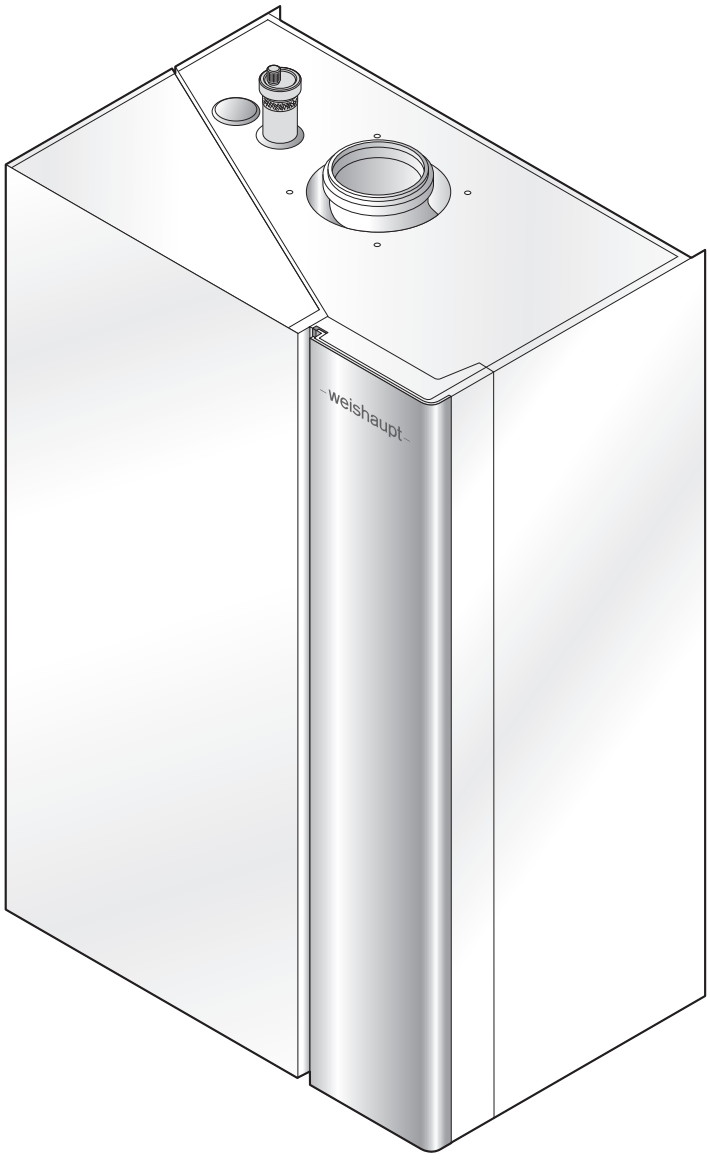
–weishaupt–

manual

Installation and operating instruction



Gas condensing unit WTC-GW 15 … 32-B

83307202 ▪ 2/2018-05

1 User instructions

Translation of original operating instructions

This manual forms part of the equipment and must be kept on site.

Carefully read the manual prior to working on the unit.

1.1 Target group

The manual is intended for the operator and qualified personnel. They should be observed by all personnel working with the unit.

Work on the unit must only be carried out by personnel who have the relevant training and instruction.

In accordance with EN 60335-1 the following requirements apply

This appliance can be used by children 8 years and above as well as by persons with limited physical, sensory or mental capacities or lack of experience and knowledge, provided they are supervised or have been instructed regarding the safe use of the appliance and understand the resulting danger. Children must not play with the appliance. Cleaning and operator maintenance must not be carried out by children without supervision.

1.2 Symbols

 **DANGER**	Immediate danger with high risk. Non observance can lead to serious injury or death.
 **WARNING**	Danger with medium risk. Non observance can lead to environmental damage, serious injury or death.
 **CAUTION**	Danger with low risk. Non observance can cause damage to the equipment and injury to personnel.
	Important information
▸	Requires direct action
✓	Result after an action
▪	Itemisation
…	Range of values

1.3 Guarantee and Liability

Guarantee and liability claims for personal and equipment damage are excluded, if they can be attributed to one or more of the following causes:

- non approved application,
- non-observance of the manual,
- operation with faulty safety equipment,
- continual operation despite a fault,
- improper installation, commissioning, operation and service,
- repairs, which have been carried out incorrectly,
- the use of non original Weishaupt parts,
- force majeure,
- unauthorised modifications made to the unit,
- the installation of additional components, which have not been tested with the unit,
- changes to the combustion chamber,
- unsuitable fuels,
- defects in the inlet lines.
- on non diffusion tight heating circuits without system separation.

2 Safety

2.1 Designated application

The unit is suitable for:
- Warm water heating circuits in closed systems to EN 12828,
- a flow rate of maximum:
  - WTC 15: 1300 l/h
  - WTC 25: 2200 l/h
  - WTC 32: 2750 l/h

The combustion air must be free from aggressive compounds (e. g. Halogens) and free from contaminants (e. g. dust) sein. If the combustion air in the boiler room is contaminated, increased cleaning and servicing will be required. In this case the appliance should be operated room air independent.

The unit should only be used in enclosed rooms.

The installation room must comply with local regulations.

Improper use could:
- endanger the health and safety of the user or third parties,
- cause damage to the unit or other material assets.

2.2 When gas can be smelled

Avoid open flames and spark generation, for example:
- do not operate light switches,
- do not operate electronic equipment,
- do not use mobile telephones.

- ► Open doors and windows.
- ► Close gas isolating valve.
- ► Warn the inhabitants, do not ring door bells.
- ► Leave the building.
- ► Inform the heating contractor or gas supplier from outside of the building.

2.3 What to do if flue gas can be smelled

- ► Switch off unit and turn of the system.
- ► Open doors and windows.
- ► Notify your heating contractor or Weishaupt Customer Service.

2.4 Safety measures

Safety relevant fault conditions must be eliminated immediately.

Components, which show increased wear and tear or whose design lifespan is or will be exceeded prior to the next service should be replaced as a precaution [ch. 9.2].

The design lifespan of the components is listed in the service plan.

2.4.1 Normal operation

- All labels on the unit must be kept in a legible condition.
- Stipulated settings, service and inspection work should be carried out at regular intervals.
- Only operate the unit with its cover closed.
- Do not touch moving parts during operation.

2.4.2 Electrical connection

For work carried out on live components:
- Observe the accident prevention instructions DGUV Regulation 3 and adhere to local directives,
- tools in accordance with EN 60900 should be used.

2.4.3 Gas supply

- Only the gas supply company or an approved agent may carry out installation, alteration and maintenance work on gas appliances in buildings and properties.
- Pipework must be subject to a combined load and valve proving test and/or usability testing relative to the pressure range intended, e. g. DVGW-TRGI, worksheet G 600.
- Inform the gas supply company about the type and size of plant prior to installation.
- Local regulations and guidelines must be observed during installation, e. g. DVGW-TRGI, worksheet G 600; TRF Band 1 and Band 2.
- The gas supply pipework should be suitable for the type and quality of gas and should be designed in such a way that it is not possible for liquids to form, e. g. condensate. Observe vaporisation pressure and vaporisation temperature of liquid petroleum gas.
- Use only tested and approved sealing materials, whilst observing all process information.
- Re-commission the appliance when changing to a different type of gas.
- Carry out soundness test after each service and fault rectification.

2.5 Disposal

Dispose of all materials and components in a safe and environmentally friendly way at an authorised location. Observe local regulations.

3 Product description

3.1 Type key

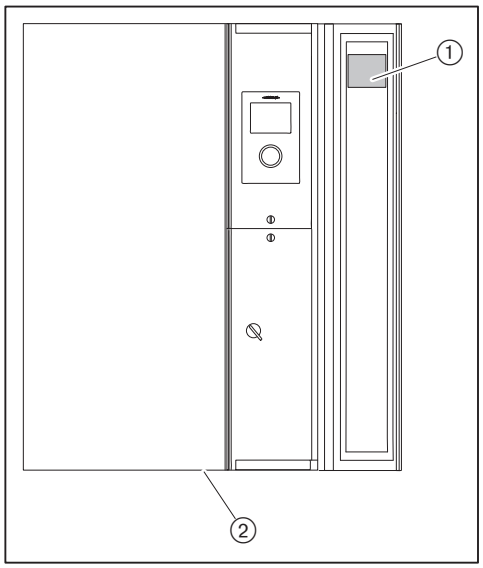
Example: WTC-GW 15-B vers. W

WTC	Range: Weishaupt Thermo Condens
G	Fuel: Gas
W	Design: wall mounted
15	Ratings size: 15 kW
B	Construction
Vers. W	Version: heating mode and DHW mode
Vers. H	Version: heating mode
Vers. H-0	Version: without circulation pump, without expansion vessel
Vers. C	Version: heating mode and DHW mode with integrated plate heat exchanger

3.2 Serial number

The serial number on the name plate identifies the product. This is required by Weishaupt's customer service department.

For further information, see name plate ② on the underside of the unit.



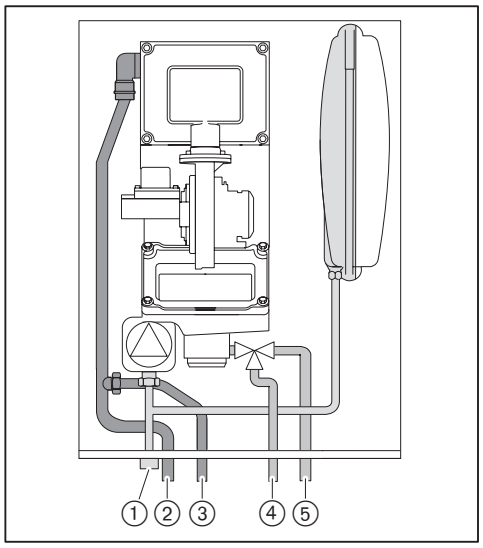
① Additional name plate
② Name plate

Ser.No. _____

3.3 Variations

Version W

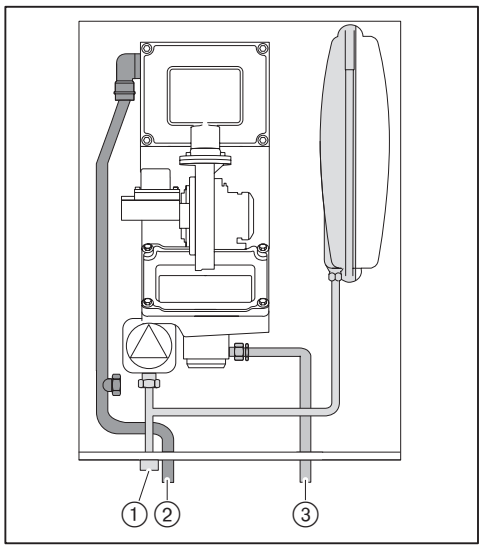
Heating unit with circulation pump and integral three-way valve for DHW preparation.



① Connection inlet and outlet tap
② Heating circuit flow
③ DHW circuit flow
④ DHW circuit return
⑤ Heating circuit return

Version H

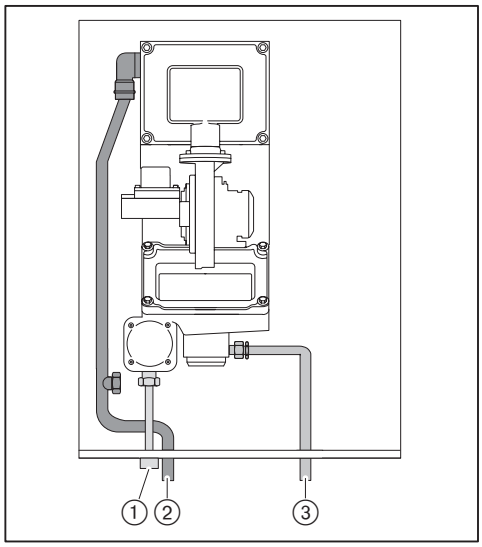
Heating unit with circulation pump, without three-way valve (for WTC 32 without expansion vessel).



① Connection inlet and outlet tap
② Flow
③ Return

Version H-0 (WTC 15 and WTC 25 only)

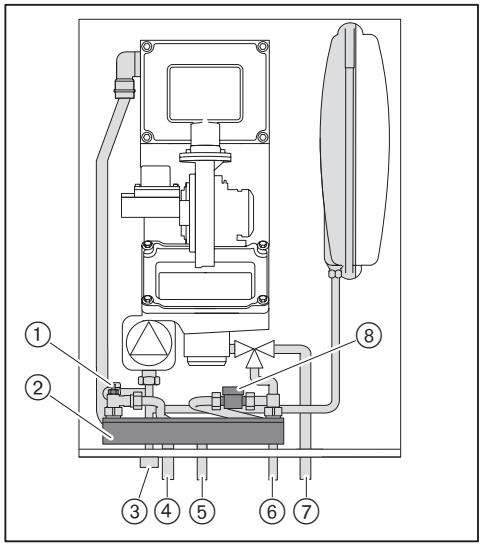
Heating unit without circulation pump, without three-way valve, without expansion vessel.



① Connection inlet and outlet tap
② Flow
③ Return

Version C (WTC 25 only)

Heating unit with integrated DHW preparation with plate heat exchanger and water-flow sensor for detecting the amount of water tapped.

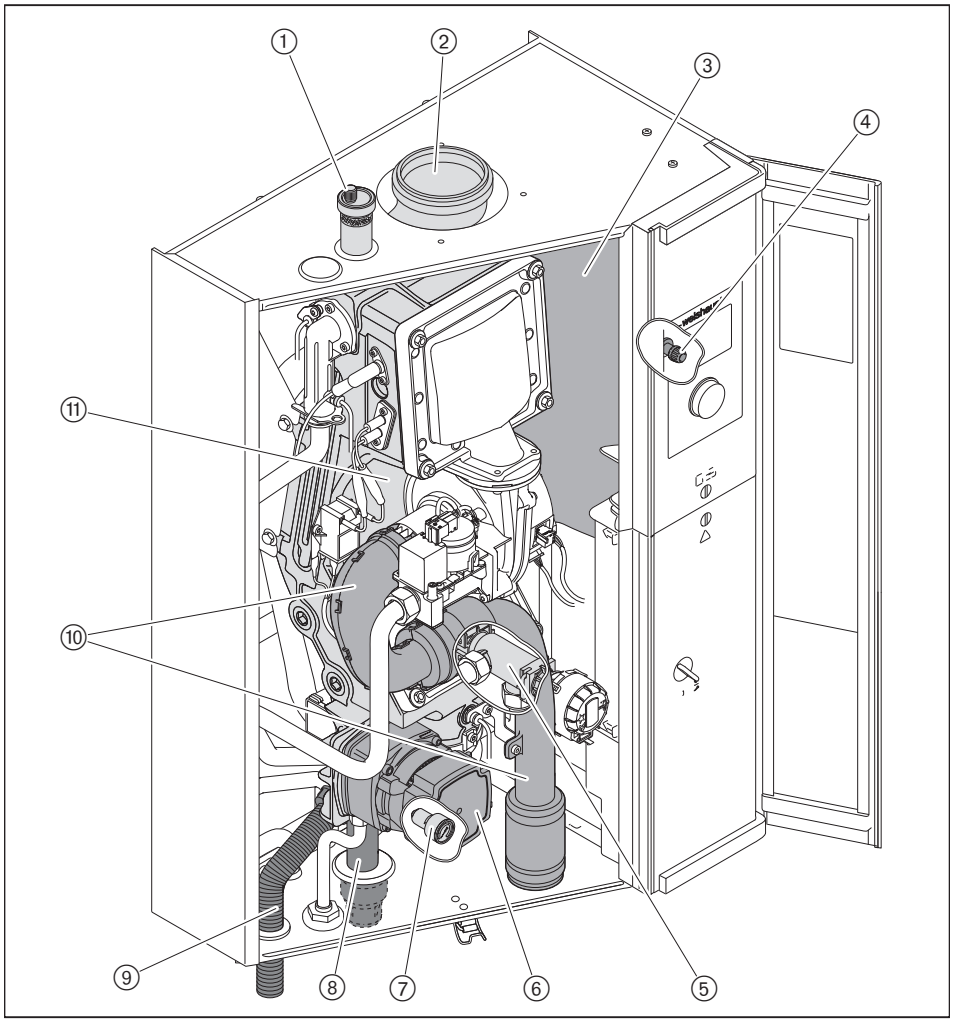


① DHW sensor
② Plate heat exchanger
③ Connection inlet and outlet tap
④ Heating circuit flow
⑤ DHW outlet
⑥ Fresh water inlet
⑦ Heating circuit return
⑧ Water flow sensor

3.4 Function

3.4.1 Water, air and flue gas carrying components

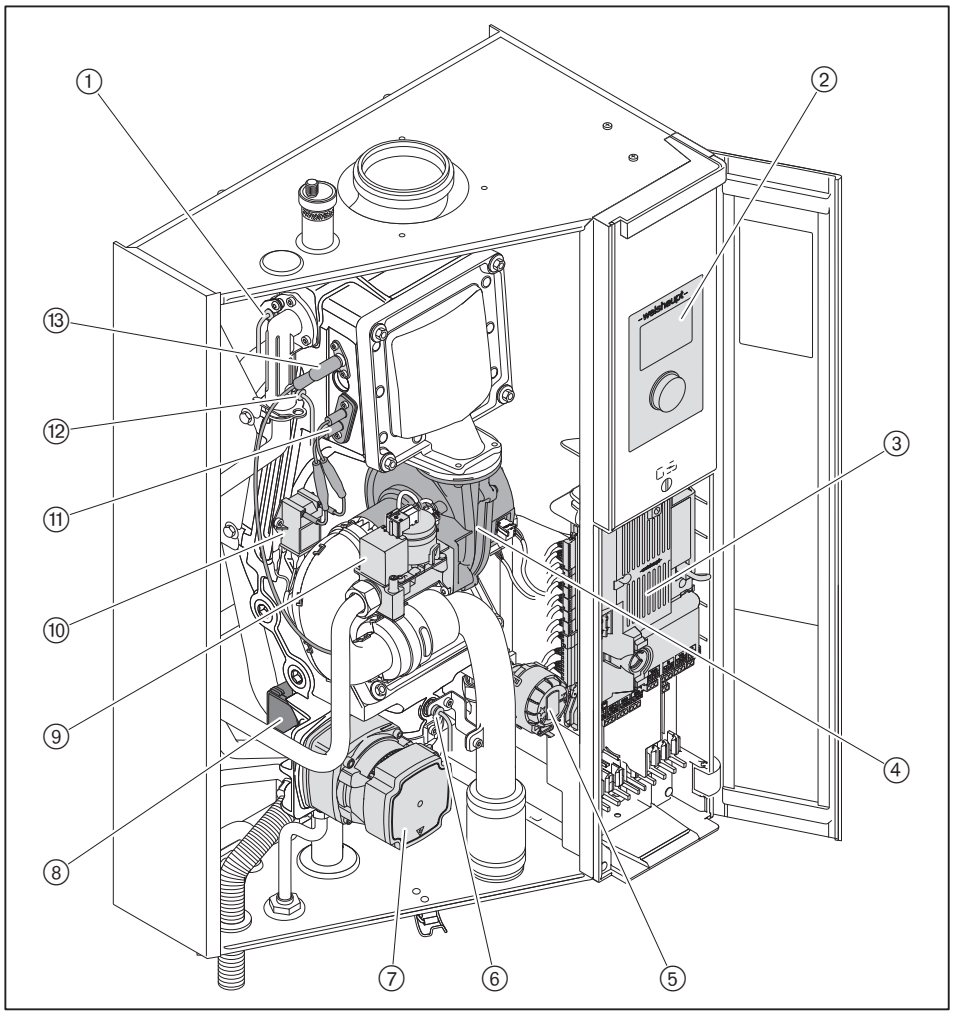
Image: WTC-GW 15-B vers. W



① Quick action vent valve
② Flue gas connection
③ Expansion vessel 10 litres / 0.75 bar
④ Expansion vessel fill valve
⑤ three-way valve
⑥ Speed controlled circulation pump
⑦ Pressure gauge system pressure
⑧ Siphon
⑨ Condensate outlet
⑩ Intake sound attenuator
⑪ Heat exchanger

3.4.2 Electrical components

Image: WTC-GW 15-B vers. W



① Flow sensor eSTB
② Display and operating unit (system device)
③ Device electronics WEM-FA-G with electrical connection and unit fuse
④ Fan
⑤ Actuator three-way valve
⑥ Flue gas sensor
⑦ Speed controlled circulation pump
⑧ Multifunction sensor VPT
⑨ Gas combi valve
⑩ Ignition unit
⑪ Ignition electrode
⑫ Flow sensor multifunction sensor VPT
⑬ Ionisation electrode

3.4.3 Safety and monitoring functions

3.4.3.1 Flow sensor eSTB / flue gas sensor

Flow sensor eSTB

The fuel supply is shut off and the pump run-on is activated if the temperature exceeds 95 °C (W 12). The appliance restarts automatically if the temperature drops below the target supply value for 1 minute.

If the temperature exceeds 105 °C, the fuel supply is shut off and the pump run-on is activated. The system goes to lockout (F 11).

Flow temperature increase eSTB (gradient)

If the flow temperature increases too fast, the appliance is switched off (W 14). If the warning occurs several times in succession, the system goes to lockout (F 14). This function is only activated at a temperature of > 45 °C.

Differential temperature flow eSTB / flue gas

The appliance is switched off if the difference between the flow temperature and the flue gas temperature exceeds a preset value (W 15). If the warning occurs several times in succession, the system goes to lockout (F 15). When approaching this value, first the pump capacity is increased and then the burner capacity is reduced.

Flue gas sensor

If the flue gas temperature exceeds 120 °C (factory setting), the fuel supply is shut off and the pump run-on is activated (F 13). On proximity to the safety temperature the burner capacity will be reduced, at a difference of 5 K (115 °C) the burner shuts down (W 16) [ch. 6.6.2.1].

3.4.3.2 Multifunction sensor VPT

The multifunction sensor determines and monitors:
- volumetric flow,
- system pressure,
- flow temperature,
- return temperature.

Volumetric flow

If the volumetric flow drops below 60 l/h, the appliance switches off (W 10), (not in heating mode, when the condensing unit supplies the heating circuit directly).

System pressure

If the system pressure drops below the value of parameter 2.2.7 minimum system pressure warning, a waring message is issued (W 36). If the system pressure drops below 0.5 bar, the appliance switch off (F 36). If the pressure increases above 0.5 bar, the appliance automatically restarts [ch. 6.6.2.2].

Differential temperature flow eSTB / flow VPT

If the difference between the flow temperature eSTB and the flow temperature VPT exceeds a preset value, the appliance is switched off (W 18). If the warning occurs several times in succession, the system goes to lockout (F 18).

Differential temperature flow VPT / return VPT

If the difference between flow and return temperature exceeds a specified value, the appliance is switched off for at least 3 minutes. If the shutdown occurs several times in succession, a warning is issued (W 17). When approaching this value, first the pump capacity is increased and then the burner capacity is reduced.

Flow temperature increase VPT (gradient)

If the flow temperature increases too fast, the appliance is switched off (W 19). If the warning occurs several times in succession, the system goes to lockout (F 19). This function is only activated at a temperature of > 45 °C.

3.4.4 Combustion control (System SCOT®)

The appliance is equipped with an electronic combustion control.

The combustion control is carried out via ionisation electrode. Depending on the measured ionisation current, the gas volume is regulated to the amount of air available.

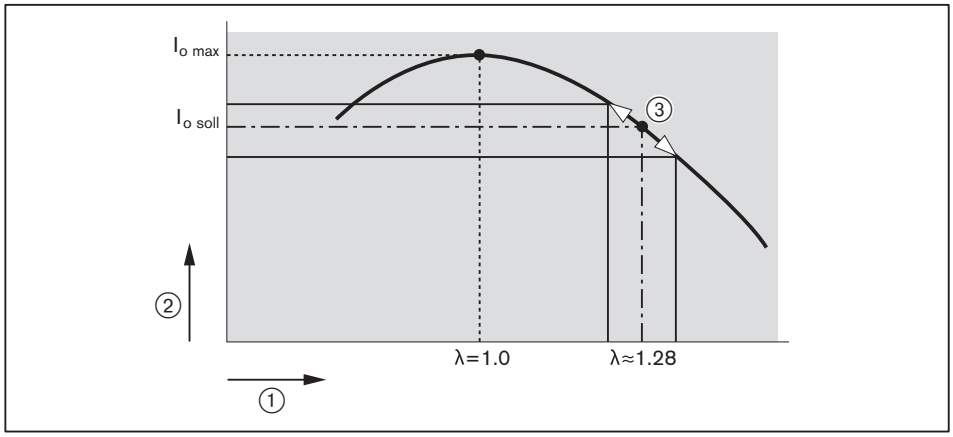
If excess air is reduced, the combustion temperature and therefore the ionisation current increases. The maximum ionisation current (Io max) is achieved at excess air of 0 % (λ=1.0).

Calibration procedures regularly determine the maximum ionization current (Io max).

Excess air is calculated from this maximum value. The setpoint of the ionisation current (Io set) is set so that the following O_2 content is available across the entire modulation range.

	O_2 content
Natural Gas	approx. 5.0 % (λ=1.29)
Liquid Petroleum Gas	approx. 5.3 % (λ=1.31)

Example



① Air number [λ]
② Ionisation current
③ Turndown ratio

Calibration

Calibrations are carried out:
- by dynamically predefined operating hours,
- by dynamically predefined burner starts,
- following power outage,
- following the occurrence of certain faults (e. g. `F 21`, `W 22`, etc.).

Calibration can be carried out manually via the output measurement or with the commissioning wizard.

Manual calibration is mandatory when replacing the following components:
- ionisation electrode,
- burner surface,
- WEM-FA-G device electronics,
- gas combi valve.

During calibration the CO content briefly (approx. 2 s) increases above 1000 ppm.

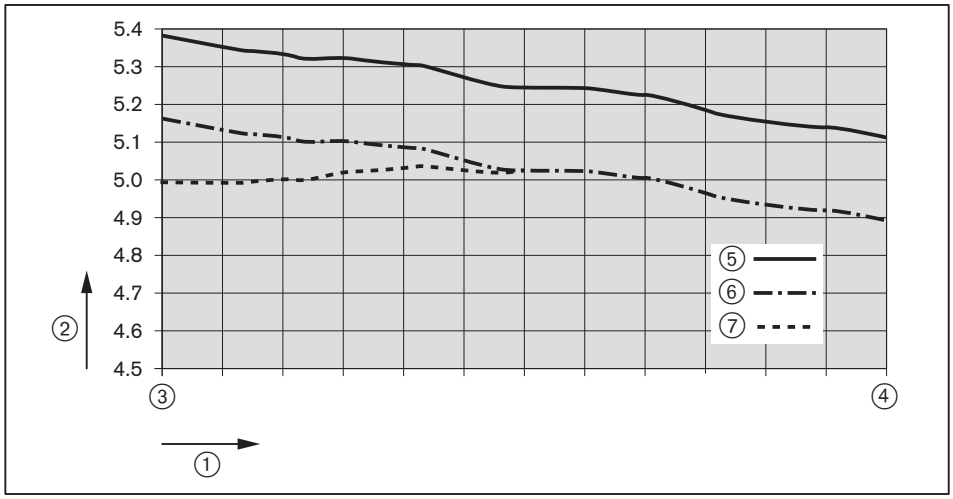
O_2 correction

Following calibration via the output measurement or using the commissioning wizard, a new O_2 curve is generated.

The entire curve can then be moved in parallel via the `O2 total correction` at max load, thus optimising the O_2 content; the WTC drives to 100 % capacity.

Using `O2 correction up to 50%` at min load the O_2 content can also be optimised in the lower load range.

Example



① Burner capacity
② O_2 content [%]
③ minimum load
④ maximum load
⑤ O_2 curve following calibration
⑥ O_2 curve following `O2 total correction` at max load
⑦ O_2curve following `O2 correction up to 50%` at min load

3.4.5 Program sequence

Ignition speed

The fan stars at heat demand ① and drives to ignition speed ②.

Ignition

Ignition ③ starts once the ignition speed has been stabilised. The gas valves ④ open. A flame is formed.

Safety time

Following the safety time (3.5 seconds) ⑤ ignition is switched off.

Flame stabilisation

If a flame signal ⑥ is transmitted, the flame stabilisation time ⑦ will follow.

Forced partial load

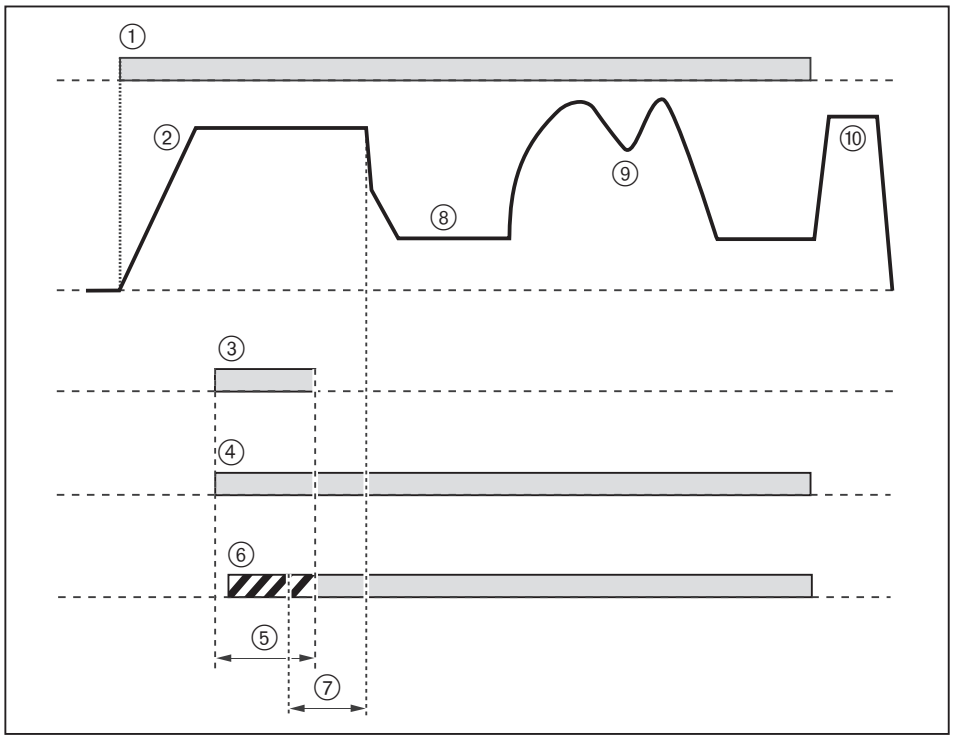
In operating mode heating, forced partial load ⑧ is carried out first. For the duration of the delay time, the heating capacity is limited, forced partial load is omitted for DHW loading or buffer loading.

Operation

The internal unit temperature regulator sets the speed setpoint for the fan ⑨ within the programmed load limits.

Post-purge

Following every normal shut down, after faults and after the return of the power supply, the fan is operated at the post-purge speed ⑩.



3.5 Technical data

3.5.1 Approval data

Gas Appliance Category	DE: $II_{2N3B/P}$; AT: $II_{2H3B/P}$; CH: II_{2H3P}
Type of installation	B_{23}, B_{33}, C_{13}, $C_{33(x)}$, $C_{43(x)}$, $C_{53(x)}$, $C_{63(x)}$, $C_{83(x)}$, $C_{93(x)}$
PIN (EU) 2016/426	CE-0085 CR 0407
SVGW	16-044-4
Basic standards	EN 15502-1:2015 EN 15502-2-1:2013 Additional standards, see EU conformity certification.

3.5.2 Electrical data

	WTC 15	WTC 25	WTC 32
Mains voltage / mains frequency	230 V/50 Hz	230 V/50 Hz	230 V/50 Hz
Consumption	max 39 W	max 74 W	max 76 W
Power consumption without circulation pump	max 24 W	max 53 W	max 53 W
Power consumption standby	4 W	3 W	3 W
Internal unit fuse	T4H, IEC 127-2/V	T4H, IEC 127-2/V	T4H, IEC 127-2/V
Fuse	max 16 A	max 16 A	max 16 A
Type of protection	IP X4D	IP X4D	IP X4D

3.5.3 Ambient conditions

Temperature in operation	+3 … +30 °C
Temperature during transport / storage	-10 … +60 °C
relative humidity	max 80 %, no dew point

3.5.4 Fuels

- Natural Gas
- Liquid Petroleum Gas

3.5.5 Emissions

Flue gas

The appliance complies with EN 15502-1 of Emission Class 6.

Sound levels

Dual number noise emission values

	WTC 15	WTC 25	WTC 32
Measured sound power level L_{WA} (re 1 pW)	46 dB(A)(1	48 dB(A)(1	52 dB(A)(1
Uncertainty value K_{WA}	4 dB(A)	4 dB(A)	4 dB(A)
Measured sound pressure level L_{pA} (re 20 µPa)	39 dB(A)(2	41 dB(A)(2	47 dB(A)(2
Uncertainty value K_{pA}	4 dB(A)	4 dB(A)	4 dB(A)

(1 Determined to ISO 9614-2.
(2 Determined at 1 metre distance from the front of the unit.
The measured noise levels plus uncertainty values form the upper limit value, which could occur when measuring.

3.5.6 Rating

	WTC 15	WTC 25	WTC 32
Combustion heat rating Q_C	2.0 … 14.0 kW	3.0 … 24.0 kW	4.0 … 30.5 kW
Boiler capacity at 80/60 °C	1.9 … 13.7 kW	2.9 … 23.6 kW	3.9 … 30.0 kW
Boiler capacity at 50/30 °C	2.1 … 15.1 kW	3.3 … 26.0 kW	4.3 … 32.0 kW
Fan speed Natural Gas	940 … 5200 1/min (rpm)	980 … 6185 1/min (rpm)	1040 … 6920 1/min (rpm)
Fan speed Liquid Petroleum Gas	890 … 4850 1/min (rpm)	900 … 5680 1/min (rpm)	1010 … 6500 1/min (rpm)
Condensate quantity at 50/30 °C	0.27 … 1.27 l/h	0.38 … 2.17 l/h	0.52 … 2.38 l/h

WTC 25 version C

Combustion heat rating Q_C at booster operation	28.0 kW
Fan speed Natural Gas at booster operating	7200 1/min (rpm)
Fan speed LPG at booster operation	6855 1/min (rpm)
DHW draw-off rate	9 l/min
specific water throughput at ΔT = 30 K to EN 13203-1	13.3 l/min (13.9[(1])

[(1] with throughput limiter 11.0 l/min (optional spare part)

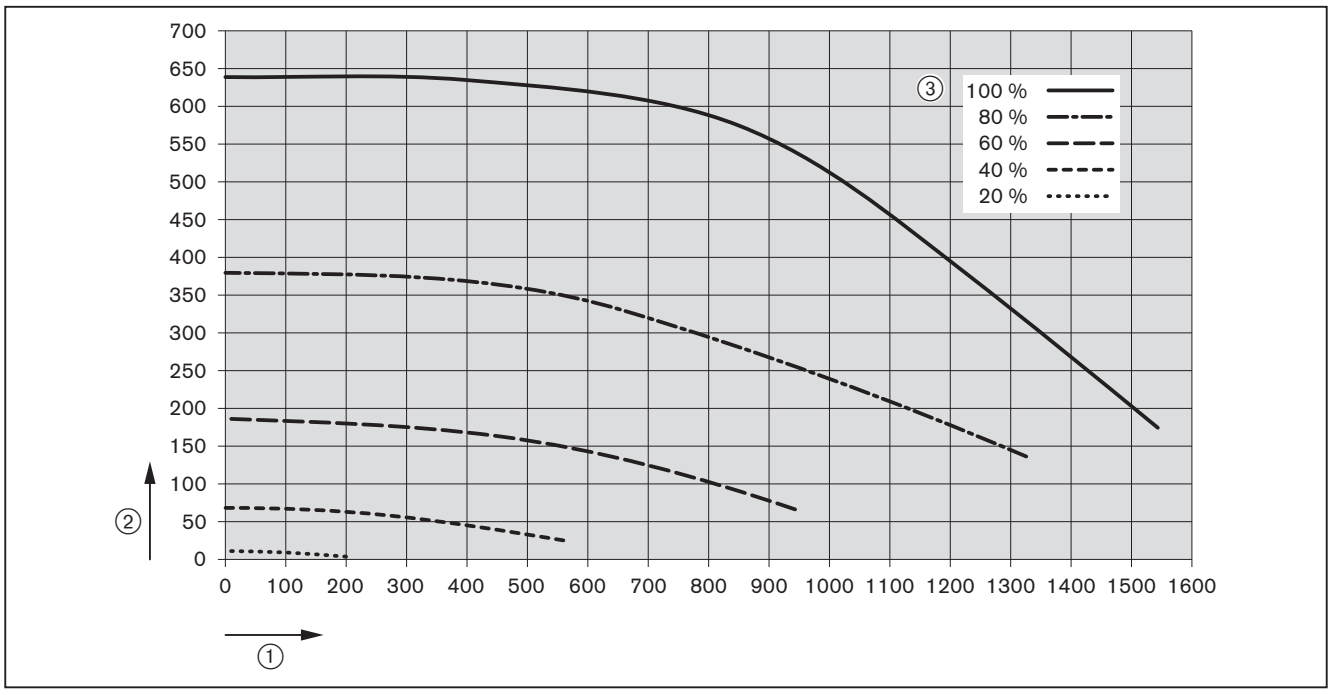
3.5.7 Hydraulic data

	WTC 15	WTC 25	WTC 32
Water content	2.2 litres	3.1 litres	3.2 litres
Boiler temperature	max 85 °C	max 85 °C	max 85 °C
Operating pressure	max 3 bar	max 3 bar	max 3 bar
Expansion vessel content	10 litres	10 litres	10 litres(1
Expansion vessel pre-pressure	0.75 bar	0.75 bar	0.75 bar(1
Throughput limit	1300 l/h	2200 l/h	2750 l/h
Fresh water operating pressure(2	–	max 6 bar	–

(1 version W only
(2 version C only

Resulting supply pressure pulse width modulation

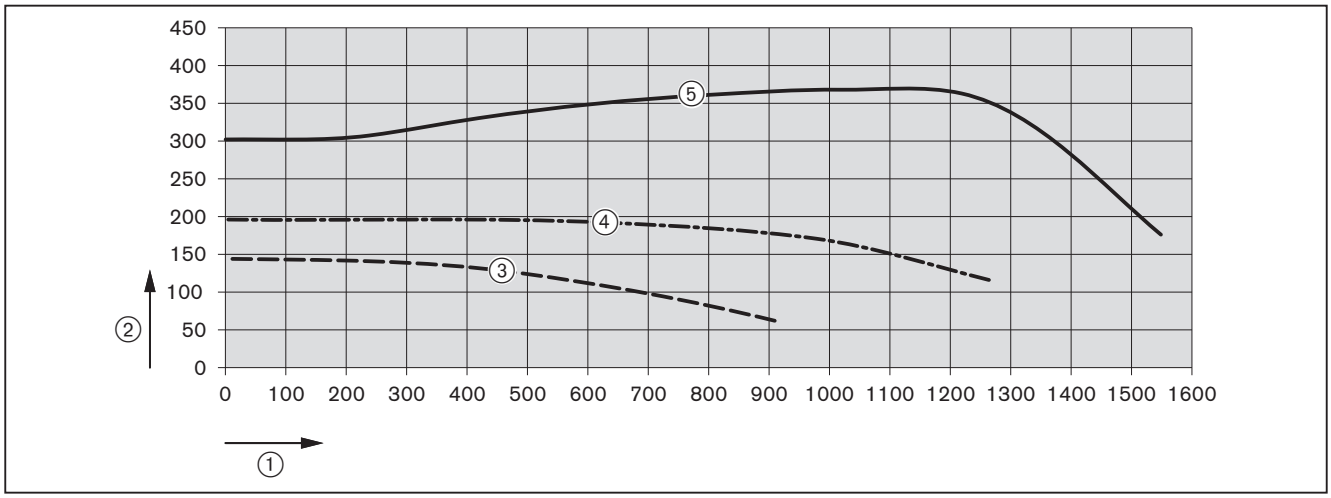
Version W, H and C



① Throughput [l/h]
② Resulting supply pressure [mbar]
③ Circulation pump capacity

Resulting supply pressure proportional pressure

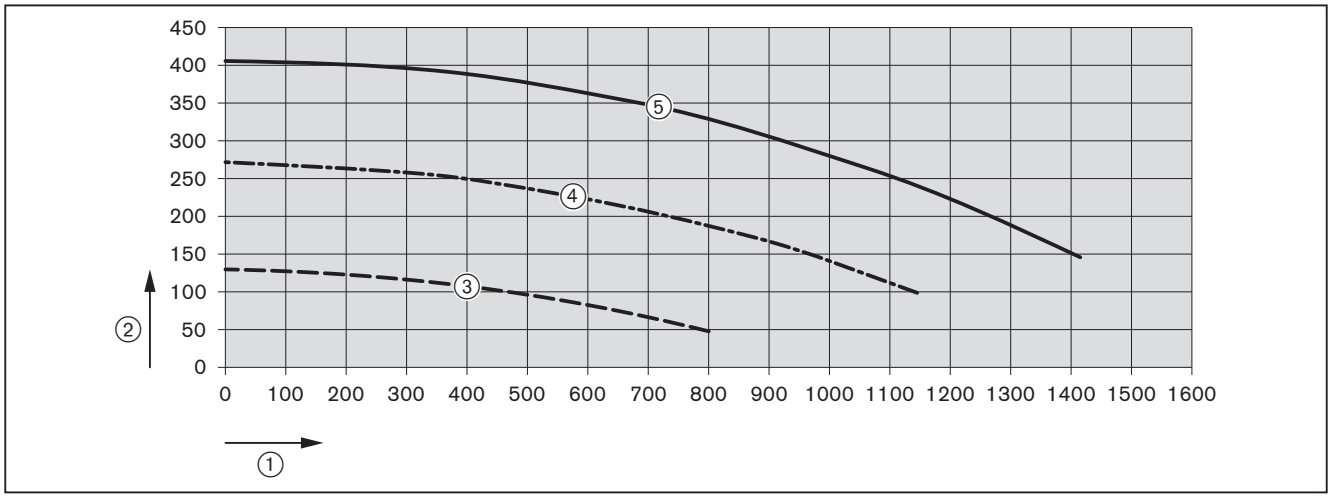
Version W, H and C



① Throughput [l/h]
② Resulting supply pressure [mbar]
③ Proportional pressure stage 1
④ Proportional pressure stage 2
⑤ Proportional pressure stage 3

Resulting supply pressure constant pressure

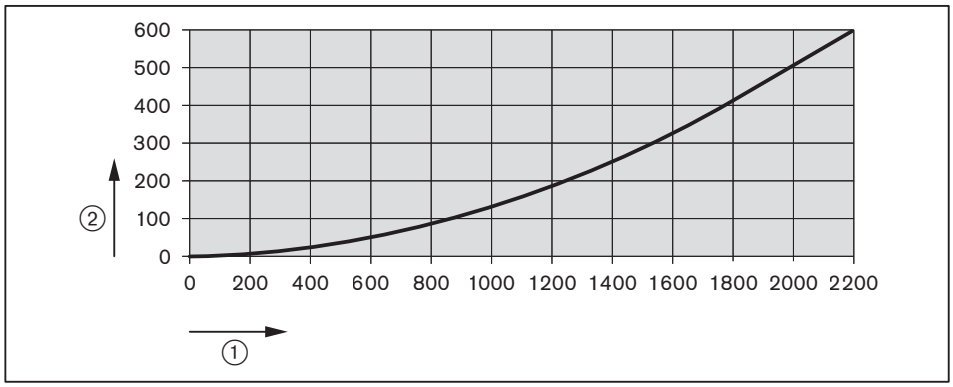
Version W, H and C



① Throughput [l/h]
② Resulting supply pressure [mbar]
③ Constant pressure stage 1
④ Constant pressure stage 2
⑤ Constant pressure stage 3

Pressure loss version H-0

Observe the pressure loss of the unit and the maximum flow rate limit when determining the hydraulic layout of the heating system.



① Throughput [l/h]
② Pressure loss [mbar]

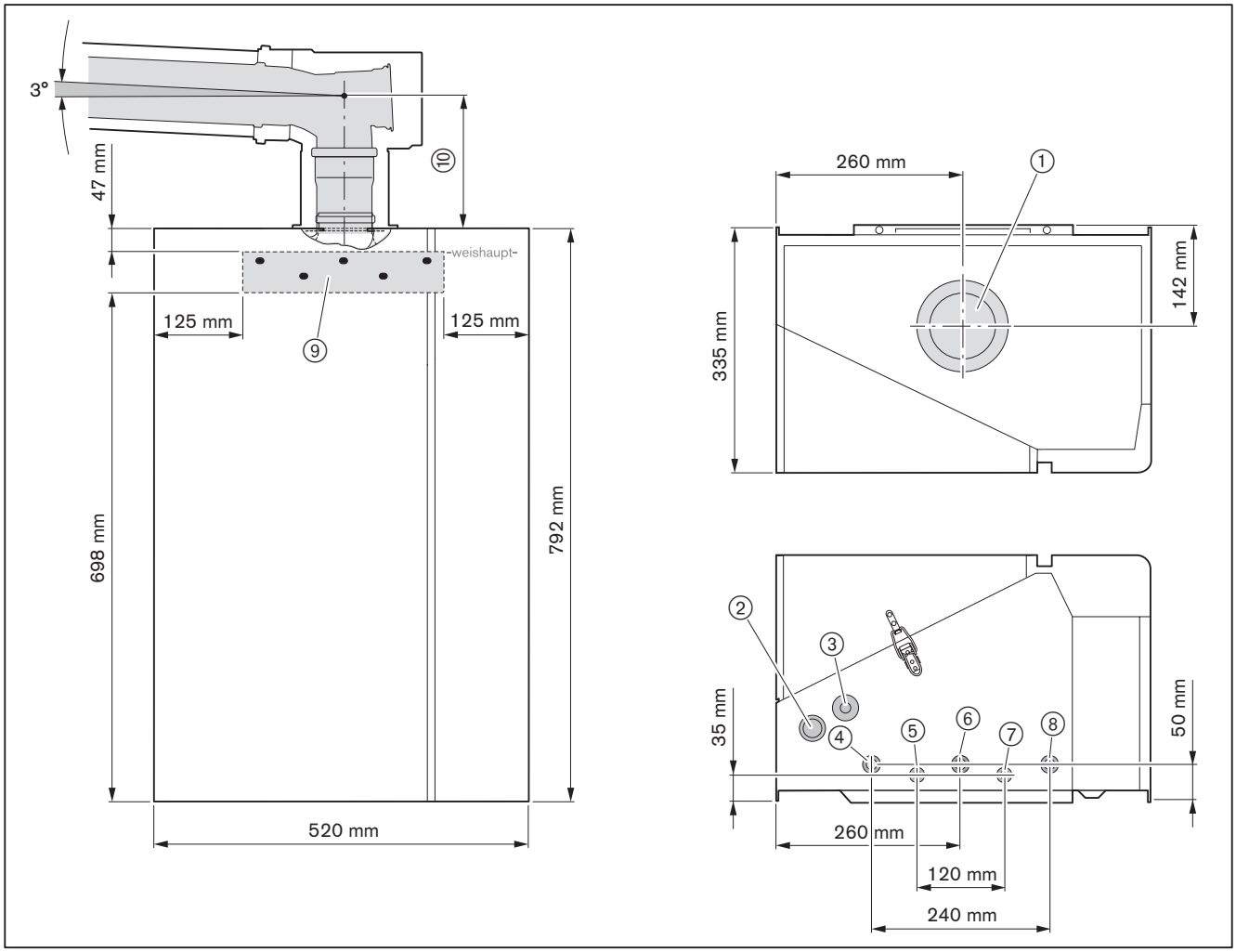
3.5.8 Flue gas system data

	WTC 15	WTC 25	WTC 32
Residual supply pressure at flue gas outlet	76 Pa	116 Pa	152 Pa
Flue gas mass flow rate	0.9 … 6.4 g/s	1.4 … 11.0 g/s	1.8 … 14.0 g/s
Flue gas temperature at 80/60 °C	53 … 61 °C	54 … 61 °C	56 … 62 °C
Flue gas temperature at 50/30 °C	30 … 43 °C	30 … 42 °C	31 … 45 °C

3.5.9 EnEV Product Characteristics

	WTC 15	WTC 25	WTC 32
Boiler efficiency factor at 100 % capacity and at medium boiler temperature 70 °C	98.2 % H_i (88.5 % H_s)	98.5 % H_i (88.7 % H_s)	98.3 % H_i (88.5 % H_s)
Boiler efficiency factor at 30 % capacity and at return temperature 30 °C	110.4 % H_i (99.4 % H_s)	110.3 % H_i (99.3 % H_s)	109.6 % H_i (98.6 % H_s)
Standby loss at 30 K above room temperature	0.29 %; 76 W	0.16 %; 76 W	0.13 %; 76 W

3.5.10 Dimensions



① Supply air/flue gas Ø 125 mm/DN 80
② Condensate outlet
③ Inlet and outlet tap G¾
④ Heating circuit flow Ø 18 mm
⑤ DHW circuit flow Ø 15 mm
⑥ Gas supply Ø 18 mm
⑦ DHW circuit return Ø 15 mm
⑧ Heating circuit return Ø 18 mm
⑨ Wall bracket (anchor bolt size Ø 10 mm)
⑩ 161 mm for DN 100/60
171 mm for DN 125/80

3.5.11 Weight

	WTC 15 vers. W	WTC 25 vers. W	WTC 25 vers. C	WTC 32 vers. W
Weight empty	approx. 41 kg	approx. 47 kg	approx. 49 kg	approx. 49 kg

4 Installation

4.1 Installation conditions

Only valid in Switzerland
When installing and operating the regulations of SVGW, VKF, local and Cantonal regulations and the EKAS guideline (LPG Guideline Part 2) must be observed.

Installation location

- ► Prior to installation ensure that:
  - the minimum distance is maintained [ch. 4.2],
  - the condensate can drain away,
  - the installation location is frost free and dry,
  - the bearing capacity of the wall is sufficient [ch. 3.5.11],
  - the space for the hydraulic connection is sufficient,
  - the gradient for the flue gas system is maintained [ch. 4.2].

4.2 Mounting the wall bracket

Minimum clearance

Observe minimum distance to the wall for service work.

laterally from the appliance	3 cm

Flue gas system

Maintain the gradient of the flue gas system to the appliance.

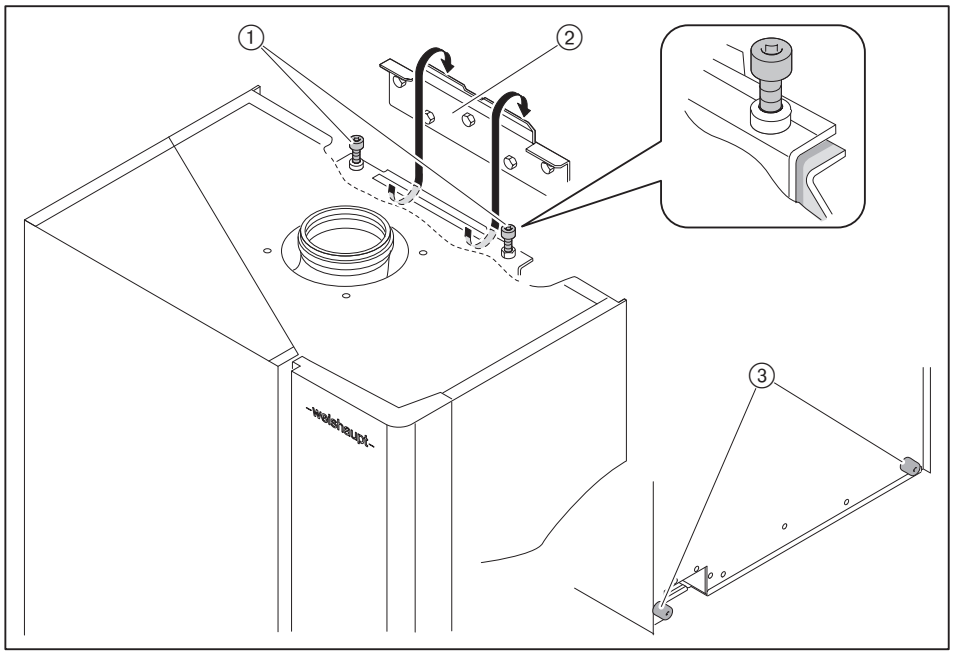
Gradient	3° (1 m equals approx. 55 mm)

Mounting the wall bracket

- ► Prior to installation ensure that:
  - the fixing material supplied is suitable for wall mounting [ch. 3.5.11].
- ► Position wall bracket, mark all fixing points and drill [ch. 3.5.10].
- ► Mount the wall bracket to the wall using all drilling positions.

4.3 Hanging and aligning the unit

- ► Mount the spacers ③ enclosed to the rear of the appliance at the bottom.
- ► Hook the unit into the wall bracket ② and using the adjustment screws ① align horizontally.

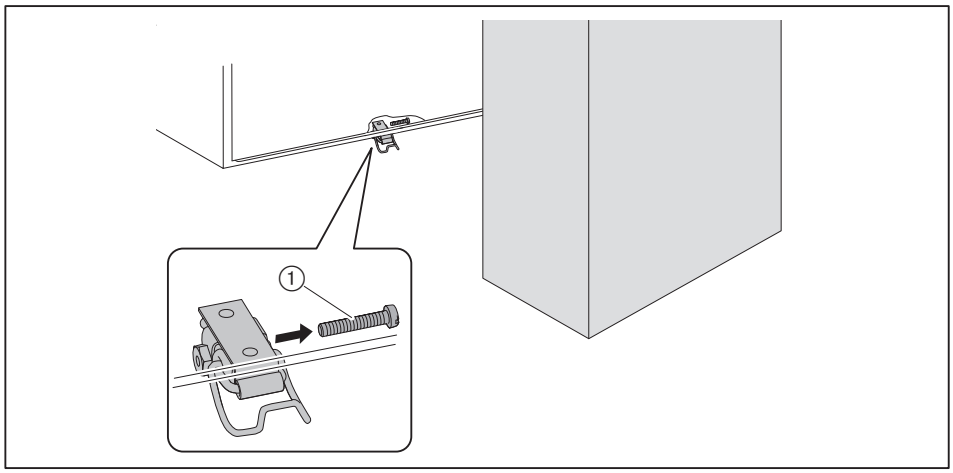


4.4 Remove front panel

The front panel is secured with a screw at the tension lock to prevent accidental opening.

- ► Refit screw when mounting front panel.

- ► Remove screw ① from tension lock at the underside of the unit.
- ► Open the tension lock and remove the front panel.



5 Installation

5.1 Requirements for the heating water

In support of VDI guideline 2035 the following requirements are applicable for heating water.

- Untreated fill and top-up water must be of domestic water quality (colourless, clear and without any sedimentation).
- The fill and top-up water must be pre-filtered (mesh max 25 µm).
- The pH value must be 8.5 ±0.5.
- There must be no oxygen enrichment of the heating water (max 0.02 mg/l).
- With non-diffusion resistant system components, the unit must be de-coupled from the heating circuit by means of a separator.

5.1.1 Water hardness

The permissible water hardness is determined in proportion to the fill and top up water quantity.

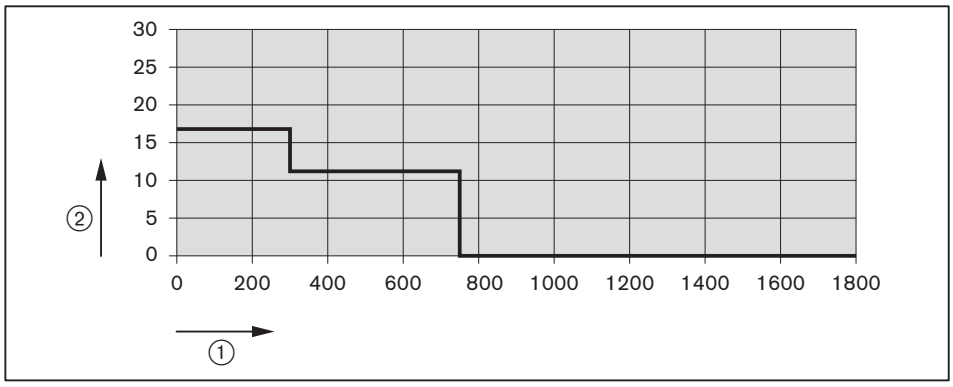
► Determine from the diagram below whether water treatment measures are necessary.

If the fill and top up water lies in the upper range of the limit curve:
► treat the fill and top-up water.

If the fill and top up water lies in the lower range of the limit curve , treatment is not necessary.

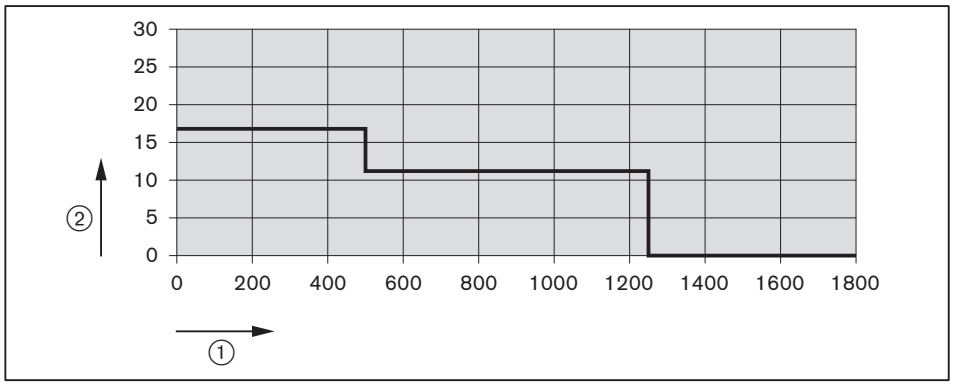
► Record the fill and top-up water quantities in a system logbook.

WTC 15



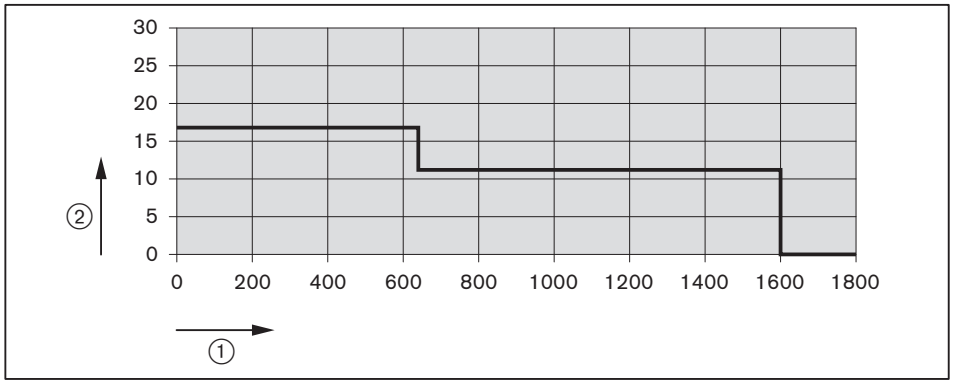
① Fill and top up water quantity [litres]
② Total hardness [°dH]

WTC 25



① Fill and top up water quantity [litres]
② Total hardness [°dH]

WTC 32



① Fill and top up water quantity [litres]
② Total hardness [°dH]

5.1.2 Fill water quantity

If information about the fill water quantity is not available, the following table can be used to estimate the quantity.

For systems with buffer vessels, the buffer content must be taken into account.

Heating system	**Estimated fill water quantity**[1]	
	55/45 °C	**70/55 °C**
Pipe and steel radiators	37 l/kW	23 l/kW
Cast iron radiators	28 l/kW	18 l/kW
Panel radiators	15 l/kW	10 l/kW
Air conditioning	12 l/kW	8 l/kW
Convectors	10 l/kW	6 l/kW
Underfloor heating	25 l/kW	25 l/kW

[1] based on the heating requirements of the building.

5.1.3 Treat the fill and top-up water

De-ionisation (recommended by Weishaupt)

► De-ionise the fill and top-up water completely.
(Recommendation: mixed bed procedure)

When the heating water has been entirely de-ionised, additional top-up water up to 10 % of the system contents may be untreated. Higher quantities of top-up water must be de-ionised.

► Check the pH value (8.5 ±0.5) of the de-ionised water:
- after the commissioning,
- after approx. 4 weeks of operation,
- during the annual servicing.

► If necessary, increase thepH value of the heating water by the addition of Trisodium Phosphate.

Softening (cation exchanger)


CAUTION

Damage to the appliance due to raised pH value
Softening the water by means of cation exchange leads to self alkalisation of the heating water. Corrosion can damage the appliance.
► Following the softening of the water by means of cation exchanger the pH value has to be stabilised.

► Soften the fill and top-up water.
► Stabilise the pH value.
► Check pH value of (8.5 ±0.5) during the annual servicing.

Stabilisation of hardness


CAUTION

Damage to the appliance due to inappropriate inhibitors
Corrosion and scale could damage the appliance.
► Only use inhibitors when the manufacturer can guarantee the following:
- the requirements relating to the heating water are fulfilled,
- the heat exchanger in the appliance will not be attacked by corrosion,
- there will be no formation of sludge in the heating system.

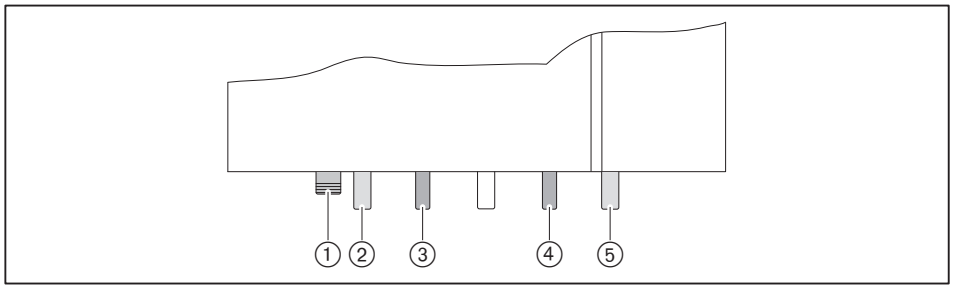
► Treat the fill and top-up water with inhibitors.
► Check the pH value (8.5 ± 0.5) according to the instructions provided by the manufacturer of the inhibitors.

5.2 Hydraulic connection

CAUTION

Damage caused by hard water (version C)
Hard water can lead to calcium deposits in the plate heat exchanger of the condensing unit.
► A water softening system is recommended for a total water hardness above 21 °dH.

► Flush the heating system with at least twice the total system content.
✓ Contaminants are removed.
► Close heating circuit flow and return (install shut off devices).
► Version W: connect DHW circuit flow and return, install shut off devices.
► Version C: install DHW lines and fresh water lines.
► Fit inlet and outlet tap.
► Fit safety valve
► If necessary fit sludge separator in the return line.



① Inlet and outlet tap G¾
② Heating circuit flow Ø 18 mm
③ DHW circuit flow or DHW outlet (version C) Ø 15 mm
④ DHW circuit return or fresh water inlet (version C) Ø 15 mm
⑤ Heating circuit return Ø 18 mm

Filling with water

WARNING

Contamination of drinking water
Topping up without system separator can contaminate the drinking water. A direct connection between heating and drinking water is not permitted.
► Top up heating water via system separator.

CAUTION

Damage to the unit due to unsuitable fill water
Corrosion and scale could damage the system.
► Adhere to the requirements for the heating water and the local directives [ch. 5.1].

During the filling of the system, the three-way valve installed should be in the central position. The valve as delivered is in the central position. The central position can also be approached manually. position can also be approached manually [ch. 6.6.10.6].

► Check design and inlet pressure of the expansion vessel and adjust if necessary [ch. 12.1].
► Open shut off devices.
► Undo cap on quick action vent valve.
► Gradually fill the heating system using the inlet tap whilst observing the system pressure.
► Vent the system
► Check soundness and system pressure.

5.3 Condensate connection

DANGER

Danger of poisoning by escaping flue gas
Flue gas can escape if the siphon is not filled. Inhalation leads to dizziness, nausea and eventually death.
► Check the fill level of the siphon at regular intervals and replenish if necessary, in particular when the system has been shut down for longer periods or has been operated at high return temperatures > 55 °C.

The condensate generated during the heating mode is discharged to the sewage system via an integrated siphon.

Observe work sheet DWA-A 251 and local regulations, if required, fit a neutralisation system.

If the discharge point of the sewage system is above the condensate outlet:
► Installing condensate lift pump.

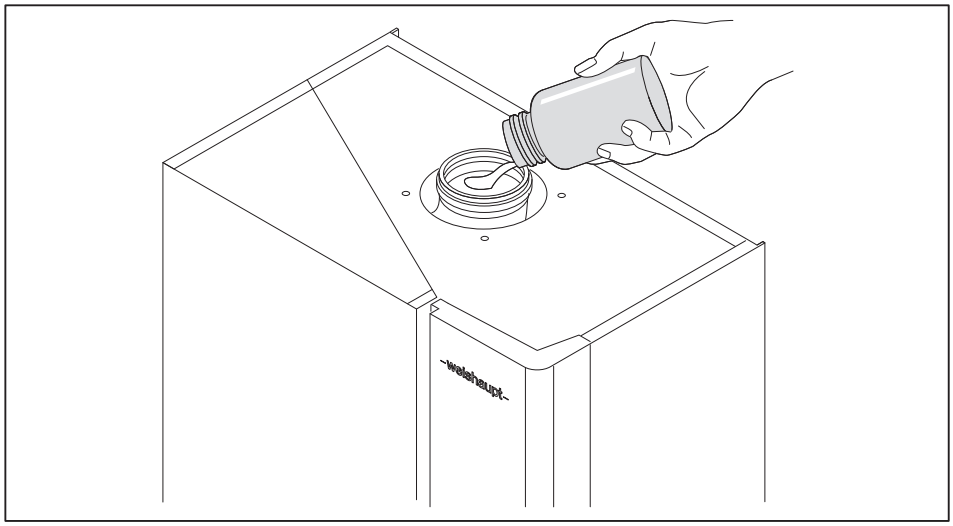
Install condensate hose

Place condensate hose in such a way that it is not possible for a water bag to form (siphon effect) and the condensate can drain away unimpeded.

► Run condensate hose to condensate outlet pipe.

Filling the siphon

► Fill the siphon with water via the flue gas outlet or inspection opening, until water flows from the condensate hose.



CAUTION

Damage to boiler due to the accumulation of condensate
An accumulation of condensate can cause faults or damage the appliance.

If there is another siphon downstream of the appliance:
► Install a connection piece with breather opening between the two siphons.

5.4 Gas supply

Only an approved gas installer may carry out the gas side connection. Observe local regulations.

The gas characteristics must match the data given on the name plate of the appliance.

The appliance is factory preset to Natural Gas.

Conversion from Natural Gas to Liquid Petroleum Gas [ch. 7.1.3].

Gas connection pressure

During operation, the gas connection pressure must be within the following range:

Natural Gas E/H	17.0 … **20** … 25.0 mbar
Natural Gas LL	20.0 … **25** … 30.0 mbar
LPG B/P (p_n 37)	25.0 … **37** … 45.0 mbar
LPG B/P (p_n 50)	42.5 … **50** … 57.5 mbar

Operation outside the ranges according to EN 437 is not permitted.

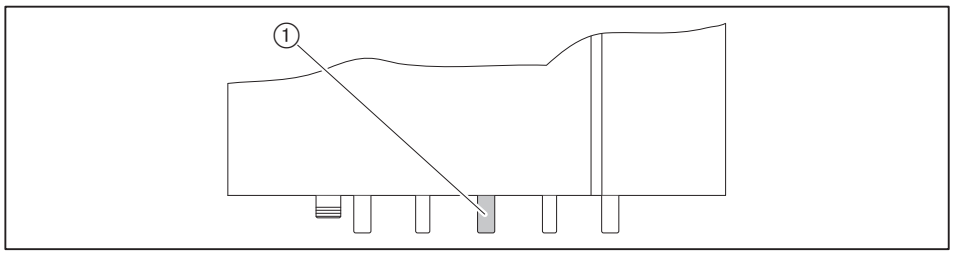
Installing the gas supply

DANGER

Risk of explosion due to leaking gas
Gas leaks can lead to a build-up of explosive gas/air mixture. With an ignition source present this can result in an explosion.
- ► Install gas supply with care.
- ► Observe all safety instructions.

- ► Close fuel shut off devices prior to commencing work and protect from accidental re-opening.
- ► Install gas supply pipes tension free.

If a thermal shut off device (TAE) is required:
- ► Install a thermal shut off device in front of the gas isolating valve, or install a gas isolating valve with TAE.
- ► Install gas isolating valve on gas connection ①.
- ► Connect gas supply.



Carry out soundness test of gas supply line and vent

Only the gas supply company or a contract installation company may carry out a soundness test and vent the gas line.

Gas safety valve

The gas safety valve opens only when the output is configured, therefore the flue gas measurement must be skipped during initial commissioning and carried out later.

If a gas safety valve is required:
- ► Connect valve to output MFA1 or VA1/2, see [ch. 5.6.1].
- ► Set output to `Gas safety valve` ,see [ch. 6.6.10.5].

5.5 Air supply / flue gas duct

Air supply duct

The combustion air can be supplied:
- from the installation room (room air dependent operation),
- through concentric piping systems (room air independent operation),
- through separate air duct in the room (ducted air intake).

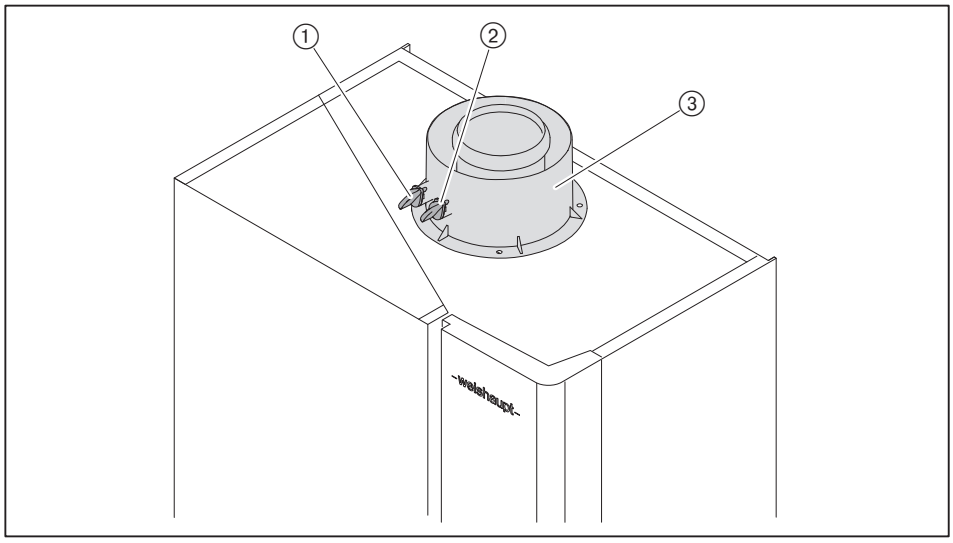
Flue gas system

Local and building regulations must be observed when designing the flue gas ducting.

Only approved flue gas systems may be used.

If the appliance is connected to a chimney, this must be damp proof.

► Install the flue gas system at the flue gas connection.



① Measuring point in supply air annular gap
② Flue gas test point
③ Boiler connection piece (accessory)

The flue gas system must be sound:
► carrying out soundness test of the flue gas system.

If a plastic flue gas system is connected, which is not approved for flue gas temperatures of up to 120 °C, the `maximum shut off temperature` must be reduced accordingly [ch. 6.6.2.3].

5.6 Electrical connection

DANGER

Risk of electric shock
Working on the device when voltage is applied can lead to electric shock.
- ► Isolate the device from the power supply prior to starting any work.
- ► Safeguard against accidental restart.

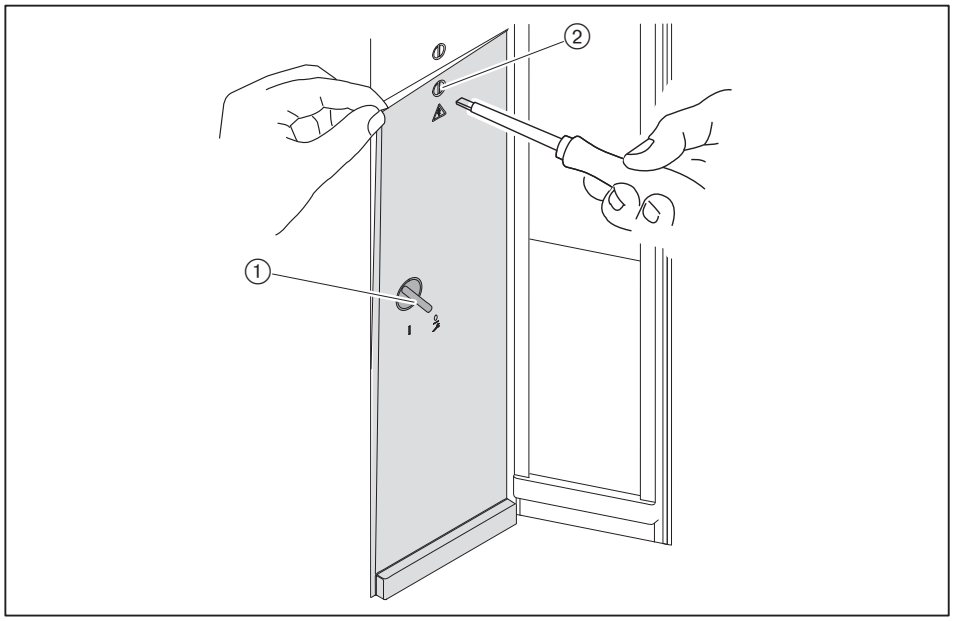
The electrical connection must only be carried out by qualified electricians. Observe local regulations.

The preferred Bus line to be used is the 4 wire RJ11 shielded bus line (accessory). Run bus lines and external sensors separately and preferentially using shielded lines, placing the shield on to the existing shield plate.

DANGER

Risk of fire due to incorrect bus installation
Bus installation with RJ11 distributor (hub) can lead to overheating of electrical components and cables.
- ► Do not use a distributor (hub) for bus installation.
- ► Install the bus line of the WEM components as a line structure [ch. 5.6.2].

- ► Switch off switch S1 ①.
- ► Turn screw ② 90° anticlockwise.
- ► Remove cover from the electrical installation duct.



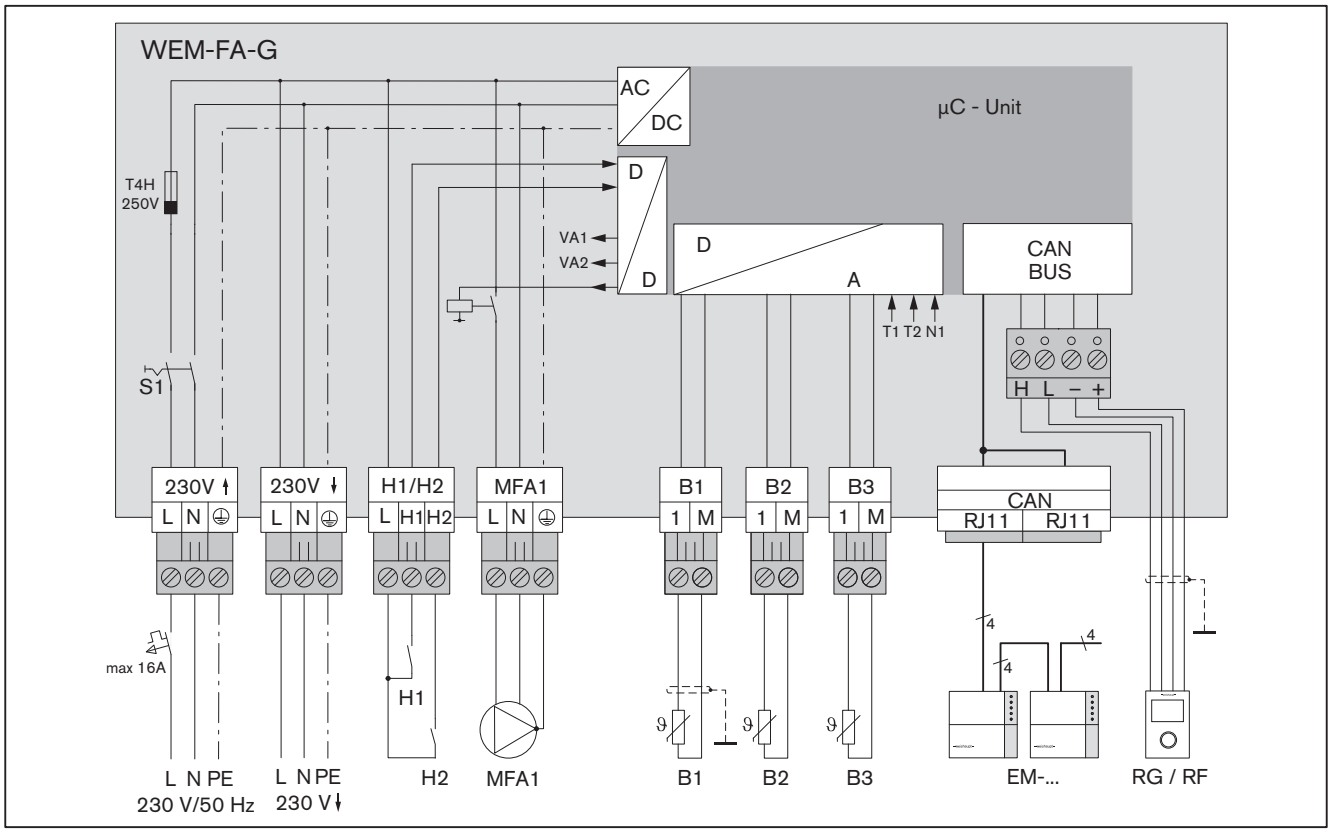
- ► Guide the lines from the rear of the appliance through the recess to the wiring duct.
- ► Assign the inputs and outputs according to application [ch. 11.6].
- ► Connect the cables according to the wiring diagram, in the process pay particular attention to the correct phase location of the voltage supply.
- ► Secure the cables with the screw terminals for tension relief supplied.

5.6.1 Wiring diagram

Observe the instructions for the electrical installation [ch. 5.6].

Depending on the hydraulic variant selected, the inputs and outputs are pre-assigned, the function can then not be changed [ch. 11.1].

WEM-FA-G device electronics



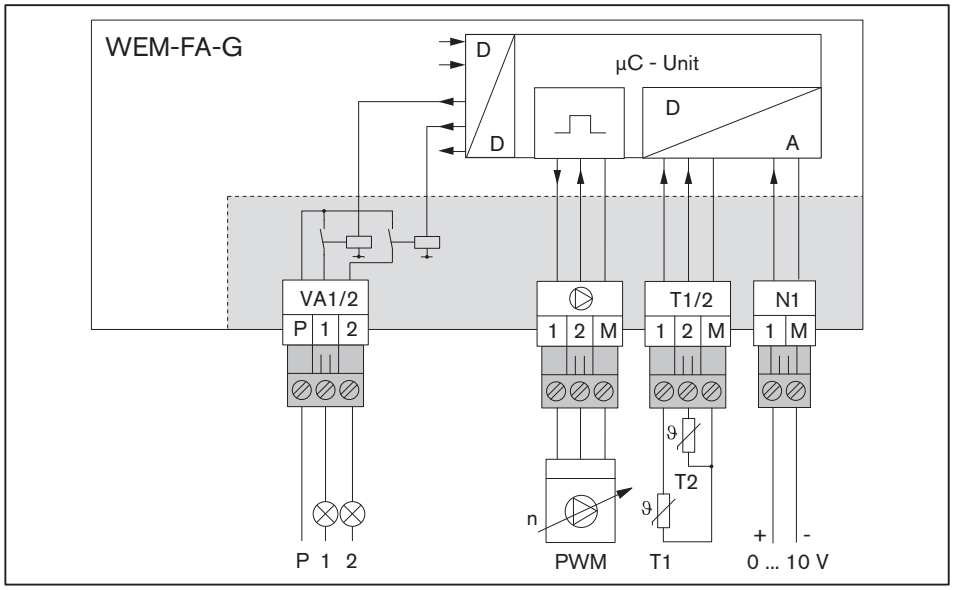
WEM-FA-G device electronics

Plug	Colour	Connection	Description
230V ↑	black	Voltage supply 230 V AC / 50 Hz	–
230V ↓	grey	Voltage output 230 V AC	max 2 A(1
H1/H2	turquoise	Inputs 230 V AC	–
MFA1	purple	Relay output 230 V AC	max 1 A, cos phi 1(1; max 0.5 A, cos phi > 0.8(1
B1	Green	External sensor	NTC 2 kΩ
B2	white	De-couple sensor / plate heat exchanger sensor	NTC 5 kΩ
B3	yellow	DHW sensor	NTC 5 kΩ
CAN RJ11	–	WEM components (EM-HK, EM-Sol, RG, RF) Observe Bus installation [ch. 5.6.2].	CAN Bus line RJ11 4 wire, shielded (accessory)
CAN	pink	WEM components (RG, RF, EM-HK, EM-Sol) Observe Bus installation [ch. 5.6.2].	CAN Bus line shielded

(1 The total current of all connections 230V ↓ and MFA1 must not exceed 2 A.

Additional input/output module (optional)

With the additional module, the inputs and outputs of the condensing unit are extended. This allows certain hydraulic variants or special functions to be implemented.

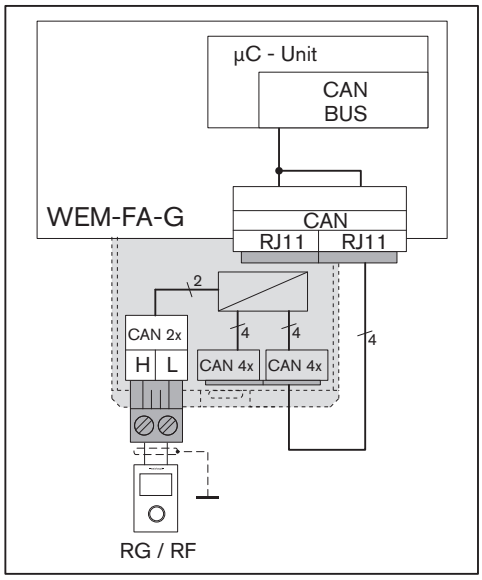


Additional input/output module

Plug	Colour	Connection	Description
VA1/2	brown	potential free relay outputs external fuse: max 8 A	230 V AC/max 1 A, cos phi 1; max 0.5 A, cos phi > 0.8 30 V DC/max 1 A
▷	blue	PWM signal	control signal for speed controlled pump
T1/2	grey	sensor (can be configured)	NTC 5 kΩ
N1	orange	remote control input 0 … 10 V	–

Adapter set WEM-CAN 2 wire (optional)

With the adapter set, the room sensor WEM-RF or the room device WEM-RG can be connected to the 4 wire CAN Bus in an existing installation with 2 wires.



Adapter set WEM-CAN 2 wire

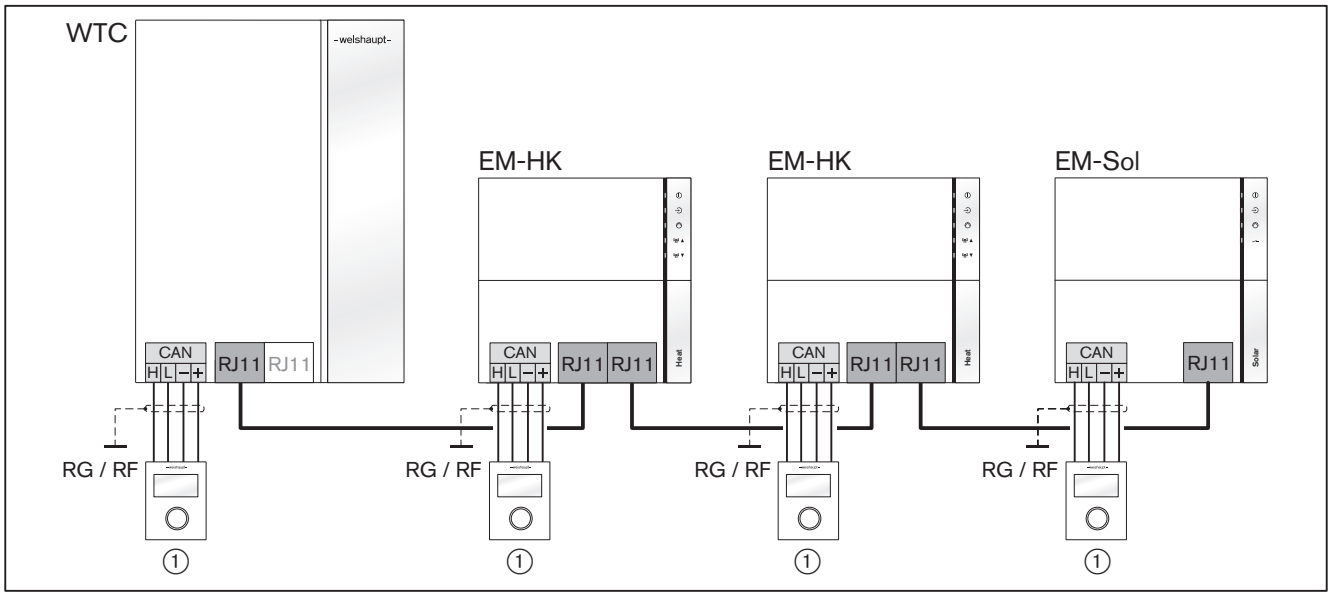
Plug	Colour	Connection	Description
CAN 2x	beige	2 wire connection for room device / room sensor	max 1 room device and 2 room sensors – or – max 3 room sensors

5.6.2 Bus installation

Observe the instructions for the electrical installation [ch. 5.6].

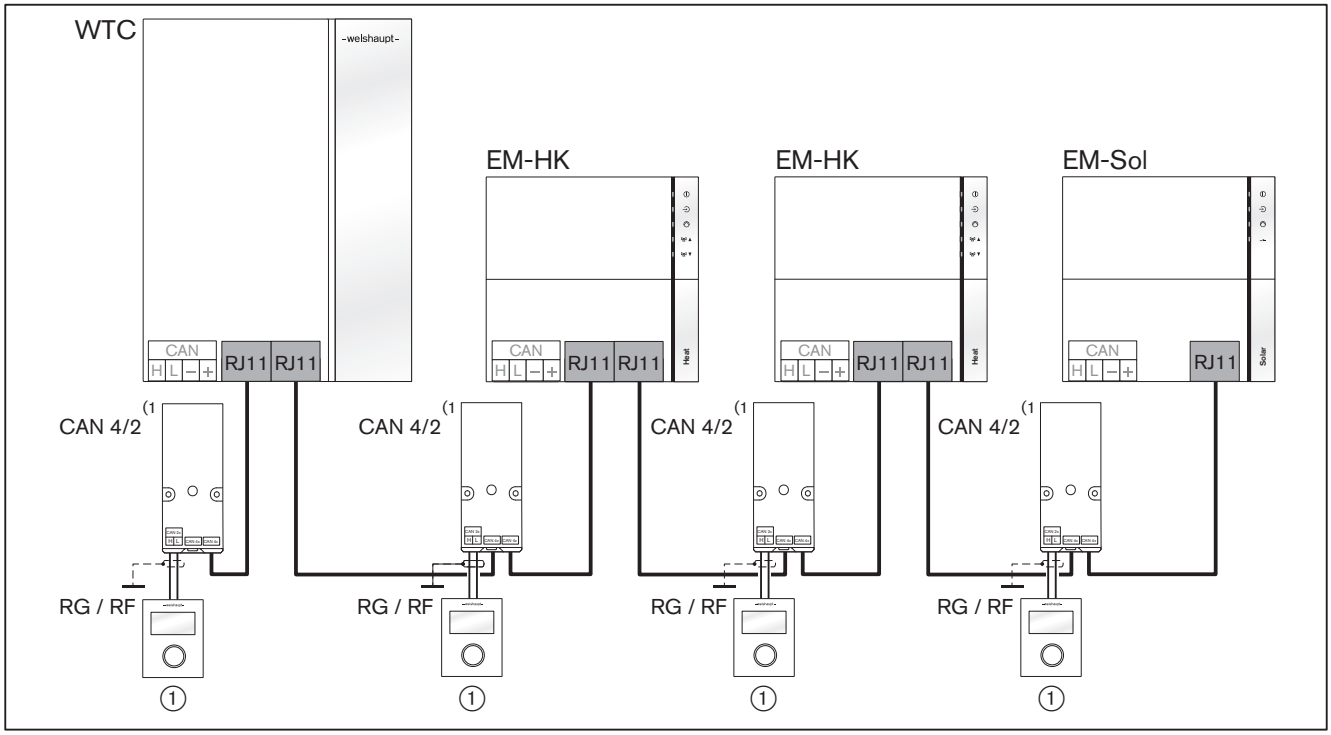
- Install the Bus as per wiring diagram whilst paying attention to the maximum number of room devices and room sensors.

Installation example with room devices / room sensors via 4 wire



① max 3 devices

Installation example with room devices / room sensors via 2 wire



① max 1 room device and 2 room sensors – or – max 3 room sensors

(1 Connect a maximum of 1 adapter set to the WTC and each expansion module.

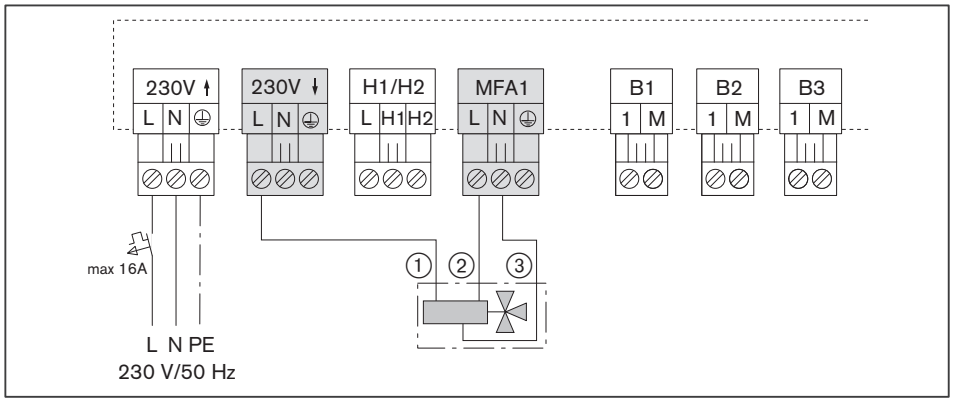
5.6.3 Connect external three-way valve

Observe the instructions for the electrical installation [ch. 5.6].

Depending on the hydraulic variant selected, the outputs are pre-assigned, the function can then not be changed [ch. 11.1].

Control via output MFA1

► Connect three-way valve to wiring diagram whilst observing actuator manual.

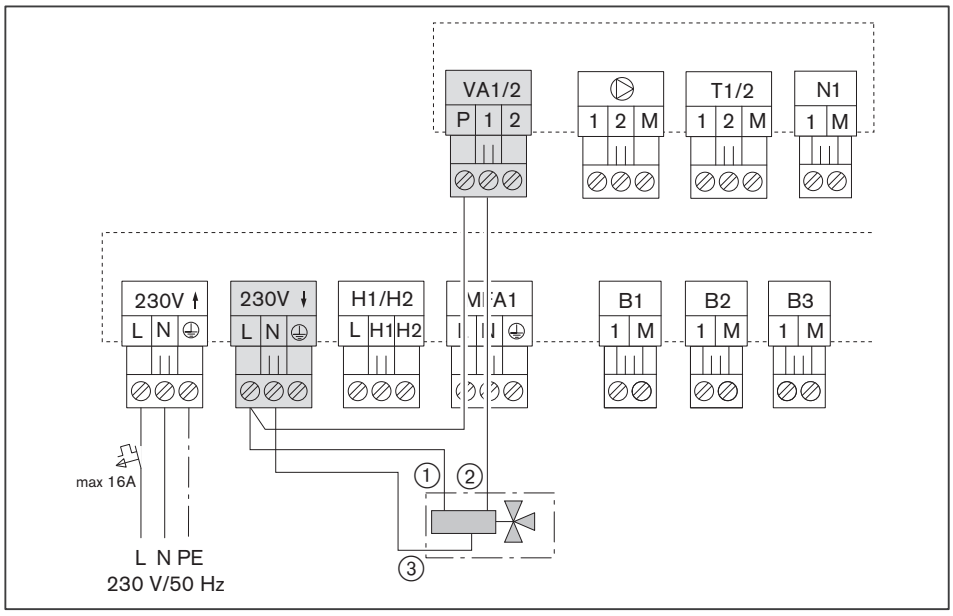


① brown
② black
③ blue

Control via output VA1/2

If the external three-way valve is connected via VA1/2, an additional module is required.

► Connect three-way valve to wiring diagram whilst observing actuator manual.



① brown
② black
③ blue

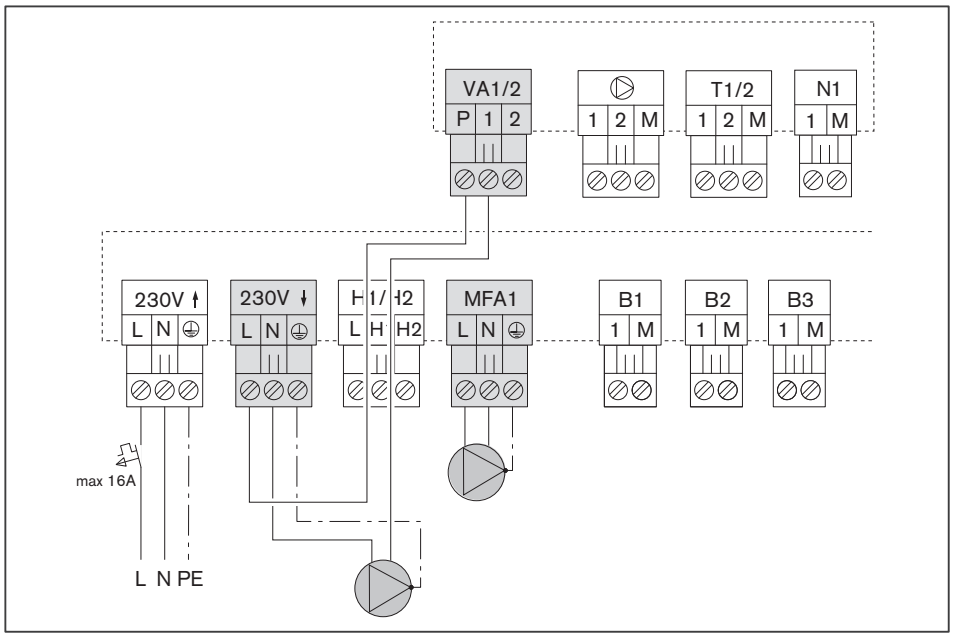
5.6.4 Connect external pump

Observe the instructions for the electrical installation [ch. 5.6].

Depending on the hydraulic variant selected, the outputs are pre-assigned, the function can then not be changed [ch. 11.1].

If the external pump is connected via VA, an additional module is required.

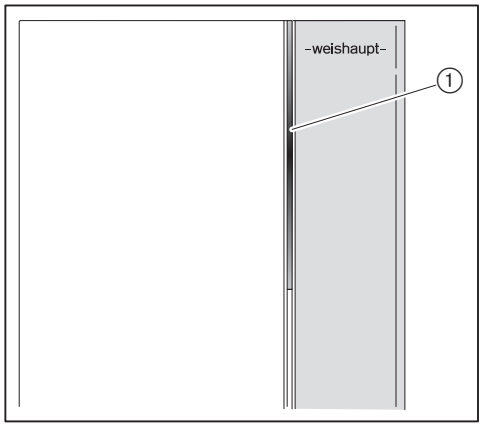
► Connect pump to output MFA1 or VA1/2 according to the wiring diagram.



6 Operation

6.1 Operational display

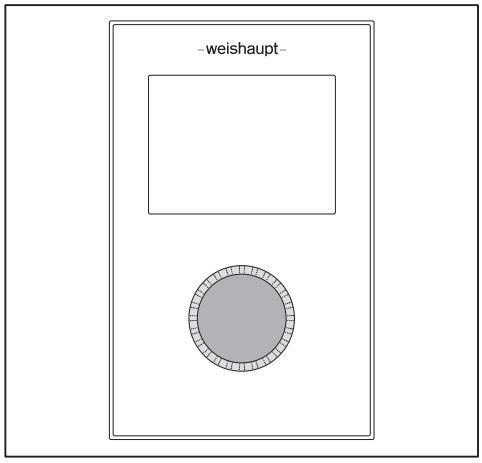
The light bar ① shows the operating status of the condensing unit.



Light bar	Description
OFF	No voltage supply or light bar deactivated
Green	System is fault free
yellow(1	Warning or fault (system is still in operation) [ch. 10]
red	Locked fault (system is in lockout) [ch. 10]

(1 Delayed after approx. 15 minutes.

6.2 Display and operating unit



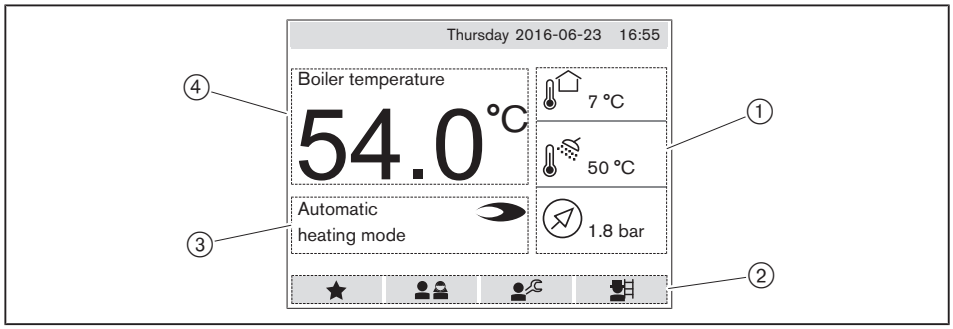
turn	navigation through parameter structure; changing values
press	briefly: confirm or save values approx. 3 seconds: exit value without saving approx. 5 seconds: return to the start screen

Voltage supply

The display and operating unit (system device) of the condensing unit is fed via the bus connection. If the voltage supply to the condensing unit is interrupted, the system device can still be operated if an extension module is supplied with a separate voltage and thus supplies the bus connection. In that case a warning (`W 1201`) is issued.

6.3 Display

Start screen



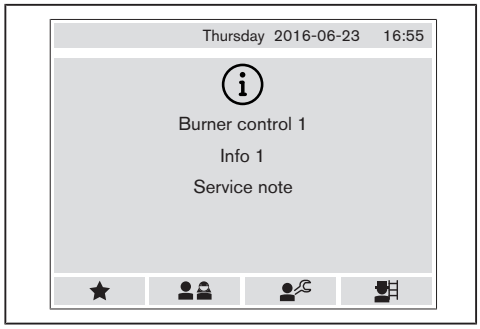
①	Information: Information from menu `Info` in the user level. The upper 2 fields can be assigned as required [ch. 6.5.1]. The bottom field is permanently assigned to the system pressure.
②	Level selection: ▪ Favourites level ▪ User level ▪ Expert level ▪ Chimney sweep function
③	Status display: Current status of the condensing unit.
④	Temperature display: Current boiler temperature of condensing unit.

Symbols

★	Favourites level / Create favourite
	User level
	Expert level
	Chimney sweep function
	Exit display
	Reset value to factory setting
?	Information / Help text
	Flame present

Service

If the service interval of the condensing unit is exceeded, a message appears [ch. 6.6.8.1].



► Notify your heating contractor or Weishaupt Customer Service.

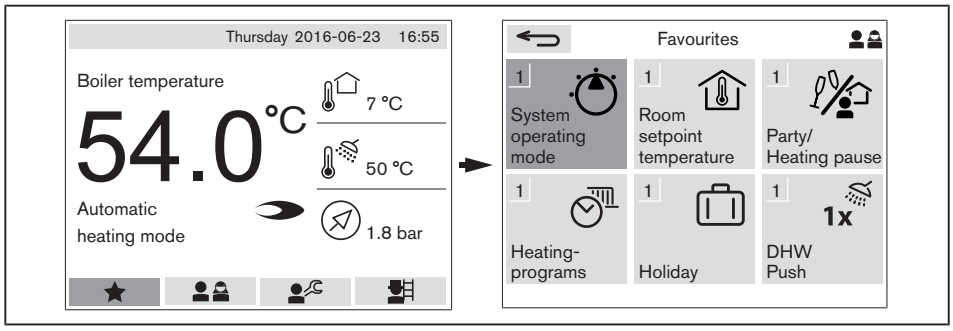
6.4 Favourites level

Frequently used user level parameters can be assigned as favourites.

It is possible to assign a maximum of 6 favourites. Factory pre-assigned favourites can be replaced by parameters from the user level.

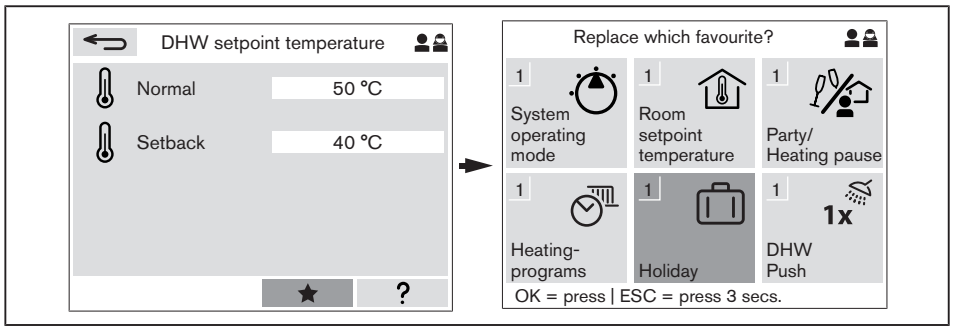
Display favourites

► Select Favourites level using dial knob and confirm.
✓ Display changes to Favourites level.



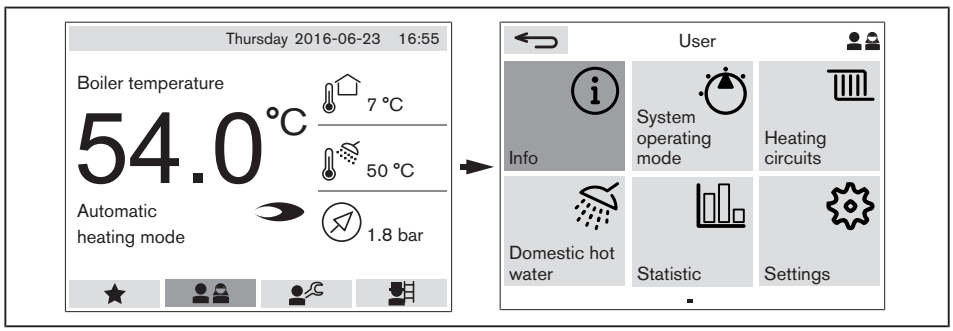
Assigning favourites

► Select the desired parameter in the user level .
► Select ★ and confirm.
► Turn the knob to select an existing favourite and replace by confirming.
✓ A new favourite has been assigned.



6.5 User level

► Select User level using dial knob and confirm.
✓ Display changes to the User level.



Depending on the execution, hydraulics and control variations, certain information and parameters are hidden.

6.5.1 Info

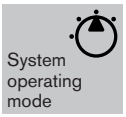
In menu Info, the information is read only.

Information		Description
	External temperature	Current temperature at the external sensor (B1).
	DHW temperature	Current temperature at the DHW sensor (B3).
	DHW Actual outlet temperature	Current temperature at the DHW outlet sensor (version C).
	DHW Flow rate	Current DHW flow rate at the water flow sensor of the condensing unit (version C).
	Return flow temperature Circulation	Current temperature at the return flow sensor (T1) of the circulation line.
	Heating circuits	
	- Flow temperature	Current temperature at the flow sensor (B6) of the corresponding heating circuit.
	- Room temperature …	Current temperature at the corresponding room device or room sensor.
	- Room humidity …	Current room humidity at the corresponding room device 2.
kw	Rating	Current heating capacity of the condensing unit. The output is expressed as a percentage of the rated output of the condensing unit.
	Boiler temperature	Current temperature at the flow sensor of the condensing unit., measured by the multifunction sensor VPT.
	System pressure	Current system pressure, measured by the multifunction sensor VPT of the condensing unit.
	Collector output	Current heat output of the solar system.
	Collector temperature	Current temperature at the collector sensor (T1).
	Storage tank temperature bottom	Current temperature at the bottom of the storage tank (T2).
	Buffer storage temperature top	Current temperature at the buffer sensor at the top (B10).
	Buffer storage temperature bottom	Current temperature at the buffer sensor at the bottom (B11).
	De-couple temperature	Current temperature at de-couple sensor (B2).
	Plate heat exchanger temperature	Current temperature at the plate heat exchanger (B2).

The following information can be displayed on the start screen [ch. 6.3].

- ► Select information required and confirm.
- ► Select and confirm `Info on start screen?`.
- ► Select information, which is to be replaced and confirm.
- ✓ Information on start screen is replaced.

6.5.2 System operating mode

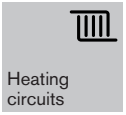


Menu System operating mode determines the operating mode of the entire system.

Setting	Description
`Standby`	▪ Frost protection on ▪ Heating off ▪ DHW off
`Summer`	▪ Frost protection on ▪ Heating off ▪ DHW on
`Automatic`(1	▪ Frost protection on ▪ Heating on ▪ DHW on

(1 Factory setting

6.5.3 Heating circuits



A separate submenu appears for each heating circuit.

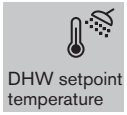
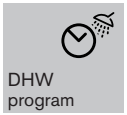
Parameters	Setting
 Operating mode	determines the type of operation of the heating circuit. If functions (heating, DHW) are deactivated in menu `System operating mode` , the setting has effect [ch. 6.5.2]. `Standby`: ▪ Frost protection on ▪ Heating off ▪ DHW off `Time program 1 … 3`: ▪ Frost protection on ▪ Heating on Temperature level according to selected time program. Time programs can be set in parameter `Heating program` . ▪ DHW on (Factory setting: `Time program 1`) `Summer`: ▪ Frost protection on ▪ Heating off ▪ DHW on `Comfort, Normal, Setback`: ▪ Frost protection on ▪ Heating on Temperature level according to the operating mode set, independent of the time program. ▪ DHW on
 Heating-programs	The heating program is used to stipulate the times of the day when comfort, normal or setback heating is used. ▪ `Time program 1 … 3` The preset time programs can be customised, factory setting see [ch. 11.8]. Changing a time program: ► Select time program using the knob and confirm. ✓ Time bars are displayed. ► Select week day(s) using the knob and confirm. ✓ Time program can be edited. The temperature of the level can be set using parameter `Room setpoint temperature`. Set time program required in parameter `Operating mode` .
 Party/ Heating pause	The temperature level of the heating program can be temporarily changed (maximum 23:45 hours). After this time the current heating program will be reactivated. ► Select `Function` and set `Party/Heating pause` . ► Set level required in `Room setpoint temperature` . ► Enter `Start` and `End`. If the parameter is set to `Off`, the current heating program is activated.

(1 Factory setting and setting range depending on the heating circuit type set [ch. 11.9].

Parameters	Setting
Room setpoint temperature	Room setpoint temperature for the temperature level selected. ▪ `Comfort` (factory setting: `22.0 °C`) ▪ `Normal` (factory setting: `21.0 °C`) ▪ `Setback` (factory setting: `16.0 °C`) The levels can be assigned to specific times of the day using parameter `Heating program` . At temperature level `Setback` the setting `Frost` can be selected. With this setting, the heating circuit pump is deactivated during setback operation. If the external temperature drops below value of parameter `6.2.7 Frost protection external temperature` (factory setting 0 °C) the heating circuit pump switches on.
Flow setpoint-temperature	Flow setpoint temperature for the temperature level selected. ▪ `Comfort`(1 ▪ `Normal`(1 ▪ `Setback`(1 The levels can be assigned to specific times of the day using parameter `Heating program` . Only with control variation `Constant flow temperature` [ch. 11.2.1].
Special level	Defines the flow temperature set at special level. [ch. 11.3]. The heating program is not effective. When input H1 is closed, the system heats up to the special flow level set. Only if input H1 is configured to `Heating circuit 1: Special level` .
Holiday	Interrupt heating program for a certain period of time. The level can be set to `Setback` or `Frost` during this time. ▶ Set `Function` to `On`. ▶ Set `Room setpoint temperature` to `Setback` or `Frost`. ▶ Enter `Start date` and `End date`. If the parameter is set to `Off`, the current heating program is activated.
Heating curve	Flow setpoint temperature dependent on external temperature [ch. 11.2.2]. The display refers to the room setpoint temperature `Normal`. The heating curve gradient can be changed and / or it can be moved in parallel. ▪ Gradient (1 ▪ Parallel movement (1 Adapting the heating curve [ch. 11.2.2]: ▪ cold external temperature: change gradient ▪ mild external temperature: change parallel movement Only with control variation `Weather dependent control` or `Weather/Room control`.
Su/Wi change-over	Configure Summer-Winter change-over. `On` (factory setting): If the damped external temperature (tendentious course) exceeds the `Change-over temperature` (factory setting: `19 °C`), the `Operating mode` changes to `Summer`. `Off`: The operating mode set remains activated, independent of the external temperature.

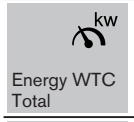
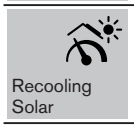
(1 Factory setting and setting range depending on the heating circuit type set [ch. 11.9].

6.5.4 Domestic hot water

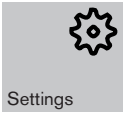
Parameters	Setting
	DHW temperature for normal and setback operation. ▪ `Normal` (factory setting: `50 °C`) ▪ `Setback` (factory setting: `40 °C`) Normal and setback operation can be assigned to specific times of the day using the DHW program. With version C only the DHW setpoint temperature for normal operation is displayed.
	DHW Push is used to cover increased hot water demand, e. g. during setback operation. The DHW tank is heated once to the DHW setpoint temperature set for normal operation.
	The DHW program is used to stipulate the times of the day when the DHW tank is heated to normal temperature or setback temperature, factory setting see [ch. 11.8]. For version C, the plate heat exchanger is brought to and maintained at the `DHW setpoint temperature` during normal operation (comfort mode). As a result, hot water is available immediately. Change a time program: ► Select week day(s) using the knob and confirm. ✓ Time program can be edited.
	The circulation program is used to stipulate the time of day when the circulation pump is switched on, factory setting see [ch. 11.8]. Change a time program: ► Select week day(s) using the knob and confirm. ✓ Time program can be edited.
	Deactivate DHW preparation. `On` (factory setting): DHW preparation activated. `Off`: DHW preparation deactivated.

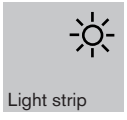
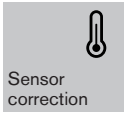
6.5.5 Statistic

In the `Statistic` menu, daily, monthly and annual values relating to the energy generated are displayed.

Information	Description
	Total amount of heat generated by the condensing unit.
	Solar system yield.
	Yield for re-cooling via collector circuit [ch. 6.6.3.3].

6.5.6 Settings



Parameters	Setting
	Set current time of day.
	Set current date.
	Configure automatic change-over of summertime. ▪ `On` (factory setting) ▪ `Off`
	activate acces to WEM Portal [ch. 11.12]. The following information is required for access and is displayed here: ▪ `Serial number` ▪ `Access code`
	Deactivate light strip on condensing unit. `On` (factory setting): Light strip activated. `Off`: Light strip deactivated.
	`External sensor` Correction of the current outside temperature (factory setting: `0.0 K`) If no optimal placement of the outdoor sensor is possible or a measurement error is to be compensated, the measured outdoor temperature can be corrected.
	`Room sensor` Correction of the current room temperature (factory setting: `0.0 K`). If no optimal placement of the room sensor is possible or a measurement error is to be compensated, the measured room temperature can be corrected.

6.6 Expert level

Factory setting and setting range see [ch. 11.7]

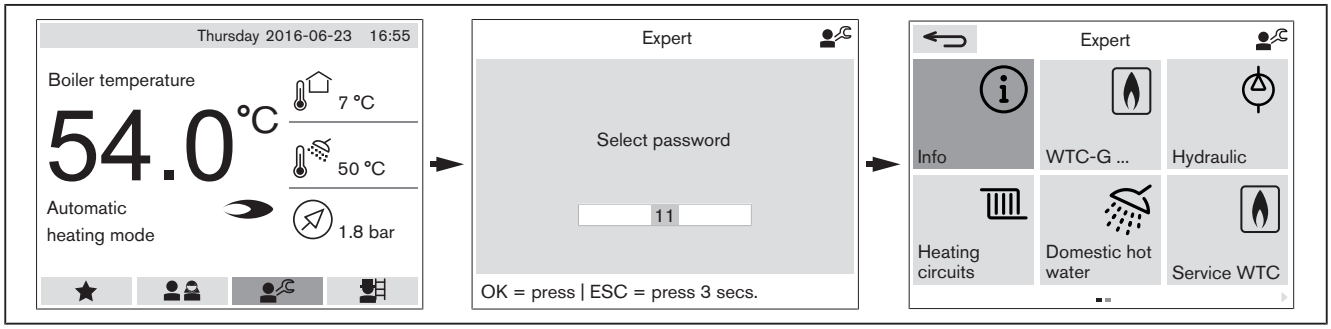
Depending on the execution, hydraulics and control variations, certain information and parameters are hidden.

Access to the Expert level is only possible with a password.

Select password

Password: `11`

- ► Select Expert level using dial knob and confirm.
- ✓ Display changes to Password window.
- ► Select Password `11` and confirm.
- ► Select ▶▶ and confirm.
- ✓ Display changes to Expert level.



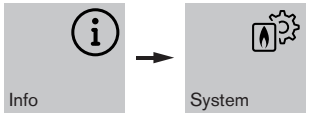
Deactivating password

If the dial knob is not operated for 3 minutes or you exit the expert level the password is deactivated.

6.6.1 Info

In menu Info, the information is read only.

6.6.1.1 System



Information	Description
1.1.1 Status	Current operating mode of system. The operating mode is determined from the operating mode of the system and the operating modes of the individual heating circuits. ▪ Off ▪ Standby ▪ Summer ▪ Automatic
1.1.2 External temperature	Current temperature at the external sensor (B1). Show additional information: ► Press dial knob. Current: Current external temperature used for system frost protection. Damped: Tendency of the outdoor temperature used for the summer-winter changeover. Mixed: Calculated outdoor temperature (current and damped) used for the flow setpoint temperature.
1.1.3 Heat demand Heating	Required maximum flow setpoint temperature of all heating circuits.
1.1.4 … 1.1.27 Heat demand Heating circuit …	Required flow setpoint temperature of the corresponding heating circuit.
1.1.28 Heat demand DHW	Required flow setpoint temperature of the DHW circuit.

6.6.1.2 WTC

Boiler controller

Information	Description
1.2.1.1 Operating phase WTC	Current operating phase of condensing unit. ▪ Normal operation ▪ Pump run-on ▪ Burner rapid cycle interlock heating ▪ Block minimum heat output ▪ Adaption gas correcting element is running ▪ Delayed heating mode ▪ DHW soft start ▪ Regulating function remote control ▪ Spread flow/flue gas ▪ Spread flow/return ▪ Regulating function flue gas temperature ▪ Remote control shutdown ▪ Minimum circulation shutdown ▪ SCOT calibration running
1.2.1.2 Operating phase burner	Current operating phase of burner. ▪ Burner off ▪ Pre-purge ▪ Burner on: control operation ▪ Burner on: control operation ▪ Post-purge
1.2.1.3 Target load	Required heating capacity of the condensing unit. The output is expressed as a percentage of the rated output of the condensing unit.
1.2.1.4 Actual load	Current heating capacity of the condensing unit. The output is expressed as a percentage of the rated output of the condensing unit.
1.2.1.5 Flow setpoint temperature	Required flow setpoint temperature of the condensing unit.
1.2.1.6 Flow temperature	Current temperature at the flow sensor eSTB (heat exchanger) of the condensing unit.
1.2.1.7 Flow temperature VPT	Current temperature at the flow sensor VPT (flow pipe) of condensing unit.
1.2.1.8 Return temperature VPT	Current temperature at the return flow sensor VPT of condensing unit.
1.2.1.9 Flue gas temperature	Current temperature at the flue gas sensor of the condensing unit.
1.2.1.10 Daily quantity of heat (previous day)	Quantity of heat generated by the condensing unit on the previous day.
1.2.1.11 Counter since reset	Burner starts and operating hours of the condensing unit since last reset.
1.2.1.12 Total counter	Burner starts and operating hours of condensing unit in total (can not be reset).

6 Operation

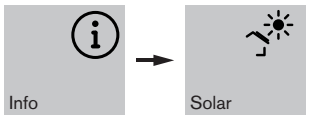
Boiler circuit

Information	Description
1.2.2.1 Internal three-way valve	Current setting of three-way valve in the condensing boiler. ▪ heating mode ▪ Start DHW ▪ DHW ▪ Start heating mode ▪ Anti-locking function ▪ Drive to centre setting ▪ Centre setting
1.2.2.2 Pump capacity internal pump	Current pump capacity of internal pump of condensing unit.
1.2.2.3 Volumetric flow VPT	Current volumetric flow at multifunction sensor VPT of condensing unit.
1.2.2.4 Heat capacity VPT	Actual heat output from the condensing unit to the heating system (calculated value from the multifunction sensor VPT).
1.2.2.5 System pressure VPT	Current system pressure, measured by the multifunction sensor VPT of the condensing unit.

Combustion

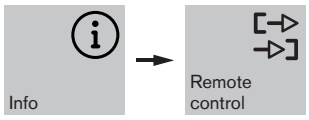
Information	Description
1.2.3.1 Ionisation signal SCOT base value	Maximum ionisation signal determined during the calculation procedure [ch. 3.4.4]. ▶ Replace ionisation electrode if: ▪ WTC 15: < 70 points ▪ WTC 25: < 75 points ▪ WTC 32: < 75 points
1.2.3.2 Ionisation signal Setpoint	Setpoint for excess air calculated using the SCOT® base value [ch. 3.4.4].
1.2.3.3 Ionisation signal SCOT actual value	Current ionisation signal.
1.2.3.4 Ionisation signal Start	Minimum ionisation signal following flame detection at last burner start.
1.2.3.5 Gas valve Offset	Current compensation value from the control signal for the immersion coil from the gas valve.
1.2.3.6 Time to flame formation	Time from gas release to flame formation at last burner start.
1.2.3.7 Gas valve control signal	Current control signal at gas combi valve.
1.2.3.8 Gas-air compound	Current ratio of the control signals from the gas combi valve and fan.
1.2.3.9 Fan speed	Current speed signal from the fan.
1.2.3.10 Fan control signal	Current control signal at the fan (fan capacity).
1.2.3.11 Gas pressure	Current switching condition of the gas pressure switch. ▪ unavailable ▪ available Only in conjunction with inbuilt gas pressure switch (accessory).

6.6.1.3 Solar



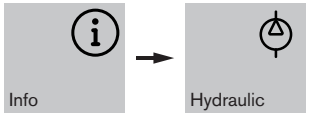
Information	Description
1.3.1 Status solar controller	Current operating condition of the solar controller (differential temperature controller) [ch. 11.5.2]. ▪ Off ▪ On ▪ Special phase ▪ Start phase ▪ Control
1.3.2 Status protection function	Current protection function of the solar system [ch. 11.5.3]. ▪ Normal operation ▪ Collector circuit: stagnation ▪ Collector circuit: high temperature ▪ Hydraulic: excess temperature ▪ Hydraulic: high temperature ▪ Collector circuit: frost protection ▪ Buffer: excess temperature
1.3.3 Volumetric flow	Current volumetric flow in the collector circuit.
1.3.4 Collector output	Current heat output of the solar system.
1.3.5 Collector temperature	Current temperature at the collector sensor (T1).
1.3.6 Storage tank temperature bottom	Current temperature at the bottom of the storage tank (T2).
1.3.7 Collector flow temperature	Current temperature at solar flow sensor (T3) of the collector circuit.
1.3.8 Collector return temperature	Current temperature at the solar return sensor (T4) of the collector circuit.
1.3.9 Solar pump	Current capacity of the solar pump.
1.3.10 Solar counter since reset	Starts and operating hours of the solar pump since the last reset.
1.3.11 Solar Total counter	Total starts and operating hours of solar pump (can not be reset).
1.3.12 Solar yield counter since reset	Solar yield since last reset.
1.3.13 Solar yield total counter	Total solar yield (can not be reset).
1.3.14 Solar yield (today)	Current solar yield today.
1.3.15 Solar yield (previous day)	Solar yield of previous day.

6.6.1.4 Remote control



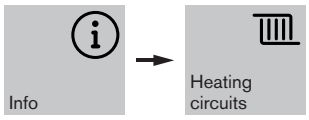
Information	Description
1.4.1 Voltage remote control input (N1)	Current voltage signal at input N1.
1.4.2 Heat demand remote control (N1)	Flow setpoint temperature of the remote control.

6.6.1.5 Hydraulic



Information	Description
1.5.1 Buffer loading strategy	Current control mode of the buffer storage. ▪ Buffer control P1 [ch. 11.2.5] ▪ Buffer control P2 [ch. 11.2.6] ▪ Buffer switch-over P1/P2 [ch. 11.2.7]
1.5.2 External three-way valve	Current setting of the external three-way valve. ▪ heating mode ▪ Start DHW ▪ DHW ▪ Start heating mode ▪ Anti-locking function
1.5.3 De-couple temperature – or – 1.5.3 Plate heat exchanger temperature	Current temperature at de-couple sensor (B2) or plate heat exchanger sensor (B2).
1.5.4 Buffer storage Temperature top	Current temperature at the buffer sensor top (B10).
1.5.5 Buffer storage temperature bottom	Current temperature at the buffer sensor bottom (B11).

6.6.1.6 Heating circuits

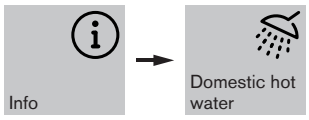


A separate submenu appears for each heating circuit.

Information	Description
1.6.1 Operating mode	Current operating mode of heating circuit. ▪ System standby; system Summer ▪ Function specific heating; screed drying ▪ Holiday ▪ Time program 1 … 3 ▪ Summer; setback; normal; comfort
1.6.2 Status	Current status of the operating mode of the heating circuit. ▪ Room frost protection ▪ Emergency-Off ▪ Day … ▪ Special, comfort, normal, setback, standby via input H1 ▪ Party ▪ On optimisation ▪ Level increase external temperature ▪ Excess temperature alternative energy ▪ Excess alternative energy ▪ DHW priority ▪ Summer operation weather compensated ▪ Heating limit shutdown room ▪ Heating limit shutdown flow ▪ Thermostat shutdown ▪ Comfort; normal; setback ▪ Frost protection on
1.6.3 External temperature – or – 1.6.3 Local external temperature	Current temperature at external sensor (B1) or at external sensor (T1) on heating circuit extension module (local). Show additional information: ▶ Press dial knob. Current: Current external temperature used for system frost protection. Damped: Tendency of the outdoor temperature used for the summer-winter changeover. Mixed: Calculated outdoor temperature (current and damped) used for the flow setpoint temperature.
1.6.4 Room setpoint temperature	Room setpoint temperature of currently activated temperature level.
1.6.5 Flow setpoint temperature	Required flow setpoint temperature of the heating circuit.
1.6.6 Actual flow temperature	Current temperature at flow sensor (B6) of the heating circuit.
1.6.7 Mixer setpoint setting	Required setting of mixer valve.
1.6.8 Actual mixer setting	Actual setting of mixer valve.

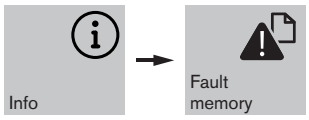
Information	Description
1.6.9 Heating circuit pump	Current operating mode of heating circuit pump. ▪ Off ▪ On
1.6.10 Correction heat-up optimisation	Current calculated advance time of heat-up optimisation with control variation weather compensated control.
1.6.11 Correction heat-up optimisation	Current calculated advance time of heat-up optimisation with control variation room compensated control or weather / room compensated control.

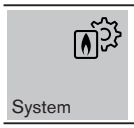
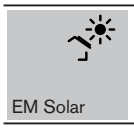
6.6.1.7 Domestic hot water



Information	Description
1.7.1 Status	Current operating mode of DHW circuit. ▪ Standby via system program switch ▪ Time program - normal ▪ Time program - setback ▪ DHW mode activated ▪ Normal, setback, standby via input H2
1.7.2 Flow setpoint temperature DHW	Required flow setpoint temperature for DHW loading. The flow set temperature results from the DHW setpoint temperature and the flow setpoint temperature increase (P 7.1.3).
1.7.3 DHW setpoint temperature	DHW setpoint temperature of current operating mode (normal or setback).
1.7.4 DHW temperature	Current temperature at the DHW sensor (B3).
1.7.5 Return flow temperature circulation	Current temperature at the return flow sensor (T1) of the circulation line.
1.7.6 DHW pump	Current operating mode of DHW load pump. ▪ Off ▪ On
1.7.7 Status DHW mode	Current operating mode of DHW circuit (version C). ▪ Off ▪ Standby ▪ Burner start ▪ Tap operation ▪ Comfort keep warm function ▪ Top-up heating following tap drawdown ▪ Pump run-on ▪ SCOT calibration in DHW
1.7.8 DHW outlet setpoint temperature	Required setpoint of DSHW outlet temperature (version C).
1.7.9 DHW actual outlet temperature	Current temperature at the DHW outlet sensor of the condensing unit (version C).
1.7.10 Flow rate	Current flow rate at the water flow sensor of the condensing unit (version C).
1.7.11 Daily DHW flow rate	DHW flow rate at the water flow sensor of the condensing unit on the previous day(version C).

6.6.1.8 Fault memory



Information	Description
	The System menu contains the last 10 errors of all devices.
	The last 16 faults of the condensing boiler and the system status when the fault occurred are stored in the WTC menu. Interrogating system status when fault occurred: ► Select fault with dial knob. ► Press dial knob. ► Select and confirm. ✓ System status when fault occurred is displayed. ► Turn dial knob to interrogate information.
	The EM Solar menu contains the last 16 errors from the solar expansion module.

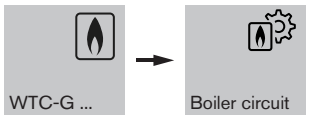
The fault memory can be deleted using button .

6.6.2 WTC

6.6.2.1 Boiler controller

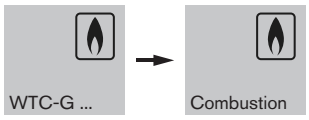
Parameters	Setting
2.1.1 Burner rapid cycle interlock heating mode	After switching off the burner, the condensing unit remains locked in heating mode for the set time. The burner rapid cycle interlock prevents the burner from starting too often.
2.1.2 Maximum load heating mode	Upper load limit (combustion heat rating) in heating mode. The output is expressed as a percentage of the rated output of the condensing unit.
2.1.3 Maximum load DHW mode	Upper load limit (combustion heat rating) in DHW mode. The output is expressed as a percentage of the rated output of the condensing unit.
2.1.4 Time forced partial load capacity heating mode	At heat demand from the heating circuit, the heating load is restricted to partial load for the duration set. When this time has elapsed, load control is released. Forced partial load is not required for DHW loading.
2.1.5 Controller switch differential operating mode	Switch differential boiler controller for heating mode. If the current flow temperature exceeds the flow setpoint temperature by the switch differential set, the burner shuts down.
2.1.6 Controller switch differential DHW	Switch differential boiler controller for DHW mode. If the current flow temperature exceeds the flow setpoint temperature by the switch differential set, the burner shuts down.

6.6.2.2 Boiler circuit



Parameters	Setting
2.2.1 Internal pump operating mode HC	Operating mode of internal condensing unit pump for heating mode [ch. 11.4]. ▪ Load proportional ▪ De-couple control ▪ Volumetric flow control ▪ Proportional pressure stage 1 … 3 ▪ Constant pressure stage 1 … 3 ▪ Proport. pressure auto adaption ▪ Constant pressure auto adaption Factory setting depending on the selected hydraulic variant.
2.2.2 Internal pump operating mode DHW	Operating mode of internal condensing unit pump for DHW mode [ch. 11.4]. ▪ Load proportional ▪ De-couple control ▪ Volumetric flow control ▪ Constant pump capacity Factory setting depending on the selected hydraulic variant.
2.2.3 Pump capacity minimum heating mode	Minimum pump capacity in heating mode.
2.2.4 Pump capacity maximum heating mode	Maximum pump capacity in heating mode.
2.2.5 Pump capacity minimal DHW mode	Minimum pump capacity for DHW loading.
2.2.6 Pump capacity maximum DHW mode	Maximum pump capacity for DHW loading.
2.2.7 Minimum system pressure warning	If the system pressure in the condensing unit drops below the value set, a warning message is issued.
2.2.8 Minimum system pressure burner lockout	If the system pressure in the condensing unit drops below the value set, an error message is issued. The condensing unit is blocked. When the pressure rises again, the appliance restarts automatically.
2.2.9 Volumetric flow factor heating mode	Adjustment of the heating capacity to optimise the volumetric flow control during buffer loading for heating mode.
2.2.10 Volumetric flow factor DHW loading	Adjustment of the heating capacity to optimise the volumetric flow control during buffer loading for DHW mode.
2.2.11 Maximum volumetric flow	Maximum permissible volumetric flow during buffer loading.
2.2.12 Inertia internal pump	Determines how fast the pump reacts to a change in the temperature differential between flow/decouple. The parameter is only effective, if parameter 2.2.1 Internal pump operating mode HC is set to de-couple control.

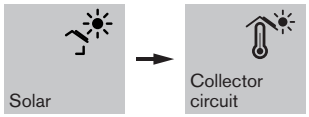
6.6.2.3 Combustion



Parameters	Setting
2.3.1 Gas quantity correction at start	Changes the gas quantity at ignition.
2.3.2 Load correction at start	Changes the load (fan speed) at ignition.
2.3.3 Correction speed for flue gas length	Changes the fan speed across the entire load range. The air side resistance through long flue gas ducts can be compensated.
2.3.4 Minimum load correction	The minimum load (fan speed) can be increased in percentage.
2.3.5 Correction gas surge at start	Changes the gas quantity following flame detection during the safety period.
2.3.6 Gas valve offset storage	Changes the control signal for the immersion coil of the gas valve. Variable value, which is re-determined after startup with minimum load.
2.3.7 Maximum flue gas temperature	If the flue gas temperature exceeds the value set, the burner shuts down [ch. 3.4.3]. If a plastic flue gas system is connected, which is not approved for flue gas temperatures of up to 120 °C, the value must be reduced accordingly.

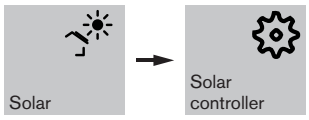
6.6.3 Solar

6.6.3.1 Collector circuit



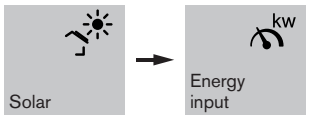
Parameters	Setting
3.1.1 Operating mode	Operating mode of the solar controller. Emergency-Off: Solar controller off. Frost protection is not activated. Standby: Solar controller off. Frost protection is activated. Automatic: Solar controller in automatic mode. Manual: purging: solar pump on.
3.1.2 Minimum pump capacity	Minimum pump capacity of solar pump.
3.1.3 Maximum pump capacity	Maximum pump capacity of solar pump.
3.1.4 Maximum flow temperature	Maximum flow temperature in collector circuit (sensor T3). the current flow temperature exceeds the value set, the solar pump switches off (collector protection function).
3.1.5 Minimum volumetric flow	Minimum volumetric flow in the collector circuit. Lower measuring limit that the volume flow sensor can detect. An increase in the volumetric flow may be required for large solar systems or viscous medium.
3.1.6 Maximum volumetric flow	Maximum volume flow in the collector circuit. The volumetric flow is limited to this value via the pump speed. By limiting the volume flow, electrical energy can be saved during high yield phases [ch. 11.5.1].
3.1.7 Maximum collector temperature	Maximum temperature at the collector sensor (T1). If the collector temperature exceeds the value set, the solar pump starts. Regardless of the setpoint temperature set, fresh water storage tanks are heated up to the shutdown limit solar DHW loading (P 7.1.6), energy storage tanks to the shutdown limit solar buffer loading (P 5.1.5). The solar pump switches off , when the shutdown limit has been reached or when the collector temperature exceeds 120 °C.
3.1.8 Collector frost protection temperature	Limit of the frost protection function for the collector. If the temperature at the collector sensor (T1) drops below the value set, the solar pump runs with minimum capacity. Factory setting depending on the Tyfocor concentration set: ▪ -12 °C at 30 % Tyfocor concentration ▪ -25 °C at 45 % Tyfocor concentration
3.1.9 Minimum yield heating mode	Minimum required yield for activating the acceptance limit for heating mode. If the yield exceeds the value set, the heat demand from the heating circuits is reduced.
3.1.10 Minimum yield DHW preparation	Minimum required yield for activating the acceptance limit for DHW loading. If the yield exceeds the value set, the heat demand from the DHW circuits is reduced.

6.6.3.2 Solar controller



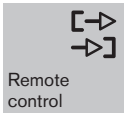
Parameters	Setting
3.2.1 Minimum collector temperature	Minimum temperature at collector sensor (T1). If the temperature exceeds the value set and when the switch on differential collector circuit (P 3.2.2) has been reached, the solar pump starts.
3.2.2 Switch on differential collector circuit	If the differential temperature between collector sensor (T1) and storage sensor (T2) exceeds the value set and if the minimum collector temperature (P 3.2.1) has been exceeded, the solar pump starts.
3.2.3 Switch off differential collector circuit	If the differential temperature between collector flow (T3) a storage sensor (T2) exceeds the value set the solar pump switches off.
3.2.4 Lower load limit collector	Minimum required load from a collector for solar loading. If the collector output drops below the value set, the solar pump switches off (profitability threshold).
3.2.5 Control differential	The setpoint temperature of the collector flow is calculated from the storage tank temperature (sensor T2) and the control differential set. The controller attempts to maintain the set differential temperature between the collector flow (sensor T3) and the tank sensor (T2) via the pump speed.

6.6.3.3 Energy input



Parameters	Setting
3.3.1 Recooling via solar circuit	Following previous overheating of the collector (stagnation), the storage tank is cooled at night (0 to 4 o'clock) via the collector circuit to counteract stagnation on the following day. Not possible with layer storage. Off: Recooling not activated. On: Recooling activated.

6.6.4 Remote control



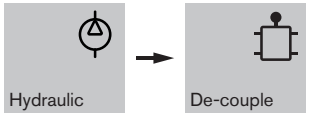
Parameters	Setting [ch. 11.3]
4.1 Voltage error input N1	Voltage limit for error message. If the voltage at input N1 drops below the value set, an error message (F 80) will be issued after approx. 15 minutes.
4.2 Voltage burner off input N1	Voltage limit for burner shutdown. If the voltage at input N1 drops below the value set, the burner shuts down.
4.3 Minimum flow temperature input N1	Setpoint of flow temperature at voltage signal 3 V.
4.4 Maximum flow temperature input N1	Setpoint of flow temperature at voltage signal 10 V.

6.6.5 Hydraulic

6.6.5.1 Buffer storage

Parameters	Setting
5.1.1 Buffer control	Control mode of the buffer storage. ▪ Buffer control P1 [ch. 11.2.5] ▪ Buffer control P2 [ch. 11.2.6] ▪ Buffer switch-over P1/P2 [ch. 11.2.7]
5.1.2 Change-over temperature buffer control P1/P2	Change-over temperature for buffer change-over P1/P2 [ch. 11.2.7]. If the damped outside temperature exceeds the value set, the load strategy changes from buffer control P2 to P1. In buffer control P1, the condensing boiler loads only the upper storage area.
5.1.3 Switch differential	Switch differential for buffer loading. If the temperature at buffer sensor (B10) drops below the setpoint temperature by the switch differential set, the condensing unit starts and loads the buffer storage.
5.1.4 Temperature elevation	Flow setpoint temperature of condensing unit for buffer storage loading. Flow setpoint temperature = buffer storage temperature top (sensor B10) + temperature elevation This parameter is used to adjust capacity losses and to ensure the switch-off criterion for buffer loading.
5.1.5 Switch-off solar buffer loading	If the temperature at the buffer sensor exceeds the value set, the solar pump switches off.

6.6.5.2 De-couple



Parameters	Setting [ch. 11.2.8]
5.2.1 Temp differential flow/ de-couple pump	The pump modulates depending on the temperature difference between flow sensor and de-couple sensor (B2). The control function prevents an undesirable return flow increase in the condensing boiler.

6.6.6 Heating circuits

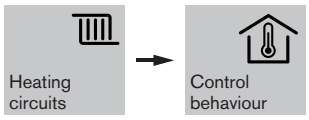
A separate submenu appears for each heating circuit.

6.6.6.1 Heating circuit settings

Parameters	Setting
6.1.1 Minimum flow setpoint temperature[1]	Lower limit for the minimum flow temperature. Lower heat demands are limited to the value set.
6.1.2 Maximum flow setpoint temperature[1]	Upper limit for the maximum flow temperature. Higher heat demands are limited to the value set.
6.1.3 Flow setpoint temperature heating limit[1]	If the flow setpoint temperature drops below the value set, the heating mode is not enabled. On: Heating limit activated. Off: Heating limit not activated.
6.1.4 Room setpoint temperature heating limit	If the outside temperature is higher than the room setpoint temperature, the heat demand from the heating circuit will not be released. If the outside temperature falls below the room set temperature by 2 K, heat demand is released. The average outdoor temperature is used as comparison value. On: Heating limit activated. Off: Heating limit not activated.
6.1.5 DHW priority	Behaviour of the heating circuit when DHW loading is activated. Priority: DHW loading has priority. Heating mode is blocked during DHW loading. Parallel: Heating mode remains in operation during DHW loading. Sliding: The heating mode is temporarily suspended if the required temperature for DHW loading can no longer be provided.

[1] Factory setting and setting range depending on the heating circuit type set [ch. 11.9].

6.6.6.2 Control behaviour



Parameters	Setting
6.2.1 Heat-up optimisation	To ensure that the room setpoint temperature reaches the level set at the beginning of the heating program, the switch-on time for the start of the heating is advanced. Off: Heat-up optimisation not activated. On: Heat-up optimisation activated.
6.2.2 Heat-up optimisation Maximum advance[1]	Limits the maximum time of advancement for heat optimisation.
6.2.3 Building construction	With weather compensated control the mixed external temperature influences the flow setpoint temperature. The influence depends on the building construction. The better (heavier) the building construction, the slower the influence. ▪ very light … very heavy
6.2.4 Room thermostat function[1]	The room thermostat switches off the heating circuit, when the room temperature exceeds the room setpoint temperature + switch differential. Off: Room thermostat function not activated. On: Room thermostat function activated. On at setback: The room thermostat function is only activated at level setback. Switch differential: If the current room temperature exceeds the room setpoint temperature by the switch differential, the heating circuit is switched off.
6.2.5 Room sensor influence	With room compensated control, the difference between the current room temperature and the room setpoint temperature set influences the flow temperature. The higher the value of the room sensor influence set, the more affect the difference will have.
6.2.6 Room control I-Part	With active PI room control, an exact compensation of the room setpoint temperature is achieved. On: PI room control activated. Off: On:PI room control not activated. Reset time: The shorter the reset time, the faster a control deviation is compensated. If the time is set too short, the controller tends to oscillate.
6.2.7 Frost protection External temperature	If the current external temperature drops below the value set, system frost protection is activated.

[1] Factory setting depending on the heating circuit type set [ch. 11.9].

Parameters	Setting
6.2.8 Level increase external temperature	If the outdoor temperature drops below the value set, heating continues in setback mode at normal level, to prevent the building from cooling down. On: Level increase activated. Off: Level increase not activated.
6.2.9 Correction external temperature	Correction of the current outdoor temperature by external sensor (T1) on heating circuit extension module. If no optimal placement of the outdoor sensor is possible or a measurement error is to be compensated, the measured outdoor temperature can be corrected. Only if sensor T1 is configured to external sensor .
6.2.10 Frost protection Room temperature	If the current room temperature drops below the value set, frost protection function is activated.

(1 Factory setting depending on the heating circuit type set [ch. 11.9].

6.6.6.3 Mixer control

Parameters	Setting
6.3.1 Mixer elevation	The flow setpoint temperature of the mixer heating circuit is increased by the value set, e. g. to compensate for load losses.
6.3.2 Delay time heat demand	At heat demand via the mixer heating circuit the start of the condensing unit is delayed by the time set. During the delay time, the mixer opens and the condensing unit has flow.
6.3.3 Mixer run time	Run time of mixer, from CLOSED position to fully OPEN position.
6.3.4 Mixer initialisation run time	When driving from the CLOSED position to the OPEN position, the time set is added to the mixer run time (P 6.3.3), to achieve the end position of the mixer.
6.3.5 Tolerance range mixer control(1	The parameter determines from which the differential between the current flow temperature and the flow setpoint temperature the mixers is controlled. A high differential reduces the driving impulses and protects the actuator. A low differential increases the control accuracy (e. g. for underfloor heating).
6.3.6 Temperature controller P part Kp	Proportional part of heating circuit controller. The greater the value set, the faster the control will commence. If the value set is too great the controller tends to over-oscillate.
6.3.7 Temperature controller I part Tn	Integral part of heating circuit controller. The smaller the value set, the faster the control will commence. If the value is set too small, the controller tends to oscillate.

(1 Factory setting depending on the heating circuit type set [ch. 11.9].

6.6.6.4 Screed program

CAUTION

Damage to the building structure
It is possible that the screed program on the pump heating circuit could be masked by other heating circuits or by DHW circuits.
► If necessary, deactivate other heating or DHW circuits.

The screed program is used for the drying of underlay flooring and is separated into two functions. Observe the requirements provided by the speed manufacturer andEN 1264-4.

Function specific heating

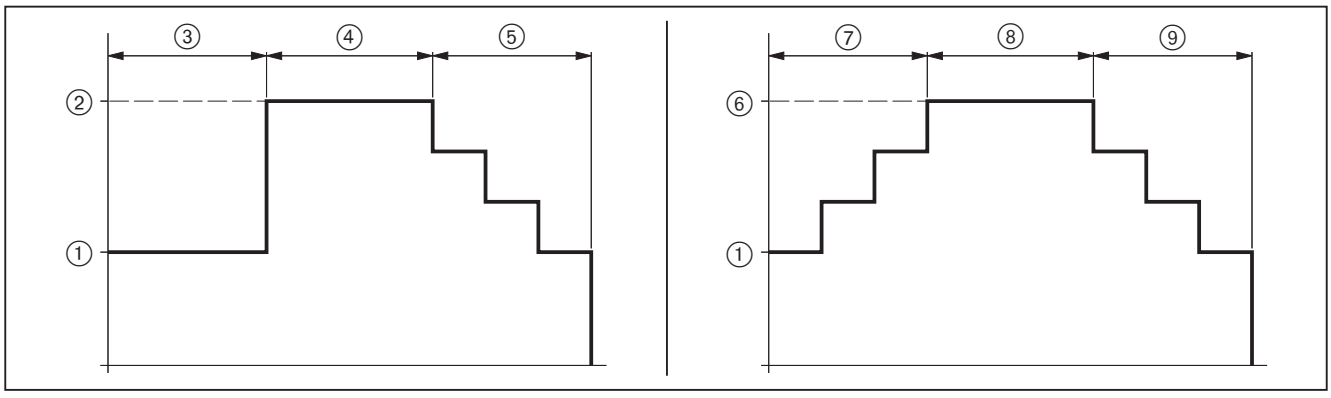
First phase of drying. The function specific heating is used to ensure defect-free preparation for underfloor heating.

Screed drying

Second phase of drying. Screed drying is used to continue drying ready for floor covering work.

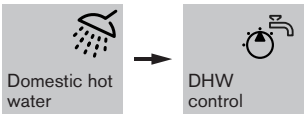
Parameters	Setting
6.4.1 Screed	Off: Screed program deactivated. Function specific heating: Function specific heating curve activated. Screed drying: Screed drying curve activated. Function specific heating and screed drying: Function specific heating and screed drying activated one after the other.
6.4.2 Screed day	Skip or repeat screed day. Using the ↺ button, the screed function is set to day 0.
6.4.3 Start temperature	Start temperature for function specific and screed drying ①.
6.4.4 Function specific heating max temp	Maximum temperature for Function specific heating ②.
6.4.5 Function specific heating days min temp	Number of days for the start phase for function specific heating ③.
6.4.6 Function specific heating days max temp	Number of days at maximum temperature for function specific heating ④.
6.4.7 Function specific heating days cooling	Number of days for the cool down phase for function specific heating ⑤.
6.4.8 Screed drying maximum temperature	Maximum temperature for screed drying ⑥.
6.4.9 Screed drying days heat-up	Number of days for the heat-up phase for screed drying ⑦.
6.4.10 Screed drying days maximum temperature	Number of days at maximum temperature for screed drying ⑧.
6.4.11 Screed drying days cooling	Number of days for the cool down phase for screed drying ⑨.

Function specific heating | **Screed drying**



6.6.7 Domestic hot water

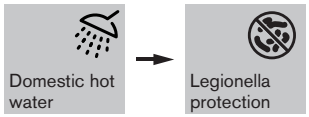
6.6.7.1 DHW control



Parameters	Setting
7.1.1 Load strategy	Defines the temperature increase for the DHW loading. Automatic change-over: automatic change-over between comfort and efficient. The change-over depends on the heat demand of the heating circuits. Comfort: Constant temperature increase of DHW setpoint. Advantage: faster DHW loading. Efficient: Variable temperature increase from the DHW setpoint. Advantage: Burner run time is increased, better utilisation of condensing technology.
7.1.2 Switch differential DHW	Switch differential for DHW loading. If the temperature in the fresh water storage tank drops below the DHW set-point temperature by the switch differential set, DHW loading is initiated.
7.1.3 Flow setpoint temperature increase	Temperature increase of DHW setpoint for DHW loading. Flow setpoint temperature = DHW setpoint temperature + Flow set-point temperature increase
7.1.4 Maximum load time	Time limit for DHW loading. Off: Time limit not activated. On: Time limit activated. With DHW loading and simultaneous heat demand through the heating circuit, the appliance will switch to heating mode after the time set. The appliance will remain in heating mode for the same time, after which DHW loading will restart. The time limit is only effective, when parameter 6.1.5 DHW priority is set to priority .
7.1.5 Maximum DHW setpoint temperature	Maximum setting valve of DHW setpoint temperature in the user level. ⚠ **Danger of scalding by hot water** Water temperature above 60 °C can lead to scalding.
7.1.6 Switch-off limit solar DHW loading	If the temperature in the fresh water storage tank exceeds the value set, the solar pump switches off.
7.1.7 Switch-off differential comfort preh	If the temperature at the plate heat exchanger exceeds the DHW setpoint temperature by the switch differential set, the burner shuts down in comfort mode (version C).
7.1.8 Switch-on differential comfort preh	If the temperature at the plate heat exchanger drops below the DHW setpoint temperature by the switch differential set, the burner starts in comfort mode (version C).
7.1.9 Minimum water tapping quantity	If the tapping quantity exceeds the value set, the burner starts (version C).

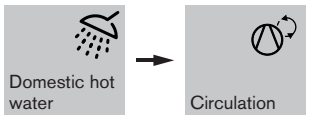
Parameters	Setting
7.1.10 Residence time three-way valve for DHW	After a tapping process, the three-way valve remains in DHW mode for the duration set (version C).
7.1.11 Pump run-on time DHW Combi	Following DHW loading, the DHW load pump continues to run for the time set (version C).

6.6.7.2 Legionella protection



Parameters	Setting
7.2.1 Protection function	Protection function against legionella. Off: Legionella protection deactivated. By weekday: legionella protection is carried out on the weekday set, see parameter weekday. In intervals: legionella protection is carried out in intervals, see parameter interval. Note: A legionella pump can be connected to output MFA1 of the WEM-EM-Sol. The pump is used for storage tank circulation, so that the entire tank is heated to the Legionella protection temperature. When legionella protection is activated, the contact of output MFA1 closes and the legionella pump starts.
7.2.2 Start time	Time for the start of Legionella protection.
7.2.3 Weekday	Weekday on which Legionella protection is carried out. Only if parameter protection function is set to by weekday .
7.2.4 Interval	Days until the next legionella protection is carried out. Only if parameter protection function is set to in intervals .
7.2.5 Heat-up temperature DHW	DHW setpoint temperature for Legionella protection.
7.2.6 Circulation for legionella protection	Configure circulation pump for legionella protection. Off: Circulation pump not activated during legionella protection. On during legionella protection: Circulation pump is activated during legionella protection. Disadvantage: if the pipework is long this setting leads to high heat loss. On after legionella protection: Circulation pump activated for 4 minutes only after legionella protection. Disadvantage: if the pipework is long this setting leads to high heat loss.

6.6.7.3 Circulation



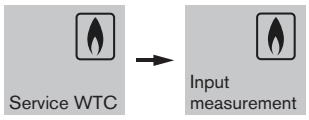
Parameters	Setting
7.3.1 Switch differential Return flow temp	Switch differential for the circulation pump control. Only if circulation pump is set to time controlled + temperature . Circulation On: If the temperature at the circulation sensor drops below the DHW temperature (sensor B3) minus the value set minus 5 K, the pump starts. Circulation Off: If the temperature at the circulation sensor exceeds the DHW temperature (sensor B3) minus the value set, the pump switches off.
7.3.2 Pump run time via button	Run time of circulation pump by pressing button on input H2. Only if the hydraulic circulation pump is set to time controlled + button (H2) in the commissioning wizard.
7.3.3 Circulation for DHW Boost	Configure circulation pump for DHW boost. Off: Circulation pump not activated during DHW boost. On during DHW boost: Circulation pump activated during DHW boost. On after DHW boost: Circulation pump activated for 4 minutes only after DHW boost. Disadvantage: if the pipework is long this setting leads to high heat loss.

6.6.8 Service WTC

6.6.8.1 Servicing

Parameters	Setting
Time to service	Show the remaining time until service.
Service	Reset service.
Interval	Change service interval.

6.6.8.2 Input measurement

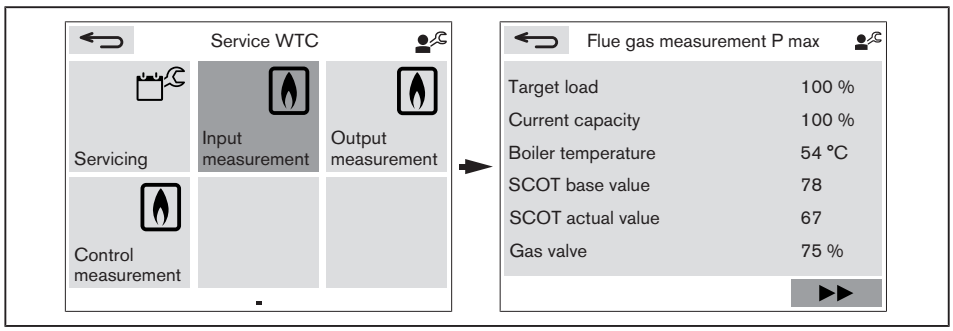


Wizard for input measurement.

An input measurement is required prior to every service.

- ► Select expert level [ch. 6.6].
- ► Select `Service WTC` and confirm.
- ► Select `input measurement` and confirm.

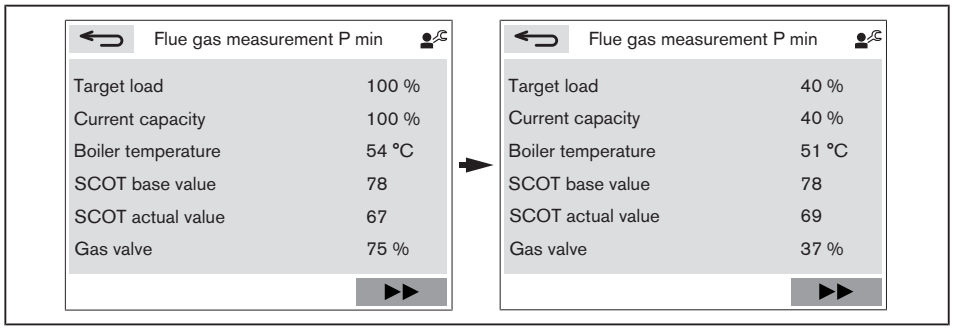
✓ The display shows `Flue gas measurement P max`.



When the current capacity has reached 100 %:

- ► Carry out flue gas measurement, enter values in the test sheet of the engineers report.
- ► Select ▶▶ and confirm.

✓ The display shows `Flue gas measurement P min`.



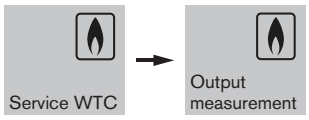
When the current capacity has reached min. load:

- ► Carry out flue gas measurement, enter values in the test sheet of the engineers report.
- ► Select ▶▶ and confirm.

✓ The message `input measurement completed` appears briefly.

✓ Display changes to menu `Service WTC`.

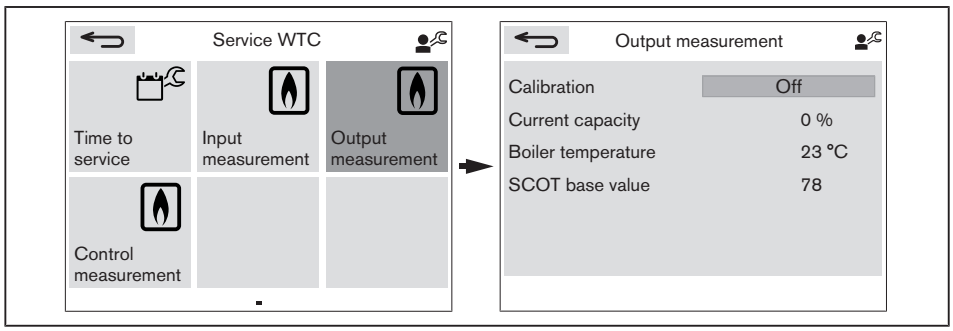
6.6.8.3 Output measurement



Wizard for output measurement.

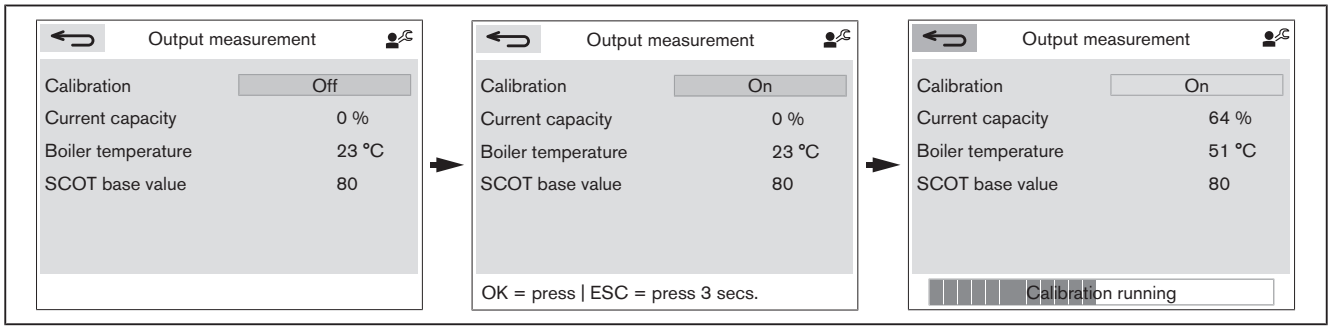
An output measurement is required after every service.

- ▶ Select expert level [ch. 6.6].
- ▶ Select `Service WTC` and confirm.
- ▶ Select `output measurement` and confirm.
- ✓ Display changes to Calibration.



1. Start calibration

- ▶ Press dial knob.
- ✓ Selected area is highlighted in blue.
- ▶ Set `Calibration` to `On` and confirm.
- ✓ The condensing unit carries out a calibration and determines the basic Io value for the combustion control (system SCOT®).
- ✓ Following successful calibration the `flue gas measurement P max` starts.



2. Optimise O_2 content at max. load

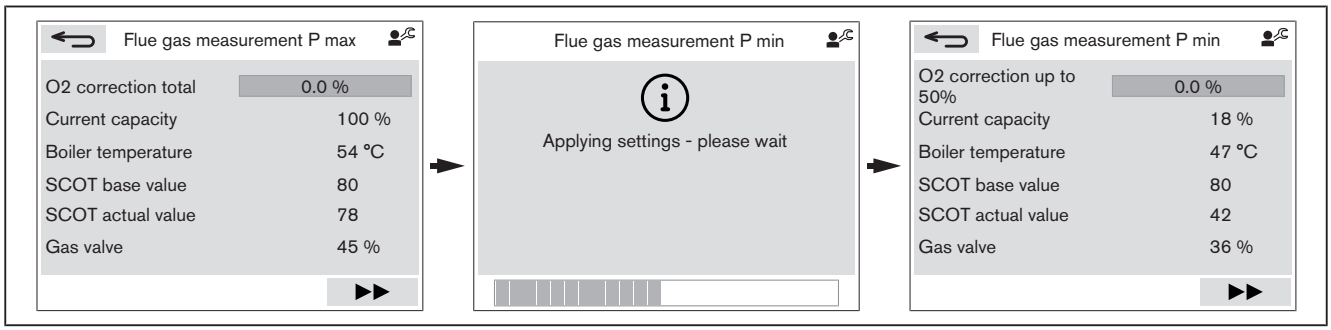
A correction is not necessary, if the O_2 content is within the permissible range.

Max load	O_2 content
Natural Gas	4.5 … 5.5 %
Liquid Petroleum Gas	4.8 … 5.8 %

- ▸ Check combustion and if necessary optimise O_2 content.

If the O_2 content deviates from the permissible range:
- ▸ Press dial knob.
- ✓ Selected area is highlighted in blue.
- ▸ Correct O_2 content and confirm.
- ▸ Check O_2 content.
- ▸ Repeat procedure until the O_2 content lies within the permissible range.

If the O_2 content lies within the permissible range:
- ▸ Carry out flue gas measurement, enter values in the test sheet of the engineers report.
- ▸ Select ▶▶ and confirm.
- ✓ Settings are applied.
- ✓ `Flue gas measurement P min` starts.



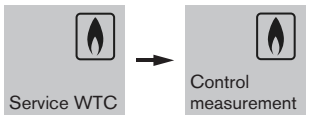
3. Optimise O_2 content at min. load

A correction is not necessary, if the O_2 content is within the permissible range.

Min load	O_2 content
Natural Gas	4.0 … 6.0 %
Liquid Petroleum Gas	4.3 … 6.3 %

- ▸ Repeat procedure for min load.
- ▸ Carry out flue gas measurement, enter values in the test sheet of the engineers report.
- ▸ Select ▶▶ and confirm.
- ✓ The message `output measurement completed` appears briefly.
- ✓ Display changes to menu `Service WTC`.

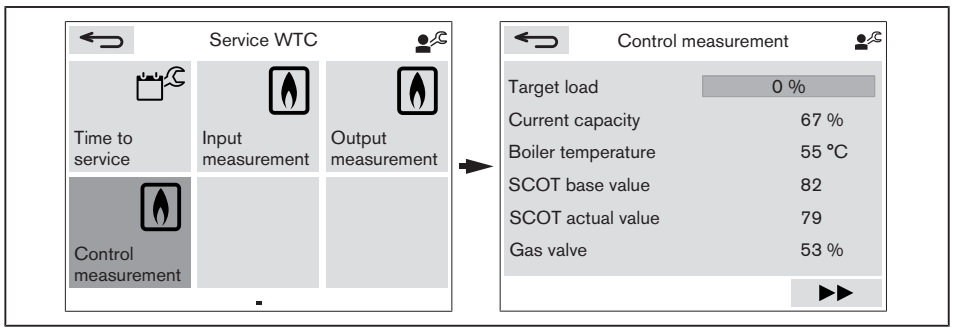
6.6.8.4 Control measurement



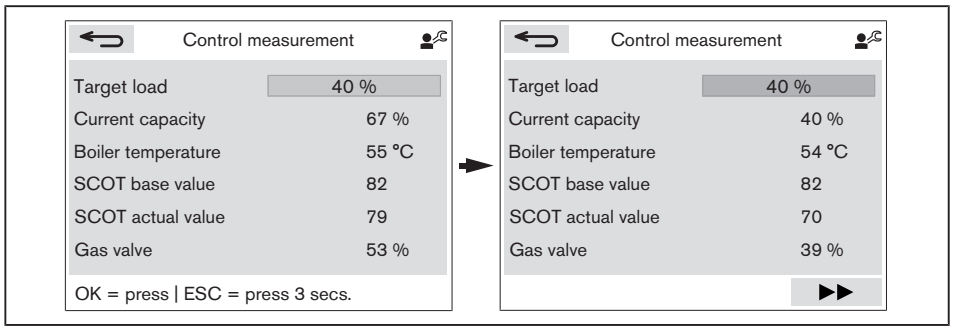
Wizard for control measurement.

During the control measurement, any load between max load and min load can be started (e. g. when operating problems occur).

- ► Select expert level [ch. 6.6].
- ► Select `Service WTC` and confirm.
- ► Select `control measurement` and confirm.

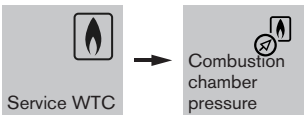


- ► Press dial knob.
- ✓ Selected area is highlighted in blue.
- ► Set `target load` and confirm.
- ✓ Start load required.



- ► Select ▶▶ and confirm.
- ✓ The message `control measurement completed` appears briefly.
- ✓ Display changes to menu `Service WTC`.

6.6.8.5 Combustion chamber pressure



The parameter Combustion chamber pressure can be used to determine the differential pressure of the heat exchanger.

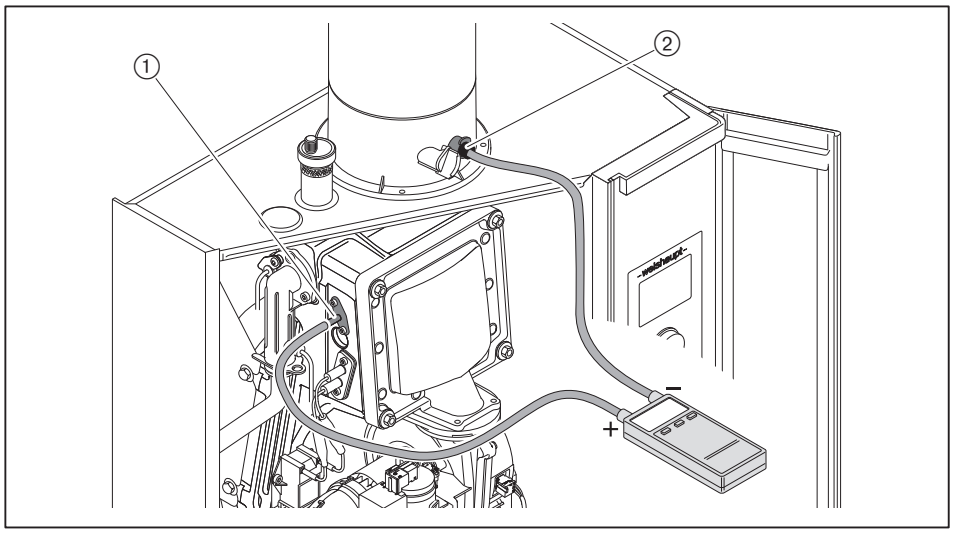
During service, the parameter is used for diagnostic purposes.

The combustion chamber pressure test nipple is required to carry out the measurement (Order No. 481 000 00 72 2).

- ► Select parameter `10.5.1.4 input H1`, see [ch. 6.6.10.5].
- ► Set function to `Heat exchanger Emergency-Off`.
- ► If the input is taken, disconnect plug H1 / H2 if necessary.
- ✓ An automatic start is avoided.
- ✓ `Burner lockout function activated` is displayed.

Connect measuring device

- ► Switch off system using switch S1 [ch. 5.6].
- ► Remove front panel [ch. 4.4].
- ► Completely remove the ionisation electrode, also unplug it from the circuit board.
- ► Fit test nipple ①.
- ► Connect pressure inlet (+) to test nipple ①.
- ► Connect vacuum input (–) to the flue gas test point ② and seal up.
- ► Open inspection opening on flue gas system.
- ✓ Draught conditions of the flue gas system have no influence on the measurement.



Activate measurement

- ► Switch on system at switch S1 [ch. 5.6].
- ► Select `combustion chamber pressure` and confirm.
- ► Set combustion chamber pressure to `On` and confirm.
- ✓ The fan drives to maximum fan speed.

Deactivate measurement

After 10 minutes or after exiting the parameter, the combustion chamber pressure is automatically reset to `Off` .

- ► Set function of parameter `10.5.1.4 input H1`.
- ► If necessary, set parameter `10.5.1.5 input H1 inverted`.
- ► Switch off system using switch S1 [ch. 5.6].
- ► Install ionisation electrode.
- ► If necessary, plug in plug H1/H2.
- ► Mount the front panel and secure the tension lock with the screw.

6.6.9 Output test

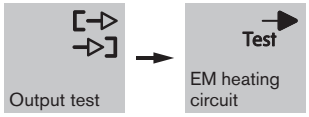
During the output test, the actuators connected (pump, mixer, etc.) can be switched manually for test purposes.

When exiting the parameter, the output test is automatically reset to `Off` .

6.6.9.1 WTC

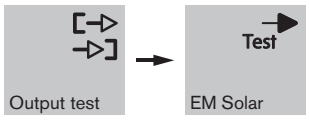
Parameters	Setting
`9.1.1` `Output test`	`Off`: Output test WTC deactivated. `On`: Output test WTC activated.
`9.1.2` `MFA1`	Activate output MFA1. ▪ `Off` ▪ `On`
`9.1.3` `VA1`	Activate output VA1. ▪ `Off` ▪ `On`
`9.1.4` `VA2`	Activate output VA2. ▪ `Off` ▪ `On`
`9.1.5` `External PWM signal`	Activate PWM signal. ▪ `0 … 100 %`

6.6.9.2 EM heating circuit



Parameters	Setting
`9.2.1` `Output test`	`Off`: Output test EM heating circuit deactivated. `On`: Output test EM heating circuit activated.
`9.2.2` `Relay test`	Activate output M1 or MM1. ▪ `Off` ▪ `Pump` (M1) ▪ `Mixer Open` (MM1) ▪ `Mixer Closed` (MM1)
`9.2.3` `PWM signal`	Activate PWM signal. ▪ `0 … 100 %`

6.6.9.3 EM Solar



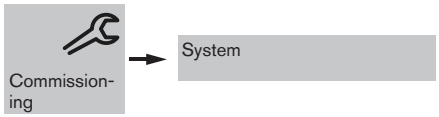
Parameters	Setting
9.3.1 Output test	off: Output test EM Solar deactivated. On: Output test EM Solar activated.
9.3.2 Pump	Activate output M1. ▪ Off ▪ On
9.3.3 MFA1	Activate output MFA1. ▪ Off ▪ On
9.3.4 PWM signal	Activate PWM signal. ▪ 0 … 100 %

6.6.10 Commissioning menu

In the commissioning menu, the engineer can:
- interrogate or change commissioning settings,
- call up device information,
- configure inputs and outputs,
- start program for purging and water filling,
- carry out BCC updates,
- reset system to factory settings.

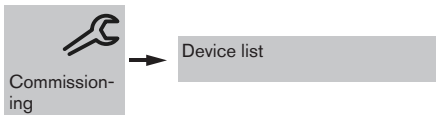
If a device (Bus participant) is installed at a later date, removed or replaced:
► Interrupt and restore voltage supply.
✓ The relevant commissioning wizard starts automatically.
► Carry out commissioning steps.

6.6.10.1 System



Parameters	Setting
10.1.1 Language	Set language.
10.1.2 Date	Set date.
10.1.3 Time	Set time.

6.6.10.2 Device list



Parameters	Settings / description
`Device list`	Addressing and assigning devices. See commissioning steps adjust condensing unit [ch. 7.2]. ▪ Check device list (step 3) ▪ Address heating circuit (step 7) ▪ Address room device 1 (step 8) ▪ Address room device 2 (step 9) ▪ Address room sensor (step 10) ▪ Assign room device 1 (step 11) ▪ Assign room device 2 (step 12) ▪ Assign room sensor (step 13) ▪ Check assignment of room devices and/or room sensor (step 14)

Display addressing and device information

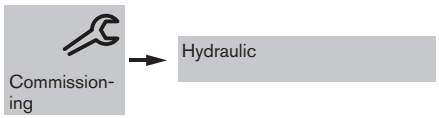
The address and device information of each device can be displayed.

► Select relevant device.
► Press dial knob.
✓ The address of the participant is displayed.
✓ The device selected flashes.
► Press dial knob again.
✓ Device information (`Software version`, etc.) is displayed.

Update device list

If a device is not recognised:
► Select button and confirm.
✓ Search will be reloaded.

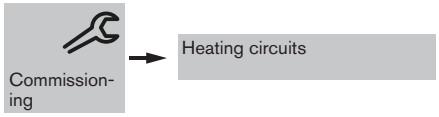
6.6.10.3 Hydraulic



Parameters	Settings / description
Commissioning wizard Hydraulic	The commissioning wizard Hydraulic guides you step by step through the selection of system hydraulics. See commissioning steps adjust condensing unit [ch. 7.2]. ▪ Set DHW circuit of condensing unit (step 4) ▪ Set circulation pump control (step 5) ▪ Set heating circuit of condensing unit (step 6) ▪ Select hydraulic version (step 15)
10.3.2 Hydraulic version	Current hydraulic version set [ch. 11.1].
10.6.4 Device version	Type of condensing unit.
10.6.5 Additional module	Indicates the condensing unit is equipped with the optional additional module.
10.3.3 External sensor	Deactivate outdoor sensor. ▪ available ▪ unavailable
10.3.4 Direct DHW circuit	Current connection of DHW circuit 1 set.
10.3.5 Circulation pump	Current circulation pump control set.
10.3.6 Direct heating circuit	Current connection of heating circuit 1 set.
10.3.7 Buffer loading strategy	Current control mode of the buffer storage.

6.6.10.4 Heating circuits

A separate submenu appears for each heating circuit.

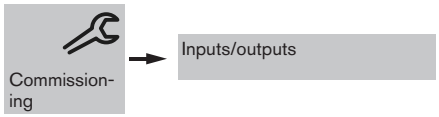


Parameters	Setting
Commissioning wizard Heating circuit	The commissioning wizard Heating circuit guides you through the commissioning of the heating circuit. See commissioning steps adjust condensing unit [ch. 7.2]. ▪ Set heating circuit type and control variation (step 17)
10.4.2 Heating circuit type	Set heating circuit [ch. 11.9].
10.4.3 Control variation	Set control variation [ch. 11.2].
10.4.4 Heating circuit function	Set heating circuit function. ▪ Pump heating circuit ▪ Mixer heating circuit

6.6.10.5 Inputs/outputs

The inputs and outputs can be configured for various functions.

Depending on the hydraulic variant selected, the inputs and outputs are pre-assigned, the function can then not be changed [ch. 11.1].



WTC

Parameters	Setting
10.5.1.1 Multifunction sensor VPT	Deactivate multifunction sensor VPT. On (factory setting): Multifunction sensor VPT activated. Off: Multifunction sensor VPT deactivated.
10.5.1.2 Gas pressure switch	Activate gas pressure switch. Off (factory setting): Gas pressure switch deactivated. On: Gas pressure switch activated. Only in conjunction with inbuilt gas pressure switch (accessory). A gas pressure switch is required to ensure the appliance does not go to lockout if gas pressure fluctuations occur.
10.5.1.3 Output MFA1	Function of output MFA1 [ch. 11.6]. Possible reassignment by commissioning wizard Hydraulic: ▪ Pump HC1 ▪ Pump DHW1 ▪ Buffer load pump ▪ Circulation pump DHW1 ▪ three-way valve
10.5.1.4 Input H1	Function of input H1 [ch. 11.6].
10.5.1.5 Input H1 inverted	The function (contact position) of input H1 can be rotated with inverted . ▪ normal ▪ inverted
10.5.1.6 Input H2	Function of input H2 [ch. 11.6]. Possible reassignment by commissioning wizard Hydraulic: ▪ DHW 1: circulation/button
10.5.1.7 Input H2 inverted	The function (contact position) of input H2 can be rotated with inverted . ▪ normal ▪ inverted
10.5.1.8 Output VA1	Function of output VA1 [ch. 11.6]. Possible reassignment by commissioning wizard Hydraulic: ▪ Pump HC1 ▪ three-way valve

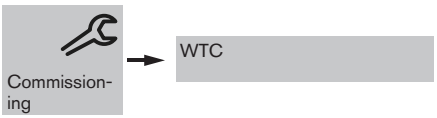
Parameters	Setting
10.5.1.9 Output VA2	Function of output VA2 [ch. 11.6]. Possible reassignment by commissioning wizard Hydraulic: ▪ Circulation pump DHW1
10.5.1.10 Input N1	Function of remote control N1 [ch. 11.3]. ▪ Off ▪ Load remote control (function not activated) ▪ Temperature remote control

Heating circuit (extension module WEM-EM-HK)

A separate submenu appears for each heating circuit.

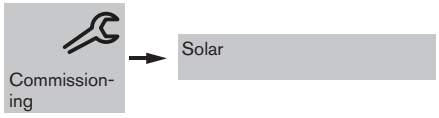
Parameters	Setting
10.5.2.1 Input H1	Function of input H1 [ch. 11.6].
10.5.2.2 Sensor T1	Function of sensor T1. no function: no sensor connected to input T1. external sensor: external sensor connected to input T1.

6.6.10.6 WTC



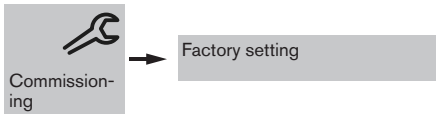
Parameters	Settings / description
Commissioning wizard WTC	The commissioning wizard WTC guides you step by step through the combustion settings. See commissioning steps adjust condensing unit [ch. 7.2]. ▪ Purging the heat exchanger (step 19) ▪ Set type of gas (step 20) ▪ Start calibration (step 21) ▪ Optimise O_2 content at max load (step 23) ▪ Optimise O_2 content at min load (step 24)
10.6.2 BCC Update	Transfer data from coded plug BCC to device electronics WEM-FA-G.
10.6.3 Automatic purging	Program for purging the heat exchanger.
10.6.4 Centre position three-way valve	To fill the water, the internal three-way valve can be placed in the centre position. ▪ Automatic ▪ Centre setting After 10 minutes or after exiting the parameter, the three-way valve is automatically reset to Automatic.
10.6.5 Device version	Type of condensing unit.
10.6.6 Additional module	Indicates the condensing unit is equipped with the optional additional module.
10.6.7 Type of gas	Gas type currently set.
10.6.8 O2 correction total	Current O_2 correction set for max load.
10.6.9 O2 correction up to 50%	Current O_2 correction set for min load.
10.6.10 Nominal load	Nominal load of condensing unit.
10.6.11 Version VPT	Software version of multifunction sensor VPT

6.6.10.7 Solar



Parameters	Settings / description
Commissioning wizard Solar	See commissioning steps adjust condensing unit [ch. 7.2]. ▪ Set number of collectors (step 25) ▪ Select Tyfocor concentration (step 26) ▪ Purge collector circuit (step 27) ▪ Determine maximum operating point (step 28) ▪ Determine minimum operating point (step 29)
10.7.2 Number of collectors	Number of collectors currently set.
10.7.3 Tyfocor concentration	Tyfocor concentration currently set.
10.7.4 Automatic purging	Program for purging the collector circuit.
10.7.5 Maximum operating point	Maximum volumetric flow of collector circuit determined during commissioning (step 28).
10.7.6 Minimum operating point	Minimum volumetric flow of collector circuit determined during commissioning (step 29).

6.6.10.8 Factory setting



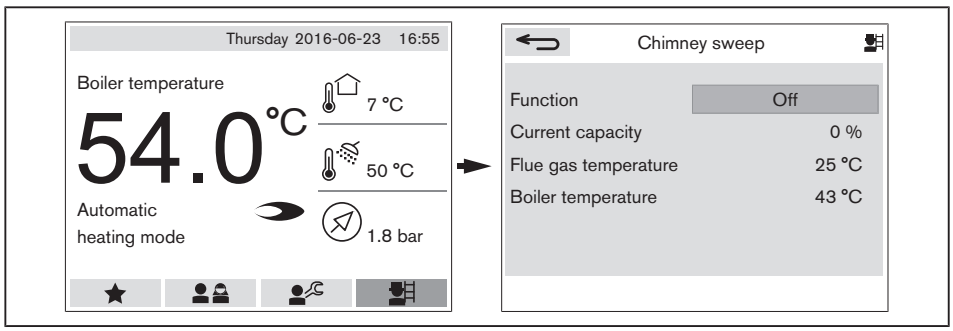
Parameters	Setting
Factory setting	Reset system to factory setting. All parameters are reset to factory setting, with the exception of: ▪ test bench configuration (device version), ▪ parameters of device electronics WEM-FA-G (except for parameters which are pre-assigned by the hydraulic version), ▪ fault memory, ▪ meter readings.

6.7 Chimney sweep function

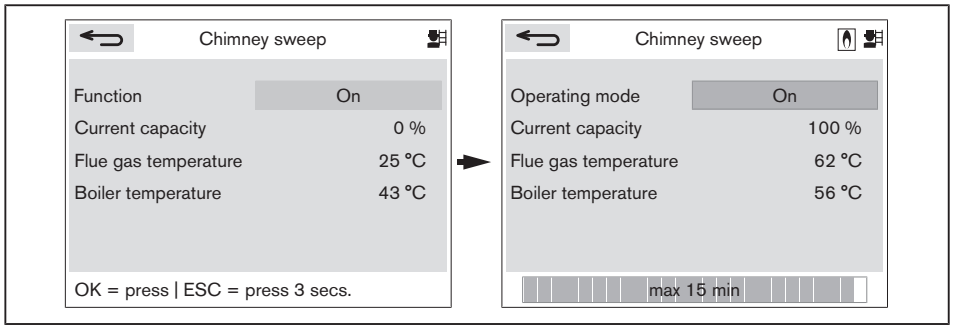
The function is used for flue gas measurement. During the chimney sweep function, the unit runs at maximum capacity.

Activate chimney sweep function

► Select the Chimney sweep symbol and confirm.
✓ Level `Chimney sweep` appears.



► Press dial knob.
► Set`Function` to `On` and confirm.
✓ Chimney sweep function is activated for 15 minutes.



Deactivate chimney sweep function

► Select ⮌ and confirm.

7 Commissioning

7.1 Prerequisite

Commissioning must only be carried out by qualified personnel.

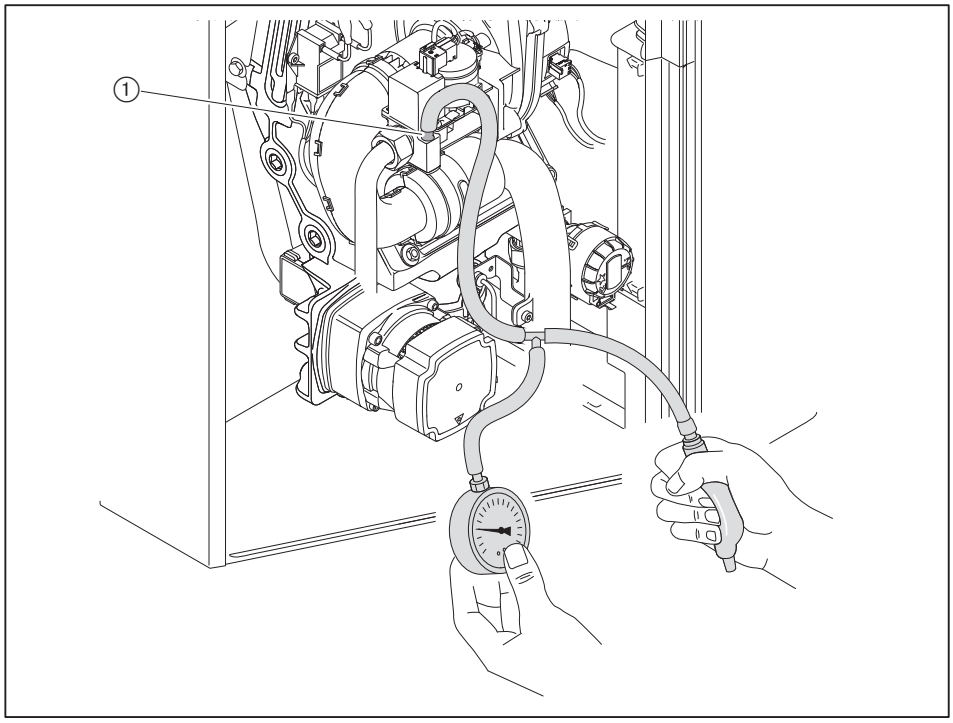
Only correctly carried out commissioning ensures the operational safety.

► Prior to commissioning ensure that:
- all assembly and installation work has been carried out correctly,
- the appliance and heating system have been filled with media and vented,
- the siphon has been filled with water,
- an adequate supply of fresh air is guaranteed,
- flue gas ducts and combustion air ducts are unimpeded,
- all regulating, control and safety devices are functioning and set correctly
- a heat demand is available

Additional system-related tests could be necessary. Please observe the operating guidelines for the individual components.

7.1.1 Check soundness of gas valve train

- ► Carry out soundness test:
  - prior to commissioning,
  - after all service and maintenance work.
- ► Switch off system using switch S1 [ch. 5.6].
- ► Close gas isolating valve.
- ► Remove front panel [ch. 4.4].
- ► Open screw on test point Pe ① of gas combi valve.
- ► Connect test equipment.
- ► Generate test pressure of 100 … 150 mbar.
- ► Wait 5 minutes for pressure equalisation.
- ► Read pressure.
- ► Wait for the test period of 5 minutes.
- ► Read pressure and check pressure loss.
- ✓ The gas section is sound, if the pressure does not drop by more than 1 mbar.
- ► Close screw ① (torque 2 Nm).



DANGER

Risk of explosion due to leaking gas
Improper service work can lead to escaping gas and explosion.
- ► After working on the gas combi valve, close the screw at the measuring point and check for leaks.

- ► Check soundness of measuring point.
- ► Document result of the soundness test on the engineers report.

7.1.2 Check gas connection pressure

DANGER

Risk of explosion due to excess gas supply pressure
Exceeding the maximum connection pressure can damage the gas valve train and lead to an explosion.
► Check gas connection pressure

► Open screw on test point Pe of gas combi valve [ch. 7.1.1].
► Connect pressure measuring device.
► Slowly open isolating valve whilst observing the pressure increase.

If the connection pressure exceeds 60 mbar:
► Immediately close isolating valve.
► Do not start plant.
► Inform the gas supplier.
► If necessary install gas pressure regulator.

DANGER

Risk of explosion due to leaking gas
Improper service work can lead to escaping gas and explosion.
► After working on the gas combi valve, close the screw at the measuring point and check for leaks.

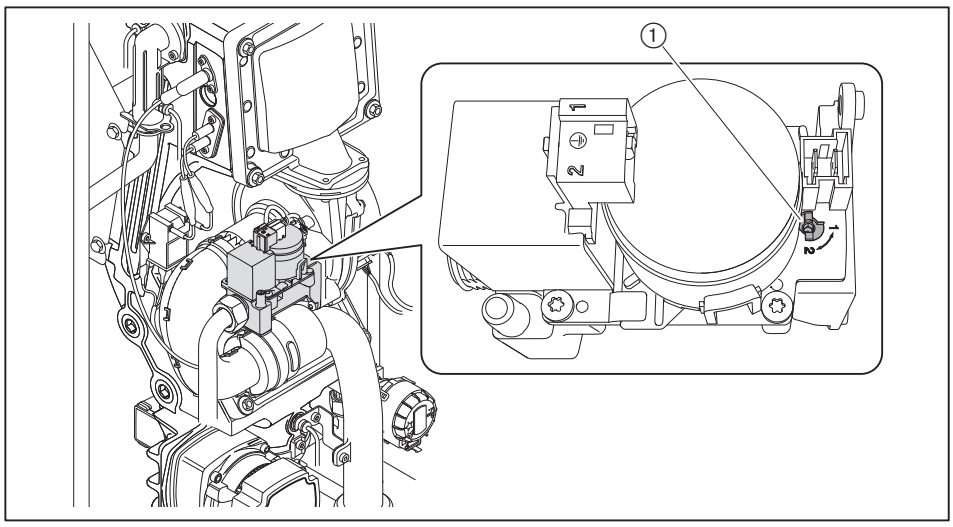
► Close screw on measuring point Pe (torque 2 Nm).
► Check soundness of measuring point.

7.1.3 Set type of gas on gas combi valve

The gas combi valve is factory reset to Natural Gas.

If the appliance is operated with liquid petroleum gas, it is necessary to switch to LPG at the gas combination valve:
► Turn screw (Allen screw 2.5) ① 90° clockwise to position 2.

Natural Gas	Position 1
LPG	Position 2



If the type of gas is changed, the parameter for the type of gas must also be adjusted.

7.2 Adjusting the condensing unit

Depending on system variation, specific commissioning steps are shown or hidden.

For cascade operation or multiple assignment, note deviating settings for commissioning, see installation and operating manual Flue gas-air system.

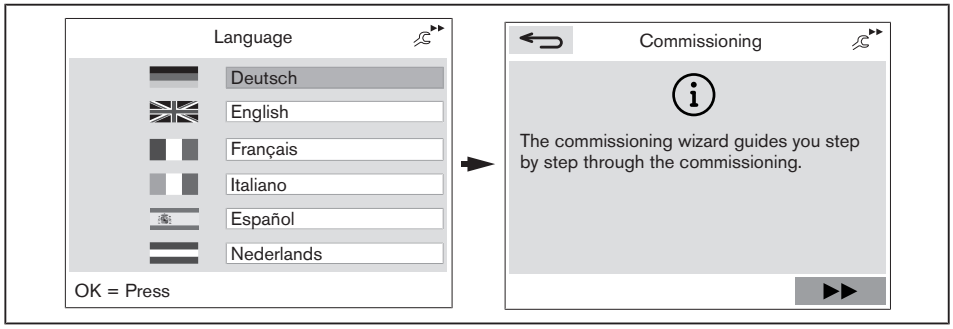
- ► During commissioning, make sure that:
  - maximum possible water throughput is ensured,
  - heat up is carried out with low flow temperatures and at low rating,
  - all units on systems with multiple units are operated simultaneously with low load.
- ► Open gas isolating valve.
- ► Switch on system at switch S1 [ch. 5.6].

The commissioning wizard can be restarted at any time during the initial commissioning.

- ► Press dial knob for approx. 15 seconds.
- ✓ The system device can be reset to its factory setting.
- ► Reset device to factory setting.
- ✓ The commissioning wizard restarts.

1. Set language

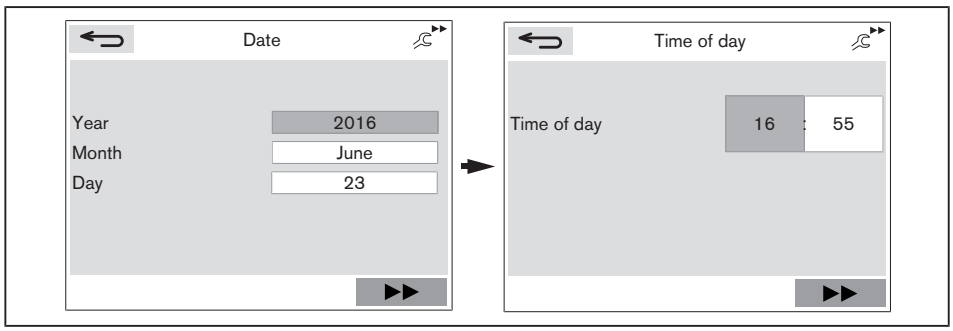
- ► Select language required and confirm.
- ✓ The language selected is generated.
- ✓ The commissioning wizard starts.



- ► Select ▶▶ and confirm.

2. Set date and time

► Select `year`, `month` or `day` .
► Press dial knob.
✓ Selected area is highlighted in blue.
► Set current date and confirm.
► Select ▶▶ and confirm.
► Select `hours` or `minutes` .
► Press dial knob.
✓ Selected area is highlighted in blue.
► Set current time of day.

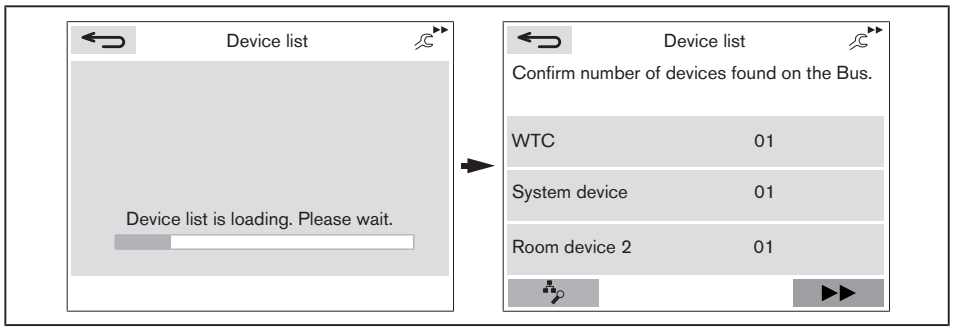


3. Check device list

► Select ▶▶ and confirm.
✓ Device list is loading.
✓ The address of each Bus participant of the system is displayed in the device list.
► Ensure all devices are shown.

Show device information:
► Select relevant device.
► Press dial knob.
✓ The device selected flashes.
► Press dial knob again.
✓ Device information (`Software version`, etc.) is displayed.

If a device is not recognized, button can be used to reload the search.

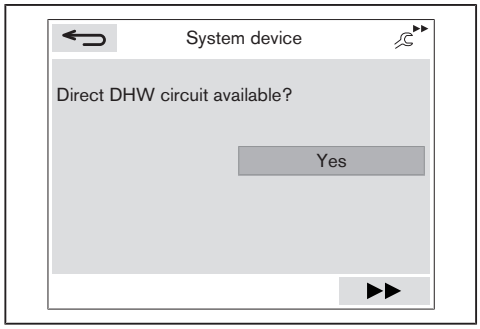


► Selected button ▶▶ and confirm device list.

4. Set DHW circuit of condensing unit (optional)

This step appears only for version H and version H-0.

► Check if a direct DHW circuit is available.
✓ A direct DHW circuit is available when the condensing unit controls DHW loading (DHW sensor B3 connected to the condensing unit).
► Set DHW circuit and confirm.
- `Yes`: Direct DHW circuit available.
- `No`: No direct DHW circuit available.

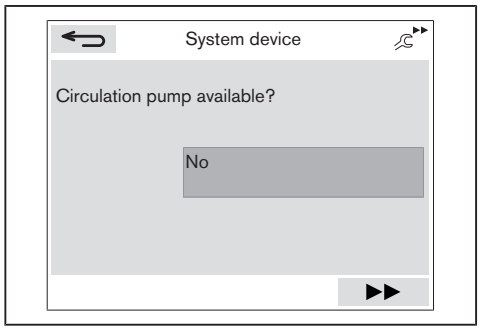


► Select ▶▶ and confirm.

5. Set circulation pump control (optional)

If the question about the direct DHW circuit has been answered with `Yes` , the interrogation of the circulation pump control appear, if `No` the interrogation is skipped.

► Set circulation pump control and confirm.
- `Non`: no circulation pump installed.
- `Yes: time controlled`: pump is controlled via time program [ch. 6.5.4].
- `yes: time controlled + button (H2)`: pump is controlled via time program and manually [ch. 6.6.7.3].
- `Yes: time controlled + temperature`: pump is controlled via time program and return flow sensor [ch. 6.6.7.3].

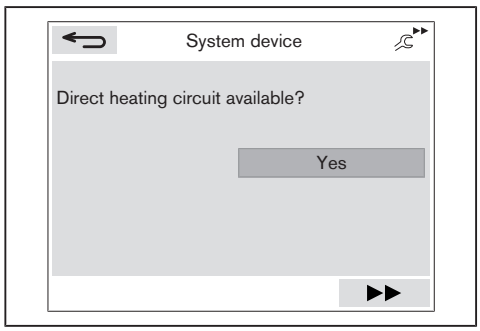


► Select ▶▶ and confirm.

6. Set heating circuit of condensing unit

► Check if a direct heating circuit is available.
✓ A direct heating circuit is available if either:
- the internal pump is supplied by the internal pump from the condensing unit supplies the heating circuit 1, or
- an external heating circuit pump supplies the heating circuit 1, which is connected to the condensing unit.

► Set heating circuit and confirm.
- `Yes`: direct heating circuit available.
- `No`: no direct heating circuit available.

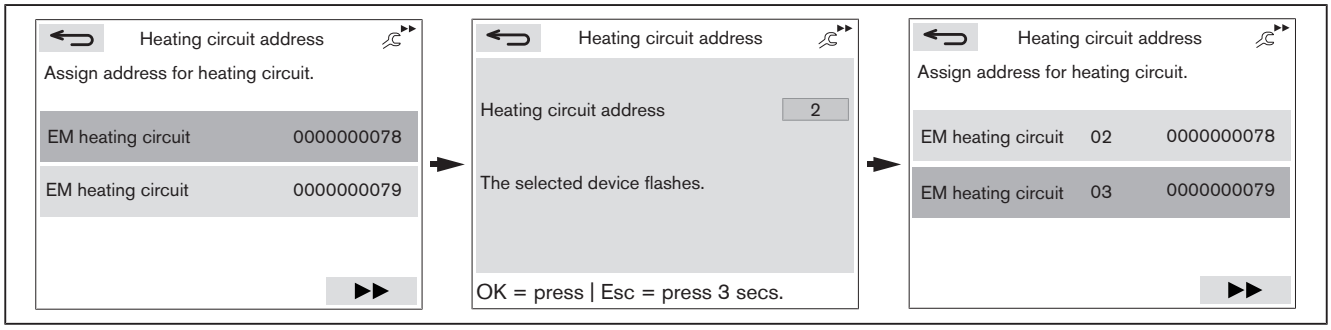


► Select ▶▶ and confirm.

7. Address heating circuit (optional)

This step only has to be carried out for multiple expansion module heating circuits.

If multiple heating circuits are available:
► Select the relevant heating circuit.
► Press dial knob.
✓ The extension module selected flashes.
► Assign address for heating circuit.
► Repeat procedure for the other heating circuits.

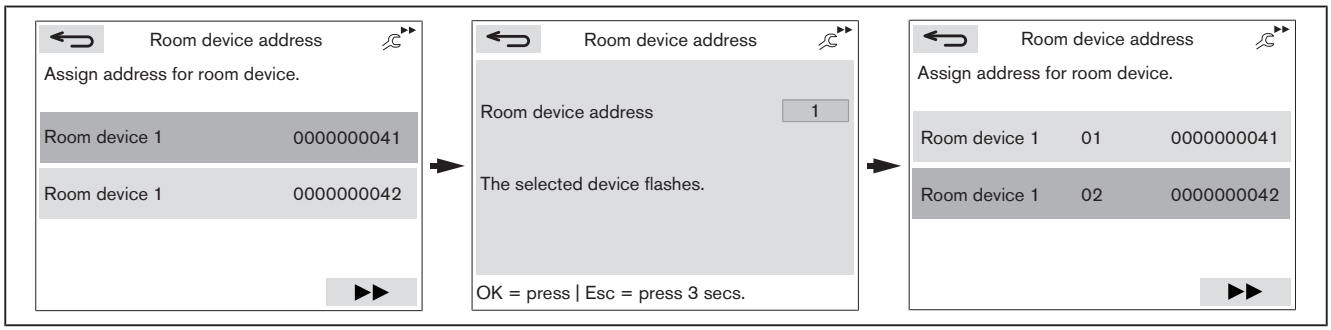


► Select ▶▶ and confirm.

8. Address room device 1 (optional)

This step only has to be carried out for multiple room devices.

If multiple room devices are available:
- ▸ Select relevant room device.
- ▸ Press dial knob.
- ✓ The room device selected flashes.
- ▸ Assign address for room device.
- ▸ Repeat procedure for the other room devices.

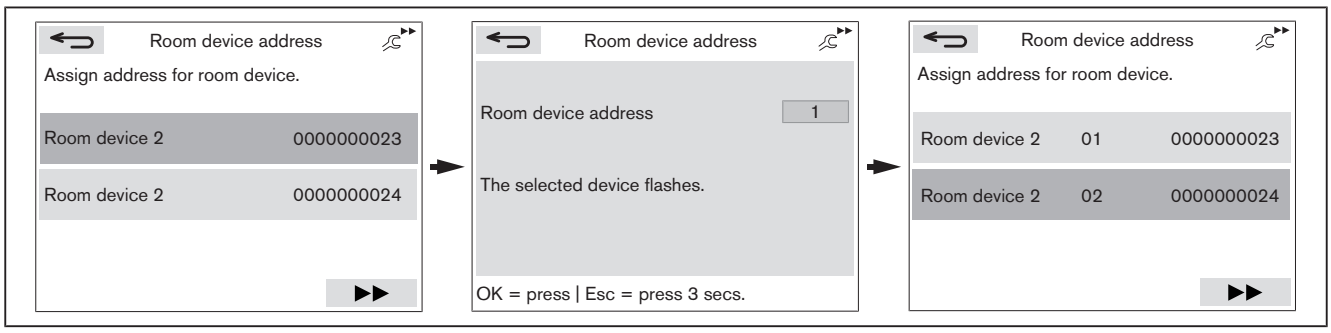


- ▸ Select ▶▶ and confirm.

9. Address room device 2 (optional)

This step only has to be carried out for multiple room devices.

If multiple room devices are available:
- ▸ Select relevant room device.
- ▸ Press dial knob.
- ✓ The room device selected flashes.
- ▸ Assign address for room device.
- ▸ Repeat procedure for the other room devices.

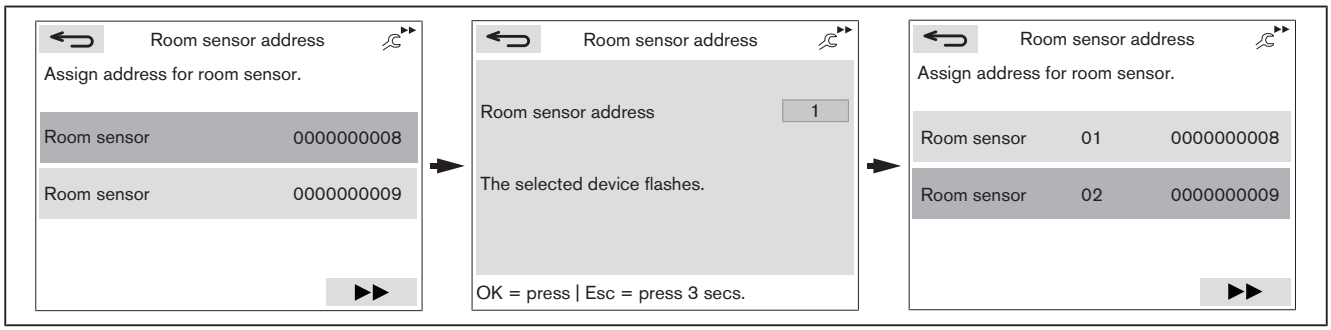


- ▸ Select ▶▶ and confirm.

10. Address room sensor (optional)

This step only has to be carried out for multiple room sensors.

If multiple room sensors are available:
- ► Select appropriate room sensor.
- ► Press dial knob.
- ✓ The room sensor selected flashes.
- ► Assign address for room sensor.
- ► Repeat procedure for the other room sensors.



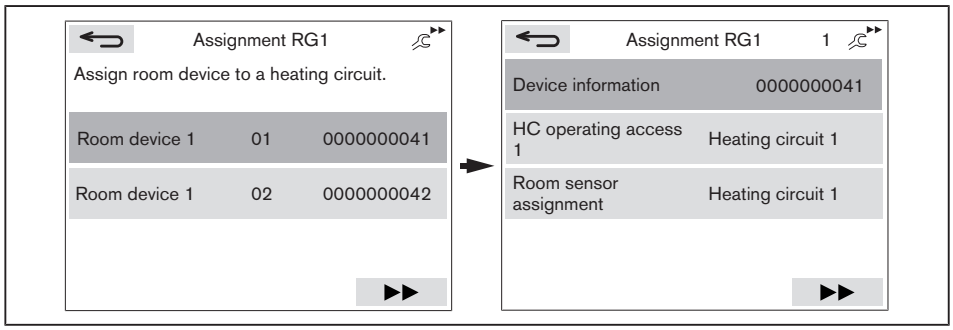
- ► Select ▶▶ and confirm.

11. Assign room device 1 (optional)

Each room device must be assigned with an operating access and if the control is room temperature controlled, a room sensor must be assigned.

Room device 1 can operate one heating circuit.

- ► Select relevant room device.
- ► Press dial knob.
- ► Assign desired operating access for heating circuit.
- ► If required, assign desired room sensor assignment for heating circuit.
- ► Repeat procedure for the other room devices.



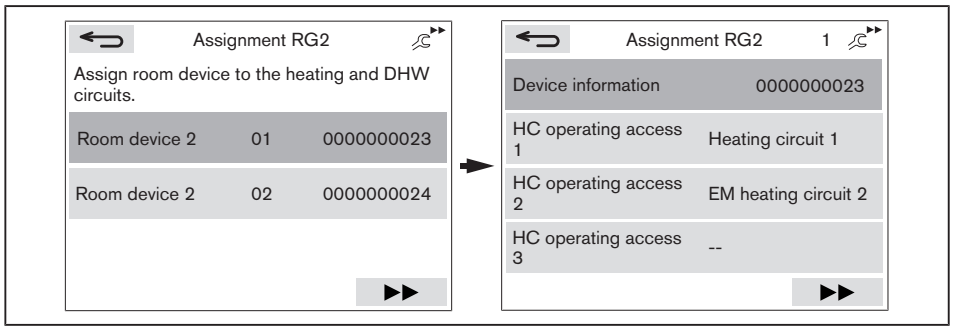
- ► Select ▶▶ and confirm.

12. Assign room device 2 (optional)

Each room device must be assigned with an operating access and if the control is room temperature controlled, a room sensor must be assigned.

Room device 2 can operate up to 3 heating circuits and one DHW circuit.

- ► Select relevant room device.
- ► Press dial knob.
- ► Assign desired operating access for heating circuit and DHW circuit.
- ► If required, assign desired room sensor assignment for heating circuit.
- ► Repeat procedure for the other room devices.



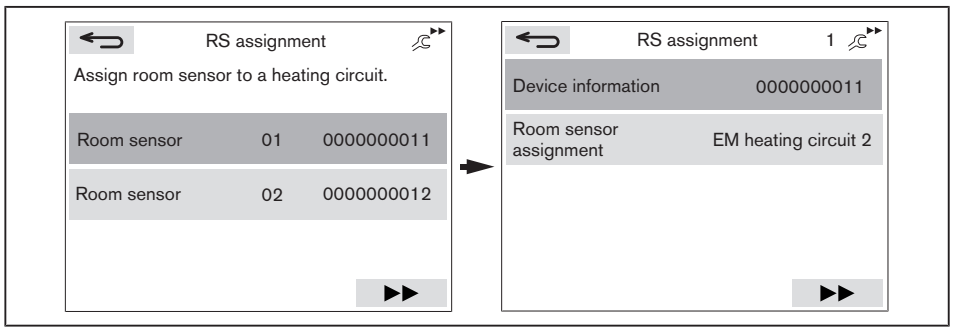
- ► Select ▶▶ and confirm.

13. Assign room sensor (optional)

For each room sensor, a room sensor assignment must be assigned. Assign desired access for heating circuit.

Room sensor WEM-RF can only be assigned to one heating circuit. Up to 3 room sensors can be assigned to one heating circuit. The system device then calculates the average value for the control from the room temperatures.

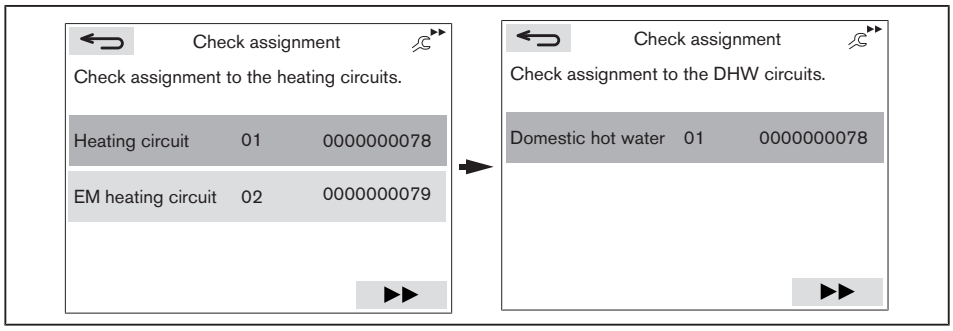
- ► Select the relevant room sensor.
- ► Press dial knob.
- ► Assign desired room sensor assignment for heating circuit.
- ► Repeat procedure for the other room sensors.



- ► Select ▶▶ and confirm.

14. Check assignment of room devices and/or room sensor (optional)

- ▸ Select the relevant heating circuit and confirm.
- ▸ Check assignment of room devices and/or room sensor to the heating circuits.
- ▸ If necessary, use the button ⮌ to go back and reallocate room devices.
- ▸ Select ▶▶ and confirm.
- ▸ Check assignment of room devices to DHW circuit.
- ▸ If necessary, use the button ⮌ to go back and reallocate room devices.

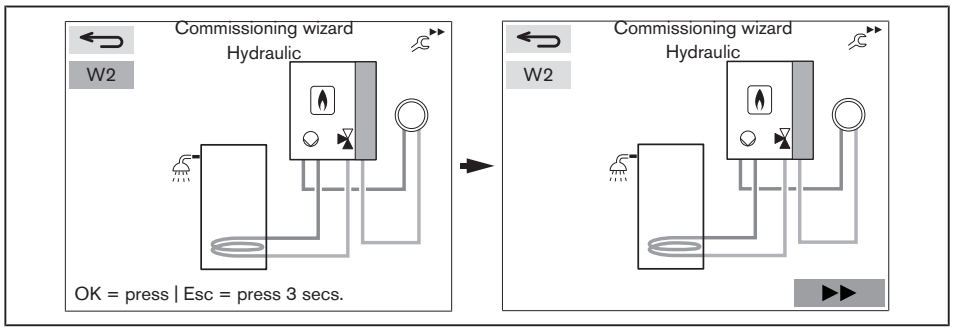


- ▸ Select ▶▶ and confirm.

✓ Device lists is saved.

15. Select hydraulic version

- ▸ Select hydraulic version using dial knob [ch. 11.1].
- ▸ Press to confirm hydraulic version.



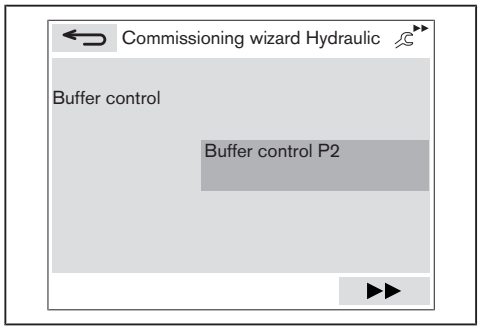
- ▸ Select ▶▶ and confirm.

✓ Hydraulic data is written.

16. Set buffer control (optional)

This step appears only when there is a buffer storage.

► Select buffer control and confirm.
- `Buffer control P1`: buffer control with one sensor [ch. 11.2.5].
- `Buffer control P2`: buffer control with two sensors [ch. 11.2.6].
- `Buffer switch-over P1/P2`: Automatic switch-over [ch. 11.2.7].



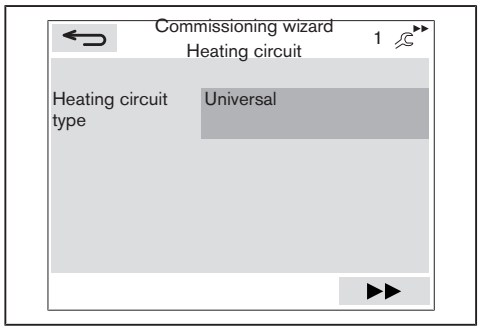
► Select ▶▶ and confirm.

17. Set heating circuit type and control variation

Defined factory settings of the heating circuit types [ch. 11.9].

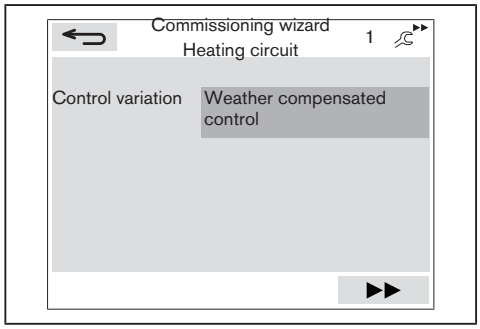
Depending on the type of heating circuit, a heating curve is automatically generated [ch. 11.9.1].

► Set heating circuit type and confirm.
- `Universal`
- `Convector`
- `Radiator 70`
- `Radiator 60`
- `Underfloor heating`
- `Floor warming`



► Select ▶▶ and confirm.
✓ Control variation is displayed.
► Set control variation and confirm.
- `Constant flow temperature` [ch. 11.2.1]
- `Weather compensated control` [ch. 11.2.2]
- `Room temperature dependent control`(1 [ch. 11.2.3]
- `Weather compensated/room control`(1 [ch. 11.2.4]

(1 Appears only if a room sensor assignment has been made.



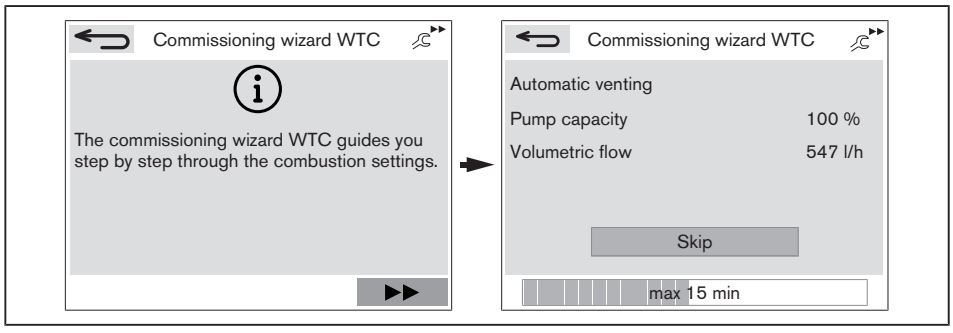
► Select ▶▶ and confirm.

18. Set heating circuit type and control variation for additional heating circuits (optional)

If multiple heating circuits are available:
► Set heating circuit type and control variation.

19. Purge heat exchanger

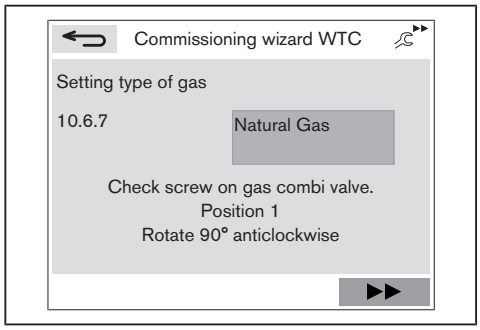
► Select ▶▶ and confirm.
✓ Automatic purging of heat exchanger starts.



Following successful purging, the window `Set type of gas` appears.

20. Set type of gas

► Check type of gas, if required change type of gas.

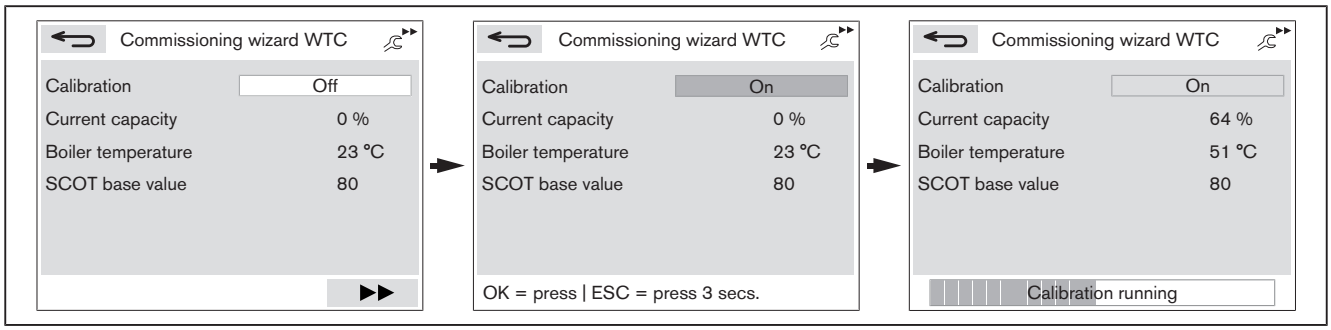


21. Start calibration

DANGER

Risk of electric shock
Touching the ignition device can lead to electric shock.
► Do not touch ignition device during the ignition process.

► Select ▶▶ and confirm.
► Press dial knob.
✓ Selected area is highlighted in blue.
► Set `Calibration` to `On` and confirm.
✓ The condensing unit carries out a calibration and determines the basic Io value for the combustion control (system SCOT®).
✓ Following successful calibration the `flue gas measurement P max` starts.



22. Check gas connection pressure

► Open screw on test point Pe of gas combi valve [ch. 7.1.1].
► Connect pressure measuring device.
► Check gas connection pressure
✓ The gas connection pressure must be within the range.

Natural Gas E/H	17.0 … **20** … 25.0 mbar
Natural Gas LL	20.0 … **25** … 30.0 mbar
LPG B/P (p_n 37)	25.0 … **37** … 45.0 mbar
LPG B/P (p_n 50)	42.5 … **50** … 57.5 mbar

Operation outside the ranges according to EN 437 is not permitted.

If the measured connection pressure lies outside of the range:
► Do not start plant.
► Inform the gas supplier.
► If necessary install additional gas pressure regulator.

23. Optimise O_2 content at max. load

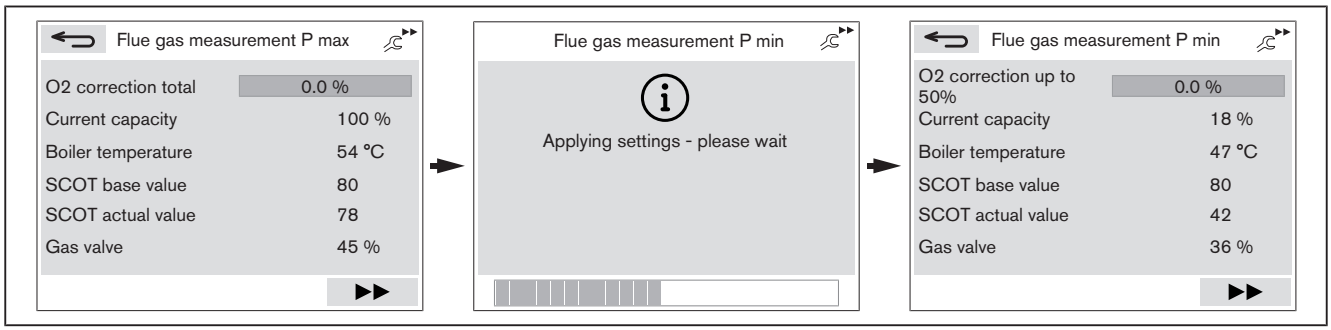
A correction is not necessary, if the O_2 content is within the permissible range.

Max load	O_2 content
Natural Gas	4.5 … 5.5 %
Liquid Petroleum Gas	4.8 … 5.8 %

- ▶ Check combustion and if necessary optimise O_2 content.

If the O_2 content deviates from the permissible range:
- ▶ Press dial knob.
- ✓ Selected area is highlighted in blue.
- ▶ Correct O_2 content and confirm.
- ▶ Check O_2 content.
- ▶ Repeat procedure until the O_2 content lies within the permissible range.

If the O_2 content lies within the permissible range:
- ▶ Carry out flue gas measurement, enter values in the test sheet of the engineers report.
- ▶ Select ▶▶ and confirm.
- ✓ Settings are applied.
- ✓ `Flue gas measurement P min` starts.



24. Optimise O_2 content at min. load

A correction is not necessary, if the O_2 content is within the permissible range.

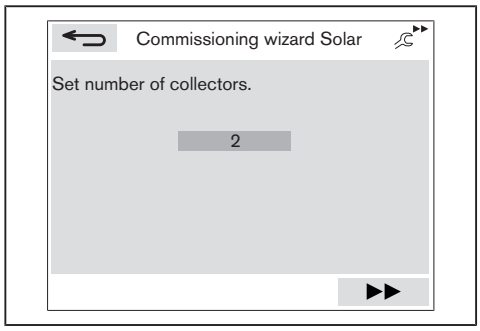
Min load	O_2 content
Natural Gas	4.0 … 6.0 %
Liquid Petroleum Gas	4.3 … 6.3 %

- ▶ Repeat procedure for min load.
- ▶ Carry out flue gas measurement, enter values in the test sheet of the engineers report.
- ▶ Select ▶▶ and confirm.
- ✓ Commissioning of the condensing unit is complete.

25. Set number of collectors (optional)

This step appears only when there is a solar system available.

► Set number of collectors and confirm.

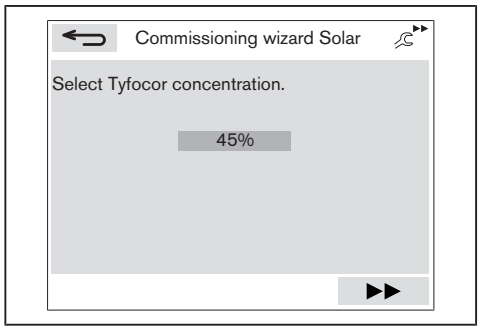


► Select ▶▶ and confirm.

26. Select Tyfocor concentration (optional)

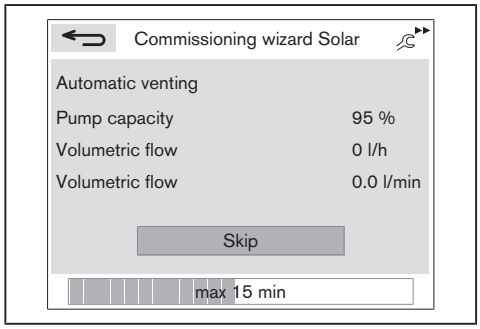
This step appears only when there is a solar system available.

► Select Tyfocor concentration and confirm.



27. Purge collector circuit (optional)

► Select ▶▶ and confirm.
✓ Automatic purging of the collector circuit starts.

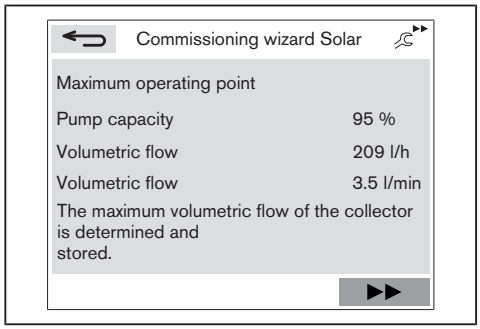


Following successful purging, the window `Maximum operating point` appears.

28. Determine maximum operating point (optional)

The maximum volumetric flow of the collector is determined and stored [ch. 6.6.10.7].

► Wait approx. 1 minute until the volumetric flow has stabilised.



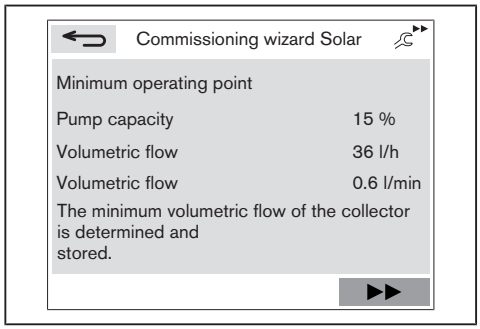
► Select ▶▶ and confirm.
✓ Maximum operating point is stored.

29. Determine minimum operating point (optional)

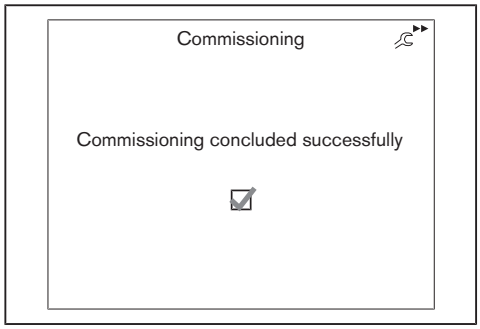
The solar pump tries to achieve the minimum volumetric flow (factory setting 0.6 l/min) via the pump capacity.

The minimum volumetric flow and the pump capacity required for the collector circuit is determined and stored [ch. 6.6.10.7].

► Wait until the minimum flow has been determined.



► Select ▶▶ and confirm.
✓ Minimum operating point is stored.
✓ The commissioning wizard is closed.



30. Concluding work

DANGER

Risk of explosion due to leaking gas
Improper service work can lead to escaping gas and explosion.
- ► After working on the gas combi valve, close the screw at the measuring point and check for leaks.

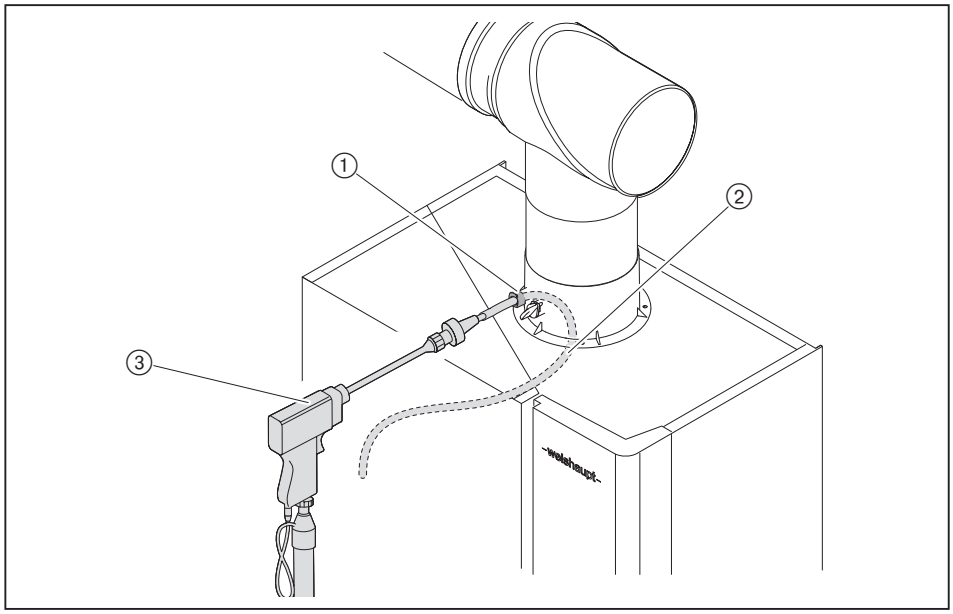
- ► If necessary, configure inputs and outputs according to the application [ch. 6.6.10.5].
- ► Close the test points and close covers.
- ► Enter combustion values and settings in the commissioning record.
- ► Inform the operator about the use of the equipment.
- ► Insert the operating instructions enclosed into the inside of the control unit flap.
- ► Hand the installation and operating manual to the operator and inform him that this must be kept on site.
- ► Point out to operator that the installation should be serviced annually.
- ► Write the type of gas set onto the name plate.

7.3 Check soundness of flue gas system

For room air independent operation, the soundness of the flue gas system must be checked by means of an O_2 measurement.

- ► Guide the hose ② via the measuring point in the supply air annular gap ① into the appliance.
- ► Seal the measuring point in the supply air annular gap.
- ► Connect the measuring probe ③ to the hose.
- ► Mount the front panel.
- ► Manually drive to capacity.
- ► Carry out O_2 measurement at maximum load.
- ► Adhere to a measuring period of at least 5 minutes.

It is admissible for the O_2 content to fall short of the measured values of the ambient air by 0.2 % at the most.



7.4 Adjust capacity

Maximum load

If required, the maximum load can be changed via parameter `2.1.2 Maximum load heating mode` , see [ch. 6.6.2.1].

Minimum load

If required, the minimum load can be changed via parameter `2.3.4 Correct minimum load`, see [ch. 6.6.2.3].

Flue gas pipe length

The capacity adjustment for the flue gas pipe length is set via parameter `2.3.3 Correction speed for flue gas length`, see [ch. 6.6.2.3].

7.5 Calculate combustion heat rating

Formula symbol	Explanation
V_B	Operating volume [m^3/h] Volume measured at gas meter at current pressure and temperature (gas throughput).
V_N	Standard volume [m^3/h] Volume gained by gas at 1013 mbar and 0 °C.
f	Conversion factor
H_i	Calorific value [kWh/m^3] (at 0 °C and 1013 mbar)
t_{Gas}	Gas temperature at gas meter [°C]
P_{Gas}	Pressure at gas meter [mbar]
P_{Baro}	Barometric air pressure [mbar], see table
V_G	Gas throughput determined at gas meter
T_M	Measuring time [seconds]
Q_F	Combustion heat rating [kW]

Determine current operating volume (gas throughput)

- ► Measure gas throughput (V_G) at gas meter, measuring time (T_M) should be a minimum of 60 seconds.
- ► Calculate operating volume (V_B) using the following formula.

$$V_B = \frac{3600 \cdot V_G}{T_M}$$

Calculate conversion factor

- ► Determine gas temperature (t_{Gas}) and pressure (P_{Gas}) at gas meter.
- ► Determine barometric air pressure (P_{Baro}) from table.

Height above sea level [m]	0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300
P_{Baro} [mbar]	1013	1001	990	978	966	955	943	932	921	910	899	888	877	866

- ► Calculate conversion factor (f) using the following formula.

$$f = \frac{P_{Baro} + P_{Gas}}{1013} \cdot \frac{273}{273 + t_{Gas}}$$

Calculate normal volume

- ► Calculate the normal volume (V_N) using the following formula.

$$V_N = V_B \cdot f$$

Calculate combustion heat rating

- ► Calculate combustion heat rating (Q_F) using the following formula.

$$Q_F = V_N \cdot H_i$$

8 Shutdown

For breaks in operation:
- ► Switching off the appliance.
- ► Close fuel shut off devices.
- ► If there is a risk of frost drain the system.

9 Servicing

9.1 Notes on servicing

DANGER

Risk of explosion due to leaking gas
Improper service work can lead to escaping gas and explosion.
- ▶ Close fuel shut off devices prior to starting work.
- ▶ Care should be taken when dismantling and assembling gas carrying components.
- ▶ Close the screws on the test points ensuring the tests points are sealed.

DANGER

Risk of electric shock
Working on the device when voltage is applied can lead to electric shock.
- ▶ Isolate the device from the power supply prior to starting any work.
- ▶ Safeguard against accidental restart.

DANGER

Danger of poisoning by escaping flue gas
Flue gas can escape if the siphon is not filled. Inhalation leads to dizziness, nausea and eventually death.
- ▶ Check the fill level of the siphon at regular intervals and replenish if necessary, in particular when the system has been shut down for longer periods or has been operated at high return temperatures > 55 °C.

WARNING

Electric shock despite disconnection from the voltage supply
It is possible that electrical components continue to carry voltage and cause electric shock even after the voltage supply has been disconnected.
- ▶ Wait approx. 5 minutes before commencing work.
- ✓ Electric voltage has dissipated.

WARNING

Danger of getting burned on hot components
Hot components can lead to burns.
- ▶ Allow components to cool.

Servicing must only be carried out by qualified personnel. The combustion plant should be serviced annually. Depending on site conditions more frequent checks may be required.

Components, which show increased wear and tear or whose design lifespan is or will be exceeded prior to the next service should be replaced as a precaution [ch. 9.2].

Weishaupt recommends a service contract is entered into to ensure regular inspections.

The following components must only be replaced and must not be repaired:
- WEM-FA-G device electronics,
- gas combi valve,
- safety valve.

Prior to every servicing

- ► Inform the operator about the extent of service work to be carried out.
- ► Carry out input measurement [ch. 6.6.8.2].
- ► Switch off mains switch of installation and safeguard against accidental reactivation.
- ► Close fuel shut off devices.
- ► Remove front panel [ch. 4.4].

Service

Carry out servicing in accordance with the enclosed inspection card (Print No. 837569xx).

Following servicing

DANGER

Risk of electric shock
Touching the ignition device can lead to electric shock.
- ► Do not touch ignition device during the ignition process.

- ► Check soundness of gas valve train [ch. 7.1.1]
- ► Check soundness of flue gas and condensate carrying components.
- ► Check tightness of water carrying components.
- ► Check soundness of burner cover / fan connection and burner cover / heat exchanger connection.
- ► Mount the front panel and secure the tension lock with the screw.
- ► Carry out flue gas measurement (calibration, O_2 correction), see [ch. 6.6.8.3].
- ► Enter combustion values and settings in the commissioning record.
- ► Resetting the service display [ch. 6.6.8].

9.2 Components

In addition to the servicing steps listed in the inspection card, the following components must be tested for their design lifespan.

Components, which show increased wear and tear or whose design lifespan is or will be exceeded prior to the next service should be replaced as a precaution.

- ► Check the design lifespan of the components.
- ► Replace components as necessary

Components	Design lifespan
WEM-FA-G device electronics	10 years or 360 000 burner starts
Gas combi valve	10 years or 500 000 burner starts
Gasket fan air outlet	10 years
Seal gas valve / fan	10 years
Burner gasket	10 years

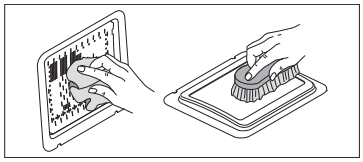
9.3 Removing and refitting burner surface

Observe notes on servicing [ch. 9.1].

Removing

- ► Close gas isolating valve.
- ► Unplug electrical connections ① from gas combi valve and fan.
- ► Undo union nut ②.
- ► Remove screw ④ on intake sound attenuator.
- ► Remove disc nuts ⑤ on burner cover.
- ► Remove burner cover.
- ► Remove burner gasket ⑥.
- ► Remove burner surface ⑦.

Clean burner surface

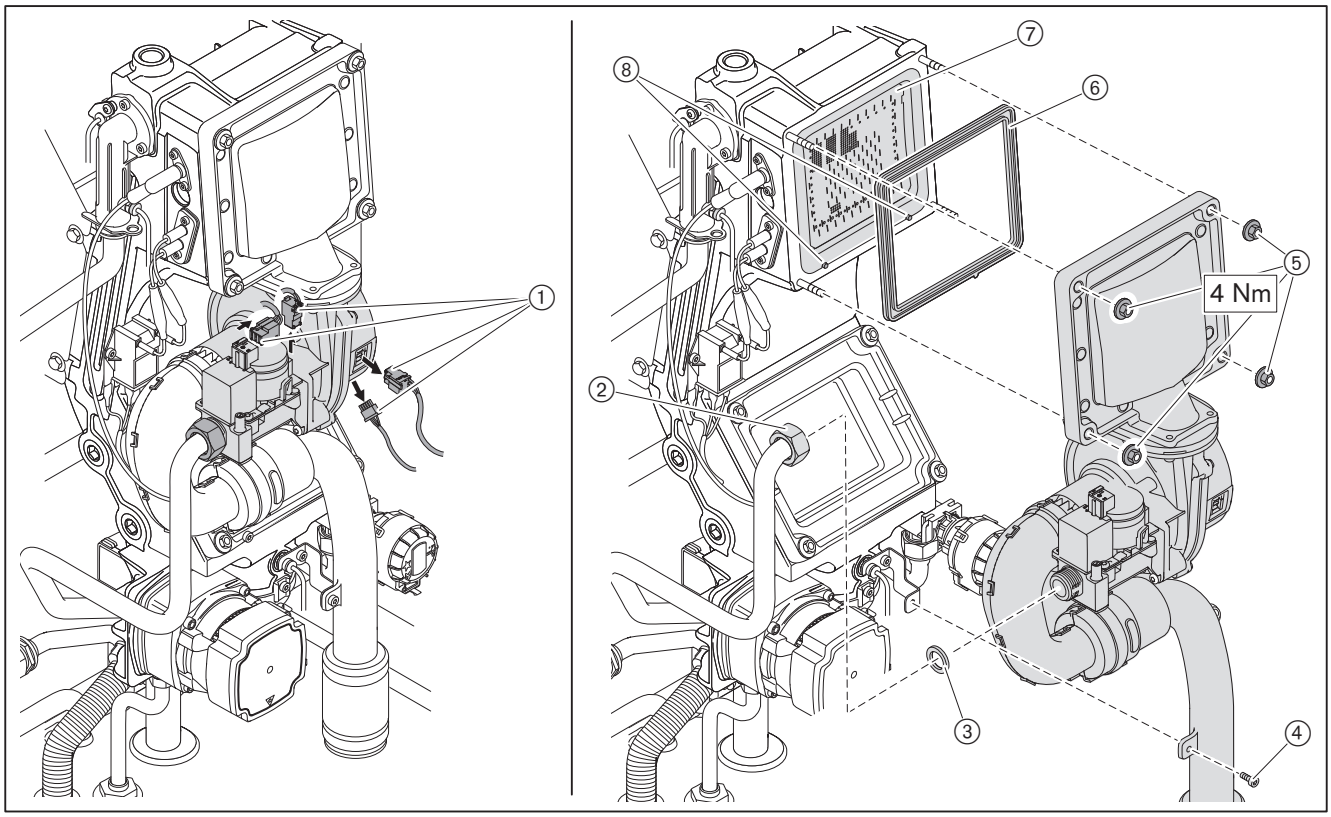


Clean burner surface if required:

- ► Clean the front with a cloth.
- ► If dust deposits are present, brush out the back using a soft brush to prevent damaging the burner fleece.

Refitting

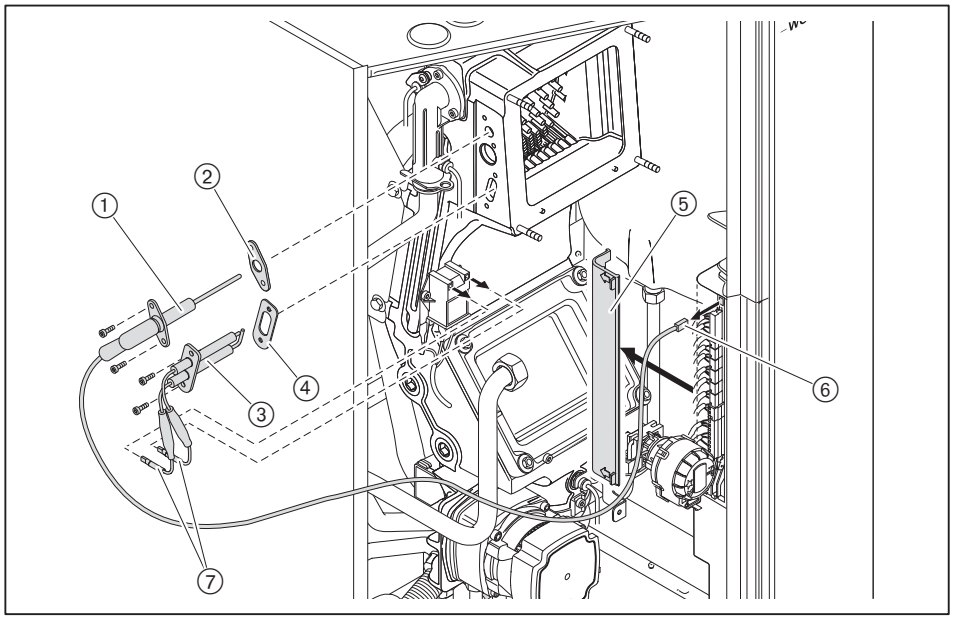
- ► Refit burner surface in reverse order, and:
  - fit burner surface with recesses to the adjusting pins ⑧ and install it,
  - check burner gasket ⑥ for visible damage, replace if necessary,
  - fit burner cover, tighten disc nuts ⑤ evenly diagonally across (torque 4 Nm),
  - fit new gasket ③ to gas connection.



9.4 Replacing electrodes

Observe notes on servicing [ch. 9.1].

- ▶ Remove cover ⑤.
- ▶ Unplug ionisation cable ⑥ from the circuit board.
- ▶ remove screws from ionisation electrode ①.
- ▶ Replace ionisation electrode and gasket ②.
- ▶ Unplug ignition cable ⑦.
- ▶ Remove screws from ignition electrode ③.
- ▶ Replace ignition electrode and gasket ④, observe ignition electrode distance of 4.0 mm.



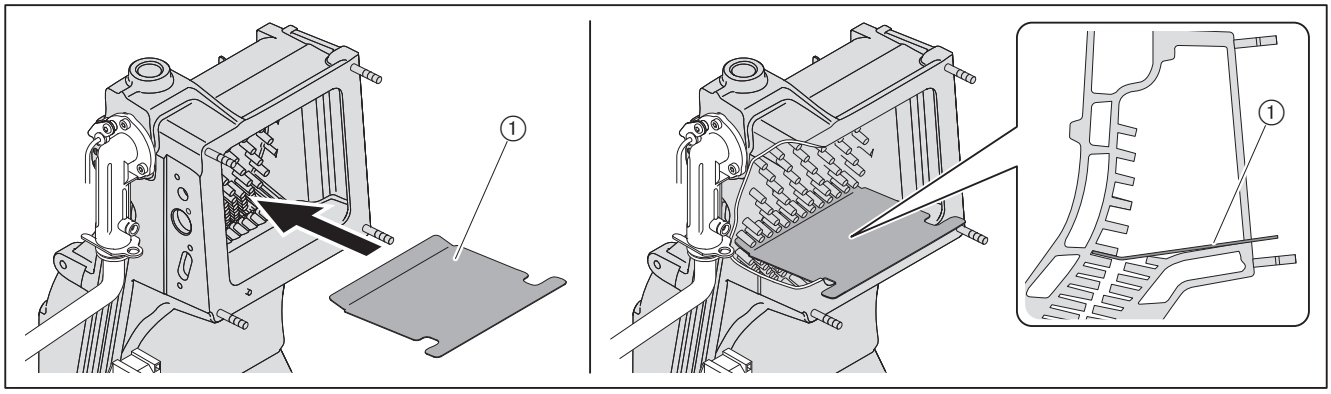
9.5 Cleaning the heat exchanger

Observe notes on servicing [ch. 9.1].

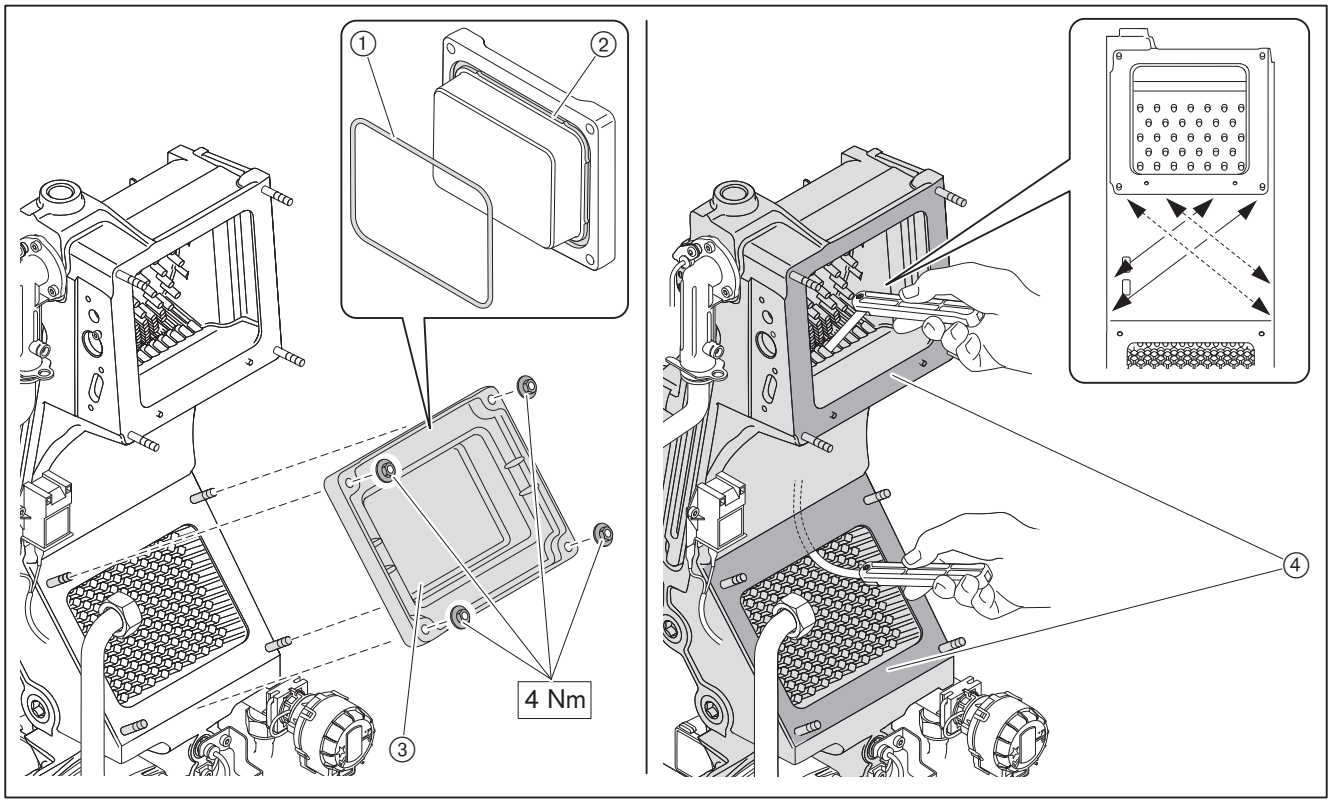
- ► Remove burner surface [ch. 9.3].
- ► Remove electrodes [ch. 9.4].

Heat exchanger cleaning kit (accessory) required.

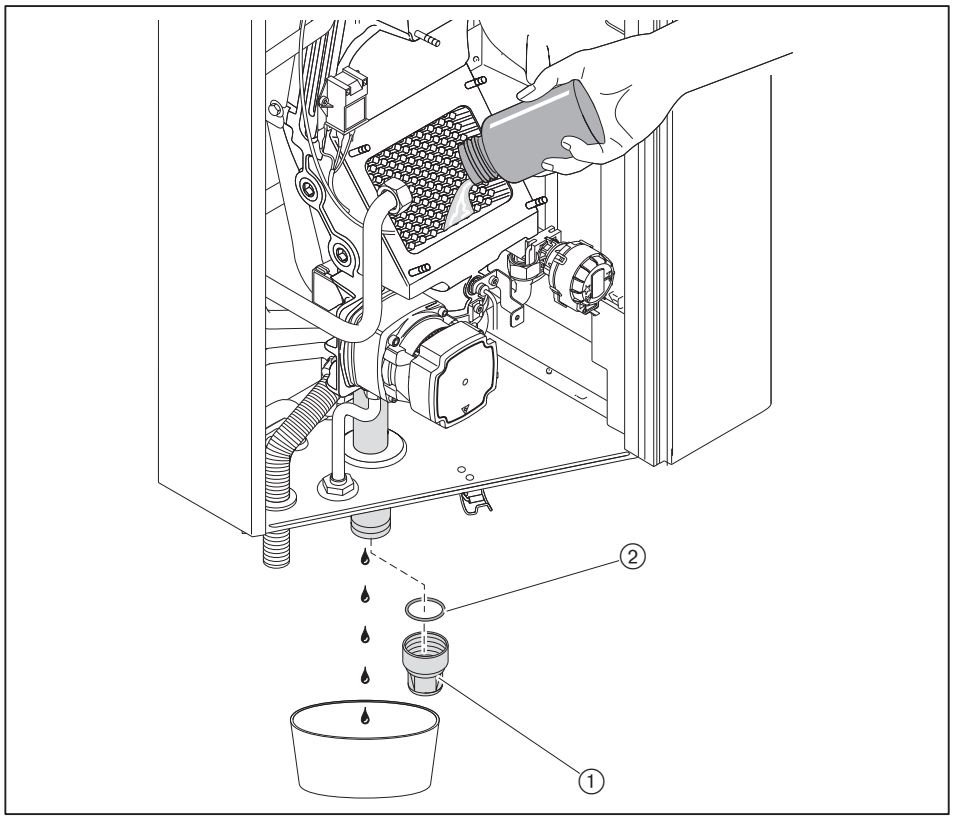
- ► Insert cover plate ① from cleaning kit.
- ✓ Heat exchanger is protected against falling dirt.
- ► Clean combustion chamber with brush from cleaning kit and vacuum.
- ► Remove cover plate.



- ► Remove disc nuts from service cover ③.
- ► Remove service cover.
- ► Remove gasket ① and clean seal groove ②.
- ► Clean heat exchanger with cleaning blades and brush from cleaning kit.
- ► Vacuum out any dislodged dirt.
- ► Clean sealing surfaces ④.



- ► Remove siphon cover ①.
- ► Clean siphon and fill with water.
- ► Refit siphon cover ensuring correct alignment of seal ②, if necessary replace seal.
- ► Fill siphon with water via the service cover and check for leaks.



- ► Replace service cover seal.
- ► Fit service cover (torque 4 Nm).
- ► Fit electrodes and gaskets, if necessary replace.
- ► Refit burner surface [ch. 9.3].

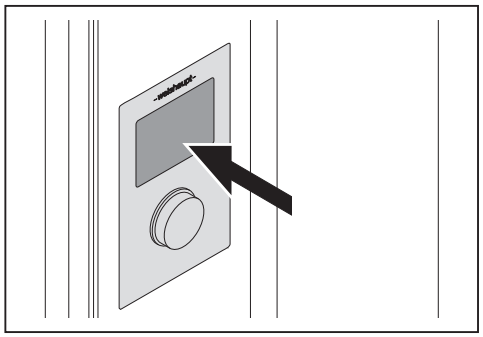
10 Troubleshooting

10.1 Procedures for fault conditions

- ▶ Check prerequisites for operation:
  - Voltage supply available.
  - Heating switch is set to On.
  - System device or room device set correctly.

The system device detects and displays irregularities in the system.

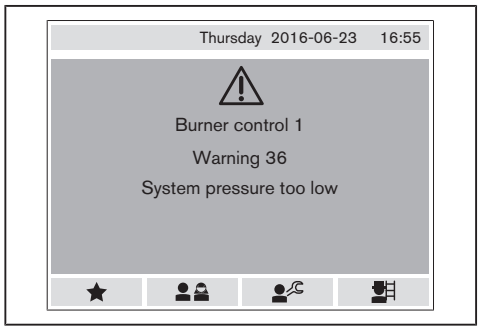
The following conditions can occur:
- Warning
- Fault



Warnings

The system does not lock out during a warning. The signal will extinguish automatically as soon as the cause of the warning has been eliminated.

Example



If a warning appears more than once, the system should be checked by qualified personnel.

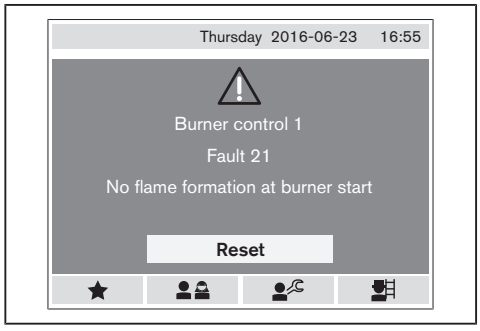
► Read and correct the warning [ch. 10.2].

Faults

If a fault occurs, the systems goes to lockout, if operational safety can no longer be ensured.

If the system is in lockout, the display shows `Reset`.

Example



Faults must only be rectified by qualified personnel.

► Read and correct the fault [ch. 10.3].

Resetting

WARNING

Damage resulting from incorrect fault repair
Incorrect fault repair can cause damage to the equipment and injure personnel.
► Do not carry out more than 2 lockout resets successively.
► Faults must be rectified by qualified personnel.

► Select `Reset` and confirm.
✓ The system is reset.

Exchanging the unit

If a device (Bus participant) has to be replaced:
► Interrupt and restore voltage supply.
✓ The relevant commissioning wizard starts automatically.
► Carry out commissioning steps.

10.2 Warning codes

The following warnings must only be rectified by qualified personnel:

Warning	Cause	Rectification
W 1	Humidity in room too high	▶ Check current humidity at room device. ▶ Check parameter Humidity at room device, adjust if required.
W 2	Humidity too low	▶ Check current humidity at room device. ▶ Check parameter Humidity at room device, adjust if required.
W 3	No SD card available	▶ Ensure SD card has been installed correctly. ▶ Insert SD card on the display and operating unit (system device). ▶ If necessary replace SD card. The SD card is located at the underside of the system device.
W 10	Volumetric flow too low [ch. 3.4.3.2]	▶ Ensure there is a flow of water. ▶ Increase water flow. ▶ Purge unit on the water side, initiate program Automatic purging , see [ch. 6.6.10.6].
W 11	Emergency-Off	▶ Check components connected to input H1 of the EM heating circuit.
W 12	Temperature at flow sensor > 95 °C [ch. 3.4.3] Temperature is measured at the flow sensor eSTB.	▶ Ensure there is a flow of water. ▶ Increase water flow. ▶ Purge unit on the water side, initiate program Automatic purging , see [ch. 6.6.10.6]. ▶ Check the heat exchanger on the water side for contamination or calcification.
W 14	Flow temperature rises too rapidly (gradient) [ch. 3.4.3] Temperature is measured at the flow sensor eSTB.	▶ Ensure there is a flow of water. ▶ Increase water flow. ▶ Purge unit on the water side, initiate program Automatic purging , see [ch. 6.6.10.6].
W 15	Difference between flow and flue gas temperature is too great [ch. 3.4.3] The flow temperature is measured at the flow sensor eSTB.	▶ Ensure there is a flow of water. ▶ Increase water flow. ▶ Check heat demand (e. g. heating curve), reduce if necessary. ▶ Heating capacity too high, reduce parameter 2.1.2 Maximum load heating mode.
W 16	Flue gas temperature too high [ch. 3.4.3]	▶ Check the heat exchanger [ch. 9.5].
W 17	Temperature differential between flow and return to high [ch. 3.4.3.2] The flow temperature is measured at the multifunction sensor VPT.	▶ Ensure there is a flow of water. ▶ Increase water flow. ▶ Check heat demand (e. g. heating curve), reduce if necessary. ▶ Heating capacity too high, reduce parameter 2.1.2 Maximum load heating mode.
W 18	Difference flow (eSTB) and flow temperature(VPT) too great [ch. 3.4.3.2]	▶ Ensure there is a flow of water. ▶ Increase water flow. ▶ Check the heat exchanger on the water side for contamination or calcification. ▶ Check 1.2.1.7 Flow temperature VPT for plausible value.
W 19	Flow temperature (VPT) rises too rapidly (gradient) [ch. 3.4.3.2] Temperature is measured at the flow sensor of the multifunction sensor VPT.	Heat exchanger protection function ▶ Requires no action.

The following warnings must only be rectified by qualified personnel:

Warning	Cause	Rectification
W 20	Flame failure in safety time	▶ Check gas connection pressure [ch. 7.1.2] (flow operated safety device). ▶ Check the ionisation electrode, replace if necessary [ch. 9.4]. ▶ Clean burner surface, if necessary replace [ch. 9.3]. ▶ Check combustion air for contamination. ▶ With room-air-independent operation, check soundness of flue gas system [ch. 7.3]. ▶ Time until flame formation too long, increase parameter 2.3.5 Correction gas surge at start step by step, whilst observing CO content [ch. 6.6.2.3]. ▶ Time until flame formation too long, increase parameter 2.3.1 Correction gas quantity at start step by step, whilst observing CO content [ch. 6.6.2.3]. ▶ Ensure that the flue gas ducts are unimpeded. ▶ Flue gas resistance too high, check condensate drain. ▶ Check flue gas shut off device, if necessary replace. ▶ Check gas combi valve, if necessary replace.
W 21	No flame formation at burner start	The system restarts. ▶ Requires no action.
W 22	Flame failure during operation	If occurring occasionally: (e. g. due to strong wind at the flue gas system): ▶ Requires no action. If occurring frequently: ▶ Check gas connection pressure [ch. 7.1.2] (flow operated safety device). ▶ Check the ionisation electrode, replace if necessary [ch. 9.4]. ▶ Clean burner surface, if necessary replace [ch. 9.3]. ▶ Check combustion air for contamination. ▶ With room-air-independent operation, check soundness of flue gas system [ch. 7.3]. ▶ Ensure that the flue gas ducts are unimpeded. ▶ Flue gas resistance too high, check condensate drain. ▶ Check flue gas shut off device, if necessary replace.

10 Troubleshooting

The following warnings must only be rectified by qualified personnel:

Warning	Cause	Rectification
W 25	Flame failure during stabilisation time	If occurring occasionally: (e. g. due to strong wind at the flue gas system): ▶ Requires no action. If occurring frequently: ▶ Check gas connection pressure [ch. 7.1.2] (flow operated safety device). ▶ Check the ionisation electrode, replace if necessary [ch. 9.4]. ▶ Clean burner surface, if necessary replace [ch. 9.3]. ▶ Check combustion air for contamination. ▶ With room-air-independent operation, check soundness of flue gas system [ch. 7.3]. ▶ Flue gas resistance too high, check condensate drain. ▶ Check flue gas shut off device, if necessary replace.
W 27	Gas pressure too low After 5 burner shutdowns in a row, the system is locked for approx. 15 minutes. Note: Only in conjunction with inbuilt gas pressure switch (accessory).	▶ Check gas connection pressure [ch. 7.1.2] (flow operated safety device).
W 36	System pressure too low [ch. 3.4.3.2]	▶ Check system pressure, if necessary top up ▶ For roof heating centres, reduce parameter 2.2.7 Minimum system pressure warning if necessary.
W 40	Internal pump signals warning	▶ Check circulation pump, replace if necessary.
W 42	Internal pump return signal incorrect	▶ Check plug cable PWM circulation pump. ▶ Check circulation pump.
W 43	Fan speed outside of range	▶ Check the fan and cable, replace if necessary.
W 48	Air in system	▶ Purge system (heating circuit and DHW circuit). ▶ Purge unit on the water side, initiate program Automatic purging , see [ch. 6.6.10.6]. ▶ Increase system pressure. ▶ Install the deaerator on site.
W 61	Ionisation signal outside of tolerance limits	▶ Check the ionisation electrode, replace if necessary [ch. 9.4]. ▶ Check setting of type of gas .
W 62	Control signal of gas correcting element or fan outside of tolerance limits	▶ Check the ionisation electrode, replace if necessary [ch. 9.4]. ▶ With room-air-independent operation, check soundness of flue gas system [ch. 7.3]. ▶ Flue gas resistance too high, check condensate drain. ▶ Check gas connection pressure [ch. 7.1.2] ▶ Check setting of type of gas ,see [ch. 6.6.10.6]. ▶ Check fan, replace if necessary
W 63	SCOT system error	▶ Carry out calibration via output measurement [ch. 6.6.8.3].
W 66	Calibration unsuccessful	▶ Carry out calibration via output measurement [ch. 6.6.8.3].

The following warnings must only be rectified by qualified personnel:

Warning	Cause	Rectification
W 69	Partial load: stable condition not achieved	▶ Check the ionisation electrode, replace if necessary [ch. 9.4]. ▶ Clean burner surface, if necessary replace [ch. 9.3]. ▶ Check wind conditions at flue gas system.
W 1201	Communication error	▶ Check voltage supply at condensing unit. ▶ Switch on switch S1, see [ch. 5.6].
W 1301 … 1324	Communication error	▶ Check CAN-Bus connection to EM heating circuit.
W 1401	Communication error	▶ Check CAN-Bus connection to EM Solar.
W 1501 … 1332	Communication error	▶ Check CAN Bus connection to room device 2.
W 1601 … 1632	Communication error	▶ Check CAN Bus connection to room sensor.
W 1701 … 1732	Communication error	▶ Check CAN Bus connection to room device 1.

10.3 Fault codes

The following faults must only be rectified by qualified personnel:

Fault	Cause	Rectification
F 1	Heating circuit device: Communication error EM heating circuit	▶ Check CAN Bus connection.
	Solar device: Collector sensor (T1) defective	▶ Check the sensor and cable and replace if necessary
F 2	Heating circuit device: External sensor (T1) of EM heating circuit defective	▶ Check the sensor and cable and replace if necessary
	Solar device: Storage sensor bottom (T2) defective	▶ Check the sensor and cable and replace if necessary
F 3	Heating circuit device: Flow sensor (B6) of EM heating circuit defective	▶ Check the sensor and cable and replace if necessary
	Solar device: Flow sensor Solar (T3) defective	▶ Check the sensor and cable and replace if necessary
F 4	Return sensor Solar (T4) defective	▶ Check the sensor and cable and replace if necessary
F 5	Buffer sensor top (B10) defective	▶ Check the sensor and cable and replace if necessary
F 6	Buffer sensor bottom (B11) defective	▶ Check the sensor and cable and replace if necessary
F 10	Communication error EM Solar	▶ Check CAN Bus connection.
F 11	Temperature at flow sensor > 105 °C [ch. 3.4.3] Temperature is measured at the flow sensor eSTB.	▶ Ensure there is a flow of water. ▶ Increase water flow. ▶ Purge unit on the water side, initiate program Automatic purging , see [ch. 6.6.10.6]. ▶ Check the heat exchanger on the water side for contamination or calcification.
F 13	Flue gas temperature too high [ch. 3.4.3]	▶ Check the heat exchanger [ch. 9.5].
F 14	Flow temperature rises too rapidly (gradient) [ch. 3.4.3] Temperature is measured at the flow sensor eSTB.	▶ Ensure there is a flow of water. ▶ Increase water flow. ▶ Purge unit on the water side, initiate program Automatic purging , see [ch. 6.6.10.6].
F 15	Difference between flow and flue gas temperature is too great [ch. 3.4.3] The flow temperature is measured at the flow sensor eSTB.	▶ Ensure there is a flow of water. ▶ Increase water flow. ▶ Check heat demand (e. g. heating curve), reduce if necessary. ▶ Heating capacity too high, reduce parameter 2.1.2 Maximum load heating mode.
F 19	Flow temperature (VPT) rises too rapidly (gradient) [ch. 3.4.3.2] Temperature is measured at the flow sensor of the multifunction sensor VPT.	▶ Ensure there is a flow of water. ▶ Increase water flow. ▶ Function / check the setting of the pump. ▶ Purge unit on the water side, initiate program Automatic purging , see [ch. 6.6.10.6]. ▶ Adjust parameters, if necessary consult with Weishaupt.

The following faults must only be rectified by qualified personnel:

Fault	Cause	Rectification
F 20	Burner control: Flame failure in safety time	▶ Check gas connection pressure [ch. 7.1.2] (flow operated safety device). ▶ Check the ionisation electrode, replace if necessary [ch. 9.4]. ▶ Clean burner surface, if necessary replace [ch. 9.3]. ▶ Check combustion air for contamination. ▶ With room-air-independent operation, check soundness of flue gas system [ch. 7.3]. ▶ Time until flame formation too long, increase parameter 2.3.5 Correction gas surge at start step by step, whilst observing CO content [ch. 6.6.2.3]. ▶ Time until flame formation too long, increase parameter 2.3.1 Correction gas quantity at start step by step, whilst observing CO content [ch. 6.6.2.3]. ▶ Ensure that the flue gas ducts are unimpeded. ▶ Flue gas resistance too high, check condensate drain. ▶ Check flue gas shut off device, if necessary replace. ▶ Check gas combi valve, if necessary replace.
	Solar device: No volumetric flow	▶ Check solar pump. ▶ Check volumetric flow sensor. ▶ Purge collector circuit. ▶ Increase pump capacity
F 21	Burner control: No flame formation at burner start	▶ Check gas connection pressure [ch. 7.1.2] (flow operated safety device). ▶ Check the ionisation electrode, replace if necessary [ch. 9.4]. ▶ Clean burner surface if necessary replace [ch. 9.3]. ▶ Check combustion air for contamination. ▶ Check the ignition unit and replace if necessary ▶ Time until flame formation too long, increase parameter 2.3.1 Correction gas quantity at start step by step, whilst observing CO content [ch. 6.6.2.3]. ▶ With room-air-independent operation, check soundness of flue gas system [ch. 7.3]. ▶ Ensure that the flue gas ducts are unimpeded. ▶ Flue gas resistance too high, check condensate drain. ▶ Check flue gas shut off device, if necessary replace. ▶ Check gas combi valve and cable, replace if necessary.
	Solar device: fault in DTC (differential temperature controller)	▶ Wait until control differential between sensors T2 and T3 is reached. ▶ If the fault re-occurs reduce parameter 3.2.5 Control differential and/or parameter 3.1.5 Minimum volumetric flow.

10 Troubleshooting

The following faults must only be rectified by qualified personnel:

Fault	Cause	Rectification
F 23	Flame simulation	▶ Check phase position and earth. ▶ Optimise EMC measures. ▶ Reset appliance, replace appliance electronics WEM-FA-G if occurring repeatedly.
F 24	Burner lockout function activated	▶ Check components connected to input H1 and/ or H2 of WTC.
F 29	DHW outlet sensor defective (version C)	▶ Check the sensor and cable and replace if necessary
F 30	Flow sensor (eSTB) defective	▶ Check the sensor and cable and replace if necessary
F 31	Flue gas sensor defective	▶ Check the sensor and cable and replace if necessary
F 32	De-couple sensor (B2) defective	▶ Check the sensor and cable and replace if necessary
F 33	External sensor (B1) defective	▶ Check the sensor and cable and replace if necessary
F 34	DHW sensor (B3) defective	▶ Check the sensor and cable and replace if necessary
F 36	System pressure outside of range [ch. 3.4.3.2]	▶ Check system pressure, if necessary top up or drain.
F 37	Water flow sensor is defective (version C)	▶ Check the water flow sensor and cable, replace if necessary.
F 38	T1 sensor at additional module defective	▶ Check the sensor and cable and replace if necessary
F 39	T2 sensor at additional module defective	▶ Check the sensor and cable and replace if necessary
F 40	Internal pump signals electronic fault	▶ Check circulation pump, replace if necessary.
F 41	Gas valve control faulty	▶ Check gas combi valve and cable, replace if necessary.
F 42	Internal pump signals blockade fault	▶ Check circulation pump, replace if necessary.
F 43	Specified fan speed is not achieved	▶ Check the fan and cable, replace if necessary.
F 44	Fan standby defective	▶ Check the fan and cable, replace if necessary.
F 45	Valve flows out of tolerance	▶ Check gas combi valve and cable, replace if necessary.
F 46	Multifunction sensor VPT defective	▶ Purge system (heating circuit and DHW circuit). ▶ Purge unit on the water side, initiate program Automatic purging , see [ch. 6.6.10.6]. ▶ Increase system pressure. ▶ Install the deaerator on site. ▶ Check multifunction sensor VPT and cable, replace if necessary.
F 47	Multifunction sensor VPT version error Version of multifunction sensor VPT not compatible with appliance electronics WEM-FA-G	▶ Replace multifunction sensor.
F 49	Data record error burner control	▶ Interrupt the voltage supply temporarily ▶ Carry out BCC Update, see [ch. 6.6.10.6]. ▶ Replace appliance electronics WEM-FA-G if occurring repeatedly.

The following faults must only be rectified by qualified personnel:

Fault	Cause	Rectification
F 50	Internal fault	▶ Interrupt the voltage supply temporarily ▶ Reset appliance, replace appliance electronics WEM-FA-G if occurring repeatedly.
F 51	Data record error boiler	▶ Interrupt the voltage supply temporarily ▶ Carry out BCC Update, see [ch. 6.6.10.6]. ▶ Replace appliance electronics WEM-FA-G if occurring repeatedly.
F 52	Data record error burner	▶ Interrupt the voltage supply temporarily ▶ Carry out BCC Update, see [ch. 6.6.10.6]. ▶ Replace appliance electronics WEM-FA-G if occurring repeatedly.
F 53	Voltage supply outside the tolerance limits	▶ Check voltage supply
F 54	Electronic fault	▶ Interrupt the voltage supply temporarily ▶ Reset appliance, replace appliance electronics WEM-FA-G if occurring repeatedly.
F 55	Memory fault	▶ Interrupt the voltage supply temporarily ▶ Reset appliance, replace appliance electronics WEM-FA-G if occurring repeatedly.
F 56	Ionisation measurement faulty	▶ Interrupt the voltage supply temporarily ▶ Reset appliance, replace appliance electronics WEM-FA-G if occurring repeatedly.
F 57	Additional module no longer available	▶ Check additional module on WEM-FA-G and cable. ▶ Reset value to factory setting [ch. 6.6.10.8]. ▶ Replace additional module on WEM-FA-G.
F 58	Too many resets within a short period of time	▶ Interrupt the voltage supply temporarily ▶ Reset unit.
F 59	No data record available	▶ Interrupt the voltage supply temporarily ▶ Replace appliance electronics WEM-FA-G if occurring repeatedly.
F 60	Calibration: SCOT base value too low	▶ Carry out calibration via output measurement [ch. 6.6.8.3]. ▶ Check the ionisation electrode and cable, replace if necessary [ch. 9.4].
F 61	Ionisation signal outside of tolerance limits	▶ Check the ionisation electrode and cable, replace if necessary [ch. 9.4]. ▶ Reset appliance, replace appliance electronics WEM-FA-G if occurring repeatedly. ▶ Check setting of type of gas ,see [ch. 6.6.10.6].
F 62	Control signal of gas correcting element or fan outside of tolerance limits	▶ Check the ionisation electrode, replace if necessary [ch. 9.4]. ▶ With room-air-independent operation, check soundness of flue gas system. ▶ Flue gas resistance too high, check condensate drain. ▶ Check gas connection pressure [ch. 7.1.2] ▶ Check setting of type of gas ,see [ch. 6.6.10.6]. ▶ Check fan, replace if necessary
F 63	SCOT system error	▶ Carry out calibration via output measurement [ch. 6.6.8.3]. ▶ Reset appliance, replace appliance electronics WEM-FA-G if occurring repeatedly.

10 Troubleshooting

The following faults must only be rectified by qualified personnel:

Fault	Cause	Rectification
F 64	Calibration: SCOT base value too high	▶ Check the ionisation electrode and cable, replace if necessary [ch. 9.4]. ▶ Clean burner surface, if necessary replace [ch. 9.3]. ▶ Check combustion air for contamination. ▶ With room-air-independent operation, check soundness of flue gas system [ch. 7.3].
F 65	SCOT base value deviates too much from its previous value	▶ Carry out calibration via output measurement [ch. 6.6.8.3]. ▶ Check the ionisation electrode, replace if necessary [ch. 9.4]. ▶ Clean burner surface, if necessary replace [ch. 9.3]. ▶ Check combustion air for contamination.
F 66	Calibration could not be carried out	▶ Ensure heat demand. ▶ Subsequent error of W 22. ▶ Check the ionisation electrode and cable, replace if necessary [ch. 9.4]. ▶ Clean burner surface, if necessary replace [ch. 9.3]. ▶ Time until flame formation too long, increase parameter 2.3.1 Correction gas quantity at start step by step, whilst observing CO content [ch. 6.6.2.3].
F 67	SCOT base value stored incorrectly	▶ Check gas connection pressure [ch. 7.1.2] ▶ Check setting of type of gas . ▶ Carry out calibration via output measurement [ch. 6.6.8.3]. ▶ Reset appliance, replace appliance electronics WEM-FA-G if occurring repeatedly.
F 68	Gas valve: offset outside of range	▶ Carry out calibration via output measurement [ch. 6.6.8.3]. ▶ Check the ionisation electrode, replace if necessary [ch. 9.4]. ▶ Clean burner surface, if necessary replace [ch. 9.3]. ▶ Check combustion air for contamination. ▶ Check gas combi valve, if necessary replace.
F 70	Data record error BCC	▶ Carry out BCC Update, see [ch. 6.6.10.6].
F 71	Data record error BCC missing	▶ Plug in coded plug.
F 72	Data record error BCC	▶ Replace coded plug. ▶ Carry out BCC Update, see [ch. 6.6.10.6].
F 73	Data record error: BCC not compatible	▶ Check coded plug, if necessary replace. ▶ Carry out BCC Update, see [ch. 6.6.10.6].
F 74	BCC-Update requested: restart required	▶ Carry out BCC Update, see [ch. 6.6.10.6].
F 75	Data record error BCC	▶ Check coded plug, if necessary replace. ▶ Carry out BCC Update, see [ch. 6.6.10.6].
F 80	Remote control signal (N1) too weak	▶ Check signal [ch. 11.3].
F 81	Remote control signal (N1) too strong	▶ Check signal [ch. 11.3].
F 88	Internal fault	▶ Interrupt the voltage supply temporarily ▶ Reset appliance, replace appliance electronics WEM-FA-G if occurring repeatedly.
F 90	Communication error ChipCom	▶ Check CAN Bus connection.

The following faults must only be rectified by qualified personnel:

Fault	Cause	Rectification
F 91	Communication error system device / burner control	▶ Check CAN Bus connection.
F 92	Communication error CAN	▶ Check CAN Bus connection.
F 93	Communication error Serial Flash	▶ Interrupt the voltage supply temporarily ▶ Replace appliance electronics WEM-FA-G if occurring repeatedly.
F 94	Communication error VPT Modbus	If occurring occasionally: ▶ Requires no action. If occurring frequently: ▶ Interrupt the voltage supply temporarily ▶ Check multifunction sensor VPT and cable, replace if necessary.
F 95	Internal fault	▶ Interrupt the voltage supply temporarily ▶ Replace appliance electronics WEM-FA-G if occurring repeatedly.
F 96	Communication error VPT data	If occurring occasionally: ▶ Requires no action. If occurring frequently: ▶ Interrupt the voltage supply temporarily ▶ Check multifunction sensor VPT, replace if necessary.

10.4 Operating problems

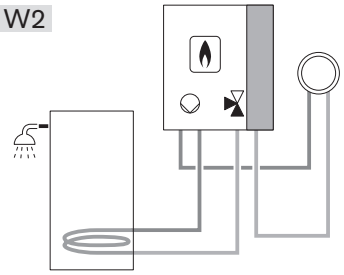
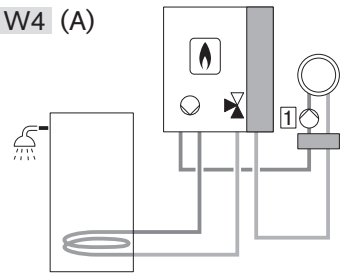
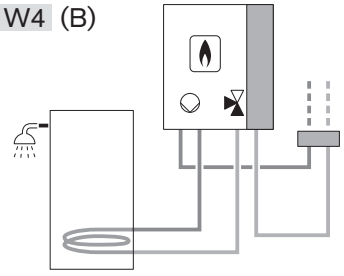
The following faults must only be rectified by qualified personnel:

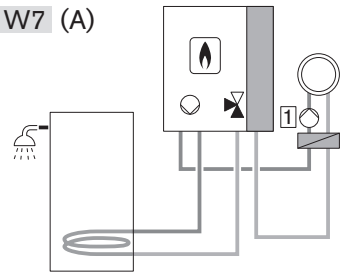
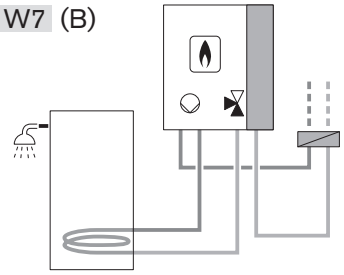
Observation	Cause	Rectification
Burner is humming/whistling	burner surface soiled / damaged, fleece loose	▶ Check burner surface, if necessary clean or replace [ch. 9.3].
	Intake sound attenuator faulty	▶ Check connection between intake sound attenuator and fan. ▶ Check intake sound attenuator, replace if necessary.
Poor start behaviour	Ignition electrode distance incorrect, ignition electrode damaged	▶ Replace ignition electrode [ch. 9.4].
	Ignition occurs too late	▶ Time until flame formation too long, increase parameter 2.3.1 Correction gas quantity at start step by step, whilst observing CO content [ch. 6.6.2.3].
Smell of flue gas	Siphon fill level insufficient	▶ Fill siphon [ch. 9.5]
Pump capacity insufficient	Circulation pump set to incorrect operating mode	▶ Check operating mode of pump.
No flame formation following gas combi valve replacement	Value of parameter Gas valve offset storage incorrect	▶ Change parameter 2.3.6 Gas valve offset storage,see [ch. 6.6.2.3].

11 Technical documentation

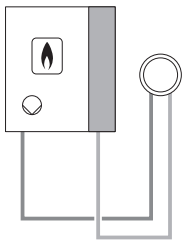
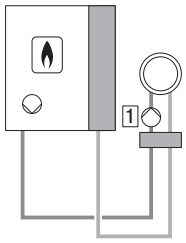
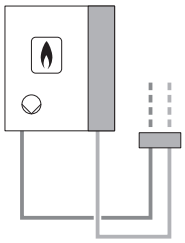
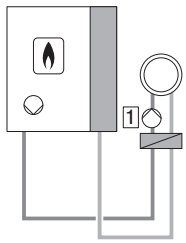
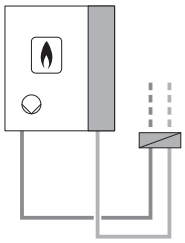
11.1 Hydraulic versions

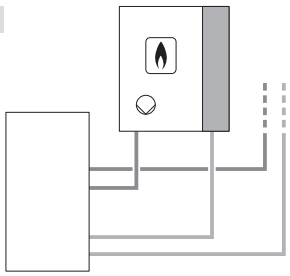
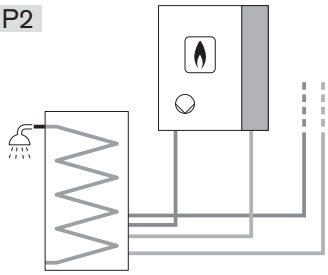
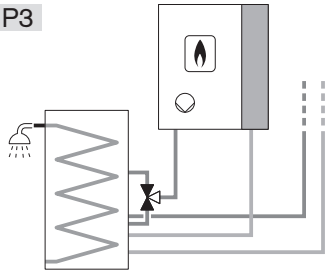
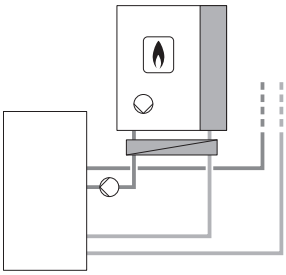
11.1.1 WTC version W

Hydraulic version	Components / settings	Explanation
W2 	WTC version W Components: ▪ Fresh water storage Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: Constant pressure 2 ▪ P 2.2.2: Constant pump capacity ▪ P 6.1.5: Priority	The condensing unit loads the DHW storage tank or supplies heating circuit 1 via the internal three-way valve. The condensing unit controls DHW loading and heating circuit 1. WTC connection: ▪ MFA1: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)
W4 (A) 	WTC version W Components: ▪ Fresh water storage ▪ De-couple ▪ External heating circuit pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: De-couple control ▪ P 2.2.2: Constant pump capacity ▪ P 6.1.5: Priority	The condensing unit loads the DHW storage tank or supplies the de-couple via the internal three-way valve. The external heating circuit pump downstream of the de-couple supplies heating circuit 1. The condensing unit controls DHW loading and heating circuit 1. WTC connection: ▪ MFA1: pump HK1 ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: de-couple sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)
W4 (B) 	WTC version W Components: ▪ Fresh water storage ▪ De-couple Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: De-couple control ▪ P 2.2.2: Constant pump capacity ▪ P 6.1.5: Priority	The condensing unit loads the DHW storage tank or supplies the de-couple via the internal three-way valve. The condensing unit controls DHW loading. Extension modules control the heating circuits downstream of the de-couple. WTC connection: ▪ MFA1: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: de-couple sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)

Hydraulic version	Components / settings	Explanation
W7 (A) 	WTC version W Components: ▪ Fresh water storage ▪ Plate heat exchanger ▪ External heating circuit pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: Load proportional ▪ P 2.2.2: Constant pump capacity ▪ P 6.1.5: Priority	The condensing unit loads the DHW storage tank or supplies the plate heat exchanger via the internal three-way valve. The external heating circuit pump downstream of the plate heat exchanger supplies heating circuit 1. The condensing unit controls DHW loading and heating circuit 1. WTC connection: ▪ MFA1: pump HK1 ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: plate heat exchanger sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)
W7 (B) 	WTC version W Components: ▪ Fresh water storage ▪ Plate heat exchanger Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: Load proportional ▪ P 2.2.2: Constant pump capacity ▪ P 6.1.5: Priority	The condensing unit loads the DHW storage tank or supplies the plate heat exchanger via the internal three-way valve. The condensing unit controls DHW loading. Extension modules control the heating circuits downstream of the plate heat exchanger. WTC connection: ▪ MFA1: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: plate heat exchanger sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)

11.1.2 WTC version H

Hydraulic version	Components / settings	Explanation
H2 	WTC version H Settings: ▪ Direct DHW circuit: no ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: Constant pressure 2	The internal pump of the condensing unit supplies heating circuit 1. The condensing unit control heating circuit 1. WTC connection: ▪ B1: external sensor
H3 (A) 	WTC version H Components: ▪ De-couple ▪ External heating circuit pump Settings: ▪ Direct DHW circuit: no ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: De-couple control	The internal pump of the condensing unit supplies the de-couple. The external heating circuit pump supplies heating circuit 1. The condensing unit control heating circuit 1. WTC connection: ▪ MFA1: pump HK1 ▪ B1: external sensor ▪ B2: de-couple sensor
H3 (B) 	WTC version H Components: ▪ De-couple Settings: ▪ Direct DHW circuit: no ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: De-couple control	The internal pump of the condensing unit supplies the de-couple. Extension modules control the heating circuits downstream of the de-couple. WTC connection: ▪ B1: external sensor ▪ B2: de-couple sensor
H4 (A) 	WTC version H Components: ▪ Plate heat exchanger ▪ External heating circuit pump Settings: ▪ Direct DHW circuit: no ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: Load proportional	The internal pump of the condensing unit supplies the plate heat exchanger. The external heating circuit pump supplies heating circuit 1. The condensing unit control heating circuit 1. WTC connection: ▪ MFA1: pump HK1 ▪ B1: external sensor ▪ B2: plate heat exchanger sensor
H4 (B) 	WTC version H Components: ▪ Plate heat exchanger Settings: ▪ Direct DHW circuit: no ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: Load proportional	The internal pump of the condensing unit supplies the plate heat exchanger. Extension modules control the heating circuits downstream of the plate heat exchanger. WTC connection: ▪ B1: external sensor ▪ B2: plate heat exchanger sensor

Hydraulic version	Components / settings	Explanation
P1 	WTC version H Components: ▪ Buffer storage Settings: ▪ Direct DHW circuit: no ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: Volumetric flow control ▪ P 6.1.5: Parallel	The internal pump of the condensing unit loads the buffer storage. Extension modules control the heating circuits downstream of the buffer storage. WTC connection: ▪ B1: external sensor WEM-EM-Sol connection: ▪ B10: buffer sensor top ▪ B11: buffer sensor bottom (optional)
P2 	WTC version H Components: ▪ Combination storage Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: Volumetric flow control ▪ P 2.2.2: Volumetric flow control ▪ P 6.1.5: Parallel	The internal pump of the condensing unit loads the combination storage. The condensing unit controls DHW loading. Extension modules control the heating circuits downstream of the combination storage. WTC connection: ▪ MFA1: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available) WEM-EM-Sol connection: ▪ B10: buffer sensor top ▪ B11: buffer sensor bottom (optional)
P3 	WTC version H Components: ▪ Combination storage ▪ External three-way valve Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: Volumetric flow control ▪ P 2.2.2: Volumetric flow control ▪ P 6.1.5: Parallel	The internal pump of the condensing unit loads the combination storage via the three-way valve. The condensing unit controls DHW loading. Extension modules control the heating circuits downstream of the combination storage. WTC connection: ▪ MFA1: three-way valve ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available) WEM-EM-Sol connection: ▪ B10: buffer sensor top ▪ B11: buffer sensor bottom (optional)
P4 	WTC version H Components: ▪ Buffer storage ▪ Plate heat exchanger ▪ External buffer load pump Settings: ▪ Direct DHW circuit: no ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: Load proportional ▪ P 6.1.5: Parallel	The internal pump of the condensing unit supplies the plate heat exchanger. The external pump loads only the buffer storage. Extension modules control the heating circuits downstream of the buffer storage. WTC connection: ▪ MFA1: buffer load pump ▪ B1: external sensor ▪ B2: plate heat exchanger sensor WEM-EM-Sol connection: ▪ B10: buffer sensor top ▪ B11: buffer sensor bottom (optional)

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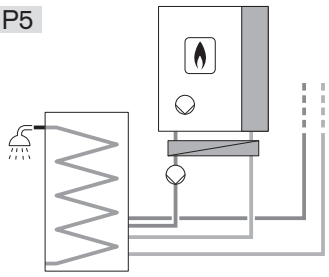
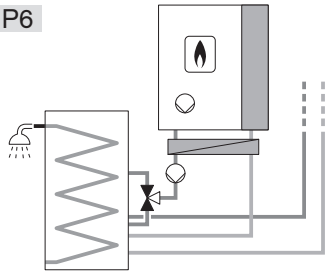
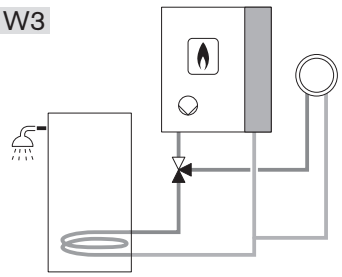
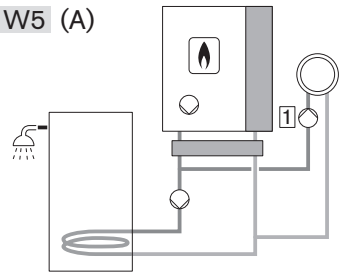
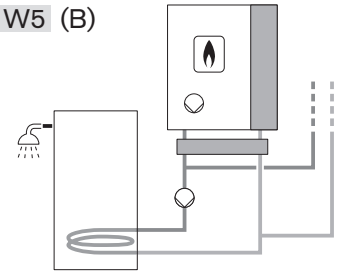
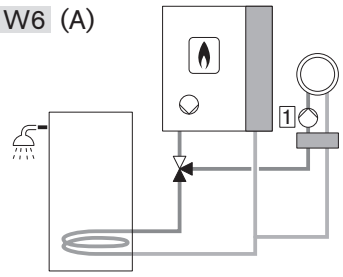
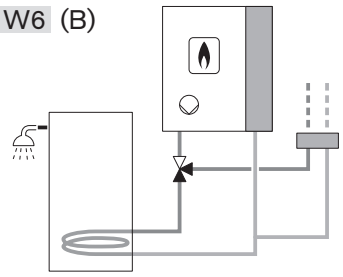
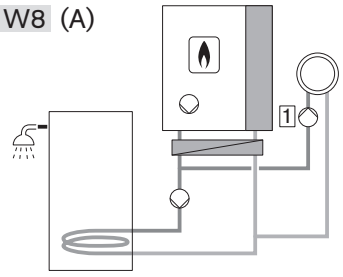
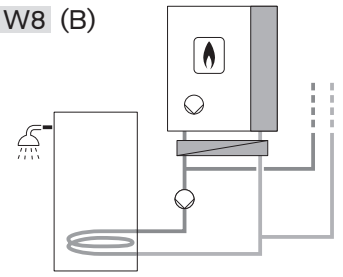
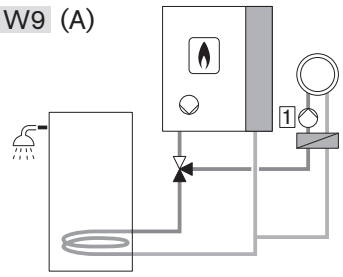
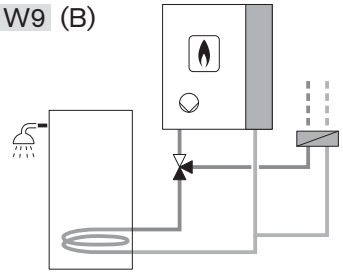
Hydraulic version	Components / settings	Explanation
P5 	WTC version H Components: ▪ Combination storage ▪ Plate heat exchanger ▪ External buffer load pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: Load proportional ▪ P 2.2.2: Load proportional ▪ P 6.1.5: Parallel	The internal pump of the condensing unit supplies the plate heat exchanger. The external pump loads only the combination storage. The condensing unit controls DHW loading. Extension modules control the heating circuits downstream of the combination storage. WTC connection: ▪ MFA1: buffer load pump ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: plate heat exchanger sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available) WEM-EM-Sol connection: ▪ B10: buffer sensor top ▪ B11: buffer sensor bottom (optional)
P6 	WTC version H Components: ▪ Combination storage ▪ Plate heat exchanger ▪ External three-way valve ▪ External buffer load pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: Load proportional ▪ P 2.2.2: Load proportional ▪ P 6.1.5: Parallel	The internal pump of the condensing unit supplies the plate heat exchanger. The external pump of the condensing unit loads the combination storage via the three-way valve. The condensing unit controls DHW loading. Extension modules control the heating circuits downstream of the combination storage. WTC connection: ▪ MFA1: buffer load pump ▪ VA1: three-way valve ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: plate heat exchanger sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available) WEM-EM-Sol connection: ▪ B10: buffer sensor top ▪ B11: buffer sensor bottom (optional)
W3 	WTC version H Components: ▪ Fresh water storage ▪ External three-way valve Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: Constant pressure 2 ▪ P 2.2.2: Constant pump capacity ▪ P 6.1.5: Priority	The circulating pump in the condensing boiler loads the DHW storage tank or supplies the heating circuit via the external three-way valve. The condensing unit controls DHW loading and heating circuit 1. WTC connection: ▪ MFA1: three-way valve ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)

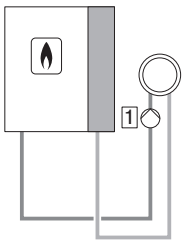
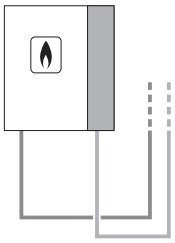
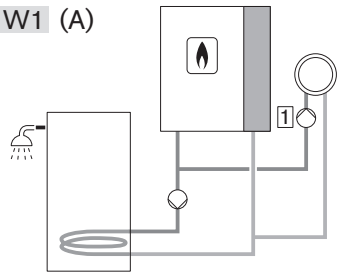
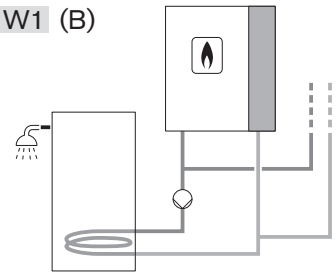
Hydraulic version	Components / settings	Explanation
W5 (A) 	WTC version H Components: ▪ Fresh water storage ▪ De-couple ▪ External load pump ▪ External heating circuit pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: De-couple control ▪ P 2.2.2: De-couple control ▪ P 6.1.5: Parallel	The internal pump of the condensing unit supplies the de-couple. The external heating circuit pump supplies heating circuit 1, the external load pump loads the DHW storage tank. The condensing unit controls DHW loading and heating circuit 1. WTC connection: ▪ MFA1: pump DHW1 ▪ VA1: pump HC1 ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: de-couple sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)
W5 (B) 	WTC version H Components: ▪ Fresh water storage ▪ De-couple ▪ External load pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: De-couple control ▪ P 2.2.2: De-couple control ▪ P 6.1.5: Parallel	The internal pump of the condensing unit supplies the de-couple. The external load pump loads the DHW storage tank. The condensing unit controls DHW loading. Extension modules control the heating circuits downstream of the de-couple. WTC connection: ▪ MFA1: pump DHW1 ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: de-couple sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)
W6 (A) 	WTC version H Components: ▪ Fresh water storage ▪ De-couple ▪ External three-way valve ▪ External heating circuit pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: De-couple control ▪ P 2.2.2: Constant pump capacity ▪ P 6.1.5: Priority	The circulating pump in the condensing boiler loads the DHW storage tank or supplies the de-couple via the external three-way valve. The external heating circuit pump downstream of the de-couple supplies heating circuit 1. The condensing unit controls DHW loading and heating circuit 1. WTC connection: ▪ MFA1: three-way valve ▪ VA1: pump HC1 ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: de-couple sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)

11 Technical documentation

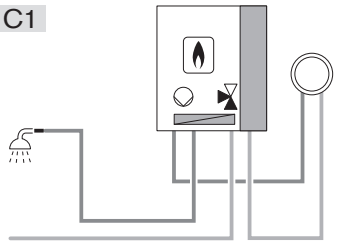
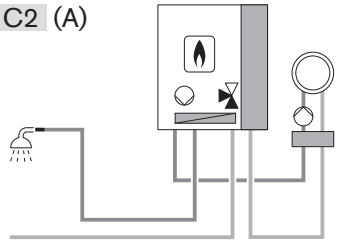
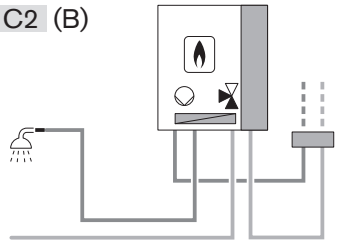
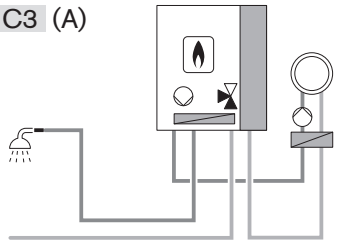
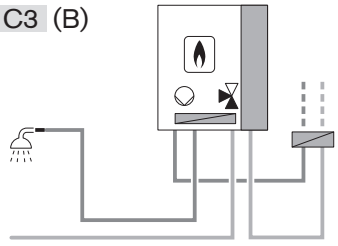
Hydraulic version	Components / settings	Explanation
W6 (B) 	WTC version H Components: ▪ Fresh water storage ▪ De-couple ▪ External three-way valve Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: De-couple control ▪ P 2.2.2: Constant pump capacity ▪ P 6.1.5: Priority	The circulating pump in the condensing boiler loads the DHW storage tank or supplies the de-couple via the external three-way valve. The condensing unit controls DHW loading. Extension modules control the heating circuits downstream of the de-couple. WTC connection: ▪ MFA1: three-way valve ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: de-couple sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)
W8 (A) 	WTC version H Components: ▪ Fresh water storage ▪ Plate heat exchanger ▪ External load pump ▪ External heating circuit pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: Load proportional ▪ P 2.2.2: Load proportional ▪ P 6.1.5: Parallel	The internal pump of the condensing unit supplies the plate heat exchanger. An external heating circuit pump supplies heating circuit 1, the external load pump loads the DHW storage tank. The condensing unit controls DHW loading and heating circuit 1. WTC connection: ▪ MFA1: pump DHW1 ▪ VA1: pump HC1 ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: plate heat exchanger sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)
W8 (B) 	WTC version H Components: ▪ Fresh water storage ▪ Plate heat exchanger ▪ External load pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: Load proportional ▪ P 2.2.2: Load proportional ▪ P 6.1.5: Parallel	The internal pump of the condensing unit supplies the plate heat exchanger. The external load pump loads the DHW storage tank. The condensing unit controls DHW loading. Extension modules control the heating circuits downstream of the plate heat exchanger. WTC connection: ▪ MFA1: pump DHW1 ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: plate heat exchanger sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)

Hydraulic version	Components / settings	Explanation
W9 (A) 	WTC version H Components: ▪ Fresh water storage ▪ Plate heat exchanger ▪ External three-way valve ▪ External heating circuit pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: Load proportional ▪ P 2.2.2: Constant pump capacity ▪ P 6.1.5: Priority	The circulation pump in the condensing unit loads the DHW storage tank or supplies the plate heat exchanger via the external three-way valve. The external heating circuit pump downstream of the plate heat exchanger supplies heating circuit 1. The condensing unit controls DHW loading and heating circuit 1. WTC connection: ▪ MFA1: three-way valve ▪ VA1: pump HC1 ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: plate heat exchanger sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)
W9 (B) 	WTC version H Components: ▪ Fresh water storage ▪ Plate heat exchanger ▪ External three-way valve Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: Load proportional ▪ P 2.2.2: Constant pump capacity ▪ P 6.1.5: Priority	The circulation pump in the condensing unit loads the DHW storage tank or supplies the plate heat exchanger via the external three-way valve. The condensing unit controls DHW loading. Extension modules control the heating circuits downstream of the plate heat exchanger. WTC connection: ▪ MFA1: three-way valve ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B2: plate heat exchanger sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)

11.1.3 WTC version H-0

Hydraulic version	Components / settings	Explanation
H1 (A) 	WTC version H-0 Components: ▪ External heating circuit pump Settings: ▪ Direct DHW circuit: no ▪ Direct heating circuit: yes	The condensing unit controls heating circuit 1. WTC connection: ▪ MFA1: pump HK1 ▪ B1: external sensor
H1 (B) 	WTC version H-0 Settings: ▪ Direct DHW circuit: no ▪ Direct heating circuit: no	The condensing boiler serves only as a heat exchanger. Extension modules control the heating circuits. WTC connection: ▪ B1: external sensor
W1 (A) 	WTC version H-0 Components: ▪ Fresh water storage ▪ External heating circuit pump ▪ External load pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: yes Factory setting: ▪ P `6.1.5`: Parallel	An external heating circuit pump supplies heating circuit 1, the external load pump loads the DHW storage tank. The condensing unit controls DHW loading and heating circuit 1. WTC connection: ▪ MFA1: pump DHW1 ▪ VA1: pump HC1 ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)
W1 (B) 	WTC version H-0 Components: ▪ Fresh water storage ▪ External load pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P `6.1.5`: Parallel	The external pump loads the DHW storage tank. The condensing unit controls DHW loading. Extension modules control the heating circuits downstream of the DHW storage tank. WTC connection: ▪ MFA1: pump DHW1 ▪ VA2: circulation pump WW1 (if available) ▪ B1: external sensor ▪ B3: DHW sensor ▪ T1: circulation sensor (if available)

11.1.4 WTC version C

Hydraulic version	Components / settings	Explanation
C1 	WTC version C Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: Constant pressure 2 ▪ P 6.1.5: Priority	The condensing unit supplies DHW heating or supplies heating circuit 1 via the internal three-way valve. The condensing unit control DHW heating and heating circuit 1. WTC connection: ▪ B1: external sensor
C2 (A) 	WTC version C Components: ▪ De-couple ▪ External heating circuit pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: De-couple control ▪ P 6.1.5: Priority	The condensing unit supplies DHW heating or the de-couple via the internal three-way valve. The condensing unit control DHW heating and heating circuit 1. WTC connection: ▪ MFA1: pump HK1 ▪ B1: external sensor ▪ B2: de-couple sensor
C2 (B) 	WTC version C Components: ▪ De-couple Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: De-couple control ▪ P 6.1.5: Priority	The condensing unit supplies DHW heating or the de-couple via the internal three-way valve. The condensing unit control DHW heating. Extension modules control the heating circuits downstream of the de-couple. WTC connection: ▪ B1: external sensor ▪ B2: de-couple sensor
C3 (A) 	WTC version C Components: ▪ Plate heat exchanger ▪ External heating circuit pump Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: yes Factory setting: ▪ P 2.2.1: Load proportional ▪ P 6.1.5: Priority	The condensing unit supplies DHW heating or the plate heat exchanger via the internal three-way valve. The external heating circuit pump downstream of the plate heat exchanger supplies heating circuit 1. The condensing unit controls DHW heating and heating circuit 1. WTC connection: ▪ MFA1: pump HK1 ▪ B1: external sensor ▪ B2: plate heat exchanger sensor
C3 (B) 	WTC version C Components: ▪ Plate heat exchanger Settings: ▪ Direct DHW circuit: yes ▪ Direct heating circuit: no Factory setting: ▪ P 2.2.1: Load proportional ▪ P 6.1.5: Priority	The condensing unit supplies DHW heating or the plate heat exchanger via the internal three-way valve. The condensing unit control DHW heating. Extension modules control the heating circuits downstream of the plate heat exchanger. WTC connection: ▪ B1: external sensor ▪ B2: plate heat exchanger sensor

11.2 Control options

11.2.1 Constant flow temperature

No additional sensors or thermostats are required for this control.

The flow temperature from the heating circuit is controlled to the flow setpoint temperature set in the user level, see [ch. 6.5.3].

Room frost protection and setting optimisation are not active.

11.2.2 Weather compensated control

The flow temperature is controlled depending on the external temperature.

An external sensor is required for weather compensated control.

- ▶ Mount the external sensor to the north side or the north-west side of the building, half way up (min 2,5 m).

Avoid direct solar radiation at the external sensor.
Avoid heat up by external heat sources.

The current flow temperature setpoint is calculated from:
- external temperature,
- Heating curve:
  - Gradient  ,
  - Parallel movement  ,
- Room setpoint temperature.

A higher flow temperature is required to achieve the desired room temperature, when external temperatures are lower. The gradient determines how much the change in external temperature affects the flow setpoint temperature and adjusts the heating curve to the building.

The heating curve can be moved vertically using the parallel movement.

	Room temperature too cold	**Room temperature too warm**
Cold external temperature	▶ Increase gradient.	▶ Decrease gradient.
Mild external temperature	▶ Increase room setpoint temperature – or – increase parallel movement.	▶ Decrease room setpoint temperature – or – decrease parallel movement.

Depending on the type of heating circuit, a heating curve is automatically generated [ch. 11.9.1].

The heating curve and the room setpoint temperature can be set in the user level [ch. 6.5.3].

11.2.3 Room temperature dependent control

The flow temperature is controlled depending on the room temperature.

A room device or room sensor are required for room temperature dependent control.

Avoid direct solar radiation at the room sensor.
Avoid heat up by external heat sources.

The current flow temperature setpoint is calculated from:
- room setpoint temperature,
- current room temperature,
- room sensor influence.

The room setpoint temperature can be set in the user level [ch. 6.5.3].

The room sensor influence can be set in the Engineer level [ch. 6.6.6.2].

11.2.4 Weather compensated/Room control

The flow temperature of the heating circuit is controlled depending on the external temperature and the room temperature.

An external sensor and room device or room sensor are required for weather compensated control and room temperature dependent control.

► Mount the external sensor to the north side or the north-west side of the building, half way up (min 2,5 m).

Avoid direct solar radiation at the external sensor and room sensor.
Avoid heat up by external heat sources.

The current flow temperature setpoint is calculated from:
- external temperature,
- Heating curve:
  - Gradient  ,
  - Parallel movement  ,
- room setpoint temperature,
- current room temperature,
- room sensor influence.

The heating curve and the room setpoint temperature can be set in the user level [ch. 6.5.3].

The room sensor influence can be set in the Engineer level [ch. 6.6.6.2].

11.2.5 Buffer control with one sensor

Buffer control P1

This type of control makes sense, when only the top part of the buffer is to be filled. The loading of the bottom part of the buffer is carried out by an external heat source.

DHW release is initiated via sensor B3, the heating mode release via sensor B10.

A WEM-EM-Sol extension module is required for buffer control.
► Connect buffer sensor to input B10.

Switch-on criteria	B10 < flow setpoint
Switch-off criteria	B10 > flow setpoint + switching differential

Additionally, a three-way valve can be installed at output MFA 1 for DHW mode.

11.2.6 Buffer control with two sensors

Buffer control P2

This type of control should be used, if the appliance is to load a larger buffer area.

DHW release is initiated via sensor B3, the heating mode release via sensors B10 and B11.

A WEM-EM-Sol extension module is required for buffer control.
► Connect buffer sensor at the top at input B10.
► Connect buffer sensor at the bottom at input B11.

Switch-on criteria	B10 < flow setpoint and B11 < flow setpoint
Switch-off criteria	B11 > flow setpoint + switching differential

Additionally, a three-way valve can be installed at output MFA 1 for DHW mode.

11.2.7 Buffer switch-over

Buffer switch-over P1/P2

The buffer switch-over P1 / P2 automatically switches between the version buffer control P1 and buffer control P2 depending on the outside temperature.

If the outside temperature exceeds the value set, the load strategy changes from buffer control P2 to P1. In buffer control P1 the condensing boiler loads only the upper storage area. Extended volume reserved for alternative energy input. In the cooler season, the burner run time is increased by the increased buffer volume.

11.2.8 De-couple control

The appliance modulates the capacity in heating mode based on the de-couple temperature.

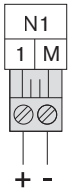
With this control option, the pump modulates between the de-couple sensor B2 and the flow sensor depending on the differential temperature. The function can be adapted to the conditions of the system using parameter `5.2.2 Temperature differential flow/de-couple pump` ,see [ch. 6.6.5.2].

DHW loading can be achieved via a three-way valve upstream of the hydraulic de-couple, as control in DHW mode reacts to the internal flow sensor or de-couple sensor B2 (depending on hydraulic version).

► Connect de-couple sensor to input B2 [ch. 5.6.1].

Switch-on criteria	B2 < flow setpoint
Switch-off criteria	B2 > flow setpoint + temperature differential

11.3 Control options



Temperature remote control 0 … 10 V

An additional module is required for temperature remote control.

► Connect analogue signal 0 … 10 V to input N1, observe the polarity [ch. 5.6.1].

✓ Signal is interpreted as flow setpoint.

3 V	Minimum flow temperature (P `4.3`)
10 V	Maximum flow temperature (P `4.4`)
2 … 3 V	Burner off
<2 V	Signal fault (after approx. 15 minutes `F 80`)

The voltage limits for burner shutdown and error message can be adapted [ch. 6.6.4].

Heating mode with special level

When input H1 is closed, the system heats up to the temperature level preset parameter `Special level` ,see [ch. 6.5.3]. Higher target values of additional heating circuits will be taken into consideration. DHW mode is generally given priority. When the contact is open, the temperature is determined according to the existing control variation.

This function is also effective in the Summer mode.

► Set `Function input H1` to `Heating circuit 1: special level`,see [ch. 6.6.10.5].

11.4 Circulation pump

The following operating modes of the internal pump of the condensing unit are possible [ch. 6.6.2.2]:

Load proportional

With this type of control, the pump capacity is assigned to the burner capacity required (pump capacity ≙ WTC capacity).

De-couple control

With de-couple control, the pump modulates between de-couple sensor and flow sensor depending on the differential temperature.

The de-couple control be adapted to the conditions of the system via parameter `2.2.12 Inertia pump internal .`

Volumetric flow control

Only in conjunction with buffer control.

A fixed pump capacity is specified for volumetric flow control. If the volumetric flow is too high, the pump capacity is reduced.

Proportional pressure stage 1 … 3 [ch. 3.5.7]

With proportional pressure control, the differential pressure at the pump is regulated depending on the volumetric flow. The lift height reduces with decreasing volumetric flow.

This control version is recommended for systems with high pressure loss changes.

Constant pressure stage 1 … 3 [ch. 3.5.7]

Constant pressure control regulates the differential pressure at the pump to a constant value. The lift height is kept constant regardless of the volumetric flow.

This control version is recommended for systems with low pressure loss changes (e. g. underfloor heating).

Proportional pressure auto adaption

Automatic change-over between the proportional pressure stages (characteristic curves).

With proportional pressure control, the differential pressure at the pump is regulated depending on the volumetric flow. The lift height reduces with decreasing volumetric flow.

This control version is recommended for systems with high pressure loss changes.

Constant pressure auto adaption

Automatic change-over between the constant pressure stages (characteristic curves).

Constant pressure control regulates the differential pressure at the pump to a constant value. The lift height is kept constant regardless of the volumetric flow.

This control version is recommended for systems with low pressure loss changes (e. g. underfloor heating).

11.5 Solar control

11.5.1 Set maximum volumetric flow

By limiting the `Maximum volumetric flow` (P `3.1.6`) electrical energy can be saved during high yield phases.

To limit the maximum volumetric flow, the nominal volumetric flow of the system at average media temperature must first be determined.

- ► Calculate average media temperature from the average value of:
  - `collector flow temperature`,
  - `collector return temperature`.
- ► Determine nominal volumetric flow using the table (for Weishaupt solar system) or the documentation provided by the collector manufacturer.
- ► Set parameter `3.1.6 Maximum volumetric flow`,see [ch. 6.6.3.1].

Example

Weishaupt solar system WTS-F2

Collector type	WTS-F2
Number of collectors	3
Average media temperature	50 °C
Nominal volumetric flow from table	3.5 l/min

Nominal volume flow [l/min]

Average temperature	Collector type WTS-F1								Collector type WTS-F2							
	Number of collectors								Number of collectors							
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
0 °C	0.8	1.1	1.5	1.9	2.3	2.6	3.0	3.4	1.2	1.8	2.3	2.9	3.5	4.1	4.7	5.3
10 °C	0.9	1.4	1.8	2.3	2.7	3.2	3.6	4.1	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3
20 °C	1.1	1.6	2.1	2.6	3.2	3.7	4.2	4.7	1.6	2.5	3.3	4.1	4.9	5.7	6.5	7.4
30 °C	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	1.9	2.8	3.7	4.7	5.6	6.5	7.5	8.4
40 °C	1.4	2.0	2.7	3.4	4.1	4.7	5.4	6.1	2.1	3.2	4.2	5.3	6.3	7.4	8.4	9.5
50 °C	**1.5**	**2.3**	**3.0**	**3.8**	**4.5**	**5.3**	**6.0**	**6.8**	**2.3**	**3.5**	**4.7**	**5.8**	**7.0**	**8.2**	**9.3**	**10.5**
60 °C	1.7	2.5	3.3	4.1	5.0	5.8	6.6	7.4	2.6	3.9	5.1	6.4	7.7	9.0	10.3	11.6

11.5.2 Status solar controller

The following operating conditions of the solar controller are possible [ch. 6.6.1.3]:

`Off`:
Solar controller not operating (no solar yield).

`On`:
Solar controller goes into operation.

`Special phase`:
Change-over of load strategy to collector temperature (sensor T1) and collector return temperature (sensor T4).

`Start phase`:
Control of the solar pump to `Minimum volumetric flow` (P `3.1.5`) until the `control differential` (P `3.2.5`) between storage temperature bottom (sensor T2) and collector flow temperature (sensor T3) has been achieved.

`Control`:
Control of volumetric flow until the `control differential` (P `3.2.5`) between storage temperature bottom (sensor T2) and collector flow temperature (sensor T3) has been achieved.

11.5.3 Status protection function

The following protection functions of the solar controller are possible [ch. 6.6.1.3]:

`Normal operation`:
Protection function not activated.

`Collector circuit: stagnation`:
Collector temperature (sensor T1) too high. `Maximum collector temperature` (P `3.1.7`) achieved, solar pump switches off.

`Collector circuit: high temperature`:
Collector temperature (sensor T1) too high. `Maximum collector temperature` (P `3.1.7`) - 10 K, solar pump operates at maximum speed.

`Hydraulic: excess temperature`:
collector flow temperature (sensor T3) too high. `Maximum flow temperature` (P `3.1.4`) achieved, solar pump switches off.

`Hydraulic: high temperature`:
collector flow temperature (sensor T3) too high. `Maximum flow temperature` (P `3.1.4`) - 10 K, solar pump operates at maximum speed.

`Collector circuit: frost protection`:
frost protection function activated. `Collector frost protection temperature` (P `3.1.8`) achieved, solar pump operates at minimum speed.

`Buffer: excess temperature`:
Buffer temperature (sensor B10) too high. `Switch-off limit solar buffer loading` (P `5.1.5`) achieved, solar pump switches off.
– or –
storage temperature (sensor B3) too high. `Switch-off limit solar DHW loading` (P `7.1.6`) achieved, solar pump switches off.

11.6 Inputs/outputs

The inputs and outputs can be configured for various functions [ch. 6.6.10.5].

Depending on the hydraulic variant selected, the inputs and outputs are pre-assigned, the function can then not be changed [ch. 11.1].

WTC output MFA1, VA1 and VA2

Setting	Explanation
`Off`	Output not used.
`Forward reporting of operation`	The contact closes as soon as a flame signal is present.
`Safety valve Gas`	The contact closes as soon as heat demand is present.
`Forward reporting of faults`	The contact closes as soon as a fault occurs.
`Actuator heating and DHW mode`(1	The contact is closed during heating and DHW mode.
`Actuator DHW mode`(1	The contact is closed during DHW mode.
`Actuator heating mode`(1	The contact is closed during heating mode.
`DHW 1: actuator`	The contact is closed during DHW loading of DHW circuit 1.
`Switched output via App`	Variable contact via an App. Not supported in the current software version.
`Pump neutralisation`	The contact closes as soon as a flame signal is present.

(1 Actuator: circulation pump or three-way valve

WTC input H1

The function (contact position) of input H1 can be rotated using parameter `Input H1 inverted` .

Setting	Explanation
`Off`	Input not used.
`System standby with frost protection`	The WTC is disabled for heating and DHW mode when the contact is closed. Frost protection is activated.
`Emergency-Off heat exchanger`	The system is disabled for heating and DHW mode when the contact is open. Frost protection is not activated. This function can be used to connect a temperature monitor, underfloor heating circuit or safety switch of a condensate lift unit.
`Block heating/ DHW mode`	The WTC is disabled for heating and DHW mode when the contact is closed. Frost protection is activated.
`Generator block heating mode`	The WTC is disabled for heating mode when the contact is closed. Frost protection is activated.
`Heating circuit 1: standby`	Heating circuit 1 is disabled for heating mode when the contact is closed. Frost protection is activated.
`Heating circuit 1: set-back`	When the contact is closed, the system heats to setback setpoint. The heating program of heating circuit 1 is ineffective.
`Heating circuit 1: normal`	When the contact is closed, the system heats to normal setpoint. The heating program of heating circuit 1 is ineffective.
`Heating circuit 1: comfort`	When the contact is closed, the system heats to comfort setpoint. The heating program of heating circuit 1 is ineffective.
`Heating circuit 1: Emergency-Off`	Heating circuit 1 is disabled for heating mode when the contact is open.
`Heating circuit 1: special level`	When the contact is closed, the system heats to special level. The heating program of heating circuit 1 is ineffective.
`Forward signalling via portal`	When the contact is closed, a message is forwarded to the WEM portal.

WTC input H2

The function (contact position) of input H2 can be rotated using parameter `Input H2 inverted` .

Setting	Explanation
`Off`	Input not used
`System standby with frost protection`	The WTC is disabled for heating and DHW mode when the contact is closed. Frost protection is activated.
`Emergency-Off heat exchanger`	The system is disabled for heating and DHW mode when the contact is open. Frost protection is not activated.
`Block heating/ DHW mode`	The WTC is disabled for heating and DHW mode when the contact is closed. Frost protection is activated.
`Generator block DHW mode`	The WTC is disabled for DHW mode when the contact is closed. Frost protection is not activated.
`DHW 1: standby`	DHW mode is disabled when the contact is closed. Frost protection is activated.
`DHW 1: setback`	When the contact is closed, the system heats to setback setpoint. The DHW program is ineffective.
`DHW 1: normal`	When the contact is closed, the system heats to normal setpoint. The DHW program is ineffective.
`DHW 1: Boost/button`	If the button on the input is pressed, the WTC loads the DHW storage tank in DHW circuit 1 once to the normal DHW setpoint temperature. An increased demand for hot water during setback operation can be met using the DHW boost function.
`Forward signalling via portal`	When the contact is closed, a message is forwarded to the WEM portal.
`DHW 1: circulation/button`	Only if the hydraulic `circulation pump` is set to `time controlled + button (H2)` in the commissioning wizard. If the button on the input is pressed, the WTC activates the output for the circulation pump. The output to which the pump is connected must be set to hot water circuit 1: circulation. The run time of the pump is determined via parameter `pump run time via button`.

Heating circuit (extension module WEM-EM-HK) input H1

Setting	Explanation
`no function`	Input not used
`Standby`	heating mode is disabled when the contact is closed. Frost protection is activated.
`Heating circuit activated setback operation`	When the contact is closed, the system heats to setback setpoint. The relevant heating program is ineffective.
`Heating circuit activated normal operation`	When the contact is closed, the system heats to normal setpoint. The relevant heating program is ineffective.
`Heating circuit activated comfort operation`	When the contact is closed, the system heats to comfort setpoint. The relevant heating program is ineffective.
`Heating circuit activated special level`	When the contact is closed, the system heats to special level. The relevant heating program is ineffective.
`Emergency-Off`	heating mode is disabled when the contact is open. Frost protection is not activated.

11.7 Factory setting engineer level

WTC - Parameters (P)		Factory setting	Setting range
2.1.1	Burner rapid cycle interlock heating mode(1	5 min / buffer: 0 min	0 … 30 min
2.1.2	Maximum load heating mode	100 %	WTC 15: 18 … 100 % WTC 25: 14 … 100 % WTC 32: 16 … 100 %
2.1.3	Maximum load DHW mode	100 %	WTC 15: 18 … 100 % WTC 25: 14 … 100 % WTC 32: 16 … 100 %
2.1.4	Time forced partial load capacity heating mode(1	120 s / buffer: 0 s	0 … 240 s
2.1.5	Controller switch differential operating mode(1	4 K / buffer: 6 K	0 … 20 K
2.1.6	Controller switch differential DHW	6 K	0 … 20 K
2.2.1	Internal pump operating mode HC(1	[ch. 11.1]	[ch. 6.6.2.2]
2.2.2	Internal pump operating mode DHW(1	[ch. 11.1]	[ch. 6.6.2.2]
2.2.3	Pump capacity minimum heating mode	WTC 15: 30 % WTC 25: 30 % WTC 32: 40 %	16 % … P 2.2.4
2.2.4	Pump capacity maximum heating mode	WTC 15: 80 % WTC 25: 80 % WTC 32: 90 %	P 2.2.3 … 100 %
2.2.5	Pump capacity minimal DHW mode	30 %	16 % … P 2.2.6
2.2.6	Pump capacity maximum DHW mode	WTC 15: 45 % WTC 25: 70 % WTC 32: 80 %	P 2.2.5 … 100 %
2.2.7	Minimum system pressure warning	0.8 bar	P 2.2.8 … 2.5 bar
2.2.8	Minimum system pressure burner lockout	0.5 bar	0.0 bar … P 2.2.7
2.2.9	Volumetric flow factor heating mode	90 %	0 … 100 %
2.2.10	Volumetric flow factor DHW loading	90 %	0 … 100 %
2.2.11	Maximum volumetric flow	WTC 15: 1300 l/h WTC 25: 2200 l/h WTC 32: 2750 l/h	0 … 10000 l/h
2.2.12	Inertia internal pump	4 s	1 … 30 s
2.3.1	Gas quantity correction at start	0 %	-10 … 20 %
2.3.2	Load correction at start	0 %	-16 … 14 %
2.3.3	Correction speed for flue gas length	0 %	-8 … 10 %
2.3.4	Minimum load correction	0 %	0 … 21 %
2.3.5	Correction gas surge at start	0 %	-10 … 10 %
2.3.6	Gas valve offset storage	29 % (variable)	12 … 42 %
2.3.7	Maximum flue gas temperature	120 °C	80 … 120 °C

(1 depending on the hydraulic version set

Solar - parameters (P)		Factory setting	Setting range
3.1.1	Operating mode	Automatic	[ch. 6.6.3.1]
3.1.2	Minimum pump capacity	15 %	0 % … P 3.1.3
3.1.3	Maximum pump capacity	95 %	P 3.1.2 … 100 %
3.1.4	Maximum flow temperature	110 °C	90 … 150 °C
3.1.5	Minimum volumetric flow	0.6 l/min	0.6 l/min … P 3.1.5

Solar - parameters (P)		Factory setting	Setting range
3.1.6	Maximum volumetric flow	15.0 l/min	P 3.1.5 … 15.0 l/min
3.1.7	Maximum collector temperature	120 °C	110 … 150 °C
3.1.8	Collector frost protection temperature	[ch. 6.6.3.1]	-50 … 5 °C
3.1.9	Minimum yield heating mode	1000 W	0 … 20000 W
3.1.10	Minimum yield DHW preparation	1000 W	0 … 20000 W
3.2.1	Minimum collector temperature	20 °C	15 … 60 °C
3.2.2	Switch on differential collector circuit	7 K	P 3.2.3 … 20 K
3.2.3	Switch off diff. collector circuit	4 K	1 K … P 3.2.2
3.2.4	Lower load limit collector	20 W	0 … 150 W
3.2.5	Control differential	12 K	1 … 20 K
3.3.1	Recooling via solar circuit	Off	Off / On

Remote control - parameters (P)		Factory setting	Setting range
4.1	Voltage error input N1	2 V	0.5 … P 4.2 - 0.2 V
4.2	Voltage burner off input N1	3 V	P 4.1 + 0.2 V ... 8.0 V
4.3	Minimum flow temperature input N1	8 °C	8 °C … P 4.4
4.4	Maximum flow temperature input N1	80 °C	P 4.3 … 80 °C

Hydraulic - parameters (P)		Factory setting	Setting range
5.1.1	Buffer control	P2	[ch. 6.6.5.1]
5.1.2	Change-over temp buffer control P1/P2	15 °C	0 … 30 °C
5.1.3	Switch differential	4 K	1 … 7 K
5.1.4	Temperature elevation	2 K	1 … 10 K
5.1.5	Switch-off solar buffer loading	85 °C	30 … 95 °C
5.2.2	Temperature differential flow/de-couple pump	4.0 K	1.0 … 7.0 K

Heating circuits - parameters (P)		Factory setting	Setting range
6.1.1	Minimum flow setpoint temperature(2	[ch. 11.9]	[ch. 11.9]
6.1.2	Maximum flow setpoint temperature(2	[ch. 11.9]	[ch. 11.9]
6.1.3	Flow setpoint temperature heating limit(2	[ch. 11.9]	Off / 8 … P 6.1.1
6.1.4	Room setpoint temperature heating limit	On	Off / On
6.1.5	DHW priority(1	[ch. 11.1]	[ch. 6.6.6.1]
6.2.1	Heat-up optimisation	Off	Off / On
6.2.2	Heat-up optimisation maximum advance(2	[ch. 11.9]	0 … 240 min
6.2.3	Building construction	light	[ch. 6.6.6.2]
6.2.4	Room thermostat function(2	[ch. 11.9]	[ch. 6.6.6.2] 1 … 3 K
6.2.5	Room sensor influence	25 %	0 … 100 %
6.2.6	Room control I-Part	Off (60 min)	0 … 240 min
6.2.7	Frost protection external temperature	0 °C	-10 … 10 °C
6.2.8	Level increase external temperature	Off (-20 °C)	-30 … 5 °C
6.2.9	Correction external temperature	0.0 K	-10.0 … 10.0 K
6.2.10	Frost protection room temperature	6.0 °C	4.0 … 10.0 °C
6.3.1	Mixer elevation(2	[ch. 11.9]	-5 … 20 K
6.3.2	Delay time heat demand	1 min	0 … 30 min
6.3.3	Mixer run time	120 s	0 … 600 s

(1 depending on the hydraulic version set
(2 depending on the heating circuit type set

11 Technical documentation

Heating circuits - parameters (P)		Factory setting	Setting range
6.3.4	Mixer initialisation run time	12 s	0 … 300 s
6.3.5	Tolerance range mixer control(2	[ch. 11.9]	0.0 … 5.0 K
6.3.6	Temperature controller P part Kp	16	0 … 200
6.3.7	Temperature controller I part Tn	12	0 … 200

(1 depending on the hydraulic version set
(2 depending on the heating circuit type set

Heating circuits - parameters (P)		Factory setting	Setting range
6.4.1	Screed	Off	[ch. 6.6.6.4]
6.4.2	Screed day	0 days	0 … 30 days
6.4.3	Start temperature	25 °C	15 … 30 °C
6.4.4	Function specific heating max temp	45 °C	35 … 60 °C
6.4.5	Function specific heating days min temp	3 days	2 … 30 days
6.4.6	Function specific heating days max temp	4 days	1 … 30 days
6.4.7	Function specific heating days cooling down	4 days	2 … 30 days
6.4.8	Screed drying maximum temperature	55 °C	35 … 60 °C
6.4.9	Screed drying days heat-up	3 days	3 … 30 days
6.4.10	Screed drying days maximum temperature	13 days	7 … 60 days
6.4.11	Screed drying days cooling	3 days	3 … 30 days

DHW - parameters (P)		Factory setting	Setting range
7.1.1	Load strategy(1	Auto / buffer: comfort	[ch. 6.6.7.1]
7.1.2	Switching differential DHW	3 K	3 … 10 K
7.1.3	w setpoint temperature increase(1	15 K / buffer: 5 K	2 … 25 K
7.1.4	Maximum load time	On (30 min)	0 … 240 min
7.1.5	Maximum DHW setpoint temperature	60 °C	40 … 85 °C
7.1.5	Maximum DHW setpoint temperature (version C)	65 °C	60 … 75 °C
7.1.6	Switch-off limit solar DHW loading	90 °C	40 … 95 °C
7.1.7	Switch-off differential comfort preh	0 K	-10 … 3 K
7.1.8	Switch-on differential comfort preh	-15 K	-30 … -10 K
7.1.9	Minimum water tapping quantity	2.0 l/min	1.9 … 2.4 l/min
7.1.10	Residence time three-way valve for DHW	180 s	0 … 255 s
7.1.11	Pump run-on time DHW Combi	3 min	0 … 10 min
7.2.1	Protection function	by weekday	[ch. 6.6.7.2]
7.2.2	Start time	01:00	00:00 … 23:45
7.2.3	Weekday	Saturday	Mon … Sun / daily
7.2.4	Interval	7 days	2 … 14 days
7.2.5	Heat-up temperature DHW	60 °C	60 … 80 °C
7.2.6	Circulation for legionella protection	Off	[ch. 6.6.7.2]
7.3.1	Switch differential return flow temp	5 K	0 … 20 K
7.3.2	Pump run time via button	5 min	0 … 60 min
7.3.3	Circulation for DHW Boost	On during DHW...	[ch. 6.6.7.3]

(1 depending on the hydraulic version set

11.8 Factory setting time programs

Heating program (time program)

	Weekdays	TimeOfDay	Level
Time program 1	Mon - Fri	06:00 … 22:00	Normal
		22:00 … 06:00	Setback
	Sat ... Sun	07:00 … 23:00	Normal
		23:00 … 07:00	Setback
Time program 2	Mon - Fri	05:30 … 07:30	Normal
		07:30 … 16:00	Setback
		16:00 … 22:30	Comfort
		22:30 … 05:30	Setback
	Sat ... Sun	07:00 … 19:00	Normal
		19:00 … 23:00	Comfort
		23:00 … 07:00	Setback
Time program 3	Mon … Sun	07:00 … 21:30	Normal
		21:30 … 07:00	Setback

DHW program

Weekdays	TimeOfDay	Level
Mon - Fri	05:00 … 21:00	Normal
	21:00 … 05:00	Setback
Sat ... Sun	06:30 … 22:00	Normal
	22:00 … 06:30	Setback

Circulation program

Weekdays	TimeOfDay	Circulation pump
Mon - Fri	06:30 … 07:30	On
	07:30 … 11:30	Off
	11:30 … 13:00	On
	13:00 … 17:00	Off
	17:00 … 19:00	On
	19:00 … 06:30	Off
Sat ... Sun	07:00 … 08:30	On
	08:30 … 11:30	Off
	11:30 … 13:00	On
	13:00 … 17:00	Off
	17:00 … 19:00	On
	19:00 … 07:00	Off

11.9 Factory setting heating circuit type

Depending on the heating circuit type set the following will be carried out automatically:

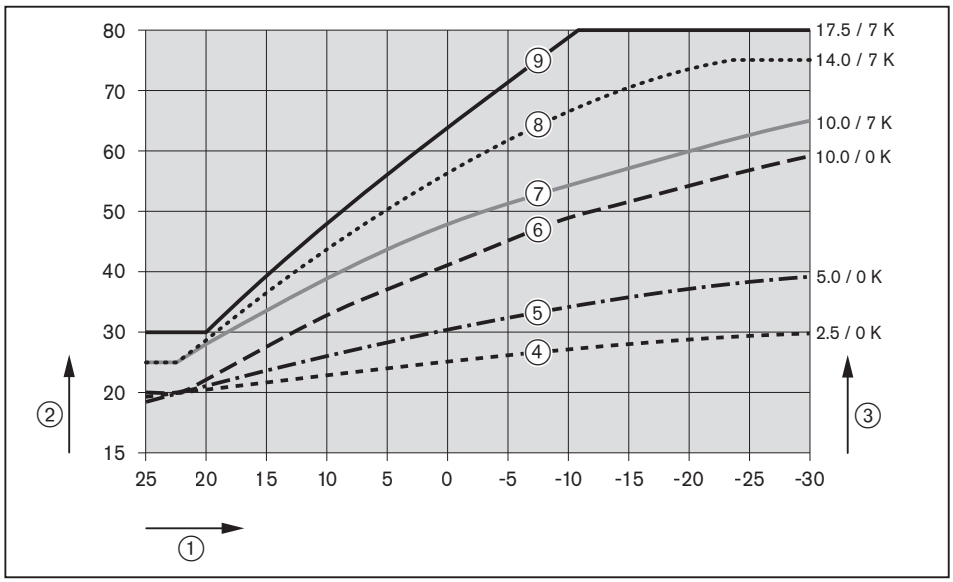
- parameters will be pre-assigned with factory settings,
- setting ranges will be limited.

	Floor warming	Underfloor heating	Universal
Setback flow temp setpoint	16.0 °C	20.0 °C	45.0 °C
Normal flow temp setpoint	24.0 °C	32.0 °C	60.0 °C
Comfort flow temp setpoint	26.0 °C	36.0 °C	70.0 °C
Heating curve Gradient	2.5 Range: 2.0 … 6.0	5.0 Range: 2.0 … 12.0	10.0 Range: 1.5 … 40.0
Heating curve Parallel	0 K	0 K	0 K
Minimum flow setpoint temperature	15.0 °C Range: 8.0 … 30.0 °C	15.0 °C Range: 8.0 … 40.0 °C	15 °C Range: 8.0 … 80.0 °C
Maximum flow setpoint temperature	30.0 °C Range: 15.0 … 50.0 °C	40.0 °C Range: 15.0 … 50.0 °C	80.0 °C Range: 15.0 … 80.0 °C
Flow setpoint temperature heating limit	Off	Off	Off
Heat-up optimisation maximum advance	90 min	90 min	90 min
Room thermostat function(1	On to setback / 1.0 K	On to setback / 1.0 K	On / 1.0 K
Correction heat-up optimisation	20.0 min/K	20.0 min/K	10.0 min/K
Tolerance range mixer control	0.5 K	0.5 K	1.0 K
Mixer elevation	2.0 K	2.0 K	4.0 K
	Radiator 60	**Radiator 70**	**Convector**
Setback flow temp setpoint	40.0 °C	40.0 °C	45.0 °C
Normal flow temp setpoint	55.0 °C	60.0 °C	60.0 °C
Comfort flow temp setpoint	60.0 °C	70.0 °C	70.0 °C
Heating curve Gradient	10.0 Range: 8.0 … 20.0	14.0 Range: 10.0 … 25.0	17.5 Range: 10.0 … 40.0
Heating curve Parallel	7 K	7 K	7 K
Minimum flow setpoint temperature	25.0 °C Range: 20.0 … 65.0 °C	25.0 °C Range: 25.0 … 75.0 °C	30 °C Range: 25.0 … 80.0 °C
Maximum flow setpoint temperature	65.0 °C Range: 25.0 … 75.0 °C	75 °C Range: 25.0 … 75.0 °C	80 °C Range: 30.0 … 80.0 °C
Flow setpoint temperature heating limit	20.0 °C	25.0 °C	25.0 °C
Heat-up optimisation maximum advance	45 min	45 min	45 min
Room thermostat function(1	On / 1.0 K	On / 1.0 K	On / 1.0 K
Correction heat-up optimisation	10.0 min/K	10.0 min/K	10.0 min/K
Tolerance range mixer control	1.0 K	1.0 K	1.0 K
Mixer elevation	4.0 K	4.0 K	4.0 K

(1 depending on the control version set

11.9.1 Factory setting heating curve

Heating curve dependent on the heating circuit type set:



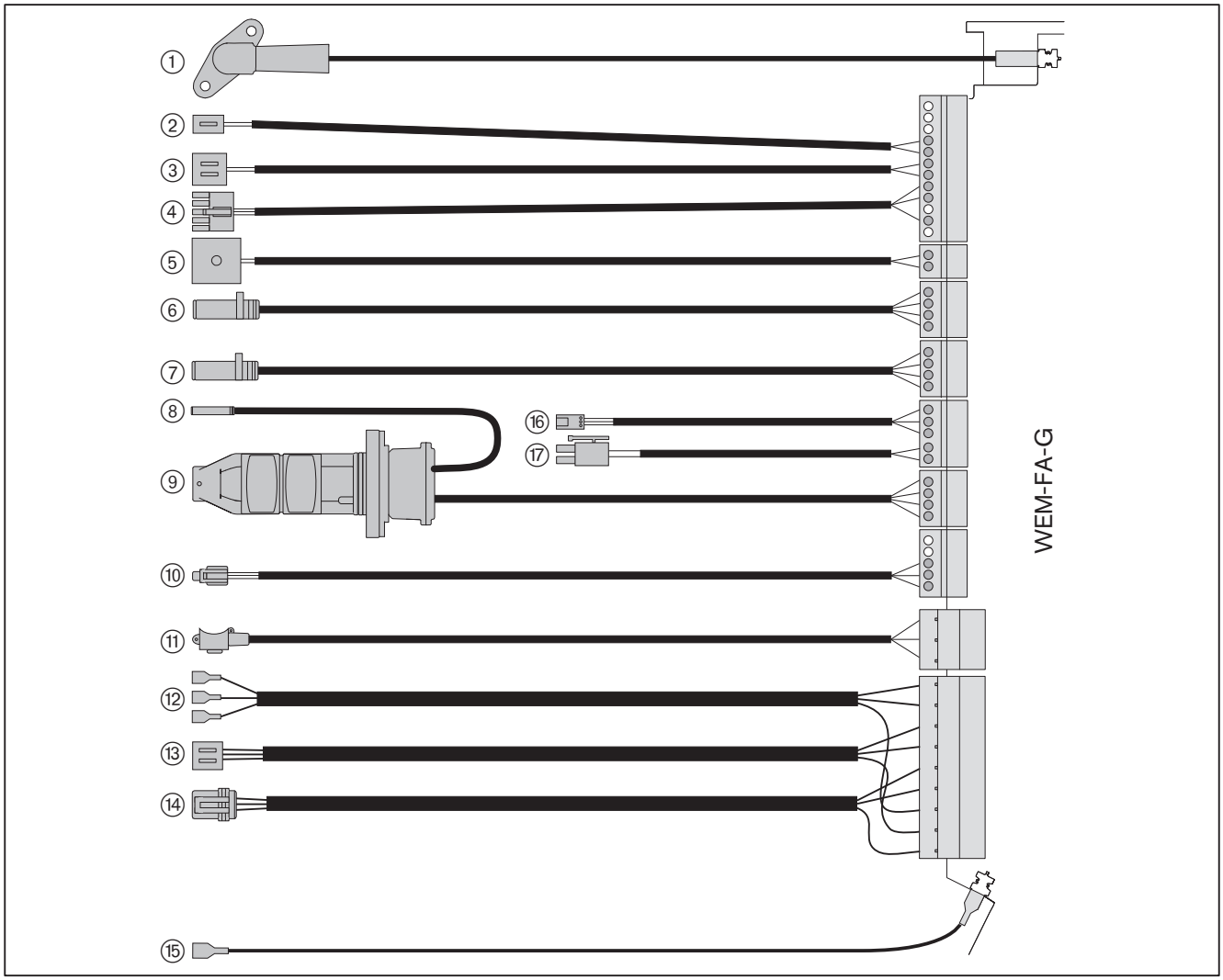
① External temperature [°C]
② Flow temperature [°C]
③ Gradient / parallel movement

Heating curve[(1]	Heating circuit type
④	Floor warming
⑤	Underfloor heating
⑥	Universal
⑦	Radiator 60
⑧	Radiator 70
⑨	Convector

[(1] With room temperature normal 21.0 °C.

A change in room temperature of 1 °C leads to a parallel movement of the heating curve set by approx. 1.5 … 2.5 °C. The parallel movement depends on the gradient set and the external temperature. The steeper the gradient or the warmer the external temperature, the greater is the change.

11.10 Wiring diagram WEM-FA-G device electronics



① Ionisation electrode
② Gas combi valve immersion coil/valve 2
③ Gas combi valve valve 1
④ PWM signal and fan return signal
⑤ Gas pressure switch (accessory)
⑥ eSTB flow sensor
⑦ Flue gas sensor
⑧ Flow sensor of multifunction sensor VPT
⑨ Multifunction sensor VPT
⑩ PWM signal and circulation pump return signal
⑪ Three way valve actuator (version W)
⑫ Ignition unit
⑬ Fan voltage supply 230 V AC
⑭ Circulation pump voltage supply 230 V AC
⑮ Protective conductor housing
⑯ Water flow sensor (version C)
⑰ DHW outlet sensor (version C)

11.11 Sensor variables

Flow sensor (eSTB) WTC
Flue gas sensor WTC
DHW sensor (B3)
De-couple sensor (B2)
Plate heat exchanger (B2)
DHW outlet sensor
Flow sensor (B6)
Buffer sensor top (B10)
Buffer sensor bottom (B11)
Storage tank sensor bottom (T2)
Solar flow sensor (T3)
Solar return sensor (T4)
Circulation return (T1)

External sensor WTC (B1)
External sensor heating circuit (T1)

Collector sensor (T1)

NTC 5 kΩ		NTC 2 kΩ		NTC 5 kΩ	
°C	Ω	°C	Ω	°C	Ω
-20	48 180	-20	15 138	-20	37 436
-15	36 250	-15	11 709	-10	22 726
-10	27 523	-10	9 138	0	14 280
-5	21 078	-5	7 193	10	9 209
0	16 277	0	5 707	20	6 092
5	12 669	5	4 563	30	4 127
10	9 936	10	3 675	40	2 856
15	7 849	15	2 981	50	2 017
20	6 244	20	2 434	60	1 451
25	5 000	25	2 000	70	1 062
30	4 029	30	1 653	80	789
35	3 267	35	1 375	90	595
40	2 665	40	1 149	100	455
45	2 185			110	353
50	1 802			120	276
55	1 494			130	219
60	1 245			140	175
65	1 042			150	142
70	876			160	115
75	740			170	95
80	628			180	79
85	535			190	66
90	457			200	55
95	393			210	47
100	338			220	40
105	292			230	34
110	254			240	29

11.12 Remote access to heating system via internet

Remote access to the heating system via the Internet is possible via web browser or app.

For remote access, the WEM portal must first be set up.

Network configuration

The device is set for automatic network configuration.

Depending on the network, switching to manual network configuration may be required.

Access data for manual network configuration:
- Network address: *http://wem-sg*
- User name: admin
- Password: Admin123

Connect network cable

► Connect the router to the Ethernet socket on the display and operating unit (system unit).

Activate the WEM portal on the condensing unit

► Select user level [ch. 6.5].
► Select `Settings` and confirm.
► Select `WEM-Portal` and confirm.
► Select rectangle for `Portal access` using the dial knob and confirm.
✓ Colour of rectangle change to green.
✓ A new `Access code` is being generated.
✓ Access to the WEM-Portal is activated.
► Note down the`Serial Number` and `Access code` .

Registering

► Access address *https://www.wemportal.com/* via the web browser.
► Click on `Register` .
► Carry out registration.

Login

► Log in with user name and password.
✓ The WEM portal opens.
✓ The window `System > Overview` is displayed.

Set up the heating system in the WEM portal

► Click on `Set up system` .
► Assign `System name` (freely selectable).
► Enter noted down `Serial Number` and `Access code` .
► Enter `Registration code` from Weishaupt voucher.
► Click on `Setup` .
✓ The system is set up.

Install the App (optional)

► Install the App "Weishaupt Energy Manager" on the end device.

12 Project planning

12.1 Expansion vessel and system pressure

The unit is equipped with an integrated expansion vessel:
- Contents 10 litres,
- inlet pressure 0.75 bar.

► Use the following table to verify whether an additional expansion vessel should be installed.

Example

A maximum flow temperature of 50 °C and an installation elevation of 7.5 metres would result in a maximum system content of 260 litres. An additional expansion vessel must be installed if this volume is exceeded.

	Installation elevation				
	5 m	**7.5 m**	**10 m**	**12.5 m**	**15 m**
Flow temperature	**Maximum admissible total water content [litres]**				
max 40 °C	500	400	300	210	120
max 50 °C	320	260	200	140	80
max 60 °C	220	180	140	100	60
max 70 °C	170	130	100	70	40
max 80 °C	130	100	80	50	30

Expansion vessel inlet pressure

The inlet pressure is calculated from the static ceiling of the system:
10 metres static height: 1.0 bar inlet pressure

The static height is determined by the difference in height between the expansion vessel connection and the highest point of the system.

If the static height is less than 5 metres (e. g. with a one-storey building or roof heating centre), an inlet pressure of minimum 0.5 bar must be selected.

► Determine static height.
► Calculate inlet pressure.
► Check inlet pressure in the expansion vessel and adjust to calculated value if necessary.

The valve of the expansion vessel is located behind the display and operating unit (system device) [ch. 3.4.1].

System pressure

► Set the system pressure 0.5 bar above the adjusted inlet pressure of the expansion vessel.

Example

	Example 1	**Example 2**
Static height	8 metres	1 metre
Expansion vessel inlet pressure	0.8 bar	0.5 bar
System pressure	1.3 bar	1.0 bar

12.2 Weishaupt Energy Management WEM

System device

The display and operating unit (system unit) integrated in the condensing unit is the higher-level system unit (master) for the entire system. The system device can address all expansion modules connected to the system.
At the same time, the system device controls the direct heating and hot water circuit of the condensing unit. Only heating or DHW circuits that are supplied via a pump controlled by the condensing unit are classed as direct circuits. Address 1 is designated to the direct heating and DHW circuit in the system.

Extension module

The heating system extension module (WEM-EM-HK) can be used to control an additional pump heating circuit or a mixer circuit. Up to 24 heating system extension modules can be connected to the system.

The solar extension module (WEM-EM-Sol) is used to control a solar system.

Room device WEM-RG1

A room device can be connected to the condensing unit and to each heating system extension module. One room device WEM-RG1 can operate one heating circuit.

Room device WEM-RG2

A room device can be connected to the condensing unit and to each heating system extension module. One room device WEM-RG2 can operate up to 3 heating circuits and one DHW circuit.

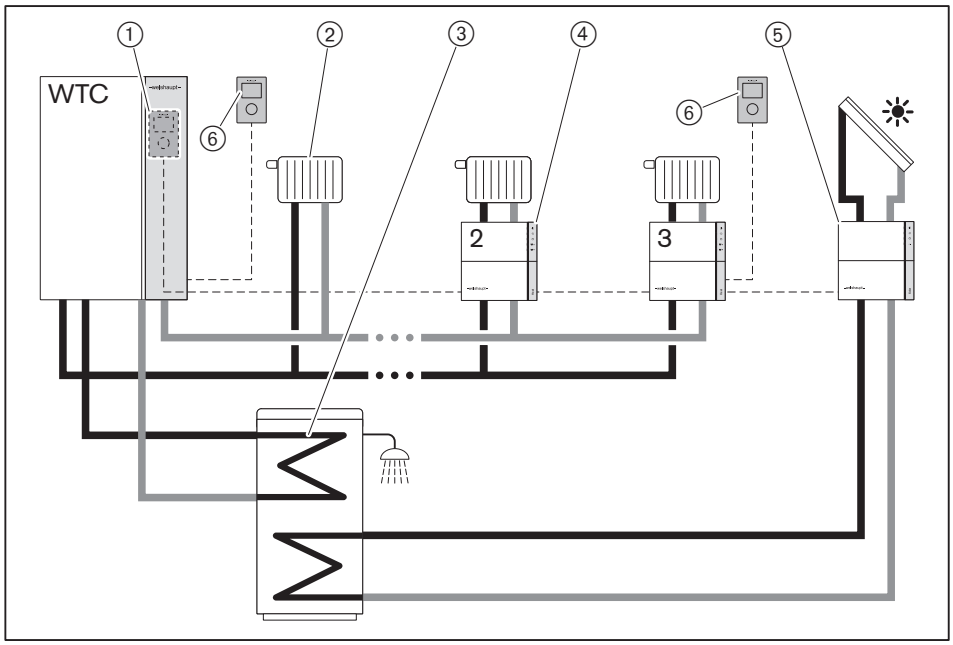
Room sensor WEM-RF

A room sensor can be connected to the condensing unit and to each heating system extension module.

Room sensor WEM-RF can only be assigned to one heating circuit. Up to 3 room sensors can be assigned to one heating circuit. The system device then calculates the average value for the control from the room temperatures.

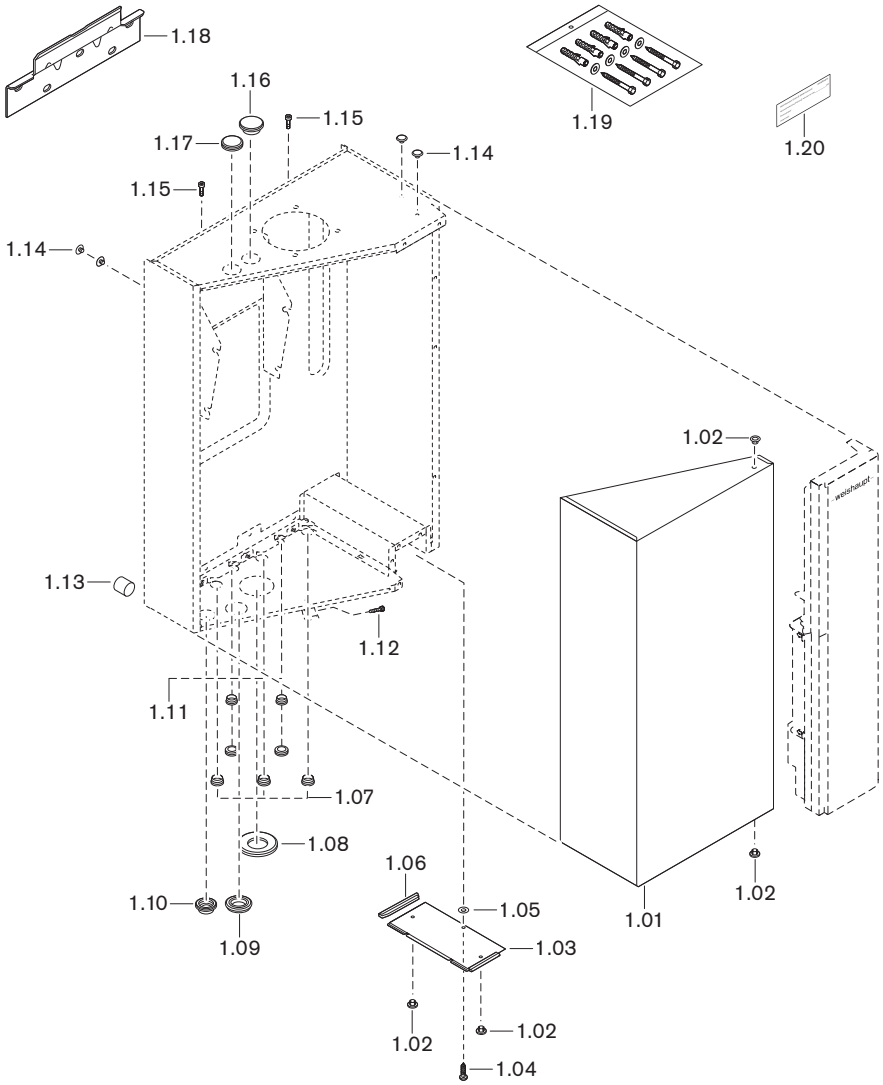
System overview

Example



① System device
② Direct heating circuit of condensing unit
③ Direct DHW circuit of condensing unit
④ Heating system extension module (WEM-EM-HK)
⑤ Solar extension module (WEM-EM-Sol)
⑥ Room device or room sensor

13 Spares


1.18
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1.01
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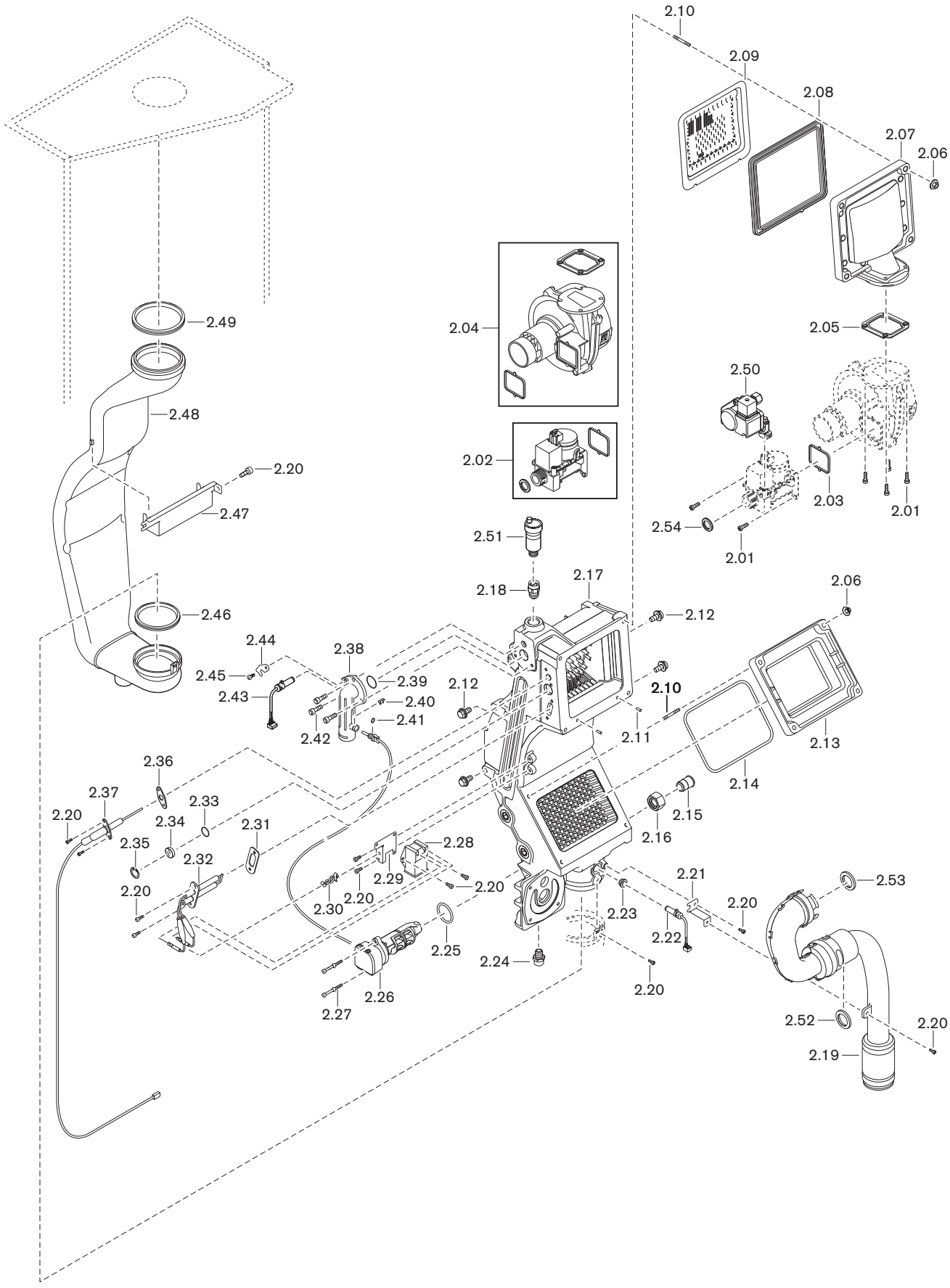
1.02
1.02
1.04

Pos.	Description	Order No.
1.01	Cover	481 011 02 02 2
1.02	Plug 6 mm form 1 white	446 034
1.03	Cover plate cable duct	481 011 02 07 2
1.04	Screw ISO 14585 4.2 x 13.0-C	409 132
1.05	Washer 3.5 x 10 x 0.5	430 020
1.06	Edge protection profile 0.8-1.0 mm	756 027
1.07	Grommet water connection Ø internal 18 mm	481 011 02 19 7
1.08	Grommet siphon Ø internal 35 mm	481 011 40 22 7
1.09	Grommet water connection Ø internal 22 mm	481 015 02 14 7
1.10	Grommet condensate hose Ø internal 24 mm	481 011 02 36 7
1.11	Grommet water connection Ø internal 15 mm	481 011 02 35 7
1.12	Screw M4 x 22 for tension lock	481 011 02 41 7
1.13	Wall spacer	481 011 02 33 7
1.14	Plug (version H-0)	481 011 02 34 7
1.15	Screw M6 x 35 DIN 7984	402 406
1.16	Grommet Ø internal 18 mm	483 011 02 10 7
1.17	Grommet quick action vent valve closed	481 011 02 24 7
1.18	Wall bracket	471 064 02 33 7
1.19	Dowel set	481 011 02 05 2
1.20	Label Nominal heat output	793 534

13 Spares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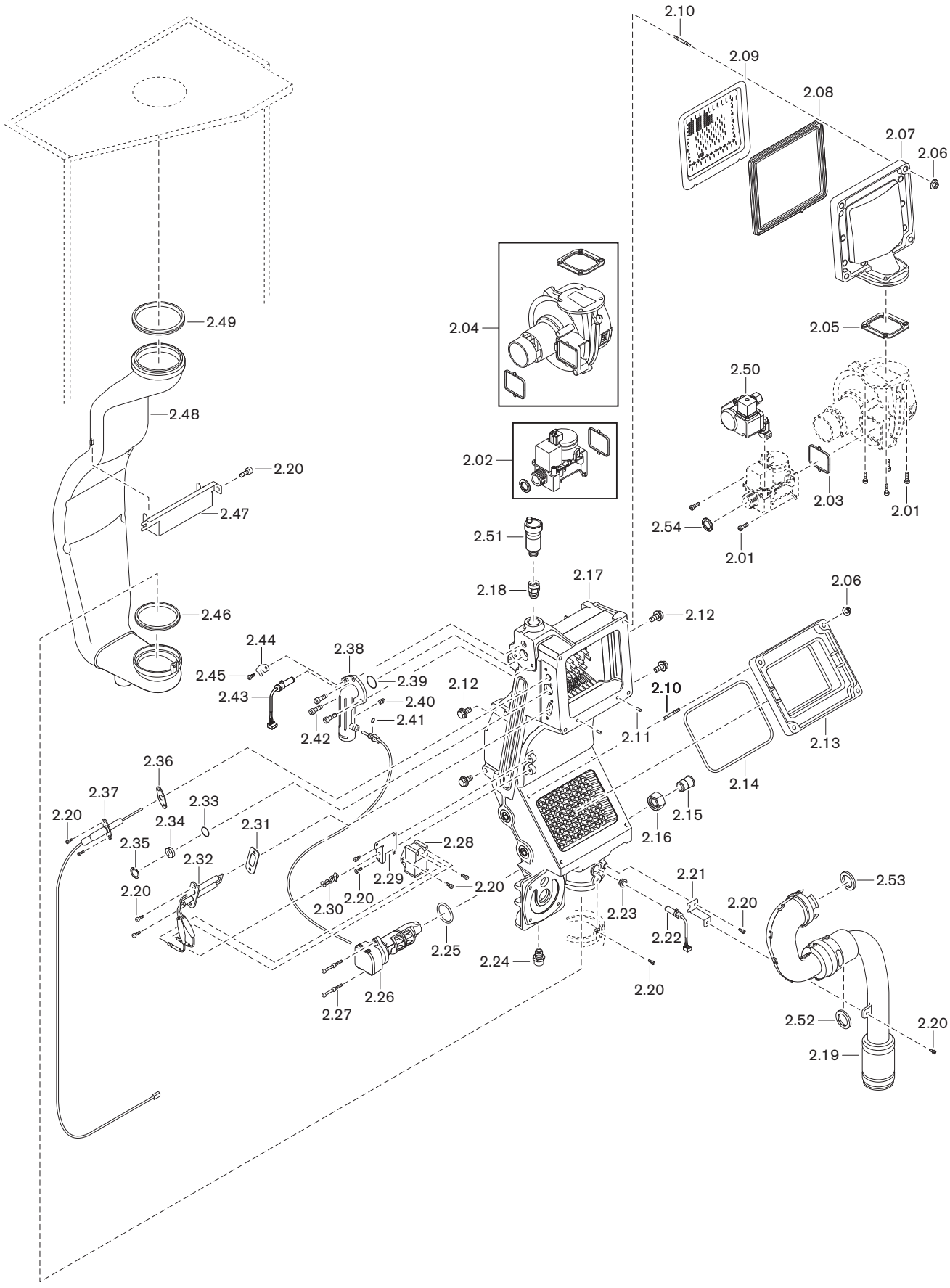
2.20
2.19

13 Spares

Pos.	Description	Order No.
2.01	Screw M5 x 16 DIN 6912	403 263
2.02	Compact gas combi valve CES with seals	
	– WTC-G… 15-B	483 011 30 19 2
	– WTC-G… 25/32-B	483 111 30 19 2
2.03	Profile seal gas valve - fan	483 011 30 12 7
2.04	Fan NRG 118 with seals	483 011 30 06 2
2.05	Gasket fan air outlet	482 001 30 67 7
2.06	Combi hexagonal nut M6	412 508
2.07	Burner cover	
	– WTC-G… 15-B	483 011 30 08 2
	– WTC-G… 25-B	483 111 30 08 2
	– WTC-GW 32-B	483 311 30 08 2
2.08	Burner gasket	
	– WTC-G… 15-B	483 011 30 05 7
	– WTC-G… 25/32-B	483 111 30 05 7
2.09	Burner surface	
	– WTC-G… 15-B	483 011 30 11 2
	– WTC-G… 25/32-B	483 111 30 11 2
2.10	Stud bolt 6 x 30-A3K DIN 949-B	471 230
2.11	Grooved pin 4 x 10 ISO 8741 A4	422 227
2.12	Screw M8 x 16 DIN 6921	409 256
2.13	Service cover with seal	
	– WTC-G… 15-B	483 011 30 03 2
	– WTC-G… 25/32-B	483 111 30 03 2
2.14	Service cover seal	
	– WTC-G… 15-B	481 011 30 05 7
	– WTC-G… 25/32-B	481 111 30 05 7
2.15	Screw in part R½A	483 011 30 22 7
2.16	Union nut G¾ x 22 L=16 steel	483 011 30 21 7
2.17	Heat cell pre-mounted with accessories	
	– WTC-G… 15-B	483 011 30 02 2
	– WTC-G… 25-B	483 111 30 02 2
	– WTC-GW 32-B	483 311 30 02 2
2.18	Shut-off valve R½A x G⅜I	662 034
2.19	Intake sound attenuator complete	483 011 30 09 2
2.20	Screw M4 x 10 DIN 912	402 150
2.21	Fix. plate intake attenuator-flue gas sensor	483 011 30 25 7
2.22	Flue gas sensor eSTB NTC 5K	483 011 30 18 7
2.23	Grommet flue gas sensor	481 011 30 28 7
2.24	Double nipple R¼ x G⅜	481 011 40 12 7
2.25	O ring 31 x 2.5 EPDM 70	445 176
2.26	Multifunction sensor set VPT2 complete	483 011 40 10 2
2.27	Screw M4 x 50 / 20-8.8 A2K	483 011 40 09 7

13 Spares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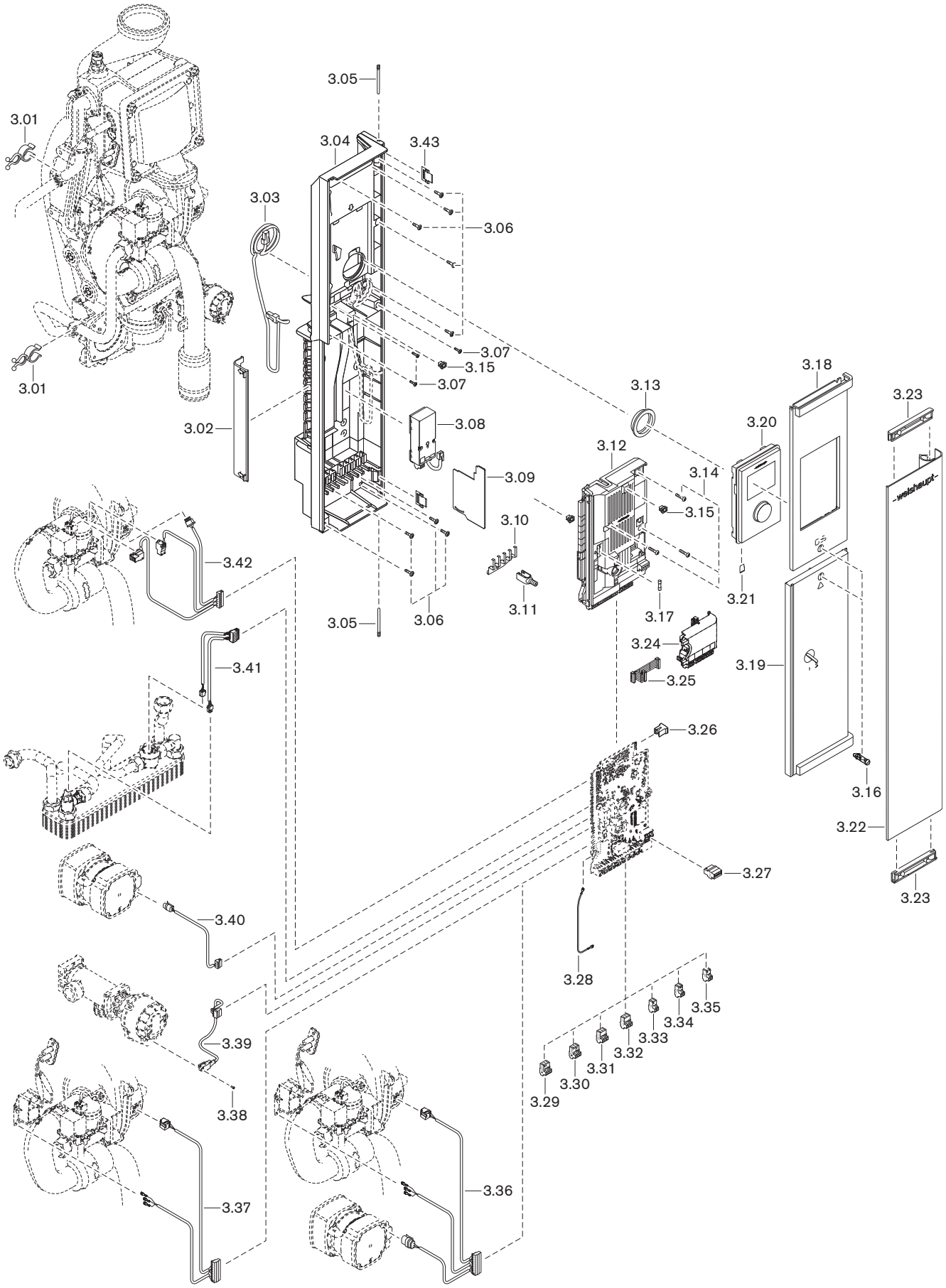
13 Spares

Pos.	Description	Order No.
2.28	Ignition unit ZAG2	483 011 30 07 2
2.29	Ignition unit bracket	483 011 30 19 7
2.30	Cable tie with rivet PA 6.6 natural	481 011 22 11 7
2.31	Gasket ignition electrode	483 011 30 16 7
2.32	Ignition electrode with gasket	483 011 30 15 2
2.33	O ring 17 x 1.5 -N FPM 80 green	445 135
2.34	View port glass	481 011 30 06 7
2.35	Washer DIN 472 J 20 x 1.0	435 467
2.36	Gasket ionisation electrode	481 011 30 25 7
2.37	Ionisation electrode with gasket	483 011 30 16 2
2.38	Flow connection piece complete (with O rings and fixing plate)	483 011 40 09 2
2.39	O ring 29 x 3.0 -N EPDM 70 DIN 3771	445 138
2.40	Fixing plate flow sensor Ø 6 mm	483 011 30 20 7
2.41	O ring 4 x 2.5 N-EPDM 70	445 175
2.42	Screw M6 x 20 DIN 912 8.8	402 350
2.43	Flow sensor eSTB NTC 5K	483 011 30 14 7
2.44	Fixing plate eSTB sensor	483 011 30 08 7
2.45	Screw Dm.4 x L10	409 329
2.46	Gasket DN70 EPDM for flue gas duct	669 369
2.47	Flue gas duct bracket	
	– WTC-G… 15-B	483 011 30 13 7
	– WTC-G… 25/32-B	483 111 30 13 7
2.48	Flue gas duct	
	– WTC-G… 15/25-B	483 011 30 04 2
	– WTC-GW 32-B	483 311 30 04 2
2.49	Gasket DN80 for PP flue gas pipe	669 252
2.50	Gas pressure switch GW50 complete (accessory)	483 000 00 10 2
	– Pressure switch GW50 with O ring	482 001 30 05 2
	– O ring 10.5 x 2.25 GW50/VDK300	445 512
	– Screw M4 x 20 DIN 912 8.8	402 115
2.51	Quick action vent valve G3/8 w/o shut off v.	662 032
2.52	Intake sound attenuator gasket	481 401 30 23 7
2.53	Intake sound attenuator gasket DN50	483 011 30 24 7
2.54	Seal 17 x 24 x 2 (¾") AFM-34/2	409 000 21 10 7

13 Spares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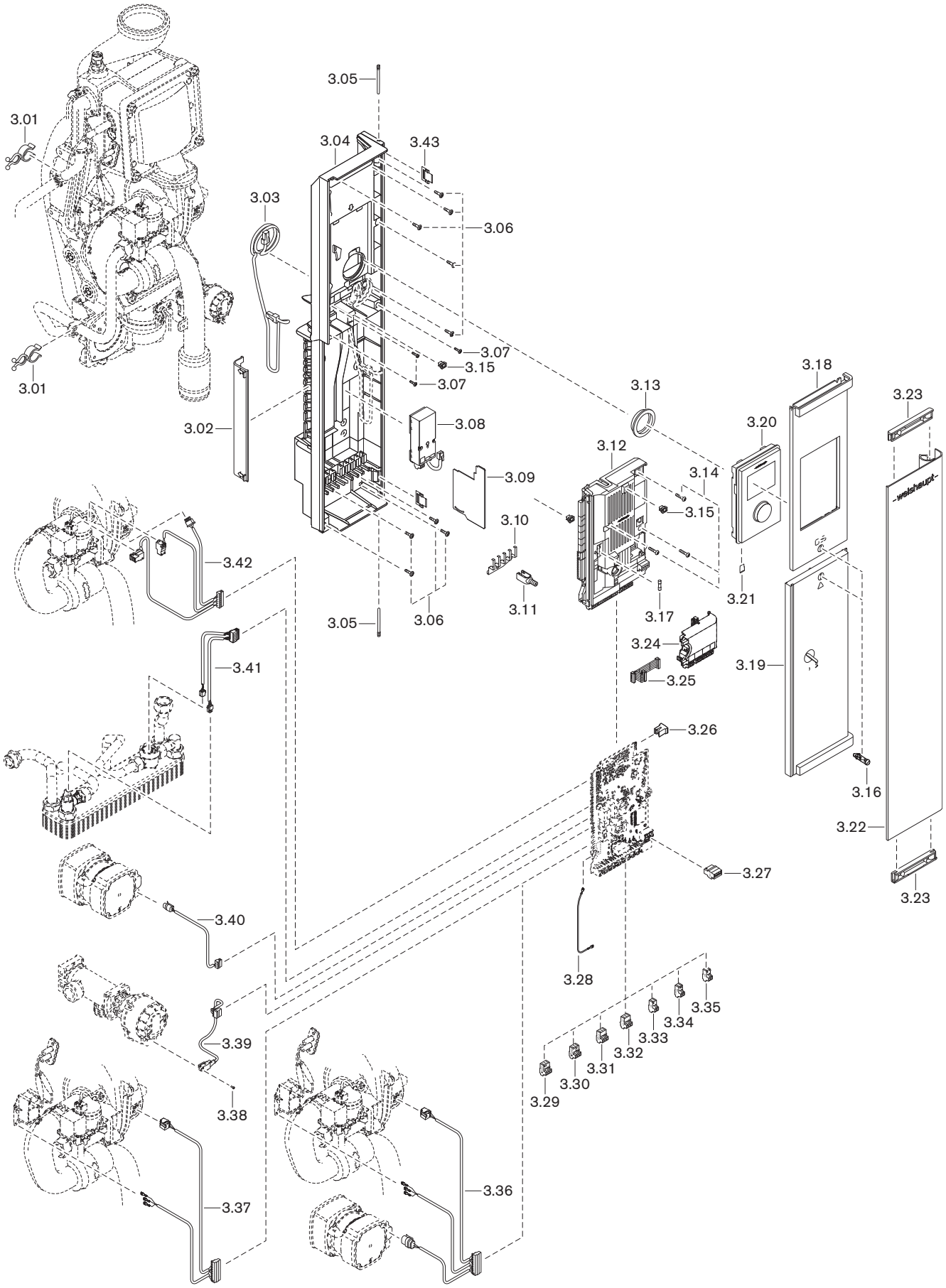
13 Spares

Pos.	Description	Order No.
3.01	Pipe holder for pipe Ø 18 mm	483 011 22 43 7
3.02	Splash guard for WEM plug	483 011 22 15 7
3.03	Connection line RJ11 WEM system device	483 011 22 10 2
3.04	Operating unit	483 011 22 21 2
3.05	PT bearing screw L = 63 mm	483 011 22 34 7
3.06	Self tapping screw 4.2 x 16 ZEBRA	483 011 22 33 7
3.07	Screw 4 x 12 W1451 A3K	483 011 22 30 7
3.08	Adapter set WEM-CAN 2 wire	
	– for room device 2 with wall bracket	483 000 00 22 2
	– for room sensor / room device 1	483 000 00 38 2
3.09	Separating strip 230 V / SELV	483 011 22 17 7
3.10	Traction relief EMC shielding	483 011 22 29 7
3.11	Screw terminal	483 011 22 38 2
3.12	WEM-FA-G 2.0 cassette (device electronics)	483 011 22 23 2
3.13	Grommet service opening expansion vessel	483 011 22 35 7
3.14	Screw 4 x 20 W1451 A3K	483 011 22 31 7
3.15	Clamp quick release fastener	483 011 22 09 7
3.16	Locking bolt quick release fastener	483 011 22 10 7
3.17	Micro fuse T4H 5 x 20 mm	483 011 22 44 7
3.18	Cover operating panel	483 011 22 15 2
3.19	Cover boiler control panel	483 011 22 16 2
3.20	WEM system device 2.0 cpl. with SD card	483 011 22 24 2
3.21	SD card WEM system device	483 011 22 20 2
3.22	Operating panel flap	483 011 22 18 2
3.23	Manual holder	483 011 22 18 7
3.24	WEM-FAgas additional input/output module 1.0	483 000 00 01 2
3.25	Ribbon cable 10-pin	483 000 00 02 2
3.26	Coded plug BCC (V2.0)	
	– WTC-G… 15-B	483 011 22 25 2
	– WTC-G… 25-B	483 111 22 25 2
	– WTC-GW 32-B	483 311 22 25 2
3.27	Plug CAN 4 pole pink Rast 5	716 582
3.28	Chassis earth GNGE 1.0 x 300 Chassis-PE	481 011 22 07 2
3.29	Plug 230V 3 pole graphite grey Rast 5	716 275
3.30	Plug 230V 3 pole silver grey Rast 5	716 284
3.31	Plug H1/H2 3 pole turquoise Rast 5	716 580
3.32	Plug MFA1 3 pole violet	716 277
3.33	Plug B1 2 pole green Rast 5	716 280
3.34	Plug B2 2 pole cream Rast 5	716 581
3.35	Plug B3 2 pole yellow Rast 5	716 281

13 Spares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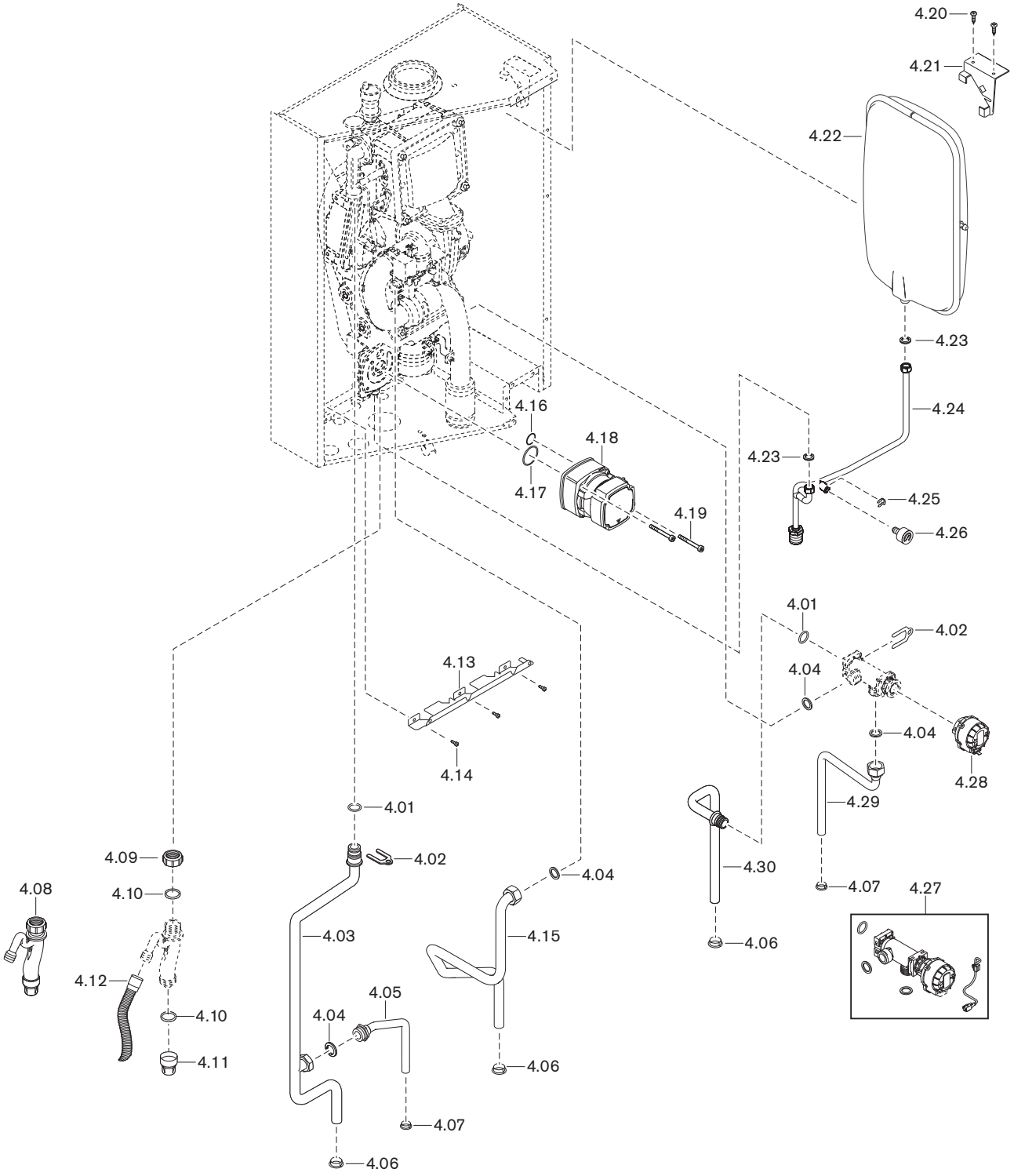
Pos.	Description	Order No.
3.36	Cable loom ignition, fan, circulation pump (version W, H, C)	483 012 22 08 2
3.37	Cable loom ignition, fan (version H-O)	483 011 22 09 2
3.38	Screw W1452 2.2 x 6	409 376
3.39	Plug cable change-over valve (3 way valve) (version W, C)	483 012 22 06 2
3.40	Plug cable PWM circulation pump (version W, H, C)	483 012 22 07 2
3.41	Cable loom water flow sensor, DHW sensor (version C)	483 113 22 04 2
3.42	Cable loom fan control, valves	483 011 22 06 2
3.43	Hinge spring	483 011 22 46 7

13 Spares

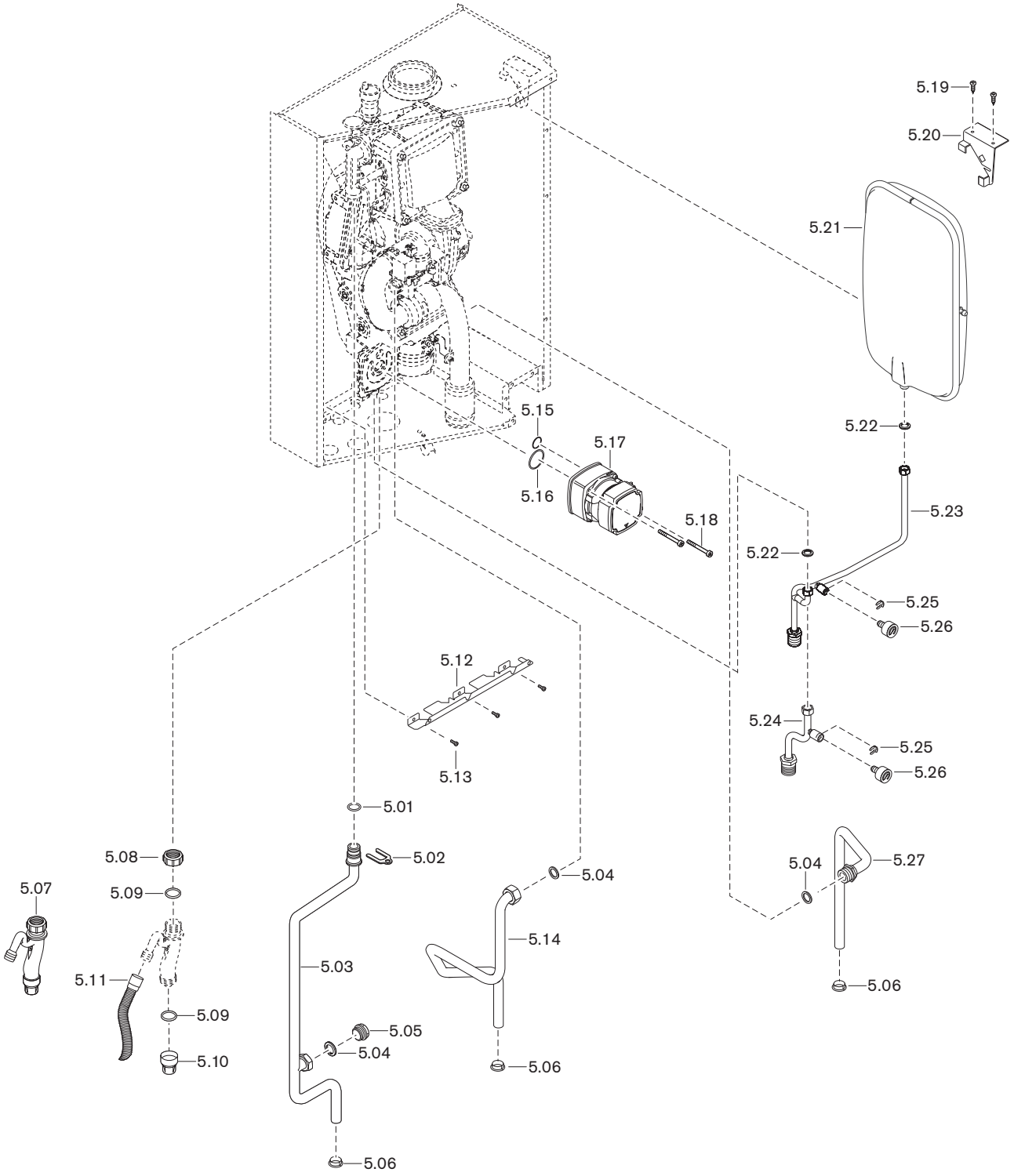
Version W



Pos.	Description	Order No.
4.01	O ring 18 x 2.0 -N EPDM 70 DIN 3771	445 137
4.02	Fixing plate flow pipe	481 011 40 14 7
4.03	Flow connection pipe	
	– WTC-GW 15-B	483 011 40 04 2
	– WTC-GW 25/32-B	483 111 40 04 2
4.04	Seal 17 x 24 x 2 (¾") AFM-34/2	409 000 21 10 7
4.05	Connection pipe flow-storage tank	483 012 40 04 2
4.06	Pipe grommet for pipe Ø 18 mm	481 011 02 40 7
4.07	Pipe grommet for pipe Ø 15 mm	481 011 02 39 7
4.08	Siphon complete	483 011 40 15 2
4.09	Union nut G1¼ siphon	481 011 40 19 7
4.10	Seal siphon union nut G1¼	481 011 40 21 7
4.11	Siphon cover	481 011 40 18 7
4.12	Condensate hose 25 x 1000 long	400 110 50 21 7
4.13	Pipe holding comb front	481 011 02 38 7
4.14	Screw M4 x 10 DIN 912 8.8	402 150
4.15	Gas pipe with union nut G¾ and seal	483 011 30 20 2
4.16	O ring 18 x 2.5 N-EPDM 70 DIN 3771	445 145
4.17	O ring 25.07 x 2.62 N-EPDM 70 DIN 3771	445 146
4.18	Circulation pump UPM3 15-70 GGMBP3 with seals and screws	483 011 40 03 2
4.19	Screw M6 x 62 / 25-8.8 A2K galvanised	483 011 40 03 7
4.20	Screw ISO 14585 4.2 x 13.0-C	409 132
4.21	Bracket expansion vessel top	481 011 40 03 7
4.22	Expansion vessel 10 l	483 011 40 10 7
4.23	Seal 10 x 14.8 x 2 AFM-34/2	409 000 21 18 7
4.24	Connecting pipe WT-AD	483 011 40 06 2
4.25	Fixing plate pressure gauge Ø 10 mm	483 011 40 07 7
4.26	Press. gauge 0-4 bar w. plug conn., O ring	483 011 40 08 7
4.27	Change-over valve (three way valve) complete with actuator and plug cable	483 012 40 03 2
4.28	Actuator for change-over valve	483 012 40 07 2
4.29	Connecting pipe return storage tank	483 012 40 05 2
4.30	Connecting pipe return with plug connection	483 012 40 06 2

13 Spares

Version H (on WTC 32 without expansion vessel)

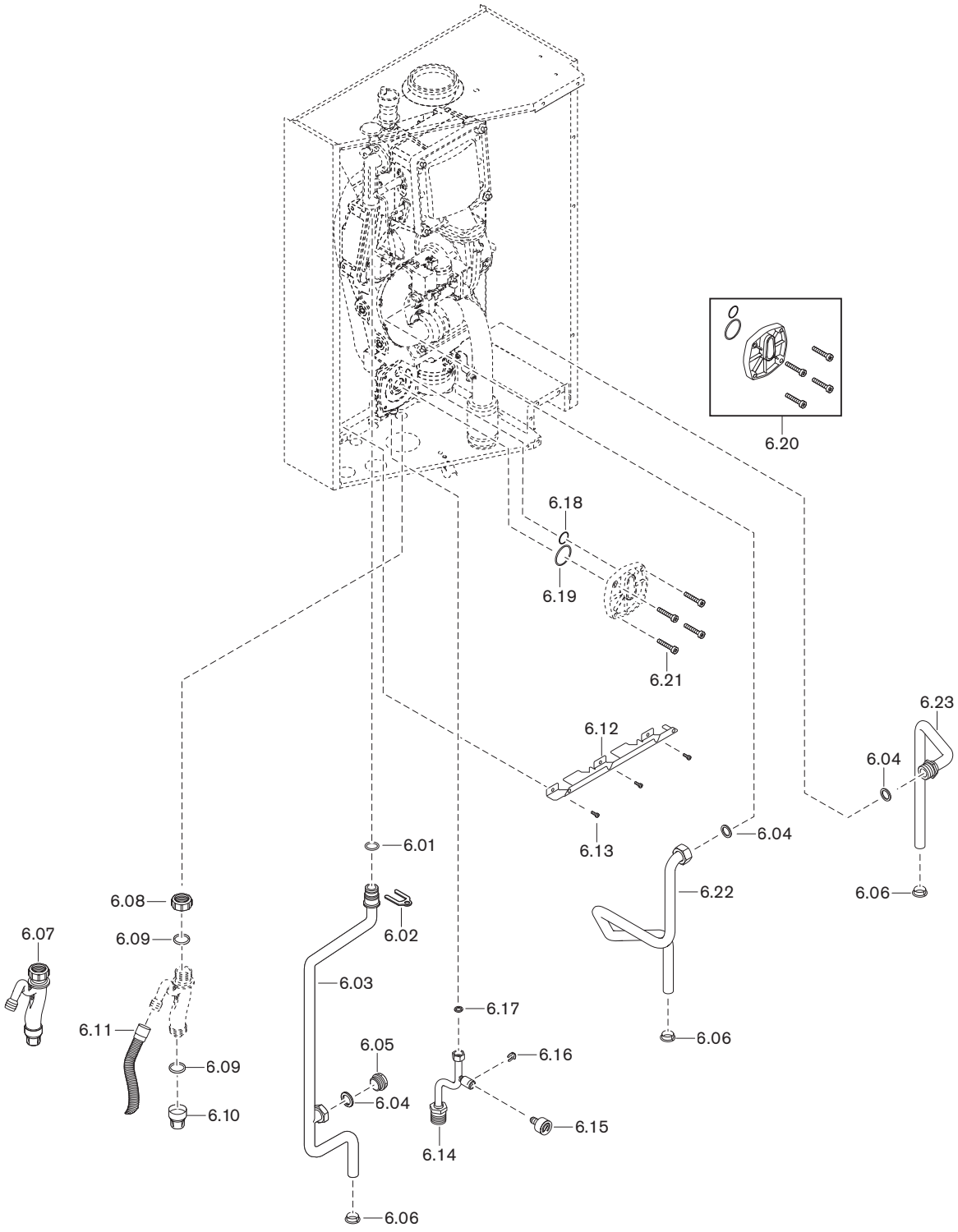


13 Spares

Pos.	Description	Order No.
5.01	O ring 18 x 2.0 -N EPDM 70 DIN 3771	445 137
5.02	Fixing plate flow pipe	481 011 40 14 7
5.03	Flow connection pipe	
	– WTC-GW 15-B	483 011 40 04 2
	– WTC-GW 25/32-B	483 111 40 04 2
5.04	Seal 17 x 24 x 2 (¾") AFM-34/2	409 000 21 10 7
5.05	Cover screw G¾ A DIN 908	481 011 40 29 7
5.06	Pipe grommet for pipe Ø 18 mm	481 011 02 40 7
5.07	Siphon complete	483 011 40 15 2
5.08	Union nut G1¼ siphon	481 011 40 19 7
5.09	Seal siphon union nut G1¼	481 011 40 21 7
5.10	Siphon cover	481 011 40 18 7
5.11	Condensate hose 25 x 1000 long	400 110 50 21 7
5.12	Pipe holding comb front	481 011 02 38 7
5.13	Screw M4 x 10 DIN 912 8.8	402 150
5.14	Gas pipe with union nut G¾ and seal	483 011 30 20 2
5.15	O ring 18 x 2.5 N-EPDM 70 DIN 3771	445 145
5.16	O ring 25.07 x 2.62 N-EPDM 70 DIN 3771	445 146
5.17	Circulation pump UPM3 15-70 GGMBP3 with seals and screws	483 011 40 03 2
5.18	Screw M6 x 62 / 25-8.8 A2K galvanised	483 011 40 03 7
5.19	Screw ISO 14585 4.2 x 13.0-C	409 132
5.20	Bracket expansion vessel top	481 011 40 03 7
5.21	Expansion vessel 10 l	483 011 40 10 7
5.22	Seal 10 x 14.8 x 2 AFM-34/2	409 000 21 18 7
5.23	Connecting pipe WT-AD	483 011 40 06 2
5.24	Conn. pipe press. gauge, inlet/outlet tap (WTC 32)	483 011 40 07 2
5.25	Fixing plate pressure gauge Ø 10 mm	483 011 40 07 7
5.26	Press. gauge 0-4 bar w. plug conn., O ring	483 011 40 08 7
5.27	Return connection pipe G¾, Ø 18 mm	483 011 40 05 2

13 Spares

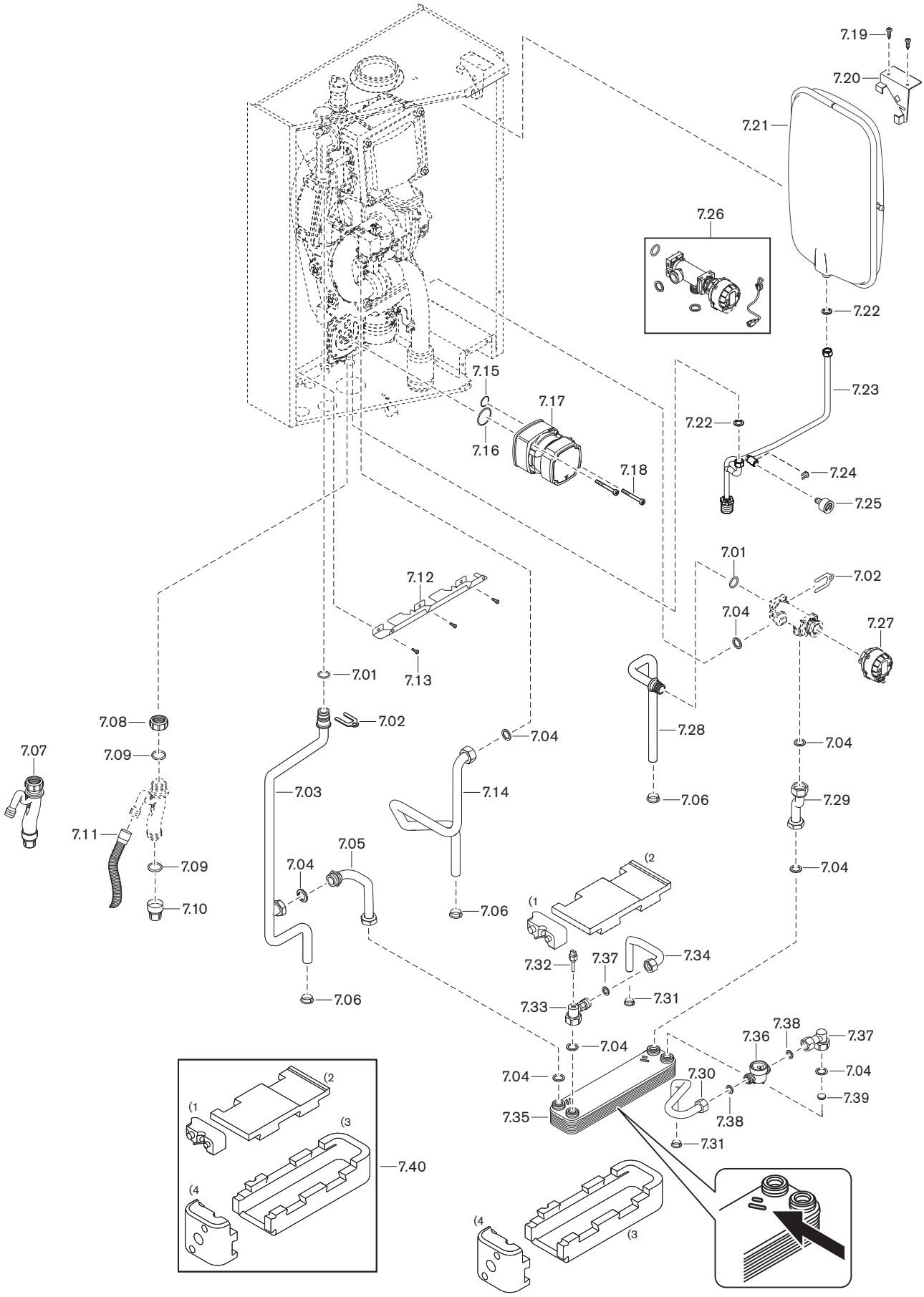
Version H-0 (WTC 15 and WTC 25 only)



Pos.	Description	Order No.
6.01	O ring 18 x 2.0 -N EPDM 70 DIN 3771	445 137
6.02	Fixing plate flow pipe	481 011 40 14 7
6.03	Flow connection pipe	
	– WTC-GW 15-B	483 011 40 04 2
	– WTC-GW 25-B	483 111 40 04 2
6.04	Seal 17 x 24 x 2 (¾") AFM-34/2	409 000 21 10 7
6.05	Cover screw G¾ A DIN 908	481 011 40 29 7
6.06	Pipe grommet for pipe Ø 18 mm	481 011 02 40 7
6.07	Siphon complete	483 011 40 15 2
6.08	Union nut G1¼ siphon	481 011 40 19 7
6.09	Seal siphon union nut G1¼	481 011 40 21 7
6.10	Siphon cover	481 011 40 18 7
6.11	Condensate hose 25 x 1000 long	400 110 50 21 7
6.12	Pipe holding comb front	481 011 02 38 7
6.13	Screw M4 x 10 DIN 912 8.8	402 150
6.14	Conn. pipe press. gauge, inlet/outlet tap	483 011 40 07 2
6.15	Press. gauge 0-4 bar w. plug conn., O ring	483 011 40 08 7
6.16	Fixing plate pressure gauge Ø 10 mm	483 011 40 07 7
6.17	Seal 10 x 14.8 x 2 AFM-34/2	409 000 21 18 7
6.18	O ring 18 x 2.5 N-EPDM 70 DIN 3771	445 145
6.19	O ring 25.07 x 2.62 N-EPDM 70 DIN 3771	445 146
6.20	Blind cover pump with O rings and screws	483 011 40 20 2
6.21	Screw M6 x 25 DIN 912 8.8	402 371
6.22	Gas pipe with union nut G¾ and seal	483 011 30 20 2
6.23	Return connection pipe G¾, Ø 18 mm	483 011 40 05 2

13 Spares

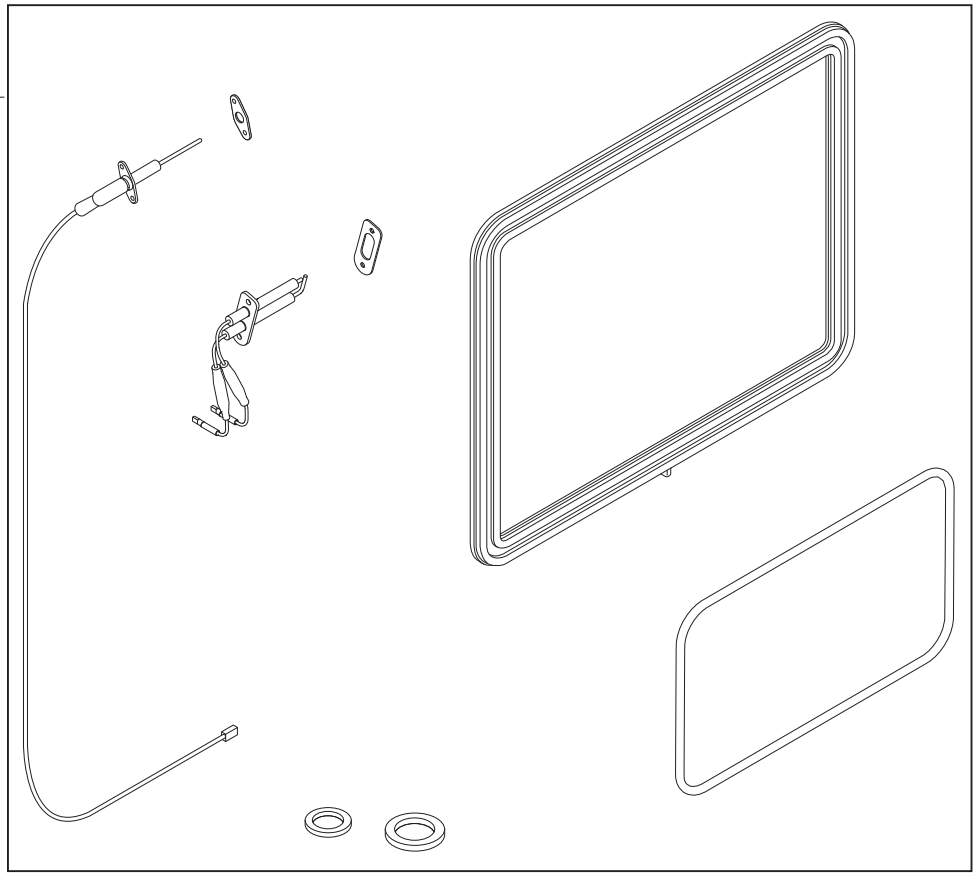
Version C (WTC 25 only)



13 Spares

Pos.	Description	Order No.
7.01	O ring 18 x 2.0 -N EPDM 70 DIN 3771	445 137
7.02	Fixing plate flow pipe	481 011 40 14 7
7.03	Flow connection pipe	483 111 40 04 2
7.04	Seal 17 x 24 x 2 (¾") AFM-34/2	409 000 21 10 7
7.05	Flow connection pipe PWT	481 113 40 06 2
7.06	Pipe grommet for pipe Ø 18 mm	481 011 02 40 7
7.07	Siphon complete	483 011 40 15 2
7.08	Union nut G1¼ siphon	481 011 40 19 7
7.09	Seal siphon union nut G1¼	481 011 40 21 7
7.10	Siphon cover	481 011 40 18 7
7.11	Condensate hose 25 x 1000 long	400 110 50 21 7
7.12	Pipe holding comb front	481 011 02 38 7
7.13	Screw M4 x 10 DIN 912 8.8	402 150
7.14	Gas pipe with union nut G¾ and seal	483 011 30 20 2
7.15	O ring 18 x 2.5 N-EPDM 70 DIN 3771	445 145
7.16	O ring 25.07 x 2.62 N-EPDM 70 DIN 3771	445 146
7.17	Circulation pump UPM3 15-70 GGMBP3	483 011 40 03 2
7.18	Screw M6 x 62 / 25-8.8 A2K galvanised	483 011 40 03 7
7.19	Screw ISO 14585 4.2 x 13.0-C	409 132
7.20	Bracket expansion vessel top	481 011 40 03 7
7.21	Expansion vessel 10 l	483 011 40 10 7
7.22	Seal 10 x 14.8 x 2 AFM-34/2	409 000 21 18 7
7.23	Connecting pipe WT-AD	483 011 40 06 2
7.24	Fixing plate pressure gauge Ø 10 mm	483 011 40 07 7
7.25	Press. gauge 0-4 bar w. plug conn., O ring	483 011 40 08 7
7.26	Change-over valve (three way valve) complete with actuator and plug cable	483 012 40 03 2
7.27	Actuator for change-over valve	483 012 40 07 2
7.28	Connecting pipe return with plug connection	483 012 40 06 2
7.29	Connection pipe WT RT-PWT	483 113 40 05 2
7.30	Connection pipe KW	483 113 40 07 2
	– Union nut G½ x 16	481 113 40 07 7
7.31	Pipe grommet for pipe Ø 15 mm	481 011 02 39 7
7.32	NTC sensor WW G⅛	483 113 40 10 7
	– O ring 9.25 x 1.78 EPDM 70 Shore	483 113 40 11 7
7.33	Connection flange left PWT	483 113 40 04 2
7.34	Connection pipe WW	483 113 40 06 2
	– Union nut G½ x 16	481 113 40 07 7
7.35	Plate heat exchanger	483 113 40 02 7
7.36	Water flow sensor C7195A2 with cable loom	483 113 40 09 2
7.37	Connection flange right PWT	483 113 40 03 2
7.38	Seal 12 x 18.5 x 2 AFM-34/2	409 000 21 19 7
7.39	Throughput limiter	
	– 9.0 l/min orange (as delivered)	483 113 40 09 7
	– 11.0 l/min brown (optional)	483 113 40 12 2
7.40	Insulation PWT	483 113 40 13 2

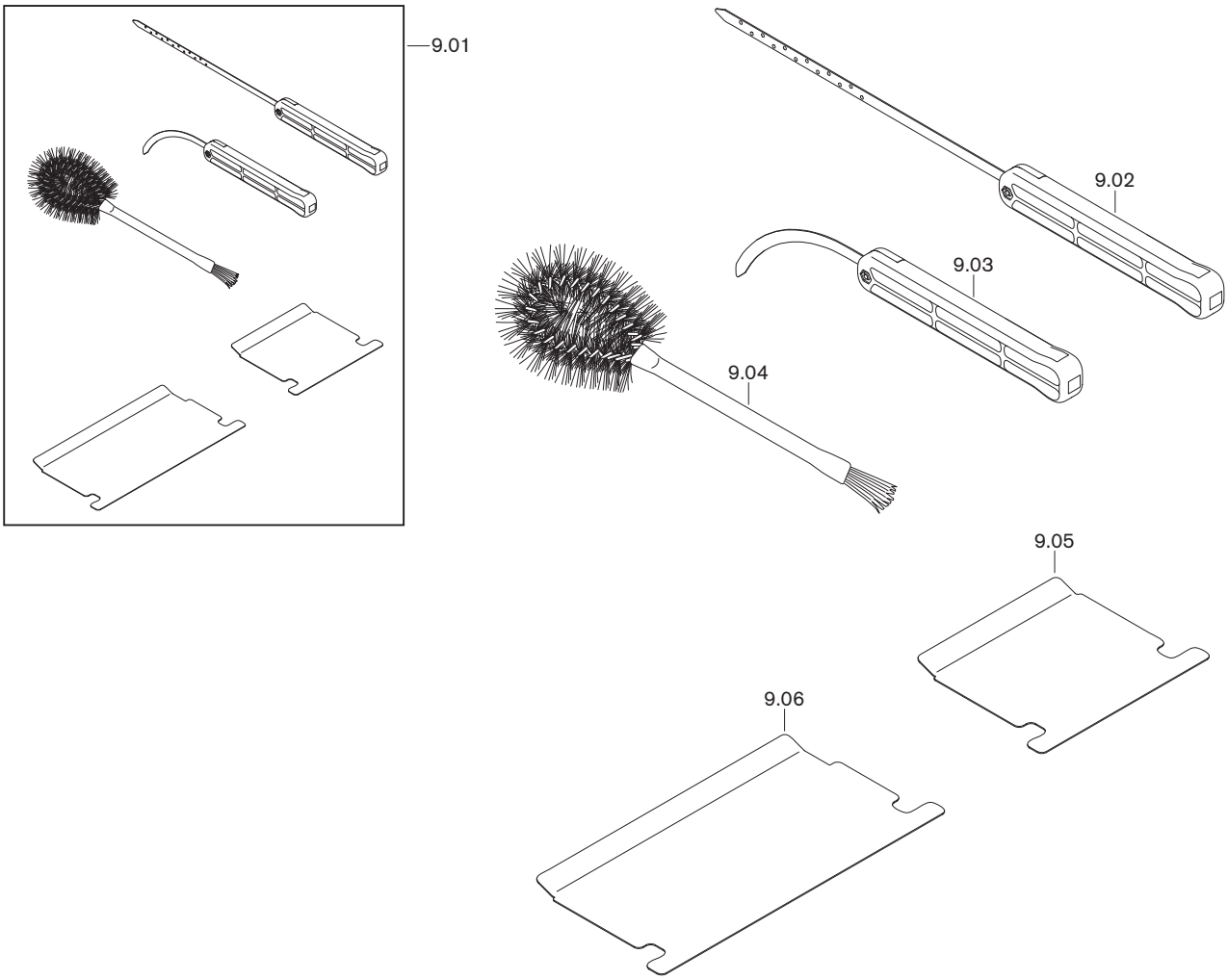
13 Spares



13 Spares

Pos.	Description	Order No.
8.01	Service kit	
	Consisting of: ▪ Burner gasket ▪ Service cover seal ▪ Gasket ionisation electrode ▪ Ionisation electrode ▪ Gasket ignition electrode ▪ Ignition electrode ▪ Seal 17 x 24 x 2 (¾") AFM-34/2 ▪ Seal siphon union nut G1¼	
	– WTC-G… 15-B	483 011 00 22 2
	– WTC-G… 25/32-B	483 111 00 22 2

13 Spares



13 Spares

Pos.	Description	Order No.
9.01	Heat exchanger cleaning kit complete	483 000 00 39 2
9.02	Cleaning tool straight	
	– Handle cleaning tool	481 000 00 67 7
	– Mounting part cleaning blade	481 000 00 68 7
	– Cleaning blade 270 long	481 000 00 70 7
	– Screw M4 x 16 DIN 912	402 131
	– Hexagonal nut M4 DIN 985	411 104
9.03	Cleaning tool angled	
	– Handle cleaning tool	481 000 00 67 7
	– Mounting part cleaning blade	481 000 00 68 7
	– Cleaning blade angled	481 000 00 74 7
	– Screw M4 x 16 DIN 912	402 131
	– Hexagonal nut M4 DIN 985	411 104
9.04	Brush WT - combustion chamber	483 000 00 85 7
9.05	Cover plate WT - comb. cham. WTC-G… 15-B	483 000 00 83 7
9.06	Cover pl. WT - comb. cham. WTC-G… 25/32-B	483 000 00 84 7

14 Notes

15 Key word index

15 Key word index

W

Y

–weishaupt–

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WK Burners **up to 32,000 kW**

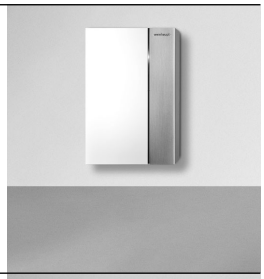
These industrial burners of modular construction are adaptable, robust and powerful.
Even on the toughest industrial applications these oil, gas and dual fuel burners operate reliably.

MCR Technology / Building Automation from Neuberger

From control panels to complete building management systems - at Weishaupt you can find the entire spectrum of modern control technology. Future orientated, economical and flexible.

Service

Weishaupt customers can be assured that specialist knowledge and tools are available whenever they are needed. Our service engineers are fully qualified and have extensive product knowledge, be it for burners, heat pumps, condensing boilers or solar collectors.

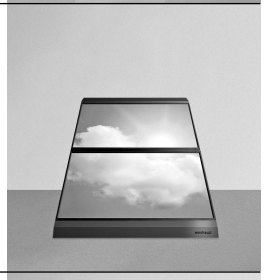


Wall-hung condensing boilers for gas **up to 240 kW**

The wall-hung condensing boilers WTC-GW have been developed to meet the highest demands in ease of operation and efficiency. Modulating operation means these units operate quietly and economically.

Floor-standing condensing boilers for oil and gas **up to 1,200 kW**

The floor-standing condensing boilers WTC-GB (up to 300 kW) and WTC-OB (up to 45 kW) are efficient, low in pollutants and versatile in use.
Even the largest capacities can be covered by cascading up to four gas condensing boilers.



Solar systems

The stylish flat-plate collectors are the ideal complement for any Weishaupt heating system. They are suitable for solar water heating and for combined heating support. With versions for on-roof, in-roof and flat roof installations, solar energy can be utilised on almost any roof.

Water heaters/Energy storage

The diverse program of potable water and energy storage for various heat sources includes storage volumes of 70 to 3,000 litres. In order to minimize storage losses, potable water cylinders from 140 to 500 litres are available with highly efficient insulation using vacuum insulation panels.

Heat pumps **up to 180 kW**

The heat pump range offers solutions for the utilisation of heat from the air, the soil or ground water.
Some systems are also suitable for cooling buildings.

Geothermal probe drilling

With its daughter company, BauGrund Süd, Weishaupt also offers geothermal probe and well drilling. With the experience of more than 10,000 systems and more than 2 million meters of drilling, BauGrund Süd offers a comprehensive service program.