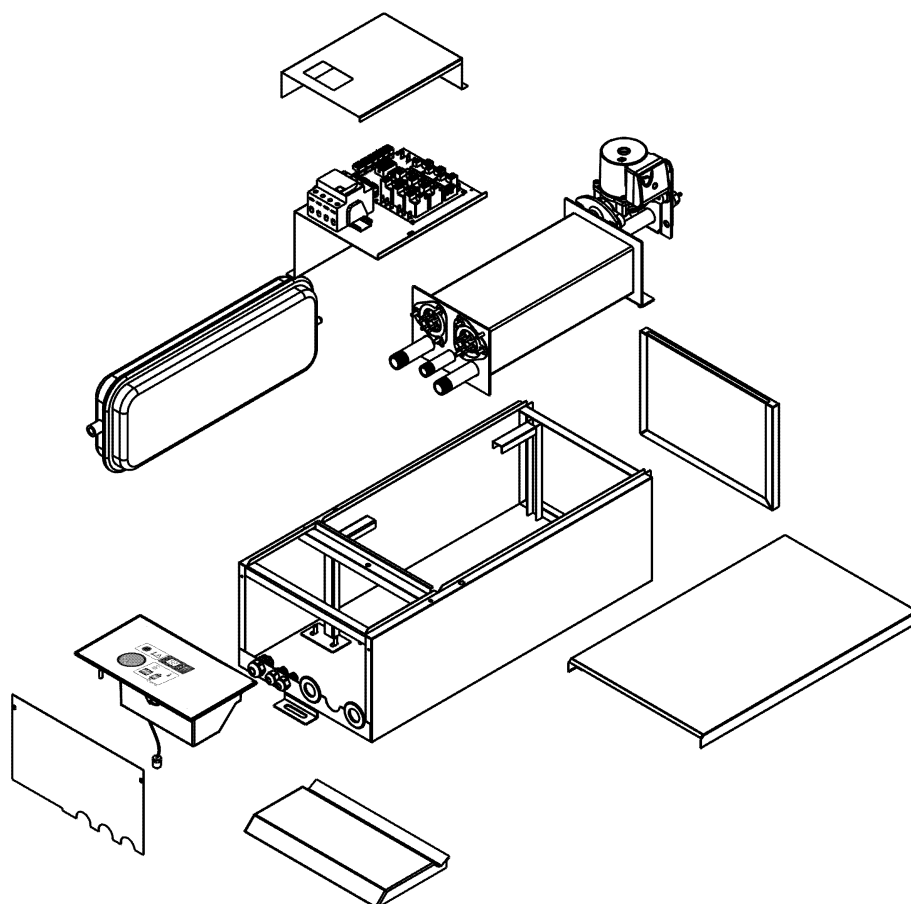


ELECTRIC BOILERS FOR CENTRAL HEATING

TermoMini



Installation manual

User guide

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General

Read this document carefully before carrying out any installation, adjustment or service and follow the instructions

- **Keep these instructions close to the boiler!**
- **The boiler must not be modified, changed or rebuilt.**
- **The correct settings are important for economical heating.**
- **The type and serial number of the boiler must be quoted whenever you contact manufacturer or service, see the identification plate.**

General safety instructions!!

- Children shall not play with the appliance.
- Cleaning and user maintenance shall not be made by children without supervision.
- Children should be supervised to ensure that they do not play with the appliance.
- Boiler is not intended for outdoor use.

Technical safety instructions!!

- Keep the water pressure between recommended limits – see chapter 3.4.3, page 7.
- Do not install boiler close the heat source (for instance, fireplace, wood stove etc...).
- Incompetent repairs can cause serious danger to users.
- Defective parts may be replaced only by the original or approved by the manufacturer,
- Switch off main power by MCB before opening the boiler.
- Boiler has built-in frost protection. When the boiler is not in use, leave the main power active that protection stay active.

1. Introduction

Thank you for the confidence you have shown to us by purchasing our central heating boiler. In order to use the boiler to the utmost correctly and safely, and above all economically, read thoroughly these instructions before continuing with installation.

A competent person, who is responsible for adhering to the existing regulations, rules and guidelines, must install the appliances.

1.1. Applicable documents

The following additional documents are provided with the appliance:

For the owner of the system:
Instructions for use
Warranty card

For the qualified technician:
Instructions for installation
Electrical drawing for the appliance

1.2. Retention of documents

Please pass on this manual to the owner of the system. The owner should retain the manuals so that they are available when required.

1.3. Introduction

TermoMini boilers are economical central heating boilers that can be used as an independent or additional source of heat.

TermoMini boilers offer you a possibility to reduce the power of the heater if necessary. The power can be easily reduced through the control panel. This way it is possible to adapt the boiler to the utmost to circumstances on the spot.

The boiler operates on a principle of rapid heating smaller water quantities, so that exploiting energy is already 100%.

TermoMini boilers are used for radiator and floor heating. Temperature operation area is from 20°C to 90°C. TermoMini boilers are designed in such way that in apartment-contained central heating they can fit well with your furniture.

1.4. Frost protection

The software in control panel provides boiler frost protection. When frost protection is controlled for entire central heating system by room thermostat, please consult room thermostat manuals for more details.

2. Boiler specifications

2.1. Dimensions in mm

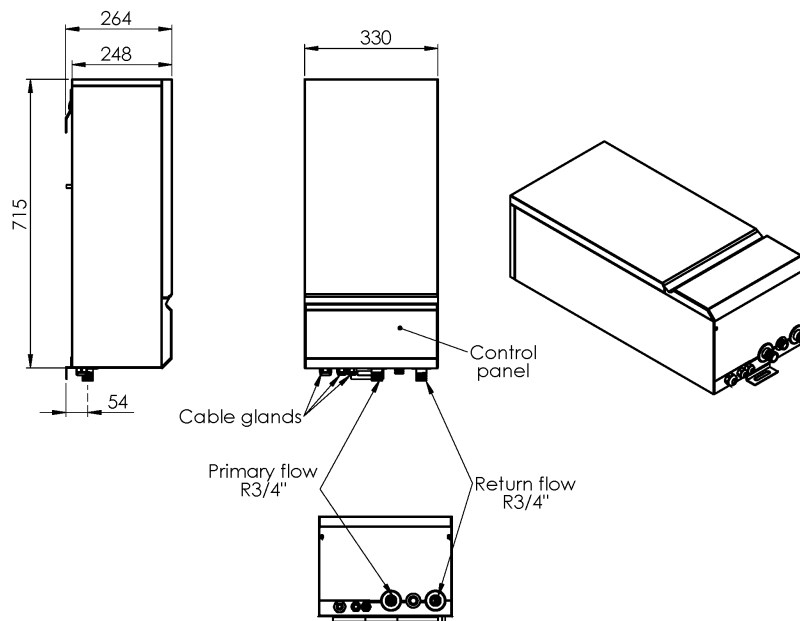


Figure 1 - TermoMini dimensions and flow and return positions

Table 1. Expansion vessel characteristics

Volume of Expansion Vessel [L]	6
Maximum Expansion Vessel Pressure [MPa (bar)]	0,3 (3)
Filling Pressure [MPa (bar)]	0,10 (1,0)
Maximum Pressure In the Heating System [MPa (bar)]	0,3 (3)
Height Of the Central Heating System [m]	4
Effective Capacity Of Expansion Vessel [L]	3,0
Adsorption Capacity [%]	50
Maximum Amount of Water in the System [L]	86

Table 2. Power supply characteristics

Power [kW]	230 V~N				400V 3N ~ 50/60 Hz	
	3	4,5	6	9	9	12
Nominal current [A]	13	19,6	26,1	39,2	13,1	17,5
Fuse current [A]	16	25	32	50	16	25
Rated short-circuit breaking capacity I_{cn} (EN 60898) [kA]	10	10	10	10	10	10
Rated short-circuit breaking capacity I_{cn} (IEC 947-2) [kA]	15	15	15	15	15	15
Min. conductor's cross-section [mm²]	3x2,5	3X4	3X6	3X10	5X2,5	5x4
Fuse type	B16	B25	B32	B50	B16	B25
RCCB switch type [A]	25/0,03	25/0,03	40/0,03	63/0,03	25/0,03	25/0,03

Figure 2. Expansion vessel and power supply characteristics

2.2. Elements of TermoMini

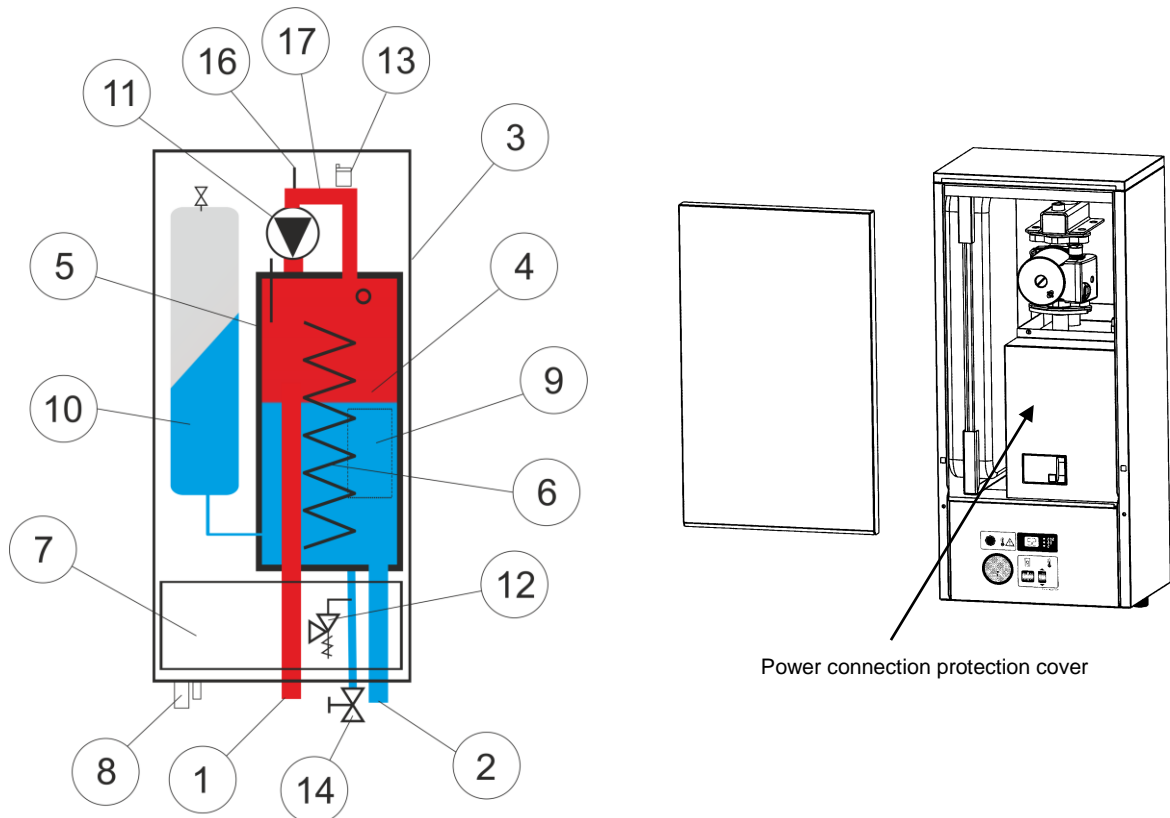


Figure 3 - TermoMini elements

Table 3. List of TermoMini elements

1. Primary flow	10. Expansion vessel
2. Return flow	11. Circulation pump
3. External boiler shell	12. Pressure relief valve (0,3 MPa / 3 bar)
4. Boiler	13. Automatic air vent
5. Heat insulation	14. Charge and discharge valve
6. Electrical heaters	16. Air-indicator
7. Control panel	17. Manifold
8. Inducers for el. connections	
9. RCCB switch and relays	

3. General requirements

3.1. Contents included in delivery

TermoMini boilers are delivered pre-mounted in a package unit. Make sure that all parts have been delivered intact. For the exact list of parts, see the figure and table below. If parts are damaged or missing, please consult our local sales office.

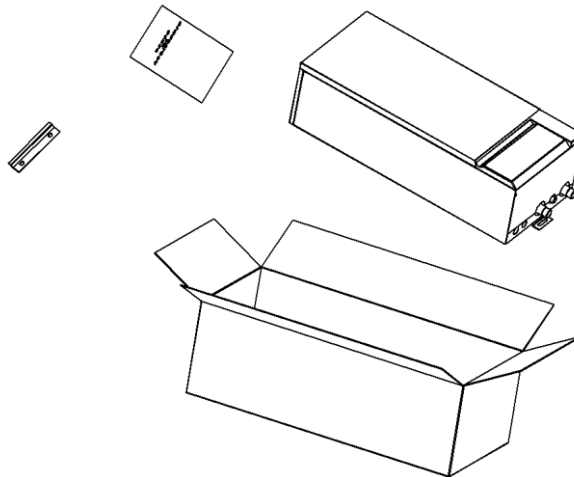


Figure 4 - Contents included with delivery

Table 4. Table of contents included with delivery

Item	Quantity	Description
1	1	TermoMini boiler
2	1	Instructions for installation and use Electrical drawing Warranty card
3	1	Hanging bracket

3.2. Preliminary remarks

When connecting the appliance to the fixing wiring, the means for disconnection (MCB) must be incorporated in fixing wiring in accordance with the local wiring rules.

If the boiler is out of function during wintertime, there is a danger of installation freeze. In this case, boiler should be filled with antifreeze liquid for central heating. If this is not possible water should be drained out of the system with the help of charge and discharge valve.

Recommended pressure of central heating installation is between 0,12 MPa (1,2 bar) and 0,15 MPa (1,5 bar), maximum pressure is 0,25 MPa (2,5 bar).

3.3. Installation site

3.3.1. Position of a boiler

The location must provide adequate space for servicing and air circulation around the boiler. The boiler can be installed in any room, although particular attention is drawn to the local regulations in respect to the installation of a boiler in a room containing a bath or a shower. The boiler must be mounted on a flat, vertical wall, which must be sufficiently robust to bear the weight of the boiler. The boiler can be installed on a combustible wall, subject to the requirements of the Local Authorities and Building Regulations.

Following figure shows the recommended minimal distances.

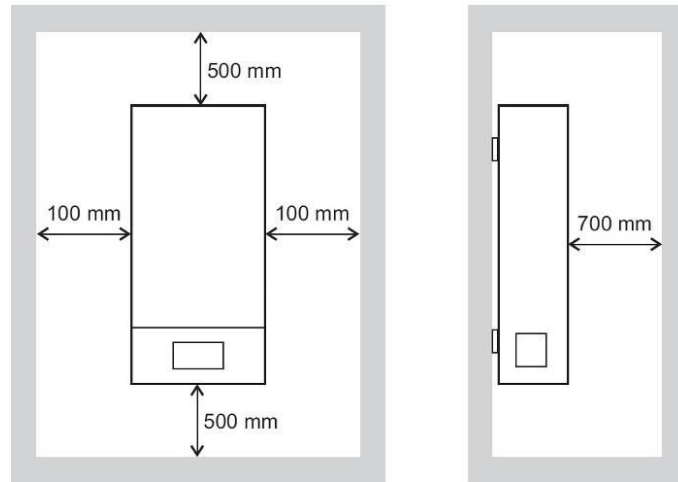


Figure 5 - Minimal distances for installing the boiler

It is possible to reduce recommended minimal distances, but the following requirements must be met:

Power supply connection, located at bottom of boiler must be accessible

Bottom part of boiler must be accessible to allow change of heater

Control panel on bottom side of boiler must be accessible

Basic air circulation must be maintained.

3.3.2. Power supply

The boiler is rated as a high-power appliance and fixed wiring must be used. Please observe chapter [2.2.](#) about fuse and conductor requirements. When connecting the appliance to the fixing wiring the means for disconnection (MCB) must be incorporated in fixed wiring in accordance with the local wiring rules.

RCCB (RCD) switch 0,03A sensitivity is fitted inside a boiler.

Note:

In some cases, additional measures must be taken, subject to the requirements of the Local Authorities.

3.4. System requirements

3.4.1. Pipe work

Pipe work that is not a forming part of the useful heating surface should be insulated to help prevent heat loss and possible freezing, particularly where pipes are run through roof spaces and ventilated under floor spaces. Draining taps must be located in accessible positions, which permit the draining of the whole system including the boiler and the hot water system.

3.4.2. Cleansing and flushing the system

Flushing of system is highly recommended this will prevent damage to the appliance made by dirt from the system.

3.4.3. Filling and preparing heating system

The system can be filled using the built-in filling valve or via a separate filling point fitted at a convenient position on the heating circuit. The connection must be removed when filling is completed. Where local Water Authority regulation does not allow temporary connection, a sealed system filler pump with break tank must be used. The heating system will not be filled automatically from the domestic hot water side.

Note:

For the heating system to operate properly the indicator of manometer must be between 1,2 and 1,5 bar when system is cold. Maximum pressure is 2,5 bar and minimum 0,8 bar. It is very important to use soft water or fluids for central heating.

Do not fill the system with water from private source.

3.4.4. Pressure relief valve

A pressure relief valve is provided with the boiler. This safety device is required on all sealed heating systems and is preset at 0,3 MPa (3 bar). The pressure relief valve must not be used for draining purposes.

3.4.5. Pressure gauge

This is factory fitted to the TERMO-Mini boilers and indicates the primary circuit pressure to facilitate filling and testing.

3.4.6. Expansion vessel

TermoMini boiler incorporate an expansion vessel. Refer to chapter **2.2** for more information about incorporated expansion vessel.

If the nominal capacity of the built-in expansion vessel is not sufficient for the heating system (for instance in the case of modernization of old open systems) an additional expansion vessel can be installed externally to the boiler. It should be fitted in the return pipe as close as possible to the boiler.

3.4.7. Circulating pump

The circulation pump is included in TermoMini boilers. The following figure represents pump characteristics - see chapter 5.3.

3.4.8. Air in boiler

Boiler is fitted with the air detector that will stop boiler in the case of air presence.

4. Boiler installation sequence

4.1. Transporting the appliance

Important:

The following lift operation exceeds the recommended weight for a one-man lift.

General recommendations when handling

Clear the route before attempting the lift. Safe lifting techniques are used – keep back straight – bend using legs. Keep load as close to body as possible. Do not twist – reposition your feet. If two persons are performing the lift, ensure coordinated movements during lift. Avoid upper body/top heavy bending - do not lean forward/sideways. It is recommended to wear suitable cut resistant gloves with good grip to protect against sharp edges and ensure good grip. Always use assistance if required.

Positioning of Appliance for Final Installation

Fit bracket securely onto wall before lifting appliance into position. Ensure that stable balance is achieved and lift upwards to drop into place onto bracket. Ensure coordinated movements during a two-person lift to ensure equal spread of weight of load it is recommended to wear suitable cut resistant gloves with good grip to protect against sharp edges and ensure good grip when handling appliance.

4.2. Select position for boiler

Refer to chapter 3.3.1. for information regarding the appliance position. In general, the boiler must be positioned in such manner that:

- There is enough space around the boiler for service and maintenance
- There is no chance for boiler to be submerged into water
- There is no chance for boiler to be poured with significant amount of water
- Normal level of air circulation can be maintained
- All necessary pipe work can be connected

4.3. Fitting the boiler hanging bracket

Fix the hanging bracket (2) to the wall (1) using the plugs and M8 or M10 screws. Lift up boiler (3) above hanging bracket (2), gently lean it to the wall (1) and slide it down to the hanging bracket (2).

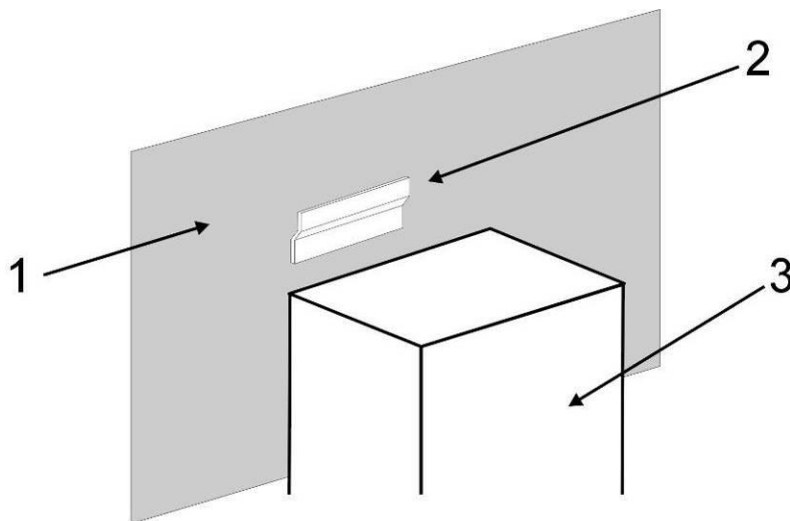


Figure 6 - Wall mounting

Note:

If the boiler is to be fitted in a timber framed building, ensure that the bracket is secured to a substantial part of the timber frame capable of bearing the weight of the boiler.

4.4. Removing/fixing the front and top case

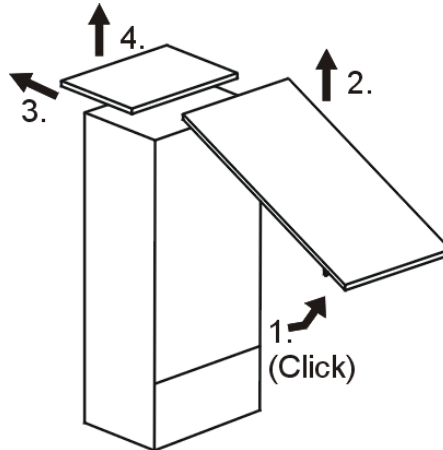


Figure 7 - Removing front and top case

Grasp the front case by its sides, pull it towards the front and remove it by lifting it off the unit, push top cover towards back and lift it off the unit.

4.5. Power supply connection

Note:

Before working with the appliance, turn off the power supply (MCB) and secure against restart.

This device must be earthed.

Tightening torque for RCCB is 2,5 Nm.

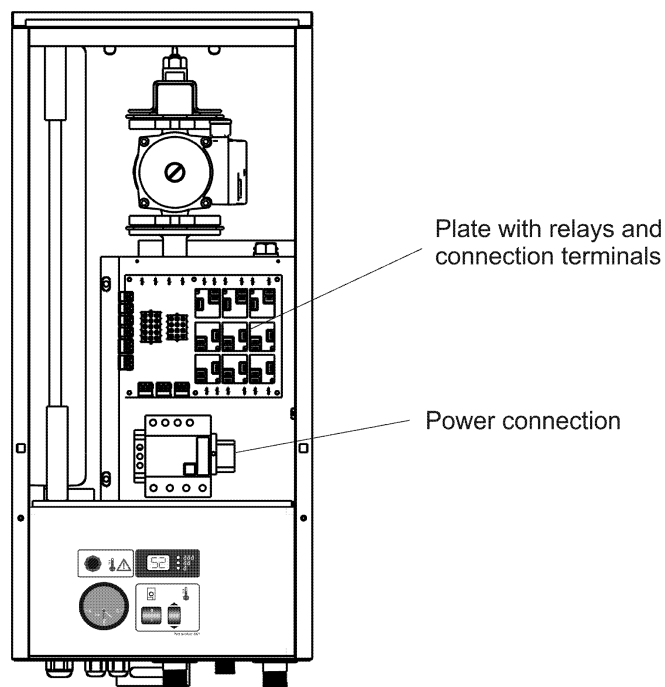


Figure 8 - Power supply connection

4.6. Connecting temperature sensors or external electrical controls

4.6.1. Accessing connection plate

In order to access connection plate, power connection protection cover (Figure 2) must be removed by unwinding two screws M4 and pulling protection cover out.

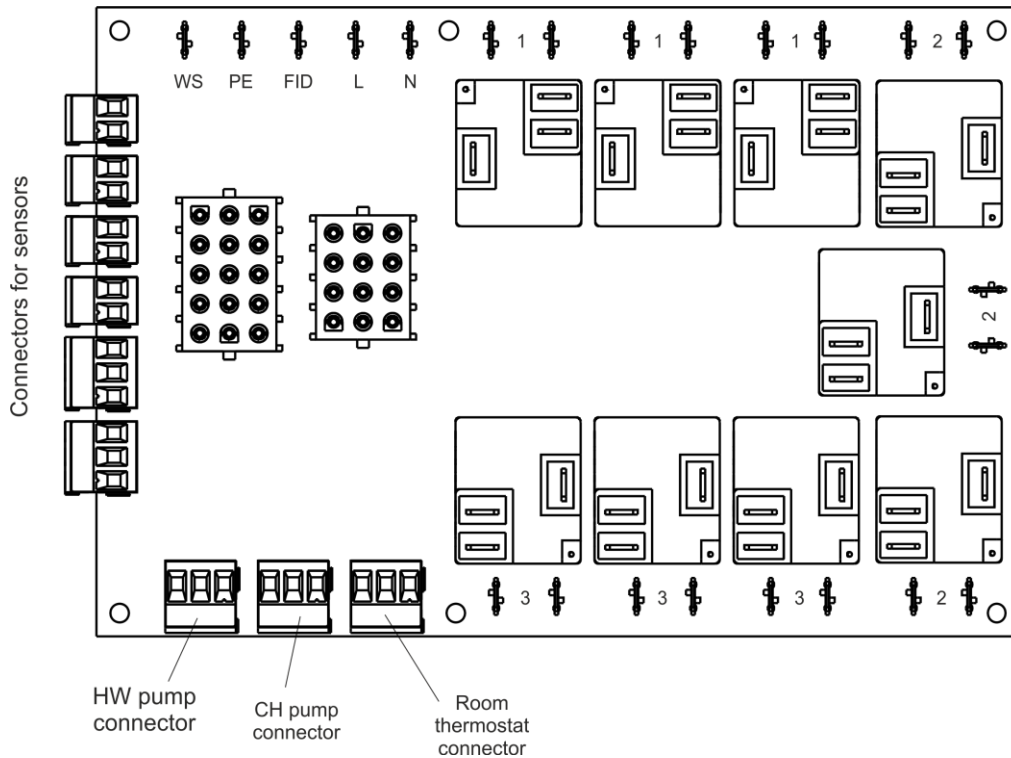


Figure 9 - Connection relay plate

4.7. Filling the heating system

For the heating system to operate properly the indicator of manometer must be between 1.2 and 1.5 bar when the system is cold. It is very important to use soft water or fluids for central heating.

5. Commissioning

5.1. Heating system check

Check for pressure in the system, it should be from 0,12 MPa (1,2 bar) to 0,15 MPa (1,5 bar) when the system is cold. Vent all heating elements and installation.

5.2. Preliminary electrical check

Check if power cable is tightened on RCCB (RCD) terminals

Check the presence of phase on RCCB (RCD) input terminals inside boiler

If the exact measured voltage between L and N lines is more than 10% higher than nominal voltage on the appliance, the appliance itself can be damaged.
Test the RCCB (RCD) switch by pressing T button on it

5.3. Pump

The pump impeller is made of noryl. Pump casing is made of grey cast iron. Embodiment of the casing is single made.



Figure 10 - Pump NMT 25/40

Table 5. Pump electric and performance information

Max. flow, Q_{\max} [m³/h]	2,6
Max. height, H_{\max} [m]	4
Default pressure [bar]	10
Power [W]	5-25
Current [A]	0,05-0,2
Voltage [V]*	230
Insulation class	F
Protection level	IP44

Table 6. Pump general information

Medium temperature [°C]	5-95
Ambient temperature [°C]	0-40
Recommended system pressure at 50/80/110 °C [bar]	0,05/0,4/1,1

* single-phase

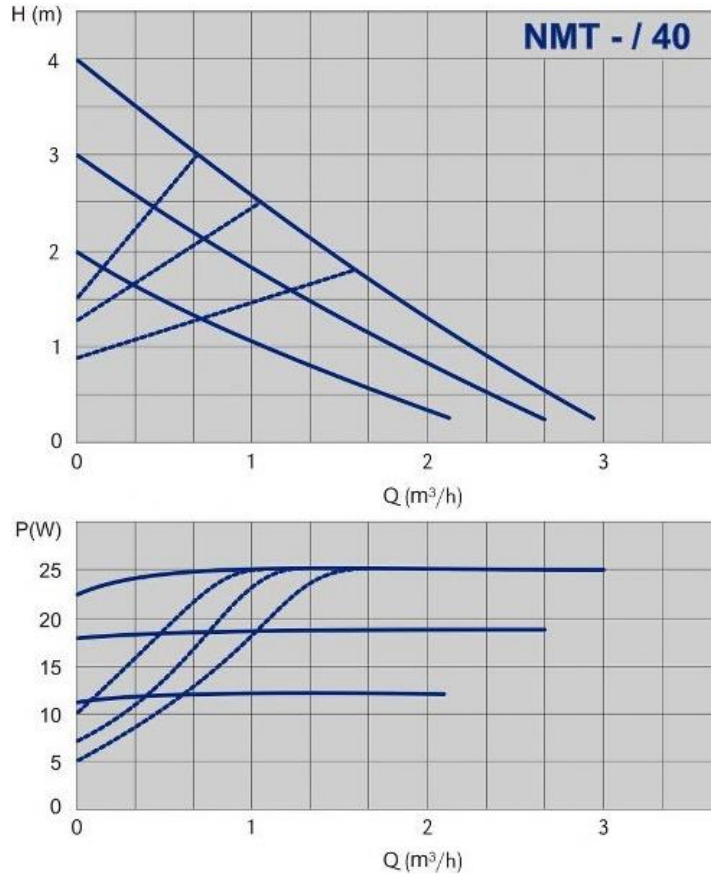


Figure 11 - Pump characteristics

5.4. Working with standard control panel

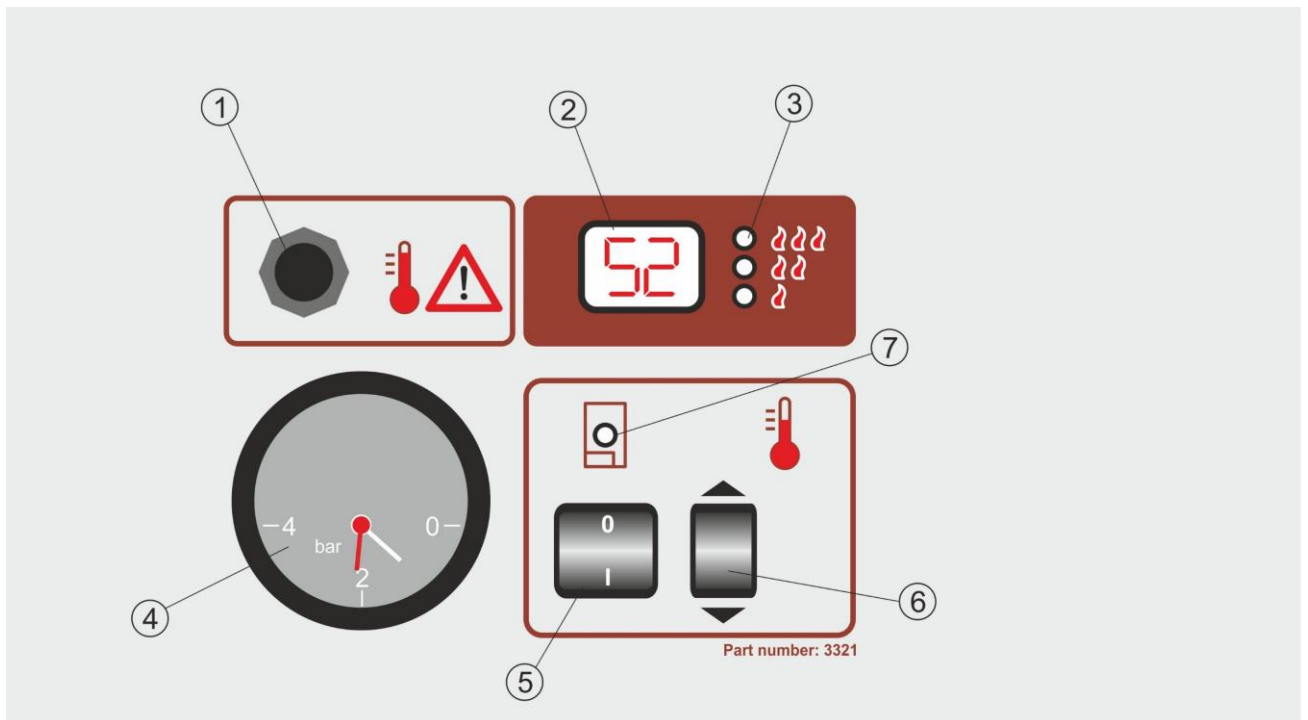


Figure 12 - Standard electronic control panel

- | | |
|--|--|
| 1. Thermal fuse (STB) | 4. Pressure indicator |
| 2. Multipurpose – temperature indicator (temperature of boiler, adjustment of temperature) | 5. Switch for central heating switching on and off |
| 3. Signalization of operation degree of heaters (1, 2, 3) | 6. Adjustment of temperature in boiler |
| | 7. Signalization of boiler operation (green light) |

Switching on of central heating

By switching the switch (5) to the position 1, the central heating system is switched on. Upon switching on the desired water temperature in boiler is displayed for 5 seconds, signalization of boiler operation is twinkling (7). After 5 seconds the real temperature in the boiler is displayed (2); if the current temperature in the boiler meets the desired one, the signalization lamp of the boiler operation (7) is switched off.

Adjustment of desired temperature of central heating

By pressing the key for temperature adjustment (6) the desired temperature in the boiler appears, the signalization lamp of the boiler operation (7) is twinkling. By repeated pressing upwards or downwards it is possible to increase or decrease the desired water temperature. When the temperature is adjusted it is sufficient to wait for 5 seconds (signalization lamp of the boiler operation (7) does not twinkle) in order for the boiler to memorize new temperature.

Air in the boiler "LU"

If air appears in the boiler, the signalization of air in the boiler "LU" is shown on display (2) and the boiler stops the operation. In this way the boiler is protected against burning through because of appearance of air. To continue the operation, the boiler should be vented. If the boiler is correctly vented, the operation of boiler continues automatically.

Voltage drop "SP"

If the voltage in the network line drops below 180V by phase, the signalization of under voltage protection "SP" is shown on display (2), the boiler automatically switches off in order to protect electronics and contactors inside the boiler. The boiler will automatically continue the operation when the network voltage reaches values above 180V.

Cutout thermostat - turning on

Cutout thermostat (safety thermostat) (1) protects the boiler against rapid increase of temperature above 115°C. The fuse turns off the boiler and ejects the RCCB (RCD)-switch.

To continue the operation, it is necessary to take off the protection cover from the cutout thermostat and press the red key, after which the RCCB (RCD)-switch should be switched on again.

NOTE:

If the room thermostat is on, check if it is set at the necessary room temperature and if supply batteries are in order, otherwise the boiler will not operate.



Red dot in lower right corner of display is showing - boiler is off on control panel but main power (RCCB switch) is in ON position



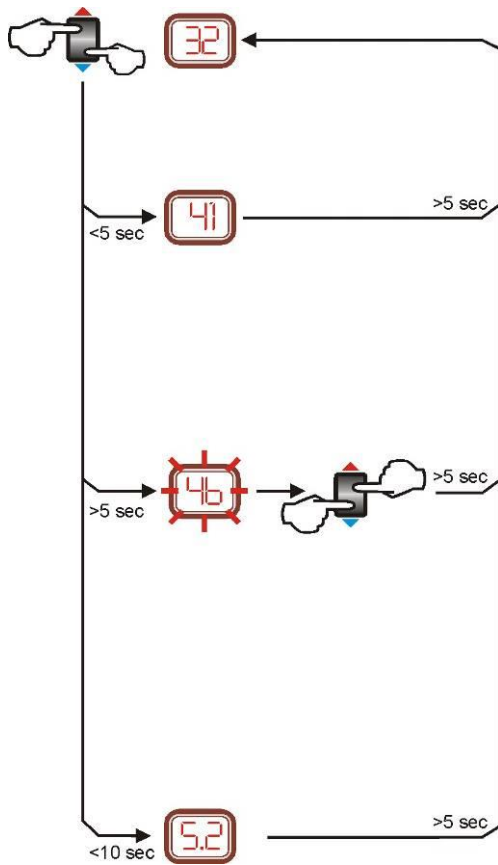
Display is showing real temperature in boiler - red dot is illuminate



Display show settings parameter during programming - without red dot

Clarification of LED display layout

5.4.1. Heating functions



Display of desired temperature in the boiler

If the key (6) is held pressed less than 5 s the LED display will show the desired temperature in the boiler. The value is displayed for 5 seconds, after which the display normally shows the real temperature of water in the boiler.

Setting the desired temperature in the boiler

By pressing the key (6) user can enter the boiler temperature menu.

The desired boiler temperature is blinking.

By pressing the key (6) UP or DOWN, the desired boiler temperature can be set in steps of 1°C.

If the key is held pressed less than 5 s the value from the display becomes the desired boiler temperature.

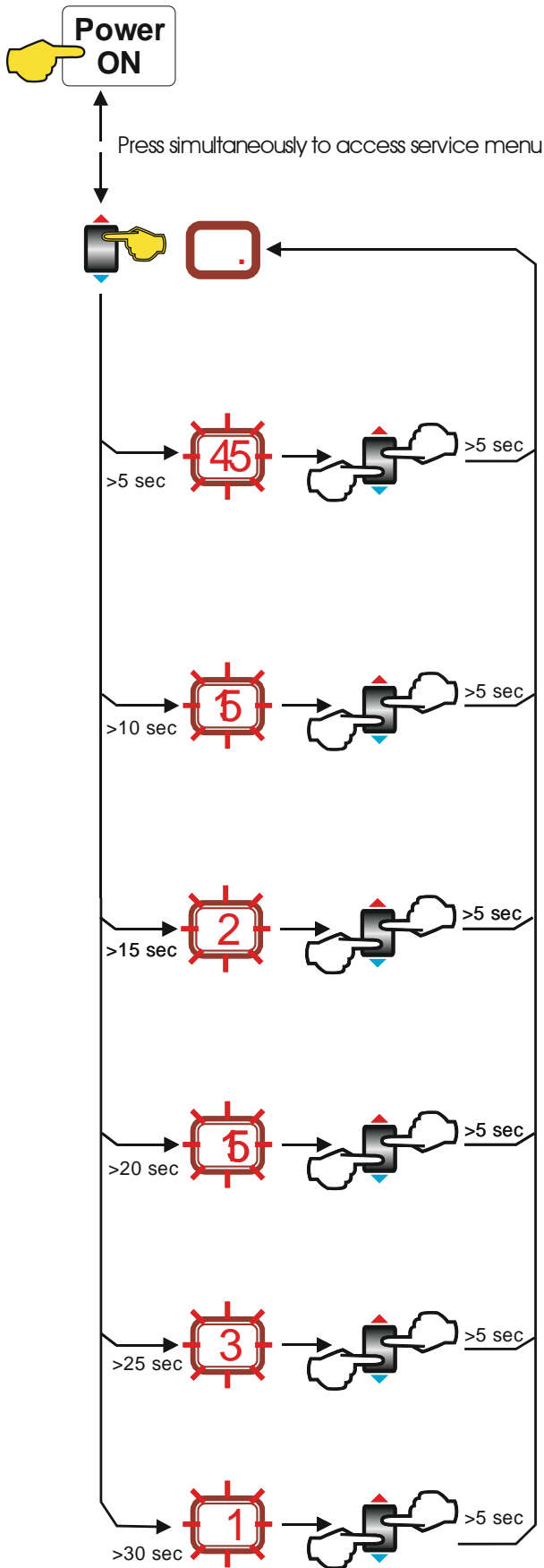
Possible adjustment is from 20°C up to 90°C for radiator heating.

Possible adjustment is from 15°C up to 45°C for under floor heating.

Reset to factory defaults

By pressing the key (6) longer than 15 seconds, all parameters will return to the factory default values and controller will be reset and show software version.

5.4.2. Access to special service menu



Access to special service menu

To access in special service menu, press simultaneously key (6) during switching ON main switch on boiler - RCCB (in that moment key (7) **must** be turned off)

Limiting maximum boiler temperature

By pressing the key (6) user can limit maximum boiler temperature.

Factory defined maximum temperature starts to blink. By pressing up or down user can set new maximum temperature. If the key is depressed for more than 5s, value on the display will be memorized and becomes active.

Radiator heating: Adjustment range 60°C-90°C, factory default 80°C

Underfloor heating: Adjustment range 30°C-50°C, factory default 80°C

Setting the minimal boiler temperature

By pressing the key (6) user can set minimal boiler temperature.

Minimal boiler temperature starts blinking.

By pressing the key user can select the desired minimal boiler temperature. Temperature changes in steps of 1°C. If the key is depressed for more than 5s, value on the display will be memorized and becomes active.

Radiator heating: Adjustment range 20°C-45°C, factory default 45°C

Underfloor heating: Adjustment range 15°C-30°C, factory default 30°C

Setting the heating pump delay

By pressing key (6) user can change pump delay time between 0 - 15 min. Factory settings is 2.

Selecting the time delay between steps for power regulation

By pressing the key (6) user can change the time delay between step for power regulation in the range from 5 to 60 seconds. Default value depends on the number of stages for power regulation – each stage will add 5 seconds. 3 stages will have 3*5=15 seconds between successive stages turn-on. Turn of delay is fixed to 1 second.

Selecting the number of steps for power regulation

By pressing the key (6) servicer can change the number of steps for power regulation.

By pressing the key it is possible to select 1 to 3 steps for power regulation. Default settings: 3 power levels. Change in the number of stages will cause time delay parameter to be changed (see above) !

Selecting the number of pumps for controlling

By pressing the key (6) servicer can change the number of pumps, one or two – **only for option control panel "Z"**

5.4.3. Control panel “Z” – OPTION

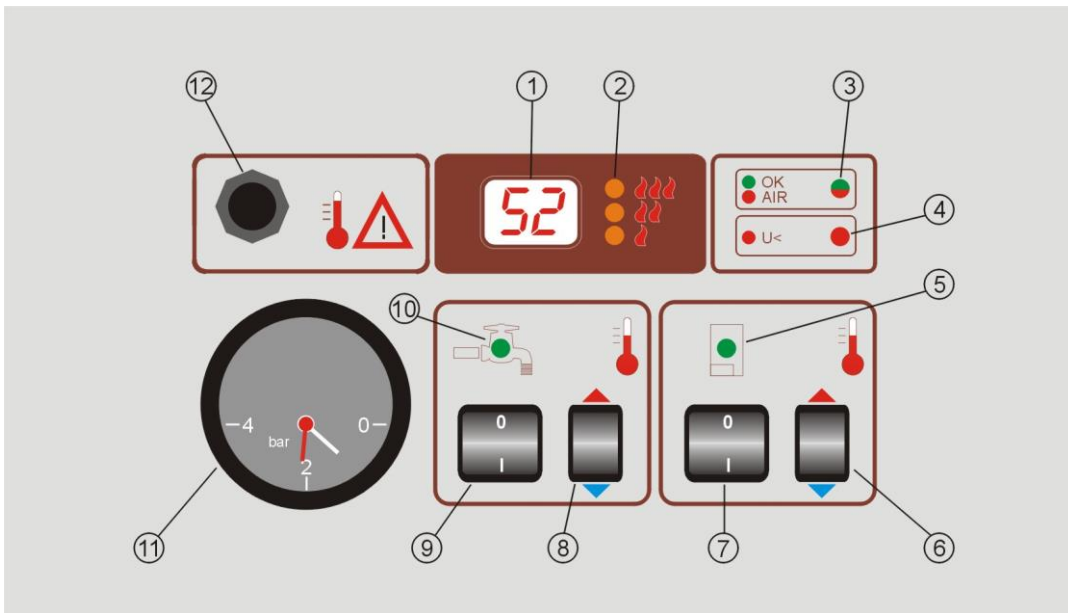


Figure 13 - Control panel “Z” - OPTION

- | | |
|--|---|
| 1. Multipurpose – temperature indicator (temperature of boiler, sanitary water, adjustment of temperature) | 7. Switch for central heating switching on and off |
| 2. Signalization of operation degree of heaters (1., 2., 3.) | 8. Sanitary water temperature adjustment |
| 3. Signalization of air appearance in the boiler (red light) | 9. Switch for switching on and off the sanitary water preparation |
| 4. Signalization of under voltage protection (red light) | 10. Signalization of sanitary water preparation and consumption |
| 5. Signalization of boiler operation (green light) | 11. Indicator of pressure in a boiler |
| 6. Adjustment of temperature in boiler | 12. Thermal fuse |

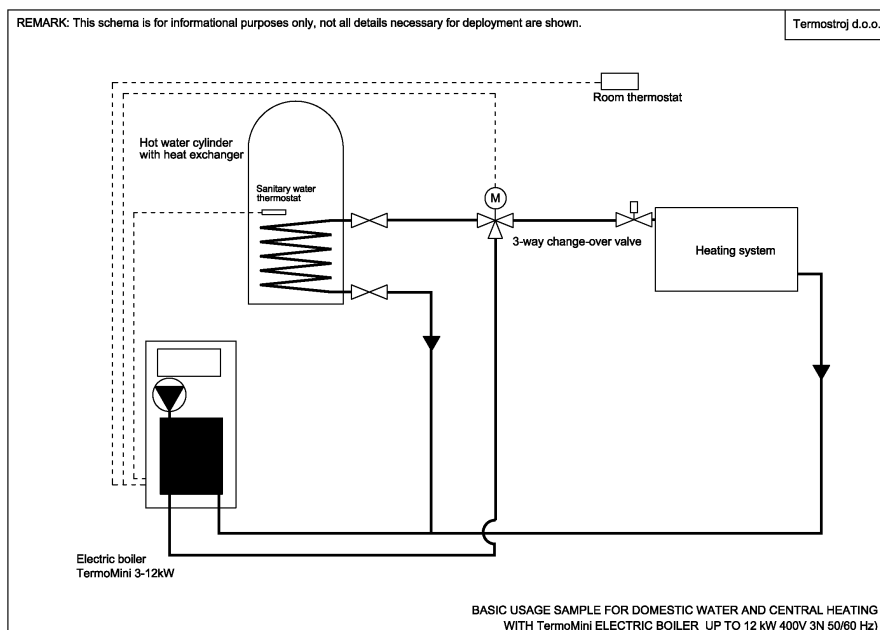


Figure 14 - Hydraulic sketch for TermoMini with OPTION control panel type “Z”

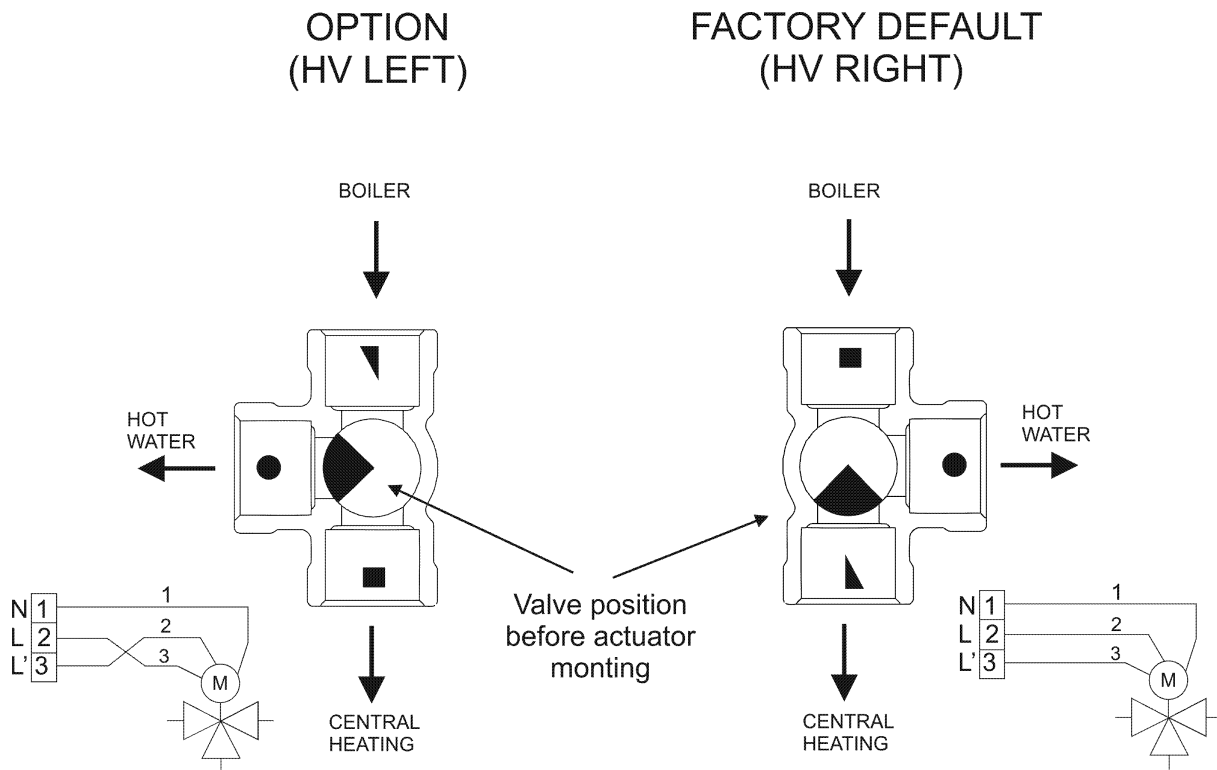


Figure 15 - Connecting 3-way valve

6. Maintenance

6.1. Periodic checking

We recommend the inspection of the device once a year by the authorized service provider (before heating season). This service is not included in the warranty. **During the inspection all electric and water connections should be tightened, the system should be vented and – if necessary – filled up, valves and general functionality of the device should be checked.**

RCCD switch - pressing the TEST button must disconnect the RCCD switch. This testing procedure insures that switch is functioning properly. We recommend this test once or twice in heating season.

Safety valve should be checked once a year (before the beginning of heating season) to ensure proper functioning and avoiding appearance of water calculus.

If the boiler is not connected to the room thermostat or if the boiler is out of function during the winter time, there is a danger of installation freezing.

In this case the system should be filled with antifreeze liquid for central heating, and if this is not possible water should be drained out.

6.2. Cleaning

It is not permitted to use aggressive media (e.g. gasoline, kerosene or solvent) for cleaning the product. Media for cleaning plastics or dishwashing media can be used for the external shell and decorative cover. Control panel should be cleaned with dry or moist cloth (not wet).

APPENDIX:**7. Survey of possible malfunctions and irregularities in operation**

MALFUNCTION	CAUSE	ELIMINATION
- there is no voltage on the control panel at switching on	- there is no power supply from the net on one or more phases - fuse 100mA on the control panel is burned through - RCCB switch is disconnected	- replace fuse 100mA and check the cause of burning - contact authorized service personnel to resolve the problem
- By switching on, the switches on the control panel display the voltage, but the boiler does not heat	- check the adjustment of the room thermostat, - limiting thermostat is activated - indicator of air presence in the boiler blocked the operation, - defective switch, - heaters are burned through	- check the set temperature on the room thermostat, replace batteries, or the room thermostat is faulty, - vent the boiler in order to turn off the lamp "air in boiler"
- temperature in boiler is on desired value, but radiators do not heat	- circulation pump does not operate, - air stopper on central heating installation prevents circulation	- vent installation
- boiler does not provide enough heat	- one phase is missing on supply - a part of heater is burned through - in a three-phase system the three different phases are not brought to the boiler	- check fuses on the main panel, - contact authorized service personnel to resolve the problem
- the switcher can be heard while operating (it buzzes) radio and TV-interferences	- poor voltage in the net - defective relay	- contact authorized service personnel to resolve the problem
- boiler in operation "roars"	- the system is not well vented, - defective heater	- vent the system - contact authorized service personnel to resolve problem
- pressure in the system varies	- defective expansion vessel, - the vessel pressure is too low or too high	- contact authorized service personnel to resolve the problem
- the actual temperature in the boiler is higher than the desired temperature and the safety thermostat is activated	- defective relays	- contact authorized service personnel to resolve the exact source of the problem
- RCCB switch disconnects	- defective heater, - humidity on conductors, - safety thermostat is activated	- check leakage, - contact authorized service personnel to resolve the exact source of the problem

- RCCB switch cannot be reset	- safety thermostat is activated	- pre-reset safety thermostat and then the RCCB switch - contact authorized service personnel to resolve the exact source of the problem
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Table 7. Possible malfunctions