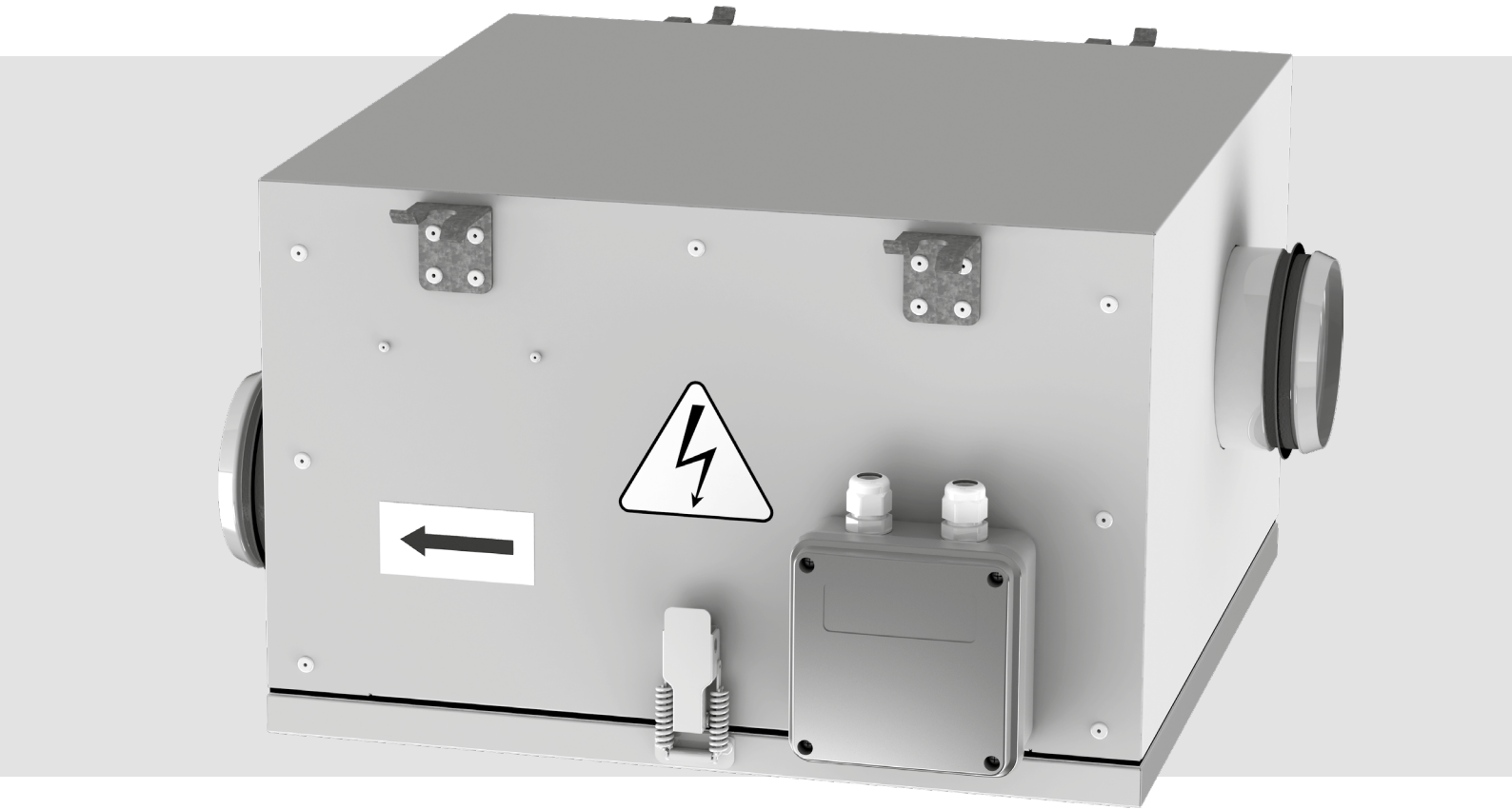
USER'S MANUAL

KSB K2 EC



Centrifugal duct fan in sound insulated casing

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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 KSB K2 EC 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.

SAFETY REQUIREMENTS

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
Cleaning and user maintenance shall not be made by children without supervision.
Children shall not play with the appliance.
The appliance is only to be used with the power supply unit provided with the appliance.

Connection to the mains must be made through a disconnecting device, which is integrated into the fixed wiring system in accordance with the wiring rules for design of electrical units, and has a contact separation in all poles that allows for full disconnection under overvoltage category III conditions.

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent, or similarly qualified persons in order to avoid a safety hazard.

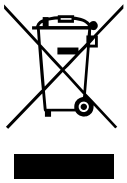
CAUTION: In order to avoid a safety hazard due to inadvertent resetting of the thermal cut-out, this unit must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility.

Ensure that the unit is switched off from the supply mains before removing the guard.
WARNING: If there are any unusual oscillating movements, immediately stop using the unit and contact the manufacturer, its service agent or suitably qualified persons.
The replacement of parts of the safety suspension system device shall be performed by the manufacturer, its service agent or suitably qualified persons.

Precautions must be taken to avoid the back-flow of gases into the room from the open flue of gas or other fuel-burning appliances.

The appliance may adversely affect the safe operation of appliances burning gas or other fuels (including those in other rooms) due to back flow of combustion gases. These gases can potentially result in carbon monoxide poisoning. After installation of the unit the operation of flued gas appliances should be tested by a competent person to ensure that back flow of combustion gases does not occur.

All operations described in this manual must be performed by qualified personnel only, properly trained and qualified to install, make electrical connections and maintain ventilation units.
Do not attempt to install the product, connect it to the mains, or perform maintenance yourself.
This is unsafe and impossible without special knowledge.
Disconnect the power supply prior to any operations with 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.
Disconnect the unit from the power supply prior to any connection, servicing, maintenance, and repair operations.
Connection of the unit to power mains is allowed by a qualified electrician with a work permit for the electric units up to 1000 V after careful reading of the present user's manual.
Check the unit for any visible damage of the impeller, the casing, and the grille before starting installation. The casing internals must be free of any foreign objects that can damage the impeller blades.
While mounting the unit, avoid compression of the casing! Deformation of the casing may result in motor jam and excessive noise.
Misuse of the unit and any unauthorised modifications are not allowed.
Transported air must not contain any dust or other solid impurities, sticky substances, or fibrous materials.
Do not use the unit in a hazardous or explosive environment containing spirits, gasoline, insecticides, etc.
Do not close or block the intake or extract vents in order to ensure the efficient air flow.
Do not sit on the unit and do not put objects on it.
The information in this user's manual was correct at the time of the document's preparation.
The Company reserves the right to modify the technical characteristics, design, or configuration of its products at any time in order to incorporate the latest technological developments.
Never touch the unit with wet or damp hands.
Never touch the unit when barefoot.
BEFORE INSTALLING ADDITIONAL EXTERNAL DEVICES, READ THE RELEVANT USER MANUALS.



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 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.

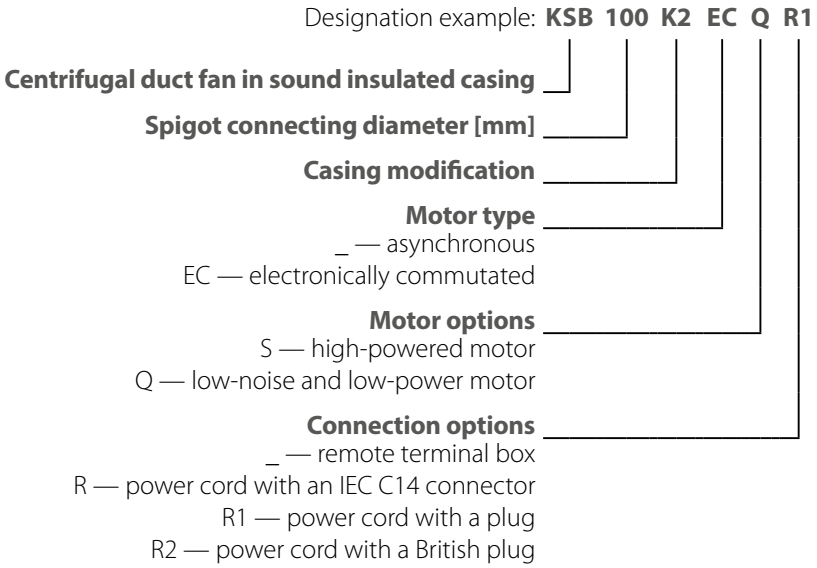
THE CHOICE OF UNIT INSTALLATION LOCATION MUST PREVENT UNAUTHORISED ACCESS BY UNATTENDED CHILDREN.

The Centrifugal duct fan in sound insulated casing is designed for supply and exhaust ventilation of domestic, public and industrial premises with high requirements to the noise level and with limited space for mounting.
The unit is rated for continuous operation.
The unit is a component part and is not designed for stand-alone 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).

DELIVERY SET

NAME	NUMBER
Fan	1 pc.
User's manual	1 pc.
Packing box	1 pc.

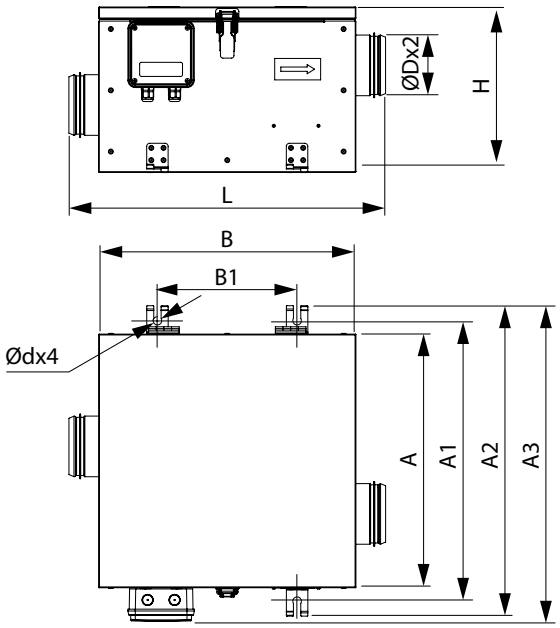
DESIGNATION KEY

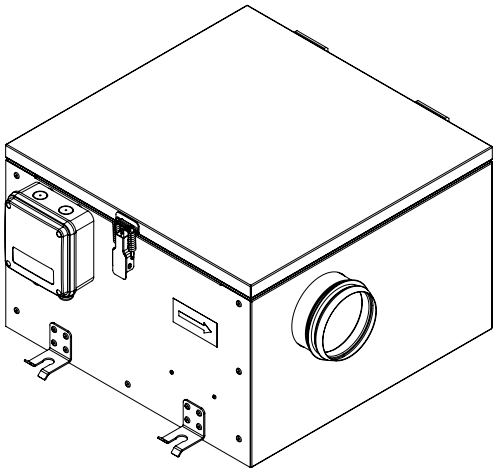


TECHNICAL DATA

The unit is rated as a Class I electrical appliance.

	KSB 100 K2 EC	KSB 125 K2 EC	KSB 150 K2 EC	KSB 160 K2 EC	KSB 200 K2 EC	KSB 250 K2 EC	KSB 315 K2 EC	KSB 355 K2 EC	KSB 400 K2 EC	KSB 450 K2 EC	KSB 500 K2 EC
Unit voltage [V/50 (60) Hz]	1~ 230	1~ 230	1~ 230	1~ 230	1~ 230	1~ 230	1~ 230	1~ 230	1~ 230	3~ 400	1~ 230
Power [W]	69	78	81	85	111	164	531	527	513	1200	752
Current [A]	0.55	0.58	0.59	0.60	0.88	1.32	2.32	2.31	2.25	1.95	3.42
Maximum air flow [m^3/h]	341	444	495	454	740	1099	3053	3417	3633	5620	7145
RPM [min^{-1}]	3270	3270	3270	3600	2400	2800	2360	2360	2360	2580	1440
Sound pressure level at 3 m distance [dBA]	37	39	40	40	42	45	47	50	51	54	56
Transported air temperature [°C]	-25..+55	-25..+55	-25..+55	-25..+55	-25..+55	-25..+55	-25..+55	-25..+55	-25..+55	-25..+55	-25..+55
Ingress protection rating	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4
SEC class	ErP 2018	ErP 2018	ErP 2018	ErP 2018	ErP 2018	ErP 2018	ErP 2018	ErP 2018	ErP 2018	ErP 2018	ErP 2018





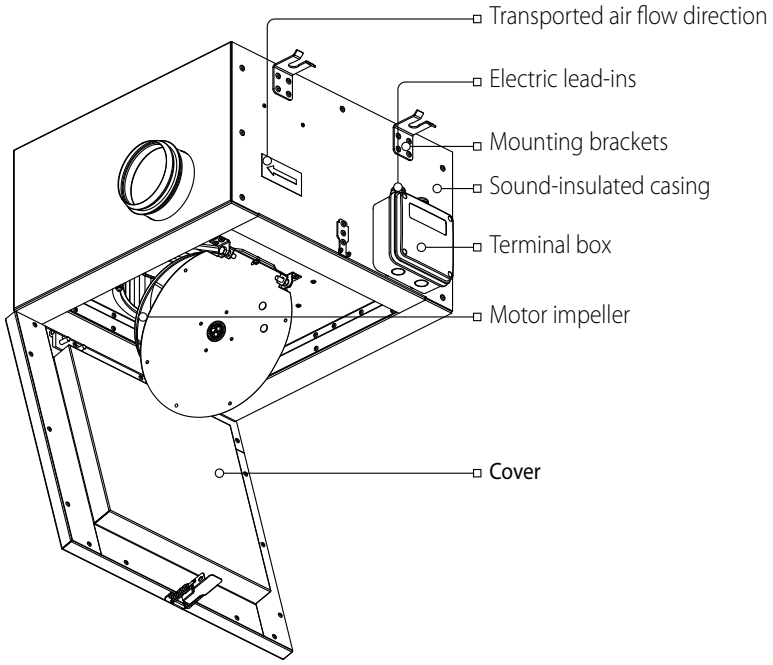
Model	Overall and connecting dimensions of the fan [mm]										Weight [kg]
	D	H	L	A	A1	A2	A3	B	B1	d	
KSB 100 K2 EC	99	270	517	414	458	507	515	420	228	14	12
KSB 125 K2 EC	124	270	517	414	458	507	515	420	228		12
KSB 150 K2 EC	149	270	517	414	458	507	515	420	228		12
KSB 160 K2 EC	159	270	517	414	458	507	515	420	228		12
KSB 200 K2 EC	198	328	648	553	597	645,5	654	551	374		20
KSB 250 K2 EC	248	371	762	616	660	709	717	665	487		27
KSB 315 K2 EC	313	505	904	737	790	818	832	807	600	9	47
KSB 355 K 2EC	354	505	904	737	790	818	832	807	600		47
KSB 400 K2 EC	399	505	904	737	790	818	832	807	600		47
KSB 450 K2 EC	449	580	982	805	858	886	900	885	670		60
KSB 500 K2 EC	499	660	1146	998	1051	1079	1094	1049	800		86

DESIGN AND OPERATING PRINCIPLE

The fan casing is made of aluzinc. For easy installation and operation, the top cover of the fan is secured with a special lock. The casing is heat- and sound-insulated with a 50 mm layer of non-flammable mineral wool. To ensure better noise absorption, the inner surface of the insulation is made of a perforated metal sheet. The round connecting spigots are rubber sealed.

The fan is equipped with an electronically commutated motor with an external rotor and an impeller with backward curved blades. The low-noise motor with ball bearings with specially selected grease ensures maintenance-free operation of the fan.

Duct fans are intended for mounting to round air ducts. The fans are installed between the air ducts. In case the fan is mounted on flexible joints, attach the fan to a structural unit by means of supports, suspension links or brackets (purchased separately). The fan may be installed in any position in consideration of the air flow direction (as indicated by the arrow on the fan casing).



MOUNTING AND SET-UP

WHILE INSTALLING THE UNIT ENSURE CONVENIENT ACCESS FOR SUBSEQUENT MAINTENANCE AND REPAIR.

THE UNIT MUST BE MOUNTED ON A PLANE SURFACE.

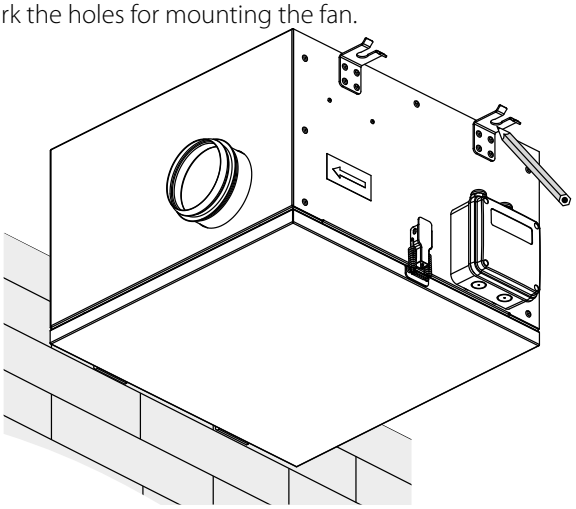
MOUNTING OF THE UNIT TO AN UNEVEN SURFACE CAN LEAD TO THE UNIT CASING DISTORTION AND OPERATION DISTURBANCE.

- Before installing the fan, make sure the casing has no visible damages and check the integrity of power supply wires. The fan casing must not contain any foreign objects which can damage the impeller blades.
- Make sure the impeller rotates freely without touching the flange and the casing.
- Mount the fan in such a way that the arrow on the fan casing matches the air flow direction in the system.
- The casing has mounting brackets to facilitate the fan installation.
- The fan may be installed in any position in consideration of the air flow direction (as indicated by the arrow on the fan casing).
- To attain the best performance of the fan and to minimize turbulence-induced air pressure losses while mounting, connect the straight air duct section to the fan spigots on both sides of the fan. The minimum straight air duct length is equal to 1 air duct diameter on the intake side and 3 air duct diameters on the exhaust side. No filters or any other similar devices are allowed to be installed in these sections.

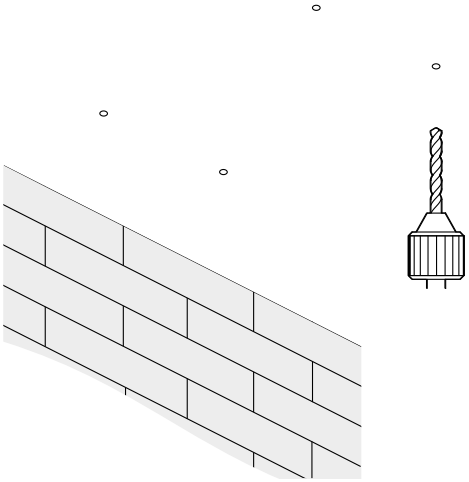
Fan and remote terminal box installation sequence

- Before installation, lay the wires and cables necessary to connect the fan to the mains.
- Minimal distance from the fan casing to the wall is 300 mm.
- Fasteners for fan mounting are not included in the delivery set and should be ordered separately. While choosing fasteners consider the material of the mounting surface as well as the weigh of the unit, refer to the «Technical data» section. Fasteners for unit mounting should be selected by the service technician.

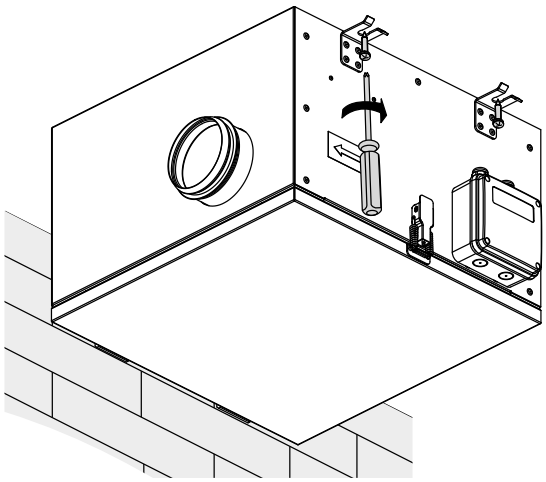
1. Mark the holes for mounting the fan.



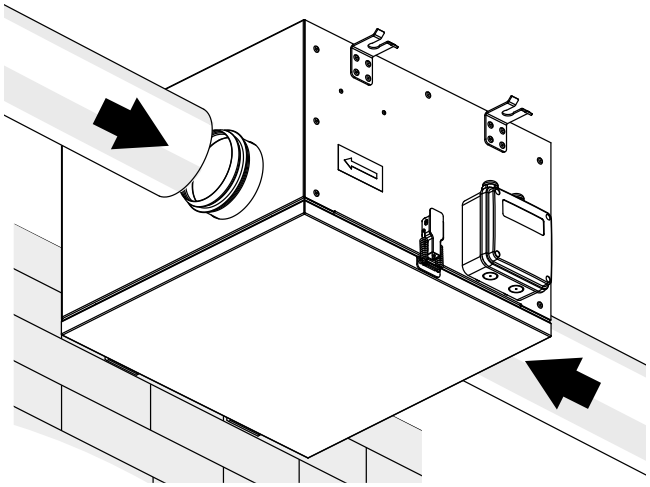
2. Drill the holes according to the markings.



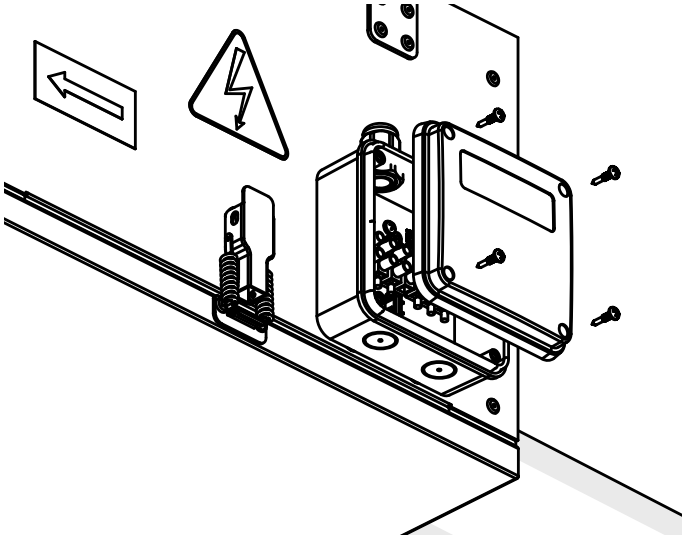
3. Fix the fan on the mounting brackets using the appropriate fasteners.



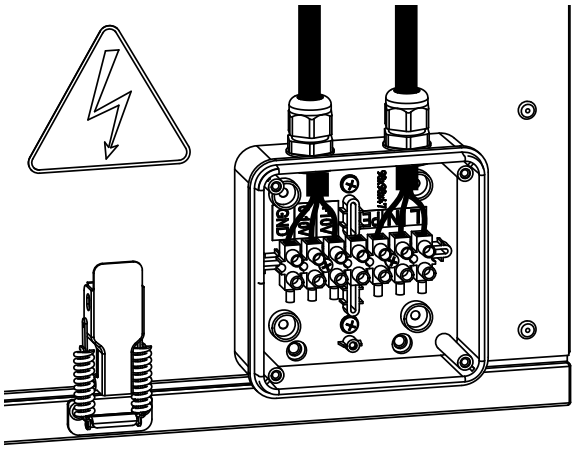
4. Connect the air ducts (purchased separately) to the fan spigots.



5. Unscrew the terminal box cover.



6. Make the electrical connections in compliance with the wiring diagram.
Re-assemble the terminal box in the reverse order.



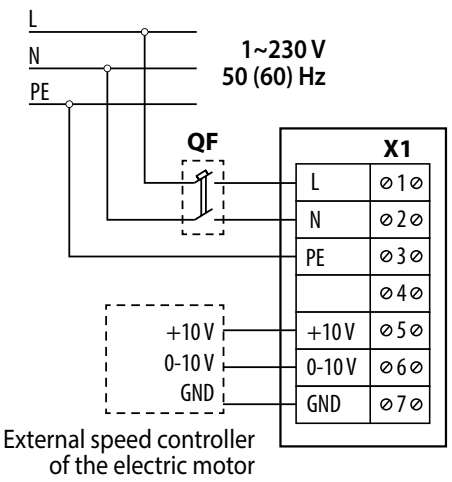
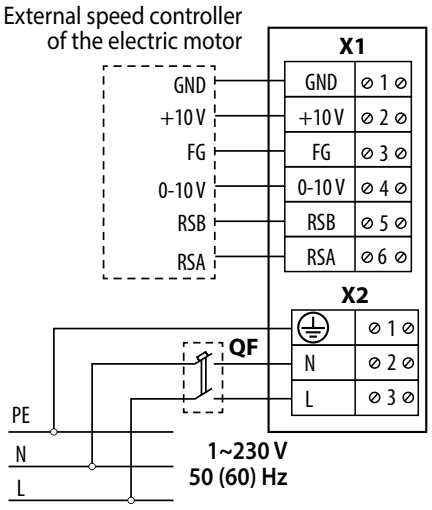
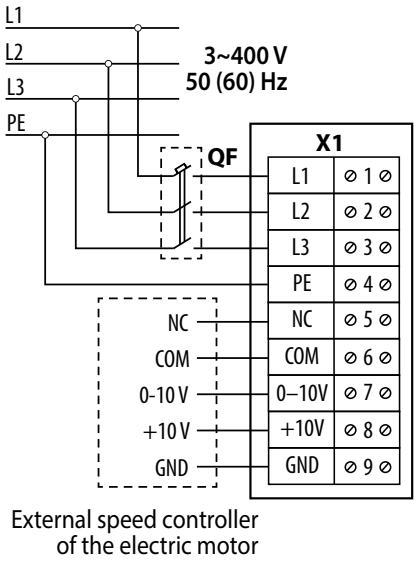
CONNECTION TO POWER MAINS

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

- The unit is rated for connection to 1~230 V/50 (60) Hz power mains.
- The unit must be connected to power mains using insulated electric conductors (cables, wires). The actual wire cross section selection must be based on the maximum load current, maximum conductor temperature depending on the wire type, insulation, length and installation method.
- The external power input must be equipped with an automatic circuit breaker built into the stationary wiring to open the electric circuit in case of overload or short-circuit. The circuit breaker installation place must provide quick access for emergency shutdown of the unit. The trip current of the automatic circuit breaker **QF** must exceed the maximum current consumption of the unit (refer to the technical data table). The recommended trip current of the circuit breaker is the next current in the standard trip current row following the maximum current of the connected unit. The automatic circuit breaker is not included in the delivery set.

Connection of the fan to power mains and to additional external control units is carried out in the control box on the fan casing. External speed control devices must provide voltage from 0 to 10 V at the motor input or PWM signal with an amplitude of 10 V. External control units are purchased separately (shown in dotted lines in the diagram).

Wiring diagram

KSB 100 K2 EC; KSB 125 K2 EC; KSB 150 K2 EC; KSB 160 K2 EC; KSB 200 K2 EC; KSB 250 K2 EC; KSB 500 K2 EC	KSB 315 K2 EC; KSB 355 K2 EC; KSB 400 K2 EC	KSB 450 K2 EC;
		

CONTROL

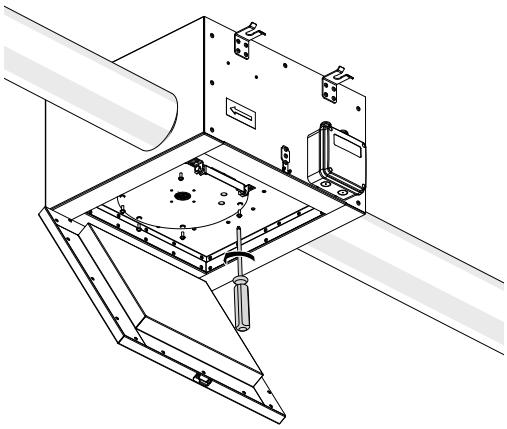
Additional external control units can be connected to the fan for speed control. The fan speed control can be either smooth or stepped.

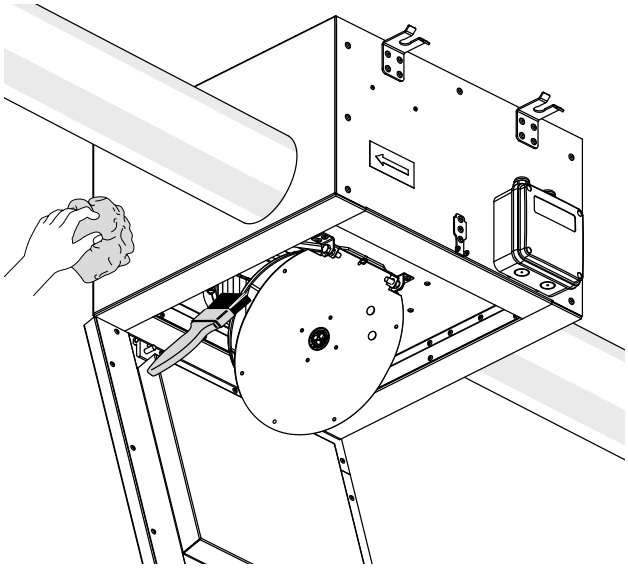
TECHNICAL MAINTENANCE

DISCONNECT THE UNIT FROM POWER SUPPLY BEFORE ANY MAINTENANCE OPERATIONS!

MAKE SURE THE UNIT IS DISCONNECTED FROM POWER MAINS BEFORE REMOVING THE PROTECTION.

The technical maintenance includes periodic cleaning of the surfaces from accumulated dust and dirt. The impeller blades require thorough cleaning once in 6 months. Clean the blades with a soft brush or a vacuum cleaner. While cleaning the fan be careful not to displace the impeller counter weights. Protect the electric motor against ingress of liquid.





TROUBLESHOOTING

PROBLEM	POSSIBLE REASONS	TROUBLESHOOTING
The fan does not start.	No power supply.	Make sure that the unit is properly connected to the power mains and make any corrections, if necessary.
Low air flow.	The ventilation system is soiled or damaged.	Make sure the air ducts are clean and intact. Clean them if necessary.
Noise, vibration.	The fan impeller is soiled.	Clean the impellers.
	The screw connection is loose.	Tighten the fastening screws.

STORAGE AND TRANSPORTATION REGULATIONS

- Store the unit in the manufacturer's original packaging box in a dry closed ventilated premise with temperature range up +5 ˚C to +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 dismounted 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.
- Damage to the unit casing 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	Centrifugal duct fan in sound insulated casing
Model	
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	

Seller's Stamp

INSTALLATION CERTIFICATE

The _____ 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:		

Installation Stamp

WARRANTY CARD

Unit Type	Centrifugal duct fan in sound insulated casing
Model	
Serial Number	
Manufacture Date	
Purchase Date	
Warranty Period	
Seller	

Seller's Stamp

V143-2EN-02