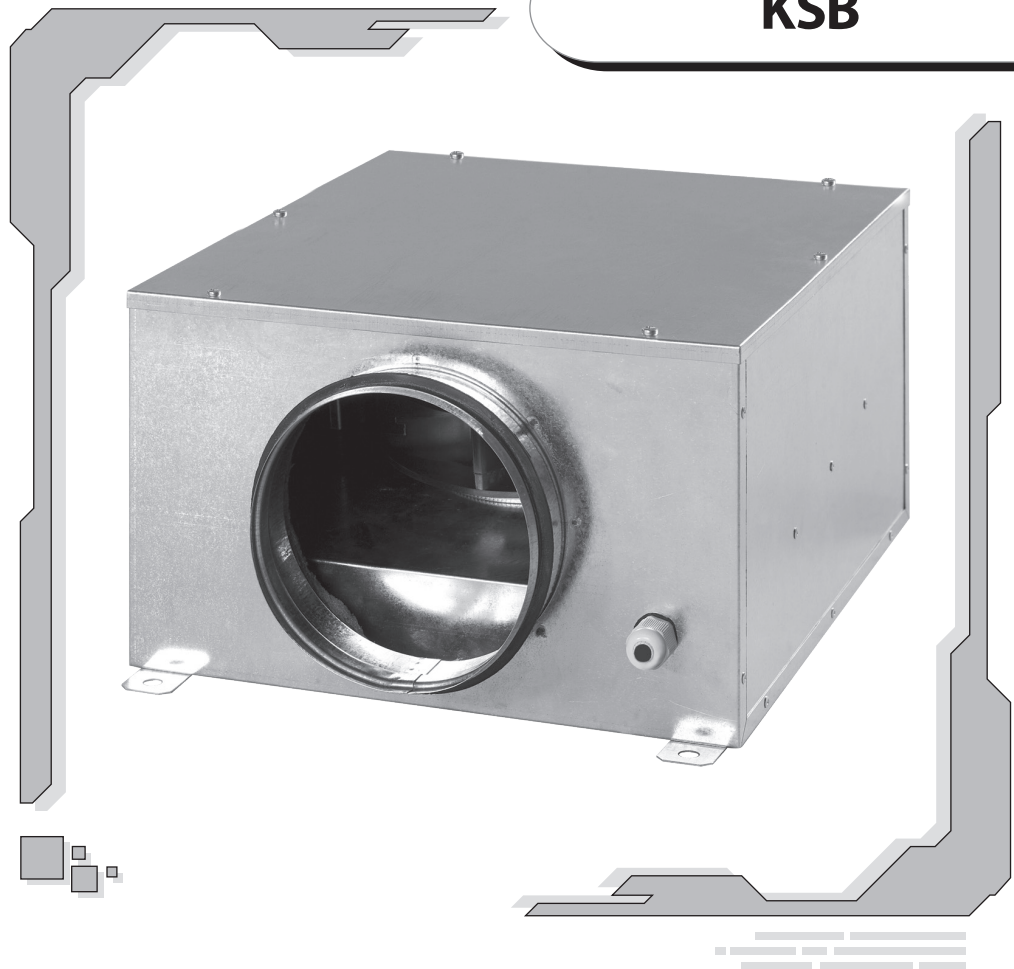


# USER'S MANUAL

## SOUND-INSULATED FAN KSB

**KSB**



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**RECYCLE AT THE END OF THE SERVICE LIFE.**

**DO NOT DISPOSE THE PRODUCT WITH UNSORTED MUNICIPAL TRASH.**

**SAFETY REQUIREMENTS**

- Read the user's manual carefully prior to installing and operating the unit.
- Fulfil the user's manual requirements as well as the provisions of all the applicable local and national construction, electrical and technical norms and standards.
- 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.



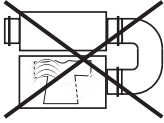
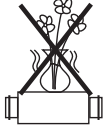

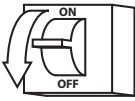
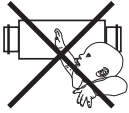

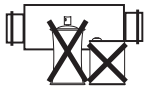
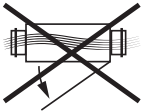

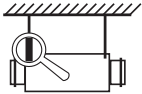
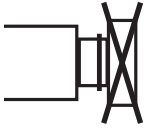

Symbol legend:

	<b>WARNING!</b>
	<b>RESTRICTED!</b>

**UNIT MOUNTING SAFETY PRECAUTIONS**

	Disconnect the unit from power mains prior to any installation and repair operations.		The unit must be grounded!
	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 use damaged equipment or cables when connecting the unit to power mains.
	While installing the unit follow the safety regulations specific to the use of electric tools.		Unpack the unit with care.
	Do not change the power cable length at your own discretion. Do not bend the power cable. Avoid damaging the power cable.		Do not lay the power cable of the unit in close proximity to heating equipment.

**UNIT OPERATION SAFETY PRECAUTIONS**

	<p>Do not touch the unit controls with wet hands. Do not carry out the installation and maintenance operations with wet hands.</p>		<p>Do not wash the unit with water. Protect the electric parts of the unit against ingress of water.</p>
	<p>Use the unit only for its intended purpose. Do not connect any clothes dryers or other similar equipment to the unit or the ventilation circuit.</p>		<p>Do not put any water containers (e.g. vases etc.) on top of the unit.</p>
	<p>Do not sit on the unit and avoid placing foreign objects on it.</p>		<p>Disconnect the unit from power mains prior to any technical maintenance.</p>
	<p>Disconnect the unit from power mains prior to any technical maintenance.</p>		<p>Avoid damaging the power cable. Do not put any foreign objects on the power cable.</p>
	<p>Do not store any explosive or highly flammable substances in close proximity to the unit.</p>		<p>Do not open the unit during operation.</p>
	<p>When the unit generates unusual sounds, odour or emits smoke disconnect it from power supply and contact the Seller.</p>		<p>In case of continuous operation of the unit periodically check the security of mounting.</p>
	<p>Do not block the air duct when the unit is switched on.</p>		<p>Do not direct the air flow produced by the unit towards open flame or ignition sources.</p>

## INTRODUCTION

The user's manual consisting of the technical details, operating instructions and technical specification applies to the installation and mounting of the sound-insulated fan VENTS KSB (hereinafter referred to as «the unit»).

## PURPOSE

The fan is intended for supply and exhaust ventilation of household, public and industrial spaces with stringent noise generation restrictions and limited installation space. The fan is designed for round air duct systems.

The fan is rated for continuous operation.

The fan is a component and, therefore, may not be commissioned for standalone 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 FAN MAY NOT BE OPERATED BY CHILDREN OR PERSONS WITH REDUCED PHYSICAL, MENTAL OR SENSORY CAPACITIES, OR LACKING THE APPROPRIATE TRAINING. THE UNIT MUST BE INSTALLED AND CONNECTED ONLY BY PROPERLY QUALIFIED PERSONNEL AFTER THE APPROPRIATE BRIEFING. THE CHOICE OF FAN INSTALLATION LOCATION MUST PREVENT UNAUTHORIZED ACCESS BY UNATTENDED CHILDREN.**

## DELIVERY SET

- Fan - 1 item;
- User's Manual - 1 item;
- Shipping Box - 1 item.



## DESIGNATION KEY

### Vents KSB 100 S M U1 R K1

#### Insulation

- \_ - PU foam insulation.
- K1 - mineral wool insulation.

#### Connection to power mains

- \_ - equipped with a terminal box.
- R - equipped with a power cord with IEC C14 plug.
- R1 - equipped with a power cord with a wall socket plug (depending on the country of intended use).

#### Temperature and speed controller availability

- U - speed controller with electronic thermostat and temperature sensor integrated into the air duct. Equipped with power cord and IEC C14 electric plug. Temperature-based operation logic.
- Un - speed controller with electronic thermostat and external temperature sensor fixed on 4 m cable. Equipped with power cord and IEC C14 electric plug. Temperature-based operation logic.
- U1 - speed controller with electronic thermostat and temperature sensor integrated into the air duct. Equipped with power cord and IEC C14 electric plug. Timer-based operation logic.
- U1n - speed controller with electronic thermostat and external temperature sensor fixed on 4 m cable. Equipped with power cord and IEC C14 electric plug. Timer-based operation logic.

#### Anti-vibration mounts

- \_ - no anti-vibration mounts.
- M - motor installed on the rubber anti-vibration mounts.

#### Motor power

- \_ - medium-powered motor.
- S - high-powered motor.

#### Spigot connecting diameter [mm]

#### Product name

#### Trade mark

## TECHNICAL DATA

The fan is designed for operation in an enclosed area at ambient temperatures from  $-25^{\circ}\text{C}$  up to  $+55^{\circ}\text{C}$  at relative humidity of up to 80 at  $+25^{\circ}\text{C}$ .

Hazardous parts access and water ingress protection ratings is IP X4.

The fan is rated as a class I electric appliance.

The overall and connecting dimensions, external view, technical data are shown in fig. 1 and in table 1 and 2.

The fan design undergoes continuous improvement. Therefore, some models may slightly differ from the ones described herein.

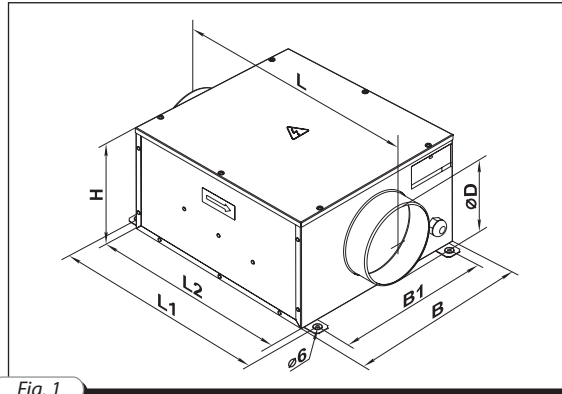


Fig. 1

Table 1

Model	Dimensions [mm]							Weight [kg]
	ØD	B	B1	H	L	L1	L2	
KSB 100	99	322	280	192	447	380	350	5.4
KSB 125	124	322	280	192	447	380	350	5.4
KSB 150	149	352	310	212	477	410	380	6.4
KSB 160	159	352	310	212	477	410	380	6.4
KSB 200	199	432	368	287	588	506	480	10.0
KSB 200C	199	432	368	287	588	506	480	12.0
KSB 250	249	432	368	287	588	506	480	12.5
KSB 315	314	502	438	397	648	566	540	15.5



## DESIGN AND OPERATING LOGIC

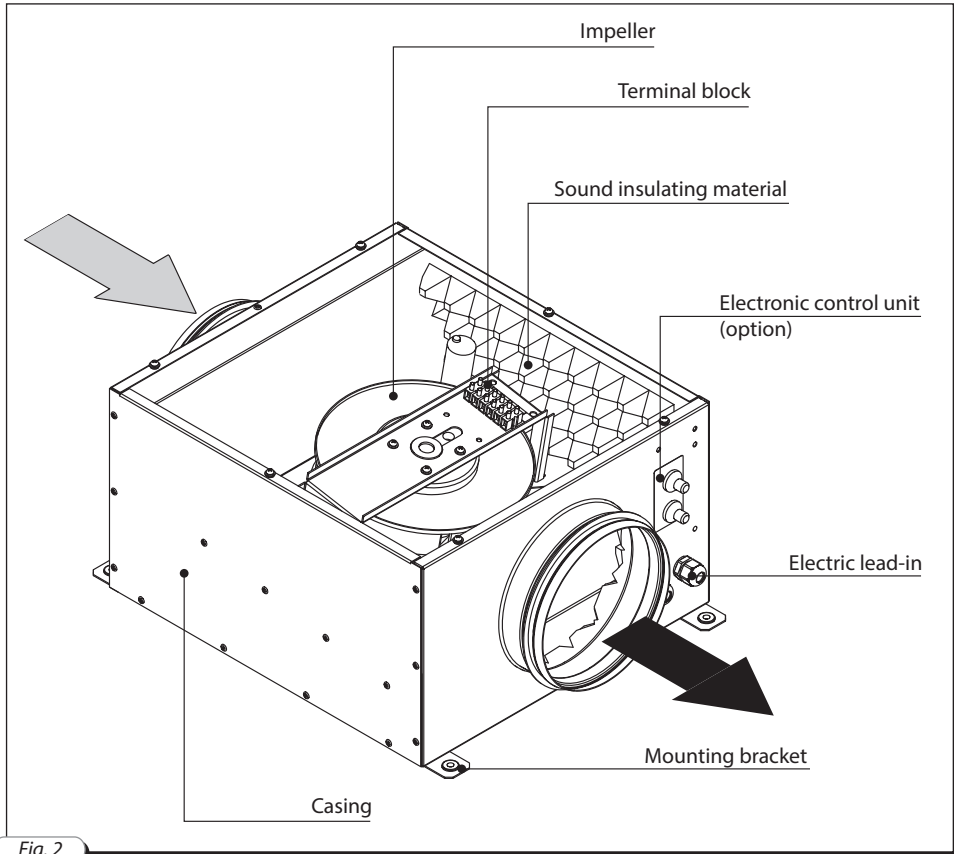


Fig. 2

The fan casing is made of galvanized steel sheets internally lined with heat- and sound-insulation layer. The round spigots are rubber sealed for airtight connection to the air ducts, Fig. 2.

The fan is equipped with a bipolar asynchronous motor with an external rotor and a centrifugal impeller with backward curved blades. The motor is equipped with built-in overheating protection with automatic reset. The motor ball bearings with a specially selected lubricant reduce the fan noise and ensure maintenance-free operation. The model KSB...M is equipped with rubber anti-vibration mounts for extra vibration absorption.

The model KSB...S is equipped with a high-powered motor.

The model KSB...K1 with mineral wool insulation is designed for air extract only.



## MOUNTING AND SETUP

The inline fan KSB is designed for direct connection to round air ducts.

The casing has mounting brackets to facilitate the fan installation.

In case the fan is mounted on flexible joints attach the fan to a structural unit by means of supports, suspension links or brackets. 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.

While installing the fan ensure convenient access for subsequent maintenance and repair.

### After unpacking the fan, prior to starting the mounting:

- Carefully read the user's manual and the installation, operation and maintenance guidelines.
- Check the fan for integrity and make sure there are no transportation damages.

Follow the safety regulations during the fan set-up and operation.

### The fan mounting is as follows:

- Make sure that the fan is disconnected from power mains, Fig. 3.1.
- Apply the markings for mounting of the fixing brackets onto the mounting surface, Fig. 3.2.
- Drill the holes and fasten the fan on the brackets by using appropriate fasteners (e.g. expansion anchors), Fig. 3.3.

Connect the air ducts to the fan, Fig. 3.4.

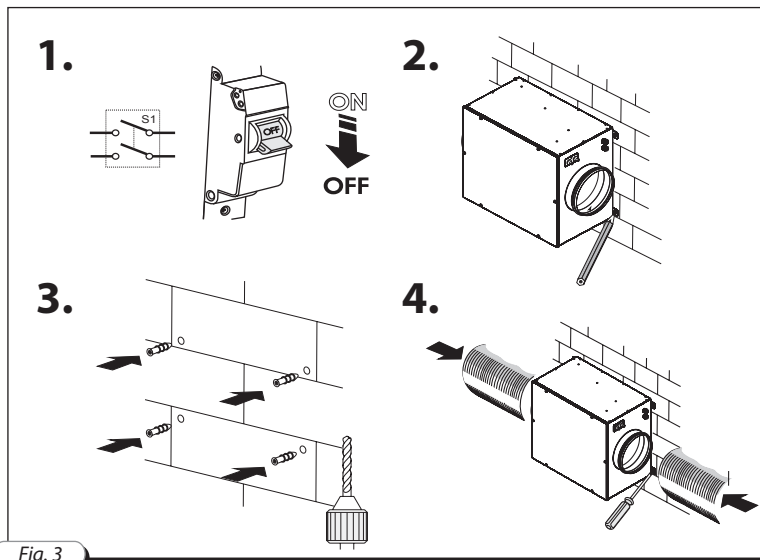


Fig. 3

**CONNECTION TO POWER MAINS**

**DISCONNECT THE FAN FROM POWER SUPPLY PRIOR TO ANY ELECTRIC INSTALLATION OPERATIONS.**

**INSTALLATION SHALL ONLY BE PERFORMED BY A PROFESSIONAL ELECTRICIAN QUALIFIED FOR UNASSISTED OPERATIONS WITH ELECTRICAL INSTALLATIONS UP TO 1000 V AFTER CAREFUL STUDY OF THE PRESENT USER'S MANUAL.**

**THE RATED ELECTRICAL PARAMETERS ARE STATED ON THE RATING PLATE.**

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

The fan is rated for connection to single-phase 230 V/50-60 Hz AC mains.

Depending on the fan configuration there are two possible options for power mains connection:

- via the plugged power cable;
- via the terminal box.

For electric installations use insulated, durable and heat-resistant electric leads (cables, conductors). Connect the fan to power mains through the external automatic circuit breaker installed at the power input and integrated into the house cabling. The circuit breaker location must ensure free access for emergency shutdown of the fan.

The recommended trip current of the circuit breaker is 2 A for KSB 315 and 1 A for all other modifications. The recommended minimum conductor cross section is 0.75 mm<sup>2</sup>. The conductor selection shall be based on the maximum permissible wire heating depending on the wire type, its insulation, length and installation method (i.e. overhead, in pipes or inside the walls).

The power mains connection steps are as follows:

**1. Internal fan connections:**

- Remove the screws securing the casing bottom panel, Fig. 4.1.
- Remove the casing bottom panel (see Fig. 4.2);
- Route the power supply cable through the sealed electric lead-in the side wall.
- Strip the wire tips for 7 - 8 mm.
- Connect the wires to the terminal block in accordance with the electrical wiring diagram and the terminal designations as shown in Fig. 5. Insert the wires into the respective terminals until the insulation stops against the metal part and secure the wires with clamping screws.
- Assemble the fan.

**2. Connection via a terminal box.**

In case of the fan connection to the power mains via a terminal box use the same wiring diagram and terminal markings, see Fig. 5.

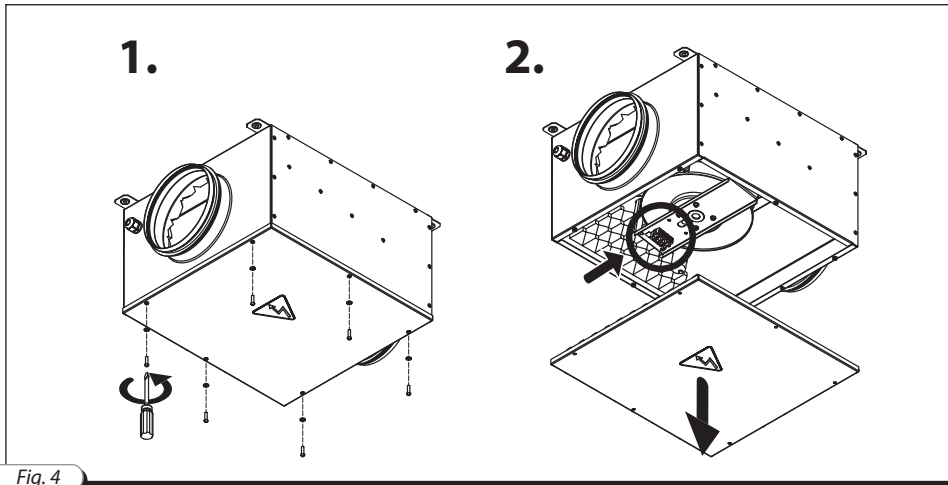


Fig. 4

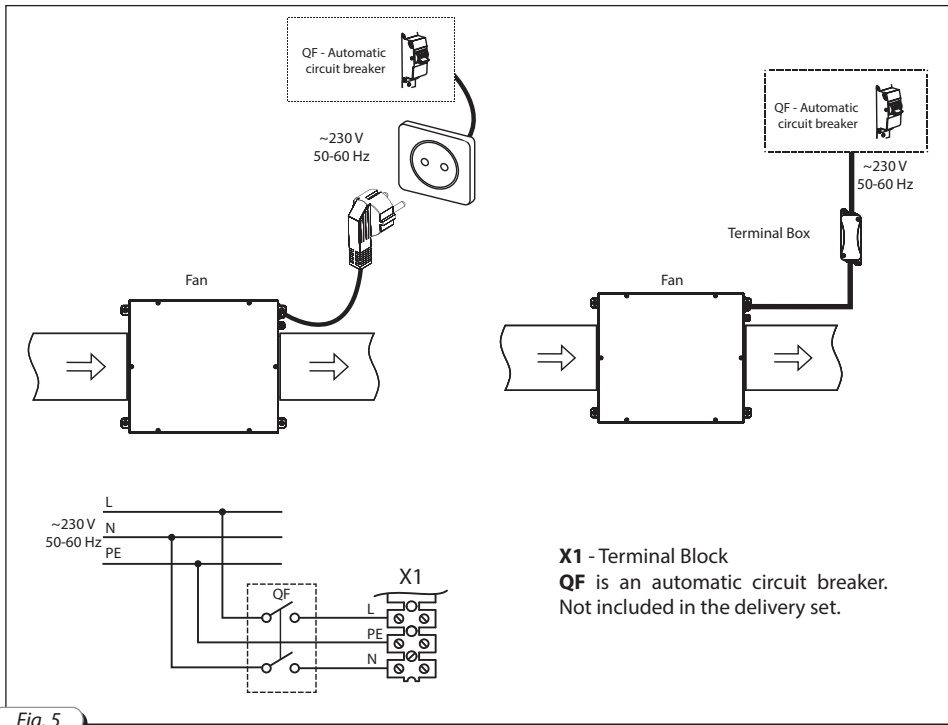
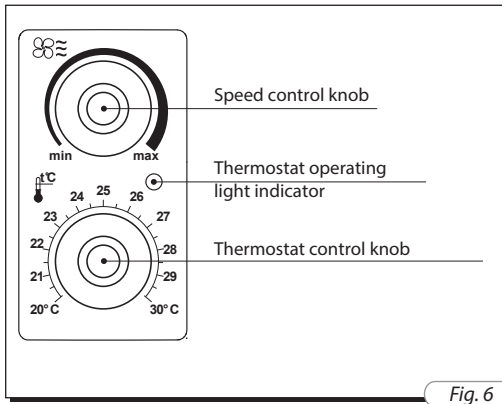


Fig. 5

## CONTROL

Depending on the configuration the fan may be equipped with an electronic temperature and speed control unit, Fig. 6.

KSB fan is a perfect solution for ventilation of premises requiring permanent temperature control (i.e. greenhouses). The fan is equipped with an electronic temperature and speed control unit and automatically changes the impeller speed (air flow rate) with respect to the temperature in the ventilation duct or in the premise.



The front panel of the electronic module has the following controls and indicators:

- Speed control knob for low speed setting.
- Temperature control knob for temperature setting.
- Thermostat operating indicator.
- The fan is available in two modifications:
  - with a temperature sensor built into the fan duct (U/U1 option);
  - with a remote temperature sensor attached to a 4 m long cable («Un»/U1n» option).

### Operation of KSB fans equipped with an electronic temperature and speed control unit.

Set the desired air temperature (thermostat set point) by turning the thermostat control knob and the minimum rotation speed (air flow rate) by turning the speed control knob. If the air temperature increases above the thermostat set point the fan switches to the high speed (maximum air flow rate). If the temperature decreases below the thermostat set point the fan switches to the pre-set lower speed.

To avoid frequent motor speed switches when the air temperature in the duct is equal to the set temperature point, the speed switch delay is activated. There are two switch delay patterns for various cases:

#### ■ The temperature sensor-based feedback delay (KSB U option):

The motor switches to high speed as the air temperature exceeds 2 °C above the set thermostat set point. The motor reverts to the pre-set lower speed as the air temperature drops below the thermostat set point. This pattern is used to keep air temperature to within 2 °C. In this case the motor speed switches are rare.

#### ■ 2. Timer-based feedback delay (KSB...U1 option).

As the air temperature exceeds the set thermostat set point, the motor switches to higher speed and the switch delay timer is activated for 5 min. The motor reverts to lower speed as the air temperature drops down below the thermostat set point and only after 5 minutes countdown.

This pattern is used for exact air temperature control. The speed switches for the fan with U1 option are more frequent as compared to the operating logic of the fan with U option, however the minimum operating cycle at one speed is 5 minutes.

**Example of the temperature sensor feedback delay:**

Initial Conditions:

- Rated rotation speed is 60 % of the maximum speed.
- Set temperature point is +25 °C.
- Air duct temperature is +20 °C.

Fan impeller rotation speed is 60 %.

*Air duct temperature increases.*

Fan impeller rotation speed is 60 %.

*Air duct temperature reaches +27 °C.*

Fan switches to impeller rotation speed 100 %.

*Air duct temperature starts falling.*

Fan impeller rotation speed is 100 %.

*Air duct temperature reaches +25 °C.*

Fan switches to the pre-set lower speed 60 %.

**Example of the timer feedback delay:**

Initial Conditions:

- Rated rotation speed is 60 % of the maximum speed.
- Operation threshold is 25 °C.
- Air duct temperature is +20 °C.

Fan impeller rotation speed is 60 %.

*Air duct temperature increases, reaches +25°C and continues to grow.*

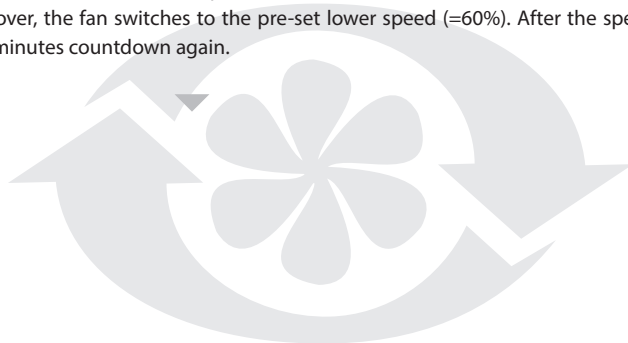
Fan switches to impeller rotation speed 100 %. The delay timer is activated for 5 minutes.

*Air duct temperature starts falling down.*

Fan operates with impeller rotation speed is 100 %.

*Air duct temperature reaches +25 °C and continues to drop.*

After the timer countdown is over, the fan switches to the pre-set lower speed (=60%). After the speed switches to 60% the timer starts 5 minutes countdown again.



*Air duct temperature increases, reaches +25°C and continues to grow*

After the timer stops, the motor switches to the high speed 100%. After the speed switch the timer starts 5 minutes countdown.

Thus, in the timer delay pattern the delay timer activates each time the fan speed changes.

## TECHNICAL MAINTENANCE

Disconnect the fan from power mains prior to any maintenance and repair operations. Make sure the rotating parts do not move.

Maintenance means regular cleaning of the fan surfaces of dirt and dust.

The impeller blades require thorough cleaning every 6 months. Clean the blades as follows:

- Disconnect the fan from power supply.
- Wipe the exterior surfaces of the fan casing, Fig. 7.1.
- Undo the screws and remove the casing bottom panel, Fig. 7.2 and 7.3.
- Clean the impeller blades using a soft brush or a vacuum cleaner, Fig. 7.4.

Protect the motor and circuit board from water ingress. Blade cleaning must be performed with care so as not to displace the balancing weights of the impeller.

Perform all the above operations in the reverse order after cleaning.

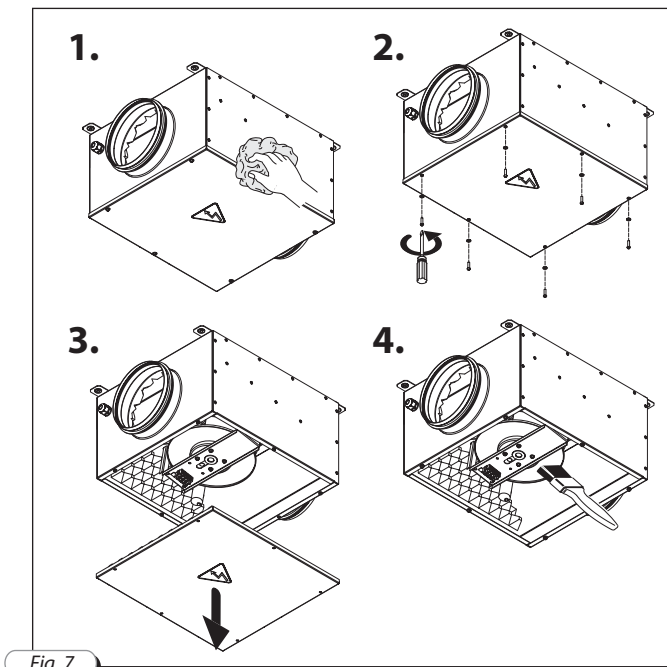


Fig. 7

**TROUBLESHOOTING**

Table 3

Possible problems and troubleshooting		
Problem	Possible Reasons	Troubleshooting
The fan does not get started.	No connection to power supply.	Make sure that the fan is properly connected to the power mains and make any corrections, if necessary.
	Jammed motor.	Switch off the fan. Troubleshoot an electric connection error. Restart the fan.
Circuit breaker tripping during the fan start.	Excessive electric current consumption caused by a short circuit.	Turn the fan off. Contact the Seller.
Noise and vibration.	Clogged impeller.	Clean the fan impeller.
	Loose screw connections.	Check the tighten the fastening screws.

**TRANSPORTATION AND STORAGE REGULATIONS**

Store the fan in the manufacturer's original packing box in a dry ventilated premise at ambient temperatures from +10°C up to +40°C.

Storage environment must not contain aggressive vapours and chemical mixtures provoking corrosion, insulation and sealing deformation.

Use suitable hoist machinery for handling and storage operations to prevent possible damage to the fan. Follow the handling requirements applicable for the particular type of cargo.

The fan can be carried in the original packing by any mode of transport provided proper protection against precipitation and mechanical damage. Avoid sharp blows, scratches or rough handling during loading and unloading.



## MANUFACTURER'S WARRANTY

The manufacturer hereby warrants warranty period of the product for 24 months after the retail sale date provided the user's observance of the transportation, storage, mounting 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 elimination of faults by the manufacturer by means of warranty repair at the factory free of charge. The warranty repair shall include 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 document 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 packing 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.
- User's violation of the unit installation regulations.
- User's violation of the unit control regulations.
- Unit connection to the power mains with a voltage different from the one stated in the user's manual.
- Unit breakdown due to voltage surges in the 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.
- User's violation of the unit transportation regulations.
- User's violation of the unit storage regulations.
- 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 document certifying the unit purchase.



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

**USERS' 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.**

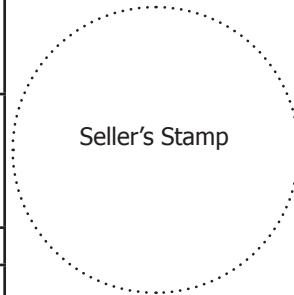


**ACCEPTANCE CERTIFICATE**

<b>Unit Type</b>	Sound-Insulated Fan
<b>Model</b>	Vents KSB _____
<b>Serial Number</b>	
<b>Manufacture Date</b>	
<p>Is compliant with the technical specifications and is recognized as serviceable. «We hereby declare that the product complies with the essential protection requirements of Electromagnetic Council Directive 2004/108/EC, 89/336/EEC and Low Voltage Directive 2006/95/EC, 73/23/EEC and CE-marking Directive 93/68/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.</p> <p>This certificate is issued following test carried out on samples of the product referred to above.»</p>	
<b>Quality Inspector's Stamp</b>	

**SELLER INFORMATION**

<b>Seller</b>	
<b>Address</b>	
<b>Phone Number</b>	
<b>E-mail</b>	
<b>Purchase Date</b>	



<p>This is to certify acceptance of the complete fan delivery with the user's manual. The warranty terms are acknowledged and accepted.</p>	
<b>Customer's Signature</b>	

**INSTALLATION CERTIFICATE**

The sound-insulated fan KSB has been connected to power mains pursuant to the requirements stated in the present user's manual.

<b>Company Name</b>		
<b>Address</b>		
<b>Phone Number</b>		
<b>Installation Technician's Full Name</b>		
<b>Installation Date:</b>		<b>Signature:</b>

Installation Technician's  
Company Seal

The fan has been installed in accordance with the provisions of all the applicable local and national construction, electrical and technical codes and standards. The fan operates normally as intended by the manufacturer.

**Signature:**

**WARRANTY CARD**

<b>Unit Type</b>	Sound-Insulated Fan
<b>Model</b>	Vents KSB _____
<b>Serial Number</b>	
<b>Manufacture Date</b>	
<b>Purchase Date</b>	
<b>Warranty Period</b>	
<b>Seller</b>	

Seller's Stamp

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