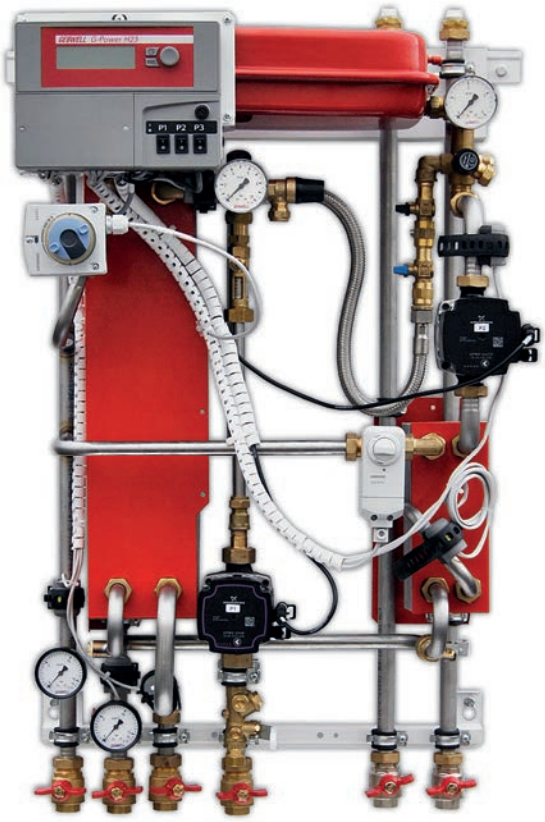
GEBWELL

Installation and maintenance manual

G-Power® small substations



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APPENDICES

PI- diagrams

Electric diagrams

Circulation pumps quick guide

Declaration of Conformity

1. District heating in general

District heating is the most popular form of heating in Finland. It is used in nearly all cities and urban areas. Some 2.7 million Finns live in houses with district heating. District heating accounts for around 50% of the heating market. District heating is used in more than 95% of multi-storey residential buildings and the majority of public and commercial buildings in Finland.

District heating is produced in each area with the most inexpensive fuels. Natural gas provides the main fuel for district heating where it is available, whereas the largest coastal cities use coal and the peat areas primarily use peat.

District heating is available throughout the year, 24 hours a day. Moreover, the temperature of the hot water produced with district heating remains even, constant and plentiful.

District heating keeps the environment clean and adds to the comfort of living. District heating also saves energy and is environmentally friendly. Optimal savings are achieved through combined heat and electricity production, which has a fuel efficiency of 80 to 90%. When electricity is produced separately, only 40 to 50% of the fuel’s energy can be utilised. Due to the efficiency of combined production, the environmental emissions remain approximately 30% lower than in the separate production of electricity and heat (source: Finnish Energy).

2. Gebwell G-Power® delivery contents

The G-Power district heating substation is packed in a cardboard box which includes the following:

- G-Power Easy district heating substation
- Accessory bag
- Instruction manual
- Wall mounting rail

3. Gebwell G-Power® district heating substation

G-Power Easy district heating substations are designed for connecting detached, semi-detached and small row houses to district heating. G-Power Easy is suitable for newbuild as well as renovation projects and it can be connected to radiator, underfloor and air heating. G-Power district heating substation is equipped with brazed plate heat exchangers.

G-Power district heating substations are available with 2 and 3 circuits. Two-circuit-substations have control circuits for producing hot water needed for heating domestic hot water and for heating network. With third control circuit the damp spaces like bathroom or washroom all year round apart from the heating needs of other rooms.

G-Power district heating substation models:

- 2-circuits: **G-Power 2/100, 2/150 and 2/200:** domestic hot water circuit and one heating circuit
- 3-circuits: **G-Power 3/100:** domestic hot water circuit and two heating circuits

Model designation:

2/3 indicates the number of control circuits, 100-200 indicates the power class (100 = detached houses, 150 = detached houses and 200 = detached houses / small terraced houses)

District heating, inlet

Piping to transfer the heat from the energy company to the consumer's district heating substation.

District heating, return

Piping to transfer the heat from the consumer's district heating substation back to the energy company.

Heating, supply

Piping to transfer the heated water from the heat exchanger to the radiators, underfloor heating or air supply unit.

Heating, supply water temperature sensor

The supply water temperature sensor is the part in the control or measurement equipment for measuring the temperature of the supply water. The temperature sensor is on the surface of the pipe, and it produces the measurement values for the controller.

G-Power 2/100, 2/150 and 2/200	*TE2A*
G-Power 3/100	*TE2A and TE3A*

Overheating protection for underfloor heating (pump stop thermostat)

Overheating protection protects the underfloor heating, e.g. by stopping the circulation pump in the event of a malfunction of the control unit.

G-Power 2/100, 2/150 and 2/200	*TS2*
G-Power 3/100	*TS2 and TS3*

Pump P2 and / or P3 restarts when the temperature drops at the thermostat at about 6 ° C below the setpoint.

In the underfloor heating network, the setpoint of the thermostat is 55 ° C

G-Power 2/100, 2/150 and 2/200 *P2*

G-Power 3/100 *P2 and P3*

NOTE!

If the control panel is connected to a radiator heating, the pump stop thermostat is installed in the supply line of the heating network and the knob is turned to 90 ° C.

The control curve is changed to values for "radiator heating" (see section *"Changing the heating network control curve*").

Changing the heating network control curve

The district heating substation is delivered with underfloor heating values unless otherwise stated. If the values need to be changed to "radiator values", the maximum flow temperature is increased at

- “L1 CONTROL CIRCUIT” →
- “L1 SETTINGS” →
- “SUPPLY WATER MAXIMUM LIMIT” →
- “INSERT VALUE” →
- “ENTER THE VALUE BY PRESSING THE SELECTION DIAL”.

The maximum flow temperature for radiator heating is set at + 70 ° C.

In the main menu, go to "L1 CONTROL CIRCUIT" → L1 CONTROL CIRCUIT.

The values below are factory default values and can be customized for each property as needed.

Outdoor temperature (°C)	Radiator heating (°C)	Underfloor heating (°C)
-20	+ 58	+ 33
-10	+ 46	+ 30
0	+ 33	+ 27
+ 10	+ 20	+ 23
+ 20	+ 18	+ 20

L2- heating circuit is adjusted the same way.

Heating, return

Piping to transfer the water returning from the radiators, underfloor heating and air supply unit to the heat exchanger.

Heating circuit filling

Valve for filling the radiator, underfloor heating and air heating circuit. Fill the network by opening both consecutive shut-off valves until the network has reached the correct pressure value. When the network is full, close both filling shut-off valves.

Record the filling date. If you need to fill the network repeatedly, either the network has leaks or the pre-charge pressure of the expansion tank has decreased.

Heating circuit pressure gauge

The heating circuit pressure gauge measures the static pressure in the network.

Heating, safety valve

The safety valve prevents the pressure in the heating circuit from rising too high. It is a spring-loaded valve whose opening pressure is 2.5 bar. We recommend that you check the valve for proper operation yearly.

Heating, circulation pump

The heating circulation pump circulates water in the heating circuit. The pump is of the wet motor structure.

The installation technician selects the pump pressure according to the site plan to achieve the desired flow. The pump must be stopped if there is no pressure in the network. Stopping the pump for the summer is not recommended. See also the attached circulation pump instruction manual.

G-Power 2/100, 2/150 and 2/200	*P2*
G-Power 3/100	*P2 and P3*

Heating, return water temperature sensor

Measures the temperature of the water returning from the network, which can be seen on the controller display.

G-Power 2/100, 2/150 and 2/200	*TE2C*
G-Power 3/100	*TE2C and TE3C*

Control valves

The domestic hot water balancing valve (TV1) controls the district heating water flow in the domestic hot water heat exchanger according to the signals from the controller.

The heating balancing valve (TV2, TV3) controls the heating supply water temperature according to the signals from the controller.

G-Power 2/100, 2/150 and 2/200	*TV1 and TV2*
G-Power 3/100	*TV1, TV2 and TV3*

Summer shut-off valve

The shut-off valve stops the district heating flow in the heat exchanger for heating. By closing the heating summer shut-off valve unnecessary heating of the building during the summer can be avoided.

Expansion tank

The expansion tank evens out the effects of the changes in water volume. It ensures that there is a sufficient amount of water also in the topmost circuits of the heating circuit.

The expansion tank is divided into a water space and gas space by a rubber diaphragm. The gas space is filled with nitrogen gas. When an expansion tank comes from the factory, its pre-charge pressure can be anywhere from 0.5 to 2.5 bar. The pre-charge pressure of each expansion tank must be checked and set according to the characteristics of the building's heating system.

Use the table on the next page to check the correct expansion tank pre-charge pressure for the building in question, based on the number of storeys. Set the pre-charge pressure according to the table before pressurising the heating system.

When measuring the pre-charge pressure, the water side of the expansion tank must be free of pressure. If you check the pre-charge pressure before connecting the expansion tank to the heating circuit, or if the expansion tank is disconnected from the heating circuit for the duration of the check, use the "*pre-charge pressure without static pressure"* value in the table.

The pre-charge pressure can be checked when the expansion tank is connected to a filled heating system. In such a case, free expansion in the heating system must be ensured when checking the pre-charge pressure. Open a valve at the highest point of the heating system for the duration of the check. Use the "*pre-charge pressure, with static pressure taken into account*" value in the table for setting the expansion tank pre-charge pressure.

The table below shows the expansion tank pre-charge pressure, cold water filling pressure and heating system minimum operating pressure by the number of storeys of the building:

Number of storeys	**1**	**2**	**3**
Static head of the building, H_{st} (m)	0	3	6
Heating system static pressure, P_{st} (bar)	0	0.3	0.6
Expansion tank pre-charge pressure without static pressure (bar)	0.5	0.3	0.3
Expansion tank pre-charge pressure, with static pressure considered, P_e (bar)	0.5	0.6	0.9
Cold water filling pressure (bar)	0.8	0.9	1.2
Heating system minimum operating pressure, P_{min} (bar)	1.0	1.1	1.4
Heating system maximum operating pressure, P_{max} (bar)	2.0	2.0	2.0
Safety valve opening pressure, P_{sv} (bar)	2.5	2.5	2.5

Heating system pressure

Set the pressure in the water side of the heating system after setting the expansion tank pressure.

If the heating system is filled for the first time, use the "*cold water filling pressure (bar)*" value in the table. The heating system pressure increases as the temperature of the heating circuit increases. Check the final pressure when the heating system reaches its normal operating temperature.

The heating system pressure varies between summer and winter as the temperature of the heating circuit varies. In the summer, when the operating temperature of the heating system is at its lowest, the pressure must be at least the "*heating system minimum operating pressure*" value specified in the table. In the winter, when the operating temperature of the heating system is at is highest, the pressure must not exceed the "*heating system maximum operating pressure*" value specified in the table.

Domestic hot water pipe

Pipe to transfer the domestic hot water to the points of consumption in the building.

Domestic hot water temperature sensor

The substation models with electronic hot water controller are equipped with domestic hot water temperature sensor. The domestic hot water temperature sensor is the part in the control or measurement equipment for measuring the temperature. The temperature sensor is located on the surface of the pipe and produces the measurement values for the domestic hot water controller.

G-Power 2/100, 2/150, 2/200 and 3/100 TE1A

Cold water pipe

Pipe to transfer the domestic cold water to the domestic hot water heat exchanger for heating.

Cold water supply valve

A valve group that includes a safety valve, pressure gauge, shut-off valve and non-return valve. Can be used for stopping the domestic hot water.

The pressure gauge can be used for checking the cold-water network pressure. The safety valve opening pressure is 10 bar.

Domestic hot water circulation

Pipe to transfer the domestic hot water from the utilisation points back to the heat exchanger. The pipe ensures that hot water is available from the utilisation points after a certain waiting period. Domestic hot water circulation decreases water consumption.

To avoid the possible noise problems, sharp corners in piping should be avoided. In case sound problems occur, also check the flow meter set point.

Domestic hot water, circulation pump

Domestic hot water circulation pump circulates the water in the domestic hot water circuit. Speed 1 is recommended for the circulation pump in case the circulation pipe is less than 5 meters long. In case there are heat consuming elements for domestic hot water or the circulation pipe is more than 5 meters long, the *AUTOADAPT -mode is recommended.*

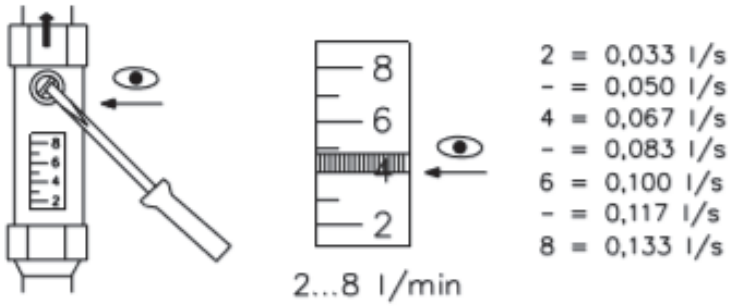
The circulation pump must not be stopped, because it will cause the domestic water control not to work. Circulation pump is of wet motor structure. The pump must be stopped in case there is no pressure in the network.

See the enclosed circulation pump instructions.

Flow meter

Meter for controlling the water flow in domestic hot water circulation. Flow meter flow is to be set 30% of the design flow at the minimum.

Flow meter is adjusted by turning the adjustment screw to desired set point. Flow is read from the bottom of the disc.



Pump valve

The pump valve is a shut-off and non-return valve in connection with the domestic hot water circulation pump. The valve also acts as a shut-off valve when servicing the circulation pump.

The non-return valve prevents water from being misdirected during consumption.

Controllers and pumps

Separate instructions for the controller and the circulation pumps are included in the substation delivery.

Accessories

Differential pressure controller

The differential pressure controller ensures a constant pressure difference for the heating and domestic hot water control valves. It is factory adjusted to a setting of 120 kPa, which is six revolutions downwards from the topmost position of the regulating wheel. One revolution (360°) of the regulating wheel corresponds to a 10 kPa change in the pressure difference setting. If a higher-pressure difference is desired, rotate the regulating wheel clockwise, and correspondingly, rotate the regulating wheel anticlockwise for a lower pressure difference.

District heating accessory kit

The district heating accessory kit is integrated into the substation. The kit includes pressure gauges and shut-off valves.

The district heating input and return pressures can be seen on the pressure gauges. During usage, the pressure gauge shut-off valves must be kept closed; open the valves only when you want to check the district heating input or return pressure.

4. Installing the G-Power Easy district heating substation

The district heating substation is to be installed in a single-family house technical room that has a floor drain.

The minimum space requirements of the equipment and heat energy meter must be checked from the **heating company.**

Leave 800 mm of free space in front of the heat energy meter and the main distribution board. Do not place any pipes above the main distribution board.

Things to note before any installation work is performed

Only a contractor who is approved by the energy company can carry out district heating connections. The heating piping of the substation can be connected from above, below, apart from the cold-water pipe.

The connectors may become loose during transport. The connectors should be checked and, if necessary, tightened during installation.

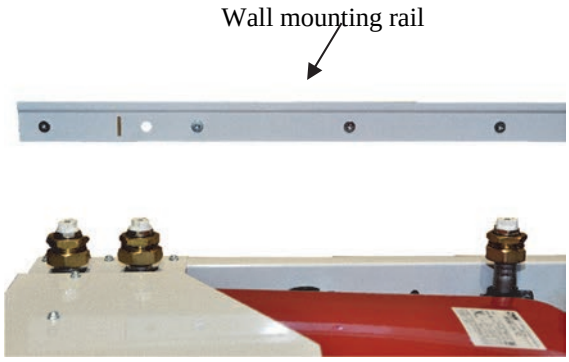
NOTE! The circulation pumps on the G-Power 3/100 substation are turned to the side on delivery. Turn the circulation pumps on installation so, that the control panel faces forward.

Installing the G-Power substation on the wall

Attach the wall mounting rail carefully on to the wall.

Lift the district heating substation to hang from the ail and attach the heating substation on to the wall through the mounting holes on the bottom of the retaining frame.

District heating substation is ready to be connected to networks.



Connection of DHW circulation

According to Finnish Energy recommendation K1 / 2013, the standard connection of the detached house includes a domestic hot water circulation pump as standard. Hot water circulation shortens hot water waiting time and improves control performance

If a hot water circulation pipe is or will be built on the property, the hot water circuit of the G-Power district heating substation is connected to the marked piping.

If the property does not have a hot water circulation pipe and cannot be reasonably constructed, connect the circulation pipe as far away from the G-Power substation as possible, e.g. to the domestic hot water manifold.

NOTE! The length of the circulating pipe must be at least 3m and the recommended pipe size is at least DN15.

Electrification

Ensure that all the electrical parts are in faultless condition and are firmly fixed to the substation and piping. Once the pipework is finished and the water has been connected, an electrician is not necessarily needed for the start-up of the G-Power Easy single-family house substation.

If you are uncertain, ask an electrician to perform the following operations:

- Install the outdoor temperature sensor to the north wall of the building at a height of approximately 3 m. The sensor measures the current outside temperature (do not install the sensor near ventilation windows).
- The outdoor temperature sensor includes a wire and a plug. Connect the outdoor temperature sensor plug to the connector in the control box that is marked with the decal “outdoor temperature sensor wire”. Alternatively, the outdoor temperature sensor can already be connected directly to the controller.
- Check that all the pipes are filled with water and that the air has been bled out of them.
- Connect the power supply plug of the controller power supply unit and circulation pump P2 to a grounded wall socket with 10A/230V fuses.
- Wait from approx. 10s, turn on the circulation pumps P1 (domestic hot water) and P2 (heating) on the operating switch.
- Switch on the controller. See “User instructions for controllers”.

For underfloor heating, connect a pre-wired pump stop thermostat (TS2 / TS3) to the heating supply pipe. The electrical connection is ready. Attach the sensor on the heating supply pipe as far as possible from the heat exchanger. The minimum distance is 1 m. Set the temperature to, for example, 55°C.

5. Things to note

Differential pressure in the district heating circuit

The differential pressure generated by the district heating circuit pumps enables the circulation of district heating water in the district heating circuit and in each customer’s district heating equipment. The district heating circuit pressure and differential pressure can vary. For example, the pressure and differential pressure values are usually higher in the winter than in the summer.

Customer’s district heating equipment is usually designed for a differential pressure of 60 kPa (0.6 bar).

If the differential pressure in the district heating circuit is high (> 2 bar), we recommend that a differential pressure controller is used.

Sound engineering practice

According to the Finnish Pressure Equipment Act 1144/2016, pressure equipment that is not subject to the essential safety requirements referred to in section 14 of the Act due to its characteristics shall be designed and manufactured in accordance with the sound engineering practice of a Member State in the European Union.

Pressure equipment designed or manufactured in accordance with the sound engineering practice shall not bear the CE mark referred to in section 17 of the Act.

G-Power substation is designed and manufactured in accordance with the sound engineering practice.

6. General terms of warranty

1) Scope of application and guarantor

This warranty includes the district heating substations and heat exchangers delivered by Gebwell Ltd.

2) Warranty validity

This warranty is valid from the date of delivery as follows:

- District heating substation components for 24 months
- Piping and connectors for 24 months
- Heat exchangers for 60 months

This warranty applies to district heating substations and heat exchangers that are used in Finland. Any change of ownership, after which the product is still used in Finland, does not terminate the warranty. A repaired or replaced product is not granted an extended or new warranty period.

3) Warranty contents

Gebwell Ltd. guarantees that the operation and quality of the product will remain normal throughout the warranty period. If this is not the case, there is a warranty error in the product. However, Gebwell Ltd. is not responsible for any error in quality or operation caused by the following:

- Negligent or incorrect installation (for example, insufficient pipe support or incorrect environmental conditions).
- Exceeding the allowed maximum pressure (pressure peaks).
- Outside stress (temperature, mechanical stress etc.)
- Repairs carried out by anyone other than a company authorised by Gebwell Ltd.
- Poor quality water in circulation, i.e. the water does not fulfil the specifications of the report KK3/1988 published by Finnish Energy Industries, or the domestic water requirements of the Ministry of Social Affairs and Health, decisions 953/1994 and 74/1994 (e.g. water hardness, aggression, etc.).

4) Notification on errors

The buyer is to inform Gebwell Ltd. about any errors within 14 days of the detection of the error, or of the date that the buyer should have noticed the error.

5) Correction of the error

If the error is covered by the terms of this warranty, Gebwell Ltd. will correct the error or supply the buyer with a faultless product within a reasonable amount of time after the reception of the notification of the error.

6) Rights of the buyer after the warranty period

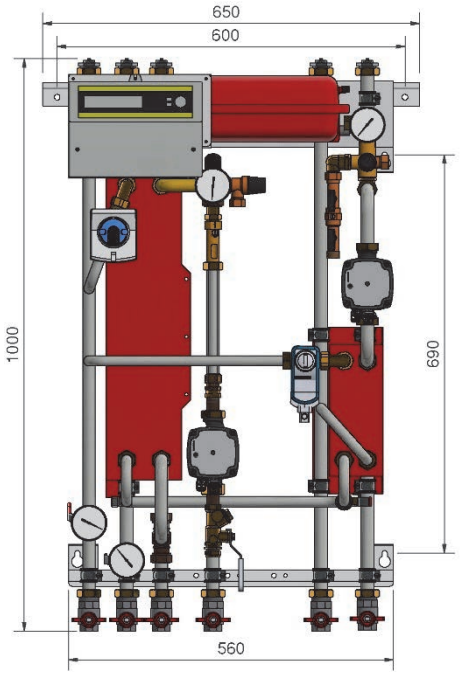
This warranty does not impede the rights related to those errors granted to the buyer by Chapter 5 of the Consumer Protection Act.

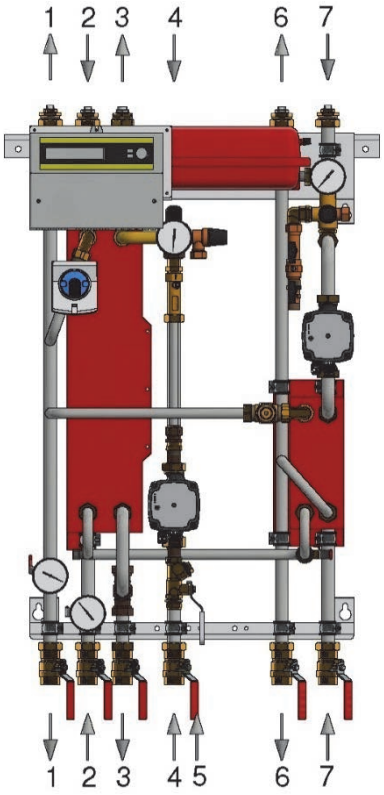
7) Resolving disputes

The buyer is entitled to have any dispute on these warranty terms handled by the Consumer Complaint Board. If any dispute regarding this warranty is to be settled in court, it will be settled in the district court of the buyer's place of residence.

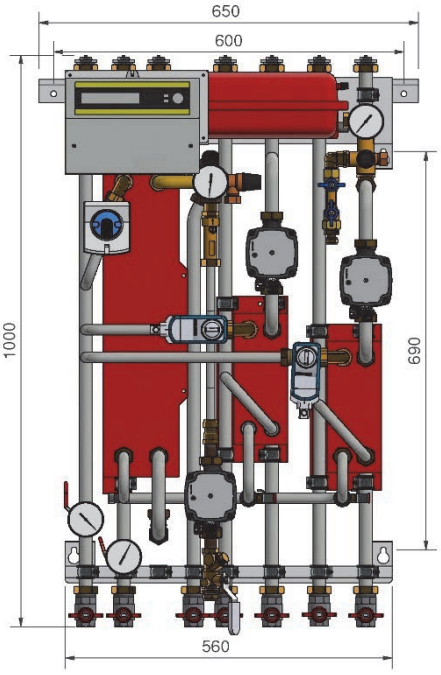
7. G-Power district heating substation – dimensions and connections

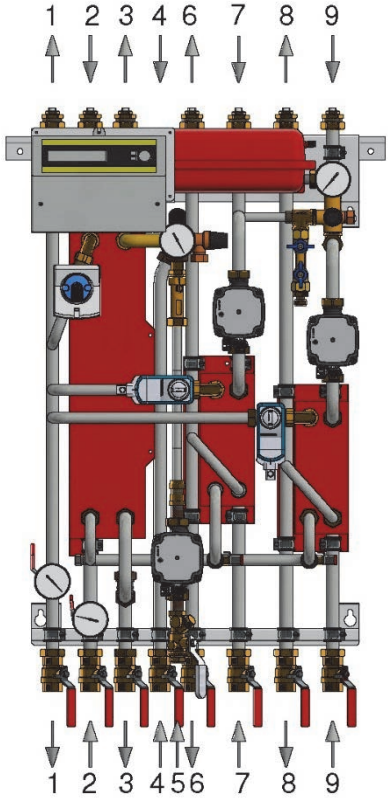
G-Power 2/100 and G-Power 2/150





G-Power 3/100





1 TO DISTRICT HEAT NETWORK
2 FROM DISTRICT HEAT NETWORK
3 DOMESTIC HOT WATER
4 COLD WATER SUPPLY
5 DHW CIRCULATION
6 TO HEATING CIRCUIT 1
7 FROM HEATING CIRCUIT 1
8 TO HEATING CIRCUIT 2
9 FROM HEATING CIRCUIT 2

GEBWELL CIRCUIT DIAGRAM
SMALL HOUSE G-POWER-2/100

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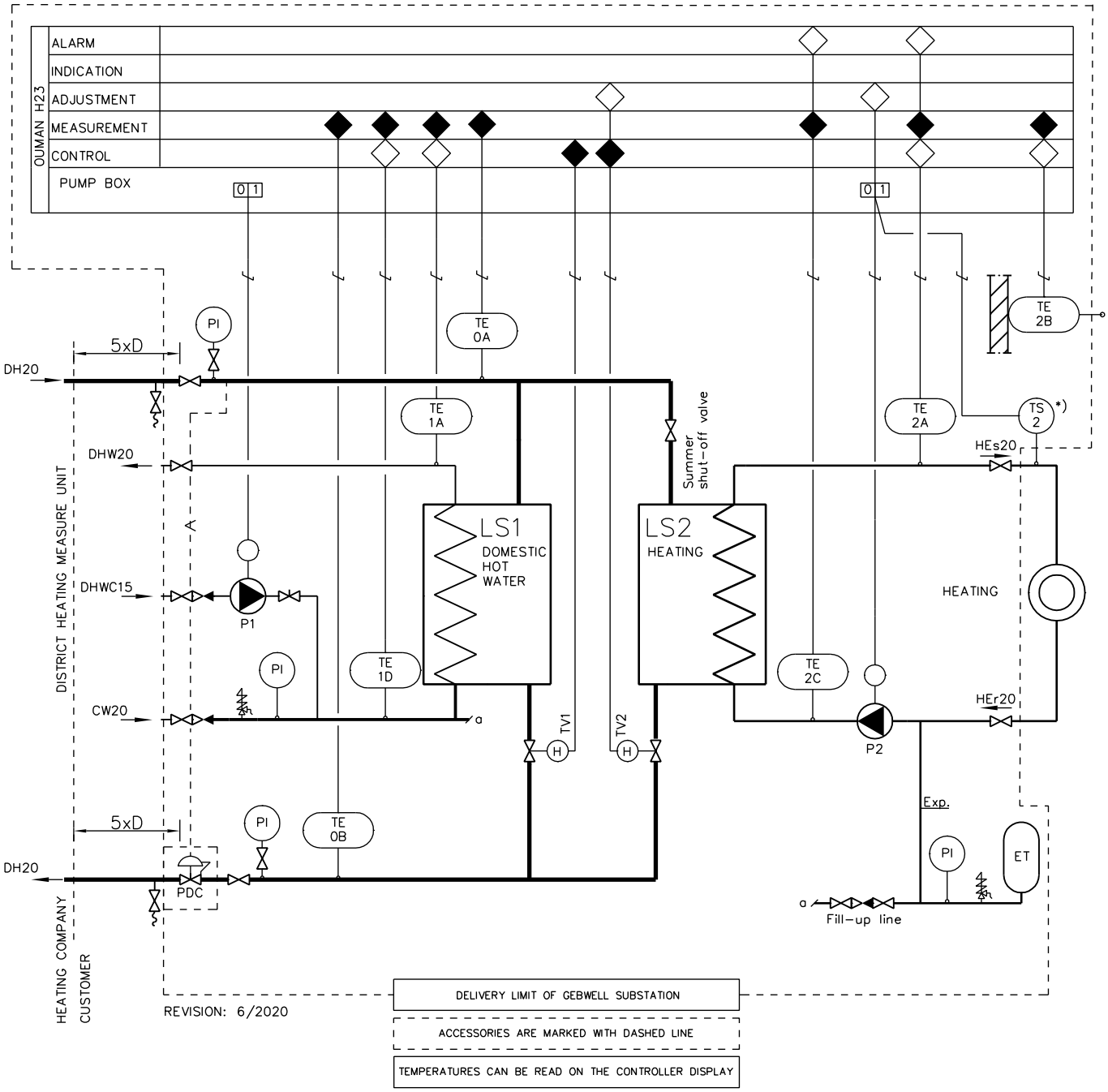


DESCRIPTION OF OPERATION

DOMESTIC HOT WATER

AUTOMATIC CONTROL VALVE CV1 CONTROLS THE HOT WATER TEMPERATURE BY MEASURING SENSOR TS. THE SELF-POWERED 3-WAY VALVE IS TO KEEP THE HOT WATER TEMPERATURE AT THE SETTING (+58°C).

HEATING

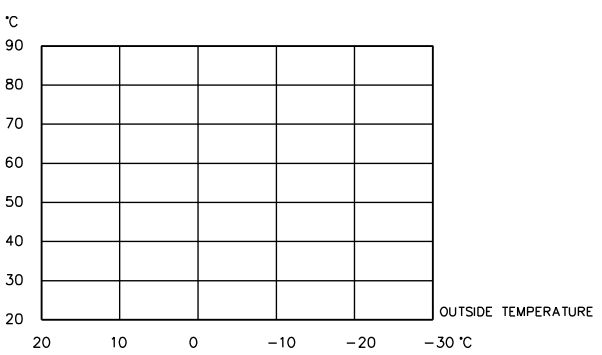
THE CONTROL SYSTEM CONTROLS THE CONTROL VALVE ON CV2 OUTPUT WATER MEASURING SENSOR TE2A AND OUTSIDE SENSOR TE2B BY MEASURING THE OUTPUT WATER TEMPERATURE CONTROL CURVE.

HEATING OVER TEMPERATURE PROTECTION

SUPPLY WATER TEMPERATURE LIMIT THERMOSTAT TS2 STOP HEATING PUMP P2, NETWORK SUPPLY WATER TEMPERATURE EXCEEDED LIMIT. THE PUMP WILL RESTART WHEN THE TEMPERATURE DROPS BELOW 8°C.

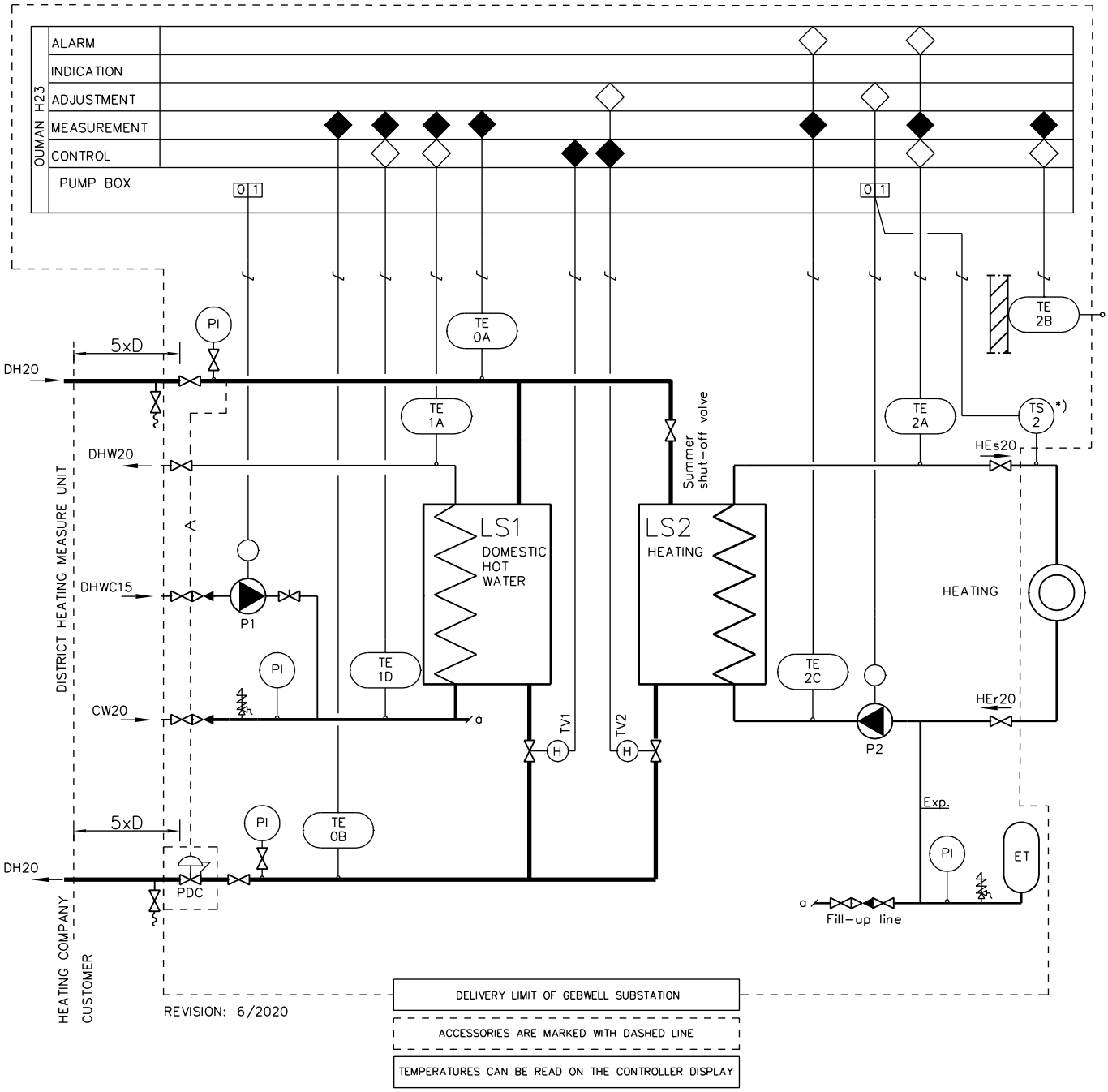
*) = The thermostat should be installed as far away as possible (min. 2.0m) from the heat exchanger.
The pipe must not be insulated around the thermostat.

HEATING NETWORK OPERATING TEMPERATURES



GEBWELL CIRCUIT DIAGRAM
SMALL HOUSE G-POWER-2/150

GEBWELL



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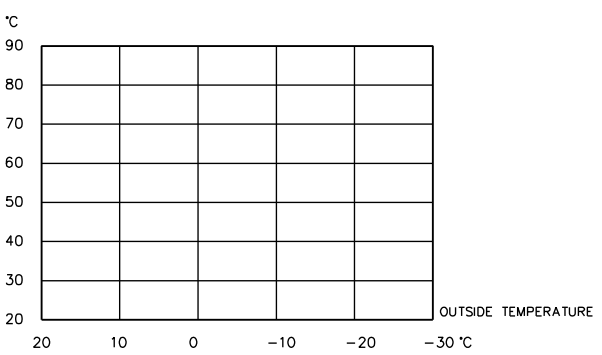
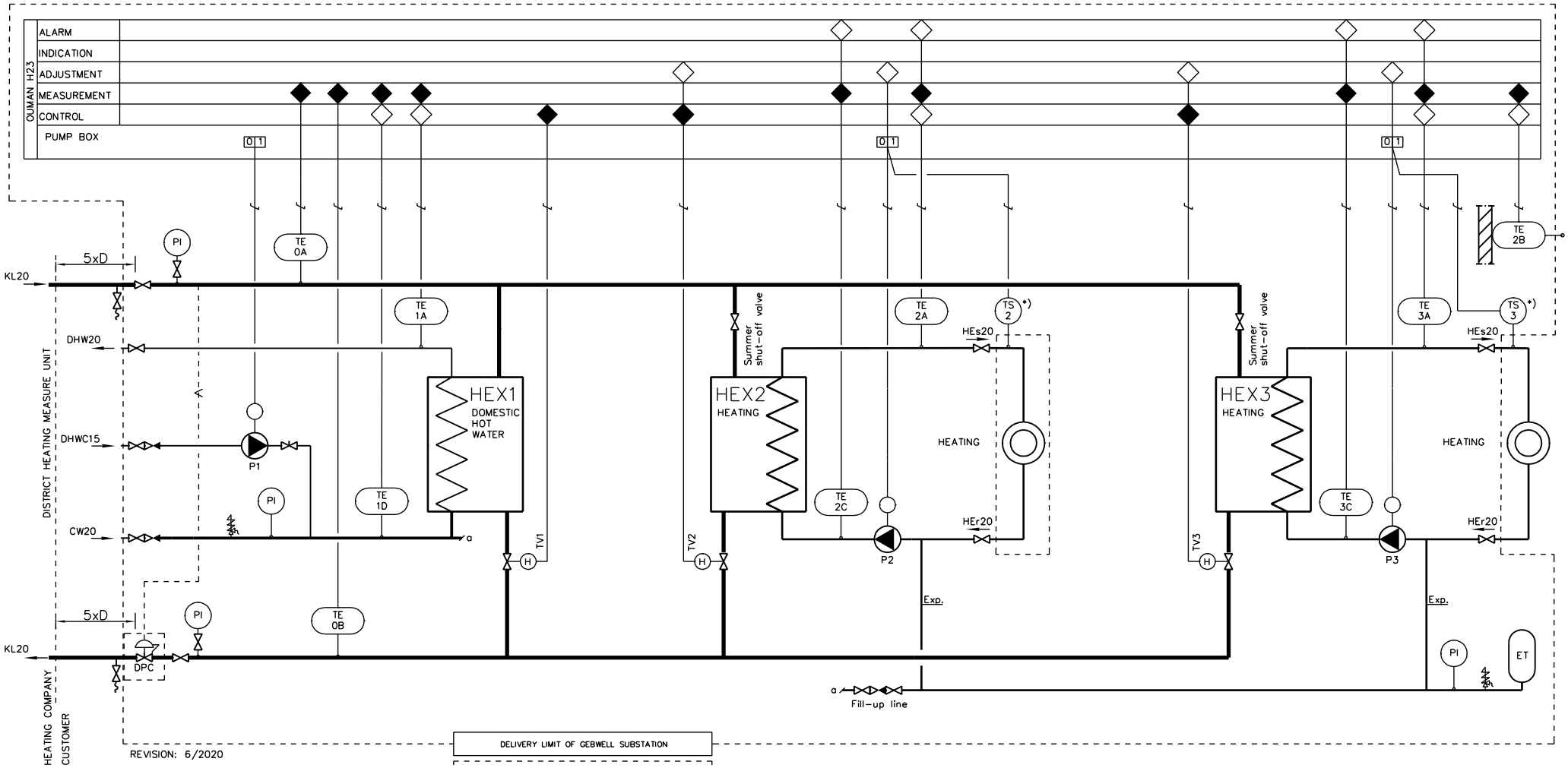


GEBWELL CIRCUIT DIAGRAM
SMALL HOUSE G-POWER-3/100

GEBWELL



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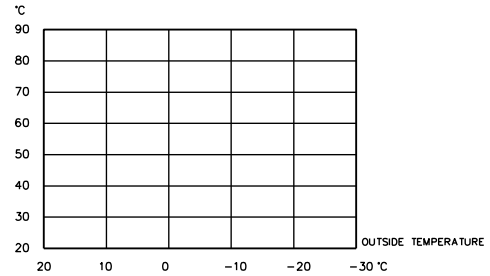

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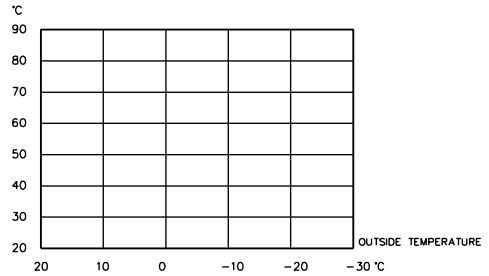

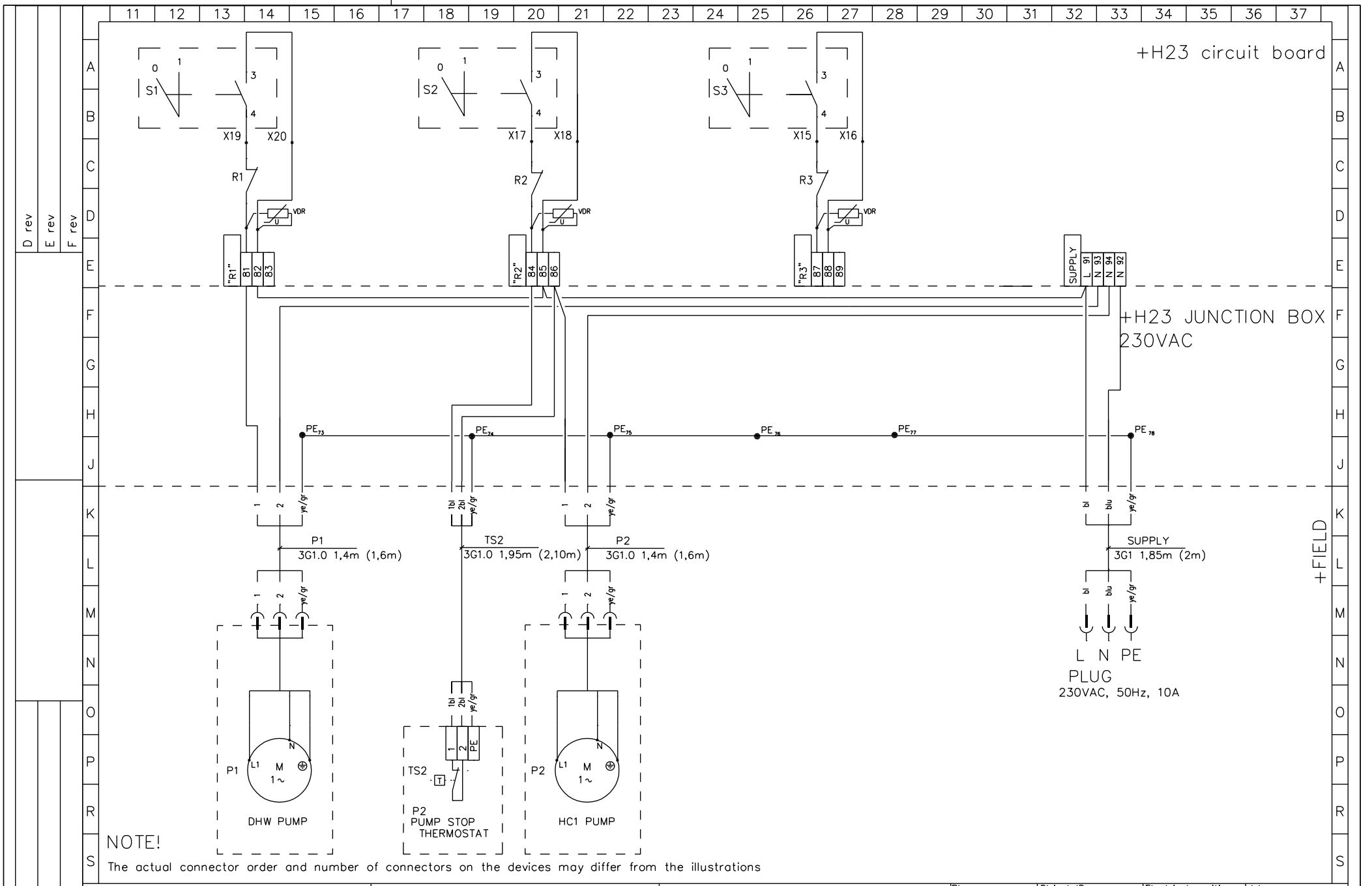

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GEBWELL G-POWER 2 H23,
2-CIRCUIT
CIRCUIT DIAGRAM

Plan. EHa / 7.8.20	Object ID	Electrical position	Job no.
Draw. EHa	Sheet 1/2	Drawing no. GEBWELL G-POWER 2 H23	
Check			

A rev			D rev
B Rev.			E rev
C Rev.			F rev

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www.ouman.fi

OUMAN®
BUILDING AUTOMATION SYSTEMS

GEBWELL G-POWER 2 H23, 2-CIRCUIT CIRCUIT DIAGRAM

Plan.	THo /12.10.2018
Draw.	THo
Check	
Sheet	2/2
Object ID	
Drawing no.	
Electrical position	
Job no.	

GEBWELL G-POWER 2 H23

OUMAN H23

TE2B
OUTDOOR TEMP.
EH800 OUTDOOR SENSOR
?–

TE2A
HC1 FLOW TEMP.
TMS-2M/NTC10
ye
blu
KLM 2x0.8
1,86m (2m)
M1 11 31⊥
M2 12 32⊥

TE2C
HC1 RETURN TEMP.
TMS-1M/NTC10
KLM 2x0.8
1m (1,15m)
M3 13 33⊥

TE0A
DH FLOW TEMP.
TMS-1M/NTC10
KLM 2x0.8
0,85m (1m)
M4 14 34⊥

M5 15 35⊥
M6 16 36⊥

TE0B
DH RETURN TEMP.
TMS-1M/NTC10
KLM 2x0.8
0,7m (0,8m)
M7 17 37⊥

TE1A
DHW FLOW TEMP.
TMS-1M/NTC10
KLM 2x0.8
0,92m (1m)
M8 18 38⊥

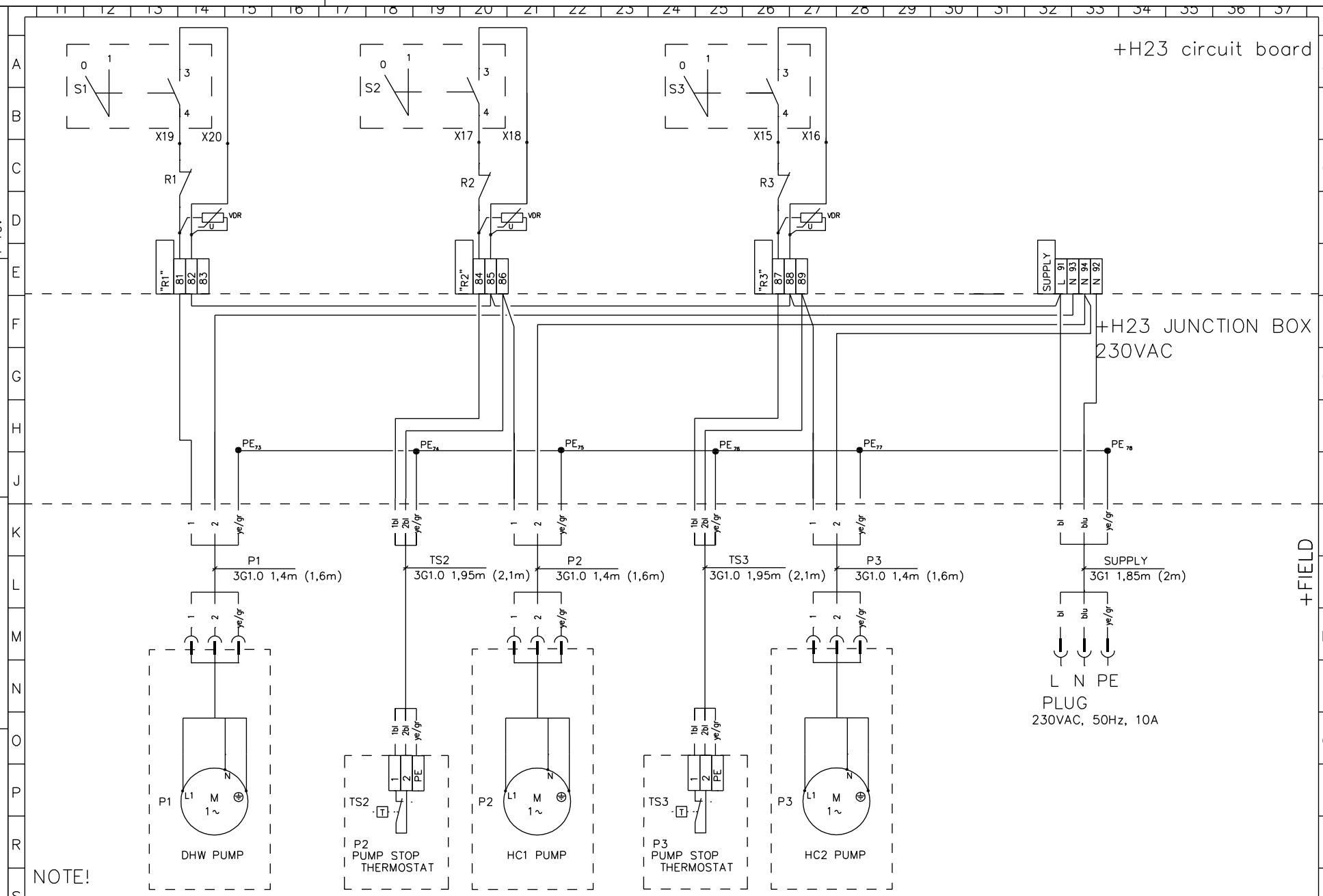
TE1D
DHW CIRC. TEMP.
TMS-1M/NTC10
KLM 2x0.8
0,3m (0,4m)
M9 19 39⊥

TV1
DHW VALVE
24VAC
0-10V
wh
KLM 4x0.8
0,78m (0,88m)
Y1 55 65 66
24VAC ⊥ 0-10V

TV2
HC1 VALVE
OPEN
CLOSED
KLM 4x0.8
0,78m (0,88m)
Y2 57 67 58
TR3 ⊥ TR4

Y3 59 69 60
TR5 ⊥ TR6

+FIELD
+H23



NOTE!

The actual connector order and number of connectors on the devices may differ from the illustrations

D rev
E rev
F rev
A rev
B Rev.
C Rev.

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GEBWELL G-POWER 3 H23,
3-CIRCUIT
CIRCUIT DIAGRAM

Plan. EHa / 4.9.2018	Object ID	Electrical position	Job no.
Draw. THa	Sheet 1/2	Drawing no. GEBWELL G-POWER 3 H23	
Check			

A rev			D rev
B Rev.			E rev
C Rev.			F rev

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OUMAN®
BUILDING AUTOMATION SYSTEMS

GEBWELL G-POWER 3 H23, 3-CIRCUIT CIRCUIT DIAGRAM

Plan. THo / 12.10.2018	
Drow. THo	
Check	
Object ID	Sheet 2/2
Drawing no.	GEBWELL G-POWER 3 H23
Electrical position	
Job no.	

OUMAN H23

TE2B
OUTDOOR TEMP.
EH800 OUTDOOR SENSOR
?-

TE2A
HC1 FLOW TEMP.
TMS-2M/NTC10
ye
blu
KLM 2x0.8
1,86m (2m)
M1 11 31⊥
M2 12 32⊥

TE2C
HC1 RETURN TEMP.
TMS-1M/NTC10
KLM 2x0.8
1m (1,15m)
M3 13 33⊥

TE0A
DH FLOW TEMP.
TMS-1M/NTC10
KLM 2x0.8
0,85m (1m)
M4 14 34⊥

TE3A
HC2 FLOW TEMP.
TMS-2M/NTC10
KLM 2x0.8
1,86m (2m)
M5 15 35⊥

TE3C
HC2 RETURN TEMP.
TMS-1M/NTC10
KLM 2x0.8
0,85m (1m)
M6 16 36⊥

TE0B
DH RETURN TEMP.
TMS-1M/NTC10
KLM 2x0.8
0,7m (0,8m)
M7 17 37⊥

TE1A
DHW FLOW TEMP.
TMS-1M/NTC10
KLM 2x0.8
0,92m (1m)
M8 18 38⊥

TE1D
DHW CIRC. TEMP.
TMS-1M/NTC10
KLM 2x0.8
0,3m (0,4m)
M9 19 39⊥

TV1
DHW VALVE
24VAC
0-10V
ye
wh
blu
KLM 4x0.8
0,78m (0,88m)
Y1 55 65 66
24VAC ⊥ 0-10V

TV2
HC1 VALVE
OPEN
CLOSED
KLM 4x0.8
0,78m (0,88m)
Y2 57 67 58
TR3 ⊥ TR4

TV3
HC2 VALVE
OPEN
CLOSED
KLM 4x0.8
0,78m (0,88m)
Y3 59 69 60
TR5 ⊥ TR6

+FIELD
+H23

QUICK GUIDE - GRUNDFOS UPM3

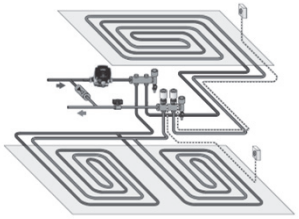
GEBWELL

PUMP SETTINGS

	OPERATING PANEL	CONTROL MODE
0		PROPORTIONAL PRESSURE AUTO ADAPT
1		CONSTANT PRESSURE AUTO ADAPT
2		PROPORTIONAL PRESSURE 1
3		PROPORTIONAL PRESSURE 2
4		PROPORTIONAL PRESSURE 3 - MAX
5		CONSTANT PRESSURE 1
6		CONSTANT PRESSURE 2
7		CONSTANT PRESSURE 3 - MAX
8		CONSTANT CURVE 1
9		CONSTANT CURVE 2
10		CONSTANT CURVE 3 - MAX

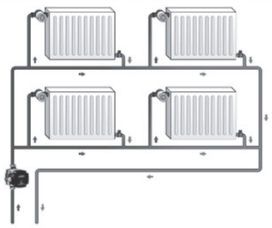
Underfloor heating

RECOMMENDATION	SETTING INDICATION
Lowest constant pressure curve or Constant Pressure Auto Adapt →	CONSTANT PRESSURE AUTO ADAPT CONSTANT PRESSURE 1 CONSTANT PRESSURE 2 CONSTANT PRESSURE 3 - MAX



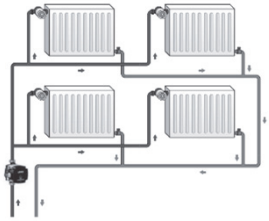
Radiator heating, one-pipe system

RECOMMENDATION	SETTING INDICATION
Lowest relative pressure curve →	PROPORTIONAL PRESSURE 1 PROPORTIONAL PRESSURE 2 PROPORTIONAL PRESSURE 3 - MAX

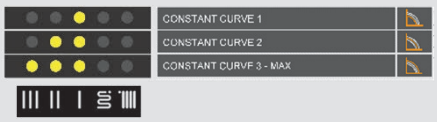


Radiator heating, two-pipe system

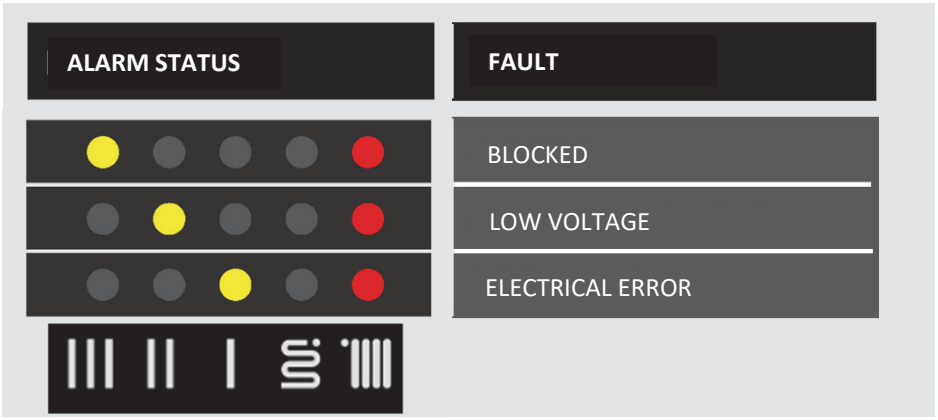
RECOMMENDATION	SETTING INDICATION
Highest relative pressure curve or Relative pressure Auto Adapt →	PROPORTIONAL PRESSURE AUTO ADAPT PROPORTIONAL PRESSURE 1 PROPORTIONAL PRESSURE 2 PROPORTIONAL PRESSURE 3 - MAX

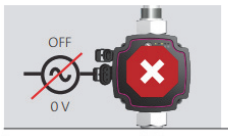
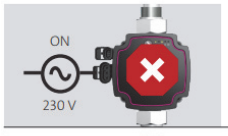
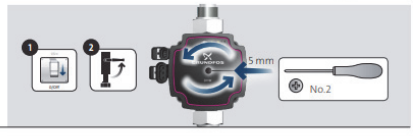
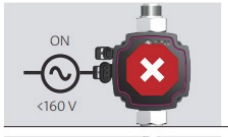
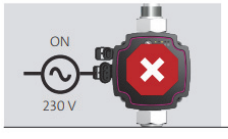
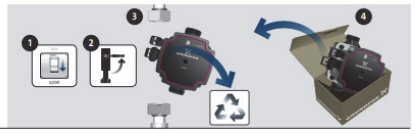


Constant curves for fixed rotation speed

RECOMMENDATION	SETTING INDICATION
We recommend you use heating system specific energy optimised pump functions. Please see instructions on page 1.	

TROUBLESHOOTING



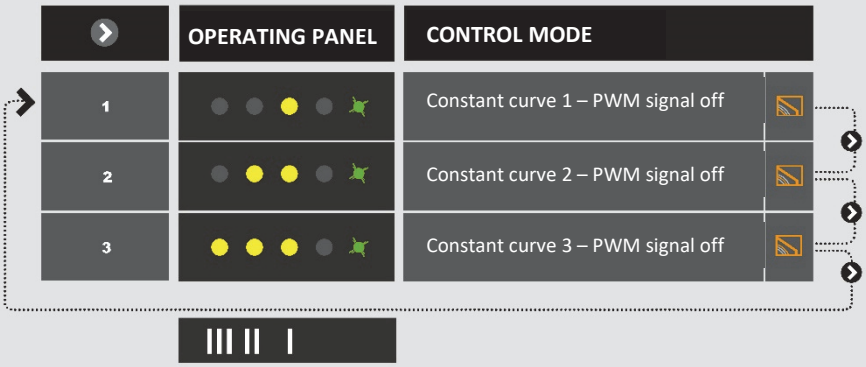
FAULT	DISPLAY	SOLUTION	
			**Pump does not function, no power.** Check that: **A** the power plug is plugged in, **B** the switch is turned on.
			**1. The LED is lit – An axle or impeller is stuck.** To release the axle/impeller, press on the screw in front of the pump and turn it using a screw driver.
			**2. The LED is lit – Supply voltage too low** Check the supply voltage.
			**3. The LED is lit – Supply voltage too low, severe malfunction** Check the supply voltage. Replace the pump.

GEBWELL

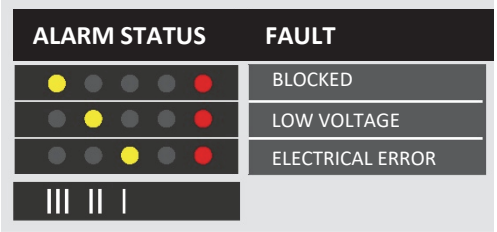
QUICK GUIDE - GRUNDFOS UPM3(K) DHW

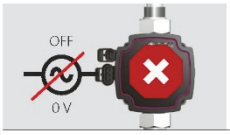
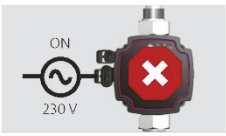
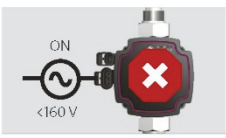
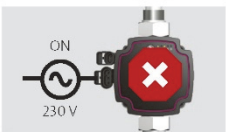
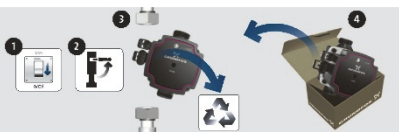
PUMP SETTINGS

Select the pump settings according to the operating environment.
Select constant curve 1, 2 or 3 as a control mode.



TROUBLESHOOTING



FAULT	DISPLAY	SOLUTION	
			**Pump does not function, no power.** Check that: **A** the power plug is plugged in, **B** the switch is turned on.
			**1. The LED is lit – An axle or impeller is stuck.** To release the axle/impeller, press on the screw in front of the pump and turn it using a screw driver.
			**2. The LED is lit – Supply voltage too low** Check the supply voltage.
			**3. The LED is lit – Supply voltage too low, severe malfunction** Check the supply voltage. Replace the pump.

GEBWELL

Vaatimustenmukaisuusvakuutus
Declaration of Conformity
Försäkran om överensstämmelse

Painelaite on kaukolämmönjakokeskus lämpimälle käyttövedelle ja/tai lämmitykselle.
Pressure equipment in question is a district heating substation for domestic hot water production and / or heating.
Tryckutrustningen i fråga är en fjärrvärmecentral för tappvarmvatten och/eller värme.

Product models: **G-Power 2/100, G-Power 2/150, G-Power 3/100, G-Power 3/150, G-Power 2/200, G-Power 3/200**

	Ensiö Primary | Primär	Käyttövesi DHW | Tappvatten	Lämmitys 1 Heating | Värme
Max käyttöpaine | allowable pressure (PS) | tillåtet tryck (PS) bar	16	10	6
Max lämpötila | allowable temperature (TS) | tillåten temperatur (TS) °C	120	100	100
Min. lämpötila °C | allowable temperature | tillåten temperatur °C	0	0	0

Painelaite on tyypiltään laitekokonaisuus, joka koostuu erilaisista painelaitteista kuten putkistosta, lämmönsiirtimistä, venttiileistä ja pumpuista.
Painelaitteen suunnittelu ja rakenne perustuvat seuraaviin standardeihin.
Pressure equipment is an entity comprising of different pressure device such as pipes, heat exchangers, valves and pumps. Design and structure of the pressure device based on the following standards
Tryckutrustningen är en enhet bestående av tryckutsatta komponenter såsom rör, värmeväxlare, ventiler och pumpar. Design och uppbyggnad av tryckutrustningen har skett enligt följande standarder

Putkisto | Pipes | Rör: **SFS-EN13480, SFS-EN13445**
Hitsaajien pätevöinti | Qualification of welders | Kvalifikationer svetsare: **SFS-EN287-1**
Hitsausohjeet ja niiden hyväksyntä | Welding instructions and approvals | Svetsinstruktioner och godkännanden: **SFS-EN15607**

Gebwell Oy vakuuttaa, että painelaitteen vaatimustenmukaisuus on arvioitu **Suomen painelaitelain 1144/2016 ja direktiivin PED2014/68/EU; Moduulin A2 mukaisesti.**
Gebwell Ltd. assures that the pressure equipment meets the requirement of the directive **PED2014/68/EU**. The conformity assessment is carried out with procedure **Module A2**.
Gebwell AB försäkrar att tryckutrustningen möter de krav som ställs i EU-direktiv **PED2014/68/EU**. Försäkran utförs enligt procedurerna i **Modul A2**.

PED2014/68/EU artiklassa 4.3 on määritelty, että painelaitteet joiden ominaisuudet ovat PED luokan 1 rajojen alapuolella, tai yhtäsuudet on suunniteltava ja valmistettava jäsenvaltiossa noudatettavan hyvän konepajakäytännön mukaisesti. Tällaisissa laitteissa tai laitekokonaisuuksissa ei saa olla 18. artiklassa tarkoitettua PED direktiiviä koskevaa CE-merkintää.
PED2014/68/EU specificerar i artikel 4.3 att tryckutrustningen enligt kategori 1 skall utformas och tillverkas enligt god praxis och att sådan utrustning ej skall omfattas av CE-märkning enligt PED.
PED2014/68/EU specifies in article 4.3, that pressure equipment under the limits set to Category 1 shall be designed and manufactured in accordance with the sound engineering practice and such equipment shall not bear the CE mark referred to PED.

Laitekilpi on merkitty PED määritysten mukaisesti. PED kategorioiden 1 ja 2 mukaiset laitteet on merkitty CE merkillä.
The equipment nameplate is marked according to PED. The equipment in Categories 1 and 2 is marked with CE. Utrustningens typskylt är märkt i enlighet med PED. Utrustningen i Kategori 1 och 2 är märkt med CE.

Ilmoitettuna laitoksena | Notified body | Notifierad av: DEKRA

DEKRA Industrial Oy
ILMOITETTU LAITOS 0875
P.O.Box 41
FIN-01621 Vantaa, Finland
Tel. +358 9 878 020
Fax +358 9 878 6653

Kaukolämmönjakokeskus täyttää **Konedirektiivin 2006/42/EC** vaatimukset.
District heating substations meet also requirement of **Machine Directive MD 2006/42/EC**.
Fjärrvärmecentraler möter också kraven i enlighet med **Maskindirektivet MD 2006/42/EC.**
Tuotteen sähkölaitteet ja -asennukset täyttävät direktiivien **LVD 2014/35/EC ja EMCD 2014/30/EU** vaatimukset.
Electrical device and installations are in conformity with the following directives: **LVD 2014/35/EC and EMCD 2014/30/EU**.
Elektriska enheter och installationer är i enlighet med och följer följande direktiv och standarder: **LVD 2014/35/EC och EMCD 2014/30/EU**.

Leppävirta 21.4.2021

Janne Rahunen, Managing Director

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Patruunapolku 5, FI-79100 Leppävirta, FINLAND
Tel. +358 20 1230 800 | info@gebwell.fi | www.gebwell.com

MADE IN FINLAND