



**VENTS INLINE FANS IN
SOUND-INSULATED CASING
USER'S MANUAL**

www.ventilation-system.com



TT Silent-M



VENTS

CONTENTS

Safety requirements.....	3
Delivery set	9
Operation guidelines	9
Brief description	9
Product sales	9
Designation key	11
Installation and set-up.....	12
Connection to power mains	18
Electronics operation algorithm	23
Technical maintenance.....	25
Troubleshooting.....	26
Storage and transportation regulations.....	26
Manufacturer's warranty	27

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 TT Silent-M 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.



FOLLOW THE USER'S MANUAL REQUIREMENTS TO ENSURE DURABLE AND TROUBLE-FREE OPERATION OF THE UNIT

SAFETY REQUIREMENTS

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.

Only qualified electricians with a work permit for electrical units up to 1000 V are allowed for installation. The present user's manual should be carefully read before beginning works.

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. Do not expose the unit to adverse atmospheric agents (rain, sun, etc.).

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.

This unit is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the unit by a person responsible for their safety. Children should be supervised to ensure that they do not play with the unit.

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.

Fixing means for attachment to the ceiling such as hooks or other devices shall be fixed with a sufficient strength to withstand 4 times the weight of the appliance.

The mounting of the suspension system shall be performed by the manufacturer, its service agent or suitably qualified persons.

The appliance is to be installed so that the blades are more than 2.3m above the floor.

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

DELIVERY SET

Fan	1 pc.
Screws with dowels	4 pcs.
Plastic screwdriver (only for the models with a timer)	1 pc.
User's manual	1 pc.
Packing box	1 pc.

OPERATION GUIDELINES

The fan is rated for connection to single-phase AC 220-240 V/50 Hz or 220 V/60 Hz power mains.

The unit is rated for continuous operation.

The arrow on the fan casing must match the air direction in the system.

The fan is rated as a class II electric appliance.

Ingress protection rating against access to hazardous parts and water ingress is IPX4.

The fan is rated for operation at the ambient air temperature from +1 °C up to +40 °C.

Power [V/Hz]	Transported air temperature [°C]
220-240/50	-25...+60
220/60	-25...+40

To comply with the ErP 2018 regulation, a local demand controller and speed controller must be used.

BRIEF DESCRIPTION

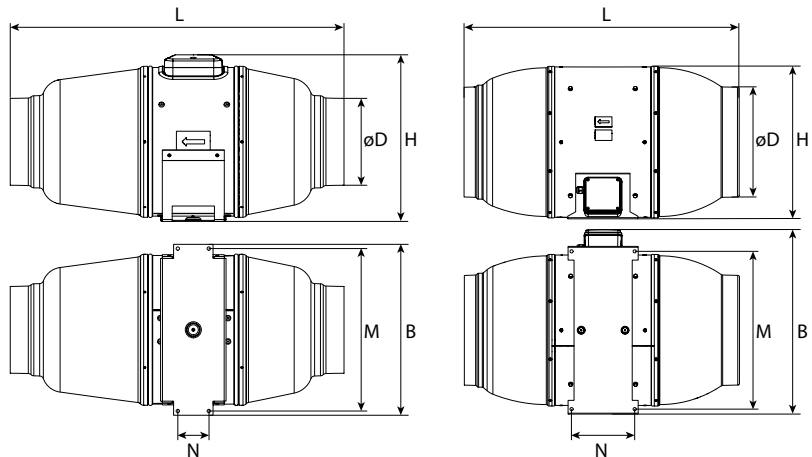
The unit described herein is a mixed-flow duct fan for supply or exhaust ventilation of premises. The fan is designed for connection to \emptyset 100, 125, 150, 160, 200, 250 and 315 mm air ducts.

An external control unit can be connected to the fan.

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

Overall dimensions:

	Ø D	B	H	L	M	N
TT Silent-M 100	98	243	237	505	231	44
TT Silent-M 125	123	243	237	474	231	44
TT Silent-M 150	148	274	263	580	231	44
TT Silent-M 160	157	274	263	580	231	44
TT Silent-M 200	198	392	295	560	310	115
TT Silent-M 250	248	445	360	665	370	130
TT Silent-M 315	313	526	434	785	450	180



DESIGNATION KEY

TT Silent M 100 T 220V/60 Hz

Unit voltage:

_ — 220-240 V/50 (60) Hz (by default)

YYY V/ZZ Hz — mains parameters other than the default ones

Options:

T: timer

U: speed controller with an electronic thermostat and a temperature sensor integrated into the air duct; power cord with a mains plug. Temperature-based operation logic

Un: speed controller with an electronic thermostat and external temperature sensor fixed on 4 m cable; power cord with a mains plug. Temperature-based operation logic

U1: speed controller with an electronic thermostat and a temperature sensor integrated into the air duct; power cord with a mains plug. Timer-based operation logic

U1n: speed controller with an electronic thermostat and external temperature sensor fixed on 4 m cable; power cord with a mains plug. Timer-based operation logic

U2: speed controller with an electronic thermostat and a temperature sensor integrated into the air duct; power cord with a mains plug. Temperature-based switching on/off

U2n: speed controller with an electronic thermostat and external temperature sensor fixed on 4 m cable; power cord with a mains plug. Temperature-based switching on/off

P: smooth speed controller from 0 to 100 % and a power cord with a mains plug

R: power cord with a mains plug

V: speed switch

Outlet spigot diameter [mm]

Casing material:

M — metal

Casing design:

Silent – sound-insulated

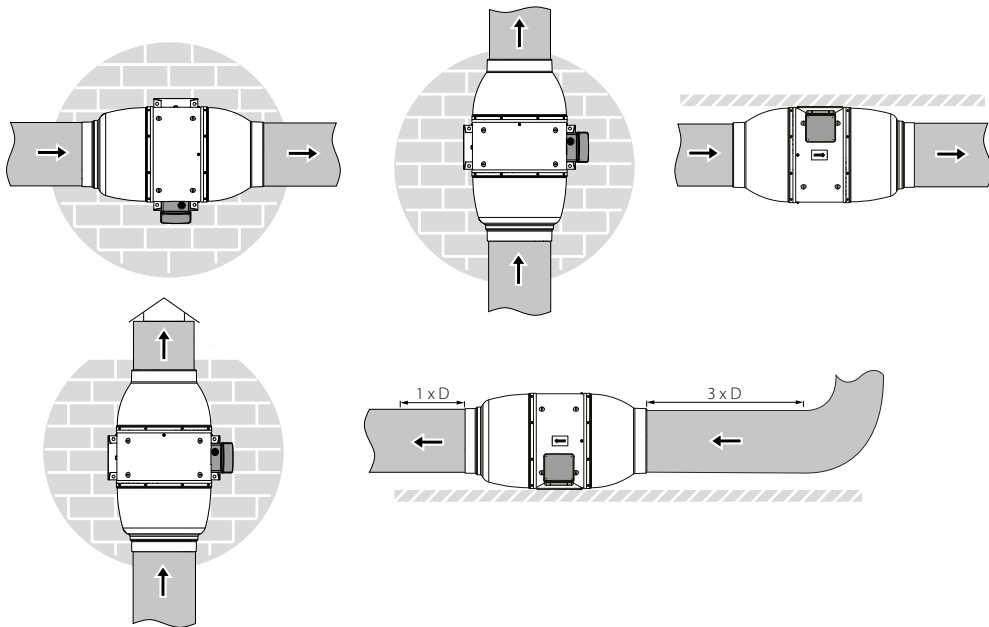
Fan model

For a description of the fan options, see the «Electronics operation algorithm» section.

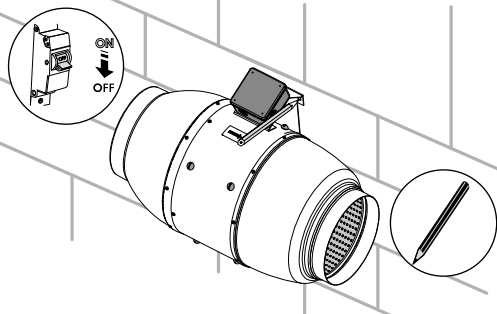
INSTALLATION AND SET-UP

The fan is suitable both for horizontal or vertical mounting on the floor, on the wall or on the ceiling. While mounting the fan, provide extra protection against water ingress, such as:

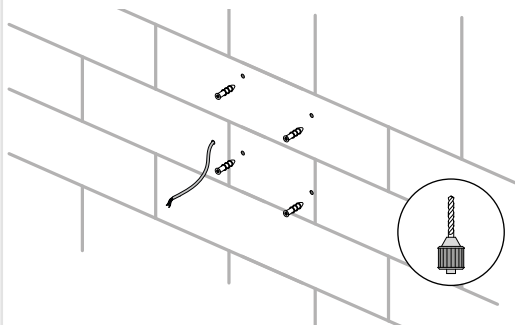
- For the top mounting install an outer protecting hood above.
- For any mounting position connect an air duct on both sides of the fan.



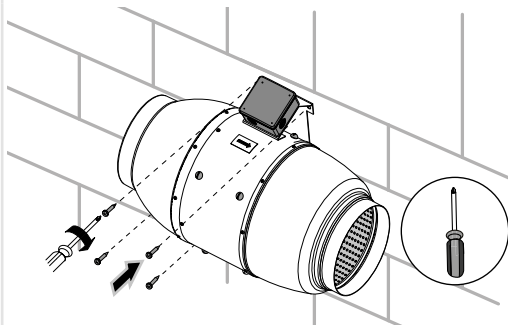
Cut off power supply and make sure electricity has been turned off. Mark the holes for fixing the fan and the power cable.



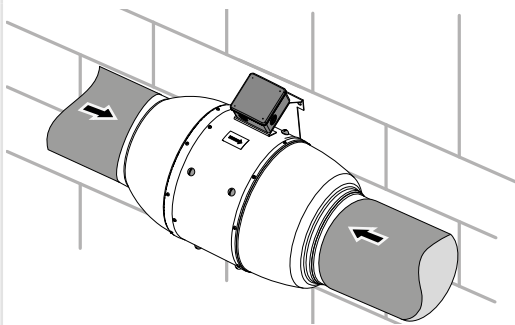
Lead the power cable to the ventilation hole, drill the mounting holes and install the dowels.



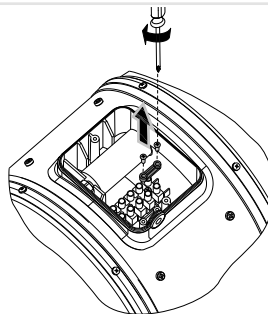
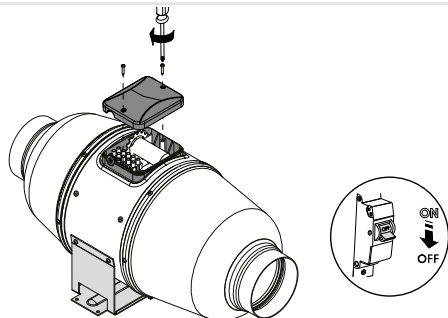
Fix the fan with the screws.



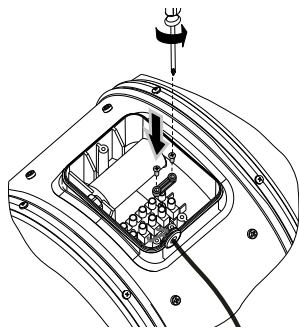
For any mounting position connect an air duct on both sides of the fan.



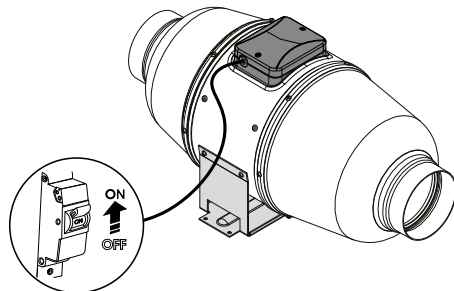
Cut off power supply and make sure electricity has been turned off. Remove the cover of the fan.



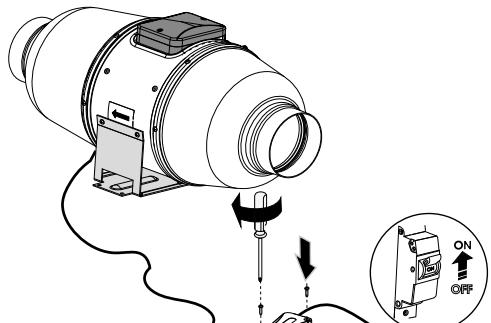
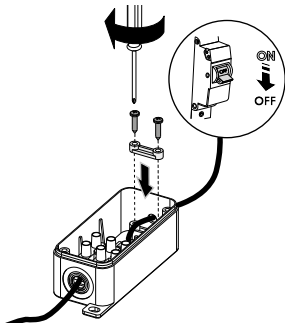
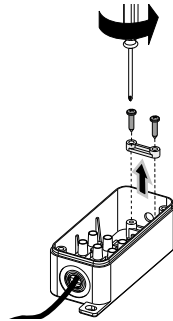
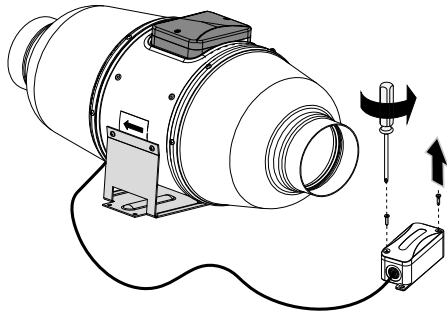
Connect the power cord wires to the terminal block and assemble the fan in reverse order.

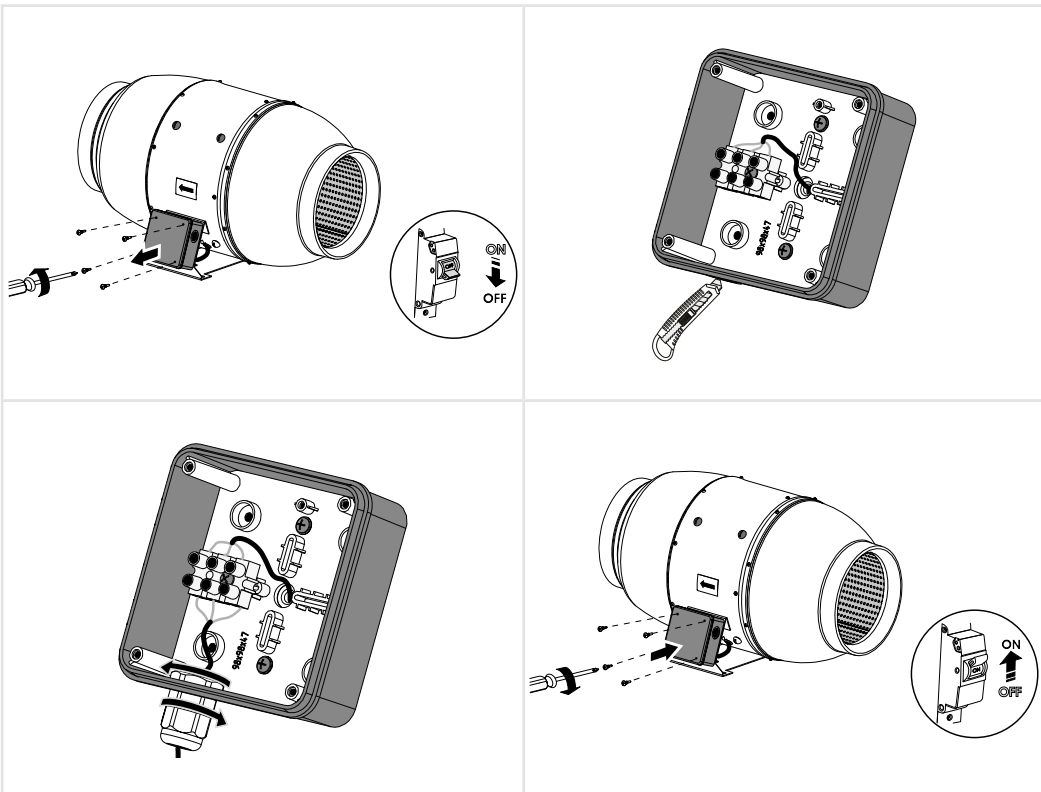


Supply power to the fan.

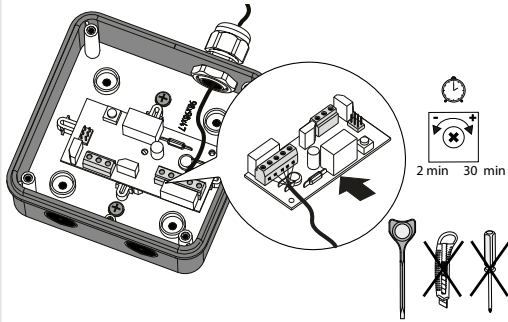


Mounting sequence for different fan models

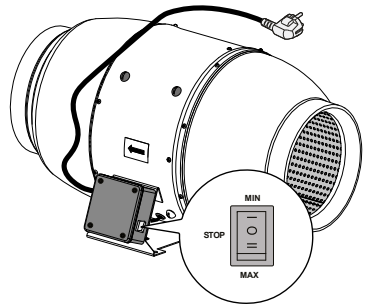




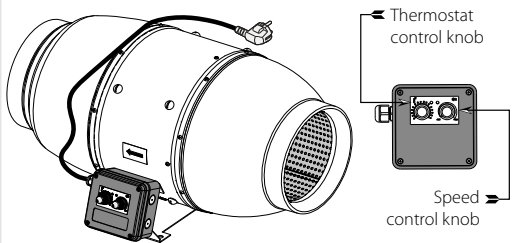
TT Silent-M ... T



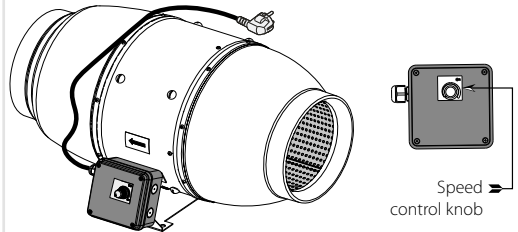
TT Silent-M ... RV



TT Silent-M ... U (U1, U2, Un, U1n, U2n)



TT Silent-M ... P



CONNECTION TO POWER MAINS

The fan is rated for connection to single-phase AC 220-240 V/50 (60) Hz power mains.

TERMINAL DESIGNATIONS ON WIRING DIAGRAMS

L1 — minimum speed terminal

L2 — maximum speed terminal

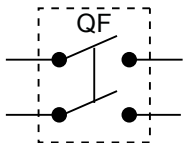
QF — automatic circuit breaker

S — external speed controller

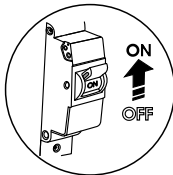
ST — external switch

SW — control mode switch

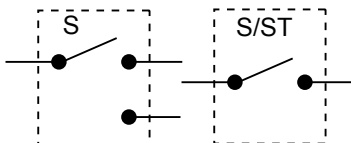
Automatic circuit breaker designation in the wiring diagram



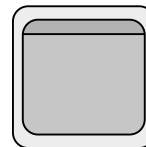
Automatic circuit breaker



Designation of the external switch on the wiring diagram

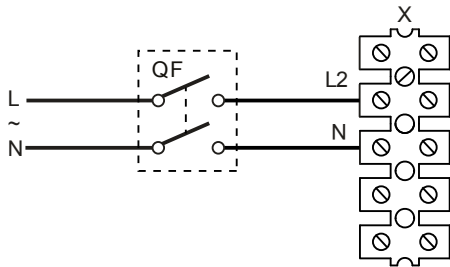


External switch

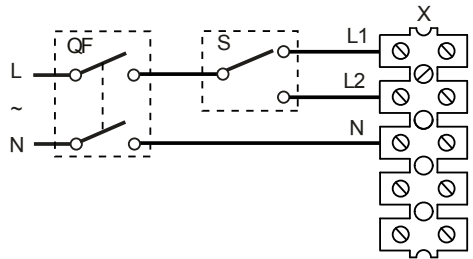


DO NOT USE A METAL SCREWDRIVER, KNIFE, ETC. FOR ADJUSTMENT OPERATIONS NOT TO DAMAGE THE CIRCUIT BOARD

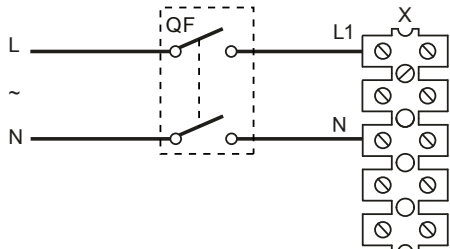
TT Silent-M 100/125



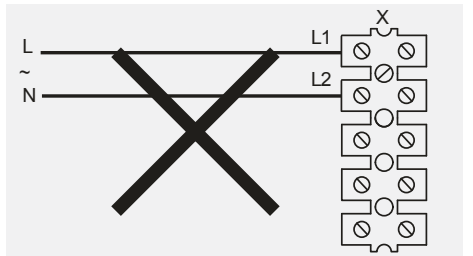
Max



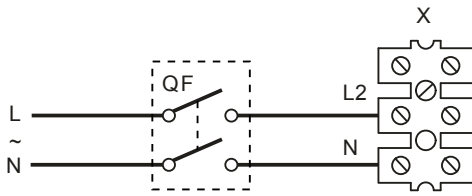
Max/min



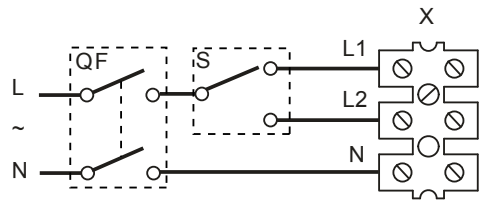
Min



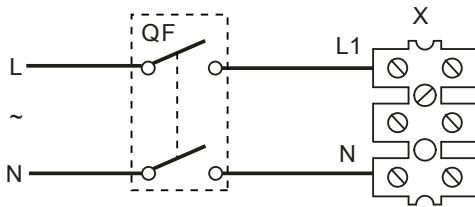
TT Silent-M 150/160/200/250/315



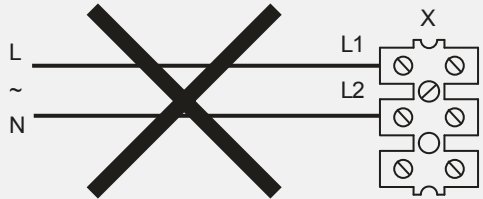
Max



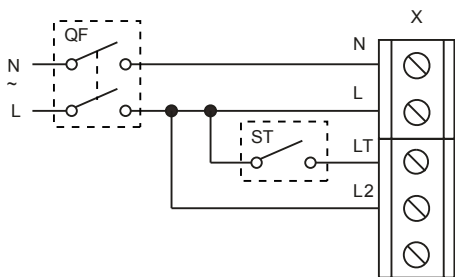
Max/min



Min

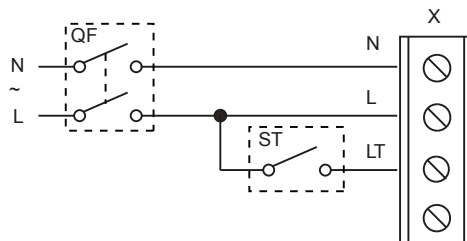


TT Silent-M ... T

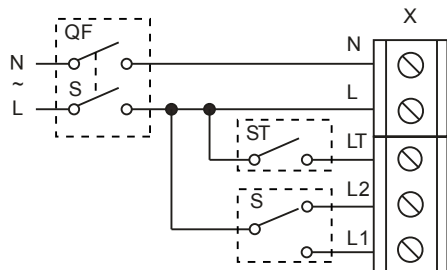


Max

terminal block for 5 contacts

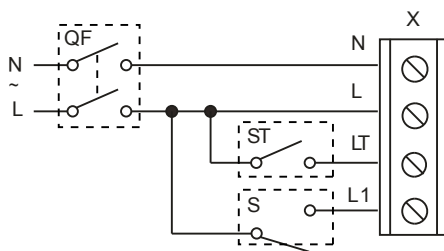


terminal block for 4 contacts

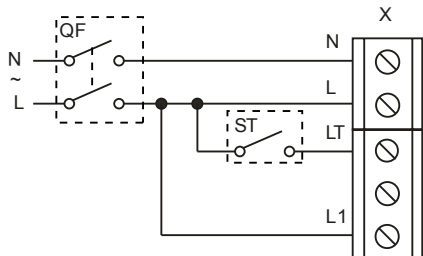


Max/min

terminal block for 5 contacts

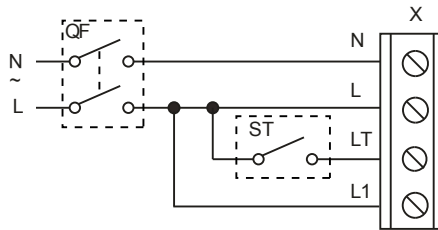


terminal block for 4 contacts

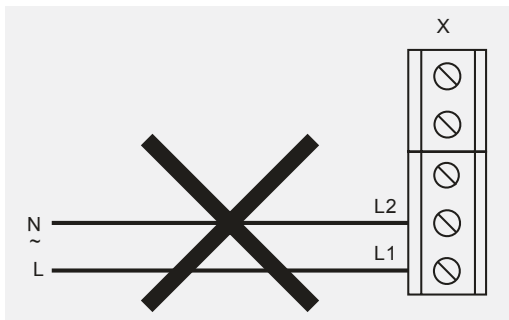


Min

terminal block for 5 contacts



terminal block for 4 contacts



ELECTRONICS OPERATION ALGORITHM

It is possible to control the fan rotation speed without options by voltage, as well as by thyristor controllers. The speed controller is purchased separately.

Warning! When adjusting the voltage, make sure there is no unusual noise or vibration at reduced motor speed. The motor current may exceed the rated current during voltage regulation. The fan is equipped with a thermal switch with no self-reset.

To reset the thermal relay:

- Switch off the power supply.
- Find and eliminate the cause of overheating.
- Make sure the motor has cooled down to operating temperature.
- Switch on the power supply.

The **TT Silent-M ... T** fan starts operation when the control voltage is applied to the LT input terminal by an external switch (e.g. switching on the room light).

After the control voltage is off, the fan continues to operate within the set time period adjustable from 2 to 30 minutes by the timer.

To adjust the fan turn-on delay time, turn the control knob **T** clockwise to increase and counter-clockwise to decrease the turn-on delay time respectively.

Warning! The timer circuit is under mains voltage. Make adjustments only after disconnecting the fan from power mains. The fan is supplied with a special plastic screwdriver for adjusting the fan settings. Use it if you want to change the fan turn-off delay time or the humidity threshold. Using a metal screwdriver, knife, etc. for adjustment may damage the electronics board.

The **TT Silent-M ... U/U1/U2(n)** fan is equipped with an electronic module **TSC** (speed controller with an electronic thermostat) for automatic motor speed (air flow) control depending on the air temperature.

The terminal compartment incorporates 2 control knobs:

- presetting the speed
- setting the threshold for the electronic thermostat

The thermostat operation indicator is located on the fan cover. It lights up when the air temperature exceeds the set value. To set the thermostat threshold, turn the temperature knob clockwise to increase the value and counter-clockwise to decrease the value. To set the fan speed (air flow), rotate the speed control knob in the same way.

The fan operating logic may be based on temperature or timer indications:

TT Silent-M ... U(n): The fan switches to the maximum speed as the room air temperature exceeds the set point. As the air temperature drops 2 °C below the set point or if the initial temperature is below the set point, the fan operates with the set speed.

TT Silent-M ... U1(n): The fan switches to the maximum speed as the room air temperature exceeds the set point. As the air temperature drops down below the set point, the timer starts a 5-minute countdown and then the fan switches to the set speed.

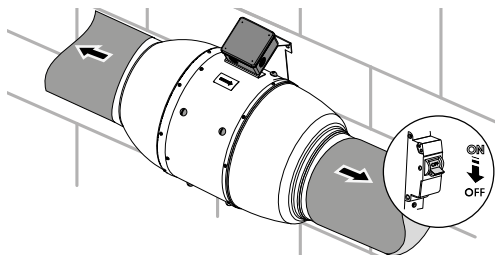
TT Silent-M ... U2(n): The fan switches to the set speed as the room air temperature exceeds the set point. As the air temperature drops 2 °C below the set point or if the initial temperature is below the set point, the fan is turned off.

The **TT Silent-M ... P** fan is equipped with a speed controller that enables switching the fan on/off and smooth speed (air flow) regulation from minimum to maximum value.

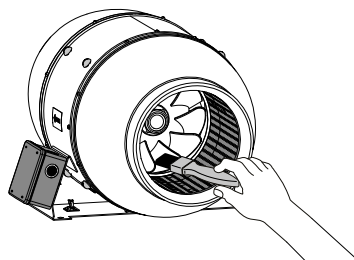
TECHNICAL MAINTENANCE

The fan maintenance periodicity is at least once per 6 months.
Maintenance steps:

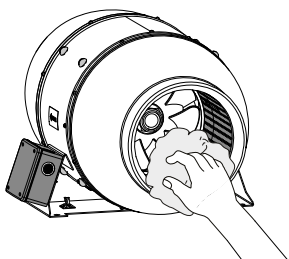
Disconnect the fan from power supply and make sure electricity has been turned off. Disconnect an air duct on both sides of the fan.



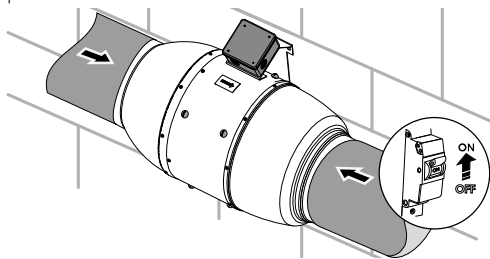
Clean the fan with a soft dry cloth or a brush.



Wipe the fan surfaces dry.



Connect an air duct on both sides of the fan. Supply power to the fan.



CAUTION! Do not allow water or liquid come into contact with electric components!

TROUBLESHOOTING

Problem	Possible reasons	Troubleshooting
When the unit is connected to power mains, the fan does not rotate and does not respond to any controls.	No power supply.	Make sure the power supply line is connected correctly, otherwise troubleshoot the connection error.
	Internal connection fault.	Contact the Seller.
Low air flow.	The ventilation system is clogged.	Clean the ventilation system.
Increased noise, vibration.	The impeller is clogged.	Clean the impeller.
	The fan is not secured well or is not mounted properly.	Troubleshoot the installation error.
	The ventilation system is clogged.	Clean the ventilation system.

STORAGE AND TRANSPORTATION REGULATIONS

- Store the unit in the manufacturer's original packaging box in a dry closed ventilated premise with temperature range from +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 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.

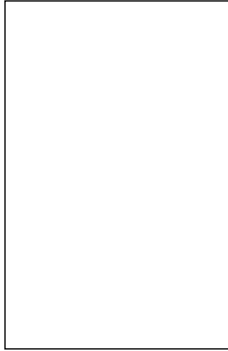


FOLLOWING THE REGULATIONS STIPULATED HEREIN WILL ENSURE A LONG AND TROUBLE-FREE OPERATION OF THE UNIT.

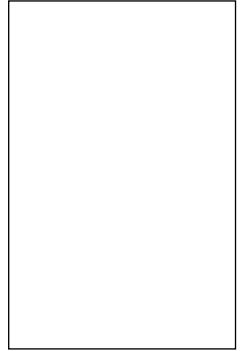


USER'S WARRANTY CLAIMS SHALL BE SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE PURCHASE DATE STAMP.

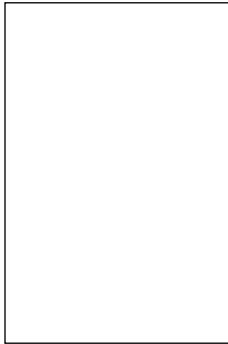
Quality Inspector's Stamp



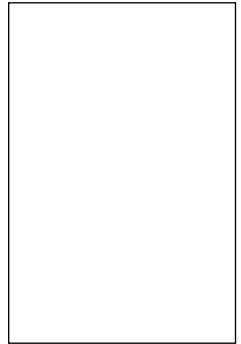
Sold by
(name and stamp of the seller)



Manufacture Date



Purchase Date



Certificate of acceptance

100

125 T

150 V

TT Silent-M 160 P 1 n

200 U 2

250 R

315

220V/60 Hz

The fan is recognized as serviceable

EN
**INLINE CENTRIFUGAL FAN IN
SOUND-INSULATED CASING**
User's manual



TT Silent-M



CONTENTS

Product sales	2
Safety requirements.....	3
Delivery set	8
Operation guidelines	8
Brief description	8
Designation key.....	9
Technical data.....	10
Installation and set-up.....	12
Connection to power mains	18
Electronics operation algorithm	20
Technical maintenance.....	22
Troubleshooting.....	23
Storage and transportation regulations.....	23
Manufacturer's warranty	24

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 TT Silent-M 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.



FOLLOW THE USER'S MANUAL REQUIREMENTS TO ENSURE DURABLE AND TROUBLE-FREE OPERATION OF THE UNIT

SAFETY REQUIREMENTS

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.

Only qualified electricians with a work permit for electrical units up to 1000 V are allowed for installation. The present user's manual should be carefully read before beginning works.

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.

Do not expose the unit to adverse atmospheric agents (rain, sun, etc.).

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.

This unit is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the unit by a person responsible for their safety. Children should be supervised to ensure that they do not play with the unit.

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.

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

DELIVERY SET

Fan	1 pc.
Screws with dowels	4 pcs.
Plastic screwdriver (only for the models with a timer)	1 pc.
User's manual	1 pc.
Packing box	1 pc.

OPERATION GUIDELINES

The fan is rated for connection to single-phase AC 220-240 V/50 Hz or 220 V/60 Hz power mains.

The fan is rated for continuous operation.

Air motion direction in the system must match the pointer on the fan casing.

The unit is rated as a Class II electrical appliance.

Ingress protection rating against access to hazardous parts and water ingress is IPX4.

The fan is rated for operation at ambient temperatures ranging from +1 °C to +40 °C.

Power [V/Hz]	Transported air temperature [°C]
220-240/50	-25...+60
220/60	-25...+40

To comply with the ErP 2018 regulation, a local demand controller and speed controller must be used.

BRIEF DESCRIPTION

The product described herein is a mixed-flow inline fan for supply as well as supply and exhaust ventilation systems of premises.

The fan is designed for connection to ø200 mm air ducts.

An external control unit can be connected to the fan.

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

DESIGNATION KEY

TT Silent - M 200 T _

Unit voltage:

_ — 220-240 V/50 (60) Hz (by default)

YYYV/ZZ Hz — mains parameters other than the default ones

Options:

T: timer

U: speed controller with an electronic thermostat and a temperature sensor integrated into the air duct; power cord with a mains plug. Temperature-based operation logic

Un: speed controller with an electronic thermostat and external temperature sensor fixed on 4 m cable; power cord with a mains plug. Temperature-based operation logic

U1: speed controller with an electronic thermostat and a temperature sensor integrated into the air duct; power cord with a mains plug. Timer-based operation logic

U1n: speed controller with an electronic thermostat and external temperature sensor fixed on 4 m cable; power cord with a mains plug. Timer-based operation logic

U2: speed controller with an electronic thermostat and a temperature sensor integrated into the air duct; power cord with a mains plug. Temperature-based switching on/off

U2n: speed controller with an electronic thermostat and external temperature sensor fixed on 4 m cable; power cord with a mains plug. Temperature-based switching on/off

P: smooth speed controller from 0 to 100 % and a power cord with a mains plug

R: power cord with a mains plug

V: speed switch

Outlet spigot diameter [mm]

Casing material:

M — metal

Casing design:

Silent – sound-insulated

Fan model

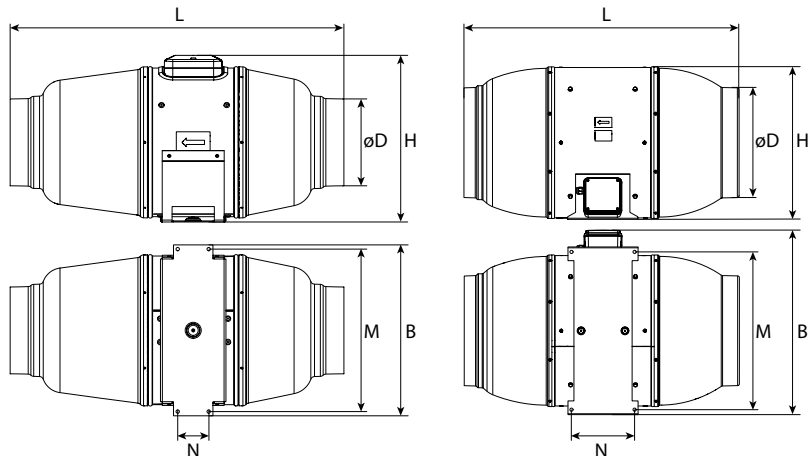
For a description of the fan options, see the «Electronics operation algorithm» section.

TECHNICAL DATA



Overall dimensions

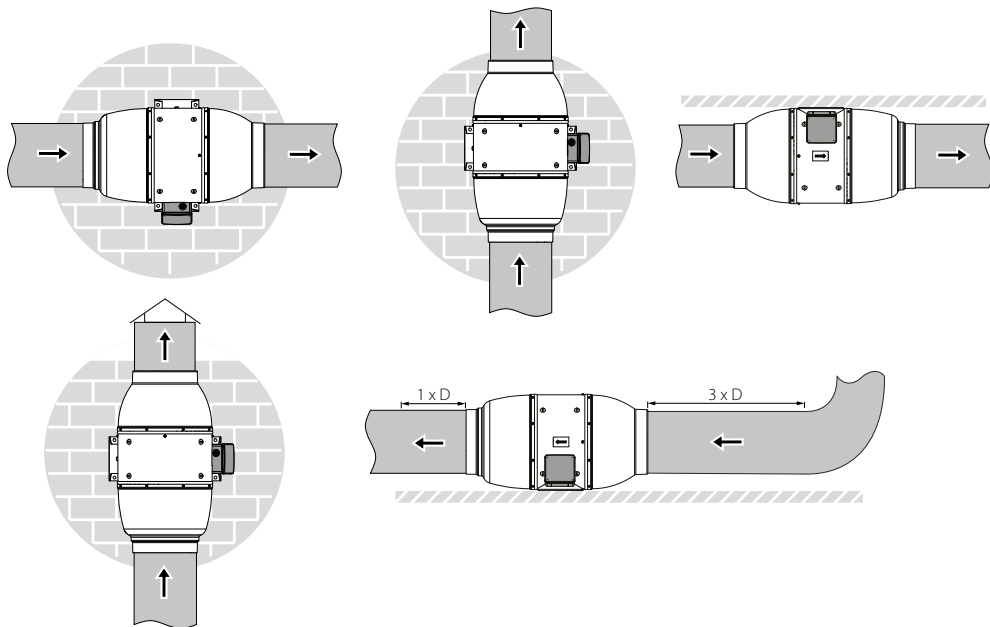
	Ø D	B	H	L	M	N
TT Silent-M 200	198	392	295	560	310	115



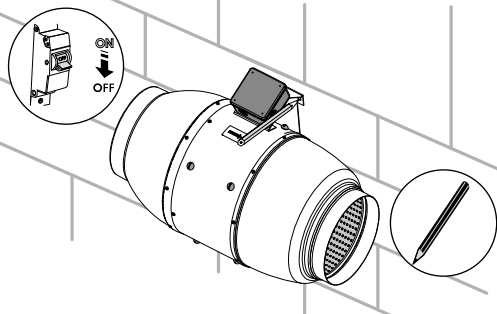
INSTALLATION AND SET-UP

The fan is suitable both for horizontal or vertical mounting on the floor, on the wall or on the ceiling. While mounting the fan, provide extra protection against water ingress:

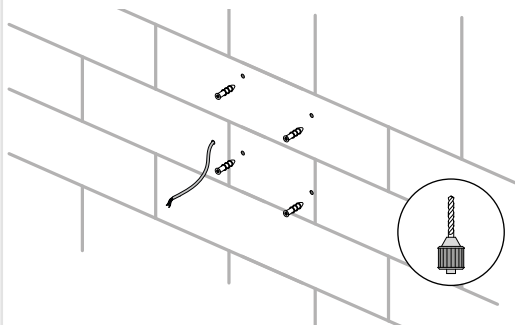
- In case of vertical mounting, install a protective hood on top.
- For any mounting position connect an air duct on both sides of the fan.



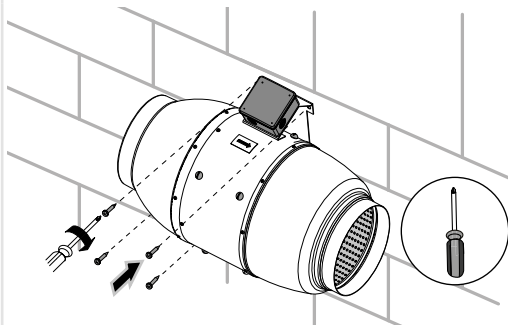
Cut off power supply and make sure electricity has been turned off. Mark the holes for fixing the fan and the power cable.



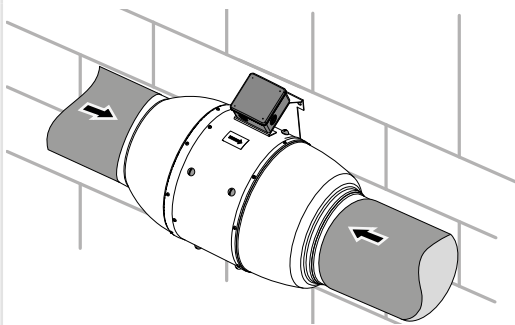
Lead the power cable to the ventilation hole, drill the mounting holes and install the dowels.



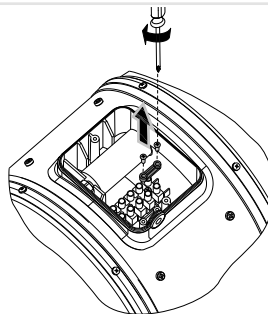
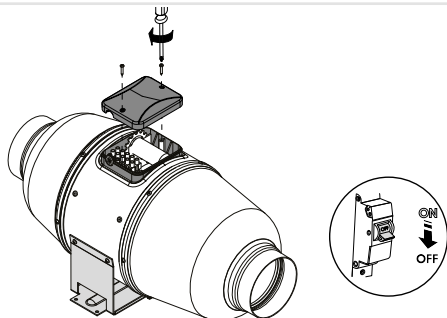
Fix the fan with the screws.



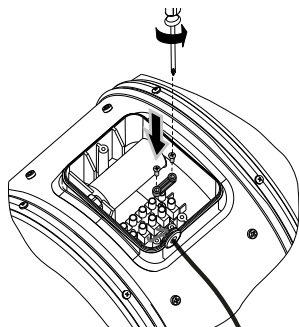
For any mounting position connect an air duct on both sides of the fan.



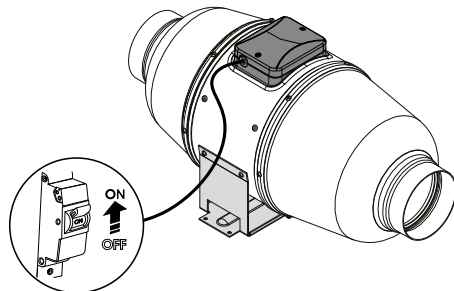
Cut off power supply and make sure electricity has been turned off. Remove the cover of the fan.



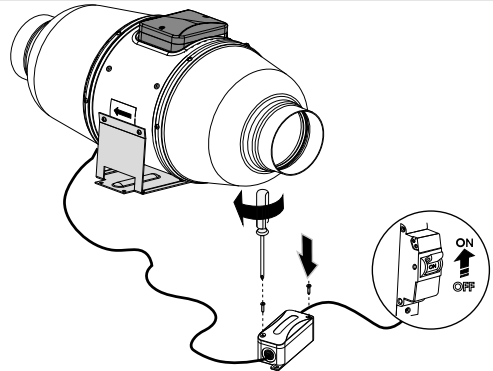
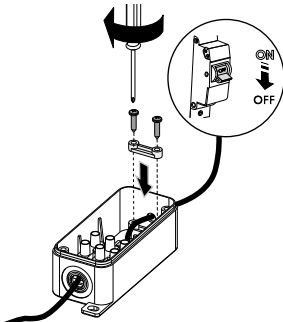
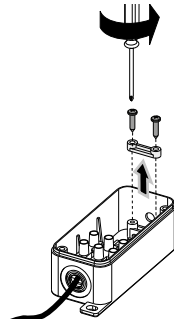
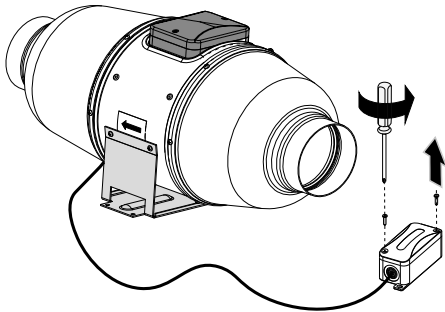
Connect the power cord wires to the terminal block and assemble the fan in reverse order.

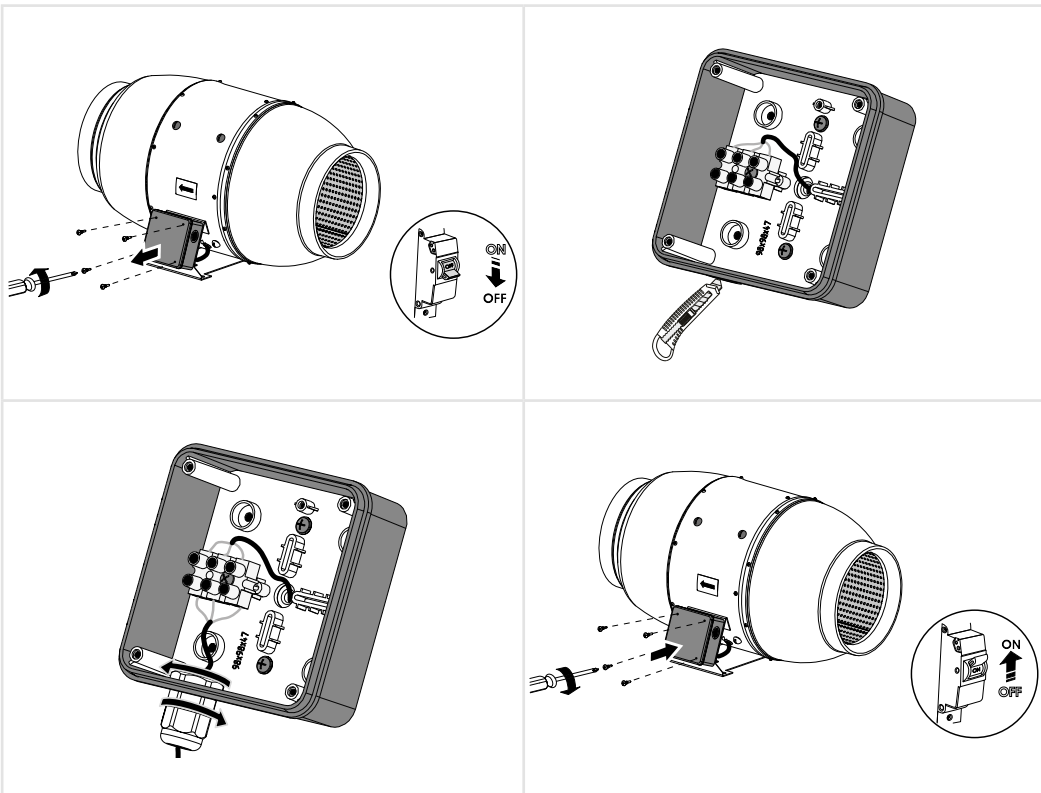


Supply power to the fan.

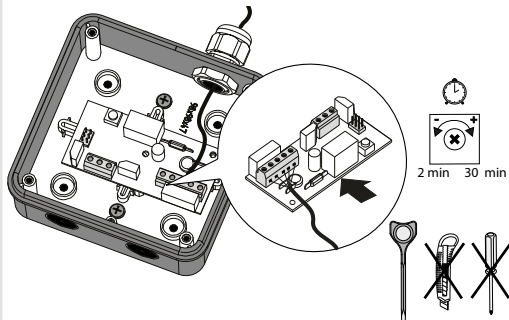


Mounting sequence for different fan models

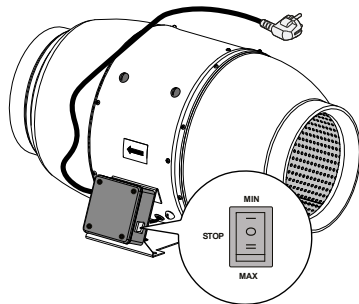




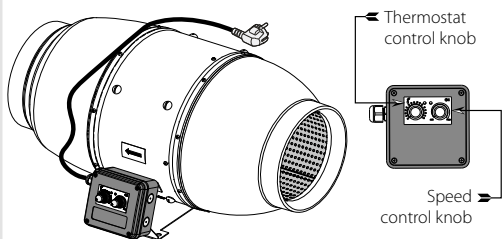
TT Silent-M ... T



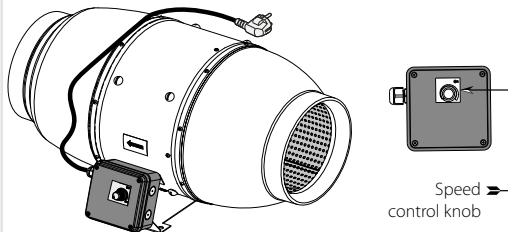
TT Silent-M ... RV



TT Silent-M ... U (U1, U2, Un, U1n, U2n)



TT Silent-M ... P



CONNECTION TO POWER MAINS

The fan is rated for connection to single-phase AC 220-240 V 50/60 Hz power mains.

Terminal designations on wiring diagrams

L – line

N – neutral

Low – minimum speed terminal

Mid – medium speed terminal

High – maximum speed terminal

QF – external speed switch

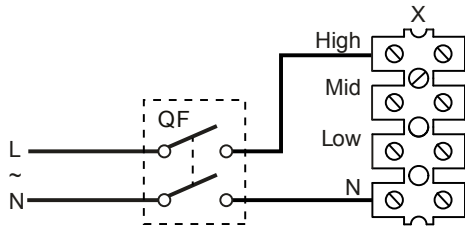
X – terminal block



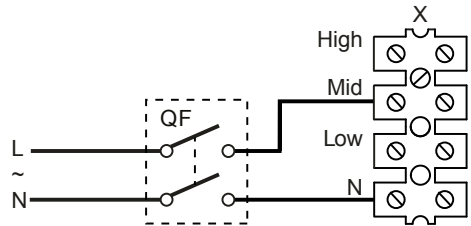
**DO NOT USE A METAL SCREWDRIVER, KNIFE, ETC. FOR ADJUSTMENT
OPERATIONS NOT TO DAMAGE THE CIRCUIT BOARD**

TT Silent-M

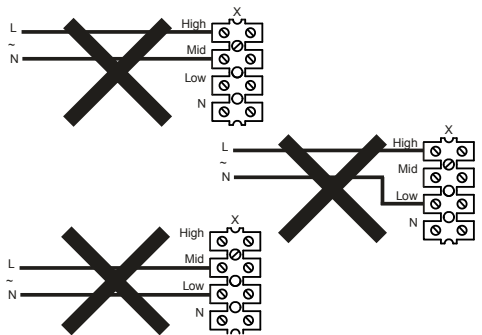
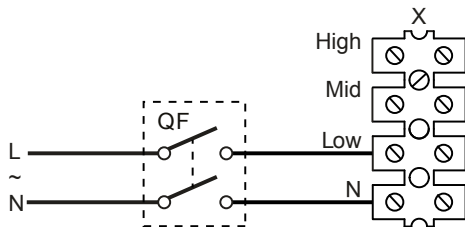
High speed



Medium speed



Low speed



ELECTRONICS OPERATION ALGORITHM

It is possible to control the fan rotation speed without options by voltage, as well as by thyristor controllers. The speed controller is purchased separately.

Warning! When adjusting the voltage, make sure there is no unusual noise or vibration at reduced motor speed. The motor current may exceed the rated current during voltage regulation. The fan is equipped with a thermal switch with no self-reset.

To reset the thermal relay:

- Switch off the power supply.
- Find and eliminate the cause of overheating.
- Make sure the motor has cooled down to operating temperature.
- Switch on the power supply.

The **TT Silent-M ... T** fan starts operation when the control voltage is applied to the LT input terminal by an external switch (e.g. switching on the room light).

After the control voltage is off, the fan continues to operate within the set time period adjustable from 2 to 30 minutes by the timer.

To adjust the fan turn-on delay time, turn the control knob **T** clockwise to increase and counter-clockwise to decrease the turn-on delay time respectively.

Warning! The timer circuit is under mains voltage. Make adjustments only after disconnecting the fan from power mains. The fan is supplied with a special plastic screwdriver for adjusting the fan settings. Use it if you want to change the fan turn-off delay time or the humidity threshold. Using a metal screwdriver, knife, etc. for adjustment may damage the electronics board.

The **TT Silent-M ... U/U1/U2(n)** fan is equipped with an electronic module **TSC** (speed controller with an electronic thermostat) for automatic motor speed (air flow) control depending on the air temperature.

The terminal compartment incorporates 2 control knobs:

- presetting the speed
- setting the threshold for the electronic thermostat

The thermostat operation indicator is located on the fan cover. It lights up when the air temperature exceeds the set value. To set the thermostat threshold, turn the temperature knob clockwise to increase the value and counter-clockwise to decrease the value. To set the fan speed (air flow), rotate the speed control knob in the same way.

The fan operating logic may be based on temperature or timer indications:

TT Silent-M ... U(n): The fan switches to the maximum speed as the room air temperature exceeds the set point. As the air temperature drops 2 °C below the set point or if the initial temperature is below the set point, the fan operates with the set speed.

TT Silent-M ... U1(n): The fan switches to the maximum speed as the room air temperature exceeds the set point. As the air temperature drops down below the set point, the timer starts a 5-minute countdown and then the fan switches to the set speed.

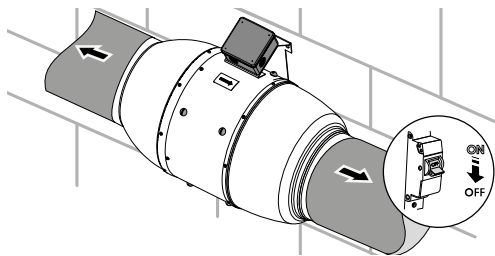
TT Silent-M ... U2(n): The fan switches to the set speed as the room air temperature exceeds the set point. As the air temperature drops 2 °C below the set point or if the initial temperature is below the set point, the fan is turned off.

The **TT Silent-M ... P** fan is equipped with a speed controller that enables switching the fan on/off and smooth speed (air flow) regulation from minimum to maximum value.

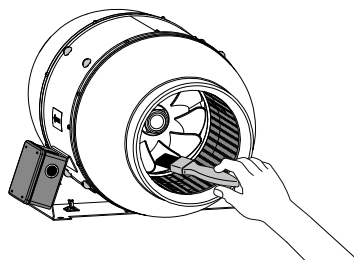
TECHNICAL MAINTENANCE

The fan maintenance periodicity is at least once per 6 months.
Maintenance steps:

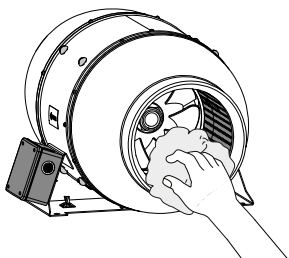
Disconnect the fan from power supply and make sure electricity has been turned off. Disconnect an air duct on both sides of the fan.



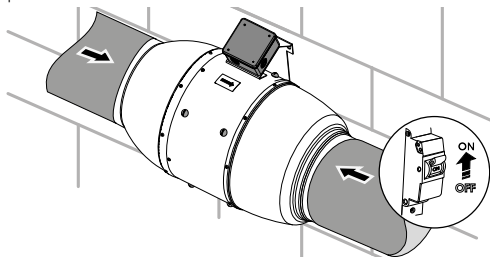
Clean the fan with a soft dry cloth or a brush.



Wipe the fan surfaces dry.



Connect an air duct on both sides of the fan. Supply power to the fan.



CAUTION! Do not allow water or liquid come into contact with electric components!

TROUBLESHOOTING

Problem	Possible reasons	Troubleshooting
When the unit is connected to power mains, the fan does not rotate and does not respond to any controls.	No power supply.	Make sure the power supply line is connected correctly, otherwise troubleshoot the connection error.
	Internal connection fault.	Contact the Seller.
Low air flow.	The ventilation system is clogged.	Clean the ventilation system.
Increased noise, vibration.	The impeller is clogged.	Clean the impeller.
	The fan is not secured well or is not mounted properly.	Troubleshoot the installation error.
	The ventilation system is clogged.	Clean the ventilation system.

STORAGE AND TRANSPORTATION REGULATIONS

- Store the unit in the manufacturer's original packaging box in a dry closed ventilated premise with temperature range from +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 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.

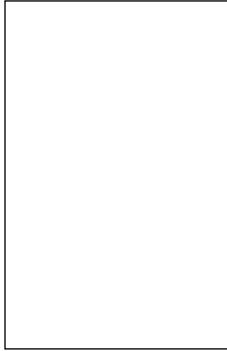


FOLLOWING THE REGULATIONS STIPULATED HEREIN WILL ENSURE A LONG AND TROUBLE-FREE OPERATION OF THE UNIT.

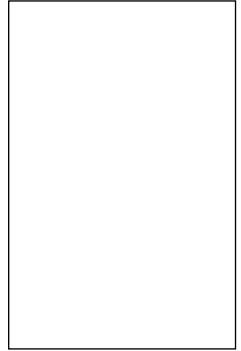


USER'S WARRANTY CLAIMS SHALL BE SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE PURCHASE DATE STAMP.

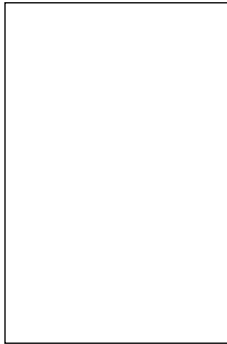
Quality Inspector's Stamp



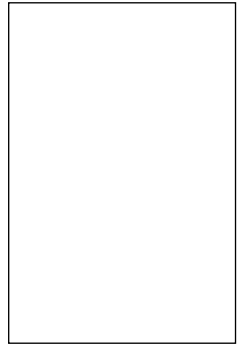
Sold by
(name and stamp of the seller)



Manufacture Date



Purchase Date



Certificate of acceptance

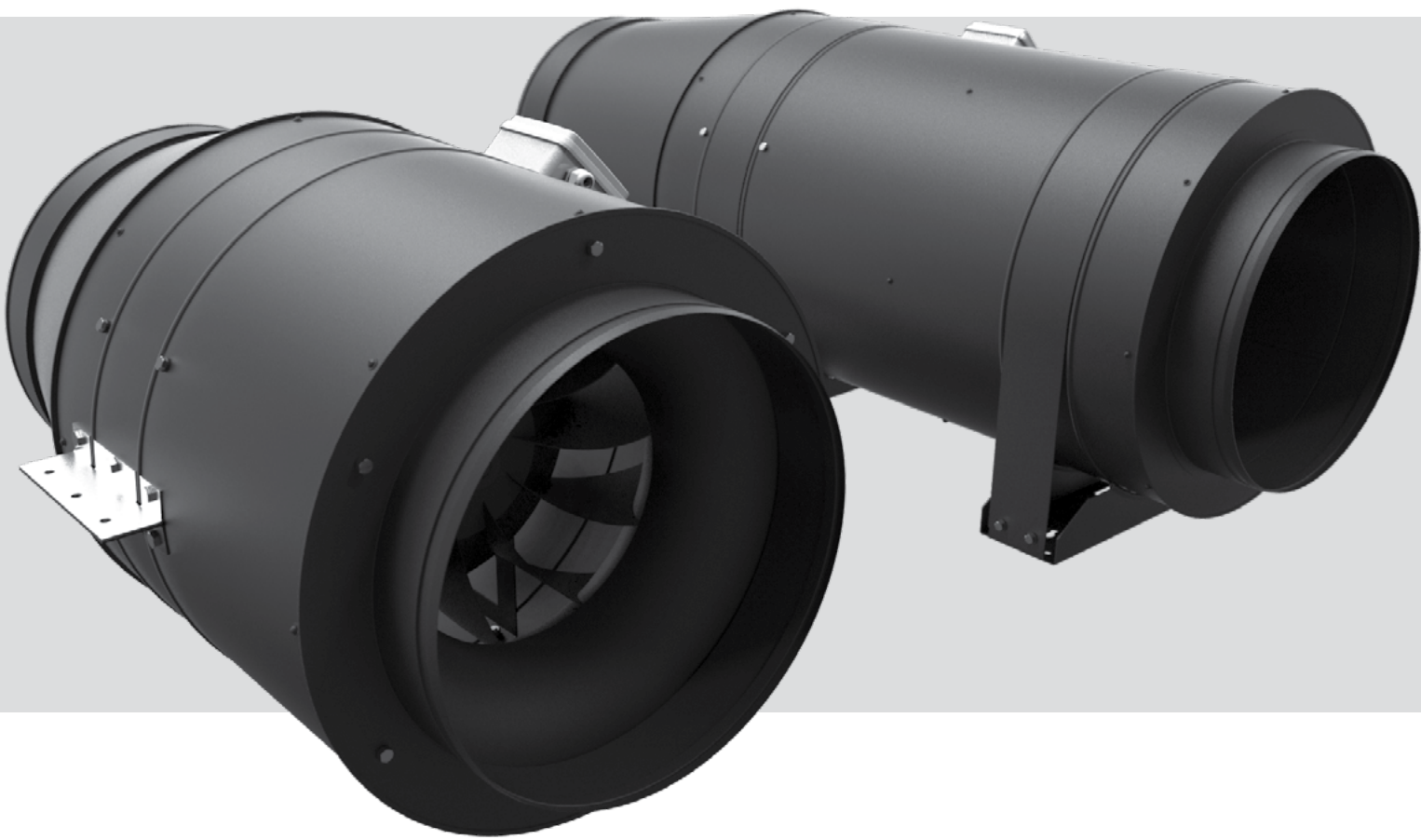
TT Silent-M _____

The fan is recognized as serviceable

USER'S MANUAL

TT-M
TT-MD
TT-MD EC

TT Silent-M
TT Silent-MD
TT Silent-MD EC



Inline mixed-flow fan

CONTENTS

Safety requirements.....	2
Purpose.....	4
Delivery set.....	4
Designation key.....	4
Technical data.....	5
Unit design and operating logic.....	7
Mounting and set-up.....	7
Connection to power mains and control.....	10
Technical maintenance.....	12
Troubleshooting.....	12
Storage and transportation regulations.....	13
Manufacturer's warranty.....	13
Acceptance certificate.....	14
Seller information.....	14
Installation certificate.....	14
Warranty card.....	14

This user's manual consisting of the technical details, operating instructions and technical specification covers the installation and mounting of the TT (Silent) M(D) inline mixed-flow fan (hereinafter referred to as «the fan» or «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.



- The unit must be grounded!



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



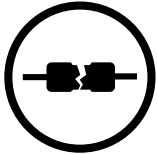
- While installing the unit follow the safety regulations specific to the use of electric tools.



- 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.



- Unpack the unit with care.



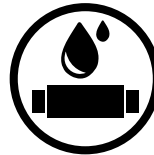
- Do not use damaged equipment or cables when connecting the unit to power mains.



- 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.

UNIT MOUNTING AND OPERATION SAFETY PRECAUTIONS



- Do not allow children to operate the unit.



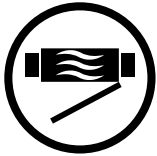
- Disconnect the unit from power mains prior to any technical maintenance.



- 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.



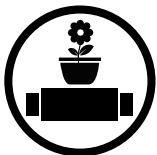
- Do not direct the air flow produced by the unit towards open flame or ignition sources.



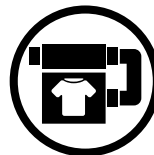
- Do not block the air duct when the unit is switched on.



- 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.

PURPOSE

The fan is designed for ventilation of various industrial premises, swimming pools, apartment houses, offices, hospitals, restaurants and other premises. The Silent models are intended for supply and exhaust ventilation systems of different commercial and industrial premises with high demands on noise level (libraries, conference halls, educational institutions, kindergartens etc.)

The unit is a component part and is not designed for independent operation.



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.

The fan is designed for floor, suspended or ceiling mounting.

The unit is rated for continuous operation.

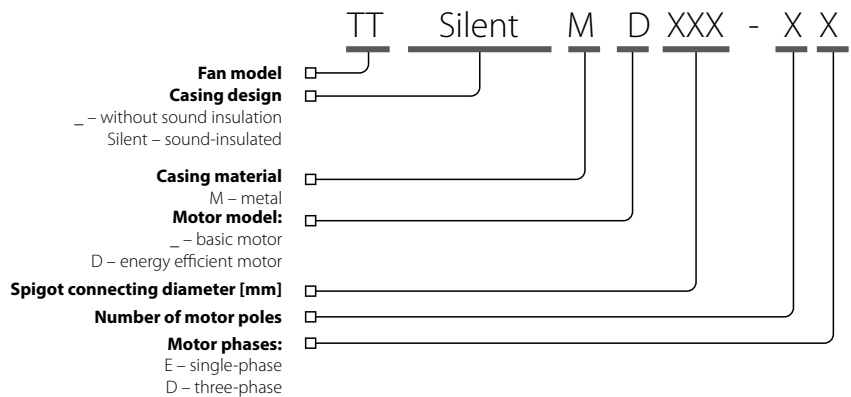
Transported air must not contain any flammable or explosive mixtures, evaporation of chemicals, sticky substances, fibrous materials, coarse dust, soot and oil particles or environments favourable for the formation of hazardous substances (toxic substances, dust, pathogenic germs).

DELIVERY SET

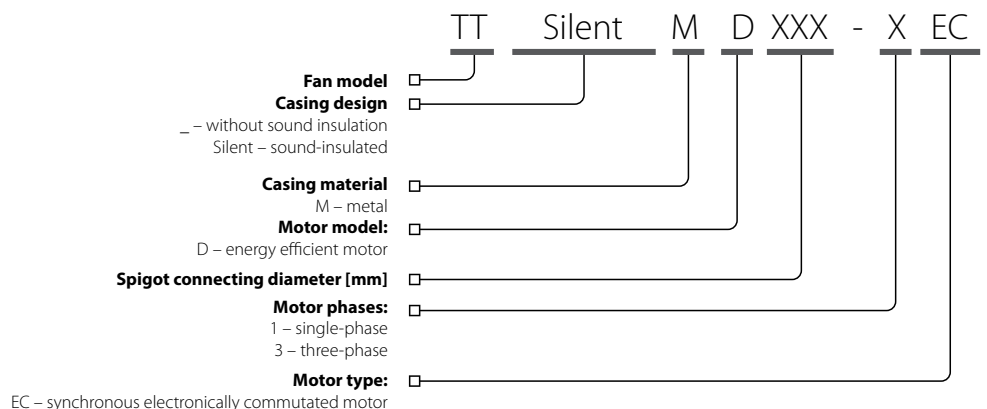
Name	Number
Fan	1 item
User's manual	1 item
Packing box	1 item

DESIGNATION KEY

Fans with AC-motors



Fans with EC-motors



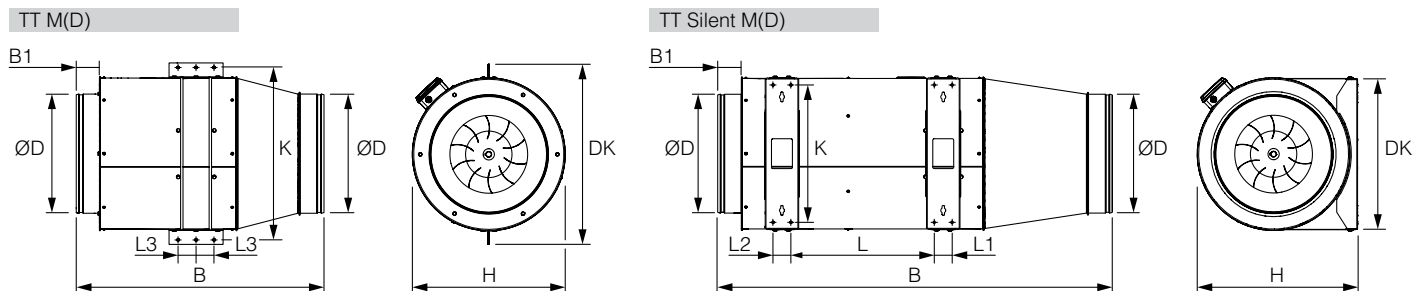
TECHNICAL DATA

The fan is designed for indoor application with the ambient temperature ranging from +1 °C up to +40 °C and relative humidity up to 80 %. The transported air temperature depends on the fan model (see the table with technical data).

Ingress Protection (IP) rating from solid objects and liquids IPX4.

The fan design is constantly being improved, so some models can slightly differ from those ones described in this manual.

OVERALL DIMENSIONS OF THE FAN, MM



Model	B	B1	D	DK	H	K	L	L1	L2	L3	Weight [kg]
TT Silent-M 355-4E	1320	80	353	510	540	460	540	60	60	-	33
TT Silent-M 355-4D	1320	80	353	510	540	460	540	60	60	-	33
TT Silent-M 400-4E	1320	80	397	510	540	460	540	60	60	-	35
TT Silent-M 400-4D	1320	80	397	510	540	460	540	60	60	-	35
TT Silent-M 450-4E	1425	80	447	610	640	460	640	60	60	-	51
TT Silent-M 450-4D	1425	80	447	610	640	460	640	60	60	-	51
TT - M 355-4E	825	80	353	605	515	575	-	-	-	60	22
TT - M 355-4D	825	80	353	605	515	575	-	-	-	60	22
TT - M 400-4E	825	80	397	605	515	575	-	-	-	60	24
TT - M 400-4D	825	80	397	605	515	575	-	-	-	60	24
TT - M 450-4E	975	80	447	705	610	675	-	-	-	60	35
TT - M 450-4D	975	80	447	705	610	675	-	-	-	60	35
TT - M 500-4D	1120	100	497	805	710	775	-	-	-	90	44
Model	B	B1	D	DK	H	K	L	L1	L2	L3	Weight [kg]
TT Silent-MD 355-4E	1070	60	353	510	540	360	338	60	60	-	35
TT Silent-MD 400-4E	1350	60	397	565	595	450	485	60	60	-	45
TT Silent-MD 450-4E	1300	60	447	705	730	540	442	70	90	-	59
TT - MD 355-4E	685	60	353	605	515	576	-	-	-	60	25
TT - MD 400-4E	740	60	397	665	570	633	-	-	-	60	30
TT - MD 450-4E	900	60	447	800	705	770	-	-	-	90	45
TT - MD 500-4E	900	60	497	815	720	785	-	-	-	90	55
TT - MD 500-4D	900	60	497	815	720	785	-	-	-	90	51
TT Silent-MD 355-1 EC	1070	60	353	510	540	360	338	60	60	-	35
TT Silent-MD 400-1 EC	1350	60	397	565	595	450	485	60	60	-	45
TT Silent-MD 450-1 EC	1300	60	447	705	730	540	442	70	90	-	54
TT Silent-MD 450-3 EC	1300	60	447	705	730	540	442	70	90	-	55
TT - MD 355-1 EC	685	60	353	605	515	576	-	-	-	60	25
TT - MD 400-1 EC	740	60	397	665	570	633	-	-	-	60	27
TT - MD 450-1 EC	900	60	447	800	705	770	-	-	-	90	40
TT - MD 450-3 EC	900	60	447	800	705	770	-	-	-	90	42
TT - MD 500-1 EC	900	60	497	815	720	785	-	-	-	90	43
TT - MD 500-3 EC	900	60	497	815	720	785	-	-	-	90	43

TECHNICAL DATA OF TT (SILENT) M FANS

	TT Silent-M 355-4E	TT Silent-M 355-4D	TT Silent-M 400-4E	TT Silent-M 400-4D	TT Silent-M 450-4E	TT Silent-M 450-4D	TT-M 355-4E	TT-M 355-4D	TT-M 400-4E	TT-M 400-4D	TT-M 450-4E	TT-M 450-4D	TT-M 500-4D
Unit voltage [V /50-60 Hz]	1~ 230	3~ 400	1~ 230	3~ 400	1~ 230	3~ 400	1~ 230	3~ 400	1~ 230	3~ 400	1~ 230	3~ 400	3~ 400
Power [W]	578	585	580	590	1200	1230	578	585	580	590	1200	1230	2125
Current [A]	3.42	1.77	3.43	1.78	7.72	3.43	3.42	1.77	3.43	1.78	7.72	3.43	4.68
Maximum air capacity [m³/h]	3310	3430	3545	3670	6260	6510	3340	3480	3610	3740	6385	6635	11900
RPM	1480	1490	1480	1490	1475	1490	1480	1490	1480	1490	1475	1490	1455
Sound pressure level at 3 m distance [dB(A)]	49	49	50	50	59	59	57	57	58	58	65	65	73
Maximum transported air temperature [°C]	from -25 up to +60												
Ingress protection rating	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4

TECHNICAL DATA OF TT (SILENT) MD FANS

	TT Silent-MD 355-4E	TT Silent-MD 400-4E	TT Silent-MD 450-4E	TT - MD 355-4E	TT - MD 400-4E	TT - MD 450-4E	TT - MD 500-4E	TT - MD 500-4D
Unit voltage [V /50 Hz]	1~ 230	1~ 230	1~ 230	1~ 230	1~ 230	1~ 230	1~ 230	3~ 400
Power [W]	310	460	910	310	460	910	1450	1350
Current [A]	1.35	2	4.4	1.35	2	4.4	6.1	2.3
Maximum air capacity [m³/h]	3200	4310	6050	3250	4400	6200	8750	9450
RPM	1390	1340	1330	1390	1340	1330	1310	1320
Sound pressure level at 3 m distance [dB(A)]	47	51	59	55	57	64	67	68
Maximum transported air temperature [°C]	from -25 up to +60							
Ingress protection rating	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4

Technical data at maximum efficiency:

Overall efficiency (η) [%]	29.7	31.9	34.7	30.6	33.2	35.8	36.3	39.4
Measurement category	A	A	A	A	A	A	A	A
Efficiency category	Static	Static	Static	Static	Static	Static	Static	Static
Efficiency grade	46.8	46.8	47	47.7	48	47.9	46	49.3
Variable speed drive	No	No	No	No	No	No	No	No
Power [kW]	0.235	0.385	0.684	0.239	0.389	0.693	1.185	1.15
Current [A]	1.13	1.7	3.44	1.13	1.7	3.45	5.1	2.2
Air capacity [m³/h]	1748	2054	3116	1782	2091	3157	4710	4805
Static pressure [Pa]	141	211	269	145	218	277	322	333
RPM	1405	1350	1365	1410	1360	1380	1350	1380
Specific ratio	1	1	1	1	1	1	1	1

TECHNICAL DATA OF TT (SILENT) MD EC FANS

	TT Silent-MD 355-1 EC	TT Silent-MD 400-1 EC	TT Silent-MD 450-1 EC	TT Silent-MD 450-3 EC	TT - MD 355-1 EC	TT - MD 400-1 EC	TT - MD 450-1 EC	TT - MD 450-3 EC	TT - MD 500-1 EC	TT - MD 500-3 EC
Unit voltage [V /50-60 Hz]	1~ 200-277	1~ 200-277	1~ 200-277	3~ 380-480	1~ 200-277	1~ 200-277	1~ 200-277	3~ 380-480	1~ 200-277	3~ 380-480
Power [W]	460	380	1250	2100	460	380	1250	2100	1050	2050
Current [A]	2.5	2.1	6.3	3.5	2.5	2.1	6.3	3.5	5.4	3.3
Maximum air capacity [m³/h]	4000	4370	7650	8920	4080	4480	7830	9160	8600	11100
RPM	1700	1290	1530	1900	1700	1290	1530	1900	1290	1600
Sound pressure level at 3 m distance [dB(A)]	52	55	54	57	61	63	63	69	65	71
Maximum transported air temperature [°C]	from -25 up to +40									
Ingress protection rating	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4

Technical data at maximum efficiency:

Overall efficiency (η) [%]	43.1	40.4	40.9	44.1	43.3	41.8	41.5	44.9	42.8	41.0
Measurement category	A	A	A	A	A	A	A	A	A	A
Efficiency category	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Efficiency grade	58.7	55.8	50.7	51.6	58.7	57.1	51.2	52.2	53.2	48.4
Variable speed drive	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Power [kW]	0.325	0.341	1.158	1.948	0.339	0.352	1.195	2.016	1.005	1.994
Current [A]	1.45	1.51	5.84	3.45	1.46	1.52	5.85	3.47	5.2	3.29
Air capacity [m³/h]	1756	2054	3844	5514	1785	2120	3936	5663	4630	5495
Static pressure [Pa]	251	211	401	515	259	219	411	529	301	492
RPM	1700	1420	1530	1900	1700	1430	1530	1900	1290	1610
Specific ratio	1	1	1	1	1	1	1	1	1	1

UNIT DESIGN AND OPERATING LOGIC

The unit is an inline mixed-flow fan.

The fan casing is made of sheet steel (using heat- and sound-insulation material for the Silent models).

Connection spigots are round.

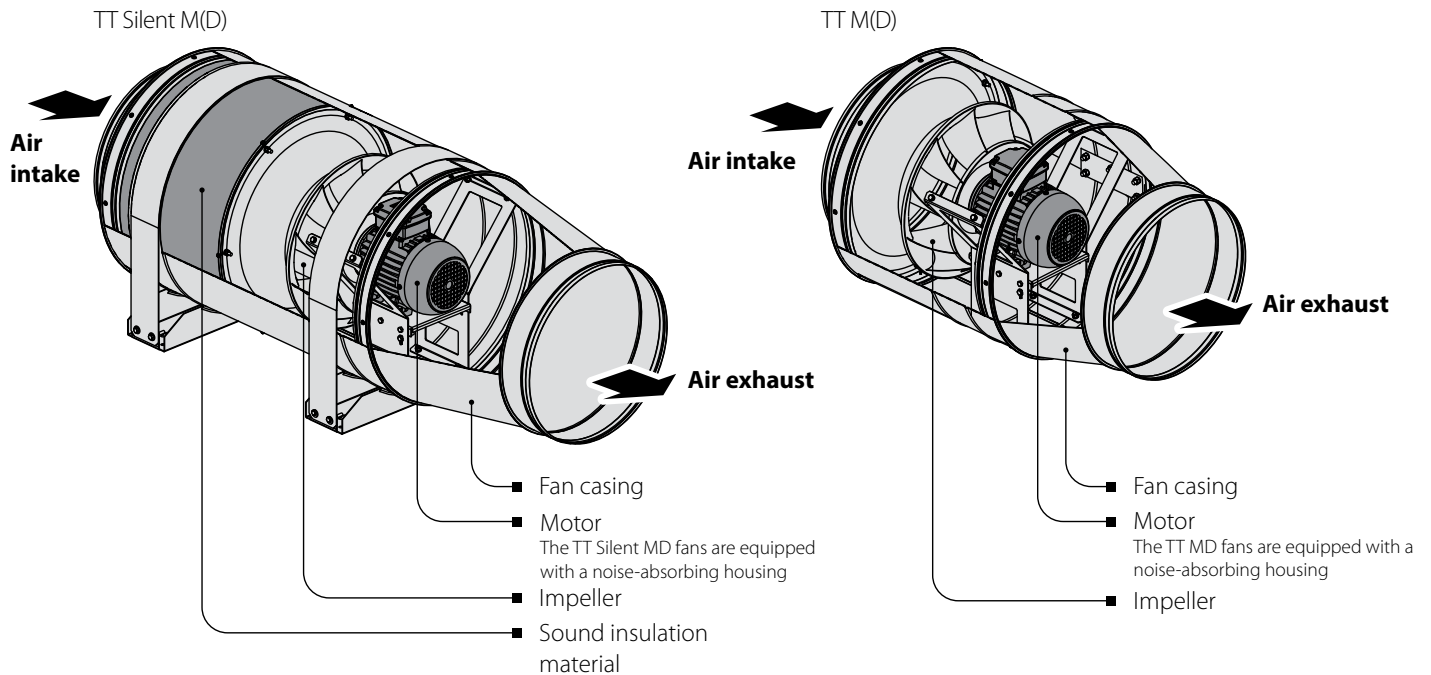
The fan is equipped with a motor which has an impeller with diagonal blades.

The motor has thermal relays built into the motor winding for overheating protection (TW). The relays must always be connected.

Use of the motor with ball bearings with specially selected grease ensures low-noise, maintenance-free operation of the fan.

The air flow direction is indicated by the arrow on the fan casing.

UNIT DESIGN AND OPERATING LOGIC



MOUNTING AND SET-UP



READ THE USER'S MANUAL PRIOR TO MOUNTING THE UNIT.



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

The TT M(D) fan is suspended to the mounting surface through the threaded rod fixed inside the expansion anchor.

The TT Silent M(D) is suitable both for horizontal and vertical installation using a fixing bracket.

The fan is intended for mounting to round air ducts.

The fans are installed between the air ducts.

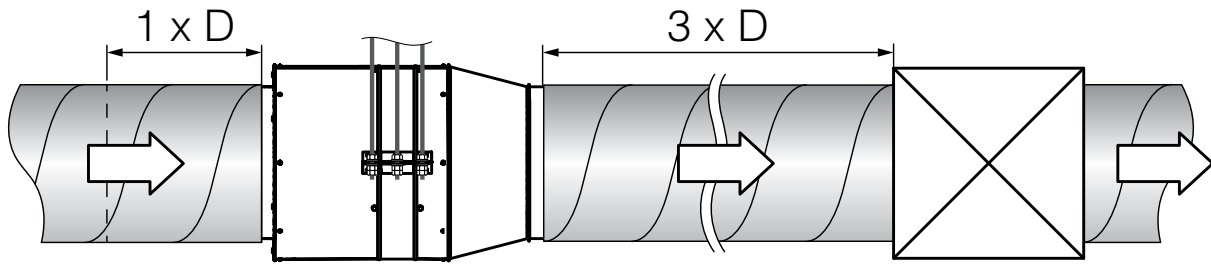
The casing is equipped with fixing brackets for easier installation of the fan.

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

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 weight of the unit, refer to the Technical Data section.

Fasteners for unit mounting should be selected by the service technician.



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

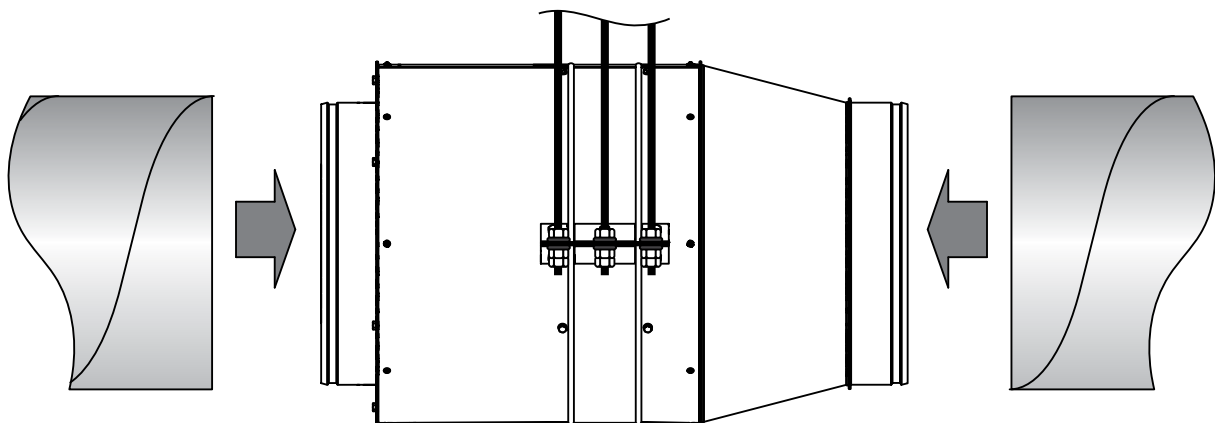
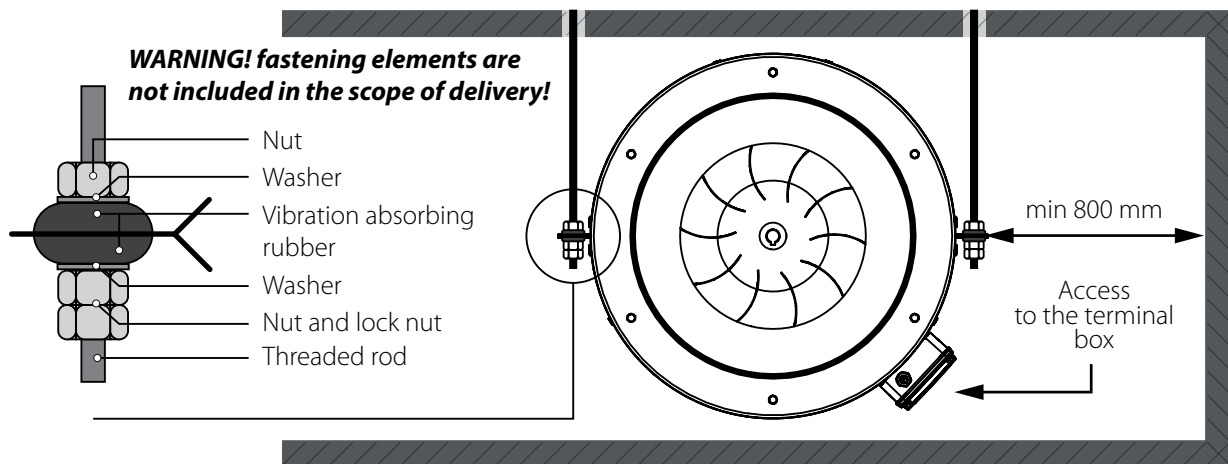
Minimum straight air duct length:

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

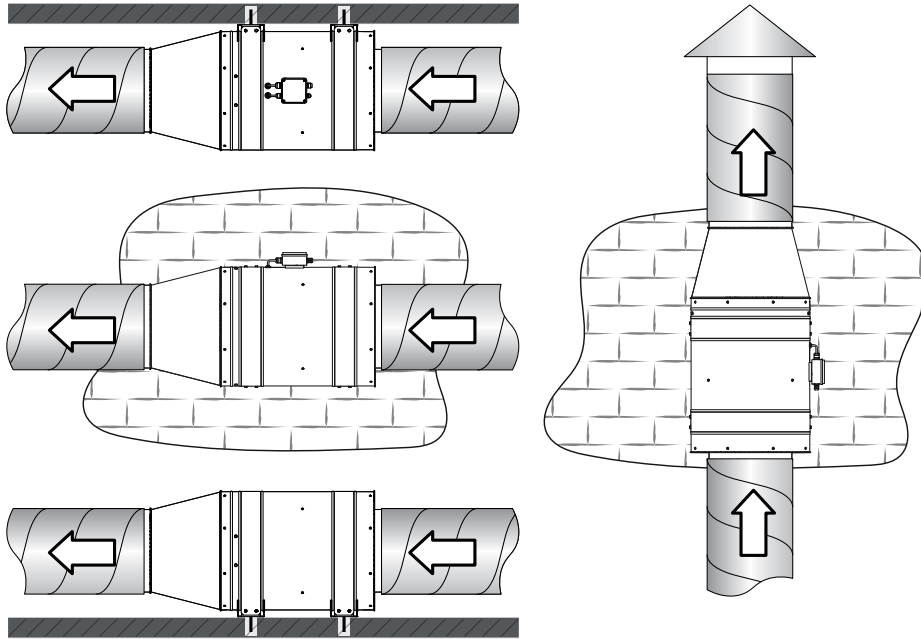
If the air ducts are too short or not connected, protect the unit parts from ingress of foreign objects.

To prevent uncontrollable access to the fan the spigots may be covered with a protecting grille or other protecting device with mesh width not more than 12.5 mm.

MOUNTING OF THE TT-M(D) FAN



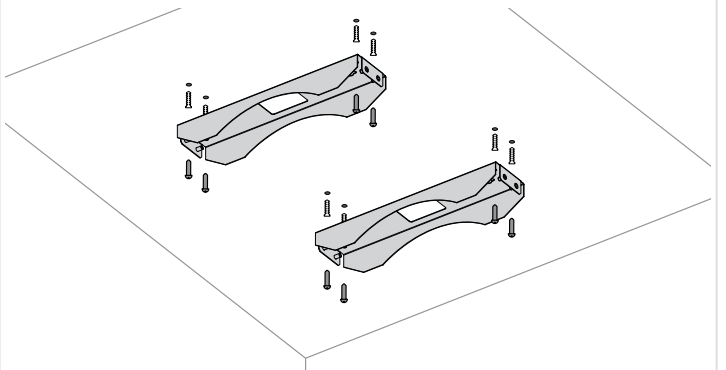
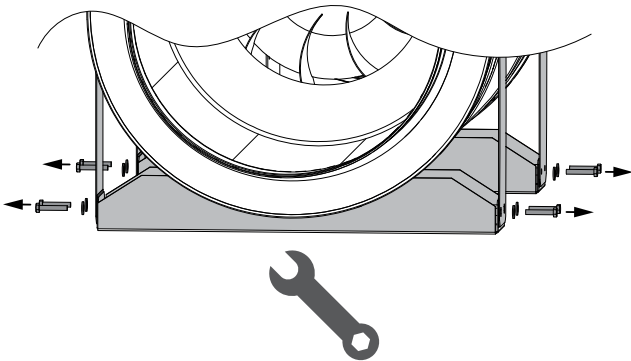
TT SILENT M(D) INSTALLATION METHODS



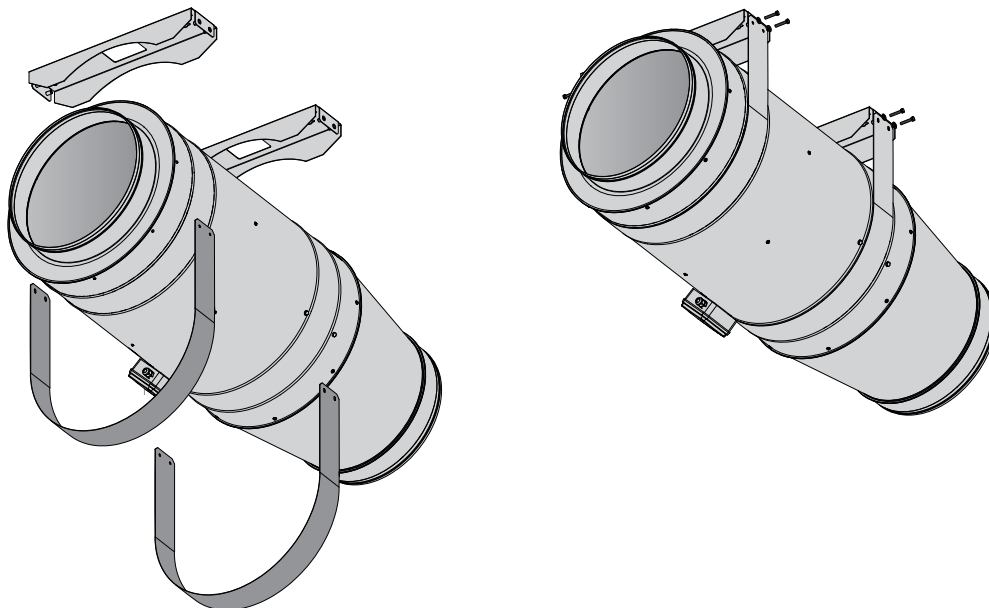
TT SILENT M(D) INSTALLATION

1. Unscrew the bolts that connect the clamp to the fixing bracket using the wrench of the appropriate size.

2. Secure the brackets to the surface using screws with dowels of the appropriate size (not included in the scope of delivery).



3. Secure the fan on the bracket with clamps and bolts removed earlier. Suspend the fan carefully. Make sure the fan is fastened securely prior to operation.



CONNECTION TO POWER MAINS AND CONTROL



DISCONNECT THE UNIT FROM POWER MAINS PRIOR TO ANY OPERATIONS. THE FAN 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 INTERNAL CONNECTION MODIFICATIONS ARE NOT ALLOWED AND RESULT IN WARRANTY LOSS.

The fan is rated for connection to single-phase or three-phase AC power mains with a voltage of 230 V or 400 V according to the wiring diagrams below. The terminal designation is placed inside of the terminal box.

The terminal clamp marking corresponds to the marking on the wiring diagram.

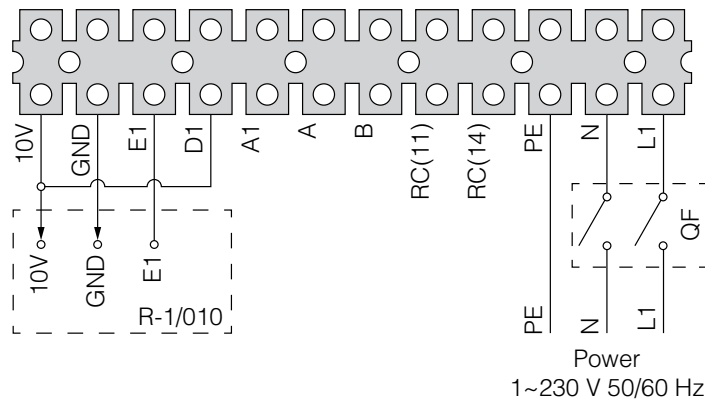
Connect the fan to power mains by means of insulated, durable and thermal-resistant cords (cables, wires) with appropriate cross section.

The cables are routed into the terminal box through a sealed lead-in for electrical hazard class compliance.

The fan shall be connected to power supply through the external circuit breaker with a thermal-magnetic trip. The rated current of the circuit breaker must be not below the rated current consumption.

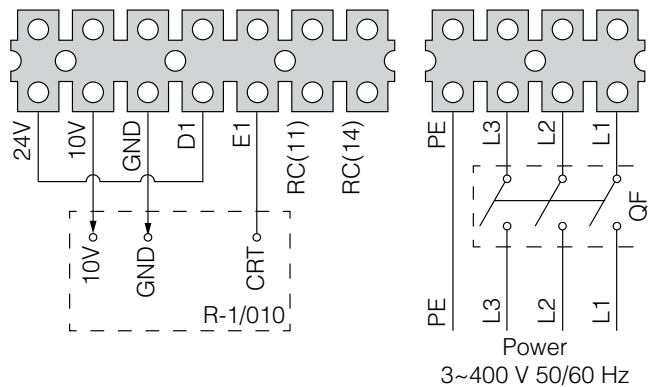
FAN MODEL	EXTERNAL CONNECTIONS DIAGRAM
TT Silent-M 355-4E TT Silent-M 400-4E TT Silent-M 450-4E TT - M 355-4E TT - M 400-4E TT - M 450-4E	<p style="text-align: center;">Power 1~230 V / 50 Hz</p> <p>PE – protective grounding. N – power supply neutral. L – power supply phase. QF – circuit breaker.</p>
TT Silent-M 355-4D TT Silent-M 400-4D TT Silent-M 450-4D TT - M 355-4D TT - M 400-4D TT - M 450-4D TT - M 500-4D	<p style="text-align: center;">Power 3~400 V / 50 Hz</p> <p>PE – protective grounding. N – power supply neutral. L1, L2, L3 – power supply phase. QF – circuit breaker.</p>
TT Silent-MD 355-4E TT Silent-MD 400-4E TT Silent-MD 450-4E TT - MD 355-4E TT - MD 400-4E TT - MD 450-4E TT - MD 500-4E	<p style="text-align: center;">Power 1~230 V / 50 Hz</p> <p>PE – protective grounding. N – power supply neutral. L – power supply phase. QF – circuit breaker. TW1, TW2 – thermal contacts of the motor. KM1 – motor starter. S1 – «Start» button. S2 – «Stop» button.</p>

TT Silent-MD 355-1 EC
 TT Silent-MD 400-1 EC
 TT - MD 355-1 EC
 TT - MD 400-1 EC



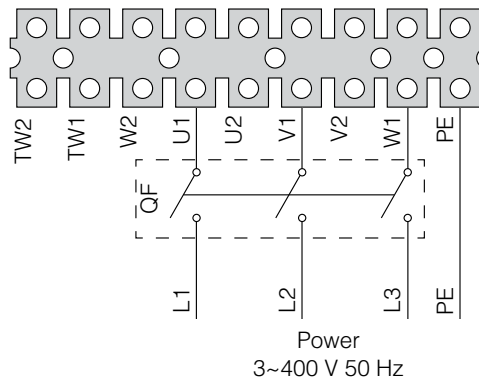
10V – 10 V DC power supply for a speed control potentiometer.
 GND – DC power supply grounding.
 E1 – 0-10 V input direct current signal for speed setting.
 D1 – digital enable signal.
 A1 – status / tachometer output.
 A – MODBUS communication interface (RS-485).
 B – MODBUS communication interface (RS-485).
 RC – NO-contact is closed in case of alarm (switching parameters: 250 V AC, 2 A).
 PE – protective grounding.
 N – power supply neutral.
 L1 - power supply phase.
 QF – circuit breaker.
 R1/010 – speed controller.

TT Silent MD 450-3 EC
 TT - MD 450-3 EC
 TT - MD 500-3 EC



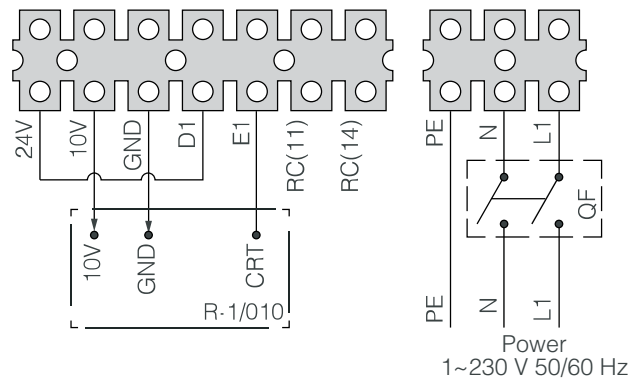
24V – 24 V DC power supply.
 10V – 10 V DC power supply for a speed control potentiometer.
 GND – DC power supply grounding.
 D1 – analogue input for speed setting compatible with 0-10 V signal or external potentiometer.
 E1 – 0-10 V input direct current signal for speed setting.
 RC – NO-contact closes in case of alarm (switching parameters: 250 V AC, 2 A).
 PE – protective grounding.
 L1, L2, L3 – power supply phase.
 QF – circuit breaker.
 R1/010 – speed controller.

TT - MD 500-4D



W1, W2, U1, U2, V1, V2 – contacts for motor connection.
 TW1, TW2 – motor thermal contacts.
 PE – protective grounding.
 L1, L2, L3 – power supply phase.
 QF - circuit breaker.

TT - MD 450-1 EC
 TT - MD 500-1 EC
 TT Silent-MD 450-1 EC



24V – 24 V DC power supply.
 10V – 10 V DC power supply for a speed control potentiometer.
 GND – DC power supply grounding.
 D1 – analogue input for speed setting compatible with 0-10 V signal or external potentiometer.
 E1 – 0-10 V input direct current signal for speed setting.
 RC – NO-contact closes in case of alarm (switching parameters: 250 V AC, 2 A).
 PE – protective grounding.
 L1 – power supply phase.
 QF – circuit breaker.
 R1/010 – the speed controller.

TECHNICAL MAINTENANCE



DISCONNECT THE UNIT FROM POWER SUPPLY BEFORE ANY MAINTENANCE OPERATIONS.

The unit must undergo technical maintenance once a year. Technical maintenance includes regular cleaning of the unit.

1. Fan maintenance (once a year).

Some dust may accumulate on the impeller blades or on the fan motor which reduces the unit capacity. Clean the fans with a soft brush, cloth, vacuum cleaner or compressed air. Do not use water, aggressive solvents or sharp objects as they may damage the impeller.

2. Supply air flow control (twice per year).

The supply duct grille may get clogged with leaves and other objects reducing the unit performance and supply air delivery. Check the supply grille twice per year and clean it as required.

3. Technical maintenance of air duct system (every 5 years).

Some dust may accumulate inside the air ducts which reduces the unit capacity. Duct maintenance means regular cleaning or replacement.

TROUBLESHOOTING

Problem	Possible reasons	Troubleshooting
The fan(s) do(es) not get started.	No power supply.	Make sure the power supply line is connected correctly, otherwise troubleshoot a connection error.
	Jammed motor.	Turn off the fan. Troubleshoot the motor jamming. Restart the fan.
Automatic circuit breaker tripping following the fan turning on	High current consumption due to short circuit in power line.	Turn off the fan. Contact the Seller.
Noise, vibration	The fan impeller is soiled.	Clean the impellers.
	The fan or casing screw connection is loose.	Tighten the screw connection of the fan or the casing against stop.
	The ventilation system components (air ducts, diffusers, louvre shutters, grilles) are clogged or damaged.	Clean or replace the ventilation system components (air ducts, diffusers, louvre shutters, grilles).

STORAGE AND TRANSPORTATION REGULATIONS

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. 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 unit.

Follow the handling requirements applicable for the particular type of cargo.

The unit can be transported in the original packing by any mode of transport without limitation provided proper protection against precipitation and mechanical damage.

Avoid sharp blows, scratches or rough handling during transportation, loading and unloading.

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 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

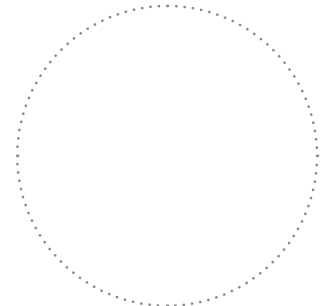
Unit type	Inline mixed-flow fan
Model	TT _____
Serial Number	
Manufacture Date	
Is compliant with the technical specifications and is recognized as serviceable. We hereby declare that the product complies with the essential protection requirements of Electromagnetic Council Directive 2004/108/EC, 89/336/EEC 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.	
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.

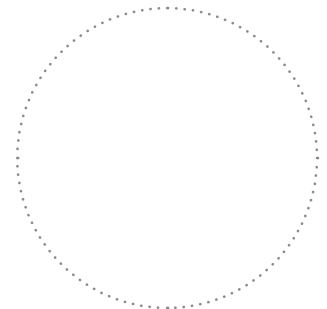
Customer's Signature	
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Seller's Stamp

INSTALLATION CERTIFICATE

_____ TT _____ Inline mixed-flow fan 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:



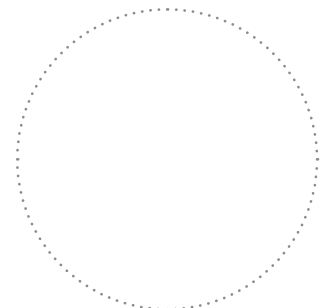
Installation Company Stamp

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	Inline mixed-flow fan
Model	TT _____
Serial Number	
Manufacture Date	
Purchase Date	
Warranty Period	
Seller	



Seller's Stamp

