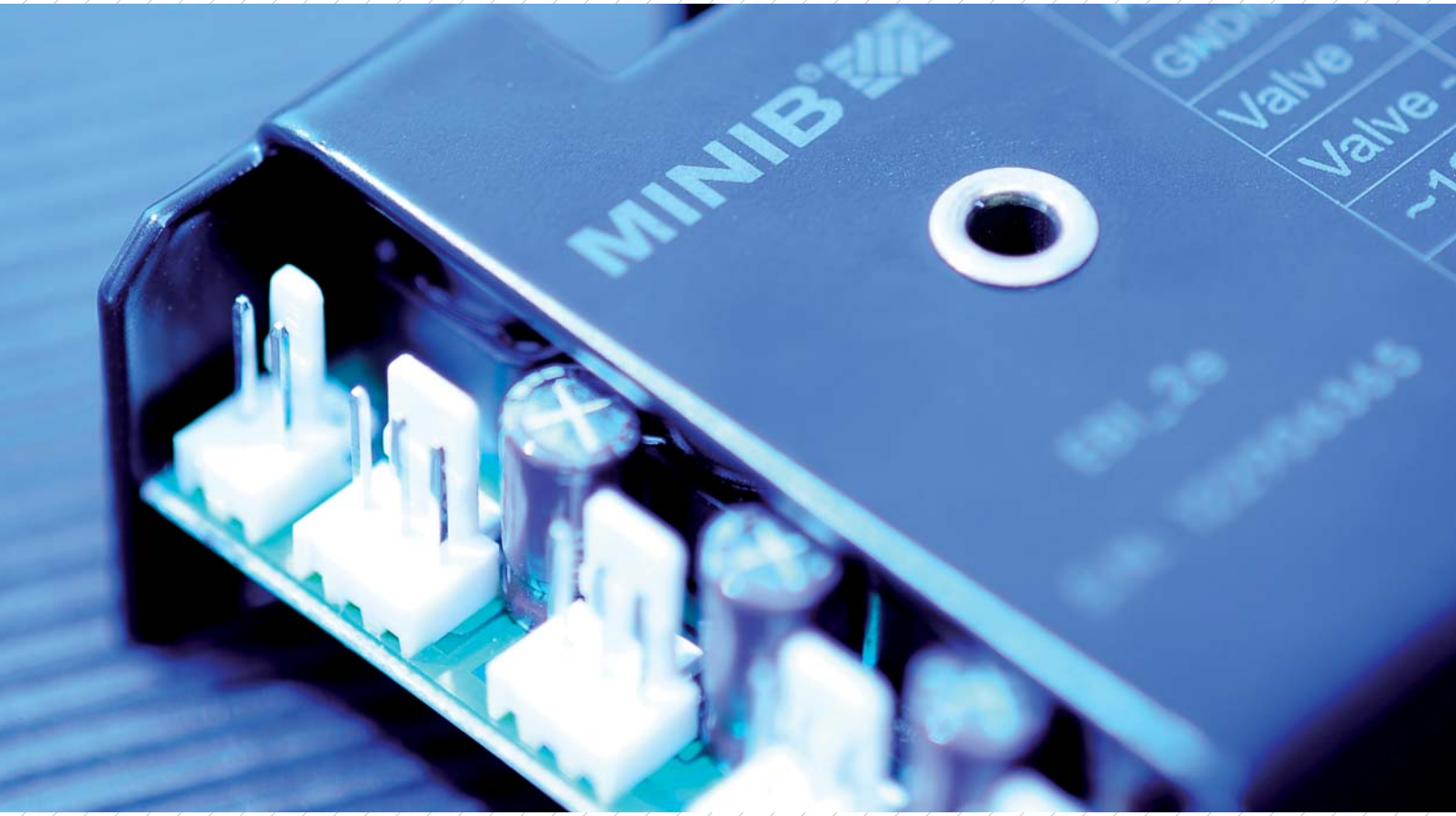
MINIB®

SPC



CONTROL, ACCESSORIES, INSTALLATION MANUALS

... more than just heat

ABOUT US

ABOUT THE COMPANY

MINIB, a.s. is a Czech business through and through, and it ranks among the leading manufacturers of convectors in the Czech Republic. It currently exports to thirty countries in Europe, Asia, Australia, and America.

Since 1999, MINIB has been systematically innovating its production technology and its products and has invested considerable sums in proprietary development and design, with the goal of offering our customers solutions that are mature both from the technical and esthetic points of view.

MINIB's business is economically soand and the company consistently turns a profit. This allows us to invest in R&D, technology, and above all, human capital, so as to ensure our long-term prosperity.

ABOUT THE MANUFACTURING PROCESS

The manufacturing facility is located in Býkev near Mělník and has excellent transport connections. It is furnished with state-of-the-art production technology. Most manufacturing operations are carried out on CNC machines, which allows us to accommodate even the most sophisticated wishes of our exacting customers.

In response to individual calls for customization, we are able to create a wide variety of non-standard, one-of-a-kind products that satisfy specific needs.

All products are made from high-grade material with a useful life of many years, which is why we offer a 10-year warranty on heat exchangers and our stainless-steel convector vats.

MINIB holds an ISO 9001:2008 certificate in addition to numerous utility models and patents.

The entire range of products is submitted to testing in the independent, accredited test chamber of HEATEST, s.r.o. pursuant to the European Standard EN 442-2, which is why we are able to guarantee the advertised heating and cooling output.

ABOUT THE PRODUCTS

MINIB's production portfolio consists of over 70 convector types. Customers can thus choose the right convector for any interior.

The main advantage of convectors is that they are efficient, modern, economical, and esthetic heaters suitable for both dry and humid environments. Significant power savings are achieved thanks to low water requirements for the immediate heating or cooling of a given area. This leads to low consumption of electricity required for its heating. In addition to water and energy savings, a great heating and cooling dynamics is also important. The space saving design is another important feature of these products. Our convectors do not disturb interior esthetics, have a modern design, and - last but not least - are safe thanks to their 12V power supply.

The product range comprises various types of convectors:

- FLOOR convectors without fans that work on the natural convection principle. Convectors with fans utilize the principle of forced convection.
- FREE STANDING AND WALL MOUNTED convectors with and without fans are also available. Heating benches with granite and wooden top panels are available for humid environments (swimming pools, bathrooms).
- DESIGN convectors are a unique patent series that use both the convection and heat radiation principle for heating. These convectors have aluminum composite front panels available in a number of modern designs from smooth glass with various colors or from glass with sand blasted decorations. The company also offers granite front panels.

MINIB can satisfy any individual, non-standard requirements of its customers such as angular or arc-shaped convectors with various connections and tailor them to their demands. MINIB emphasizes high user comfort. All products place low demands on installation and maintenance.

Numerous accessories are available for individual convector types. MINIB products have won a number of national and foreign awards.

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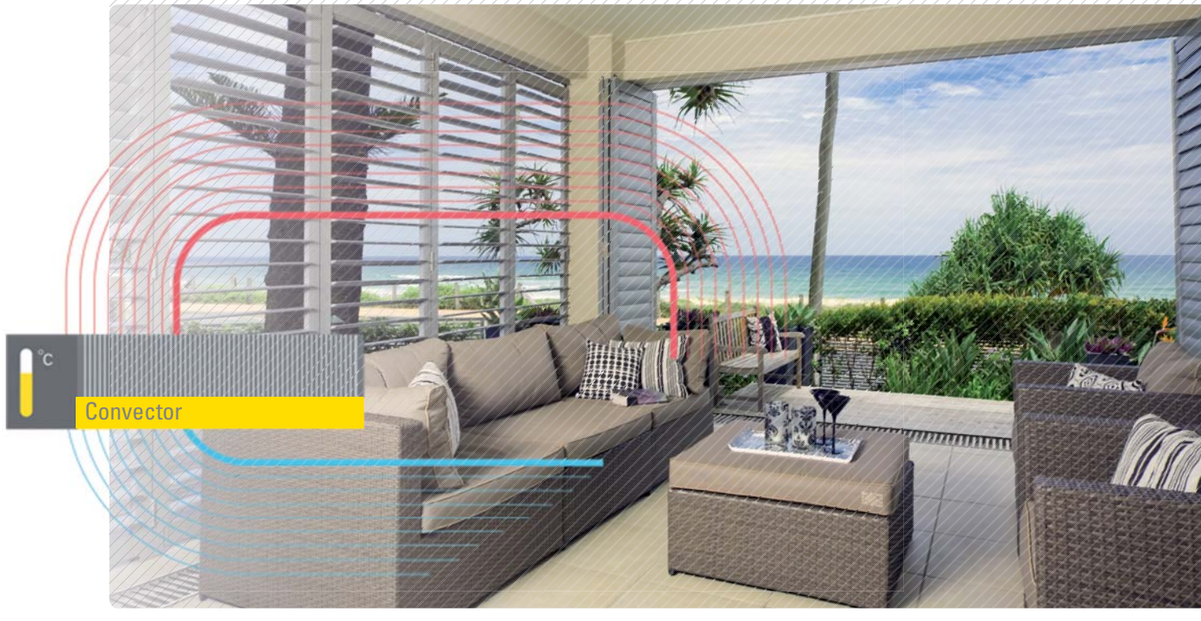


The heating output of convectors with fans is controlled by the electronic adjustment of fan speeds. For fan-coils equipped with an electrical valve, the heating output can be reduced to zero by shutting off the heating water supply.

OUTPUT CONTROL – CONVECTORS FOR STANDARD (DRY) ENVIRONMENT

MINIB has been using 12 VDC commutator-free motors in its fans intended for standard environment since 2005. Their advantage consists in significantly lower power consumption compared to commonly used AC motors. Moreover, the DC motors are characterized by low noise and long-term reliability.

The microprocessor speed control for DC motors with feedback is new for all control unit types. The benefits of the new solution include:

- stable output of convectors during the entire service life – does not decrease even with gradual soiling and wear of rotating components
- optimized output setup based on the demand from control circuits
- silent operation at lowest speeds
- electronic motor disconnection in the event of fan blockage (e.g., by an item that has fallen into the convector); the motor is thus protected against overheating and damage
- simplified installation and reduced costs of electric cabling, in particular with the possibility of manual/automatic speed control.

Speed control for each motor within the fan-coil is ensured by an electronic block (EB) incorporated in the convector. In addition to mutually independent motor control, the EB circuits also monitor the control signal at their input and adjust fan speed accordingly.

ELECTRONIC BLOCK IS USED FOR THE FOLLOWING ELEMENTARY CONTROL TYPES:

EB-A control **(for heating mode only)** – simple control of fan operation by thermostat, fan speed can be adjusted manually by the potentiometer located on the wall near the thermostat (a potentiometer can be used independently without a thermostat).

EB-B control **(for heating mode only)** – fan speed is adjusted automatically by control firmware in order to achieve required convector output.

EB-C control **(heating/cooling mode)** – in automatic mode, the fan speed is controlled similarly as for EB-B control; the highest possible speed is limited by the switch position on the thermostat (for example TH 0482).

The required control type does not have to be adjusted in any way - the unit automatically evaluates the control signal character and adjusts fan speed control accordingly. The relevant contact only needs to be connected with a jumper in the electronic block for continuous speed regulation by voltages between 0 and 10V (EB-A control or superior system management).

If multiple convectors are supplied from one source in a room, the control element (thermostat, potentiometer) can be connected to any convector for all control types. The parallel connection of EB inputs enables the simultaneous management of convectors from any location. All control modes also enable use of 12VDC voltage on the EB connector as a thermostat power supply provided that the thermostat supports 12 VDC power supply (for example type TH0482).

Wireless thermostats can be used for EB-A and EB-B control modes. In this case, the thermostat - transmitter is installed at the most suitable location in the room and the receiver is located near the 230V AC or 24V AC power supply line depending on the supply type required by the receiver. The switching contact of the receiver is connected to the relevant control signal terminals of the nearest convector similar to the case of a classic thermostat.

New for all control types is the possibility of using electric valves located in the convector which - if the valves are shut by the control electronics for more than 30 minutes – shut off the heating (cooling) water supply to the exchanger thus reducing the heating (cooling) output to zero. Once the heating (cooling) output is required - for example upon thermostat switching - the valve opens automatically and the fans start.

The electro-thermal head can be connected directly to the EB block's terminal bar in the convector as it is produced for this purpose. No additional conductors are thus required. Convector electronics take care of everything.

An electronic temperature sensor is used for all control types. The sensor is adapted for convectors intended for both heating and cooling. When heating is required, the EB block's firmware is set to run the fan whenever the heating media temperature exceeds 30°C. Equally, when cooling is required, the fans run if the cooling media temperature is lower than 30°C. The fans are idle in all other conditions. The EB block switches into the cooling mode by 12VDC on terminal 8 (COOL); it is also necessary to connect the GND/0V terminals of all EB blocks as shown in EB-C control connection scheme (dashed line).

The electric power lines are identical to all control types – the lines between the power source and convectors, as well as the connection of individual convectors, consist of a CYKY O three-conductor cable (3x1.5mm to 3x4mm) with black – brown – grey cores. The black and brown conductors are used for 12 VAC voltage distribution from TT100, TT240 or TT300 source; the grey conductor is used for EB control input connection. Conductor cross-sections are chosen according to current loading and cable length. Thermostats are connected to the control circuits of fan-coils with a CYKY (3x1.5mm) cable; it is, however, possible to use other cables (communication cables, for example) with a suitable color coding of individual conductors.

CONNECTION OF EB CONTROLS TO THERMOSTAT CONTROLLING ADDITIONAL HEATING/COOLING EQUIPMENT

Fan speed is controlled by 0 - 10 VDC voltage for all control types.

In some cases, it is not possible to connect fan-coil controls directly to the thermostat output terminals. This applies in particular to situations when the thermostat is supplied with 24VAC or 230VAC and this voltage is used to control some other system (boiler, thermal pump, etc.). An ADA-EB adaptor must be used in such situation. This adaptor converts the voltage signals from 24VAC or 230VAC to the control voltage level suitable for the control electronics of fan-coil units (0 to 10V). Thanks to its small dimensions (48 x 42 x 22mm), the adaptor can be installed in a standard embedded box under the thermostat.

An example of a solution with an ADA-EB adaptor is shown in the diagram. The three-position thermostat switch provides three levels of speed control (Lo, Mid, Hi). The adaptor input (Heat) is connected to the thermostat terminal, which controls the boiler. Closing the thermostat contact activates the boiler and starts the fans in the fan-coils. The fans are idle if the switch is off or if the thermostat contact is open. The ADA-EB adaptor must not be placed directly in the convector; if the ADA-EB adaptor is used, the EB block control must be switched to EB-A control. The required control mode is set with jumpers in the EB block.

It is recommended that the possibility of connecting and using the ADA-EB adaptor in all other cases be consulted with MINIB's technical or service personnel.

EB block EBI-2e

The EBI-2e electronic block is intended to control the direct current (DC) low voltage brushless motors used as drives for heating convector fans. This is a microprocessor controlled unit on a double-sided printed circuit board (PCB) with dimensions of 57x53mm and fitted with aluminum casing which also acts as a radiator.

- EB block power supply: AC and DC
- 4x output for DC motor
- 1x output for valve, short-circuit resistant
- Input for bimetal/thermistor temperature sensor
- 0-10V analog signal control
- Input for distinguishing between heating and cooling mode
- Selection of connected motors and control method
- Jumper setup
- Possible firmware upgrade
- Motor speed detection
- Optical indication of motors speed synchronization
- Optical indication of sufficiently hot/cold water

CONNECTION

MOTORS

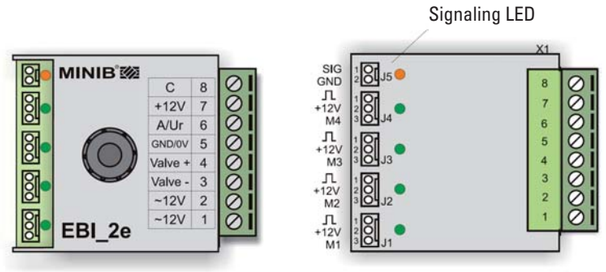
Connector	Contact	Function
J1-J4	1	Signal
	2	+ 12V
	3	Motor x

TEMPERATURE SENSOR

Connector	Contact	Function
J5	1	Signal
	2	GND

TERMINAL BAR

Bus	Contact	Function
X1	1	12V ACa
	2	12V ACb
	3	Valve – (GND)
	4	Valve + (+12V)
	5	0V/GND
	6	A/Ur (0-10V analog input)
	7	+12V
	8	COOL (Eingang 12V)

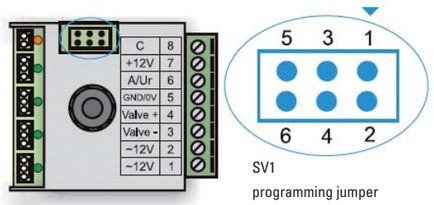


MAXIMUM VALUES

Symbol	Parameter	Value	Unit
Vcc AC	AC power supply	15	V
Vcc DC	DC power supply	20	V
I out 1-4	Output current for 1 motor	2.5	A
I out 5	Output current for valve	0.3	A
I max	Sum of output currents	4.5	A
Tj	Operating temperature	0-85	°C
Tstg	Storage temperature	-55 to +105	°C

Total current I max may not be exceeded (I max = sum of I out 1 to I out 5)

JUMPER TABLE



SV1
programming jumper

EB-A CONTROL TYPE

Description	Jumper position
Voltage output (without speed detection)	-
Fan 65 mm	1-2
Fan 50 mm	3-4
Fan 30 mm	5-6

EB-B AND EB-C CONTROL TYPE

Description	Jumper position
Voltage output (without speed detection)	2-4
Fan 65 mm	1-3
Fan 50 mm	3-5
Fan 30 mm	4-6

EB-A (potentiometer)

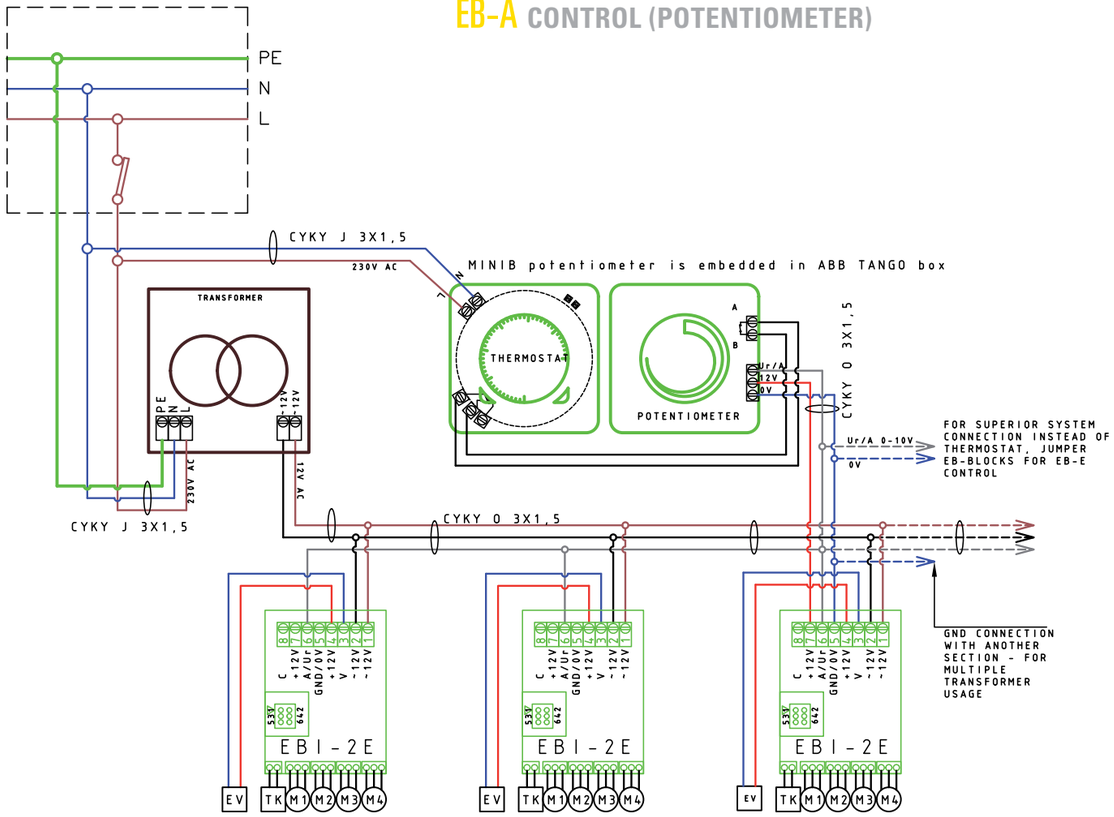
for heating mode only

Basic connection of EB-A control with the possibility of continuous manual fan speed control. Preset temperature is automatically maintained in the room when a thermostat is used. EB electronic control block is set to continuous speed control.

Possible usage of transformers: **TT100, TT240, TT300**

It is possible to use the thermostat and potentiometer or just the potentiometer.

EB-A CONTROL (POTENTIOMETER)



JUMPER SETUP IN EB BLOCK	
	VOLTAGE OUTPUT(without speed sensing)
	FAN D65
	FAN D50
	FAN D30

If more than five convectors are connected to a single transformer, the thermostat will have to be connected to the convector closest to the transformer in the given branch.

Conductor cross-sections are chosen according to current loading and cable length. When using the conductor cross-sections specified in this material, the maximum acceptable distance between the convector and transformer is 15m.

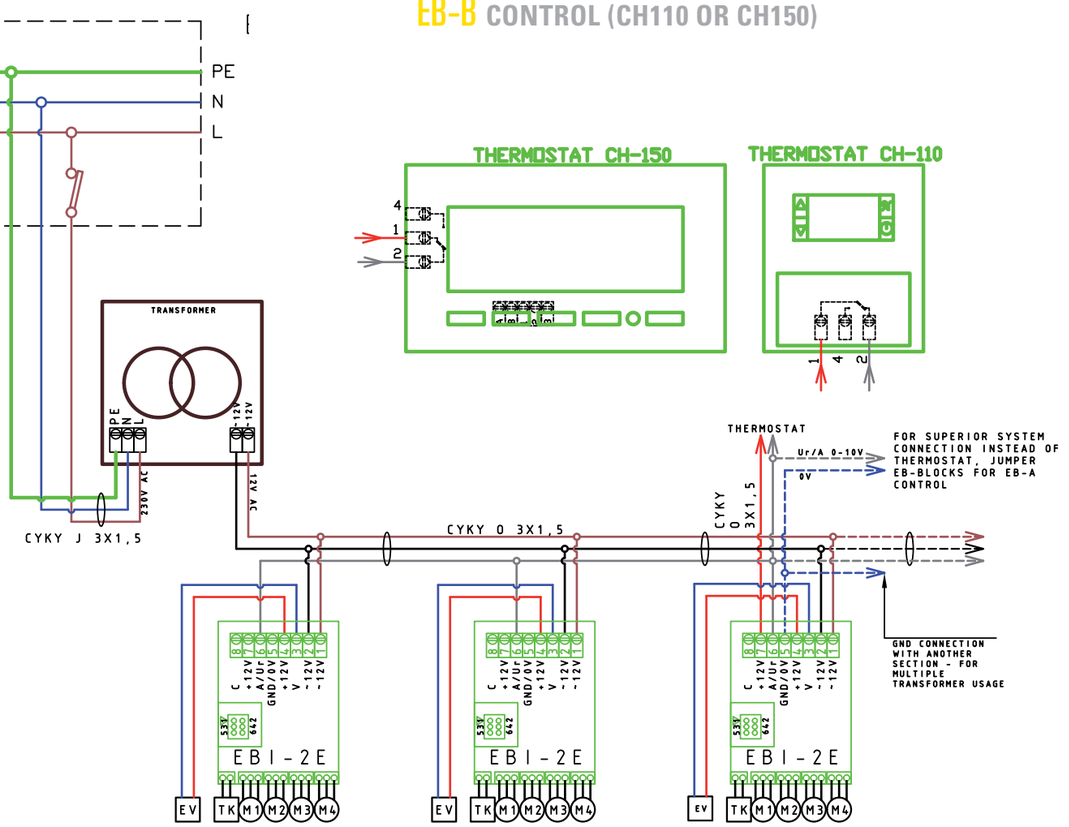
(CH110 or CH150) EB-B

for heating mode only

EB-B control – fan speed is adjusted automatically depending on the thermostat switching cycle; convector output is thus optimized by evaluating the deviation from the required room temperature.

Possible usage of transformers: **TT100, TT240, TT300**

EB-B CONTROL (CH110 OR CH150)



JUMPER SETUP IN EB BLOCK	
	VOLTAGE OUTPUT(without speed sensing)
	FAN D65
	FAN D50
	FAN D30

If more than five convectors are connected to a single transformer, the thermostat will have to be connected to the convector closest to the transformer in the given branch.

Conductor cross-sections are chosen according to current loading and cable length. When using the conductor cross-sections specified in this material, the maximum acceptable distance between the convector and transformer is 15m.

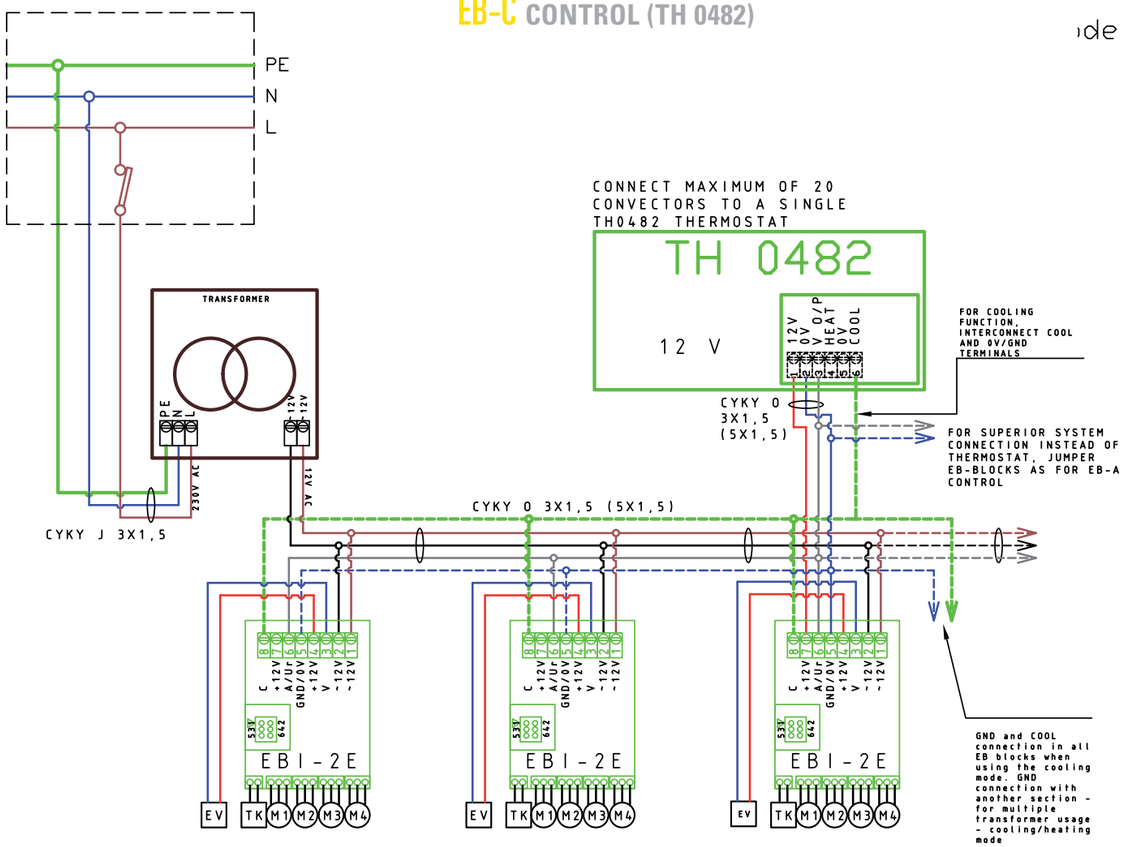
EB-C (TH0482)

heating/cooling mode

EB-C control – in automatic mode, fan speed control is similar to that for EB-B control; the highest possible speed is limited by the switch position on the thermostat (e.g., TH 0482).

Possible usage of transformers: **TT100, TT240, TT300**

EB-C CONTROL (TH 0482)



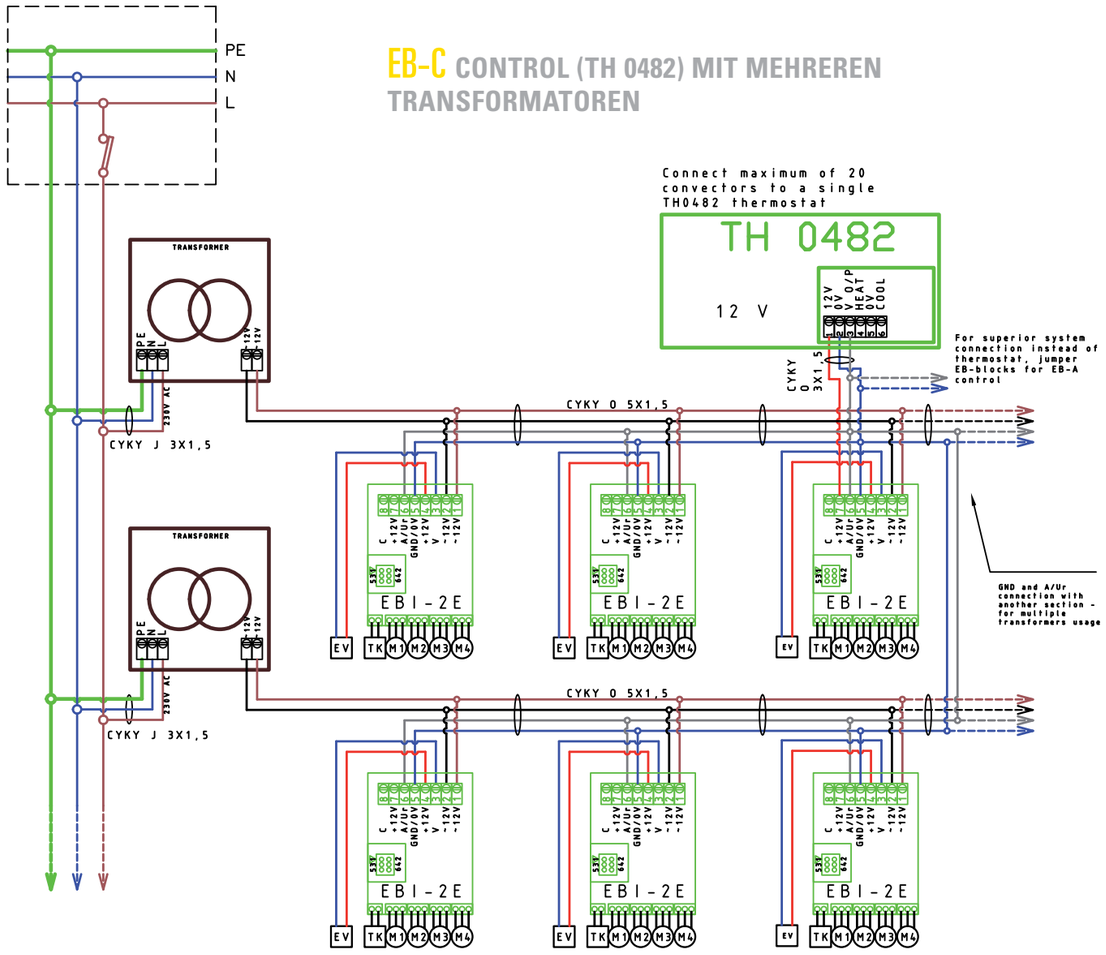
JUMPER SETUP IN EB BLOCK	
	VOLTAGE OUTPUT(without speed sensing)
	FAN D65
	FAN D50
	FAN D30

If more than five convectors are connected to a single transformer, the thermostat will have to be connected to the convector closest to the transformer in the given branch.

Conductor cross-sections are chosen according to current loading and cable length. When using the conductor cross-sections specified in this material, the maximum acceptable distance between the convector and transformer is 15m.

EB-C with multiple transformers

EB-C CONTROL (TH 0482) MIT MEHREREN TRANSFORMATOREN



JUMPER SETUP IN EB BLOCK	
	VOLTAGE OUTPUT(without speed sensing)
	FAN D65
	FAN D50
	FAN D30

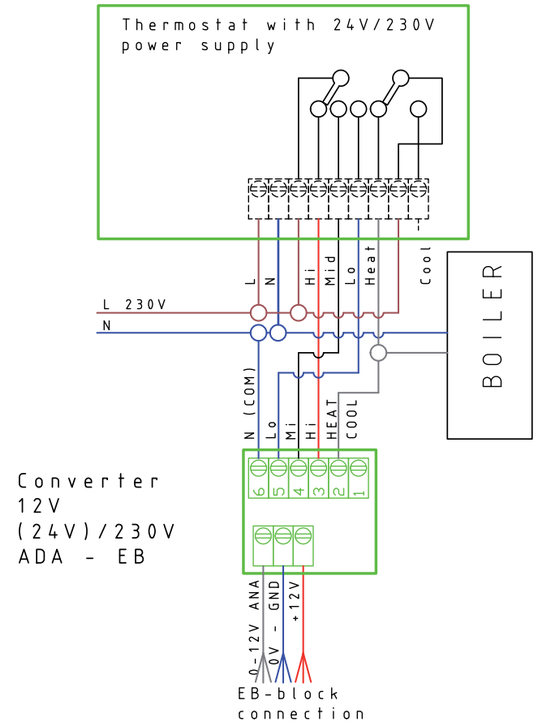
If more than five convectors are connected to a single transformer, the thermostat will have to be connected to the convector closest to the transformer in the given branch.

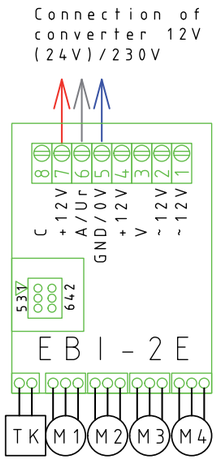
Conductor cross-sections are chosen according to current loading and cable length. When using the conductor cross-sections specified in this material, the maximum acceptable distance between the convector and transformer is 15m.

ADA-EB

Connection of fan-coil units control with **ADA-EB** adaptor to thermostat with 230/24VAC power supply and boiler control.

CONTROL WITH AUXILIARY ADAPTOR ADA-EB



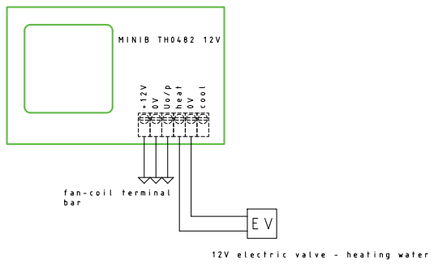


Manual operation of hot (cooling) water supply with TH0482 12V thermostat switch

The electro-thermal head opens the valve when supplied with 12VDC. EB-C control.

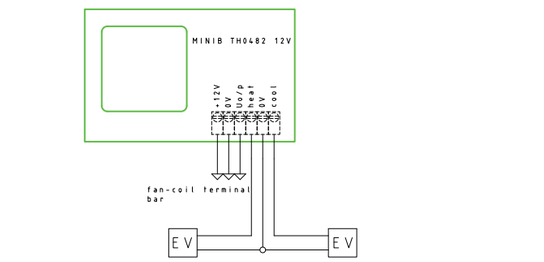
12VDC output can be used as an impulse for auxiliary relay (not supplied by MINIB) to switch any additional equipment on/off (boiler, pump, head, etc...). Caution: 12VDC pulse appears after manual switching from OFF to HEAT/COOL (not switched automatically based on required/current temperature).

Manual control of heating water supply into convectors with electric valve for (2-pipe systems)



Manual control of heating water supply into convectors with electric valve (2-pipe systems)

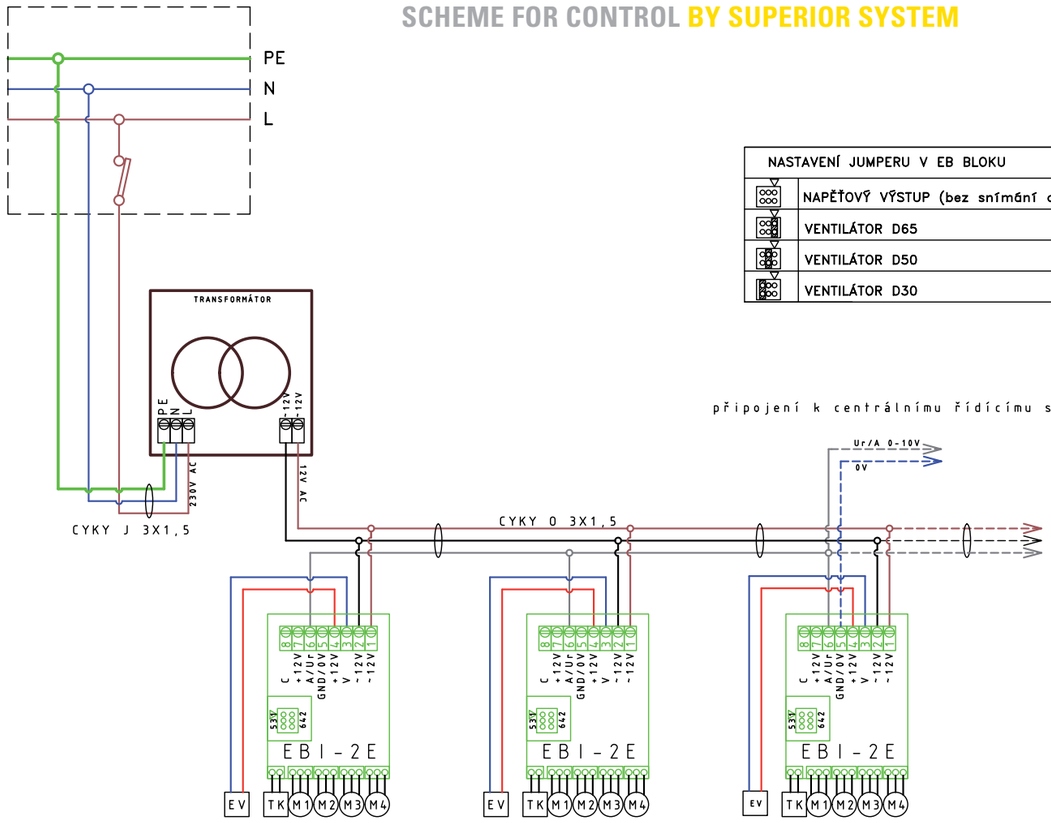
Manual control of heating water supply into convectors with electric valve for (4-pipe systems)



Manual control of heating water supply into convectors with electric valve (4-pipe systems)

When control by a superior system is used, the EB block must be set to EB-A control.

SCHEME FOR CONTROL BY SUPERIOR SYSTEM



NASTAVENÍ JUMPERU V EB BLOKU	
	NAPĚŤOVÝ VÝSTUP (bez snímání otáček)
	VENTILÁTOR D65
	VENTILÁTOR D50
	VENTILÁTOR D30

Control voltage of EB-block

EB-A control / superior system

0-1V	fans off, voltage for valve closed (valve closed)
1-2V	fans off, voltage for valve open (valve opened, convection heating)
2-10V	speed proportional to voltage (2V minimum, 10V maximum), valve voltage off (valve open)

EB-B and EB-C control

0-1V	fans off, voltage for valve closed (valve closed)
1-2V	fans off, voltage for valve open (valve opened, convection heating)
2-5V	low speed selected
5-9.5V	medium speed selected
9.5V and over	high speed selected

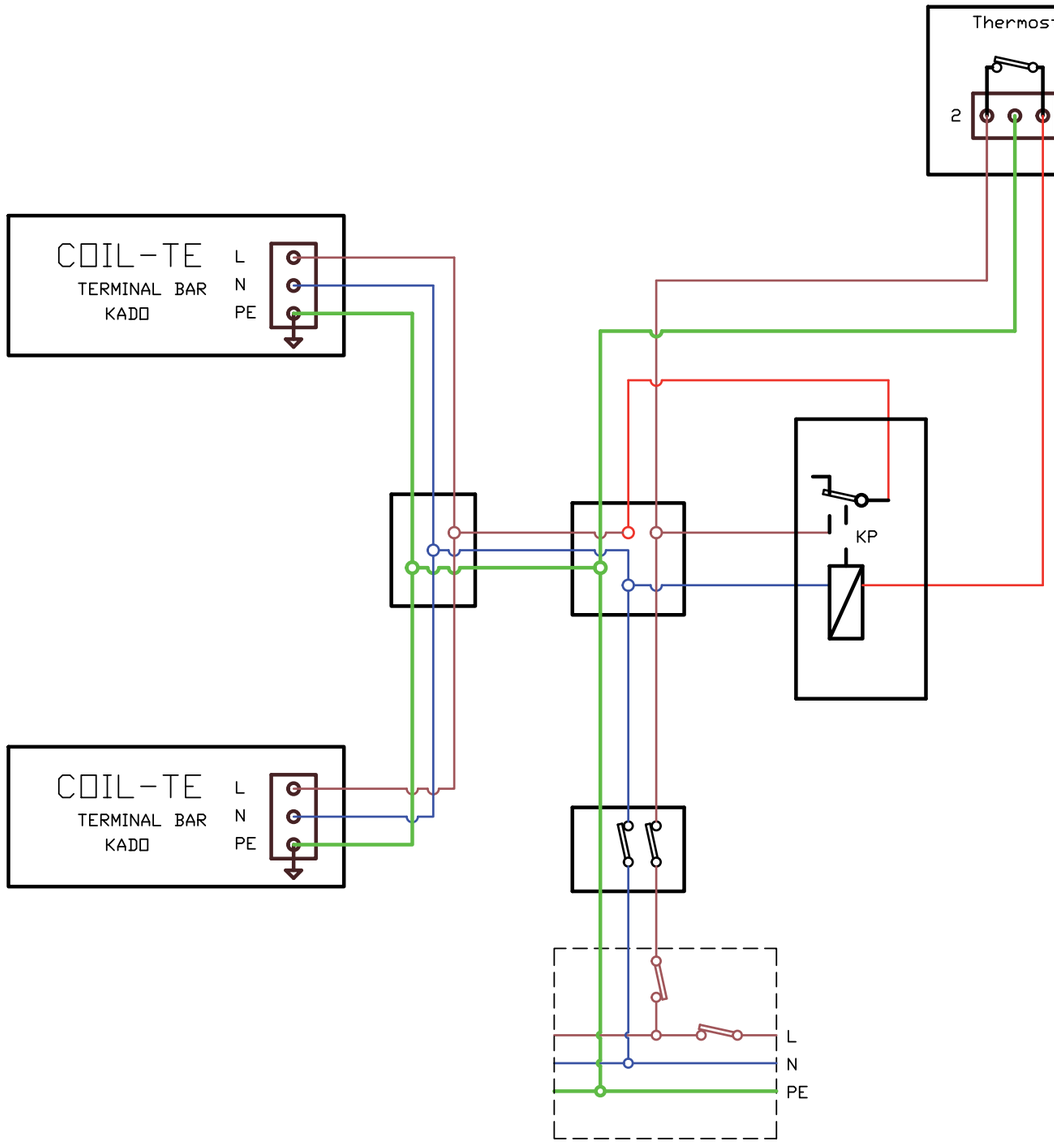
Conductor cross-sections are chosen according to current loading and cable length. When using the conductor cross-sections specified in this material, the maximum acceptable distance between the convector and transformer is 15m.

TE

TE control - thermostat contacts must be rated to 230V 50Hz voltage and to current corresponding to that of auxiliary relay / contactor coil

KP - auxiliary contactor. Control coil ~240V/50Hz Contacts ~240V/50Hz/Imax resistance load Current Imax is given by total heating input of all switched elements. Three-phase contactor can be also used; in such case, the entire length of convectors can be divided into three identical parts and each of them can be connected to one phase. The contactor coil can be supplied from any phase, of course.

TE CONTROL (Off/On control type for electric heaters, thermostat also switches heating elements on/off)



CONVECTORS OUTPUT CONTROL FOR HUMID AND WET ENVIRONMENT

A1 (TT240, TT300), E1 (TT240-E1, TT300-E1)

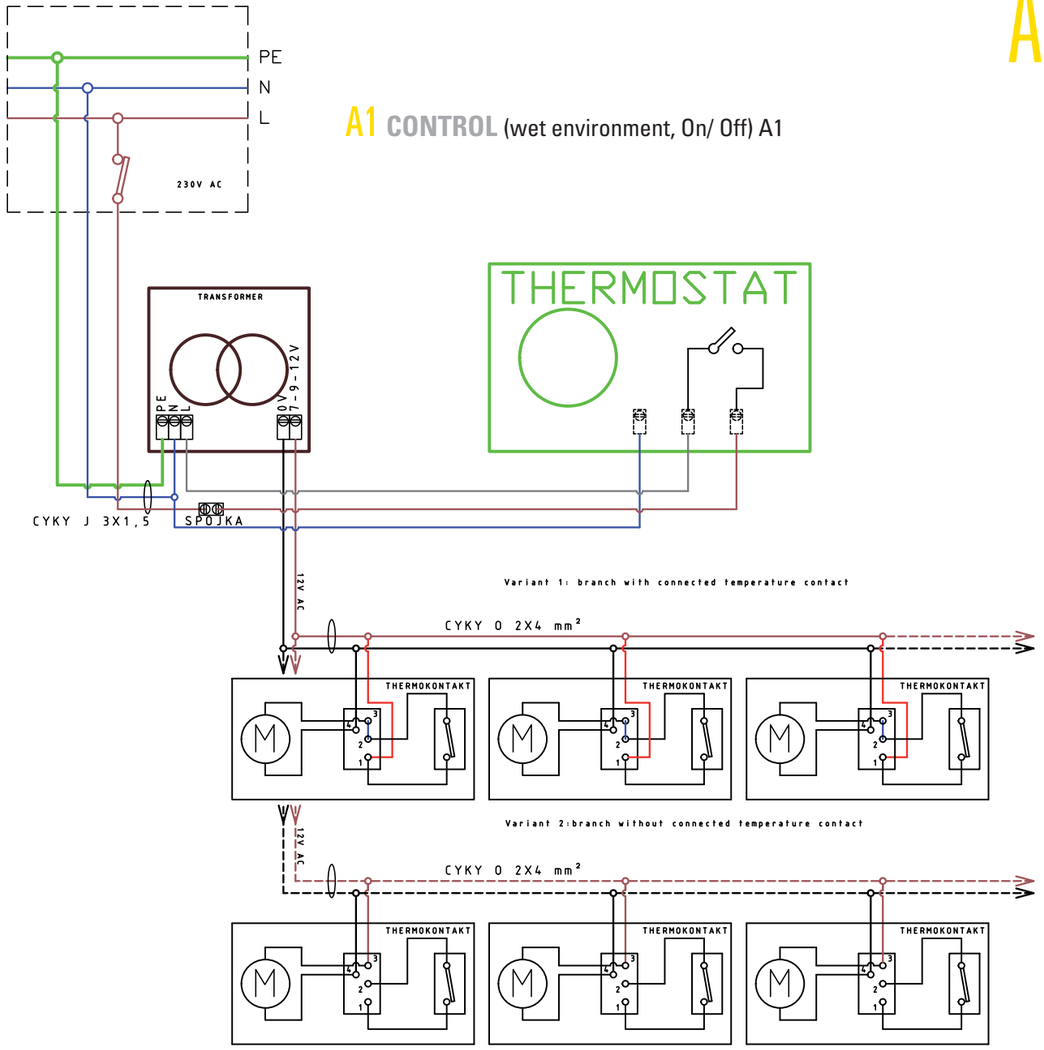
MINIB uses 12VAC motors as fan drives for convectors located in humid and wet environment. AC motors proved in long term under such demanding conditions. The following two convector output control types are available:

A1 control – thermostat contact switches power supply sources TT240 (TT300); motors are connected to source output; their speed can be firmly set by connection to chosen terminal (7 – 9 – 12VAC).

E1 control – electronic circuits (Control panel Reg. E1) evaluate thermostat contact switching cycles and switch to higher, lower, or zero fan speed according to the difference from the required temperature. A1 and E1 control connection diagram is shown in the figures.

A1

A1 CONTROL (wet environment, On/ Off) A1



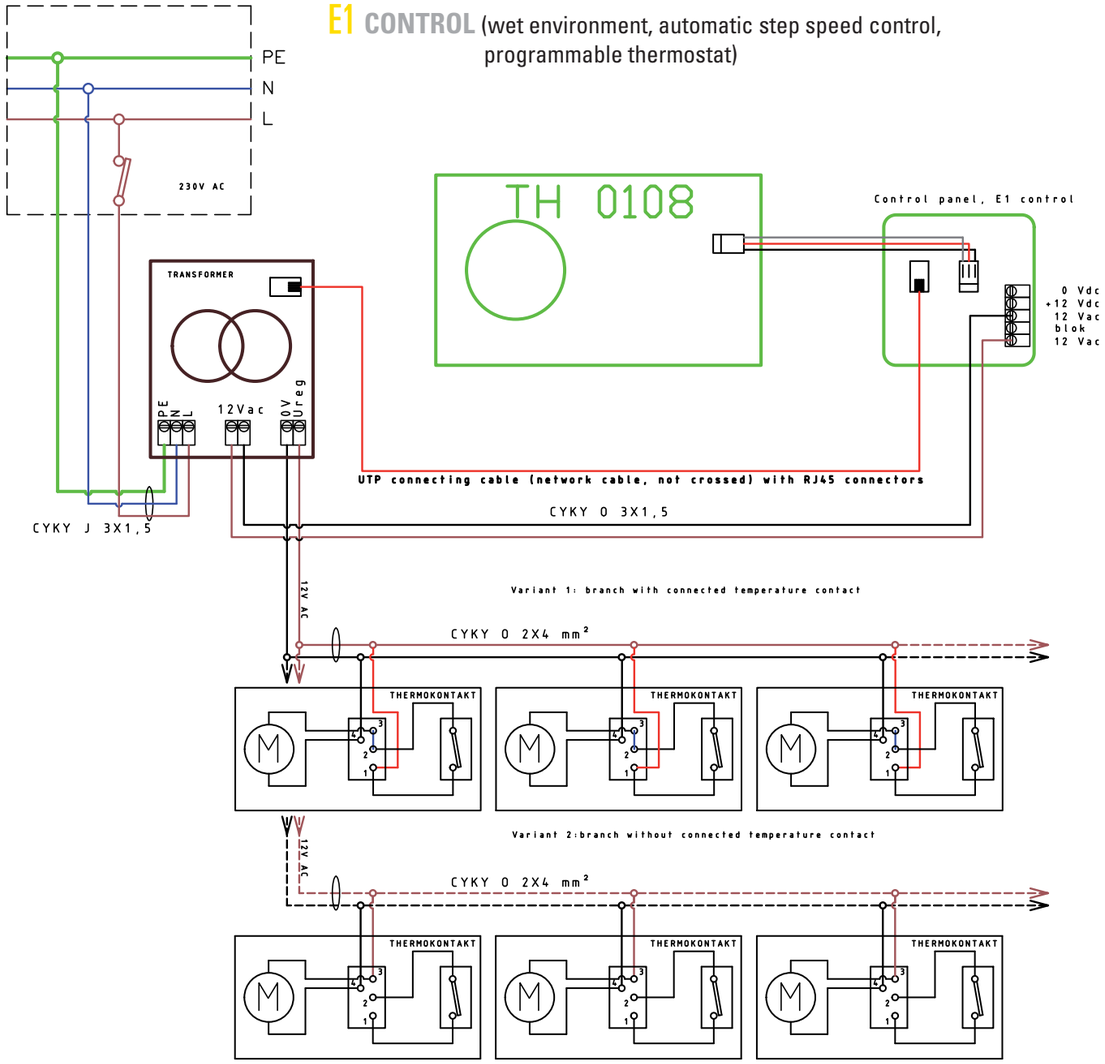
Conductor cross-sections are chosen according to current loading and cable length. When using the conductor cross-sections specified in this material, the maximum acceptable distance between the convector and transformer is 15m.

E1

E1 Control – Convectors can be arranged in a series provided that the distance from the transformer is small. The star connection is advantageous if the distance to the most distant convector exceeds 20 m. Branching can be made in an EMK electrical mounting kit in the wall or using WAGO terminals directly under the convector cover. As regards electro-technical safety, the thermostat can be located in a wet environment because it is supplied with 3V batteries and motors are supplied from safe 12VAC power source. It is recommended that the thermostat be installed in places without air humidity condensation in order to prevent battery corrosion.

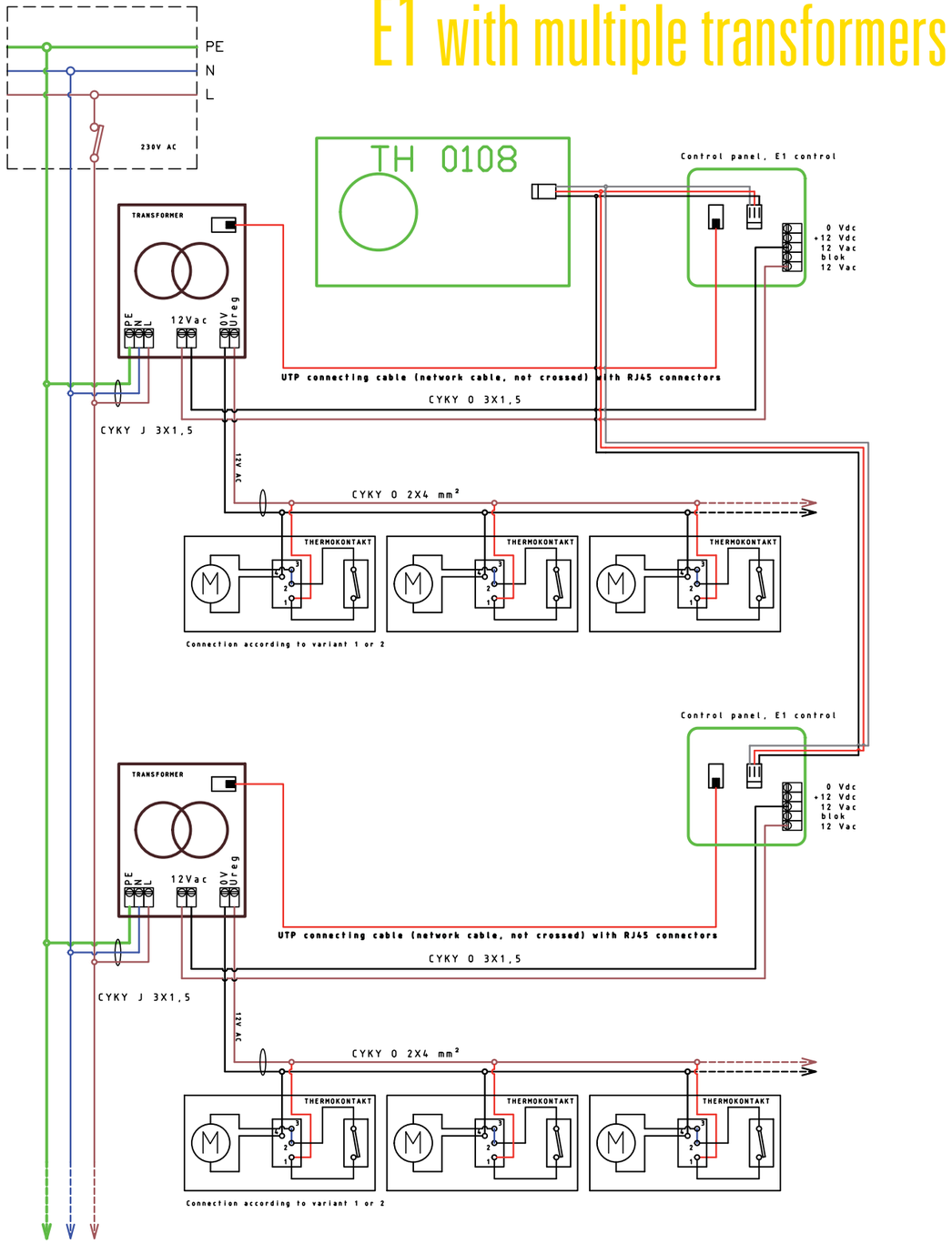
Possible usage of transformers: **TT240-E1, TT300-E1**

E1 CONTROL (wet environment, automatic step speed control, programmable thermostat)



Conductor cross-sections are chosen according to current loading and cable length. When using the conductor cross-sections specified in this material, the maximum acceptable distance between the convector and transformer is 15m.

E1 with multiple transformers



Conductor cross-sections are chosen according to current loading and cable length. When using the conductor cross-sections specified in this material, the maximum acceptable distance between the convector and transformer is 15m.

Suitable control selection procedure

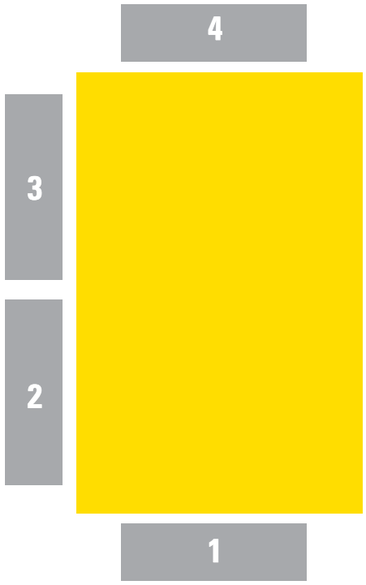
- control type selection according to the environment and client's comfort
- with regard to the number of convectors and their power input (see catalog sheet of relevant convector), define total required power input and therefore also the required number of transformers
- follow the connection diagrams for controls intended for both dry and wet environments

Illustrative examples of suitable control selection

ASSIGNMENT

WE NEED TO FIND A SOLUTION TO CONTROL 4 CONVECTORS AROUND THE SWIMMING POOL AS SHOWN IN THE FIGURE.

Convector type MINIB COIL KO, 2x 2500mm, 2x 3000mm



PROCEDURE

1. **Control selection** - there are 2 types of control units for a wet environment: A1 or E1. We choose E1 for greater comfort.
2. **Determination of the number of transformers** - we calculate the electric power inputs of individual convectors according to the assignment (required values can be found in the table for the particular convector) - convector No. 1 - 111 VA, No. 2 - 106 VA, No. 3 -106 VA, No. 4 - 111 VA => we can choose between the following transformer types: TT240-E1 and TT300-E1.
3. **Determination of the number of transformers** - the sum of the electric power input of individual convectors shows that one transformer will not be sufficient and that it will be necessary to choose from the following combinations: No. 1+No. 2=217VA, No. 3+No. 4 = 217VA, No. 1+No. 4 = 222VA, No. 2 + No. 3=212VA => we decide for 2 TT240--E1 transformers and convectors to be connected in combinations No. 1+No. 2 and No. 3+No. 4.
4. **Another step is to order all control elements** - standard supply for order: 1x E1 control with transformer (1x thermostat TH0108, E1 control panel, TT240-E1 transformer, connecting cable) + additional order 1x TT240-E1 + control panel + connecting cable.

ASSIGNMENT

WE NEED TO FIND A SOLUTION TO CONTROL 8 CONVECTORS IN A ROOM

Convector types MINIB COIL T80, 2x 2500mm, 1x 3000mm, 6x 1000mm and convector type MINIB COIL KT, 1x 2000mm and 3x 3000mm.

PROCEDURE

1. **Control selection** - we can choose from three control types intended for a dry environment: EB-A, EB-B, and EB-C.
   As we want to choose the maximum fan speeds while also being able to select an automatic mode for greater comfort, we choose EB-C control.
2. **Determination of the number of transformers** - we calculate electric power inputs of individual convectors.
   (required values can be found in the table for the particular convector) Convector T80 2500mm = 12VA i.e., 2x12=24VA, Convector T80 3000mm = 16VA i.e., 1x16=16VA, Convector T80 1000mm = 4VA i.e., 6x4=24VA, Convector KT 2000mm = 36VA i.e., 1x36=36VA, Convector KT 3000mm = 48 i.e., 3x48=144VA => T80 convectors have a total power input of 64VA. KT convectors have a total power input of 180VA.
3. **Determination of the number of transformers** - the transformer is chosen with 20% output reserve with regard to possible transmission loss due to varying conductor lengths (up to 15m), i.e., T80 64VA + 20% = 77VA in total and KT 180VA + 20% = 216VA in total; the consumption of all convectors is counted as 293VA. We have a choice: either 1x TT300 – convectors are in one room or 1x TT100 for T80 convectors (77VA) in one room and 1x TT240 for KT convectors (216VA) in the other room.
4. **Another step is to order all control elements** - standard supply for the order:
   1x EB-C control with transformer (1x thermostat TH0482, transformer TT300) or (when two transformers are used) 2(1)x EB-C control with transformers (2(1)x thermostat TH0482, 1x transformer TT100 and 1x transformer TT240).

1. UNIT DESCRIPTION

This is a floor heating unit that works on the convection principle. Since the unit fully uses the laws of physics in the area of thermodynamics, it represents one of the most efficient means of interior heating.

BENEFITS OF FLOOR CONVECTORS WITHOUT FAN:

- high output,
- silent operation,
- no need for other energy,
- low hot water consumption,
- light weight compared to other heating units with similar output,
- short response time,
- design,
- minimal operation and maintenance requirements,
- a great advantage of floor convectors is the possibility of embedding them in interior floors. This is beneficial in places where we do not want to disturb the aesthetic appearance of the interior by wall mounted or free-standing convectors or other heating units but where sufficient heating output is required.

2. PACKAGE CONTENT

PACKAGE CONTENT	Position	P	P80	PT	PT 105	PT 180	PT 300	PT4	PO	PO4	PMW90	PMW125	PMW165	PMW 205
Convector														
Vat	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Exchanger holder	2	2	*	2	*	*	*	*	2	*	*	*	*	*
Side holder of the exchanger	3	2	-	2	-	-	-	-	2	-	-	-	-	-
Exchanger	4	1	1	1	1	1	1	1	1	1	1	1	1	1
Anti-vibration mounting	5	8	8	8	8	8	8	8	8	8	8	8	8	8
Cover panel	6	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
Brace [1]	7	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
Decorative frame [2]	8	1	1	1	1	1	1	1	1	1	1	1	1	1
Accessories														
Anti-vibration mounting	5	4	4	4	4	4	4	4	4	4	4	4	4	4
Anchoring footing [3]	9	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
Screw M8x50 [3]	10	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
Wood screw 3x30 [3]	11	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
Dowel 3 [3]	12	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
Hose G1/2" – 65 mm	13	2	2	2	2	2	2	2	2	2	2	2	2	2
Straight valve	14	1	1	1	1	1	1	1	1	1	1	1	1	1
Screw fitting - straight	15	1	1	1	1	1	1	1	1	1	1	1	1	1
Sealing KLIGERSIL C4400	16	4	4	4	4	4	4	4	4	4	4	4	4	4

* Forms part of the vat

[1] Braces: 1 brace for lengths up to 1500 inclusive, 2 braces for lengths between 1750 and 2000 and 3 braces for lengths between 2500 and 3000

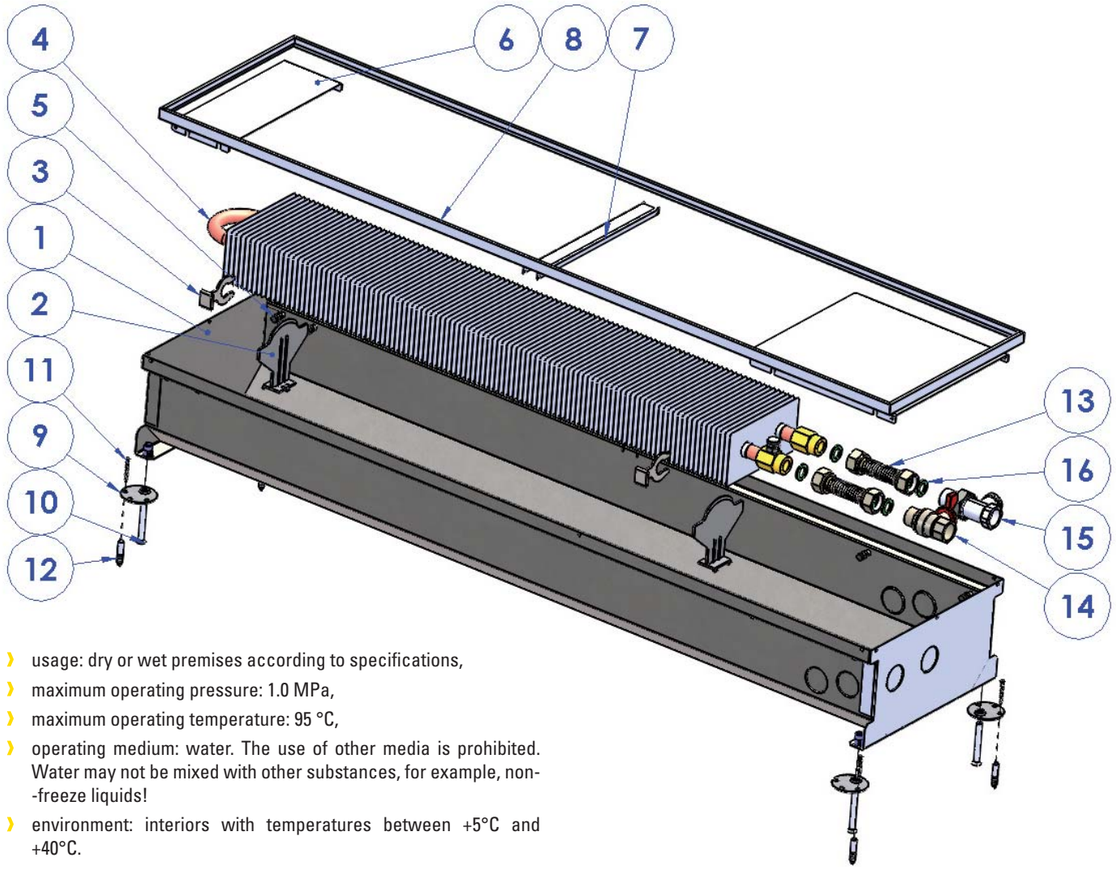
[2] decorative frame consists of 4 pieces – 2 short segments and 2 long segments

[3] There are +2 pieces for lengths over 2000

Individual positions in the table correspond to Figure No. 1, see the following page.

3. TECHNICAL PARAMETERS

Figure 1: **COMPONENTS OF FLOOR CONVECTOR WITHOUT FAN:**



- usage: dry or wet premises according to specifications,
- maximum operating pressure: 1.0 MPa,
- maximum operating temperature: 95 °C,
- operating medium: water. The use of other media is prohibited. Water may not be mixed with other substances, for example, non-freeze liquids!
- environment: interiors with temperatures between +5°C and +40°C.

1. VAT - stainless metallic vat according to type designed for dry or wet environment. Dry environment: stainless steel AISI 304, wet environment: AISI 316.
2. EXCHANGER HOLDER - Supports the exchanger and keeps it in correct vertical position.
3. EXCHANGER SIDE HOLDER - limits the space between the convector vat and the exchanger.
4. EXCHANGER - copper pipes with pressed-on aluminum fins through which the heating water flows.
5. RUBBER ANTI-VIBRATION MOUNTING - for vibration attenuation and cover panel mounting.
6. COVER PANEL - cover panel covers the blind space. The second cover panel covers the water connection.
7. BRACE - metallic brace maintains convector vat shape during installation.
8. CONVECTOR FRAME - the frame is a design element and should be perfectly aligned with final floor. Maximum height difference should be (0-1 mm).
9. ANCHORING FOOTING - intended for convector mounting and accurate positioning in rough floor.
10. POSITIONING SCREW - intended for fine positioning of convector before concreting.
11. WOOD SCREW - fixing footing attachment to the floor.
12. DOWEL - screw fixing in concrete floor.
13. HOSE – the bellows hose is a stainless hose intended for fitting connection to the convector exchanger.
14. STRAIGHT VALVE - can be either thermostatic or ball straight valve. This valve shuts off the water supply to the convector.
15. SCREW FITTING - a valve that controls / adjusts heating water flow.
16. SEALING - seals joints between valves, hoses, and exchangers (KLEGERSIL C4400). MINIB, s.r.o. recommends this sealing as an optimum sealing solution, as other materials (rubber, NBR, silicon) do not have sufficient tightness upon sufficient tightening and because they are deformed by tightening forces.

4. BEFORE INSTALLATION

- Use the catalogue to choose a suitable convector for wet or dry environment - see paragraph 4.1.
- Select correct convector position - see paragraph 4.2.
- Leave enough space for placement and installation - see paragraph 4.3.
- Consider using a thermal insulation, anti-vibration foil, or braces in hollow floors - see paragraph 4.4.
- Do not forget drainage pipe or other condensate removal system - see paragraph 4.5.

4.1 Suitable Convector Type

Decide whether the convector will act as the main source of heat, an additional heating element or as a thermal barrier.
As the main source of heat in your apartment / room, the convector should sufficiently cover the entire thermal loss of the room. Therefore, choose a heating unit whose capacity is higher than the thermal loss of your apartment, room, or other premises.
Make sure that you have enough space for convector installation - both from the wall (window) and in the floor (see paragraph 4.3).
Determine whether the convector will be used in a dry or wet environment. A dry environment is an environment where the average annual relative humidity does not exceed 85%. A wet environment is an environment where such average annual value is equal to or greater than 85%. In terms of convector selection, a dry environment is in general any environment where no precipitation of vapor occurs in the convector unit. Convectors intended for a wet environment have more resistant stainless material and condensate drainage features.

4.2 Convector Position

Consult the convector position with an expert or your designer.

Floor convectors MINIB are intended for embedding in floors in order to avoid disturbance to the overall aesthetic appearance of the room. If the convector is intended to be the main source of heat, it must be placed with a heat exchanger in the room (Figure 2). If the convector serves as an additional source of heat or as a thermal barrier, it is placed with a heat exchanger towards the window (Figure 3).

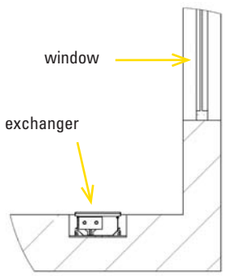


Figure 2: Convector with exchanger in the room as the main source of heat.

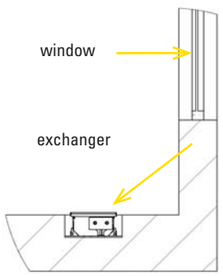


Figure 3: Convector with exchanger towards the window as an additional source of heat.

4.3 Installation Space

MINIB, s.r.o. recommends leaving sufficient space for convector installation. For installation in older floors, during reconstruction, or whenever sufficient space is not available, the dimensions of the installation hole should be equal to the convector height + at least 20 mm. The width and/or length (if only 1 convector is concerned) of the installation hole should correspond to convector width (length) + at least 60 mm - see Figure 4. Clearance around the convector should provide enough space for the connection of water, cabling, and for convector embedding in concrete. For new floors, MINIB recommends at least +100 mm of free space around the convector; height remains identical to the previous case (H + at least 20mm).

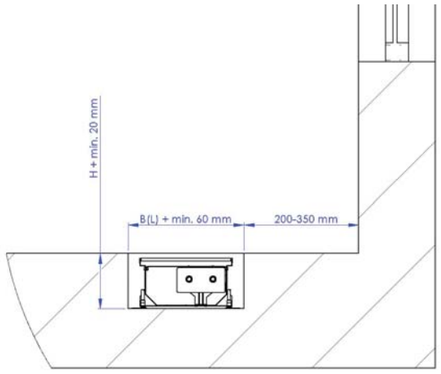


Figure 4: B - maximum width of convector; L - convector length; H - convector height (without adjustment legs).
Recommended MINIMUM clearance for installation: B + 60 mm; L + 60 mm; H + 20 mm.

The position and location of the convector fully depend on the client's requirements, in particular what and how they need to heat or cool. MINIB, s.r.o. recommends installing convectors acting as the main source of heat under windows with a heat exchanger in the room. The recommended distance from the wall is 200 to 350mm. If the customer wishes to use the convector as an additional source of heat only (i.e., for a convector that does not serve as the main source of heat) the heat exchanger can be turned towards the window. The exchanger location on the window side is recommended in cases where the convector is used as an additional source of heat or when it acts as a thermal barrier in front of the window.

4.4 Principles of Convector Installation in Floors

MINIB floor convectors are intended for installation in solid or hollow floors where certain principles apply. Before you start, please read the following instructions.

- At your own discretion (parquet, floating, or wooden floors), install thermal insulation on the outside of the convector vat on the heat exchanger side. (Figure 6).
- If the convector is installed at a frequented spot where people often step on the cover grille or walk past the convector, it is recommended that anti-vibration foil be used to reduce structure-borne noise, particularly in multi-story buildings. (Figure 7).

4.4.1 Hollow Floors – Principles of Installation of Floor Convectors without Fan:

- When installing a convector in a hollow floor, hollow floor braces must be used outside the convector unit in order to ensure its stability. (Figure 5).
- Decide on the use of thermal insulation or anti-vibration foil at your own discretion.

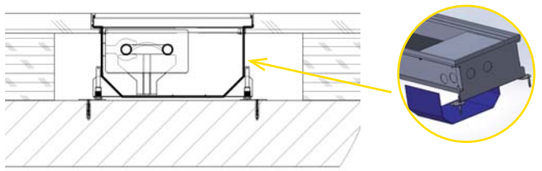


Figure 5: Hollow floor - brace for floor convector without fan.

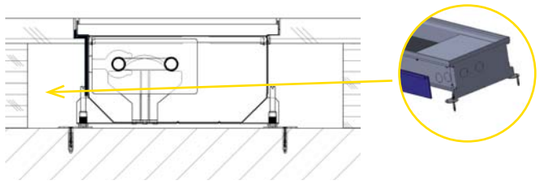


Figure 6: Hollow floor - thermal insulation for floor convector without fan to protect the floor on the exchanger side .

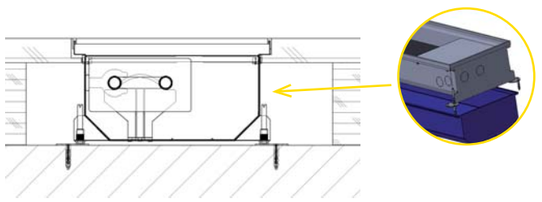


Figure 7: Hollow floor - anti-vibration foil for floor convector without fan to attenuate structure-borne noise and/or any other vibrations. It is usually applied along the entire outer surface of the convector.

- Use thermal insulation depending on the type and characteristics of the floor. If the heat exchanger is situated along one side of the convector, it is sufficient to apply the insulation on that side. If the exchanger is positioned symmetrically in the convector body, using insulation on both sides is recommended. The insulation is intended to protect the final floor against direct heat from the convector. Failure to use insulation can result in the uneven drying of the final floor (parquet, for example) and thus the formation of gaps between individual parquet strips. This applies in particular to hollow floors where heat is transmitted even through the metallic convector body within the floor.
- Thermal insulation is applied on the outside of the metallic body of the convector
- Decide on the use of anti-vibration foil at your own discretion. The foil acts not only as protection against vibration in hollow floors; it also reduces structure-borne noise in the room under the floor, especially when people often walk on the grille.

4.4.2 Solid Floors – Principles of Installation of Floor Convectors without Fan:

- Decide on the use of thermal insulation or anti-vibration foil at your own discretion.

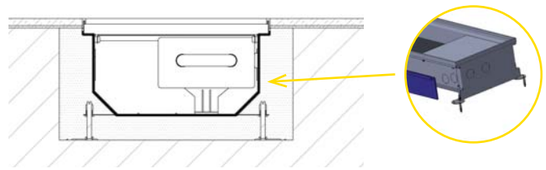


Figure 8: Solid floor - thermal insulation for floor convector without fan to protect the floor on the exchanger side.

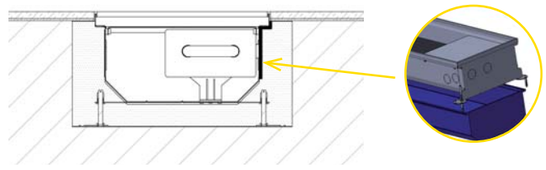


Figure 9: Solid floor - anti-vibration foil for floor convector without fan to attenuate structure-borne noise and/or any other vibrations. It is usually applied along the entire outer surface of the convector.

4.5 Condensate Drainage:

Some convectors which are intended for a wet environment are equipped with a Ø18x23mm drainage pipe. You will probably have to connect a hose leading to the sewer system, sump, or another location.

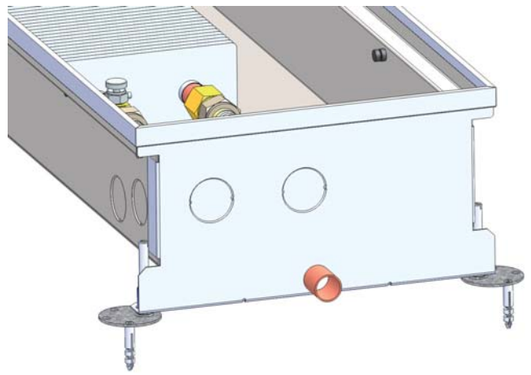


Figure 10: Drainage pipe can be located on a side of the convector other than the side shown in the figure (depending on convector type).

5. INSTALLATION

- Heat exchanger must be connected to the distribution pipes with the supplied stainless steel hoses.
- A correctly installed convector is in a horizontal position and the top edges of the casing are not damaged or bent in order to ensure correct functionality of the walk-on grille and the possibility of heat exchanger deaeration.
- A correctly installed convector has a decorative frame aligned with the final floor with a tolerance of ± 1mm.
- It is recommended that the top convector cover (fiberboard) be left in place during concreting to prevent the soiling of the convector interior. We would like to point out that walking on this convector cover is not permitted!
- The convector must be fixed in the floor with fitting screws or another suitable material during concreting to prevent the vertical movement of the convector after concrete pouring. A vertical load may be applied to the convector during concreting.

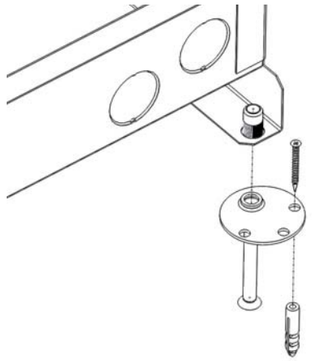


Figure 11: Insert 4 adjustment screws (6 screws for lengths over 2.5m)

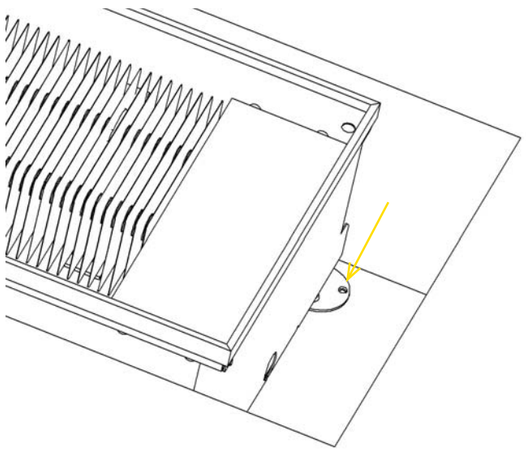


Figure 12: Place the convector in the installation hole and mark feet mounting holes.

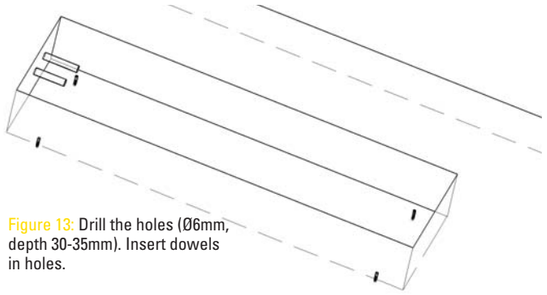


Figure 13: Drill the holes (Ø6mm, depth 30-35mm). Insert dowels in holes.

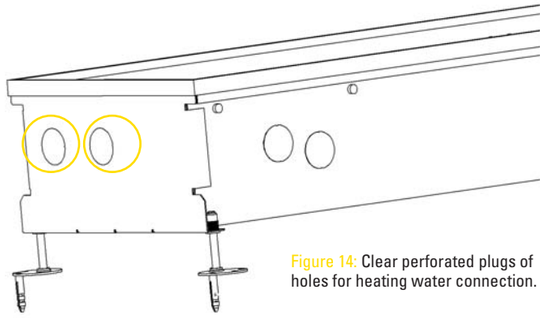


Figure 14: Clear perforated plugs of holes for heating water connection.

Install necessary braces, thermal insulation, and/or vibration foil - see paragraph 4.4

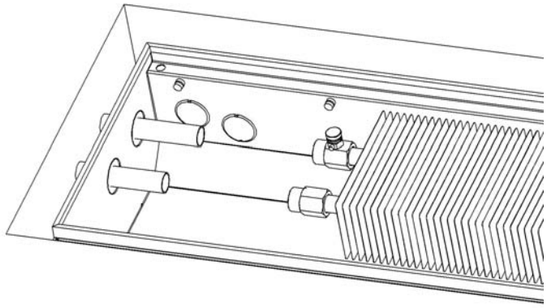


Figure 15: Level the convector in the installation hole and install the heating water pipes.

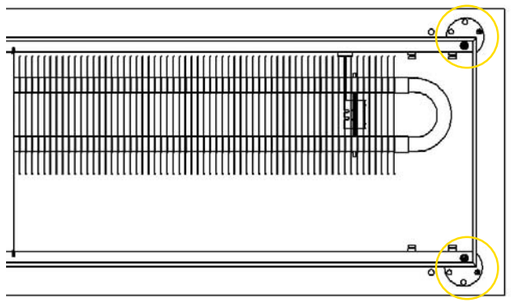
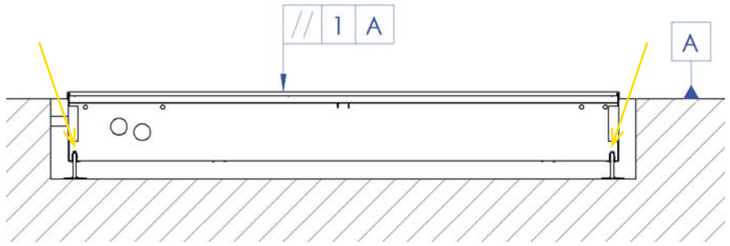


Figure 16: Attach the convector's fixing feet into the dowels. Fix the feet with quick-setting concrete.



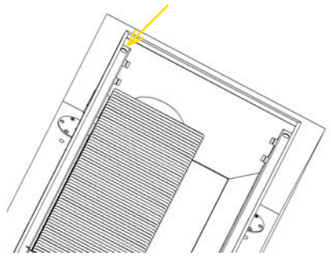


Figure 17: Align the convector (with frame attached) using adjustment bolts. Set the final height so that the convector frame is aligned with the final floor (± 1mm).

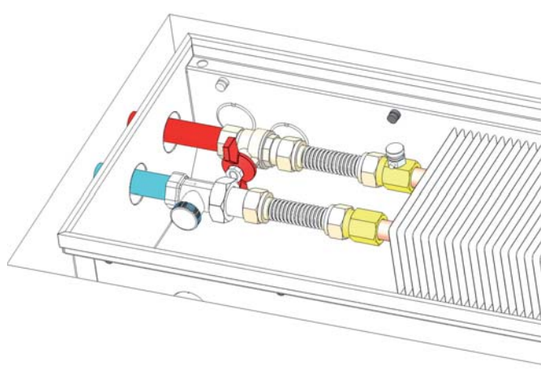


Figure 18: Connect the inlet and outlet pipes. See paragraph 6.

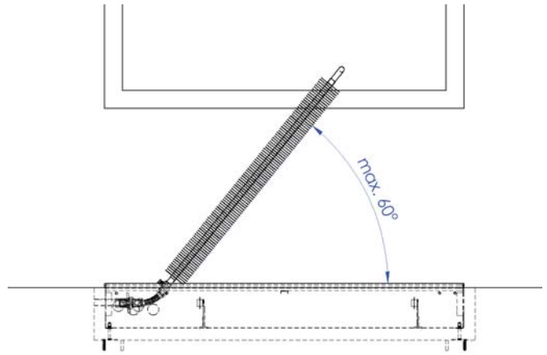


Figure 19: MAX. PERMITTED exchanger tilt is approximately 60 degrees. See paragraph 7. The exchanger can be moved in the heat exchanger so that the ribs are not covered.

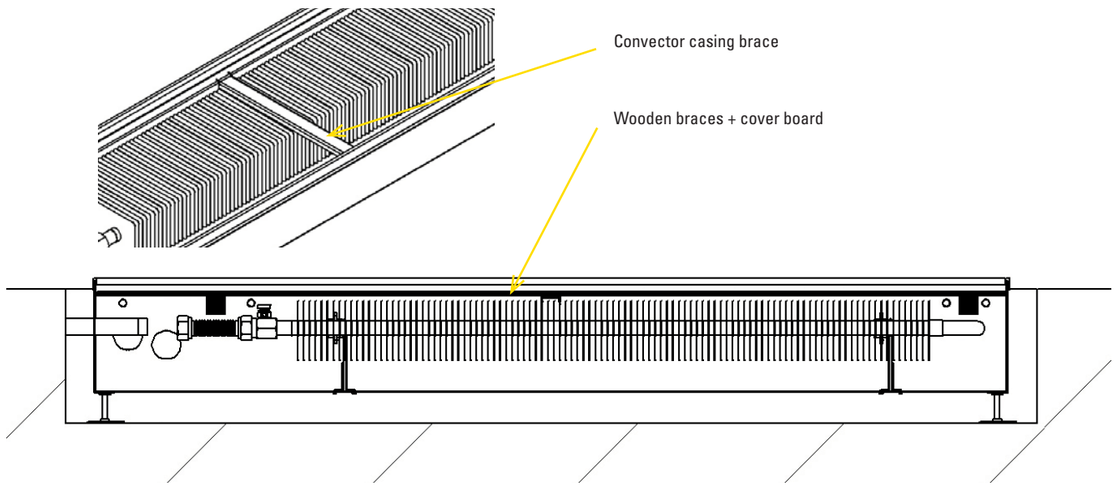


Figure 20: **Make sure that** all openings inside the vat are sealed so that the convector interior is not soiled during concreting! Install braces of the convector vat and wooden braces together with fiberboard cover.

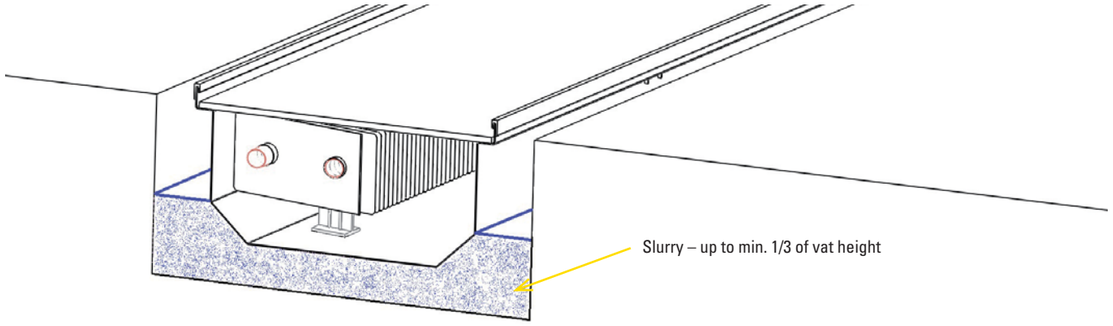


Figure 21: Pour concrete slurry or anhydride mixture to at least 1/3 of the convector height in order to minimize the noise. A convector with fan can vibrate if the bottom is not properly concreted!

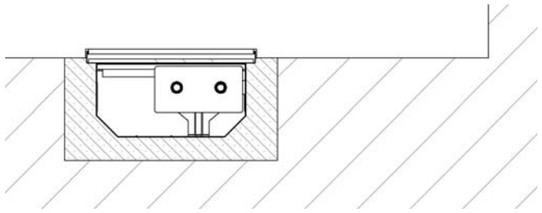


Figure 22: The entire space around the convector must be subsequently filled with classical concrete up to the final rough floor height. The convector is now set in the rough floor, ready for final floor installation (tiles, parquet strips, etc.).

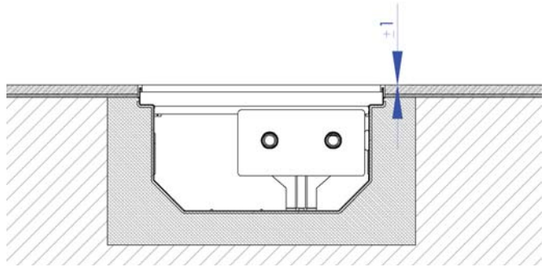


Figure 23: A correctly installed convector has a decorative frame aligned with the final floor with a tolerance of ± 1mm.

6. CONNECTION OF FITTINGS

Connect the fittings with the supplied standard accessories (direct connection from the convector face). Whenever you require connection from the window or room side, specify the connection method in your order. Accessories for window or room side connection are non-standard and are comprised of other fittings.

Connect individual inlet and outlet valves. The water inlet to the convector is provided with a ball valve (standard supply) enabling the shutting off of the heating water supply if necessary or a thermostatic valve (optional accessories) for flow control. The screw fitting is installed on the outlet pipe. Sealing must be used in all joints.

Use the supplied flexible stainless hoses for exchanger connection (bellows hose), which will enable vertical exchanger tilting for later cleaning. MAX. PERMITTED exchanger tilt is approximately 60 degrees. Connect the fittings according to Figures 22, 23, or 24.

Stainless hoses are designed to withstand a maximum pressure of 1.0 MPa. Hoses must not be stretched, compressed, or otherwise deformed.

Media inlet: The media inlet pipe is always equipped with a ball valve (part of standard supply) or a thermostatic valve (optional accessory). The angle screw fitting or angle thermostatic valve is connected to the inlet for connections from the window or room side.

Outlet (return pipe): The screw fitting is always connected to the return pipe. If thermostatic valves are used, observe the flow direction of the valve and leave sufficient space for the valve with the given throughput. In some cases, it may be necessary to switch the hot water inlet and outlet depending on the space required for thermostatic head installation; however, fittings are always installed as described above.

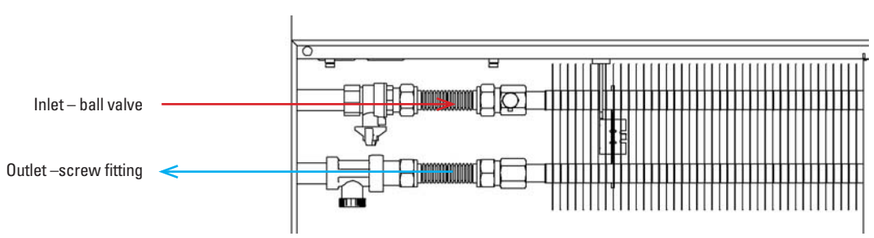


Figure 24: Figure 24: Direct heating water connection (standard accessories).

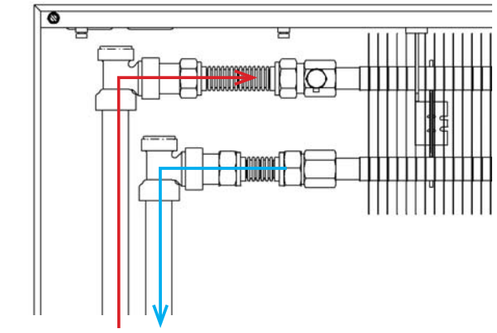


Figure 25: Side heating water connection - from the window (non-standard accessory - angular connection).

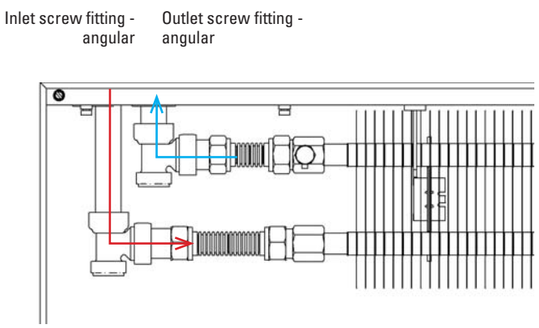


Figure 26: Side heating water connection - in the room (non-standard accessory - angular connection).

7. UNIT DEAERATION

Deaerate the unit by opening the deaerating valve during first use. The deaerating valve is located by the water inlet on the heat exchanger fitting.

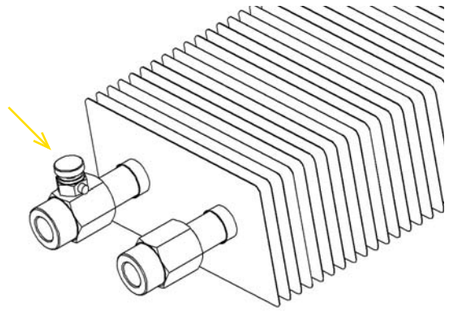


Figure 27: Deaerating valve

8. OPTIONALES ACCESSORIES

- Thermostatic valve - straight, ½"
- Thermostatic valve - angular, ½"
- Screw fitting - straight, ½"
- Screw fitting - angular, ½"
- Ball valve - straight, ½"
- Ivar thermostatic head
- Heimeier thermostatic head
- Bellows hose ½" - ½" 65 mm
- Bellows hose ½ - ½ 41 mm

Accessories / angular connection comprise:

- 1x hose G1/2" – 65 mm
- 1x bellows hose 41 mm
- 4x sealing KLIGERSIL C4400
- 2x angular screw fitting

1. UNIT DESCRIPTION

This is a floor heating unit that works on the convection principle. The unit fully uses the laws of physics in the area of thermodynamics, representing one of the most efficient means of interior heating.

BENEFITS OF FLOOR CONVECTORS WITH FAN:

- high output,
- possibility of heating using natural or forced (with fan) convection ,
- low fan noise or no noise at all in natural convection mode, light weight compared to other heating units with similar output,
- low hot water consumption,
- very short response time,
- design,
- minimal operation and maintenance requirements,
- a great advantage of the floor convectors is the possibility of embedding them in interior floors. This advantage is beneficial in places where we do not want to disturb the aesthetic appearance of the interior by wall mounted or free-standing convectors or other heating units, but where sufficient heating output is required.

2. PACKAGE CONTENT

PACKAGE CONTENT	Position	KT KT110	KO	KT0 KT1	KT2 KO2	KT 3 KT3 105	T50, T60, T80	TO 85	MT MO	HC	HCM	HC4p	HCM4p
Convector													
Vat	1	1	1	1	1	1	1	1	1	1	1	1	1
Exchanger holder	2	2-4	*	2-4	2-4	*	*	*	*	2-4	*	*	*
Side holder of the exchanger	3	2-4	-	2-4	2-4	-	-	-	-	2-4	-	-	-
Exchanger	4	1	1	1	1	1	1	1	1	1	1	1	1
Anti-vibration mounting	5	8	8	8	8	8	8	8	8	8	8	8	8
Cover panel	6	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
Brace [1]	7	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
Decorative frame [2]	8	1	1	1	1	1	1	1	1	1	1	1	1
Fan [4]	17	1-3	1-3	1-3	1-3	1-3	1-4	1-3	1-3	1-3	1-3	1-3	1-3
EB control unit	18	1	1	1	1	1	1	1	1	1	1	1	1
Exchanger temperature sensor	19	1	1	1	1	1	1	1	1	1	1	1	1
Cable grommet	20	1	1	1	1	1	1	1	1	1	1	1	1
Fan filter	21	1	1	-	1	-	-	-	1	-	1	1	1
Accessories													
Anti-vibration mounting	5	4	4	4	4	4	4	4	4	4	4	4	4
Anchoring footing [3]	9	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
Screw M8x50 [3]	10	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
Wood screw 3x30 [3]	11	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
Dowel 3 [3]	12	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
Hose G1/2" – 65 mm	13	2	2	2	2	2	2	2	2	2	2	2	2
Straight valve	14	1	1	1	1	1	1	1	1	1	1	1	1
Screw fitting - straight	15	1	1	1	1	1	1	1	1	1	1	1	1
Sealing KLIGERSIL C4400	16	4	4	4	4	4	4	4	4	4	4	4	4

* Forms part of the vat

[1] Braces: 1 brace for lengths up to 1500 inclusive, 2 braces for lengths between 1750 and 2000 and 3 braces for lengths between 2500 and 3000

[2] decorative frame consists of 4 pieces - 2 short segments and 2 long segments

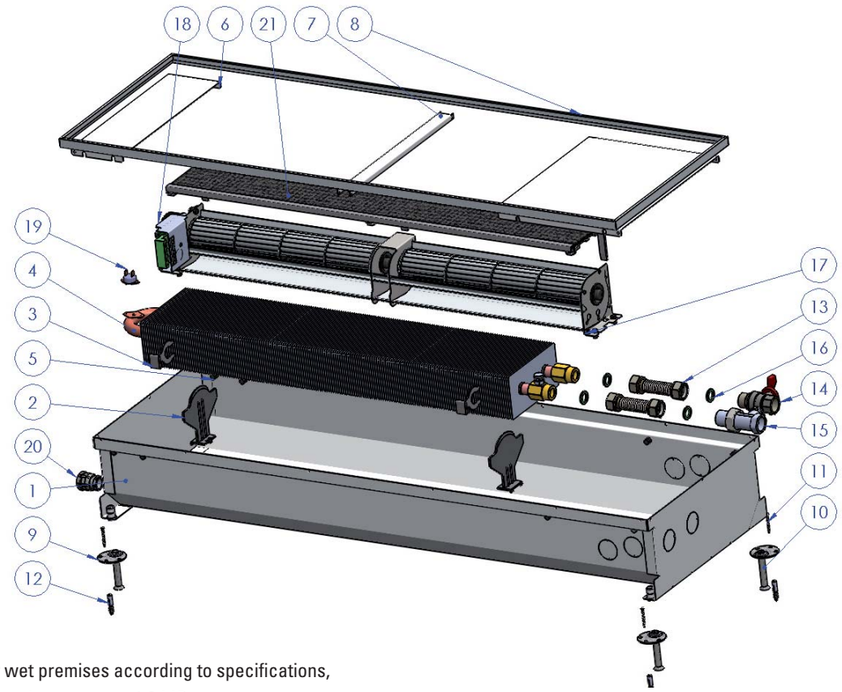
[3] There are +2 pieces for lengths over 2000

[4] Number of fan motors depends on convector length (1 to 4 fan modules).

Individual positions in the table correspond to Figure No. 1 - see previous page.

3. TECHNICAL PARAMETERS

Figure 1: **COMPONENTS OF FLOOR CONVECTOR WITH FAN:**



- usage: dry or wet premises according to specifications,
- maximum operating pressure: 1.0 MPa,
- maximum operating temperature: 95 °C,
- operating medium: water. The use of other media is prohibited. Water may not be mixed with other substances, such as non-freeze liquids!
- environment: interiors with temperatures between +5°C and +40°C.

1. VAT - stainless metallic vat according to type designed for dry or wet environment. Dry environment: stainless steel AISI 304, wet environment: AISI 316.
2. EXCHANGER HOLDER - Supports the exchanger and keeps it in correct vertical position.
3. EXCHANGER SIDE HOLDER - limits the space between the convector vat and the exchanger.
4. EXCHANGER - copper pipes with pressed-on aluminum fins through which the heating water flows.
5. RUBBER ANTI-VIBRATION MOUNTING - intended for vibration attenuation and for cover panel mounting.
6. COVER PANEL - cover panel covers the blind space. The second cover panel covers the water connection.
7. BRACE - metallic brace maintains convector vat shape during installation.
8. CONVECTOR FRAME - the frame is a design element and should be perfectly aligned with final floor. Maximum height difference should be (0-1 mm).
9. ANCHORING FOOTING - intended for convector mounting and accurate positioning in rough floor.
10. POSITIONING SCREW - intended for fine positioning of the convector before concreting.
11. WOOD SCREW - fixing footing attachment to the floor.
12. DOWEL - screw fixing in concrete floor.
13. HOSE – the bellows hose is a stainless hose intended for fitting connection to the convector exchanger.
14. STRAIGHT VALVE - can be either thermostatic or ball straight valve. This valve shuts off the water supply to the convector.
15. SCREW FITTING - a valve that controls / adjusts heating water flow.
16. SEALING - seals joints between valves, hoses, and exchangers (KLEGERSIL C4400). MINIB, s.r.o. recommends this sealing as an optimum sealing solution, as other materials (rubber, NBR, silicon) do not have sufficient tightness upon sufficient tightening and because they are deformed by tightening forces.
17. FAN - intended for forced convection.
18. EB CONTROL UNIT - fan motor control unit.
19. TEMPERATURE SENSOR - exchanger temperature sensor.
20. GROMMET - intended for 12VAC power supply cable.
21. FILTER - the purpose of the filter is to protect the fan modules against larger particles. It also protects the fan against dust. Convector with filters can be provided with a walk-on grille with greater bar spacing.

4. BEFORE INSTALLATION

- Use the catalogue to choose a suitable convector for wet or dry environment - see paragraph 4.1.
- Select correct convector position - see paragraph 4.2.
- Leave enough space for placement and installation - see paragraph 4.3. Consider using thermal insulation, anti-vibration foil, or braces into
- hollow floors - see paragraph 4.4.
- Do not forget drainage pipes or other condensate removal systems - see paragraph 4.5.

4.1 Suitable Convector Type

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

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

Make sure that you have enough space for convector installation - both from the wall (window) and in the floor (see paragraph 4.3).

Determine whether the convector will be used in a dry or wet environment. A dry environment is an environment where the average annual relative humidity does not exceed 85%. A wet environment is an environment where such average annual value is equal or greater than 85%. In terms of convector selection, a dry environment is in general any environment where no precipitation of vapor occurs in the convector unit. Convectors intended for a wet environment have more resistant stainless material and a feature for condensate drainage.

4.2 Convector Position

Consult the convector position with an expert or your designer.

MINIB floor convectors are intended for embedding in floors in order to avoid disturbance to the overall aesthetic appearance of the room. If the convector is intended to be the main source of heat, it must be placed with a heat exchanger in the room (Figure 2). If the convector serves as an additional source of heat or as a thermal barrier, it is placed with a heat exchanger towards the window (Figure 3). If the convector is equipped with a heat exchanger over its entire width, it is recommended that the convector be positioned with the fan facing into the room.

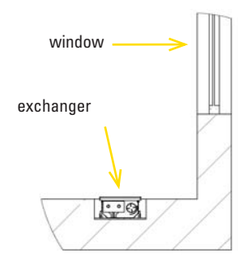


Figure 2: Convector with exchanger in the room as the main source of heat.

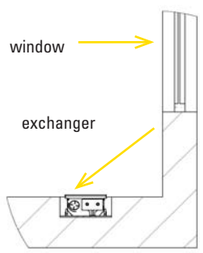


Figure 3: Convector with exchanger towards the window as an additional source of heat.

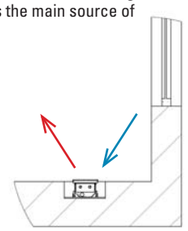


Figure 3-1

4.3 Installation Space

MINIB, s.r.o. recommends leaving sufficient space for convector installation. For installation in older floors, during reconstruction, or whenever sufficient space is not available, the dimensions of the installation hole should be equal to the convector height + at least 20 mm. The width and/or length (if only 1 convector is concerned) of the installation hole should correspond to the convector width (length) + at least 60 mm - see Figure 4. Clearance around the convector should provide enough space for the connection of water, cabling, and convector embedding in concrete. For new floors, MINIB recommends at least +100 mm of free space around the convector; the height remains identical to the previous case (H + at least 20 mm).

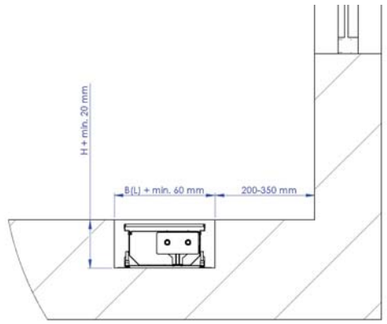


Figure 4: B - maximum width of convector; L - convector length; H - convector height (without adjustment legs)
Recommended MINIMUM clearance for installation: B + 60 mm; L + 60 mm; H + 20 mm

The position and location of the convector fully depend on the client's requirements, particularly, what and how they need to heat or cool. MINIB, s.r.o. recommends installing convectors acting as the main source of heat under windows with a heat exchanger into the room. The recommended distance from the wall is 200 – 350mm. If the customer wishes to use the convector as an additional source of heat only (i.e., the convector does not serve as the main source of heat), the heat exchanger can be turned towards the window. The exchanger location on the window side is recommended in cases where the convector is used as an additional source of heat or when it acts as a thermal barrier in front of the window.

4.4 Principles of Convector Installation in Floors

MINIB floor convectors are intended for installation in solid or hollow floors where certain principles apply. Before you start, please read the following instructions.

- At your own discretion (parquet, floating, or wooden floors), install thermal insulation on the outside of the convector vat on the heat exchanger side. (Figure 6).
- If the convector is installed at a frequented spot where people often step on the cover grille or walk past the convector, it is recommended that anti-vibration foil be used to reduce structure-borne noise, particularly, in multi-story buildings (Figure 7).

4.4.1 Hollow Floors – Principles of Installation of Floor Convectors with Fan:

- When installing a convector in a hollow floor, it is necessary to use hollow floor braces outside the convector unit in order to ensure its stability (Figure 5).
- Anti-vibration foil must be used for convectors with a fan installed in hollow floors
- Decide on the use of thermal insulation at your own discretion.

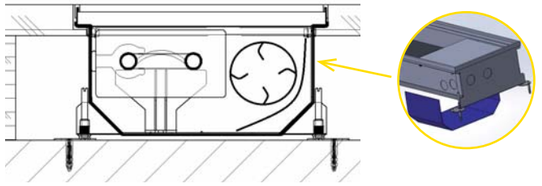


Figure 5: Hollow floor - brace for floor convector with fan .

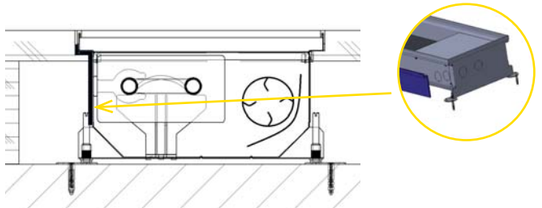


Figure 6: Hollow floor - thermal insulation for floor convector with fan to protect the floor on the exchanger side .

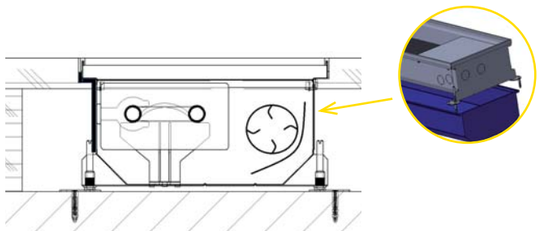


Figure 7: Hollow floor - anti-vibration foil for floor convector with fan. Its purpose is to attenuate structure-borne noise and fan vibration. It is usually applied along the entire outer surface of the convector.

- Use thermal insulation depending on the type and characteristics of the floor. If the heat exchanger is situated along one side of the convector, it is sufficient to apply the insulation on that side. If the exchanger is positioned symmetrically in the convector body, it is recommended that insulation be used on both sides. The insulation is intended to protect the final floor against direct heat from the convector. Failure to use insulation can result in the uneven drying of the final floor (parquet, for example) and thus the formation of gaps between individual parquet strips. This applies in particular to hollow floors where heat is transmitted even through the metallic convector body in the floor.
- Thermal insulation is applied on the outside of the metallic body of the convector.
- Decide on the use of anti-vibration foil at your own discretion. The foil acts not only as protection against vibration in hollow floors; it also reduces structure-borne noise in the room under the floor, especially when people often walk past the grille.

4.4.2 Solid Floors – Principles of Installation of Floor Convectors with Fan:

- Decide on the use of thermal insulation or anti-vibration foil at your own discretion.

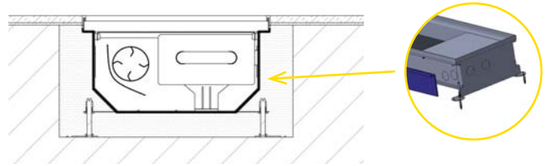


Figure 8: Solid floor - thermal insulation for floor convector with fan to protect the floor on the exchanger side.

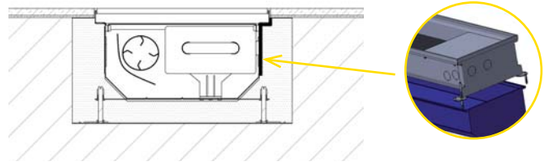


Figure 9: Solid floor - anti-vibration foil for floor convector with fan. Its purpose is to attenuate structure-borne noise and fan vibration. It is usually applied along the entire outer surface of the convector.

4.5 Condensate Drainage:

Some convectors which are intended for a wet environment are equipped with a Ø18x23mm drainage pipe. You will probably have to connect a hose leading to the sewer system, sump, or another location.

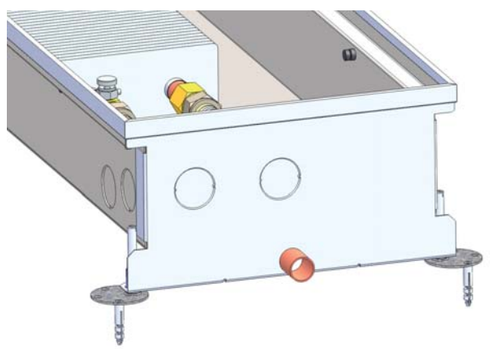


Figure 10: The drainage pipe can be located on a side of the convector other than the side shown in the figure (depending on convector type).

5. INSTALLATION

- The heat exchanger must be connected to the distribution pipes with the supplied stainless steel hoses.
- A correctly installed convector is in a horizontal position and the top edges of the casing are not damaged or bent in order to ensure correct the functionality of the walk-on grille and the possibility of heat exchanger deaeration.
- A correctly installed convector has a decorative frame aligned with the final floor with a tolerance of ± 1mm.
- It is recommended that the top convector cover (fiberboard) be left in place during concreting to prevent the soiling of the convector interior. We would like to point out that walking on this convector cover is not permitted!
- The convector must be fixed in the floor with screw fittings or another suitable material during concreting to prevent the vertical movement of the convector after concrete pouring. A vertical load may be applied to the convector during concreting.

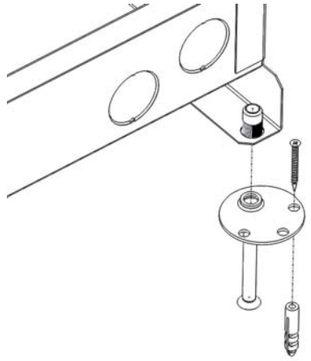


Figure 11: Insert 4 adjustment screws (6 screws for lengths over 2.5 m).

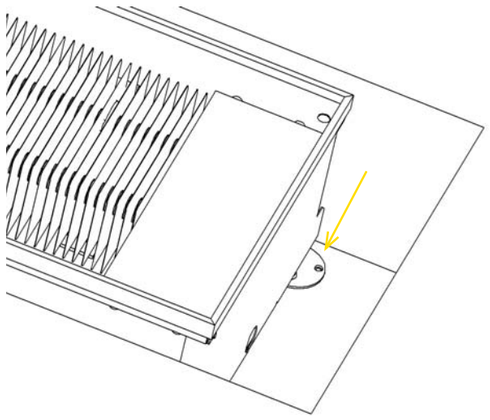


Figure 12: Place the convector in the installation hole and mark feet mounting holes

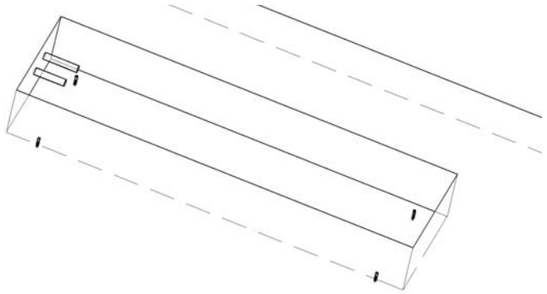


Figure 13: Drill the holes (Ø6mm, depth 30-35 mm). Insert dowels in holes.

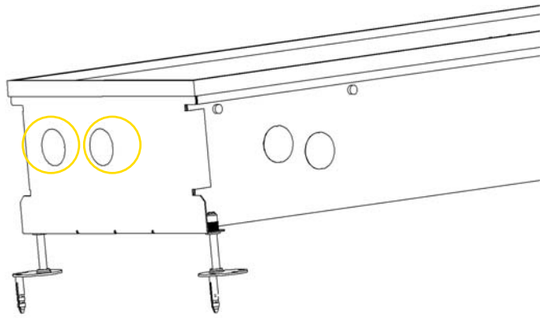


Figure 14: Clear perforated plugs of holes for heating water connection.

Install necessary braces, thermal insulation, and/or vibration foil - see paragraph 4.4.

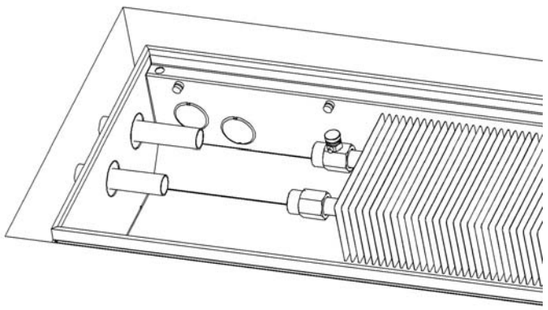


Figure 15: Level the convector in the installation hole and install heating water pipes.

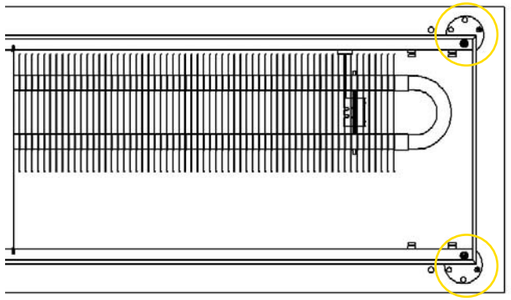


Figure 16: Attach the convector's fixing feet into the dowels. Fix the feet with quick-setting concrete.

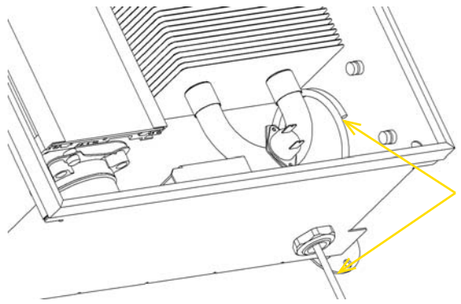


Figure 17: Install the power supply cable for the motors in the fixed convector. For safety reasons, check whether the power supply cable is not energized.

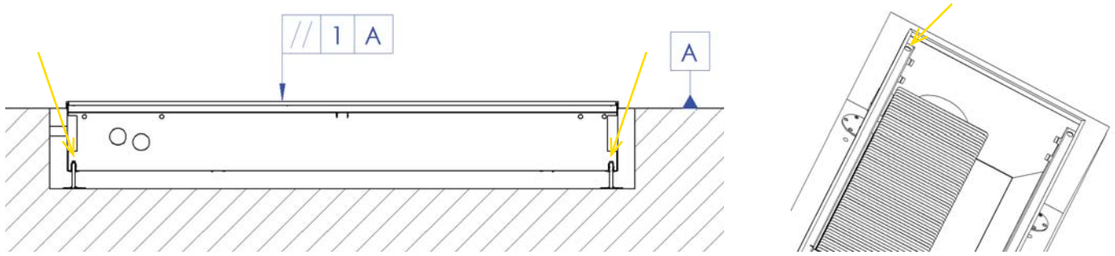


Figure 18: Align the convector (with frame attached) using adjustment bolts. Set the final height so that the convector frame is aligned with the final floor (± 1mm). Fix the feet with quick-setting concrete.

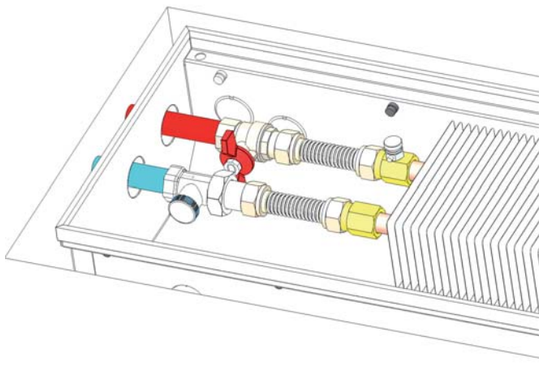


Figure 19: Connect the inlet and outlet pipes. See paragraph 6.

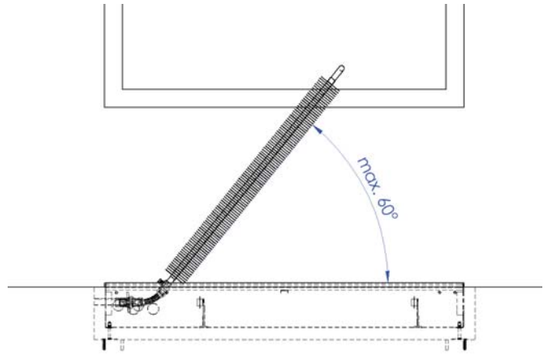


Figure 20: MAX. PERMITTED exchanger tilt is approximately 60 degrees. See paragraph 7. The exchanger can be moved in the heat exchanger so that the ribs are not covered.

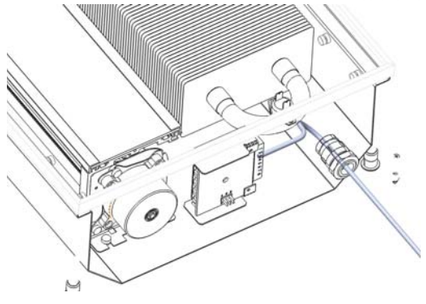


Figure 21: Connect convector control unit. Use the connection and control manual and observe the connection diagrams.

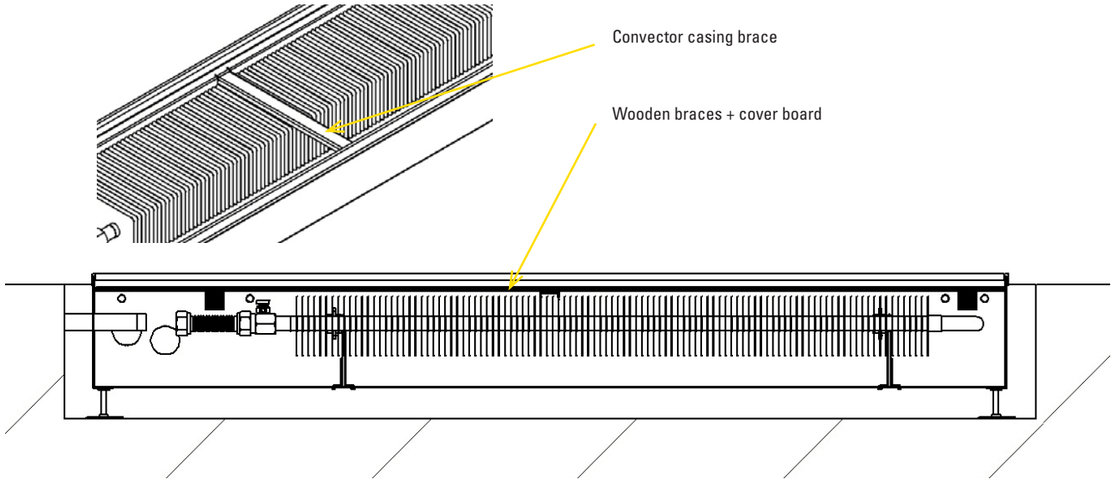


Figure 22: **Make sure that** all openings inside the vat are sealed so that the convector interior is not soiled during concreting! Install braces of the convector vat and wooden braces together with fiberboard cover.

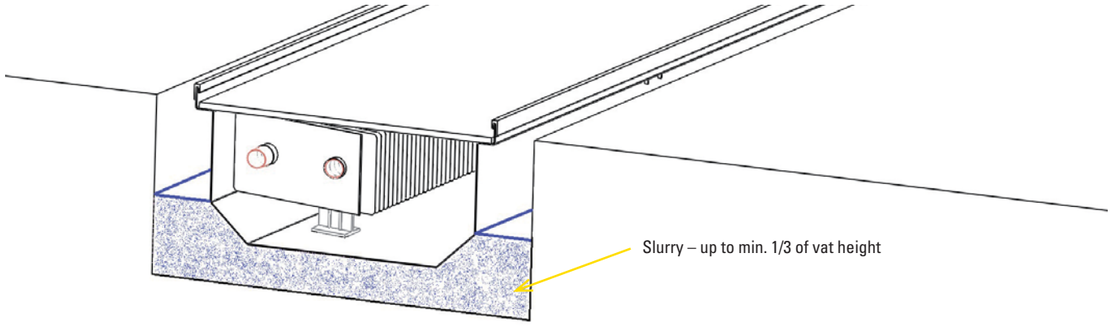


Figure 23: Pour concrete slurry or anhydride mixture to at least 1/3 of the convector height in order to minimize the noise. A convector with fan can vibrate if the bottom is not properly concreted!

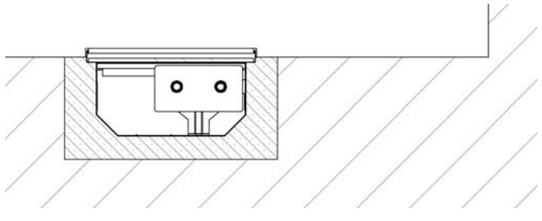


Figure 24: The entire space around the convector must be subsequently filled with classical concrete up to the final rough floor height. The convector is now set in the rough floor, ready for final floor installation (tiles, parquets, etc.).

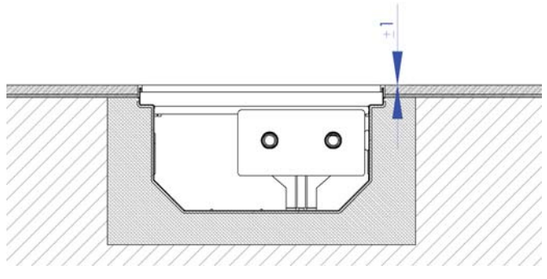


Figure 25: A correctly installed convector has a decorative frame aligned with the final floor with a tolerance of ± 1mm.

6. CONNECTION OF FITTINGS

Connect the fittings with the supplied standard accessories (direct connection from the convector face). Whenever you require connection from the window or room side, specify the connection method in your order. Accessories for a window or room side connection are non-standard and comprise other fittings.

Connect individual inlet and outlet valves. The water inlet to the convector is provided with a ball valve (standard supply) enabling the shut off of the heating water supply if necessary, or a thermostatic valve (optional accessories) for flow control. The screw fitting is installed on the outlet pipe. Sealing must be used in all joints.

Use the supplied flexible stainless hoses for the exchanger connection (bellows hose), which will enable vertical exchanger tilting for later cleaning. MAX. PERMITTED exchanger tilt is approximately 60 degrees. Connect the fittings according to Figure 22, 23, or 24.

Stainless hoses are designed to withstand a maximum pressure of 1.0 MPa. Hoses must not be stretched, compressed, or otherwise deformed.

Media inlet: The media inlet pipe is always equipped with a ball valve (standard supply) or a thermostatic valve (optional accessory). The angle screw fitting or angle thermostatic valve is connected to the inlet in the case of connections from the window or room side.

Outlet (return pipe): The screw fitting is always connected to the return pipe. When thermostatic valves are used, observe the flow direction of the valve and leave sufficient space for the valve with the given throughput. In some cases, it may be necessary to switch the hot water inlet and outlet depending on the space required for thermostatic head installation; however, fittings are always installed as described above.

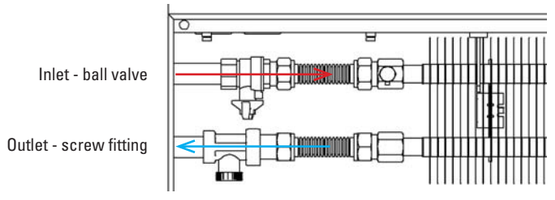


Figure 26: Direct heating water connection (standard accessories).

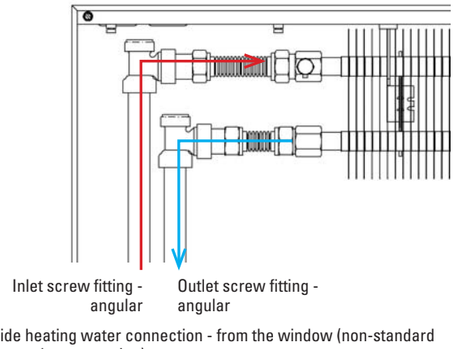


Figure 27: Side heating water connection - from the window (non-standard accessory - angular connection)

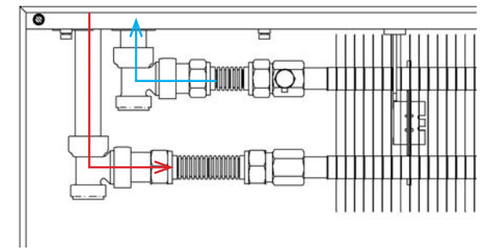


Figure 28: Side heating water connection - in the room (non-standard accessory - angular connection).

7. UNIT DEAERATION

Deaerate the unit by opening the deaerating valve during the first use. The deaerating valve is located near the water inlet on the heat exchanger fitting.

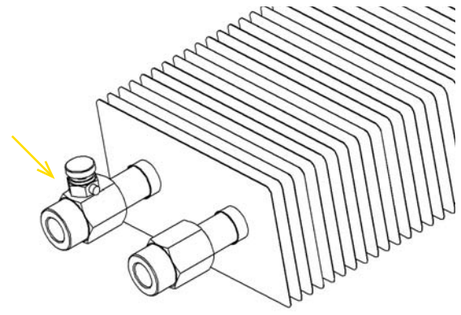


Figure 39: Deaerating valve.

8. OPTIONALES ACCESSORIES

- Thermostatic valve - straight, ½"
- Thermostatic valve - angular, ½"
- Screw fitting - straight, ½"
- Screw fitting - angular, ½"
- Ball valve - straight, ½"
- Ivar thermostatic head
- Heimeier thermostatic head
- Bellows hose ½" - ½" 65 mm
- Bellows hose ½ - ½ 41 mm
- Electro-thermal head 12V-NO

Accessories / angular connection comprise:

- 1x hose G1/2" – 65 mm
- 1x bellows hose 41 mm
- 4x sealing KLIGERSIL C4400
- 2x angular screw fitting

1. UNIT DESCRIPTION

These are wall mounted unit types NU1, NU2, NW 170, NW340, NP1, NP2 (based on the natural convection principle) and NK1, NK2, which are equipped with fans. Since the units fully use the laws of physics in the area of thermodynamics, they represent the most efficient means of interior heating.

BENEFITS OF WALL MOUNTED CONVECTORS:

- high output,
- silent operation and very low noise of fan units,
- light weight compared to other heating units with similar output using the radiation principle,
- low hot water consumption,
- short response time,
- design,
- minimal operation and maintenance requirements,
- the small installation space is a great advantage of these units. You will appreciate this, particularly in situations when the units are used during interior reconstruction and for the replacement of old heating units, even in places where sufficient heating output needs to be maintained.

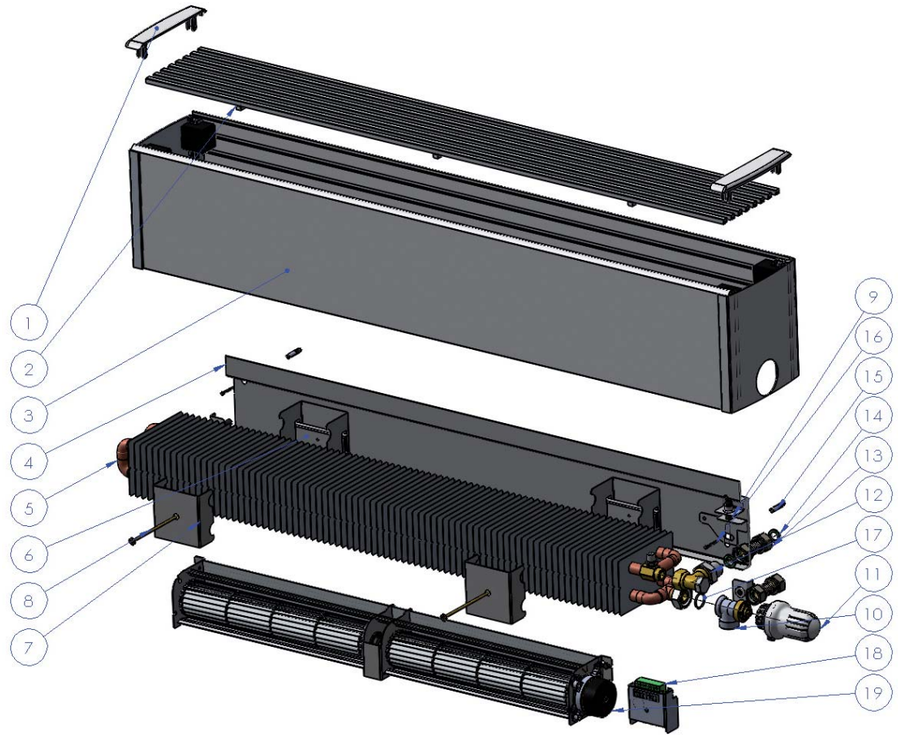
2. PACKAGE CONTENT

PACKAGE CONTENT	Position	NK1	NK2	NU1	NU2	NW 170	NW 340	NP1	NP2
Convector									
Plastic cover	1	2	2	2	2	2	2	2	2
Grille	2	1	1	1	1	1	1	1	1
Convector body	3	1	1	1	1	1	1	1	1
Load bearing piece	4	1	1	1	1	1	1	1	1
Exchanger	5	1	1	1	1	1	1	1	1
Exchanger holder + screw	6, 7, 8	2	2	2	2	2	2	2	2
Adjustment screw	9	1	1	1	1	1	1	1	1
Fan	17	1-2	1-2	-	-	-	-	-	-
EB control unit	18	1	1	-	-	-	-	-	-
O-RING 18X2	19	1	1	1	1	1	1	1	1
Accessories									
Heimeier AT 15 V_exakt valve	10	1	1	1	1	1	1	1	1
Thermostatic head	11	1	1	1	1	1	1	1	1
Screw fitting - straight	12	-	-	-	-	1	1	1	1
Screw fitting - angular	12	1	1	1	1	-	-	-	-
Hose G1/2" – 65mm	13	1	-	-	-	1	1	1	1
Hose G1/2" – 41 mm	13	-	1	1	1	-	-	-	-
Sealing KLIGERSIL C4400	14	4	4	4	4	4	4	4	4
Dowel No. 10	15	2	2	2	2	2	2	2	2
Wood screw 6x50	16	2	2	2	2	2	2	2	2

Individual positions in the table correspond to Figure No. 1, see following page.

3. TECHNICAL PARAMETERS

Figure 1: COMPONENTS OF WALL MOUNTED CONVECTOR



- usage: dry or wet premises according to specifications,
- maximum operating pressure: 1.0 MPa,
- maximum operating temperature: 95 °C,
- operating medium: water. The use of other media is prohibited. Water may not be mixed with other substances, such as non-freeze liquids!
- environment: interiors with temperatures between +5°C and +40°C.

1. PLASTIC COVER - intended for grille attachment to the convector body.
2. CONVECTOR GRILLE - design element protecting the convector outlet. Must not be covered !!!
3. EXTERNAL CONVECTOR BODY - aluminum body of the convector.
4. CONVECTOR BEARING PIECE - attachment piece of the wall mounted convector and load bearing piece of the convector body.
5. EXCHANGER - copper pipes with pressed-on aluminum fins through which the heating water flows.
6. FIXED EXCHANGER HOLDER - intended to set the exchanger position.
7. EXCHANGER HOLDER - intended for exchanger attachment.
8. EXCHANGER HOLDER SCREW - intended for exchanger holder fitting.
9. ADJUSTMENT SCREW - intended for adjustment of horizontal position of the convector body.
10. THERMOSTATIC VALVE - intended for flow control.
11. THERMOSTATIC HEAD - intended for manual regulation.
12. SCREW FITTING - a valve that controls / adjusts heating water flow.
13. HOSE – the bellows hose is a stainless hose intended for fitting connection to the convector exchanger.
14. SEALING - seals joints between valves, hoses, and exchangers (KLEGERSIL C4400). MINIB, s.r.o. recommends this sealing as an optimum sealing solution, as other materials (rubber, NBR, silicon) do not have sufficient tightness upon sufficient tightening and because they are deformed by tightening forces.
15. DOWEL - for screw fixing in the wall.
16. WOOD SCREW - fixing of the convector bearing piece
17. O-RING - sealing between heat exchanger and thermostatic valve.
18. EB CONTROL UNIT - fan motor control unit.
19. FAN - intended for forced convection.

4. BEFORE INSTALLATION

- Use the catalogue to choose a suitable convector - see paragraph 4.1.
- Select correct convector position and placement - see paragraph 4.2.

4.1 Suitable Convector Type

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

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

All wall mounted convectors are intended for a dry environment. This means an environment where the average annual humidity does not exceed 85%. In terms of convector selection, a dry environment is generally any environment where no precipitation of vapor occurs in the convector unit.

4.2 Convector Position

A MINIB Wall mounted convector is intended for installation on walls under windows or window sills. Install the convector approximately 100 mm under the window frame. Observe the rule according to which the gap between the floor should be greater than 80 mm. Never cover the top grille - this will result in flow reduction and in a considerable decrease of the convector's output.

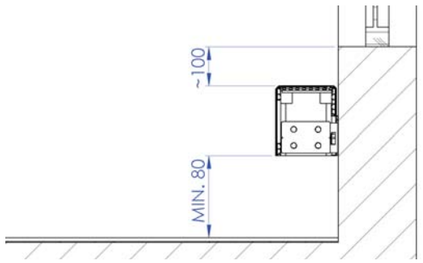


Figure 2: The recommended distance of the convector from the bottom of the window (window sill) is 100mm. The minimum distance from the floor must be 80mm.

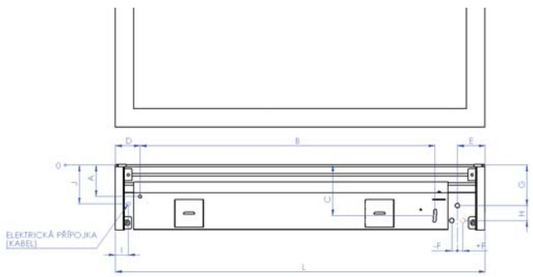


Figure 3: 0 – is the top edge of the rear wall mounted side without covers and grille.

Installation dimensions (mm) for the installation of water pipes, cabling, and wall mounting

	NK1	NK2	NU1	NU2	NW 170	NW 340	NP1	NP2
A	79	85	90	90	90	90	90	90
B	L-185	L-185	L-357	L-357	L-357	L-357	L-357	L-357
C	137	163	135	135	135	135	135	135
D	50	50	50	50	50	50	50	50
E	41	46	41	41	41	41	31	31
F	-30	5	-55	-55	0	0	-10	-10
G	105	92	90	260	87	257	92	177
H	40	50	45	45	35	35	42	128
I	35	35	-	-	-	-	-	-
J	130	130	-	-	-	-	-	-

5. INSTALLATION

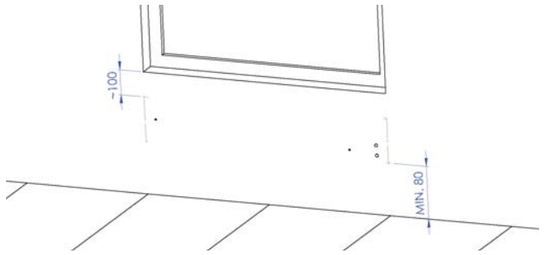


Figure 4: Plan the position of the heating unit. Observe the dimensions specified in the installation table - see Table 2. Mark the water inlet/outlet, fitting holes for the bearing piece of the convector, and electric connection (as appropriate). Observe the principles specified in paragraph 4.2 (convector position).

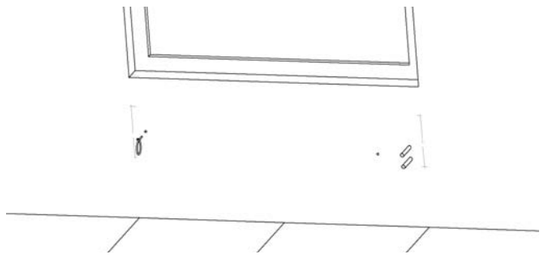


Figure 5: Drill the mounting holes. Install the pipes and power supply cable as appropriate.

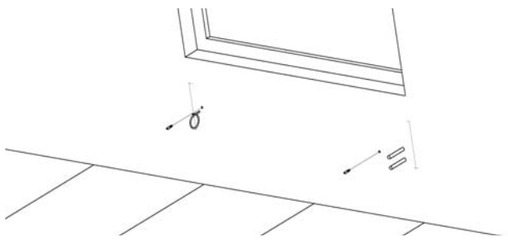


Figure 6: Insert dowels in holes.

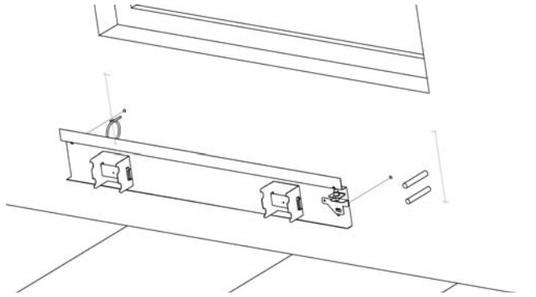


Figure 7: Turn the adjustment stoppers to middle position. Screw the bearing plate to the dowels. Do not tighten the screws completely.

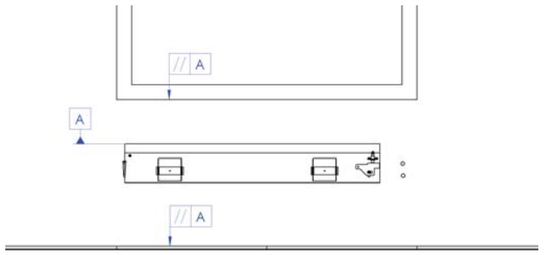


Figure 8: Align the bearing piece into a horizontal position and tighten the fixing screws.

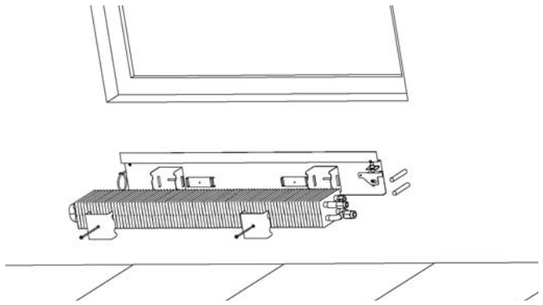


Figure 9: Mount the exchanger using exchanger holders and screws.

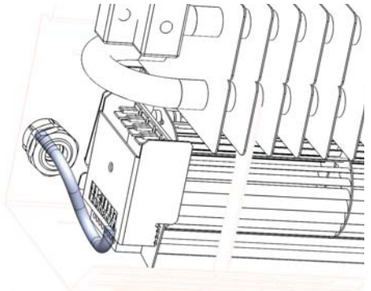


Figure 10: Pull the cable through the grommet and connect the control unit of the motors according to the "Controls" manual depending on the selected control type. Test the connection.

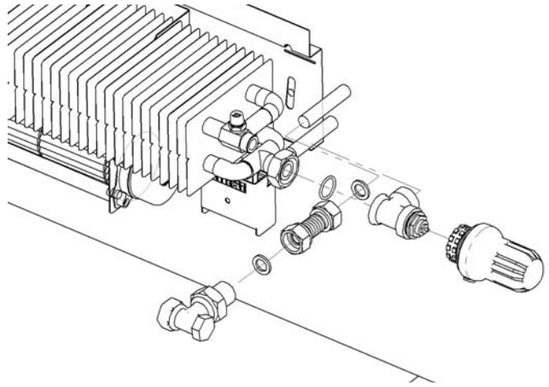


Figure 11: Connect fittings. Inlet – thermostatic valve. Outlet – screw fitting. The inlet is always at the bottom. Test the connection tightness.

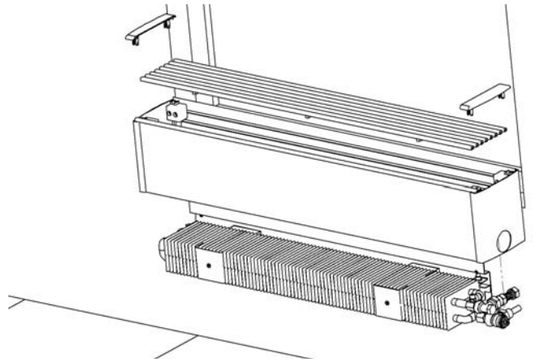


Figure 12: Attach the convector frame, grille, and covers.

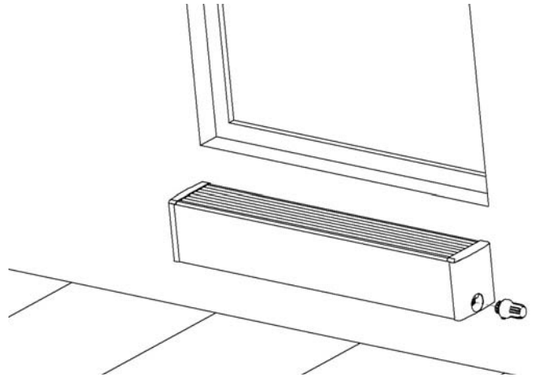


Figure 13: Screw head onto thermostatic valve.

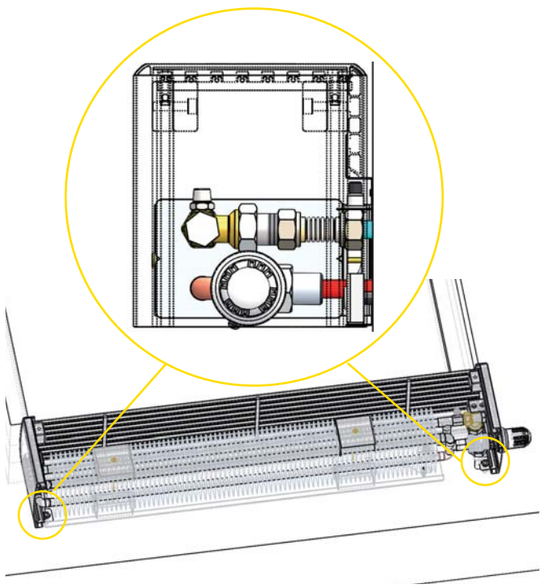


Figure 14: Adjust the vertical position of the convector using the adjustment screws at the bottom of the convector body.

6. CONNECTION OF FITTINGS

Connect the fittings with the supplied standard accessories.

Connect individual inlet and outlet valves. The thermostatic valve (standard supply) is connected to the water inlet to the convector for flow regulation. The screw fitting is installed on the outlet pipe. Sealing must be used in all joints. Flow direction is from bottom to top.

Use the supplied flexible stainless hoses for exchanger connection (bellows hose), which will later enable vertical exchanger tilting for the purpose of cleaning. Connect fittings according to Figure 14.

Stainless hoses are designed to withstand a maximum pressure of 1.0 MPa. Hoses must not be stretched, compressed, or otherwise deformed.

Media inlet: the thermostatic valve (standard supply) is connected to the water inlet.

Outlet (return pipe): the screw fitting is always connected to the return pipe.

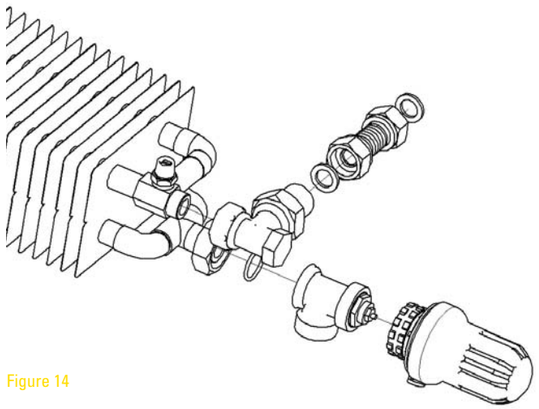


Figure 14

7. UNIT DEAERATION

Deaerate the unit by opening the deaerating valve during the first use. The deaerating valve is located near the water inlet on the heat exchanger fitting.

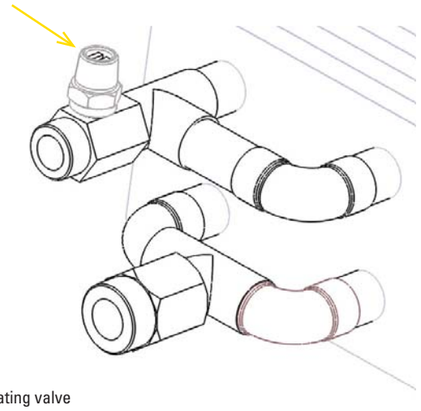


Figure 15: Deaerating valve

8. OPTIONALES ACCESSORIES

- Thermostatic valve - straight, ½"
- Thermostatic valve - angular, ½"
- Screw fitting - straight, ½"
- Screw fitting - angular, ½"
- Ball valve - straight, ½"
- Ivar thermostatic head
- Heimeier thermostatic head
- Bellows hose ½" - ½" 65 mm
- Bellows hose ½ - ½ 41 mm

1. UNIT DESCRIPTION

This is a free-standing heating unit that works on the convection principle. Since the unit fully uses the laws of physics in the area of thermodynamics, it represents one of the most efficient means of interior heating.

BENEFITS OF FREE-STANDING CONVECTORS:

- high output,
- silent operation and very low noise of fan units,
- units without fan do not require any additional energy supply,
- low hot water consumption,
- short response time,
- design,
- minimal operation and maintenance requirements.

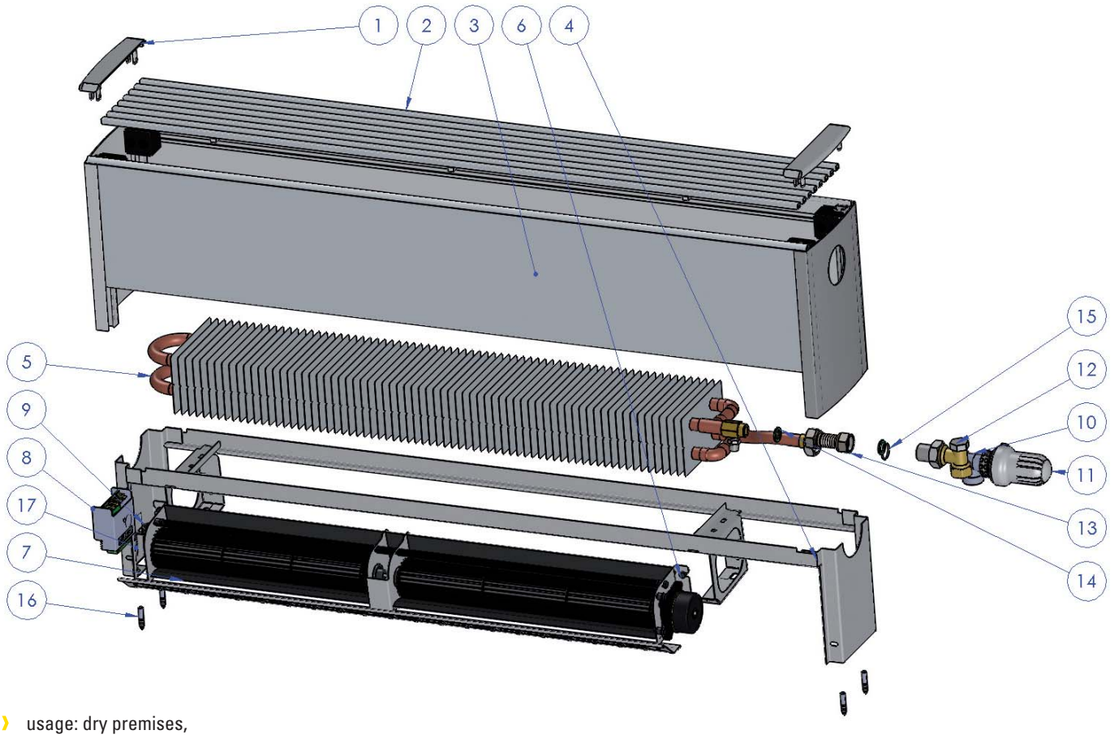
2. PACKAGE CONTENT

PACKAGE CONTENT	Position	SK1	SK2	SU1	SU2	SP 1/4	SP 2/4	SW 250	SW 240	SPO
Convector										
Plastic cover	1	2	2	2	2	2	2	2	2	2
Grille	2	1	1	1	1	1	1	1	1	1
Convector body	3	1	1	1	1	1	1	1	1	1
Load bearing piece	4	1	1	1	1	1	1	1	1	1
Exchanger	5	1	1	1	1	1	1	1	1	1
Anti-vibration mounting	6	6-10	6-10	-	-	-	-	-	-	-
Fan	7	1-2	1-2	-	-	-	-	-	-	-
EB control unit	8	1	1	-	-	-	-	-	-	-
Grommet	9	1	1	-	-	-	-	-	-	-
Accessories										
Heimeier AT 15 V_exakt valve	10	1	1	1	1	1	1	1	1	1
Thermostatic head	11	1	1	1	1	1	1	1	1	1
Screw fitting - angular, ½"	12	1	1	1	1	1	1	1	1	1
Hose G1/2" – 41 mm	13	1	1	1	1	1	1	1	1	1
Sealing KLIGERSIL C4400	14	2	2	2	2	2	2	2	2	2
O-RING 18X2 NBR70	15	1	1	1	1	1	1	1	1	1
Dowel No. 10	16	4	4	4	4	4	4	4	4	4
Wood screw 6x50	17	4	4	4	4	4	4	4	4	4
Fitting connection template	-	1	1	1	1	1	1	1	1	1

Individual positions in the table correspond to Figure No. 1, see the following page.

3. TECHNICAL PARAMETERS

Figure 1: **COMPONENTS OF FREE-STANDING CONVECTOR WITH FAN**



- usage: dry premises,
- maximum operating pressure: 1.0 MPa,
- maximum operating temperature: 95 °C,
- operating medium: water. The use of other media is prohibited. Water may not be mixed with other substances, such as non-freeze liquids!
- environment: interiors with temperatures between +5°C and +40°C.

1. PLASTIC COVER - intended for grille attachment to the convector body.
2. CONVECTOR GRILLE - design element protecting the convector outlet. Must not be covered !!!
3. EXTERNAL CONVECTOR BODY - aluminum body of the convector.
4. BEARING PIECE OF THE CONVECTOR - bearing piece for heat exchanger and motor.
5. EXCHANGER - copper pipes with pressed-on aluminum fins through which the heating water flows.
6. RUBBER ANTI-VIBRATION MOUNTING - intended for vibration attenuation.
7. FAN - intended for forced convection.
8. EB CONTROL UNIT - fan motor control unit.
9. GROMMET - for control unit cable connection.
10. THERMOSTATIC VALVE - intended for flow control.
11. THERMOSTATIC HEAD - intended for manual regulation.
12. SCREW FITTING - a valve that controls / adjusts heating water flow.
13. HOSE – the bellows hose is a stainless hose intended for fitting connection to the convector exchanger.
14. SEALING - seals joints between valves, hoses, and exchangers (KLEGERSIL C4400). MINIB, s.r.o. recommends this sealing as an optimum sealing solution, as other materials (rubber, NBR, silicon) do not have sufficient tightness upon sufficient tightening and because they are deformed by tightening forces.
15. O-RING - sealing between heat exchanger and thermostatic valve.
16. DOWEL - for screw fixing in the wall.
17. WOOD SCREW - fixing of the convector bearing piece

4. BEFORE INSTALLATION

- Use the catalogue to choose a suitable convector - see paragraph 4.1.
- Select correct convector position and placement - see paragraph 4.2.

4.1 Suitable Convector Type

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

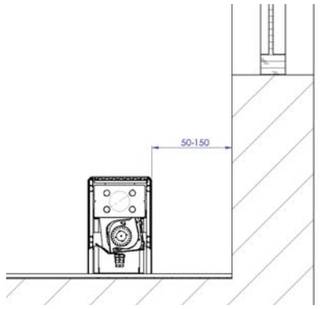
As the main source of heat in your apartment / room, the convector should sufficiently cover the entire thermal loss of the room. Therefore, choose a heating unit with a capacity higher than the thermal loss of your apartment, room, or other premises.

All wall mounted convectors are intended for a dry environment. This means an environment where the average annual humidity does not exceed 85%. From the perspective of convector selection, a dry environment is generally any environment where no precipitation of vapor occurs in the convector unit.

4.2 Convector Position

The free-standing MINIB convector is primarily intended for floor installation. Place the convector so that it does not disturb the overall aesthetic appearance of the room. MINIB, s.r.o. recommends leaving 50-150 mm between the convector and the wall - Figure 2. Never cover the top grille - this would result in flow reduction and a considerable decrease in the convector's output.

Figure 2



5. INSTALACE

Free-standing MINIB convectors are intended for floor installation. Before you start, please read the following instructions.

For floor installation, plan the exact position of the heating water pipes and power supply cable (if required). Use the template supplied with the convector.

Mount the free-standing convector with the mounting accessories supplied by MINIB, s.r.o.

The heat exchanger must be connected to the distribution pipes with the supplied stainless steel hoses.

A correctly installed convector is horizontally supported along the length of the leg.

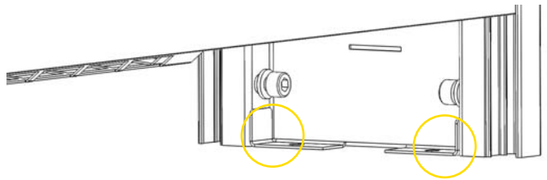


Figure 3: Loosen the screws on both sides of the convector body and remove the top cover (do not completely remove the screws!!!).

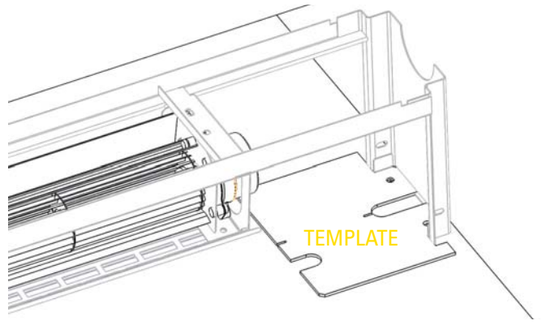


Figure 4: Remove the convector cover, including its plastic parts and grille. Adjust the convector in the required position. Place the template on the floor at the place of heating water supply / removal as shown in the picture. Mark the holes for convector fixing in the floor.

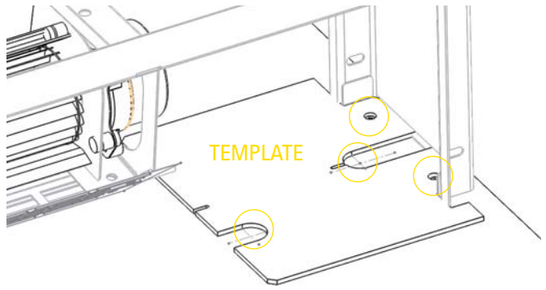


Figure 5: Mark the heating water pipe position, return pipe position, and convector mounting holes on the floor. Connect the supply pipe to the bottom outlet of the heat exchanger. This is where the thermostatic valve is installed. The screw fitting is installed on the outlet - top pipe.

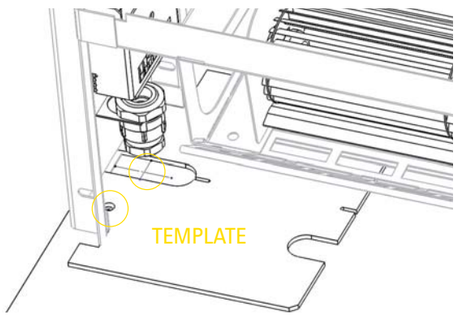


Figure 6: On the opposite side, use the template to mark the power supply cable position (if the convector is equipped with fans) and the holes for mounting the convector to the floor.

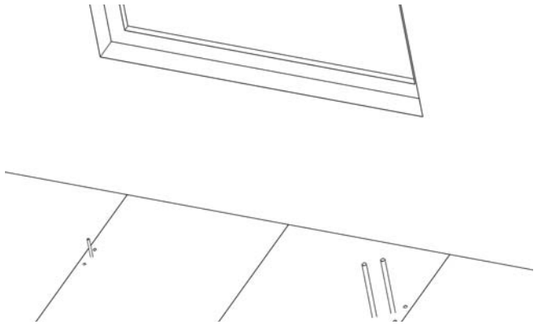


Figure 7: Install the heating water supply and return pipes and electrical cable (for convectors equipped with fans) in the floor.

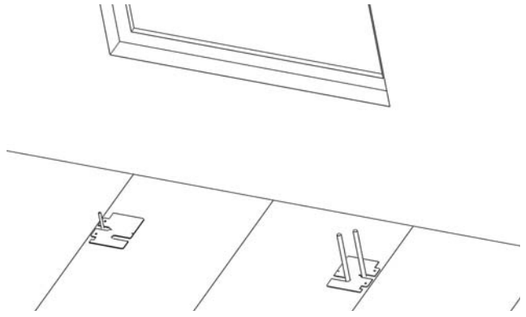


Figure 8: Drill convector mounting holes in the floor.

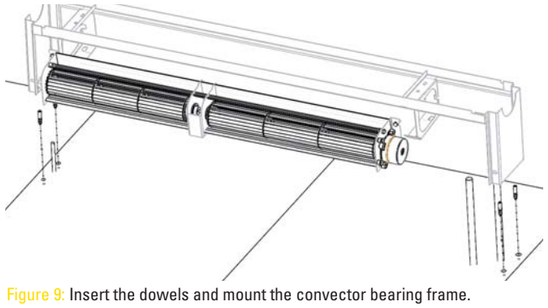


Figure 9: Insert the dowels and mount the convector bearing frame.

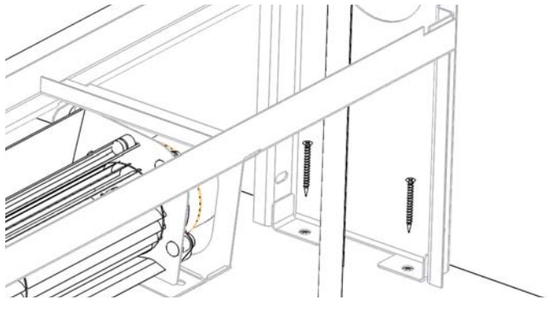


Figure 10: Fix the convector by screws in the previously drilled holes.

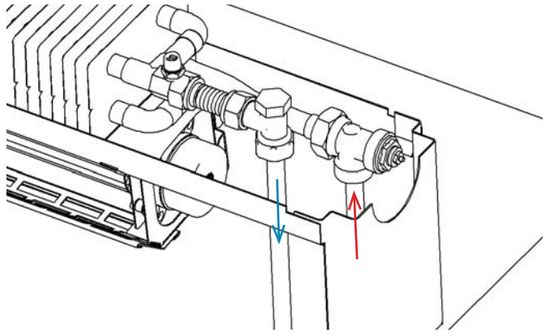


Figure 11: Install the heat exchanger and connect the fittings - see paragraph 6. Test fitting connection tightness.

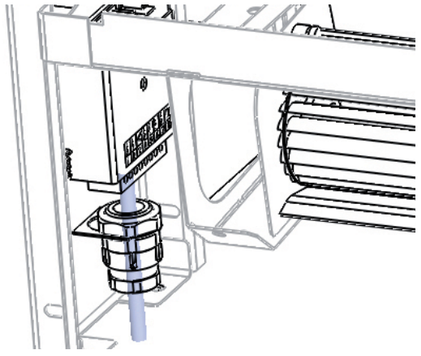


Figure 12: For convectors equipped with fans, connect the cable through the grommet to the control unit using the instructions for the chosen control type. Check fan functionality.

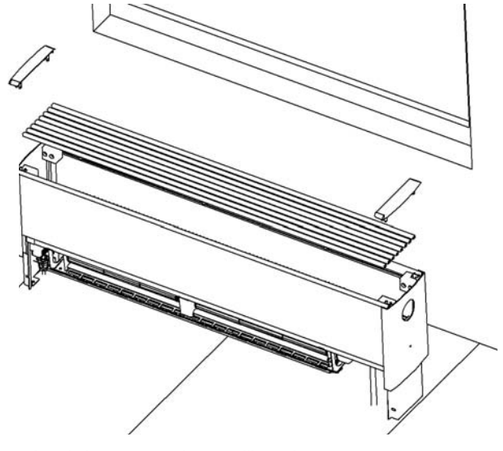


Figure 13: Attach the convector frame, grille, and covers.

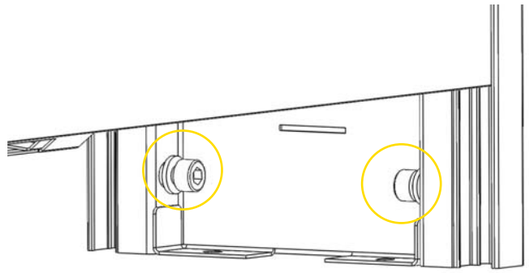


Figure 14: Tighten the screws on convector sides .

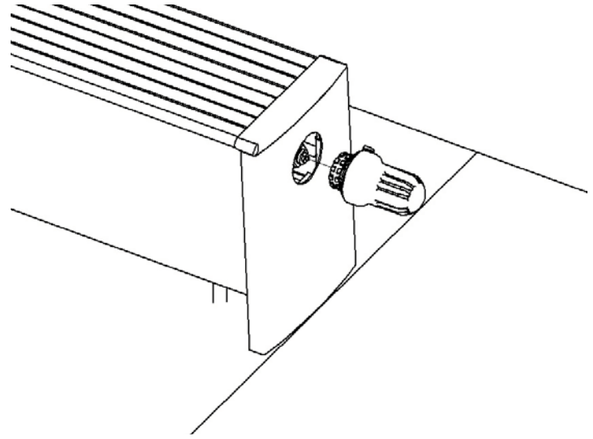


Figure 15: Connect the thermostatic head.

6. CONNECTION OF FITTINGS

Connect the fittings with the supplied standard accessories.

Connect the individual inlet and outlet valves. The axial thermostatic valve (standard supply) is connected to the water inlet in the convector for flow regulation. The screw fitting is installed on the outlet pipe. Sealing must be used in all joints. Insert the O-ring between the thermostatic valve and heat exchanger. The flow direction is from bottom to top.

Use the supplied flexible stainless hoses (bellows hoses) for heat exchanger connection. Connect fittings as shown in Figure 14.

Stainless hoses are designed to withstand a maximum pressure of 1.0 MPa. Hoses must not be stretched, compressed, or otherwise deformed.

Media inlet: the thermostatic valve (standard supply) is connected to the water inlet.

Outlet (return pipe): the screw fitting is always connected to the return pipe.

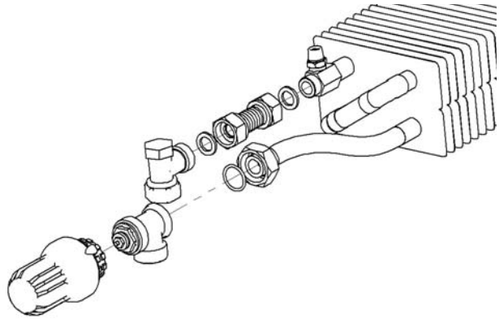


Figure 16: Connection of fittings to the heat exchanger.

7. UNIT DEAERATION

Deaerate the unit by opening the deaerating valve during the first use. The deaerating valve on free-standing convectors is located near the water inlet on the heat exchanger fitting.

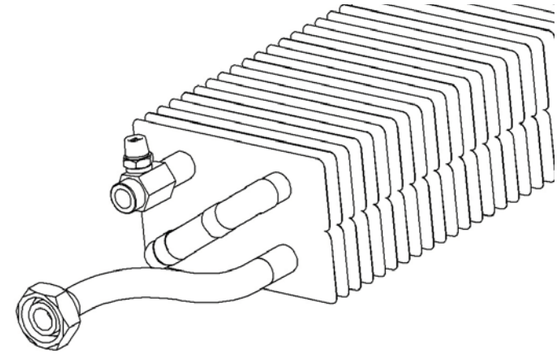


Figure 17: Deaerating valve

8. OPTIONALES ACCESSORIES

- Thermostatic valve - straight, ½"
- Thermostatic valve - angular, ½"
- Screw fitting - straight, ½"
- Screw fitting - angular, ½"
- Ball valve - straight, ½"
- Ivar thermostatic head
- Heimeier thermostatic head
- Bellows hose ½" - ½" 65 mm
- Bellows hose ½ - ½ 41 mm

1. UNIT DESCRIPTION

This is a heating element intended for installation in window sills, which uses the forced convection principle. Since the unit fully uses the laws of physics in the area of thermodynamics, it represents one of the most efficient means of interior heating.

BENEFITS OF CONVECTORS WITH FAN:

- high output,
- silent operation,
- light weight compared to heating units with similar output,
- low hot water consumption,
- very short response time,
- design,
- minimal operation and maintenance requirements,
- a great advantage of these convectors is the possibility of embedding them into window sills. This advantage is beneficial in places where we do not want to disturb the aesthetic appearance of the interior by wall mounted or free-standing convectors or other heating units and where sufficient heating output is required at the same time.

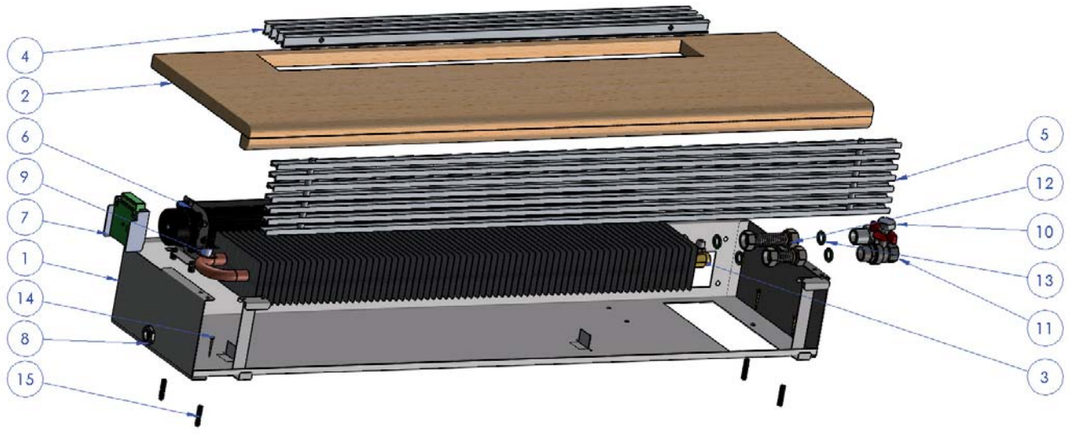
2. PACKAGE CONTENT

PACKAGE CONTENT	Position	Quantity
Convector		
Convector body	1	1
Window sill board	2	1
Exchanger	3	1
Inlet grille	4	1
Discharge grille	5	1
Fan	6	1
Control unit	7	1
Cable grommet	8	1
Temperature sensor	9	1
Accessories		
Ball valve - straight, ½"	11	1
Screw fitting - straight, ½"	10	1
Hose G1/2" – 65 mm	12	2
Sealing KLIGERSIL C4400	13	4
Dowel No. 6	15	4
Screw 3.2x30	14	4

Individual positions in the table correspond to Figure No. 1.

3. TECHNICAL PARAMETERS

Figure 1: **COMPONENTS OF CONVECTOR KP**



1. CONVECTOR BODY - stainless body for incorporation into window sill.
2. WINDOW SILL BOARD - top wooden board between window reveals.
3. EXCHANGER - copper pipes with pressed-on aluminum fins through which the heating water flows.
4. INLET GRILLE - anodized aluminum grille.
5. DISCHARGE GRILLE - anodized aluminum grille.
6. FAN - intended for forced convection.
7. EB CONTROL UNIT - fan motor control unit.
8. GROMMET - intended for 12VAC power supply cable.
9. TEMPERATURE SENSOR - exchanger temperature sensor.
10. SCREW FITTING - a valve that controls / adjusts heating water flow.
11. BALL VALVE - this valve shuts off the water supply to the convector.
12. HOSE – the bellows hose is a stainless hose intended for fitting connection to the convector exchanger.
13. SEALING - seals joints between valves, hoses, and exchangers (KLEGERSIL C4400). MINIB, s.r.o. recommends this sealing as an optimum sealing solution, as other materials (rubber, NBR, silicon) do not have sufficient tightness upon sufficient tightening and because they are deformed by tightening forces.
14. SCREW - intended for unit mounting and fixing.
15. SCREW - intended for unit mounting and fixing.

- usage: dry premises, window sills,
- maximum operating pressure: 1.0 MPa,
- maximum operating temperature: 95 °C,
- operating medium: water. The use of other media is prohibited. Water may not be mixed with other substances, such as non-freeze liquids!
- environment: interiors with temperatures between +5°C and +40°C,
- power supply: 12VAC from a suitable transformer for the given environment and fan types (DC) convector.

4. BEFORE INSTALLATION

- Select the right convector length from the catalogue.
- Select the correct convector position - see paragraph 4.2.
- Leave enough space for placement and installation - see paragraph 4.3.
- Consider using thermal insulation.

4.1 Suitable Convector Type

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

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

Make sure that you have enough space for convector installation - both from the wall (window) and in the floor (see paragraph 4.3).

The convector is intended for dry environment. A dry environment is an environment where the average annual relative humidity does not exceed 85%. In terms of convector selection, a dry environment is in general any environment where no precipitation of vapor occurs in the convector unit.

4.2 Convector Position

Consult the convector position with an expert or your designer. This MINIB convector type is intended mainly for embedding in window sills in order to avoid disturbance to the overall aesthetic appearance of the room.

The convector is installed with a heat exchanger in the room (Figure 2).

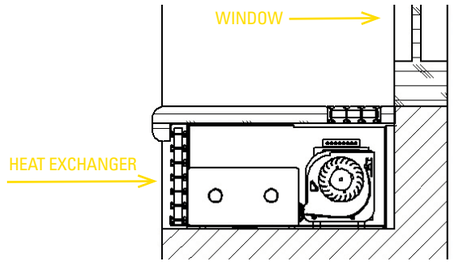


Figure 2: Convector with exchanger in the room as the main source of heat.

4.3 Installation Space

MINIB, s.r.o. recommends leaving sufficient space for convector installation. Minimum installation depth of 252 mm. 10 mm of space for thermal insulation is accounted for behind the convector - the thermal insulation is not standard supply. The height including cover panel is 135 mm - Figure 3.

The convector is usually connected at the back of the unit (see supplied accessories).

Connection to the bottom of the convector is less common.

The electrical equipment for the convector is located on the side opposite the water connection.

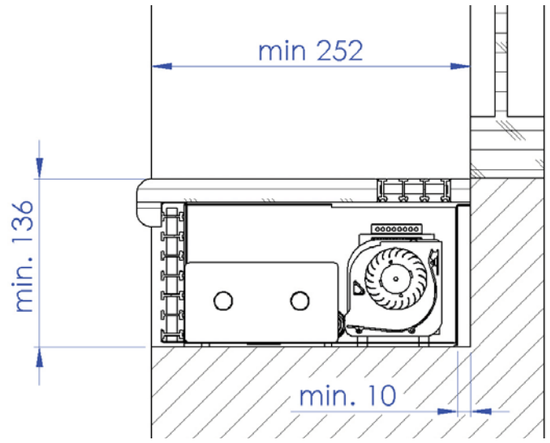


Figure 3

4.4 Installation Principles:

Place thermal insulation on the outside of the convector vat between its rear side and window.

Anti-vibration foil must be used with convectors with fans installed in hollow floors or spaces - this applies in particular to premises with increased demands regarding noise, e.g., bedrooms or offices.

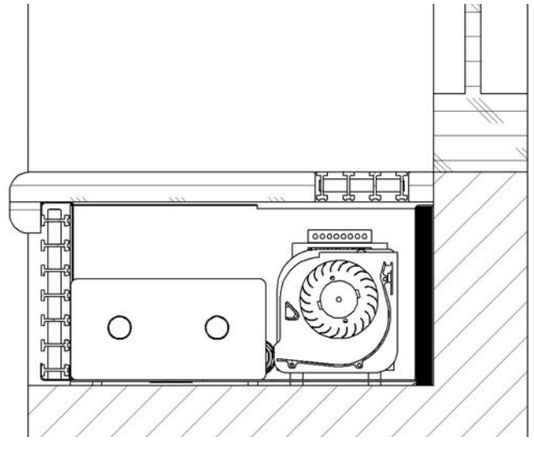


Figure 4: Thermal insulation for window sill convector with fan.

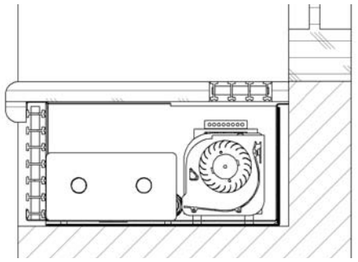


Figure 5: Anti-vibration foil for floor convector with fan. Its purpose is to attenuate structure-borne noise and fan vibration. It is usually applied along the entire outer surface of the convector.

5. INSTALLATION

The heat exchanger must be connected to the distribution pipes with the supplied stainless steel hoses.

A correctly installed convector is in a horizontal position and the top edges of the casing are not damaged or bent in order to ensure the correct position for window sill installation.

Make sure that the top cover panel can be removed freely in order to allow cleaning and deaeration of the convector.

The convector should be fixed with dowels and the supplied screws before enclosing to avoid later movement.

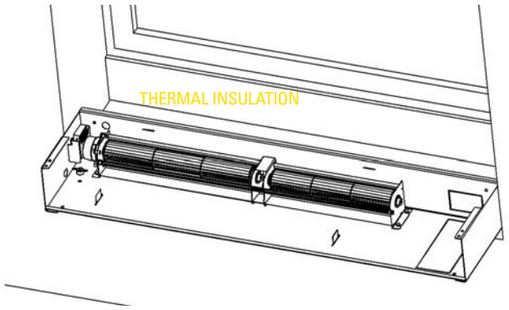


Figure 6: Installieren Sie die Wärmedämmung zwischen Convector und Rückwand.

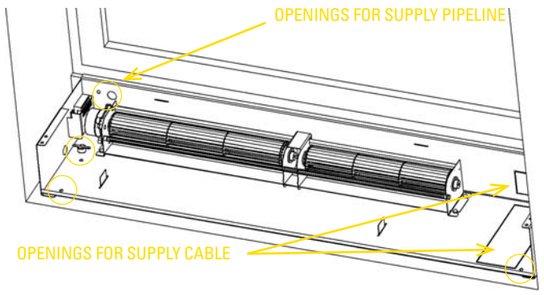


Figure 7: Remove the window sill panel and grilles. Remove the heat exchanger and fit the convector into position. Mark the convector mounting holes and the position of the pipes and power supply cable. The mounting holes can be located at the bottom or at the back of the convector.

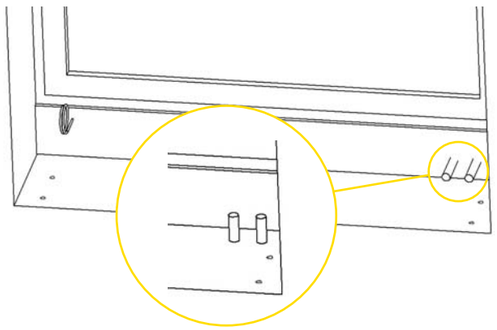


Figure 8: Drill marked holes for dowels. Install the power supply cable and pipes. Pipes can be brought from behind or underneath the convector.

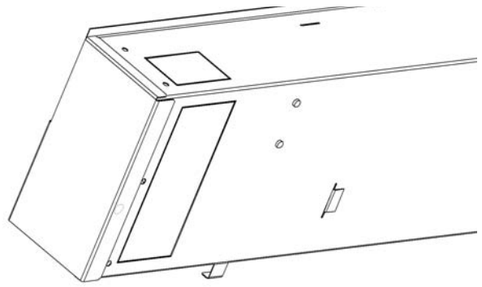


Figure 9: Decide on the position of the pipes and break off the perforated cover in the convector body for the chosen direction.

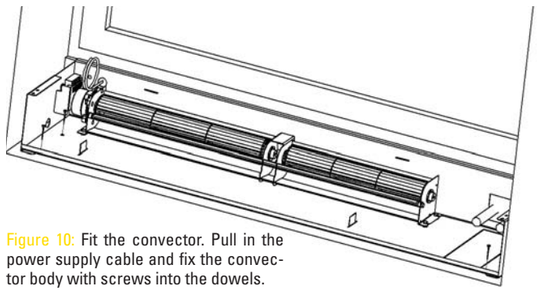


Figure 10: Fit the convector. Pull in the power supply cable and fix the convector body with screws into the dowels.

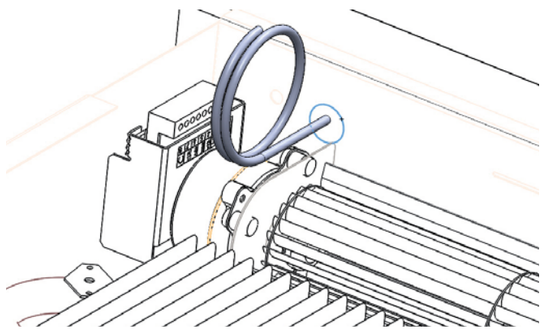


Figure 11: Pull the cable through the grommet and connect the control unit of the motors according to the "Controls" manual depending on the selected control type. Test the connection.

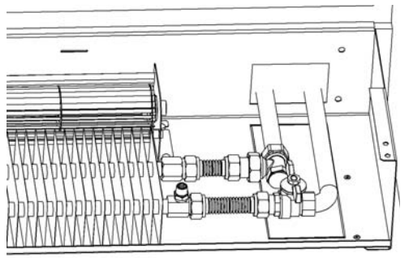


Figure 12: Install heat exchanger and connect the fittings - see paragraph 6. Test connection tightness.

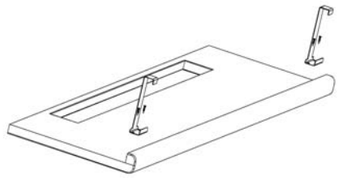


Figure 13: Install the window sill. Screw grille holders to the bottom of the window sill.

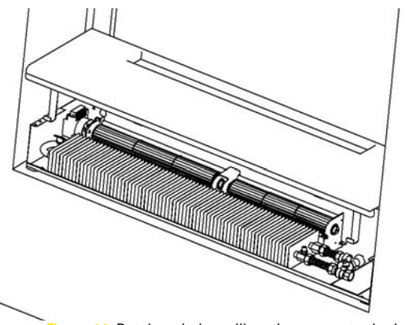


Figure 14: Put the window sill on the convector body

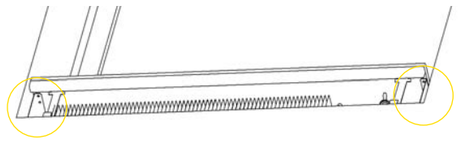


Figure 15: Tighten the panel from the bottom of the convector body. Joints between the wall and the window sill can be filled with a suitable sealant.

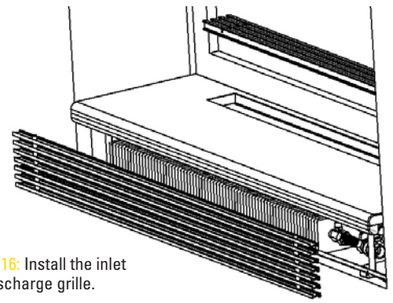


Figure 16: Install the inlet and discharge grille.

6. CONNECTION OF FITTINGS

Connect the fittings with the supplied standard accessories.

Connect individual inlet and outlet valves. The ball valve (standard supply) is connected to the water inlet for shutting off the water supply to the convector. The screw fitting is installed on the outlet pipe. Sealing must be used in all joints.

Use the supplied flexible stainless hoses for exchanger connection (bellows hose), which will later enable vertical exchanger tilting for the purpose of cleaning. Connect fittings according to Figure 17.

Stainless hoses are designed to withstand a maximum pressure of 1.0 MPa. Hoses must not be stretched, compressed, or otherwise deformed.

Media inlet: the ball valve (standard supply) is connected to the water inlet. It is also possible to connect the screw fitting.

Outlet (return pipe): the screw fitting is always connected to the return pipe.

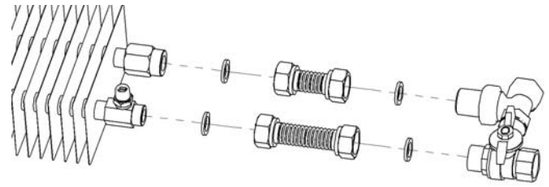


Figure 17: Connection of fittings to KP body.

7. UNIT DEAERATION

Deaerate the unit by opening the deaerating valve during the first use. The deaerating valve is located near the water inlet on the heat exchanger fitting.

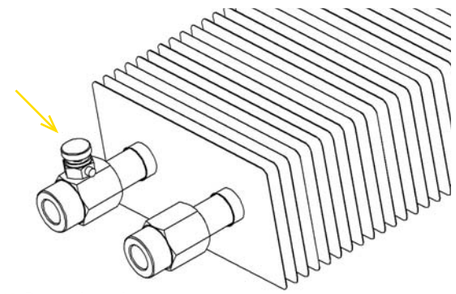


Figure 18: Deaerating valve

8. OPTIONALES ACCESSORIES

- Screw fitting- straight, ½"
- Screw fitting - angular, ½"
- Ball valve - straight, ½"
- Bellows hose ½" - ½" 65 mm
- Bellows hose ½ - ½ 41 mm

1. UNIT DESCRIPTION

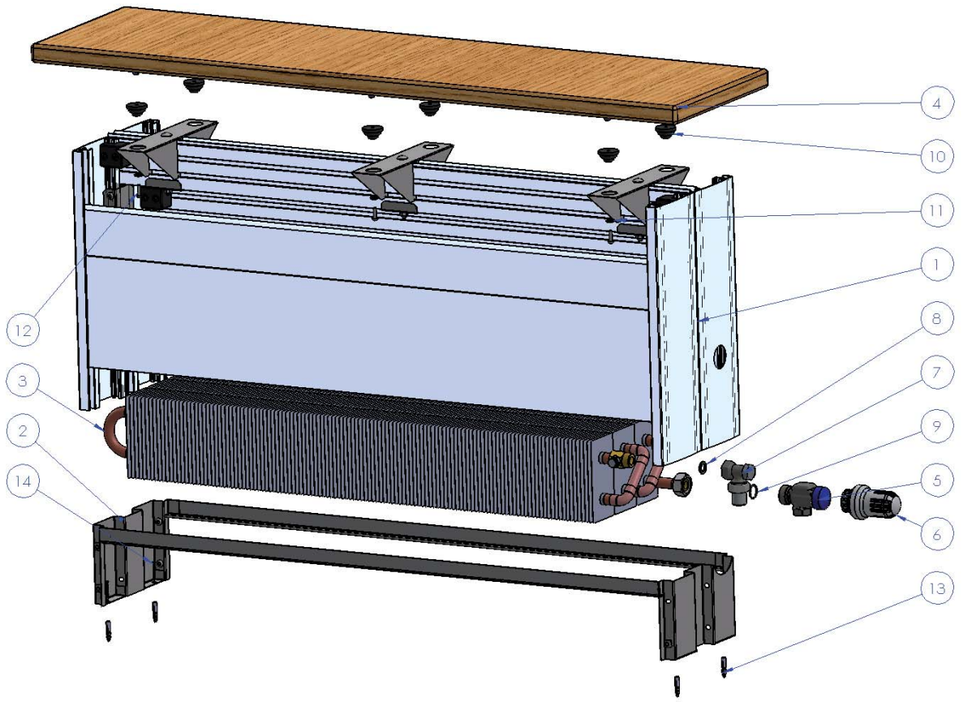
This is a free-standing heating unit that works on the convection principle. Since the unit fully uses the laws of physics in the area of thermodynamics, it represents one of the most efficient means of interior heating. The convector can be equipped with stone or a wooden panel.

BENEFITS OF FREE-STANDING CONVECTORS:

- high output,
- radiating component of thermal output in case of stone panel usage (lengths 1000 and 1250 mm only),
- silent operation,
- units without fan do not require any additional energy supply,
- low hot water consumption,
- short response time,
- design,
- minimal operation and maintenance requirements.

3. TECHNICAL PARAMETERS

Figure 1: **COMPONENTS OF CONVECTOR LP**



- usage: dry premises,
- maximum operating pressure: 1.0 MPa,
- maximum operating temperature: 95 °C,
- operating medium: water. The use of other media is prohibited.
- Water may not be mixed with other substances, such as non-freeze liquids!
- environment: interiors with temperatures between +5°C and +40°C,
- maximum panel loading: 150kg.

2. PACKAGE CONTENT

PACKAGE CONTENT	Position	LP 1000	LP 1250	LP 1500
Convector				
Convector body	1	1	1	1
Convector supporting frame	2	1	1	1
Exchanger	3	1	1	1
Top panel – GRANIT	4	1	1	-
Top panel – WOODEN (BEECH)	4	-	-	1
Accessories				
Heimeier AT 15 V_exakt valve	5	1	1	1
Thermostatic head	6	1	1	1
Screw fitting - angular, ½“	7	1	1	1
Sealing KLIGERSIL C4400	8	1	1	1
O-RING 18X2 NBR70	9	1	1	1
Large anti-vibration mounting	10	6	6	6
Base	11	6	6	6
Wood screw 3.9 x 30	12	-	-	6
Screw M6 x 18	12	6	6	-
Dowel No. 10	13	4	4	4
Wood screw 6x50	14	4	4	4
Fitting connection template	-	1	1	1

Individual positions in the table correspond to Figure No. 1.

1. EXTERNAL CONVECTOR BODY - aluminum body of the convector.
2. BEARING PIECE OF THE CONVECTOR - bearing piece for heat exchanger.
3. EXCHANGER - copper pipes with pressed-on aluminum fins through which the heating water flows.
4. TOP PANEL - design element protecting the convector outlet. (wood or granite).
5. THERMOSTATIC VALVE - axial thermostatic valve intended for flow regulation and head installation.
6. THERMOSTATIC HEAD - intended for manual regulation.
7. SCREW FITTING - a valve that controls / adjusts heating water flow.
8. SEALING - seals joints between valves, hoses, and exchangers (KLEGERSIL C4400). MINIB, s.r.o. recommends this sealing as an optimum sealing solution, as other materials (rubber, NBR, silicon) do not have sufficient tightness upon sufficient tightening and because they are deformed by tightening forces.
9. O-RING - sealing between heat exchanger and thermostatic valve.
10. LARGE ANTI-VIBRATION MOUNTING - intended for panel placement on the convector body.
11. WASHER - washers between screw heads and anti-vibration mounting.
12. SCREW or WOOD SCREW - intended for panel mounting to the convector body (wood screw for wooden panel / screw for granite panel).
13. DOWEL - for screws fixing in the floor.
14. WOOD SCREW - for convector fixing to the floor.

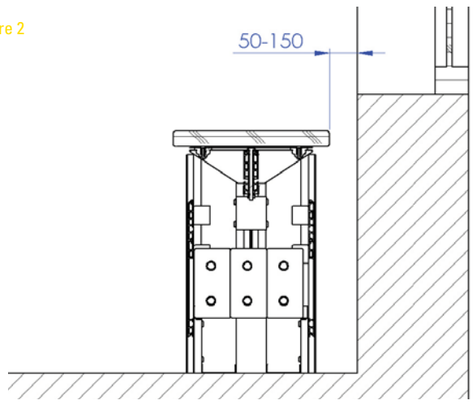
4. BEFORE INSTALLATION

- Select correct convector position - see paragraph 4.1.

4.1 Convector Position

The free-standing LP MINIB convector is primarily intended for floor installation. Place the convector so that it does not disturb the overall aesthetic appearance of the room. MINIB, s.r.o. recommends leaving 50-150 mm between the convector and the wall - Figure 2. Never cover the bottom or top convector outlets - this would result in flow reduction and a considerable decrease of the convector's output.

Figure 2



5. INSTALLATION

Free-standing convectors LP are intended for installation in the floor. Before you start, please read the following instructions.

For installation in the floor, plan the exact positions of the heating water pipes. Use the template supplied with the convector LP.

Mount the convector LP with the mounting accessories supplied by MINIB, s.r.o.

A correctly installed convector is horizontally supported along the entire length of the leg.

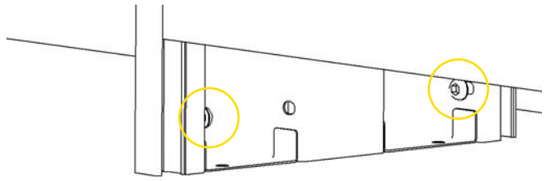


Figure 3: Loosen screws on both sides of the convector body and remove the top cover. (do not completely remove the screws!!!)

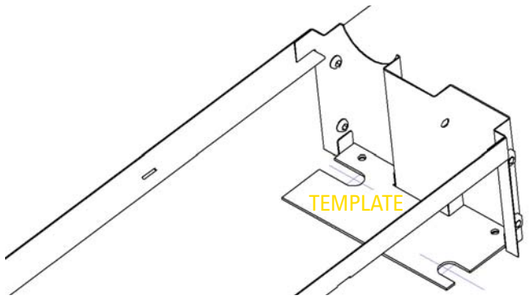


Figure 4: Remove the convector body. Adjust the convector bearing frame to the required position. Place the template on the floor at the place of heating water supply / removal as shown in the picture. Mark holes for convector fixing in the floor.

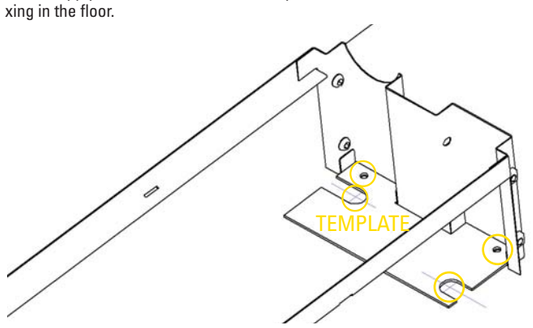


Figure 5: Mark the heating water pipe position, return pipe position, and convector mounting holes on the floor. Connect the supply pipe to the bottom outlet of the heat exchanger. This is where the thermostatic valve is installed. The screw fitting is installed on the outlet - top pipe.

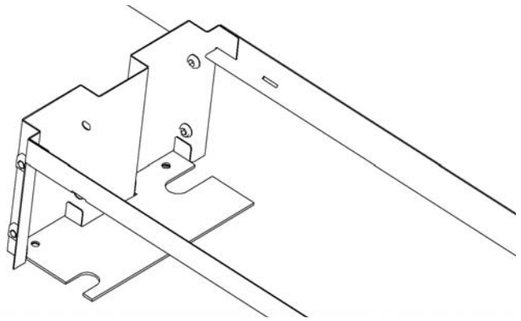


Figure 6: Use the template to mark the convector fixing holes - also on the opposite side.

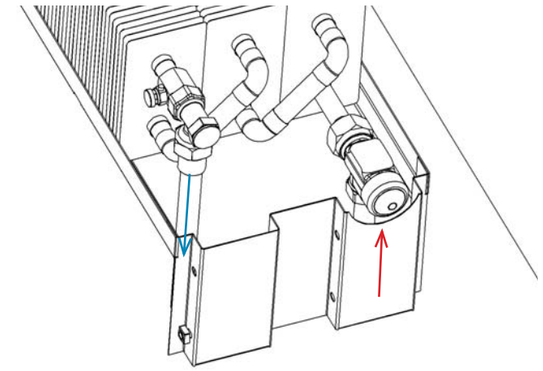


Figure 9: Install heat exchanger and connect the fittings - see paragraph 6. Test fitting connection tightness.

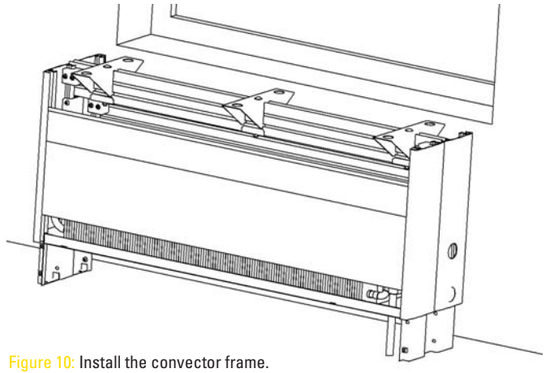


Figure 10: Install the convector frame.

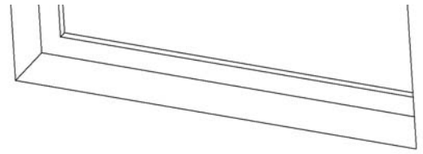


Figure 7: Install inlet and return pipeline to the floor, drill convector mounting holes in the floor.

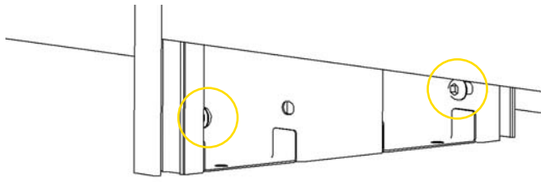
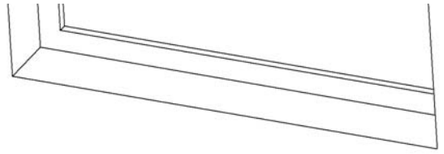


Figure 11: Tighten the screws on convector sides .



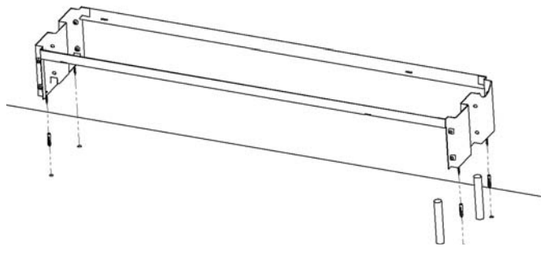


Figure 8: Insert the dowels and mount the convector bearing frame. Fix the convector by screws into the previously drilled holes.

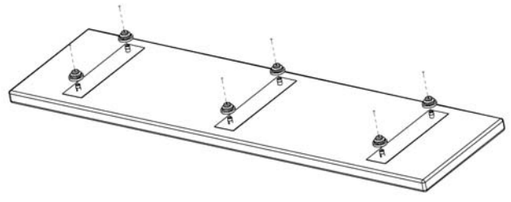


Figure 12: Place the rubber anti-vibration rings on the panel.

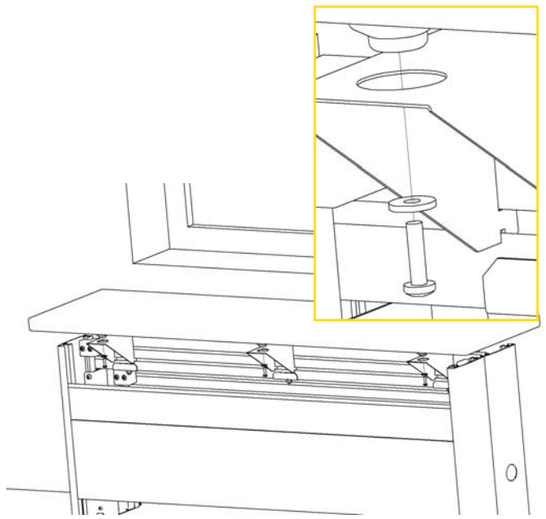


Figure 13: Fix the panel to the convector body.

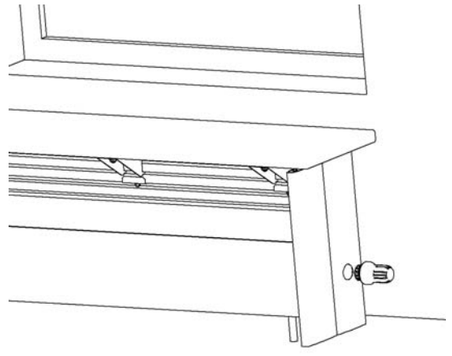


Figure 14: Connect the thermostatic head.

Media inlet: the thermostatic valve (standard scope).

Outlet (return pipe): the screw fitting is always connected to the return pipe.

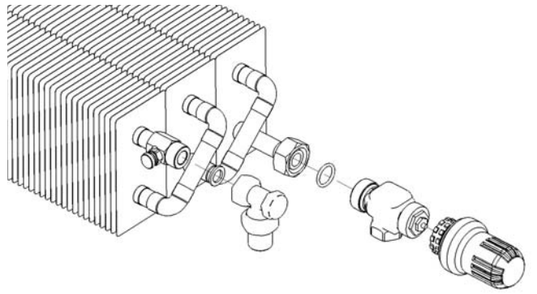


Figure 15: Connection of fittings to KP body.

7. UNIT DEAERATION

Deaerate the unit by opening the deaerating valve during the first use. The deaerating valve on free-standing convectors is located near the water inlet on the heat exchanger fitting.

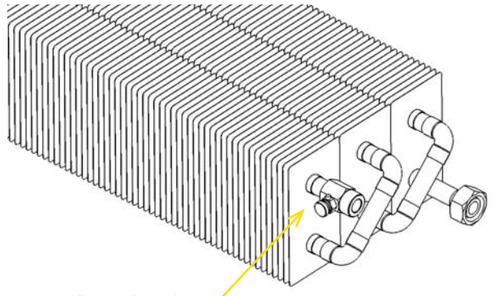


Figure 16: Deaerating valve

6. CONNECTION OF FITTINGS

Connect the fittings with the supplied standard accessories.

Connect the individual inlet and outlet valves. The axial thermostatic valve (standard supply) is connected to the water inlet into the convector for flow regulation. The screw fitting is installed on the outlet pipe. Sealing must be used in all joints. Insert the O-ring between the thermostatic valve and the heat exchanger. The flow direction is from bottom to top. Connect the fittings as shown in Figure 15.

8. OPTIONALES ACCESSORIES

- Screw Fitting - angular, ½"
- Heimeier Thermostatic head
- Heimeier Thermostatic head
- Bellows hose ½" - ½" 65 mm
- Bellows hose ½ - ½ 41 mm
- Granite panel
- Wooden panel (beech – natural varnish)

1. UNIT DESCRIPTION

This is a free-standing, all-wooden heating unit that works on the convection principle. Since the unit fully uses the laws of physics in the area of thermodynamics, it represents one of the most efficient means of interior heating.

BENEFITS OF FREE-STANDING CONVECTORS:

- high output,
- silent operation,
- no need for other energies except water,
- low hot water consumption,
- short response time,
- design,
- minimal operation and maintenance requirements.

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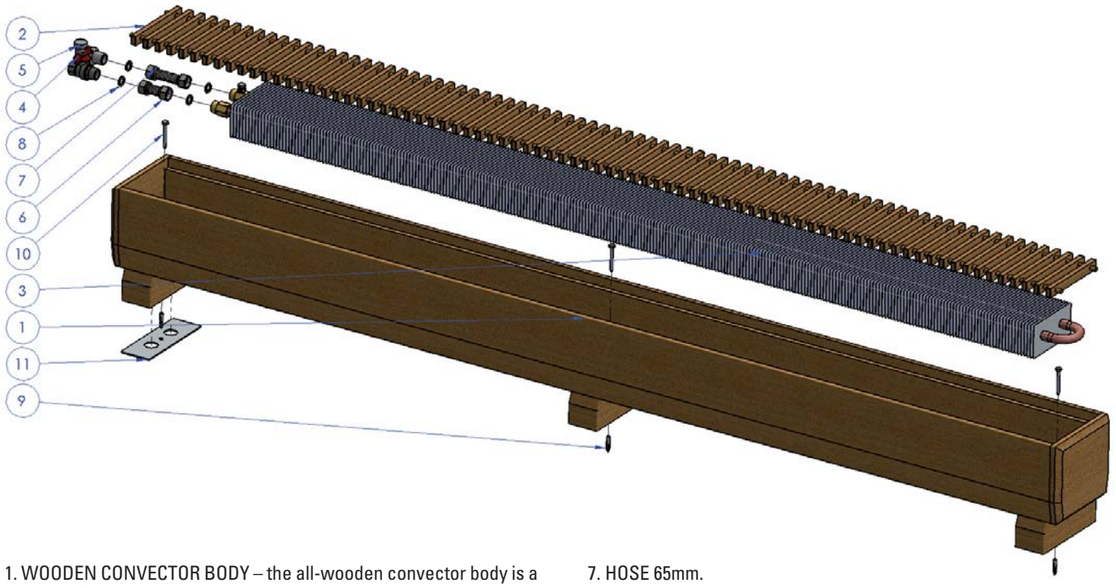
3. TECHNICAL PARAMETERS

Figure 1: **COMPONENTS OF CONVECTOR LP**



1. WOODEN CONVECTOR BODY – the all-wooden convector body is a design feature and it covers the heat exchanger.
2. CONVECTOR GRILLE - design element protecting the convector outlet. Must not be covered!!!
3. EXCHANGER - copper pipes with pressed-on aluminum fins through which the heating water flows.
4. STRAIGHT BALL VALVE - enables water supply shut off.
5. SCREW FITTING - a valve that controls / adjusts heating water flow.
6. HOSE 41mm – the bellows hose is a stainless hose intended for fitting the connection to the convector exchanger.
7. HOSE 65mm.
8. SEALING - seals joints between valves, hoses, and exchangers (KLEGERSIL C4400). MINIB, s.r.o. recommends this sealing as an optimum sealing solution, as other materials (rubber, NBR, silicon) do not have sufficient tightness upon sufficient tightening and because they are deformed by tightening forces.
9. DOWEL - for screw fixing.
10. WOOD SCREW - for convector fixing to the floor.
11. TEMPLATE - for marking the positions of the inlet and return pipes and for marking the convector fixing holes on the floor.

2. PACKAGE CONTENT

PACKAGE CONTENT	Position	Quantity
Convector		
All-wooden body	1	1
All-wooden grille	2	1
Exchanger	3	1
Accessories		
Ball valve - straight, ½“	4	1
Screw fitting - angular, ½“	5	1
Hose G1/2“ – 41 mm	6	1
Hose G1/2“ – 65 mm	7	1
Sealing KLIGERSIL C4400	8	4
Dowel No. 10 *)	9	2-3
Wood screw 6x50 *)	10	2-3
Template DP	11	1

*) 3 pcs. for lengths of 1500 and 2000mm

Individual positions in the table correspond to Figure No. 1.

- usage: dry premises,
- maximum operating pressure: 1.0 MPa,
- maximum operating temperature: 95 °C,
- operating medium: water. The use of other media is prohibited. Water may not be mixed with other substances, such as non-freeze liquids!
- environment: interiors with temperatures between +5°C and +40°C.

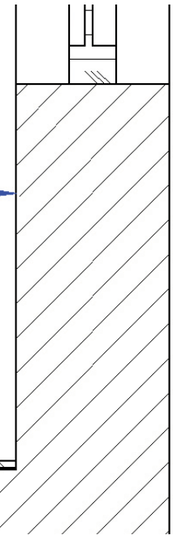
4. BEFORE INSTALLATION

- Select the correct convector position - see paragraph 4.1.

4.1 Convector Position

The free-standing MINIB DP convector is intended for floor installation. Place the convector so that it does not disturb the overall aesthetic appearance of the room. MINIB, s.r.o. recommends leaving 50-150 mm between the convector and the wall - Figure 2. Never cover the top grille - this would result in flow reduction and a considerable decrease in the convector's output.

Figure 2



5. INSTALLATION

Free-standing DP convectors are intended for floor installation. Before you start, please read the following instructions.

For floor installation, plan the exact positions of the heating water pipes. The convector body (wooden) should be used for the exact position determination.

Mount the free-standing convector with the mounting accessories supplied by MINIB, s.r.o.

The heat exchanger must be connected to the distribution pipes with the supplied stainless steel hoses.

A correctly installed convector is horizontally supported along its entire length.

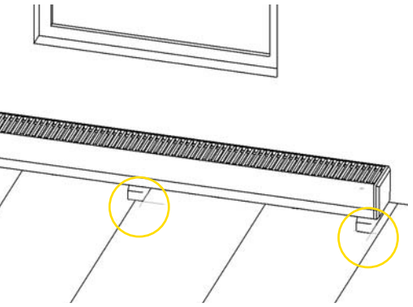


Figure 3: Adjust the convector to the required position. Mark the position of the DP convector body legs.

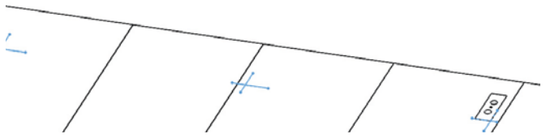


Figure 4: Mark the inlet pipe, return pipe, and fixing screw positions using the template. **For pipe installation, use either the right or left leg of the DP convector - never the central one.**

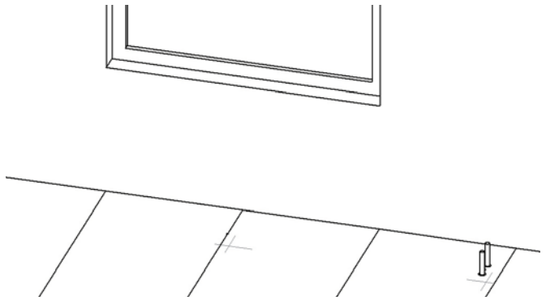


Figure 5: Drill holes for convector body mounting and prepare the inlet and return pipes in the floor.

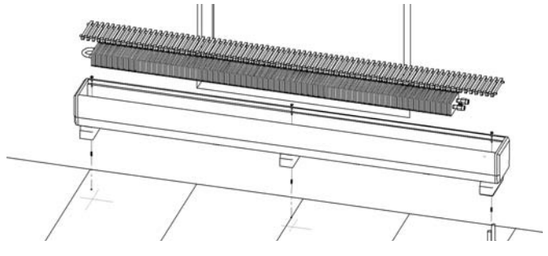


Figure 6: Insert dowels in holes. Remove grille and convector exchanger. Fit the convector body on the pipes and dowels. Screw the convector body to the floor.

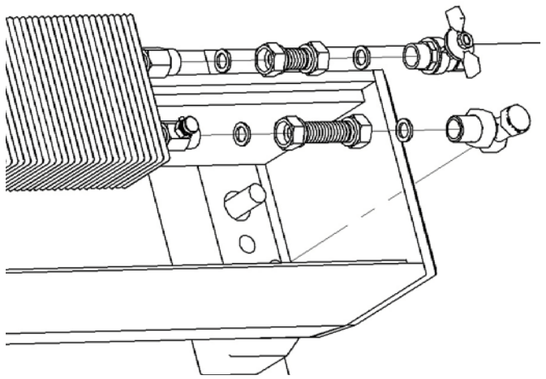


Figure 7: Install the heat exchanger and connect the fittings - see paragraph 6. Check installation tightness.

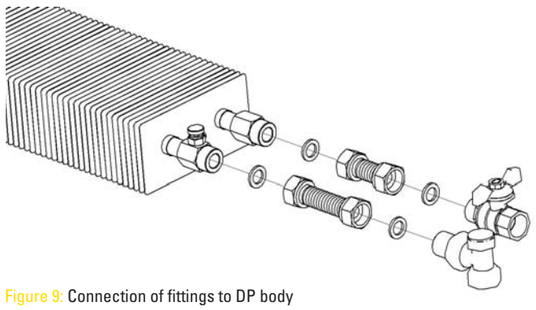


Figure 9: Connection of fittings to DP body

7. UNIT DEAERATION

Deaerate the unit by deaerating the valve opening during first use. In free-standing convectors, the deaerating valve is located by the water inlet on the heat exchanger fitting.

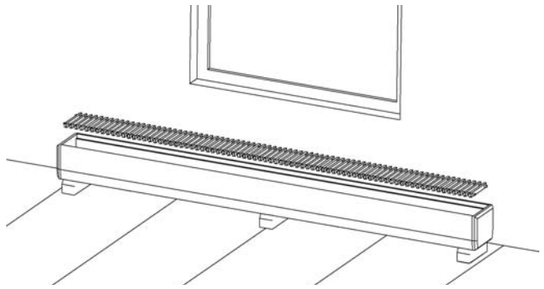


Figure 8: Insert the grille.

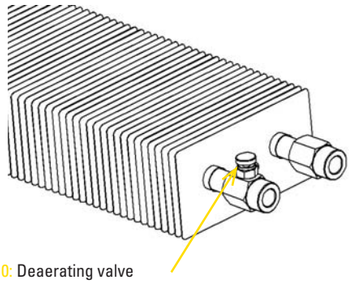


Figure 10: Deaerating valve

6. CONNECTION OF FITTINGS

Connect the fittings with the supplied standard accessories.

Connect individual inlet and outlet valves. The ball valve (standard supply) is connected to the water inlet for shutting off the water supply. The screw fitting is installed on the outlet pipe. Sealing must be used in all joints. Use the supplied flexible stainless hoses (bellows hoses) for heat exchanger connection. Connect fittings as shown in Figure 9.

Stainless hoses are designed for the maximum pressure of 1.0 MPa. Hoses must not be stretched, compressed, or otherwise deformed.

Media inlet: the ball valve (standard supply) is connected to the water inlet.

Outlet (return pipe): the screw fitting is always connected to the return pipe.

8. OPTIONALES ACCESSORIES

- Thermostatic valve - angular, ½"
- Screw fitting - angular, ½"
- Ball valve - straight, ½"
- Ivar thermostatic head
- Heimeier thermostatic head
- Bellows hose ½" - ½" 65 mm
- Bellows hose ½ - ½ 41 mm

SCREW FITTINGS

Angular

ARCO 1/2"

ARCO 3/8"

Straight

ARCO 1/2"

ARCO 3/8"

THERMOSTATIC VALVES

Angular

IVAR 1/2"

IVAR 3/8"

Straight

IVAR 1/2"

IVAR 3/8"

IVAR - M-PR-01

MULTILUX 1/2" HEIMEIER

Thermostatic and control fitting - straight, ½"

IVAR - M-RO-02

Thermostatic and control fitting - angular, ½"

THERMOSTATIC HEADS

Thermostatic valve, set

MINIB

IVAR T1000

HEIMEIER DX CHROME

Multilux 4 set chrome

THERMOSTATIC HEADS WITH DETACHABLE SENSOR

Danfoss

Remote sensor and 2m capillary RAE-K-5036

Heimaier

K-white with capillary and detachable sensor

BALL VALVES

Straight

ARCO 1/2"

MINIB 3/8"

HOSES

Flexible hose WS110 65 mm ½"

Flexible hose WS110 41 mm ½"

Flexible hose WS110 65 mm 3/8"

Flexible hose WS110 41 mm 3/8"

SEALING

Klingersil C4400 1/2" and 3/8"

ELECTRONIC ACCESSORIES

Transformers for wet environment

TT240-E1 (240VA) 255X71X205

TT300-E1 (300VA) 255X71X205

Transformers for dry environment

TT300 (300VA) 260X70X210

TT100 (100VA) 175X70X145mm

TT240 (240VA) 220X70X178

Elektrothermische Köpfe

12V 2W NO

Thermostate

Potentiometer MINIB EB-A

Thermostat ABB EB-A

Thermostat TH0482

Thermostat TH0108

Thermostat CH110

Thermostat CH150

Thermostat EBERLE 524

Umwandler

230V oder 24V/12V ADA-EB

Bedientafel

Bedientafel E1

VERSTEIFUNG

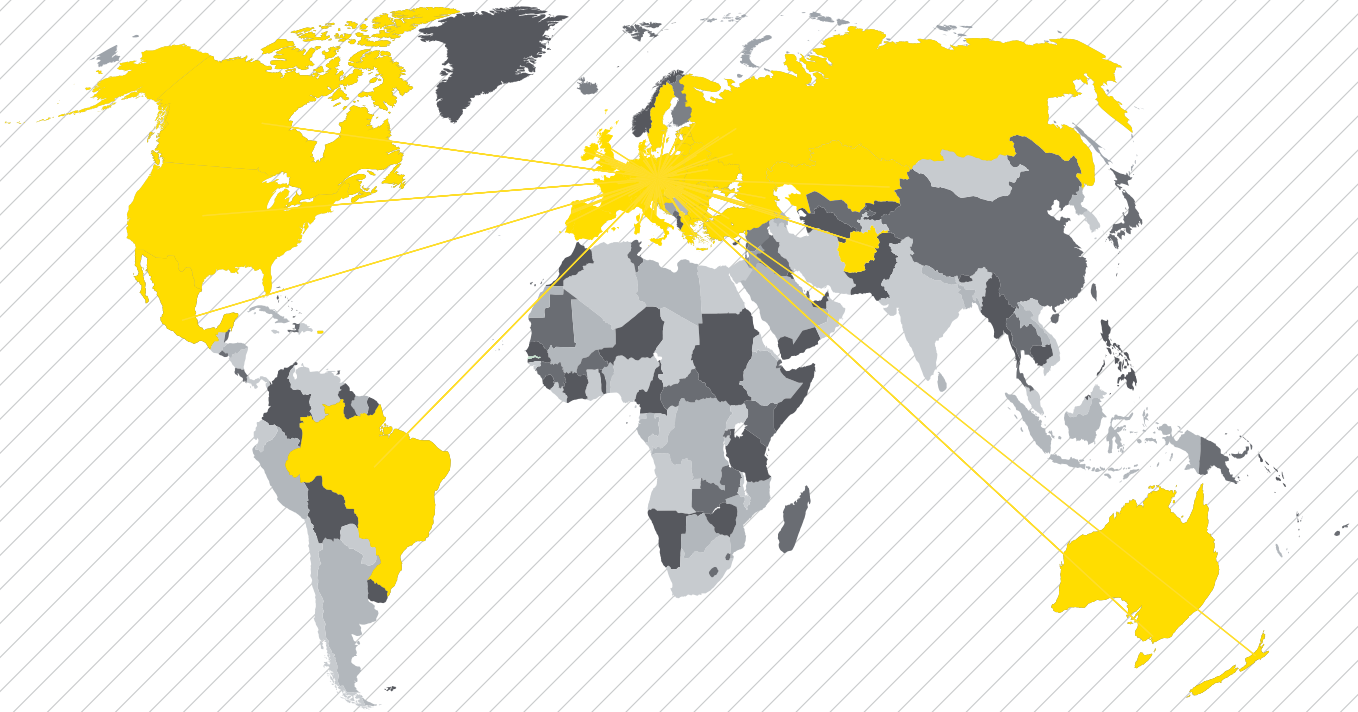
Versteifung von Convectoren für Hohlraumböden

ANTIVIBRATIONSFOLIE

Antivibrationsfolie St. 2 mm

MINIB®

more than just heat



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