Electric mobile heating units

English translation of original operating instructions

For type MH19.2ME/Q1, MH20.2E, MH40.2ME/Q1

Two different control units are described in this manual. Please observe the appropriate instructions for your device in the following sections

3.3.3 Settings for type MHRE control unit
3.3.4 Settings for type MHRE control unit

yellow line

Art. No: MH-BA-25

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Symbols and terms used

All safety and warning notices in this manual have been clearly highlighted. The following symbols and signal words have been used for warnings.

	**Danger** Warns you of dangers that could result in personal injury or considerable damage to property.
	**Attention** Malfunctions may occur during operation if you do not follow these instructions.
	**Risk of electric shock** Indicates a situation that may result in electric shock.
	**Risk of burns** Indicates a situation that may cause burns due to extremely high or low temperatures.
	**Danger of explosion** Indicates a situation which may result in an explosion.
	**Warning: Flammable material**
	**Tip** Reference to useful information when handling the device
	**Information**

Abbreviations:

STB	Safety temperature limiter
MAG	Diaphragm expansion vessel
KFE	Fill and drain valve
VL	Flow
RL	Return
HK	Heating circuit
TWW	Warm drinking water
mWS	Meter water column

1. Important safety regulations

IMPORTANT SAFETY REGULATIONS FOR BOILERS

READ THIS MANUAL CAREFULLY BEFORE CONNECTING THE BOILER TO THE HEATING CIRCUIT. **Installation and connection may only be carried out by qualified personnel.**

Use the device only for the purpose described in this manual. Otherwise you may endanger yourself or damage the device.

Danger due to unauthorised modifications!

Never modify the unit or any part of it without obtaining a clearance certificate from the manufacturer. Otherwise you may put yourself and others at risk.
Serious injuries and/or considerable damage to property could result.

Danger for unauthorised operating personnel!

Only work with the device if you have been instructed accordingly and have understood the contents of these operating instructions.

Never bridge the settings of the safety devices.

The device must not be used in hazardous areas

The electrical power supply must be disconnected before any maintenance work is carried out on the unit.

Danger from fire and smoking!

Never smoke or light a fire on or in the system while you are working on or in the heating system.

Otherwise you may put yourself at risk. This could result in serious injuries or considerable damage to property.

Risk of burns!

During and immediately after operation, do not touch the device or any internal components.

Risk of electric shock!

Work on electrical components must be carried out by qualified personnel in accordance with local regulations.

2. Technical data

Please refer to the following tables for the respective technical data and connected loads for your model.

2.1 MH19.2ME/Q1

Dimensions (W x D x H):	600 mm	580 mm	1220 mm
Weight (including transport trolley):	approx. 58 kg		
Circulating pump:	max. 3.0 m^3/h, max. 5.5 mWS		
Heating connection:	VL/RL DN 25, bayonet lock		
Volume MAG:	10 litres		
Recommended operating pressure:	1.5 – 2.0 bar (safety valve = 3.0 bar)		
Degree of protection:	IP 44		
Heating mode:	20 – 80°C		
Heating capacity:	3 kW	11 kW	19 kW
Electrical connection:	CEE 16 A /230V/50Hz/1~	CEE 16 A /400V/50Hz/3~	CEE 32 A /400V/50Hz/3~
Control unit:	**MHRE**		**MHRQ1**
	Digital		Digital and programmable Screed heating programs
Screed heating programs:	- Screed curing DIN 1264-4 - Functional heating DIN 1264-4		- Screed curing DIN 1264-4 - Functional heating DIN 1264-4 - OE standard B 3732 - OE standard B 2242-2 - Suissetec Cement - Suissetec Calcium Sulphate $CaSO_4$

2.2 MH20.2E

Dimensions (W x D x H):	600 mm	580 mm	1220 mm
Weight (including transport trolley):	approx. 58 kg		
Circulating pump:	max. 3.0 m^3/h, max. 5.5 mWS		
Heating connection:	VL/RL DN 25, bayonet lock		
Volume MAG:	10 litres		
Recommended operating pressure:	1.5 – 2.0 bar (safety valve = 3.0 bar)		
Degree of protection:	IP 44		

Heating mode:	20 – 80°C
Heating capacity:	19 kW
Electrical connection:	CEE 32 A/400V/50Hz/3~

Control unit:	MHRE	MHRQ1
	Digital	Digital and programmable Screed heating programs
Screed heating programs:	- Screed curing DIN 1264-4 - Functional heating DIN 1264-4	- Screed curing DIN 1264-4 - Functional heating DIN 1264-4 - OE standard B 3732 - OE standard B 2242-2 - Suissetec Cement - Suissetec Calcium Sulphate $CaSO_4$

2.3 MH40.2ME/Q1

Dimensions (W x D x H):	670 mm	585 mm	1260 mm
Weight (including transport trolley):	approx. 70 kg		
Circulating pump:	max. 3.0 m^3/h, max. 5.5 mWS		
Heating connection:	VL/RL DN 25, bayonet lock		
Volume MAG:	12 litres		
Recommended operating pressure:	1.5 – 2.0 bar (safety valve = 3.0 bar)		
Degree of protection:	IP 44		
Heating mode:	20 – 80°C		
Heating capacity:	8 kW	16 kW	40 kW
Electrical connection:	CEE 16 A /400V/50Hz/3~	CEE 32 A /400V/50HZ/3~	CEE 63 A /400V/50Hz/3~

Control unit:	MHRE	MHRQ1
	Digital	Digital and programmable Screed heating programs
Screed heating programs:	- Screed curing DIN 1264-4 - Functional heating DIN 1264-4	- Screed curing DIN 1264-4 - Functional heating DIN 1264-4 - OE standard B 3732 - OE standard B 2242-2 - Suissetec Cement - Suissetec Calcium Sulphate $CaSO_4$

2.4 Intended use

The mobile electric heating units are compact and fully functional mobile electric heating units for universal use as emergency heating in the event of heating faults, when working on a heat generator, for frost protection, for screed heating or for preventive/initial heating, e.g. to prevent icing up of a geothermal heat pump.

3. Setup/commissioning

3.1 Transport

Transport by forwarding agency

- Never lift or lash the device by the fittings.
- Store the device in a dry, frost-free and dust-protected place.
- Disconnect the device from the power source for storage.
- After use, store the device only in a completely empty condition. In this way you ensure that no damage occurs to the device during transport and storage.

3.2 Setup

- Ensure the device is set up on firm and level ground.
- Secure the device against rolling away.

3.3 Commissioning

Installation and commissioning may only be carried out by qualified personnel

3.3.1 Connection

- Check whether the ball valves with thermometer handle are closed (Fig. 1, Section 3.3.1). Close these if necessary.
- Connect the connecting pipes for the return (blue, Fig. 1, Section 3.3.1) and flow (red, Fig. 1, Section 3.3.1) to the on-site heating system.

(Figure 1)

3.3.2 Filling and venting

- Attach a vent line to the flow pipe (Pos. 4, Fig. 2, Section 3.3.2).
- Attach a water supply line to the fill and drain valve (Pos. 6, Fig. 2, Section 3.3.2).
- Open the fill and drain valve for the water supply line and bleed line.
- Fill the device until there is no more air in the device.
- Close the fill and drain valve at the flow (Pos. 4, Fig. 2, Section 3.3.2) and pay attention to the indicated pressure (Pos. 5, Fig. 2, Section 3.3.2). The recommended operating pressure is 1.5 – 2 bar.
- Connect the device to the power supply (Pos. 7, Fig. 2, Section 3.3.2).
- Set the current selector switch to the desired connection (Pos. 7, Fig. 2, Section 3.3.2).

(Figure 2)

- Work on electrical components must be carried out by qualified personnel in accordance with local regulations.
- Never bleed or fill the device when it is connected to the power supply.

- If you operate the device with deionised water, the conductivity of the water may be too low in rare cases. The error "Air in boiler" appears. This is usually only the case for conductivity below 8–10 µS. If required, you can retrofit your device with a sensor for deionised water.

3.3.3 Settings for the type MHRE control unit

- The heating circuit pump starts.
- A rotating running light appears in the display (Fig. 3, Section 3.3.3).
- The LED operating display flashes at position **"0"** (Fig. 3, Section 3.3.3).
- The **"boiler ventilation"** LED indicator lights up green. (Fig. 3, Section 3.3.3)
- The device is ready for operation.

(Figure 3)

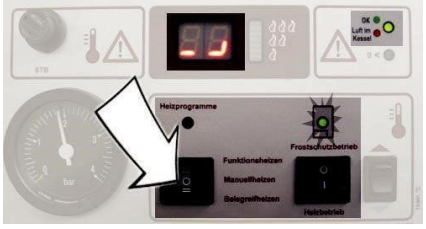
- If the LED indicator ***"U<"*** lights up ***red***, Have the on-site power supply checked by a specialist.
- If the LED indicator **"Air in boiler"** lights up **red** and the heating circuit pump does not start, the boiler is not sufficiently vented. Disconnect the device from the power supply and bleed the device as described in Section 3.3.2.

- **Automatic heating mode**

- Set the switch (Fig. 4, Section 3.3.3) to on.
- The LED power indicator (Fig. 4, Section 3.3.3) lights up permanently. The actual temperature is shown on the display.

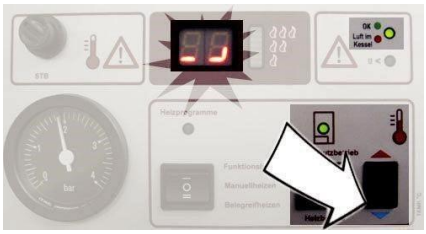
(Figure 4)

- Use the selector switch (Fig. 5, Section 3.3.3) to select your desired screed program.



(Figure 5)

- Tap on the temperature selector switch (Fig. 6, Section 3.3.3) to display the target temperature and the remaining running time of the program.

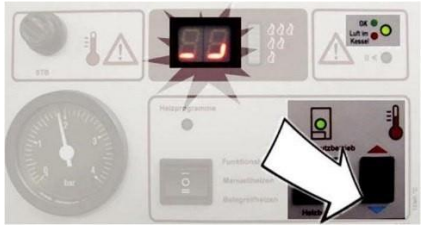


(Figure 6)

- If one of the selected heating programs is manually interrupted, the program is stopped and starts from the beginning.
- If a heating program is active, the display alternates between **"PR"** and the **boiler temperature**.
- You **cannot** intervene in the program sequence.
- In case of power failure, the current point within the heating program is stored for one hour. If the power supply is active again, the heating program automatically resumes from this point.

• Manual heating mode

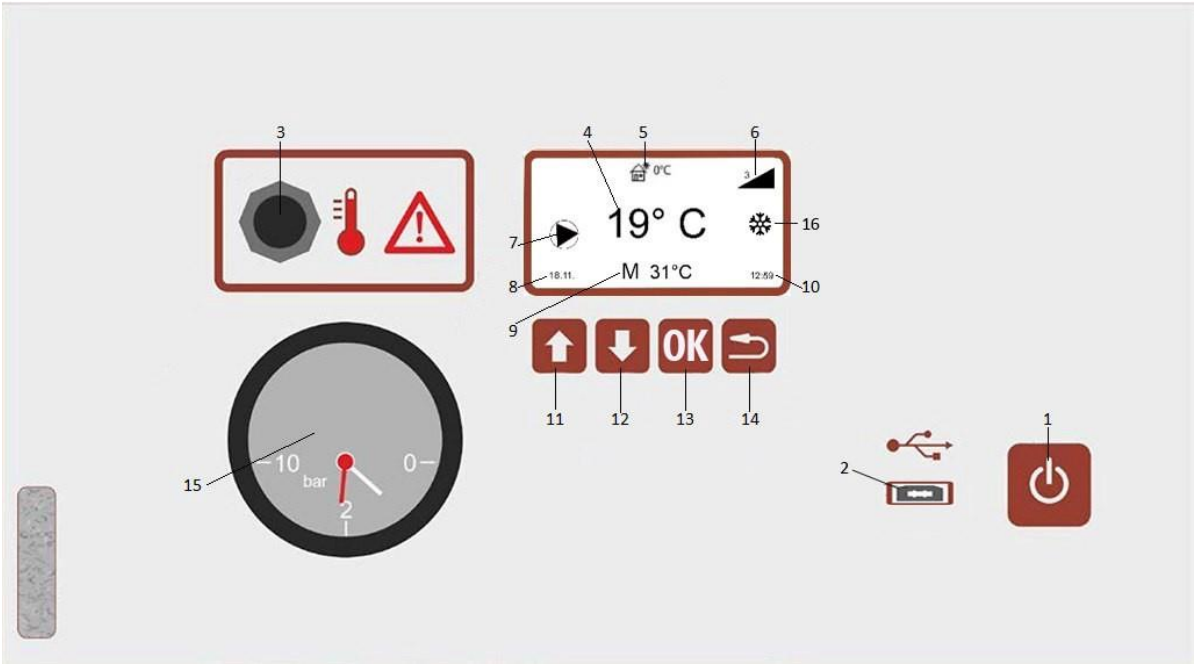
- Switch on the device.
- Press the temperature selection button up or down for 5 seconds until the temperature indicator on the display flashes. (Fig. 7, Section 3.3.3)
- Set the desired temperature using the temperature selection button.



(Figure 7)

3.3.4 Setting the MHRQ1 type controller

Installation and commissioning may only be carried out by qualified personnel



1 Power button
2 USB port
3 STB
4 Boiler temperature
5 Outdoor temperature (only for units with outdoor temperature sensor)
6 Number of active heating stages
7 Heating circuit pump in operation
8 Date
9 Operating mode: Manual M or screed heating program
10 Time
11 Multifunction key
12 Multifunction key
13 Enter key / select program
14 Back / request program info
15 Pressure display
16 Frost protection active

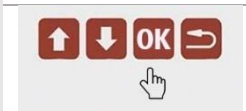
3.3.4.1 Menu overview

1. Service menu	Outdoor temperature sensor / weather-controlled
	Heating circuit pump run-on
	Stand-by temperature
	Min. boiler temperature
	Max. boiler temperature
	Switch-on delay for power levels
	Date / time
	Delete log data
	Reset counter
	Reset to factory settings
2. Programs/log data menu	Pre-installed programs
	Installing your own programs
	Read log data
3. User menu	Select language
	Power limit
	Set clock
	Factory settings
	Information

Setting the boiler temperature

Press the arrow keys (11 and 12) up or down to set the desired temperature. Confirm the change with the Enter key (13).

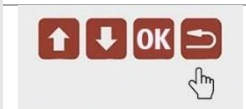
Select program



Press the Enter key (13) to select the heating program. Use the arrow keys (11 and 12) to set the desired program and confirm with the Enter key (13).

Press the Enter key (13) to cancel the program. Use the keys (11 and 12) to select yes or no and confirm your selection with the Enter key (13).

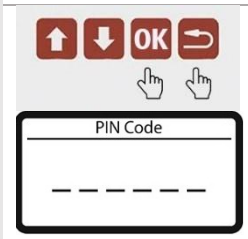
Back / query remaining program time



Press the Back key (14) to return to the previous page in the menu.

Press the Back key (14) to query the remaining program time.

Service menu



Press the buttons (13 and 14) for at least 5 seconds to call up the service menu.

Enter the PIN by pressing the following key combination 334112:

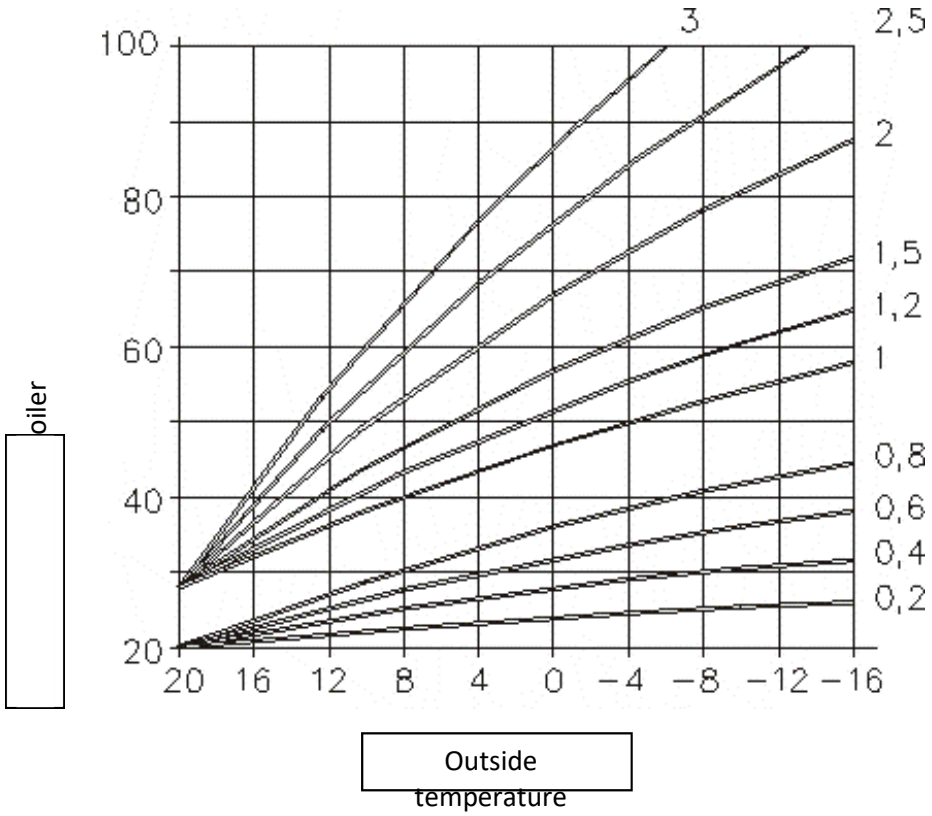
OK 2 x ⮌ 1x ⮝ 2x ⮟ 1x

3.3.5 Service menu

3.3.5.1 Outdoor temperature sensor / weather controlled

Setting the heating characteristic (only for devices with outdoor temperature sensor)

Preset characteristic curves



- Underfloor heating ON → Heating characteristic 0.1 – 0.9
- Underfloor heating OFF → Heating characteristic 1 – 3
- Select the desired heating characteristic with the arrow keys (11 and 12) and confirm with the Enter key (13).
- The heating characteristic can only be set when the outdoor sensor is active.
- This function is not possible with mobile devices.

3.3.5.2 Heating circuit pump run-on

- 0 – 15 minutes
- Select the desired time with the arrow keys (11 and 12) and press Enter (13) to confirm.

3.3.5.3 Stand-by temperature

- 10°C – 50°C
- Select the desired stand-by temperature with the arrow keys (11 and 12) and confirm with the Enter key (13).

3.3.5.4 Min. boiler temperature

- You can set the minimum boiler temperature to 15°C – 50°C.
- Select the desired temperature with the arrow keys (11 and 12) and confirm with the Enter key (13).

3.3.5.5 Max. boiler temperature

- You can set the maximum boiler temperature to 50°C – 90°C. (Max. operating temperature 80°C)
- Select the desired temperature with the arrow keys (11 and 12) and confirm with the Enter key (13).

3.3.5.6 Switch-on delay for power levels

- You can set the time between switching on two power levels to between 15 and 360 seconds.
- Select the desired temperature with the arrow keys (11 and 12) and confirm with the Enter key (13).

3.3.5.7 Date / time

- Select the desired date or time with the arrow keys (11 and 12) and confirm with the Enter key (13).

3.3.5.8 Reset counter

- You can reset the operating hours of the individual heating elements. The total operating time of the boiler cannot be reset.
- Select the desired heating element or all heating elements with the arrow keys (11 and 12) and confirm with the Enter key (13). Select YES or NO with the arrow keys (11 and 12) and confirm with Enter.

3.3.6 Programs/log data menu

3.3.6.1 Preinstalled programs

	MHRE + MHRQ1		Only with MHRQ1			
Day	Screed curing heating DIN 1264-4	Functional DIN 1264-4	OE standard B 3732	OE standard B 2242-2	Suissetec Cement	Suissetec Calcium sulphate $CaSO_4$
1	25°C	25°C	20°C	20°C	20°C	20°C
2	30°C	25°C	25°C	25°C	20°C	20°C
3	35°C	25°C	30°C	30°C	20°C	20°C
4	40°C	50°C	35°C	35°C	20°C	20°C
5	45°C	50°C	40°C	40°C	20°C	20°C
6	50°C	50°C	45°C	45°C	20°C	20°C
7	50°C	50°C	45°C	50°C	20°C	25°C
8	50°C		45°C	50°C	20°C	25°C
9	50°C		35°C	50°C	20°C	25°C
10	50°C		25°C	40°C	20°C	50°C
11	50°C			30°C	20°C	50°C
12	50°C			20°C	20°C	50°C
13	50°C			20°C	20°C	50°C
14	50°C			20°C	20°C	
15	50°C				20°C	
16	50°C				20°C	
17	45°C				20°C	
18	35°C				20°C	
19	25°C				20°C	
20					20°C	
21					25°C	
22					25°C	

23				25°C	
24				50°C	
25				50°C	
26				50°C	
27				50°C	

Program terminated:
25°C

3.3.6.2 Installing your own programs

Create program file

- Download and install the Windows app **MHLogs** from www.mobiheat.de on your PC or notebook.
- Start the **MHLogs**program.
- In the main menu, click on 

- Click the **New Program** button.
- Enter the desired **name** for the program.
- Enter the number of **days** for your program.
- In the **Temperatures** line, insert your desired temperatures and separate them with a comma without spaces.
- Insert an empty USB stick into a free USB slot. (The USB stick must be formatted as **FAT32**).
- Click on **Export** and select the USB stick as the storage location.
- Close the program.
- After the message **Update successful** is displayed, you can remove the USB stick.
- Connect the USB stick to the control unit (port 2).
- Use the arrow keys (11 and 12) to select **Transfer Setup Files** and confirm with Enter. (13)

3.3.6.3 Reading out log data

- Connect a USB flash drive
- If setup files are available, use the arrow keys (11 and 12) to select log data onto USB and confirm with the Enter key (13).
- If there are no setup files, the log data is automatically loaded onto USB.

- Create log.
  - Connect the USB stick to your PC or notebook.
  - Start the **MHLogs**program.
  - Click in the menu bar on 

  - Select the folder with your recordings on the USB stick.
  - By double-clicking on the recording in the MHLogs program, you can view the recording as text and graphics.
  - To create a PDF log, enter your company data under 

(in the main menu) and then select a recording. On the menu, click on 

, fill out the form, and then click **Save log as PDF**.

3.3.7 User menu

3.3.7.1 Select language

- Select the desired language with the arrow keys (11 and 12) and confirm with the Enter key (13).

3.3.7.2 Power limitation

- Select the desired number of heating elements with the arrow keys (11 and 12) and confirm with the Enter key (13).

3.3.7.3 Setting the clock

- Set the desired time with the arrow keys (11 and 12) and confirm with the Enter key (13).

3.3.7.4 Factory settings

- Select yes or no with the arrow keys (11 and 12) and confirm with the Enter key (13).

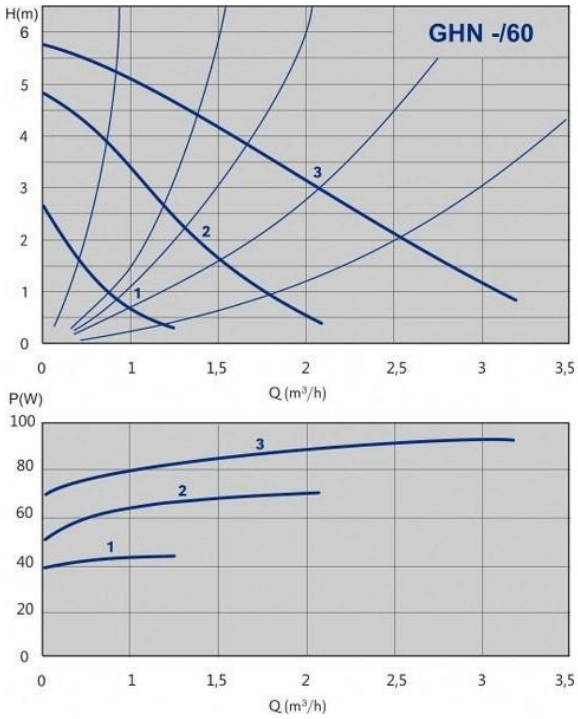
3.3.7.5 Information

- Software version is displayed.
- Use the arrow keys (11 and 12) up or down to display the operating hours.

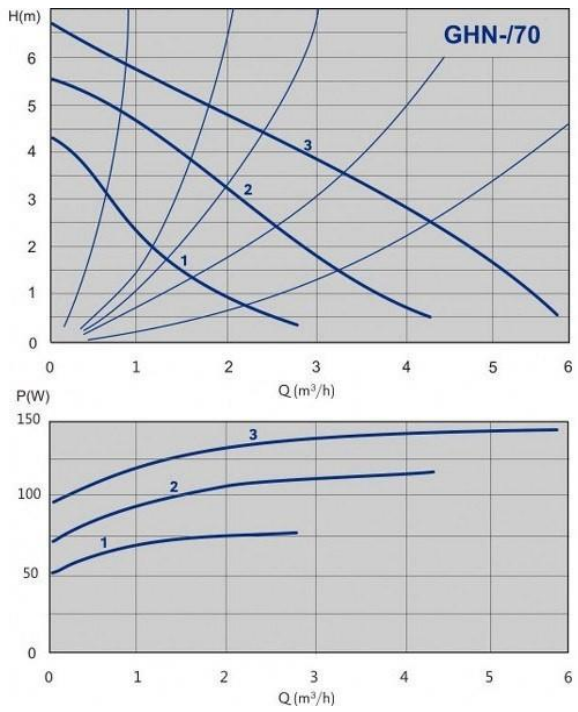
3.3.8 Setting the heating circuit pump

- Heating circuit pump MH19.2ME/Q1

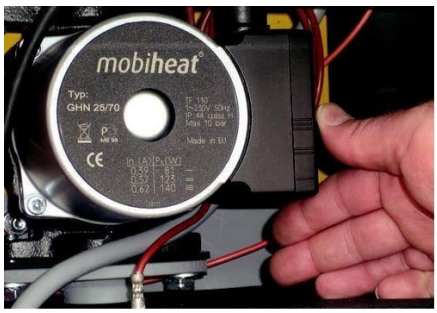
- Heating circuit pump MH20.2E



- Heating circuit pump MH40.2ME/Q1



- If the rooms are not heated sufficiently, the speed of the pump may be too low. In this case, switching to a higher speed is necessary. If the pump is set to a speed that is too high, flow noises are generated in the pipes and especially at throttled thermostatic valves. They can be switched to a lower speed by means of a rotary knob on the terminal box: left for minimum and right for maximum speed (Fig. 8, Section 3.3.8).



(Figure 8)

3.3.9 Voltage monitoring

- Voltage monitoring protects the device against undervoltage and overvoltage. If the power supply is faulty, the heater is switched off.

U	O	On	Meaning
√	√	√	Voltage OK
	√	√	Overvoltage
√		√	Undervoltage
		√	Neutral conductor or phase missing, no voltage / neutral conductor or phase missing

(Figure 9)

(Figure 10)

3.3.10 Dismantling

- Close the ball valves on the flow line (red, Fig. 1, Section 3.3.1) and on the return line (red, Fig. 1, Section 3.3.1). Empty the system, if possible at the lowest point.

4. Malfunctions: Causes and remedies

4.1 General

Malfunction	Possible cause	Remedy
• **Heating system cools down**	• No mains voltage	• Check on-site fuse • Check supply line • Check earth-leakage circuit breaker and devices in the unit itself and in the distributor provided by the customer • Check whether the system is switched on
	• System pressure too low or too high. (Pressure should be at least 1.5 bar, maximum pressure 3 bar)	• If pressure is low – top up with water • If pressure is too high – drain off water
	• Check flow and return temperature	• The flow temperature should be equal to the boiler temperature (+/- 5°C)
	• Air in the system	• Bleed system
	• No circulation	• Check pump is functioning properly • Check barriers
	• STB has triggered (110°C)	• Unlock STB
	• Incorrect setting on room thermostat	• Check room thermostat setting • Room thermostat bridge is missing
• **Display is dark**	• Fuse F1 on the circuit board defective	• Replace fuse F1
• **Heating too warm**	• Check error message on controller, burner or pump	• For troubleshooting, check the error list for the respective device
	• Check the temperature setting on the control unit	• Set temperature

• **Earth-leakage switch cannot be switched on**	• STB defective • Heating rods defective	• Check or replace STB • Check or replace heating elements
• **Target temperature not visible**	• Room thermostat bridge is missing • Target temperature is controlled via room thermostat	• Check whether there is a bridge for room thermostat • Check room thermostat setting.

4.2 Error code table for MHRE control unit

Troubleshooting may only be carried out by qualified personnel

Error code on display	Cause	Remedy
• C1	• Short-circuit in temperature sensor	• Contact mobiheat
• C2	• A system error has occurred	• Contact mobiheat
• C3	• A system error has occurred	• Contact mobiheat
• O1	• Cable break • Temperature sensor is not connected or defective	• Contact mobiheat
• O3	• A system error has occurred	• Contact mobiheat
• Pf	• The boiler is not sufficiently vented, the LED "Boiler ventilation" lights up red	• Close the ball valves with thermometer handle for return and flow • Bleed the unit. See Section 3.3.2
	• The power supply is faulty. The ***"U<"*** LED lights up	• Have the on-site power supply checked by a specialist. • Contact mobiheat

4.3 Error code table for MHRQ1 control unit

Error code on display	Cause	Remedy
• Air in the boiler	• Not sufficiently vented	• Bleed the device (Section 3.3.2)
• Temperature sensor XXX interrupted	• Temperature sensor XXX no correct contact or defective	• Check plug connections for tight fit or check cable for damage • Replace temperature sensor
• Temperature sensor XXX short circuit	• Temperature sensor XXX defective	• Check cable for damage • Replace temperature sensor

4.4 Heating circuit pump

Malfunction	Possible cause	Remedy
• **Pump makes noises**	• Air in the system • Pump defective • Incorrect operating mode and power set • Pump output too low	• Bleed system • Replace pump • Adjust the pump • Check pump setting

5. Maintenance

5.1 Regular maintenance

- Clean the device after each use.
- Check and clean the heating elements after each use.
- Check the STB before each start-up.
- Check the residual current circuit breaker before each start-up.
- Clean the dirt trap in the return line after each use.
- Have the device serviced by mobiheat once a year.

Please observe the statutory inspection intervals

5.2 Storage

- After use, store the device only in a completely empty condition.
- Turn all ball valves to 45° position.

This is to ensure that storage does not cause any damage to the device.

6. Accessories

6.1 Supplied accessories (included with rental equipment / optional for purchased equipment)

- 1x connecting pipe heating DN 25 a 2.8 m with GEKA coupling Art. No: MHABL25H

6.2 Optional accessories

- 1x cable 20 m Art. No: MHEVK2016