Installation, operation and maintenance
Mini Boiler
MP4 G2 and MP6 G2

VÄRMEBARONEN

Contents

Notes

To be completed when the boiler is installed!

Serial number: .....

Installation date: .....

Installation engineer: .....

Tel: .....

Connection:

MP4 G2	**MP6 G2**
☐ 1.5 kW /230V~	☐ 2 kW /230V~
☐ 2.25 kW / 400V 2N~	☐ 3 kW / 400V 2N~
☐ 3.0 kW /400V 2N~	☐ 4 kW /400V 2N~
☐ 4.5 kW / 400V 3N~	☐ 6 kW / 400V 3N~

Other: .....

.....

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Safety and handling

- Read these instructions carefully before installation and putting into operation!
- Keep the instructions close to the boiler!
- Correct installation in combination with correct adjustment and continuous service will produce high operational reliability and good heating economy.
- Only authorised persons may work on the boiler.
- Switch off the operating switch before any service/repair
- Never carry out maintenance work/service on pressure-bearing parts when they are pressurised.
- The boiler must not be modified, changed or converted in any way.
- The boiler may not be used by children or people with physical or mental impairments. Nor by children/people who lack knowledge about the boiler.
  Children may not play with the boiler or connect accessories.
- Never place any combustible material on the immersion heater.
- Always contact your installation engineer for service.
- The type and manufacturing number of the boiler must always be specified when contacting Värmebaronen, see the boiler's rating plate
- Värmebaronen AB reserves the right to change the specification, in accordance with its policy of continuous improvement and development, without prior notice.
- Illustrations may differ from the actual product.
- Subject to printing/proofreading errors.

The following icons are used in these instructions to indicate important information:

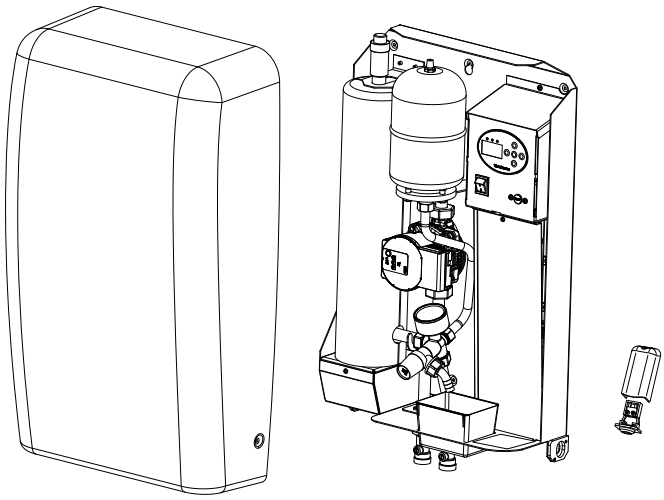
Information that is important for optimum operation.

Tells you what you should or should not do to avoid a component, the boiler, a process or the environment being damaged or destroyed.

Tells you what you should or should not do to avoid personal injury.

Electrical hazard!

Function



Versatile

MP4 and MP6 G2 are wall-hung electric boilers with stainless steel boiler tanks and immersion heaters.

The boiler has many possibilities, such as underfloor heating in extensions and conservatories, an easy way to heat the holiday home or a freestanding garage, or for use in work sheds, in holiday chalets and on campsites. The boiler is extremely versatile.

With or without outdoor temperature compensation

The boiler is pre-set on delivery for outdoor temperature compensated boiler temperature regulation, UTK, together with an outdoor temperature sensor. The function can easily be adjusted for a fixed boiler temperature regulation.

Compact

The MP4 and MP6 G2 are small in size and have a discreet cover which make them easy to position.

Efficient

The boiler's power manages the heat required for up to 100 m² of living space, depending on insulation and ventilation.

Reliability

The boiler is equipped with a float switch to avoid damage to the immersion heaters.

Alternate temperature or blocking

Potential-free input for change in UTK level or blocking of boiler power, depending on the type of temperature regulation selected.

Alarm indication

Alarms are indicated on the boiler's control panel, connection is also available for an external buzzer alarm indication.

Complete

MP 4/6 is delivered complete. Only water and power need to be connected. Then it is ready for use.
The boiler is equipped with:

- circulation pump
- expansion tank
- safety valve, 2.5 bar
- automatic vent valve
- overflow valve
- pressure gauge
- overheating protection
- status indications
- control switch
- float switch
- outdoor temperature sensor

Accessories

Room device item no. 2964

Together with the boiler's UTK function, it also has a room temperature effect on the temperature regulation.

GSM-control item no. 1950

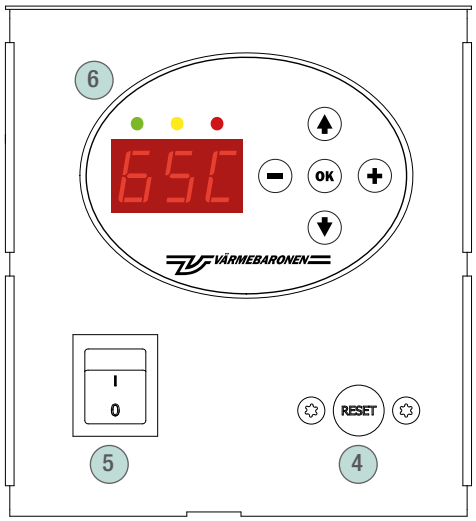
Remotely control the heat in, for example, the summer house by turning on the heat from home.
Also automatically gives temperature alarms for the set limit values and an alarm if the mains voltage disappears, which is good to know if there is a risk of freezing.

Operation and maintenance

Before starting, check that the installation is in a fully satisfactory condition.
Ask the installation engineer to demonstrate the regulation and functions so that you know how the system works and must be maintained.
Check that:

- ***the boiler and heating system are filled with water, vented and that the pressure is correct.***
- ***Pipe connections are tight.***
- ***necessary valves are open.***
- ***the vent valve is open so that the air can escape.***
- ***the safety valve is working, water should come out of the overflow pipe when the valve is in operated.***
- ***the circulation pump is working.***

Control panel



4. Overheating protection reset.
5. Control switch
6. Control display - panel circuit board with overlay.

Temperature settings

Set the desired heat curve or temperature.
The temperature requirement varies for the different seasons.
Boiler temperature - constant
Desired boiler temperature, see "User level" row 1 and "Advanced Service level" row 15.

Safety valve

Safety valves must be operated regularly to maintain the safety function.

The outlet of the safety valve flows into a collection tank. Check the water level in the tank regularly and empty it if necessary.

Regularly check the amount of water in the tank that collects waste water from the safety valve.

Overheating protection

The boiler's overheating protection is triggered when the boiler temperature exceeds 80°C.

Check the circulation pump and ensure that the required valves are open. See also "Flow - overflow valve".

The protection is reset on the control panel when the boiler temperature has gone below 65°C.
Remove the "RESET plug", use a screwdriver, press firmly until you hear a click.

Always check the cause of any protection being triggered!
If the protection is triggered repeatedly, the cause should be rectified - Call the installer!

Expansion tank

The pre-charge pressure should be checked by the pipe installer at intervals of one year.

Filling - Water pressure in the system

Check regularly that there is sufficient water in the heating system. The cover of the boiler must be removed when checking. Pressure gauge, displays the pressure in the heating system.

The heating system must be filled with water to a pressure that is higher than the expansion tank's pre-charge pressure, 1.5 bar. 2 bar is recommended.

Water changes its volume with temperature, which affects the pressure. Higher temperature produces higher volume and pressure. The expansion tank absorbs the volume changes.

Check the water pressure in the heating system regularly!

Float switch

The boiler is equipped with a level guard, which protects the immersion heater if the water disappears from the boiler. The function immediately disconnects the connected power and the circulation pump is stopped.

A warning is displayed,  . The boiler automatically restarts when the water level is restored, the warning must be acknowledged manually.

Operation and maintenance

Venting - Vent valve

Air may remain in the system for a while after installation, for which reason water needs to be added.
When the system is full of water, it must be vented with the vent valve on the boiler and the bleeder valves on the heating system. The vent valve protective cover must be loosened by 1.5 turns so that the air can escape.

In order for the vent valve to function satisfactorily, the system pressure should not be less than 1.5 bar.

The vent valve is checked regularly. If the valve does not close due to contaminants, liquid comes up through the air outlet. Growing deposits around the air outlet indicate that this fault has occurred. Clean or replace the air vent.

Draining

The boiler must be switched off before the water is drained from the system.

Always switch off the boiler before:
- ***the boiler water is drained***
- ***doing anything to the automatic control cabinet or the boiler's power units***

Frost protection - heating systems

If the heating system's water is mixed with anti-freeze, it is important to check that it contains a suitable quantity of corrosion-protection additive. When an anti-freeze disintegrates, one of the by-products can be carbonic acid, which increases the risk of corrosion.

Frost protection - function

If the boiler temperature goes below 3°C, the circulation pump and the power will be switched off in order to avoid the boiler operating in a frozen system.

If the system's water contains anti-freeze and a low temperature is desired in the system, the frost protection can be disabled. See menu - "Advanced Service Level" row 22. However, the boiler will try to maintain a temperature of 10°C.

Action in the event of a risk of freezing

When it is extremely cold, no part of the heating system must be switched off as there is a risk of bursting.

If you suspect that any part of the heating system is frozen, contact an installation engineer.

If the heating system is to be switched off for an extended period of time, the system should be drained or it can be filled with water mixed with anti-freeze.

The boiler must not be in operation if you suspect that any part of the heating system is frozen. Call an installation engineer!

Circulation pump

With the UTK function activated, the pump is in operation for as long as the outside temperature is lower than the set pump stop value, see menu "User level" row 7.
If the UTK function has not been selected, the pump will operate continuously.

ECO - function

If, for a certain period, no heat is desired from the boiler, the ECO function can be activated.
See menu "User level" row 8.

This means that no power is connected and that the circulation pump is not running: In order for the pump not to get stuck, it is run for a few minutes every two days.
If the boiler temperature is lower than 10°C, the frost protection is activated, the pump starts and the power is switched on to avoid freezing.

Over temperature protection

The upper temperature protection supplements the overheating protection. The aim is to prevent the overheating protection from triggering as far as possible.

The break temperature of the upper temperature protection can be set as a fixed temperature or a temperature relative to the set point.

See “Advanced Service level” rows 20 and 21.

Optional Room Unit

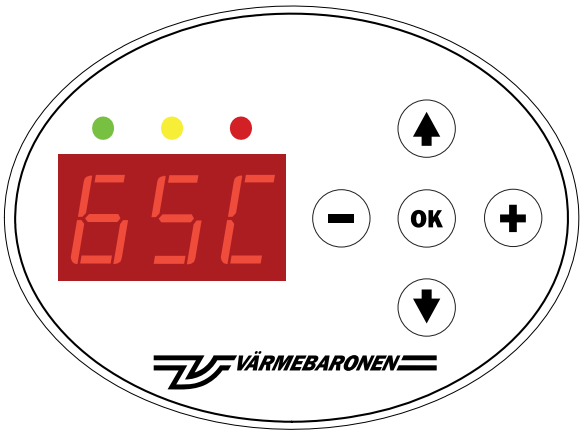
The boiler can be fitted with a room unit with a setting for the desired room temperature and an alarm indication, with the same function as the red indication on the front panel of the boiler.

The room unit increases the heating comfort with the lowest possible energy consumption. Additional information is included with the device.

Room unit, see “User level” rows 5 and 6 and “Service level” row 17.

Operation and maintenance

Menus - function and management



Indicators and buttons

Green	Perma-nently on	The boiler has voltage.
	Flashing	Output connection is restricted.
Yellow	Perma-nently on	Displays a modifiable parameter. In row 0, yellow indication indicates that a warning is acknowledged and that the cause has not been rectified.
	Fast flashing	Parameter has been changed but not acknowledged (OK).
	Flashing	Warning
Red	Flashing	Alarm, which has not been acknowledged.
	Perma-nently on	Acknowledged alarm as long as the cause has not been corrected.

The buttons are used to navigate the menus:

(▲) moves up in the menu list. (▼) moves down in the menu list.

(−) decreases the value. (+) increases the value.

(OK) acknowledges the changed value.

Menus

The menu system consists of three levels: the User level, Service level and Advanced service level.

Each menu level contains a number of rows, the number of which appears in the display followed by a decimal point and a value. At larger values, the display switches between displaying the row number and its value.

Editable value

An editable menu row is indicated by the yellow indicator light. When the value is changed, the indicator flashes. The new value is only applied after confirming by pressing (OK). The old value is reset if the row is left with (▼) or (▲)

User level - rows 0 - 8.

Reading and modification of the most common parameters.

Row 0 of the menu, which shows the current boiler temperature, is the row that is normally displayed. This is where you are returned to from the other menus when no button has been pressed for a while.

Service level - rows 11 - 19.

Reading and changes to the parameters usually adjusted when the boiler is commissioned.

Access to “Service level” is obtained by simultaneously pressing (▼) and (▲) in any menu row in “User level”.
The same action is used to return to "User Level".

Advanced Service level - rows 20 - 29.

Reading and changes to less frequent parameters and the possibility of manual testing, connection/disconnection of power steps, circulation pump and buzzer alarm relay.

Access to the "Advanced Service level" is obtained by setting the value "21" in the last menu row 19, in "Service level". Return to "Service level" is done with (▲).

Return to "User level" is done by simultaneously pressing (▼) and (▲).

Screen saver

The screen saver will be activated 15 minutes after the last button press. The menu returns to display of the current boiler temperature.
“21-lock” for “Advanced service level” is reset.
If there are no unacknowledged alarms, the display will turn off and only the indicators will be lit.

Operation and maintenance

Alarm

If several simultaneous alarms/warnings/restrictions are active, only the first code is shown in the list. Scroll using ⏶ to see other codes.

When the cause of the alarm disappears and is acknowledged with "OK", the relevant indication ceases to flash and the display returns to normal display.

Acknowledgement of alarms

Acknowledge active alarms by pressing the OK button when the alarm row is displayed. All active alarms are acknowledged at the same time. The red indicator will stop flashing and return to solid. The display remains on the alarm row and displays the alarm code(s). Once all active alarms are resolved, the red indicator turns off.
The user can use the menu system as usual even during an active alarm.

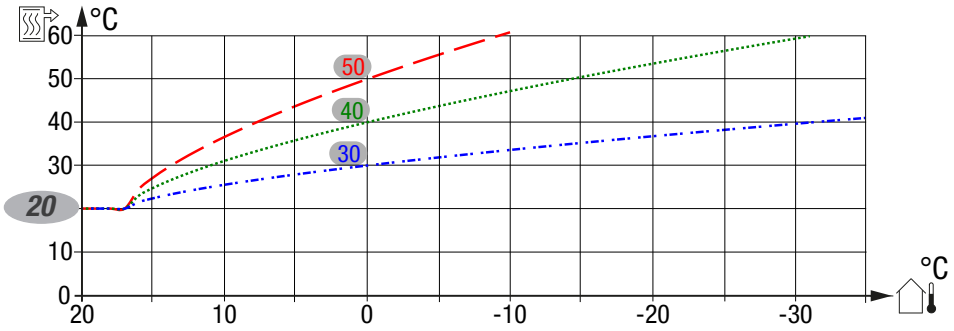
View at start-up

- all segments of the display and indications are lit for two seconds.
- the display's program version is displayed for two seconds.
- three bars are displayed for one second.
- the power board's program version is displayed for two seconds
- "0" appears for two seconds.

Menu - User Level

User level, rows 1- 8.		Delivery setting area	std
30	Display current boiler temperature.	0 – 60°C	
1.35	Display estimated boiler temperature when UTK function is selected, delivery setting. Display and setting of the desired boiler temperature when the boiler should have a constant boiler temperature. Function selection is made in the menu "Service level" row 12.	10 – 60°C	25
2.20	Level heat curve, UTK, parallel displacement of the heat curve, setting Adjustment will be added to the calculated boiler temperature, see row 1.	5– 30	15
2.--	UTK function switched off, see “Service Level” row 12.		
3.38	Slope heating curve, UTK, higher value gives higher boiler temperature when cold outside.	21 – 60	25
3.--	UTK function switched off, see menu “Service Level” row 12.		

The boiler temperature is calculated according to the current outdoor temperature, the heat curve settings for level and slope, and possibly the room temperature and alternative temperature.
The boiler temperature can be min/max limited.
The diagram shows the heat curves 30 , 40 and 50 at Level = 20 .
Curve 30 strives for a boiler temperature of 30°C at ±0°C outdoor temperature. The corresponding curves 40 and 50 are 40 and 50 ° C respectively.
The vertical axis shows the boiler temperature and the horizontal axis shows the outdoor temperature.



Menu-User Level

Delivery setting

Heating curve

Use the heating system's dimensioned flow temperature as the initial value. If the value is not known, general values are used. If the room is not at the desired temperature, additional adjustment is needed. Wait at least one day between adjustments so that temperatures have time to stabilise.
Dimensioned values, select a curve that gives the desired flow temperature.
Unknown values - Underfloor heating system, choose a curve that gives a flow temperature of 40°C for wooden floors and 30°C for concrete slabs on the coldest day.
Unknown values - Radiator system, select a curve that gives a flow temperature of 55°C for a low temperature system on the "coldest day" and a flow temperature of 70°C for a high temperature system.
The 'coldest day' is the lowest temperature that normally occurs in the location.

Adjustment of basic setting

For low temperatures, select a higher level. An increase in the room temperature can be limited by the thermostats for the radiators or underfloor heating.
For high temperatures, select a lower level.
If the room is not at the desired temperature, additional adjustment is needed. Wait at least one day between adjustments so that temperatures have time to stabilise.

		area	std
4.10	Display of current outdoor temperature, requires that the outdoor temperature sensor is connected.	Display	
4.--	UTK function not selected and the outdoor temperature sensor is not connected.		
5.20	Display of the current room temperature. UTK should be activated and a room unit connected/activated. See room unit in menu "Service level" row 17	Display	
5.--	Fixed boiler temperature regulation is selected.		
6.20	Set temperature on the room unit. UTK should be activated and a room unit activated/connected. The set temperature is also affected by "Alternative temperature", see menu "Service level" row 16.	Display	
6.--	Fixed boiler temperature regulation is selected.		
7.20	Setting the outside temperature for pump stop. Temperature above the set value puts the boiler on standby. UTK function must be activated. If "Alternative Temperature" is used, this area changes.	15 –25°C	17°C
7.--	Fixed boiler temperature regulation is selected.		
8. 0	ECO function disabled.	0: no ECO function	0
8. 1	ECO function activated. Boiler put on standby. The circulation pump is switched off, so that it does not get stuck, it will be run for a few minutes every two days. If necessary, the boiler will start in order to maintain a boiler temperature of approximately 10°C if external limitation allows.	1: ECO - function	

Menu - Service Level

Service level, rows 11-19, alternate between displaying row number window and parameter value.

			Delivery setting area	std
11.	1	Display of the number of power steps connected. MP4 / MP6 G2 connected: • 230V~ : a power step, shows "2" when power is connected. • 400V 2N~ : a power step, shows "2" when power is connected. • 400V 2N~ + N - X jumper : two power steps, showing "1" and "2" respectively for connected power steps. • 400V 3N~ : two power steps, display "1" and "2" respectively for connected power steps.		
12.	0	Selection of the temperature regulation function. Fixed boiler temperature.	0: fixed temperature	
12.	1	UTK function, temperature regulation with the influence of outdoor temperature and possibly room temperature.	1: UTK	1
13.	10	UTK min-limit, minimum boiler temperature/flow temperature. The value is displayed when the UTK function is activated in the "Service Level" menu, row 12. If there are no special requirements, this should be set as low as possible.	10 – 50	10
13.	--	UTK function not selected, boiler regulates for fixed boiler temperature.		
14.	20	UTK max-limit, maximum boiler temperature/flow temperature. The value is displayed when the UTK function is activated in the "Service Level" menu, row 12. The maximum permitted flow temperature is selected so that it is not lower than the temperature that the heating curve selected gives on the “coldest day”.	20 – 60	40
14.	--	The boiler regulates for a fixed boiler temperature/flow temperature.		
15.	0	UTK, alternative temperature, display of the status of the input. Digital input that activates the function when it is closed. Can be used for night-time reduction, holiday mode or similar.	0 = not active 1 = active	
15.	1	If different temperatures are desired at different times of the day, a timer can be connected to the boiler, see Electrical installation; Alternative temperatures. To adjust the temperature, down/up - see “Service level” menu row 16. Displays the value if UTK is activated in "Service Level" menu row 12.		
15.	0	Blocking when fixed temperature regulation is selected. Fixed temperature regulation - power connection allowed.	0 = operation	
15.	1	Fixed temperature regulation - blocking.	1 = blocking	

Menu - Service Level

		Delivery setting area	Delivery setting std
16. --	The boiler regulates for a fixed boiler temperature/flow temperature.		
16. 1	UTK: Alternative temperature, adjustment. Which room temperature change should the external input give Alternative temperature adjustment – Setting (decrease/increase) Alternative temperature – -20– +5°C, Setting See "8 - Outdoor temperature sensor and 9 - Alternative temperature / External blocking in "Electrical installation". Open input activates the function. Can be used for night-time reduction, holiday mode or similar, see “Electrical installation”; “Alternative temperature”. Function without installed room unit: Shifts, parallel displacement, UTK curve level with a configurable number of stages. This corresponds to a change in the room temperature by the approximate corresponding number of degrees.	-20 – +5	-5
17. --	Room unit not connected, UTK function not selected, boiler regulates for constant boiler temperature.		
17. 0	Room unit not activated, see "Service level" row 17. UTK is activated in the "Service Level" menu row 12.	0: does not exist	0
17. 1	Room unit is available, and UTK is activated in the menu "Service level" row 12.	1: available	
18. 0	Selection of whether the buzzer should sound or be silent in the event of an alarm.	0: Silent	1
18. 1	Selection of whether the buzzer should sound or be silent in the event of an alarm.	1: Summer	
19. 0	Enter 21, for access to “Advanced service level” menu.		

Menu - Advanced Service Level

Enter 21 in the menu "Service level" row 19, for access to menu "Advanced Service Level"!

Advanced Service Level, rows 20-29, alternate between row number window and parameter value.

		Delivery setting area	std
20. 0	Upper temperature function, choice of method. Absolute value for upper temperature.	0 = absolute	1
20. 1	Temperature relative to setpoint.	1 = relative	
21. 10	Temperature level of the upper temperature function - setting This parameter is used regardless of the above selection. To be adjusted if an absolute value is selected for the upper temperature.	6 – 105°C	15°C
22. 0	Frost protection - the choice of whether frost protection should be active or inactive. Frost protection inactive.	0 = off	1
22. 1	Frost protection active.	1 = on	
23. 0	Manual tests Manual tests according to rows 24 - 26, disabled	0 = off	0
23. 1	Manual tests according to rows 24 - 26, are possible. The function is deactivated automatically after 4 minutes.	1 = on for 4 min	
24 0	Power connection. Connection can only be done after the function is activated in row 23.	0, 1 and 2	0
24 1	Press + or - to select number of power stages. Manual connection is subordinate to all protection functions.		
25. 0	Circulation pump Connection can only be done after the function has been activated in row 23.	0 = off	0
25. 1	Manual connection of the circulation pump. Press + or - to select.	1 = on	
26. 0	Buzzer alarm. Connection can only be done after the function is activated in row 23.	0 = off	0
26. 1	Manual connection of buzzer alarm. Press + or - to select.	1 = on	
27. 30	Display of the temperature of the power circuit board. Temperature too high >55° C.	0 – 55°C	
28. --	Room unit and UTK function not selected.		
28. 30	UTK room unit, P-factor, proportional impact, 0.1°C/°C. ⚠ ***Adjustment should only be performed by a person with an understanding of the impact!***	0 – 100	30
29. --	Room unit and UTK function not selected.		
29. 10	UTK room unit. I-factor, I-part impact, 0.1°C/°C/h. ⚠ ***Adjustment should only be performed by a person with an understanding of the impact!***	0 – 100	10

Menu - Advanced Service Level

Pipe installation

Installation must take place according to existing regulations and standards.

The boiler is fitted indoors, hanging, with the pipe connections downwards.
Note the distance required for any replacement of the immersion heater.
An internal support sleeve must be used during connection to prevent damage to the internal piping.
Must not be used for heating fresh water.
As frost protection, the water in the system may be mixed with maximum 30% glycol.
Heating systems can differ between countries due to climate, traditions and national regulations. In cases where the standards violate national regulations, the latter must be followed. Consider national and individual requirements.

Water quality - Suitable water supply quality

A water supply is usually classified from a hygiene perspective. Good water classified on this basis is not automatically suitable for a heating system.
To avoid problems a technical water analysis should take place. Any nonconformities with standard values should be corrected.

Alkalinity ≥ 60 mg/l to avoid corrosion.

Carbonic acid content > 25 mg/l increases the risk of corrosion.

Sulphate content > 100 mg/l may accelerate corrosion. If the sulphate content is higher than the alkalinity, there is a risk of copper corrosion.

Hard water causes boiler scale and is not suitable in a heating system.

Very soft water may cause corrosion damage.

Chloride levels above 100 mg/l make the water aggressive, especially in combination with lime deposits.

Low pH values may cause corrosion damage. The pH value should be 7.5- 8.5.

The presence of carbonic acid in combination with low pH and hardness values makes the water aggressive.

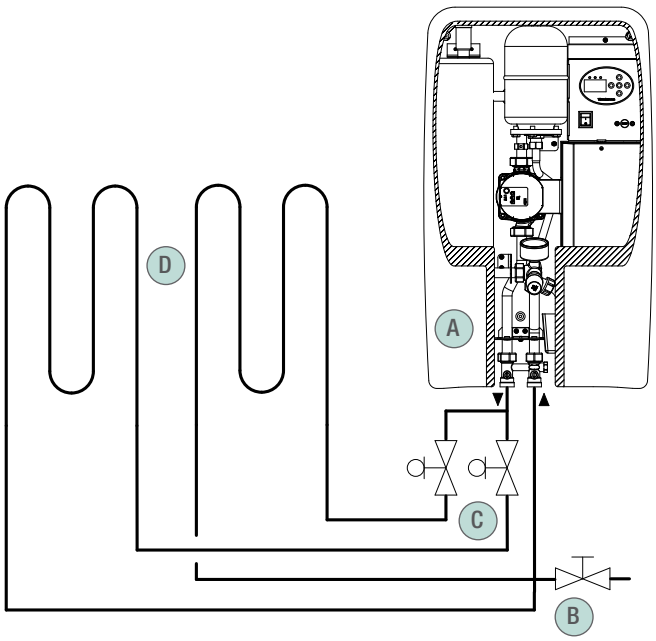
Frost protection - heating systems

If the heating system's water is mixed with anti-freeze, it is important to check that it contains a suitable quantity of corrosion-protection additive. When an anti-freeze disintegrates, one of the by-products can be carbonic acid, which increases the risk of corrosion.

If the system's water contains anti-freeze and a low temperature is desired in the system, the frost protection can be disabled. See menu "Advanced Service Level" row 22. However, the boiler will try to maintain a temperature of 10°C.

Installation - System in principle

A system in principle is shown below, the actual installation must be carried out in accordance with existing regulations and standards.



A. Electric boiler MP4/MP6 G2, containing: `
circulation pump
expansion tank
safety valve
overflow valve with shut-off valve scan valves on riser and return connection.
vent valve
pressure gauge
B. Filling / draining valves (are not included in the delivery).
C. Shut off- / throttle valves (are not included in the delivery).
D. Underfloor heating system.

Expansion tank

Expansion tank: 2 litres, Supply prepressurisation 1.5 bar.

The tank can manage a heating system volume of 70 litres at 60°C and a static pressure of 5 metres.

For a lower static height or temperature the tank can manage a greater volume.

When glycol is added, the capacity of the expansion tank decreases in relation to the quantity of glycol added.

Pipe installation

Safety valve

The safety valve, 2.5 bar, is fitted to the boiler, the over-flow pipe empties into a drip bowl in the boiler cupboard.

Filling - draining

Filling the boiler and heating system is preferably done through a fixed filling line or with a hose in the drain valve.

The heating system must be filled with water to a pressure that is higher than the expansion tank's pre-charge pressure, 1.5 bar. 2 bar is recommended.

Filling - venting

When the system is full of water, it must be vented on the immersion heater and the pipe distributions.

The vent valve protective cover must be loosened by 1.5 turns so that the air can escape.

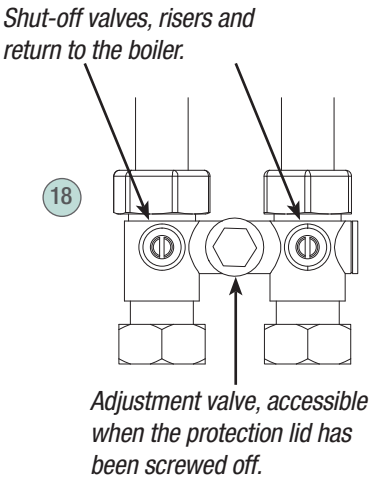
In order for the vent valve to function satisfactorily, the system pressure should not be less than 1.5 bar.

Flow - overflow valve

The flow must be ensured, the overflow valve should be open 1 - 4 turns. Delivery setting 2¼ turns.

If the valve is:

- not open enough the pump can be damaged and the risk increases that the overheating protection will be triggered.
- if it is open too much it can cause the circulation in the heating system to be insufficient.



Circulation pump

Information about the pump is found in the enclosed leaflet. Delivery setting: lowest constant pressure curve.

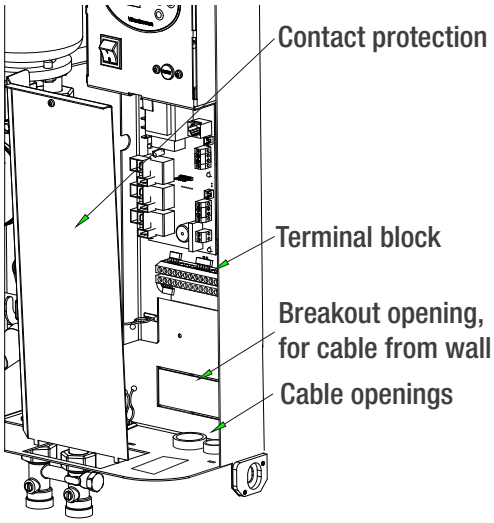
If parts of the heating system do not become warm this might need to be increased.
Selecting a higher curve increases the pump's energy consumption and operational costs.

A magnetic filter should always be fitted before the circulation pump in order to prevent operational problems.

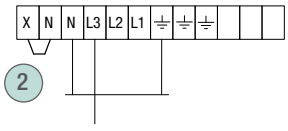
Electrical installation

Electrical installation must be carried out in accordance with the applicable regulations, by an authorised electrical installer or by someone who is covered by the company's self-inspection programme!

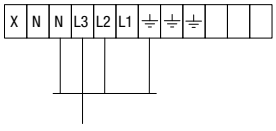
The boiler must not be electrically connected until it is filled with water.
The boiler must be preceded by an all-pole switch with at least 3 mm breaking distance.
Light-current cables must not be laid in direct connection with power cables as this may give rise to disruption.
With one or two phase connection not all the boiler's main fuses are loaded. Other large power consumers should therefore be on the phases that are not loaded by the boiler.



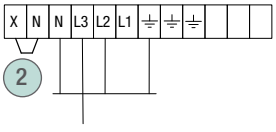
Connection electrical supply
MP4: 1,5 kW / 230 V~ / 6.5 A
MP6: 2.0 kW / 230 V~ / 8.7 A
Supply Cable: 3 x 1.5 mm²
Fuse: 10 A
Jumper: N - X



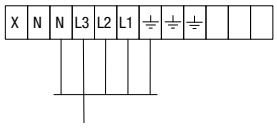
MP4: 2.25 kW / 400 V 2N~ / 5.6 A
MP6: 3.0 kW / 400 V/2N~ / 7.5 A
Supply Cable: 4 x 1.5 mm²
Fuse: 2 x 10 A

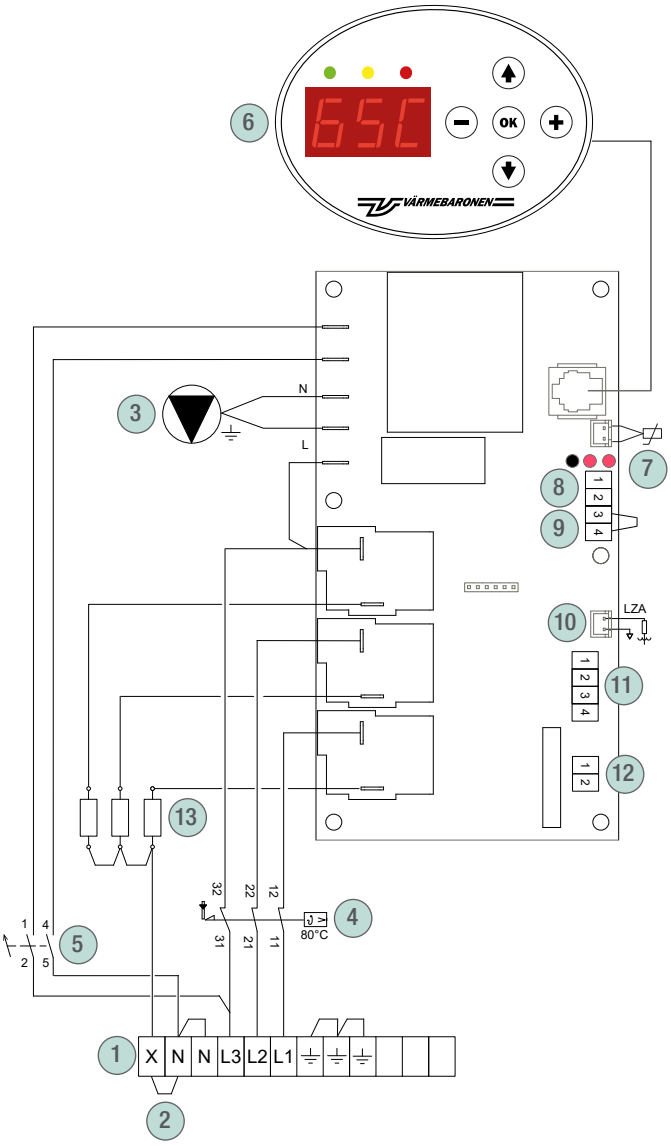


MP4: 3.0 kW / 400 V 2N~ / 7.5 A
MP6: 4.0 kW / 400 V/2N~ / 10 A
Supply Cable: 4 x 1.5 mm²
Fuse: 2 x 10 A
Jumper: N - X
Two power steps: **MP4:** 1.5/3 kW **MP6:** 2 / 4 kW



MP 4: 4.5 kW / 400V 3N~ / 6.5 A
MP 6: 6.0 kW / 400V/3N~ / 8.7 A
Supply Cable: 5 x 1.5 mm²
Fuse: 3 x 10 A
Two power steps: **MP4:** 2.25 / 4.5 kW **MP6:** 3 / 6 kW

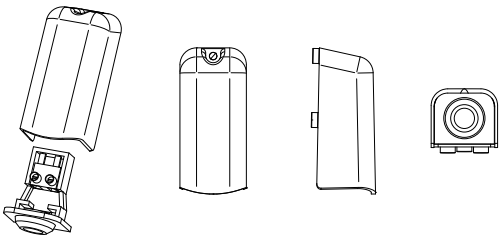




1. Terminal block.
2. Jumper, N - X.
3. Circulation pump.
4. Overheating protection.
5. Control switch.
6. Panel circuit board with overlay.
7. Boiler temperature sensor.
8. Connection for outdoor temperature sensor.
9. Connection external blocking / alternative temperature.
10. Water level sensor.
11. Room unit connection.
12. Potential-free relay output for buzzer alarm.
13. Immersion heater.
14. Power circuit board.

Electrical installation

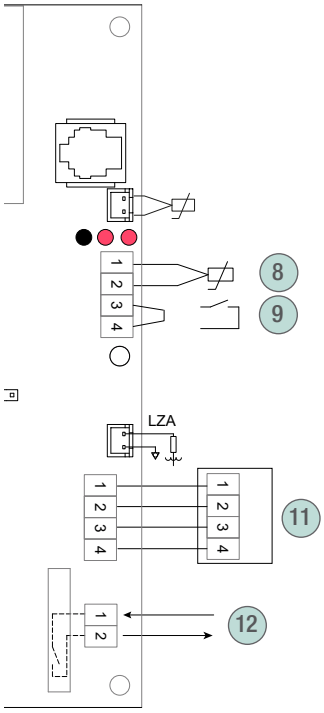
8 - Outdoor temperature sensor



The sensor is fitted to an outside wall, at half the height of the façade, close to a corner, facing north/north west.

The sensor must not be placed where it will be exposed to the morning sun or close to valves, windows or doors.

Connection with at least 0.5 mm^2 cable up to 30 metres.



9 - Alternative temperature / External blocking

The input has different functions depending on the regulation method chosen for the boiler.

For UTK regulation you can displace the level of the curve with the aid of an external potential-free contact function. See Menu, “Service level” rows 15 and 16.

With UTK regulation together with a room unit accessory, the room unit temperature regulation is changed by the set number of degrees.

Example. If the alternative temperature is set to -6, the middle point for adjustment will be displaced to 20 - 6 = 14°C when the function is activated.

In fixed boiler temperature regulation, the power can be blocked by means of an external potential-free contact function.

11 - Room Unit - accessory

The control can be equipped with a room unit with a temperature regulator and an alarm indicator, which has the same function as the red indicator on the front panel of the boiler.

The room unit increases heating comfort with the lowest possible energy consumption. Configurable temperature range is 15- 25°C.

Additional information is included with the device.

12 - Buzzer alarm

Potential-free relay output, closed in the event of an alarm.

Protective low voltage, max 48V~/ 24V=, 2A.

Warning, Limitation and Alarms

Warning - yellow indicator flashing

The display shows current warnings if no stop alarms occur. The information remains until OK is pressed and the cause has been resolved. Yellow Indication is solid when a warning is acknowledged with "OK", while the cause remains.

ot.1	High temperature of power circuit board. Temperature > 45°C, yellow indication goes out at temperature below 42°C. All connected output steps out at temperatures > 55°C, output can be stepped back in at temperatures < 45°C. See menu “Advanced Service Level” row 27.
ot.2	Boiler temperature above installed maximum limit. All connected output steps out and steps in again only when the temperature has dropped below the limit. See the menus "Service Level" in row 18 and "Advanced Service Level" in rows 20 and 21.
ot.3	Boiler temperature lower than 7°C. The boiler temperature shall exceed 7°C during operation, regardless of the set point. If external blocking/external control is active, the boiler is NOT allowed to step in output.
ot.4	Outdoor temperature sensor. Incorrect value, interruption/short circuit or disconnection of the room unit. UTK assumes the outside temperature is 0°C until the sensor is exchanged or reconnected.
ot.5	Room unit, temperature sensor. Incorrect value, interruption/short circuit of the sensor and/or disconnected room unit. The unit is disconnected from the regulator until the alarm is acknowledged and the room unit is fixed
ot.6	Room unit, adjustment. Incorrect value, interruption/short circuit or disconnection of the room unit. The unit is disconnected from the regulator until the alarm is acknowledged and the room unit is fixed.
ot.7	Temperature sensor on power circuit board. Incorrect value or interruption/short circuit. As a temporary solution the regulation will be carried out without the monitoring of the internal temperature.
ot.8	Low water level in the boiler. When there is a low water level in the boiler the power is blocked and the circulation pump is stopped. The regulation is resumed when the water level is restored. The warning remains until it is acknowledged with “OK”.

Limitations - Green indication flashes

b.03	Indicates during operation with UTK that the alternative temperature applies. With a fixed setpoint, external blocking prevents power connection. See “Service level” row 12.
b.04	Test mode, connection of power steps, circulation pump and buzzer alarm. See menu “Advanced Service Level” rows 23 - 26
ECO	ECO – function selected in the menu. See menu “User Level” row 8

Alarm - Red indication flashes - Boiler blocked

Display window shows current alarms. The information remains and the buzzer sounds until “OK” is pressed and the reason for the alarm has been corrected.

F.01	Boiler temperature sensor, incorrect value, interruption or short circuit.
F.02	Overheating protection triggered
F.03	Boiler temperature lower than 3°C. The boiler is blocked. Boiler temperature below 3°C - Freezing protection
F.06	Low supply voltage to electronic components, all output disconnected, the circulation pump is switched off.

Troubleshooting

Work on the system which requires tools, must only be carried out by authorised installers.

Ensure the boiler de-energised before starting work!

No or insufficient heat

The regulation valves are limiting the system or the set point value is too low for the boiler. Check and adjust.

Incorrect adjustment of the overflow valve. Check and adjust.

The boiler's display and indications are turned off

Check the fuses and that the boiler's control switch is in the on position.

The group fuses for the boiler are triggered

The immersion heater is broken. Check by isolation testing it. Measure between the outgoing side of the circuit board and earth. Call an installation engineer!

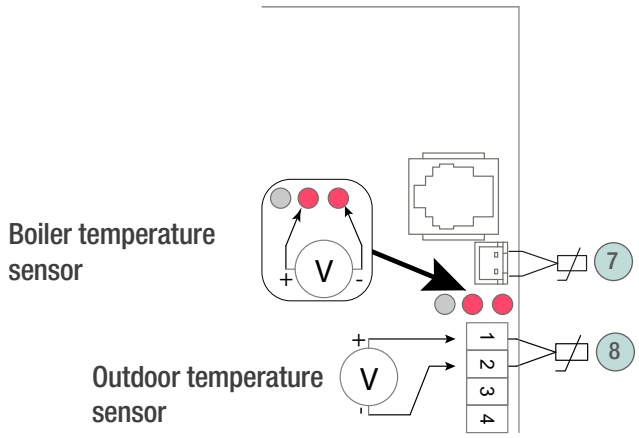
Manual operation - test mode

In order to test the boiler's functions when troubleshooting, you can control the power steps, the circulation pump and the buzzer alarm relay manually. Manual operation is activated in "Advanced service level", row 23. The function is deactivated automatically after 4 minutes.

Temperature sensor - measurement

The sensor must not be connected to the circuit board during resistance measurement.

Measuring points on the circuit board



Boiler temperature sensor

°C	kΩ	V	°C	kΩ	V	°C	kΩ	V
5	141.9	4.7	40	30	3.7	75	8.2	2.3
10	111.6	4.6	45	24.6	3.6	80	6.9	2
15	88.3	4.5	50	20.2	3.3	85	5.8	1.8
20	70.3	4.4	55	16.7	3.1	90	5	1.7
25	56.3	4.2	60	13.9	2.9	95	4.2	1.5
30	45.4	4.1	65	11.6	2.7	100	3.7	1.3
35	36.8	3.9	70	9.7	2.5			

Outdoor temperature sensor

°C	kΩ	V	°C	kΩ	V
-40	88.7	4.5	0	8.8	2.3
-35	64.2	4.3	5	6.8	2.0
-30	47.0	4.1	10	5.4	1.7
-25	34.7	3.9	15	4.2	1.5
-20	25.9	3.6	20	3.4	1.3
-15	19.5	3.3	25	2.7	1.1
-10	14.8	3.0	30	2.2	0.9
-5	11.4	2.7			

Technical data

Shared data	Ingress protection rating	IP x1				
	Volume	1.4				litres
	Expansion vessel volume pre-charge pressure	2 1.5				litres bar
	Calculation pressure	2.5				bar
	Test pressure	3.6				bar
	Safety valve	2.5				bar
	Calculation pressure	80				°C
	Adjustment temperature	10 - 60				°C
	Ambient temperature	10 - 30				°C
	Weight	17				kg
	*Installation height for immersion heater replacement	>380				mm
	Manufactured to	PED 2014/68/EU article 4.3				

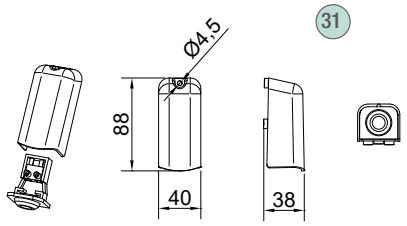
MP4 G2	Power options	1.5	2.25	3.0	4.5	kW
item no. 2040	Voltage	230	400V 2N	400V 2N	400V 3N	V
	Frequency	50/60				Hz
	Current	6.5	5.6	7.5	6.5	A
	Fuse protection	10	2 x 10	2 x 10	3 x 10	A

MP6 G2	Power options	2.0	3.0	4.0	6.0	kW
item no. 2041	Voltage	230	400V 2N	400V 2N	400V 3N	V~
	Frequency	50/60				Hz
	Current	8.7	7.5	10.0	8.7	A
	Fuse protection	10	2 x 10	2 x 16	3 x 10	A

Circulation pump	Wilo Para 15/6-43/SC	P = 3 - 43 W	Imax = 0.44 A
	Grundfos UPM3 AUTO L 15-50 130	P = 4 - 33 W	Imax = 0.36 A

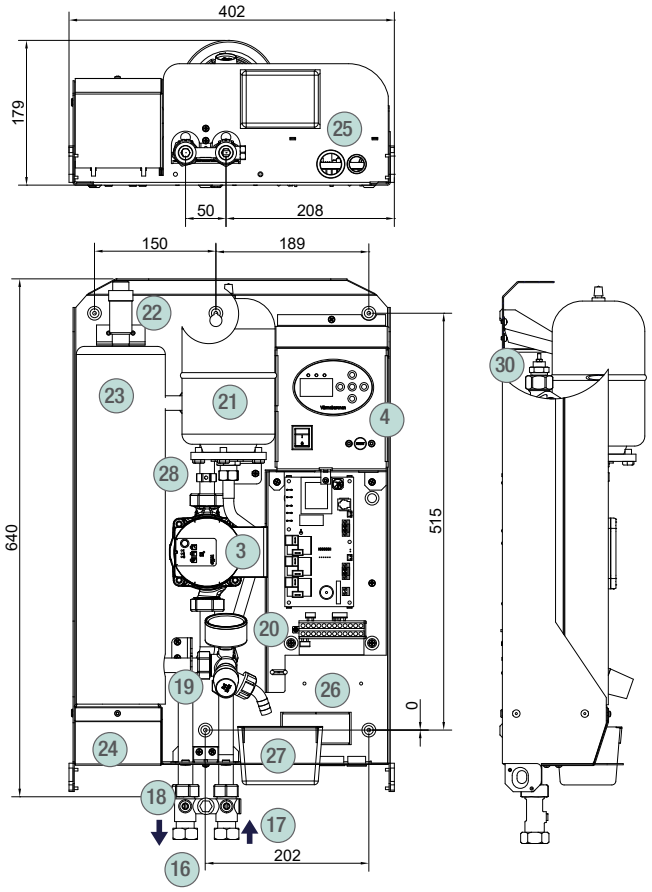
Outdoor temperature sensor	Ingress protection rating	IP 54
item no. 1921	Cable connection	0.5 - 4 mm²
	Temperature range	- 40…+90 °C
	Temperature regulator	Class II - Contribution to average seasonal efficiency 2%

**Distance between the bottom edge of the boiler and the floor level.*

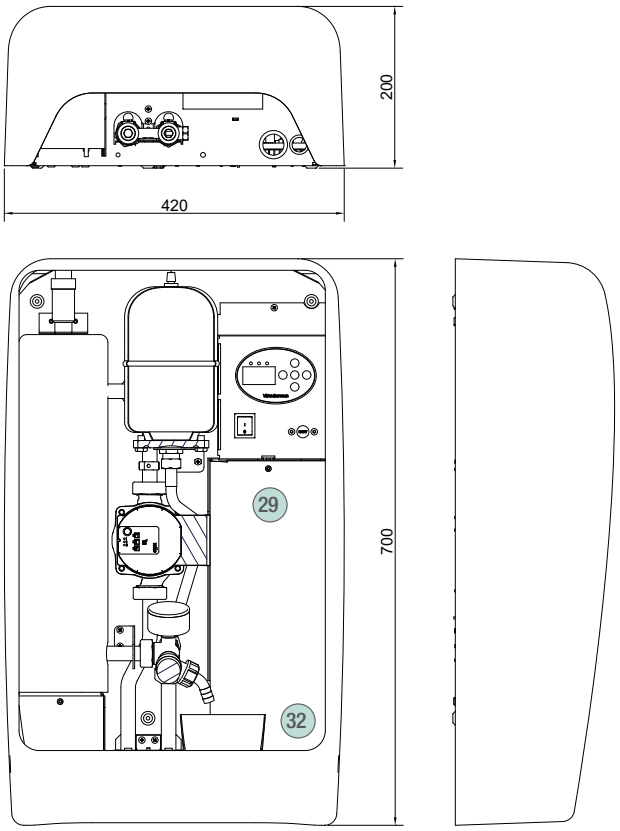


Technical data

Without cover



With cover



3. Circulation pump.
4. Overheating protection (reset under rubber plug).
16. Riser, R20 ext.
17. Return connection, R20 ext.
18. Overflow valve, bypass, with shut-off valves.
19. Safety valve.
20. Pressure gauge.
21. Expansion tank.
22. Vent valve.
23. Insulated stainless steel boiler tank with immersion heater.
24. Contact protection for the immersion heater cable connections.
25. Cable openings.
26. Knockout opening for cables, extending from wall.
27. Collecting vessel, waste water from safety valve.
28. Sensor clamp, thermometer bulb.
29. Contact protection.
30. Level sensor guard.
31. Outdoor temperature sensor
32. Rating plate

Components

Art. no.	Designation	Quantity
300017	O-ring for immersion heater	1
210221	Panel circuit board	1
700414	Overlay	1
210222	Power circuit board	1
210224	Cable, power - panel circuit board	1
210205	Boiler temperature sensor	1
210227	Outdoor temperature sensor	1
440040	Level sensor	1
130038	Power switch	1
120028	Overheating protection	1
370092	Reset plug	1
245078	Vent	1
245117	H-bypass, overflow valve	1
245524	Safety valve	1

Art. no.	Designation	Quantity
370080	Collection tank, overflow water	1
246221	Expansion tank	1
380051	Manometer	1
720259	Cover	1
731392	Immersion heater container	1
280018	Insulation, immersion heater container	1
Immersion heater		
110010	MP4 G2: 4.5 kW	1
110015	MP6 G2: 6 kW	1
Circulation pump		
246004	Wilo Para 15/6-43/SC	1
150155	Adapter cabling for Wilopump	1
alternatively		
246003	Grundfos UPM3 AUTO L 15-50 130	1

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