



IMPULSE CENTRIFUGAL FAN

ICF series



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The user's manual consisting of the technical details, operating instructions and technical specification applies to the installation and mounting of the impulse centrifugal fan of ICF series (hereinafter «the unit» as mentioned in the «Safety Requirements» and «Manufacturer's Warranty» sections as well as in warnings and information blocks).

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:



WARNING!



DO NOT!

UNIT MOUNTING AND OPERATION SAFETY PRECAUTIONS



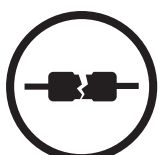
- Disconnect the unit from power mains prior to any installation operations.



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



- 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 objects on the power cable.



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



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



- Do not allow children to operate the unit.



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



- Do not open the unit during operation.



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



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



- Ground the unit!



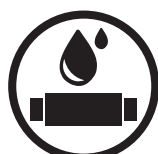
- Unpack the unit with care.



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



- 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 wash the unit with water. Protect the electric parts of the unit against ingress of water.



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



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



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



- Use the unit only for its intended purpose.



**THE PRODUCT MUST BE COLLECTED SEPARATELY AT THE END OF SERVICE LIFE.
DO NOT DISPOSE OF AS UNSORTED MUNICIPAL WASTE.**

PURPOSE

The impulse centrifugal fan is applied in ventilation and smoke extraction systems of underground parkings and garages to decrease CO₂ concentration in the air.

The fans with fire resistance ratings +200 °C, +300 °C and +400 °C are designed for 2 hours non-stop operation for smoke exhaust. The fan generates a pressurized air jet and it shifts the polluted air or smoke from the premise to exhaust air shafts.

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 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 UNIT INSTALLATION LOCATION MUST PREVENT UNAUTHORIZED ACCESS BY UNATTENDED CHILDREN.

DELIVERY SET

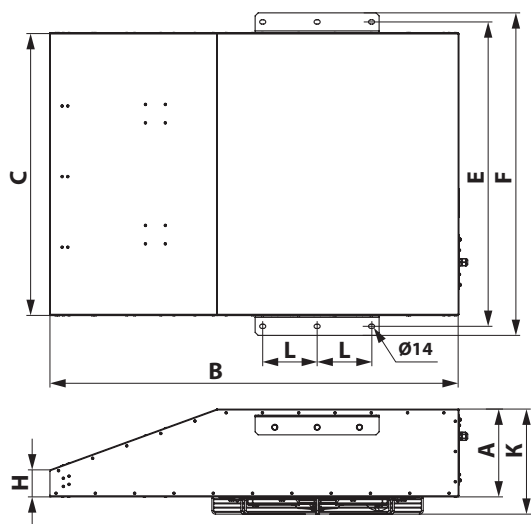
- | | |
|-----------------|--------|
| ■ Fan | 1 item |
| ■ User's manual | 1 item |
| ■ Packing | 1 item |

DESIGNATION KEY

ICF-X-X-X

- | | |
|--------------------------------|---|
| Fan type | ■ |
| Impulse centrifugal fan | |
| Thrust | ■ |
| 50N | |
| 85N | |
| 100N | |
| Number of poles | ■ |
| 4 (single-speed) | |
| 4/6 (double-speed) | |
| 4/8 (double-speed) | |
| Fire resistance / hours | ■ |
| — up to +55 °C | |
| 200/2 — 200 °C/2 hours | |
| 300/2 — 300 °C/2 hours | |
| 400/2 — 400 °C/2 hours | |

TECHNICAL DATA



The fans are designed for general purpose ventilation of underground and semi-opened parkings, smoke extraction in case of fire as a part of smoke extract system.

The unit is rated as a class I electric appliance.

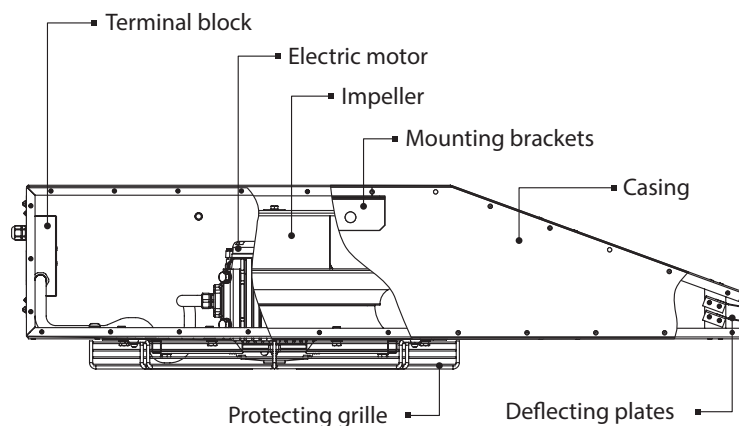
Hazardous parts access and water ingress protection rating is IP55.

The unit design is regularly improved, so some models may slightly differ from those ones described in this manual.

Model	Dimensions [mm]								Weight [kg]
	A	B	C	E	F	H	L	K	
ICF-50N ...	290	1355	935	1005	1065	90	180	350	96
ICF-85N ...	330	1605	1105	1175	1235	110	230	390	136
ICF-100N ...	330	1605	1105	1175	1235	110	230	390	138

Model	Power supply voltage, [V/Hz]	Air capacity [m³/h]	Input power [kW]	Thrust (impulse) [N]	Air velocity [m/s]	RPM [min⁻¹]	Operation temperature [°C]
50N, single-speed							
ICF-50N-4	3~ 400 / 50	6200	1.5	50	20.5	1500	-25 - +55 °C
ICF-50N-4-200/2	3~ 400 / 50	6150	1.5	50	20.3	1500	200 °C/2 hours
ICF-50N-4-300/2	3~ 400 / 50	6100	1.5	50	20.1	1500	300 °C/2 hours
ICF-50N-4-400/2	3~ 400 / 50	6050	1.5	50	20	1500	400 °C/2 hours
50N, double-speed							
ICF-50N-4/6	3~ 400 / 50	6200 / 4100	1.5 / 0.37	50 / 20	20.5 / 13.5	1500 / 1000	-25 - +55 °C
ICF-50N-4/6-200/2	3~ 400 / 50	6150 / 4070	1.5 / 0.37	50 / 20	20.3 / 13.4	1500 / 1000	200 °C/2 hours
ICF-50N-4/6-300/2	3~ 400 / 50	6100 / 4030	1.5 / 0.37	50 / 20	20.1 / 13.3	1500 / 1000	300 °C/2 hours
ICF-50N-4/6-400/2	3~ 400 / 50	6050 / 4000	1.5 / 0.37	50 / 20	20 / 13.2	1500 / 1000	400 °C/2 hours
ICF-50N-4/8	3~ 400 / 50	6200 / 3100	1.6 / 0.4	50 / 13	20.5 / 10.2	1500 / 750	-25 - +55 °C
ICF-50N-4/8-200/2	3~ 400 / 50	6150 / 3060	1.6 / 0.4	50 / 13	20.3 / 10.1	1500 / 750	200 °C/2 hours
ICF-50N-4/8-300/2	3~ 400 / 50	6100 / 3030	1.6 / 0.4	50 / 13	20.1 / 10	1500 / 750	300 °C/2 hours
ICF-50N-4/8-400/2	3~ 400 / 50	6050 / 300	1.6 / 0.4	50 / 13	20 / 9.9	1500 / 750	400 °C/2 hours
85N, single-speed							
ICF-85N-4	3~ 400 / 50	9750	2.2	85	22.3	1500	-25 - +55 °C
ICF-85N-4-200/2	3~ 400 / 50	9700	2.2	85	22.2	1500	200 °C/2 hours
ICF-85N-4-300/2	3~ 400 / 50	9660	2.2	85	22.1	1500	300 °C/2 hours
ICF-85N-4-400/2	3~ 400 / 50	9620	2.2	85	22	1500	400 °C/2 hours
85N, double-speed							
ICF-85N-4/6	3~ 400 / 50	9750 / 5950	2.2 / 0.7	85 / 28	22.3 / 13.6	1500 / 1000	-25 - +55 °C
ICF-85N-4/6-200/2	3~ 400 / 50	9700 / 5900	2.2 / 0.7	85 / 28	22.2 / 13.5	1500 / 1000	200 °C/2 hours
ICF-85N-4/6-300/2	3~ 400 / 50	9660 / 5860	2.2 / 0.7	85 / 28	22.1 / 13.4	1500 / 1000	300 °C/2 hours
ICF-85N-4/6-400/2	3~ 400 / 50	9620 / 5820	2.2 / 0.7	85 / 28	22 / 13.3	1500 / 1000	400 °C/2 hours
ICF-85N-4/8	3~ 400 / 50	9750 / 4150	2.2 / 0.55	85 / 20	22.3 / 9.5	1500 / 750	-25 - +55 °C
ICF-85N-4/8-200/2	3~ 400 / 50	9700 / 4100	2.2 / 0.55	85 / 20	22.2 / 9.4	1500 / 750	200 °C/2 hours
ICF-85N-4/8-300/2	3~ 400 / 50	9660 / 4050	2.2 / 0.55	85 / 20	22.1 / 9.3	1500 / 750	300 °C/2 hours
ICF-85N-4/8-400/2	3~ 400 / 50	9620 / 4000	2.2 / 0.55	85 / 20	22 / 9.1	1500 / 750	400 °C/2 hours
100N, single-speed							
ICF-100N-4	3~ 400 / 50	10200	3.0	100	23.3	1500	-25 - +55 °C
ICF-100N-4-200/2	3~ 400 / 50	10140	3.0	100	23.2	1500	200 °C/2 hours
ICF-100N-4-300/2	3~ 400 / 50	10080	3.0	100	23	1500	300 °C/2 hours
ICF-100N-4-400/2	3~ 400 / 50	10000	3.0	100	22.9	1500	400 °C/2 hours
100N, double-speed							
ICF-100N-4/8	3~ 400 / 50	10200 / 5150	2.8 / 0.7	100 / 26	23.3 / 11.8	1500 / 750	-25 - +55 °C
ICF-100N-4/8-200/2	3~ 400 / 50	10140 / 5100	2.8 / 0.7	100 / 26	23.2 / 11.7	1500 / 750	200 °C/2 hours
ICF-100N-4/8-300/2	3~ 400 / 50	10080 / 5050	2.8 / 0.7	100 / 26	23 / 11.5	1500 / 750	300 °C/2 hours
ICF-100N-4/8-400/2	3~ 400 / 50	10000 / 5000	2.8 / 0.7	100 / 26	22.9 / 11.4	1500 / 750	400 °C/2 hours

DESIGN AND FUNCTIONING



The fan casing is made of polymer coated steel. The protection grille on the air inlet side prevents ingress of foreign objects. The deflecting plates on the pressure side ensure equal air distribution and boost air draft.

Depending on the fan modification it is equipped with a single-speed four-pole motor or a double-speed 4/6 or 4/8 pole asynchronous motor. Steel impeller with backward curved blades.

MOUNTING

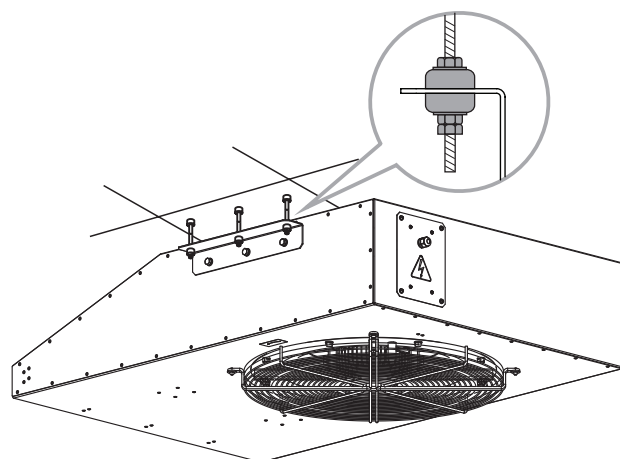


THE UNIT MUST BE MOUNTED BY A QUALIFIED EXPERT ONLY, PROPERLY TRAINED AND POSSESSING THE REQUIRED TOOLS AND MATERIALS.



THE UNIT MUST BE INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF ALL THE APPLICABLE LOCAL AND NATIONAL CONSTRUCTION, ELECTRICAL AND TECHNICAL CODES AND STANDARDS. THE UNIT MUST BE GROUNDED.

THE INSTALLED UNIT MUST PROVIDE SUFFICIENT SERVICE SPACE TO THE UNIT FOR MAINTENANCE AND REPAIR OPERATIONS.



The fan is attached to the ceiling by means of specially designed mounting brackets. The fan is fixed to the ceiling in 6 points with expansion anchors or mounting studs.

The fasteners for mounting of the fan are not included in the delivery set and must be purchased separately. For selection of the fastener type consider the mounting surface material and fan weight. For details, please refer to the fan technical data. Selection of fasteners must be performed by a qualified service technician.

CONNECTION TO POWER SUPPLY



DISCONNECT THE UNIT FROM POWER SUPPLY PRIOR TO ANY ELECTRIC INSTALLATION OPERATIONS. INSTALLATION SHALL ONLY BE PERFORMED BY A PROFESSIONAL ELECTRICIAN. THE RATED ELECTRICAL PARAMETERS OF THE UNIT 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 three-phase ac 400 V/ 50 Hz power mains. For electric installations use insulated durable heat-resistant conductors with the minimum wire cross section 2.5 mm². Connect the fan to power supply through the external automatic circuit breaker installed at the power input and integrated into house cabling. The circuit breaker location must provide quick access for emergency shutdown of the unit. The trip current of the circuit breaker must be in compliance with the consumption current. The recommended trip current of the automatic circuit breaker is 4 A for ICF-50N and 6.3 A for ICF-85N, ICF-100N. The cable selection must 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).

Connection of the fan for smoke extraction must be performed via a cable with a respective fire-resistance class. Quality and mounting of the fire-resistant power cable must provide trouble-free durable operation of the fan in case of fire. The fan motor has no integrated thermal protection. Consider this fact during selection of the motor starter and the contactor.

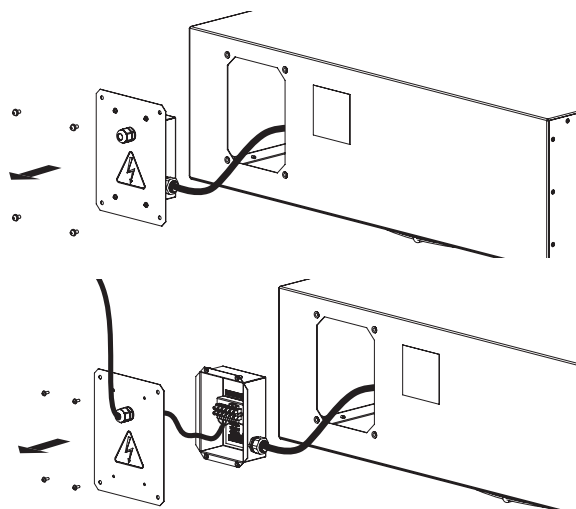
The impulse centrifugal fan is a component part of the ventilation system and is not designed for standalone operation. The fan must be integrated in the ventilation or smoke extraction system and equipped with automatic control.

The fan motor must be connected to power supply in compliance with wiring diagram and terminal designations and wired through the terminal block X1. The terminal block is located in the terminal box and terminal marking is shown on the sticker attached to the terminal box.

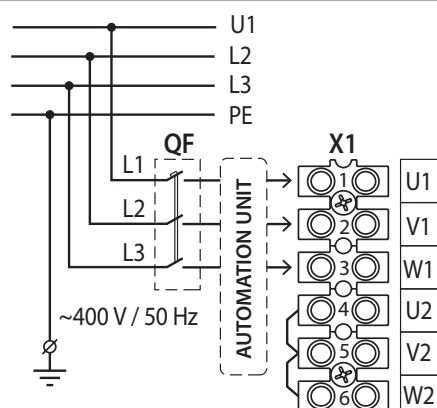
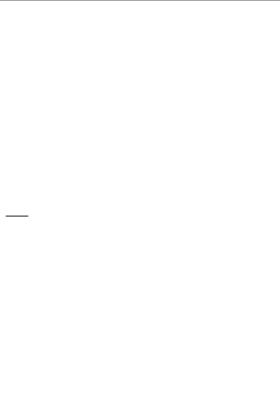
The terminal box is located inside of the fan casing.

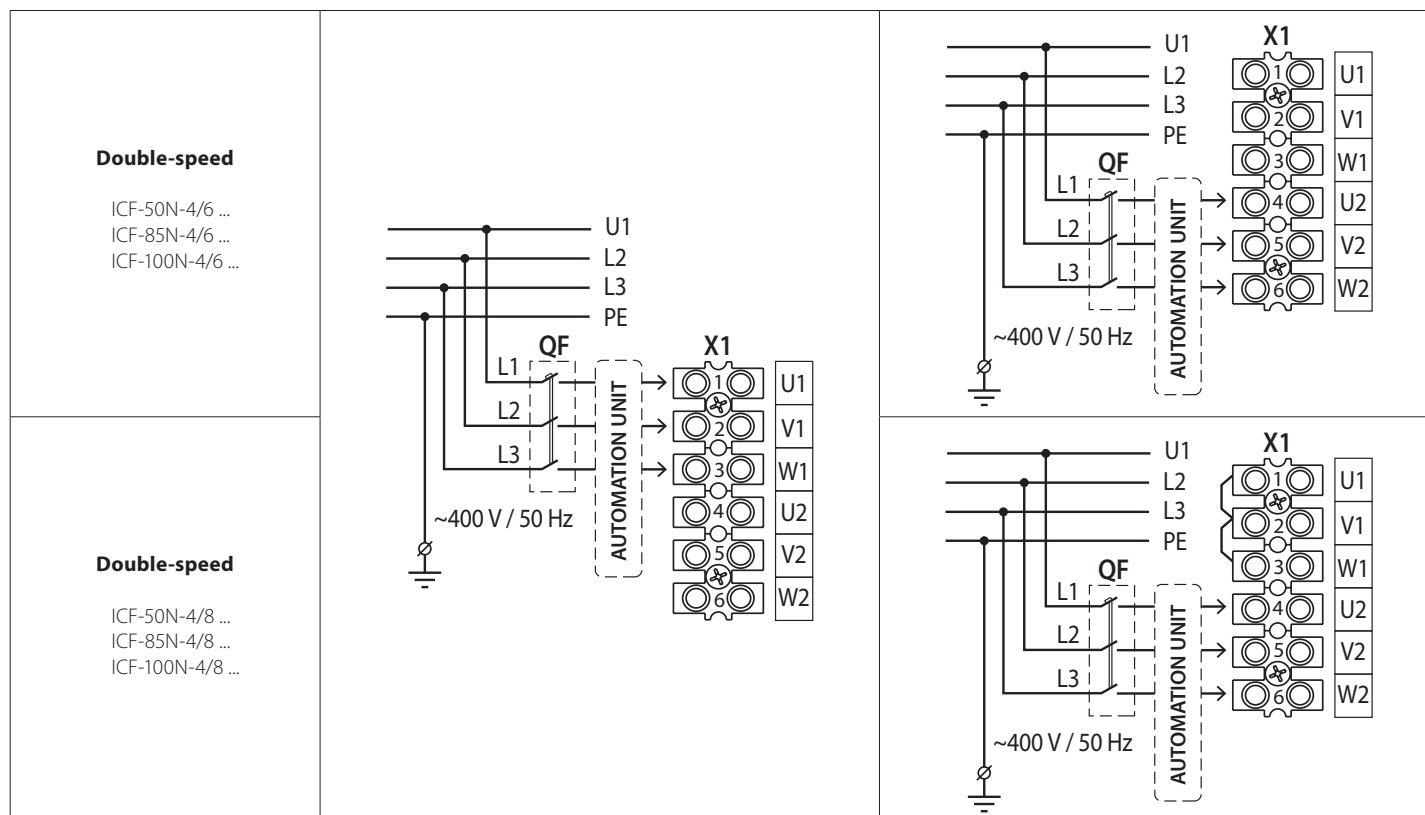
Wiring steps:

- Unscrew the terminal box from the casing wall and remove it.
- Unscrew the terminal box lid and remove it.
- Route the power cable through the sealed cable gland on the terminal box lid and wire the unit in compliance with the wiring diagram.
- Re-install and re-attach the terminal box.



Wiring diagrams

Model	Wiring diagram for the fan operation with low speed	Wiring diagram for the fan operation with high speed
Single-speed ICF-50N-4 ... ICF-85N-4 ... ICF-100N-4 ...		



MAINTENANCE



DISCONNECT THE UNIT FROM POWER MAINS PRIOR TO ANY MAINTENANCE OPERATIONS.



PROTECT THE MOTOR AGAINST WATER SPLASHES! DO NOT USE AGGRESSIVE SOLVENTS AND SHARP OBJECTS FOR CLEANING!



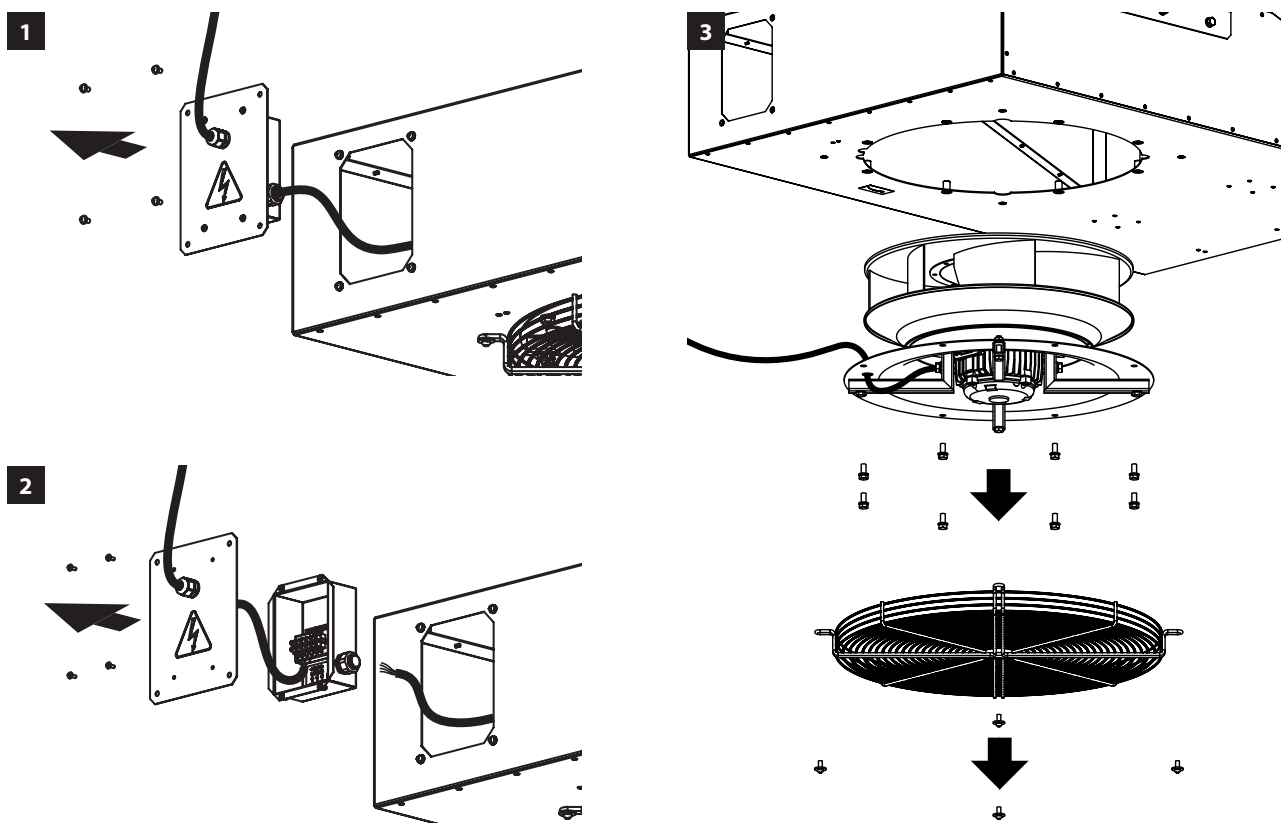
FULFIL THE SERVICING REQUIREMENTS STATED IN THE USER'S MANUAL FOR THE ELECTRIC MOTOR.

Keep the fan in good working condition.

To ensure proper functioning and a long service life of the fan perform regularly functional checkout, tests and cleaning.

- The fan designed for extraction of exhaust fumes must be checked annually.
- The fan designed for smoke extraction and general purpose ventilation must be checked every 6 months.
- The fan designed for operation only in case of fire must be checked 4 times per year.
- Clean the fan as required with pressurized air jet or a vacuum cleaner. Waterblasting is not recommended for cleaning.
- Vibration isolation: factory balancing of the fans excludes excessive vibration. Elevated vibration normally indicates contamination of the impeller. If regular cleaning is not sufficient to troubleshoot the vibration source, contact professionals for a solution. Long-term exposure of the impeller and motor to vibration may lead to their damage.
- The electric motor is supplied with maintenance-free bearings, greased for the entire service life.

Dismantling of the electric motor and impeller for maintenance purposes



TROUBLESHOOTING

Trouble	Possible reasons	Troubleshooting method
The fan does not get started.	No connection to power supply.	Make sure the power supply line is connected correct. Otherwise troubleshoot a connection error.
	Wrong wiring.	Contact the Seller for troubleshooting.
Low air flow of the fan.	The protecting grille and the deflecting plates are contaminated.	Clean the grille and the deflecting plates.
	Wrong rotation direction of the impeller. WARNING! Wrong rotation direction of the impeller may lead to the electric motor malfunction!	Make sure that the rotation direction of the impeller is consistent with the pointer on the fan casing. Turn the fan on for 5-10 seconds. In case of a wrong rotation direction contact the seller for checking of the electric connection for compliance with the wiring diagrams.
	Motor malfunction.	Contact the Seller for troubleshooting.
Noise, vibration.	Fan impeller clogged.	Clean the impeller blades.
	Loose screw connection of the screws in the fan or in the fan casing.	Tighten the fixing screws in the fan or in the casing against stop.
	Wear or damage of the motor bearings.	Contact the Seller for troubleshooting.
	Misbalance of the impeller.	
	Wear or damage of the impeller.	

STORAGE AND TRANSPORTATION RULES

Store the unit in the manufacturer's original packing box in a dry closed ventilated premise with temperature range from +5 °C to + 40 °C. Vapours or particles which can cause corrosion or damage the insulation or connection tightness are not allowed in the storage environment.

Use hoist machinery for handling and transportation to prevent possible mechanical damages of the unit.

Fulfil the requirements for transportation of the specified cargo type.

Use any vehicle types for the unit transportation provided that it is protected against mechanical or weather damage.

Transportation of the unit is allowed only in the operating position.

Avoid any mechanical shocks and strokes during handling operations. Abrupt temperature changes may provoke condensation of moisture inside the unit and impair the unit start-up. Prior to the initial power-up after transportation at sub-zero temperatures allow the unit to warm up at room temperature for at least 2 hours.

MANUFACTURER'S WARRANTY

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, 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 dismantled 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.



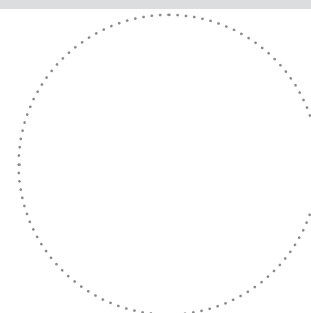
FOLLOWING THE REGULATIONS STIPULATED HEREIN WILL ENSURE A LONG AND TROUBLE-FREE OPERATION OF THE UNIT. USERS' CLAIMS SHALL BE A SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE SALE DATE STAMP.

ACCEPTANCE CERTIFICATE

Unit Type	Impulse centrifugal fan
Model	ICF-____N_____
Serial Number	
Manufacture Date	
<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. This certificate is issued following test carried out on samples of the product referred to above.</p>	
Quality Inspector's Stamp	

SELLER INFORMATION

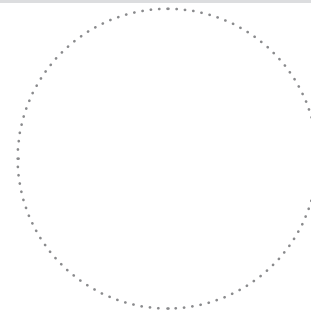
Seller	
Address	
Phone Number	
E-mail	
Purchase Date	
<p>This is to certify acceptance of the complete unit delivery with the user's manual. The warranty terms are acknowledged and accepted.</p>	
Customer's Signature	



Seller's Stamp

INSTALLATION CERTIFICATE

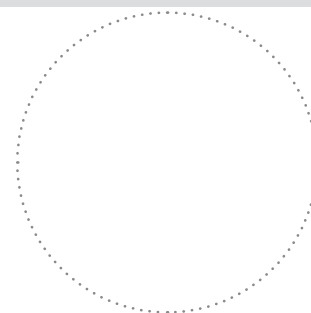
The unit has been connected to power mains pursuant to the requirements stated in the present user's manual.	
Company Name	
Address	
Phone Number	
Installation Technician's Full Name	
Installation Date:	Signature:
<p>The unit has been installed in accordance with the provisions of all the applicable local and national construction, electrical and technical codes and standards. The unit operates normally as intended by the manufacturer.</p>	
Signature:	



Installation Company Stamp

WARRANTY CARD

Unit Type	Impulse centrifugal fan
Model	ICF-____N_____
Serial Number	
Manufacture Date	
Purchase Date	
Warranty Period	
Seller	



Seller's Stamp



V117EN-02