

HEAT RECOVERY AIR HANDLING UNIT



KOMFORT EC DBW 2000
KOMFORT EC DBW 3000

EN

USER'S MANUAL

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This user's manual is a main operating document intended for technical, maintenance, and operating staff.

The manual contains information about purpose, technical details, operating principle, design, and installation of the KOMFORT EC DBW 2000/3000 unit and all its modifications.

Technical and maintenance staff must have theoretical and practical training in the field of ventilation systems and should be able to work in accordance with workplace safety rules as well as construction norms and standards applicable in the territory of the country.

The information in this user's manual is correct at the time of the document's preparation.

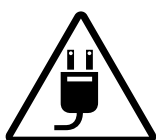
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SAFETY REQUIREMENTS

- Please read the user's manual carefully prior to installing and operating the unit.
- All user's manual requirements as well as the provisions of all the applicable local and national construction, electrical, and technical norms and standards must be observed when installing and operating the unit.
- The warnings contained in the user's manual must be considered most seriously since they contain vital personal safety information.
- Failure to follow the rules and safety precautions noted in this user's manual may result in an injury or unit damage.
- After a careful reading of the manual, keep it for the entire service life of the unit.
- While transferring the unit control, the user's manual must be turned over to the receiving operator.

UNIT INSTALLATION AND OPERATION SAFETY PRECAUTIONS



- Disconnect the unit from power mains prior to any installation operations.



- Unpack the unit with care.



- The unit must be grounded!



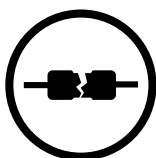
- While installing the unit, follow the safety regulations specific to the use of electric tools.



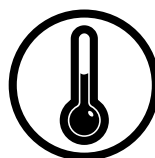
- Do not change the power cable length at your own discretion.
- Do not bend the power cable.
- Avoid damaging the power cable.
- Do not put any foreign objects on the power cable.



- Do not lay the power cable of the unit in close proximity to heating equipment.



- Do not use damaged equipment or cables when connecting the unit to power mains.



- Do not operate the unit outside the temperature range stated in the user's manual.
- Do not operate the unit in aggressive or explosive environments.



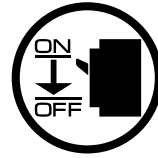
- Do not touch the unit controls with wet hands.
- Do not carry out the installation and maintenance operations with wet hands.



- Do not wash the unit with water.
- Protect the electric parts of the unit against ingress of water.



- Do not allow children to operate the unit.
- The unit is allowed to be used by children aged from 8 years old and above and persons with reduced physical, sensory, or mental capabilities or no experience and knowledge provided that they have been given supervision or instruction regarding safe use of the unit and understand the risks involved.



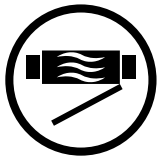
- Disconnect the unit from power mains prior to any technical maintenance.



- Do not store any explosive or highly flammable substances in close proximity to the unit.



- When the unit generates unusual sounds, odour, or emits smoke, disconnect it from power supply and contact the Seller.



- Do not open the unit during operation.



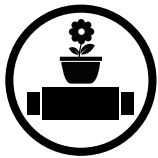
- Do not direct the air flow produced by the unit towards open flame or ignition sources.



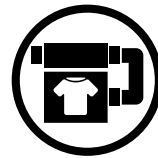
- Do not block the air duct when the unit is switched on.



- In case of continuous operation of the unit, periodically check the security of mounting.



- Do not sit on the unit and avoid placing foreign objects on it.



- Use the unit only for its intended purpose.



**THE PRODUCT MUST BE DISPOSED SEPARATELY AT THE END OF ITS SERVICE LIFE.
DO NOT DISPOSE THE UNIT AS UNSORTED DOMESTIC WASTE.**

PURPOSE

The unit is designed to ensure continuous mechanical air exchange in houses, offices, hotels, cafes, conference halls, and other utility and public spaces as well as to recover the heat energy contained in the air extracted from the premises to warm up the filtered stream of intake air.

The unit is not intended for organizing ventilation in swimming pools, saunas, greenhouses, summer gardens, and other spaces with high humidity.

Due to the ability to save heating energy by means of energy recovery, the unit is an important element of energy-efficient premises.

The unit is a component part and is not designed for stand-alone operation. It is rated for continuous operation.

Transported air must not contain any flammable or explosive mixtures, evaporation of chemicals, sticky substances, fibrous materials, coarse dust, soot and oil particles or environments favourable for the formation of hazardous substances (toxic substances, dust, pathogenic germs).



THE UNIT SHOULD NOT BE OPERATED BY CHILDREN OR PERSONS WITH REDUCED PHYSICAL, MENTAL, OR SENSORY CAPACITIES, OR THOSE WITHOUT THE APPROPRIATE TRAINING.

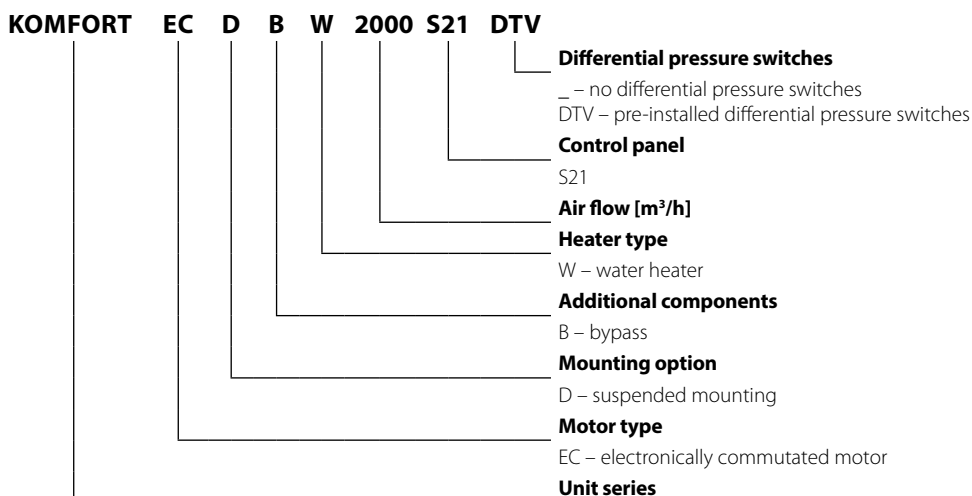
THE UNIT MUST BE INSTALLED AND CONNECTED ONLY BY PROPERLY QUALIFIED PERSONNEL AFTER THE APPROPRIATE BRIEFING.

THE CHOICE OF UNIT INSTALLATION LOCATION MUST PREVENT UNAUTHORIZED ACCESS BY UNATTENDED CHILDREN.

DELIVERY SET

Name	Number
Unit	1 pc.
User's manual	1 pc.
Packing box	1 pc.

DESIGNATION KEY



TECHNICAL DATA

The unit is designed for application with the ambient temperature ranging from +1 °C to +40 °C and relative humidity up to 80 %. In order to prevent condensation on the internal walls of the unit, it is necessary that the surface temperature of the casing is 2-3 °C above the dew point temperature of the transported air.

The unit is rated as a Class I electrical appliance.

Hazardous parts access and water ingress protection rating:

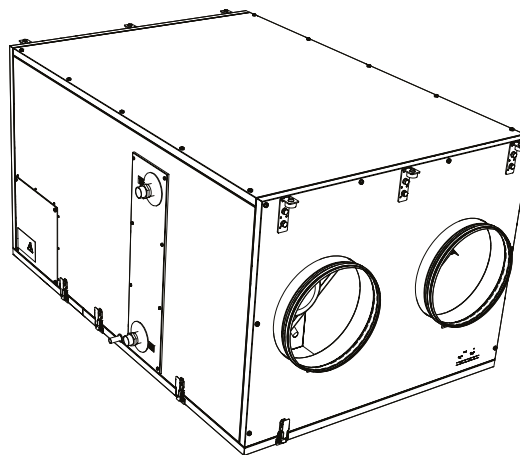
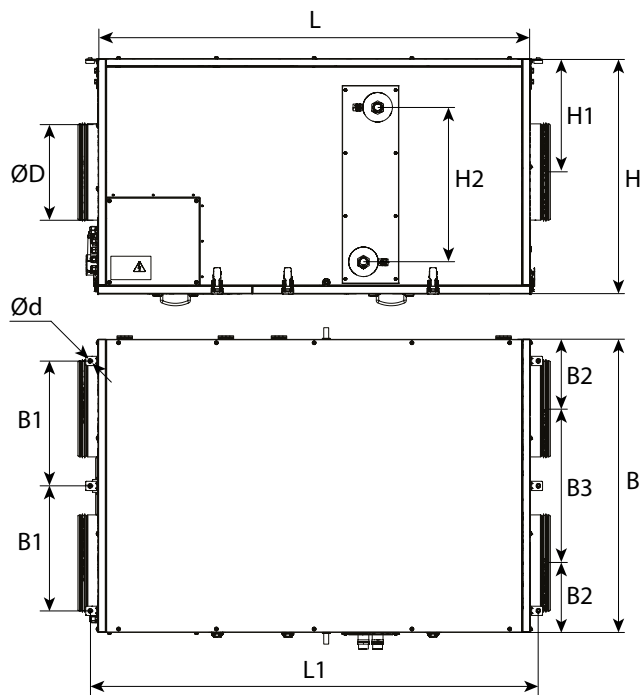
- IP22 for the unit connected to the air ducts
- IP44 for the unit motors

The unit design is constantly being improved, thus some models may be slightly different from those described in this manual.

TECHNICAL DATA

MODEL	KOMFORT EC DBW 2000	KOMFORT EC DBW 3000
Supply voltage, 50 (60) Hz [V]	3~400	
Maximum fan power [W]	876	2226
Number of water heater rows	2	2
Maximum unit current [A]	5.3	3.5
Maximum air flow [m ³ /h]	2100	4300
RPM [min ⁻¹]	2920	3400
Sound pressure level at 3 m distance [dBA]	36	46
Transported air temperature [°C]	-25...+40	
Casing material	Aluzinc	
Insulation, mineral wool [mm]	25	
Filtering class of the extract filter	G4	
Filtering class of the supply filter	G4	
Connected air duct diameter [mm]	315	400
Weight [kg]	140	268
Heat recovery efficiency [%]	50...67	59...72
Heat exchanger type	Cross-flow	
Heat exchanger material	Aluminium	
SEC class	NRVU	NRVU

OVERALL DIMENSIONS OF THE UNIT



Dimensions [mm]

Model	Ø D	B	B1	B2	B3	H	H1	H2	L	L1	Ø d
KOMFORT EC DBW 2000	312	950	405	225	500	762	367	501	1400	1452	9
KOMFORT EC DBW 3000	397	1265	563	347	570	854	427	300	1835	1888	9

DESIGN AND FUNCTIONING

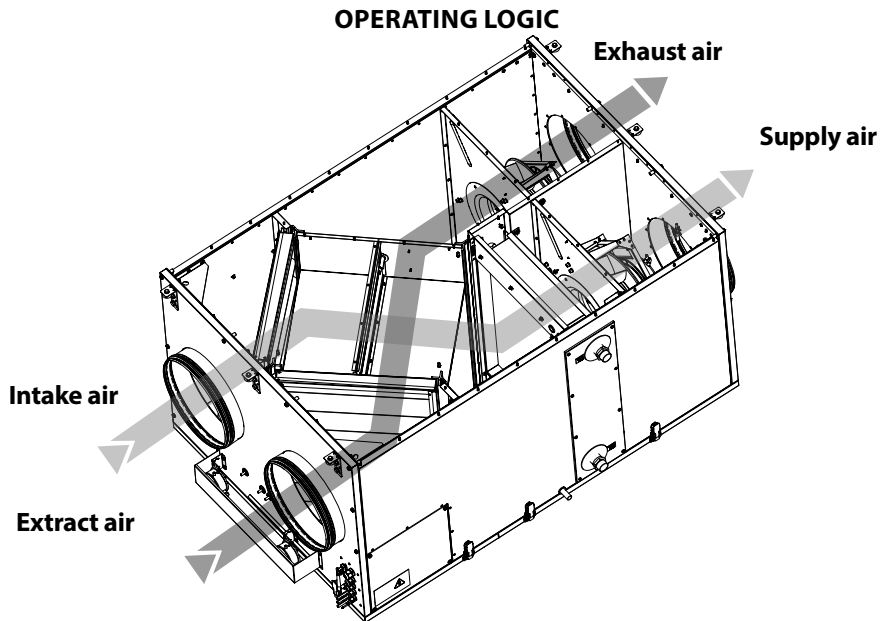
Warm stale extract air from the room flows into the unit, where it is filtered by the extract filter, then air flows through the heat exchanger and is exhausted outside by the extract fan.

Clean cold air from outside is moved to the supply filter. Then filtered air flows through the heat exchanger and is moved to the room with the supply fan.

Heat energy of warm extract air is transferred to clean intake fresh air from outside and warms it up.

Heat recovery minimizes thermal energy losses and space heating expenses in cold seasons.

The unit is equipped with a detachable service panel for repair and maintenance operations and a cover enabling access to the control system components.

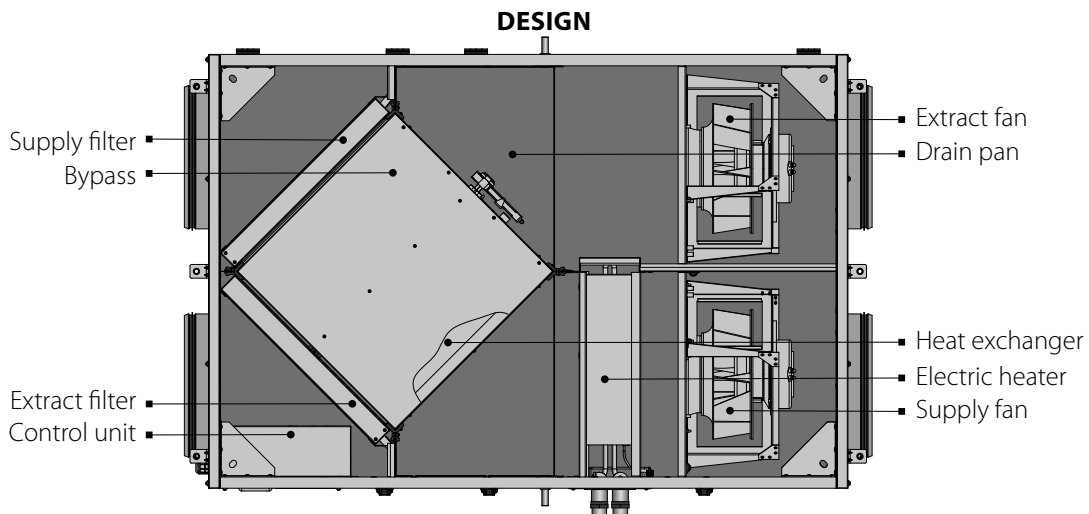


The basic unit delivery set includes a control panel for connection to the control system inside the unit casing using a data cable. The unit is equipped with supply and extract centrifugal single-inlet fans with backward curved blades; maintenance-free EC motors with an external rotor and a built-in overheating protection; a plate counterflow heat exchanger and an water heater.

The supply G4 filter cleans supply air flow and prevents contamination of the unit parts.

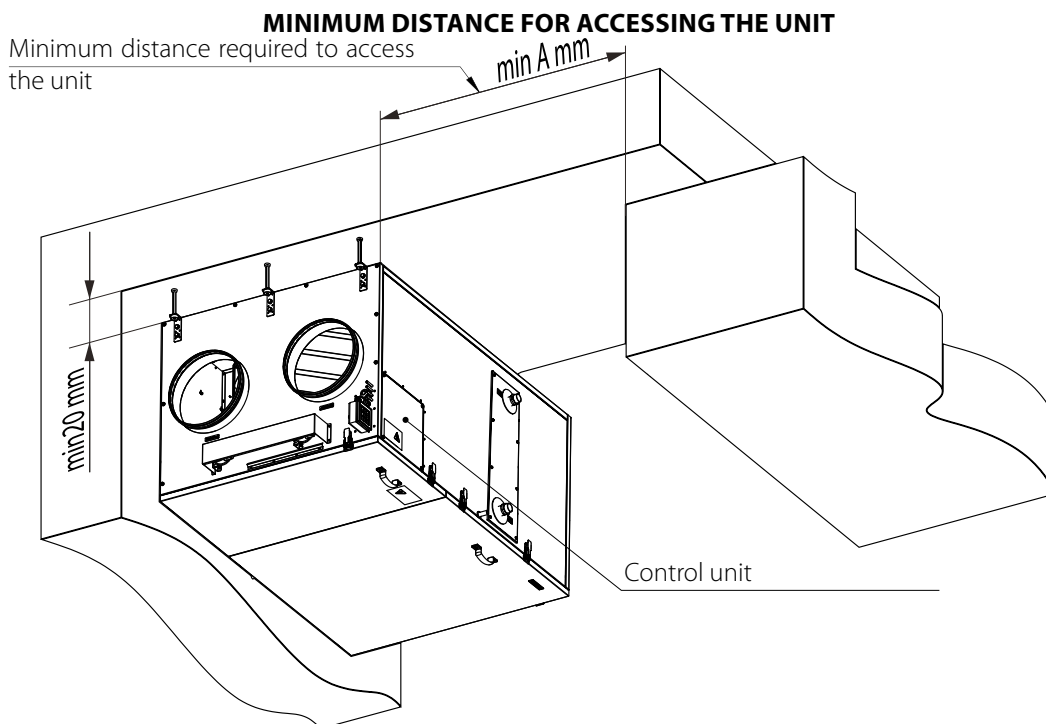
The extract G4 filter prevents contamination of the unit components.

Some condensate may form during heat recovery. The condensate is collected in the drain pan and is removed from the unit through the drain pipes.



MOUNTING AND SET-UP

While mounting the unit provide enough space for its maintenance or repair work.

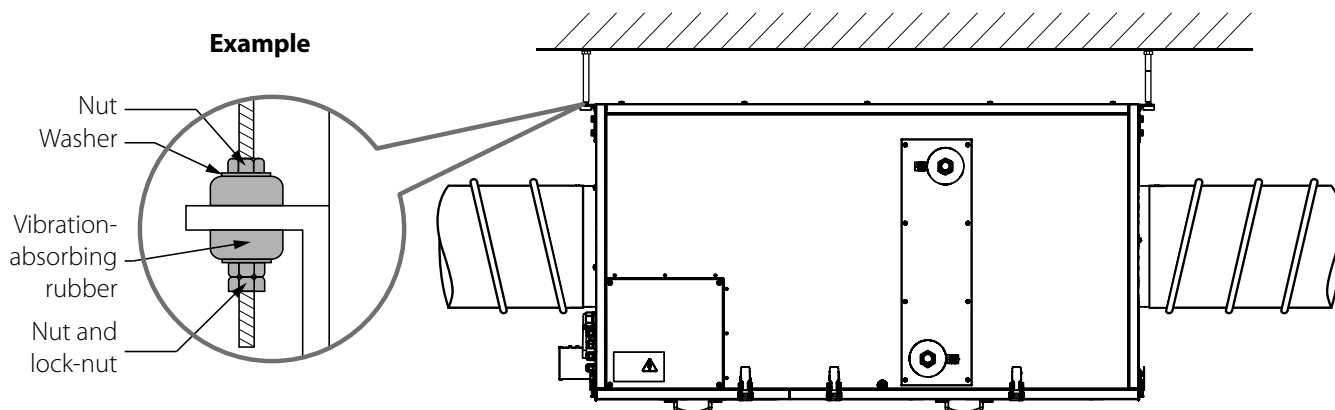


Type	KOMFORT EC DBW 2000	KOMFORT EC DBW 3000
min A, mm	500	850

The distance is selected depending on the installation conditions at the discretion of the installer.

UNIT INSTALLATION

The unit must be suspended to the ceiling on the threaded rod that is fixed inside a dowel.




To attain the best performance of the unit and to minimise turbulence-induced air pressure losses, connect a straight air duct section on both sides of the unit while mounting.

Minimum straight air duct length:

- equal to 1 air duct diameter on the intake side
- equal to 3 air duct diameters on the outlet side

If the air ducts are too short or not connected, protect the unit parts from ingress of foreign objects, e.g. by covering the spigots with a protecting grille or other protecting device with mesh width not more than 12.5 mm to prevent uncontrollable access to the fans.

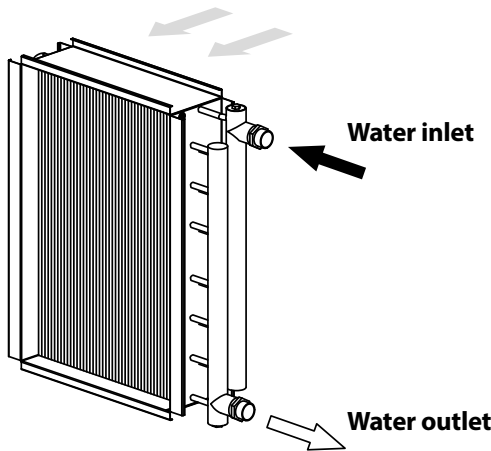


READ THE USER'S MANUAL BEFORE INSTALLING THE UNIT.

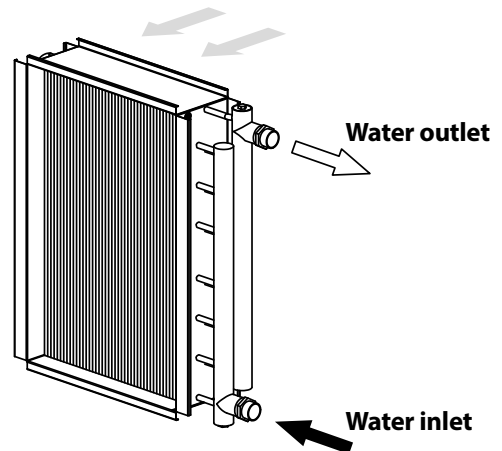
WATER HEATER CONNECTION

In order to attain maximum power the water heater should be counterflow connected. In case of the direct-flow connection, the water heater has lower power but higher frost-resistant properties. Mixing unit diagram (not included in the delivery set) of the water heater is shown in the following figure.

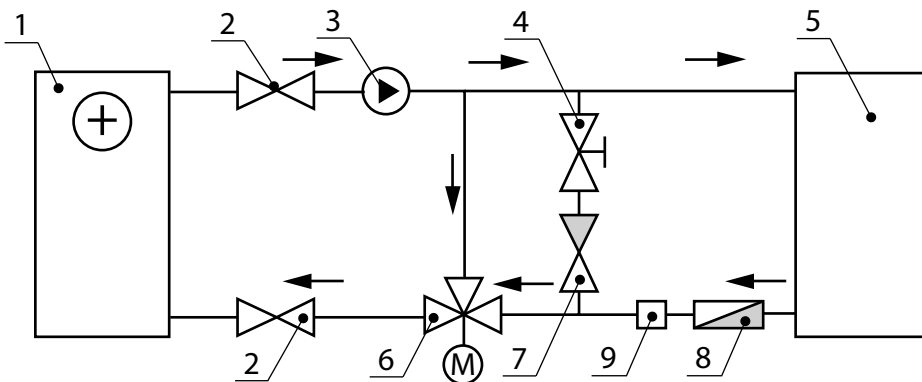
Direct flow connection



Counterflow connection

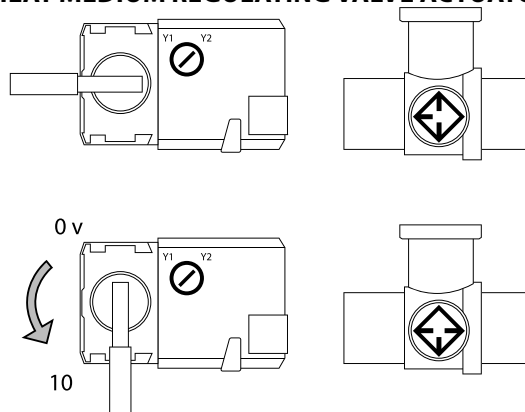


MIXING UNIT DIAGRAM



- 1. Water heater
- 2. Shutoff valves
- 3. Circulation pump
- 4. Bypass damper
- 5. Boiler
- 6. Regulating valve of the heater with an actuator
- 7. Non-return valve
- 8. Coarse filter
- 9. Water pressure sensor (nc).

HEAT MEDIUM REGULATING VALVE ACTUATOR



Caution!

The unit operates in two modes: Winter and Summer. The Winter mode is activated at outdoor temperature below +10 °C. At higher outdoor temperature the unit operates in Summer mode. In Summer mode the unit operates regardless of the return heat medium temperature in the mixing unit. In Winter mode the unit has following temperature limits: the unit will not be turned on at a return heat medium temperature below +40 °C. When the return heat medium temperature reaches +40 °C and higher, the unit will turn on with a delay of 90 seconds. The unit turns off when the return heat medium temperature falls below +20 °C.

Safety precautions

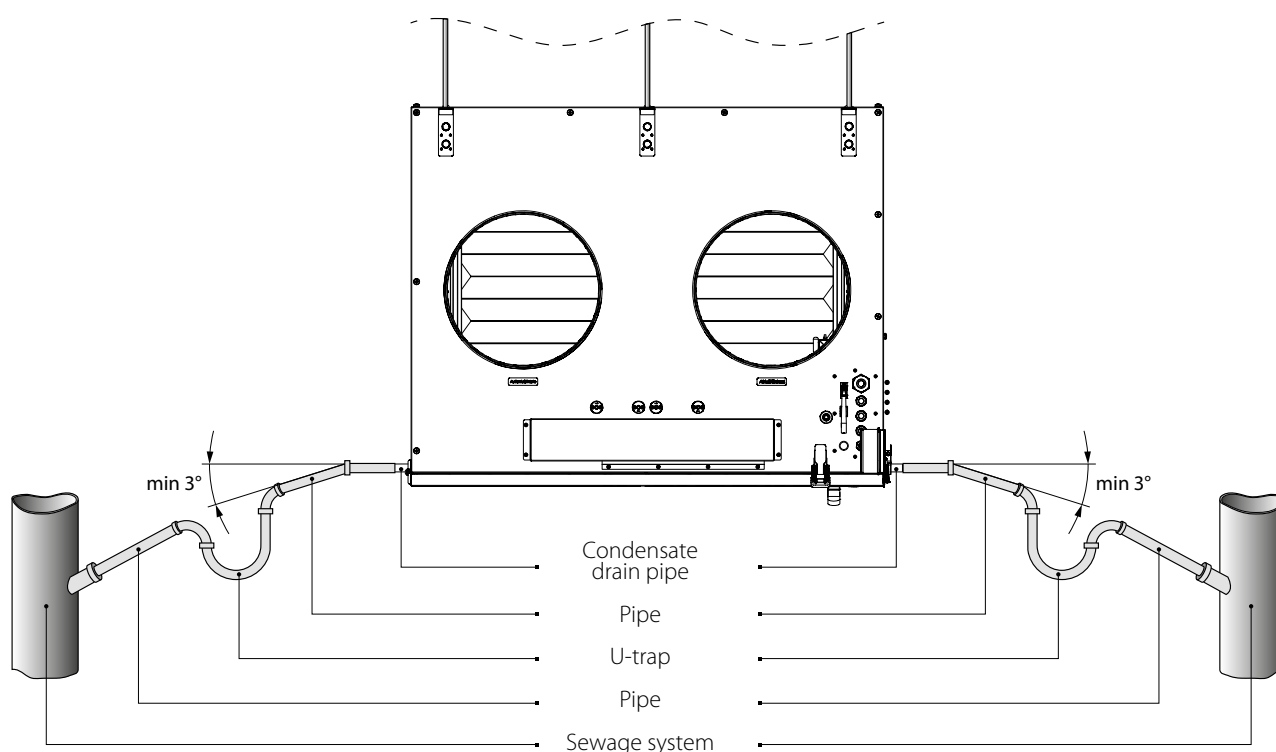
The unit must be mounted to a rigid and stable structure. The unit must be suspended using threaded rods. Before starting mounting check that the mounting structure has sufficient loading capacity for the unit weight. Otherwise reinforce the mounting location with beams or similar elements. If the threaded rods used for the unit mounting are too short, the unit can generate abnormal noise resulting from resonance with the ceiling. Use threaded rods of sufficient length to prevent resonance.

If the abnormal noise is generated at the spiral air duct joint, replace the spiral air duct with a flexible one to prevent resonance.

Flexible anti-vibration connectors are another alternative for dealing with resonance.

CONDENSATE DRAINAGE

The drain pan is equipped with two drain pipes for condensate removal outside the unit. Connect the drain pipe, the U-trap (not included in the standard delivery set) and the sewerage system with metal, plastic or rubber pipes. While laying the connection pipes provide the slope of minimum 3° downwards. Fill the system with water prior to connecting it to power supply! The U-trap must always be filled with water. Provide free drainage for the condensed water, otherwise it is accumulated inside the unit that may cause the equipment damage and condensate outflow to the room. The condensate drainage system is designed for normal operation in premises with air temperatures above 0 °C! If the expected ambient air temperatures are below 0 °C, the condensate drainage system must be equipped with heat insulation and preheating facilities.



CONNECTION TO POWER MAINS

DISCONNECT THE UNIT FROM POWER SUPPLY PRIOR TO ANY OPERATIONS WITH THE UNIT. THE UNIT MUST BE CONNECTED TO POWER MAINS BY A QUALIFIED ELECTRICIAN. THE RATED ELECTRICAL PARAMETERS OF THE UNIT ARE GIVEN ON THE MANUFACTURER'S LABEL.

ANY TAMPERING WITH THE INTERNAL CONNECTIONS IS PROHIBITED AND WILL VOID THE WARRANTY.

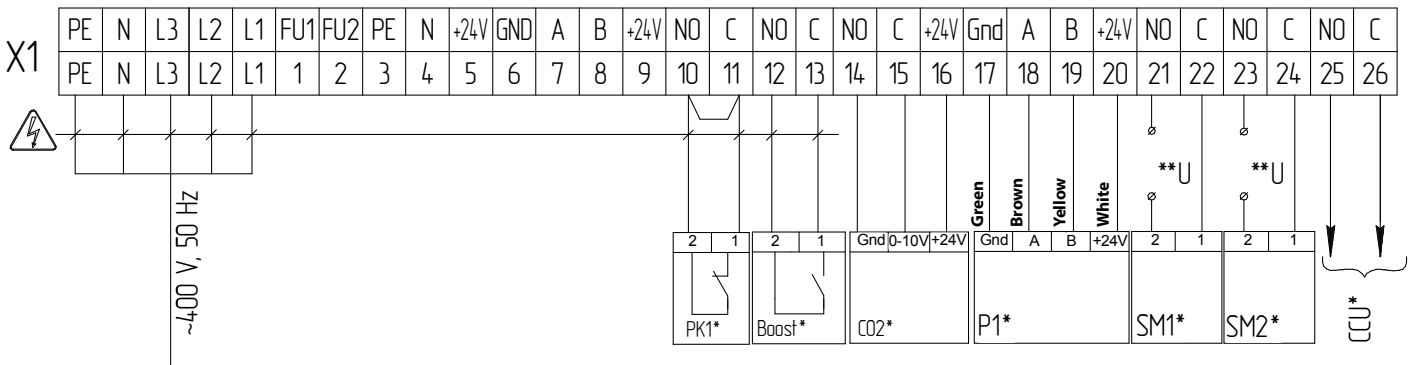
The unit is rated for connection to 3~400 V/50 Hz three-phase alternating current power mains via insulated, durable and thermal-resistant cords (cables, wires) with respective cross section not less than 2.5 mm². The cable cross-section is given for reference only. The applicable cable cross section must be selected depending on the wire type, its maximum temperature and insulation, the maximum current, the wire length and its installation method. Connect the unit to power mains through the external automatic circuit breaker with a magnetic trip integrated into the fixed wiring system with the rated current not below the rated current consumption.

The terminal block with the prewired control unit is located inside the control unit compartment.

To connect the power and the ground cable, route the cables through the airtight electric lead-in in the unit casing and connect these to the terminal block.

The wiring diagram for connection of the air handling unit to power supply is on the back side of the lid.

EXTERNAL CONNECTIONS DIAGRAM OF S21



Designation	Name	Model	Wire***	Note
SM1*	Supply air damper actuator	NO	2 x 0.75 mm ²	3 A, 30VDC/~250 AC
SM2*	Exhaust air damper actuator	NO	2 x 0.75 mm ²	3 A, 30VDC/~250 AC
PK1*	Contact from fire alarm panel	NC	2 x 0.75 mm ²	remove the jumper
CCU*	Cooler control	NO	2 x 0.75 mm ²	3 A, 30VDC/~250 AC
P1*	External control panel		4 x 0.25 mm ²	
Boost*	On/Off contacts of the Boost mode	NO	2 x 0.75 mm ²	
CO ₂ *	External CO ₂ sensor		3 x 0.75 mm ²	

*Is not included in the delivery set.

**The supply voltage U of the SM1, SM2 external dampers is selected depending on the type of dampers.

Output parameters: terminals 21-26 — 3 A, 30 V DC/~250 V AC ("dry contact").



TECHNICAL MAINTENANCE



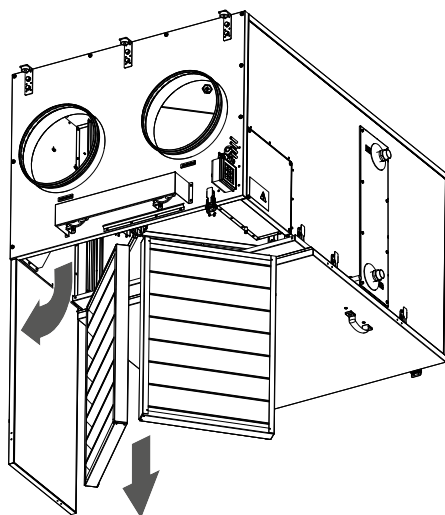
DISCONNECT THE UNIT FROM POWER SUPPLY BEFORE ANY MAINTENANCE OPERATIONS!

Maintenance operations of the unit are required 3-4 times per year. They include general cleaning of the unit and the following operations:

1. Filter maintenance (3-4 times per year).

Dirty filters increase air resistance in the system and reduce supply air volume. The filters require cleaning not less than 3-4 times per year. Vacuum cleaning is allowed. After two consecutive cleanings filters must be replaced. For new filters contact the Seller. Sequence of filter removal:

1. Unlatch the service panel.
2. Open the service panel carefully, supporting it with the hand.
3. Remove the filters from the unit.



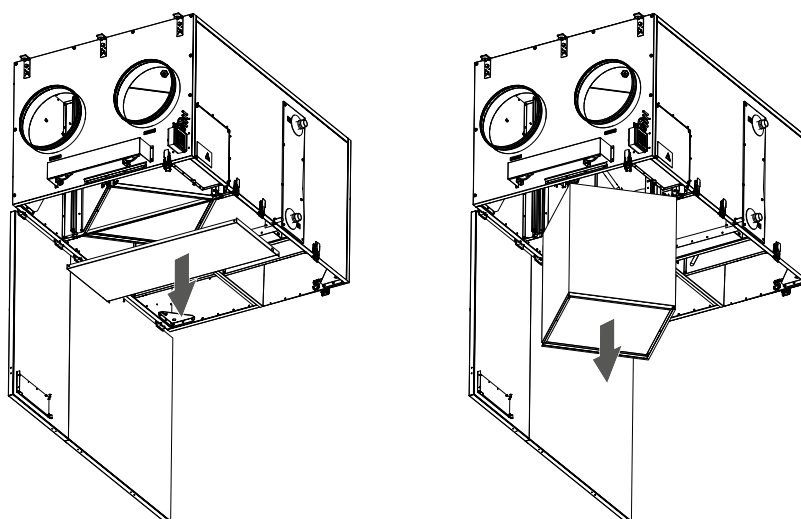
2. Heat exchanger maintenance (once per year).

Some dust may accumulate on the heat exchanger even in case of regular maintenance of the filters. To maintain high heat recovery efficiency, regular cleaning is required. To clean the heat exchanger, remove it from the unit and clean the heat exchanger by using compressed air or a vacuum cleaner. In case of severe contamination, the heat exchanger can be washed with water.

After cleaning, reinstall the heat exchanger into the unit.

Sequence of heat exchanger removal:

1. Unlatch the service panel.
2. Open the panels supporting those with the hand.
3. Remove the drain pan after unscrewing 4 screws.
4. Unscrew 9 self-tapping screws holding the heat exchanger and remove it from the unit. Be careful when removing the heat exchanger.



3. Fan inspection (once a year).

Even regular technical maintenance of the filters and the heat exchanger may not completely prevent dust accumulation in the fans which reduces the fan capacity and impairs supply air volume into the premises.

The fans must be cleaned by a service technician.

4. Condensate drain maintenance (4 times a year).

The drain pipes may get clogged with the extracted particles.

Pour some water inside the drain pan and check the pipe for clogging. Clean the U-trap and drain pipe if required.

5. Air intake maintenance (twice a year).

Leaves and other pollutions can clog the supply air grille and reduce the unit performance and supply air volume.

Check the supply grille twice per year and clean it as required.

6. Duct system maintenance (every 5 years).

Even regular fulfilling of all the prescribed above maintenance operations may not completely prevent dust accumulation in the air ducts which reduces the air quality and the unit performance. The air duct maintenance includes regular cleaning or replacement.

TROUBLESHOOTING



IF UNIDENTIFIED NOISES OR ODOURS SHOULD ARISE AND IN CASE OF DEFORMATION OF ELEMENTS, VIBRATION, TERMINATION OF AIR SUPPLY/EXTRACTION OR REDUCED SYSTEM PERFORMANCE, IMMEDIATELY DISCONNECT THE UNIT FROM POWER SUPPLY AND CONTACT THE SELLER FOR THE VENTILATION SYSTEM DIAGNOSTICS. DIAGNOSTICS MUST BE CARRIED OUT BY QUALIFIED SPECIALISTS

POSSIBLE REASONS AND TROUBLESHOOTING

Problem	Possible reasons	Troubleshooting
The fan(s) does (do) not start when the unit is on.	No power supply.	Make sure the power supply line is connected correctly, otherwise troubleshoot the connection error.
	The mode in which the fans are turned off is set.	Change the mode with the help of the control panel.
Low air flow.	Low set fan speed.	Set higher speed.
	The filters and the fans are clogged, the heat exchanger is clogged.	Clean or replace the filters, clean the fans and the heat exchanger.
	The ventilation system elements (air ducts, diffusers, louver shutters, grilles) are clogged, damaged or closed.	Clean or replace the ventilation system elements, such as air ducts, diffusers, louver shutters, grilles.
Cold supply air.	The extract filter is soiled.	Clean or replace the extract filter.
High noise, vibration.	The fan or casing screw connection is loose.	Tighten the screw connection of the fans or the casing.
	No anti-vibration connectors on air duct pipe flanges.	Install anti-vibration connectors.
Water leakage.	The drainage system is soiled, damaged, or installed incorrectly.	Clean the drain line. Check the drain line slope angle. Make sure that the U-trap is filled with water and the drain pipes are frost protected.

**If troubleshooting steps have failed,
contact the Seller of the product.**

**In case of faults not described in the table,
contact the Seller for further information.**

STORAGE AND TRANSPORTATION REGULATIONS

- Store the unit in the manufacturer's original packaging box in a dry closed ventilated premise with temperature range +5 °C...+40 °C and relative humidity up to 70 %.
- Storage environment must not contain aggressive vapors and chemical mixtures provoking corrosion, insulation, and sealing deformation.
- Use suitable hoist machinery for handling and storage operations to prevent possible damage to the unit.
- Follow the handling requirements applicable for the particular type of cargo.
- The unit can be carried in the original packaging by any mode of transport provided proper protection against precipitation and mechanical damage. The unit must be transported only in the working position.
- Avoid sharp blows, scratches, or rough handling during loading and unloading.
- Prior to the initial power-up after transportation at low temperatures, allow the unit to warm up at operating temperature for at least 3-4 hours.

MANUFACTURER'S WARRANTY

The product is in compliance with EU norms and standards on low voltage guidelines and electromagnetic compatibility. We hereby declare that the product complies with the provisions of Electromagnetic Compatibility (EMC) Directive 2014/30/EU of the European Parliament and of the Council, Low Voltage Directive (LVD) 2014/35/EU of the European Parliament and of the Council and CE-marking Council Directive 93/68/EEC. This certificate is issued following test carried out on samples of the product referred to above.

The manufacturer hereby warrants normal operation of the unit for 24 months after the retail sale date provided the user's observance of the transportation, storage, installation, and operation regulations. Should any malfunctions occur in the course of the unit operation through the Manufacturer's fault during the guaranteed period of operation, the user is entitled to get all the faults eliminated by the manufacturer by means of warranty repair at the factory free of charge. The warranty repair includes work specific to elimination of faults in the unit operation to ensure its intended use by the user within the guaranteed period of operation. The faults are eliminated by means of replacement or repair of the unit components or a specific part of such unit component.

The warranty repair does not include:

- routine technical maintenance
- unit installation/dismantling
- unit setup

To benefit from warranty repair, the user must provide the unit, the user's manual with the purchase date stamp, and the payment paperwork certifying the purchase. The unit model must comply with the one stated in the user's manual. Contact the Seller for warranty service.

The manufacturer's warranty does not apply to the following cases:

- User's failure to submit the unit with the entire delivery package as stated in the user's manual including submission with missing component parts previously dismantled by the user.
- Mismatch of the unit model and the brand name with the information stated on the unit packaging and in the user's manual.
- User's failure to ensure timely technical maintenance of the unit.
- External damage to the unit casing (excluding external modifications as required for installation) and internal components caused by the user.
- Redesign or engineering changes to the unit.
- Replacement and use of any assemblies, parts and components not approved by the manufacturer.
- Unit misuse.
- Violation of the unit installation regulations by the user.
- Violation of the unit control regulations by the user.
- Unit connection to power mains with a voltage different from the one stated in the user's manual.
- Unit breakdown due to voltage surges in power mains.
- Discretionary repair of the unit by the user.
- Unit repair by any persons without the manufacturer's authorization.
- Expiration of the unit warranty period.
- Violation of the unit transportation regulations by the user.
- Violation of the unit storage regulations by the user.
- Wrongful actions against the unit committed by third parties.
- Unit breakdown due to circumstances of insuperable force (fire, flood, earthquake, war, hostilities of any kind, blockades).
- Missing seals if provided by the user's manual.
- Failure to submit the user's manual with the unit purchase date stamp.
- Missing payment paperwork certifying the unit purchase.



FOLLOWING THE REGULATIONS STIPULATED HEREIN WILL ENSURE A LONG AND TROUBLE-FREE OPERATION OF THE UNIT.



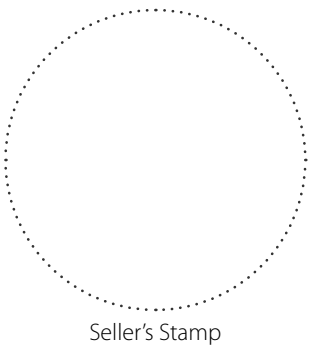
USER'S WARRANTY CLAIMS SHALL BE SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE PURCHASE DATE STAMP.

CERTIFICATE OF ACCEPTANCE

Unit Type	Heat recovery air handling unit
Model	KOMFORT EC DBW _____
Serial Number	
Manufacture Date	
Quality Inspector's Stamp	

SELLER INFORMATION

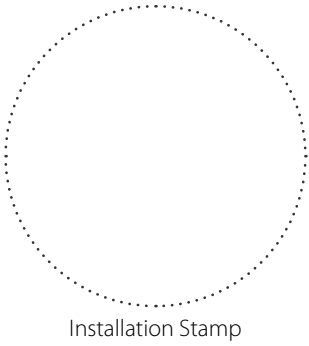
Seller	
Address	
Phone Number	
E-mail	
Purchase Date	
This is to certify acceptance of the complete unit delivery with the user's manual. The warranty terms are acknowledged and accepted.	
Customer's Signature	



INSTALLATION CERTIFICATE

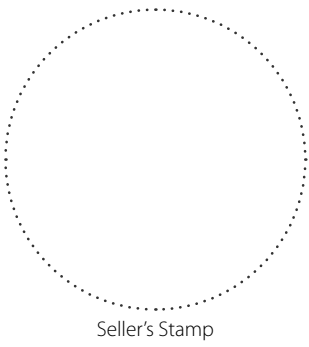
The KOMFORT EC DBW _____ unit is installed pursuant to the requirements stated in the present user's manual.

Company name	
Address	
Phone Number	
Installation Technician's Full Name	
Installation Date:	Signature:
The unit has been installed in accordance with the provisions of all the applicable local and national construction, electrical and technical codes and standards. The unit operates normally as intended by the manufacturer.	
Signature:	



WARRANTY CARD

Unit Type	Heat recovery air handling unit
Model	KOMFORT EC DBW _____
Serial Number	
Manufacture Date	
Purchase Date	
Warranty Period	
Seller	





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