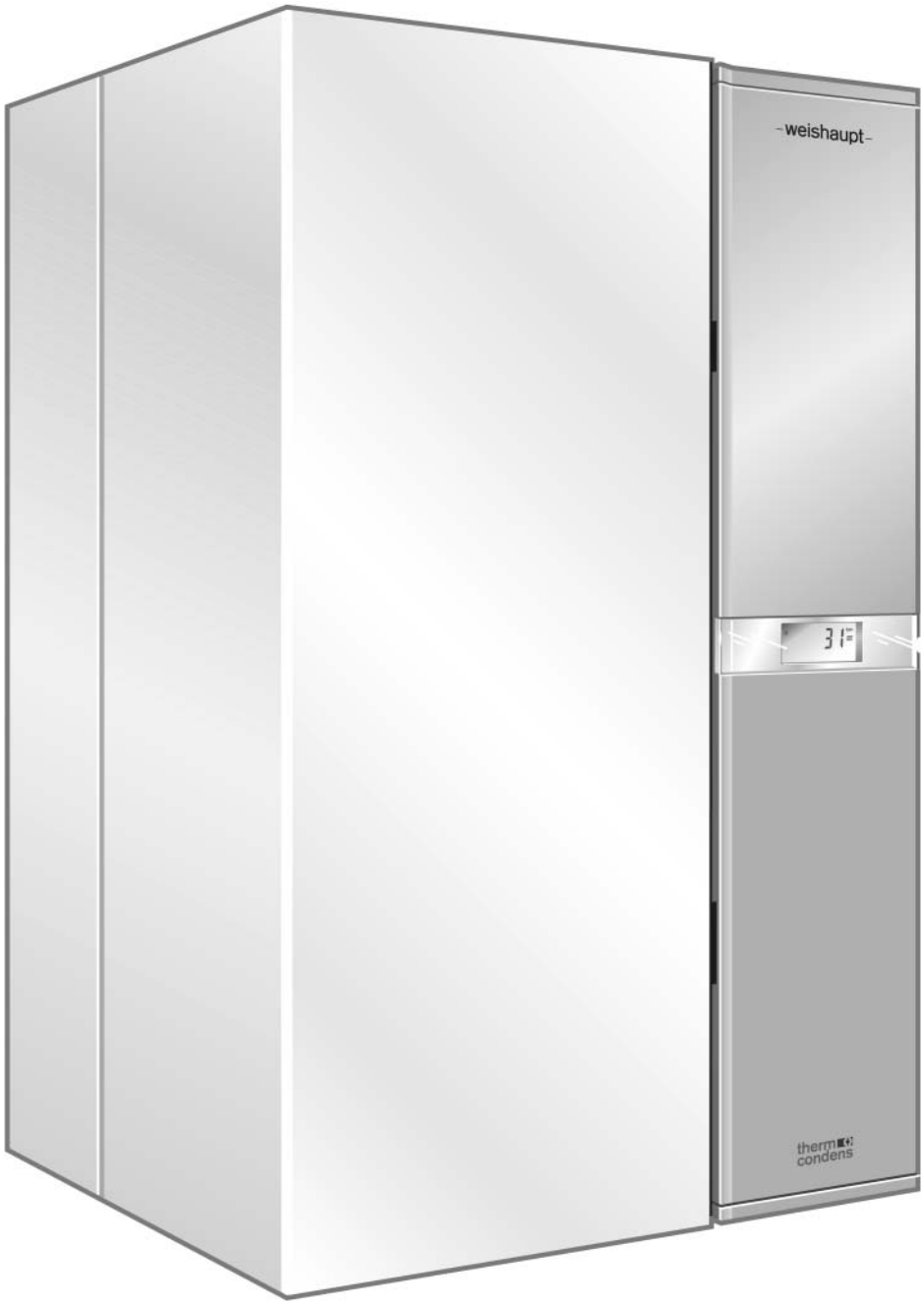
–weishaupt–

manual

Installation and operating instructions



Condensing boilers Weishaupt Thermo Condens WTC 15-A / WTC 25-A and WTC 32-A 83247602 – 1/2008

Conformity Certification to ISO/IEC Guide 22

Manufacturer: Max Weishaupt GmbH

Address: Max Weishaupt Straße
D-88475 Schwendi

Product: Gas Condensing Boiler
Type: WTC 15-A, WTC 25-A, WTC 32-A

The products described above conform to Document No.:

EN 483, EN 677, EN 50 165, EN 60 335,
EN 61 000-6-1, EN 61 000-6-4, LRV 92:2005

In accordance with the directives:

GAD	90/396/EC	Gas Appliance Directive
LVD	2006/95/EC	Low Voltage Directive
EED	92/42/EC	Efficiency Directive
EMC	2004/108/EC	Electromagnetic Compatibility Directive

these products are labelled as follows

CE 0063 BM 3092

The product complies with the prototype tested by the Notified Body 0063.

Schwendi 07.01.2008

ppa.
Dr. Lück

ppa.
Denkinger

Manufacturer certification to 1. BImSchV
This is a declaration that the condensing wall hung gas boiler WTC 15/25/32 complies with the requirements of 1. BImSchV.

Comprehensive Quality Assurance is ensured by a certified Quality Management System to ISO 9001.

EnEV Site calculation

The EnEV characteristic values of the product in Ch. 11 can be used as calculation basis

Contents

Your information package
This is user information included with the unit. You can find answers to your questions in the following brochures:

Info for the user:
❑ Operating instructions for the operator
WTC 15-A/25-A and WTC 32-A
(These instructions can be stored in the pocket in the lower unit cover.)

Info for the installer:
❑ Installation and operating instructions
WTC 15-A/25-A and WTC 32-A

These installation and operating instructions WTC 15-A/25-A and WTC 32-A

- are an integral part of the equipment and must be kept permanently on site
- are to be used by qualified personnel only
- contain the relevant information for the safe assembly, commissioning and servicing of the equipment
- are for the attention of all personnel working with the equipment.

Explanation of notes and symbols

This symbol is used to mark instructions, which, if not followed, could result in death or serious injury.

This symbol is used to mark instructions, which, if not followed, could result in damage to, or the destruction of the equipment and environmental damage.

This symbol is used to mark instructions, which, if not followed, could result in life threatening electric shock.

☞ This symbol is used to mark procedures, which you should follow.

1.
2.
3. Procedures with more than one step are numbered.

❑ This symbol is used when you are required to carry out a test.

• This symbol is used to list points

⇨ This symbol indicates detailed information

Abbreviations
Tab. Table
Ch. Chapter

Hand over and operating instructions
The contractor is responsible for passing the operating instructions to the plant operator prior to hand-over. He should also inform the plant operator that these instructions should be kept with the heating appliance. The address and telephone number of the nearest service centre should be entered on the reverse of the operating instructions. The plant operator must note that an agent of the contractor or other suitably qualified person must inspect the plant at least once a year. To ensure regular inspections, -weishaupt- recommends a service contract.

The contractor should instruct the plant operator in the use of the equipment prior to hand-over and inform him as and when necessary of any further inspections that are required before the plant can be used.

Guarantee and liability
Weishaupt will not accept liability or meet any guarantee claims for personal injury or damage to property arising as a result of one or more of the causes below:

- Failure to use the equipment as intended.
- Improper assembly, commissioning, operating or servicing of the equipment.
- Operating the appliance with defective safety equipment, or with non-recommended or non-functioning safety and protection devices.
- Failure to follow the information in the Installation and Operating Instructions.
- Alterations made to the construction of the equipment by the plant operator.
- Fitting additional components not tested or approved for use with the equipment.
- Alterations to the combustion chamber are not permitted.
- Inadequate monitoring of parts liable to wear and tear.
- Improperly executed repairs.
- Acts of God.
- Damage caused by continued use despite the occurrence of a fault.
- Use of incorrect fuel.
- Obstruction or damage of the supply lines.
- Use of non-original -weishaupt- spare parts.

2 Safety instructions

Dangers when using the equipment
Weishaupt products are manufactured in accordance with the relevant existing standards and guidelines and the recognised safety laws. However, improper use of the equipment could endanger life of the user or a third party, or result in damage to the plant.

To avoid unnecessary danger, the equipment is only to be used:
- for its intended purpose
- under ideal safety conditions
- with reference to all the information in the installation and operating instructions
- in accordance with inspection and service work

Faults, which could affect safe operation should be rectified immediately.

Installation in agreement with the district chimney sweep
In accordance with German state law the installation of a heating system has to be notified and/or a permit has to be obtained.
Prior to installation please consult your district chimney sweep with regards to:
- Layout of air supply and flue gas system
- Fuel supply
- Condensate discharge into the waste water system
- Platform in the area of cleaning aperture to DIN 18160-Part 5

Installation in garages
Only Gas units in version C may be installed in garages. The distance between floor and bottom edge of the WTC must be a minimum of 50 cm. The WTC must be protected from mechanical damage. A suitable metal frame should therefore be installed around the WTC. The operating instructions should be placed into a clearly visible position and should be protected against atmospheric exposure.

Personnel training
Only competent personnel may work on the appliance. Competent personnel according to this operating manual are persons who are familiar with the installation, mounting, setting and commissioning of the product and have the necessary qualifications such as:-
- Training, instruction or authorisation to switch electrical circuits and electrical devices on and off, to earth them and to mark them in accordance with the safety standards.
- Training, instruction or authorisation to carry out installation, alteration and maintenance work on gas fired plant.

Organisational measures
- Everyone working on the plant should wear the necessary protective clothing.
- All safety devices should be checked regularly.

Informal safety measures
- In addition to the installation and operating instructions, local codes of practice should also be adhered to. Special attention should be paid to the relevant installation and safety guidelines given.
- All safety and danger notices should be kept in a legible condition.

Safety measures in normal operation
- Only use the equipment when all safety devices are fully functional.
- At least once a year the equipment, including the safety devices, should be checked for signs of visible damage and to ensure that the safety devices are operating correctly.
- More frequent safety checks may be required depending on plant conditions.

Electrical safety
- Before starting work - isolate plant and protect against reactivation, check voltage is isolated, the unit is earthed, and protected from adjacent equipment that might still be under voltage!
- Work on the electrical supply should be carried out by a qualified electrician.
- Electrical components should be checked during servicing. Loose connections and heat damaged cables should be dealt with immediately.
- Should it be necessary to carry out work on live parts, the Regulation for the Prevention of Accidents BGV A3 and/or country specific safety regulations must be observed and tools to EN 60900 must be used. A second person should be present to switch off the mains supply in an emergency.

Maintenance and fault rectification
- Necessary installation, service and inspection work should be carried out at the specified time.
- Inform the operator before beginning any service work.
- For all service, inspection and repair work, electrically isolate the equipment and ensure the mains switch cannot be accidentally switched back on. Cut off the fuel supply.
- If, during servicing or testing, control seal joints have to be opened, these have to be thoroughly cleaned to ensure tight sealing when re-assembling. Damaged seals must be replaced. Carry out soundness test.
- Flame monitoring devices, limit controls, correcting elements and all other safety devices must be commissioned by, and may only be replaced by, the manufacturer or an authorised agent.
- Screwed connections, which have been loosened, must be re-tightened without cross-threading.
- Following service work, all safety devices should be tested to ensure they are functioning correctly.

Alterations to the construction of the equipment
- No alterations to the equipment are to be made without the approval of the manufacturer. All conversions require written confirmation from Max Weishaupt GmbH.
- Any parts not in perfect working order should be replaced immediately.
- No additional components may be fitted, which have not been tested for use with the equipment.
- Use only -weishaupt- replacement and connection parts. Parts from other manufacturers are not guaranteed to be suitable to meet the necessary operational and safety requirements.

Cleaning of the equipment and waste disposal
- All materials used should be handled and disposed of correctly, with due regard to the environment.

General information for gas operation
- When installing a gas combustion system, regulations and guidelines must be observed (i.e. Local Codes of Practice and Regulations).
- The subcontractor responsible for the installation or changes to the gas system must inform the gas supplier of the type and extent of the installation planned and the intended work. The subcontractor must ascertain that an adequate gas supply to the installation is ensured.
- Installations, alterations and maintenance work on gas systems in buildings and below ground must only be carried out by installers who have a contract with the gas supplier.
- The gas pipe work must be subject to a preliminary and main test or the combined loading test and soundness test, according to the pressure range intended.
- The inert gas used for the test must be expelled from the pipe work. The pipe work must be completely purged.

Safety measures when gas can be smelled
- Avoid open flames and spark generation (e.g. switching lights and electric units on and off, including the use of mobile phones).
- Open windows and doors.
- Close gas shut off valve.
- Warn all occupants and evacuate the building.
- Inform heating company/installer and gas supplier from outside of the building.

Gas characteristics
The following information must be obtained from the gas supplier:
- Type of gas
- Calorific value in MJ/m^3 or kWh/m^3
- Max. CO_2 content of flue gas
- Gas supply pressure

Pipe thread connection
- Only tested and approved sealing material should be used. Please observe the prevailing user instructions!

Soundness test
☞ Check connection joints with foam forming or similar media, which do not cause corrosion.

Gas supplier

_____

_____

Date Signature

Type of gas: _____

Calorific value Hi: _____ kWh/m_n^3

max. CO_2: _____ %

Connection pressure: _____ mbar

Conversion to other types of gas
The WTC is type tested for Natural Gas and Liquid Petroleum Gas.
It is factory pre-set for Natural Gas operation.
A setting to 2E or 2LL is not required.
The conversion from Natural Gas to Liquid Petroleum Gas is described in the appendix. When operating with Liquid Petroleum Gas we recommend the use of Propane.

☞ When converting from Natural Gas to Liquid Petroleum Gas or visa versa please check the O_2 content, the unit loading (values see Technical data) and the designation on the name plate. Furthermore a calibration is required (procedure see Ch. 6.3.3: Notes for special parameters).

-weishaupt-

Max Weishaupt GmbH D-88475 Schwendi

Nominal heat loading (heating)

reduced to max._____kW

3 Technical description

3.1 Permissible application

The Weishaupt Thermo Condens WTC 15-A/25-A and WTC 32-A is a condensing wall mounted heating appliance for sliding setback operation without lower temperature limit.

- for wall mounting in enclosed rooms (installation outdoors is not permitted)
- for heating DHW heating circuits in sealed systems
- for flue gas ducting in chimneys / flue gas ducts or directly via wall and roof flue gas systems
- for combustion air supply from the room air or with room air independent systems.
- for gas families Natural gas E/LL and Liquid Petroleum Gas B/P.

3.2 Function

3.2.1 General notes

Condensate drain
The condensate created by the condensing boiler technology is fed into the waste water system via a siphon built into the unit. The ATV data sheet A251 should be observed.

Combustion air
Depending on the type of operation, the combustion air is supplied either from the room where the unit is installed (room air dependent operation) or via a concentric pipe system (room air independent operation).

Flue gas system
Once the cooled flue gas exits the heat exchanger it flows through a flue gas duct made from Polypropylene (PP) to the unit exit, from where a number of different ducting systems from the Weishaupt flue gas / air system WAL-PP are available.

☞ Observe installation and operating instructions WAL-PP!

Safety equipment
An internal flue gas temperature limiter (max. 120 °C) and a safety temperature limiter switch off the unit at excess temperature.

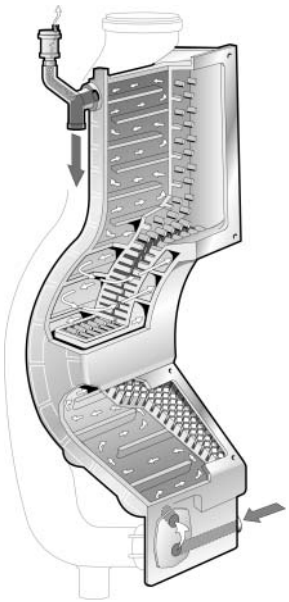
3.2.2 Important components

Heat exchanger
The heat exchanger consists of a corrosion proof aluminium alloy through which the heating water flows from bottom to top.

The heat exchanger is designed in such a way that the flue gas is cooled to below the flue gas dewpoint if the system temperature is adequately low.
It is surrounded by water and has no additional insulation.
Due to the utilisation of the latent flue gas heat the unit operates with very high efficiency.
The heat exchanger is equipped with inbuilt hydraulic circuit with integrated pump and three way valve housing (version -C and -W).

Premix surface burner
The overheat proof radiant burner is made from a highly stressable metal mesh (FeCr Alloy). Flame monitoring and the regulation of the gas quantity are carried out by a SCOT® monitoring electrode in conjunction with the fully electronic compound regulation and the Weishaupt Condens Manager (WCM).

Heat exchanger operating mode

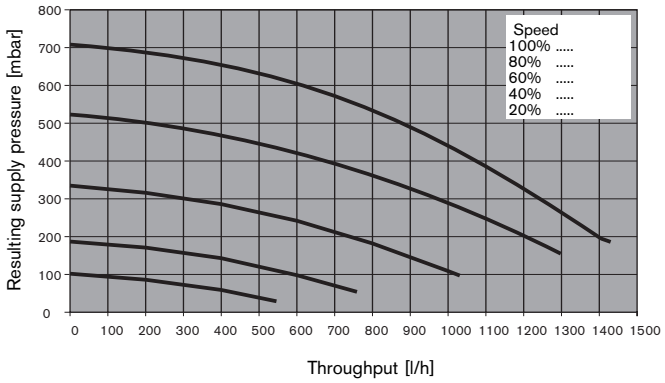


Version with PEA pump
On condensing boilers with PEA pump (PWM pump with permanent magnet technology) the maximum modulation range of the pump in its factory presetting is 30 - 60% (WTC 15-A), 30 - 70% (WTC 25-A) and 30 - 80% (WTC 32-A). The modulation range can be adjusted in the heating engineer level using parameter P42 and P43. This pump matches the unit throughput to the rating and reduces electrical consumption. The resulting supply pressure within the modulating range can be determined using the diagram on the right.

⇨ For a detailed description of the controller function see Ch. 7.6.

Note: Following change-over into DHW operation (version -W) the pump is driven for 3 minutes at a rating of 40%. The rating then increases to the value set in parameter P45.

Diagram resulting supply pressure
WTC 15-A, WTC 25-A and WTC 32-A with PEA pump



The following parameter settings are recommended as standrad to adjust the pump rating :

WTC 15-A	WTC 25-A	WTC 32-A
❑ P42 = 40	❑ P42 = 40	❑ P42 = 40
❑ P43 = 60	❑ P43 = 70	❑ P43 = 90

Version with PWM pump
On condensing boilers with PWM (Pulse width modulation) modulating heating circuit pump the maximum modulation range of the pump in its factory presetting is 30 - 60% (WTC 15-A), 30 - 70% (WTC 25-A) and 30 - 80% (WTC 32-A). The modulation range can be adjusted in the heating engineer level using parameter P42 and P43. This pump matches the unit throughput to the rating and reduces electrical consumption. The resulting supply pressure within the modulating range can be determined using the diagram on the right.

⇨ For a detailed description of the controller function see Ch. 7.6.

Note: Following change-over into DHW operation (version -W) the pump is driven for 3 minutes at a rating of 40%. The rating then increases to the value set in parameter P45.

Diagram resulting supply pressure WTC 15-A with PWM pump

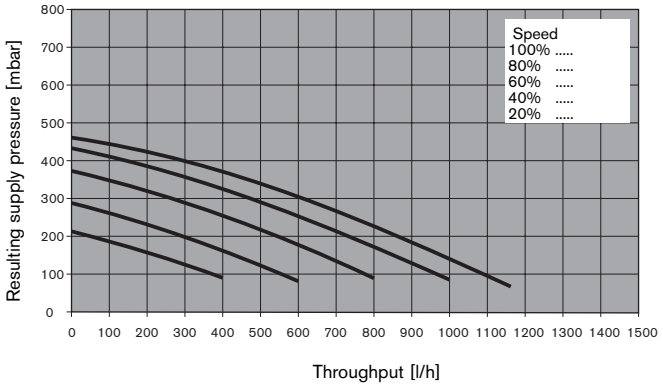


Diagram resulting supply pressure WTC 25-A with PWM pump

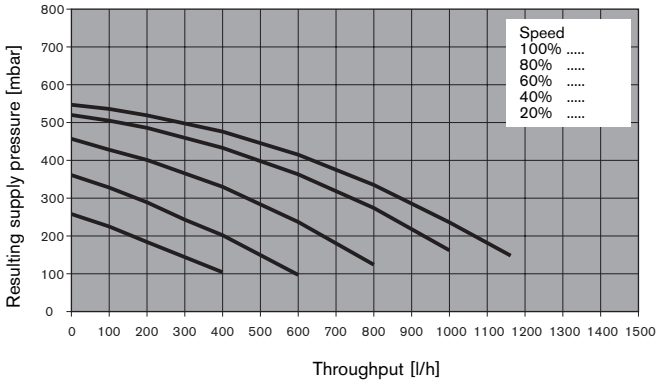
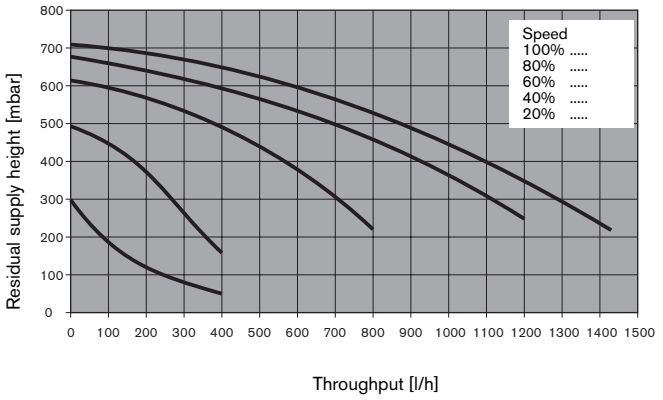


Diagram resulting supply pressure WTC 32-A with PWM pump



Version with 3 stage pump (WTC 15-A/25-A)
On condensing boilers with 3 stage pump the pump stage can be set manually at the pump. The pump is supplied preset to pump stage 2.
For the hydraulic design of the installation the resulting supply pressure should be be taken from the table on the right. Depending on the installation, the pump rating may be reduced.

Diagram resulting supply pressure WTC 15-A with 3 stage pump

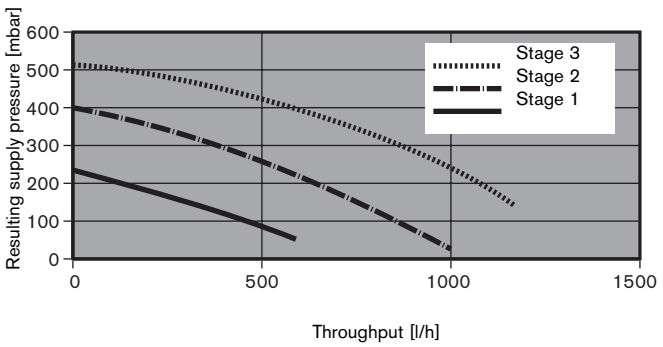
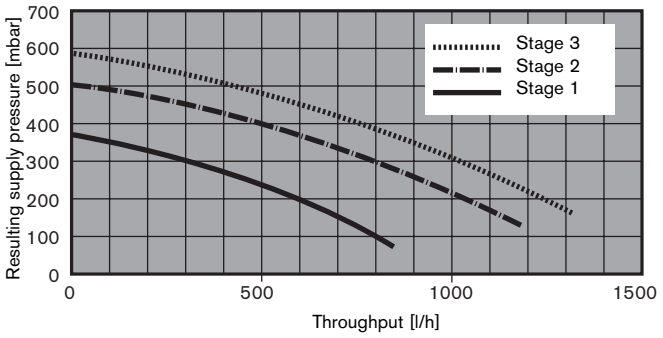


Diagram resulting supply pressure WTC 25-A with 3 stage pump

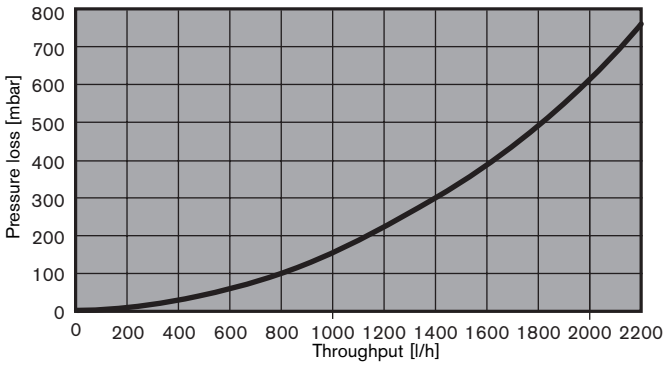


Pressure loss unit -H-0
The diagram on the right shows the pressure loss of the WTC unit without integrated pump to be able to carry out the hydraulic design of the installation.

Throughput limits

Size	Min. throughput	Max. throughput
WTC 15-A	0 l/h	1300 l/h
WTC 25-A	0 l/h	2200 l/h
WTC 32-A	0 l/h	2200 l/h

Diagram pressure loss WTC 15-A/25-A/32-A, version -H-0 without pump



Expansion vessel
The table enables an evaluation to establish if the expansion vessel fitted (content 10 l) is sufficient or if an additional expansion vessel is required.

The following key data was taken into account for the table:
- Flow pressure of the expansion vessel is equal to the static installation height above the heat exchanger (e.g. height 10 m ➪ flow pressure 1.0 bar)
- Maximum operating pressure: 3 bar
- Operating pressure differential safety valve: 0.5 bar
- Water trap 2 l

Note: In accordance with DIN 4807-2, expansion vessel must be serviced annually. The values set during initial commissioning must be re-set when recommissioning.

Example:
A max. flow temperature of 50°C, installation height 7.5 m and flow pressure 0.75 bar result in a maximum installation content of approx. 260 l. If this installation content is exceeded an additional expansion vessel should be installed.

Maximum permissible total water content of the heating system with integral expansion tank [2)]

Size expansion tank	Maximum flow temperature	Installation elevation				
		5 metre [1)]	7.5 metre	10 metre [1)]	12.5 metre [1)]	15 metre [1)]
10 Litre	40 °C	500	400	300	210	120
	50 °C	320	260	200	140	80
	60 °C	220	180	140	100	60
	70 °C	170	130	100	70	40
	80 °C	130	100	80	50	30

[1)] The supply pressure of the expansion vessel has to be altered accordingly.

[2)] A detailed object related calculation is required.

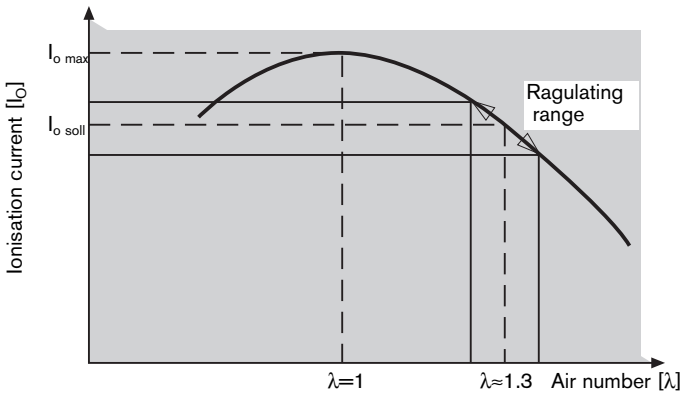
Fully electronic compound regulation
The WTC 15-A/25-A and WTC 32-A are equipped with fully automatic compound regulation. This regulates the gas quantity depending on the measured ionisation current. The regulation of the air quantity is carried out via the speed controlled fan. The basis for the regulation is the diagram on the right. The maximum of the ionisation current occurs with all gas types at $\lambda = 1.0$. This maximum is redetermined from time to time during recalibration. Calibrations are carried out
- after every power outage
- after 100 hours of burner operation
- after 500 burner starts
- after certain faults have occurred (e.g. F21, W22, …)

The maximum value determined is used to calculate the setpoint value.

Note: Calibration can also be initiated manually. This is necessary if the following part were changed during servicing or repair :
- Burner
- SCOT electrode, ionisation cable
- WCM electronic controls
- Gas valve

(Procedure see Ch. 6.3.3: Notes about special parameters)

Diagram ionisation current regulation



ATTENTION

During calibration, CO emissions above 1000 ppm occur for a short time (approx. 2 sec.).

3.3 Basic construction and variations

3.3.1 Overview of variations

Version -H: Heating unit only without DHW function.

Version -H-0: Heating unit only, but without pump and expansion vessel.

Version -W: Unit with integrated 3 way valve for DHW preparation in combination with Weishaupt water heaters.

Version -C: Unit with integrated DHW preparation via plate heat exchanger and throughput sensor for acquisition of water quantity drawn.

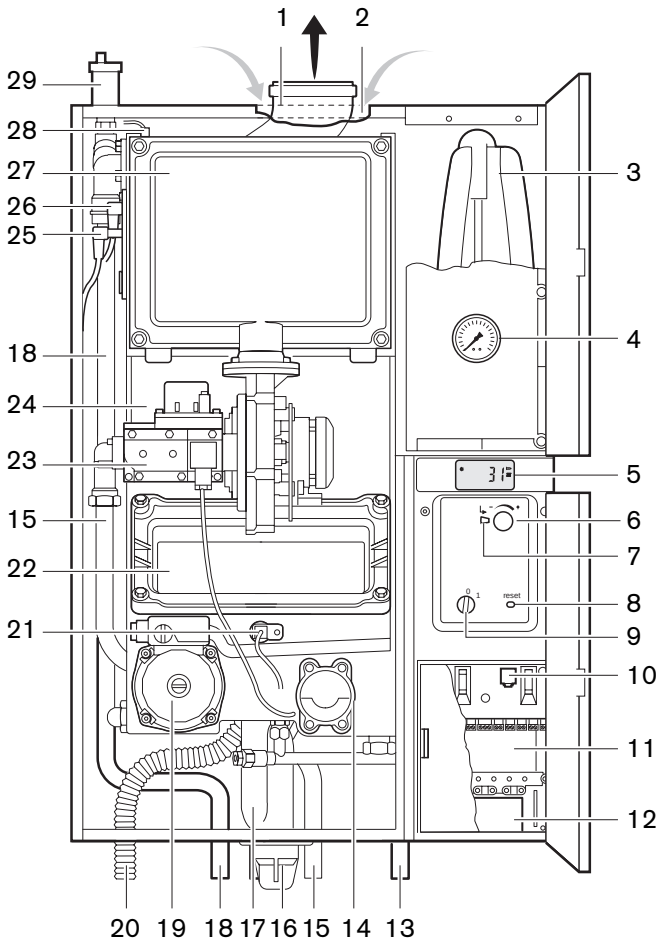
WTC 15-A: Available in versions -H, -H-0 and -W. Versions with circulation pump available with optional three stage or speed controlled PWM pump.

WTC 25-A: Available in versions -H, -H-0, -W and -C. Versions with circulation pump available with optional three stage or speed controlled PWM pump.

WTC 32-A: Available in versions -H, -H-0 and -W. Versions with circulation pump are fitted with integrated speed controlled PWM pump. The WTC 32-A is only supplied with expansion vessel in version -W.

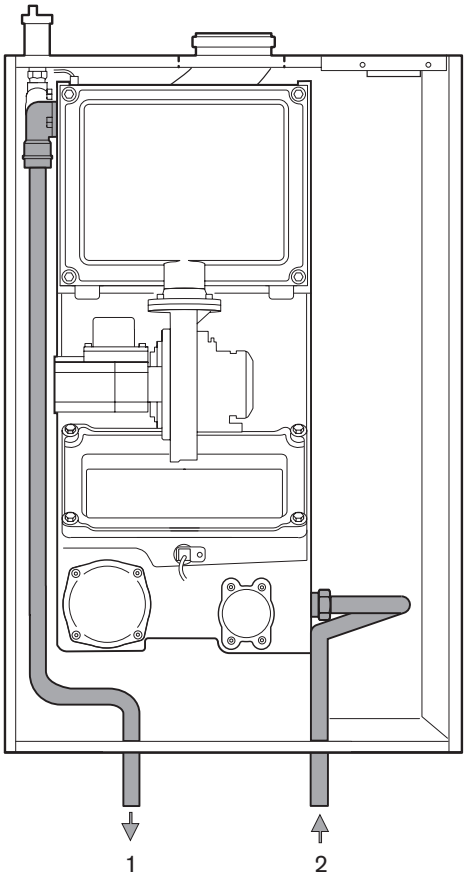
3.3.2 Version -H

1 Flue gas outlet
2 Supply air inlet
3 Expansion vessel (for WTC 15-A/25-A)
4 Pressure gauge
5 LCD display
6 Dial knob
7 Enter key
8 Reset key
9 On/Off switch
10 PC connection
11 Electrical installation area
12 Electrical cable duct
13 Heating return Ø 18 mm
14 Cover 3 way valve
15 Gas pipe Ø 18 mm
16 Cleaning opening siphon
17 Siphon
18 Heating flow Ø 18 mm
19 Pump
20 Condensate outlet hose
21 Flue gas sensor (NTC 5kΩ)
22 Inspection opening heat exchanger
23 Fully electronic compound regulation
24 Heat exchanger made from Al Mg is
25 Ignition electrode
26 SCOT electrode
27 Burner
28 Flow sensor (NTC 5kΩ)
29 Quick action vent valve



3.3.3 Version -H-0

Version -H-0 is a unit for heating operation without DHW preparation. The heating pump and the expansion vessel are usually fitted on site. When installing the pump on site it should be observed that a minimum installation pressure of 1 bar is maintained if the pump is fitted in the flow. The pressure loss diagram from Ch. 3.2.2 should be used when sizing the pump. Weishaupt recommend the pump is installed in the return of the heating system of the unit.

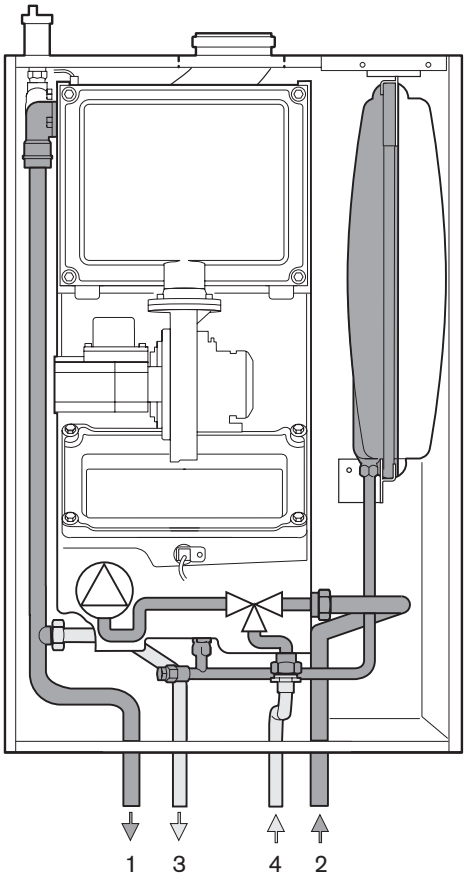


1 Heating flow
2 Heating return

3.3.4 Version -W

The 3 way valve is flanged directly to the heat exchanger. The valve consists of two parts, the base with integrated valve body and the motor, which can be removed via the bayonet connection. The valve runs in both settings on a limit switch, it therefore does not require any electrical energy except when changing from one valve setting to the other. The valve can be set to its centre position manually with the catch of the lever on the motor of the 3 way changeover valve. In this setting, all 3 ways are open (see Ch. 4.5). In comparison to version -H, version -W is equipped with connection pipes for connecting a water heater.

Note: The expansion tank is integrated in WTC 15-A, WTC 25-A as well as WTC 32-A vers. W.



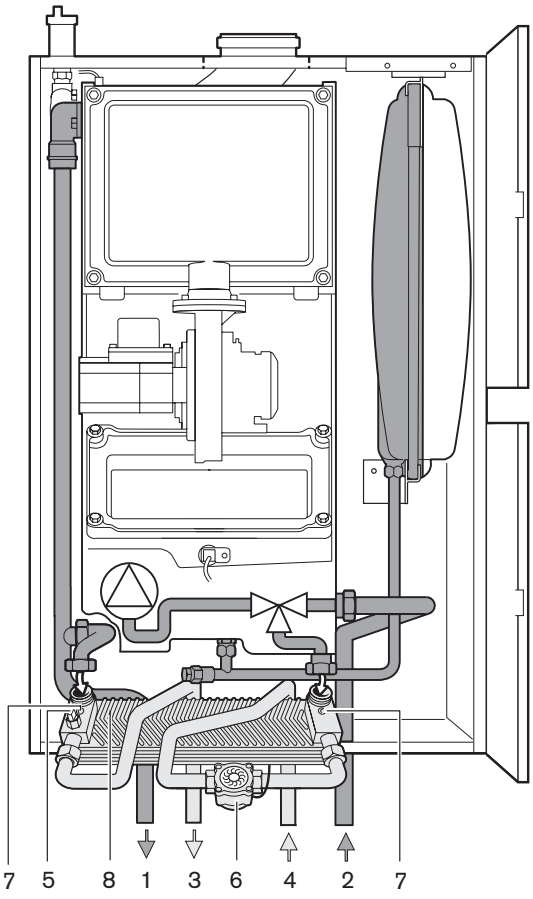
1 Heating flow
2 Heating return
3 Flow to water heater
4 Return from water heater

3.3.5 Version -C (WTC 25-A only)

Version -C contains the same 3 way valve as version -W. The drawn water quantity is determined exactly by a throughput sensor (6) and evaluated by the Weishaupt Condens Managers (WCM).

To ensure a constant DHW outlet temperature, version -C is fitted with a temperature sensor (5) in the DHW outlet. It is possible to maintain the DHW temperature so that warm water is available immediately the tap is opened. This function can be switched off.
Version -C is equipped with a booster function to ensure total DHW comfort, which increases the burner rating to approx. 28 kW with a drawn quantity of over $4^{l}/_{min}$ and an outlet temperature > 50°C . This function can be switched off in the heating engineer level (parameter P62).
The plate heat exchanger (8) can be removed forwards by undoing the two flange screws (7).

Hard domestic water can lead to scaling of version -C .
If the water hardness is above 21° dH, a water softener should be used in conjunction with version C.



1 Heating flow
2 Heating return
3 DHW outlet
4 Cold water inlet
5 DHW sensor
6 Throughput sensor
7 Fixing screws plate heat exchanger
8 Plate heat exchanger

3.4 Prerequisites

Included in delivery
The ready-to-use unit is delivered in a cardboard box. The following parts are enclosed loose:

- End user documents
- Wall bracket
- Screw set with wall plugs
- Installation template
- Spacer

Application instructions
When transporting and storing the unit, the following should be avoided:

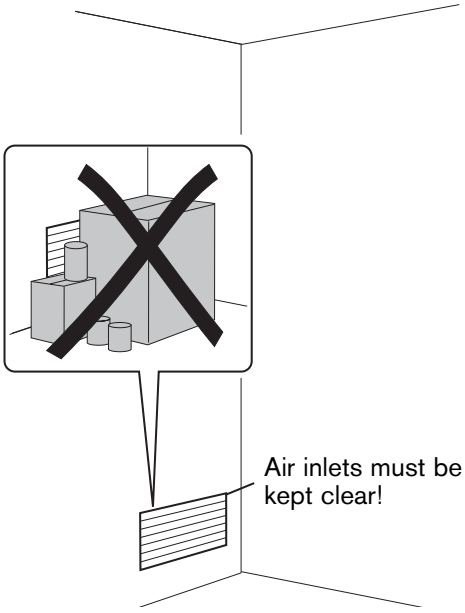
- mechanical impact, such as: distortion, warping, scratching
- contamination of any kind, e.g.: water, oils, greases, solvents, dust, debris, aggressive steam, etc.
- electrical impact, e.g.: through electrostatic discharge or unnaturally large electric fields, see DIN EN 100 015 Part 1 and "Instruction for handling electrostatically sensitive components" (techn. information 821005 from Valvo)
- climatic exposure, such as: temperatures outside of the range -10°C...+60°C, condensation caused by dew, rel. humidity above 75% as annual average.

Requirements relating to the installation location
The installation location, which should be frost free and protected from humidity, must comply with local regulation (combustion by-law, fire regulations). Observe special regulations:

- DVGW-TRGI (Germany)
- SVGW-Guidelines (Switzerland)

Requirements relating to combustion air
The combustion air must be free from aggressive compounds (Halogene, Chloride, Fluoride, etc.) and from contaminants (dust, building material, steam, etc.). The unit should not be operated until all building work in the installation location has been completed.

Unimpeded combustion air



Important - Warranty for boiler replacement!
Supply air ducts, which have previously been used as a chimney for solid fuel or oil firing plants, must only be used as supply air duct once they have been thoroughly cleaned. Thoroughly clean means that dust, sulphur, soot, dirt and any diffused gases have been removed from the duct material (e.g. paint, render, insulation). If unsure, the internal sides of the duct should be sealed or concentric flue gas pipes (accessory) should be used.
If the WTC is integrated into an existing heating system, it must be ensured that rust, dirt and sludge have been removed. Non oxygen diffusion resistant plastic pipes must only be connected via a separate heat exchanger, otherwise deposits can cause damage and lead to operational influences (localised overheating, noise or similar). On version -C it should be noted that galvanised steel pipes must not be connected to the DHW connections.

☞ If necessary fit sludge strainer in the return

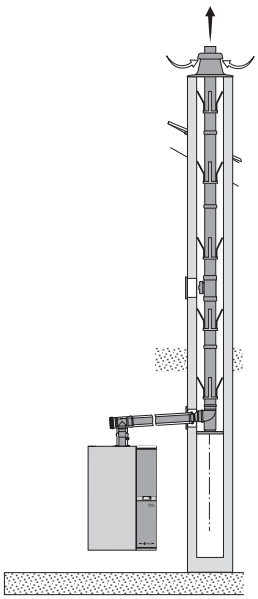
Flue gas connection to chimneys
Due to the water vapour content in flue gases with low temperature and the additional condensation created in the chimney, condensing boilers can only be connected to moisture resistant house chimneys. The flue gas ducts must comply with local authority regulations and country specific requirements:

- (DE) DVGW (TRGI)
- (AT) ÖVGW
- (CH) SVGW, VKF Guidelines, Number 3.4.8 (Issue 1993)

Building regulation approved flue gas duct
The flue gas duct should have the same diameter as the boiler flue gas socket.

- Consultation with the appropriate district master chimney sweep
- Flue gas duct soundness test must be carried out

Flue gas duct



3.5 Demands on the heating water

Note: In accordance with VDI-Guideline 2035 the following demands must be met by the heating water.

- The untreated fill and top up water must be of domestic water quality (colourless, clear, without scaling),
- the fill and top up water must be pre-filtered (mesh width max. 25 µm),
- the pH value must be 8.5 ± 0.5,
- avoiud oxygenation of the heating water (max. 0.05 mg/l),
- if any system components are not diffusion resistant the unit should be separated from the heating circuit using a system separator.

3.5.1 Permissible water hardness

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

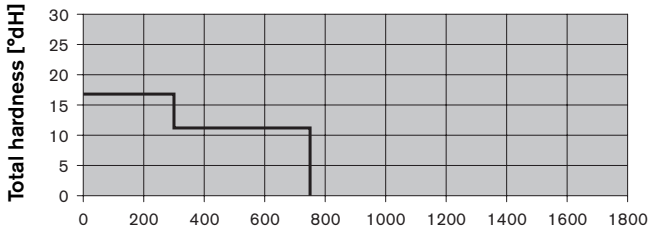
☞ Determine if measures for water treatment are necessary using the diagram.

If the fill and top up water lies in the range of the upper limit curve:
☞ Treat fill and top up water.

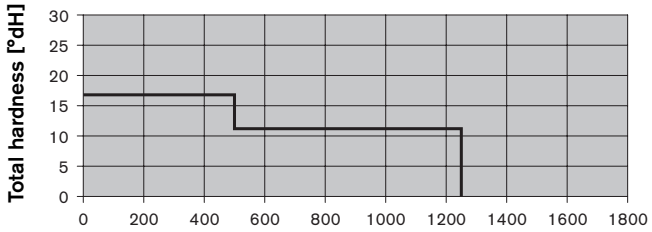
If the fill and top up water lies in the range of the lower limit curve, the water does not need to be treated.

Note: Document fill and top up water quantity.

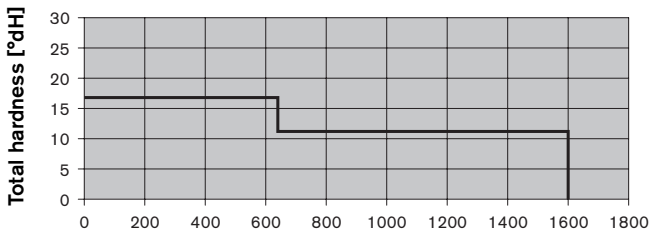
Max. total hardness of heating water for WTC 15-A



Max. total hardness of heating water for WTC 25-A



Max. total hardness of heating water for WTC 32-A



3.5.2 Fill water quantity

If information about the fill water quantity is not available, the following table can be used to estimate the quantity. On calorifier systems the calorifier content must be taken into consideration.

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
Plate 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.

3.5.3 Treatment of fill and top up water

Demineralisation (recommended by Weishaupt)

☞ Fill and top up water sgould be demineralised (Recommendation: mixer bed treatment)

When the heating water has been completely demineralised, up to 10% of the system contentents can be topped up with untreated water. Higher quantities of top up water must be demineralised.

☞ Check pH value (8.5 ± 0.5) dof demineralised water:
- following commissioning,
- after approx. 4 weeks of operation,
- during the annual service.

☞ If necessary, adjust pH value of heating water by adding Trisodium Phosphate.

Softening (cation exchanger)

ATTENTION

Damage to the unit due to raised pH value:
Corrosion could damage the system.

☞ Following softening by cation exchanger the pH value must be stabilised due to the self-alkalisation of the heating water.

☞ Soften the fill and top up water.
☞ Stabilise pH value.
☞ Check pH value (8.5 ± 0.5) during annual service.

Stabilisation of hardness

ATTENTION

Damage to the unit due to unsuitable inhibitors:
Corrosion and lime scale could damge the system.

☞ Only use inhibitorsen if the manufacturer can guarantee the following:
the requirements relating to the heating water are met,
the heat exchanger of the unit will not corrode,
no sludge will form within the heating system.

☞ Treat the fill and top up water with inhibitors.
☞ Check pH value (8.5 ± 0.5) according to the instructions of the inhibitor manufacturer.

4.1 Safety notes on installation

Electrically isolate the system

DANGER

Prior to installation switch off the unit and safety switch, as well as the mains switch. Failure to comply could cause death or serious injury by electric shock.

Only valid for Switzerland:
When installing and operating a -weishaupt- gas burner in Switzerland the regulations of SVGW and VKF as well as local and cantonal regulations must be observed.

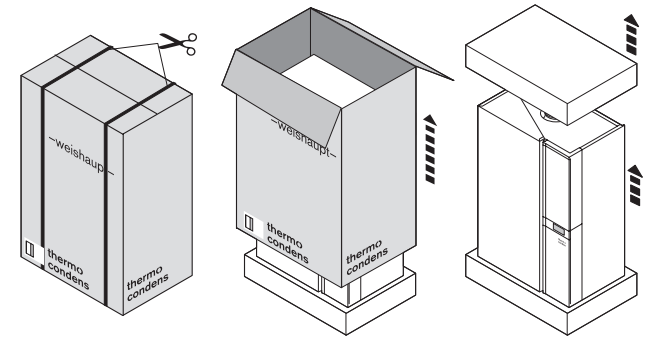
Furthermore, the EKAS guideline (Guideline for Liquid Petroleum Gas, part 2) must be observed.

4.2 Delivery, transport, storage

Packaged in shipment box
The WTC is delivered complete with accessories packaged in one strong shipment box.
The shipment packaging is best removed with the unit upright.

- ☞ Only transport in shipment box.
- ☞ Observe shipment instructions on box.
- ☞ Do not place WTC onto gas or water connections without polystyrene pad.

Packaging



4.3 Wall mounting

Fit wall bracket

☞ Fit wall bracket ① enclosed to the wall with the fixing screws supplied.

❑ The suitability of the wall plugs enclosed should be checked depending on the construction of the wall.

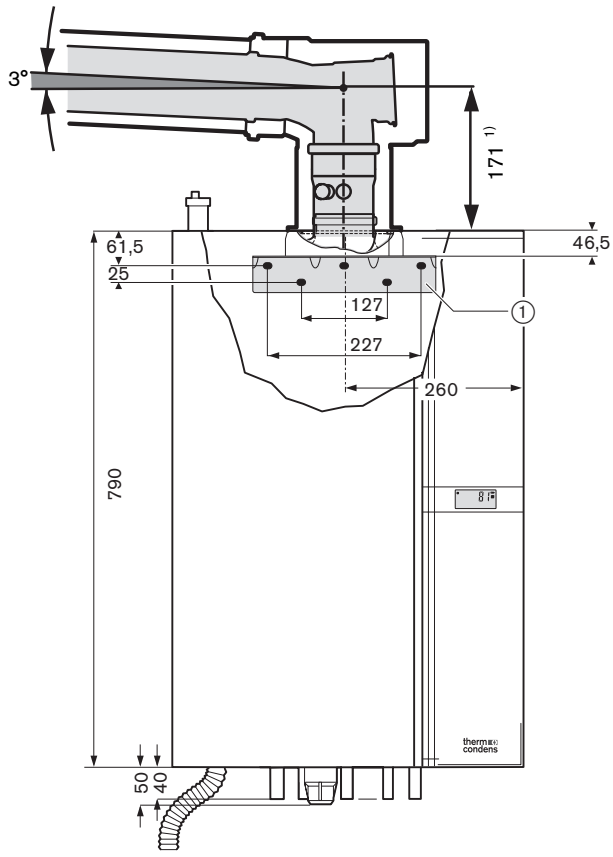
❑ A gradient of 3° towards the unit should be provided for the flue gas ducting (at 1metre this is equal to approx. 5.5 cm).

❑ There should be sufficient space available below the unit for the hydraulic connection assembly.

❑ For servicing purposes, a distance of approx. 30 mm to wall units or similar should be maintained.

Further unit dimensions see Ch. 11.5.

Fit wall bracket



1) Boiler connection piece new
Order No. 480 000 05 32 2
Dimension 234 mm is valid for old boiler connection pieces
Order No. 480 000 10 01 2 or
Order No. 480 000 06 52 7

Fit and align unit

☞ Fit spacers provided to the left and right of the rear of the unit, as low as possible.

☞ Place unit into the wall bracket ①. Check safe overlap in the wall bracket.

☞ Once fitted, horizontally align the unit with the 2 setting screws ②.

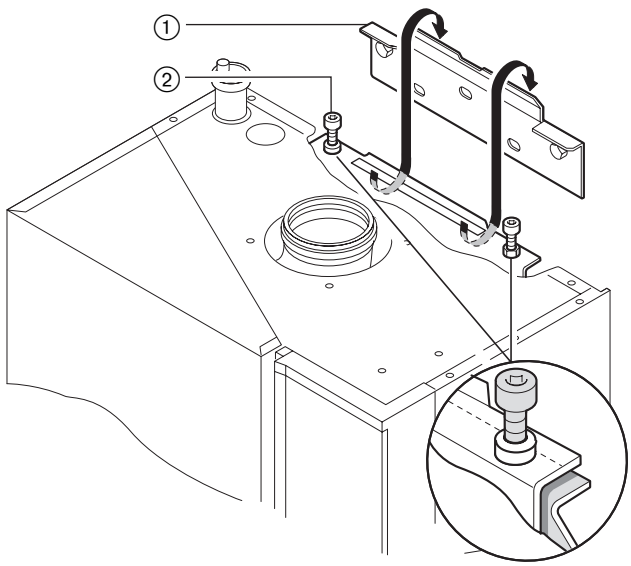
☞ Fit flue gas connection (accessory).

☞ It is recommended to remove the cover of the WTC before continuing with the installation. Remove the locking screw on the clamp fastener on the underside of the unit, open clamp fastener and remove cover upwards.

DANGER

The cover of the WTC is protected from accidental opening with screws.
Re-secure the lid once it has been refitted using the screw.

Fit and align unit



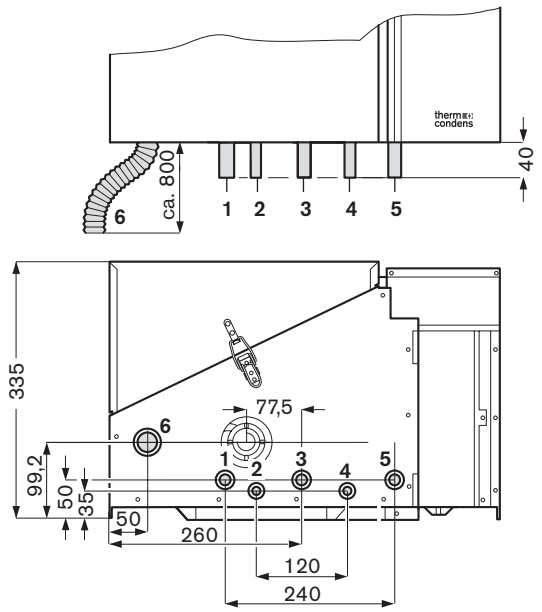
4.4 Mains water connection

Application in sealed heating systems

- ☞ On version -W: Connect flow and return pipes of water heater.
- ☞ On version -C: Connect cold and hot water pipes.
- ☞ Connect flow and return (pipes should be rinsed thoroughly before connecting).
- ☞ Install boiler, inlet and outlet valves (available as an accessory).
- ☞ Install safety valve (available as accessories).
- ☞ Fit sludge trap in return pipe (if required).
- ☞ Fit expansion tank (WTC 32-A)

1 Heating flow Ø 18 mm
2 Flow water heater or DHW Ø 15 mm
3 Gas Ø 18 mm
4 Return water heater or cold water Ø 15 mm
5 Heating return Ø 18 mm
6 Condensate outlet Ø 25 mm

Hydraulic connection



4.5 Filling with water

When filling the heating system, the requirements for the heating system water (see also Ch. 3.4) should be observed.

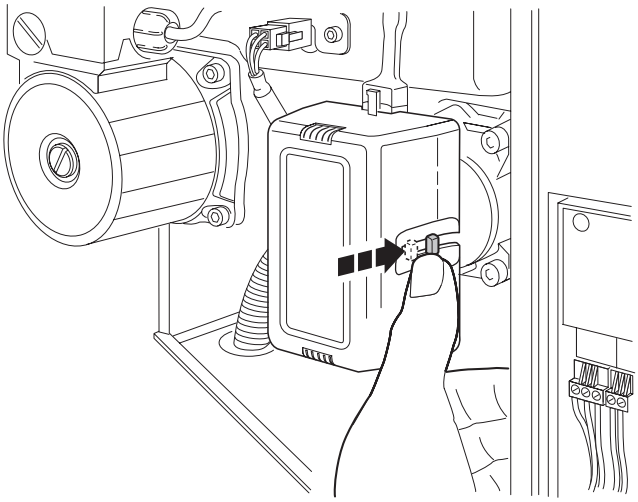
ATTENTION

Unsuitable water results in scaling and corrosion formation and can cause damage to the condensing boiler.

- ☞ Check pre-pressure of the diaphragm expansion vessel.
- ☞ Prior to first commissioning, the heating system should be flushed with at least twice the amount of the system content to remove contaminants. Swarf, rust, scale, sludge etc. can influence the operational safety.
- ☞ Set three way valve of condensing boiler to it centre position (only on version -W and -C).
- ☞ Open all thermostatic valves in the system.
- ☞ Loosen cap of quick action vent valve.
- ☞ Open service cocks for heating flow and return.
- ☞ Slowly fill heating system from tap connected to the heating return (minimum system pressure >1.0 bar). Observe all relevant regulations.
- ☞ Vent all radiators.
- ☞ Once the system has been vented, check system supply pressure, if necessary repeat fill procedure.
- ☞ Seal joints and screwed unions should be checked to ensure they are tight.

Note: The unit and any separately fitted pumps must be switched off during filling.

Centre position three way valve



4.6 Electrical connection

Electrical installation by qualified personnel only!

DANGER

Local regulations and codes of practice, as well as regulations from the energy supplier must be observed.

Mains and emergency switch

The external mains switch for the heating system must have at least 3 mm contact distance.

☞ Connection to plug assignment, Ch. 4.6.1.

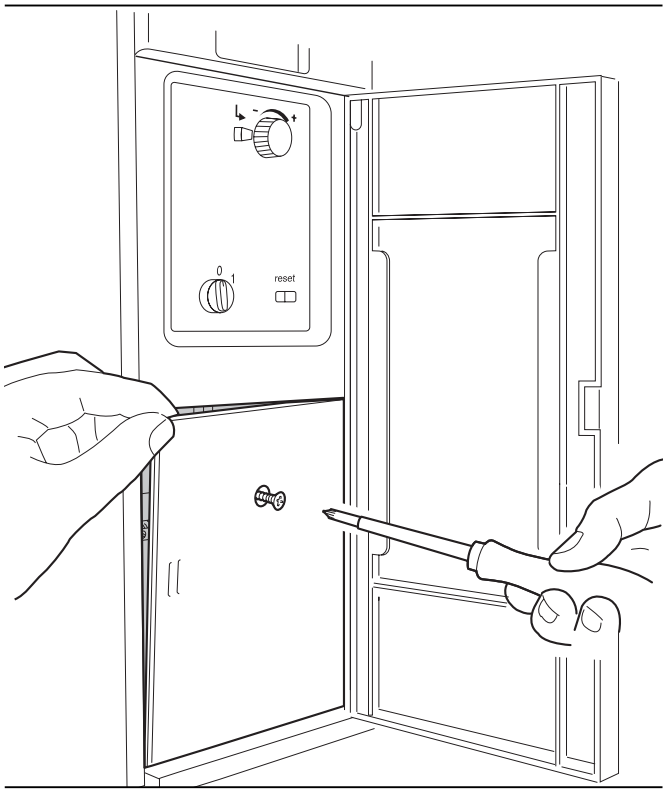
Electrical connection 230V/50 Hz

The gas condensing boiler WTC is wired ready for connection. The cover of the electrical installation duct must be removed for the electrical installation.
Insert the cable from the rear through the recess into the unit.
The electrical connection must be carried out by a qualified electrician. Changes to the internal boiler wiring are not permitted.

ATTENTION

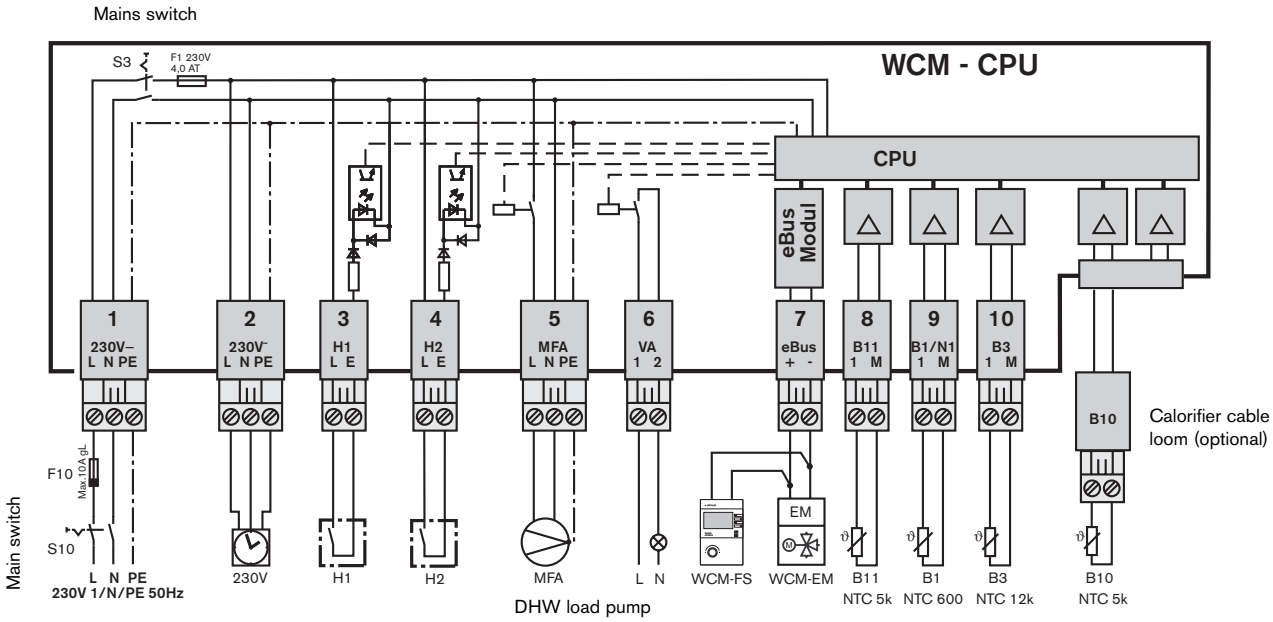
Shell clamps should be used if flexible cables are connected.
Approved sleeve cable should be used for all other connection lines.

Plug cover



4.6.1 External connection WCM

Wiring diagram WCM



The external connection is made in the electrical installation duct

Plug	Number/ colour	Connection	Operating range
Mains, 230V	**1/**black	230 VAC supply input	
230V	**2/**grey	230 VAC supply output	max. 250 VA
H1	**3/**turquoise	H1 Opto input 230VAC 0.002A	function dep. on configuration
H2	**4/**red	H2 Opto input 230VAC 0.002A	function dep. on configuration
MFA, 230V	**5/**lilac	MFA relay output: 230 VAC	max. 150VA,
VA	**6/**brown	VA potential free relay output	230VAC 8A / DC 60V 5A function dep. on configuration
eBUS	**7/**blue	Connection of add. control components	WCM - FB, - EM, - KA
B11	**8/**white	De-couple sensor (variation: P2/P3) ⇨ Ch. 7.6.6-7.6.7	0…99°C
B1	**9/**green	External sensor type QAC 31 (Order No. 660 186), NTC 600 Ohm,	-40…50°C
N1		4-20 mA remote load control ⇨ Ch. 4.6.5	4…20 mA
B3	**10/**yellow	Tank sensor NTC 12kOhm	0…99°C
Optional: calorifier cable loom	B10	DHW calorifier control sensor NTC 5kOhm ⇨ Ch. 4.6.6	0…99°C

Note:

ATTENTION

- Local regulations must be observed when connecting the boiler to the 230 VAC mains supply, to ensure safe disconnection from the mains is possible.
- The sum of all consumer load currents on plugs 2 and 5 must not be more than 2 A continuous current.
- The function of inputs and outputs H1, H2, MFA and VA depend on the configuration.

⇨ Ch 7.6.4

- Internal boiler wiring see appendix.
- Consumers of other power circuits (external voltage) must not be switched directly with the VA output.

4.6.2 Converting unit version -H-0 to version -H

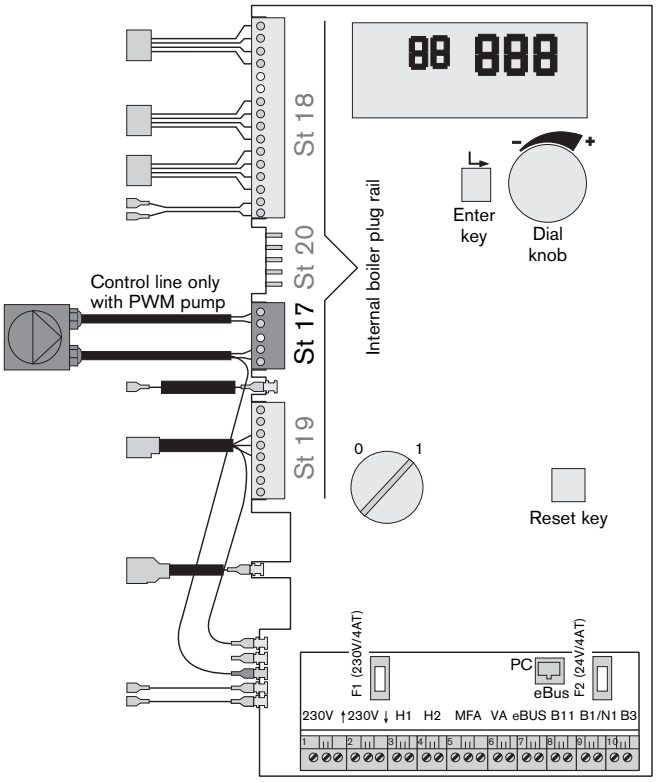
Connecting an internal boiler pump
The following pumps are available as accessories for fitting into WTC:

WTC 15-A/25-A:
- 3 stage pump
- PWM pump

WTC 32-A:
- PWM pump

The pump is supplied ready to plug in and should be connected to plug slot 17.

Connect internal boiler pump



4.6.3 Connecting a 3 way change-over valve

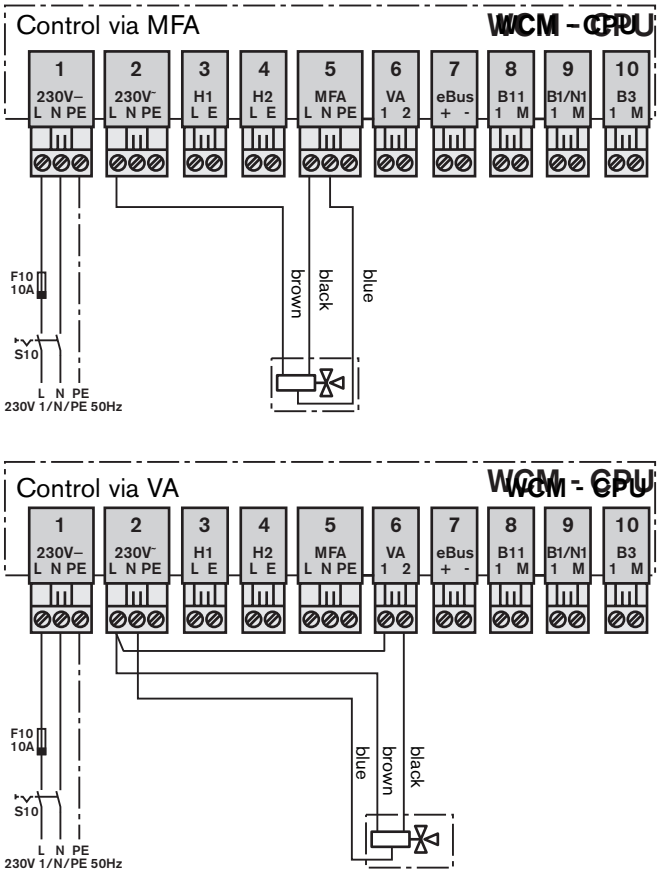
For DHW operation, the 3 way change-over valve is connected to the 230V output and either the MFA or VA. To enable the 3 way change-over valve to function, the MFA or VA must be configured accordingly.
To do this, parameter P13 or P14 (see Ch. 6.3.3) should be set to parameter value 4.

Control via MFA:P13 = 4
Control via VA: P14 = 4

3 way change-over valve
(Order No.: 409 000 05 73 2)

Servomotor with connection cable
(Order No.: 409 000 05 71 2)

Connect 3 way change-over valve

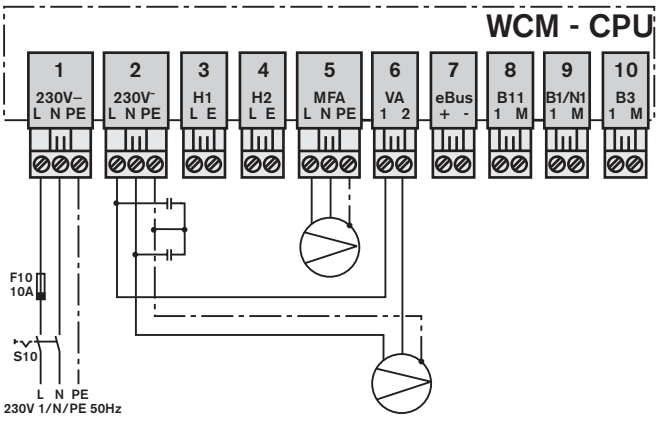


4.6.4 Connecting an external boiler pump

The external boiler pump can be controlled via output MFA or VA.
To achieve the required function of the pump (DHW or heating) parameter P13 or P14 need to be configured accordingly (see Ch. 6.3.3).

Note: When connecting an electronically controlled pump (E pump) the replacement of the suppressor element is recommended (-w- Order No. 713 404).

Connecting an external boiler pump

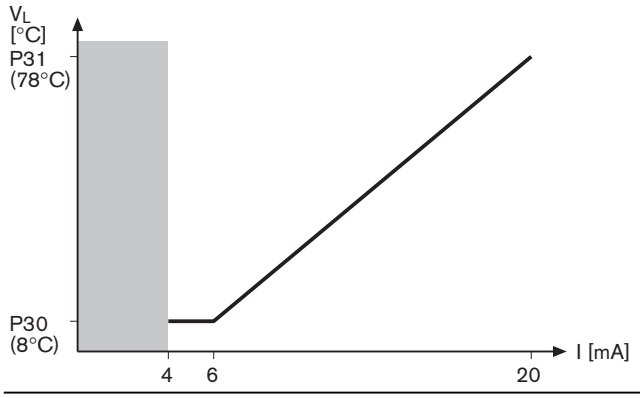


4.6.5 Remote load control

The control cable (4…20 mA) is connected to input B1/N1 (plug 9) independent of polarity.
The WCM automatically recognises the signal and displays configuration _t _ when it is switched on.
The available signal is interpreted as supply setpoint, which is incorporated into the setpoint formation parallel to other heat demands from the heating circuits, whereby 4 mA is equal to the minimum supply setpoint set in parameter P30. 20 mA is equal to the maximum supply setpoint set in parameter P31. The range of 4 - 6 mA switches the unit off.
If a control signal is switched on input B1/N, no more than 6 extension modules (addresses #2 to #7) can be installed.

Note: Remote load control is not possible on WTC-A, vers. C.

Diagram



4.6.6 Connecting temperature sensors for calorifier control (variations P1 and P2)

Connecting calorifier sensor (B10)

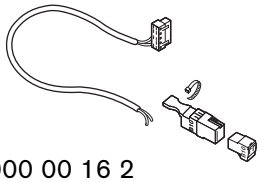
Prior to starting work electrically isolate the unit and protect from accidental reconnection.

Failure to comply could cause serious injury or death by electric shock.

To be able to install the calorifier sensor B10, the accessory line must be installed on plug slot ST20.

Note: The connection of calorifier sensors is only possible on unit version -H, -H-0 and -W.

Scope of delivery calorifier sensor connection



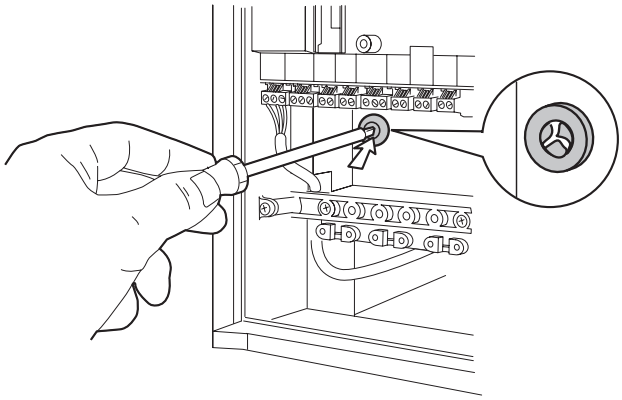
Order No.: 481 000 00 16 2

1. Open cover of WTC.

The cover of the WTC is protected from accidental opening by a screw.
Ensure this screw is refitted when refitting the cover.

2. Open cover of electrical installation area (see Ch. 4.6) and puncture through the diaphragm grommet.

Push through diaphragm grommet in installation area



3. Plug in circuit board plug (Rast 2.5) at plug slot ST20.

4. Install the cable for the calorifier sensor down towards the cable entry and pass it through the diaphragm grommet.

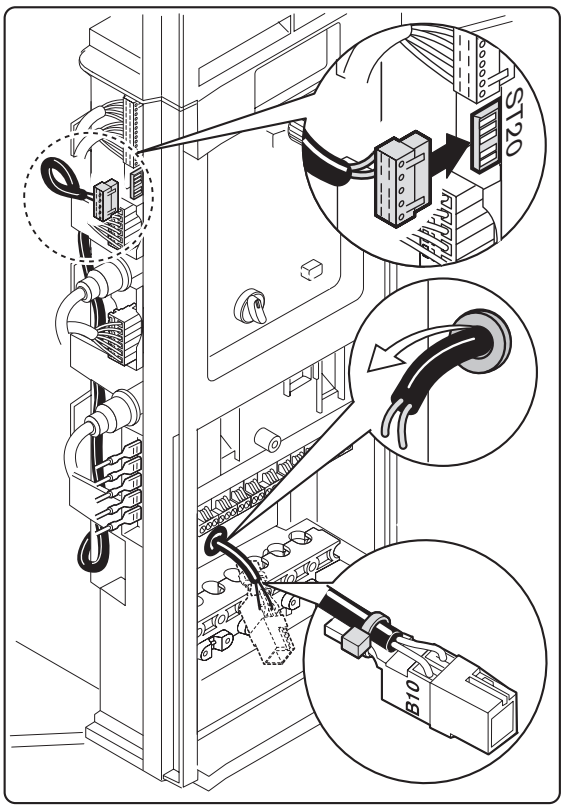
5. Connect wire ends to plug part B10 and secure with tension relief (cable ties).

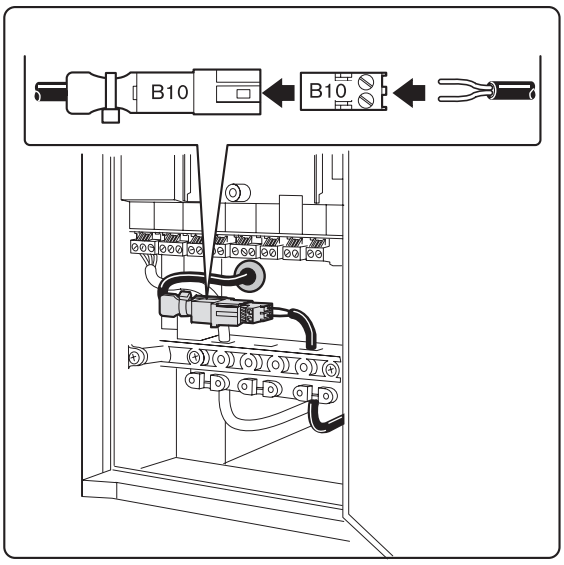
6. Connect calorifier sensor to socket B10 and plug in.

7. When retrofitting to an existing installation, the unit has to be reconfigured via parameter P10 (Ch.: 6.3.3).

Note: Detailed description for the control of calorifier tanks see Ch. 7.6.5 and Ch. 7.6.6.

Connecting calorifier cable loom





4.7 Gas side connection

Gas installation by qualified personnel only!
Local regulations and codes of practice, as well as regulations from the local gas board must be observed.

Venting the gas supply line
The local gas board or their appointed sub-contractor are responsible for venting the gas line. If work such as replacing components, valve train or gas meter, has been carried out on the gas supply line, recommissioning may only be carried out once the appropriate components have been vented by the gas board or their appointed sub-contractor.

Unit connection
Use the elbow or straight gas connection cock available as an accessory, to connect the unit to the gas supply.

The gas board will also inform you if you require an approved gas filter or thermal shut off valve required to comply with some regional building laws.

Note: Due to the fully automatic compound regulation the setting to a gas type within a gas family is not required.

Liquid Petroleum gas safety valve
For liquid petroleum gas operation below ground level it is recommended to fit an additional safety solenoid valve in the gas supply line to avoid the accumulation of gas near the boiler room.

☞ Connection to plug configuration Ch . 4.6.1, plug MFA (5) or VA (6).

☞ Parameter setting for output MFA or VA to LPG safety solenoid valve see heating engineer level parameter P13 or P14.

☞ Conversion of type of gas natural gas - liquid petroleum gas, see appendix.

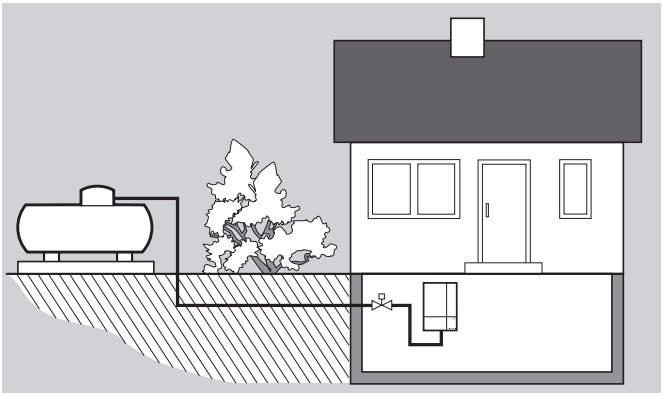
Gas characteristics
The gas characteristics should be obtained from the gas board. The Wobbe index W_S should be checked according to the valid gas groups. The gas connection pressure must lie within the following ranges:

- Natural gas 17...30 mbar
- Liquid petroleum gas 25...57.5 mbar

ATTENTION

For higher gas connection pressures the WTC should be fitted with an additional gas pressure switch.
If the gas pressure is lower, contact the gas board. Do not commission the WTC.

Safety solenoid valve



4.8 Condensate

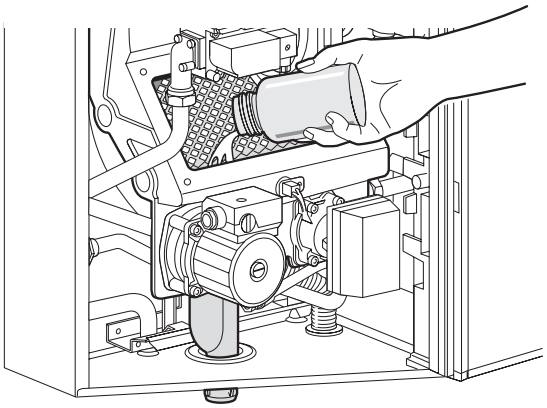
Condensate discharge into the waste water system
The condensate of the WTC complies with the requirements as stipulated in the ATV data sheet A 251for condensate discharge into the waste water system of the property. Neutralisation is usually not required.
If necessary, the water board should be informed about the discharge.
If the boiler is mainly operated in the non-condensing range, the internal siphon must always be filled with water. If the siphon is empty, flue gas can escape.

☞ Fill siphon with water - top up if flue gas can be smelled.

Note: When installing the siphon ensure that the condensate is expelled completely, as a blockage in the condensate line will cause operational problems. Therefore do not connect the condensate hose permanently to the waste pipe, but mount it free-flowing (e.g. into an outlet hopper).

If the siphon is empty, flue gas will escape into the boiler room. During prolonged shutdown or if operating the installation with high return flow temperatures (> 55°C) the water level of the siphon should be checked.

Fill siphon



4.9 Flue gas connection

Flue gas lines approved by planning law
The WTC is equipped with a concentric flue gas connection Ø 125/80 located at the top of the unit. The flue gases should be extracted via temperature and corrosion resistant flue gas duct:

- in vertical ducting
- via external wall connections
- for roof heating centres with vertical flue gas duct
- air-flue gas chimney

The combustion air can be introduced:

- from the boiler room (room air dependent operation)
- by concentric pipe systems (room air independent operation)
- by non-closing supply air ducts

Only CE certificated or locally tested and approved flue gas systems must be used.

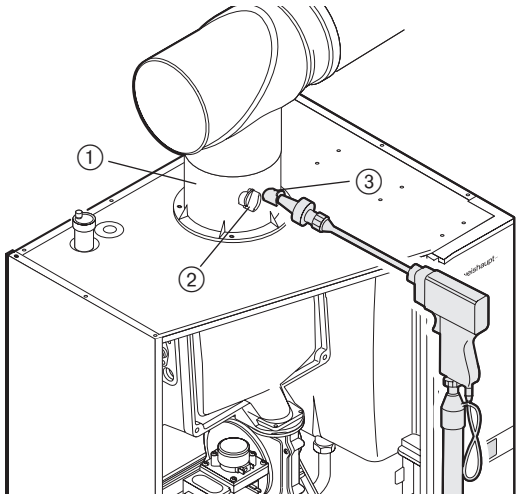
The Weishaupt Flue gas - air - system WAL-PP, see installation and operating manual WAL-PP, offers approved kits and individual components.

The flue gas duct must be gas tight.

☞ Carry out soundness test.

Note: If a **plastic** flue gas system is connected, which is approved for flue gas temperatures up to 80°C, the maximum flue gas temperature must be set to 80°C. Use parameter P33 (see Ch. 6.3.3). The Weishaupt flue gas-air system WAL-PP is approved for temperatures up to 120°C.

Flue gas connection

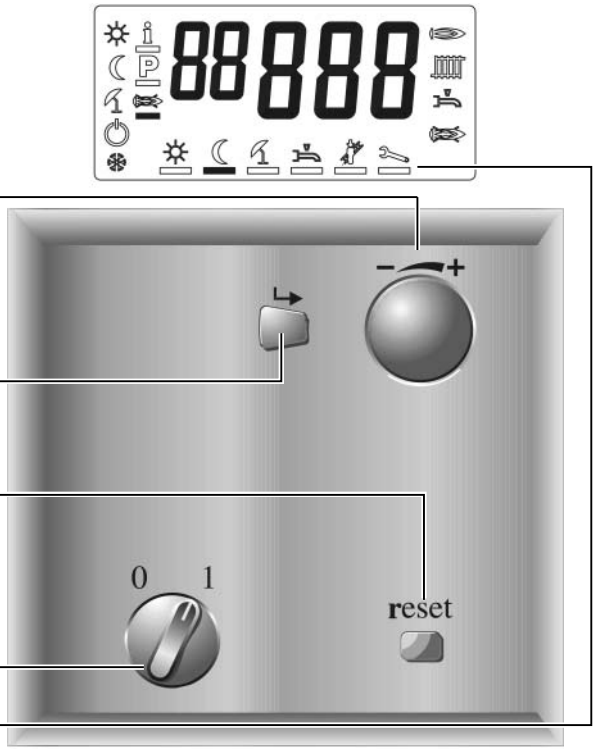


① Boiler connection piece
② Test point in the supply air aperture
③ Flue gas sampling point

5.1 Operating controls

Four operating controls are located below the front flap.

Operating elements



Dial knob
This is used to change values and settings by rotation.

Clockwise turn:
• Values are increased
• Markings are moved to the right or down

Rotation to the left:
• Values are reduced
• Markings are moved to the left or up

Enter button
This is used to select menus and to confirm entries

Reset button
Pressing this button resets lockouts.
If there is no lockout, this button is used to initiate a restart of the system.

On/Off switch

Symbol bar
This appears, when the dial knob is rotated.

5.2 Safety notes on initial commissioning

The initial commissioning must only be carried out by the supplier, manufacturer or their appointed agent. At this time, all the control and safety equipment must be checked to ensure correct operation and – if any item can be adjusted – it should also be checked that it has been set correctly.

Furthermore the correct fusing of the circuits and the measures for contact protection of electrical equipment and of wiring must be checked.

Checklist for initial commissioning

Please tick the work carried out and enter the relevant measurement values.

Commissioning protocol	Remarks/ Measurement value
✔ Heating system flushed, filled and vented (see Ch. 4.5.).	.....bar
✔ Radiators and mixer open.	❑
✔ Combustion air ducts, flue gas ducts checked.	❑
✔ Unit siphon filled.	❑
✔ condensate hose connected.	❑
✔ Gas soundness test carried out.	❑
✔ Automatic configuration saved (see Ch. 5.4.1).	❑
✔ O_2 content checked.	.....%O_2
✔ Gas connection pressure (flow pressure) define at nominal load.	.....mbar
✔ Nominal load determined.	.....kW
✔ Heat rating set in % of nominal load.	.....%
✔ DHW rating set in % of nominal load (only version -W, -C).	.....%
✔ End user instructed, documentation handed over. Confirmation by end user in appendix completed and signed.	❑

5.3 Soundness test with air

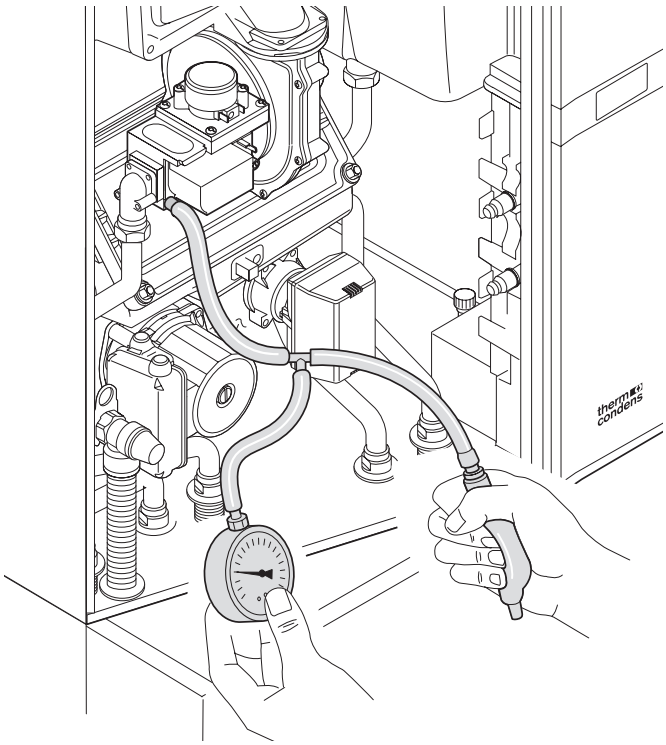
During the soundness test, the gas ball valve and gas combi valve must be closed.
A soundness test must be carried out at every service.
The result of the soundness test must be certified on the engineers report.

- ☞ Open closing screw on test point Pe by approx. 1 rotation.
- ☞ Connect pressure measuring device to Pe.
- ☞ Connect aspirator with T piece.

Create test pressure:
- ☞ The test pressure should be 100 mbar.
- ☞ Pressure loss within 5 minutes max. 1 mbar.

Only non-corrosive solutions must be used to locate leaks.
The gas ball valve should be included in the soundness test.

Soundness test



5.4 Function test without gas

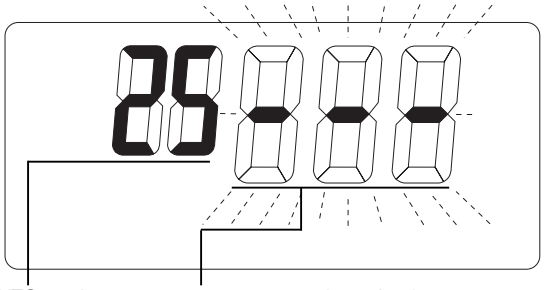
5.4.1 Automatic configuration

- ☞ The gas ball valve must be closed.
- ☞ All electric wiring should have been tested.
- ☞ There must be water pressure available in the heating system (> 1bar).
- ☞ Apply voltage supply and switch on unit.

The Weishaupt Condens Manager (WCM) automatically recognises the type of unit connected and carries out the necessary parameter settings. Equipment used:

Unit type	Sensors required/ action and/or configuration	Display
Version -H-0	-	H – –
Version -H	-	H – –
Version -W	Connection of tank sensor NTC 12kΩ on plug B 3	W – –
Version -C	Flow sensor	C – –
Options:		
Version -PWM	Internal boiler pump PWM	– – P
External sensor	Connection QAC 31 on plug B1	– A –

Display “Boiler type recognised”



Switch on WTC at the mains switch.
During the first 10 seconds an analysis of the sensors and actuators connected is carried out.

The WCM-CPU displays the configuration detected in flashing codes.
If a calorifier or de-couple sensor has been detected by the WCM-CPU the relevant control variation will be displayed after approx. 7 seconds instead of the boiler type.

The configuration detected is displayed flashing for approx. 20 seconds.

By pressing the button during this time the configuration is saved.

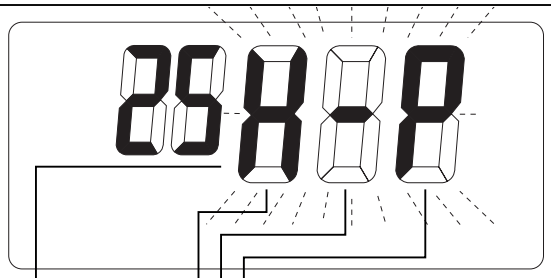
☞ If the button is not pressed, an automatic backup is carried out after 24 hours. If there is a power failure before this time has elapsed, the sequence starts again.

☞ The configuration can be changed manually (description in Ch. 6.3.3; parameter P10).

☞ Complete detection is only carried out when the unconfigured unit is turned on.
A configured unit shows its saved configuration when switched on.

If, for example, an external sensor is fitted at a later stage, the WCM shows this new configuration with flashing codes when switched on.
The continuing procedure corresponds to that of an unconfigured unit.

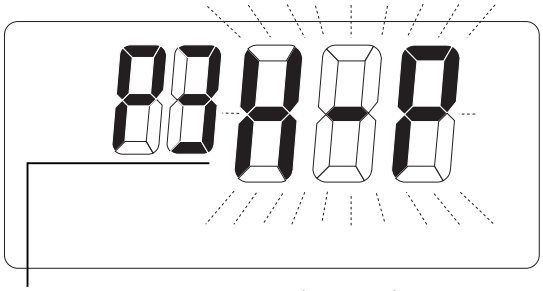
Display "Unit configured"



15 = WTC 15-A
25 = WTC 25-A
32 = WTC 32-A
P1 = Calorifier control 1
P2 = Calorifier control 2
P3 = Calorifier control 3

P = Boiler circuit pump with PWM control
- = 3 stage pump
A = External sensor available
t = Temperature remote control 4 - 20 mA (N1)
- = Connection B3/N1 not used
H = Version -H, -H-0
C = Version -C
W = Version -W

Display control variations

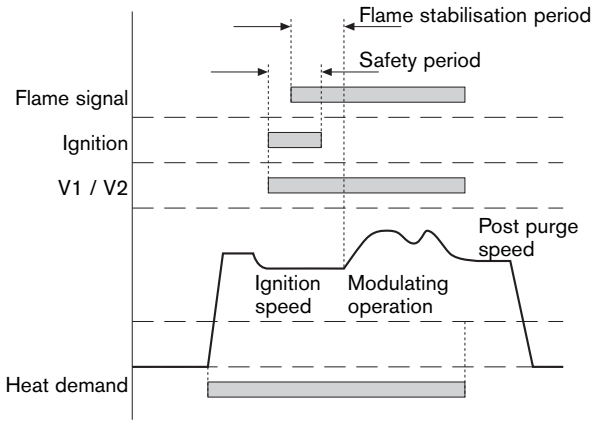


P1 = Control with one calorifier sensor (Ch. 7.6.5)
P2 = Control with two calorifer sensors (Ch. 7.6.6)
P3 = Control for hydraulic de-couple (Ch. 7.6.7)

5.4.2 Continued program sequence

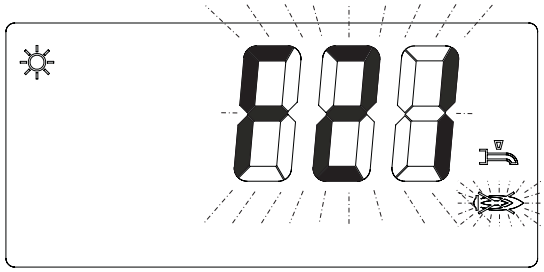
The continued sequence can be found in the sequence diagram on the right.

Sequence diagram



The unit carries out 5 ignition attempts.
After the fifth unsuccessful attempt the display shows the code F21. Initiate a restart by pressing the reset button.

Display



5.5 Commissioning

Notes on initial heating up of the system

- The commissioning and purging of the system should be carried out immediately after the system has been filled.
- When first heating up the system, ensure that the maximum possible water flow through the condensing unit is guaranteed. To do this all radiator valves should be fully opened.
- The heat up should be carried out with low supply temperatures and at low load.
- On multi-boiler systems all units should be commissioned at the same time at low load.

❑ Open gas ball valve
❑ The electrical wiring must have been tested.
❑ Water pressure is available, cocks are open, sufficient heat demand is ensured.

The WTC has been factory preset.
Due to its fully automatic compound regulation an adaptation to various gases from one gas family is not required.
Therefore the values set during first commissioning have to be checked only once. The values set can be found in the technical data.

The following checks should be carried out:

- measuring the O_2 content at nominal load and partial load (conversion table $O_2 - CO_2$ see appendix).

O_2 setpoints:	Natural gas	LPG
WTC 15/25	$O_2 = 5.5\%$	$O_2 = 5.8\%$
WTC 32	$O_2 = 4.8\%$	$O_2 = 4.8\%$

  The rating is set as detailed in Ch. 5.5.2.
  If the value deviates by more than ± 0.6%, a correction is required.
- Ratings measurement at nominal load (see Ch. 5.6).

Adapting nominal load

- Using parameter P37 the heat rating can be reduced in percentage values (see Ch. 6.3.3).
- Using parameter A10 the maximum fan speed can be increased (see Ch. 6.4.1).
  A PC with Software WCM Diagnostic is required to be able to set parameter A10 (see Ch. 6.4.1).

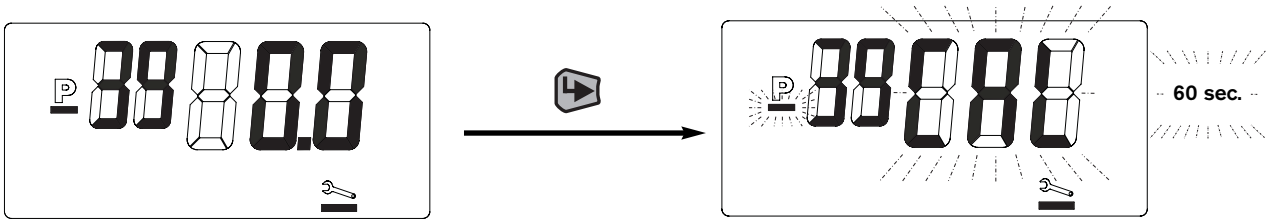
Once a correction has been made re-check nominal and minimum load.

Note: The rating set may deviate from the burner rating given on the name plate by a maximum ± 5%.

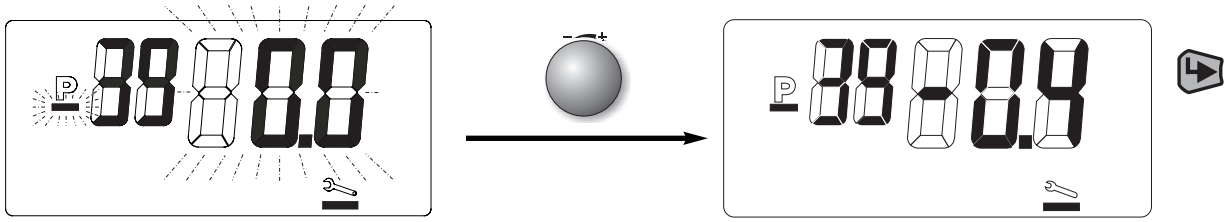
Fine tuning the O_2 value
Fine tuning the O_2 value is included in an automatic function sequence with 3 steps.
This sequence allows the combustion to be optimised on site using parameters P39 and P72.

Procedure

1. Select parameter 39 in the heating engineer level and call up the entry mode by pressing the key, the unit carries out a calibration (duration approx. 60 sec). This calibration creates a new SCOT® base value.

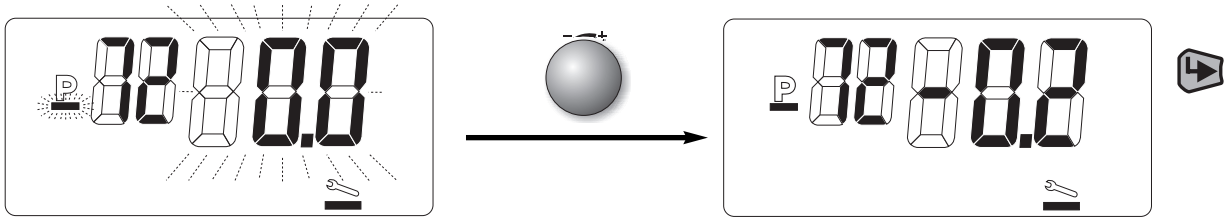


2. Following the calibration, the O_2 value can be adjusted, whereby the value displayed is almost equal to the percentage value of the O_2 adjustment.
The new value can be saved by pressing the key.

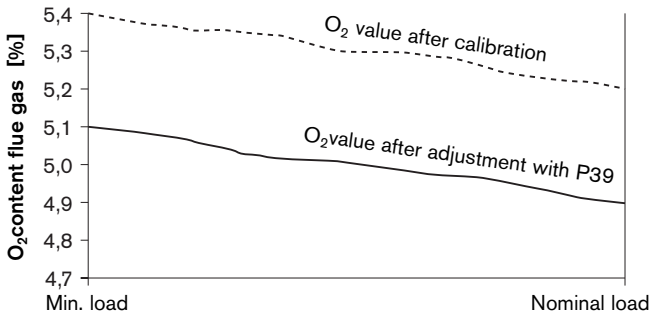


3. The WTC now modulates to the minimum rating, where possible deviations in the lower ratings range can be equalised by adjusting P72.
The entry is carried out, as for P39, as O_2 adjustment value.

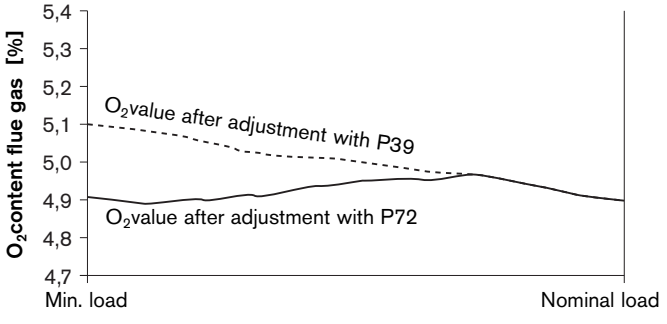
Note Following an adjustment with P39 (adjustment effective across the total modulating range) and/or P72 (adjustment effective across minimum load range of 33–50% rating) the O_2 content at maximum and minimum rating **must** be checked.



O_2 fine tuning with P39



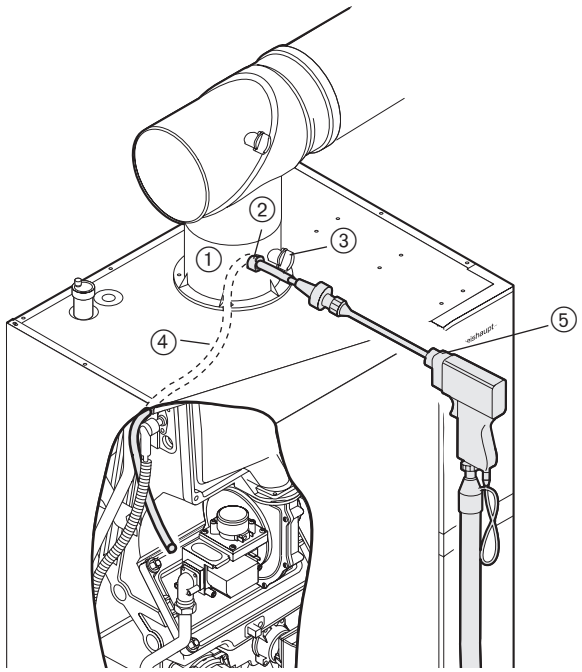
O_2 fine tuning with P72



Soundness test of flue gas system
For room air independent operation, a soundness test of the flue gas system via an O_2 measurement within the internal space of the condensing boiler is required.

- ☞ Fit hose ④ through the test point in the supply air aperture ② into the condensing boiler.
- ☞ Seal test point in the supply air aperture ②.
- ☞ Connect test sensor ⑤ to the hose ④.
- ☞ Close cover of condensing boiler.
- ☞ Start condensing boiler in chimney sweep mode and carry out O_2 measurement at 100% load. The test should last at least 5 minutes, the O_2 content must not fall more than 0.2% below the measured value of the ambient air.

Soundness test of flue gas system



① Boiler connection piece
② Test point in supply air aperture
③ Flue gas test point
④ Hose
⑤ Test sensor

5.5.1 Gas inlet pressure at nominal load

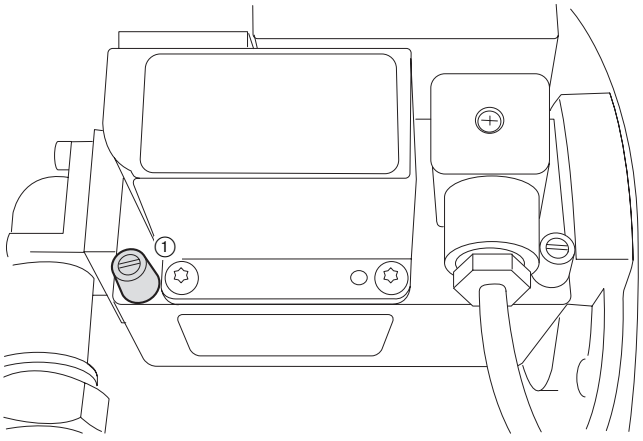
Pressure measuring device at test nipple Pe
The correct gas inlet pressure is a prerequisite for the following measurements.

- ☞ Open gas valve.
- ☞ Remove boiler cover.
- ☞ Open closing screw ① on test point Pe by approx. 1 rotation.
- ☞ Connect hose from pressure measuring device.
- ☞ Close closing screw once measurement has been taken.

Note: The gas inlet pressure across the whole ratings range must lie within the values stipulated.

- Natural Gas 17...30 mbar
- LPG 25...57.5 mbar

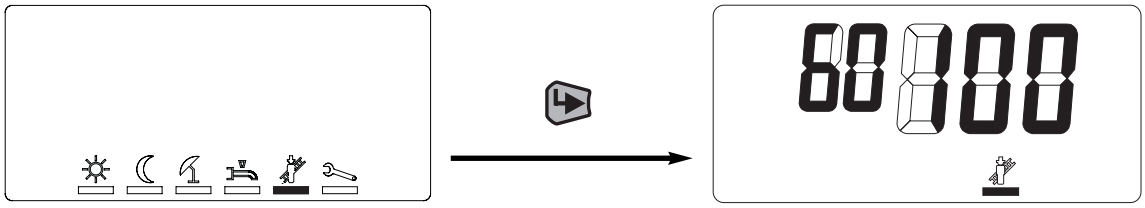
Gas inlet pressure



5.5.2 Variable ratings setting

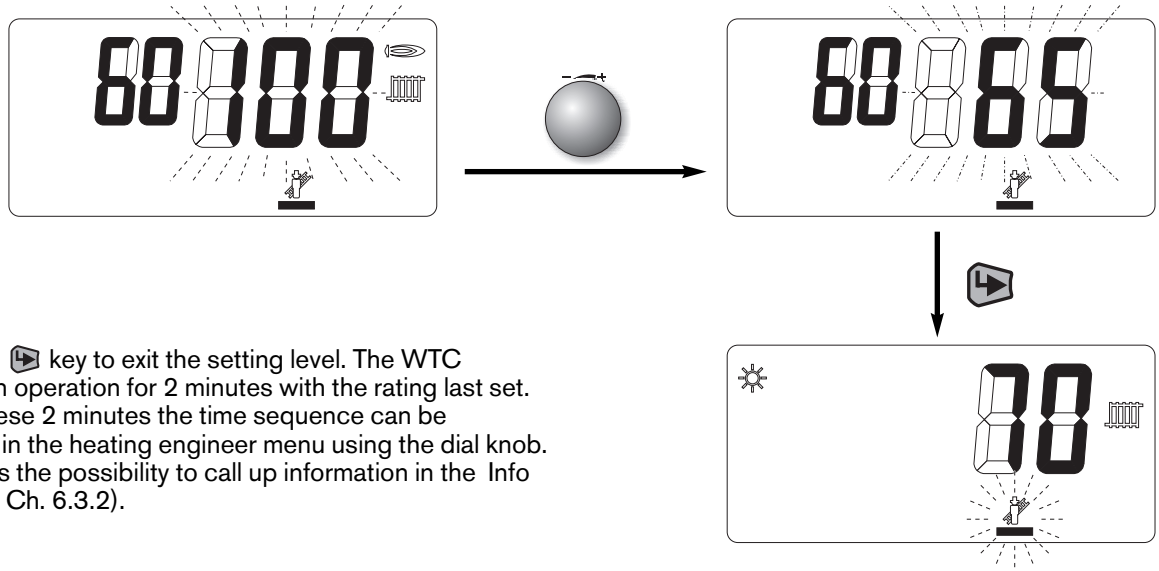
Move the selection cursor below the “Chimney sweep” symbol by turning the dial knob.

Change over to chimney sweep mode by pressing the key. The 3 large numbers show the current rating and the 2 smaller number show the current boiler temperature.



By pressing the key again the setting level, in which the variable heat rating can be changed from maximum heat rating to minimum heat rating, is activated.

Turn the dial knob anticlockwise until the desired ratings setting is reached. The value shown is that of the current burner rating (in % of the maximum burner rating).



Press the key to exit the setting level. The WTC remains in operation for 2 minutes with the rating last set. Within these 2 minutes the time sequence can be restarted in the heating engineer menu using the dial knob. This offers the possibility to call up information in the Info level (see Ch. 6.3.2).

Note:

- To exit the chimney sweep function, select ESC using the dial knob and confirm with key.
- If the heat rating is reduced in the heating engineer level (parameter P37), the percentage ratings setting range is also modified, that means, as the min. rating of the boiler is predetermined, the percentage value displayed increases accordingly.

5.6 Ratings measurement

The burner rating for nominal load has to be determined.
Proceed as follows:

- Gas quantity to operating volume $\dot{V}_B$
- Conversion factor to standard volume **f**
- Gas quantity to standard volume $\dot{V}_N$
- Burner rating $\dot{Q}_{Br}$

Legend:
$\dot{Q}_{Br}$ = Burner rating in kW
$P_{Baro.}$ = Barometric air pressure [mbar] to table
P_{Gas} = Gas pressure at meter [mbar]
t_{Gas} = Gas temperature at meter [°C]
$H_{i,n}$ = Calorific value [kWh/m³]
$\dot{V}_B$ = Operating volume [m³/h]
$\dot{V}_N$ = Standard volume [m³/h]
f = Conversion factor operating/standard volume

Operating volume at gas meter $\dot{V}_B$

$$\dot{V}_B = \frac{\text{Gas qty (m}^3\text{)}}{\text{M. time (sec.)}} \cdot 3600 = \frac{[\_\_\_]}{[\_\_\_]} \cdot 3600 = [\_\_\_]\text{m}^3/\text{h}$$

Nominal load [___] m³/h Min. load [___] m³/h

Conversion factor to standard volume f

$$f = \frac{P_{Baro.} + P_{Gas}}{1013} \cdot \frac{273}{273 + t_{Gas}} = \frac{[\_\_\_] + [\_\_\_]}{1013} \cdot \frac{273}{273 + [\_\_\_]} = [\_\_\_]$$

or conversion factor to table

Nominal load [___] m³/h Min.-Last [___] m³/h

Standard volume V_N

$\dot{V}_N = \dot{V}_B \cdot f = [\_\_\_] \cdot [\_\_\_] = [\_\_\_]$ m³/h

Nominal load [___] m³/h Min.-Last [___] m³/h

Burner rating $\dot{Q}_{Br}$

$\dot{Q}_{Br} = \dot{V}_N \cdot H_{i,n} = [\_\_\_] \cdot [\_\_\_] = [\_\_\_]$ kW

Determination of conversion factor f

Average yearly air pressure $P_{Baro.}$

Average altitude of supply area	*from* / *to*	0	1 / 50	51 / 100	101 / 150	151 / 200	201 / 250	251 / 300	301 / 350	351 / 400	401 / 450	451 / 500	501 / 550	551 / 600	601 / 650	651 / 700	701 / 750
Average yearly air pressure	*mbar*	1016	1013	1007	1001	995	989	983	977	971	965	959	953	947	942	936	930

Total pressure = $P_{Baro.}$ + P_{Gas} [mbar] = [ ] + [ ] = [ ] [mbar]

↓ Gas temperature t_G [°C]	950	956	962	967	973	979	985	991	997	1003	1009	1015	1021	1027	1033	1036
0	0.9378	0.9437	0.9497	0.9546	0.9605	0.9664	0.9724	0.9783	0.9842	0.9901	0.9961	1.0020	1.0079	1.0138	1.0197	1.0227
2	0.9310	0.9369	0.9427	0.9476	0.9535	0.9594	0.9653	0.9712	0.9770	0.9829	0.9888	0.9947	1.0006	1.0064	1.0123	1.0153
4	0.9243	0.9301	0.9359	0.9408	0.9466	0.9525	0.9583	0.9642	0.9700	0.9758	0.9817	0.9875	0.9933	0.9992	1.0050	1.0079
6	0.9176	0.9234	0.9292	0.9341	0.9399	0.9457	0.9514	0.9572	0.9630	0.9688	0.9746	0.9804	0.9862	0.9920	0.9978	1.0007
8	0.9111	0.9169	0.9226	0.9274	0.9332	0.9389	0.9447	0.9504	0.9562	0.9619	0.9677	0.9734	0.9792	0.9850	0.9907	0.9936
10	0.9047	0.9104	0.9161	0.9209	0.9266	0.9323	0.9380	0.9437	0.9494	0.9551	0.9609	0.9666	0.9723	0.9780	0.9837	0.9866
12	0.8983	0.9040	0.9097	0.9144	0.9201	0.9257	0.9314	0.9371	0.9428	0.9484	0.9541	0.9598	0.9655	0.9711	0.9768	0.9796
14	0.8921	0.8977	0.9033	0.9080	0.9137	0.9193	0.9249	0.9306	0.9362	0.9418	0.9475	0.9531	0.9587	0.9644	0.9700	0.9728
16	0.8859	0.8915	0.8971	0.9017	0.9073	0.9129	0.9185	0.9241	0.9297	0.9353	0.9409	0.9465	0.9521	0.9577	0.9633	0.9661
18	0.8798	0.8854	0.8909	0.8955	0.9011	0.9067	0.9122	0.9178	0.9233	0.9289	0.9344	0.9400	0.9456	0.9511	0.9567	0.9594
20	0.8738	0.8793	0.8848	0.8894	0.8949	0.9005	0.9060	0.9115	0.9170	0.9225	0.9281	0.9336	0.9391	0.9446	0.9501	0.9529
22	0.8679	0.8734	0.8788	0.8834	0.8889	0.8944	0.8998	0.9053	0.9108	0.9163	0.9218	0.9273	0.9327	0.9382	0.9437	0.9464
24	0.8620	0.8675	0.8729	0.8775	0.8829	0.8883	0.8938	0.8992	0.9047	0.9101	0.9156	0.9210	0.9265	0.9319	0.9373	0.9401

1 mbar = 1 hPa = 10.20 mm WG 1 mm WG = 0.0981 mbar = 0.0981 hPa

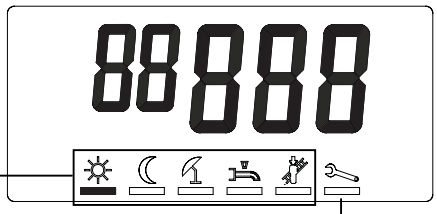
The heating and DHW ratings (on versions -C and -W) can be reduced.
Procedure see Ch. 6.3.3

6.1 Operating levels

The operation is divided into two operating levels. Level 1 is the end user level, and can be accessed directly. If an FS (remote control station) is fitted, only the chimney sweep function can be called up in level 1.

Level 2, The heating engineer level is protected by a CODE.

Operating elements



Note: On systems with additional (FS/EM) the functions of the menu are not active and are therefore faded out.

6.2 End user level

6.2.1 Display mode

① Normal temperature setpoint active

② Night setback temperature setpoint active

③ Summer time operation active

④ System in Standby operation

⑤ Frost protection

⑥ Burner in operation (flame signal)

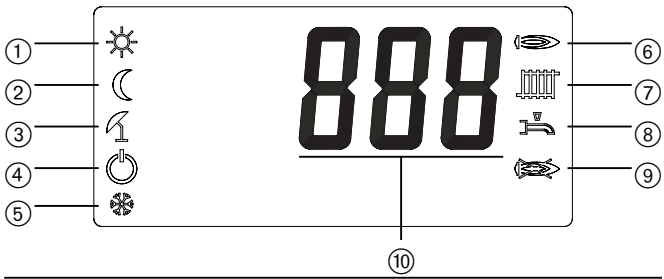
⑦ Heating operation active

⑧ DHW operation active

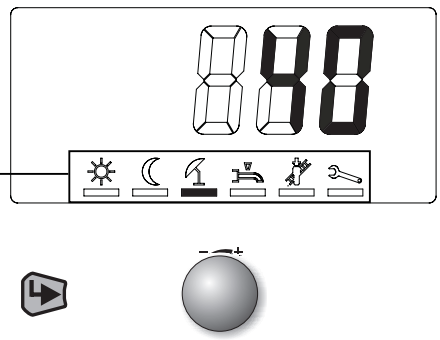
⑨ Burner lockout, restart only possible via reset key

⑩ Flow temperature
– or –
flashing display for a warning or lockout with relevant identification code
– or –
current burner rating in chimney sweep function

Display mode



6.2.2 Setting mode



Setting of setpoints and display of other system values.

Procedure:

- The symbol line is displayed by turning the dial knob.
- By turning the dial knob again, the selection cursor can be placed under the relevant symbol.
  If the selection cursor is moved beyond the left or right positions, the display mode is shown.
  The display mode also appears, if the enter key has not been used for 20 seconds.
- By pressing the enter key, the relevant symbol is activated and the value set is flashing in the display. The other symbols are faded out.
- The value can be changed by turning the dial knob.
- The value is confirmed by pressing the enter key and the selection is exited. All symbols of the symbol line are displayed again.

	Display / Enter	Range	Factory pre-setting	Note
①	Normal temperature setpoint (– – – = Standby operation)	Setback temperature – Max. flow temperature	60°C	☞ **No external sensor connected to B1** Limit value adjustable by Parameter P30, P31 heating engineer level
	Room temperature setpoint (– – – = Standby operation)	15° C – 35° C	22°C	☞ External sensor connected to B1
①	Setback temperature setpoint (– – – = Standby operation)	8° C – Normal temp. setpoint	30°C	☞ **No external sensor connected to B1**
	Setback room temperature setpoint (– – – = Standby operation)	10° C – Room temp. setpoint	15°C	☞ External sensor connected B1
①	S = Summer operation W= Winter operation	S W	W	☞ **No external sensor connected to B1**
	Current / external temp. Change-over temperature Summer/Winter	10° C – 30° C	20°C	☞ External sensor connected to B1
①	DHW setpoint (– – – = DHW operation off)	30°C – 65°C	50°C	☞ Version -W (B3 connected)
	Chimney sweep operation variable ratings setting	Min. rating – Max. rating	– – –	☞ Ch. 10.3 ☞ Ch. 5.5.2
	CODE input Entry into heating engineer level	0 – 254	– – –	☞ Ch. 6.3.1

① If the WTC is controlled remotely (via N1 see Ch. 4.6.5) or if an external controller (WCM-FB and/or WCM-EM) is connected, the menu points are faded out as the settings are carried out on the controllers.
If communication fails the symbols for emergency operation are faded in.

6.3 Heating engineer level

6.3.1 Entry into the level

- Turn dial knob until selection cursor under “Spanner” symbol.
- Press enter key.
- Set Service CODE (11).

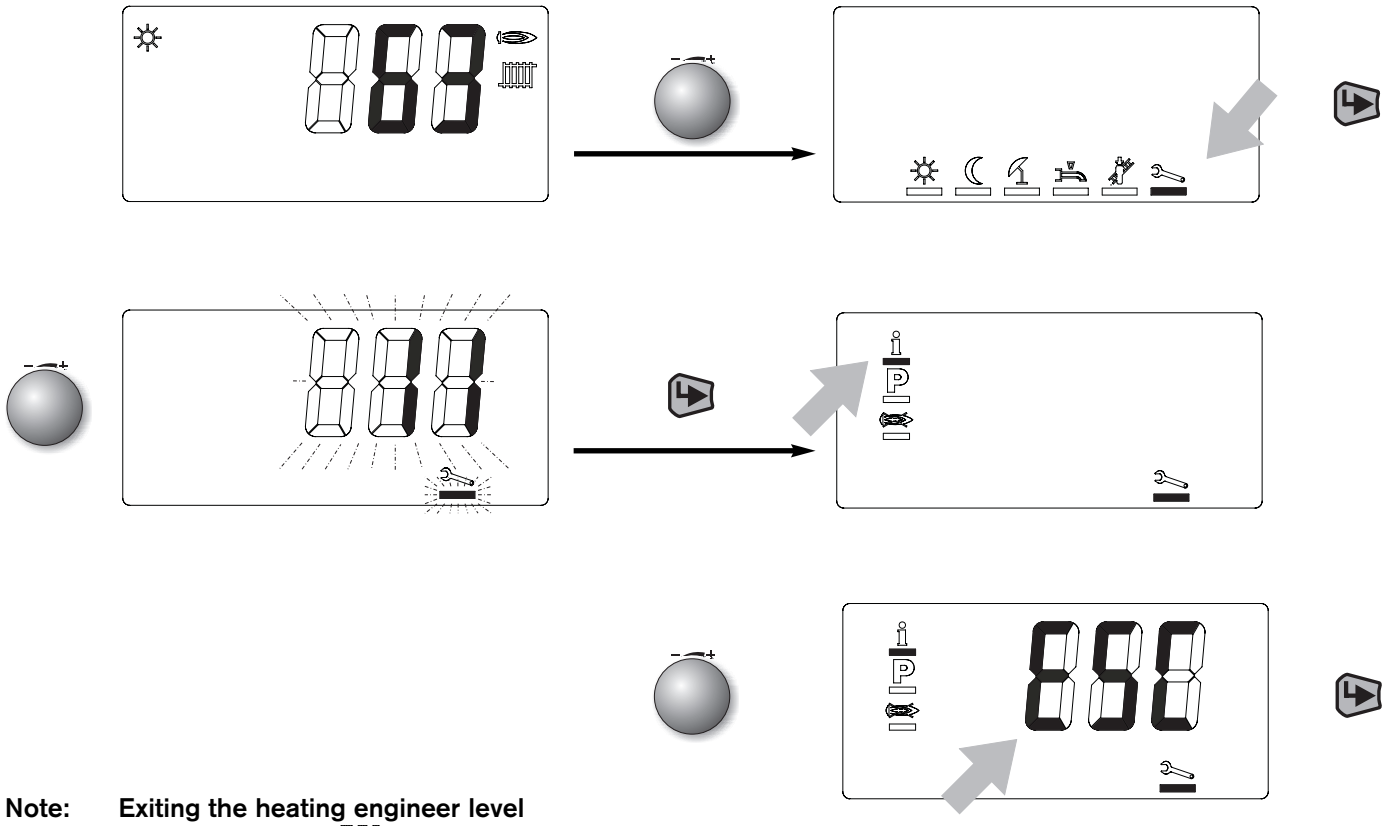
☞ If an incorrect code is entered, the entry level is exited!

- Press enter key.

The heating engineer level symbol line is displayed.

i = Info mode
P = Parameter mode
= Error memory

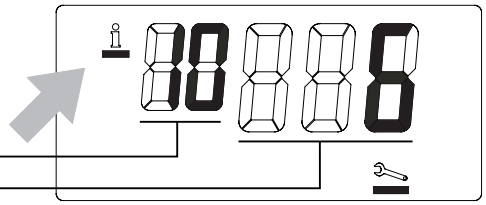
By turning the dial knob, the selection cursor can be placed under a symbol.
The selection is activated by pressing the enter key.



Note: **Exiting the heating engineer level**
Turn dial knob until ESC is displayed, then press enter key.

6.3.2 Info mode

Here, specific system values can be displayed.
By turning the dial knob, the individual operating status values can be interrogated.
Each value can be assigned to the next list via a row number.



Code	Process value	*Limited display*	Unit
	System		
I10	Operating phase (see also ⇨table operating phases Ch. 6.3.2)		
I11	Load setting		[%]
I12	Damped external temperature of weather compensation	**B1**	[°C]
I13	Heat demand	**FS/EM heat circuit**	[°C] or [%]
I14	SCOT® base value		[Point]
I15	Temperature setpoint remote control operation 4…20 mA	**N1**	[mA]
	Actuators		
I21	Start signal gas correcting element		[%]
I22	Set speed PWM pump	**PWM pump**	[%]
I23	Fan speed		[x10 RPM]
	Sensors		
I30	Flow temperature (safety temperature sensor)		[°C]
I31	Flue gas temperature		[°C]
I32	Ionisation signal (SCOT® actual value)		[Point]
I33	External temperature B1	**B1**	[°C]
I34	DHW temperature (versions -W/-C)	**B3/-C**	[°C]
I37	Throughput value (version -C)	**-C**	[l/min]
I38	Temperature calorifier sensor B10	**P1/P2**	[°C]
I39	Temperature calorifier B11	**P2 / P3**	[°C]
	System info		
I40	Daily switch cycle counter burner 0...999		
I41	Daily operating hours counter burner 0...255		h
I42	Switch cycle counter burner		[x 1000]
I43	Operating hours counter burner		[h x 100]
I44	Software version (v = Version; r = Revision)		v.r
I45	Time since last service		[h x 10]
	ESC = exit menu		

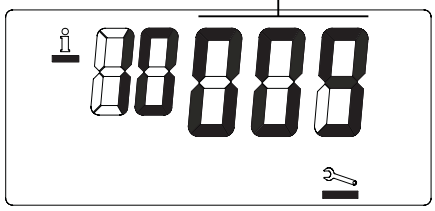
⇨ Entries in column “Limited display” show the relevant configuration or the relevant features, for which the value is displayed.

Resetting temporary information

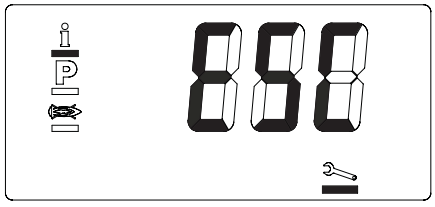
☞ The daily counters I40, I41, the damped external temperature I12 and the time since last service I45 when displayed are reset by pressing the key (approx. 2 seconds) .
Once I45 has been reset, the flashing spanner symbol goes out.

Table of operating phases

Display	Phase	description
1	1	Standby control fan
2	2	Prepurge speed achieved
Tv...0	3	Countdown of prepurge in secs.
4	4	Ignition speed achieved
0...Tz	5	Flame formation time in 0.1 x secs.
6	6	Burner in operation, control active
7	7	Gas valve control V1
8	8	Gas valve control V2
9	9	Post-purge speed achieved and post-purge
0	0	Burner off

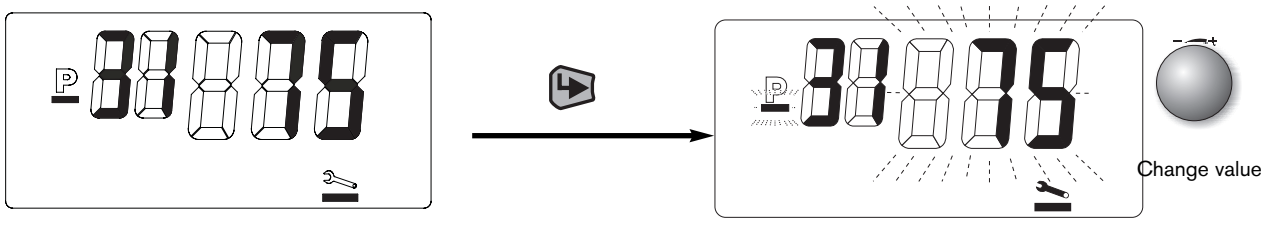


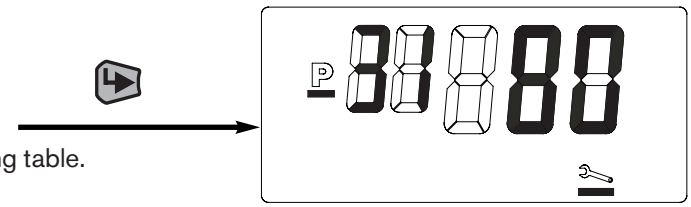
Note: Exiting the Info level:
Turn dial knob until ESC is displayed and confirm with key.



6.3.3 Parameter mode

By turning the dial knob, the parameter list can be reviewed and changed if required.
If a parameter value is to be changed, press the key. The P symbol and the value of the parameter flash. To exit without changing the parameter value press key again, to change the value, turn the dial knob. To save and exit press key.
Exit parameter mode by turning the dial knob until ESC is displayed. Then press key.





The setting parameters can be found in the following table. The table also shows the factory settings in column WTC 15/25.

Des.	Limited display	Parameter value	Factory presetting	Unit	Explanation	Special features
Basic configuration						
P10		*3 digit*	**H A P**		Current configuration (⇨ Ch. 5.4.1)	1. Character:H = Heating unit C = Combi unit W = DHW unit
		Code	*xyz*		Save configuration (⇨ Ch. 5.4.1)	2. Character:A = Ext. sens. fitted t = Temp.-remote control
			---		Delete configuration	3. Character:P= PWM pump
P11		*E / F / EA*	**E**		Nat. Gas / LPG / Nat. Gas-flue gas shut off dev.	EA for oper. w. flue gas shut off dev.
P12		*1, A…E*	**1**		Boiler address	
			1		Single unit operation	1 : eBus supply active
			A…E		Multiple boiler operation (cascade), or remote controlled operation via DDC system	A : eBus supply active B…E : switchable eBus supply ⇨ parameter P71
P13	x	*0 ... 7*	**1**		Function variable output **MFA**	⇨ Ch. 7.6.4
		0			Liquid petroleum gas pre-valve	
		1			Forward reporting of lockout	
		2			Feeder pump in front of hydr. de-couple	
		3			Heating circuit pump	
		4			DHW load pump, 3 way change-over valve	
		5			DHW circulation pump	
		6			Program controlled via FS, Addr. #1 Circulation program	
		7			Heating circuit pump, remote controlled via WCM-FS with address #1	
P14		*0 ... 7*	**1**		Function variable output **VA**	⇨ Ch. 7.6.4
		0			Liquid petroleum gas pre-valve	
		1			Forward reporting of lockout	
		2			Feeder pump in front of hydr. de-couple	
		3			Heating circuit pump	
		4			DHW load pump, 3 way change-over valve	
		5			DHW circulation pump	
		6			Program controlled via FS, Addr. #1 Circulation programme	
		7			Heating circuit pump, remote controlled via WCM-FS with address #1	
P15		*0, 1, 3*	**1**		Function input H1	⇨ Ch. 7.6.4
		0			Heating circuit release	
		1			Heating circuit setback / normal	
		3			Standby function w. frost protection	
P17		*0 ... 3*	1		Function input H2	⇨ Ch. 7.6.4
		0			DHW release	
		1			DHW setback / normal	
		2			Heating operation with special level	
		3			Floor thermostat: Emergency-Off	
P18	x	*8 ... (P31)*	**60**	°C	Special level heating operation	Only if P17 = 2
Weather compensated						**Only if external sensor fitted!**
P20	x	*-4 ... 0 ... 4*	**0**	K	Temperature correction external sensor	
P21	x	*0 / 1*	**0**	-	Evaluation building	These settings are only active,
		0			light construction	if no WCM-FS (accessory)
		1			heavy construction	is fitted or if this fails
P22	x	*2.5 ... 40.0*	**12.5**		Heating reference line gradient	
		– – –			Deactivation	
P23	x	*-10 ... 10*	**5**	°C	System frost protection	

Des.	Limited display	Parameter value	Factory presetting	Unit	Explanation	Special features
Heat exchanger						
P30		*8 ...* *(P31- P32)*	**8**	°C	Minimum flow temperature setpoint	
P31		*(P30 + P32)* ... 85	**78**	°C	Maximum flow temperature setpoint	
P32		*(±) 1 ... 7*	**(±) 3**	K	Flow temperature switch differential	
P33		*80 ... 120*	**120**	°C	STB switch off temperature flue gas duct	⇨ Ch. 4.9
P34		*1 ... 15* ---	**5**	min	Burner rapid cycle interlock, Deactivated	
P35		*5 ... 31*	**16** ①	%	Start gas quantity at ignition	
P36		*33...100* ②	**33** ②	%	Minimum boiler rating	
P37		*33...100* ②	**100**	%	Max. rating heating	
P38	x	*33...100* ②	**100**	%	Max. rating DHW operation	**DHW sensor connected**
P39		-0,5 ... +1	**0**	%-p.	O_2 correction ⚠ **Important note: Check alteration O_2 content with flue gas analysis**	**Value is equal to ≈ change O_2** ⇨ Ch. 5.5
Boiler circuit pump						
P40		*0 / 1* *0* *1*	**0**		Pump type of operation HC operation ->PU lag HC operation ->PU continuous run	⇨ Ch. 7.6.2
P41	x	1 --- 60	**3**	min	Pump lag time of heating operation (for DHW operation 3 min)	when P40 = 0 With calorifier control no lag for DHW
P42	x	*20...(P43)*	**30**	%	Minimum pump rating heating	**Only with PWM pump**
P43	x	*(P42)...100*	**60** ③	%	Maximum pump rating heating	
P44	x	*0...7* ---	**4**	K	Volume flow control in conjunction with hydr. de-couple Deactivated	Only in conjunction with hydr. de-couple and de-couple control P3 Ch. 7.6.7 only with PWM pump
P45	x	*20...100*	**60**	%	Pump rating domestic hot water	Only with PWM pump
Domestic hot water operation vers. W						
P50	x	*10 ... 30*	**20**	K	Flow temperature overload at domestic hot water loading	
P51	x	*-1 ... -10*	**-3**	K	Switch differential domestic hot water	
P52	x	*10 ... 60* ---	**30**	min	max. DHW load time Deactivated	Once time span has elapsed the unit switches over into heating operation for the same amount of time
P53	x x	*-5 ... -20*	**-15**	K	Reduction value tank temperature in setback operation	**P53 is only display if P17 = 1** ⇨ Ch. 7.3
Domestic hot water operation vers. C						
P60	x	*30 ... 60-* ---	**55**	°C	Comfort setpoint, keep warm temp. Deactivated	⇨ Ch. 7.4
P61	x	*-15 ... -30*	**-15**	K	Switch differential Comfort setpoint	
P62	x	*1* ---	**1**		Boost rating overload Deactivated	
		ESC			Exit menu	

Des.	*Limited display*	*Parameter value*	*Factory setting*	*Unit*	*Explanation*	*Special features*
System + service						
P70		*100 ... 500*	**250**	h x10	Time untill next service	Once time set has elapsed the display shows a flashing screwdriver. The service can be reset in Info mode. ⇨ Ch. 6.3.2
P71	**x**	0 /1	1		eBus supply active	⇨ Available if P12 = B…E
P72		-0.5 ... +0.5	**0**	% point	O_2 correction in partial load range (25…50%) **⚠ Important note: When changing O_2 content check with flue gas analysis !**	**Value equal to ≈ change O_2 content** ⇨ Ch. 5.5
ESC					Exit menu	

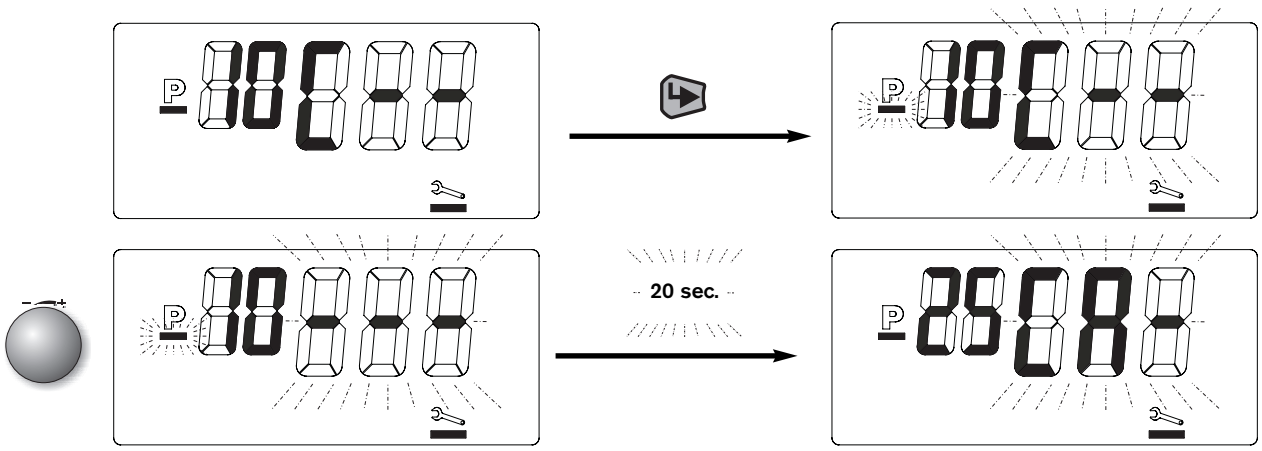
☞ In the parameter level only the parameters required are displayed (compare column *'Limited display')*. These depend on the respective unit configuration (⇨ Ch. 5.4.1 Automatic configuration).

① On WTC 32: Factory setting = 13
② On WTC 25: Parameter value = 32…100
Factory setting = 32
WTC 32: Parameter value = 31…100
Factory setting = 31
③ On WTC 25: Factory setting = 70
WTC 32: Factory setting = 80

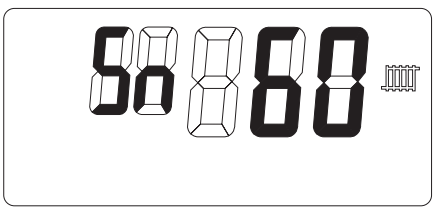
Notes for special parameters

P10 - WTC configuration
This parameter is used to reset the configuration manually. This is important, if the system is extended at a later stage, e.g. if an external sensor is fitted or if a unit version -H is converted to version -W.

Procedure:
- Call up entry mode by pressing key.
- Turn dial knob until --- is displayed.
  To cancel, select ESC with dial knob and confirm with key.
- To start a new configuration press key. After approx. 10 seconds, the new configuration is displayed flashing. It is automatically saved after 24 hours or by pressing key whilst the display is flashing.

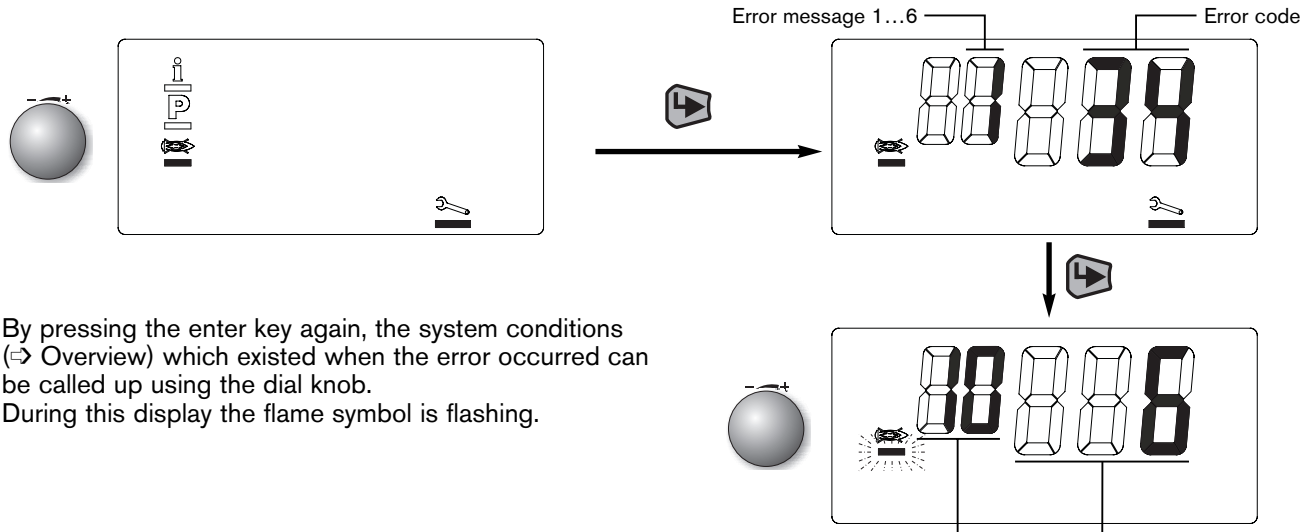


P17/P18 special level
If parameter P17 has been programmed for the function Special level with the setting 2, the WTC can provide an additional temperature level. If contact H2 is closed, the boiler heats up to the temperature level defined in parameter P18. Other heat demands are not considered, however, DHW operation has priority. If the contact is open, the boiler
setpoint temperature is defined depending on the control variation available (⇨ Ch. 7). This function can be activated in summer and winter operation.



6.3.4 Error memory

Here, the last 6 error messages can be called up in the form of an error code (see Ch. 9) of the WTC using the dial knob.



By pressing the enter key again, the system conditions (⇨ Overview) which existed when the error occurred can be called up using the dial knob.
During this display the flame symbol is flashing.

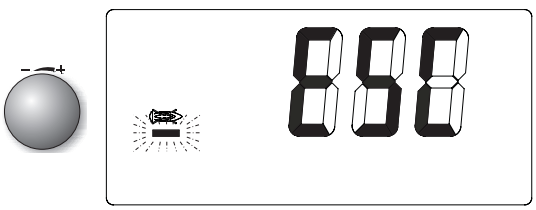
Overview system conditions

Des.	Process value	*Limited display*	Unit
	Burner, system		
10	Operating phase (⇨ Ch. 6.3.2)		
11	Load setting		[%]
16	Burner run time up to time of lockout (from value > 255 sec. the counter starts at beginning)		[sec]
	Type of operation		
20	H = Heating W = DHW		
21	Start signal gas setting elem.		[%]
	Sensors		
30	Flow temperature at safety temperature sensor		[°C]
31	Flue gas temperature		[°C]
32	Ionisation signal		[p.]
33	External temperature B1	**X**	[°C]
34	DHW temperature B3	**X**	[°C]
ESC	Exit menu		

⇨ **Table of warning and error messages, cause and rectification of lockouts see Ch. 9.**

Exiting the level

Turn the dial knob until ESC is displayed and confirm with ▶ key.



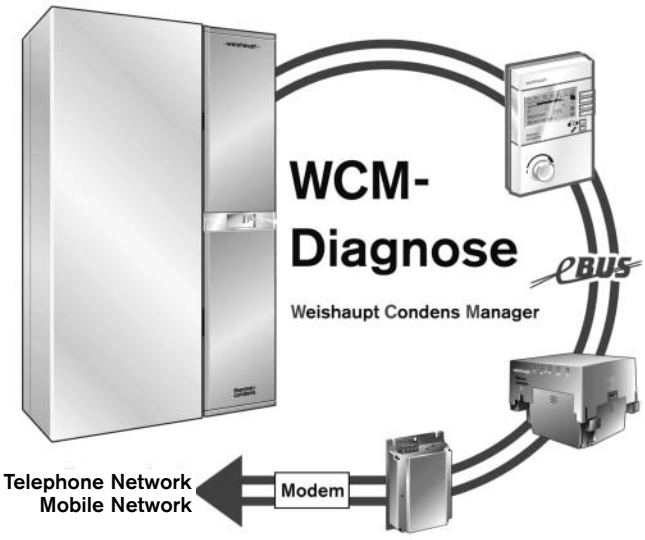
6.4 Service functions via PC interface

The Weishaupt Condens Manager (WCM) is equipped with an interface for PC connection. Data transfer is carried out via Weishaupt eBUS adapter (W-EA) from eBUS via RS 232 interface to PC.
The W-EA, as well as the Service Software WCM Diagnostic are available as accessories.

Your PC should meet the following requirements:
- Processor from 400 MHZ
- Operating system WINDOWS 95 or higher
- RAM ≥ 64 MB
- Resolution (screen/grafics card): 800 x 600 Pixel

The software makes the following functions available:
- Display of operating conditions of burner, fan, pump and gas valve.
- Display of temperatures, speeds, ionisation current, as well as other setpoints and actual values.
- Graphic display of boiler and system data for longer periods of time.
- Evaluation of system records with error statistics.
- Parameter setting of special system parameters.

Service software WCM diagnostic



6.4.1 Special system parameters

Most of the control and limit value parameters relating to the system can be set via the heating engineer level. In rare cases it may be necessary to adapt the condensing boiler to the heating system using these system parameters.

The Software WCM Diagnostic is required to carry out this process. The use of the Software and a detailed description of the system parameters can be found in the user instructions of the Software.

Des.	Parameter	WTC 15	WTC 25	WTC 32	Unit
A1	Heating controller P ratio	110	110	110	x0.25
A2	Heating controller I ratio	2	2	2	x0.125s
A3	Heating controller D ratio	32	32	32	x0.032s
A4	WTC-C DHW controller P ratio	–	80	–	x0.25
A5	WTC-C DHW controller I ratio	–	1	–	x0.125s
A6	WTC-C DHW controller D ratio	–	20	–	x0.032s
A7 ⚠	Max. temperature range flow/flue gas	45	45	45	K
A8	Boiler rating at ignition	84	82	62.1	%
A9 ⚠	Max. temperature gradient flow	1.0	1.0	1.5	K/s
A10	Max. fan speed	4380	4500	5940	rpm
A11	Boiler rating delayed heating operation ⇨ Ch. 7	33	32	31	%

Parameters marked in this way are safety relevant for the operation of the system. Changes are only permitted following discussions and approval from Weishaupt service department.

The WCM not only carries out the regulating and control functions for the boiler, but also the control of the heating systems and domestic hot water operation.
The heating controller contains basic functions which have an effect in all the following variations:

- The boiler flow temperature is limited upwards by the max. flow temperature (⇨ P31) and downwards by the min. flow temperature (⇨ P30).
- The WCM is equipped with a burner rapid cycle interlock, which inhibits frequent burner shutdowns (⇨ P34, setting --- deactivates this function).
- When switching on the burner, the rating of the WTC in heating operation is limited for 60 secs to the value set in parameter A11.
  Furthermore, during this time the switch differential (⇨ P32) is doubled. This leads to longer burner run times.

The following variations are possible:

7.1 Constant flow temperature control

The simplest control, without additional sensors or thermostats, controls the flow temperature to the value set in the end user level (⇨ Ch. 6.2.2). With increased heat demand the flow temperature should be increased, with less heat demand it should be reduced accordingly.

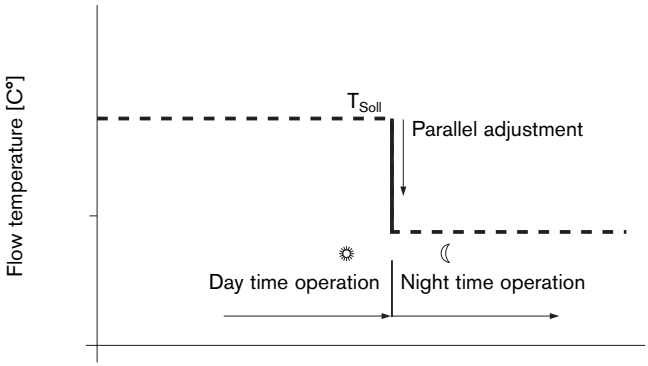
Note: If day/night time change-over is required to comply with local regulation, a digital clock (WCM-DU) is required for this regulating variation.

The clock is connected to the following plugs in the installation area:
- Supply to clock = plug 2.
- Channel for heating program = plug 3.
- Channel for DHW program = plug 4 (see Ch. 7.5)

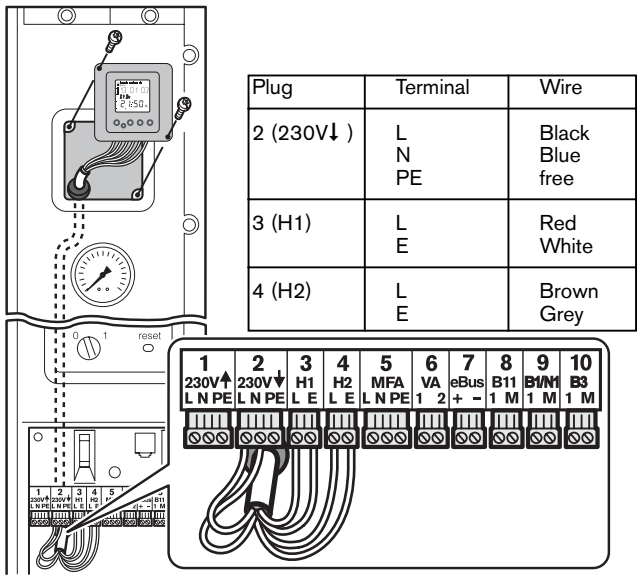
☞ Observe installation and operating manual WCM-DU.

Parameter setting (in heating engineer level):
- ❑ Heating program for setback/normal temperature ⇨ P15 = 1.
  Heating program for standby/normal temperature ⇨ P15 = 0 (boiler cools to min. flow temperature P30).
- ❑ Pump on lag ⇨ P40 = 0.
- ❑ Enter Summer/Winter change-over via end user level (symbol Ch. 6.2.2)
- ❑ Domestic hot water program for setback/normal operation ⇨ P17 = 1.

Diagram flow temperature



Connection for the clock



Plug	Terminal	Wire
2 (230V↓)	L N PE	Black Blue free
3 (H1)	L E	Red White
4 (H2)	L E	Brown Grey

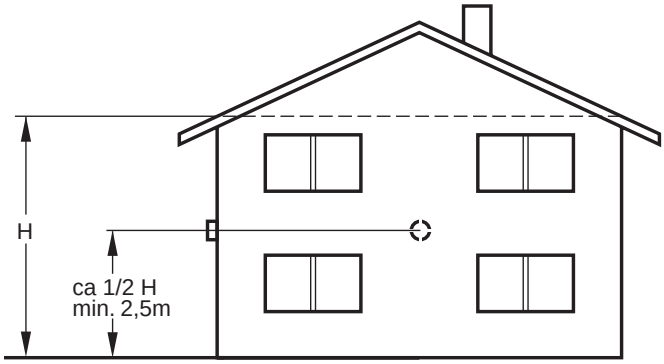
7.2 External temperature dependent flow temperature control

An external sensor QAC 31is required for this variation. The sensor should be fitted to a north or northwest facing wall.

Avoid the following unfavourable factors:
- Direct exposure to the sun.
- Installation below a balcony, eaves or similar
- Extraneous heat sources (chimney, through windows, through ventilation openings).
- Do not paint sensor housing.

Note: If day/night time change-over is required to comply with local regulation, a digital clock (WCM-DU) is required for this regulating variation.

Installation example

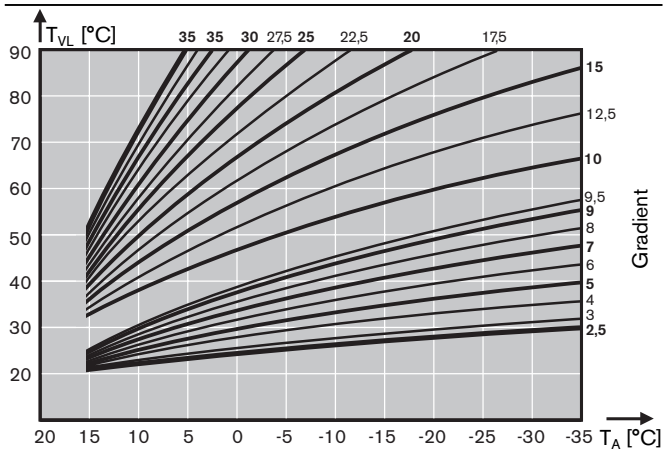


The temperature measured by the external sensor is averaged over time by a mathematical function (⇨ reset the average determination see Ch. 6.3.2). The current flow temperature is calculated under consideration of the type of building (⇨ heating engineer level P21) and the gradient set (⇨ heating engineer level P22)(see diagram heating reference line).

The room temperature setpoint, adjustable in the end user level, is also considered (see diagram influence room temperature setpoint).
If using an inbuilt digital clock (WCM-DU) different room temperature setpoints are possible for day/night.

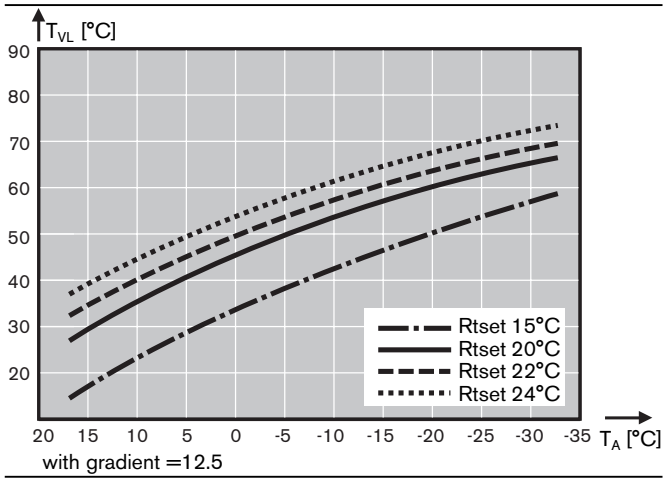
☞ When fitting a WCM remote control FB (accessory) the setting of the room temperature setpoints is carried out by remote control. (⇨ see installation and operating manual WCM-FB).

Diagram heating reference line



Parameter setting:
- ❑ P15 = 1 (when using a digital clock)
- ❑ P20 = -4...0...4 (Temp. correction external sensor)
- ❑ P21 = 0/1 (Evaluation building)
- ❑ P22 = 12.5 (Heating reference line gradient for radiator heating circuit)
  = 8 (Heating reference line gradient for underfloor heating circuit)

Diagram influence room temperature setpoint



7.3 DHW function (only version -W)

In this version, the WTC is equipped with a 3 way valve.
The DHW control is carried out by a 2 point controller with adjustable hysteresis.
The domestic hot water operation has priority over the heating operation.
DHW operation is carried out when the temperature in the water heater is $T_{DHW} < T_{DHW}$set - P51 (P51 ⇨ heating engineer level).
Modulation is carried out to the flow temperature of the WTC, which is increased by temperature increase P50.
DHW operation is switched off, when the DHW sensor has reached the setpoint T_{DHW}. Following this the pump continues to run for 3 minutes, the 3 way valve is set for DHW operation. DHW operation can also be limited in time (P52 ⇨ heating engineer level). It is possible to set a setback level for the DHW temperature using a subtraction value (P53 ⇨ heating engineer level).

A heat up procedure is initiated in setback operation, if the DHW minus the subtraction value is not maintained.
This requires either the digital clock WCM-DU (connection of second channel to plug 4 [H2]) or the remote control WCM-FB, both available as accessories.

Setting both temperatures:
- Normal temperature in end user level, symbol
- Setback temperature in heating engineer level: normal temperature - P53

Parameter settings:
- ❑ Normal temperature, end user level symbol
- ❑ P50 Flow. temperature overload (recommended 20 K)
- ❑ P51 Switch differential DHW
- ❑ P52 max. DHW operating time
- ❑ P53 Setback temperature (only when using WCM-DU)

7.4 DHW function (only version -C)

On version -C a plate heat exchanger is integrated into the WTC for domestic hot water operation. The throughput quantity is determined and used for the control. The outlet temperature is controlled and monitored by a temperature sensor. A flow sensor recognised the start of demand (quantity $> 2.3\ ^{l}/_{min}$) and the end of demand.

The following functions are integrated to improve domestic hot water operation:
- Keep warm function (comfort function):
  During the normal DHW operating phase, the plate heat exchanger is heated up to an adjustable temperature and held at that temperature. This means hot water is available immediately.
  If using the digital clock WCM-DU with connection to plug 4 (H2), this keep warm function can be switched off at night.
- Boost function:
  During the boost function, the burner rating is increased by approx. 15% depending on the DHW outlet temperature set (≥ 50° C) and the current water quantity used ($> 4\ ^{l}/_{min}$) to increase the amount of hot water available.

Once water has been drawn off or the comfort function has ended, the 3 way valve in winter operation remains in the DHW position for a further 3 minutes. In summer operation it remains in the DHW position permanantly.
The DHW quantity in the unit is limited to approx. 7.5 l/min (± 10 %). This avoids a temperature drop if more water is drawn off.

Burner off $T_{DHW} > T_{DHWset} + 5$ K
Burner on $T_{DHW} < T_{DHWset}$

Parameter setting:
- ❑ DHW temperature in end user level, symbol
- ❑ P38 - max. rating in DHW operation (100% recommended)
- ❑ P60 - Comfort function (keep warm temperature)
  Switch off of comfort function when P60 = "---"
- ❑ P61 - Hysteresis comfort operation
- ❑ P62 - 1 Booster activated
  0 Booster deactivated

7.5 Warm water operation (version -H / -H-0)

The WTC can control an external DHW circuit. To do this, the DHW sensor B3 must be connected.
The WCM-CPU recognises this modification and indicates the configuration in parameter P10 with a W.

A change-over valve or a separate DHW pump can be driven via outputs VA and MFA (electrical connection see Ch. 4.6.2 and Ch. 4.6.3).
The function is identical to the DHW function of version -W.

7.6 Special functions

7.6.1 PWM pump

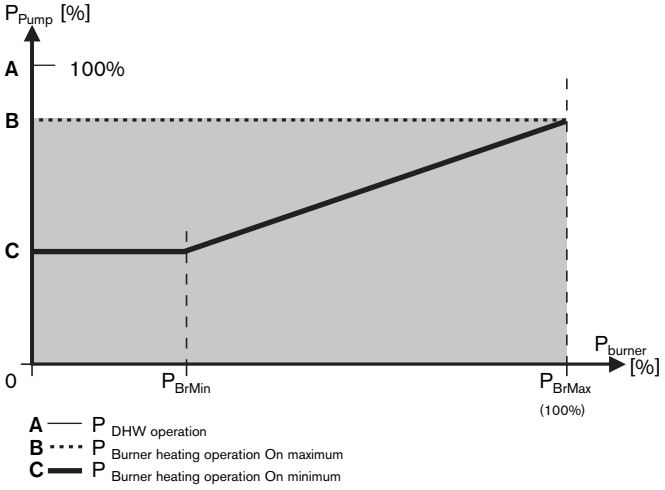
The PWM pump has variable speed and is controlled by the Weishaupt Condens Manager. The pump rating of the boiler circuit is assigned to the required burner rating. The modulating limits for the pump can be adjusted (⇨ P42, P43 heating engineer level).
The pump is operated at minimum rating when the burner is switched off.

DHW operation
Immediately after switch-over to DHW operation, the pump is operated at 40% rating. After a period of 3 minutes, calculated from the switch-over to DHW operation and during the first minute in heating operation the pump rating is the value defined in P45.

Heating operation
During the first minute in heating operation the pump is operated at the rating defined in P43. Once modulation has been released, the control is carried out within the programmed load limits (P42/P43).

Parametere settings:
- ❑ P42 = minimum pump rating (C)
- ❑ P43 = maximum pump rating (B)
- ❑ P45 = pump rating DHW operation (A)

Diagram regulating range PWM pump



7.6.2 Pump control logic in heating operation

The following pump control logic is valid for the 3 stage pump and the PWM pump.
Depending on the type of operation set (⇨ P40 heating engineer level) the pump functions for the 3 different operating conditions, Standby, Summer and Winter operation are shown in the control matrix.
The pump run on time (ROT) can be set in P41.

Overview of function of internal pump

Type of operation	Standby or Summer			
Control variation	with external sensor		without external sensor	
Setting P40	P40 = 1	P40 = 0	P40 = 1	P40 = 0
Pump operation	ROT ⇨ Off	ROT ⇨ Off	Cont. run	ROT ⇨ Off

Type of operation	Winter			
Control variation	with external sensor		without external sensor	
Setting P40	P40 = 1	P40 = 0	P40 = 1	P40 = 0
Pump operation	Cont. run	ROT ⇨ Off[1)]	Cont. run	Cont. run

[1)] The functions stated for the pump control are valid for setback operation. In normal operation the pump runs continuously independent of P40.

7.6.3 Regulating the PWM pump in DHW operation

The regulation of the pump can be set via parameter P45 (heating engineer level) between 20% and 100%.

7.6.4 Freely selectable inputs and outputs

Using the two freely selectable outputs MFA (plug 5) and VA (plug 6) a multitude of applications can be realised. The MFA is a potential linked relay output with a connection rating of 150 W. The VA output is potential free. Both outputs can be parameterised for the same functions. to do this use P13 (for output MFA) and P14 (for output VA).

- **Liquid Petroleum gas pre-valve (P13, P14=0)**
  As soon as the burner starts due to a heat demand, the contact is closed. This allows the control of an additional liquid petroleum gas valve.
  This option cannot be used on installations with gas pressure switch.

- **Lockout and warning transmission (P13, P14=1)**
  The contact is open if the installations is operating without fault. As soon the WCM recognises a warning which has been present for at least 4 minutes, the contact is closed. Lockout faults immediately initiate the switching process.

- **Feeder pump of hydraulic de-couple (P13, P14=2)**
  The external pump is controlled in the same way as an internal heating circuit pump. That means in DHW operation as well as heating operation.

- **External heating circuit pump (without WCM-FS) (P13, P14=3)**
  The external heating circuit pump is only activated during the heating operation.

- **DHW load pump or 3 way change-over valve – only available if DHW sensor is fitted (P13, P14=4)**
  The relay contact is closed depending on the domestic hot water demand.
  The external DHW load pump supplies a water heater after a hydraulic de-couple.

- **DHW circulation pump (without WCM-FS) (P13, P14=5)**
  The relay contact is closed depending on the DHW circuit release.

- **DHW circulation pump, controlled by WCM-FS, address #1, #2 or # 1+ 2 (P13, P14=6)**
  The relay contact is closed depending on the switch times of the circulation program of the WCM-FS.

- **Heating circuit pump, direct pump circuit, controlled by the heating program of the WCM-FS, address #1, #2 or # 1+ 2 (P13, P14=7)**
  Using this programming, it is possible to operate a pump heating circuit with the pump connected to output MFA or VA of the heating program of the WCM-FB. That means the type of operation of the pump is independent of the boiler pump fitted.

Variable digital input H1 (heating release)

- **Heat exchanger release in heating operation (P15=0)**
  Heating operation is released with the activation of the digital input. If the contact is open the WTC is blocked for heating operation. Heating circuits which are controlled via extension module (WCM-EM) continue to operate.

- **Heating circuit setback/normal setpoint (P15=1)**
  If the contact is closed the normal setpoint becomes effective. If the contact is open, the setback setpoint becomes effective. The function is not available with WCM-FS/WCM-EM heating circuits.

- **Type of operation Standby for heating operation (P15 = 3)**
  If the contact is closed, the WTC and all heating circuits controlled by WCM-EM/WCM-FS are driven to Standby operation. In the standby mode of heating operation frost protection and DHW operation contiue to be active.

Variable digital input H2 (DHW release)

- **Heat exchanger release in DHW operation (P17=0**)
  DHW operation is released with the activation of the digital input. If the contact is open the WTC is blocked for DHW operation.

- **DHW setback/normal setpoint (P17=1)**
  If the contact is open, the reduced DHW setpoint (version -W) is given. This function is only given without FS.
  Note:
  If a WCM-FS is integrated into the system, H2 (P17) has no effect on the DHW setpoint. It is possible to switch output VA in function DHW circulation pump (P14=5) depending on H2.

- **Heating operation with special level (P17=2)**
  If the contact is closed the current supply setpoint switches over to the setpoint defined with parameter P18. This function is also effective in Summer operation. Higher setpoints of additional heating circuits are also considered, DHW operation takes priority.

- **Lockout function (P17=3)**
  This function is intended for the connection of a underfloor heating thermostat.
  If the contact of the thermostat is closed, the unit and pump switch off, frost protection is not activated. At the same time warning F24 is displayed.
  If the contact opens, the warning automatically terminates.

7.6.5 Regulation with one calorifier sensor

For this type of regulation a calorifer sensor (NTC 5kΩ, Order No.: 660 228) has to be connected to sensor input B10 (⇨ Ch. 4.6.6).
Input B11 is not connected.
This type of operation makes sense, if only the top part of the calorifer is to be loaded by the WTC.
The loading of the lower part of the calorifier area is carried out via external heat source.

Switch on criteria for the WTC (DHW and heating operation):
B10 < (system setpoint − hysteresis)

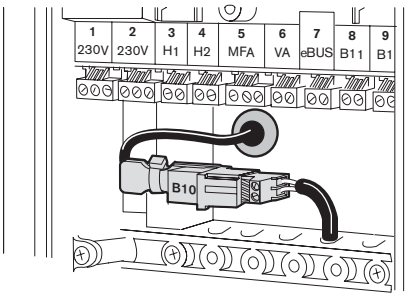
Switch off criteria for the WTC (DHW and heating operation):
B10 > (system setpoint + hysteresis)

Note: The hysteresis can be set in the heating engineer level under parameter P32.

Temperature control is carried out with the flow sensor inbuilt in the WTC.
DHWrelease is given by sensor B3, the release for heating operation is given by sensor B10.
In DHW operation the 3 way valve connected to MFA output is also activated.
The boiler pump is controlled without run on.

Sensor connection variation P1

P1:



Note:
- To operate the direct pump heating circuit after the calorifier, an FS with address #1, #2 or #1 + 2 must be connected to the system.
  Programming WCM CPU:
  Pump on MFA output P13 = 7 or
  Pump on VA output P14 = 7
- The operation of a separate DHW circuit before the calorifier is not possible.
- If the MFA/VA is operated in function DHW pump (P13/P15 = 4), the pump does not run on after DHW operation is completed.

7.6.6 Regulation with two calorifier sensors

For this type of regulation calorifier sensors (NTC 5kΩ, Order No.: 660 228) must be fitted to both sensor inputs B10/ B11(⇨ Ch. 4.6.6).
This type of regulation should be selected if full loading of the total calorifier by the WTC is required.

Switch on critereia for the WTC (DHW and heating operation):
B10 < (system setpoint − hysteresis)
and
B11 < (system setpoint − hysteresis)

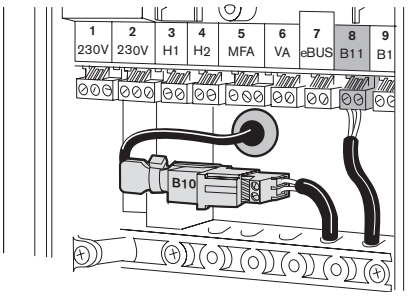
Switch off criteria for the WTC (DHW and heating operation):
B11 > (system setpoint − hysteresis)

Note: The hysteresis can be set in the heating engineer level under parameter P32.

Temperature control is carried out with the flow sensor inbuilt in the WTC.
DHW release is given by sensor B3, the release for heating operation is given by sensor B10.
In DHW operation the 3 way valve connected to MFA output is also activated.
The boiler pump is controlled without run on.

Sensor connection variation P2

P2:



Note:
- To operate the direct pump heating circuit after the calorifier, an FS with address #1, #2 or #1 + 2 must be connected to the system.
  Programming WCM CPU:
  Pump on MFA output P13 = 7 or
  Pump on VA output P14 = 7
- The operation of a separate DHW circuit beforethe calorifier is not possible.
- If the MFA/VA is operated in function DHW pump (P13/P15 = 4), the pump does not run on after DHW operation is completed.

Freely selectable inputs and outputs for calorifier control P1/P2

Using the two freely selectable outputs MFA (plug 5) and VA (plug 6) a multitude of applications can be realised. The MFA is a potential linked relay output with a connection rating of 150 W. The VA output is potential free. Both outputs can be parameterised for the same functions. to do this use P13 (for output MFA) and P14 (for output VA).

- **Liquid Petroleum gas pre-valve (P13, P14=0)**
  As soon as the burner starts due to a heat demand, the contact is closed. This allows the control of an additional liquid petroleum gas valve.
  This option cannot be used on installations with gas pressure switch.

- **Lockout and warning transmission (P13, P14=1)**
  The contact is open if the installations is operating without fault. As soon the WCM recognises a warning which has been present for at least 4 minutes, the contact is closed. Lockout faults immediately initiate the switching process.

- **Feeder pump of hydraulic de-couple (P13, P14=2)**
  The external pump is controlled in the same way as an internal heating circuit pump. That means in DHW operation as well as heating operation.

- **DHW load pump (P13, P14=4)**
  The external DHW load pump supplies a water heater after a hydraulic de-couple.

- **DHW circulation pump, controlled by WCM-FS,**
  The relay contact is closed depending on the switch times of the circulation program of the WCM-FS.

- **Heating circuit pump, direct pump circuit, controlled by the heating program of the WCM-FS, address #1 or 2***
  Using this programming, it is possible to operate a pump heating circuit with the pump connected to output MFA or VA of the heating program of the WCM-FS. That means the type of operation of the pump is independent of the boiler pump fitted.

Variable digital input H1 (heating release)

- **Heat exchanger release in heating operation (P15=0)**
  Heating operation is released with the activation of the digital input. If the contact is open the WTC is blocked for heating operation. Heating circuits which are controlled via extension module (WCM-EM) continue to operate.

- **Type of operation Standby for heating operation (P15 = 3)**
  If the contact is closed, the WTC and all heating circuits controlled by WCM-EM/WCM-FS are driven to Standby operation. In the standby mode of heating operation frost protection and DHW operation contiue to be active.

Variable digital input H2 (DHW release)

- **Heat exchanger release in DHW operation (P17=0**)
  DHW operation is released with the activation of the digital input. If the contact is open the WTC is blocked for DHW operation.

- **Heating operation with special level (P17=2)**
  If the contact is closed the current supply setpoint switches over to the setpoint defined with parameter P18. This function is also effective in Summer operation. Higher setpoints of additional heating circuits are also considered, DHW operation takes priority.

- **Lockout function (P17=3)**
  This function is intended for the connection of a underfloor heating thermostat.
  If the contact of the thermostat is closed, the unit and pump switch off, frost protection is not activated. At the same time warning F24 is displayed.
  If the contact opens, the warning automatically terminates.

7.6.7 Regulation with hydraulic de-couple

For this type of regulation, the de-couple sensor (NTC 5kΩ, Order No.: 660 228) has to be connected to input B11.

Heating operation:
The WTC controls the modulation in the heating operation directly with the de-couple sensor.

Switch on criteria for the WTC:
B11 < (system setpoint – hysteresis)

Switch off criteria for the WTC:
B11 > (system setpoint – hysteresis)

Note: The hysteresis can be set in the heating engineer level under parameter P32.

Volume flow control:
Due to the temperature difference between the de-couple sensor (B11) and the flow temperature sensor, the PWM pump integrated into the unit adapts its rating to the hydraulic conditions. Parameter P44 is used for setting (control difference).

DHW operation:
With DHW operation, the modulation control is carried out via the internal flow sensor. Consequently the hydraulic alignment of the DHW circuit before the de-couple using a 3 way valve is also possible.
DHW operation is completed with a pump run on of 3 minutes.

Direct pump heating circuit after de-couple

1. **With WCM-FS #1, #2 or #1+2:**
   Programming WCM-CPU:
   Pump on MFA P13 = 7
   Pump on VA P14 = 7

2. **With WCM-DU:**
   Programming WCM-CPU:
   Input H1 P15 = 1
   Pump on MFA P13 = 3
   Pump on VA P14 = 3

Operation of circulation pump

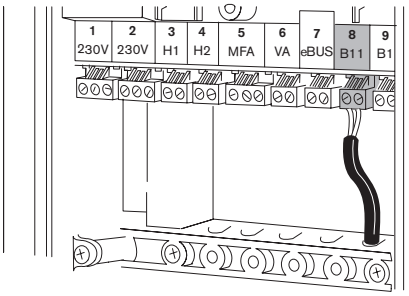
1. **With WCM-FS #1, #2 or #1+2:**
   Programming WCM-CPU:
   Pump on MFA P13 = 6
   Pump on VA P14 = 6

2. **With WCM-DU:**
   Programming WCM-CPU:
   Input H2 P17 = 1
   Pump on MFA P13 = 5
   Pump on VA P14 = 5

Prerequisites:
- Unit version with integrated PWM pump
- De-couple sensor (B11) installed

Sensor connection variation P3

P3



Freely selectable inputs and outputs for de-couple regulation P3

Using the two freely selectable outputs MFA (plug 5) and VA (plug 6) a multitude of applications can be realised. The MFA is a potential linked relay output with a connection rating of 150 W. The VA output is potential free. Both outputs can be parameterised for the same functions. to do this use P13 (for output MFA) and P14 (for output VA).

- **Liquid Petroleum gas pre-valve (P13, P14=0)**
  As soon as the burner starts due to a heat demand, the contact is closed. This allows the control of an additional liquid petroleum gas valve.
  This option cannot be used on installations with gas pressure switch.

- **Lockout and warning transmission (P13, P14=1)**
  The contact is open if the installations is operating without fault. As soon the WCM recognises a warning which has been present for at least 4 minutes, the contact is closed. Lockout faults immediately initiate the switching process.

- **Feeder pump of hydraulic de-couple (P13, P14=2)**
  The external pump is controlled in the same way as an internal heating circuit pump. That means in DHW operation as well as heating operation.

- **External heating circuit pump (without WCM-FS) (P13, P14=3)**
  The external heating circuit pump is only activated during the heating operation. The function is not available with WCM-FS.

- **DHW load pump (P13, P14=4)**
  The relay contact is closed depending on the domestic hot water demand.
  The external DHW load pump supplies a water heater after a hydraulic de-couple.

- **DHW circulation pump (without WCM-FS) (P13, P14=5)**
  The relay contact is closed depending on the DHW circuit release.

- **DHW circulation pump, controlled by WCM-FS, address #1 or 2***
  The relay contact is closed depending on the switch times of the circulation program of the WCM-FS.

- **Heating circuit pump, direct pump circuit, controlled by the heating program of the WCM-FB, address #1, #2 or #1 + 2 (P13, P14=7)**
  Using this programming, it is possible to operate a pump heating circuit with the pump connected to output MFA or VA of the heating program of the WCM-FS. That means the type of operation of the pump is independent of the boiler pump fitted.

Variable digital input H1 (heating release)

- **Heat exchanger release in heating operation (P15=0)**
  Heating operation is released with the activation of the digital input. If the contact is open the WTC is blocked for heating operation. Heating circuits which are controlled via extension module (WCM-EM) continue to operate.

- **Heating circuit setback/normal setpoint (P15=1)**
  If the contact is closed the normal setpoint becomes effective. If the contact is open, the setback setpoint becomes effective. The function is not available with WCM-FS.

- **Type of operation Standby for heating operation (P15 = 3)**
  If the contact is closed, the WTC and all heating circuits controlled by WCM-EM/WCM-FS are driven to Standby operation. In the standby mode of heating operation frost protection and DHW operation contiue to be active.

Variable digital input H2 (DHW release)

- **Heat exchanger release in DHW operation (P17=0**)
  DHW operation is released with the activation of the digital input. If the contact is open the WTC is blocked for DHW operation.

- **DHW setback/normal setpoint (P17=1)**
  if the contact is open, the reduced DHW setpoint (version -W) is given. This function is only given without FB.
  Note:
  If a WCM-FS is integrated into the system, P17 = 1 has no effect on the DHW setpoint. It is only possible to switch outputs MFA and VA with this contact, if these have been configured to 5 (DHW circulation pump).

- **Heating operation with special level (P17=2)**
  If the contact is closed the current supply setpoint switches over to the setpoint defined with parameter P18. This function is also effective in Summer operation. Higher setpoints of additional heating circuits are also considered, DHW operation takes priority.

- **Lockout function (P17=3)**
  This function is intended for the connection of a underfloor heating thermostat.
  If the contact of the thermostat is closed, the unit and pump switch off, frost protection is not activated. At the same time warning F24 is displayed.
  If the contact opens, the warning automatically terminates.

8 Safety and monitoring function

8.1 Temperature monitoring

Boiler circuit
The following functions are combined in the safety temperature sensor of the boiler circuit:
• Safety temperature limiter
• Safety temperature monitor
Temperature aquisition for control and display is carried out via the flow temperature sensor.

Safety temperature monitor STM (boiler)
If the programmed switch off temperature (95°C) is exceeded the fuel supply is shut off and the fan and pump run on is initiated (warning display W12).
An automatic restart of the system follows when the temperature has been below the switch off point for a minimum of one minute.

Safety temperature limiter STL (boiler)
If the programmed STL switch off temperature (105°C) for the boiler circuit is exceeded the fuel supply is shut off and the fan and pump run on is initiated (error message F11).
Once the temperature has fallen below the switch off temperature the permanent safety shut off can be reset by pressing the reset key.

Flue gas system
The following functions for flue gas temperature monitoring are combined in one sensor:
• Safety temperature limiter for flue gas
• Temperature measurment for display

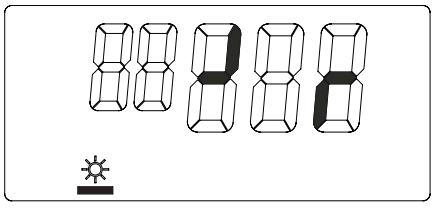
Safety temperature limiter STL (flue gas)
If the programmed STL switch off temperature for the flue gas circuit is exceeded the fuel supply is shut off and the fan and pump run on is initiated (fault display F13).
To increase the availability of the boiler, the boiler rating is reduced step by step when approaching the safety temperature and a difference of 15K (105°C), to switch to minimum rating at an approach of 10K (110°C). At a difference of 5K (115°C) the boiler switches off (warning message W16).

Differential temperature flow/flue gas system
The differential temperature monitoring limits the range between flow and flue gas temperature (warning message W15). if the warning appears 30 times consecutively the boiler goes to lockout with the error message F15.

Gradient monitoring boiler temperature
If the temperature gradient set is exceeded (system parameter A9) the boiler is switched off.
This only occurs, if the boiler temperature is > 45°C (warning message W14).

8.2 Sensor monitoring

Display of sensor faults



8.3 Heating frost protection function

Boiler frost protection (without external sensor QAC 31)

Tv < 8°C
⇨ Burner on with minimum load
• Pump on

Tv > 8°C + switch differential flow temperature (⇨ P32)
⇨ Burner off
• Pump run on (⇨ P41)

☞ Frost protection also effective on output MFA, if parametered as flow pump (⇨ P13).

System frost protection (with external sensor QAC 31)

$T_{A\ act.} < T_{system\ frost\ protction}$ (⇨ P23)
⇨ Pump starts every 5 hrs.,
Switch on duration = pump run on time (⇨ P41).

$T_{A\ act.} < T_{system\ frost\ protction}$ – 5 K
⇨ Pump continuous run on
$T_{A\ act.} > T_{system\ frost\ protction}$
⇨ Pump continuous run off
☞ Frost protection is also effective on outputs MFA and VA with function heating circuit pump (⇨ P13, P14).

☞ With calorifier regulation P1/P2 the system frost protection has no effect on the boiler circuit pump (internal or connected to MFA/VA).

8.4 DHW frost protection (version -W)

$T_{DHW} < 8°C$
⇨ Frost protection heating on

$T_{DHW} > 8°C$ + switch differential DHW/2 (⇨ P51)
⇨ Frost protection heating off

With frost protection heating the boiler temperature is regulated to 8°C + DHW temperature increase (⇨ P50), the Tap symbol flashes.

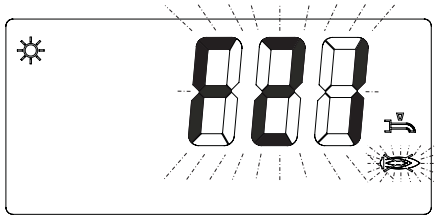
☞ Frost protection is also effective on outputs MFA and VA with function DHW supply pump and circulation pump.

9 Cause and rectification of faults

Most irregularities and faults of the boiler are recognised by the WCM and shown on the display. The display differentiates between faults (boiler lockout) and warnings.

Faults (crossed out flame signal flashes)
Proceed as follows with **faults**:
- Note down the fault displayed (flashing)
- Press reset key

Warning
With **warnings** the boiler does not lock out.
The warning is shown in the display and expires by itself once the cause of the warning no longer exists.



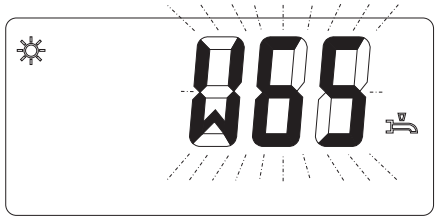


Table of fault and warning message:

CODE	Message	Cause	Possible fault/rectification
	Temperatures		
11	Fault	Boiler temperature ≥ 105°C	• No water in boiler - top up water • Air in boiler - vent boiler • No boiler throughput - check function of pump
12	Warning	Boiler temperature ≥ 95°C	• No water in boiler - top up water • Air in boiler - vent boiler • No boiler throughput - check function of pump
13	Fault	Flue gas temperature ≥ 120°C	• Heat exchanger heavily soiled
14	Warning	Flow temperature gradient too large	• Air in boiler - vent boiler • No boiler throughput • System pressure too low
15	Warning / fault[1)]	Temperature difference between boiler temperature and flue gas temperature too high	• Heat exchanger through flow insufficient
16	Warning	Flue gas temperature ≥ 115°C	• Heat exchanger heavily soiled

[1)] After 30 consecutive warnings the boiler goes to lockout.

Continuation of fault and warning message

CODE	Message	Cause	Possible fault/rectification
	Burner		
21	Fault[2)]	No flame formation at burner start	• Contaminated combustion air (dust, soot) ⇨ Clean burner • Gas supply closed • Ignition electrode soiled / incorrect spark gap • Faulty wiring to ignition electrode • Increase flame formation time > 1.7 sec. – P35 step by step • Check the gas flow safety device
22	Warning[3)]	Flame failure during operation	• Ionisation current insufficient • Check wiring to SCOT electrode • Check SCOT electrode, if necessary replace • With room air independent operation carry out soundness test of flue gas system ⇨ Ch. 5.5
23	Fault	Flame simulation	• Check earth connections • Replace WCM circuit board
24	Fault[4)]	Underfloor heating thermostat on input H2 is activated	• Check mixer • Check flow setpoint • Check pump function

[2)] After 5 unsuccessful start attempts the boiler goes to lockout.

[3)] The boiler attempts a restart. If this is unsuccessful the boiler goes to lockout with error code F21.

[4)] If the temperature at the underfloor heating thermostat falls and the contact at input H2 is opened, the WTC restarts automatically.

Continuation of fault and warning message

CODE	Message	Cause	Possible fault/rectification
	Sensor		
30	Fault	Flow safety temp. sensor defective	• Check cable + sensor
31	Fault	Flue gas sensor defective	• Check cable + sensor
33	Warning[5]	External sensor B1 defective	• Check cable + sensor
34	Warning[5]	DHW sensor B3 defective	• Check cable + sensor
35	Warning	Throughpurt sensor defective, version - C	• Check cable + sensor
38	Fault	Calorifier sensor B10 defective	• Check cable + sensor
39	Fault	Calorifier sensor B11 defective	• Check cable + sensorn
	Motors		
41	Fault	Gas valve proving	• Electrical connection gas valve faulty, replace • Gas valve leaking, replace gas valve
42	Warning	No PWM control signal available	• Check cable connection PWM pump
43	Fault	Fan speed not achieved	• Check cable connection, replace fan
44	Fault	Fan standby faulty	• Replace fan
	Electronics		
51	Fault	System fault boiler control Application fault BCC plug: Invalid unit configuration	• New configuration with P10 • Check all available parameters as per Ch. 6.3.3, if necessary use WCM diagnostic • Plug in BCC • Install BCC of version 3.X • Replace WCM-CPU
52	Fault	System fault combustion control: Invalid configuration data set Application fault BCC plug:	• Replace WCM-CPU • Carry out initialisation of BCC • Check polling of BCC • Plug in BCC and carry out initialisation
53	Fault	Voltage supply insufficient or fuse F2 (24V) defective	• Check fuse • Check fan • Replace electronics
54	Fault	Faulty electronics	• Short circuit ionisation electrode - burner, check burner fleece for fibres • Inputs H1, H2 are defective • Check ionisation electrode, unplug ionisation electrode/switch control on and off ⇨ Fault gone ⇨ Replace electrode • Replace WCM-CPU
55	Fault	Mains frequency is < 45 Hz or > 55 Hz	• Check mains, avoid unstable mains
56	Fault	Ionisation current measurement faulty	• Reset, if it recurs replace WCM-CPU

[5] If the external sensor is defective, the regulation continues in emergecy operation. This is based on an external temperature of 5°C.

Continuation of fault and warning message

CODE	Message	Cause	Possible fault/rectification
	Electronic compound regulation		
61	Fault	Deviation of ionisation signal to setpoint too large	• Wrong setting of gas type at gas valve, check setting • Parameter P11 set to wrong gas type • Check resistance ionisation circuit - R > 50 kΩ ⇨ replace cable • Ionisation electrode soild or mechanically deformed • WCM-CPU faulty - replace
62	Fault	The setting signal of the gas setting element exceeds the permissible tolerance range	• As F61 • Check flue gas circulation - flue gas system is gas tight ⇨ Ch. 5.5 • Fan does not achieve min. speed in controlled operation • Flue gas side resistance too high - check condensate outlet • Insufficient gas pressure
64	Fault	New calibration value exceeds factory preset limits	• Check flue gas circulation - flue gas system is gas tight ⇨ Ch. 5.5 • External influences on the unit (supply air) due to flue gas, dust or other contaminants
65	Fault	New calibration value deviates too much from the previous value	• Supply air contaminated by dust and soot • 100% calibration was not carried out following the repalcement of SCOT electrode, WCM-CPU or burner (⇨ Ch. 5.5, P39)
66	Fault	Contrary to requirements calibration was not carried out	• Ignition occurs too late - increase P35 (see F21) • External influences on the unit e.g. by dust, flue gas or on twin flue systems by soot • Deviations in the gas quality - carry out 100% calibration • Follow on fault from F22
67	Fault	The setpoint was incorrectly saved	• Incorrect commissioning with liquid petroleum gas, i.e. P11 was set to natural gas • Replace WCM-CPU • Insufficient gas supply, gas pressure drops

Continuation of fault and warning message

CODE	Message	Cause	Possible fault/rectification
	eBus communication		
80	Warning	WCM cascade manager no longer transmits valid setpoint P12 is set to address #A…E and no setpoint transmitter connected e.g.: WCM cascade manager	• Check Bus connection/Bus supply • Check WCM-KA • Check address setting P12
81	Warning	WCM-FS#1 no longer transmits valid setpoint	• Check Bus connection/Bus supply • FS or EM defective
82	Warning	WCM-EM#2 or -FS#2 no longer transmits a valid setpoint	• Check cable connection • FS or EM defective
83	Warning	WCM-EM#3 or -FS#3 no longer transmits a valid setpoint	• Check cable connection • FS or EM defective
84	Warning	WCM-EM#4 or -FS#4 no longer transmits a valid setpoint	• Check cable connection • FS or EM defective
85	Warning	WCM-EM#5 or -FS#5 no longer transmits a valid setpoint	• Check cable connection • FS or EM defective
86	Warning	WCM-EM#6 or -FS#6 no longer transmits a valid setpoint	• Check cable connection • FS or EM defective
87	Warning	WCM-EM#7 or -FS#7 no longer transmits a valid setpoint	• Check cable connection • FS or EM defectivet
88*	Warning	WCM-EM#8 bzw. -FS#8 no longer transmits a valid setpoint	• Check calbe connection • FS or EM defective

* With remote temperature control via input N1, warning 88 signals when the remote signal of 4-20mA is no longer present.

10.1 Safety notes on servicing

Service only qualified personnel!

Failure to carry out maintenance and service work properly can have severe consequences including serious injury or the loss of life.
Pay close attention to the following safety notes.

Some parts of the appliance (e.g. burner surface) become hot during operation and could cause burns if touched. The appliance should be allowed to cool prior to service work being carried out.

Qualified personnel
Only qualified and experienced personnel must carry out maintenance and service work.

Prior to all maintance and service work:
1. Switch off mains switch and appliacnce switch and protect from reactivation.
2. Close gas isolating valve.
3. Observe installation and operating instructions.

After all maintenance and service work:
1. Function test.
2. Check flue gas losses as well as O_2/CO values.
3. Carry out gas soundenss test.
4. Complete a test sheet.
5. Complete an inspection card.

☞ Variable rating setting in chimney sweep mode (⇨ Ch. 5.5.2)
☞ To leave chimney sweep mode turn dial knob until ESC appears, then press key.

Service interval
The operator should ensure that the combustion appliance is inspected or serviced at least
– once a year –
by an agent of the manufacturer or other suitably qualified person.

Set service interval
The time between services can be set in the heating engineer level parameter P70 (⇨ Ch. 6.3.3). Once the time set has elapsed, the display of the WTC displays a flashing spanner. If a WCM-FS (accessory) is fitted, the display shows the text Service. The service can be reset in the Info mode (⇨ Ch. 6.3.2).

Shutdown periods
If the appliance is not used for long periods of time, the following measures should be carried out:

1. Close gas isolating valve.
2. Switch off mains and appliance switch.
3. Empty heating system or prepare with frost protection.
4. Empty supply line to the expansion tank inside the appliance.
5. Empty DHW heater, turn off the water.
6. Open shut off and regulating valves.
7. Switch off pumps and control circuits.

10.2 Check list for servicing the WTC

Service task	Carried out on							
	18.07.08							
Select burner operting hours (⇨ Ch 6.3.2; I43) **I43 =**	**1500**							
Select fault memory (⇨ Ch. 6.3.4) **Fault**	**2x F22 1x F42**							
Safety and function check including the Safety and control components	✔							
Check function and safety of air/flue gas system. Check soundness of flue gas system. (⇨ Ch.5.5)	✔							
Check soundness of fuel and water carrying system components, carry out visual inspection for corrosion and wear and tear.	✔							
Check demand on the heating system water are met (⇨ Ch. 3.5) and if necessary check top up water treatment.	✔							
Check gas inlet pressure [mbar]	**20**							
Carry out O2, CO measurement (⇨ Ch. 5.5) **Max: O_2 = CO = Min: O_2 = CO =**	**5.5 % 22 ppm 5.5 % 12 ppm**							
Select SCOT® base value (⇨ Ch. 6.3.2; I14) **I14 =**	**85 points**							
Determine heat exchanger pressure loss (⇨ Ch. 10.3) Use cleaning kit 481 000 00 26 2.	**6 mbar**							
Electrically isolate the appliance	✔							
Close gas isolating valve	✔							
Check burner and burner gasket (⇨ Ch. 10.3)	✔							
Clean heat echanger if pressure loss is > 5.0 mbar (WTC 15), > 4.5 mbar (WTC 25) or > 7.5 mbar (WTC 32) (⇨ Service instructions cleaning kit)	**cleaned 4 mbar**							
Check ionissation electrode, replace if SCOT® base value is < 70 points (WTC 15), < 75 points (WTC 25) or < 78 points (WTC 32)	**replaced**							
Test ignition electrode and check spark gap (3 mm ± 0.3 mm)	✔							
Clean and refill condensate water siphon, check condensate drain	✔							
Reassemble heat exchanger Replace service cover seal and gas seal	✔							
Carry out visual inspection of electrical wiring	✔							
Carry out soundness test gas and water side (⇨ Ch. 5.3)	✔							
Check pre-pressure of expansion tank [bar]	**0.7**							
Check fill pressure of system [bar]	**1.3**							
Carry out calibration (⇨ Ch. 5.5)	✔							
Carry out test operation with DHW, if necessary vent, check condensate side soundness	✔							
Check ignition behaviour, if necessary correct via parameter P35 (⇨ Ch. 6.3.3) Ignition time approx. 1.3 sec.	✔							
Carry out O2, CO measurement (⇨ Ch. 5.5) Max: **O_2 = CO =** Min: **O_2 = CO =**	**5.5 % 22 ppm 5.5 % 11 ppm**							
Reset service message (I45) (⇨ Ch. 6.3.2)	✔							
WCM-FS or WCM-DU Check date and time and/or time and day	✔							
Comments/Notes (e.g. other parts replaced)								

Continuation checklist for service

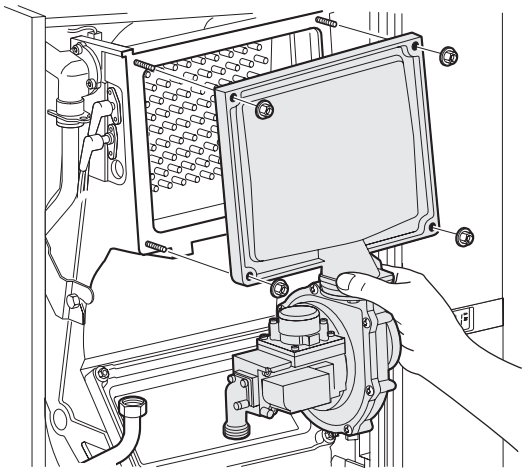
Service task	**Carried out on**							
Select burner operting hours (⇨ Ch 6.3.2; I43) **I43 =**								
Select fault memeory (⇨ Kap. 6.3.4) **Fault**								
Safety and function check including the Safety and control components								
Check function and safety of air/flue gas system. Check soundness of flue gas system. (⇨ Ch.5.5)								
Check soundness of fuel and water carrying system components, carry out visual inspection for corrosion and wear and tear.								
Check demand on the heating system water are met (⇨ Ch. 3.5) and if necessary check top up water treatment.								
Check gas inlet pressure [mbar]								
Carry out O2, CO measurement (⇨ Ch. 5.5) **Max: O_2 = CO = Min: O_2 = CO =**								
Select SCOT® base value (⇨ Ch. 6.3.2; I14) **I14 =**								
Determine heat exchanger pressure loss (⇨ Ch. 10.3) Use cleaning kit 481 000 00 26 2.								
Electrically isolate the appliance								
Close gas isolating valve								
Check burner and burner gasket (⇨ Ch. 10.3)								
Clean heat echanger if pressure loss is > 5.0 mbar (WTC 15), > 4.5 mbar (WTC 25) or > 7.5 mbar (WTC 32) (⇨ Service instructions cleaning kit)								
Check ionisation electrode, replace if SCOT® base value is < 70 points (WTC 15), < 75 points (WTC 25) or < 78 points (WTC 32)								
Test ignition electrode and check spark gap (3 mm ± 0.3 mm)								
Clean and refill condensate water siphon, check condensate drain								
Reassemble heat exchanger Replace service cover seal and gas seal								
Carry out visual inspection of electrical wiring								
Carry out soundness test gas and water side (⇨ Ch. 5.3)								
Check pre-pressure of expansion tank [bar]								
Check fill pressure of system [bar]								
Carry out calibration (⇨ Ch. 5.5)								
Carry out test operation with DHW, if necessary vent, check condensate side soundness								
Check ignition behaviour, if necessary correct via parameter P35 (⇨ Ch. 6.3.3) Ignition time approx. 1.3 sec.								
Carry out O2, CO measurement (⇨ Ch. 5.5) Max: **O_2 = CO =** Min: **O_2 = CO =**								
Reset service message (I45) (⇨ Ch. 6.3.2)								
WCM-FS or WCM-DU Check date and time and/or time and day								
Comments/Notes (e.g. other parts replaced)								

10.3 Cleaning the burner and heat exchanger

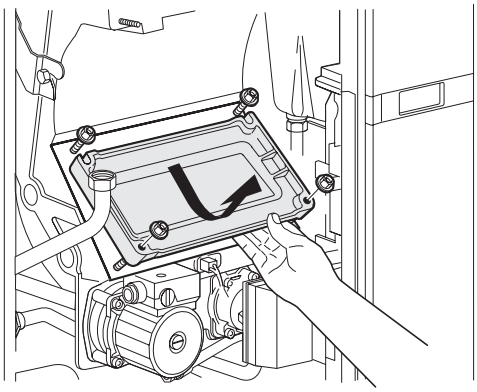
Service interval and service tasks
The burner surface should be checked for soiling and if necessary cleaned annually.
The heat exchanger should be checked for flue gas side soiling and if necessary cleaned annually.
A Weishaupt cleaning kit for this task is available, order No.: 480 000 00 26 2.
The check of the degree of soiling is carried out by a differential pressure measurement. The accessory required is included in the cleaning kit.

Dis-assembling:
1. Close gas isolating valve, de-energise unit.
2. Undo electrical connections of gas valve, fan and immersion coil.
3. Undo 3/4" screwed union between gas valve and gas pipe.
4. Remove the 4 fixing nuts on the burner cover.
5. Remove burner cover with seal and flange connected gas/air compound unit.
6. Remove burner surface.
7. Remove the 4 fixing screws on the service cover and remove service cover.

Dis-assembling burner cover



Dis-assembling service cover



Cleaning the burner
If the burner surface is soiled, brush out the burner fleece, a normal domestic brush can be used to do this.
Once cleaned, ensure that the fibres of the burner fleece in the vicinity of the ionisation electrode do not stick out so as to cause a short circuit with the ionisation electrode.

Cleaning the heat exchanger Wärmetauscher
Flue gas side cleaning of the heat exchanger can be carried out using the cleaning kit available as an accessory (order No. 481 000 00 26 2).
Remove sediments through service opening, in particular from condensate drain.
Clean siphon. To do this remove cover of cleaning opening on the siphon.

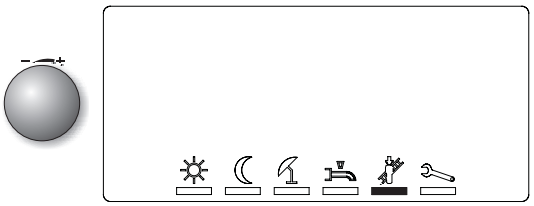
Replacing seals and components
The following seals should be replaced during service:
- Gas seal
- Service cover seal

Re-assembling following cleaning:
1. Refit cover of cleaning opening on siphone and fill siphon with water (see Ch. 4.8).
2. Fit service cover with new seal and tighten the screws to 4 Nm torque.
3. Install pre-mix burner, ensuring correct alignment on the adjusting struts.
4. Check burner seal for damage prior to fitting the burner cover. Fit burner cover to the stay bolts and tighten the nuts to 4 Nm torque.
5. Connect the gas valve to the gas pipe and tighten the union nut. Fit new gas seal (Order No. 441 076).
6. Reconnect the electrically connection to theappliance and gas valve.

Concluding work
1. Open gas isolating valve.
2. Check soundness of gas connections and burner cover opening.
3. Switch on the appliance.
4. Carry out soundnes test of all flue gas and condensate carrying components.
5. Check O_2 content as per Ch. 5.2.

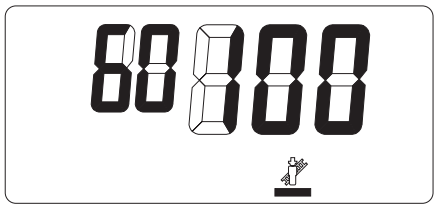
10.4 Chimney sweep function

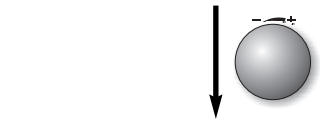
- Activate symbol rail by turning dial knob and place cursor below the chimney sweep symbol.



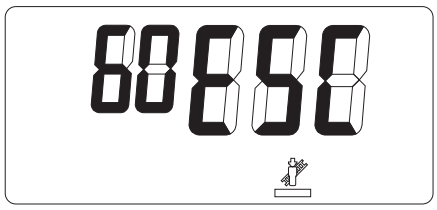
- Activate chimney sweep function by pressing the key.

- The function remains active for 15 minutes.
- The 3 digit display shows the current boiler rate.
- The 2 digit display shows the current boiler temperature.

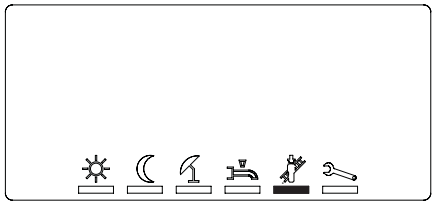




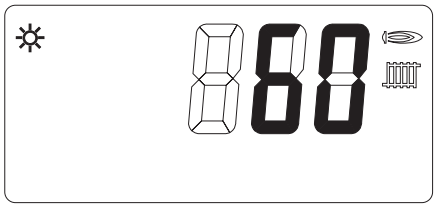
☞ To exit the chimney sweep function, turn dial knob until ESC appears, then press the key.



After approx. 90 seconds the standard display appears.



90 sec.



11.1 Rating, efficiency, emissions

Weishaupt Gas Condensing Unit WTC 15-A

Category:	(DE): II2ELL3B/P ,(AT): II2H3B/P, (CH): II2H3P
Type of installation:	B23/B23P[1]/B33/C13x/C33x/C43x/C53x/C63x/C83x/C93x
CE -No.:	0063 BM 3092
SVGW-Reg.-No. / BUWAL-No.:	01-016-4 / BUWAL-No. 401 007
ÖVGW Quality Mark:	G2.596

		Minimum load	Nominal load
Burner rating (Q_C) to EN 483	kW	4.0	14.0
Fan speed Natural Gas/LPG	1rpm	1440/1380	4380/4200
max. boiler temperature	°C	85	
Heat rating at 80/60 °C Natural Gas/LPG①	kW	3.8	13.7
Heat rating at 50/30 °C Natural Gas/LPG①	kW	4.3	14.7
Condensate quantity with Natural Gas	kg/h	0.7	1.2
Gas flow pressure Natural Gas E/H - min...**Standard**...max	mbar	17...**20**...25	
Gas flow pressure Natural Gas LL - min...**Standard**...max	mbar	20...**25**...30	
Gas flow pressure LPG B/P - min...**Standard**...max	mbar	42.5...**50**...57.5	
Gas flow pressure LPG B/P - min...**Standard**...max	mbar	25...**37**...45	
Standard efficiency at 75/60 °C	%	107.0 (96.4 Hs)	
Standard efficiency at 40/30 °C	%	110.0 (99.1 Hs)	
Standard emission factors:			
- Nitrous Oxide NO_x	mg/kWh	20	
- Carbon Monoxide CO	mg/kWh	13	
O_2 Natural Gas②	%	5.5	
O_2 LPG①②	%	5.8	
Water content	l	2.6	
permiss. max. excess operating pressure	bar	3.0	
Content expansion vessel	l	10	
Inlet pressure expansion vessel	bar	0.75	

① Propane
② Conversion table O_2 – CO_2 see appendix

EnEV product variables

Heat rating Q_N at 80/60 °C	kW	3.8...13.7
Boiler efficiency		
at nominal load and medium boiler temperature 70°C	%	97.7 (88.0 Hs)
at 30% partial load and return flow temperature 30°C	%	108.0 (97.3 Hs)
Standby loss at 50K above room temperature	%	1.14

[1] only in conjunction with flue gas systems of pressure class P1 or H1 to EN 14471

Weishaupt Gas Condensing Unit WTC 25-A

Category:	(DE): II2ELL3B/P ,(AT): II2H3B/P, (CH): II2H3P
Type of installation:	B23/B23P(1/B33/C13x/C33x/C43x/C53x/C63x/C83x/C93x
CE -No.:	0063 BM 3092
SVGW-Reg.-No. / BUWAL-No.:	01-016-4 / BUWAL-No. 401 007
ÖVGW Quality Mark:	G2.596

		Minimum load	Nominal load
Burner rating (Q_C) to EN 483	kW	6.9	24.0
Fan speed Natural Gas/LPG	1rpm	1440/1380	4500/4320
max. boiler temperature	°C	85	
Heat rating at 80/60 °C Natural Gas/LPG①	kW	6.7	23.6
Heat rating at 50/30 °C Natural Gas/LPG①	kW	7.5	25.2
Condensate quantity with Natural Gas	kg/h	1.0	2.0
Gas flow pressure Natural Gas E/H - min...**Standard**...max	mbar	17...**20**...25	
Gas flow pressure Natural Gas LL - min...**Standard**...max	mbar	20...**25**...30	
Gas flow pressure LPG B/P - min...**Standard**...max	mbar	42.5...**50**...57.5	
Gas flow pressure LPG B/P - min...**Standard**...max	mbar	25...**37**...45	
Standard efficiency at 75/60 °C	%	108.0(97.3 Hs)	
Standard efficiency at 40/30 °C	%	110.0 (99.1 Hs)	
Standard emission factors:			
- Nitrous Oxide NO_x	mg/kWh	20	
- Carbon Monoxide CO	mg/kWh	12	
O_2 Natural Gas②	%	5.5	
O_2 LPG①②	%	5.8	
Water content	l	3.5	
permiss. max. excess operating pressure	bar	3.0	
Content expansion vessel	l	10	
Inlet pressure expansion vessel	bar	0.75	
Version -C			
permissible operating pressure DHW	bar	6	
DHW outlet quantity	l/min	7.5	
Burner rating in boost operation (Q_C) to EN 483	kW	28	

① Propane
② Conversion table O_2 – CO_2 see appendix

EnEV product variables

Heat rating Q_N at 80/60 °C	kW	6.7...23.6
Boiler efficiency		
at nominal load and medium boiler temperature 70°C	%	98.4 (88.6 Hs)
at 30% partial load and return flow temperature 30°C	%	109.1(98.3 Hs)
Standby loss at 50K above room temperature	%	0.62

(1 only in conjunction with flue gas systems of pressure class P1 or H1 to EN 14471

Weishaupt Gas Condensing Unit WTC 32-A

Category:	(DE): II2ELL3B/P ,(AT): II2H3B/P, (CH): II2H3P
Type of installation:	B23/B23P[1]/B33/C13x/C33x/C43x/C53x/C63x/C83x/C93x
CE -No.:	0063 BM 3092
SVGW-Reg.-No. / BUWAL-No.:	01-016-4 / BUWAL-No. 401 007
ÖVGW Quality Mark:	G2.596

		Minimum load	Nominal load
Burner rating Q_C) to EN 483	kW	9.4	31.0
Fan speed Natural Gas/LPG	1rpm	1860/1740	5940/5460
max. boiler temperature	°C	85	
Heat rating ati 80/60 °C Natural Gas/LPG①	kW	9.1	30.2
Heat rating at 50/30 °C Natural Gas/LPG①	kW	10.2	32.0
Condensate quantity with Natural Gas	kg/h	1.2	2.0
Gas flow pressure Natural Gas E/H - min...**Standard**...max	mbar	17...**20**...25	
Gas flow pressure Natural Gas LL - min...**Standard**...max	mbar	20...**25**...30	
Gas flow pressure LPG B/P - min...**Standard**...max	mbar	42.5...**50**...57.5	
Gas flow pressure LPG B/P - min...**Standard**...max	mbar	25...**37**...45	
Standard efficiency at 75/60 °C	%	107 (96.4 Hs)	
Standard efficiency at 40/30 °C	%	110 (99.1 Hs)	
Standard emission factors:			
- Nitrous Oxide NO_x	mg/kWh	35	
- Carbon Monoxide CO	mg/kWh	17	
O_2 Natural Gas②	%	4.8	
O_2 LPG①②	%	4.8	
Water content	l	3.5	
permiss. max. excess operating pressure	bar	3.0	
Content expansion vessel (version W only)	l	10	
Inlet pressure expansion vessel (version W only)	bar	0.75	

① Propane
② Conversion table O_2 – CO_2 see appendix

EnEV product variables

Heat rating Q_N at 80/60 °C	kW	9.1...30.2
Boiler efficiency		
at nominal load and medium boiler temperature 70°C	%	97.3(87.7 Hs)
at 30% partial load and return flow temperature 30°C	%	108.7 (97.9 Hs)
Standby loss at 50K above room temperature	%	0.60

[1] only in conjunction with flue gas systems of pressure class P1 or H1 to EN 14471

11.2 Electrical data

Weishaupt gas condensing unit			WTC 15-A	WTC 25-A	WTC 32-A
Nominal voltage		230V~, 1N, 50Hz	230V~, 1N, 50Hz	230V~, 1N, 50Hz	
Nominal load	Version PEA pump	W	101	103	121
	Version PWM pump	W	87	96	151
	Version 3 stage pump	W	97	120	-
	Version without pump	W	30	35	53
El. consumption at max load and pump with factory pre-setting	Version PEA pump	W	56	73	105
	Version PWM pump	W	71	83	146
	Version 3 stage pump	W	85	99	-
Max. pre-fusing	A	G 16	G 16	G 16	
Unit fuse F 230 V	A	4 AT	4 AT	4 AT	
Unit fuse F2 24 V DC		A	4 AT	4 AT	4 AT
Type of protection		IP 44	IP 44	IP 44	
Ignition frequency	Hz	10	10	10	
Spark gap	mm	3.0	3.0	3.0	

11.3 Permissible ambient conditions

Weishaupt gas condensing unit		WTC 15-A	WTC 25-A	WTC 32-A
Temperature in installation location	°C	3...30	3...30	3...30
Temperature transport/storage	°C	-10...60	-10...60	-10...60
Humidity	% relative humidity	max. 80 %	max. 80 %	max. 80 %

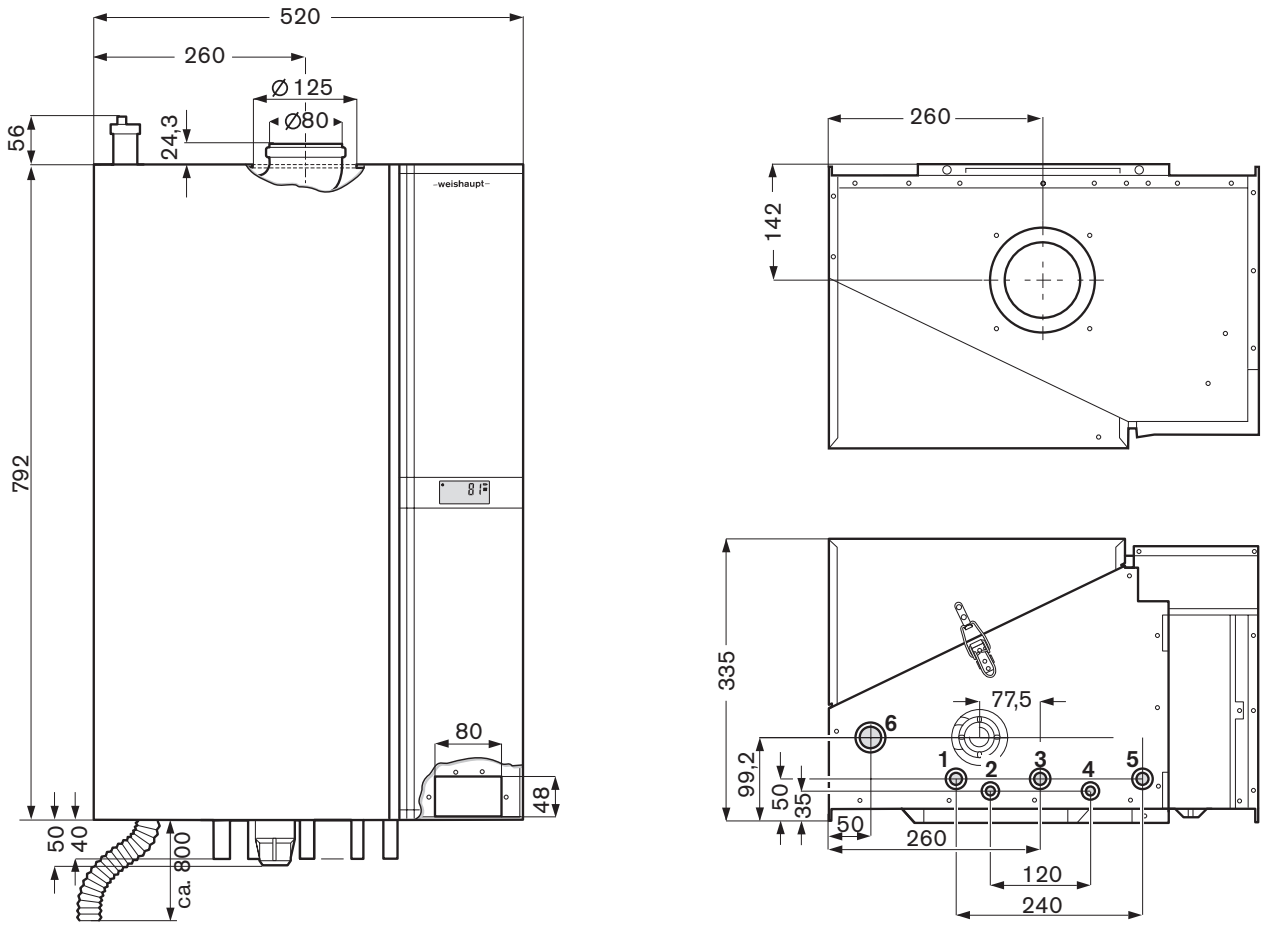
11.4 Design of flue gas system

Weishaupt gas condensing unit		WTC 15-A	WTC 25-A	WTC 32-A
Residual outlet pressure at flue gas outlet	Pa	58	61	111
Flue gas outlet	Ø	125 / 80 mm	125 / 80 mm	125 / 80 mm
Flue gas mass flow rate	g/s	1.9 – 6.6	3.3 – 11.3	4.3 – 14.0
Max. flue gas temperature at 80/60 °C	°C	54 – 61	55 – 64	58 – 69
Max. flue gas temperature at 50/30 °C	°C	32 – 46	33 – 47	34 – 53
Flue gas value group G635 / G636		G_{62} / G_{61}	G_{62} / G_{61}	G_{62} / G_{61}

11.5 Weights, dimensions

Weishaupt gas condensing unit		WTC 15-A	WTC 25-A	WTC 32-A
Weight incl. cladding	kg	42	49	46 *

* without expansion vessel



1 Heating flow
2 Flow water heater or domestic hot water
3 Gas
4 Return water heater or domestic water
5 Heating return
6 Condensate trap

A Appendix

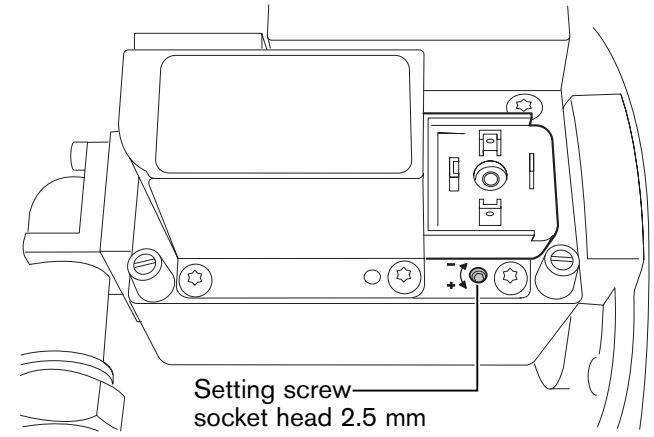
Conversion to liquid petroleum gas

Gas nozzle replacement not required !

The following sequences hould be observed during the conversion:

1. Switch boiler on/off switch to 0.
2. Unscrew plug for voltage supply to gas valve.
3. Turn setting screw (socket head 2.5 mm) on gas valve to right stop. This requires approx. 30 rotations.
   Natural Gas : left stop
   Liquid Petroleum Gas : right stop
4. Retighten plug for voltage supply to gas valve.
5. Switch on boiler.
6. In heating engineer level (⇨ Ch. 6.3) set parameter P11 to F.
7. Carry out calibration using parameter 39 (see page 43).
8. Burner commissioning and O_2 check to Ch. 5.5.
9. Note setting of type of gas on name plate.

Gas type conversion



ATTENTION

Gas line must be vented completely to avoid lockouts caused by the electronic compound regulation when calibrating during operation (messages F61, F62).

Reduction of heat rating

!!Gas rate adjustment!!

Procedure:

☞ In heating engineer level (⇨ Ch. 6.3.3) set parameter P37 accordingly.
☞ Note reduced heat rating on name plate.

Wobbe table

Calorific values and $CO_{2\ max.}$ (guide values) of different types of gas

Gas type	Calorific value H_i MJ/m³	kWh/m³	CO_2 max. %
2. Gas family			
Group LL (Natural Gas)	28.48…36.40	7.91…10.11	11.5…11.7
Group E (Natural Gas)	33.91…42.70	9.42…11.86	11.8…12.5
3. Gas family			
Propane P	93.21	25.99	13.8
Butane B	123.81	34.30	14.1

Contact the gas supplier for the various maximum CO_2 contents.

Conversion table O2 – CO2

O_2 content dry [%v]	CO_2 content [%] Natural Gas E (11.7% CO_2 max)	Natural Gas LL (11.5% CO_2 max)	Propane (13.7% CO_2 max)
3.9	9.5	9.4	11.2
4.1	9.4	9.3	11.0
4.3	9.3	9.1	10.9
4.5	9.2	9.0	10.8
4.7	9.1	8.9	10.6
4.8	**9.0**	**8.9**	**10.6**
4.9	9.0	8.8	10.5
5.1	8.9	8.7	10.4
5.3	8.7	8.6	10.2
5.5	**8.6**	**8.5**	**10.1**
5.7	8.5	8.4	10.0
5.8	8.47	8.32	9.92
5.9	8.4	8.3	9.9
6.1	8.3	8.2	9.7

Sensor variables

**Boiler (4 core), flue gas (4 core),
DHW sensor version -C (2 core)
and calorifier sensor B10/B11 = NTC 5 kΩ**

ϑ[°C]	R[Ω]	ϑ[°C]	R[Ω]	ϑ[°C]	R[Ω]	ϑ[°C]	R[Ω]	ϑ[°C]	R[Ω]
-20	48180	10	9936	40	2665	70	876	100	338
-15	36250	15	7849	45	2185	75	740	105	292
-10	27523	20	6244	50	1802	80	628	110	254
-5	21078	25	5000	55	1494	85	535		
0	16277	30	4029	60	1245	90	457		
5	12669	35	3267	65	1042	95	393		

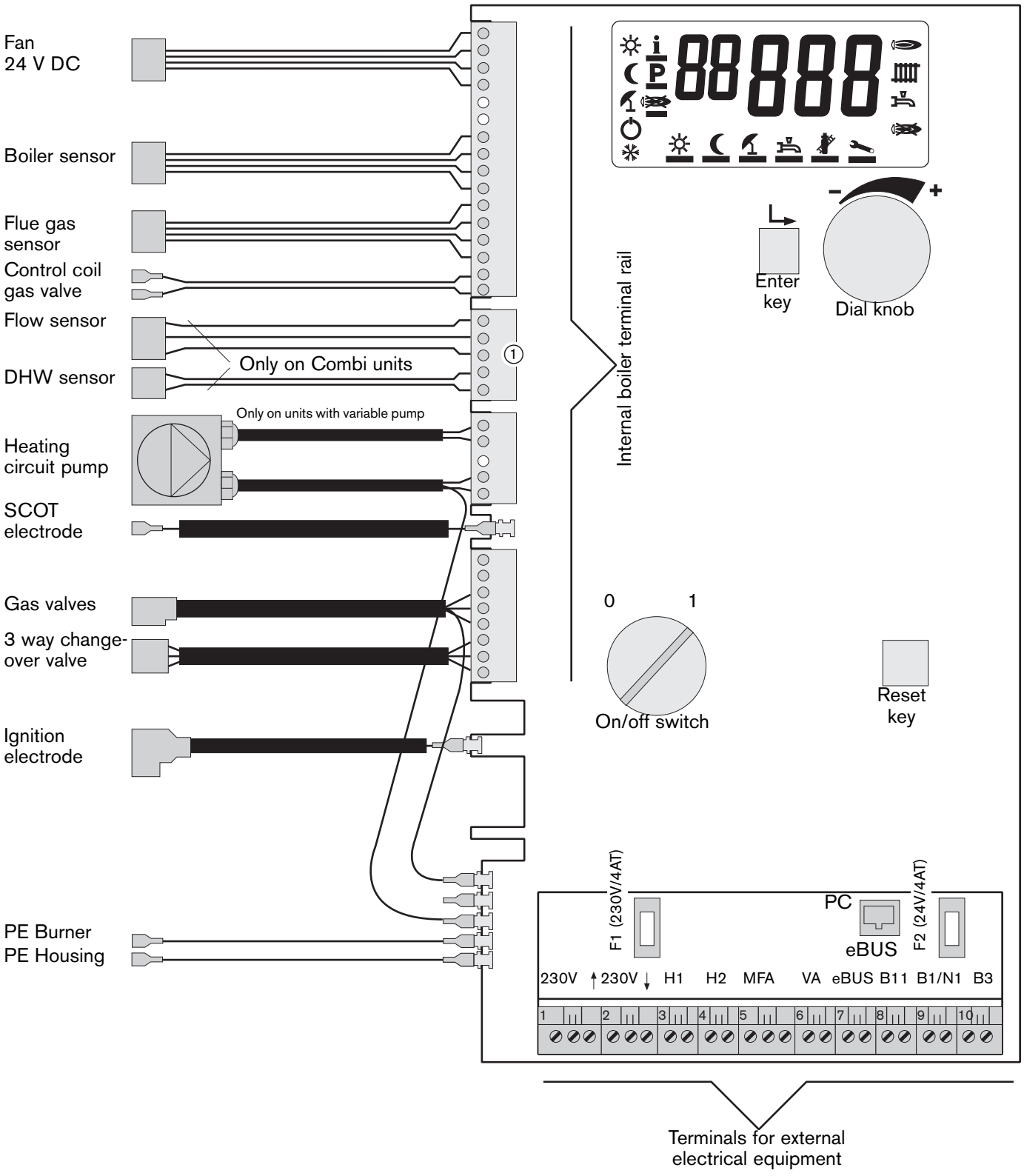
DHW sensor version -W = NTC 12 kΩ

ϑ[°C]	R[Ω]	ϑ[°C]	R[Ω]
-15	82430	40	6460
-10	63190	45	5310
-5	48820	50	4390
0	37990	55	3640
5	29770	60	3040
10	23500	65	2550
15	18670	70	2140
20	14920	75	1810
25	12000	80	1540
30	9710	85	1310
35	7900	90	1120

External sensor QAC 31 = NTC 600 Ω

ϑ[°C]	R[Ω]	ϑ[°C]	R[Ω]
-35	672	8	605
-30	668	10	600
-25	663	12	595
-20	657	14	590
-15	650	16	585
-10	642	18	580
-8	638	20	575
-6	635	22	570
-4	631	24	565
-2	627	26	561
0	623	28	556
2	618	30	551
4	614	35	539
6	609		

Internal boiler wiring



① On units version -H, -H-0 and -W this terminal slot is used to plug in the accessories connection cable (Order No.: 481 000 00 08 2) to connected the calorifier sensors.

Customer service

Heating systems consist of a number components, which have to be installed and tested by experts. This checklist aids fault limitation:

- Voltage supply - specialistd electician
- Gas supply - gas board, specialist heating company
- Flue gas system - specialist heating company
- Heating system - specialist heating company
- DHW system - specialist plumbing / heating company

Time and money saved!
A service agreement prevents problems. Experienced techicians annually check the correct function and economical operation to ensure comfort and to protect the environment.

These faults have occurred prevously:

Date:	Fault:
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Comments:

Information at the heating installation:

- ❑ Functions (commissioning, faults, shutdown)
- ❑ Operation and service on the display control
- ❑ poss. control units
- ❑ poss. test certificate
- ❑ poss. night setback/summer operation
- ❑ Water pressure/water top-up
- ❑ What to do if gas can be smelled
- ❑ Combustion air supply
- ❑ Condensate outlet into domestic water system

The system operator confirms:

- instruction on correct operation and service
- hand-over and explanation of designated operating instructions
- comprehension of the system for safe operation

Installation:
_____

Type: _____ Serial No: _____ Y. of M.: _____

Type of gas: _____

Supplier: _____

Operator: _____

Date: Signature:

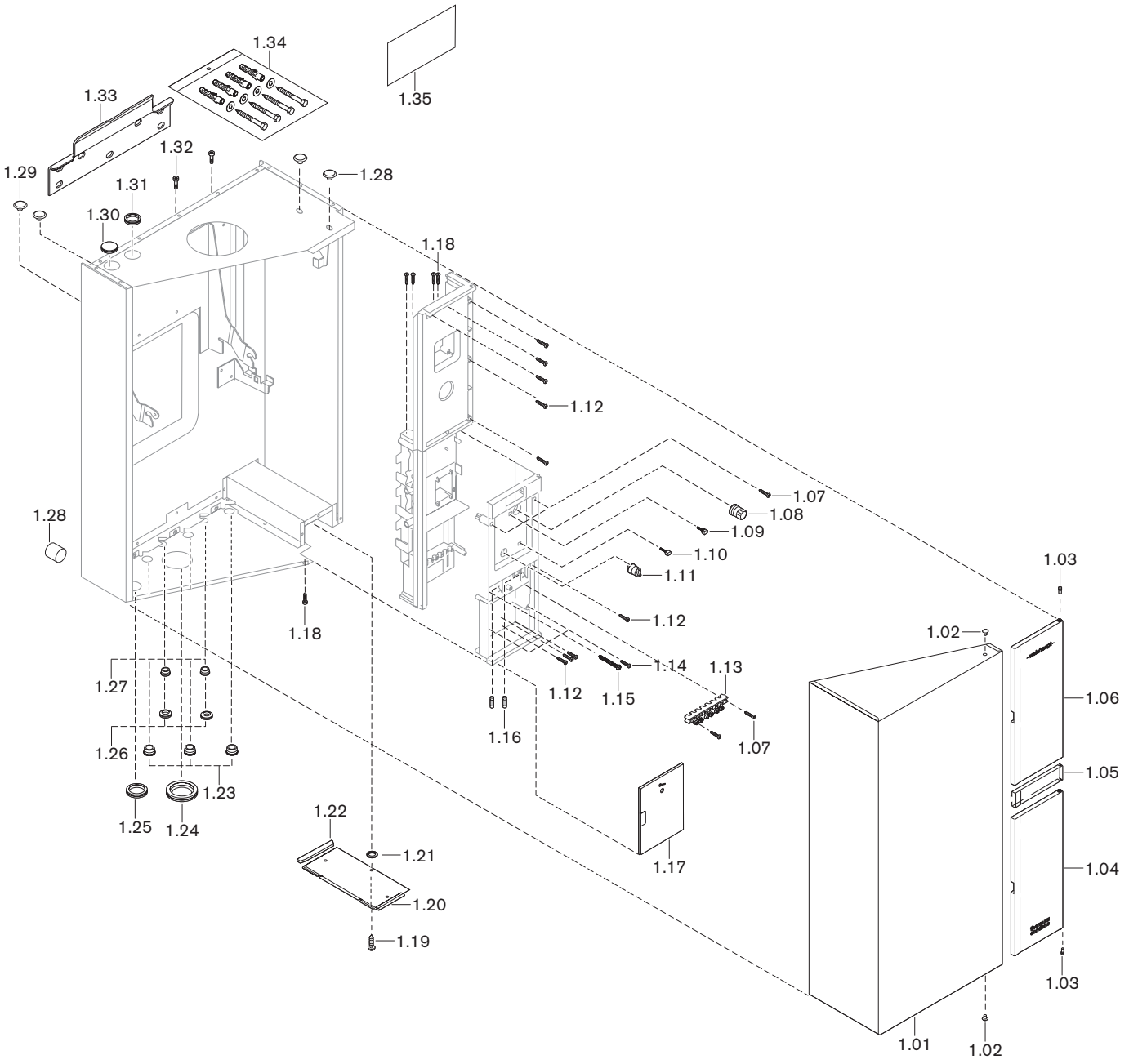
Important telephone numbers:

Heating system installer: _____

Plumber: _____

Electrician: _____

District chimney sweep:
_____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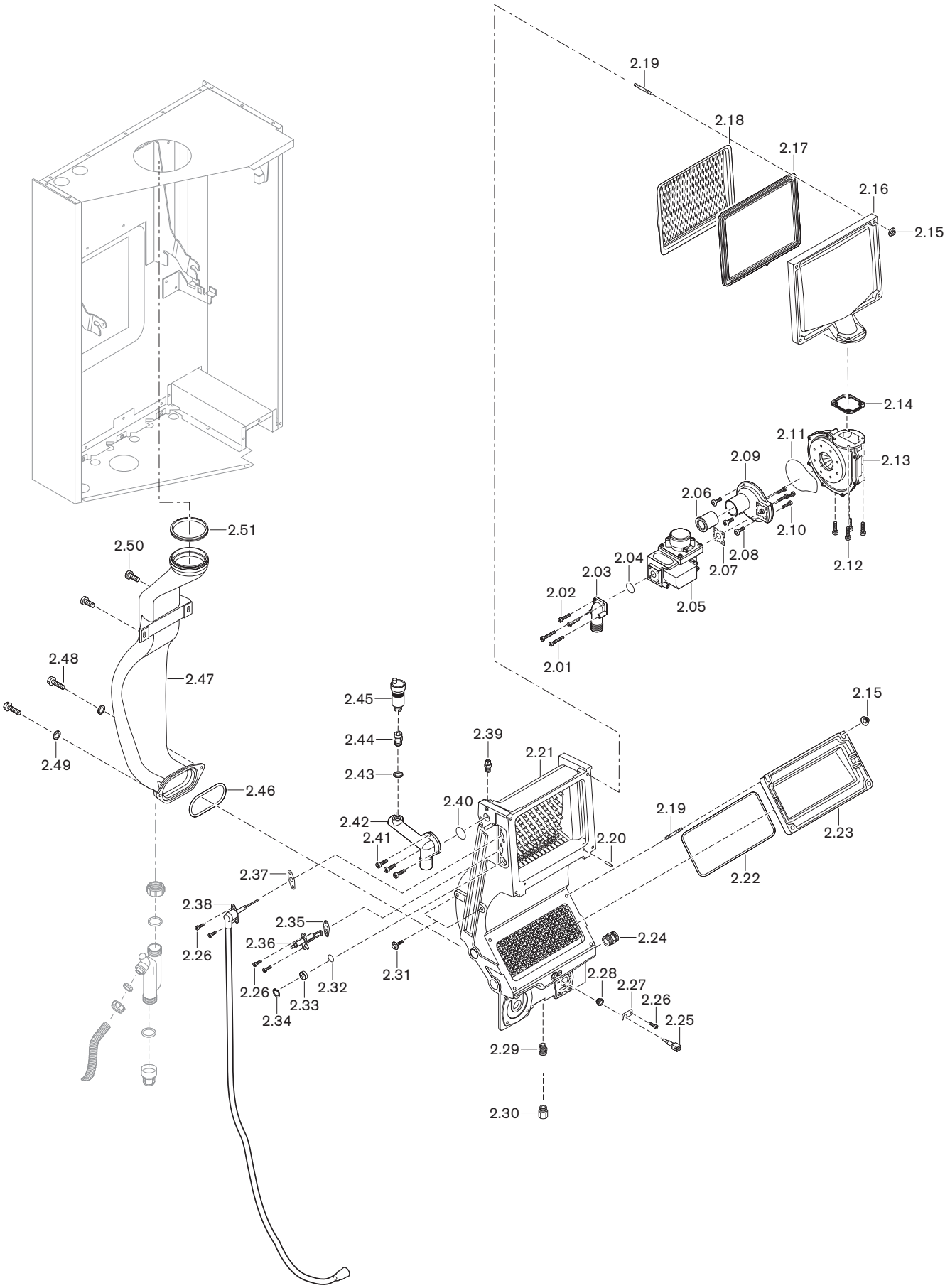
Pos.	Description	Order No.
1.01	Cover WTC 15/25-A	481 011 02 02 2
1.02	Stopper	446 034
1.03	Bearing screw WTC 15/25-A	481 011 22 24 7
1.04	Flap boiler control panel WTC 15/60-A	481 011 22 36 2
1.05	Cover LCD WTC-A	481 011 22 03 7
1.06	Flap operating panel WTC 15-60-A	481 011 22 35 2
1.07	Screw 4 X 25-WN1412-K40	409 353
1.08	Button WCM-CPU with seal. ring WTC-A	481 011 22 18 2
1.09	Operating button WCM-CPU WTC-A	481 011 22 20 2
1.10	Reset button WCM-CPU WTC-A w. seal ring	481 011 22 19 2
1.11	Toggle On/Off with seal. ring WTC-A	481 011 22 17 2
1.12	Screw M 4 X16	409 208
1.13	Traction relief WTC-A	481 011 22 32 7
1.14	Screw	409 352
1.15	Screw 4 X 35-WN1412-K40	409 354
1.16	Fuse 4A (T)	481 011 22 21 7
1.17	Cover el. conn. WTC 15/32-A	481 011 22 33 2
1.18	Screw 4 X 12-WN1411-K40	409 351
1.19	Screw DIN 7981	409 123
1.20	Cover cable duct WTC 15/25-A	481 011 02 07 2
1.21	Washer 3.5 x 10 x 0.5 Polyamid	430 020
1.22	Corner sheathing 0.8-1.0 mm	756 027
1.23	Grommet water connections Dm.I 18	481 011 02 19 7
1.24	Grommet siphon Dm.I 35 WTC 15/25-A	481 011 40 22 7
1.25	Grommet condensate hose Dm.I 24	481 011 02 36 7
1.26	Grommet closed version H	481 011 02 20 7
1.27	Grommet water conn. Dm.I 15 vers. W/C	481 011 02 35 7
1.28	Wall spacer WTC 15/25-A only version H-0	481 011 02 33 7
1.29	Plug	481 011 02 34 7
1.30	Grommet fast vent valve closed	481 011 02 24 7
1.31	Grommet Dm.I 24	481 011 02 23 7
1.32	Screw M 6 X 35	402 406
1.33	Wall bracket WAV55-W, WAV70-K	471 064 02 33 7
1.34	Dowel set	481 011 02 05 2
1.35	Sticker chimney sweep function	481 011 00 37 7

Pos.	Description	Order No.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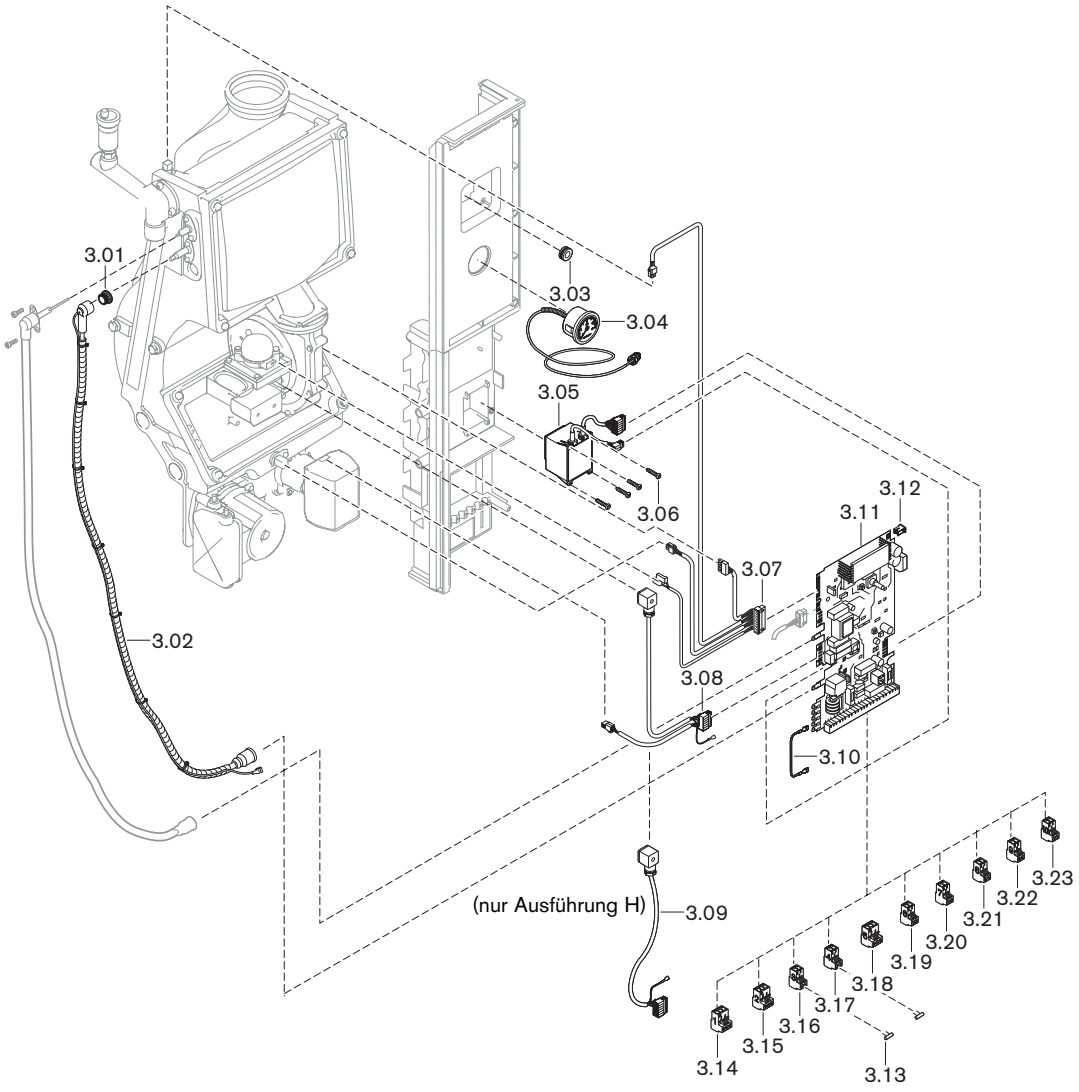
Pos.	Description	Order No.
2.01	Screw M4 x 25 Kombi-Torx-Plus metr.	409 258
2.02	Screw M4 x 12 Kombi-Torx 20 metric	409 257
2.03	Gas connection piece WTC 15/25-A	481 011 30 19 7
2.04	O ring 23 X 2.5	445 136
2.05	Compact gas combi valve	
	WTC 15-A	605 567
	WTC 25-A	605 568
	WTC 32-A	605 572
2.06	Insert WTC 15-A with circlip	481 011 30 31 2
2.07	Gasket gas valve - mixer WTC 15/25-A	481 011 30 30 7
2.08	Screw	
	PT DG 50 X 12-WN1552-K50 WTC 15/25-A	409 360
	M 5 X 12 DIN 912 WTC 32-A	402 207
2.09	Mixer fan	
	WTC 15-A with insert	481 011 30 29 2
	WTC 25-A with O ring	481 111 30 29 2
	WTC 32-A with O ring	481 301 30 29 2
2.10	Screw M 4 X 12 DIN 912	402 130
2.11	O ring 84 X 2	445 140
2.12	Screw M 5 X 16	403 263
2.13	Direct current fan	
	WTC 15/25-A	652 234
	WTC 32-A	652 235
2.14	Gasket fan air outlet WTC-A	481 401 30 32 7
2.15	Washer nut M 6	412 508
2.16	Burner cover	
	WTC 15-A	481 011 30 07 7
	WTC 25-A	481 111 30 07 7
2.17	Burner gasket	
	WTC 15-A	481 011 30 14 7
	WTC 25-A	481 111 30 14 7
2.18	Burner surface	
	WTC 15-A	481 011 30 15 7
	WTC 25-A	481 111 30 15 7
2.19	Stud screw 6 X 30	471 230
2.20	Socket pin 4x10-A4	422 227
2.21	Heat exchanger	
	WTC 15-A	481 011 30 01 7
	WTC 25/32-A	481 111 30 01 7
2.22	Seal service cover	
	WTC 15-A	481 011 30 05 7
	WTC 25-A	481 111 30 05 7
2.23	Service cover	
	WTC 15-A	481 011 30 02 7
	WTC 25-A	481 111 30 02 7
2.24	Double nipple R3/4 X G3/4 X 29	481 011 30 08 7
2.25	Flue gas sensor NTC WTC 15/25-A	481 011 30 26 7
2.26	Screw M 4 X 10 DIN 912	402 150
2.27	Safety plate flue gas sensor	481 011 30 27 7
2.28	Sleeve flue gas sensor WTC 15/25-A	481 011 30 28 7
2.29	Double nipple R1/4 X G3/8	
	(Conn. expansion vessel)	481 011 40 12 7
2.30	Double nipple Rp1/4I x R1/4 A1	
	(conn. pressure gauge) only vers. H-0	481 011 30 37 7
2.31	Screw M 8 X 16	409 256

Pos.	Description	Order No.
2.32	O ring 17.5 X 1.5	445 135
2.33	View port WTC 15/25-A	481 011 30 06 7
2.34	Circlip 20 X 1.0	435 467
2.35	Gasket ignition electrode WTC 15/25-A	481 011 30 23 7
2.36	Ignition electrode WTC 15/25-A	481 011 30 22 7
2.37	Gasket ionisation electrode WTC-A	481 011 30 25 7
2.38	Ionisation electrode WTC-A	481 011 30 11 2
2.39	NTC supply sensor Rp1/8	481 011 40 26 7
2.40	O ring 29 X 3.0	445 138
2.41	Screw M 6 X 20 DIN 912	402 350
2.42	Vent duct WTC 15/25-A	481 011 40 01 2
2.43	Supporting ring shut off valve WTC 15/25-A	481 011 30 33 7
2.44	Shut off valve 3/8I X 3/8A	662 033
2.45	Quick action vent valve G3/8	662 032
2.46	Seal flue gas duct flange WTC-A	481 011 30 12 7
2.47	Flue gas duct WTC 15/25/32-A	481 011 30 04 2
2.48	Screw	409 255
2.49	Spring washer	431 615
2.50	Screw M 6 X 5	403 319
2.51	Seal DN80 for PP flue gas pipe	669 252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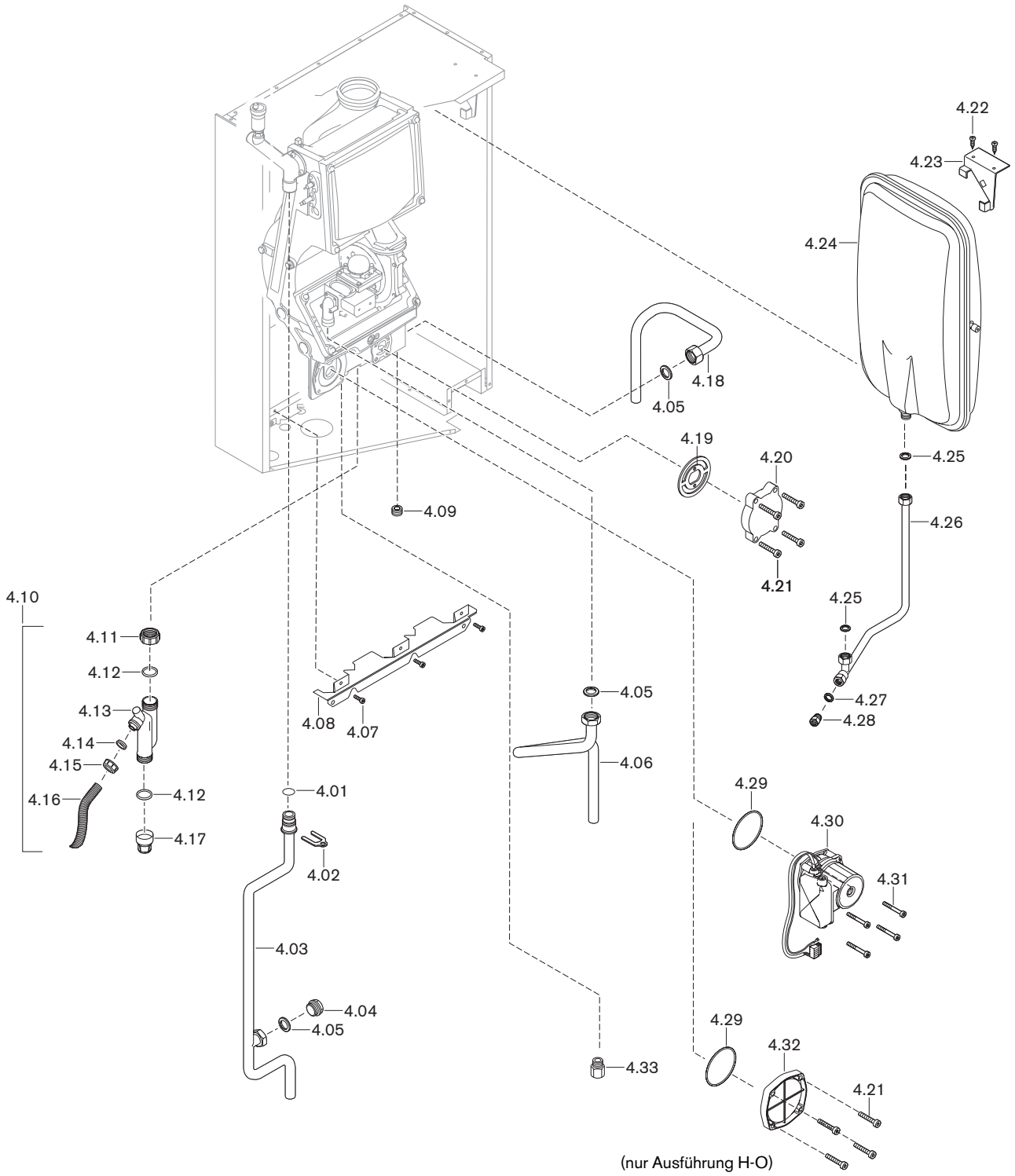
Pos.	Description	Order No.
3.01	Cowl for ignition cable WTC 15-32-A	481 011 30 43 7
3.02	Ignition cable WTC 15/25-A cpl. w. earth	481 011 30 10 2
3.03	Sleeved digital time switch	481 011 22 17 7
3.04	Pressure gauge 0-4 bar	481 011 22 27 7
3.05	Transformer for WCM WTC-A	481 011 22 12 7
3.06	Screw	409 352
3.07	Cable loom ST18 fan - supply sensor	481 011 22 05 2
3.08	Cable loom ST19a gas valve - water	481 012 22 06 2
3.09	Cable loom ST19b gas valve WTC 15/25-A-H	481 011 22 06 2
3.10	Switch wire GNGE 1.0 X 240 Chassis-PE	481 011 22 07 2
3.11	WCM-CPU, replacement circuit board WTC 15-32 vers. H, H-0, W, K WTC 25 vers. C	 481 015 22 06 2 481 113 22 06 2
3.12	Coded plug BCC WTC 15-A vers. H/H-0/W WTC 25-A vers. H/H-0/W WTC 32-A vers. H/H-0/W	 481 011 22 11 2 481 111 22 11 2 481 301 22 11 2
3.13	Insert bridge 2 pole	716 232
3.14	Plug No. 1 3 pole black Rast 5	716 220
3.15	Plug No. 2 3 pole grey Rast 5	716 221
3.16	Plug No. 3 2 pole turquoise Rast 5	716 222
3.17	Plug No. 4 2 pole red Rast 5	716 223
3.18	Plug No. 5 3 pole violet Rast 5	716 224
3.19	Plug No. 6 2 pole brown Rast 5	716 225
3.20	Plug No. 7 2 pole blue Rast 5	716 226
3.21	Plug No. 8 2 pole white Rast 5	716 236
3.22	Plug No. 9 2 pole green Rast 5	716 228
3.23	Plug No.10 2 pole yellow Rast 5	716 229

Pos.	Description	Order No.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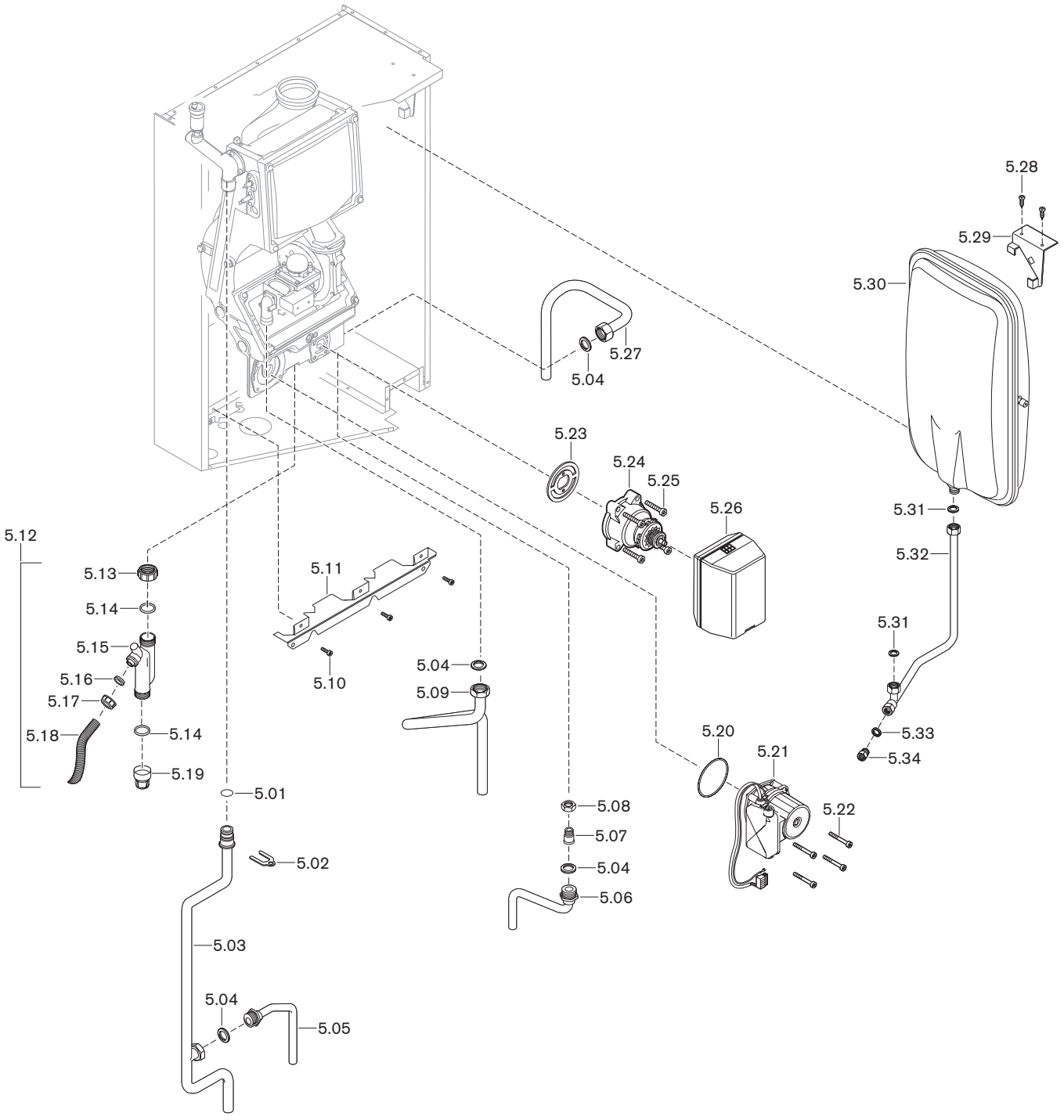
(nur Ausführung H-O)

Pos.	Description	Order No.
4.01	O ring 18 X 2.0	445 137
4.02	Safety plate supply pipe	481 011 40 14 7
4.03	Conn. pipe supply with plug conn. WTC 15-A WTC 25/32-A	 481 011 40 06 2 481 111 40 06 2
4.04	Cover screw G 3/4 A	481 011 40 29 7
4.05	Seal 17 X 24 X 2	441 076
4.06	Gas pipe with union nut G3/4	481 011 30 41 2
4.07	Screw M 4 X 10 DIN 912 8.8	402 150
4.08	Pipe manifold bracket front WTC 15/25-A	481 011 02 29 7
4.09	Screw R1/2	409 008
4.10	Siphon WTC 15/25/32-A compl.	481 011 40 16 2
4.11	Union nut G1 1/4 siphon	481 011 40 19 7
4.12	Seal siphon union nut G1 1/4	481 011 40 21 7
4.13	Siphon	481 011 40 16 7
4.14	Seal siphon union nut G1	481 011 40 20 7
4.15	Union nut G1 siphon	481 011 40 17 7
4.16	Condensate hose 25 X 3 X 1000 long	481 011 40 23 7
4.17	Lid siphon WTC 15/25-A	481 011 40 18 7
4.18	Connection pipe return WTC 15/25-A	481 011 40 07 2
4.19	Seal Change-over valve	481 012 40 02 7
4.20	Cover plate change-over valve WTC-H	481 011 40 24 2
4.21	Screw M 6 X 25 DIN 912	402 371
4.22	Screw DIN 7981-St4,2x13	409 123
4.23	Mounting exp. vessel top	481 011 40 03 7
4.24	Expansin vessel	481 011 40 02 7
4.25	Seal 10 X 14.8 X 2	441 077
4.26	Connection pipe WT-AD WTC 15/25-A	481 011 40 10 2
4.27	Supporting ring f. mount. valve press. gauge	481 011 40 28 7
4.28	Mounting valve R1/4 press. gauge	481 011 40 15 7
4.29	Pump seal	481 011 40 05 7
4.30	Circulation pump WTC 15-A PWM-X WTC 15-A WTC25-A PWM-X WTC 25-A PWM-X WTC 32-A UPM 15-70-PEA WTC15-32	 481 011 40 13 2 481 011 40 14 2 481 011 40 03 2 481 011 40 12 2 481 301 40 04 2 481 011 40 21 2
4.31	Screw M 6 X 45 DIN 912	402 361
4.32	Cover plate pump WTC 15/25-A vers. H-O	481 011 40 27 7
4.33	Double nipple Rp1/4I X R1/4A X 26 SW17 vers.H-0	481 011 30 37 7

Pos.	Description	Order No.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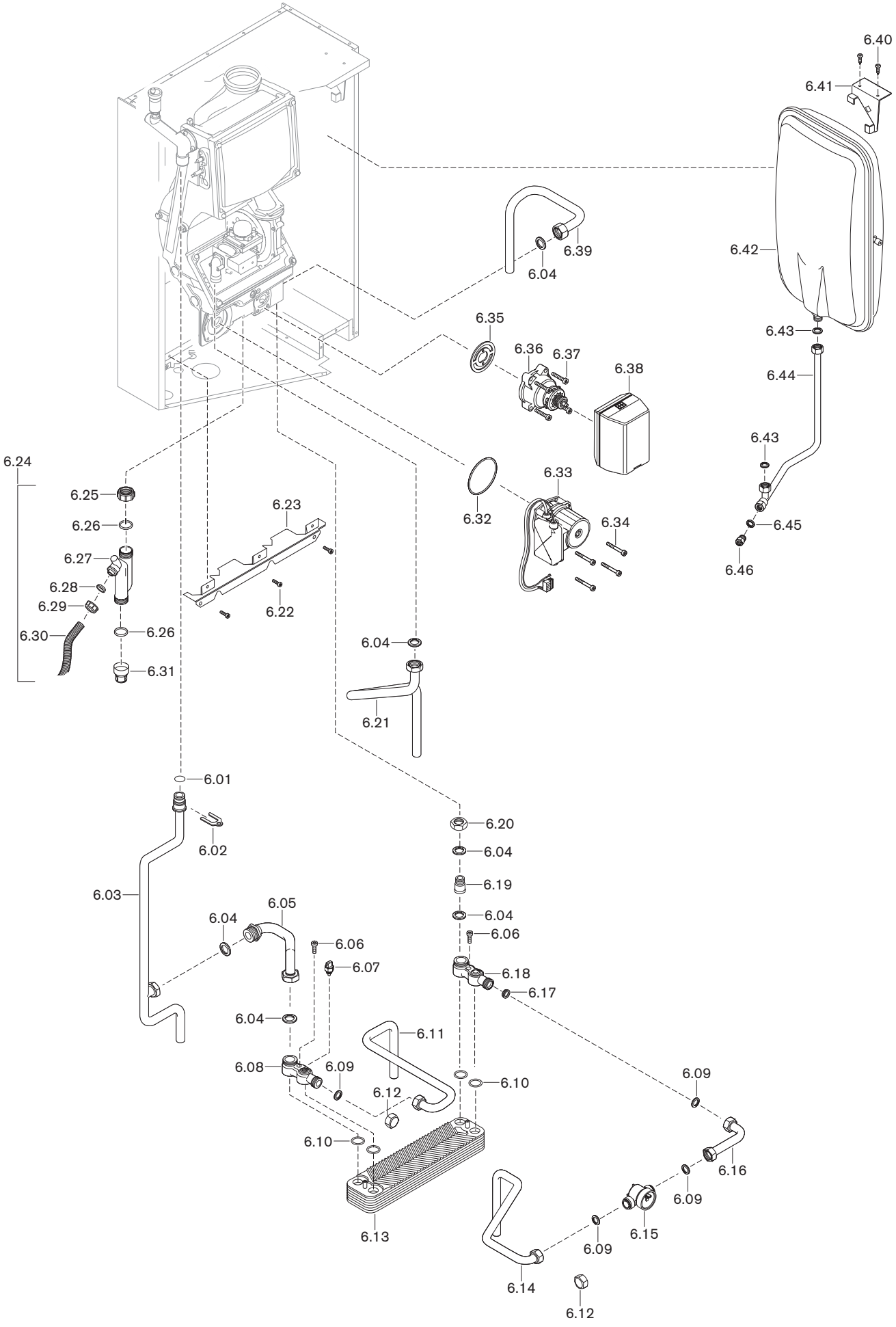
Pos.	Description	Order No.
5.01	O ring 18 X 2.0	445 137
5.02	Safety plate supply pipe	481 011 40 14 7
5.03	Connection pipe supply w. plug conn. WTC 15-A WTC 25/32-A	 481 011 40 06 2 481 111 40 06 2
5.04	Seal 17 X 24 X 2	441 076
5.05	Connection pipe supply tank	481 012 40 05 2
5.06	Connection pipe return tank	481 012 40 06 2
5.07	Screw in part R1/2	481 011 30 09 7
5.08	Union nut G3/4 X 22.2	481 011 30 10 7
5.09	Gas pipe with union nut G3/4	481 011 30 41 2
5.10	Screw M 4 X 10	402 150
5.11	Pipe manifold bracket front WTC 15/25-A	481 011 02 29 7
5.12	Siphon WTC 15/25/32-A compl.	481 011 40 16 2
5.13	Union nut G1 1/4 siphon	481 011 40 19 7
5.14	Seal siphon union nut G1 1/4	481 011 40 21 7
5.15	Siphon	481 011 40 16 7
5.16	Seal siphon union nut G1	481 011 40 20 7
5.17	Union nut G1 siphon	481 011 40 17 7
5.18	Condensate hose 25 X 3 X 1000 lang	481 011 40 23 7
5.19	Lid siphon WTC 15/25-A	481 011 40 18 7
5.20	Pump seal	481 011 40 05 7
5.21	Circulation pump WTC 15-A PWM-X WTC 15-A WTC 25-A PWM-X WTC 25-A PWM-X WTC 32-A UPM 15-70-PEA WTC15-32	 481 011 40 13 2 481 011 40 14 2 481 011 40 03 2 481 011 40 12 2 481 301 40 04 2 481 011 40 21 2
5.22	Screw M 6 X 45 DIN 912	402 361
5.23	Seal change-over valve	481 012 40 02 7
5.24	Valve base	481 012 40 04 7
5.25	Screw	402 371
5.26	Servomotor	481 012 40 03 7
5.27	Connection pipe return WTC 15/25-A	481 011 40 07 2
5.28	Screw DIN 7981-St4,2x13	409 123
5.29	Mounting exp. vessel top	481 011 40 03 7
5.30	Expansion vessel	481 011 40 02 7
5.31	Seal 10 X 14.8 X 2	441 077
5.32	Connection pipe WT-AD WTC 15/25-A	481 011 40 10 2
5.33	Supporting ring f. mount. valve press. gauge	481 011 40 28 7
5.34	Mounting valve R1/4 press. gauge	481 011 40 15 7

Pos.	Description	Order No.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Pos.	Description	Order No.
6.01	O ring 18 X 2,0	445 137
6.02	Safety plate supply pipe	481 011 40 14 7
6.03	Connection pipe supply with plug conn.	481 111 40 06 2
6.04	Seal 17 X 24 X 2	441 076
6.05	Conn. pipe supply PWT WTC 25-A versf.C	481 113 40 06 2
6.06	Screw M 5 X 10	402 224
6.07	NTC sensor WW G1/8 WTC 25-A vers.C	481 113 40 10 7
6.08	Flange left PWT WTC 25-A vers.C	481 113 40 05 7
6.09	Seal 13.5X 18.5X 2	441 078
6.10	O ring 18 X 3.5	445 139
6.11	Connection pipe WW WTC 25-A vers.C	481 113 40 10 2
6.12	Union nut G1/2 x 16	481 113 40 07 7
6.13	Plate heat exchanger WTC 25-A vers.C	481 113 40 03 7
6.14	Connectin pipe cold water flow sensor	481 113 40 07 2
6.15	Water flow sensor	481 113 40 12 2
6.16	Conn. pipe flow sens. plate heat ex.	481 113 40 09 2
6.17	Flow limiter	481 113 40 11 7
6.18	Flange right PWT WTC 25-A vers.C	481 113 40 04 7
6.19	Screw in part R1/2	481 011 30 09 7
6.20	Union nut G3/4 X 22,2	481 011 30 10 7
6.21	Gas pipe with union nut G3/4	481 011 30 41 2
6.22	Screw M 4 X 10 DIN 912 8.8	402 150
6.23	Pipe manifold bracket front WTC 15/25-A	481 011 02 29 7
6.24	Siphon WTC 15/25/32-A compl.	481 011 40 16 2
6.25	Union nut G1 1/4 siphon	481 011 40 19 7
6.26	Seal siphon union nut G1 1/4	481 011 40 21 7
6.27	Siphon	481 011 40 16 7
6.28	Seal siphon Union nut G1	481 011 40 20 7
6.29	Union nut G1 siphon	481 011 40 17 7
6.30	Condensate hose 25 X 3 X 1000 long	481 011 40 23 7
6.31	Lid siphon WTC 15/25-A	481 011 40 18 7
6.32	Pump seal	481 011 40 05 7
6.33	Circulation pump WTC 15-A PWM-X WTC 15-A WTC 25-A PWM-X WTC 25-A PWM-X WTC 32-A UPM 15-70-PEA WTC15-32	 481 011 40 13 2 481 011 40 14 2 481 011 40 03 2 481 011 40 12 2 481 301 40 04 2 481 011 40 21 2
6.34	Screw M 6 X 45	402 361
6.35	Seal change-over valve	481 012 40 02 7
6.36	Valve base	481 012 40 04 7
6.37	Screw	402 371
6.38	Servomotor	481 012 40 03 7
6.39	Connection pipe return WTC 15/25-A	481 011 40 07 2
6.40	Screw DIN 7981-St4,2x13	409 123
6.41	Mounting exp. vessel top	481 011 40 03 7
6.42	Expansion vessel	481 011 40 02 7
6.43	Seal 10 X 14.8 X 2	441 077
6.44	Connection pipe WT-AD WTC 15/25-A	481 011 40 10 2
6.45	Supporting ring f. mount. valve-press.gauge	481 011 40 28 7
6.46	Mounting valve R1/4 pressure gauge	481 011 40 15 7

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Product		Description	Performance
	**W-Burners**	The compact series, proven millions of times over: Economical, reliable, fully automatic. Gas, oil and dual fuel burners for domestic and commercial applications. The purflam burner gives almost soot-free combustion of oil with greatly reduced NO_x emissions.	Up to 570 kW
	**Monarch and industrial burners**	The legendary industrial burner: Tried and tested, long lived, clear construction. Gas, oil and dual fuel burners for district heat provision.	Up to 10,900 kW
	**multiflam® burners**	Innovative Weishaupt technology for large burners: Minimal emission values particularly at ratings over one megawatt. Oil, gas and dual fuel burners with patented fuel distribution system.	Up to 12,000 kW
	**WK industrial burners**	Modular powerhouses: Adaptable, robust, powerful. Oil, gas and dual fuel burners for industrial plant.	Up to 18,000 kW
	**Thermo Unit**	The Thermo Unit heating systems from cast iron or steel: Modern, economic, reliable. For environmentally friendly heating. Fuel: Gas or oil as desired.	Up to 55 kW
	**Thermo Condens**	The innovative condensing boilers with the SCOT system: Efficient, low in emissions, versatile. Ideal for domestic heating. Floor standing gas condensing boiler with ratings of up to 1200 kW(cascade), for higher heat demands.	Up to 1,200 kW
	**Heat pumps**	The heat pump programme offers solutions for utilisation of heat from air, soil and ground water. The systems are suitable for refurbishment or new builds.	Up to 130 kW
	**Solar systems**	Free energy from the sun: Perfectly coordinated components, innovative, proven. Pleasantly shaped flat roof collectors to support heating and of domestic water	
	**Water heater / energy reservoir**	The attractive domestic water heating range includes classic water heaters which are supplied through a heating system and energy reservoirs which can be fed through solar systems.	
	**Control technology / building management**	From control panels to complete building management systems – at Weishaupt you can find the entire spectrum of modern control technology. Future oriented, economical and flexible.	