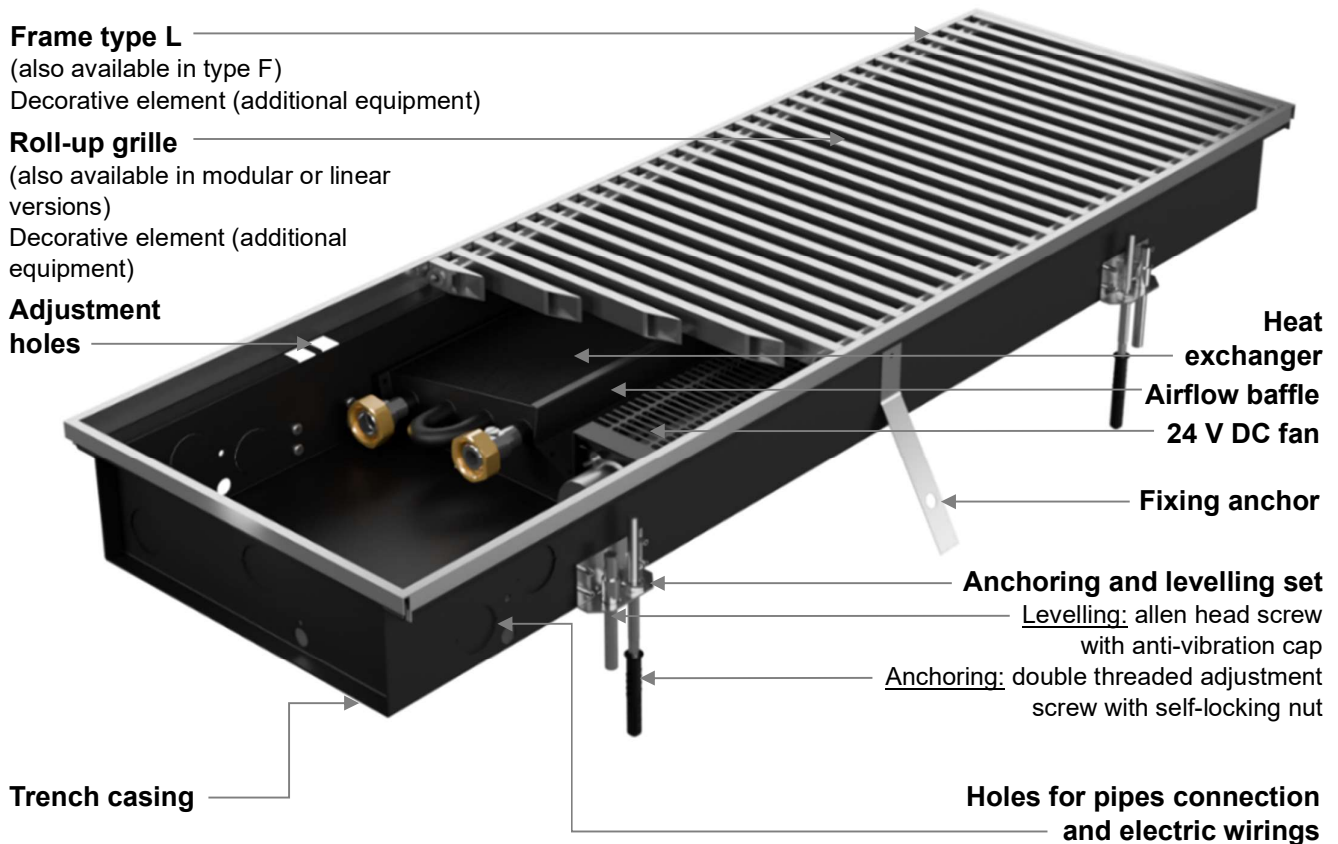


INSTALLATION MANUAL



Example of visualization of fan assisted trench heater type VKN2 SILENT

Manufacturer:

VERANO GLOBAL Sp. z o.o.

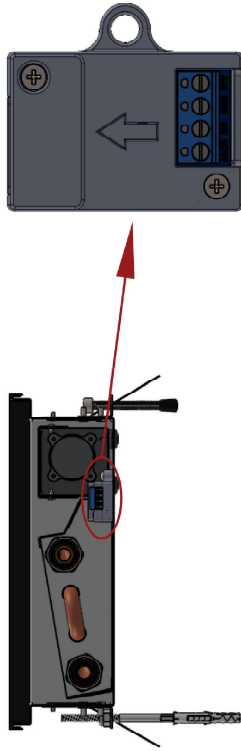
Vetterów Street 7A

20-277 Lublin, Poland

Phone: +48 533 009 415

e-mail: export@v-k.pl

ELECTRIC CONNECTION



Fan electrical wire connections in the junction box:

- **TACH** – the tach signal (indicates whether the fan is running and its rate of speed)
- **SIG** – control voltage 0-10 V DC
- **GND** – negative (-) 24 V DC
- **24V** – positive (+) 24 V DC

Recommended wire type: LIYCY
Allowed wire type: LIYY

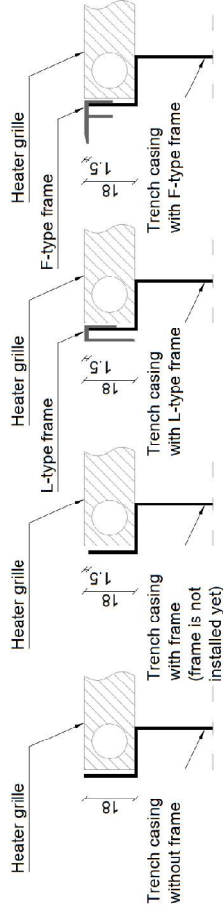
NOTE!

Do not remove the fan junction box covers.

Electrical wires routing should be done in accordance with the applicable standards of the electrical industry.

The wire cross-sections should be determined in accordance with electrical installation project based on the voltage drop calculations for the planned wires routing.

FRAME TYPE AND HEATER HEIGHT



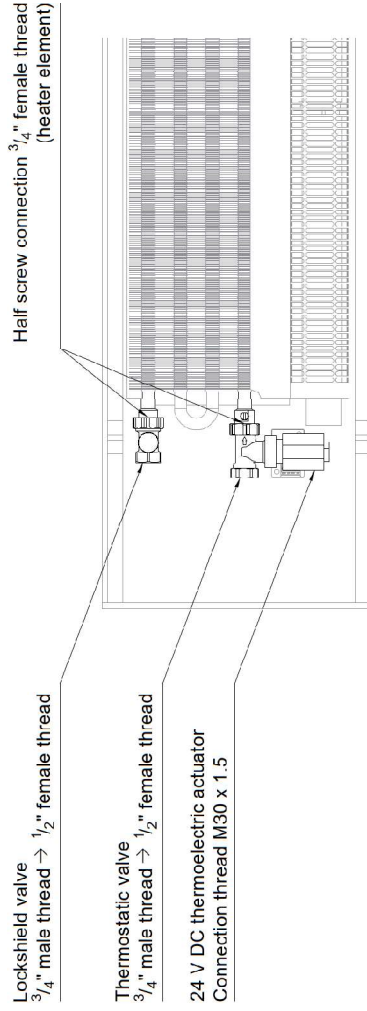
The height of the trench casing edge, for technological reasons, depends on the use of the frame. It is recommended to order the frame together with the heaters or to inform the manufacturer about the planned frame installation on a later stage.

The edge of a trench casing without frame is 18 mm high, which makes it flush with the grille and floor finish level. The height of the trench casing edge adapted to the installation of the frame is reduced by 1.5 mm.

The frame should be installed after the trench casing has been installed in accordance with point 9 of this manual.

HYDRAULIC CONNECTION

Example of hydraulic connection of the fan assisted trench heater type VKN2 SILENT



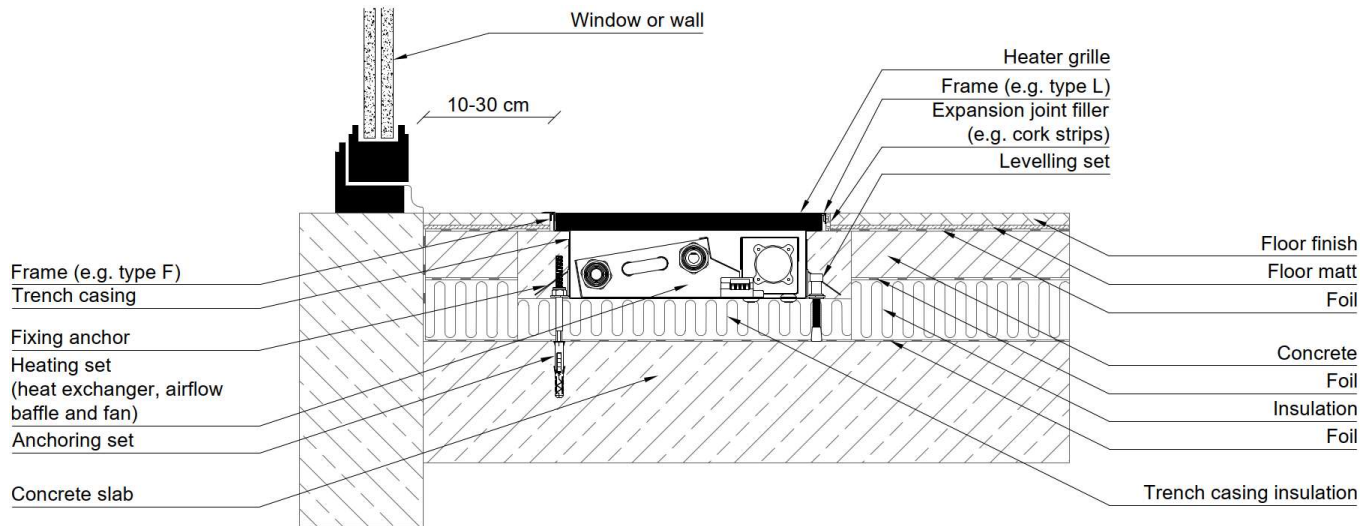
The VKN2 SILENT trench heaters require thermostatic valves and lockshield valves with threads: $\frac{3}{4}$ " male thread \rightarrow $\frac{1}{2}$ " female thread. Half screw connections are standard equipment of the VKN2 SILENT trench heaters.

VKN2 SILENT

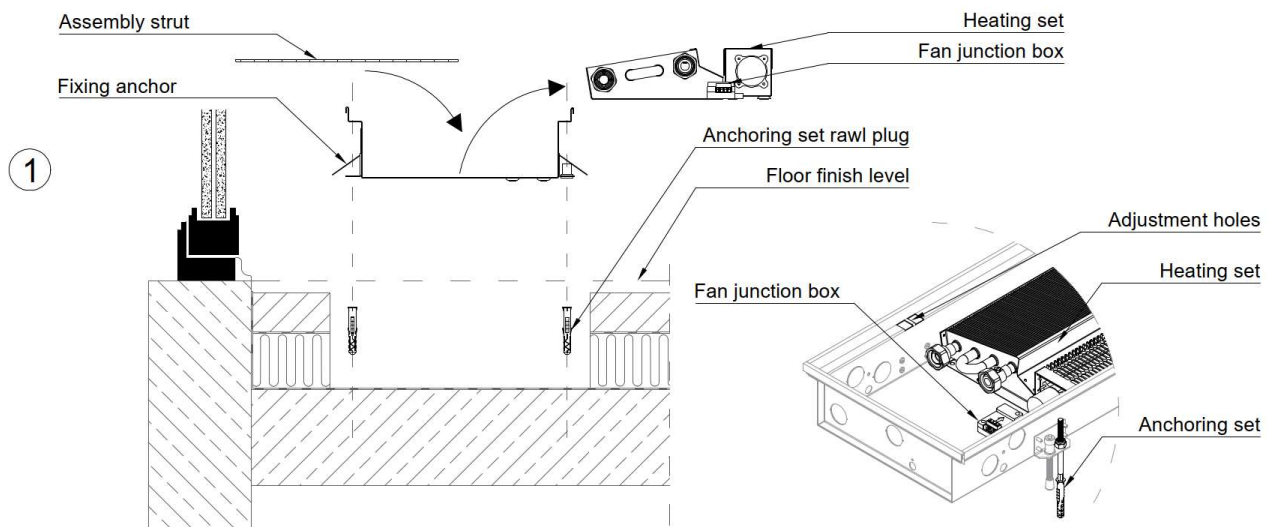
FAN ASSISTED TRENCH HEATER

VKN2 SILENT

FAN ASSISTED TRENCH HEATER



Example of the VKN2 SILENT trench heater assembly



1. During construction works, a duct for the trench heater should be prepared in the floor layers, which should be larger than the dimensions of the heater by approx. 50 mm on each side.

The depth of the duct should be planned in the way that the top of the heater grille is on the same level as a floor finish level (take into account the insulation of the trench casing).

Then mark the mounting points for the anchoring sets – put the heater casing into the duct and mark the locations of the anchoring set holes.

VKN2 SILENT

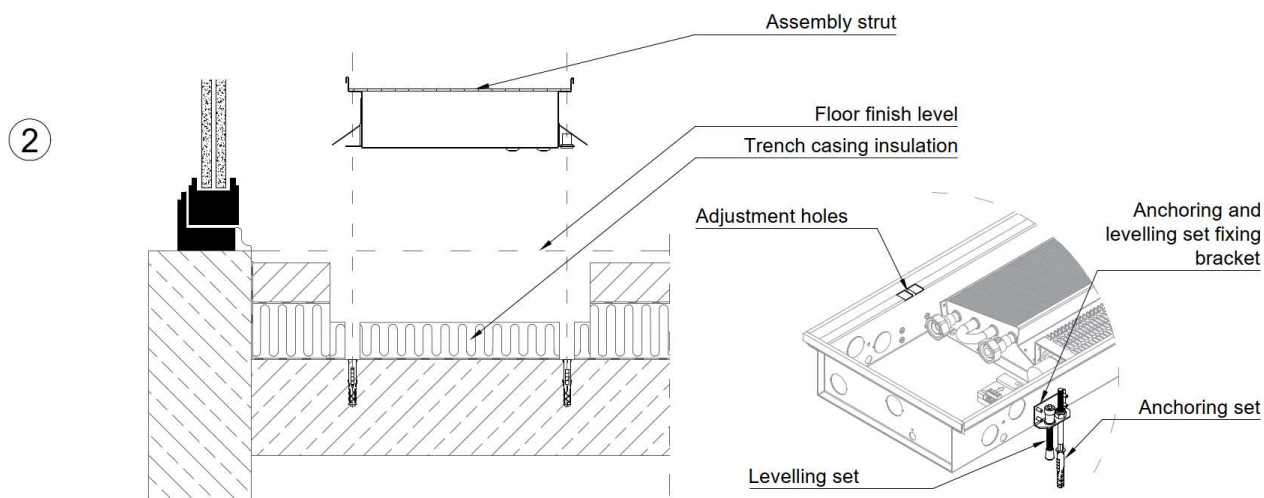
FAN ASSISTED TRENCH HEATER

NOTE!

Before starting the assembly work, it is **absolutely necessary** to remove and secure the heating set from the trench casing. To remove the fan junction box from the inside of the trench heater, use a PH-2 cross-head screwdriver (do not remove the junction box covers).

In the case of a F-type frame, also remove the frame and install the assembly struts included in the set. In the case of a L-type frame, remove the assembly struts, remove and secure the heating set, and then reinstall the assembly struts.

Contamination of fans with dust resulting from renovation and construction works causes their permanent damage and loud work during use. Damage resulting from contamination of fans is not subject to complaint.



2. The rawl plugs of anchoring sets should be placed in the concrete slab.

Place the thermal insulation layer on the concrete slab below trench casing. The thermal insulation layer should contain the holes adapted to the anchoring and levelling sets.

The recommended thermal insulation is polystyrene and filling the free spaces under the trench casing with low-expansion foam.

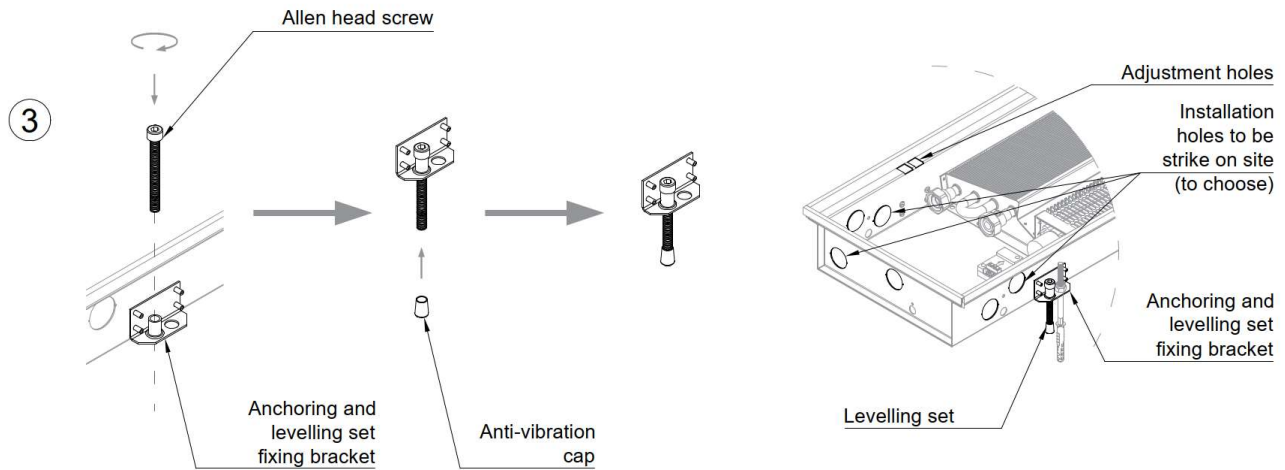
The materials from which the thermal insulation layer under the trench casing is made must have a compressive strength of not less than 70 kPa at 10% relative deformation.

The minimum insulation thickness should result from the floor structure and thermal calculations and should not be less than:

- 20 mm for heaters installed on an upper levels (repeatable level above the heated room);
- 140 mm for heaters installed on the ground floor (Polystyrene declared properties
 $\lambda = 0.004 \frac{W}{m \cdot K}, U_{min} = 0.30 \frac{W}{m^2 \cdot K}$).

VKN2 SILENT

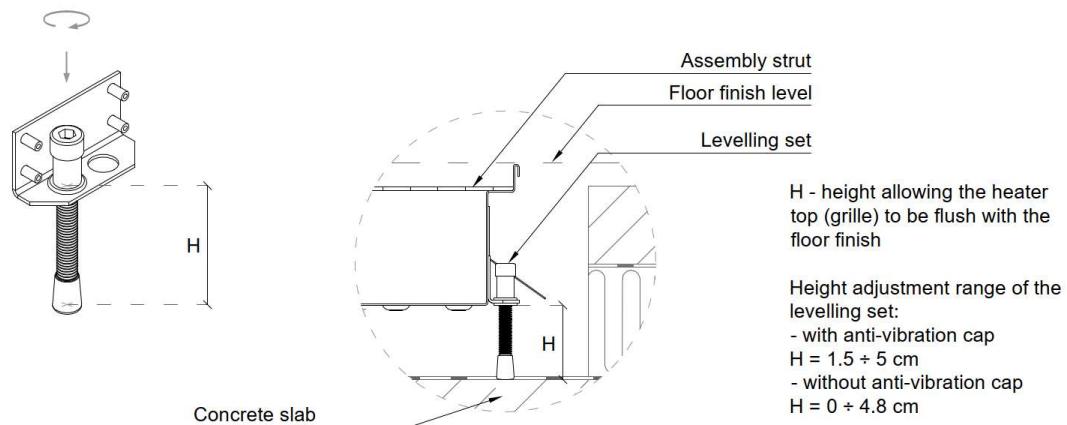
FAN ASSISTED TRENCH HEATER



3. The installation of the trench casing in the floor duct should be started by initial levelling the trench casing using levelling sets.

Before levelling the trench casing, strike holes for the central heating system pipes and electric wires. The holes are located at the front, back or side of the trench casing (to be chosen on site).

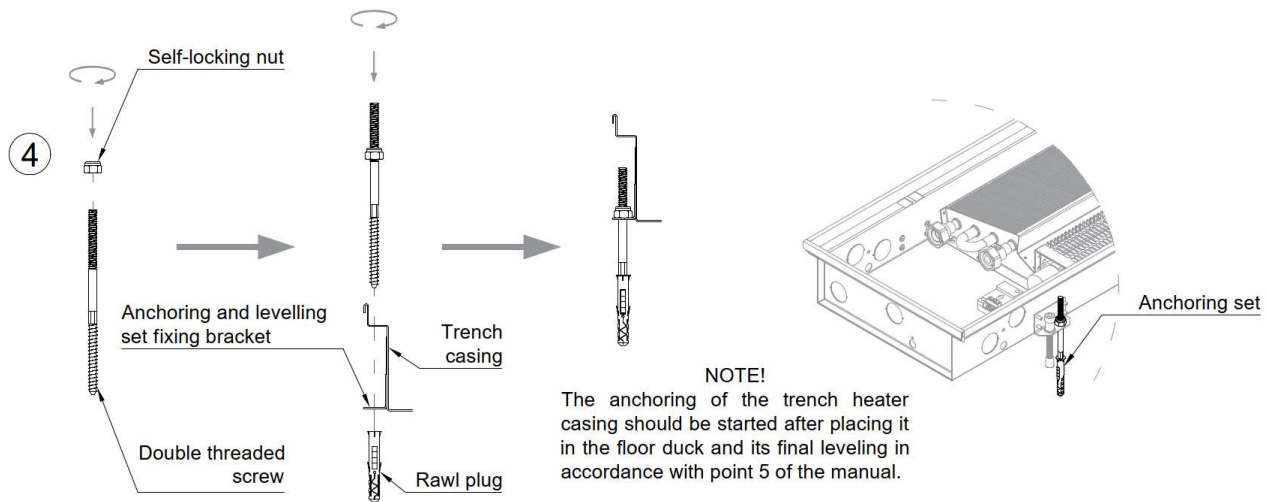
The levelling set consists of an allen head screw and an anti-vibration cap. The levelling sets (together with anchoring sets), placed symmetrically on both sides of the trench casing, should rest on the concrete slab of the ceiling. They should not be placed on the thermal insulation layer. Adjusting the height of the levelling sets requires the use of a 6-corner allen key (size 6).



The allen head screws should be screwed into the brackets of the anchoring and levelling sets and anti-vibration caps should be placed on them. Then, the height of all screws should be pre-adjusted so that the top of the heater (grille) is flush with the floor finish level.

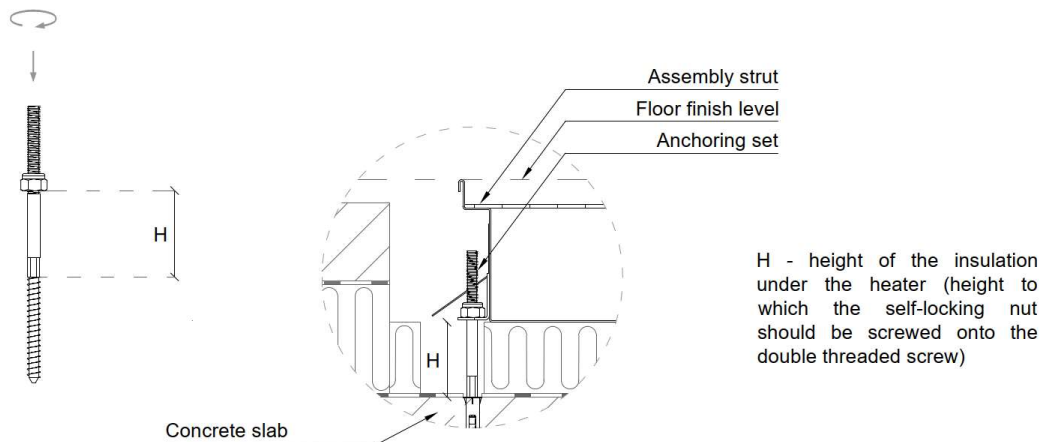
VKN2 SILENT

FAN ASSISTED TRENCH HEATER



4. After levelling, prepare the anchoring sets.

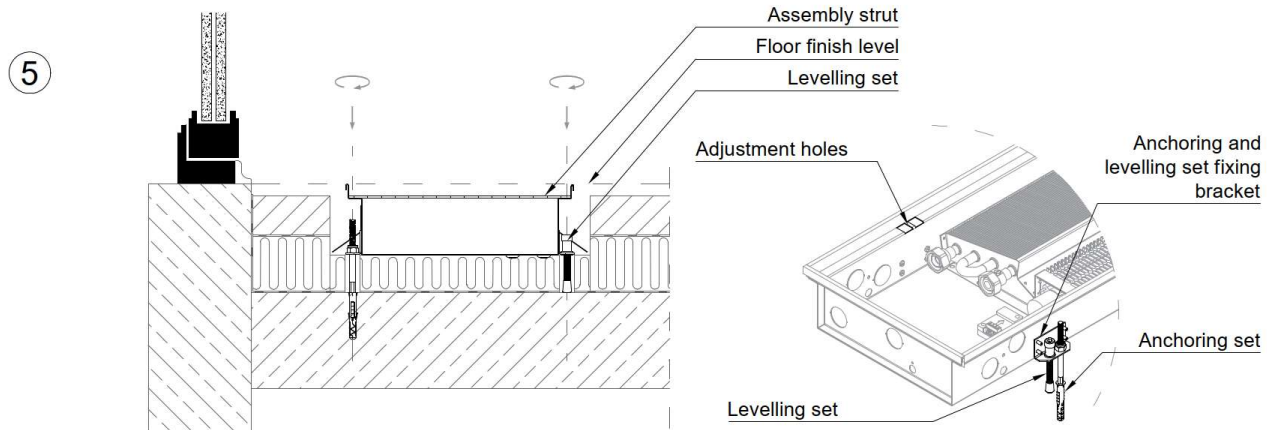
The anchoring set consists of a double threaded screw, a self-locking nut and a rawl plug. The anchoring sets (together with levelling sets), placed symmetrically on both sides of the trench casing, should rest on the concrete slab of the ceiling. They should not be placed on the thermal insulation layer.



Self-locking nuts should be screwed onto the double threaded screws to the height of the insulating layer of the trench casing (the tolerance range in this case is $H \pm 3 \text{ mm}$).

VKN2 SILENT

FAN ASSISTED TRENCH HEATER



5. After initial levelling of the trench casing and preparation of anchoring sets, place the trench casing in the floor duct and proceed to proper levelling and anchoring.

Please remember that the anchoring and levelling sets should be installed on the concrete slab of the ceiling. They should not be placed on the thermal insulation layer.

The anchoring and levelling sets are adjusted through the adjustment holes in the trench casing edge using appropriate tools.

After placing the trench casing in the appropriate place in the floor duct, adjust the height of all levelling sets so that the top of the heater (grille) is flush with the floor finish level. Adjusting the height of the levelling sets requires the use of a 6-corner allen key (size 6).

Then, fix the trench casing using anchoring sets. Their installation in the concrete slab of the ceiling requires the use of a screwdriver machine with a Torx TX25 tip.

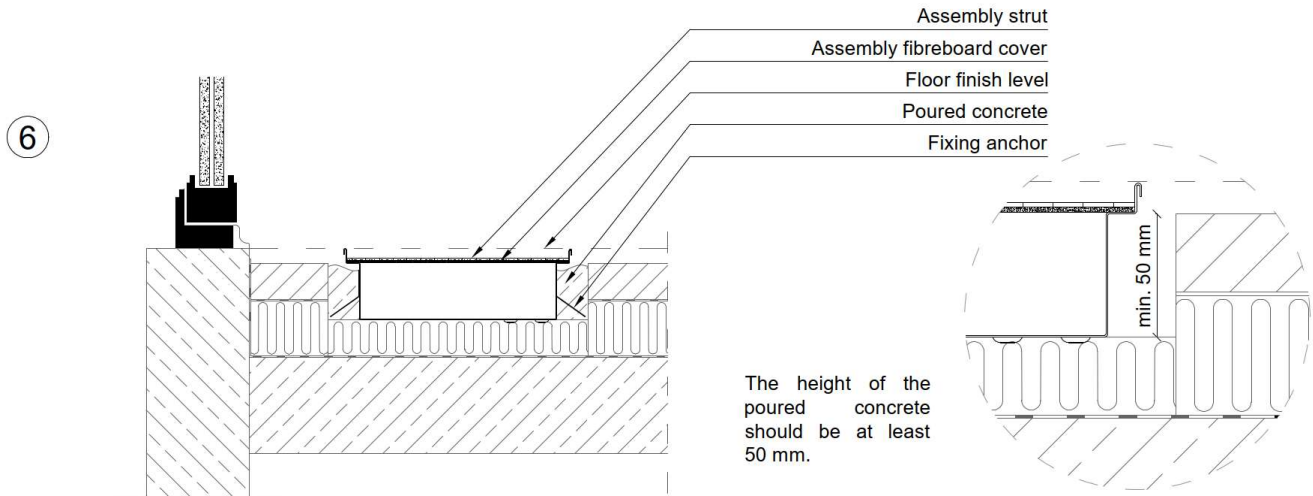
The fixing brackets of the anchoring and levelling sets should be pressed down with the double threaded screws with self-locking nuts. Fixing the trench casing prevents it from being lifted when filling the free spaces in the thermal insulation layer with low-expansion foam or when pouring a concrete layer.

It is recommended to fill the remaining free spaces between the thermal insulation layer and the trench casing with low-expansion mounting foam with a compressive strength of not less than 70 kPa at 10% relative deformation.

Leaving free spaces between the trench casing and the thermal insulation may result in increased noise from the device.

VKN2 SILENT

FAN ASSISTED TRENCH HEATER



6. Make a screed on which the edge of the trench casing will rest. The screed should be at least 50 mm high, which should be taken into account at the stage of planning the thickness of heater thermal insulation layer.

Before pouring the concrete, the central heating system pipes and the electrical and control wires must be lead to the trench casing. Secure the installation holes and other holes in the trench casing by using low-expansion foam.

At the stage of pouring the screed, the trench casing must be equipped with factory-supplied assembly struts and protected against contamination, e.g. with a assembly fibreboard cover.

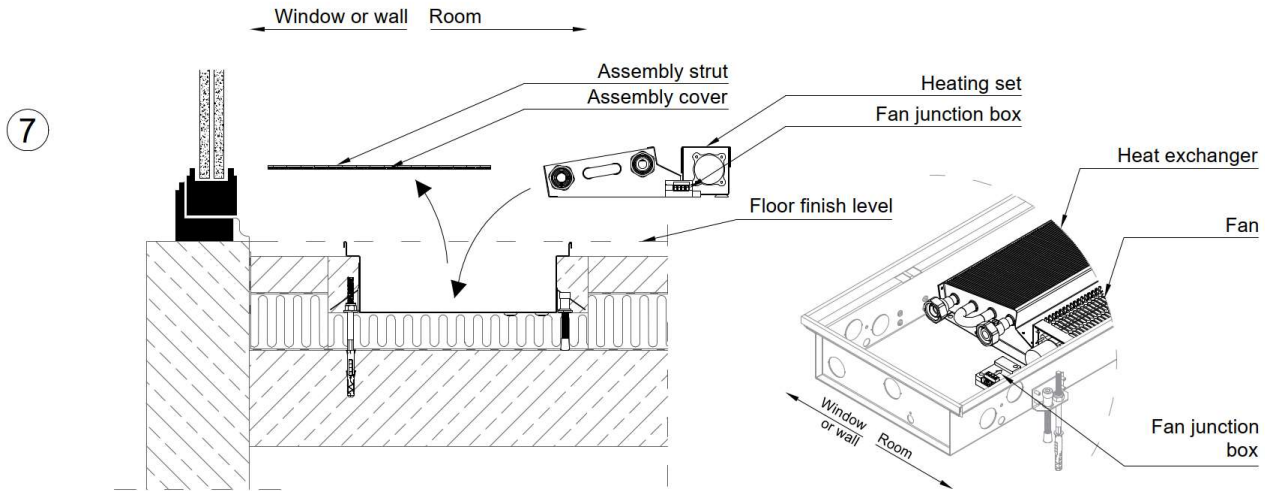


The trench casings of VKN2 SILENT fan assisted trench heaters are standardly equipped with a connection for connecting the grounding installation. To be used depending on local or special guidelines.

According to the current regulations, low voltage devices (VKN2 SILENT fan assisted trench heaters) should not be connected to the grounding of other installations.

VKN2 SILENT

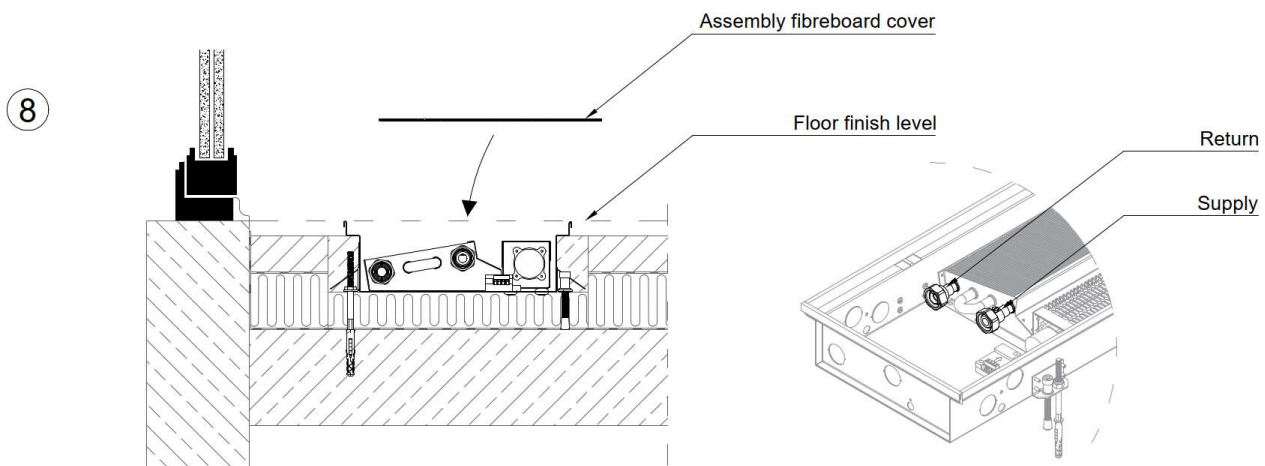
FAN ASSISTED TRENCH HEATER



7. When the screed gets dry, the assembly struts and assembly cover can be removed. After that, the inside of the trench casing should be thoroughly cleaned and the heating set should be reinstalled.

The fan junction box should be screwed to the inside of the trench casing using a PH-2 cross-head screwdriver. Do not remove the junction box covers.

In the VKN2 SILENT fan assisted trench heater, the heat exchanger should be located on the window/wall side.



8. After installing the heating set, the hydraulic connections and the installation of control equipment (if required) should be made. Carry out a leak test on the hydraulic connections.

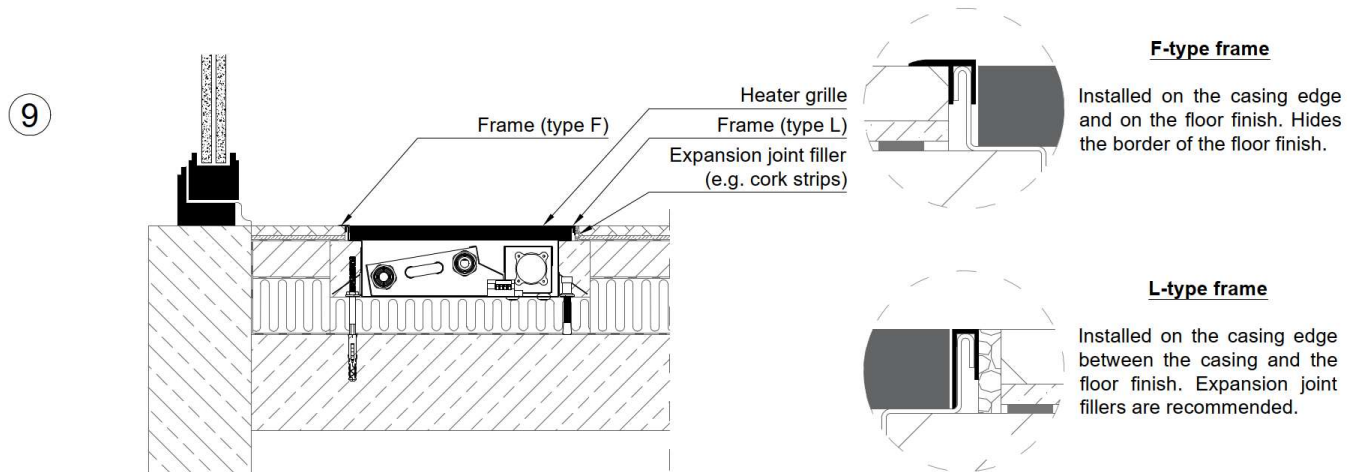
The supply pipe should be connected to the heat exchanger pipe equipped with air vent- in the case of VKN2 SILENT trench heaters, it is located on the room side.

Electrical connections should be made in accordance with separate diagrams.

After completing the assembly work, the heater should be covered with a assembly cover to protect against contamination resulting from the renovation and construction works.

VKN2 SILENT

FAN ASSISTED TRENCH HEATER



9. After finishing renovation and construction works, the grille should be installed on the heater.

In the case of a heater with a frame, remove the protective foil from the frame as soon as possible. The F-type frame must be reinstalled after these steps.

During renovation and construction works, the trench heater must be absolutely protected against contamination using an assembly cover.

Contamination of fans with dust resulting from renovation and construction works causes their permanent damage and loud work during use.

Damage resulting from contamination of fans is not subject to complaint.

NOTE!

Grilles, frames, thermostatic and lockshield valves, thermostatic heads, thermal actuators, room controllers, rail power supplies and protective fibreboard covers are elements of the trench heater's additional equipment.

OPERATION REGULATION AND POWER SUPPLY OF THE VKN2 SILENT TRENCH HEATERS

The following are required for correct operation of fan assisted trench heaters: room controller, thermal actuator installed on thermostatic valve and 24V DC power supply unit selected according to the electrical characteristics of installed heaters.

The room controller, according to diagrams presented in this manual, is connected with heater fans and the actuators installed on thermostatic valves. The recommended wires type for control system is LIYY or LIYCY. Due to the built-in temperature sensor the room controller should not be built over or covered with furniture or other interior design elements.

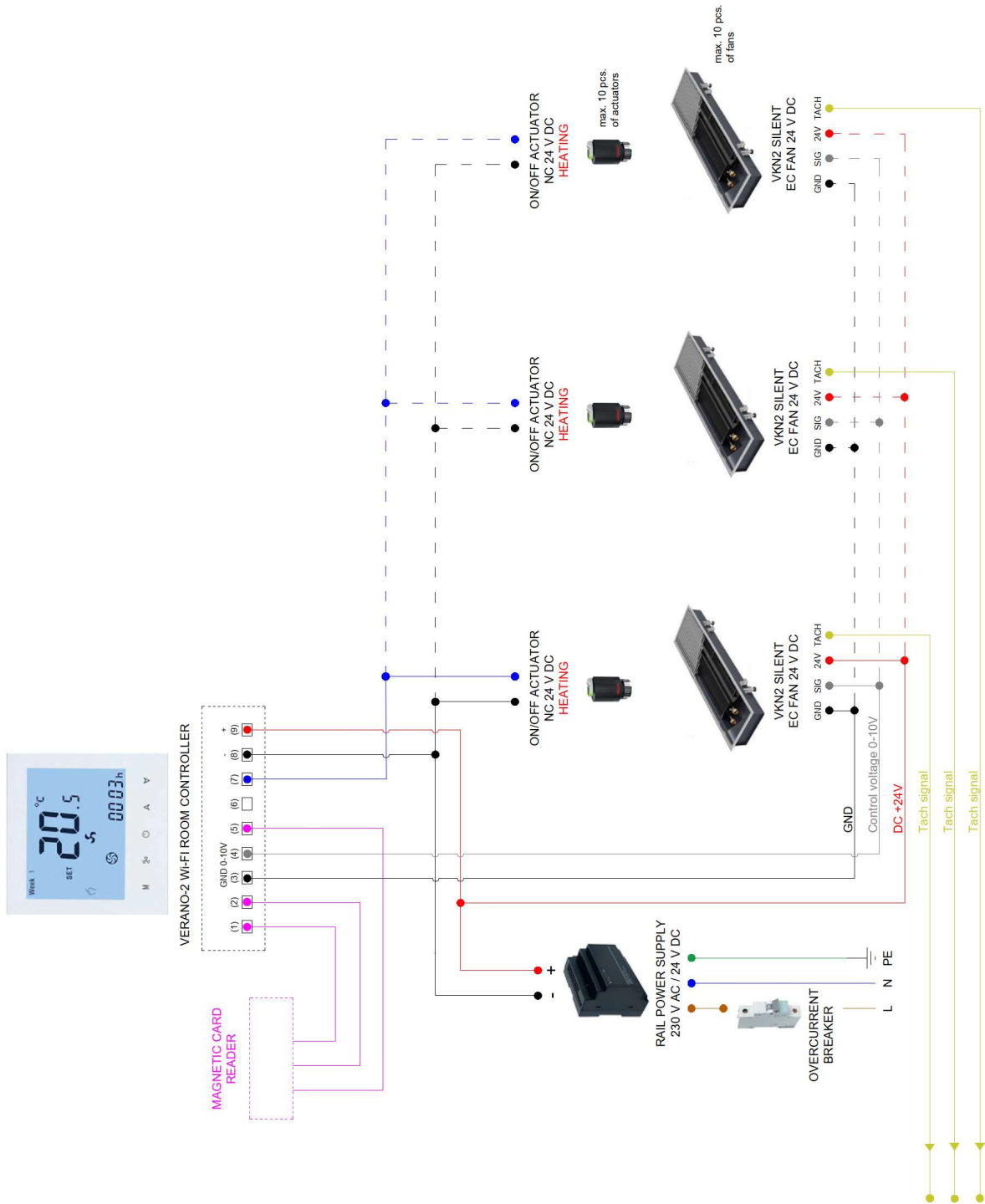
The room regulator, according to diagrams presented in this manual, is connected with heater fans and the actuators installed on thermostatic valves. The recommended wires type for control system is LIYY or LIYCY. Due to the built-in temperature sensor the room controller should not be built over or covered with furniture or other interior design elements.

VKN2 SILENT

FAN ASSISTED TRENCH HEATER



WIRING DIAGRAM - VERANO-2 Wi-Fi



NOTE!

Only properly skilled and trained personnel, holding licenses and observing applicable standards can install electric connections. Power can only be switched back on when the correctness of the whole wiring was checked and approved. Due to use of safe low voltage fans the heaters can only be powered by 24 V DC voltage. It is prohibited to connect the heaters directly to 230 V AC power grid.

SIGNAL WIRE
The tach signal indicates whether the fan is running and its rate of speed

TERMS OF USE AND MAINTENANCE OF THE DEVICE

The device should be cleaned of dust that has settled on the internal components of the heater at least once a year before heating season. To avoid failure of electrical components, make sure that no water or other liquids get inside.

Damage or improper operation resulting from contamination of the device interior is not subject to warranty repair or replacement.

To clean the inside of the device, follow the steps below:

- disconnect the device from the power source;
- remove the grille;
- the heater grille should be cleaned with a slightly damp cloth without using detergents, making sure that it does not contain any abrasive elements that could damage the outer coating of the grille;
- clean the heater components from dust using a vacuum cleaner;
- install the grille.

When using an electric trench heater during the heating period, it should not be covered with carpet, furniture or curtains. The grilles are resistant to pressure and abrasion for low-intensity pedestrian traffic. Avoid increasing pressure on the grille bars, e.g. by placing interior furnishings on them.

NOTE!

During the heating period, perform maintenance on the cold device.

Repairs to the device may only be performed by the heater manufacturer or an authorized service center indicated by the manufacturer.

Manufacturer:

VERANO GLOBAL Sp. z o.o.

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