

INSTALLATION GUIDE - FLOOR CONVECTORS TE

1. GENERAL INFORMATION ON TE CONVECTORS

Floor heating units (floor convector) COIL-TE (750 W, 1 500 W, 2 250 W, 3 000 W) made by MINIB,a.s. are intended for interior heating. The unit uses the forced convection principle where the tangential fan blows air laterally to the heating coil. The heated air then enters the room.

TECHNICAL DATA:

Each product is visibly marked with a type label which provides the following information:

- › Manufacturer: MINIB,a.s.
- › Type identification: COIL-TE
- › Serial number
- › Operating voltage 230V 50Hz
- › Power input (of the basic module) 750W

OPERATIONAL SAFETY:

The unit is intended for heating residential and office spaces. The top cover or any other part of the convector must not be removed during the operation when the unit is energized.

The unit must not be covered with any items. If the air outlet grille is covered the unit may overheat locally. Handling water near the unit is prohibited. The surface of the unit should be cleaned only by wiping with dry cloth. Only stainless steel and aluminum grilles are intended for the TE convector. Wooden grille may not be used.

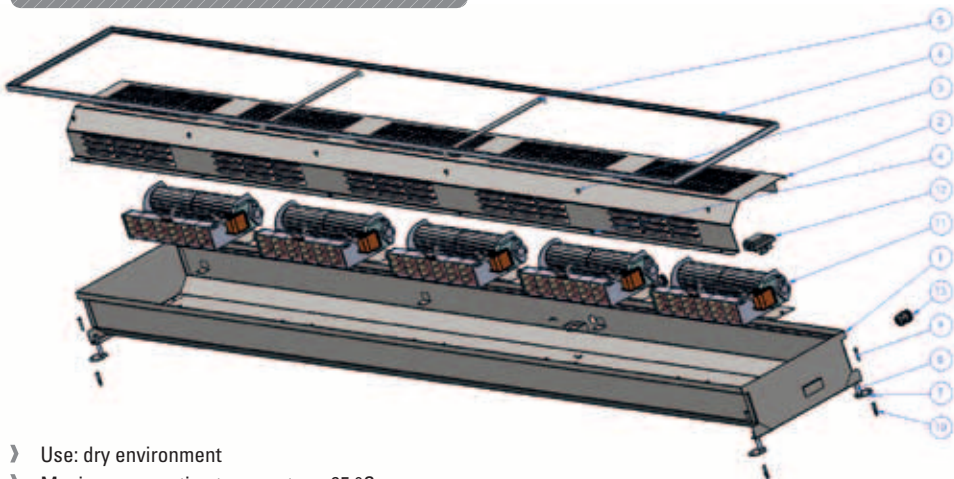
2. UNIT DESCRIPTION

A floor heating unit which uses the convection principle. Since the heater fully uses physical laws of thermodynamics it represents one of the most efficient methods of interior heating. The TE unit uses the principle of air flow through a heating coil which is powered by electricity.

Benefits of the TE floor convectors:

- › High output
- › Lightweight compared to heating units with similar output

4. TECHNICAL PARAMETERS



- › Use: dry environment
- › Maximum operating temperature: 95 °C
- › Operating medium 230 V AC 50 Hz
- › Environment: interiors with temperatures ranging between +5°C and +40°C
- › Power supply: 230 V AC

INSTALLATION, REPAIRS AND MAINTENANCE:

The unit is designed for installation in the floor and must be installed horizontally.

Before performing any work on the floor convector TE the unit must be disconnected from power supply according to the local regulation which must be prepared by the supplier of the heating system for the room or building according to the control method and the required safe operation, maintenance and, if applicable, repairs.

In terms of electrical connection of the floor convector the heating project must be prepared according to the ČSN standards, including but not limited to ČSN 33 2000-5-51 – Electrical engineering regulations, Electrical equipment, Part 5: Selection and erection of electrical equipment. Protection against electrocution must be ensured according to ČSN 33 2000-4-41.

Any work on the equipment, repair or cleaning may only be carried out by a professional service station or a qualified professional ultimately according to the applicable standards at the relevant place and time!

ELECTRICAL MAINS CONNECTION:

Before the heating system is put into operation an initial inspection of the electrical installation must be carried out according to ČSN 33 1500 "Electrical Engineering Regulations, Inspections and testing of Electrical Installations".

- › Very short response time
- › Design
- › Minimum requirements for operation and maintenance
- › A great advantage of the electrical TE floor convectors is the possibility of embedding them in the floor of the room. This is beneficial particularly in places where we do not want to disturb the overall appearance of the interior with wall-mounted, free-standing convectors, or other heating units, but where sufficient heating output is required.
- › No construction works required in terms of heating water inlet and outlet lines and drainage pipe.

Throughout the operation the user must ensure periodic inspections of the electrical installation in intervals according to ČSN 33 1500.

All inspections and connections of the electrical installation shall be ultimately carried out according to the applicable standards at the relevant place and time.

OPERATION AND PROTECTION OF THE UNIT:

Each heating segment of the equipment is protected by a reversible temperature limiter which safely isolates the coils from the power supply upon local overheating in the event of an incidental covering of the hot air outlet grilles or in the event of a failure of the fan. After cooled down, the coils will be re-connected to the power supply and start working again.

IMPORTANT NOTICE:

In terms of electrical protection we recommend connecting the convectors via a standardized power outlet protected by a residual-current circuit breaker.

Handling water near the unit is prohibited.

Checks of the correct function of the unit, including the check of the function of the reversible temperature limiters, must be carried out at least once a year, always before the heating season. Contact a professional service station or a qualified professional.

3. CONTENTS OF THE BOX

Contents of the box	Position	TE 500	TE 1000	TE 1500	TE 2000	TE 2500
Accessories:						
Base	7	4	4	4	4	6
Screw M 8 x 50	8	4	4	4	4	6
Wood screw 3.5 x 30	9	4	4	4	4	6
Screw anchor	10	4	4	4	4	6

FIG. 1: COMPONENTS OF THE TE FLOOR CONVECTOR

3. SCREW M4X6 - Used for fixing the main cover.
4. TOOTHED LOCK WASHER - Lock washer under the screw heads.
5. STRUT - All-metal strut used for bracing the convector trough during installation.
6. STANDARD FRAME - The standard frame is a design element and should be perfectly aligned with final floor or minimally flushed (0-1 mm).
7. BASE - Intended for convector mounting and accurate positioning in unfinished floor.
8. ADJUSTING SCREW - Intended for fine positioning of convector before pouring of concrete.
9. WOOD SCREW - For fixing the base to the floor.
10. SCREW ANCHOR - For fixing the screw in the concrete floor.
11. TE module - Fan unit with the heating coil.
12. KADO cable connection box - Terminal box for connecting the 230V / 50Hz power supply.
13. CABLE GROMMET - Intended for 230VAC power supply cable.

5. BEFORE INSTALLATION

- › Select the correct convector type from the catalogue for dry environment – see paragraph 5.1
- › Select the correct convector position – see paragraph 5.2
- › Leave enough space for placement and installation – see paragraph 5.3
- › Consider using thermal insulation, anti-vibration sheet, or bracing in hollow floors – see paragraph 5.4

5.1 Suitable Convector Type

Decide whether the convector will act as the main source of heat, or an additional heating element – a heat barrier.

As the main source of heat in your apartment / room, the convector should sufficiently cover the entire thermal loss of the room. Therefore, always choose a heating unit with a capacity that is higher than the thermal loss of your apartment, room, or other areas.

Make sure that you have enough space for the installation – from the wall, window, and also sufficient space for the installation of the convector in the floor – see paragraph 5.3.

A dry environment is an environment where the average annual relative humidity does not exceed 75%. A wet environment is an environment where such average annual value is equal to or greater than 75%. In terms of convector selection, a dry environment is in general any environment where no precipitation of vapor occurs in the convector unit.

5.2 Convector Position

- › Consult the convector position with an expert or your designer.

The electrical TE floor convector is intended for installation in the floor in order to avoid disturbance to the overall appearance of the room. The TE convector is primarily intended for heating the room, therefore it must be placed with the coils facing the room.

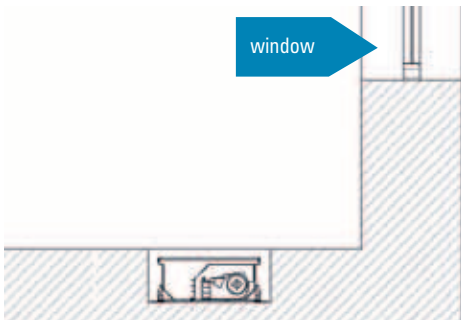


FIG. 2. Convector with coils facing the room as the main source of heat.

5.3 Installation Space

MINIB,a.s. recommends leaving sufficient space for convector installation in the structural opening. For installation in older floors, floors after renovation, or whenever sufficient space is not available, the dimensions of the installation opening should be equal to the convector height + at least 20 mm. The width and/or length (if only 1 convector is being installed) of the installation opening should correspond to the convector width (length) + at least 60 mm – see Figure 3. Clearance around the convector should provide enough space for the electrical connections and for convector embedding in concrete. For new floors, MINIB recommends at least +100 mm of free space around the convector; the height remains the same (H + at least 20 mm).

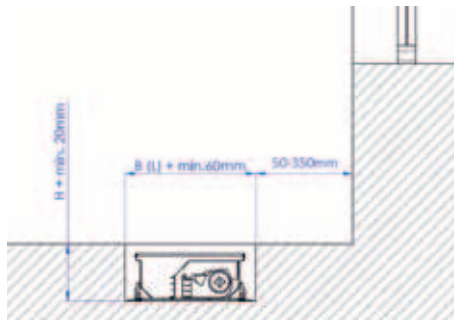


FIG. 3. B – maximum width of convector body; L – length of convector body; H – height of convector body (without the adjusting legs). Recommended MINIMUM dimensions for installation: B + 60mm; L + 60mm; H + 20mm.

The position and location of the convector entirely depend on the customer's requirement as to what is to be heated and how. MINIB,a.s. recommends placing the convector as the main source of heat under the windows with the heating coils facing the room. The recommended distance from the wall is 50–350 mm.

5.4 Principles to be Followed Prior to Installation of Convertors in Floors:

MINIB floor convertors are designed for installation in solid or hollow floors where certain principles have to be applied. Please read the following instructions before you start.

- › According to your choice (parquet, floating, or wooden floor) apply thermal insulation on the outside of the convector trough on the heating coil side. (Figure 5).
- › If the convector is to be installed at a busy place where people often step on the cover grille or walk on the convector it is advisable to use anti-vibration sheet to reduce the impact noise, particularly in multi-story buildings. (Figure 6).
- › Install 230 V/50 Hz power supply cable in the structural opening for the TE convector; the cross-sections of the conductors must be sufficiently sized in terms of the power input of the TE convertors.

5.4.1 Hollow Floors –Principles of Installation of TE Floor Convector:

- › When installing a convector in a hollow floor, make sure the convector is equipped with hollow floor u-

channels which are located outside the convector body. They are an integral part of the convector, and therefore must be ordered together with the convector production. The u-channels provide stability of the TE convector in hollow floors. (Figure 4).

- › For TE convertors installed in hollow wooden floors and wooden structures, it is necessary to use thermal insulation at least 5 mm thick, resistant to temperature 65°C, for example Mirelon. The thermal insulation is to be installed on the anti-vibration sheet along the side of the convector prior to rating. The thermal insulation protects the finished floor from the thermal shocks and the temperature differences between the convector and the floor.

- › Before installing the TE convector in hollow floor check whether it is equipped with anti-vibration sheet. The anti-vibration sheet must be ordered together with the convector. The sheet is a part of the product and absorbs the vibrations of the fan in the hollow cavities of the floor.

- › Use thermal insulation depending on the type and nature of the floor. Thermal insulation is necessary for hollow or wooden floors. It is advisable to apply insulation on both sides of the convector. The insulation protects the finished floor from the direct heat of the convector. If you do not use this insulation there is a risk of quick drying out of the floor (parquet), leading to unstable joints between the wooden blocks. This risk is particularly high in hollow floors where the heat is also transmitted through the metal body of the convector to the floor cavity.

- › Thermal insulation is to be applied on the outer surface of the metal body of the convector.

- › At your discretion decide whether to use an anti-vibration sheet. The sheet not only dampens the vibrations in hollow floors but also reduces the impact noise in the room under the floor, in particular in situations where people often walk over the cover grille.

5.4.2 Solid Floors –Principles of Installation of Floor Convertors with Fan:

- › At your discretion decide whether to use thermal insulation or anti-vibration sheets.

FIG. 4. Hollow floor – U-channel for floor convector with fan

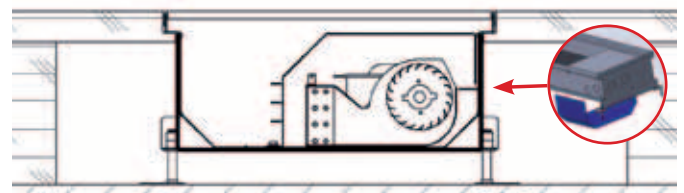


FIG. 5. Hollow floor – Thermal insulation

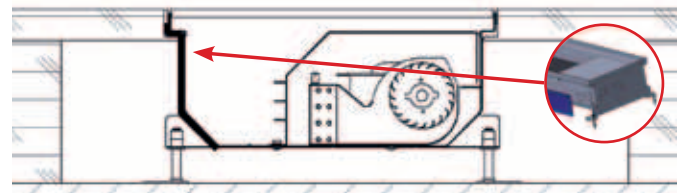
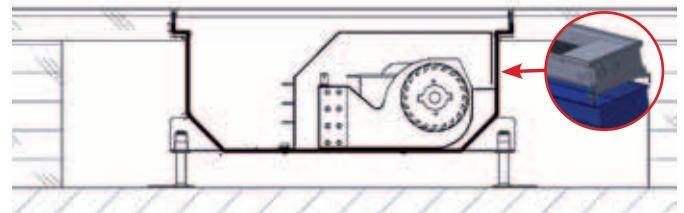


FIG. 6. Hollow floor – anti-vibration sheet for TE floor convector. It is used to attenuate the impact noise and fan vibrations. It is typically applied along the entire outer surface of the convector.



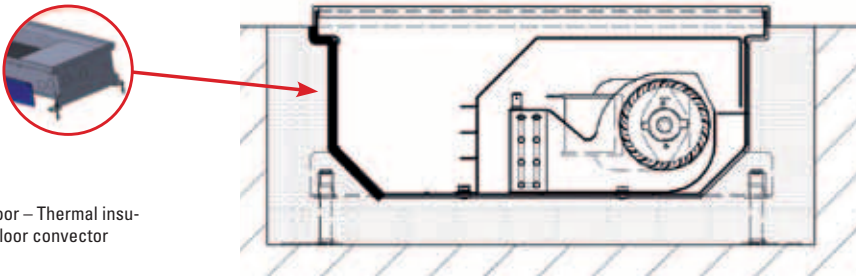


FIG. 7: Solid floor – Thermal insulation for TE floor convector

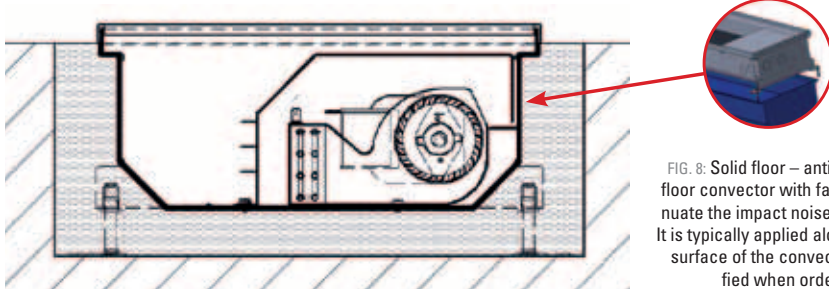


FIG. 8: Solid floor – anti-vibration sheet for floor convector with fan. It is used to attenuate the impact noise and fan vibrations. It is typically applied along the entire outer surface of the convector. Must be specified when ordering the convector.

6. INSTALLATION

- › A correctly installed convector is in horizontal position and the top edges of the trough are not damaged or bent in order to ensure correct functionality of the walk-on grille.
- › A correctly installed convector has a standard frame aligned with the final flooring with a tolerance of ± 1 mm
- › It is recommended that the top convector cover (fiberboard) be left in place during concrete pouring to prevent the contamination of the convector interior during installation. Please note that the convector cover should not be walked on!
- › During the concrete pouring process, the convector must be fixed in the floor with anchoring screws to prevent vertical movement of the convector after cast in concrete or another suitable material. A vertical load may also be applied to the convector during the concrete pouring process.

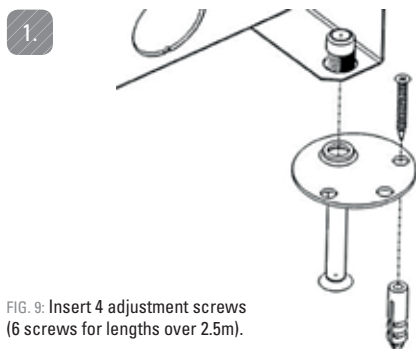


FIG. 9: Insert 4 adjustment screws (6 screws for lengths over 2.5m).

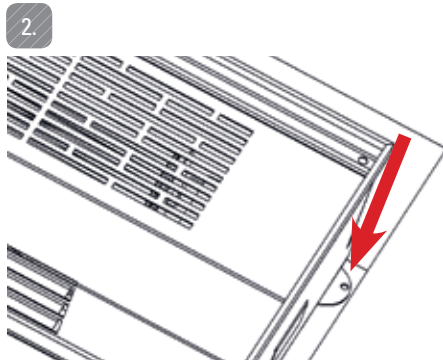


FIG. 10: Place the convector in the structural opening, mark the holes for mounting the feet, and remove the convector.

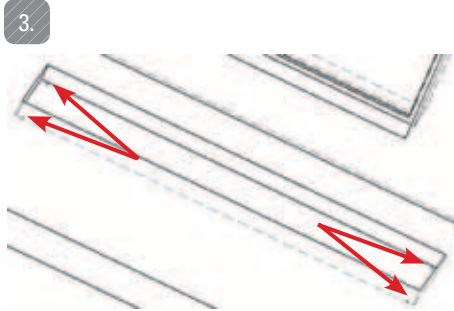


FIG. 11: Drill the marked holes ($\varnothing 6$ mm, depth 30–35 mm). Insert screw anchors in the holes.

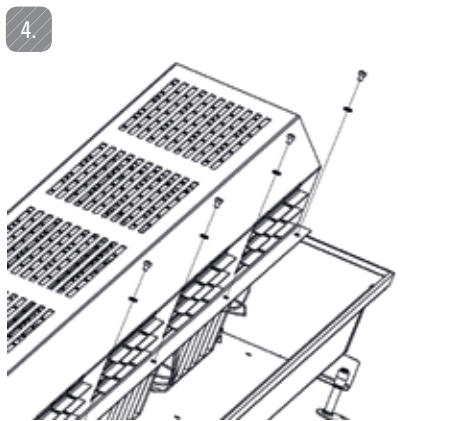


FIG. 12: Unscrew the inner cover of the TE convector.

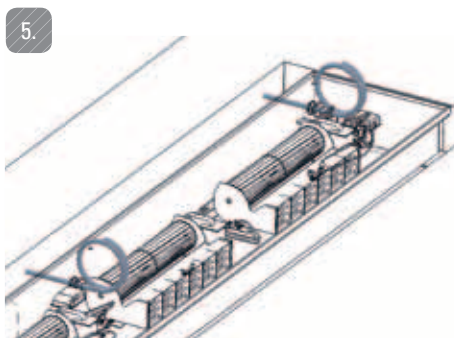


FIG. 13: Place the convector in the structural opening, install the power supply cable through the grommets (230 V/50 Hz). There are two power supply lines for convectors with length 2m and 2.5m. For safety reasons check whether the power supply cable is not live.

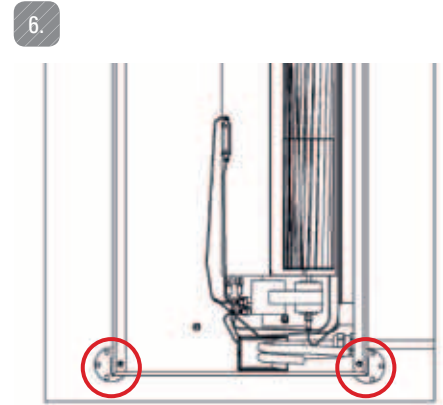


FIG. 14: Fix the convector using the attachment feet in the prepared screw anchors. Level the convector according to Fig. 15 and fix the feet using quick-hardening concrete.

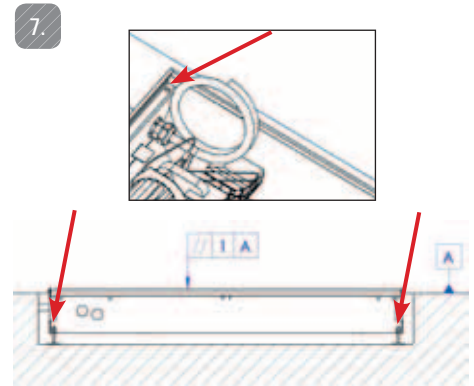


FIG. 15: Align the convector (with frame attached) using the adjustment bolts. Set the final height so that the convector frame is aligned with the finished floor (± 1 mm).

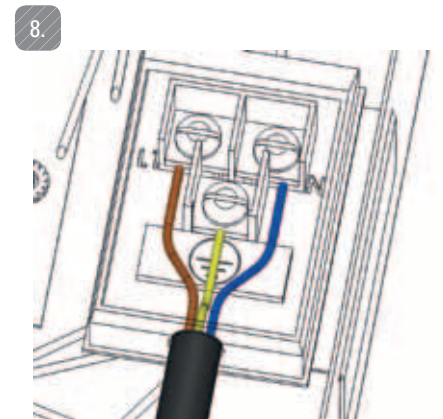


FIG. 16: Connect the power supply cable to the convector terminal box. For convectors with length 2 and 2.5m connect the power supply cable to both terminal boxes. When making the connections, follow the wiring diagrams provided in the guide. Test the function of the convector.

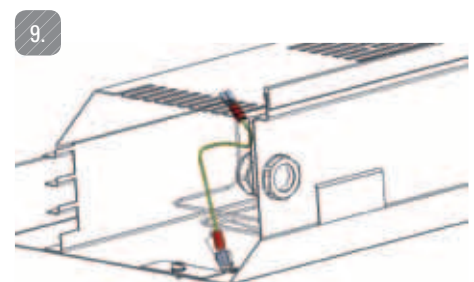


FIG. 17: Provide ground connection by connecting the fan cover to the trough.

10.

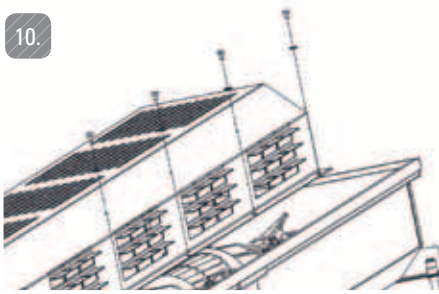


FIG. 18: Attach the cover back to the convector trough with screws.

11.

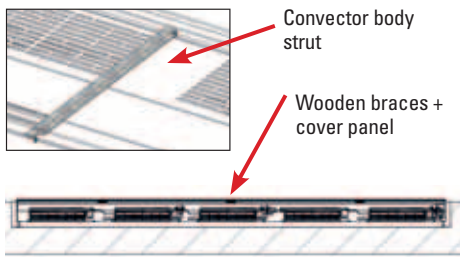
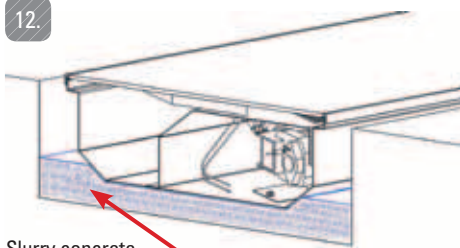


FIG. 19: Make sure that all openings inside the trough are sealed so that the convector interior is not contaminated during the concrete pouring process! Install struts of the convector trough and wooden braces together with fiberboard cover.

12.



Slurry concrete – up to min. 1/3 of trough height výšky žlabu.

FIG. 20: Pour concrete slurry to at least 1/3 of the convector height in order to minimize the impact noise transmission. In case of poor embedding of the bottom in concrete the convector with fan might resonate!

13.

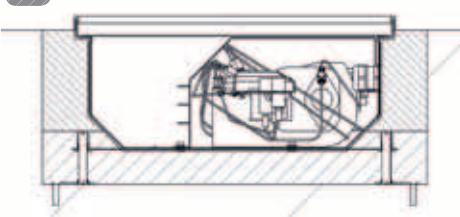


FIG. 21: The entire space around the convector must be subsequently filled with normal concrete up to the final height of the unfinished floor. The convector is now set in the unfinished floor, which is ready for floor finish installation (parquet, tiles, etc.)

14.



FIG. 22: A correctly installed convector has a standard frame aligned with the floor finish with a tolerance of ± 1 mm.

REMOVE THE BRACES AFTER THE CONCRETE POURING PROCESS!

7. ELECTRICAL CONNECTION OF THE TE CONVECTOR

7.1 Connecting the convector

The convector is connected to a single-phase power supply of 230V AC / 50Hz. The power supply cable must be pulled in through the grommet to the TE convector terminal box "KADO 1/3", and here the phase (L1), neu-

tral (N) and ground (PE) conductor are installed. These are connected to the respective contacts which are indicated on the terminal box.

Convectors with one, two and three rotors (length 500mm, 1000mm and 1500mm) are powered via a single terminal box. Convectors with four and five rotors (length 2000mm and 2500mm) are powered via two terminal boxes.

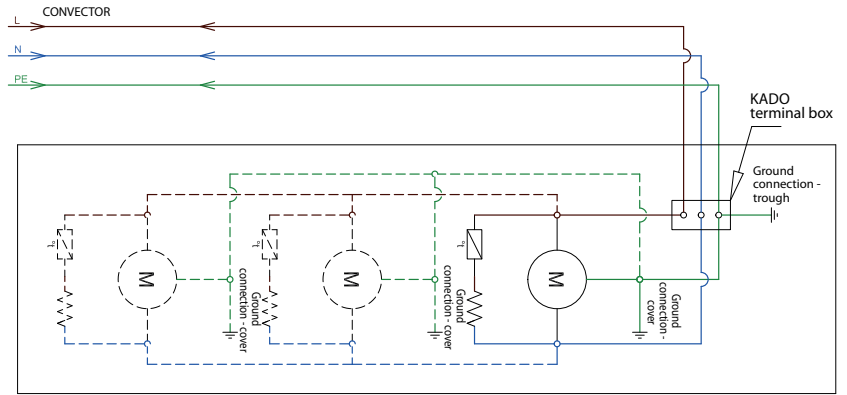


FIG. 23: Connecting a convector with one, two or three modules.

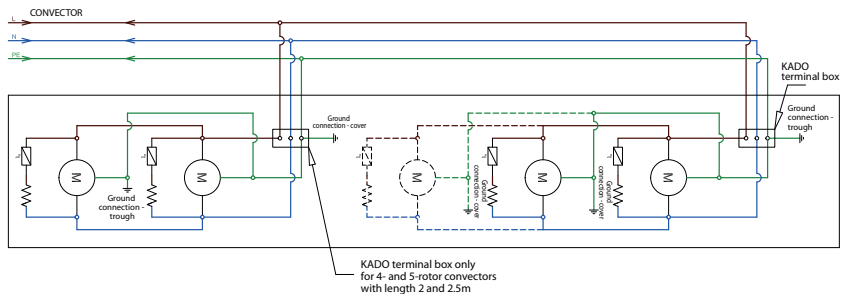


FIG. 24: Connecting a convector with four or five modules.

KADO terminal box only for 4- and 5-rotor convectors with length 2 and 2.5m

7.2 Connecting the control system of the TE convector

The thermostat of the TE convector must be connected via a contactor. The contactor must be designed to control the power input of the convector. Convectors with different length have different power inputs, again depending on the number of modules. Maximum current-carrying capacity (see the table below). Control system wiring diagram (see Figure 24).

rent of the coil of the relief relay or the contactor. Current I_{max} is determined by the total heating input power of all units switched.

The contactor may also have three phases. In such case the total length of the convectors can be divided into three identical part and each part connected to one phase. Naturally, the contactor coil may be supplied from any phase.

The thermostat contacts must be designed for voltage 230V/50Hz and for a current corresponding to the cur-

Con- vector length (mm)	No. of modules (quantity)	No. of terminal boxes in the convector (quantity)	Maximum current-carrying capacity of one convector (A)
500	1	1	3,27
1 000	2	1	6,54
1 500	3	1	9,81
2 000	4	2	13,08
2 500	5	2	16,35

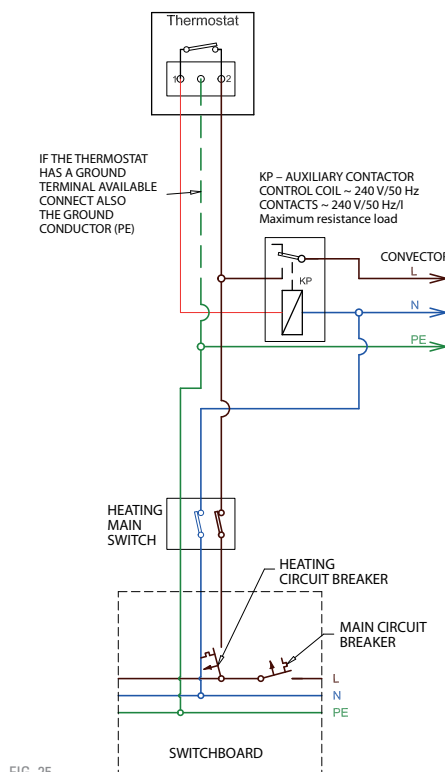


FIG. 25

HEAD OFFICE
 MINIB, a.s.
 Brunclíkova 1875/17, 162 00 Prague 6
 Czech Republic
 Tel.: +420 731 152 133
 E-Mail: export@minib.cz
 www.minib.cz

PRODUCTION
 Manufacturing plant of MINIB, a. s. Býčev
 u Mělníka 84
 276 01 Býčev
 Czech Republic

WWW.MINIB.CZ