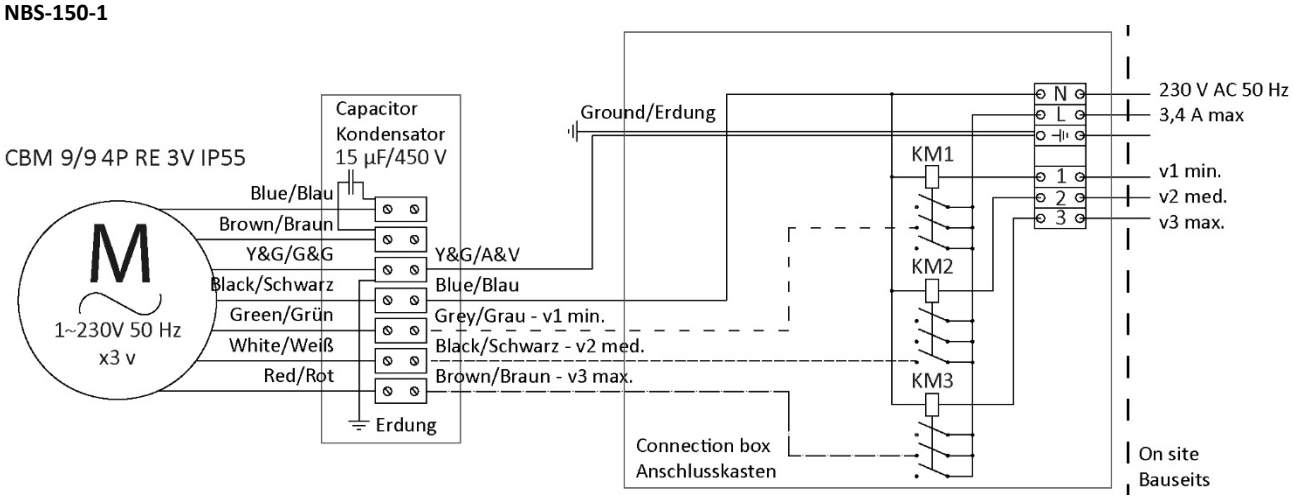
NBS-100-2



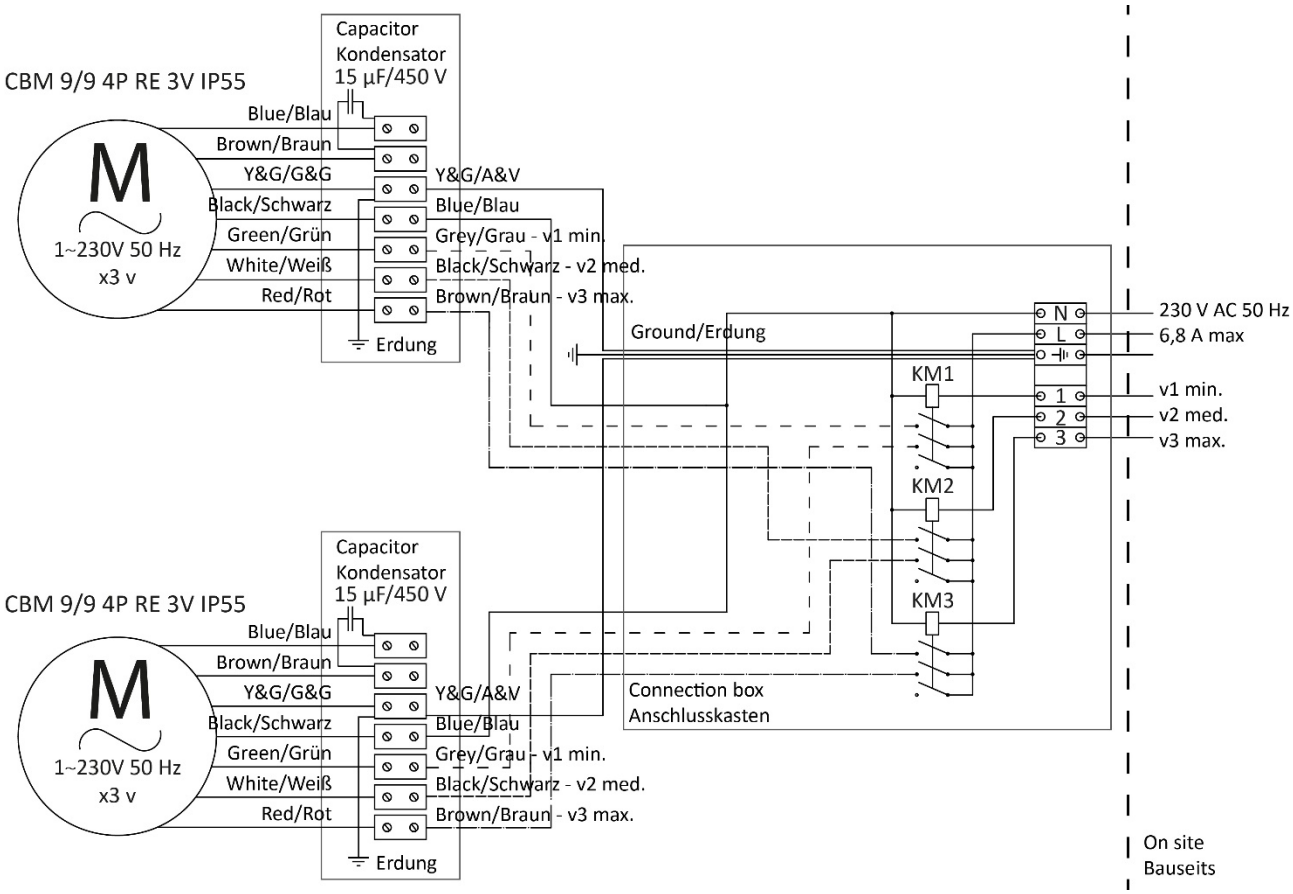
NBS-100-3



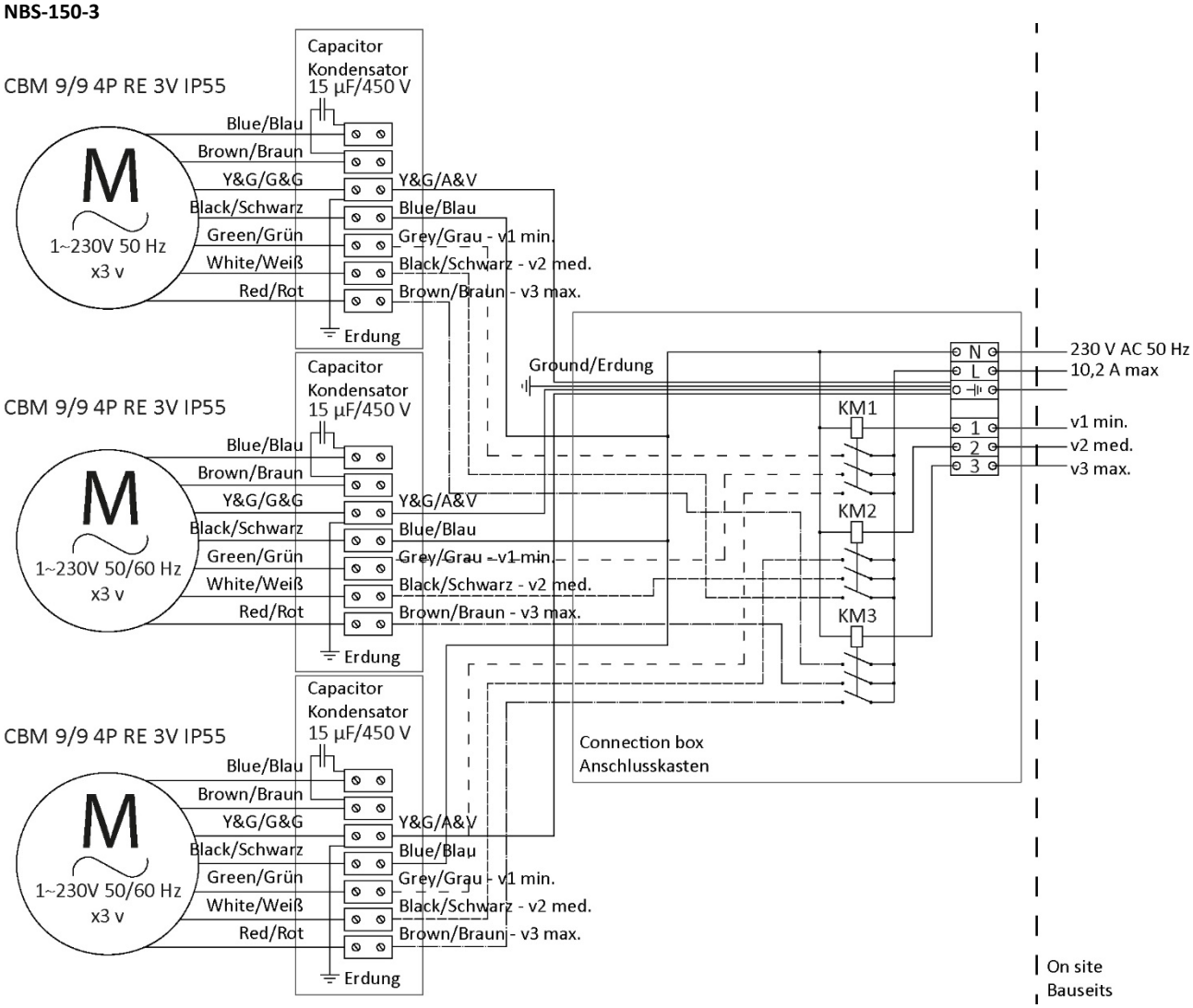
NBS-150-1



NBS-150-2



NBS-150-3


CBM 9/9 4P RE 3V IP55
Capacitor
Kondensator
15 µF/450 V
Blue/Blau
Brown/Braun
Y&G/G&G
Black/Schwarz
Green/Grün
White/Weiß
Red/Rot
1~230V 50 Hz
x3 v
Erdung
Y&G/A&V
Blue/Blau
Grey/Grau - v1 min.
Black/Schwarz - v2 med.
Brown/Braun - v3 max.
CBM 9/9 4P RE 3V IP55
1~230V 50/60 Hz
x3 v
CBM 9/9 4P RE 3V IP55
1~230V 50/60 Hz
x3 v
Ground/Erdung
KM1
KM2
KM3
N
L
1
2
3
230 V AC 50 Hz
10,2 A max
v1 min.
v2 med.
v3 max.
Connection box
Anschlusskasten
On site
Bauseits

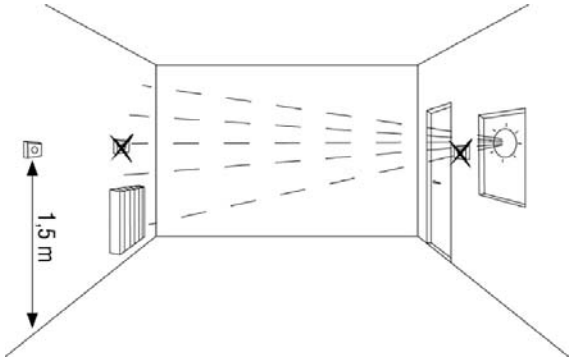
ACCESSORIES

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 diffuser 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.

Before drilling, make sure that no power, water or gas lines are present where the temperature controls are to be mounted.



Valves

Valves ordered as accessories are supplied loose. Please observe the attached mounting instructions of the manufacturer. On-site insulation of valves and connections.

Actuators

The installation of the actuators depends on the selected model. Please follow the instructions enclosed with each model.

Condensate pump

The installation of the condensate pump depends on the selected model. Please follow the instructions enclosed with each model.

Upon customer request, the condensate pump can be installed ex works.

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

If the main water drain is above the level of the NBS drain, a condensate pump has to be mounted.

CHECKS

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

--- The air flow through the filters is not impaired by foreign material (paper, packaging residues, etc.).
--- The current consumption of the device is not higher than the power of the electric circuit it is connected to.
--- The electrical properties of the device correspond to those of the electrical connection circuit.
--- Electrical connections were made correctly.
--- Hydraulic connections were tightened properly and exhibit no leaks.
--- The drain pipe of the condensate pan is not clogged.
--- Connecting and fastening elements have been sufficiently tightened.
--- There is a sufficient gradient for the condensate pan to be emptied correctly. (Check whether it is completely emptied by partly filling it).

After carrying out the items described above, the correct installation of the unit must be checked.

During commissioning itself, the following items must be guaranteed:

--- The connecting and fastening elements have been sufficiently tightened.
--- The motorised fan does not exhibit any vibrations or excessive noise.
--- The condensate pan is emptied correctly.
--- In heating mode, the temperature of the discharged supply air is not above 40°C.

MAINTENANCE

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.

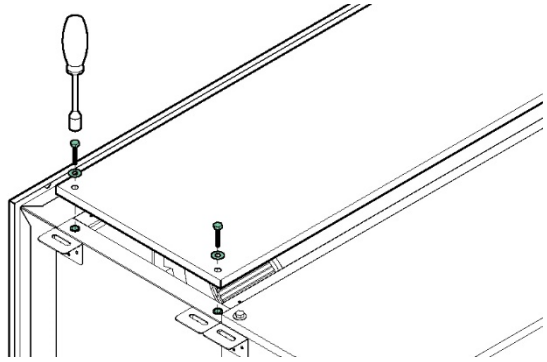
For reasons of safety, the power supply and hydraulic circuit must be disconnected and secured against being switched on again prior to any maintenance activity. If the unit was operated in heating mode, you have to wait until the register has cooled down.

DISASSEMBLING THE UNITS

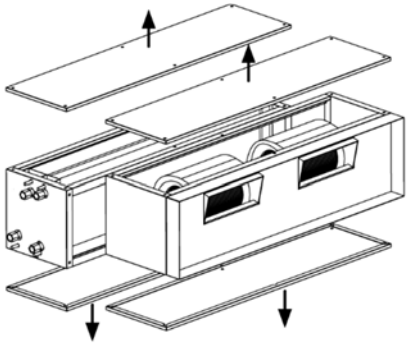
If the maintenance area as described in *Mounting position* is provided, the maintenance and replacement work should take place according to the following instructions, without having to hang the device:

NBS-100 (modular)

1. Remove the connection screws of the top and bottom covers.



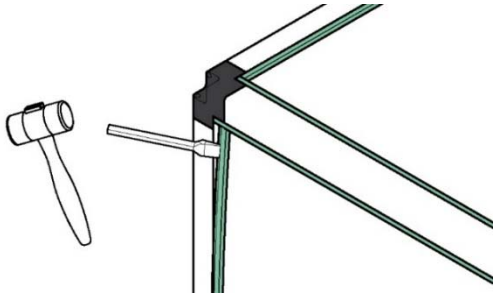
2. Take out the module due for maintenance.



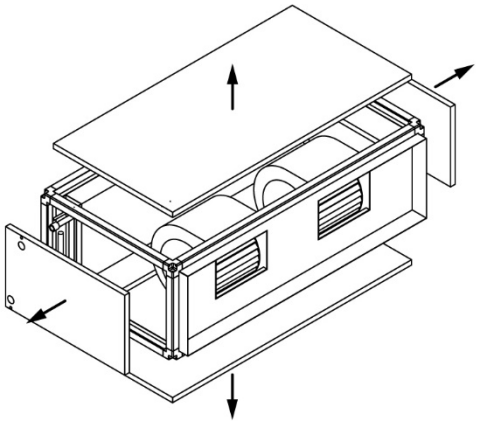
3. Mounting takes place in reverse order after completing maintenance.

NBS-150 (compact)

1. Remove the attachment strip of the sandwich panel using the screwdriver.



2. The module due for maintenance is accessible, from which the sandwich panel can be taken out from the device (inner sheet metal, insulation and outer sheet metal). After removing the lower panel, free access to the unit is made.



3. Mounting takes place in reverse order after completing maintenance.

For maintenance, service, retrofitting, etc., inspection openings in sufficient number and size must be provided on site. As given in *Mounting position* .

If the distance between the ceiling and the topside of the unit is so small that the top cover cannot be taken off, the entire NBS must be taken down. In this case, follow the above instructions.

It is recommended recycling the device components at the end of service life of the device as much as possible or reuse them.
Components that cannot be recycled must be properly disposed of by an authorized disposal company in accordance with current legal regulations.

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:

--- Check the condition of the register at least each time the filter is changed.
--- Should the register be dirty, clean it by spraying it with water or with compressed air or by suction.
--- 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.

It is not the manufacturer's strategy to give special recommendations for the water treatment (contact a company specialised in water treatment).
The use of untreated or unsuitable water may result in excessive soiling of the register pipes (earth and mud deposits, corrosion, etc.), which may have a considerable effect on the heating capacity of the unit and cause material damage that cannot be undone.
When using untreated water or water that has been treated improperly, the manufacturer or his representative cannot be held liable.

MOTORISED FAN

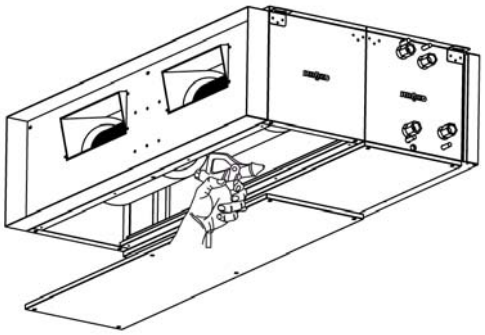
The motorised fan does not require any special maintenance, as it is equipped with self-lubricating bearings. However, the blades and the rotor of the motor must be checked at regular intervals as to whether they are free of dirt. If required, they are cleaned with compressed air.

If the operating conditions of the fan change (speed, pressure, temperature, etc.), consult SCHAKO's local sales office as to whether the unit can still be safely operated under these conditions.

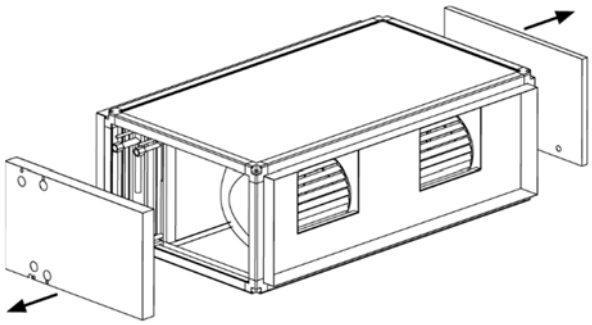
CONDENSATE PAN

Twice a year, the condensate pan must be checked for formation of algae, to prevent possible clogging of the drain pipe. Check whether the pan is completely emptied by partly filling it.

NBS-100 (modular)
To clean the condensate pan, remove the plate attached to the bottom side of the motorised fan unit.



NBS-150 (compact)
To clean the condensate pan, remove the lateral plate attached to the opposite side of the register hydraulic connections.



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.

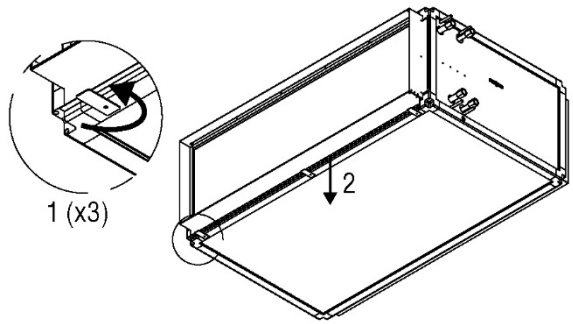
Any maintenance work and intervals depend on the valid standards and guidelines, e.g.: VDI 6022.

FILTER

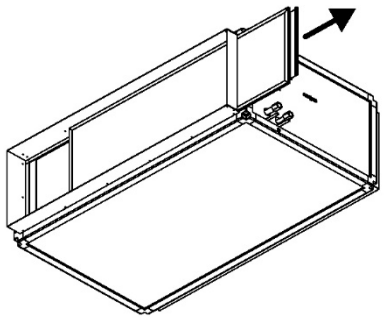
To prevent a pressure drop in the device, the filters must be replaced at regular intervals. This is why you always should have replacement filters ready, in order to avoid longer downtimes or operation without filters.

The service life of the filter depends on its efficiency and the dirt particles deposited there.

Removal of the filters from the bottom side of the device: First turn the supporting elements (1) and then pull out the filters using the handles (2) provided for this purpose in the filters.



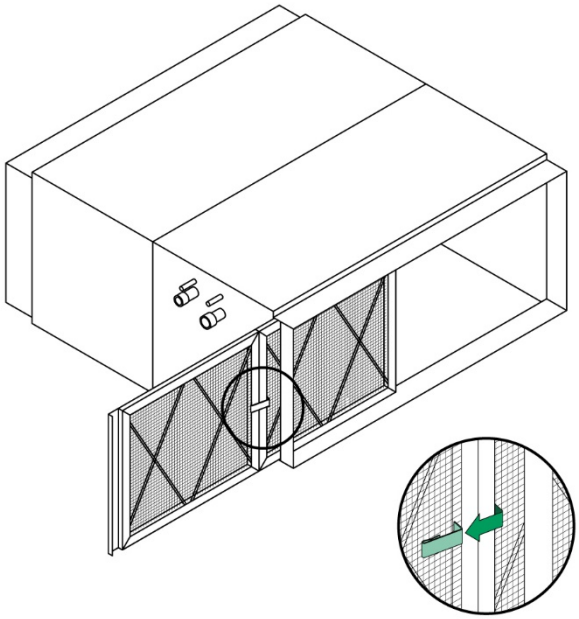
Removal of the filters from the lateral or top side of the device: Pull out the filters using the handles provided for this purpose in the filters.



	Filter components			
	Filter removal upwards and downwards		Filter removal sideways	
	St.	Dimensions	St.	Dimensions
-100-1	2	678x148x10	2	339x295x10
-100-2	2	1146x148x10	2	573x295x10
-100-3	2	1656x148x10	3	552x295x10
-150-1	2	796x198x10	2	398x395x10
-150-2	2	1294x198x10	3	431x395x10
-150-3	2	1744x198x10	3	581x395x10

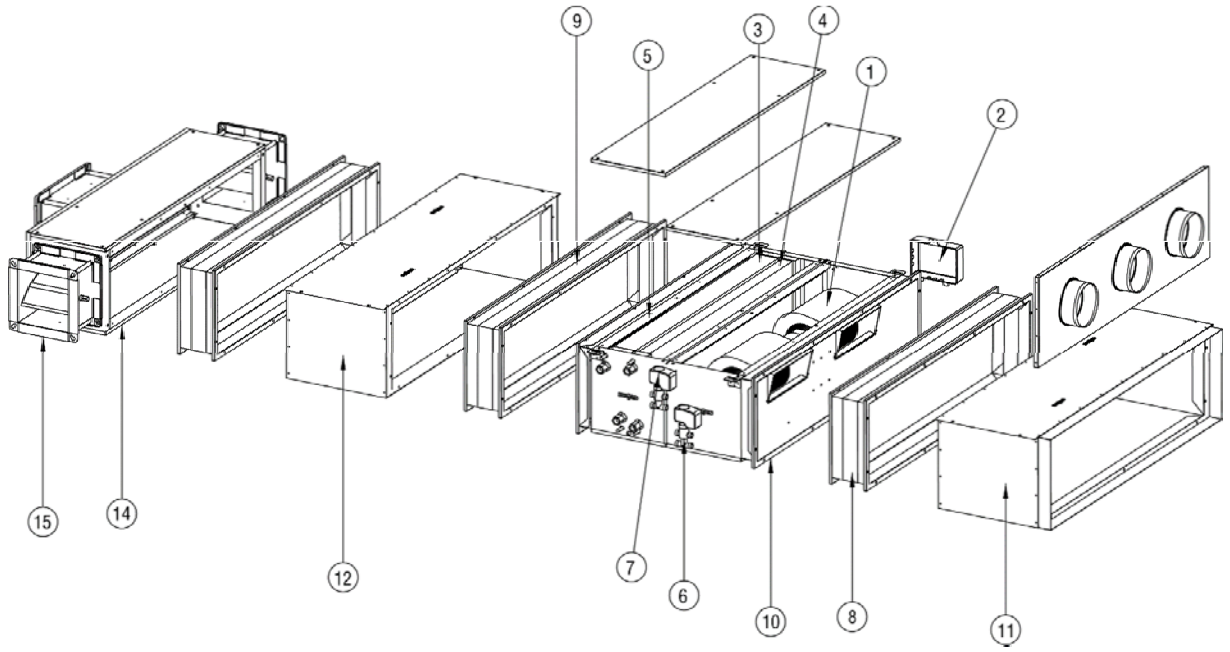
The filters are sectioned, which facilitate maintenance activities.

If the space for removing filters is limited, the filters can be removed in parts.



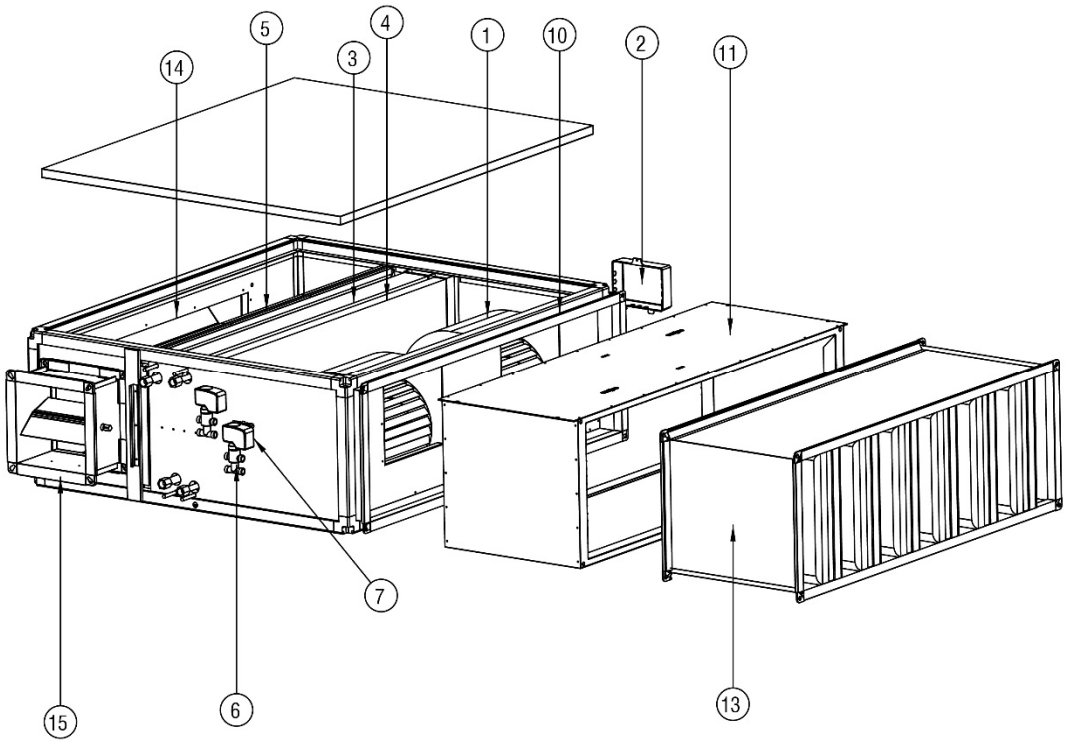
SCHAKO recommends a bimonthly check at high-medium air quality and a monthly check at low air qualities.

SPARE PARTS LIST NBS-100



		Article	Model	Reference
1	1.1	Motorised fan	-100-1 -100-2 -100-3	107595 107596 107597
	1.2	Capacitor	-100-1 -100-2 -100-3	102114 105708 105708
2		El. plenum box	(all)	102714
3		Cooling register	-100-1 -100-2 -100-3	104331 104332 104333
4		Heating register	-100-1 -100-2 -100-3	104328 104329 104330
5		Filter	-100-1 -100-2 -100-3	(enquire) (enquire) (enquire)
6		Valve	(all)	(enquire)
7		Actuator	(all)	(enquire)
8 9		Flexible connection spigot Supply air/return air	-100-1 -100-2 -100-3	(enquire) (enquire) (enquire)
10		Flange	-100-1 -100-2 -100-3	(enquire) (enquire) (enquire)
11		Supply air box	(all)	(enquire)
12		Return air box	(all)	(enquire)
13		Silencer	(all)	(enquire)
14		Mixing unit	(all)	(enquire)
15		Multi-leaf damper	-100-1 Front. -100-2 Front. -100-3 Front. (all) lateral	0620_0114 0620_0432 0620_0814 0620_0000

SPARE PARTS LIST NBS-150



		Article	Model	Reference
1	1.1	Motorised fan	-150	107594
	1.2	Capacitor	-150	109841
2		El. plenum box	(all)	102714
3		Cooling register	-150-1 -150-2 -150-3	104033 104035 104037
4		Heating register	-150-1 -150-2 -150-3	104034 104036 104038
5		Filter	-150-1 -150-2 -150-3	(enquire) (enquire) (enquire)
6		Valve	(all)	(enquire)
7		Actuator	(all)	(enquire)
8 9		Flexible connection spigot supply air / return air	-150-1 -150-2 -150-3	(enquire) (enquire) (enquire)
10		Flange	-150-1 -150-2 -150-3	(enquire) (enquire) (enquire)
11		Supply air box	(all)	(enquire)
12		Return air box	(all)	(enquire)
13		Silencer	(all)	(enquire)
14		Mixing unit	(all)	(enquire)
15		Multi-leaf damper	-150-1 Front. -150-2 Front. -150-3 Front. (all) lateral	0620_0623 0620_0619 0620_0944 0620_0570

TROUBLESHOOTING

Problem	Possible cause	Solution
Unit is not working.	Power supply missing.	Establish power supply.
	Residual current device switch was tripped.	Please inform the customer service.
The unit does not cool or heat sufficiently.	Air filter dirty or clogged.	Please clean the air filter.
	Air or volumetric flow insufficient.	Select a higher speed.
	Motorised fan is not working.	Please inform the installer.
	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 register Please inform the installer.
	Nominal value of the temperature control unit has not been set correctly.	Change the nominal value.
	Unfavourable installation of the temperature controller.	Install the temperature controller in a different place
The unit is losing water	The unit has not been installed with the correct inclination.	Please inform the installer.
	Water is draining from the condensate pan.	Please inform the installer.
	Condensate pan flows over.	Check whether the drain is maybe clogged.
	The water circuit of the register is leaking.	Please inform the installer.
	Register damaged.	Please inform the installer.
Control unit effects continuous starts and stops	Unfavourable installation of the temperature controller.	Install the temperature controller in a different place
	Temperature deviations of the coolant or heating fluid.	Please inform the installer.
	There are different units with local control elements that use coolant or heating fluid of the same circuit.	Please inform the installer.
	The control is connected incorrectly.	Interrupt the power supply of the unit and inform the installer.
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.
	Fan impeller imbalanced.	Please inform the installer.
	Filter dirty or clogged.	Clean or replace the filter.
Insufficient air throughput	Filter dirty or clogged.	Clean or replace the filter.
	Housing interior or air inlet clogged.	Remove foreign material and clean the unit.
Excessive air leakage	Filter badly installed.	Mount filter again (tighten fastening clamp) Check for tight fit.
	Inspection covers are improperly assembled	Inspect the mounting and ensure a tight fit of the covers.