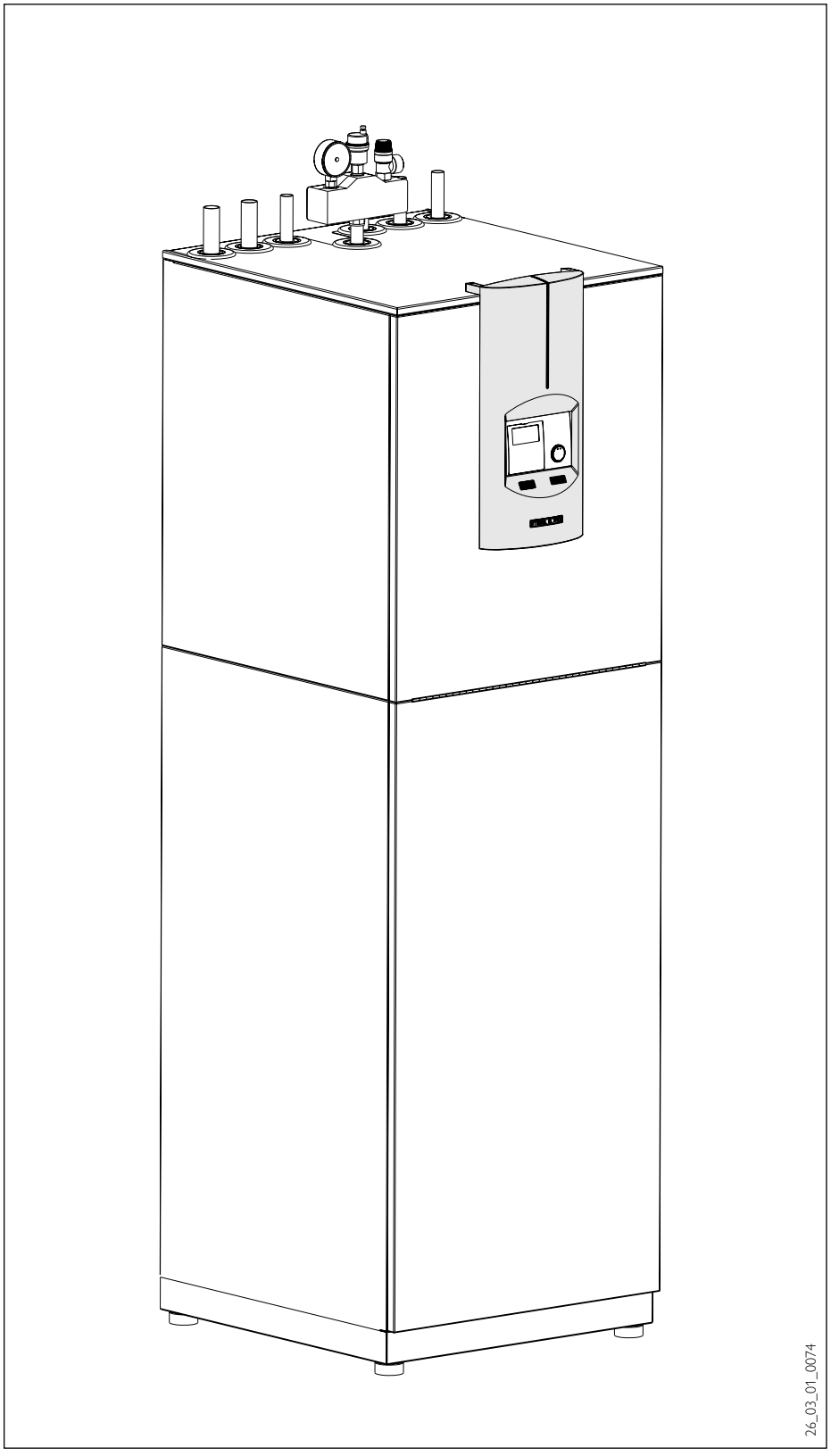
STIEBEL ELTRON

WPC 5, WPC 7, WPC 10, WPC 13
WPC 5 cool, WPC 7 cool, WPC 10 cool, WPC 13 cool
Brine/water heat pump
Operating and installation instructions



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The installation (water and electrical work) and commissioning, as well as the maintenance of this equipment, must only be carried out by an authorised qualified contractor in accordance with these instructions.

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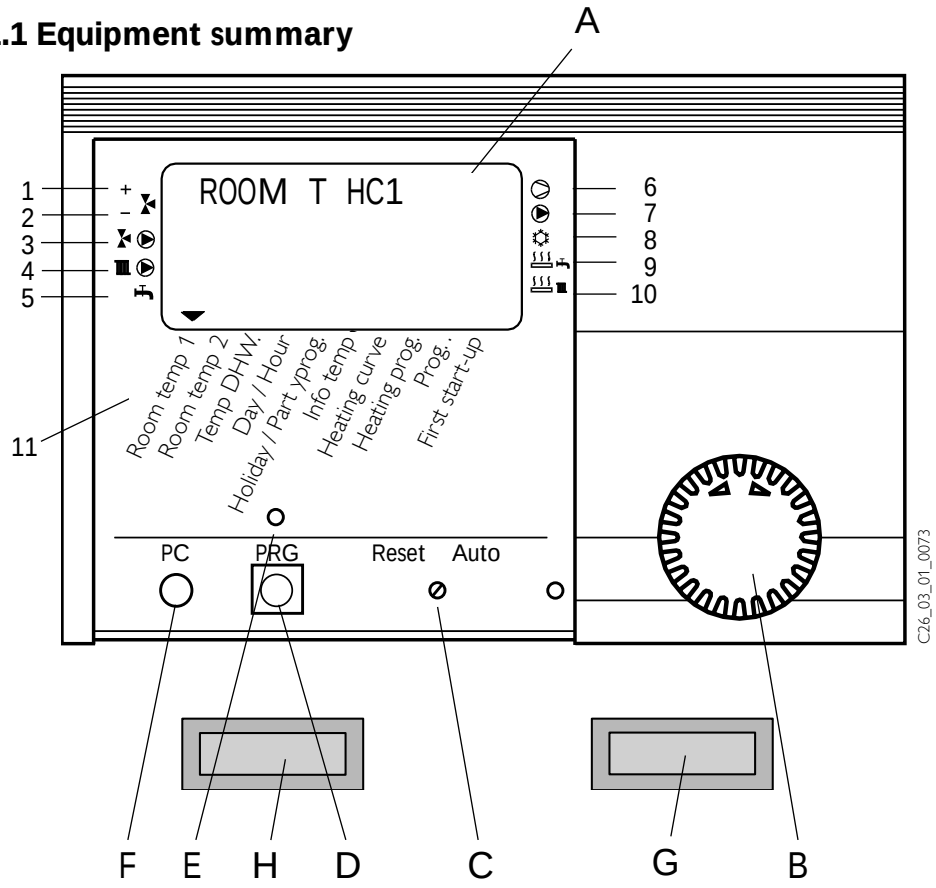
1 Operating instructions for users and contractors

1.1 Equipment summary



System status display

1 Mixer opens
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5 DHW heating
6 Compressor 1
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11 Equipment menu
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E Programming indicator
F Optical interface RS 232
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Only for WPC
G ON indicator, blue (cooling)
Only for WPC....cool
H Signal indicator, red (signal anode)

1.2 Equipment description

These are central heating heat pumps with integral DHW cylinder, designed for operation as brine/water heat pumps. The heat pump extracts energy from the heat source medium, i.e. brine, at a low temperature level. This extracted energy is then transferred to the heating water at a higher level, enriched with the energy drawn by the compressor. Subject to the heat source temperature, the heating water can be heated up to a flow temperature of 60 °C.

Inside the equipment, a brine pump, a heating circuit pump and a three-way valve for diverting the flow either to the heating circuit or the DHW circuit have been integrated. DHW is heated by pumping the heating water, which has been heated by the heat pump, through a heat exchanger into the DHW cylinder, where it transfers its energy to the DHW.

The equipment is regulated by an integral, weather-compensated return temperature controller (heat pump manager WPMi). The WPMi also regulates the DHW heating to the required temperature. If, when DHW is heated up, temperatures are required, which are higher than the maximum heat pump flow temperature, then the DHW heating is automatically completed by an integral electric booster heater, subject to the ECO function being disabled.

A red signal indicator shows that the signal anode has been consumed.

Special features of the WPC....cool
An additional heat exchanger and three-way valve for changing over between heating and cooling are integrated into the WPC....cool. The living space is cooled by the brine being pumped though the additional heat exchanger, where the energy from the heating water is extracted and passed to the cooler zones underground.

The blue ON indicator shows that the heat pump has been switched to cooling.

Summary of WPMi functions

- RS 232 interface for adjustment and monitoring via a PC
- System expansion through the FEK and FE 7 remote control units
- Input of the system and heat pump frost protection limits
- At least 24 h backup power for the clock
- Automatic pump kick-start
- Reset option
- Stored fault list with precise fault code indication, together with date and time display
- Rapid and accurate fault diagnostics using system analysis including temperature scan for heat pump and peripheral equipment without regarding additional equipment.
- Factory settings for time switch programs for all heating and DHW circuits

1.3 Operating and installation instructions

Subject to the relevant system, also observe the operating and installation instructions of the components of which the system comprises.

⚠ Keep these operating and installation instructions safely and pass them on to any new user, should the equipment change hands, and let your contractor check their content in conjunction with any maintenance and repair work.

1.4 Maintenance and care

Maintenance work, e.g. checking the electrical safety, must only be carried out by a qualified contractor. Protect the equipment from dust and dirt ingress during building work.

A damp cloth is sufficient for cleaning all plastic and sheet steel parts. Never use scouring or solvent-based cleaning agents.

1.5 Important information

The heat pumps must only be installed and maintained by qualified contractors.

Never:

- use process media, which are not expressly approved
- heat liquids other than heating water
- install the equipment
  a) outside
  b) in rooms where there is a risk from frost
  c) in wet areas, e.g. bathrooms
  d) in rooms where there is a risk of heavy dust contamination
  e) in areas, where there is a risk of explosions
- operate the equipment
  a) outside the stated temperature limits
  b) without minimum flow rate on the heat source and heat utilisation side

The DHW cylinder is at mains water pressure. During heat-up, expansion water drips from the safety valve, if no DHW expansion vessel is installed. Inform your local contractor of water drips from the system after the heat-up process has ended.

1.6 Operation

The operation is split over three control levels. Control levels 1 and 2 are accessible to users and contractors alike. Control level 3 is reserved for contractors:

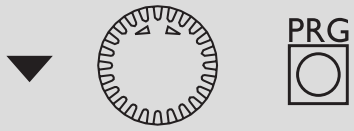
Control level 1 (control flap closed)
At this level, parameters, such as room temperature, DHW temperature, heating programs, etc. can be adjusted (for this, see section 1.8.2).

Control level 2 (control flap open)
At this level, parameters, such as room temperature, DHW temperature, heating programs, etc. can be adjusted (for this, see section 1.8.2).

Control level 3 (for contractors only)
This level is protected by a code and should only be used by contractors. At this level, heat pump and system-specific details are determined (for this, see sections 2.10 and 2.12).

Vital facts in brief
Settings

All settings follow the same pattern:



Opening the control flap toggles the WPMi into programming mode.
An indicator symbol ▼ is shown at the bottom of the display at system parameter ROOM TEMP 1.
Turning rotary selector ○ allows you to move the indicator to the parameter you want to change.
Press PRG ○ to change the value of the parameter. Whenever the red indicator above PRG ○ illuminates, you can modify the current value by turning rotary selector ○. Press PRG ○ again; the illuminator then extinguishes and the new set value has been saved. You can modify further values for this parameter by pressing PRG ○, if the red indicator has not been extinguished above PRG ○. The programming step can only be terminated when the red indicator has extinguished.

Terminate programming
You can terminate the process after entering and saving the required parameter changes by closing the control flap.
However, if you want to make further changes, turn the rotary selector ○ until the display shows BACK, then press PRG ○
This will return you to the previous level.
Closing the control flap with illuminated indicator above PRG ○ returns the WPMi into its original position. The modified value will then not be saved.

During commissioning, a system check will be implemented, e.g. all sensors that are currently connected are displayed upon request. Sensors not connected before the system went 'live' are not registered by the WPMi and are therefore not displayed. The indicator symbol skips that parameter.

1.7 What to do if . . . ?

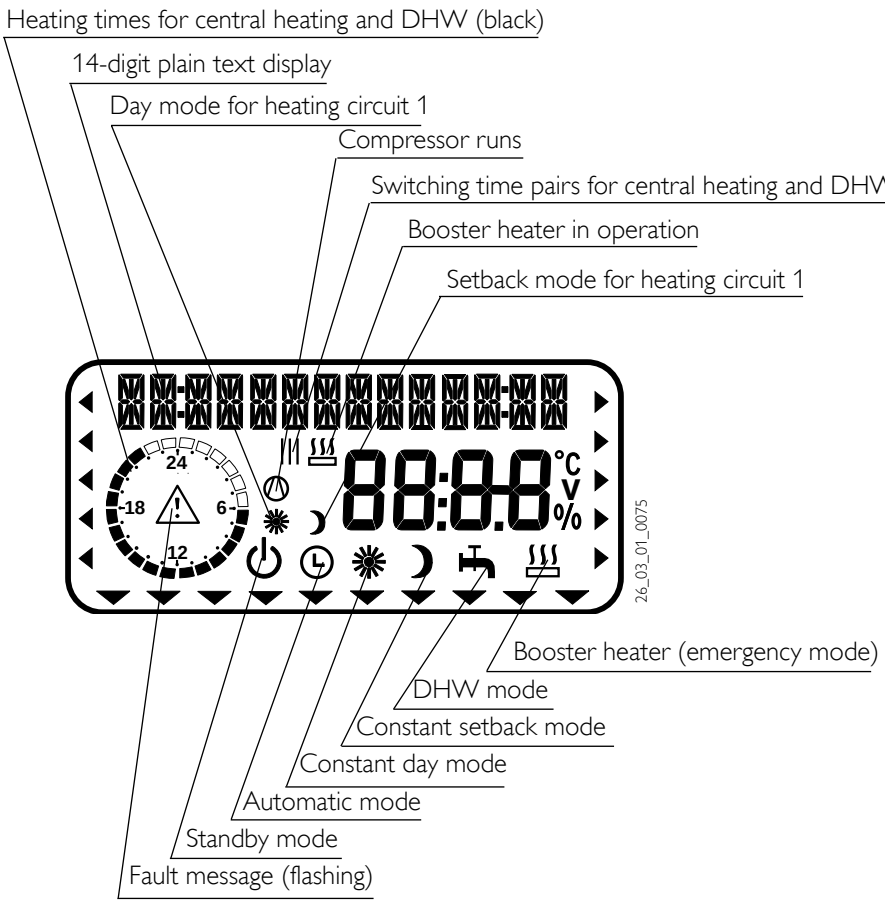
. . . there is no hot water or the heating system stays cold:
Check the fuse/circuit breaker in your fuse box. If it has blown/tripped, replace/reset the fuse/MCB. Notify your local contractor if the fuse/MCB blows/trips again.

. . . the DHW flow rate is too low:
Remove the contamination and/or scaling from perlators in water taps or shower heads.

. . . the red signal indicator illuminates:
Ask your local contractor to check or replace the signal anode, if required.

Notify your local contractor in case of all other faults.

Display (including all elements)



1.8 Settings

1.8.1 Operating modes (control level 1)

The operating modes are changed by turning rotary selector ○ with the control flap. closed.

Standby mode
Frost protection is activated for central heating and DHW operation. The display indicates frost protection when the flap is closed.
The set DHW temperature is permanently set to 10 °C; the set heating flow temperature is calculated in relation to a set room temperature of 5 °C, see point 3.
Application: Holidays.

Automatic mode
Heating subject to time switch program (applies to heating circuits 1 and 2), changeover between day and setback temperatures. DHW in accordance with a time switch program; changeover between day temperature and setback temperature. With this operating mode, an additional symbol (sun or moon) indicates whether heating circuit 1 is currently in day or in setback mode. The remote control is only active in this mode.
Application: Heating and DHW.

Constant day mode
The heating circuit is constantly held at the day temperature (applicable to HC1 and HC2). DHW according to time switch program.
Application: Low energy houses without setback mode.

Constant setback mode
The heating circuit is constantly held at the setback temperature (applicable to HC1 and HC2). DHW according to time switch program.
Application: Weekends away.

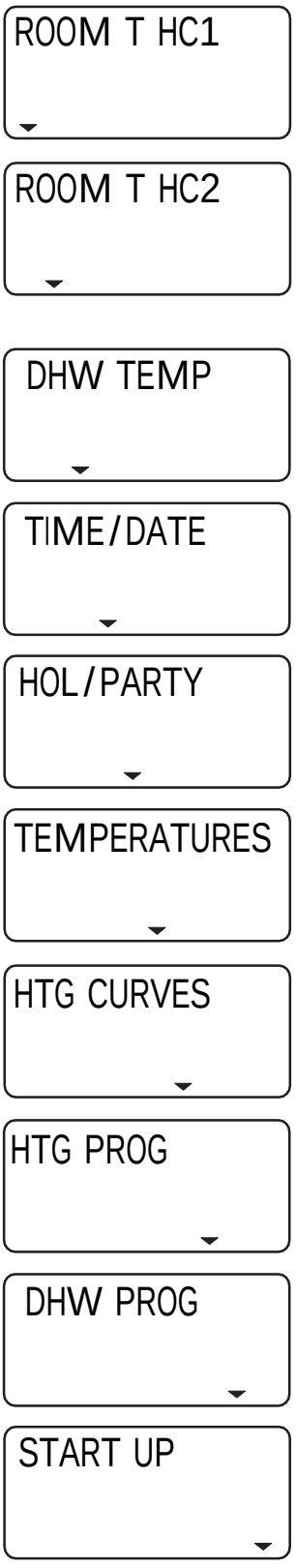
DHW mode
DHW in accordance with a time switch program; changeover between day temperature and setback temperature. Frost protection is enabled for central heating operation. For WPC....cool, cooling is also enabled.
Application: The heating season has ended; only DHW should be generated (summer mode).

Booster heater
This setting activates the emergency operation. In this operating mode, the booster heater provides DHW and central heating, irrespective of the dual-mode changeover point.

Fault message (flashing)
Indicates faults in the heat pump system. Notify your local contractor.

1.8.2 Overview of system parameters (control level 2)

Select the required parameter with the rotary selector.
For adjustments to parameters, turn to page 6.



With the parameter ROOM TEMP 1 you can select the SET ROOM TEMP for day and setback mode for heating circuit 1.
The actual room temperature can also be scanned, as soon as the FE 7 or FEK remote control has been connected and allocated to heating circuit 1.

With the parameter ROOM TEMP 2 you can select the SET ROOM TEMP for day and setback mode for heating circuit 2. ROOM TEMP 2 will only be displayed, if the mixer flow sensor for heating circuit 2 has been connected.
The actual room temperature can also be scanned, as soon as the FE 7 or FEK remote control has been connected and allocated to heating circuit 2.

You can allocate a set day or night temperature to the DHW cylinder temperature using the parameter DHW TEMP.

You can adjust the time and summer time with the TIME/DATE parameter.
At the factory, summer time is set up to begin on the 25 March and to end on the 25 October.

The HOLIDAY PROG parameter puts the heat pump system into setback mode.
Frost protection is activated for the DHW cylinder.

The PARTY PROG parameter allows you to extend the day mode by a few hours.

The parameter INFO TEMP enables you to scan the heat pump or heat pump system sensor temperatures, comparing set with actual values, the heating curve gap, etc.

The HTG CURVE parameter enables you to adjust one heating curve each for heating circuit 1 and 2. The room temperature will only remain constant, irrespective of the outside temperature, if the correct heating curve has been selected for the relevant type of building. Selecting the correct heating curve is therefore vitally important.

The HTG PROG parameter enables you to adjust associated heating programs for heating circuit 1 and 2 respectively.

The DHW PROG parameter enables you to adjust the times for the day and setback temperatures for DHW HTG.

As part of the First Start-up, determine not only the settings at control level 2 but also the system-specific parameters. These parameters are adjusted at control level 3, access to which is protected by code.
Check all parameters in sequence.
Enter all selected values into the column (system value) provided In the commissioning report.

1.8.3 For WPC...cool your contractor selects the room temperature for the cooling mode at control level 3. Cooling commences when the room temperature exceeds the set room temperature.
Cooling terminates when the actual room temperature is 2 K < than the set room temperature.

⚠ For cooling via cooling surfaces (underfloor heating/wall area heating systems) you need the additional FEK remote control (part. no. 22 01 93). For cooling via fan convectors, you need the additional FEK remote control (part. no. 22 01 93) or FE 7 (part. no. 18 55 79) Cooling via radiators would result in moisture damage; it is therefore not permissible.

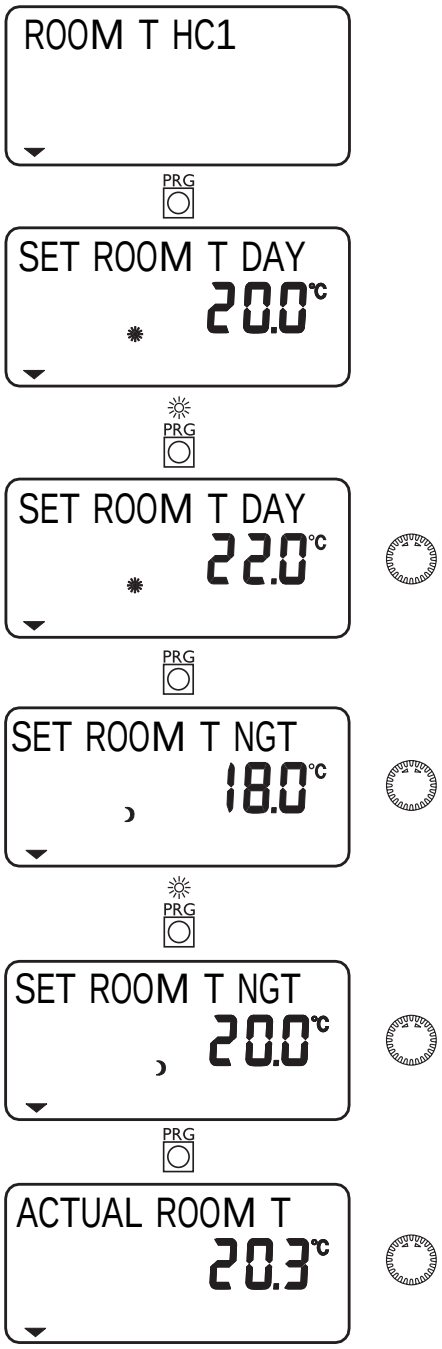
Adjustments at control level 2 for users and contractors

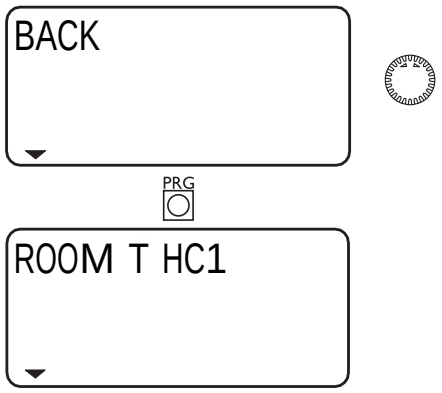
Room temperature HC1

With the parameter ROOM T HC1 you can select the set room temperature for day and setback mode for heating circuit 1. Changing these parameters results in a parallel offset of the heating curve.

The actual room temperature can also be scanned, as soon as the FE 7 or FEK remote control has been connected and allocated to heating circuit 1.

Open the control flap



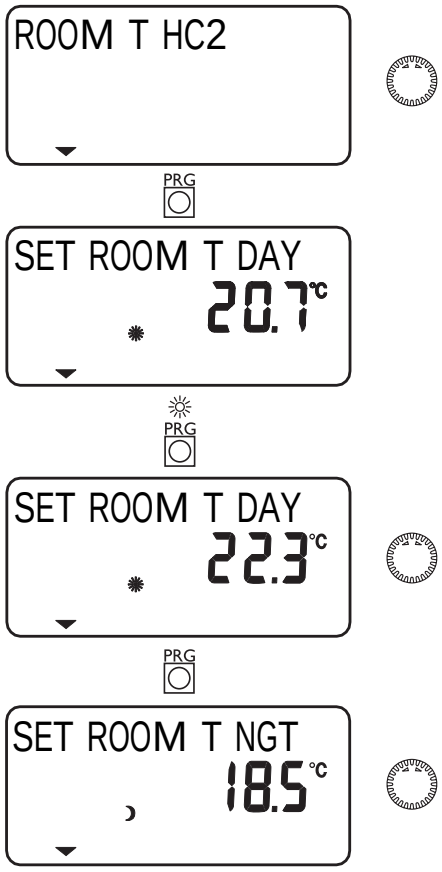


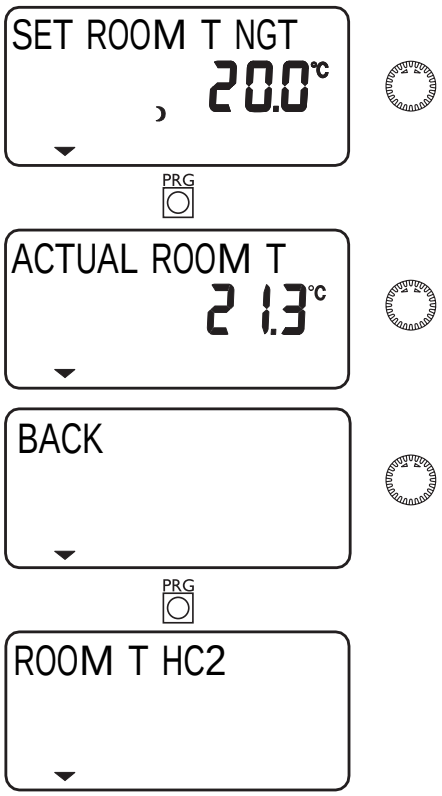
Room temperature HC2

With the parameter ROOM T HC2 you can select the set room temperature for day and setback mode for heating circuit 2. You can change the room temperature, if you feel rooms are either too hot or too cold. ROOM TEMP 2 will only be displayed, if the mixer flow sensor is connected.

The actual room temperature can also be scanned, as soon as the FE 7 or FEK remote control has been connected and allocated to heating circuit 2.

Open the control flap

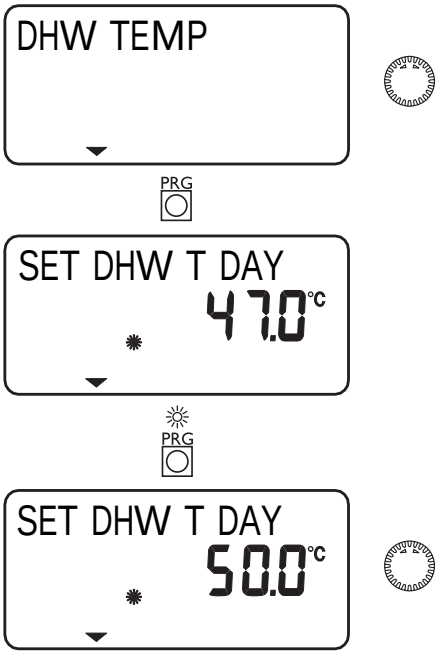


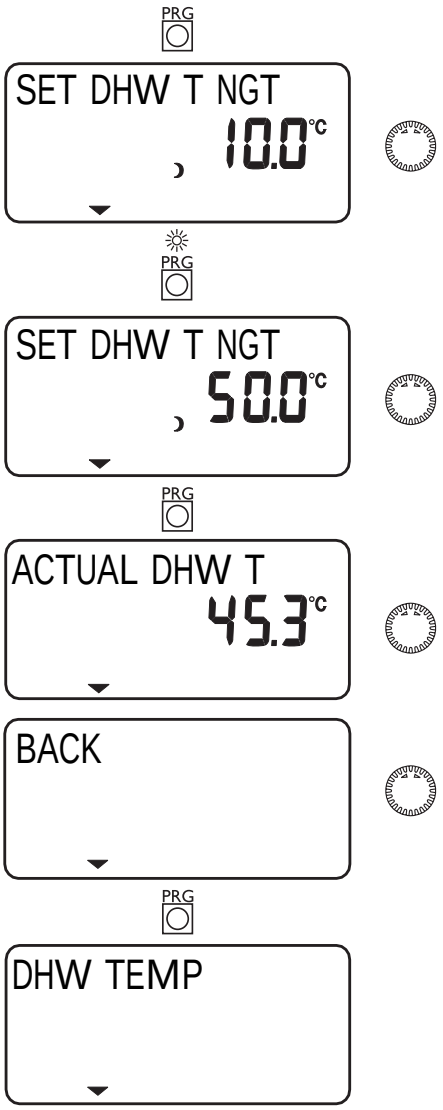


DHW temperature

You can allocate a set day or night temperature to the DHW cylinder temperature using the DHW TEMP parameter.

Open the control flap

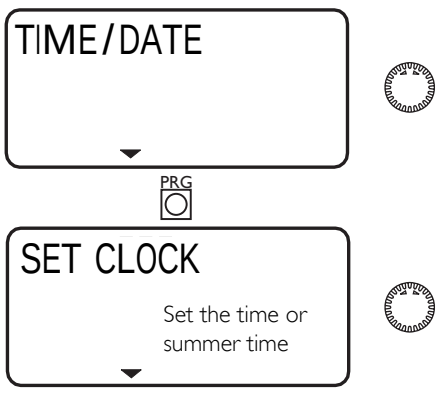


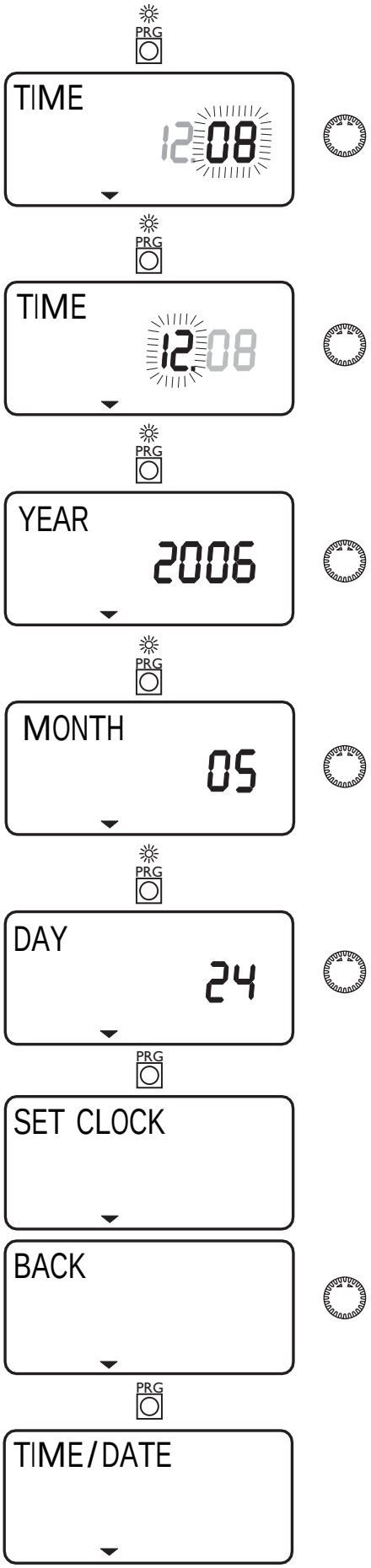


Time and date

You can adjust the time and summer time with the TIME/DATE parameter.
At the factory, summer time is set to begin on the 25 March and to end on the 25 October.

Open the control flap



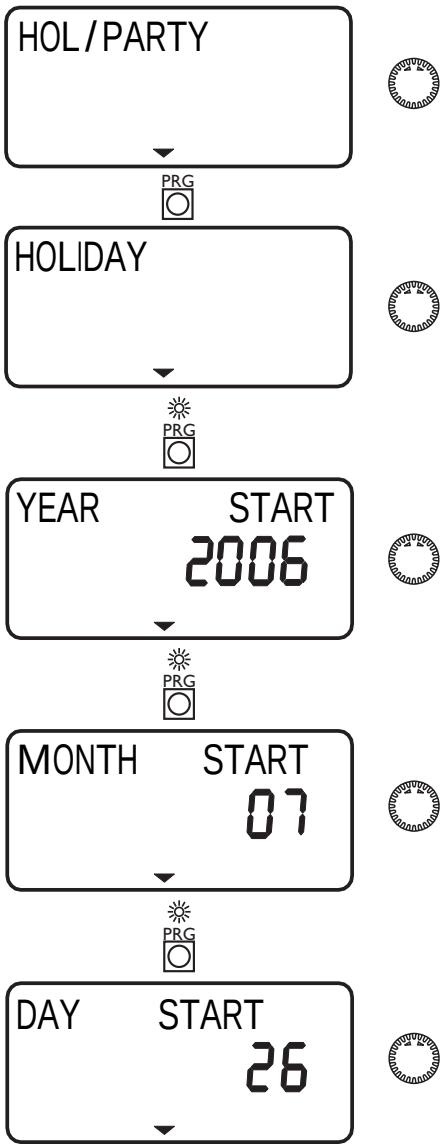


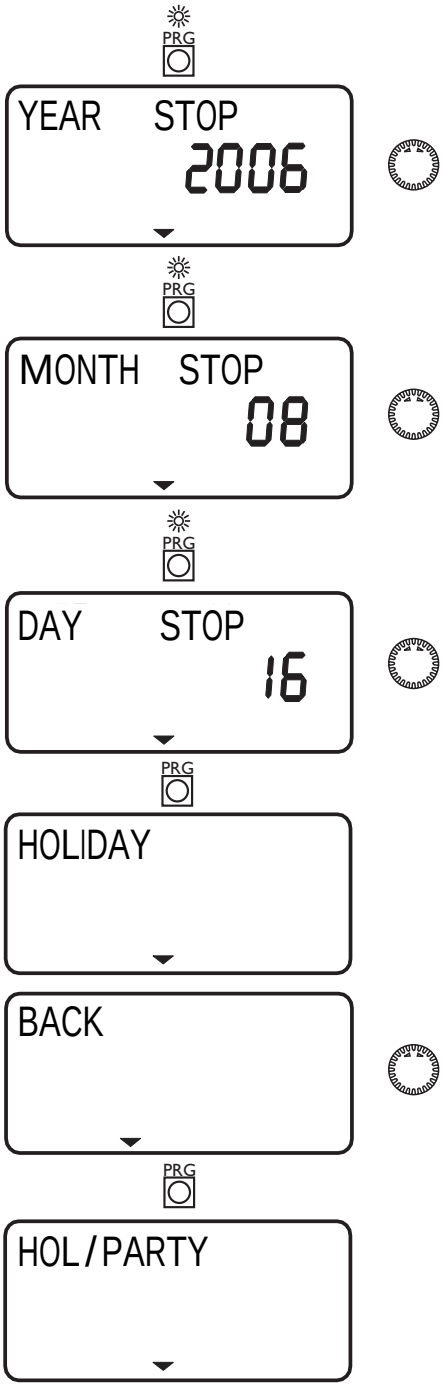
Holiday and party program

In holiday mode, the heat pump system operates in setback mode; frost protection for DHW heating is active. Holiday mode is displayed with the flap closed. For the start of the holidays, the year, month and day are entered; for its end also enter the year, month and day. The start and end time is always 24:00 h of the date entered. After the holiday period has expired, the heat pump system operates again in accordance with the previous heating and DHW program.

In party mode you can extend day mode for central heating by a few hours. This is displayed with the flap closed.
For example, if the heating program normally switches to setback mode at 22:00 h, and you set the party mode to two hours, then setback mode would only begin at 24:00 h.

Open the control flap



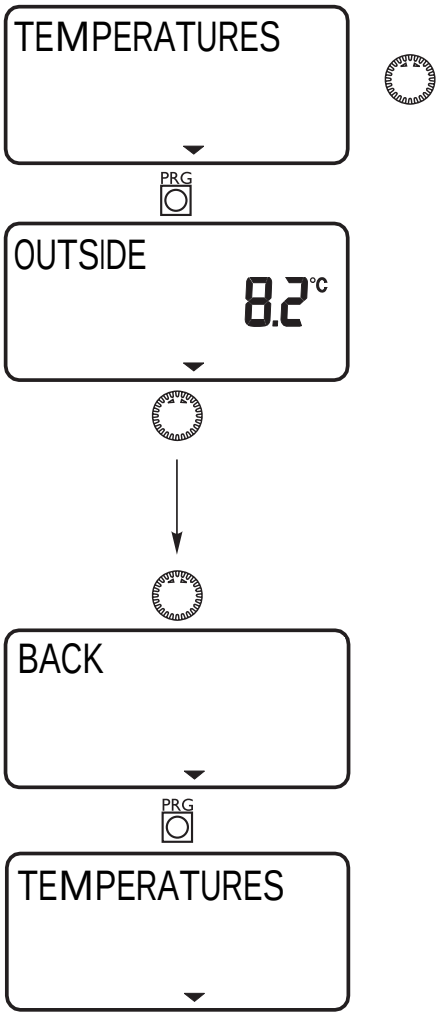


Info temperatures

The parameter INFO TEMP enables you to scan the heat pump or heat pump system sensor temperatures, comparing set with actual values, the heating curve gap, etc. In all, the following parameters can be scanned:

- Outside temperature
- Actual room temperature (HC1/HC2) (will only be displayed if the FE 7 or FEK remote control is connected)
- Set room temperature (HC1/HC2) (will only be displayed if the FE 7 or FEK remote control is connected)
- Relative humidity
- Dew point temperature
- Actual DHW temperature
- Set DHW temperature
- Actual HP return temperature (HC1)
- Set HP return temperature (HC1) The fixed temp. will be displayed for fixed temperature control
- Actual mixer flow temperature (HC1)
- Actual mixer flow temperature (HC2)
- Fixed HP return temperature
- Set buffer temperature Highest set value of heating circuits H1 or H2.
- Actual HP flow temperature
- Set heating flow temperature
- Minimum source temperature
- Set source flow temperature
- Heating changeover point
- DHW changeover point
- Heating limit temperature
- DHW limit temperature
- System frost protection temperature
- Hot gas temperature
- High pressure sensor

Open the control flap



Note: Actual or set temperatures will not be displayed, if the corresponding sensor is not connected.

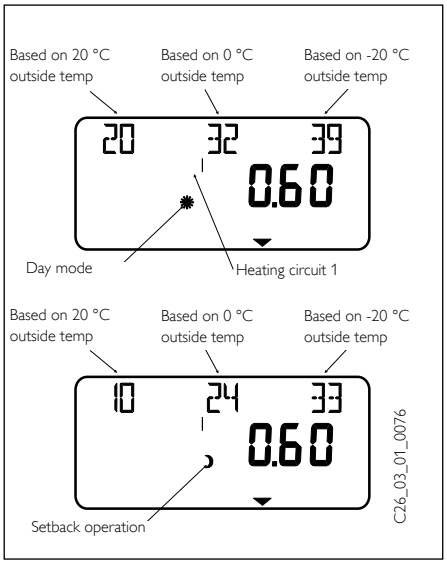
Heating curves

The HTG CURVE parameter enables you to adjust one heating curve each for heating circuit 1 and 2. Selecting the correct heating curve is therefore vitally important.

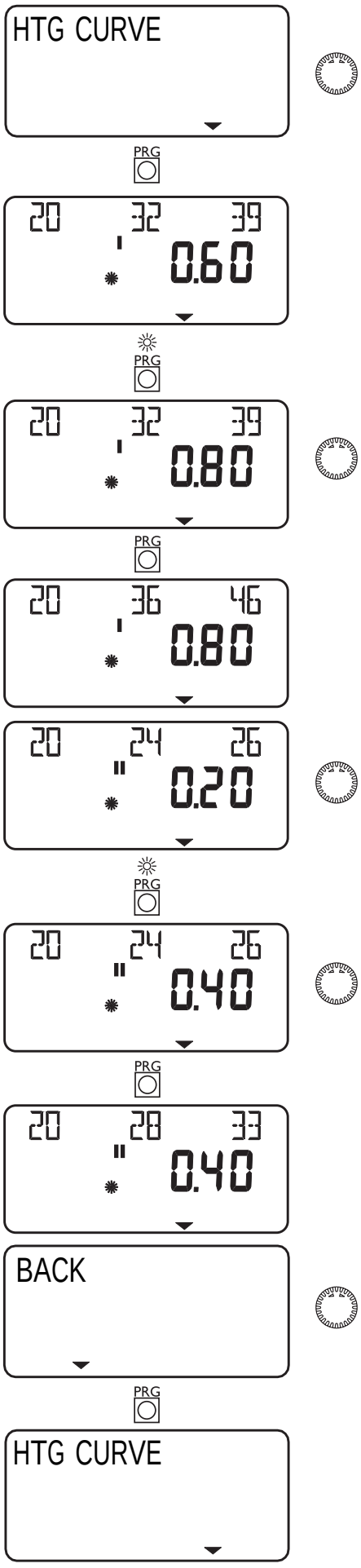
Note: Your contractor will have set up a building and system-specific optimum heating curve for every heating circuit. It relates to the HP return temperature for heating circuit 1 and to the mixer flow temperature for heating circuit 2.

When adjusting the heating curve on WPMi, the calculated set return or flow temperature, which is subject to the outside temperature and the set room temperature, will be shown at the top of the display.

As soon as a temperature has been pre-selected via the fixed temperature parameter at control level 3, heating circuit 1 will be hidden, and the display will show FIXED TEMP with the relevant temperature.

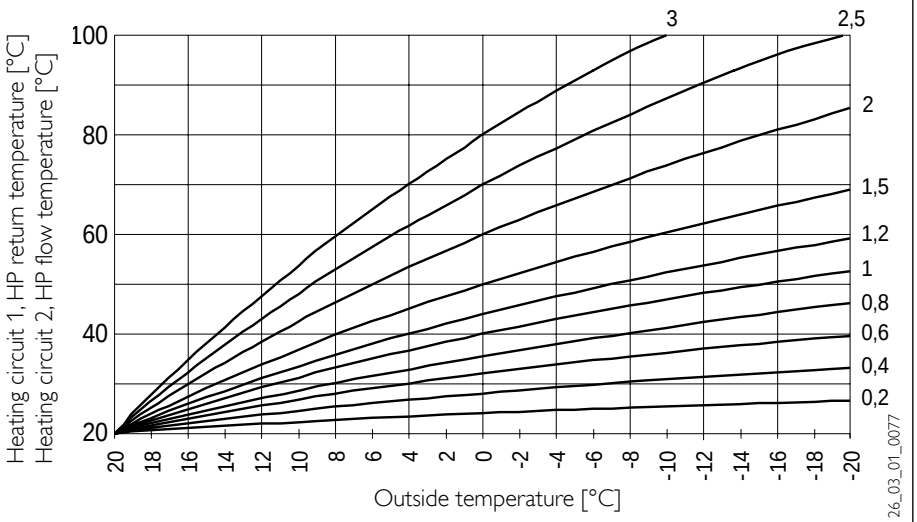


Open the control flap



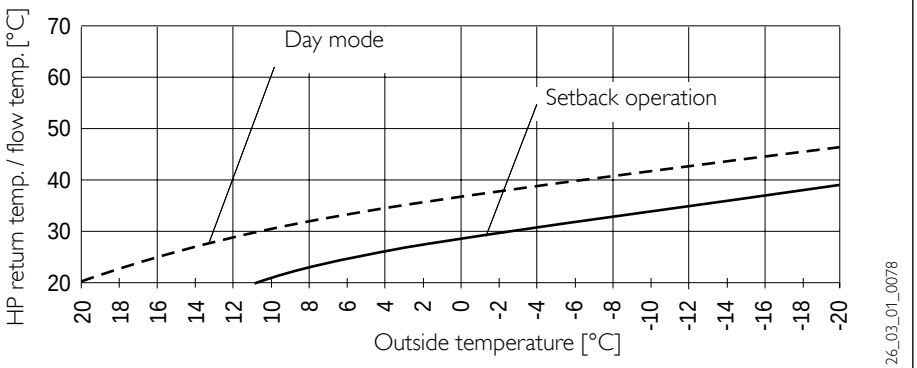
Heating curve diagram

One heating curve respectively can be adjusted for **heating circuit 1** and **heating circuit 2**. At the factory, heating curve **0.6** is set up for heating circuit 1 and heating curve **0.2** for heating circuit 2.
These heating curves relate to a set room temperature of 20 °C.



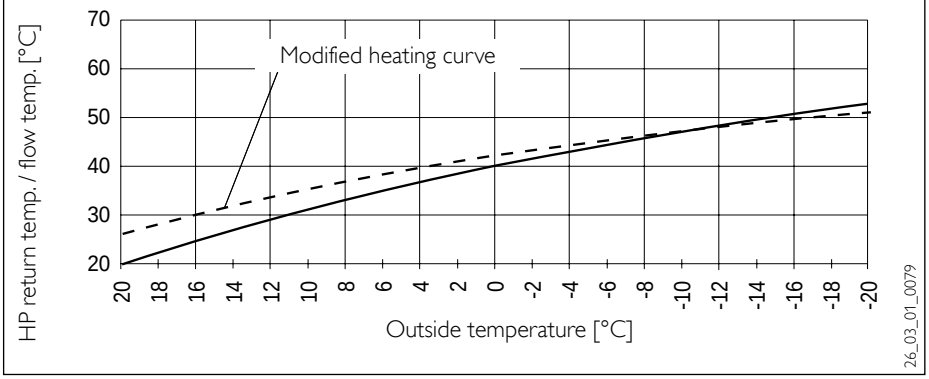
Adjustment of programmed changeover between day/setback mode

The figure shows a standard heating curve with a slope of 0.8, relative to a set room temperature for day mode of 20 °C. The lower curve represents the setback curve. For this, the set room temperature for setback mode of 15 °C is used, in other words the heating curve is subjected to a parallel offset.



Matching a heating curve to actual conditions

Example:
During spring and autumn, the return or flow temperature of a heating system is too low at an outside temperature between 5 and 15 °C, but is OK at outside temperatures of ≤ 0 °C. This problem can be remedied with parallel offset and a simultaneous reduction of the heating curve.
Prior to this adjustment, heating curve 1.0 was adjusted, relative to a set room temperature of 20 °C. The dotted line indicates the modified heating curve at 0.83 and a modified set room temperature at 23.2 °C.



Heating programs

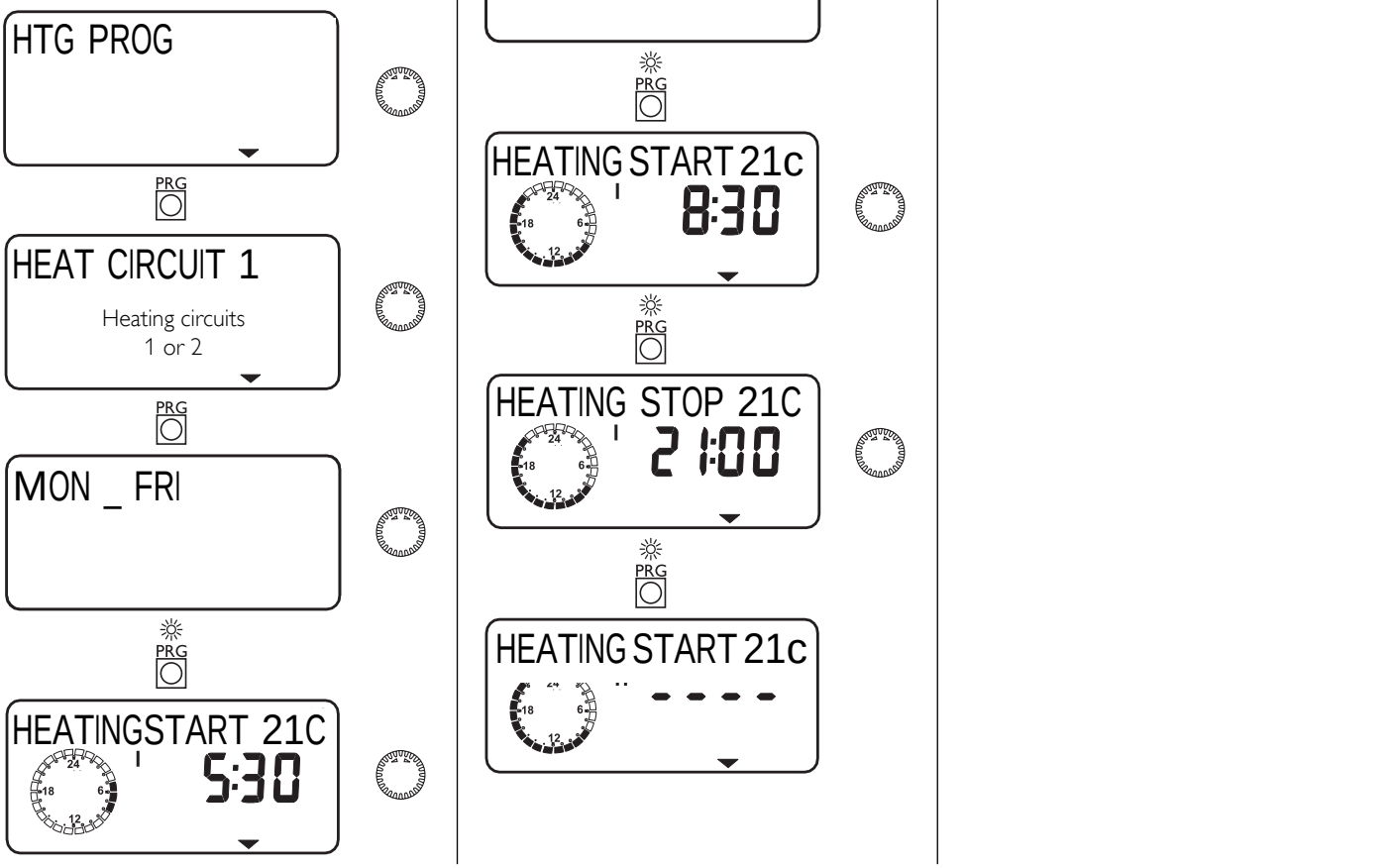
The HTG PROG parameter enables you to adjust associated heating programs for heating circuit 1 and 2 respectively.

You can adjust your heating system as follows:
– for each individual day of the week (Monday, ..., Sunday)
– Monday to Friday (MON _ FRI)
– Saturday and Sunday (SAT _ SUN)
– the whole week (MON _ SUN)

You can adjust three switching time pairs (I, II, III) for each of these options.
This determines, when and how often the heat pump system should heat in day mode. At all other times, the heat pump operates in setback mode. You will already have selected the corresponding set values for day and setback mode under parameter ROOM TEMP 1/2.

Example: For heating circuit 1, your heating system should operate daily from Monday to Friday at two different times, i.e. from 05:30 h until 08:30 h as well as from 14:00 h until 22:00 h. At the weekend, your heating system should provide heat from 08:30 h until 21:00 h.

Open the control flap



DHW programs

The DHW PROG parameter enables you to adjust the times for the day and night temperatures for DHW heating.

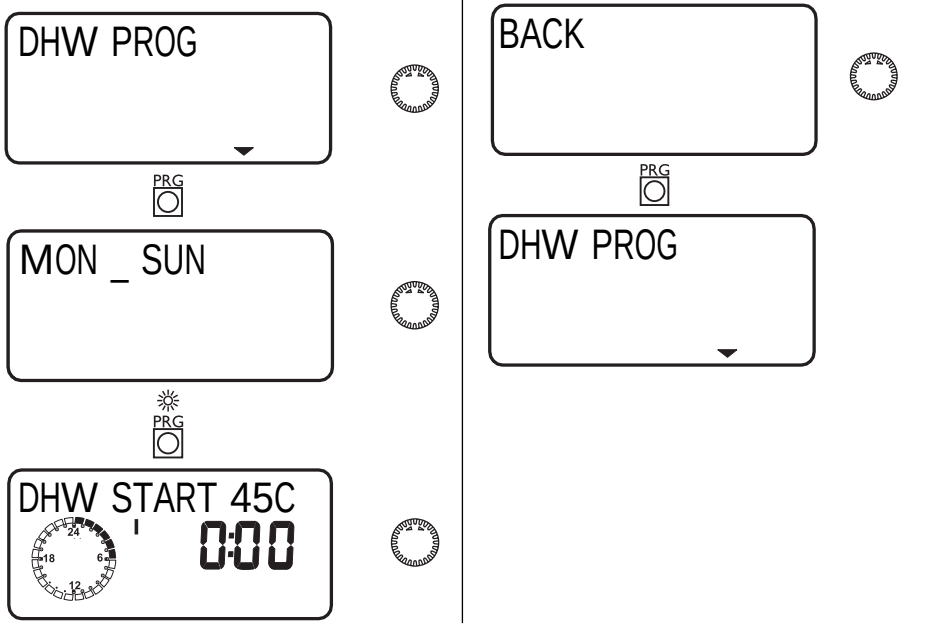
You can adjust your DHW heating as follows:
- for each individual day of the week (Monday, ..., Sunday)
- Monday to Friday (MON _ FRI)
- Saturday and Sunday (SAT _ SUN)
- the whole week (MON _ SUN)

You can adjust three switching time pairs (I, II, III) for each of these options.

Exception:
You will need two switching time pairs, if you want to heat DHW from 22:00 h until 06:00 h the following day. This determines, when and how often the heat pump system should heat up DHW in day mode. You will already have selected the corresponding set values for day and setback mode under the DHW TEMP parameter.

Example:
You want to heat up DHW daily at two different times, i.e. from 22:00 h until 06:00 h the following day, and then again from 08:00 h until 09:00 h.
The day begins at 00:00 h; therefore begin programming for this example at 00:00 h. The first switching times pair runs from 00:00 h until 06:00 h. The second switching times pair runs from 08:00 h until 09:00 h. The third switching times pair runs from 22:00 h until 24:00 h.

Open the control flap



Standard settings

At the factory, the heat pump manager is programmed with the following standard settings:

Switching times [1] for heating circuit 1 and heating circuit 2 H1 / H2 (day mode)	
Monday - Friday	6:00 h - 22:00 h
Saturday - Sunday	7:00 h - 23:00 h
ROOM TEMP 1/2 [2]	
Room temperature in day mode	20 °C
Room temperature in setback mode	20 °C
DHW program switching times	
Monday - Sunday [3]	0:00 h - 24:00 h
DHW temperature	
DHW DAY T	47 °C
DHW SETBACK T	10 °C
Heating curve slope	
Heating curve 1	0.6
Heating curve 2	0.2

1) Only for switching times pair 1; switching time pairs 2 and 3 are preprogrammed.
2) Stiebel Eltron recommends systems without night setback; our systems are set up accordingly.
3)  Due to favourable heat pump tariff, when heating up during the night.

Heating and DHW programs

You may enter your own individual programs into the following tables.

	Heating circuit 1		
	Switching times pair I	Switching times pair II	Switching times pair III
Mo			
Tu			
We			
Th			
Fr			
Sa			
Su			
Mo - Fr			
Sa - Su			
Mo - Su			

	Heating circuit 2		
	Switching times pair I	Switching times pair II	Switching times pair III
Mo			
Tu			
We			
Th			
Fr			
Sa			
Su			
Mo - Fr			
Sa - Su			
Mo - Su			

	DHW program		
	Switching times pair I	Switching times pair II	Switching times pair III
Mo			
Tu			
We			
Th			
Fr			
Sa			
Su			
Mo - Fr			
Sa - Su			
Mo - Su			

1.9 FE 7 remote control

The FE 7 enables
- the modification of the set room temperature for heating circuit 1 or 2 by ± 5 °C
- the operating mode to be changed.

It comprises the following controls:

- a rotary selector for changing the set room temperature
- a rotary selector for the following settings
  - automatic mode
  - constant setback mode
  - constant day mode.

⚠ The remote control is only effective, when the WPMi is in automatic mode.

1.10 FEK remote control

⚠ The FEK is always required for operating in conjunction with area cooling, e.g. underfloor heating systems, etc. Apart from the room temperature, it also determines the dew point temperature to prevent the formation of condensate.

The FEK remote control enables
- the modification of the set room temperature for heating circuit 1 or 2 by ± 5 °C
- the operating mode to be changed.

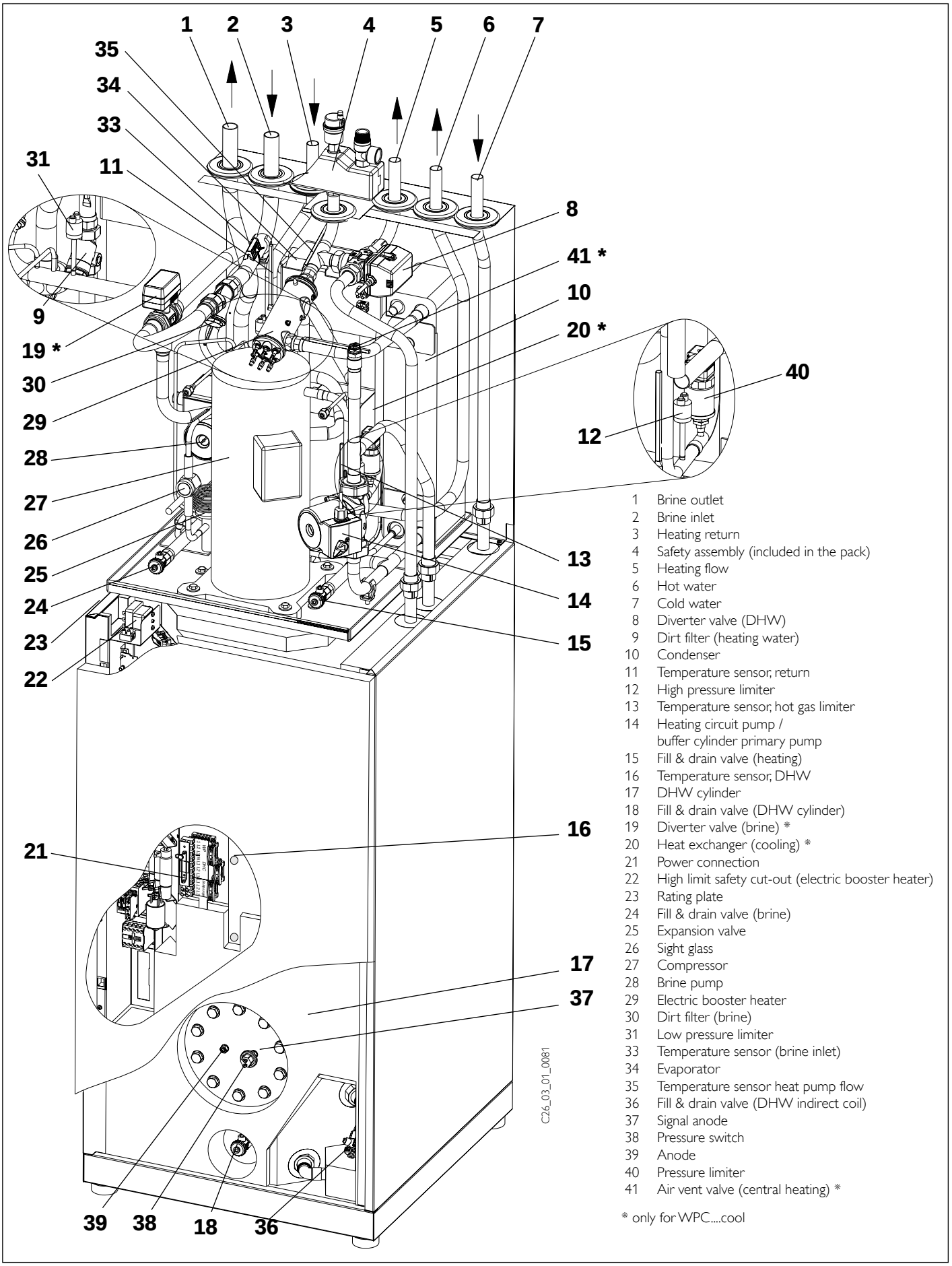
It comprises the following controls:

- one rotary selector for changing the set room temperature
- one key with the settings
  - automatic mode
  - constant setback mode
  - constant day mode

⚠ When the FEK is preset to one specific heating circuit, then the parameters heating curve, room temperature and heating program are hidden at the heat pump manager WPMi.

Notes

2.1 Equipment layout WPC / WPC....cool



1 Brine outlet
2 Brine inlet
3 Heating return
4 Safety assembly (included in the pack)
5 Heating flow
6 Hot water
7 Cold water
8 Diverter valve (DHW)
9 Dirt filter (heating water)
10 Condenser
11 Temperature sensor, return
12 High pressure limiter
13 Temperature sensor, hot gas limiter
14 Heating circuit pump / buffer cylinder primary pump
15 Fill & drain valve (heating)
16 Temperature sensor, DHW
17 DHW cylinder
18 Fill & drain valve (DHW cylinder)
19 Diverter valve (brine) *
20 Heat exchanger (cooling) *
21 Power connection
22 High limit safety cut-out (electric booster heater)
23 Rating plate
24 Fill & drain valve (brine)
25 Expansion valve
26 Sight glass
27 Compressor
28 Brine pump
29 Electric booster heater
30 Dirt filter (brine)
31 Low pressure limiter
33 Temperature sensor (brine inlet)
34 Evaporator
35 Temperature sensor heat pump flow
36 Fill & drain valve (DHW indirect coil)
37 Signal anode
38 Pressure switch
39 Anode
40 Pressure limiter
41 Air vent valve (central heating) *

* only for WPC....cool

Fig. 3

2.2 Specification (the details listed on the type plate apply)

Heat pump			Type	WPC 5	WPC 7	WPC 10	WPC 13
Part no.				220251	220252	220253	220254
Heat pump			Type	WPC 5 cool	WPC 7 cool	WPC 10 cool	WPC 13 cool
Part no.				220255	220256	220257	220258
Type and operating mode							
Type (compact / split / open version)				Compact			
Operating mode				Mono-mode			
				Dual-mode - parallel			
Dimensions, weights, connection dimensions							
Dimensions			H/W/D	2100×600×650	2100×600×650	2100×600×650	2100×600×650
Tilted dimensions			mm	2100	2100	2100	2100
Weight (dry/wet)			kg	283 / 445	293 / 458	303 / 465	313 / 475
Refrigerant			Type	R410A	R410A	R410A	R410A
Fill volume			kg	1.5	2.0	2.5	2.3
Permissible operating pressure			MPa	4.3	4.3	4.3	4.3
DHW capacity (nominal)			l	175	175	162	162
Permissible operating pressure			MPa	1.0	1.0	1.0	1.0
Connector, heating flow			mm	22 plug-in connection			
Connector, cold and hot water			mm	22 plug-in connection			
Connector, heat source flow and return			mm	28 plug-in connection			
Evaporator material				1.4401/Cu			
Condenser material				1.4401/Cu			
Output (EN 255)							
Heat output	at B0/W35 [1]		kW	5.8	7.8	9.9	13.4
Cooling output	at B0/W35 [1]		kW	4.45	6.02	7.7	10.4
Power consumption	at B0/W35 [1]		kW	1.34	1.78	2.2	3.05
Performance factor	at B0/W35 [1]			4.3	4.38	4.5	4.39
Cooling capacity WPC ... cool [2]			kW	3.8	5.2	6.0	8.5
Power consumption, booster heater (DHC)			kW	8.8	8.8	8.8	8.8
Heat transfer							
Heat transfer medium hot side / cold side				Brine = water with 33 % vol. ethylene glycol			
Flow rate, min.	hot side		m^3/h	0.5	0.7	0.9	1.2
	cold side		m^3/h	1.4	1.9	2.2	3.1
Permissible operating pressure hot side / cold side			MPa	0.3	0.3	0.3	0.3
Available external pressure differential, hot side [3]			hPa	515	451	365	205
Available external pressure differential, cold side [3]			hPa	420	360	310	230
Temperature limits							
WQA min. / WQA max. [4]			°C	-5 / 20 [briefly (max. 30 min) source temperatures up to 40 °C are permiss.].			
WNA min. / WNA max. [4]			°C	15 / 60			
Electrical details							
Fuse	Mains, Compressor		A	16 gl	16 gl	16 gl	16 gl
	Mains, booster heater (internal heat source 2)		A	16 gl	16 gl	16 gl	16 gl
	Control circuit		A	16 gl	16 gl	16 gl	16 gl
Protection EN 60529 (DIN VDE 0470)				IP 20	IP 20	IP 20	IP 20
Voltage / frequency compressor				3/PE~400/50	3/PE~400/50	3/PE~400/50	3/PE~400/50
Voltage / frequency booster heater (internal heat source 2)				3/N/PE~400/50	3/N/PE~400/50	3/N/PE~400/50	3/N/PE~400/50
Voltage / frequency control circuit				1/N/PE~230/50	1/N/PE~230/50	1/N/PE~230/50	1/N/PE~230/50
Starting current			A	23	25	28	30
Power consumption [5]							
Compressor + heat source pump		min/max	kW	2.0 / 2.9	2.3 / 3.7	2.9 / 4.5	3.5 / 5.9
Corrosion protection				Zinc-plated			
Casing meets safety requirements to				DIN EN 60335, DIN 8975,			
				EMC DIRECTIVE 89/336/EWG,			
				Low Voltage Directive 73/23/EWG			
Sound power level to DIN EN 255			dB(A)	43	44	48	50
Sound pressure level (1 m from the equipment)			dB(A)	35	36	40	42

1) B0/W35 = Brine water inlet temperature 0 °C, heating flow 35 °C

2) At nominal flow rate, 15 °C brine outlet from source, 23 °C cooling circuit return temperature

3) With B0/W35

4) WQA = heat source system (cold side)
WNA = heat utilisation system (hot side)

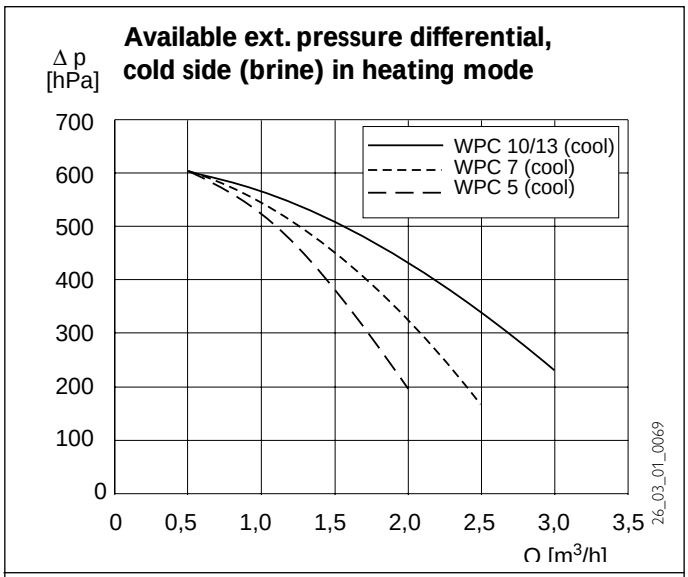
5) At min.: B5/W35
At max.: B20/W60

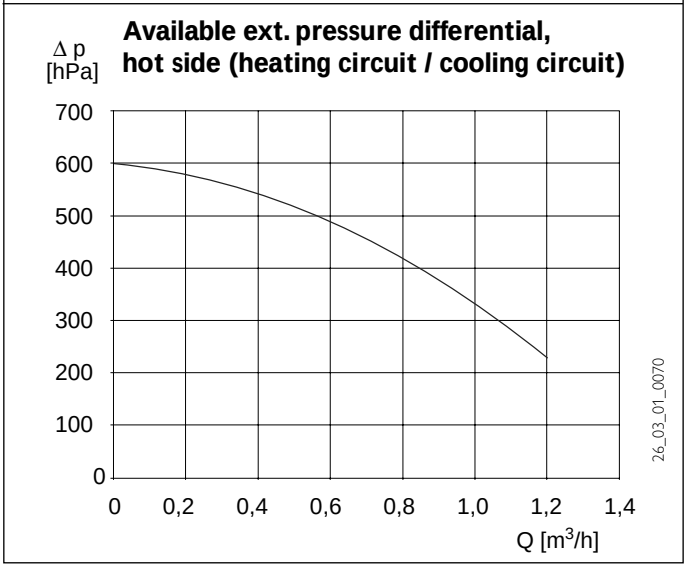
2.2.1 Specification - control unit (WPMi)

Supply voltage	230 V ~ ± 10 %, 50 Hz
Power consumption	Max. 8 VA
EN 60529	Protection IP 1XB
EN 60730	Class II
	Function type 1B
	Software - class A
Clock backup, day	> 1 day
Permiss. ambient temp. during operation	0 to 50 °C
Permiss. ambient temp. during storage	-30 to 60 °C
Sensor resistances	Test resistance at 2000 Ω
Communication system	RS232 (optical), CAN

Max. relay output capacities	
Buffer primary pump	2 (1.5) A
Heating circuit pump	2 (1.5) A
Mixer circuit pump	2 (1.5) A
DHW primary pump	2 (1.5) A
DHW circulation pump	2 (1.5) A
Source pump	2 (1.5) A
Contact HS 2	2 (1.5) A
Mixer	2 (1.5) A
Max. total relay output capacity	10 (8) A

2.2.2 Available external pressure differentials





2.3 Accessories (part of standard delivery)

Qty.	Description	Part no.
2	Safety assembly for heating circuit and brine circuit	17 06 51
2	DN 22 pressure hose with ins. for heating circuit	
2	DN 28 pressure hose with ins. for brine circuit	
	Packed inside the carton	
1	Outside temperature sensor AFS 2	16 53 39
4	Equipment foot	16 88 13
4	Sliding shoe for the equipment foot	
4	Plug-in connector elbow DN 22 for cold and hot water as well as heating flow and return	
2	Plug-in connector elbow DN 28 for brine flow and return	
2	Plug-in connector DN 22	
2	Plug-in connector DN 28	

2.4 Special accessories

Description	Part no.
Extract module LWM 250	18 99 99
Cylinder SBP 100 Comfort	18 54 43
Cylinder SBP 200 E	18 54 58
Cylinder SBP 400 E	22 08 24
Cylinder SBP 700 E	18 54 59
Cylinder SBP 700 E SOL	18 54 60
WPSV 25-4 (brine distributor)	18 22 52
WPSV 32-4 (brine distributor)	18 22 53
WPSV 25-6 (brine distributor)	18 22 54
WPSV 32-6 (brine distributor)	18 22 55
MAG 12 (brine expansion vessel)	18 99 81
Remote control FE 7	18 55 79
Remote control FEK	22 01 93
Contact sensor AVF 6	16 53 41
Immersion sensor TF 6	16 53 42
Concentrated process medium	16 16 96
Ready-mixed process medium (potassium carbonate)	18 54 72

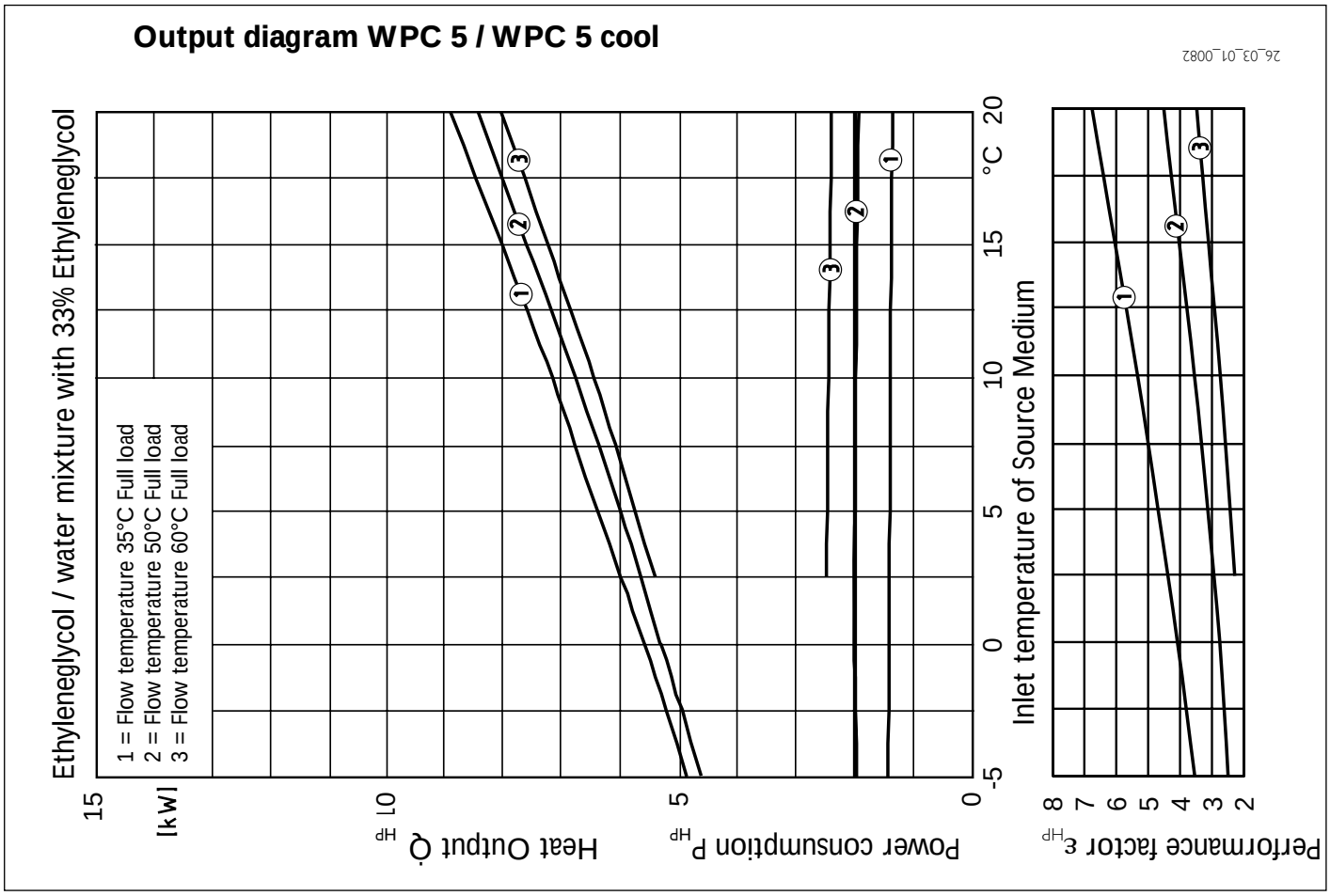

Output diagram WPC 5 / WPC 5 cool
26_03_01_0082
Ethyleneglycol / water mixture with 33% Ethyleneglycol
1 = Flow temperature 35°C Full load
2 = Flow temperature 50°C Full load
3 = Flow temperature 60°C Full load
[kW]
15
10
5
0
Heat Output Q̇ HP
Power consumption P HP
Performance factor ε HP
8 7 6 5 4 3 2
-5 0 5 10 15 20 °C
Inlet temperature of Source Medium

Fig. 4

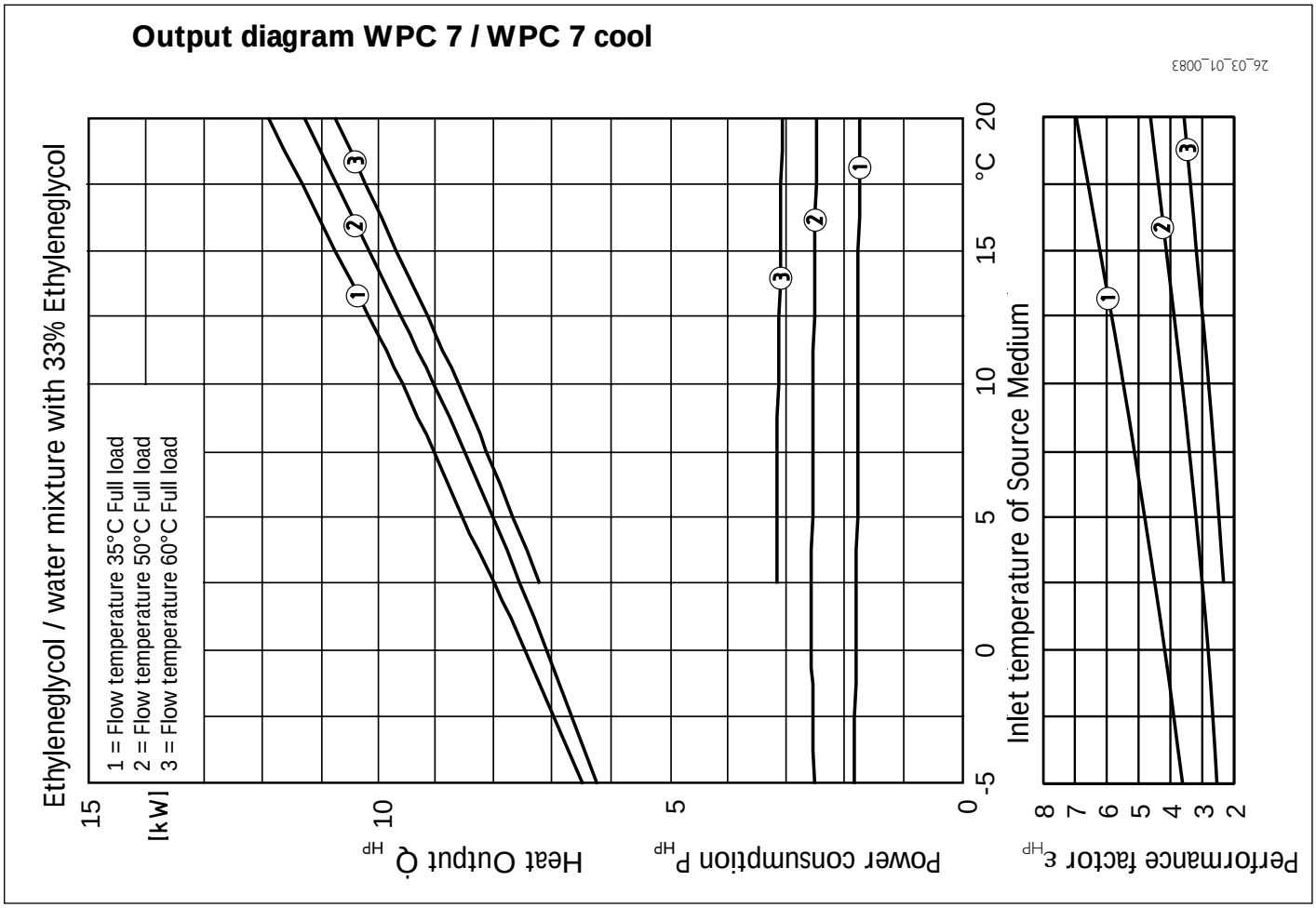

Output diagram WPC 7 / WPC 7 cool
26_03_01_0083
Ethyleneglycol / water mixture with 33% Ethyleneglycol
1 = Flow temperature 35°C Full load
2 = Flow temperature 50°C Full load
3 = Flow temperature 60°C Full load
[kW]
15
10
5
0
Heat Output Q̇ HP
Power consumption P HP
Performance factor ε HP
8 7 6 5 4 3 2
-5 0 5 10 15 20 °C
Inlet temperature of Source Medium

Fig. 5

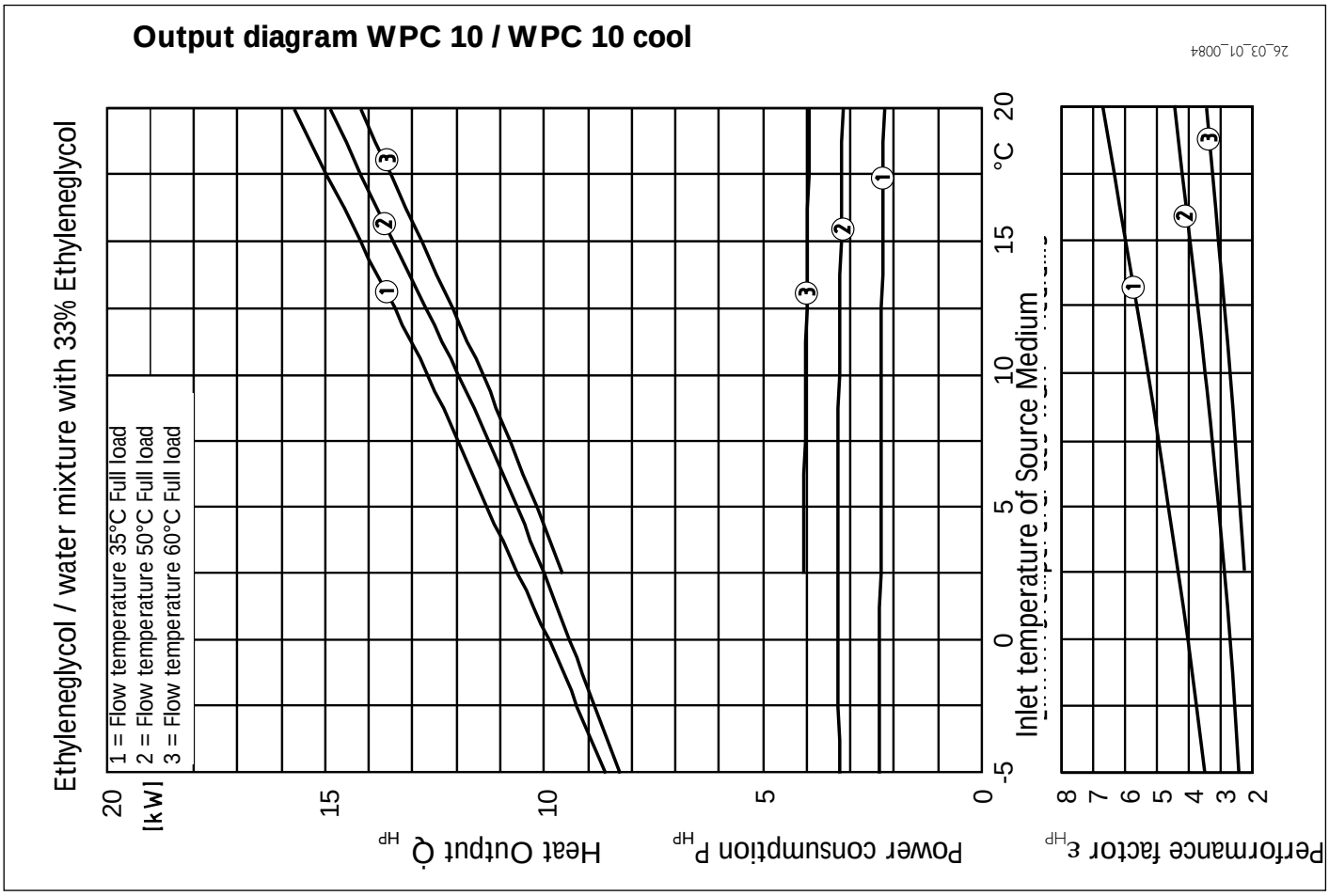

Output diagram WPC 10 / WPC 10 cool
26_03_01_0084
Ethyleneglycol / water mixture with 33% Ethyleneglycol
1 = Flow temperature 35°C Full load
2 = Flow temperature 50°C Full load
3 = Flow temperature 60°C Full load
[kW]
Heat Output Q̇ HP
Power consumption P HP
Performance factor ε HP
Inlet temperature of Source Medium
°C

Fig. 6

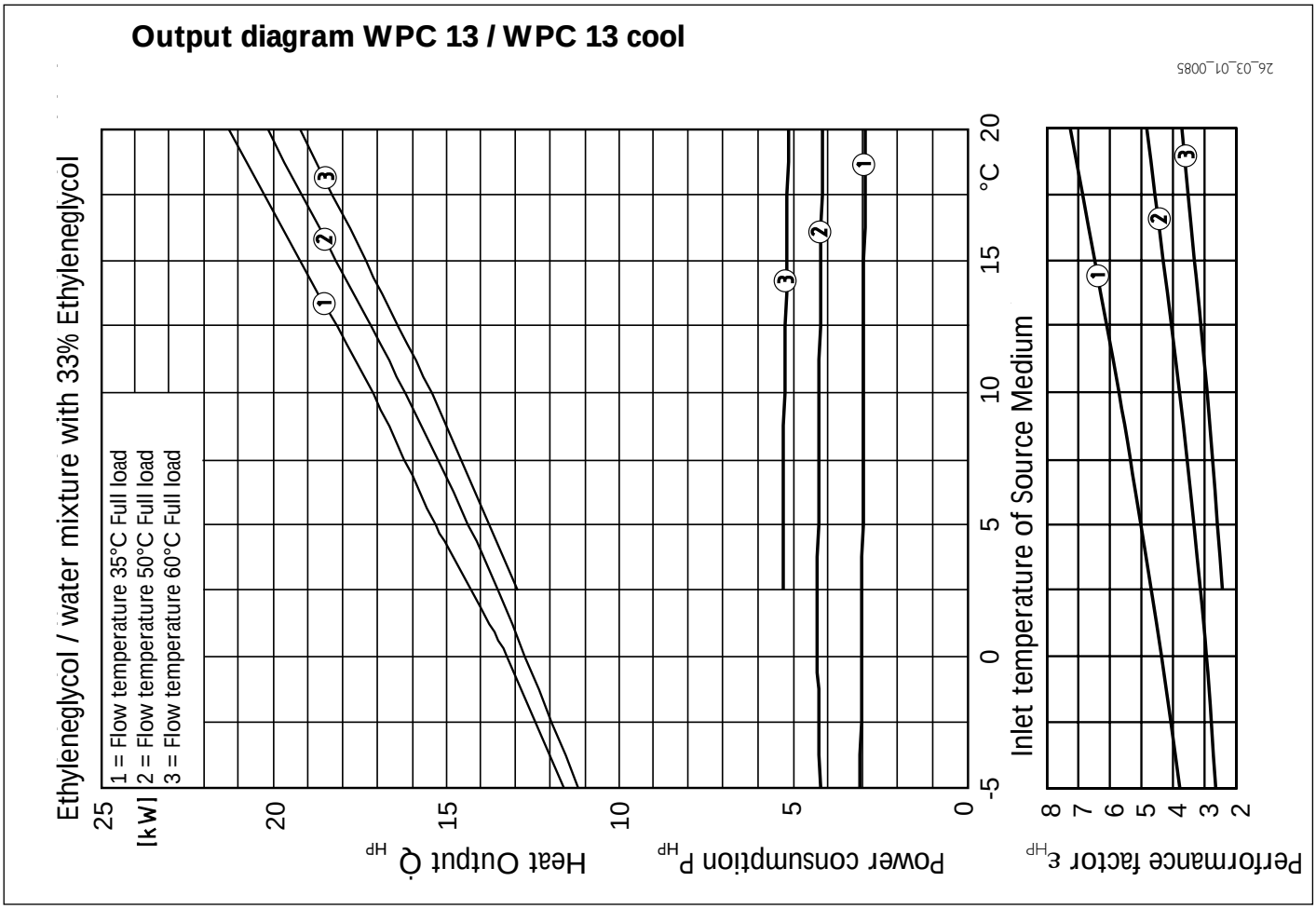

Output diagram WPC 13 / WPC 13 cool
26_03_01_0085
Ethyleneglycol / water mixture with 33% Ethyleneglycol
1 = Flow temperature 35°C Full load
2 = Flow temperature 50°C Full load
3 = Flow temperature 60°C Full load
[kW]
Heat Output Q̇ HP
Power consumption P HP
Performance factor ε HP
Inlet temperature of Source Medium
°C

Fig. 7

2.5 Equipment description WPC

2.5.1 Function diagram WPC

1 Brine outlet
2 Brine inlet
3 Heating return
4 Heating flow
5 Hot water
6 Cold water
7 Diverter valve
8 Electric booster heater (internal HS 2)
9 Condenser
10 Frost protection
11 High pressure limiter
12 Compressor
13 Heat exchanger
14 DHW cylinder
15 Expansion valve
16 Sight glass
17 Filter dryer
18 Low pressure limiter
19 Condensate tray
20 Evaporator
21 Heating circulation pump
22 Brine circulation pump

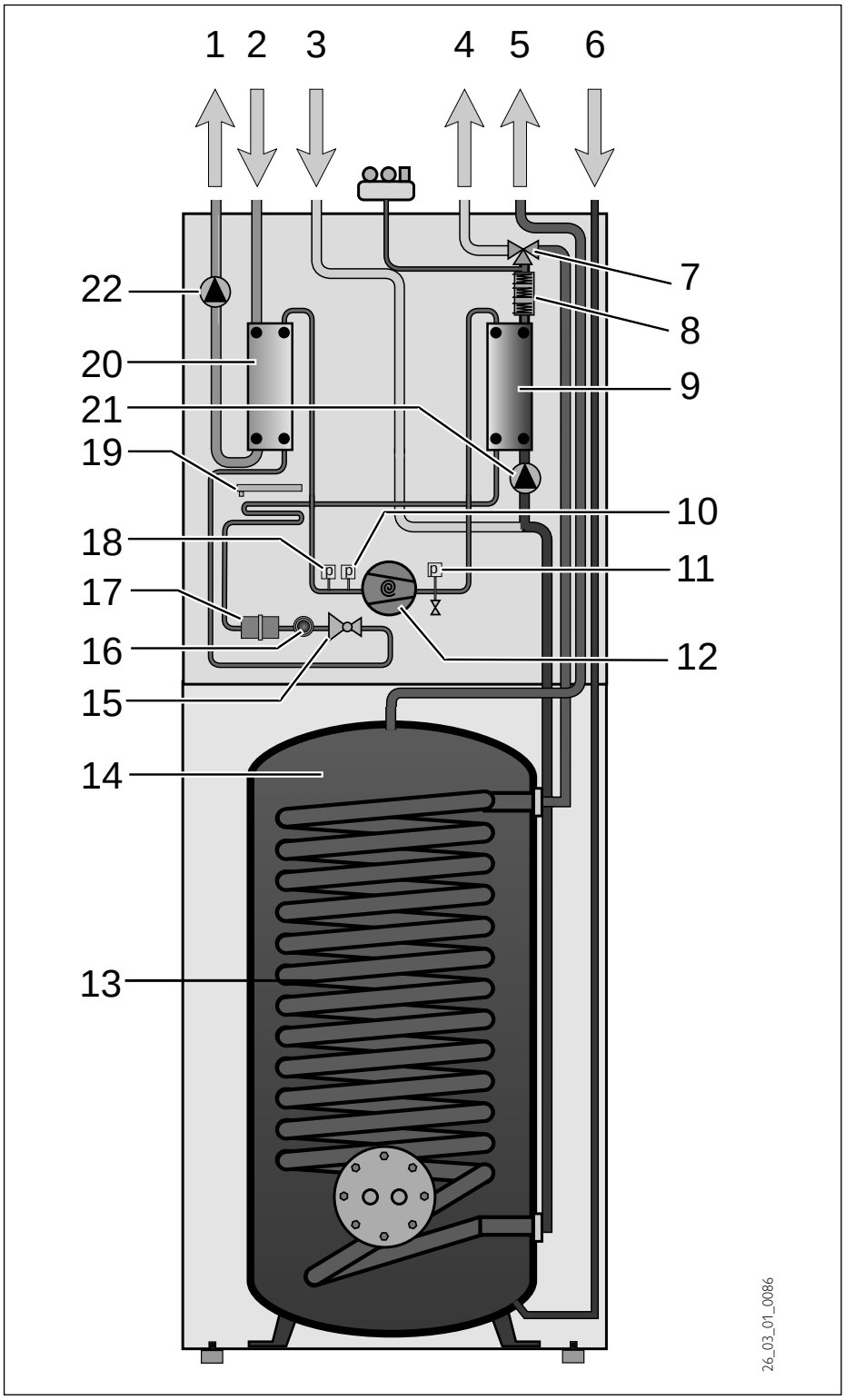


Fig. 8a

2.5.2 WPC function

The heat source medium brine enters the heat pump evaporator **(20)**. There, heat is extracted from the medium, so it exits the heat pump at a lower temperature.

The energy made available by the heat pump is transferred to the heating water inside the condenser **(9).**

The heating water subsequently transfers its energy to the heating circuit or is diverted, via the three-way valve **(7)**, to the indirect coil **(13)** integrated into the DHW cylinder **(14)**.

The electric booster heater **(8)** (internal HS 2) starts, when temperatures are required to heat the DHW, which exceed the maximum heat pump flow temperature. In addition it can cover any residual heat demand, if the heating system demand exceeds the heat pump output.

2.6 Equipment description WPC....cool

2.6.1 WPC....cool function

1 Brine outlet
2 Brine inlet
3 Heating return
4 Heating flow
5 Hot water
6 Cold water
7 Diverter valve (DHW)
8 Electric booster heater (internal HS 2)
9 Condenser
10 Heat exchanger (cooling)
11 Heating circulation pump
12 High pressure limiter
13 Compressor
14 Indirect coils (DHW)
15 DHW cylinder
16 Expansion valve
17 Sight glass
18 Filter dryer
19 Low pressure limiter
20 Condensate tray
21 Evaporator
22 Diverter valve (brine)
23 Brine circulation pump

2.6.2 WPC....cool function

The heat source medium brine enters the heat pump evaporator **(22)**. There, heat is extracted from the medium, so it exits the heat pump at a lower temperature.

The energy made available by the heat pump is transferred to the heating water inside the condenser (9).

The heating water subsequently transfers its energy to the heating circuit or is diverted, via the three-way valve **(7)**, to the indirect coil **(13)** integrated into the DHW cylinder **(14)**.

The electric booster heater **(8)** (internal HS 2) starts, when temperatures are required to heat the DHW, which exceed the maximum heat pump flow temperature. In addition it can cover any residual heat demand, if the heating system demand exceeds the heat pump output.

For cooling, the brine is pumped, via a further three-way valve **(22)**, through a second heat exchanger **(10)**, where the energy is extracted from the heating water.

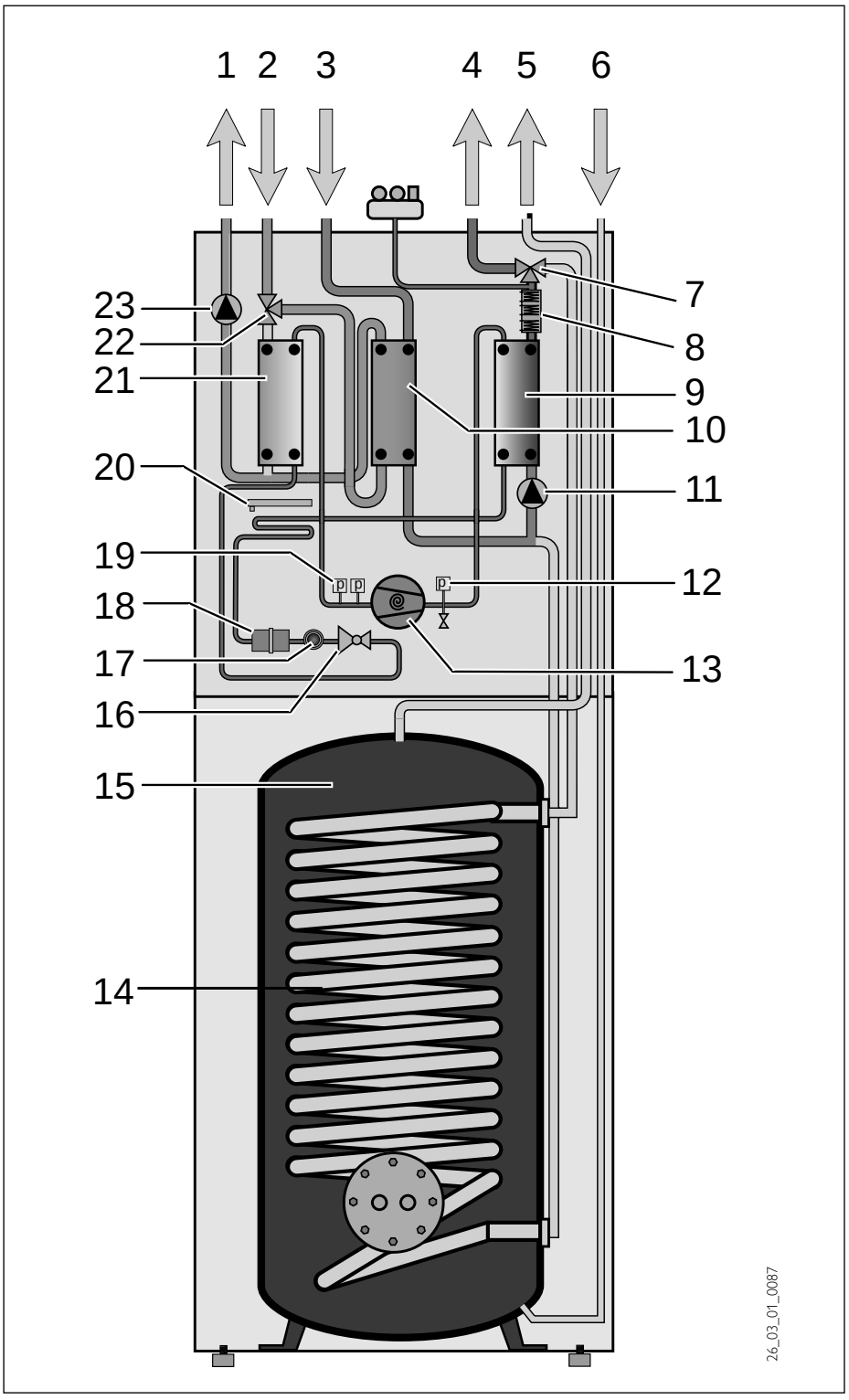


Fig. 8b

2.7 Operation and control

Contractors only!

The WPMi heat pump manager integrated into the equipment regulates the entire heating system. All necessary adjustments prior and during operation are made on this device.
Only qualified contractors must make adjustments listed in the commissioning report of the heat pump manager.

The system must not be shut down during summer, as the WPMi is provided with an automatic summer/ winter changeover facility. Set the WPMi to standby when the system is taken out of use. This retains the safety functions designed to protect the system (e.g. frost protection).

Drain the entire heating system on the water and the brine side, if the heat pump system is isolated from the power supply, when the equipment is taken out of use. For this, open the upper door and remove the lower one *(Fig. 11)*. You can drain the system using the following fill & drain valves *(see Fig. 3, page 14)*:
– Item 15, heating side
– Item 18, DHW cylinder
– Item 24, brine side
– Item 36, DHW cylinder; indirect coils

2.8 Instructions and regulations

On the water side:
DIN 4751 sh. 1 and 2: Safety equipment for hot water heating systems

DIN 1988: Technical rules for DHW installations

TRD 721: Safety equipment to prevent excess pressure - safety valves, or local regulations.

Regulations of your local water supply company.

On the electrical side:
DIN VDE 0100: Regulations for the installation of HV systems with rated voltages up to 1000 V.

VDE 0701: Regulations regarding the repair, modification and testing of used electrical equipment.

DIN-EN 60335 part 2-40

TAB: Technical connection conditions for connections to the LV mains.

On the refrigerant side:
EN 378: Safety and environmental requirements, or local regulations.

Pressure Equipment Directive

General:
Collation of technical requirements for boiler rooms, e.g. Boiler Room Directives or national/local Building Regulations, commercial and fire as well as emission control regulations and requirements, or local regulations.

Technical instructions to protect against noise emissions.

2.9 Maintenance and cleaning

Contractors only!

- Whenever working on built-in electrical components, disconnect everything from the mains.
- Regularly vent the safety valve until water streams from it. Close the safety valve after checking.
- The heat pump operates under automatic control and requires no specific maintenance.
- If heat meters are installed, frequently clean their strainers, which block easily.
- When the heat pump operation is impaired (high pressure limiter trips) through deposits of corrosion by-products (rust sludge) inside the condenser, only dissolving them by means of solvents used by our customer service will remove this problem.

DHW cylinder information:

- Cleaning and de-scaling
  After removing the flange plate, you can clean the cylinder through the inspection aperture.
  Never use de-scaling pumps. Never treat the enamel and the protective anode with descaling agents.
- Draining the cylinder:

– Close the shut-off valve in the cold water supply.
– Fully open the hot taps at all draw-off points.
– Use the drain valve to drain the cylinder (item 18, Fig. 3). Residual water remains in the lower part of the cylinder.

⚠ Hot water can be expelled during draining.

- Replacing the anodes

Check the anodes and replace them, as soon as the red signal indicator illuminates in the control array.

⚠ Never interchange the anodes. Fig. 3 Signal anode **(37)** with pressure switch hole **(38)**, part no. 26 48 64. Always seal-in the pressure switch when replacing the signal anode. Anode **(39)** without hole, part no. 26 49 84.

2.10 Installation

2.10.1 Transport

To protect the equipment against damage, it must be transported vertically inside its packaging.
Where space is restricted, you may also move the equipment tipped backwards at an angle not exceeding 45°. In conjunction with a suitable tube, the brackets at the back of the equipment assist in handling the unit (Fig. 9).
Storage and transport at temperatures below -20 °C and in excess of +50 °C are not permissible.

2.10.2 Positioning

⚠ The heat pump is designed for installation in interiors, except in wet areas.

1. Undo the four screws from the non-returnable pallet.
2. Remove the washers.
3. Before removing the equipment from the pallet, remove the equipment feet **(3)** in Fig. 9 from the pack supplied, and insert fully into the equipment.
4. Remove the equipment from its pallet and position it where required.
   To position the equipment better, you may use the sliding shoes **(4)** supplied in the pack.
5. Remove the transport aids **(2)**.
6. Level the equipment by adjusting the equipment feet.

⚠ After positioning the heat pump, check the brine pump fittings and re-tighten, if required.

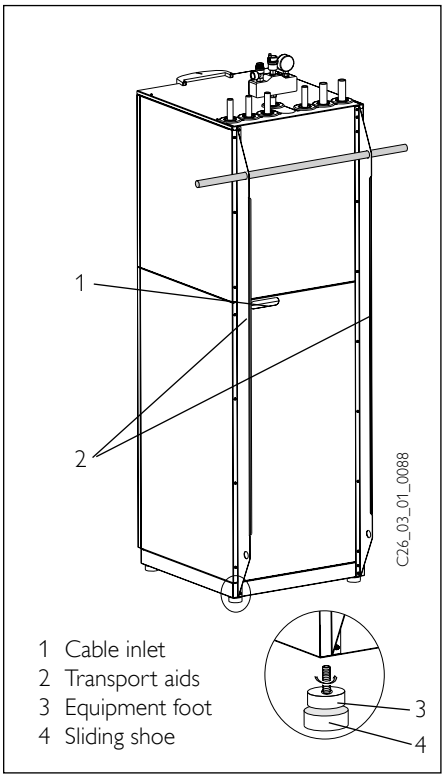


Fig. 9

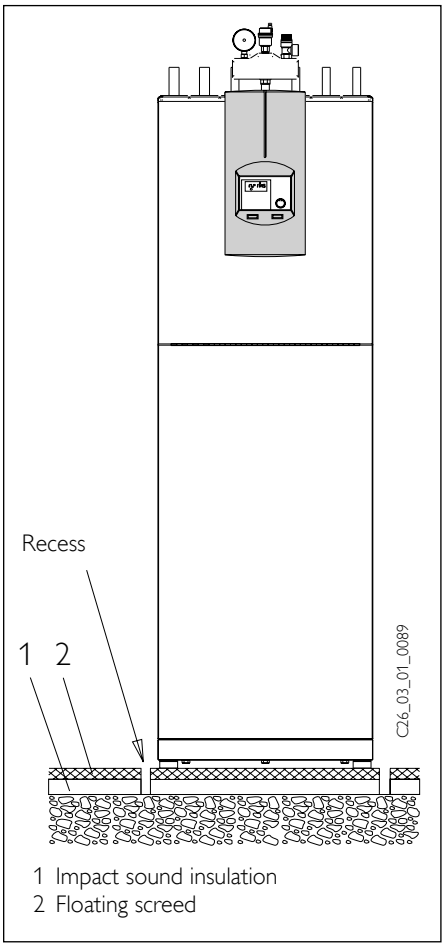
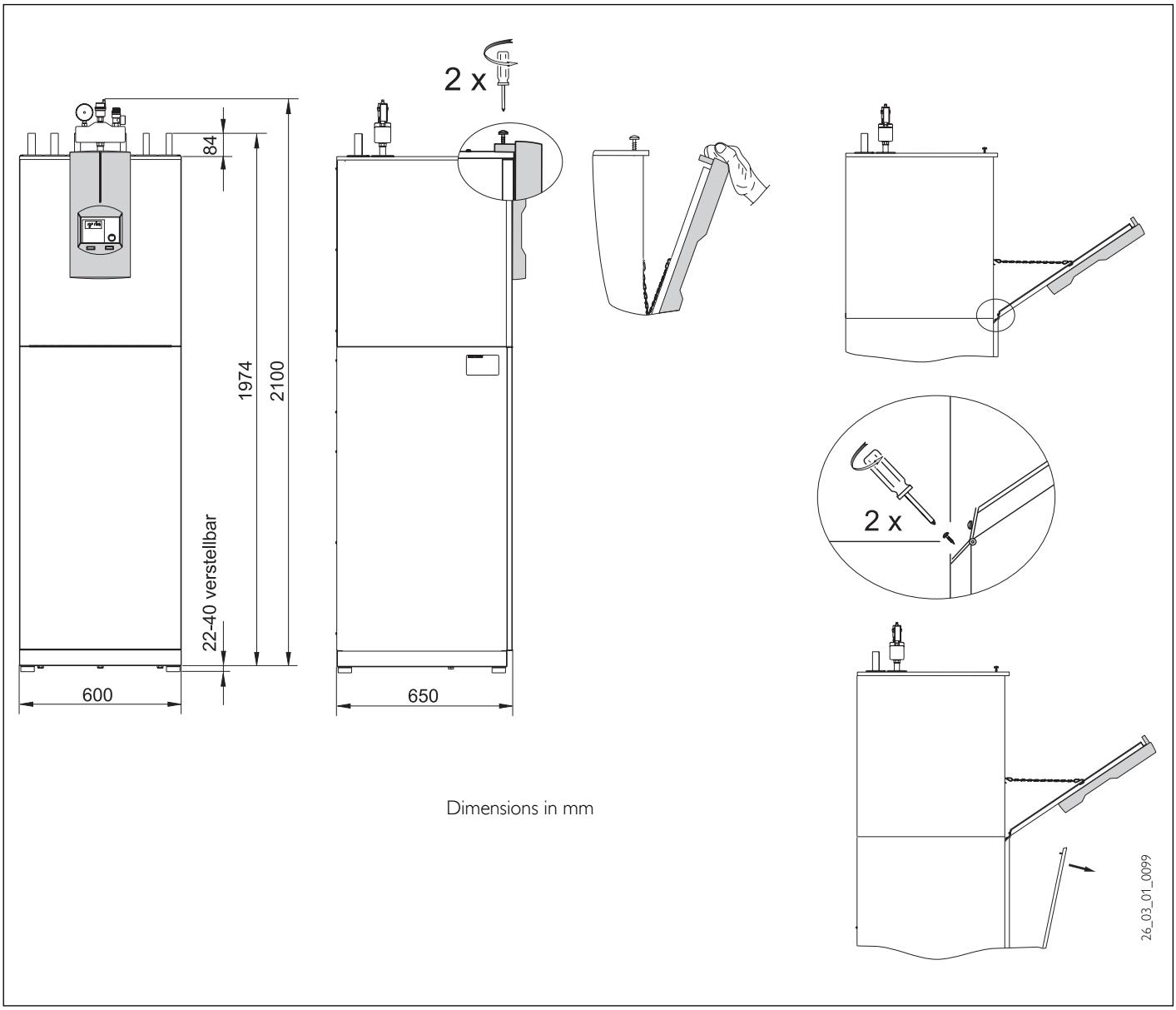


Fig. 10

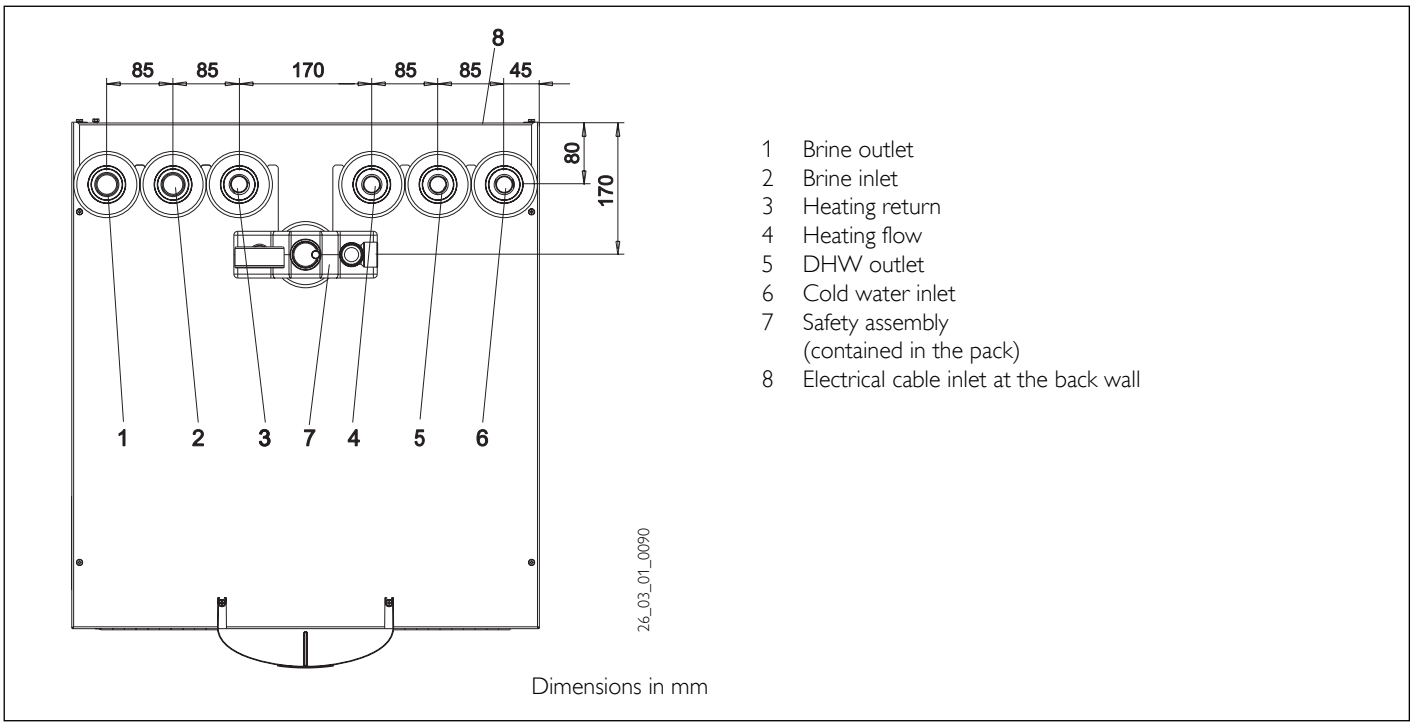
Checking installation conditions
The room in which the equipment is to be installed must meet the following conditions:

- No risk from frost.
- Floor load-bearing strength (for the equipment weight with a full DHW cylinder, see specification).



Dimensions in mm

Fig. 11



1 Brine outlet
2 Brine inlet
3 Heating return
4 Heating flow
5 DHW outlet
6 Cold water inlet
7 Safety assembly
(contained in the pack)
8 Electrical cable inlet at the back wall

Dimensions in mm

Fig. 12

- Level, even and firm base.
- For a quiet operation on floating screeds, remove the screed and the anti-vibration insulation around the installation location of the heat pump *(Fig. 10)*.
- The room must not be subject to a risk of explosions arising from dust, gases or vapours.
- The floor area of the installation room must be at least 3 m², and the room must provide a volume of at least 6 m³.
- When installing the heat pump in a boiler room together with other heating equipment ensure, that the operation of other heating equipment will not be impaired.

2.10.3 Installation of the heat source system with brine as heat source

Design the heat source system for the brine/water heat pump in accordance with STIEBEL ELTRON technical guides.
Permitted brine:
– Ethylene glycol
– Propylene glycol
– Concentrated process medium
  Part no: 16 16 96
– Ready-mixed process medium
  Part no: 18 54 72

Never seal the heat source system with hemp when using ready-mixed process medium (part no. 18 54 72).

2.10.3.1 Circulation pump and required volume flow

A circulation pump for pumping brine is already integrated into the heat pump. For the maximum available external pressure differential, see the *diagram on page 16*.
Sufficient volume flow must be safeguarded at every possible brine temperature, i.e.
– Nominal flow rate at brine temperature 0 °C with a tolerance of +10 %.

2.10.3.2 Connection and filling with brine

Prior to connecting the heat pump, check the heat source circuit for possible leaks, and flush thoroughly. After filling the system with brine and prior to commissioning, open the fill & drain valve *(item 24, Fig. 3)*, until brine runs out of it. No water must remain in the pipe run to the fill & drain valve. Calculate the volume of the heat source circuit. You can obtain the brine volume inside the heat pump from the following table.

Heat pump		Brine volume	
WPC 5	WPC 5 cool	5.84 l	8.45 l
WPC 7	WPC 7 cool	6.45 l	9.06 l
WPC 11	WPC 11 cool	7.06 l	9.67 l
WPC 13	WPC 13 cool	7.06 l	9.67 l

The overall volume equals that of the required brine, which should be mixed from 33 % vol. pure ethylene glycol and 67 % vol. water.

Mixing ratio:
Mix 1 unit undiluted ethylene glycol with 2 units water (max. chloride contents in the water = 300 ppm); then fill the mixture into the system.
Check the brine concentration: Determine the density of the ethylene glycol water mixture (e.g. with a hydrometer). Using the actual density and temperature, you can check the actual concentration in the diagram (Fig. 13).

The quoted details refer to ethylene glycol. These details will differ slightly (see specification) when using propylene glycol and the Stiebel Eltron process medium as ready-mixed solution (part no 18 54 72).

To prevent the transmission of noise, connect the heat source circuit to the heat pump with flexible pressure hoses with plug-in connectors.
Thermally insulate all brine pipes with vapour-proof material.
Check the correct connection of brine flow and return *(Fig. 12)*.

2.10.3.3 Checking the flow rate (to be implemented during heat pump commissioning)

Measure the flow and return temperatures of the heat source. For this, determine the temperature differential by measuring the temperature under the thermal insulation on both flow and return pipes of the heat pump. The diagram *(Fig. 14)* shows the temperature spread at the nominal volume flow.

You can check the source inlet temperature on the WPMi display under parameter INFO TEMP.

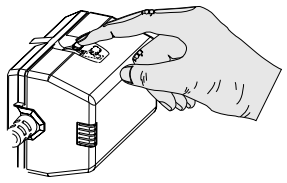
2.10.4 Installation of the heat utilisation system

2.10.4.1 Install the heat utilisation system (heating circuit) in accordance with current technical guidelines. For safety equipment on the heating system, consult DIN 4751 page 2 or local regulations.

For sizing the heating circuit, check the maximum available external pressure differential in the *diagram on page 16*.

Ensure the rated volume flow of the heat pump under all operating conditions of the heating system by installing an overflow valve.

Prior to connecting the heat pump, check the heating system for leaks, flush it thoroughly, fill and carefully vent it. The equipment has been prepared for commissioning at the factory.
The three-way diverter valve is in the centre position for filling and venting the equipment. This position will change when the equipment heats up DHW for the first time.



If the equipment is to be used exclusively for central heating (e.g. drying a new building), remove the servo drive of the three-way diverter valve once and then refit it. Use the equipment connection for filling.

Check the correct connection of the heating flow and return *(Fig. 12)*. To reduce the noise transfer on the water side, use the flexible pressure hoses with plug-in connections supplied.
Fit thermal insulation in accordance with local regulations.

2.10.4.2 Buffer cylinder

The equipment is designed so that, to provide hydraulic separation of the volume flow in the heat pump circuit and the heating circuit, a buffer cylinder is not required. If a buffer cylinder is used, set the parameter CONST BUF HEAT to OFF, when commissioning the heat pump. The cylinder primary pump is integrated into the heat pump. For sizing the pipework between the heat pump and the buffer cylinder, check the maximum available external pressure differential in the *diagram on page 16*.

2.10.4.3 Oxygen diffusion

Steel components, such as radiators and pipes, can corrode if plastic underfloor heating system pipes, which are permeable to oxygen, are used.

The products of corrosion, i.e. rusty sludge, can settle inside the heat pump condenser and can result in a lower heat pump output through a reduction of cross-section or effect the heat pump shutdown by the high pressure limiter.

Therefore, never use the heat pump in conjunction with underfloor heating systems with permeable pipes.

2.10.4.4 Scaling

Water quality, operating conditions and the water volume are decisive factors to the extent of scaling. To prevent damage to valves, heat exchanger and heating elements, check the water condition and assess it in accordance with VDI 2035 [or local regulations].

Note: An awareness of hardness in accordance with the Detergent Act [Germany] is insufficient. Decisive for scaling is the concentration of calcium hydrogen carbonate, which can be supplied by your water supply company.

2.10.4.5 Water connection

System examples on pages 39 to 41

Fit the DHW outlet and the cold water inlet lines.

The equipment is supplied with elbow plug-in fittings to facilitate an easy connection to the DHW system.

Pipework material:

– Cold water line	– DHW line
copper pipe	⇨ copper pipe
steel pipe	⇨ steel/copper pipe

Only plastic pipes with the DVGW seal [or equivalent] may be used. Insulate the DHW line in accordance with local regulations.

The on-site safety valve must open no later than at 1 MPa (10 bar).

Blow-off line:

- Size the blow-off line for a fully opened safety valve. The blow-off aperture of the safety valve must remain open towards the atmosphere.
- Install the safety valve blow-off line with a constant slope.
- Observe the information in the "Safety valve" installation instructions.

Only fill the DHW cylinder with water by opening the DHW fitting and flush thoroughly. Carry out a leak test.

Connecting a DHW circulation line

The heat losses incurred in the circulation line and the electrical power consumption of the circulation pump reduce the efficiency of the system. Where possible, avoid installing a circulation line. Where that is not possible, control the DHW circulation pump on site thermally or by means of a time switch. Connect the DHW circulation line directly to the equipment with a tee in the cold water supply line.

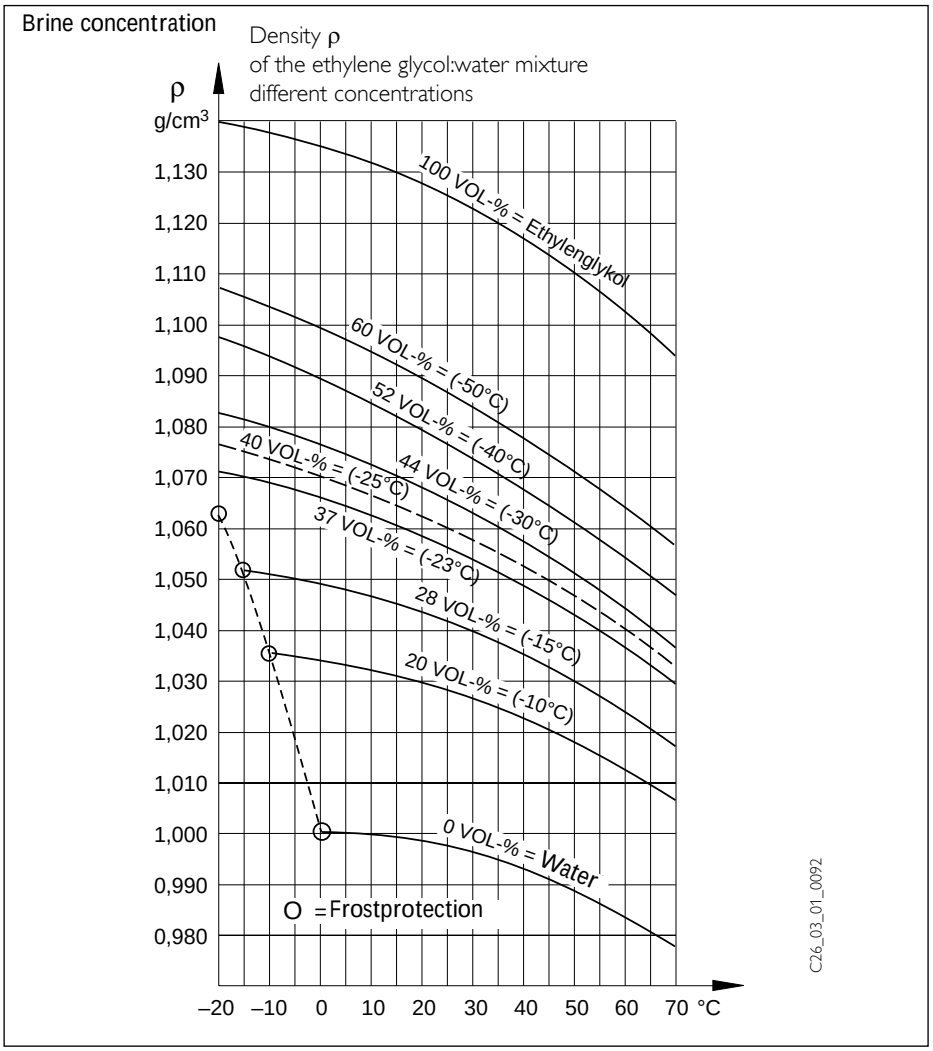


Fig. 13

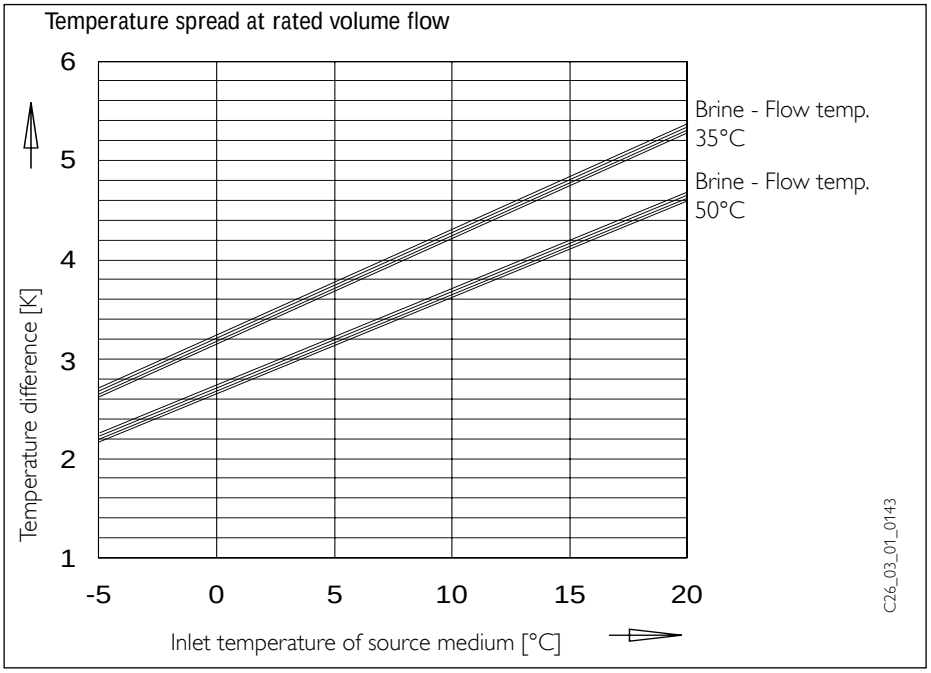


Fig. 14

2.10.4.6 Power connection

Notify your local power supply company of the electrical connection. Only qualified electricians must carry out the installation in accordance with these instructions.

⚠ Before any work, isolate the equipment from the power supply at the control panel.

Observe VDE 0100 [or local regulations] and the regulations of your local power supply company.

The equipment must be able to be separated from the mains power supply by an additional isolator, which disconnects all poles with at least 3 mm contact separation. For this purpose, use contactors, mains isolators, fuses, etc. on site.

The connection terminals are inside the control panel (Fig. 15, page 26) of the equipment behind the front cover.

Route all connecting cables and sensor leads through the apertures in the back panel (item 1, Fig. 9).

⚠ The compressor must only rotate in one direction. Change the direction of rotation by interchanging two phases, if the fault NO POWER appears in the WPMi display when the compressor starts.

After connecting all electrical cables, refit and seal the cover over the mains terminal strip (X3) (Fig. 15).

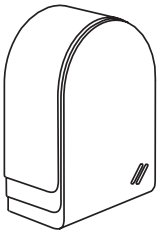
Terminal rating of the electric booster heater

Connect the booster heater to ensure acceptable DHW convenience.
Mark the box in front to the terminal rating on the relevant label below the type plate.

2.10.4.7 Sensor installation

The temperature sensors have a decisive influence on the function of your heating system. Therefore ensure the correct seating and adequate insulation of sensors.

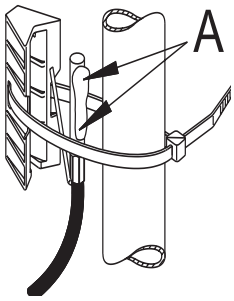
Outside temperature sensor AFS 2
(included in the pack supplied)



Install the outside temperature sensor on a north or north-eastern wall.
Minimum distances::
2.5 m above the ground
1 m away from windows and doors
The outside temperature sensor should be freely exposed to the elements, but should not be installed above windows, doors or air ducts and should not be subject to direct sunlight.
Connect the outside temperature sensor to terminal X2/9(T (A)) and the earth terminal block X26 of the WPC.

Installation:
Pull off the lid.
Secure the lower part with the screw supplied; insert and connect the sensor lead.
Reposition the lid and let it audibly click into place.

Contact sensor AVF 6 (part no. 165341)



This sensor is required if a mixer circuit is installed. Installation information:
Thoroughly clean the pipe. Apply heat transfer paste **A**, and secure the sensor with a cable tie.

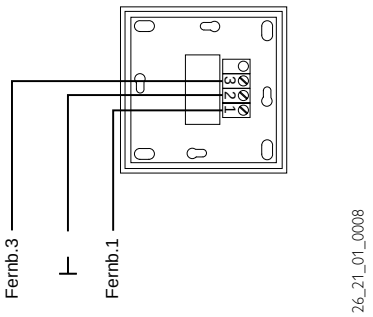
PTC sensor resistance values

The sensors installed in the equipment (return, flow and source sensors), the outside temperature sensor AFS 2, the contact sensor AVF 6 and the PTC immersion sensor TF 6A all have identical resistance values.

Temperature in ° C	Resistance in Ω
– 20	1367
– 10	1495
0	1630
10	1772
20	1922
25	2000
30	2080
40	2245
50	2417
60	2597
70	2785
80	2980
90	3182
100	3392

FE 7 remote control (part no.: 18 55 79)

Connection array



The FE 7 remote control enables you to adjust the set room temperature for heating circuit 1 or heating circuit 2 by ± 5 °C in automatic mode only. You may also change the operating mode.
Connect it to the terminals REM.CON.1, and REM.CON.3 at terminal block X2 and the earth terminal block X26 of the WPC cool.

It offers the following controls:
- One rotary selector for changing the set room temperature
- One rotary selector with the following positions

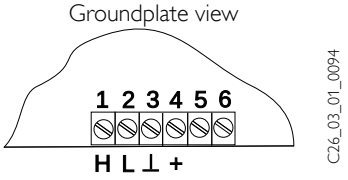
Automatic mode
Constant setback mode
Constant day mode

The remote control is only active in the automatic mode of the WPMi.

FEK remote control (part no.: 220193)

⚠ The FEK is vitally important for area cooling, e.g. underfloor heating systems, radiators etc. with the WPC cool. Apart from the room temperature, it also determines the dew point temperature to prevent condensation.

Groundplate view

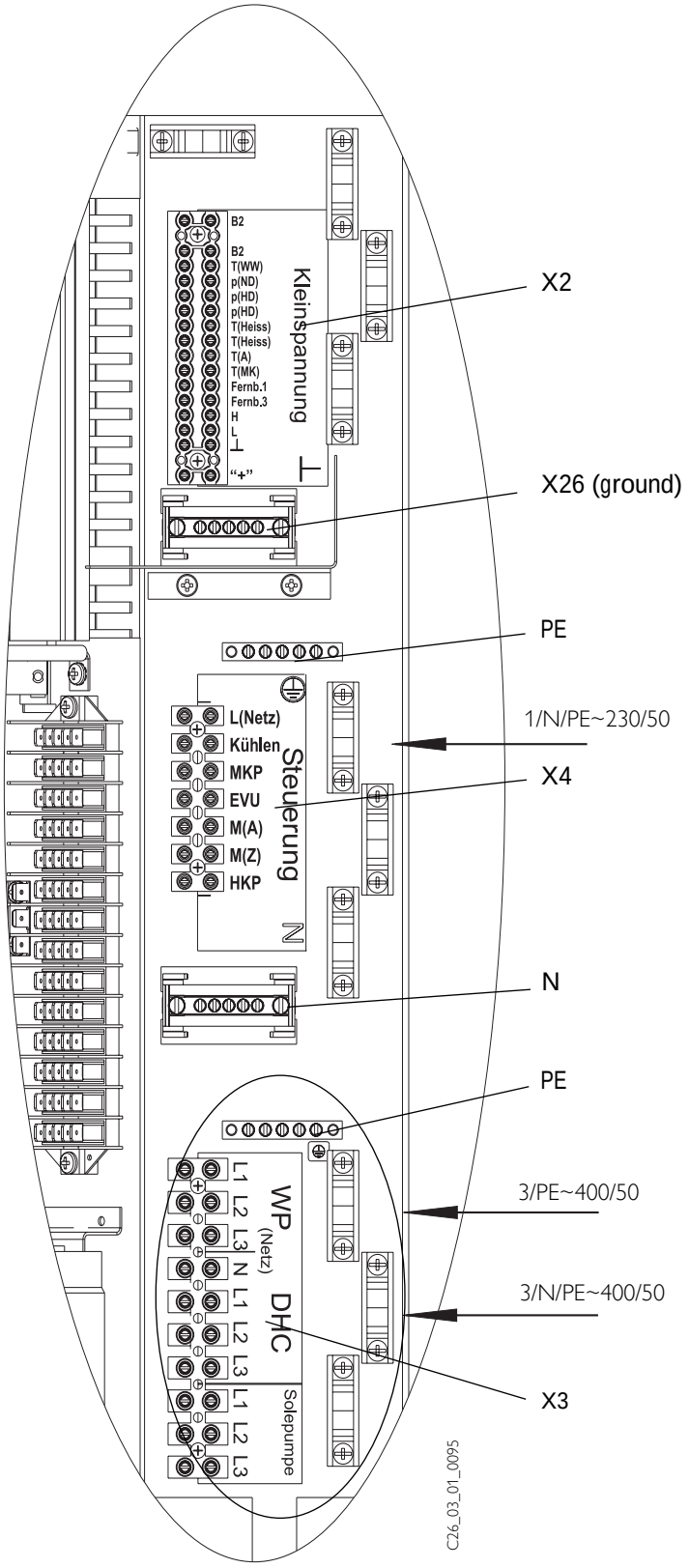


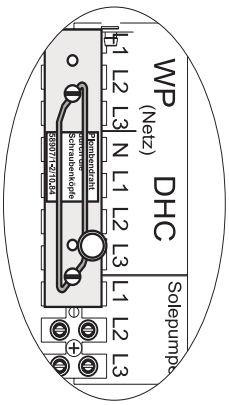
The set room temperature for heating circuit 1 or heating circuit 2 can be adjusted by ± 5 °C, and the operating mode can be changed with the FEK remote control.
Connect the remote control at terminals H, L, ⊥ and + at terminal block X2 of the WPC cool.
It offers the following controls:
- One rotary selector for changing the set room temperature
- One rotary selector with the following positions

Automatic mode
Constant setback mode
Constant day mode

Electrical connection WPC and WPC ... cool

Provide separate fuses for the three power circuits heat pump, DHC and control.





X3 Power supply

HP Heat pump (compressor)
L1, L2, L3, PE

DHC Booster heater
L1, L2, L3, N, PE

Connected load	Terminal allocation				
2.6 kW	L1			N	PE
3.0 kW		L2		N	PE
3.2 kW			L3	N	PE
5.6 kW	L1	L2		N	PE
5.8 kW	L1		L3	N	PE
6.2 kW		L2	L3	N	PE
8.8 kW	L1	L2	L3	N	PE

Brine pump
L1´, L2´, L3´, PE

X4 Control terminal

Mains supply: L, N, PE

Outputs:

Cooling	Cooling (connection only with WPC....cool)
MKP	Mixer circuit pump and N, PE
M(A)	Mixer OPEN
M(Z)	Mixer CLOSE
HKP	Heating circuit pump and N, PE

Control inputs:

EVU	L´ power supply company enable signal

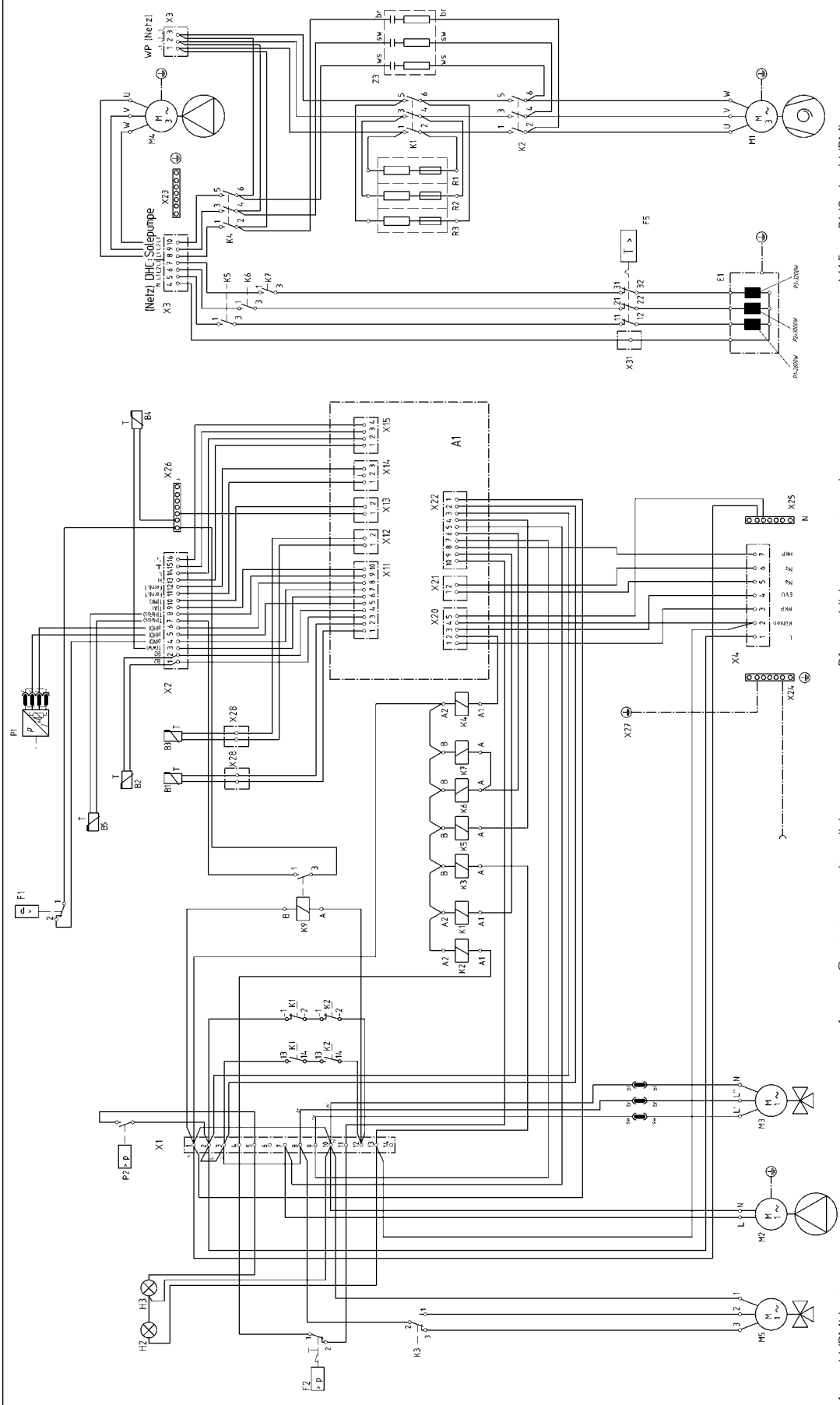
X2 LV terminal

B2	Temperature sensor heat pump return
B2	Temperature sensor heat pump return
T(WW)	DHW temperature sensor and earth
p(ND)	Low pressure switch and earth
p(HD)	High pressure transducer
p(HD)	High pressure transducer
T(hot)	Hot gas temperature sensor
T(hot)	Hot gas temperature sensor
T(A)	Outside temperature sensor and earth
T(MK)	Mixer circuit temperature sensor and earth
REM CON.1	Remote control 1
REM CON.3	Remote control 3
H	BUS high
L	BUS low
⊥	BUS ground ⊥
" + "	BUS " + "

Fig. 15

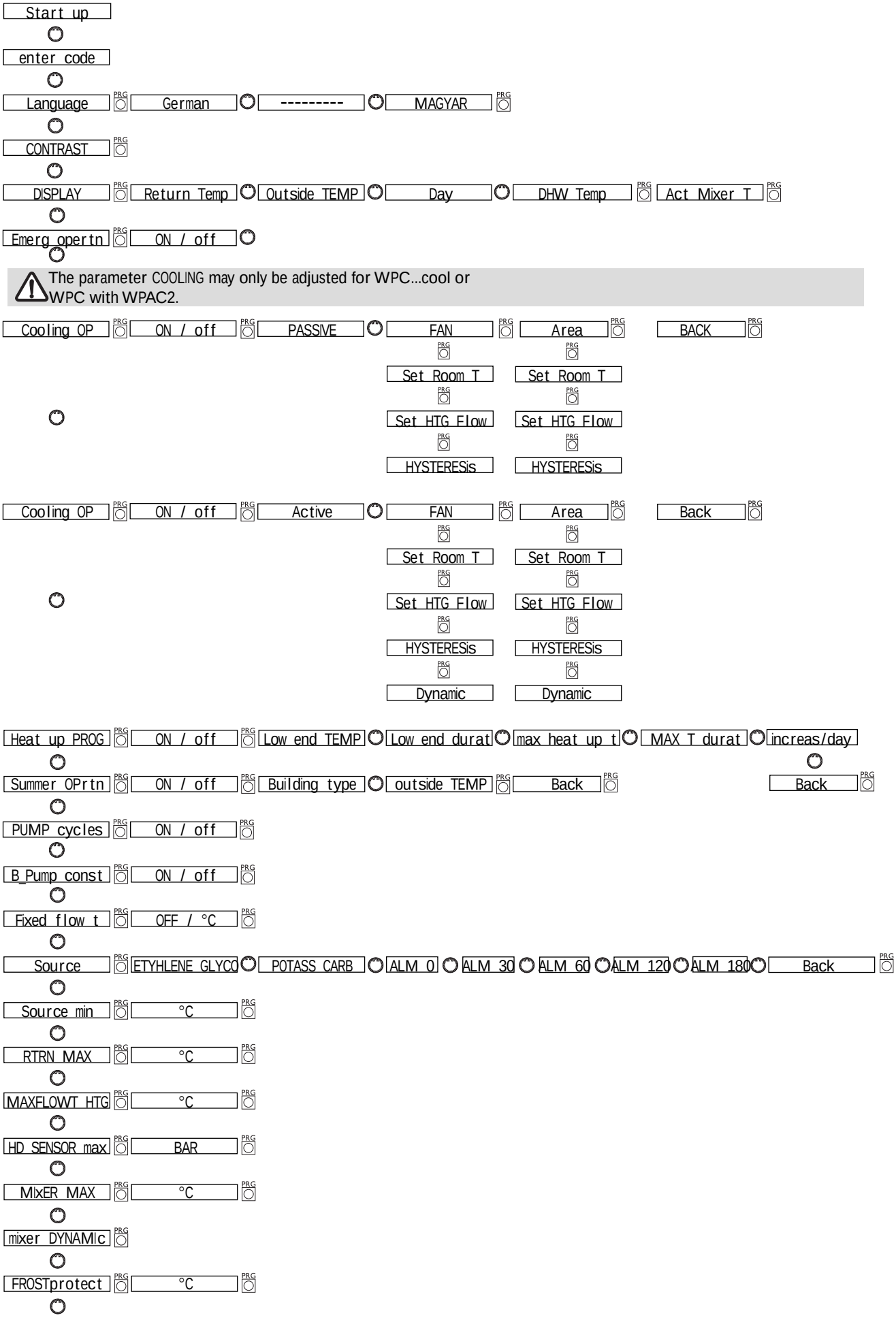
Wiring diagram WPC and WPC ... cool

C26_03_01_0068

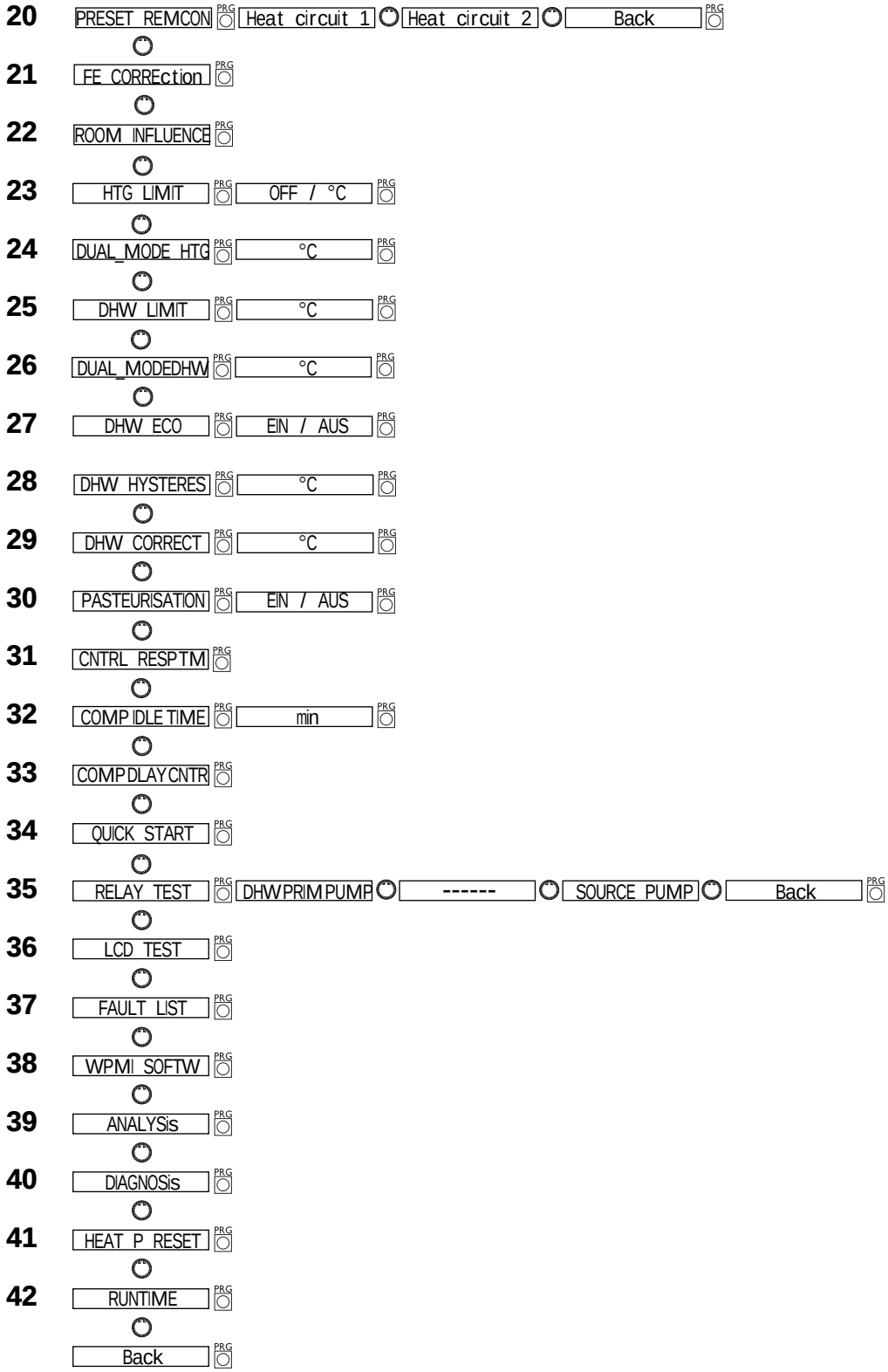


A1	WPMi heat pump manager	1	Contactor – resistor link	P1	High pressure transducer
B1	Temperature sensor heat pump flow	K2	Contactor – compressor start	P2	Signal anode pressure switch
B2	Temperature sensor heat pump return	K3	Brine diverter valve relay (for WPC cool)	R1	Start-up resistance
B3	Temperature sensor heat source	K4	Contactor - brine pump	R2	Start-up resistance
B4	Temperature sensor, DHW	K5	Relay - booster heater	R3	Start-up resistance
B5	Hot gas temperature sensor	K6	Relay - booster heater	X1	Terminals
E1	Electric booster heater (DHC)	K7	Relay - booster heater	X2	LV terminal
F1	Low pressure limiter	K9	Contactor relay stuck	X3	Power supply
F2	High pressure limiter	M1	Motor - compressor	X4	Terminals - control
F5	High limit safety cut-out for DHC	M2	Motor pump	X11	Plug temperature sensor WPMi
H2	ON indicator (heating), green (for WPC)	M3	Motorised diverter valve	X12	Plug WQ temperature WPMi
	ON indicator (cooling) blue (for WPC....cool)	M4	Brine pump motor (for WPC cool)	X13	Plug mixer circuit temp. WPMi
H3	Signal indicator, service anode (red)	M5	Brine diverter valve motor	X14	Plug remote control WPMi
		X15	BUS plug WPMi	Z3	Suppressor
		X20	Plug pumps and power-OFF WPMi		
		X21	Plug mixer control WPMi		
		X22	Plug external pump WPMi		
		X23	Earth block – power supply		
		X24	Earth block control		
		X25	N block control		
		X26	Earth block LV		
		X27	Earth plug-in block		
		X28	Socket terminal strip 2-pole		
		X31	Terminal booster heater		

Fig. 16


Start up
enter code
Language
German

MAGYAR
CONTRAST
DISPLAY
Return Temp
Outside TEMP
Day
DHW Temp
Act Mixer T
Emerg opertn
ON / off
The parameter COOLING may only be adjusted for WPC...cool or WPC with WPAC2.
Cooling OP
ON / off
PASSIVE
FAN
Area
BACK
Set Room T
Set HTG Flow
HYSTERESis
Cooling OP
ON / off
Active
FAN
Area
Back
Set Room T
Set HTG Flow
HYSTERESis
Dynamic
Heat up PROG
ON / off
Low end TEMP
Low end durat
max heat up t
MAX T durat
increas/day
Summer OPrtn
ON / off
Building type
outside TEMP
Back
PUMP cycles
ON / off
B_Pump const
ON / off
Fixed flow t
OFF / °C
Source
ETYHLENE GLYCO
POTASS CARB
ALM 0
ALM 30
ALM 60
ALM 120
ALM 180
Source min
°C
RTRN MAX
MAXFLOWT HTG
HD SENSOR max
BAR
MixER MAX
mixer DYNAMIc
FROSTprotect


20
PRESET REMCON
Heat circuit 1
Heat circuit 2
Back
21
FE CORREction
22
ROOM INFLUENCE
23
HTG LIMIT
OFF / °C
24
DUAL_MODE HTG
°C
25
DHW LIMIT
°C
26
DUAL_MODEDHW
°C
27
DHW ECO
EIN / AUS
28
DHW HYSTERES
°C
29
DHW CORRECT
°C
30
PASTEURISATION
EIN / AUS
31
CNTRL RESPTMI
32
COMP IDLE TIME
min
33
COMP DLAY CNTR
34
QUICK START
35
RELAY TEST
DHW PRIM PUMP

SOURCE PUMP
Back
36
LCD TEST
37
FAULT LIST
38
WPMI SOFTW
39
ANALYSis
40
DIAGNOSis
41
HEAT P RESET
42
RUNTIME
Back

2.12 Initial start-up

Only approved contractors may commission this equipment and instruct the owner in its use.

Commission this equipment in accordance with these operating and installation instructions. Our customer service can assist in the commissioning, which is chargeable. After commissioning, the installer should complete the commissioning report on pages *42 to 44*.

Check the following prior to commissioning:

- Heating system
  Was the heating system filled to the correct pressure, and was the quick-acting air vent valve opened?
- DHW system
  Fill, vent and thoroughly flush the DHW cylinder.
  Check the safety valve function.
- Temperature sensor
  Were the outside temperature and the return temperature sensor (in conjunction with a buffer cylinder) correctly positioned and connected?
- Power supply
  Was the mains power supply properly connected?
  The compressor turns in the right direction if, when voltage is applied to the heat pump power supply (mains), no fault message appears in the display. If the fault message NO POWER appears, reverse the rotational direction of the compressor.

⚠ Observe the maximum system temperature in underfloor heating systems.

Equipment handover
Explain the equipment function to the user and familiarise him/her with its operation. Important information:

- Make the user aware of possible dangers (scalding).
- Hand over these operating and installation instructions to the user for safe-keeping. Carefully observe all information in these instructions. They contain information concerning safety, operation, installation and maintenance of this equipment.

2.13 Commissioning in detail

Not only the adjustments at control level 2 but also the system-specific parameters must be determined as part of commissioning the heat pump system. These parameters are adjusted at control level 3, access to which is protected by code.
Check all parameters in sequence. Enter all set values into the column (system values) provided in the commissioning report under *section 2.15, page 38*.

Note: Not all adjustments take immediate effect. Some adjustments only become effective in certain situations or after a delay.

1 CODE 1 0 0 0

Enter the correct four-digit code to change parameters at control level 3. The factory-set code is 1 0 0 0.
After pressing PRG (indicator illuminates), the first digit can be selected by turning the rotary selector. Pressing PRG again confirms the value, then the second digit of the code begins to flash. Turning the rotary selector enables the second digit to be entered. When all four digits have been entered correctly, four lines appear in the display. This enables access to control level 3, and the display shows CODE OK. Closing and re-opening the flap requires that the code is entered again. Checking settings does not require the code to be entered.

2 LANGUAGE

Press PRG and select the required language with the rotary selector. Then confirm your selection by pressing PRG again.

3 CONTRAST

4 DISPLAY

Select, what will be displayed when the programming unit flap is closed. You can select between outside temperature, return temperature, day and time, DHW temperature or mixer temperature.

5 EMERGENCY MODE

Characteristics in case of Fatal Error conditions in conjunction with emergency mode: The EMERGENCY OP parameter can be set ON or OFF.

Emergency operation set ON:
The program selector automatically changes over to emergency mode as soon as faults occur and the heat pump fails.
Emergency operation set OFF:
The booster heater takes over the frost protection of the central heating system, as soon as faults occur and the heat pump fails. Users can then select emergency mode.

6 COOLING MODE

WPC 5 - 13

This equipment is designed for DHW and central heating. In the delivered condition, the parameter is set to OFF. The cooling operation is only possible with the WPAC2 cooling module.

⚠ Never enable this parameter on a WPC 5-13 without a cooling module.

WPC 5 - 13 with cooling module WPAC2

⚠ Set this parameter to activ.

Note: This parameter will only be shown, if a FEK or FE 7 remote control unit is connected. The cooling mode is only possible in summer.

The WPC with the WPAC2 cools in two stages

Stage 1 (source pump)
Heat is extracted from the heating circuit and transferred to the heat source system.

Stage 2 (source pump + compressor)
In addition, the cooling circuit extracts heat from the heating circuit and transfers it to the heat source system.

DHW heating
DHW heating always has priority. As long as the actual temperature has not dropped below the set flow and return temperature, active cooling continues even during DHW heating, and any extracted heat is transferred to the DHW. If there is no cooling demand, DHW is conventionally heated via the heat source system.

Cooling operation with the FE 7
The FE 7 is not equipped with dew point monitoring. It can therefore only be used in conjunction with fan convectors with condensate drain. Set the cooling mode to FAN.

Cooling operation with the FEK

The FEK remote control unit is equipped with dew point monitoring, and can be used with area heating systems (e.g. underfloor/wall heating systems, etc.). Set parameter 6 to AREA.

The set flow temperature is compared with the detected dew point temperature, so the actual temperature never drops below the dew point.

When using fan convectors with the FEK remote control, set parameter 6 to FAN.

The following settings for the FE 7 and the FEK can be selected for the cooling operation in parameter 6

- ROOM TEMP
  Cooling starts, when the selected room temperature is exceeded (output COOLING = 230 V). Cooling is stopped, if the actual room temperature drops 2 K below its set temperature (output COOLING = 0 V)
- Flow temperature and hysteresis
  The cooling operation is regulated via the selected flow temperature. The brine pump starts at:
  [flow temperature + hysteresis]
  Brine pump OFF, when the actual temperature drops below the flow temperature.
  The [flow temperature+hysteresis] should be at least 3 K < room temperature.
  Lower flow temperatures cause a more rapid cooling of the room. As soon as, with setting AREA, the determined dew point temperature is + 2 K higher than the selected flow temperature, that temperature will be overridden with the dew point temperature and acts as controlled variable. The brine pump starts at [entered or newly determined flow temp. + hysteresis].
  The source pump is stopped and the cooling operation terminated, if the actual flow temperature lies below the entered or newly determined flow temperature.
  The cooling signal remains active.
- Dynamics:
  Dynamics can be adjusted from 1 to 10. It describes the delay between stage 1 and stage 2, whereby the second stage is started sooner, the smaller the value.

WPC 5 - 13 cool

⚠ Set this parameter to passiv.

Note: This parameter will only be shown, if a FEK or FE 7 remote control unit is connected. The cooling mode is only possible in summer.

Cooling operation with the FE 7

The FE 7 is not equipped with dew point monitoring. It can therefore only be used in conjunction with fan convectors with condensate drain. Set the cooling mode to FAN.

Cooling operation with the FEK

The FEK remote control unit is equipped with dew point monitoring, and can be used with area heating systems (e.g. underfloor/wall heating systems, etc.). Set parameter 6 to AREA.

The set flow temperature is compared with the detected dew point temperature, so the actual temperature never drops below the dew point.

When using fan convectors with the FEK remote control, set cooling mode to FAN.

The following settings for the FE 7 and the FEK can be selected for the cooling operation in parameter 6

- ROOM TEMP
  Cooling starts, when the selected room temperature is exceeded (output COOLING = 230 V). Cooling is stopped, if the actual room temperature drops 2 K below its set temperature (output COOLING = 0 V)
- FLOW TEMPERATURE and HYSTERESIS
  The cooling operation is regulated via the selected flow temperature. The brine pump starts at:
  [flow temperature + hysteresis]
  Brine pump OFF, when the actual temperature drops below the flow temperature.
  The [flow temperature+hysteresis] should be at least 3 K < room temperature.
  Lower flow temperatures cause a more rapid cooling of the room. As soon as, with setting AREA, the determined dew point temperature is + 2 K higher than the selected flow temperature, that temperature will be overwritten with the dew point temperature and acts as controlled variable. The brine pump starts at [entered or newly determined flow temp. + hysteresis].
  The source pump is stopped and the cooling operation terminated, if the actual flow temperature lies below the entered or newly determined flow temperature.
  The cooling signal remains active.

7 HEAT UP PROG

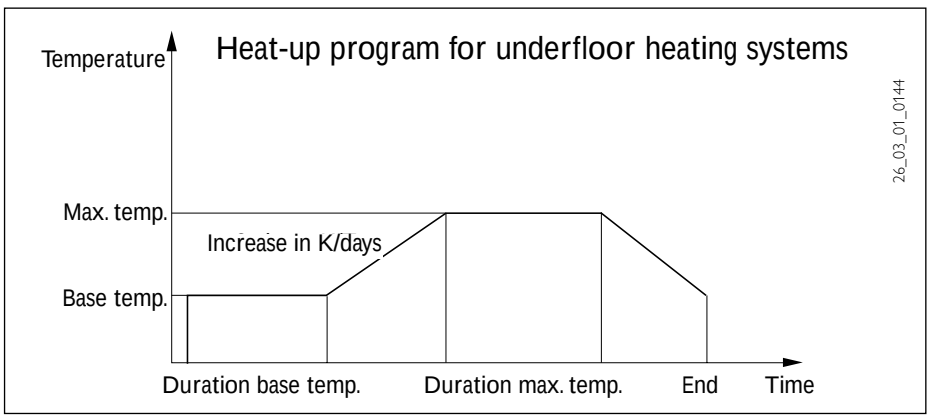
Heat-up program for underfloor heating systems

This heat-up program comprises a total of six parameters. These six parameters can be adjusted in sequence as soon as the heat-up program is activated. This program is started with the parameter HEAT UP PROG and with the setting ON. The system then heats to the selected low end temperature (parameter LOW END TEMP). The low end temperature is then held for the set period (parameter LOW END DURAT). After expiry of this period, the system heats with an increase K/day (parameter INCREASE/DAY) to the maximum low end temperature (parameter MAX. HEAT UP TEMP) and held at the maximum temperature via the selected time (parameter MAX. TEMP. TIME). After expiry of this period, the system reduces the temperature back to the low end temperature in the same stages as per heat-up. This concludes the heat-up program. As soon as two heating circuits are operational, both will be operated in accordance with this heat-up program (operation with buffer cylinder and mixer circuit). The direct heating circuit 1 (buffer circuit with return sensor) adopts the heat-up program set values. The actual temperature inside the buffer cylinder is higher at the heating flow, since the regulation takes place via the return sensor. The mixer (heating circuit 2) regulates the temperature back down to the selected set values in the heat-up program (low end temperature and maximum temperature).

Please note that only the mixer circuit pump is running when operating with two heating circuits.

When only the direct heating circuit 1 is operational, the return sensor is again used for control. As the actual temperature inside the buffer cylinder is higher at the heating flow, this constellation sees 5 K being deducted from the heat-up program set values (low end and maximum temperatures).

The summer logic is disabled when the heat-up program runs.



8 SUMMER MODE

The summer mode parameter allows you to select the time from when the heating system should change into summer mode. summer mode can be switched ON or OFF. In total, this function offers two adjustable parameters.
The "Building Type" parameter determines, subject to building type (setting 1, 2 or 3), an adjusted outside temperature. Both heating circuits (if installed) enter summer mode, if the adjusted outside temperature is ≥ than the selected outside temperature; reverse hysteresis –1 K.
The display indicates summer mode when the flap is closed.
Summer mode is disabled for heating circuit 1 when regulating to a fixed temperature.

OUTSIDE TEMP parameter:
Available outside temperature 10 °C to 30 °C
Building type parameter:

Setting 1:
Mild adjustment (averaging over a 24 h period) of the outside temperature, e.g. timber construction with rapid heat transfer.

Setting 2:
Mean adjustment (averaging over a 48 h period) of the outside temperature, e.g. solid construction with thermal insulation and average heat transfer.

Setting 3:
Severe adjustment (averaging over a 72 h period) of the outside temperature, e.g. house with slow heat transfer.

9 PUMP CYCLES

Heating circuit pump control
The PUMP CYCLES **parameter only applies to the direct heating circuit 1, i.e. for heating circuit pump 1.**

This parameter can be set ON or OFF. In setting OFF the heating circuit pump will not cycle. It will run permanently and only be switched OFF in summer mode. The heating circuit pump start will be controlled in accordance with a fixed temperature curve of the outside temperature, as soon as this parameter is set to ON.
The heating circuit pump start pulse is **always** 5 minutes. The heating circuit pump for HC1 always starts with each heat pump start. The pump runs on for 5 minutes after the heat pump has been switched OFF.
Now the start-up duration is brought to bear, e.g. at an outside temperature of 5 °C, the pump starts three times per hour for 5 minutes respectively

Pump kick
To prevent the pump from seizing up, for example during summer, 24 hours after the pump was last switched OFF, it will be started for 10 s. This applies to all pumps.

Heating circuit pump control with connected FE 7/FEK remote control unit
In conjunction with the FE 7 of FEK remote control unit, the respective heating circuit pump is switched OFF and the mixer moves to "Closed" in accordance with the switching condition

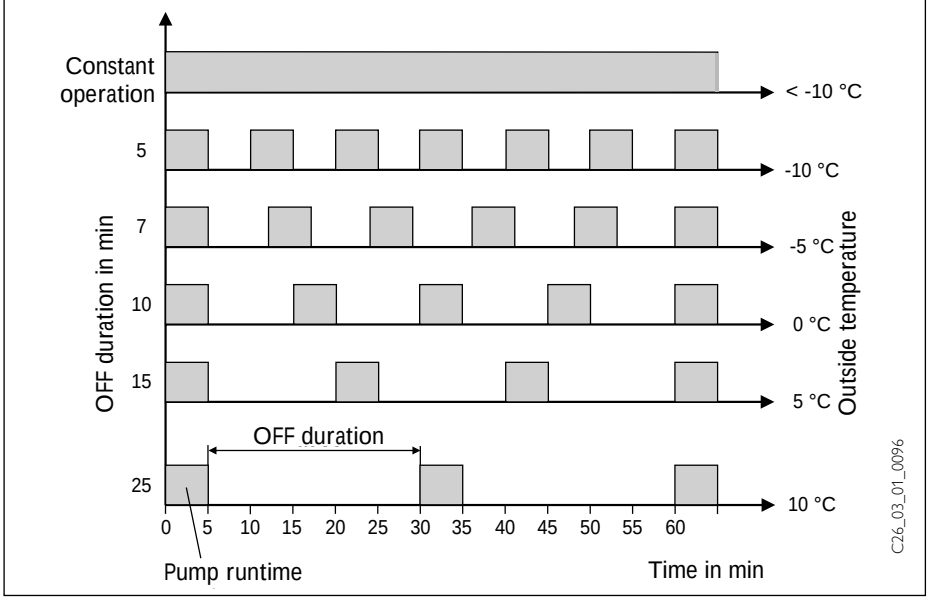
$$\vartheta_{ACTUAL\ room} > \vartheta_{SET\ room} + 1\ K$$

the respective heating circuit pump and the mixer moves to "Close". This only applies if the room sensor influence is set to K > 0.
Reverse control is subject to the following condition:

$$\vartheta_{ACTUAL\ room} < \vartheta_{SET\ room}$$

The summer mode also becomes effective for the respective heating circuit when operating with a FE 7 or FEK remote control unit.

Parameter PUMP CYCLES



10 CONSTANT PUMP RUN

When using a buffer cylinder, set this parameter to OFF.

11 SET FIXED VALUE

Fixed value temperature
The heat pump return is regulated to a fixed temperature. The switching time program will then be ignored. The various program switch positions will then only affect the mixer circuit (if installed). The frost protection is activated and the compressor is switched OFF, when the program selector is set to "Standby and DHW" and a fixed temperature has been selected.
Summer logic remains disabled with fixed temperature control. This means, that the heating circuit pump is not switched OFF for the direct heating circuit.
With the flap closed, the display shows the fixed temperature program, in other words always heating times.

12 SOURCE

Frost protection for brine/water heat pumps
The heat pump can only be operated as brine/water heat pump.

Ethylene glycol as brine (including polypropylene glycol) means that the heat pump frost protection is inactive. Responses by the frost stat no longer have any influence.

Potassium carbonate as brine (STIEBEL-ELTRON process medium, part no. 18 54 72) means, that the heat pump frost protection is disabled.
This only ensures, that the source pump is started at an outside temperature of -10 °C, even if the heat pump is idle. It is switched OFF again at an outside temperature of -8 °C.

ALM 0, 30, 60, 120 and 180

(Only in conjunction with the extractor module LWM 250)
At a brine inlet temperature of < 10 °C, a regeneration of the heat source system can be implemented in conjunction with the extractor module and ethylene glycol or propylene glycol as brine.
These settings enable the determination of the run-on time of the brine pump, after the heat pump has been shut down.
The values stated correspond to the run-on time in minutes at an average brine inlet temperature of 0 °C.

Setting	Brine pump run-on time
ALM 0	1 minute
ALM 30	30 minutes
ALM 60	60 minutes
ALM 120	120 minutes
ALM 180	180 minutes

If the brine inlet temperature rises, the resulting run-on time of the source pump reduces accordingly. If the brine inlet temperature drops, the run-on time increases. From a brine inlet temperature of 10 °C, the run-on time will always be at least one minute.

13 MIN SRCE TEMP

Setting range –10 °C to +10 °C and setting OFF.

⚠ Never operate the equipment with source temperatures below -5 °C

With setting OFF, the source sensor temperature will not be scanned. The compressor shuts down and the idle time is set, when the actual temperature drops below the minimum source temperature. The compressor is enabled again after the idle time has expired and the fixed hysteresis of 2 K has been exceeded.
This fault, i.e. MIN SRCE TEMP, will be indicated in the display by a flashing warning triangle, and will be entered into the fault list. The source pump will always be started 30 seconds earlier than the compressor, which starts when there is a heat demand coming from the central heating or DHW side.

⚠ The source pump runs on for 60 minutes after the heat pump has been switched OFF.

14 RTRN MAX

Maximum return temperature
Setting range 20 °C to 55 °C.
The heat pump will be switched OFF immediately, when the temperature at the return sensor reaches this value during heating operation. This safety function prevents the high pressure limiter responding. Reaching this value will not trigger a fault message. The return temperature is not scanned during DHW operation.

15 MAX FLOW T HTG

Maximum heat pump flow temperature for heating
Setting range 20 °C to 65 °C.
This setting limits the heat pump flow temperature and all secondary heat sources during heating operation.

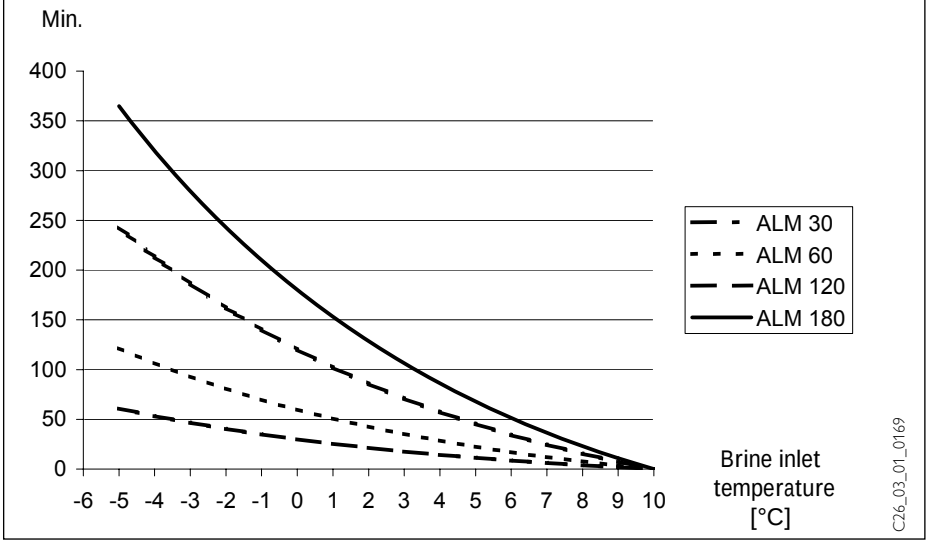
16 HP SENSOR

Maximum high pressure
Setting range 38 bar to 40 bar.
This setting limits the high pressure during DHW or central heating.
See also DHW ECO.

17 MIXER MAX

Maximum mixer flow temperature
Setting range 20 °C to 90 °C.
This setting limits the flow temperature of the mixer circuit. For example, if a higher set flow temperature is calculated from the mixer circuit data, the max. set mixer flow temperature is used by the controller, which regulates to this value.

Parameter 12 (brine pump run-on time with extractor module)



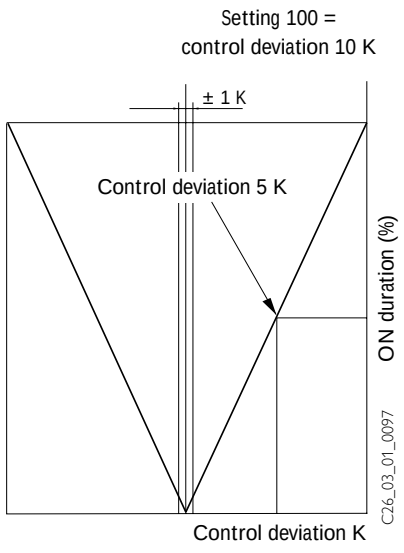
18 DYNAMIC MIX

Mixer runtime
Setting range 60 to 240
This setting enables a matching of the mixer to the control characteristics. Setting 60 to 240 means 6 K to 24 K control deviation.
The system scans every 10 s, and the minimum ON time for the mixer is 0.5 s.
The mixer does not respond inside the dead zone of ±1 K from the set value.
Example for the setting 100 = 10 K (see Fig. below).
The control deviation (set mixer temperature – actual mixer temperature) is 5 K. The mixer opens for 5 s, then pauses for 5 s and starts again.

The control deviation (set mixer temperature – actual mixer temperature) is 7.5 K. The mixer opens for 7.5 s, then pauses for 2.5 s and starts again.
In other words, the smaller the control deviation, the shorter the mixer ON time and the longer its pauses.
A reduction of the MIXER DYNA TM value with static control deviation increases the ON duration and reduces pauses.

Example for setting 100 and a current control deviation of 5 K

5 K of 10 K = 50 % = ON duration



19 FROST PROTECT

The heating circuit pumps are started at the selected frost protection temperature, to prevent the heating system being damaged by frost, the reverse hysteresis is 1 K.

20 SELECT FE

The FE 7 remote control can be selected for both heating circuits

With parameter SELECT FE you can pre-determine to which heating circuit the remote control applies. Under the parameter ROOM T 1 OR 2 at control level 2, you can scan the actual room temperature, subject to the remote control preselection.

21 FE CORRECTION

This parameter enables the calibration of the actual room temperature.

22 ROOM INFLUENCE

Room influence for FE 7 remote control unit
Standard setting 5 adjustable from ----
via 0 to 20
Dashes (----) in the display:
With the FE 7 remote control connected, the room temperature sensor **only** records and displays the actual room temperature; it has no influence on the actual control. Only in automatic mode can the room temperature for heating circuit 1 or 2 be adjusted by ± 5 °C. This set value adjustment applies for the then current heating time, not for the setback time.
At the same time, setting "0 to 20" serves to control the room temperature-dependent night setback. This means, the heating circuit pump is switched OFF at the point of changeover from the heating into the setback phase. It remains OFF, until the actual room temperature falls below the set room temperature. Afterwards the system regulates in weather-compensated mode.
If you want the room temperature to be taken into account, set the room temperature sensor influence to > 0.
The room sensor influence has the same effect as the outside temperature sensor has on the return temperature. Only this effect is 1 to 20 times greater by the set factor.

Room temperature-dependent return temperature with weather compensation
With this type of control, a control cascade is formed from weather-compensated and room temperature-dependent return temperature control. In other words, the weather-compensated return temperature control pre-selects the return temperature, which is corrected by the overlaid return temperature control in accordance with the following formula:

$$\Delta\vartheta_R = (\vartheta_{Rset} - \vartheta_{Ractual}) * S * K$$

Because a substantial proportion of control is already taken care of by the weather-compensated control, the room temperature sensor influence K can be set lower than with pure room temperature control (K = 20). The figure below indicates the control method with the set factor K = 10 (room influence) and a heating curve S = 1.2.

Room temperature control with weather-compensation
This type of control offers two substantial benefits:
Incorrectly set heating curves are corrected by the room sensor influence K; whilst the smaller factor K provides more stable control.
However, observe the following for all control units with room temperature sensor influence:
- The room temperature sensor must capture the room temperature accurately.
- Open doors and windows severely influence the control result.
- All radiator valves in the lead room must always be fully open.
- The temperature inside the lead room is decisive for the entire heating circuit.

Set the room temperature sensor influence to > 0, if you want the room temperature to be taken into account.

23 HTG LIMIT

Operational heat pump limit
The heat pump is switched OFF if the outside temperature drops below the selected lower limit for heating. Only the booster heater provides central heating.

24 DUAL MODE HTG

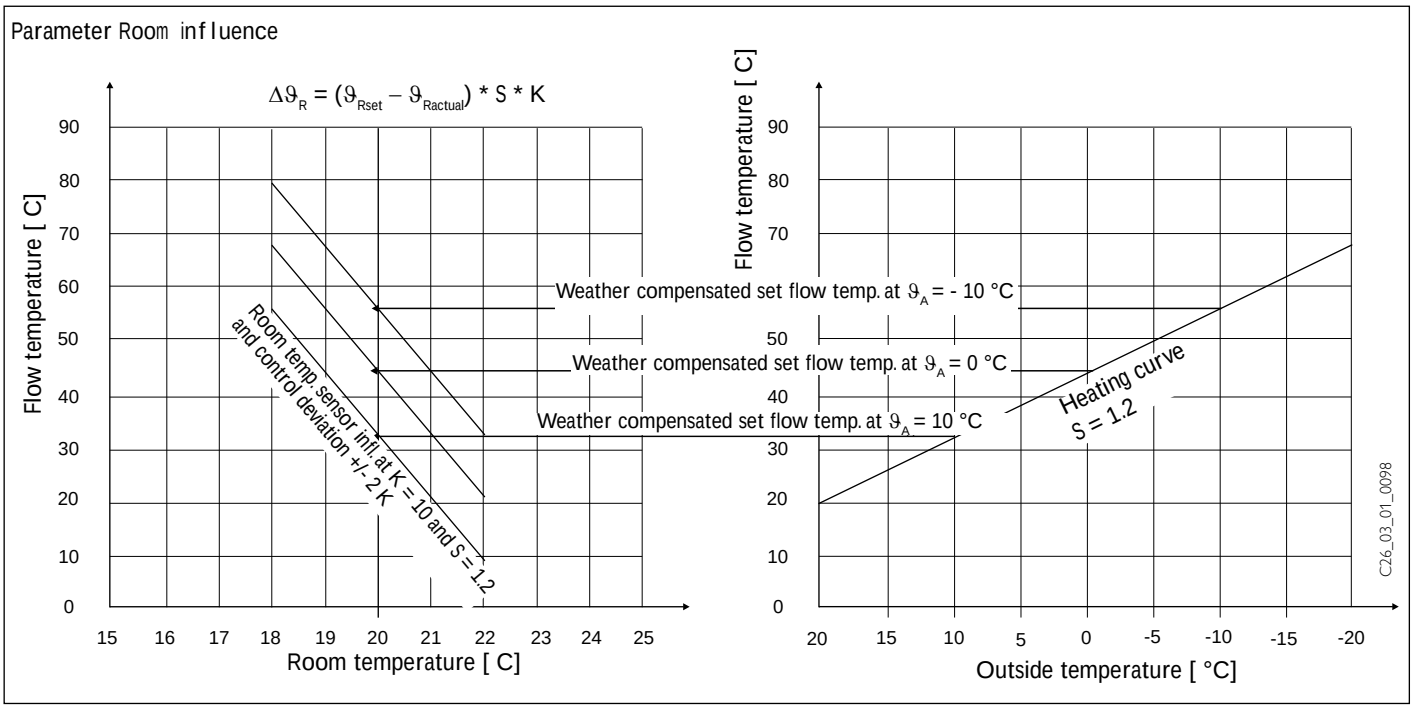
The dual-mode temperature of the heat pump for heating operation
Below this outside temperature, the booster heater is added for central heating, subject to load.

25 DHW LIMIT

Operational heat pump limit
The heat pump is switched OFF at outside temperatures below the selected lower DHW limit.
Only the booster heater provides DHW heating.

26 DUAL MODE DHW

The dual-mode temperature of the heat pump for DHW operation
Below this outside temperature, the booster heater is added for DHW heating, subject to load.



27 DHW ECO

DHW learning function

Setting OFF

When heating DHW, the system automatically adjusts itself to the required DHW temperature (self-learning function).
The booster heater will be added as backup stage as soon as the heat pump is shut down in DHW mode via the high pressure sensor or via the hot gas temperature limit (120 °C). If a flow temperature of 70 °C is achieved in this operating mode, the DHW heating will be terminated, and the set DHW temperature is overwritten with the actual DHW temperature.

Setting ON

DHW heating will be terminated and the set DHW temperature is overwritten with the actual DHW temperature, as soon as the heat pump is shut down in DHW mode via the high pressure sensor or via the hot gas temperature limit
(120 °C). This operating mode saves energy, as the DHW is exclusively heated with the heat pump.

28 DHW HYSTERESIS

This determines the switching hysteresis for the DHW operation.

– Starting DHW heating at the DHW set value minus the hysteresis value.

29 DHW CORRECTION

The DHW temperature is measured in the lower third of the cylinder. The DHW outlet temperature is approx. 3 K higher than the measured temperature. This deviation is corrected and can be calibrated, if required.

30 PASTEURISATION

The DHW cylinder is heated daily at 01:00 h to 60 °C, if pasteurisation has been enabled.

31 CONTROLDYNAMICS

Setting range 0 to 30

The selected control dynamic is a measure of the switching gap between individual compressors and the booster heater stages. Normally, the selected response time should operate sufficiently fast and without oscillation. Heating systems which respond quickly require a lower value, whilst very slow reacting systems require you to set a higher value.

32 COMP IDLE TIME

After a heat pump has been switched OFF, an idle time is set as protection for the compressor. The default idle time of 20 minutes should normally not be reduced. Where a reduction is required because of adjustments or repair work, reset the idle time again to 20 minutes after completing the necessary work.

33 RES IDLE TIME

Residual idle time

Pressing PRG enables you to scan the compressor idle time.

34 QUICK START

During commissioning, you can test the heat pump function by triggering a heat pump quick start. When this parameter is started, OFF appears at the bottom of the display. Pressing PRG initiates a quick start. The respective pumps are started after the heat pump start. The value 60 is visibly counted down to 0 on the display; then the display shows ON.
After that, the heat pump and the associated buffer primary pump are switched ON. You terminate this function by pressing PRG or by closing the control flap. OFF is displayed again.

35 RELAY TEST

Pressing PRG and continuing to turn the rotary selector allows you to control the WPMi relay outputs individually. The individual outputs are displayed as plain text.

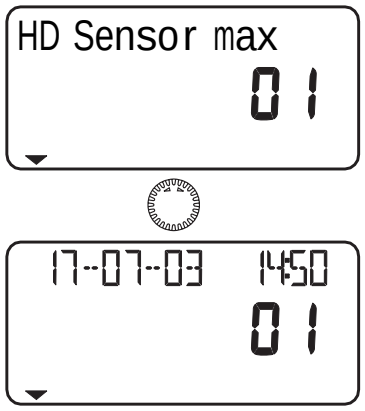
36 LCD TEST

Pressing PRG once initiates a LCD test. All display elements are displayed in sequence.

37 FAULT LIST

Pressing PRG displays the first fault code. The fault is described in plain text at the top of the display, the bottom shows the fault number. Continuing to turn the rotary selector still displays fault 1. As additional information, the display shows the day, month and year together with the relevant time, when the fault occurred. In total, 20 faults can be displayed. The fault list can be deleted via a hardware reset.

Example:
The high pressure switch has responded on the 17.07.03 at 14:50 h representing the latest fault in the heat pump.



38 SOFTWARE WPMI

Display of the current software issue

39 ANALYSIS

The bottom of the display shows the enabled stages.
The two-digit display shows the internal controller calculation. A stage will be switched every time the counter has counted down to zero. This calculation depends on the controller dynamic and the control deviation. For this, see controller dynamic.

40 DIAGNOSIS

Pressing PRG indicates whether an FEK is connected.

41 HEAT P RESET

You can reset the heat pump in case of faults. That fault is reset by pressing PRG and setting the system to ON, followed by repeatedly pressing PRG. The compressor starts again. The fault remains in the fault list.

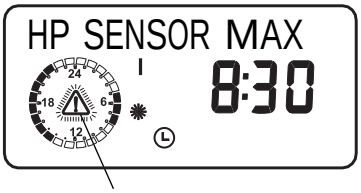
42 RUNTIMES

Pressing PRG displays, in sequence, the compressor runtime and that of the booster heater. Runtimes can only be reset via a hardware reset.

2.14 Troubleshooting

Faults/errors in the system or in the heat pump are indicated on the display. All parameters required for extensive system analysis can be checked under the system parameters **First start-up** and INFO TEMP. For troubleshooting, analyse all available WPMi parameters before opening the heat pump control panel.
The controller will not indicate that the booster heater high limit safety cut-out has responded.
The high limit safety cut-out *(item. 22, Fig. 3, page 14)* can be reset by your heating contractor through pressing the reset button. The high limit safety cut-out response is generally caused by air in the heating circuit or an inadequate heating volume flow.

2.14.1 Fault display: Heat pump-specific or hardware faults

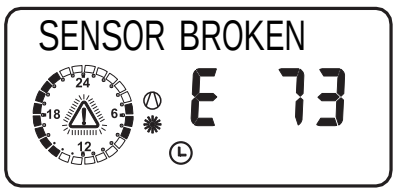


Fault message (flashes)

All faults are shown in the display.

All faults cause the heat pump to shut down. The idle time is set and, with the exception of HOT GAS MAX all faults are written to the fault list.

2.14.2 Fault display: Sensor break = sensor fault



⚠ This fault code refers to temperature sensors which can be called up under the parameter INFO TEMP. These faults are not entered into the fault list. The system will not be shut down. The display message will extinguish immediately after the fault has been removed.

Observe the list under system parameter INFO TEMP (see page 8).

Sensor	Fault code
Outside temperature	E 75
Remote control	E 80
Actual DHW temperature	E 76
Actual heat pump return temp. (H1)	E 73
Actual mixer flow temp. (H2)	E 70
Actual heat pump flow temp.	E 72
Actual source flow temp.	E 71
High pressure sensor	E 130

2.14.3 Fault message with DCO enabled

In conjunction with the DFÜ controller DCO activ, the fault codes (E75 to E130) are transmitted by text message to an authorised recipient, if the above sensor faults occur.
In addition, the following fault codes are transmitted by text message:

Contactor stuck	E 20
NO POWER	E 21
Low pressure	E 22
High pressure	E 23
High pressure sensor max	E 24

2.14.4 The heat pump does not run

The heat pump is in standby mode [⏻]
Remedy: Change to automatic mode

Power-OFF active; standby symbol flashing [⏻]
Remedy: Wait. The heat pump starts again automatically after the power-off time has expired.

There is no heat demand
Remedy: System parameter INFO TEMP. Check temperatures; compare the actual with the set temperature

Possibly incorrect fuse rating
Remedy: See the specification

⚠ Under these circumstances, you can only restart the heat pump after the fault has been removed and the heat pump has been reset (parameter HP RESET).

Additional parameters available for system analysis

Parameter Quick start:
Check the heat pump compressor by implementing a quick start

Parameter RELAY TEST:
Test all relays in the WPMi

Parameter Analysis:
System analysis for checking all existing BUS users

Parameter HEAT PUMP RESET:
Heat pump reset to clear all saved faults.

Parameter Fault list - checking and removing all faults in the fault list

Fault	Fault description:	Remedy
HP sensor max	The fault will be written to the fault list and the system will be permanently shut down after the fault has occurred five times within the operating time (idle time x 5 plus 20 minutes).	Monitor the flow temperature and check the high pressure sensor. Check the volume flow and the temperature on the heating side.
LP limit switch	The system will be permanently shut down after the fault has occurred five times within the operating time (idle time x 50 plus 20 minutes). The fault will be written to the fault list after it has occurred for the first time.	Check the volume flow and the layout of the source side. Check the refrigerant level (sight glass).
Contactor stuck	Each time the compressor is switched OFF, the system checks after 10 seconds, whether the relay K9 is open. A contactor is stuck, if that is the case. The fault is written to the fault list, and the system is permanently shut down.	Check contactors K1 and K2 and replace, if required.
High pressure	After the compressor has started, and after a delay of 15 seconds, masking checks, whether the relay K9 is open. An HP limit switch has responded, if that is the case. The fault is written to the fault list, and the system is permanently shut down.	Monitor the flow temperature and check the high pressure sensor. Check the volume flow and the temperature on the heating side.
No power	After the compressor has started, the pressure must have risen by 2 bar within 10 seconds. A fault has occurred, if that is not the case, and the fault will be written into the fault list, if that is its first occurrence. The system is then permanently shut down.	Compressor turns in the wrong direction. Change the rotational direction by interchanging two supply cores
Source min.	The defined minimum source temperature was not reached. The fault is written to the fault list. The compressor starts again after the selected idle time has expired.	Check the minimum source temperature and change it, if required. Check the source volume flow. Check the source layout.
Hot gas max.	The system is permanently shut down if a hot gas temperature of 120 °C is exceeded. The fault is not written to the fault list	See max. high pressure sensor

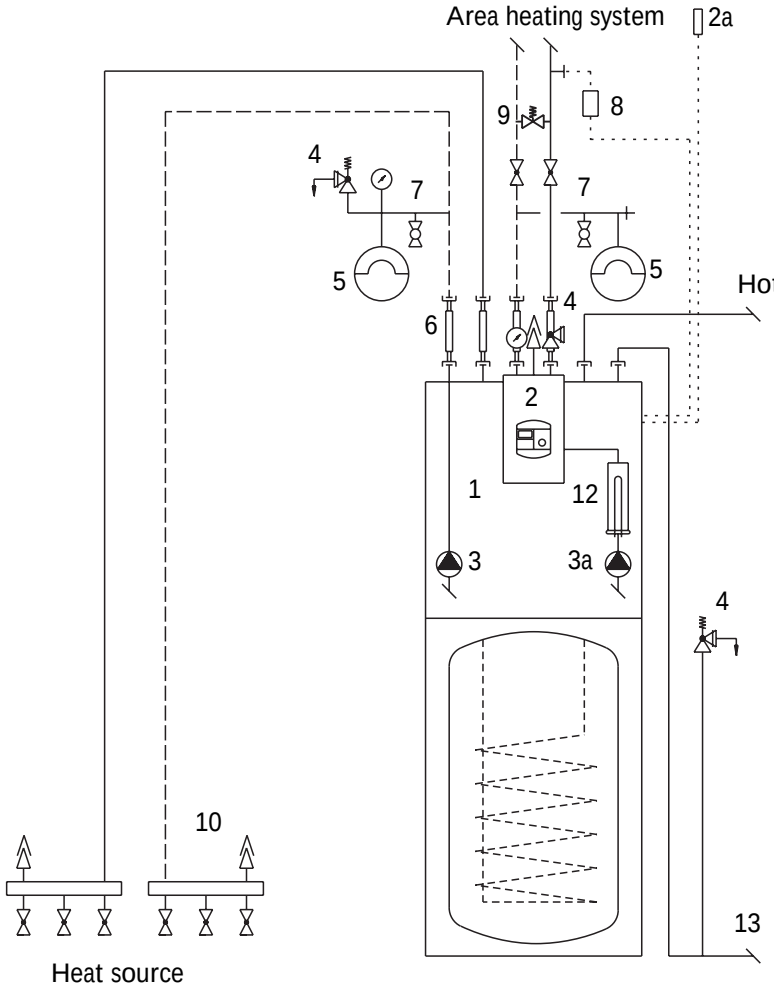
2.15 Commissioning list

⚠ The controller should be in standby mode ⏻ during commissioning. This prevents an uncontrolled heat pump start.
Please remember to reset the system into its last operating mode.

No.	Parameter	Setting range	Standard	System value
1	ENTER CODE	0000 to 9999	1000	
2	LANGUAGE		German	
3	CONTRAST	– 10 to + 10	0	
4	DISPLAY		ACTUAL RETURN	
5	EMERGENCY OPERATION	ON / OFF	OFF	
6	COOLING OPERATION *	ON / OFF	OFF	
7	HEAT-UP PROGRAM	ON / OFF	OFF	
8	SUMMER OPERATION	ON / OFF	ON	
9	PUMP CYCLES	ON / OFF	OFF	
10	BUFFER PRIMARY PUMP – CONSTANT RUN	ON / OFF	ON	
11	FIXED TEMP	OFF / °C	OFF	
12	SOURCE		Ethylene glycol	
13	MIN SOURCE T	– 10 °C to 10 °C	– 5 °C	
14	MAX RET TEMP	20 °C to 55 °C	50 °C	
15	MAX HTG FL T	20 °C to 65 °C	60 °C	
16	HIGH PRESSURE SENSOR	38 bar to 40 bar	38 bar	
17	MIXER TEMP MAX	20 °C to 90 °C	50 °C	
18	MIXER DYNAMIC	30 - 240	100	
19	FROST PROTECTION	– 10 °C to 10 °C	4 °C	
20	SELECT REMOTE CONTROL		Heat circuit 1	
21	REMOTE CONTROL CORRECTION	- 5 K to + 5 K	0	
22	ROOM INFLUENCE	0 to 20	5	
23	LIMIT TEMP, HEATING	OFF to 30 °C	OFF	
24	DUAL-MODE TEMP, HEAT SOURCE 2	– 20 °C to 30 °C	– 20 °C	
25	LIMIT TEMP, DHW	OFF to 30 °C	OFF	
26	DUAL-MODE T DHW	– 20 °C to 30 °C	– 20 °C	
27	DHW ECO	ON / OFF	OFF	
28	DHW HYSTERESIS	1 °C to 10 °C	3 °C	
29	DHW CORRECTION	1 K to 5 K	3 K	
30	PASTEURISATION	ON / OFF	OFF	
31	CONTROLLER DYNAMICS	1 – 30	20	
32	IDLE TIME after switching the compressor OFF	1 to 120 min	20 min	
33	REST IDLE TIME			
34	QUICK START			
35	RELAY TEST			
36	LCD TEST			
37	FAULT LIST			
38	WPMi SOFTWARE ISSUE			
39	ANALYSIS			
40	DIAGNOSTIC			
41	RESET HP			
42	RUNTIMES			

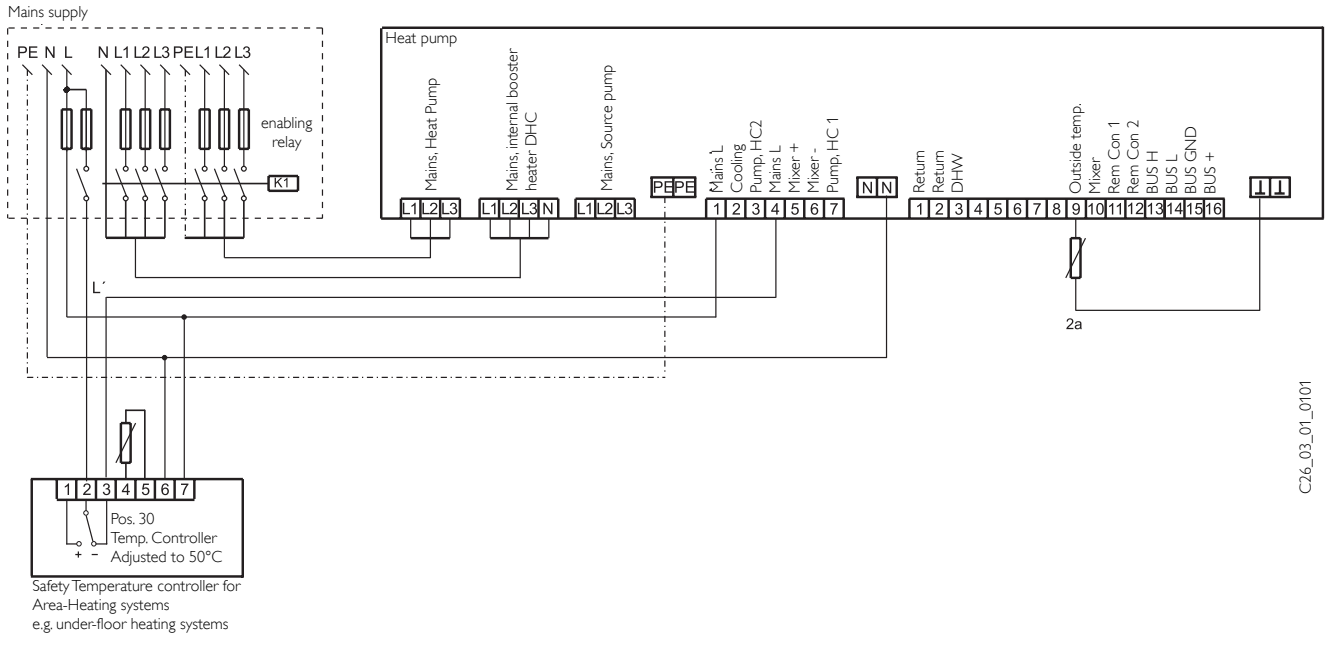
* May only be adjusted for WPC ... cool or WPC in conjunction with WPAC2!

System example: WPC mono-mode



1	Heat pump
2	WPMi heat pump manager
2a	Outside temperature sensor
3	Heat pump circulation pump (heat source)
3a	Heat pump circulation pump (central heating)
4	Safety valve max. 1 MPa (10 bar)
5	Expansion vessel
6	Anti-vibration fitting
7	Fill & drain valve
8	High limit safety cut-out
9	Overflow valve
10	Air vent valve
12	Booster heater DHC
13	Cold water safety assembly to DIN 1988

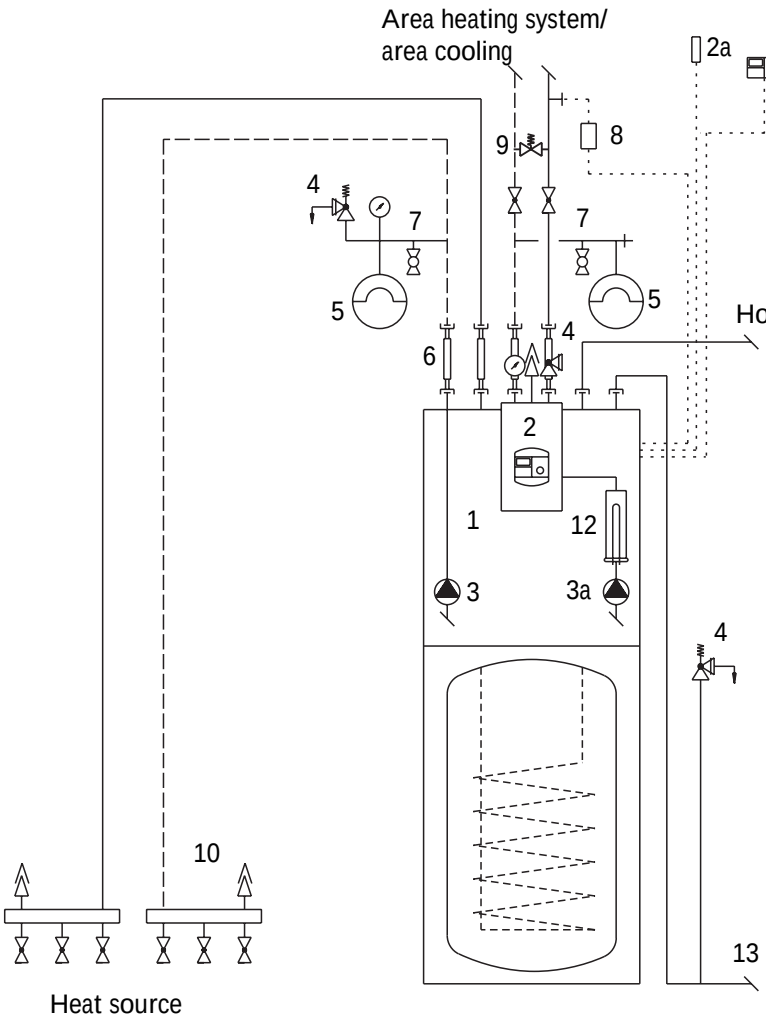
C26_03_01_0100



C26_03_01_0101

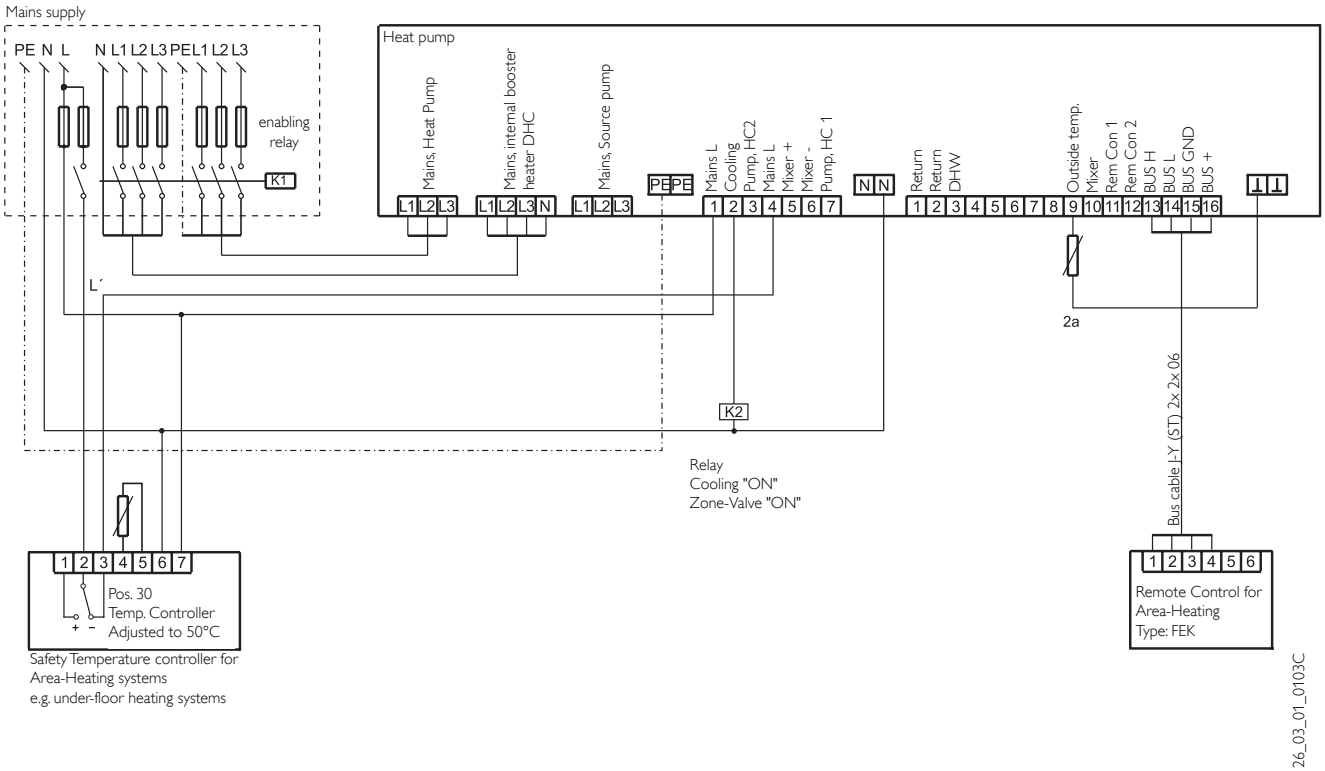
Fig. 17

System example: WPC....cool without buffer, one heating circuit and DHW



1 Heat pump
2 WPMi heat pump manager
2a Outside temperature sensor
3 Heat pump circulation pump (heat source)
3a Heat pump circulation pump (central heating)
4 Safety valve max. 1 MPa (10 bar)
5 Expansion vessel
6 Anti-vibration fitting
7 Fill & drain valve
8 High limit safety cut-out
9 Overflow valve
10 Air vent valve
11 FEK remote control
12 Booster heater DHC
13 Cold water safety assembly to DIN 1988

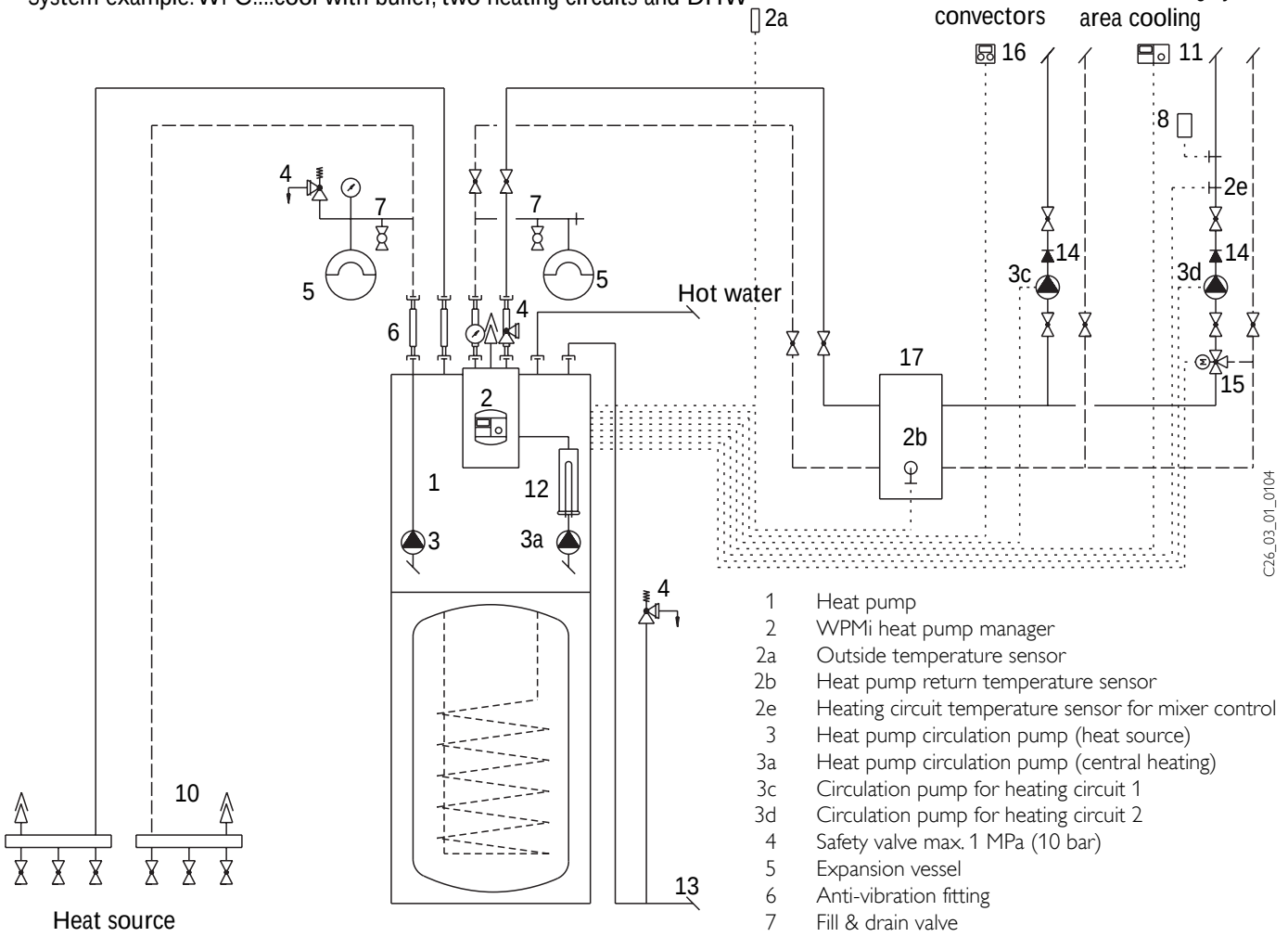
C26_03_01_0102



26_03_01_0103C

Fig. 18

System example: WPC....cool with buffer, two heating circuits and DHW



1	Heat pump
2	WPMi heat pump manager
2a	Outside temperature sensor
2b	Heat pump return temperature sensor
2e	Heating circuit temperature sensor for mixer control
3	Heat pump circulation pump (heat source)
3a	Heat pump circulation pump (central heating)
3c	Circulation pump for heating circuit 1
3d	Circulation pump for heating circuit 2
4	Safety valve max. 1 MPa (10 bar)
5	Expansion vessel
6	Anti-vibration fitting
7	Fill & drain valve
8	High limit safety cut-out
9	Overflow valve
10	Air vent valve
11	FEK remote control
12	Booster heater DHC
13	Cold water safety assembly to DIN 1988
14	Non-return valve
15	Servomotor, mixing valve
16	FE 7 remote control
17	Low loss header

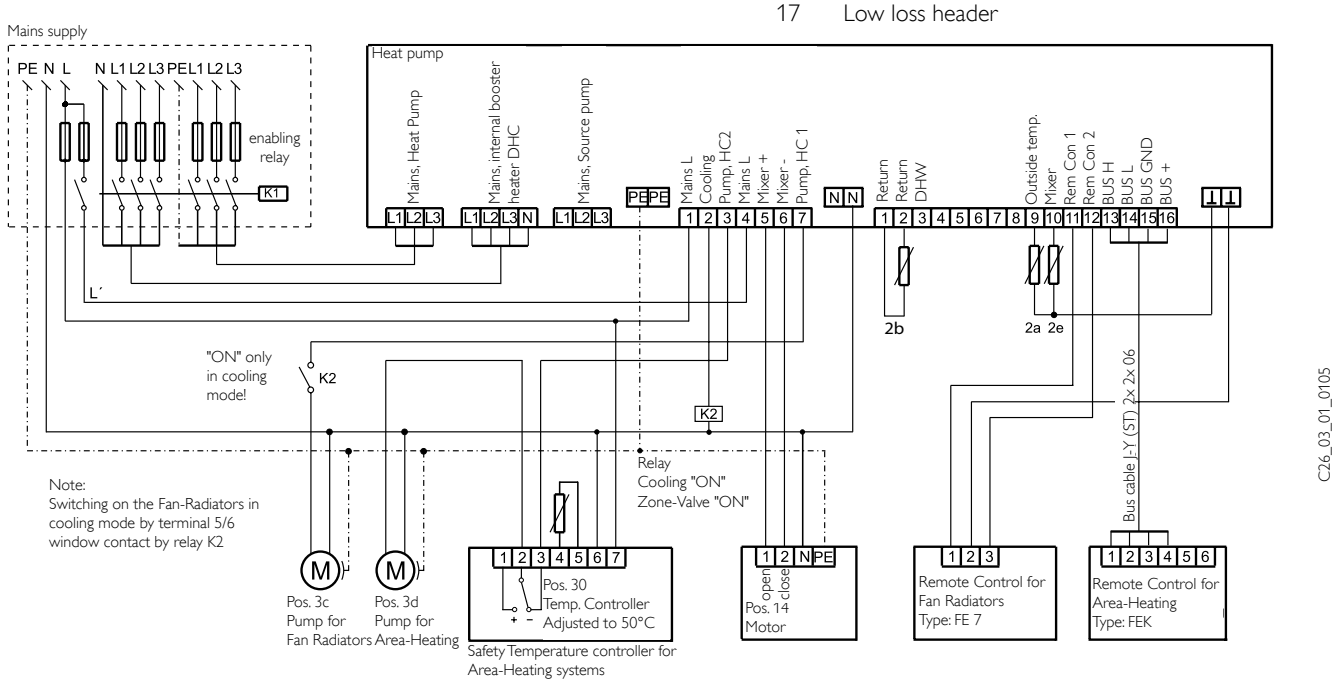


Fig. 19

Initial startup protocol

1. Customers address:

_____

_____

_____

_____

2. Installer:

_____

_____

_____

_____

3. Type of building:

One-family house ☐
Apartment building ☐
Industrie building ☐

Public building ☐

Single heat pump ☐
Cascade of heat pumps ☐

4. Device type:

Order-no.: _____

Factory-no.: _____

5. Location of the heat pump:

outside ☐
inside ☐ Cellar ☐
1st floor ☐
2nd floor ☐
top floor ☐

On concrete base ☐
On baseplate ☐
On plane floor ☐

Horizontally: yes ☐ no ☐

Sound decoupled (building): yes ☐ no ☐

6. Installation as described in the STIEBEL ELTRON Operation- and Installation manual:

Volume-installation location: _____ m³

Deaeration of the heat pump housing:
Air duct assembly
yes ☐ no ☐

If yes:
length of the piping: _____

Diameter: _____

Amount of bows: _____

Distance of the heat pump from a sourge of ignition > 1m
yes ☐ no ☐

7. Function:

Mono mode ☐
Dual mode - parallel ☐
Dual mode - part parallel ☐
Dual mode - alternative ☐

Second heat source

Gas boiler ☐
Oil boiler ☐
Solid boiler ☐
District heating ☐
Electric heating ☐

8. Hydraulic separation
- heat pump / heating circuit / Buffer cylinder

yes ☐ no ☐

Type and volume of the buffer cylinder: _____

9. DHW heating:

independend of the heat pump
yes ☐ no ☐

by an external heat exchanger
yes ☐ no ☐

by an internal heat exchanger/coil
yes ☐ no ☐

STIEBEL ELTRON products/types: _____

_____

Other manufacturers/types: _____

_____

10. Heat source:

Air External air ☐
Exhaust air ☐

Temperature min: _____ °C

max: _____ °C

Ground

Brine heat probe ☐ Number of: _____

Diameter: _____

Distributor: yes ☐ no ☐

Depth of the hole: _____

Hydraulic connections as "Tichelmann"
yes ☐ no ☐

Brine heat collector ☐

Length piping: _____

Diameter: _____

Area/square meters: _____

Distributor: yes ☐ no ☐

Hydraulic connections as "Tichelmann"
yes ☐ no ☐

Brine:

Type: _____

Concentration: _____

Freeze protection until: _____

Water ground water/fountain ☐
surface water ☐

Others: _____

_____

_____

11. Heating system:

Floor heating ☐
Convectors ☐
Plates ☐
Radiators ☐

Layout temperature HC1: flow ___ °C/ return ___ °C
Layout temperature HC2: flow ___ °C/ return ___ °C

12. Other components of the plant:

Circulationpump Source

Manufacture / type _____ / _____

Circulationpump Heizung

Manufacture / type _____ / _____

Circulationpump Heat pump/heat exchanger

Manufacture / type _____ / _____

Circulationpump heat exchanger / DHW cylinder

Manufacture / type _____ / _____

Circulationpump heat pump/ Buffer cylinder

Manufacture / type _____ / _____

Circulationpump DHW circulation

Manufacture / type _____ / _____

Circulationpump heat pump/ DHW cylinder

Manufacture / type _____ / _____

Mixing valve

Manufacture / type _____ / _____

Motor mixing valve

Manufacture / type _____ / _____

13. Controller:

STIEBEL ELTRON product / type _____

Others / type: _____

Settings according initial operation protocol of the controller.

14. Power supply:

Main compressor: _____

Mains electrical suppl. heater (DHC): _____

Control circuit: _____

Bus connection: _____

15. Measured data:

Measured at heat pump after 10 minutes operation.

Brine inlet / Water/Air	_____ °C
Brine Outlet / Water/Air	_____ °C
Heat pump flow temp.	_____ °C
Heat pump return temp.	_____ °C

17. Systemsketch

16. Checked regarding ...

- regulations of the local energy supply company.

yes ☐ no ☐

- regulations of the water supply company concerned

yes ☐ no ☐

City, Date

Installers signature

Guarantee

For guarantees please refer to the respective te rms and conditions of supply for your country.

The installation, electrical connection and first operation of this appliance should be carried out by a qualified installer.

The company does not accept liability for failure of any goods supplied which have not been installed and operated inaccordance with the manufacturer‘s instructions.

Environment and recycling

Please help us to protect the environment by disposing of the packaging in accordance with the national regulations for waste processing.

Notes

Notes

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