Service Instructions

for use by heating contractor

Vitocrossal 300 CU3A
Models 26, 35, 45, 57, 94, 125, 160, 199
Floor mounted, gas-fired condensing boiler with MatriX gas burner and Lambda Pro control

For operation with natural gas and liquid propane gas
Heating input   19 to 199 MBH
**   5.6 to   58 kW**

VIESSMANN ®

VITOCROSSAL 300

AHRI CERTIFIED ®
C   www.ahridirectory.org

Product may not be exactly as shown

IMPORTANT

Read and save these instructions for future reference.

Safety, Installation and Warranty Requirements

Please ensure that these instructions are read and understood before commencing installation. Failure to comply with the instructions listed below and details printed in this manual can cause product/property damage, severe personal injury, and/or loss of life. Ensure all requirements below are understood and fulfilled (including detailed information found in manual subsections).

■ **Product documentation**
Read all applicable documentation before commencing installation. Store documentation near boiler in a readily accessible location for reference in the future by service personnel.

▶*For a listing of applicable literature, please see section entitled "Important Regulatory and Installation Requirements".*

■ **Warranty**
Information contained in this and related product documentation must be read and followed. Failure to do so renders the warranty null and void.

■ **Licensed professional heating contractor**
The installation, adjustment, service and maintenance of this equipment must be performed by a licensed professional heating contractor.

▶*Please see section entitled "Important Regulatory and Installation Requirements".*

■ **Contaminated air**
Air contaminated by chemicals can cause by-products in the combustion process, which are poisonous to inhabitants and destructive to Viessmann equipment.

▶*For a listing of chemicals which cannot be stored in or near the boiler room, please see subsection entitled "Mechanical room" in the "Installation Instructions".*

■ **Advice to owner**
Once the installation work is complete, the heating contractor must familiarize the system operator/ ultimate owner with all equipment, as well as safety precautions/requirements, shutdown procedure, and the need for professional service annually before the heating season begins.

⚠ WARNING

Installers must follow local regulations with respect to installation of carbon monoxide detectors. Follow the Viessmann maintenance schedule of the boiler contained in this manual.

Operating and Service Documentation

It is recommended that all product documentation such as parts lists, operating and service instructions be handed over to the system user for storage. Documentation is to be stored near boiler in a readily accessible location for reference by service personnel.

■ **Carbon monoxide**
Improper installation, adjustment, service and/or maintenance can cause flue products to flow into living space. Flue products contain poisonous carbon monoxide gas.
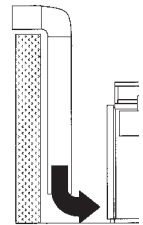
▶*For information pertaining to the proper installation, adjustment, service and maintenance of this equipment to avoid formation of carbon monoxide, please see subsection entitled "Mechanical room" and "Venting requirements" in the "Venting System Installation Instructions".*

■ **Fresh air**
This equipment requires fresh air for safe operation and must be installed ensuring provisions for adequate combustion and ventilation air exist.

▶*For information pertaining to the fresh air requirements of this product, please see subsection entitled "Mechanical room" in the "Installation Instructions".*

■ **Equipment venting**
Never operate boiler without an installed venting system. An improper venting system can cause carbon monoxide poisoning.

▶*For information pertaining to venting and chimney requirements, please see section entitled "Venting Connection". All products of combustion must be safely vented to the outdoors.*

⚠ WARNING

This boiler requires fresh air for safe operation and must be installed with provisions for adequate combustion and ventilation air (in accordance with local codes and regulations of authorities having jurisdiction).

Do not operate this boiler in areas with contaminated combustion air. High levels of contaminants such as dust, lint or chemicals can be found at construction sites, home renovations, in garages, workshops, in dry cleaning/laundry facilities, near swimming pools and in manufacturing facilities.

Contaminated combustion air will damage the boiler and may lead to substantial property damage, severe personal injury and/or loss of life. Ensure boiler/burner is inspected and serviced by a qualified heating contractor at least once a year in accordance with the Service Instructions of the boiler.

5673 649 - 20

Safety, Installation and Warranty Requirements *(continued)*

Fiberglass wool and ceramic fiber materials

> ⚠ **WARNING**
>
> **Inhaling of fiberglass wool and/or ceramic fiber materials is a possible cancer hazard. These materials can also cause respiratory, skin and eye irritation.**

The state of California has listed the airborne fibers of these materials as a possible cancer hazard through inhalation. When handling these materials, special care must be applied.

Suppliers of ceramic fiber products recommend the following first aid measures:

- Respiratory tract (nose and throat) irritation:
  If respiratory tract irritation develops, move the person to a dust free location.

- Eye irritation: If eyes become irritated, flush immediately with large amounts of lukewarm water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes.

- Skin irritation: If skin becomes irritated, remove soiled clothing. Do not rub or scratch exposed skin. Wash area of contact thoroughly with soap and water. Using a skin cream or lotion after washing may be helpful.

- Gastrointestinal irritation: If gastrointestinal tract irritation develops, move the person to a dust free environment.

Suppliers of fiberglass wool products recommend the following precautions be taken when handling these materials:

- Avoid breathing fiberglass dust and contact with skin and eyes.
- Use NIOSH approved dust/mist respirator.
- Wear long-sleeved, loose fitting clothing, gloves and eye protection.
- Wash work clothes separately from other clothing. Rinse washer thoroughly.
- Operations such as sawing, blowing, tear-out and spraying may generate airborne fiber concentration requiring additional protection.

First aid measures

- If eye contact occurs, flush eyes with water to remove dust. If symptoms persist, seek medical attention.
- If skin contact occurs, wash affected areas gently with soap and warm water after handling.

> ⚠ **WARNING**
>
> **Appliance materials of construction, products of combustion and the fuel contain alumina, silica, heavy metals, carbon monoxide, nitrogen oxides, aldehydes and/or other toxic or harmful substances which can cause serious injury or loss of life and which are known to the State of California to cause cancer, birth defects and other reproductive harm. Always use proper safety clothing, respirators and equipment when servicing or working nearby the appliance.**

About these Service Instructions

⚠ **Take note of all symbols and notations intended to draw attention to potential hazards or important product information. These include "WARNING", "CAUTION", and "IMPORTANT". See below.**

> ⚠ **WARNING**
>
> **Indicates an imminently hazardous situation which, if not avoided, could result in loss of life, serious injury or substantial product/property damage.**

▶ Warnings draw your attention to the presence of potential hazards or important product information.

> ⚠ **CAUTION**
>
> **Indicates an imminently hazardous situation which, if not avoided, may result in minor injury or product/property damage.**

▶ Cautions draw your attention to the presence of potential hazards or important product information.

> **IMPORTANT**

▶

▶ Helpful hints for installation, operation or maintenance which pertain to the product.

▶ This symbol indicates that additional, pertinent information is to be found.

▶ This symbol indicates that other instructions must be referenced.

Page

Necessary Tools

Testing/analysis equipment (Use only calibrated equipment)

- Multimeter to measure 0 - 230V, 0 - 12A AC and 0-100 mA DC
- Flue gas analyzer to measure % CO_2 or O_2 (i.e. Bacharach fluid samplers or suitable electronic analyzer)
- Manometer to measure gas pressure 0 to 11 "w.c. (accurately) and up to 28 "w.c. gas pressure (or a non-electric Magnehelic® manometer may also be utilized)
- Stack thermometer 0°F to 500°F (0°C to 260°C)
- Bacharach calculator or suitable tables to calculate efficiency
- Carbon monoxide measuring equipment 0 to 400 ppm

Cleaning supplies

- Plastic hand brush
- Rags

Special items

- Approved leak detection fluid for natural gas and liquid propane gas
- Pipe joint sealant

Important Regulatory and Installation Requirements

Codes

The installation of this unit shall be in accordance with local codes or, in the absence of local codes, use CAN/CSA-B149.1 or .2 Installation Codes for Gas Burning Appliances for Canada. For U.S. installations use the National Fuel Gas Code ANSI Z223.1. Always use latest editions of codes.

In Canada all electrical wiring is to be done in accordance with the latest edition of CSA C22.1 Part 1 and/or local codes. In the U.S. use the National Electrical Code ANSI/NFPA 70. The heating contractor must also comply with both the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1, and the Installation Code for Hydronic Heating Systems, CSA B214, where required by the authority having jurisdiction.

Technical literature

Literature for the Vitocrossal 300 CU3A boiler:
- Technical Data Manual
- Installation Instructions
- Service Instructions
- Operating Instructions and User's Information Manual
- Instructions of other Viessmann products utilized and installed
- Installation codes mentioned in this manual

Leave all literature at the installation site and advise the system operator/ultimate owner where the literature can be found. Contact Viessmann for additional copies.

This product comes with several safety instruction labels attached. Do not remove! Contact Viessmann immediately if replacement labels are required.

Initial start-up

Initial start-up must be performed by a qualified heating contractor. Proper completion of the Maintenance Record by the heating contractor is also required. The Maintenance Record is located in the Service Instructions.

Carbon Monoxide Detectors

The installer must verify that at least one carbon monoxide alarm has been installed within a residential living space or home following the alarm manufacturer's instructions and applicable codes before putting the appliance into operation.

Working on the equipment

The installation, adjustment, service, and maintenance of this boiler must be done by a licensed professional heating contractor who is qualified and experienced in the installation, service, and maintenance of hot water boilers. There are no user serviceable parts on the boiler, burners, or control.

Please carefully read this manual prior to attempting start-up, maintenance or service. Any warranty is null and void if these instructions are not followed.

For information regarding other Viessmann System Technology componentry, please reference documentation of the respective product.

We offer frequent installation and service seminars to familiarize our partners with our products. Please inquire.

Ensure main power supply to equipment, the heating system, and all external controls has been deactivated. Close main gas supply valve. Take precautions in all instances to avoid accidental activation of power during service work.

The completeness and functionality of field supplied electrical controls and components must be verified by the heating contractor. These include low water cut-offs, flow switches (if used), staging controls, pumps, motorized valves, air vents, thermostats, etc.

Instructing the system user

The installer of the system is responsible to ensure the system operator/ultimate owner is made familiar with the system functioning, its activation, and its shut-down.

The following topics must be covered:
- Proper system operation sequence.
- Explain the equipment.
- Demonstrate an emergency shut-down, what to do and what not.
- Explain that there is no substitute for proper maintenance to help ensure safe operation.

5673 649 - 20

Important Regulatory and Installation Requirements *(continued)*

CSD-1 Field Testing of High Limit Switches for Vitocrossal 300 CU3A boilers – where required by law.

VIESSMANN IS NOT RESPONSIBLE FOR ANY DAMAGES THAT THE FOLLOWING TEST PROCEDURE MAY RESULT IN BY OVERHEATING THE SYSTEM.

The fixed high limit, when tripped, produces a fault that will require manual reset of the boiler control.

Fixed High Limit fault simulation:
- Run the boiler to high fire via relays test.
- Throttle the boiler valve to a point where the burner will run with as little flow as possible.
- When the burner shuts down on the electronic limit, close the ball valve to stop the flow.
- The boiler temperature should continue a steady increase to trip the fixed high limit.
- Once the fixed high limit is tripped, slowly open the boiler valve to safely cool the boiler down.

Applicability

> ⚠️ **CAUTION**
>
> **The boiler serial number must be provided when ordering replacement parts.**

IMPORTANT

When ordering replacement parts, provide the 16-digit boiler serial number (on the bar code label), located as shown underneath boiler front enclosure panel. Refer to page 11 for instructions on how to remove front enclosure panel.

Model No. CU3A 26, 94
Serial No. 7553000 ☐☐☐☐☐☐☐☐☐

Model No. CU3A 35, 125
Serial No. 7553001 ☐☐☐☐☐☐☐☐☐

Model No. CU3A 45, 160
Serial No. 7553002 ☐☐☐☐☐☐☐☐☐

Model No. CU3A 57, 199
Serial No. 7553003 ☐☐☐☐☐☐☐☐☐

Legend
Ⓐ Digital Vitotronic boiler control unit
Ⓑ Water-cooled stainless steel combustion chamber
Ⓒ Modulating MatriX gas burner – for extremely clean combustion
Ⓓ Stainless steel Inox-Crossal heat exchanger
Ⓔ Highly effective thermal insulation
Ⓕ Flue gas collector with condensate drain pipe
Ⓖ Combustion air intake for direct vent (two-pipe) systems
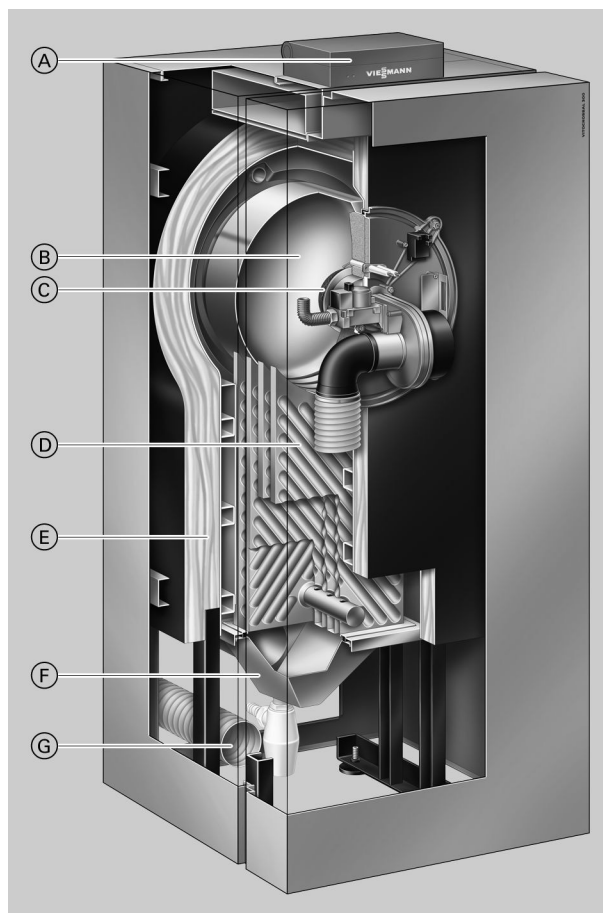
Product Information

Natural gas and liquid propane gas-fired condensing heating boiler for weather-responsive operation in closed loop, forced circulation hot water heating systems for space heating and domestic hot water (DHW) production.

The Vitocrossal 300 CU3A boiler comes factory set for operation with natural gas. For a fuel conversion to liquid propane gas no conversion kit is required.

Boiler model must be selected based on an accurate heat loss calculation of the building. Ensure boiler model is compatible with connected radiation.

Vitocrossal 300 CU3A boilers are factory-tested and calibrated. Further gas valve adjustments are not typically required during field start-up.

📖 Follow the Vitocrossal 300 CU3A Venting System Installation Instructions to vent this boiler.

5673 649 - 20

Mechanical Room

During the early stages of designing a new home, we recommend that proper consideration be given to constructing a separate mechanical room dedicated to the gas- or oil-fired heating equipment and domestic hot water storage tank(s).

The boiler must be located in a heated indoor area, near a floor drain, and as close as possible to a wall. Whenever possible, install the boiler near an outside wall so that it is easy to duct the venting system to the boiler.

Ensure that the boiler location does not interfere with the proper circulation of combustion and ventilation air of other fuel burning equipment within the mechanical room (if applicable).

The maximum room temperature of the mechanical room where the boiler is located must not exceed 104°F (40°C).

Installation area conditions

⚠ **WARNING**

Incorrect ambient conditions can lead to damage to the heating system and put safe operation at risk.

■ Ensure ambient temperatures are higher than 32°F (0°C) and lower than 104°F (40°C).
■ Prevent the air from becoming contaminated by halogenated hydrocarbons (e.g. as contained in paint solvents or cleaning fluids) and excessive dust (e.g. through grinding or polishing work). Combustion air for the heating process, and ventilation of the boiler room must be free of corrosive contaminants. To that end, any boiler must be installed in an area that has no chemical exposure. The list to the right indicates the main, currently known sources.
■ Avoid continuously high levels of humidity (e.g. through frequent drying of laundry).
■ Never close existing ventilation openings.

⚠ **WARNING**

If you notice fire coming from the appliance, call the fire department immediately! Do not attempt to extinguish the fire unless qualified to do so.

IMPORTANT

The service life of the boiler's exposed metallic surfaces, such as the casing and fan housing, is directly influenced by proximity to damp and salty marine environments. In such areas, higher concentration levels of chlorides from sea spray, coupled with relative humidity, can lead to degradation of the exposed metallic surfaces mentioned above. Therefore, it is imperative that boilers installed in such environments not be installed using direct vent systems which draw outdoor air for combustion. Such boilers must be installed using room air dependent vent systems; i.e. using room air for combustion. The indoor air will have a much lower relative humidity and, hence, potential corrosion will be minimized.

Sources of combustion and ventilation air contaminants Areas likely to contain contaminants:

■ New building construction
■ Swimming pools
■ Remodelling areas, hobby rooms
■ Garages with workshops
■ Furniture refinishing areas
■ Dry cleaning/laundry areas and establishments
■ Auto body shops
■ Refrigeration repair shops
■ Metal fabrication plants
■ Plastic manufacturing plants
■ Photo processing plants
■ Beauty salons

Products containing contaminants:

■ Chlorine-type bleaches, detergents and cleaning solvents found in household laundry rooms
■ Paint and varnish removers
■ Hydrochloric acid, muriatic acid
■ Chlorine-based swimming pool chemicals
■ Spray cans containing chlorofluorocarbons
■ Chlorinated waxes and cleaners
■ Cements and glues
■ Refrigerant leaks
■ Calcium chloride used for thawing
■ Sodium chloride used for water softening salt
■ Permanent wave solutions
■ Adhesives used to fasten building products and other similar items
■ Antistatic fabric softeners used in clothes dryers

Boiler operation in marine environments (damp, salty coastal areas)
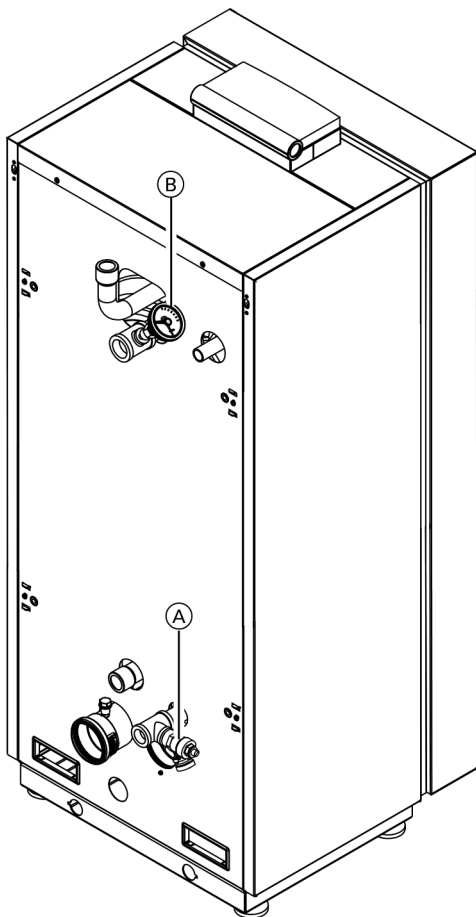
⚠ **WARNING**

Fire causes a risk of burns and explosion!
■ **Shut down the boiler**
■ **Close fuel shut-off valves**
■ **Use a tested fire extinguisher, class ABC.**

5673 649 - 20

Filling the Heating System

⚠ CAUTION

Unsuitable fill water increases the level of deposits and corrosion, and may lead to damage to the equipment.
- **Thoroughly flush the entire heating system prior to filling with water.**
- **Only use water of potable quality.**
- **The water will have to be softened if it is harder than 8.77 grains / 150 ppm total dissolved solids.**
- **Inhibitors or antifreeze additives suitable for heating systems may be added manually.**

1. Check the pre-charge pressure of the diaphragm expansion vessel when the system is still cold.

Note: If the pre-charge pressure of the diaphragm expansion vessel is lower than the static pressure of the system, top up with nitrogen until the precharge pressure 1.5 to 3 psi (0.1 to 0.2 bar) is higher than the static system pressure. The static pressure corresponds to the static head.

2. Close the gas shutoff valve.

3. Open any installed shutoff valves.

4. Fill the heating system with water and vent it, until the fill pressure 1.5 to 3 psi (0.1 to 0.2 bar) is higher than the pre-charge pressure of the diaphragm expansion vessel using the boiler drain/fill valve Ⓐ.

Max. operating pressure: .... 30 psi (2 bar)
Min. operating pressure: .... 14 psi (1 bar)
Pressure relief valve: .... 30 psi (2 bar)

5. Mark the set pressure at temperature and pressure gauge Ⓑ.

6. Return the shutoff valves to their operating position.

7. Close boiler drain/fill valve Ⓐ.

Removing the Front Panel
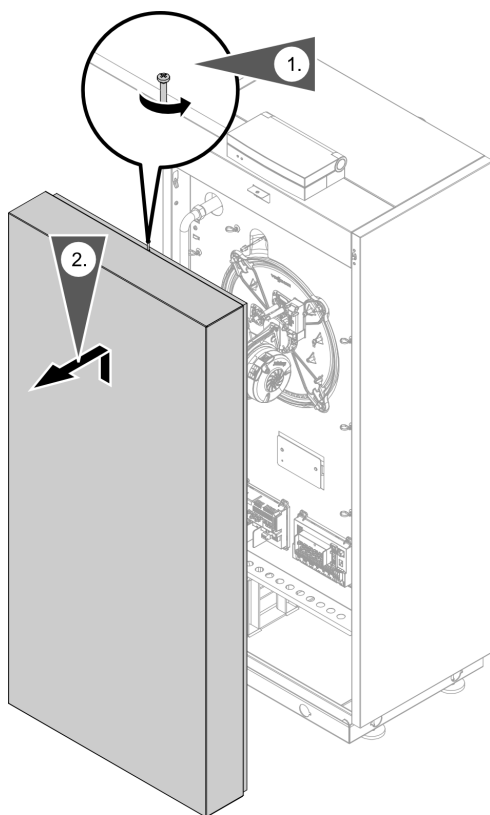
1. Remove the retaining screw and set aside.

2. Pull the top of the boiler cover away from the boiler, lift off and set aside.

Filling Siphon with Water

1. Undo fitting Ⓐ of siphon Ⓑ, remove the siphon and fill it with water.
   Note: There is a risk of flue gas escaping if the siphon is not filled with water.

2. Refit siphon Ⓑ.

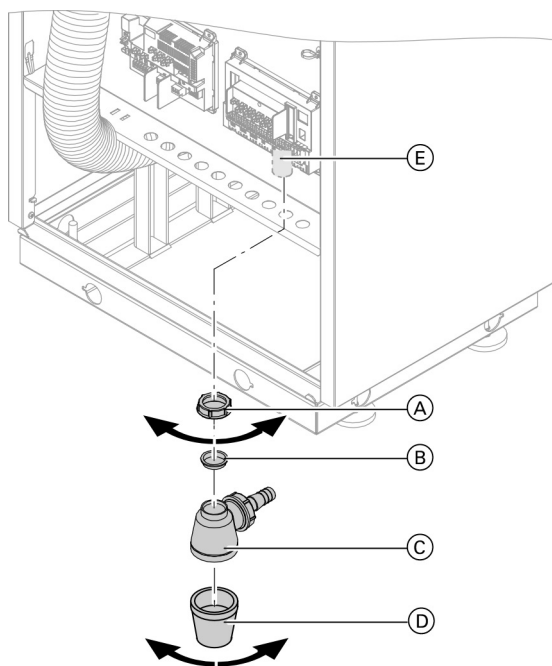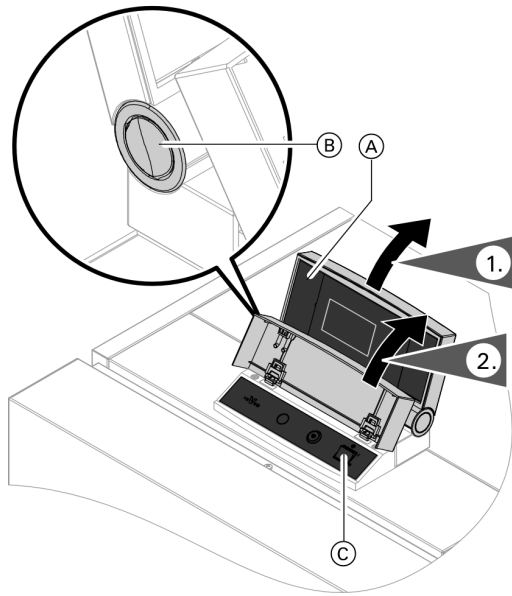## Opening the Control Unit

Vitotronic 200, type KW6B

1. Lift the programming unit Ⓐ into the upright position (the angle of the programming unit can be adjusted using the push button on the side Ⓑ).

2. Open the control cover and turn the boiler on by switching the on/off switch Ⓒ.

Legend
Ⓐ Top part of control unit with programming unit
Ⓑ Push button for changing the angle
Ⓒ On/off switch

Check Power Supply Connection

An external accessories connection modules are integrated into the Vitocrossal 300 CU3A boiler, which requires a 120VAC power supply from a wall receptacle (15A fuse protected).
Refer to the Installation Instructions shipped with the boiler.

Voltage range

The voltage at connector 40 of the boiler control must be 120V (see wiring diagram).

Neutral conductor

The electrical power supply must have a neutral conductor.

IMPORTANT

In Canada all electrical wiring is to be done in accordance with the latest edition of CSA C22.1 Part 1 and/or local codes. In the U.S. use the National Electrical Code ANSI/ NFPA 70. The heating contractor must also comply with both the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1.

Note: The line conductor "L " and the neutral conductor "N" must not be interchanged.
See wiring diagram on page 101 in section entitled "Additional Information".
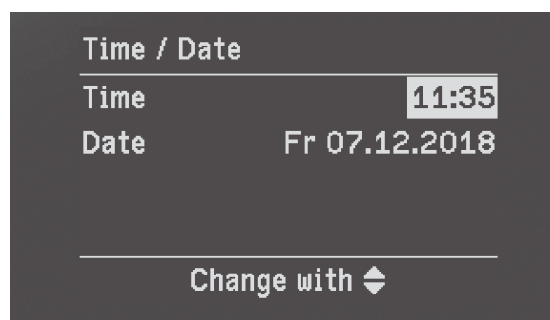
Start-up Wizard

```
Sprache
Deutsch              DE  ☑
American English     EUS ☐
Français Canadien    FCA ☐
_____
       Wählen mit ⬍
```

Select Language

At the commissioning stage, the display is in German.

1. "Sprache" (Language) Deutsch DE (German)
2. Select the required language with ▲/▼
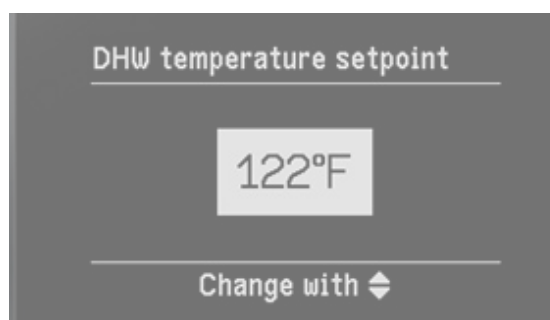3. Accept by pressing OK

```
Time / Date
Time              11:35
Date        Fr 07.12.2018
_____
      Change with ⬍
```

Set time and date

1. Using the ▲/▼ set the current time
2. Accept by pressing OK, this will move to date
3. Using the ▲/▼ set the current date
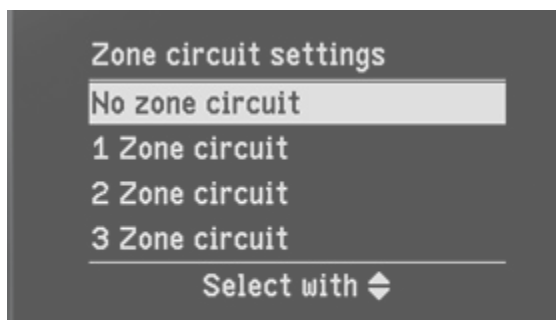4. Press OK to complete

```
Temperature unit
Degrees Celsius     °C  ☑
Degrees Fahrenheit  °F  ☐
_____
      Select with ⬍
```
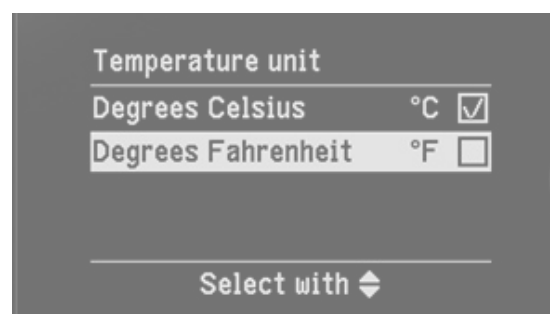
Select temperature unit

1. Select the temperature unit "°C" or "°F" using the ▲/▼
2. Accept by pressing OK

```
DHW temperature setpoint

        122°F
_____
      Change with ⬍
```

Set DHW temperature setpoint

1. Set DHW temperature setpoint with ▲/▼
2. Accept by pressing OK

Note: if the DHW sensor is installed.

```
Zone circuit settings
No zone circuit
1 Zone circuit
2 Zone circuit
3 Zone circuit
      Select with ⬍
```
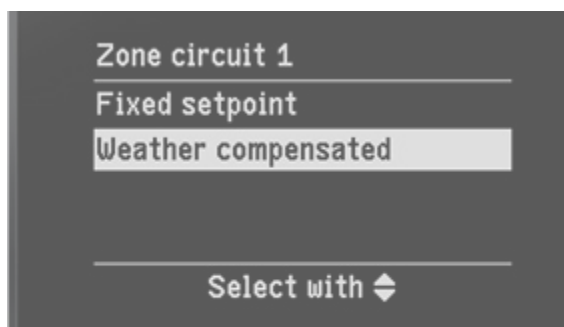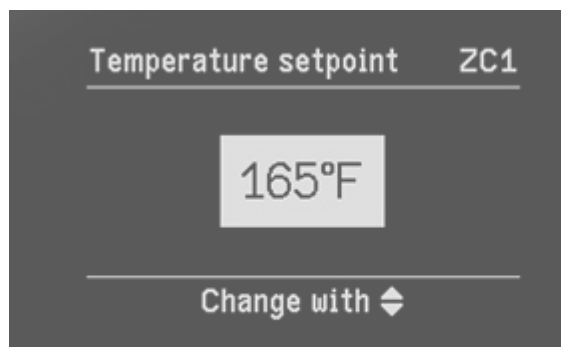
Select zone circuits

During the start-up wizard an additional display screen will come up asking for the number of connected zone circuits use ▲/▼ to adjust and press OK.

If no zone circuit is selected the control will finish the set up and display will show DHW/Heating circuit 1, outdoor temperature, indoor temperature setup and burner operating status.

Start-up Wizard *(continued)*

Select zone circuit type

Each zone circuit can be operated either as a fixed setpoint or weather compensated (using the outdoor temperature sensor) thermostat, use ▲/▼ to select and press OK.

Select fixed setpoint

For zone circuits with fixed setpoint operation select desired supply water temperature use ▲/▼ to adjust and press OK.
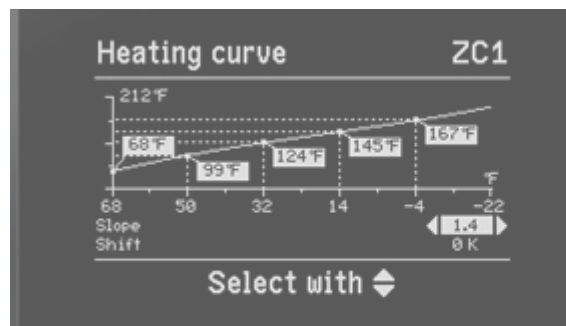
Adjust heating curve

Select between slope and shift with ▲/▼ and ▶/◀ to adjust and press OK.
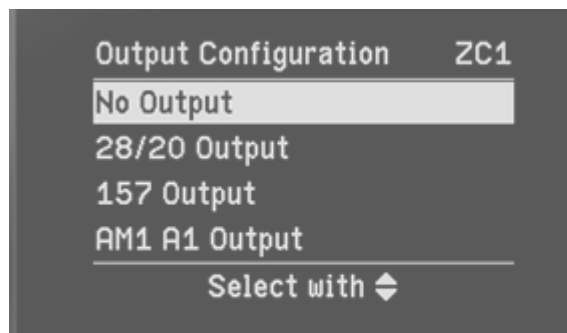
Select pump output

Assign desired pump output for zone circuit with ▲/▼ and press OK.

Start-up Wizard *(continued)*

Confirm pump output

Confirmation of selected pump output and press OK.

i Zone circuit settings

Zone circuit 1 28/20 Output

Continue with OK

Zone circuit temperature setting

For the selected zone with fixed set point thermostat will display zone circuit temperature setting.

◄ ZC1 ►

Zone circuit 1

160°F 88%

Boiler temperature 140°F

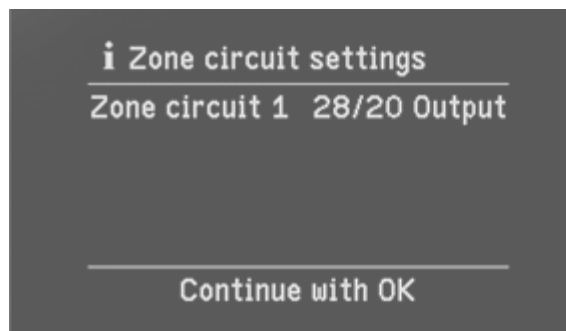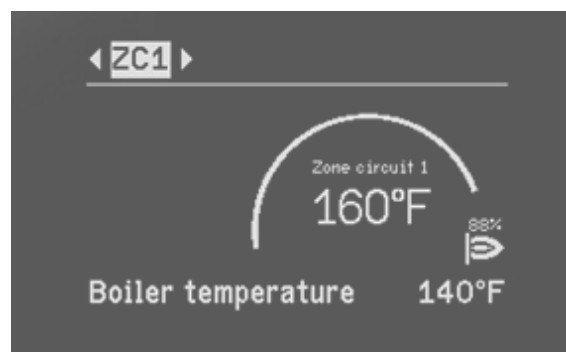**Weather compensated operation**

For the selected zone circuit with weather compensated operation the current outdoor temperature and the current setpoint boiler temperature as calculated by the outdoor reset curve.

◄ ZC1 ►

Zone circuit 1

50°F 165°F 88%

Boiler temperature 140°F

Making changes using the start-up wizard

In the event that an error has been made in the initial set-up of the start-up wizard or additional system components have been added to the system, the start-up wizard can be restarted at any time by;

1. Press OK and 'menu' simultaneously for approximatelty 4 sec.
2. "Service Functions"
3. "Set-up Wizard"
4. ▲/▼ to select 'Yes'
5. Press OK and the start-up wizard will restart

It is recommended the settings are recorded prior to restarting the start-up wizard as some settings may be reset during this process.

Designating Heating Circuits

In the delivered condition, the heating circuits are designated "Heating circuit 1", "Heating circuit 2" and "Heating circuit 3" (if installed).
If the system user prefers, the heating circuits can be designated differently to suit the specific system.
To enter names for heating circuits:

Refer to the Operating Instructions

Setting High Altitude

In the factory default setting, the boiler is equipped to operate in altitudes of up to 5,000 ft. (1,500 m).
Altitude can be set using coding address 93:
(in coding level 2 General).

- Coding 11:9 must be set in order to unlock coding 93:.
- 93:0 is reserved for altitudes up to 5000 ft. (1500 m).
- 93:6 must be set for altitudes from 5000 ft. (1500 m). to 10000 ft. (3000 m)
- Setting back to 93:0 turns off the high altitude function.

```
┌─────────────────────────────────────────────────┐
│  IMPORTANT                                        │
└─────────────────────────────────────────────────┘
```

Do not set or use coding addresses 93:1 to 93:5.

- After setting coding address 93:, set coding address 11:0
- The program is automatically disabled after 20 minutes.

5673 649 - 20

Select Gas Type

Note: the Vitocrossal 300 CU3A boiler is factory set to operate with natural gas . See following subsection for conversion instructions to liquid propane gas.

1. Ensure that the fuel type listed on the boiler rating plate is the correct type for the installation being attempted.
2. Record fuel type in Maintenance Record on page 113.

The Vitocrossal 300 CU3A boiler is for use with gases whose characteristics fall within the following ranges. Do not use any other types of gas.

		Natural gas	**Liquid propane gas**
Heating value (gross)	Btu/ft^3	970 to 1100	2466 to 2542
Specific gravity		0.57 to 0.70	1.522 to 1.574
Ultimate carbon dioxide (CO_2)	%	11.7 to 12.2	13.73 to 13.82

Convert Fuel Type to LPG
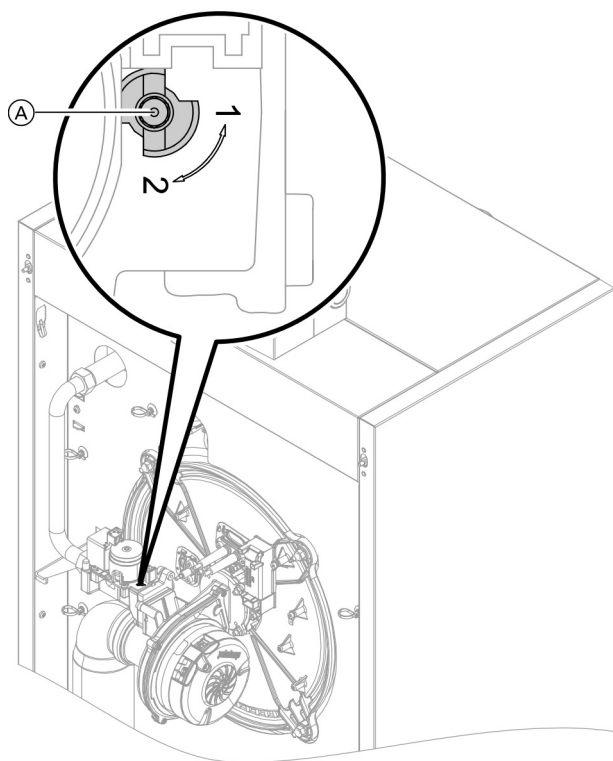
Gas type conversion

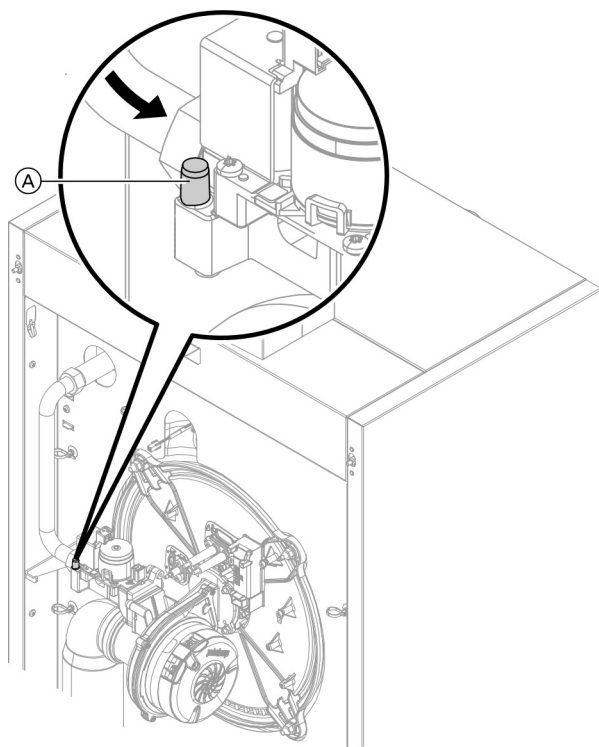1. Set adjusting screw Ⓐ on the gas valve to "2".

2. Turn ON/OFF switch "Ⓞ" ON.

3. Select the gas type in coding address "82".
   - Call up code 2.
   - "General"
   - In coding address "11", select value "9".
   - In coding address "82", select value "1" (LPG operation).
   - Set code "11" value unequal "9".
   - End service functions.

4. Open the gas shut-off valve

5. Affix fuel conversion label supplied with the fuel conversion kit as shown in the fuel conversion kit instructions.

⚠ WARNING

Hot surfaces can cause burns
DO NOT TOUCH!
Allow to cool before servicing

Measure Static Pressure and Running Pressure

IMPORTANT

A CO$_2$ measurement (see page 28) must be taken before and after working on gas appliances to eliminate risks to health and to guarantee the satisfactory condition of the system.

IMPORTANT

The burner is automatically ignited and starts operation after a safety time has elapsed. During initial start-up, the unit may indicate a fault because of air in the gas supply pipe (especially for liquid propane gas). After approx. 5 seconds, press the "R" button to reset the burner. The ignition procedure is repeated. This boiler employs a direct spark ignition system.

⚠ WARNING

Ensure that there is no open flame in the room.

⚠ WARNING

**Hot surfaces can cause burns
DO NOT TOUCH!
Allow to cool before servicing**

1. To measure static and/or running pressure remove boiler enclosure panel as indicated page 11 in these instructions.

2. Close gas shutoff valve (field supplied).

3. Loosen screw at inlet gas pressure port Ⓐ on the gas combination valve, do not remove completely. Connect manometer.

4. Open the gas shutoff valve.

5. Measure static pressure. Values must be:
   14 "w.c. maximum for NG
   14 "w.c. maximum for LPG

6. Enter measured value into Maintenance Record on page 113 in this manual.

7. Start up boiler, using the ON/OFF switch "①" on the boiler control.
   Note: Flip up lower orange cover to access the ON/OFF switch.

8. Measure the running pressure; value must be:
   Note: Use suitable measuring instruments calibrated with a minimum resolution of 0.04 "w.c. for measuring the running pressure.

Running supply pressure with		Corrective action
NG	**LPG**	
under 4 "w.c.	under 4 "w.c.	Do not start the boiler. Notify your gas supply utility or LPG supplier.
4 to 14 "w.c.	10 to 14 "w.c.	Start up boiler.
over 14 "w.c.	over 14 "w.c.	Do not attempt adjustment. Call local gas utility to decrease pressure or install up stream gas pressure regulator. Boiler valve must not be exposed to pressure over 14 "w.c.

9. Enter gas type into Maintenance Record on page 113 in this manual.

10. Switch off the ON/OFF switch "①" on the boiler control, close the gas shut-off valve, remove the manometer and re-tighten the screw at inlet gas pressure port Ⓐ.

⚠ WARNING

Never purge a gas line into a combustion chamber. Never use matches, candles, flame, or other sources of ignition for purpose of checking leakage. Use a soap and water solution to check for leakage. A failure to follow this warning could result in fire, explosion, personal injury or death.

Setting the Maximum Output

You can limit the maximum output for heating operation. The limit is set via the modulation range. The max. adjustable output is limited upwards by the boiler coding card.

1. Press OK and ☰ simultaneously for approx. 4 sec.

2. "Service functions"

3. "Max. output"

4. "Change?" Select "Yes". A value flashes on the display (e.g. "85"). In the delivered condition, this value represents 100% of rated output.

5. Set the required value.

Check All Primary and Secondary Circuit Connections for Leaks

⚠ WARNING

Hot surfaces can cause burns
DO NOT TOUCH!
Allow to cool before servicing

Check heating system and domestic hot water connections (if applicable). Ensure all connections are pressure tight. Correct any leaks found on fittings, pumps, valves, etc.

Check Gas Pipes and Fittings for Leaks

⚠ WARNING

Hot surfaces can cause burns
DO NOT TOUCH!
Allow to cool before servicing

Note: For the tightness test, use only suitable and approved leak detecting agents and devices. Leak detecting agents with unsuitable contents (e.g. nitrites, sulphides) can lead to material damage. Remove residues of the leak detecting agent after testing.

⚠ WARNING

Escaping gas leads to a risk of explosion.
Check gas equipment for tightness.

⚠ WARNING

The gas supply piping must be leak tested before placing the boiler in operation.

⚠ CAUTION

Ensure all joints of gas line are pressure tight and that gas valves do not leak when under normal operating pressure (use approved leak detection liquid).

5673 649 - 20

19

Perform Combustion Analysis
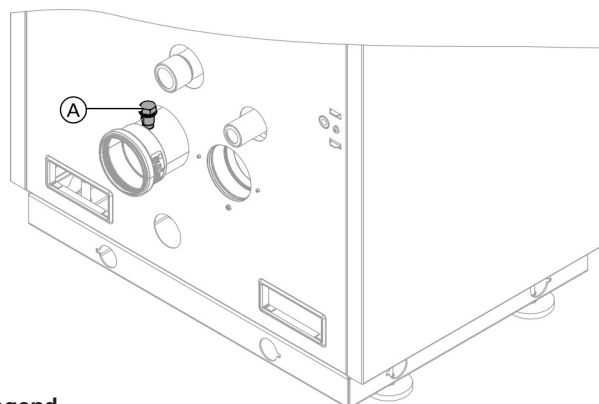
Legend
Ⓐ Flue gas test port

IMPORTANT

A CO_2 measurement (see page 28) must be taken before and after working on gas appliances to eliminate risks to health and to guarantee the satisfactory condition of the system.

Record the measured combustion values in the sequence stated in the Maintenance Record on page 113 in this manual.

> ⚠ **WARNING**
>
> **Hot surfaces can cause burns**
> **DO NOT TOUCH!**
> **Allow to cool before servicing**

Checking the Direct Vent (coaxial) System Tightness

Viessmann strongly recommends that the heating contractor perform a simplified leak test during boiler start-up. For this purpose it is sufficient to measure the CO_2 concentration of the combustion air in the coaxial gap of the air intake adaptor. The vent pipe is considered sufficiently leak-proof if a CO_2 concentration in the combustion air no higher than 0.2% or an O_2 concentration no lower than 20.6% is measured.
If higher CO_2 values or lower O_2 values are measured, check venting system thoroughly.

Note: This measurement can be taken at the flapper Ⓐ located on the air inlet pipe located just prior to the burner.

> ⚠ **WARNING**
>
> **Hot surfaces can cause burns**
> **DO NOT TOUCH!**
> **Allow to cool before servicing**

Legend
Ⓐ Air inlet flapper

Sequence of Operation and Potential Faults During Each Start-up Cycle

Function sequence and possible faults

		Display		Measures
Control unit issues a heat demand		no	→	Increase set value and ensure heat is drawn off

↓ yes

Fan starts	no →	After approx. 51 s fault F9	→	Check the fan, fan connecting cables, power at the fan and fan control

↓ yes

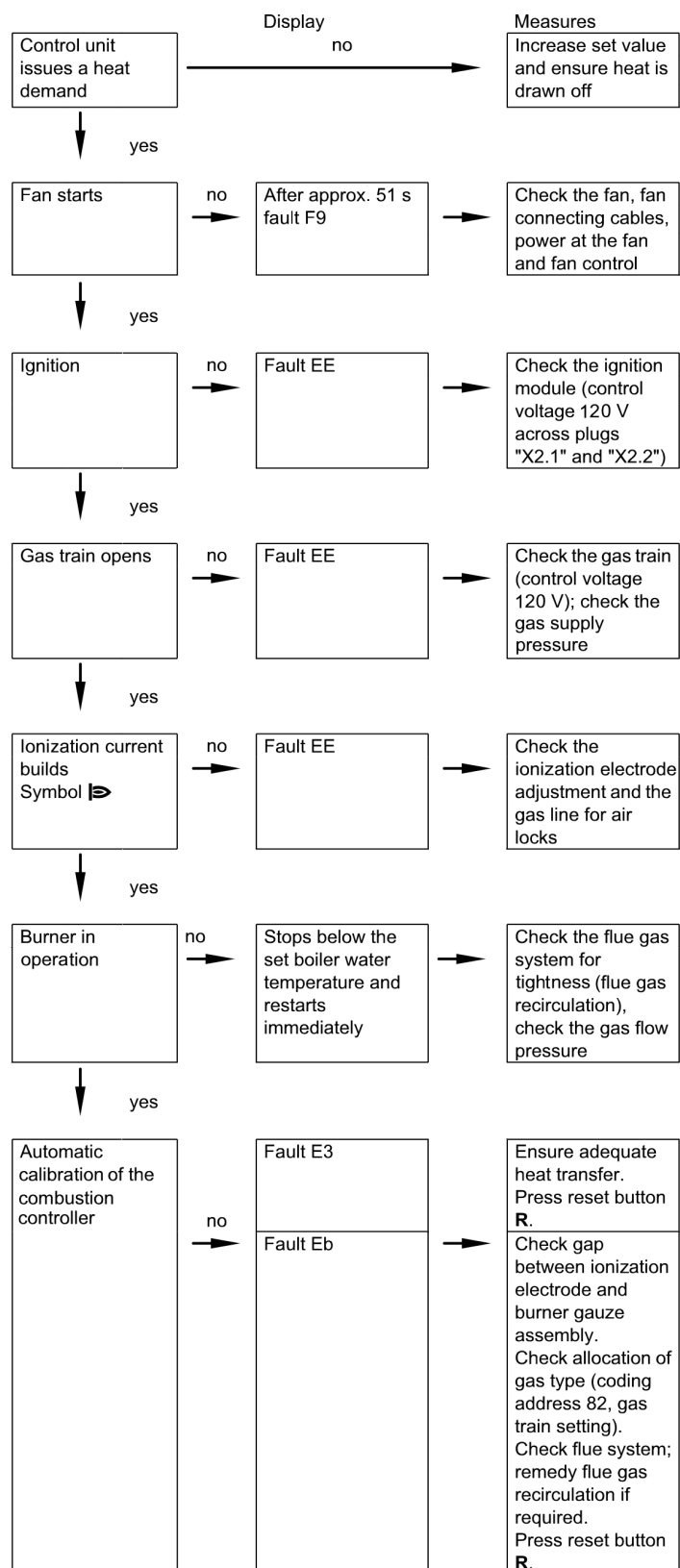|				
Ignition	no →	Fault EE	→	Check the ignition module (control voltage 120 V across plugs "X2.1" and "X2.2")

↓ yes

Gas train opens	no →	Fault EE	→	Check the gas train (control voltage 120 V); check the gas supply pressure

↓ yes

Ionization current builds Symbol ▶	no →	Fault EE	→	Check the ionization electrode adjustment and the gas line for air locks

↓ yes

Burner in operation	no →	Stops below the set boiler water temperature and restarts immediately	→	Check the flue gas system for tightness (flue gas recirculation), check the gas flow pressure

↓ yes

Automatic calibration of the combustion controller		Fault E3	→	Ensure adequate heat transfer. Press reset button **R**.
	no →	Fault Eb	→	Check gap between ionization electrode and burner gauze assembly. Check allocation of gas type (coding address 82, gas train setting). Check flue system; remedy flue gas recirculation if required. Press reset button **R**.

Removing the Burner and Checking the Burner Gasket
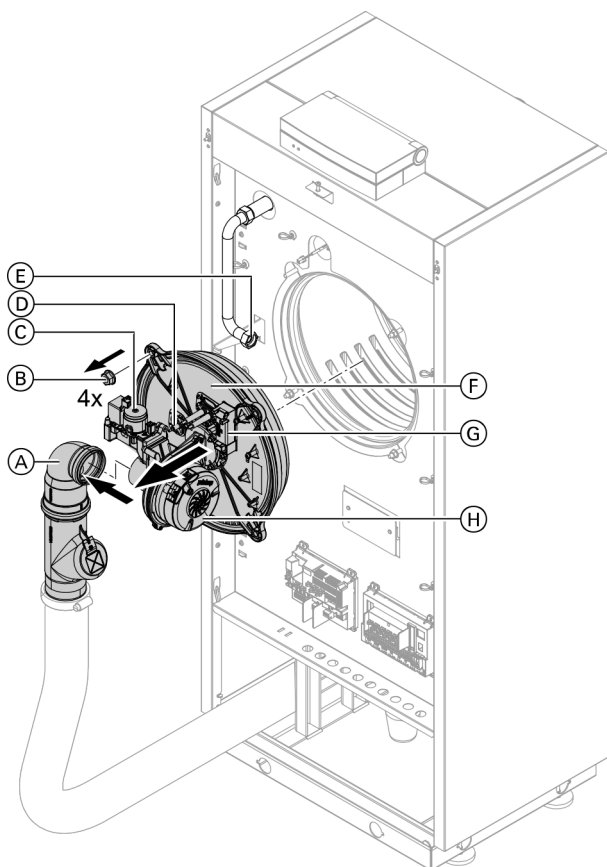
1. Switch OFF the main power supply and the ON/OFF switch at the control unit.

2. Close the gas shut-off valve and safeguard against reopening.

3. Pull power cables from fan motor (H), gas valve (C) and ionization electrode (D). Pull plug (G).

4. Undo fitting on gas supply pipe (E) and pull air intake adaptor (A).

5. Undo four nuts (B) and remove burner (F), then hook it into its service retainer (L).

   Note: Prevent damage to the burner. Always hook the burner into its service retainer.

6. Check burner gasket (K) for possible damage; replace if necessary. The burner gasket should be replaced every 2 years.

⚠ CAUTION

To avoid damage to the burner, do not lay burner on its dome matrix or touch the burner mesh.
Failure to heed this caution may cause damage to the burner, which may lead to improper operation.

⚠ WARNING

Hot surfaces can cause burns
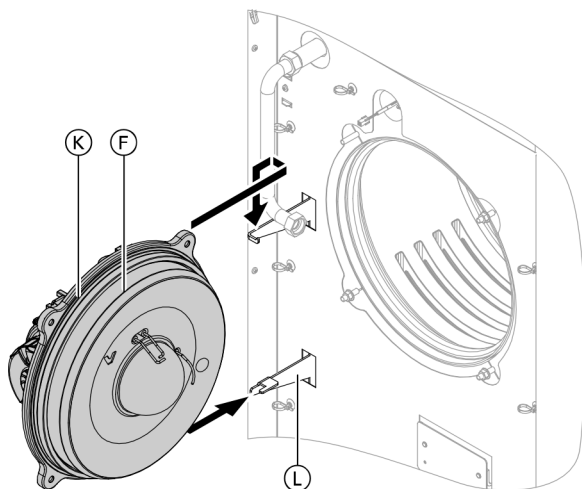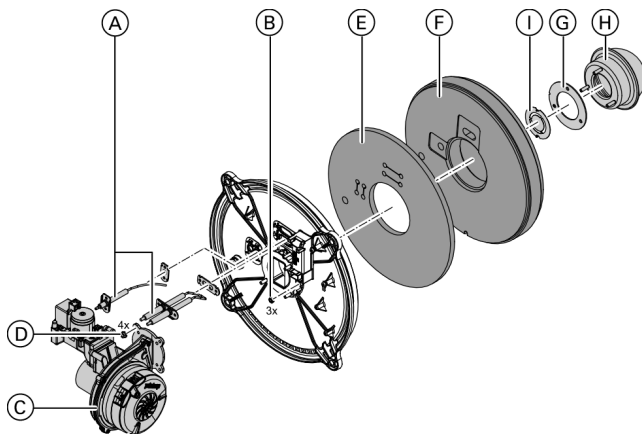DO NOT TOUCH!
Allow to cool before servicing

Placing the Burner Door in the Service Retainer

⚠ WARNING

Hot surfaces can cause burns
DO NOT TOUCH!
Allow to cool before servicing

Checking Burner Mesh Assembly and Refractory
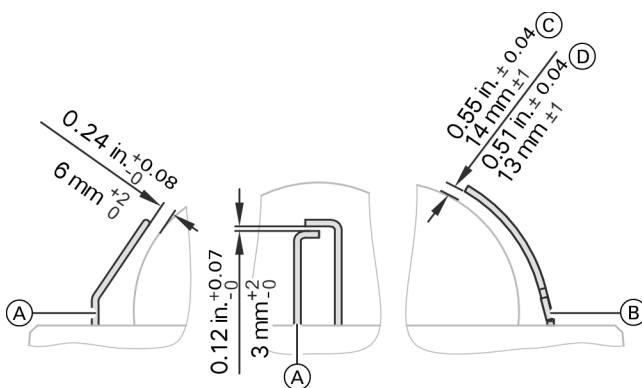
Replace the burner mesh assembly if the wire mesh is damaged.

1. Remove electrodes Ⓐ.

2. Undo four nuts Ⓓ and remove fan with gas valve Ⓒ.

3. Release three nuts Ⓑ and remove burner mesh assembly Ⓗ.

4. Remove refractory Ⓕ with thermal insulating mat Ⓔ.

5. Remove old burner mesh assembly gasket Ⓖ.

6. Check refractory Ⓕ for damage and replace, if required.

7. Insert thermal insulating mat Ⓔ and refractory Ⓕ according to the electrode position.

   Note: Observe the positioning aid on the refractory.

8. Insert new burner mesh assembly Ⓗ with new gasket Ⓖ and secure with three nuts.
   Torque: 3.7 lb.ft (5 Nm).

9. Fit the fan with the gas valve. Torque: 3.7 lb.ft (5 Nm).

⚠ WARNING

**Hot surfaces can cause burns
DO NOT TOUCH!
Allow to cool before servicing**

Checking and Adjust the Ignition and Ionization Electrodes

1. Check the electrodes for wear and contamination.

2. Clean the electrodes with a small brush (not with a wire brush) or sandpaper.

⚠ CAUTION

Do not damage wire gauze of the burner head.
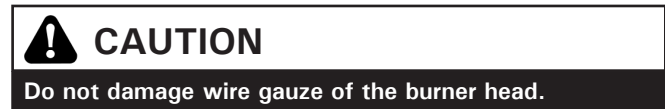
3. Check the electrode gaps. If the gaps are not as specified or the electrodes are damaged, replace and align the electrodes together with new gaskets. Tighten the electrode fixing screws with a torque of 2.2 lb.ft (3.0 Nm).

⚠ WARNING

**Hot surfaces can cause burns
DO NOT TOUCH!
Allow to cool before servicing**

0.24 in. $^{+0.08}_{-0}$
6 mm $^{+2}_{0}$

0.12 in. $^{+0.07}_{-0}$
3 mm $^{+2}_{-0}$

0.55 in. ± 0.04 Ⓒ
14 mm ±1

0.51 in. ± 0.04 Ⓓ
13 mm ±1

Legend
Ⓐ Ignition electrodes
Ⓑ Ionization electrode
Ⓒ Up to 35 kW (125 MBH)
Ⓓ From 45 kW (160 MBH)

5673 649 - 20

23

Cleaning the Combustion Chamber and Heating Surfaces

⚠ **WARNING**

Follow cleaning agent manufacturer's safety instructions and wear appropriate protective equipment.

⚠ **WARNING**

Never use a metal wire brush or mechanically driven brushes.
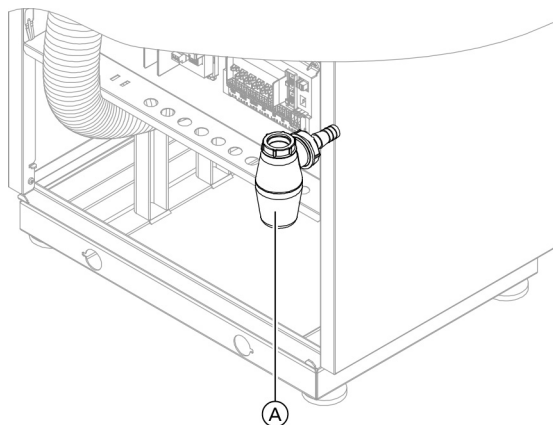
⚠ **WARNING**

Hot surfaces can cause burns
DO NOT TOUCH!
Allow to cool before servicing

1. Remove burner assembly as per instruction on page 22.

2. Clean the combustion chamber by vacuuming loose debris out.

3. Remove embedded sediment from the heat exchanger surface by thoroughly rinsing with water or solvent free cleaning agents such as citric acid based cleaners. Avoid getting the refractory wet during cleaning.
   Note: Discoloration of the heat exchanger surface is the normal result of the combustion process. It has no impact on the functionality or the longevity of the heat exchanger.

4. Use a non-metallic brush if necessary, with a gentle brushing motion to remove the embedded sediment.

5. Flush the combustion chamber with water until it runs clear through the condensate trap.

6. Remove and clean out any accumulated debris from condensate trap. Reinstall condensate trap. See page 25 for details.

7. Mount burner and tighten diagonally to a torque of 3 lb.ft. (4 Nm).

8. Fit gas supply pipe with new gasket. Torque: 11 lb.ft (15 Nm).

9. Plug in air intake adaptor.

10. Connect the electrical cables/leads to the corresponding components.

IMPORTANT

Perform gas leak test.

Separating the Neutralizing System (if installed)

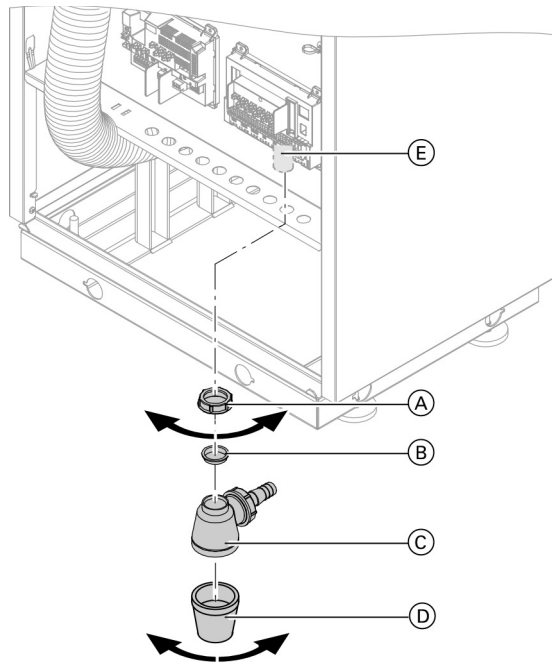**Separating the neutralizing system (if installed) from the boiler and connecting the drain hose**

1. Separate the hose to the neutralizing system from siphon Ⓐ.

⚠ **WARNING**

Hot surfaces can cause burns
DO NOT TOUCH!
Allow to cool before servicing

Cleaning and Reconnecting the Condensate Drain System

⚠️ **WARNING**

**Hot surfaces can cause burns
DO NOT TOUCH!
Allow to cool before servicing**

Flue collector, condensate drain, siphon, neutralizing system and all hoses or pipe runs in between are considered part of the condensate drain system.

Note: Clean the inside of the condensate drain system at least annually.

1. Undo fitting Ⓐ on the siphon Ⓑ and remove the siphon from the boiler.

2. Clean the inside of inlet connector Ⓓ with a brush.

3. Remove bottom part Ⓒ of siphon Ⓑ, then clean and refit it.

4. Fill siphon Ⓑ with water and refit with inlet connector Ⓓ.
   Note: There is a risk of flue gas escaping if the siphon is not filled with water.

5. Clean the insides of the condensate drain system and the neutralizing system (if installed).

6. Check the pH value of the condensate with pH measuring strip. If the pH value is less than 6.5, replace granulate.

7. If contaminated:
   Rinse neutralization unit with tap water.

8. Add granulate as marked.

   📖 Refer to the Neutralization Unit Installation Instructions (if applicable)

9. Undo drain hose to the building drain from siphon Ⓑ.

10. Reconnect the neutralizing system to the siphon Ⓑ.

IMPORTANT

pH measuring strip must be field supplied.

IMPORTANT

The granulate is consumed as it neutralizes the condensate. For minimum granulate level, refer to the neutralization unit Operating Instructions.

Checking that the condensate drain and neutralizing system (if installed) are not obstructed and that they are free from leaks.

Add water to the combustion chamber.

Note: The water must flow from the condensate drain without back pressure. If necessary, clean the condensate drain again.

Checking Gaskets and Thermal Insulation Components on the Boiler

WARNING

Hot surfaces can cause burns
DO NOT TOUCH!
Allow to cool before servicing
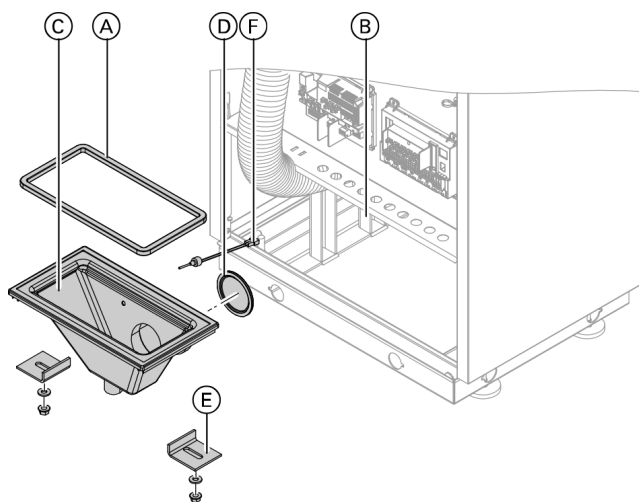
1. Check the gasket/seal on the flue gas collector Ⓐ
   between the flue gas collector Ⓒ and the boiler body
   Ⓑ for tightness.

2. Check lip seal Ⓓ of the boiler flue connection for
   tightness.

   Note: The seals/gaskets can also be checked under
   full load with an inspection mirror. If required,
   remove the thermal insulation components.
   Traces of condensate on the outside of flue
   gas collector Ⓒ also point towards a leak.

3. If required, retighten the flue gas collector seal Ⓐ
   at the tensioning toggles Ⓔ or replace. Replace lip
   seal Ⓓ in case it leaks.
   Note: Prior to removing the flue gas collector,
   pull the plug at flue gas temperature sensor Ⓕ.

4. Check the fittings on the water side for leaks and
   replace the seals/gaskets if required.

WARNING

**There is a risk of injury when working on pressurized
components. Only open the connections on the heating
water side after the boiler has been depressurized.
Only drain the boiler with a suction pump when the
boiler air vent valve is open.**

5. Check the boiler thermal insulation for good fit and
   correct if required or replace if it is damaged.

Checking the Diaphragm Expansion Vessel and System Pressure

CAUTION

**Unsuitable fill water increases the level of deposits and
corrosion, and may lead to damage to the equipment.**
- **Thoroughly flush the entire heating system prior to
  filling with water.**
- **Only use water of potable quality.**
- **The water will have to be softened if it is harder than
  8.77 grains / 150 ppm total dissolved solids.**
- **Inhibitors or antifreeze additives suitable for heating
  systems may be added manually.**

Note: Carry out this test on a cold system.

1. Drain the system or close the cap valve at the
   diaphragm expansion vessel to depressurize the
   system until the pressure gauge indicates "0".

2. If the precharge pressure of the diaphragm expansion
   vessel is lower than the static system pressure, top
   up with nitrogen until the precharge pressure is raised
   by 1.5 to 3 psi (0.1 to 0.2 bar).

3. Top up your heating system with water until the filling
   pressure of a cooled system is 1.5 to 3 psi (0.1 to 0.2)
   bar higher than the pre-charge pressure of the
   diaphragm expansion vessel.
   Max. operating pressure: .... 30 psi (2 bar)
   Min. operating pressure: .... 14 psi (1 bar)

Fitting the Burner
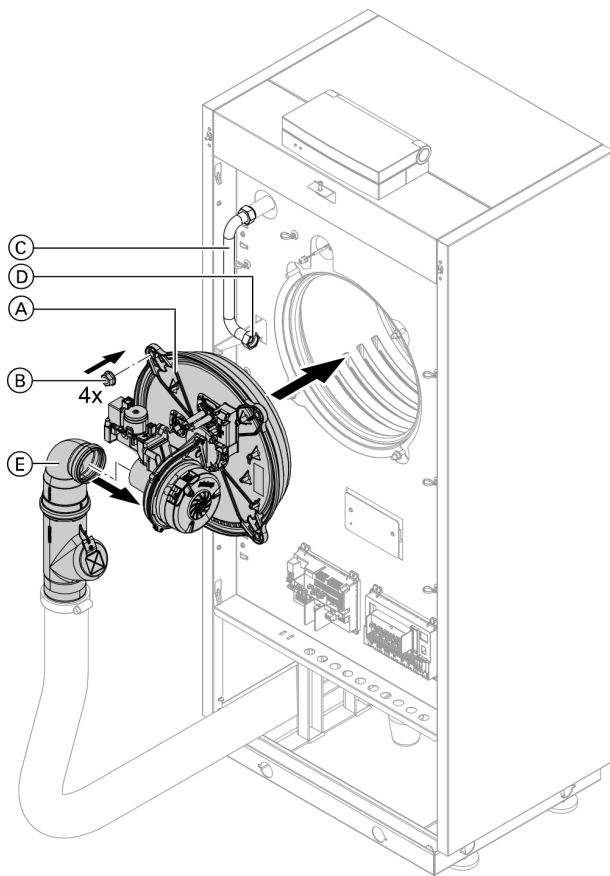
1. Insert burner Ⓐ and secure with four nuts Ⓑ, tightening the nuts evenly and crosswise.
   Torque: 3 lb.ft (4 Nm).

2. Fit gas supply pipe Ⓒ with new gasket Ⓓ.
   Torque: 11 lb.ft (15 Nm).

3. Plug in ventilation air intake adaptor Ⓔ.

4. Connect the electrical cables/leads to the corresponding components.

Checking all gas equipment for tightness at operating pressure.

> ⚠ **WARNING**
>
> **Escaping gas leads to a risk of explosion.**
> **Check gas equipment for tightness.**

Note: For the tightness test, use only suitable and approved leak detecting agents and devices. Leak detecting agents containing unsuitable substances (e.g. nitrites, sulphides) can lead to material damage. Remove residues of the leak detecting agent after testing. Refer to page 19 for additional information.

Clock Natural Gas Meter

For example:
A Vitocrossal 300 CU3A 199 boiler (199000 Btu/h max. input) requires 181 sec. to use 10 ft.^{3} of natural gas. After contacting the local utility, you will find the heating value is 1000 Btu per ft.^{3}.

Therefore:
3,600 sec./h x 10 revolutions
36,000/181 x 1000 = 199000 Btu/h input.
The boiler input is correct.

Burner input formulas (for low altitude only):
INPUT = (3600t) x 1000 where
t = TIME (sec.) for 1 ft.^{3}
INPUT = (3600 x .01 x 1000 x 35.31)T where
T = TIME (sec.) for .01 m^3 natural gas

Clock natural gas meter to verify input.

1. Ensure all other gas equipment served by the meter is turned off during timing of gas input to the Vitocrossal 300 CU3A boiler.

2. Measure the time in seconds it takes for the boiler to use 10 ft.^{3} of gas. Divide 3600 x 10 by the number of seconds and you get the number of ft.^{3} of gas used per hour. Multiply this number by the heating value of the gas to obtain Btu per hour input.

> **IMPORTANT**
>
> **A boiler underfired by 5% is acceptable. Do not overfire the boiler.**

> ⚠ **CAUTION**
>
> **Always contact your gas utility to obtain the correct heating value before clocking the meter.**

Check CO$_2$ Setting

The Vitocrossal 300 CU3A boiler is equipped with the Combustion Management System developed by Viessmann which ensures optimal combustion quality independent of gas quality and type. (For a description of the Combustion Management System, see page 29 in this manual). During initial start-up and maintenance you will only need to check the CO$_2$ and O$_2$ content at the boiler vent pipe.

Note: The Vitocrossal 300 CU3A boiler comes factory set to operation with natural gas. (For instructions on how to convert to operation with liquid propane gas, see page 17). For high-altitude operation above 5,000 ft. (1,500 m), see page 16. The MatriX burner of this boiler is preset for the entire gas group. No adjustment or readjustment of the burner is required.

Ⓐ
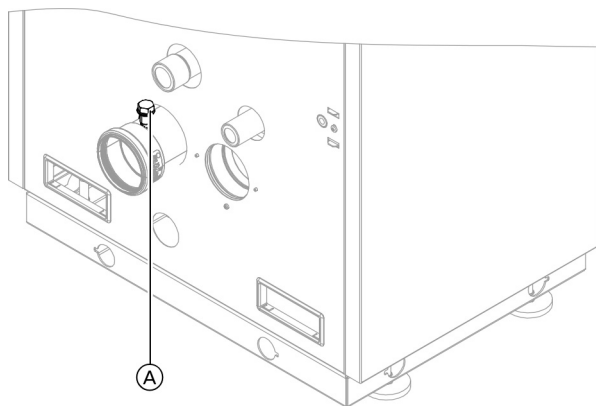
1. Connect a flue gas analyzer to test port Ⓐ at boiler vent pipe adaptor.

2. Open gas shut-off valve, start up boiler and create heat demand.

3. Select higher/lower output:
    Service menu
    - Press OK and ≣ simultaneously for approximately 4 seconds.
    - "Actuator test"
    - Select lower heating output: select "Base load OFF". Then "Base load ON" appears and the burner operates at its upper heating output.
    - Select upper heating output: select "Full load OFF". Then "Full load ON" appears and the burner operates at its upper heating output.
    - Terminate with OK or ⤺.

4. Measure CO$_2$ and O$_2$ content at boiler vent pipe. If the measured values deviated by more than 1% from the ranges for the respective fuel type listed in the right column or in the table on page 29.
    - check the venting system for leaks (see subsection on page 20).
    - check that the boiler is set for the gas type used (see subsection on page 17).
    CO$_2$ content range:
    - 7.6 to 11.0% for natural gas
    - 9.0 to 11.3% for LPG
    O$_2$ content range:
    - 3.8 to 7.3% for all gas types

5. Enter measured values into the Maintenance Record on page 113.

6. Select the upper output: Select "Full load ON". Confirm with OK.

7. Measure CO$_2$ and O$_2$ content at boiler vent pipe adaptor. If the measured values deviated by more than 1% from the ranges listed in the right column or in the table on page 29.
    - check the venting system for leaks (see subsection on page 20).
    - check that the boiler is set for the gas type used (see subsection on page 17).
    CO$_2$ content range:
    - 7.6 to 11.0% for natural gas
    - 9.0 to 11.3% for LPG
    O$_2$ content range:
    - 3.8 to 7.3% for all gas types

8. Press **OK** and ⤺ after testing and enter measured values into the Maintenance Record on page 113.

5673 649 - 20

Combustion Management System

The combustion management system utilizes the physical correlation between the level of the ionization current and the air factor λ. For all gas qualities, the maximum ionization current results with air factor λ.

The ionization signal is evaluated by the combustion management system, and the air factor is adjusted to between $\lambda = 1.24$ and 1.44. This range provides for an optimum combustion quality. Thereafter, the electronic gas valve regulates the required gas volume based on the prevailing gas quality.

To check the combustion quality, the CO_2 content or the O_2 content of the flue gas is measured. The actual values enable the prevailing air factor to be determined.

The relationship between the CO_2 or O_2 content and air factor λ is illustrated in the table below.

To achieve an optimum combustion control, the system regularly performs an automatic self-calibration; also after a power failure (shutdown). For this, the combustion is briefly regulated to max. ionization current (equals air factor $\lambda = 1$). The automatic calibration is performed shortly after the burner starts and lasts approximately 5 seconds.

During the calibration, higher than normal CO emissions may occur briefly.

Air factor λ - CO_2/O_2 content

Air factor λ	O_2 content (%)	CO_2 content (%) for natural gas	CO_2 content (%) for liquid propane gas
1.20	3.8	9.6	11.3
1.24	4.4	9.2	10.9
1.27	4.9	9.0	10.6
1.30	5.3	8.7	10.3
1.34	**5.7**	**8.5**	**10.0**
1.37	6.1	8.3	9.8
1.40	6.5	8.1	9.6
1.44	6.9	7.8	9.3
1.48	7.3	7.6	9.0

The Vitocrossal 300 CU3A boilers come equipped with Lambda Pro, the industry's first intelligent combustion management system.

Check Functioning of Safety Valves

Ensure proper operation of low water cut-off(s) (if applicable), pressure relief valve, and pump(s).

Check pressure gage, air vent and pressure relief valve. Ensure that pressure relief valve does not leak and that it operates in accordance with information provided by the manufacturer.

Refer to maintenance instructions supplied with low water cut-offs, pumps, etc.

Flush float water type low water cut-offs (if used).

Follow local regulations with respect to backflow preventers.

If oil-lubricated pumps are used, ensure proper lubrication.

If motorized zone valves are used, refer to maintenance instructions provided with zone valves.

Check Electrical Connections

Ensure all plug-in connectors and strain reliefs make positive contact and are seated properly.

↪ 📖   Refer to the Installation Instructions

Check Gas Pipes and Fittings for Leaks

⚠ **WARNING**

**Hot surfaces can cause burns
DO NOT TOUCH!
Allow to cool before servicing**

Note: For the tightness test, use only suitable and approved leak detecting agents and devices. Leak detecting agents with unsuitable contents (e.g. nitrites, sulphides) can lead to material damage. Remove residues of the leak detecting agent after testing.

⚠ **WARNING**

**Escaping gas leads to a risk of explosion.
Check gas equipment for tightness.**

⚠ **WARNING**

The gas supply piping must be leak tested before placing the boiler in operation.

⚠ **CAUTION**

Ensure all joints of gas line are pressure tight and that gas valves do not leak when under normal operating pressure (use approved leak detection liquid).

Checking the Mixing Valve for Obstructions and Leaks

1. Remove the motorized lever from the mixing valve handle.

2. Check the mixing valve for ease of operation.

3. Check the mixing valve for leaks. Replace the O-rings if the mixing valve leaks.

4. Snap the motorized lever into place.

Example Layout 1

Matching the control unit to the heating system

Subject to the equipment level, the control unit must be matched to the system. Various system components are recognized automatically by the control unit and the relevant codes are adjusted automatically.

■ For the selection of an appropriate scheme, see the following diagrams.

■ For coding steps, see page 55.

System version 1

One heating circuit without mixing valve and DHW heating (optional solar DHW heating)

Applications

Heating system with DHW heating

Main components

■ Gas condensing boiler models 26 to 199
■ DHW tank (dual mode)
■ Solar thermal system

Function description

The boiler circuit ㉚ and the DHW tank ⑩/⑭ are regulated by boiler heating circuit controller ①. The heating circuit and the DHW tank are supplied by their individual circulation pumps ㉛ and ⑬.

Heating mode

The boiler heating circuit controller regulates the boiler water temperature in weather-compensated or heat demand dependent mode (= supply temperature of the heating circuit without mixing valve).

DHW heating without a solar thermal system

If the temperature falls below the set DHW temperature selected at control unit ②, the burner of boiler ① starts and circulation pump ⑬ of DHW tank ⑩ or ⑭ runs. Within the program set at control unit ②, DHW is heated with or without priority.

DHW heating by the solar thermal system

Solar circuit pump ㉓ starts and DHW tank ⑭ is heated up, if the temperature differential between collector temperature sensor ㉑ and tank temperature sensor ⑮ exceeds the start temperature differential.
Pump ㉓ is stopped according to the following criteria:

■ The actual temperature drops below the stop temperature differential

■ Exceeding the electronic temperature limit (up to 90°C) set in the solar control module (type SM1) ㉖

■ The temperature selected at high limit safety cut-out ⑯ (if installed) is reached

  Demands for the auxiliary function are met by circulation pump ㉔.

Suppression of reheating of the DHW tank by the boiler in conjunction with solar control module (type SM1)

Reheating suppression takes place in two stages. Reheating DHW tank ⑭ by boiler ① is suppressed as soon as DHW tank ⑭ is heated by collectors ⑳. For this, the set tank temperature for reheating is reduced by boiler ①. Suppression remains active for a certain time after solar circuit pump ㉓ has been switched off.

In the case of uninterrupted heating by collectors ⑳ (> 2 h) boiler ① will only reheat, if the set tank temperature (coding address "67") selected at boiler circuit control unit ② is not achieved.

In control unit ②, coding address "67" defaults a third set DHW temperature (setting range 10 to 95°C). This value must be below the first set DHW temperature.

DHW tank ⑭ will only be heated by boiler ① when this set value is no longer achieved by the solar thermal system.

Function/system components	Code	
	Adjust	**Delivered condition**
Operation with LPG	82:1	82:0

Example Layout 1 *(continued)*

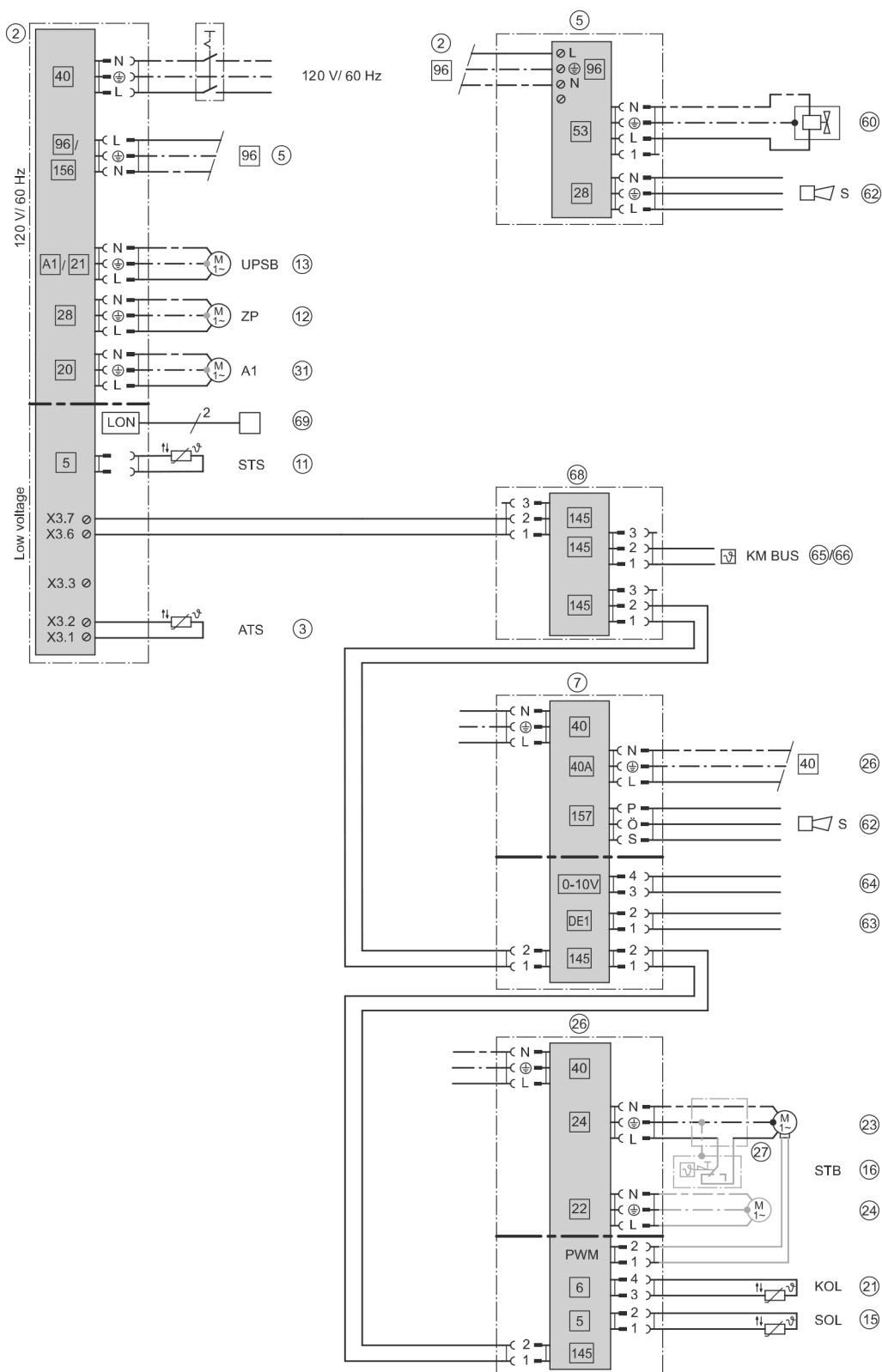**Hydraulic installation scheme ID: 4605300_1006_01**
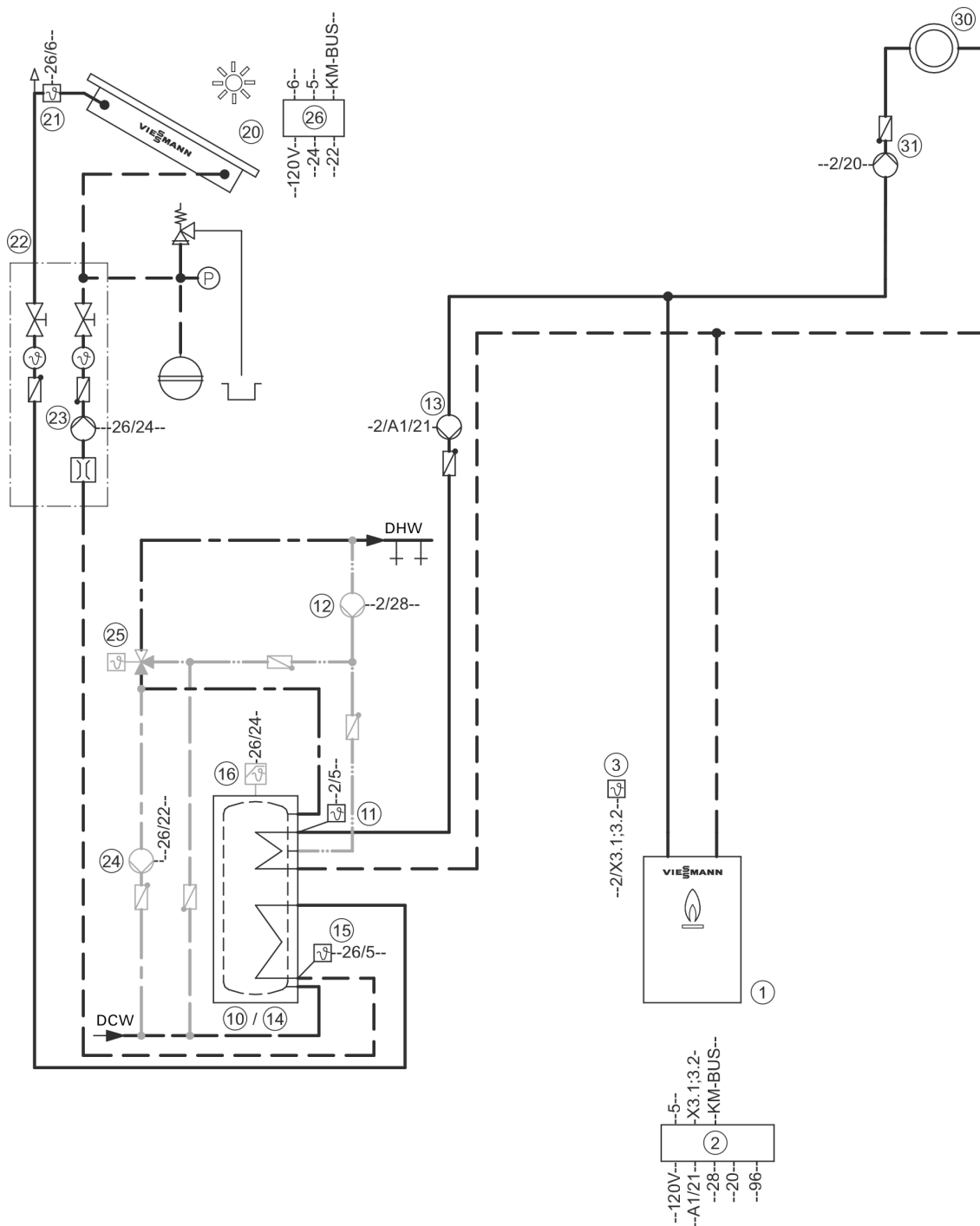
Note: This scheme is a basic example without shut-off valves or safety equipment.
This does not replace the need for local engineering.

Example Layout 1 *(continued)*

Equipment required ID: 4605300_1006_01

Pos.	Designation
①	**Boiler with**
②	**Control unit**
	Vitocrossal 300 with
	Vitotronic 200, type KW6B
③	Outdoor temperature sensor ATS
	DHW heating by the boiler
⑩	DHW tank
⑪	Tank temperature sensor STS
⑫	DHW recirculation pump ZP
⑬	DHW pump UPSB
	DHW heating by the solar thermal system
⑪	Tank temperature sensor STS
⑫	DHW recirculation pump ZP
⑬	DHW pump UPSB
⑭	Dual mode DHW tank
⑮	Tank temperature sensor SOL
⑯	High limit safety cut-out STB
⑳	**Solar collectors**
㉖	Solar control module, type SM1
㉑	Collector temperature sensor KOL
㉒	Solar-Divicon
㉓	Solar circuit pump
㉔	Circulation pump (transfer)
㉕	Automatic thermostatic mixing valve
㉚	**Heating circuit I**
㉛	Heating circuit pump, heating circuit A1
	Accessories
⑤	Internal extension H1: (integrated)
	■ Connection, external safety solenoid valve (LPG)
	■ Central fault message (alternative to extension EA1)
⑦	Extension EA1 (integrated)
㉔	External safety solenoid valve for LPG
㉖	Central fault message
㉓	External hook-up:
	■ External blocking
	■ External demand
	■ External heating program changeover
㉔	External set value 0 to 10 V
㉕	Vitotrol 200A
㉖	Vitotrol 300A
㉘	KM BUS distributor, for several KM BUS participants
	KM BUS participant:
	■ Extension EA1 ⑦
	■ Vitotrol 200A ㉕
	■ Vitotrol 300A ㉖
	■ Solar control module, type SM1 ㉖
㉙	Vitocom 100 LAN 1

Example Layout 1 *(continued)*

Electrical installation diagram

② 40 — N ⊕ L — 120 V/ 60 Hz

96 / 156 — L ⊕ N — 96 ⑤

A1/ 21 — N ⊕ L — M 1~ UPSB ⑬

28 — N ⊕ L — M 1~ ZP ⑫

20 — N ⊕ L — M 1~ A1 ㉛

LON — 2 — ⑥⑨

5 — STS ⑪

X3.7 / X3.6

X3.3

X3.2 / X3.1 — ATS ③

120 V/ 60 Hz

Low voltage

⑤ — ⊘ L ⊘ N ⊘ — 96

53 — N ⊕ L 1 — 60

28 — N ⊕ L — S 62

② 96

⑥⑧ — 3 2 1 — 145 / 145 — 3 2 1 — KM BUS 65/66 / 145 — 3 2 1

⑦ — N ⊕ L — 40 / 40A — N ⊕ L — 40 26 / 157 — P Ö S — S 62 / 0-10V — 4 3 — 64 / DE1 — 2 1 — 63 / 145 — 2 1 / 2 1 — 145

㉖ — N ⊕ L — 40 / 24 — N ⊕ L — M 1~ 23 / ㉗ STB ⑯ / 22 — N ⊕ L — M 1~ 24 / PWM — 2 1 / 6 — 4 3 — KOL 21 / 5 — 2 1 — SOL ⑮ / 145 — 2 1

Example Layout 2

System version 2
One heating circuit without mixing valve, one heating circuit with mixing valve and DHW heating (optional solar DHW heating)

Applications
Heating system with different heat sources and methods of DHW heating
- One heating circuit without mixing valve
- One heating circuit with 3-way mixing valve

Main components
- Gas condensing boiler models 26 to 199
- Heating circuit distribution
- DHW tank (dual mode)
- Solar thermal system

Function description
The heating circuits ㉚/㊵ and the DHW tank ⑩/⑭ are regulated by the boiler heating circuit controller ①. The heating circuits and DHW tank are each supplied by a separate circulation pump ㉛/㊸ and ⑬.

Heating mode
The boiler heating circuit controller regulates the boiler water temperature in weather-compensated mode (= supply temperature of the heating circuit without mixing valve) and the temperature level of the heating circuit with mixing valve via an extension kit for one heating circuit with mixing valve.

DHW heating without a solar thermal system
If the temperature falls below the set DHW temperature selected at control unit ②, the burner of boiler ① starts and circulation pump ⑬ of DHW tank ⑩ or ⑭ runs. Within the time program selected at control unit ②, DHW is heated with or without priority.
In the case of absolute priority, heating circuit pump ㊸ of the heating circuit with mixing valve is switched off and mixing valve ㊹ is closed. With modulating priority, the heating circuit pump ㊸ of the heating circuit with mixing valve remains on, and mixing valve ㊹ is closed far enough for the set boiler water temperature for tank heating to be reached.
In this case, DHW tank ⑩ or ⑭ and heating circuit with mixing valve ㊵ are heated simultaneously.

DHW heating by the solar thermal system
Solar circuit pump ㉓ starts and DHW tank ⑭ is heated up, if the temperature differential between collector temperature sensor ㉑ and tank temperature sensor ⑮ exceeds the start temperature differential. Pump ㉓ is stopped according to the following criteria:
- The actual temperature drops below the stop temperature differential
- Exceeding the electronic temperature limit [up to 194°F (90°C)] set in the solar control module (type SM1) ㉖
- The temperature selected at high limit safety cut-out ⑯ (if installed) is reached
- Demands for the auxiliary function are met by circulation pump ㉔.

Suppression of reheating of the DHW tank by the boiler in conjunction with solar control module (type SM1)
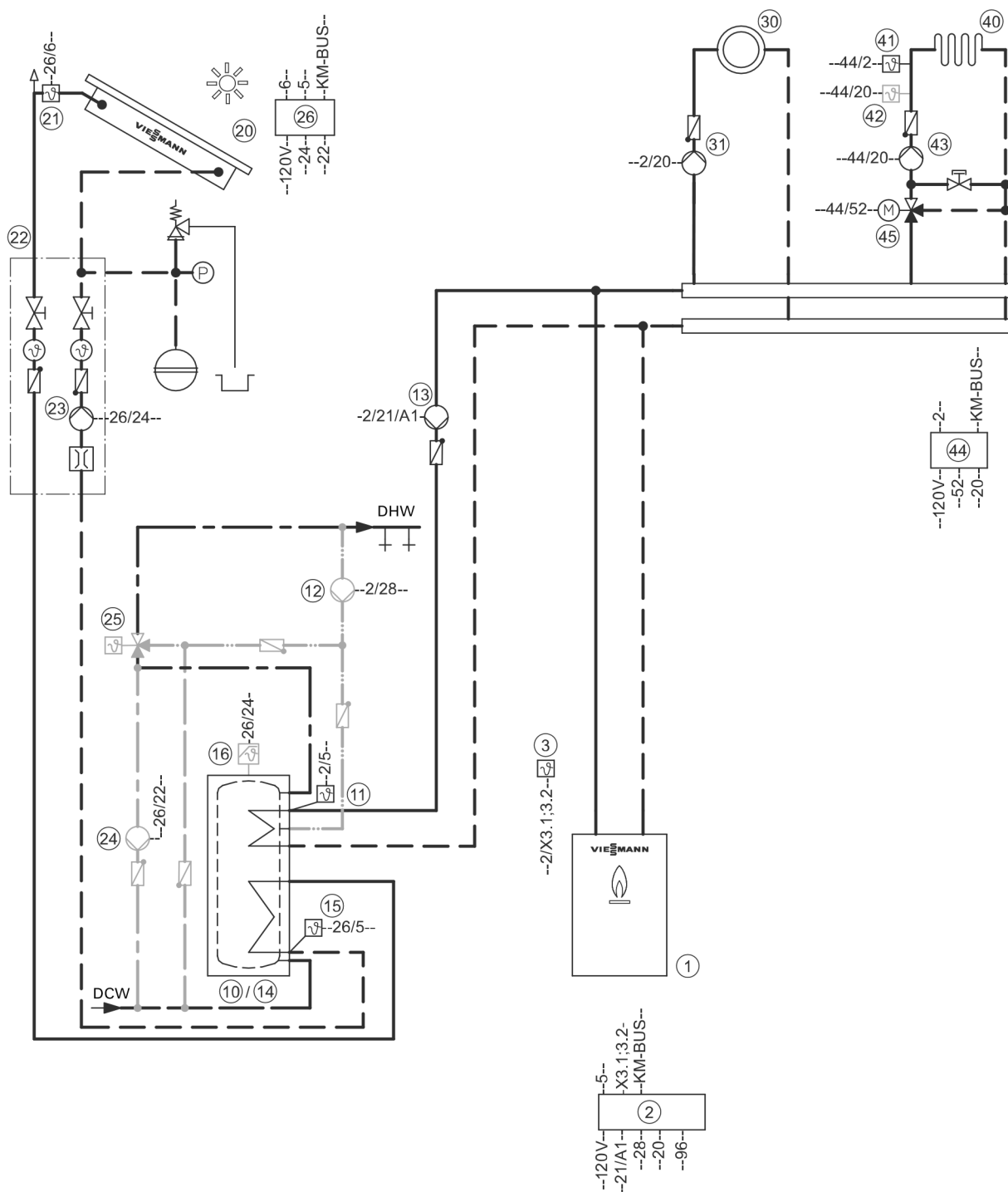Reheating suppression takes place in two stages. Reheating DHW tank ⑭ by boiler ① is suppressed as soon as DHW tank ⑭ is heated by collectors ⑳. For this, the set tank temperature for reheating is reduced by boiler ①. Suppression remains active for a certain time after solar circuit pump ㉓ has been switched off.
In the case of uninterrupted heating by collectors ⑳ (>2 h) boiler ① will only reheat, if the set tank temperature (coding address "67") selected at boiler circuit control unit ② is not achieved.
In control unit ②, coding address "67" defaults a third set DHW temperature [setting range 50°F to 203°F (10°C to 95°C)].
This value must be below the first set DHW temperature. DHW tank ⑭ will only be heated by boiler ① when this set value is no longer achieved by the solar thermal system.

Function/system components	Code	
	Adjust	**Delivered condition**
Operation with LPG	82:1	82:0
System with only one heating circuit with mixing valve (without unregulated heating circuit)	00:4	00:6
	00:3	00:5

Example Layout 2 *(continued)*

Hydraulic installation scheme ID: 4605301_1006_02

Note: This scheme is a basic example without shut-off valves or safety equipment.
This does not replace the need for local engineering.

Example Layout 2 *(continued)*

Equipment required ID: 4605301_1006_02

Pos.	Designation
①	**Boiler with**
②	**Control unit**
	Vitocrossal 300 with
	Vitotronic 200, type KW6B
③	Outdoor temperature sensor ATS
	DHW heating by the boiler
⑩	DHW tank
⑪	Tank temperature sensor STS
⑫	DHW recirculation pump ZP
⑬	DHW pump UPSB
	DHW heating by the solar thermal system
⑪	Tank temperature sensor STS
⑫	DHW recirculation pump ZP
⑬	DHW pump UPSB
⑭	Dual mode DHW tank
⑮	Tank temperature sensor SOL
⑯	High limit safety cut-out STB
⑳	**Solar collectors**
㉖	Solar control module, type SM1
㉑	Collector temperature sensor KOL
㉒	Solar-Divicon
㉓	Solar circuit pump
㉔	Circulation pump (transfer)
㉕	Automatic thermostatic mixing valve
㉚	**Heating circuit I**
㉛	Heating circuit pump, heating circuit A1
㊵	**Heating circuit II**
㊹	Extension kit for one heating circuit with mixing valve M2
	Components:
㊶	■ Supply temperature sensor M2 (contact temperature sensor)
	and
㊺	■ Mixing valve PCB with mixing valve motor
	or
㊹	Extension kit for one heating circuit with mixing valve M2
	Components:
㊶	■ Mixing valve PCB and supply temperature sensor M2 (contact temperature sensor)
㊺	Mixing valve motor
	or
	Mixing valve motor M2 for flanged mixing valve and plug
㊷	Temperature limiter for an underfloor heating circuit
㊸	Heating circuit pump M2 and 3-way mixing valve

Example Layout 2 *(continued)*

Equipment required ID: 4605301_1006_02

Pos.	Designation
	Accessories
⑤	Internal extension H1: (integrated)
	■ Connection, external safety solenoid valve (LPG)
	■ Central fault message (alternative to extension EA1)
⑦	Extension EA1 (integrated)
⑥⓪	External safety solenoid valve for LPG
⑥②	Central fault message
⑥③	External hook-up:
	■ External blocking
	■ External demand
	■ External heating program changeover
⑥④	External set value 0 to 10V
⑥⑤	Vitotrol 200A
⑥⑥	Vitotrol 300A
⑥⑧	KM BUS distributor, for several KM BUS participants
	KM BUS participant:
	■ Extension EA1 ⑦
	■ Vitotrol 200A ⑥⑤
	■ Vitotrol 300A ⑥⑥
	■ Solar control module, type SM1 ㉖
⑥⑨	Vitocom 100 LAN 1

Example Layout 2 *(continued)*

Electrical installation diagram
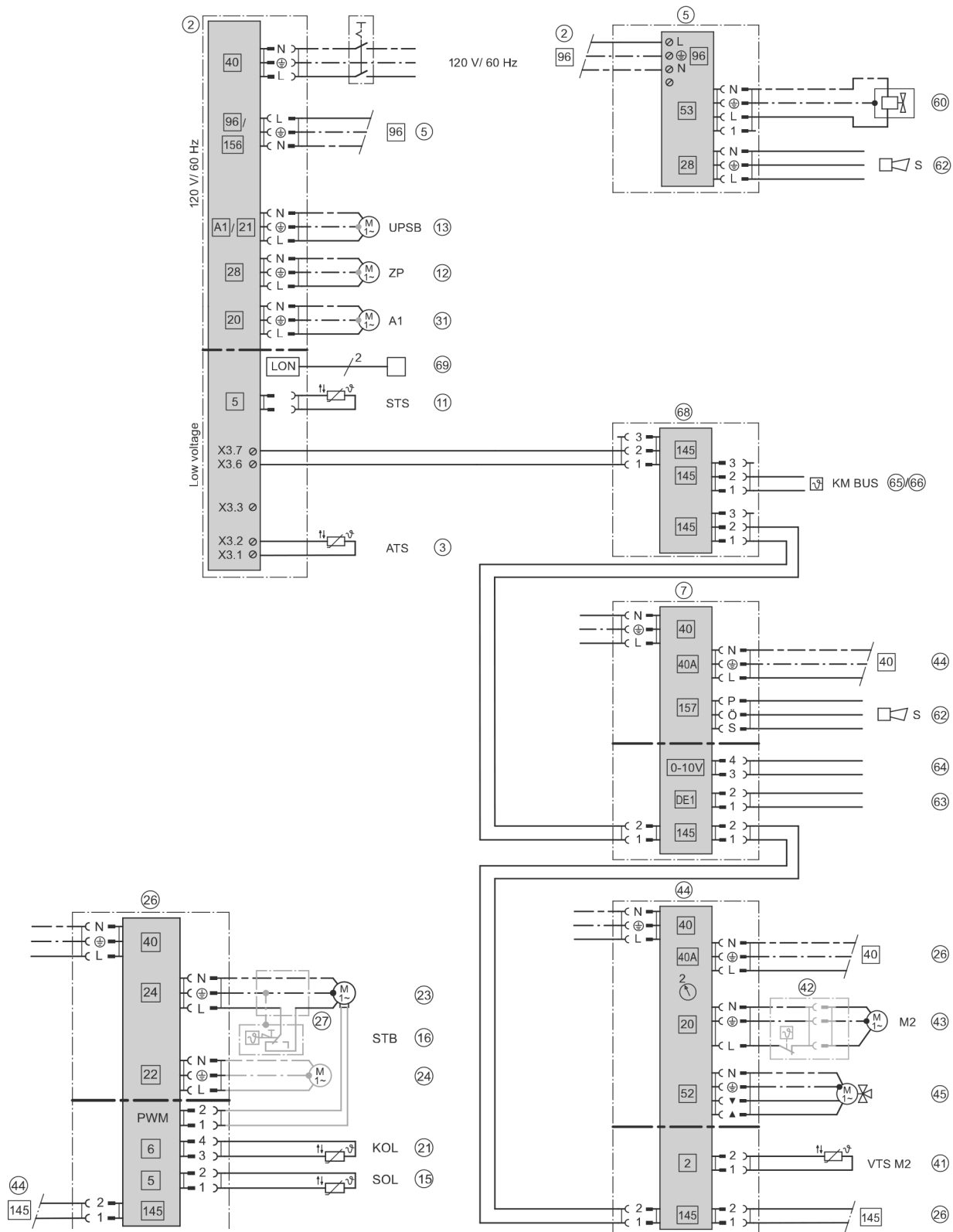
Example Layout 3

System version 3
One heating circuit without mixing valve and two heating circuits with mixing valve and DHW heating (optional solar DHW heating)

Applications
Heating system with different heat sources and methods of DHW heating
■ One heating circuit without mixing valve
■ Two heating circuits with 3-way mixing valve

Main components
■ Gas condensing boiler models 26 to 199
■ Heating circuit distribution
■ DHW tank (dual mode)
■ Solar thermal system

Function description
The heating circuits ㉚/㊵/㊿ and DHW tank ⑩/⑭ are regulated by boiler heating circuit controller ①. The heating circuits and DHW tank are each supplied by a separate circulation pump ㉛/ ㊸/�54 and ⑬.

Heating mode
The boiler heating circuit controller regulates the boiler water temperature in weather-compensated mode (= supply temperature of the heating circuit without mixing valve) and the temperature level of the heating circuit with mixing valve via an extension kit for one heating circuit with mixing valve.

DHW heating without a solar thermal system
If the temperature falls below the set DHW temperature selected at control unit ②, the burner of boiler ① starts and circulation pump ⑬ of DHW tank ⑩ or ⑭ runs. Within the time program selected at control unit ②, DHW is heated with or without priority.
In the case of absolute priority, heating circuit pumps ㉛/㊸/�54 are switched off and mixing valves ㊻/�555 are closed. With modulating priority control of the heating circuits with mixing valve, heating circuit pumps ㊸/�54 remain on, and mixing valves ㊻/�555 close far enough to enable the boiler
water temperature set for tank heating to be reached.
In this case, DHW tank ⑩ or ⑭ and heating circuit with mixing valve ㊵ and ㊿ are heated simultaneously.

DHW heating by the solar thermal system
Solar circuit pump ㉓ starts and DHW tank ⑭ is heated up, if the temperature differential between collector temperature sensor ㉑ and tank temperature sensor ⑮ exceeds the start temperature differential. Pump ㉓ is stopped according to the following criteria:
■ The actual temperature drops below the stop temperature differential
■ Exceeding the electronic temperature limit [up to 194°F (90°C)] set in the solar control module (type SM1) ㉖
■ The temperature selected at high limit safety cut-out ⑯ (if installed) is reached
Demands for the auxiliary function are met by circulation pump ㉔.

Suppression of reheating of the DHW tank by the boiler in conjunction with solar control module (type SM1)
Reheating suppression takes place in two stages. Reheating DHW tank ⑭ by boiler ① is suppressed as soon as DHW tank ⑭ is heated by collectors ⑳. For this, the set tank temperature for reheating is reduced by boiler ①. Suppression remains active for a certain time after solar circuit pump ㉓ has been switched off.
In the case of uninterrupted heating by collectors ㉓ (> 2 h) boiler ① will only reheat, if the set tank temperature (coding address "67") selected at boiler circuit control unit ② is not achieved.
In control unit ②, coding address "67" defaults a third set DHW temperature [setting range 50°F to 203°F (10°C to 95°C)].
This value must be below the first set DHW temperature.
DHW tank ⑭ will only be heated by boiler ① when this set value is no longer achieved by the solar thermal system.

Function/system components	Code	
	Adjust	Delivered condition
Operation with LPG	82:1	82:0
System with only one heating circuit with mixing valve (without unregulated heating circuit)	00:8	00:10
	00:7	00:9

Example Layout 3 *(continued)*

Hydraulic installation scheme ID: 4605302_1006_01
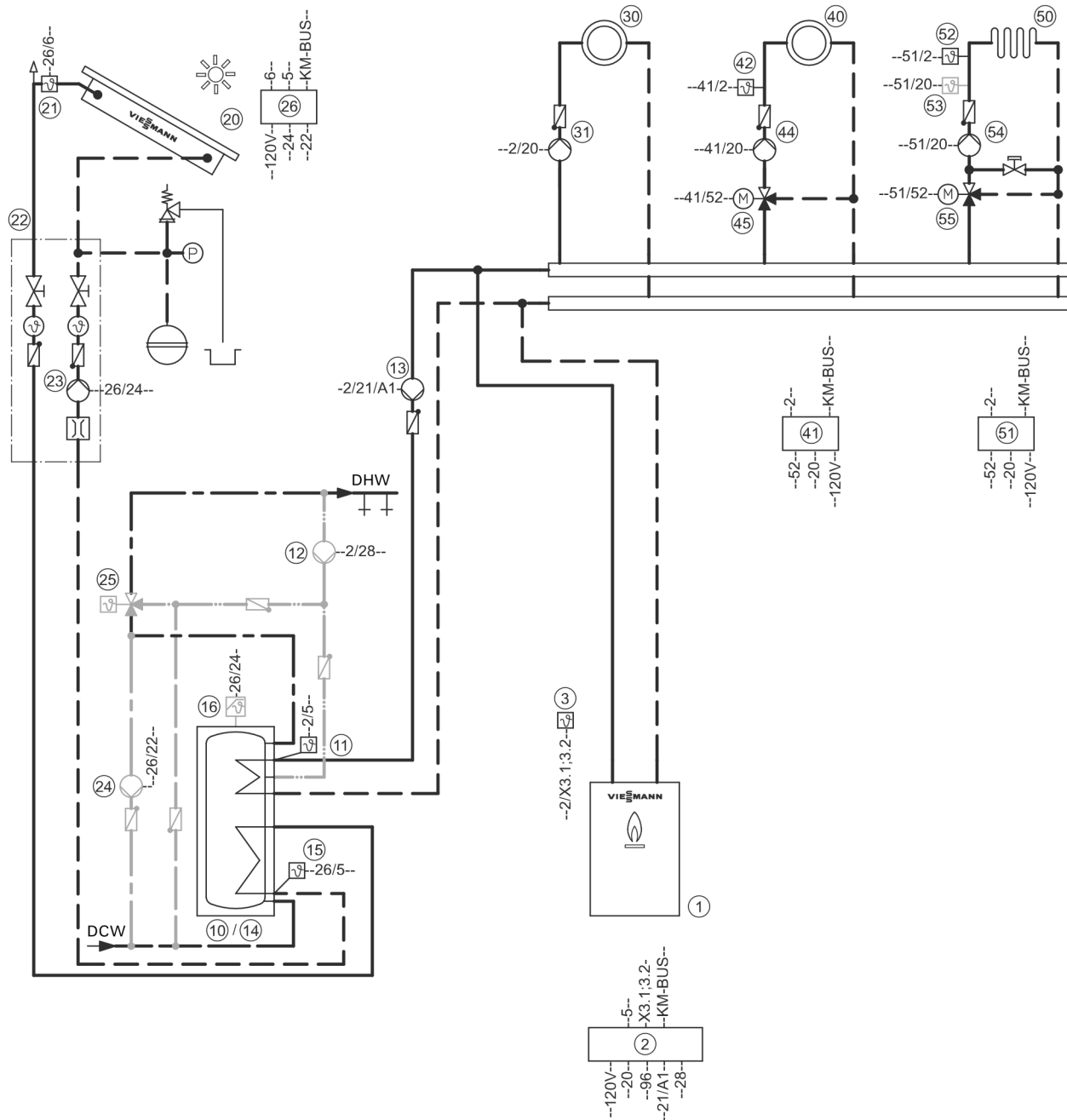
Note: This scheme is a basic example without shut-off
valves or safety equipment.
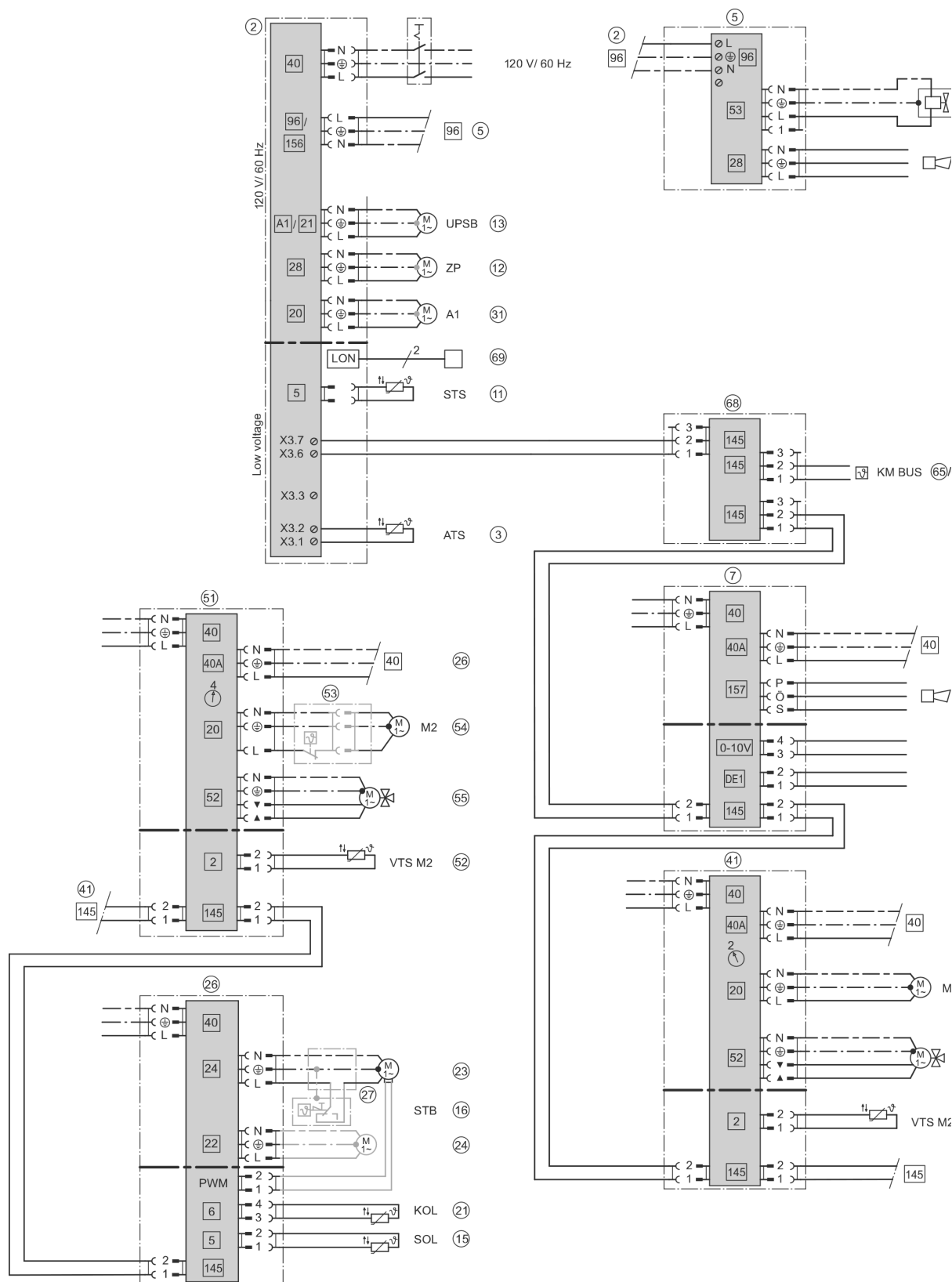This does not replace the need for local engineering.

Example Layout 3 *(continued)*

Equipment required ID: 4605302_1006_01

Pos.	Designation
①	**Boiler with**
②	**Control unit**
	Vitocrossal 300 with
	Vitotronic 200, type KW6A
③	Outside temperature sensor ATS
	DHW heating by the boiler
⑩	DHW tank
⑪	Tank temperature sensor STS
⑫	DHW recirculation pump ZP
⑬	DHW pump UPSB
	DHW heating by the solar thermal system
⑪	Tank temperature sensor STS
⑫	DHW recirculation pump ZP
⑬	DHW pump UPSB
⑭	Dual mode DHW tank
⑮	Tank temperature sensor SOL
⑯	High limit safety cut-out STB
⑳	**Solar collectors**
㉖	Solar control module, type SM1
㉑	Collector temperature sensor KOL
㉒	Solar-Divicon
㉓	Solar circuit pump
㉔	Circulation pump (transfer)
㉕	Automatic thermostatic mixing valve
㉚	**Heating circuit I**
㉛	Heating circuit pump, heating circuit A1
㊵/㊿	**Heating circuit II and III**
㊶/⑤①	Extension kit for one heating circuit with mixing valve M2/M3
	Components:
㊷/⑤②	■ Supply temperature sensor M2/M3 (contact temperature sensor)
	and
㊺/⑤⑤	■ Mixing valve PCB with mixing valve motor
	or
㊶/⑤①	Extension kit for one heating circuit with mixing valve M2/M3
	Components:
㊷/⑤②	■ Mixing valve PCB and supply temperature sensor M2 (contact temperature sensor)
	Mixing valve motor
	or
㊺/⑤⑤	Mixing valve motor M2 for flanged mixing valve and plug
⑤③	Temperature limiter for an underfloor heating circuit
㊹/⑤④	Heating circuit pump M2 and 3-way mixing valve

Example Layout 3 *(continued)*

Equipment required ID: 4605301_1006_02

Pos.	Designation
	Accessories
⑤	Internal extension H1: (integrated)
	■ Connection, external safety solenoid valve (LPG)
	■ Central fault message (alternative to extension EA1)
⑦	Extension EA1 (integrated)
㉠	External safety solenoid valve for LPG
㉢	Central fault message
㉣	External hook-up:
	■ External blocking
	■ External demand
	■ External heating program changeover
㉤	External set value 0 to 10V
㉥	Vitotrol 200A
㉦	Vitotrol 300A
㉧	KM BUS distributor, for several KM BUS participants
	KM BUS participant:
	■ Extension EA1 ⑦
	■ Vitotrol 200A ㉥
	■ Vitotrol 300A ㉦
	■ Solar control module, type SM1 ㉖
㉩	Vitocom 100, LAN1

Example Layout 3 *(continued)*

Electrical installation diagram

Example Layout 4

Vitocrossal 300 CU3A with…
- DHW storage tank
- three zone circuits

Legend
A   Vitocrossal 300 CU3A boilers
B   DHW storage tank
C   DHW pump [output 21]
D   DHW recirculation pump [output 28/20]
E   Thermostat zone circuits 1, 2, 3 (dry contact)
F   Zone circuit 1 [output 157]
G   AM1 extension module (accessory)
H   Zone circuit 2 [output A1 - AM1 extension module]
I   Zone circuit 3 [output A2 - AM1 extension module]

Installation of different heating circuits…

■   DHW production
■   3 zone circuits

Example Layout 4 *(continued)*

Equipment required

Pos.	Designation
Ⓐ	**Boiler with** **Control unit** Vitocrossal 300 with Vitotronic 200, type KW6A Outside temperature sensor ATS
Ⓑ Ⓣ Ⓒ Ⓓ	**DHW heating by the boiler** DHW tank Tank temperature sensor STS DHW recirculation pump ZP DHW pump UPSB
Ⓕ	**Zone circuit 1** [output 157] Heating circuit pump, heating circuit A1
Ⓗ Ⓖ Ⓘ	**Zone circuit 2** AM1 extension module function output A1 33:6 zone circuit pump 2 AM1 extension module function output A2 34:7 zone circuit pump 3
Ⓔ	**Zone circuit 3** Thermostat zone circuits 1, 2, 3

Start-up
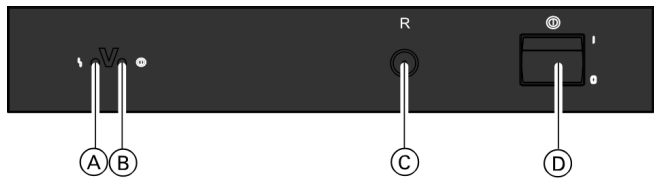
Legend
Ⓐ Fault indicator (red)
Ⓑ ON indicator (green)
Ⓒ Reset button
Ⓓ ON/OFF switch

Starting the heating system

1. Check the heating system pressure at the pressure gauge. The heating system pressure is too low if the indicator is below 14 psi.
   In this case, top up with water or notify your local heating contractor.

2. For room air dependent operation:
   Check that the ventilation opening of the installation room are open and unrestricted.
   Note: With room air dependent operation, the combustion air is drawn from the boiler room.

3. Open the gas shut-off valve.
   Note: Ask your heating contractor to explain the positioning and handling of these components.

4. Switch ON the power supply, e.g. at a separate power switch or fuse.

5. Turn the ON/OFF switch "Ⓞ" ON. After a short time, the standard menu is displayed and the green ON indicator illuminates. Your heating system and, if installed, your remote controls are now ready for operation.

   Refer to operating instructions for steps on shut down the system.

Error 0: Unexpected

Menu Heating Circuits

There are two control levels available, the "Standard menu" and the "Extended menu".
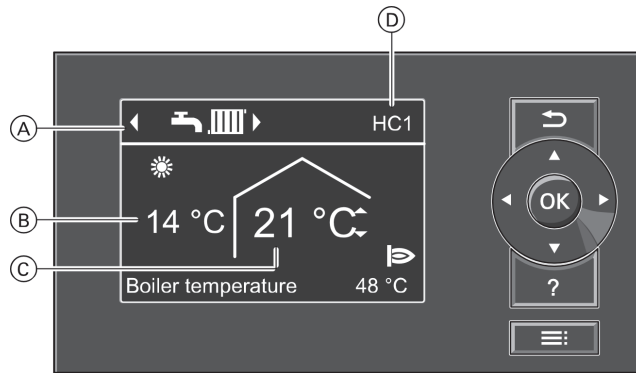
Heating circuit interface

Legend
Ⓐ Header (shows the heating program for displayed heating circuit Ⓓ)
Ⓑ Current outside temperature
Ⓒ Set room temperature
Ⓓ Heating circuit which is selected for operation in the standard menu

Zone control interface

Standard menu

Note: If your heating system has 2 or 3 heating circuits: You can select the heating circuit "**HC1**", "**HC2**" or "**HC3**" to be displayed in the standard menu.

If your heating system only has 1 heating circuit: No heating circuit name "**HC…**" is shown in the header.

In the standard menu, you can adjust and scan the most frequently used settings for the heating circuit shown in the header:

Press the following keys to set room temperature:
▲/▼ for the required value
OK to confirm

Heating programs:
⏻ Standby mode with frost protection monitoring
🚰 Only DHW
🚰 ▥ Heating and DHW

Press the following keys:
►/◄ for the required heating program
OK to confirm

Note: 2 minutes after any setting has been made, the display automatically reverts to the standard menu.
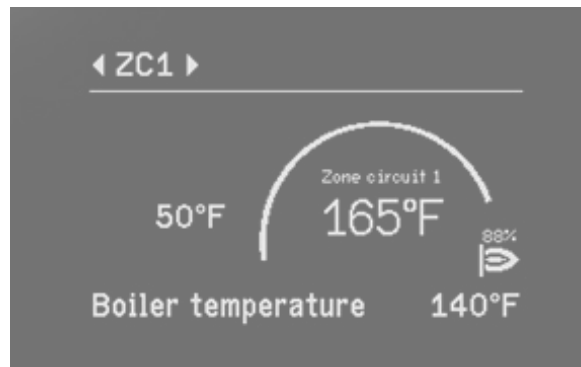
Menu Heating Circuits *(continued)*

Note: For any other connected heating circuits, use the settings in the extended menu.
Call up the standard menu as follows:
- If the screen saver is active
- Press any key except **?**.
If you are somewhere in the menu:
Keep pressing ⮌ until the standard menu appears.

Symbols on the display
These symbols are not always displayed, but appear subject to the system version and the operating state.
Heating programs
⏻ Standby mode with frost protection monitoring
🚰 Only DHW
🚰 Ⅲ Heating and DHW

Displays
HC1 (2, 3) To display the heating circuit selected in the standard menu
ZC1 (2, 3) To display the zone circuit selected in the standard menu
To change this, refer to the Operating Instructions
❄ Frost protection monitoring
☀ Central heating with standard temperature
☽ Central heating with reduced temperature
🍸 Party mode enabled
♣ Economy mode enabled

In conjunction with a solar thermal system
☀⁄ Solar circuit pump running
▷ Burner in operation

Messages
🔧 Service message
⚠ Fault message

Extended menu

In the extended menu, you can adjust and scan the settings from the control unit's range of functions used less frequently, (e.g. time programs and holiday programs).

Call up the extended menu
If the screen saver is active:
Press any key except **?**, and then press ☰.
If you are somewhere in the menu:
Press ☰.

How to use the controls
The screen saver will become active if you have not adjusted any settings on the programming unit for a few minutes. The display brightness is reduced.
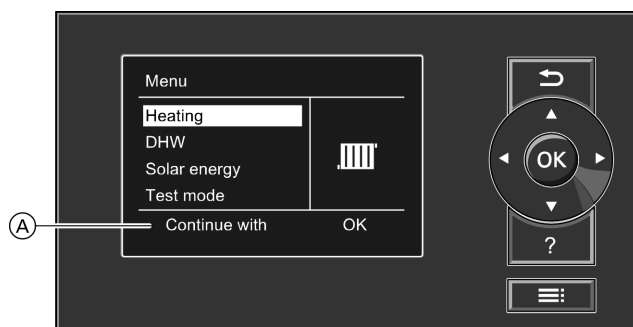
Legend
Ⓐ Dialogue line

5673 649 - 20

Functional Description
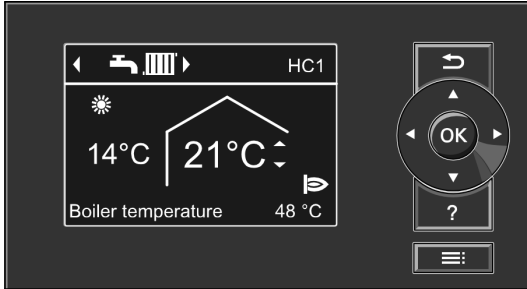
Space heating mode
For operation with heating circuits the control unit calculates a boiler water setpoint temperature based on the outdoor or room temperature (where a room temperature dependent remote control is connected) and on the slope/shift of the heating curve.

The calculated boiler water setpoint temperature is transmitted to the burner control unit.

For operation with zone circuits, the boiler water setpoint operation temperature or calculated based on the slope/shift of the heating curve.

From the boiler water setpoint and the actual temperature the burner control calculates the degree of modulation required, and regulates the burner accordingly. The maximum operating boiler water temperature is limited in the burner control unit to 194ºF (90ºC) by the electronic temperature control.

The fixed high limits of the safety chain interlock the burner control unit at 210ºF (99ºC) boiler water temperature.

Domestic hot water supply with gas-fired space heating boiler
Domestic hot water heating is activated when the tank temperature is 4.5ºF (2.5ºC) below the tank temperature setpoint value. The burner and the tank DHW pump are switched on. In the factory default setting, the desired boiler water temperature is set at 36ºF (20ºC) above the tank temperature setpoint value. When the actual tank temperature rises 4.5ºF (2.5ºC) above the tank temperature setpoint value, the burner is switched off and the time delay function of the tank DHW pump is activated.

The temperature differential of 4.5ºF (2.5ºC) can be adjusted in coding level 2, address "59" DHW boost heating / additional heating function. This function will heat your DHW tank to a second DHW setpoint temperature within the fourth time phase. It can act as an "Anti-Legionnaire-Function" if the DHW supply is not heated to 140ºF (60ºC) during the regular time schedule.

You can activate this function by selecting a switching period for the fourth time phase. (See Operating Instructions.)
The temperature setpoint for this function is adjustable in coding address "58".

Adjusting the Heating Curves

The heating curves illustrate the relationship between the outdoor temperature and the boiler water or supply temperature.
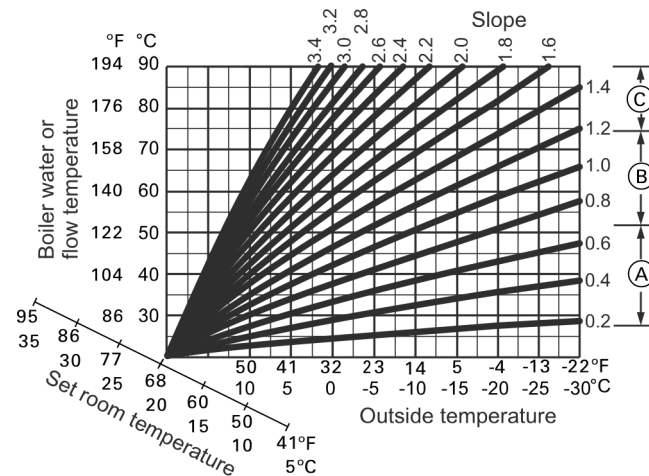To put it simply, the lower the outside temperature, the higher the boiler water or supply temperature.
The room temperature, again, depends on the boiler water or the supply temperature.

Note: If the heating system includes heating circuits with mixing valves, then the supply temperature of the heating circuit without mixing valve is higher by a selected differential (8 K in the delivered condition) than the supply temperature of the heating circuits with mixing valves. The differential temperature can be changed at coding address 9F.

Settings in the delivered condition:
- Slope = 1.4
- Shift = 0

Changing the slope and shift
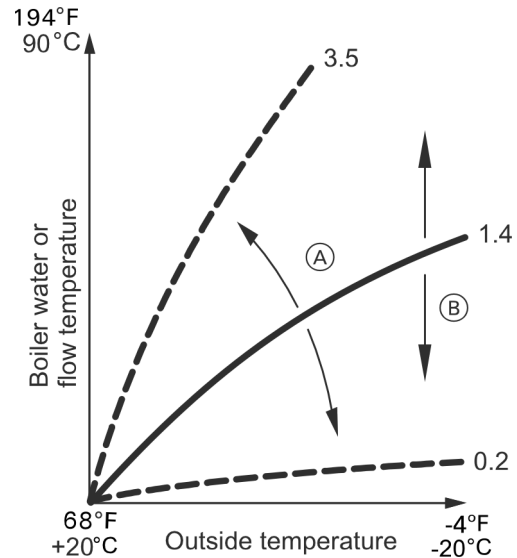
Legend
Ⓐ Changing the slope
Ⓑ Changing the shift (vertical parallel offset of the heating curve)

Extended menu:
1. ☰⋮

2. "Heating"

3. Select heating circuit.

4. "Heating curve"

5. "Slope" or "Shift"

6. Select heating curve according to the system requirements.

Legend
Ⓐ Heating curve slope for underfloor heating systems
Ⓑ Heating curve slope for low temperature heating systems
Ⓒ High temperature heating system, e.g. fintube radiation, fan coils

5673 649 - 20

Adjusting the Heating Curves *(continued)*

Adjusting the set room temperature

Standard room temperature

Reduced room temperature
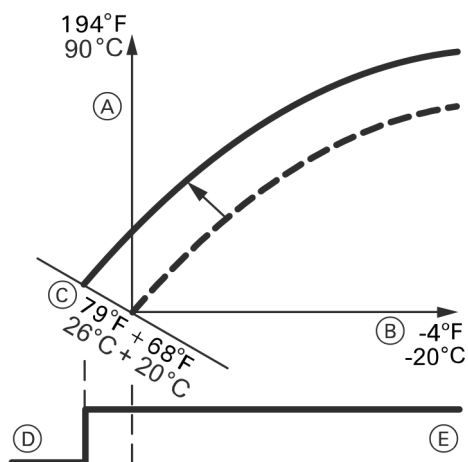
Example 1: Adjustment of the standard room temperature from 68°F to 79°F (20°C to 26°C)

Example 2: Adjustment of reduced room temperature from 41°F to 57°F (5°C to 14°C)

Legend
Ⓐ Boiler water temperature or supply temperature
Ⓑ Outdoor temperature
Ⓒ Set room temperature
Ⓓ Heating circuit pump "OFF"
Ⓔ Heating circuit pump "ON"

Legend
Ⓐ Boiler water temperature or supply temperature
Ⓑ Outdoor temperature
Ⓒ Set room temperature
Ⓓ Heating circuit pump "OFF"
Ⓔ Heating circuit pump "ON"

Adjustment of the standard room temperature:

Refer to the Operating Instructions

Adjustment of the reduced room temperature:

Refer to the Operating Instructions

Raising the reduced room temperature
During operation with reduced room temperature, the reduced set room temperature can be automatically raised subject to the outside temperature.
The temperature is raised in accordance with the selected heating curve, but no higher than the set standard room temperature.

The outside temperature limits for the start and end of the temperature raising can be adjusted via coding addresses "F8" and "F9".

Legend
Ⓐ Heating curve for operation with standard room temperature
Ⓑ Heating curve for operation with reduced room temperature

Example using the factory settings

Reducing the heat-up time
During the transition from operation with reduced room temperature to operation with standard room temperature, the boiler water or supply temperature will be raised in accordance with the selected heating curve. The boiler water or supply temperature can be automatically increased.

The value and duration of the additional increase of the set boiler water or supply temperature can be adjusted in coding addresses "FA" and "FB".

Legend
Ⓐ Start of operation with standard room temperature
Ⓑ Set boiler water or supply temperature in accordance with the selected heating curve
Ⓒ Set boiler water or supply temperature in accordance with coding address "FA": 122°F + 20% = 140°F
50°C + 20% = 60°C
Ⓓ Duration of operation with raised set boiler water or supply temperature in accordance with coding address "Fb": 60 min

Adjusting the Heating Curves *(continued)*

Allocating heating circuits to the remote control

The heating circuit allocation must be configured when commissioning the Vitotrol 200A or Vitotrol 300A.

Heating circuit	Configuration	
	Vitotrol 200A	Vitotrol 300A
The remote control affects the heating circuit without mixing valve A1	HC 1	HC 1
The remote control affects the heating circuit with mixing valve M2	HC 2	HC 2
The remote control affects the heating circuit with mixing valve M3	HC 3	HC 3

Note: One heating circuit can be allocated to the Vitotrol 200A. Up to three heating circuits can be allocated to the Vitotrol 300A. If the heating circuit allocation is later cancelled, reset coding address A0 for this heating circuit to 0 (fault message BC, BD, BE).

Connecting the Boiler to the LON System

Connecting the control unit to the LON
The LON communication module is pre-installed.
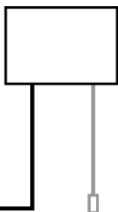
Note: The data transfer via LON can take several minutes.

Single boiler system with Vitotronic 200-H and Vitocom 100 LAN 1 (example)
Set the LON participant numbers and further functions via code 2 (see the following table).

Note: In the same LON system, the same number cannot be allocated twice. Only one Vitotronic may be programmed as fault manager.

Connecting the Boiler to a LON System (continued)

Boiler control unit	Vitotronic 200-H	Vitotronic 200-H	Vitocom
	(e.g. HK1B *1 mixing valve control)	(e.g. HK1B *1 multiple mixing valve control)	*1 LON communication module
LON	LON	LON	
Participant no. 1 Code "77:1"	Participant no. 10 Code "77:10"	Participant no. 11 Set code "77:11"	Participant no. 99
Control unit is fault manager Code "79:1"	Control unit is not fault manager Code "79:0"	Control unit is not fault manager Code "79:0"	Device is fault manager
Control unit transmits the time Code "7B:1"	The control unit receives the time Set code "81:3"	The control unit receives the time Set code "81:3"	Device receives the time
Control unit transmits outside temperature Set code "97:2"	Control unit receives outside temperature Set code "97:1"	Control unit receives outside temperature Set code "97:1"	--
LON participant fault monitoring Code "9C:20"	LON participant fault monitoring Code "9C:20"	LON participant fault monitoring Code "9C:20"	--

Carrying out a LON participant check
Communication with the system devices connected to the fault manager is tested with a participant check.
Preconditions:
■ The control unit must be programmed as fault manager (code "79:1")
■ The LON participant number must be programmed in all control units
■ The LON participant list in the fault manager must be up to date

1. Press OK and ☰ simultaneously for approx. 4 sec.

2. "Service functions"

3. "Participant check"

4. Select participant (e.g. participant 10).

The participant check for the selected participant is introduced.
■ Successfully tested participants are designated with "OK".
■ Unsuccessfully tested participants are designated with "Not OK".

Note: To carry out a new participant check, create a new participant list with menu item "Delete list?"
Note: If the participant check is carried out by another control unit, the participant number and "Wink" are shown on the display for approx. 1 min.

General

Accessing coding level 1

Note: Codes are displayed as plain text.

Codes that have no function due to the heating system equipment level or the setting of other codes are not displayed.

Heating systems with one heating circuit without mixing valve and one or two heating circuits with mixing valve:
The heating circuit without a mixing valve is designated "Heating circuit 1" and the heating circuits with mixing valve as "Heating circuit 2" or "Heating circuit 3".

If the heating circuits were given individual designations, the selected designation and "HC1", "HC2" or "HC3" appear instead:

1. Press **OK** and ☰ simultaneously for approximately 4 seconds.
2. "Coding level 1"
3. Select group of required coding address:
   - "General"
   - "Boiler"
   - "DHW"
   - "Heating circuit 1/2/3"
   - "All codes or solar"

   In this group, all coding addresses from coding level 1 (except the coding addresses from the "Solar"group) are displayed in ascending order.
4. Select coding address.
5. Select value according to the following tables and confirm with **OK**.
6. If you want to reset all codes to their factory setting: Select "Standard setting" in "Coding level 1".
   Note: This also resets codes from coding level 2.

Coding in the factory setting		Possible change	
System design			
00:1	System type 1: One heating circuit without mixing valve A1 (heating circuit 1), without DHW heating	00:2 to 00:10	For system type, see the following table:

Value address 00: …	System type	Description
1	1	One heating circuit without mixing valve (heating circuit 1), without DHW heating.
2	1	One heating circuit without mixing valve (heating circuit 1), with DHW heating (code is adjusted automatically).
3	2	One heating circuit with mixing valve (heating circuit 2), without DHW heating.
4	2	One heating circuit with mixing valve (heating circuit 2) with DHW heating.
5	2	One heating circuit without mixing valve (heating circuit 1) and one heating circuit with mixing valve (heating circuit 2), without DHW heating (code is adjusted automatically).
6	2	One heating circuit without mixing valve (heating circuit 1) and one heating circuit with mixing valve (heating circuit 2), with DHW heating (code is adjusted automatically).
7	3	One heating circuit with mixing valve (heating circuit 2) and one heating circuit with mixing valve (heating circuit 3), without DHW heating.
8	3	One heating circuit with mixing valve (heating circuit 2) and one heating circuit with mixing valve (heating circuit 3), with DHW heating.
9	3	One heating circuit without mixing valve (heating circuit 1), one heating circuit with mixing valve (heating circuit 2) and one heating circuit with mixing valve (heating circuit 3), without DHW heating (code is adjusted automatically).
10	3	One heating circuit without mixing valve (heating circuit 1), one heating circuit with mixing valve (heating circuit 2) and one heating circuit with mixing valve (heating circuit 3), with DHW heating (code is adjusted automatically).

General (continued)

Coding in the factory set mode		Possible change	
Participant no.			
Internal circulation pump function			
51:0	System with low loss header: Internal circulation pump always starts when there is a heat demand	51:1	System with low loss header: When there is a heat demand, the internal circulation pump is only started if the burner is operating. Circulation pump is switched off after a 60 sec. delay.
		51:2	System with heating water buffer DHW tank: When there is a heat demand, the internal circulation pump is only started if the burner is operating. Circulation pump is switched off after a 60 sec. delay.
77:1	LON participant number	77:2 to 77:99	LON participant number, adjustable from 1 to 99: 1 = Boiler 10 - 98 = Vitotronic 200-H 99 = Vitocom **Note:** Allocate each number only once.
Detached house/apartment building			
7F:1	Detached house	7F:0	Apartment building Separate adjustment of holiday program and time program for DHW heating possible.
Lock out controls			
8F:0	Operation in the standard menu and extended menu enabled. **Note:** The respective code is only activated when you exit the service menu.	8F:1	Operation in standard menu and extended menu blocked. Emissions test mode can be enabled.
		8F:2	Operation enabled in the standard menu and blocked in the extended menu. Emissions test mode can be enabled.
Set supply temperature for external demand			
9B:70	Set supply temperature for external demand 158°F (70°C)	9B:0 to 9B:127	Set supply temperature for external demand adjustable from 32°F to 260°F (0°C to 127°C) (limited by boiler-specific parameters).

Boiler

Coding in the factory setting		Possible change	
Single/multi boiler system			
21:0	No service interval (hours run) selected	21:1 to 21:100	Number of hours run before the burner should be serviced is adjustable from 100 to 10,000 h One adjusting step $\overline{\wedge}$ 100 h.
Service interval in months			
23:0	No time interval for burner service	23:1 to 23:24	Interval adjustable from 1 to 24 months.
Service status			
24:0	No "Service" display	24:1	"Service" display (the address is automatically set and must be manually reset after a service has been carried out).

DHW

Coding in the factory setting		Possible change	
Enable DHW recirculation pump			
67:40	For solar DHW heating: Set DHW temperature 104°F (40°C). Reheating is suppressed above the selected set temperature.	67:0 to 67:95	Set DHW temperature adjustable from 32°F to 203°F (0°C to 95°C) (limited by boiler-specific parameters)
73:0	DHW recirculation pump: "ON" in accordance with the time program	73:1 to 73:6	"ON" from once per hour for 5 minutes up to 6 times per hour for 5 minutes during the time program.
		73:7	Constantly "ON".

Solar

Note: The solar group is only displayed if a solar control module, type SM1, is connected.

Coding in the factory setting		Possible change	
Speed control solar circuit pump			
02:0	Solar circuit pump is not speed-controlled.	02:1	Solar circuit pump is speed-controlled with wave packet control.
		02:2	Solar circuit pump is speed-controlled with PWM control.
DHW tank maximum temperature			
08:60	The solar circuit pump is switched off when the actual DHW tank temperature reaches 140°F (60°C) (maximum DHW tank temp).	08:10 to 08:90	Set DHW temperature adjustable from 50°F to 194°F (10°C to 90°C).
Stagnation time reduction			
0A:5	To protect the system components and heat transfer medium, the speed of the solar circuit pump is reduced when the differential between the actual DHW tank temperature and the set DHW tank temperature is less than 5 K.	0A:0	Stagnation time reduction disabled.
		0A:1 to 0A:40	Temperature differential adjustable from 1 to 40 K.
Flow rate solar circuit			
0F:70	Solar circuit flow rate at the maximum pump speed 1.86 GPM (7 L/minute)	0F:1 to 0F:255	Flow rate adjustable from 0.02 to 6.7 GPM (0.1 to 25.5 L/minute;) 0.02 GPM (1 step $\bar{\bar{\wedge}}$ 0.1 L/minute.)
Extended solar control functions			
20:0	No extended control function enabled.	20:1	Additional function for DHW heating.
		20:2	Differential temperature control 2.
		20:3	Differential temperature control 2 and auxiliary function.
		20:4	Differential temperature control 2 for central heating backup.
		20:5	Thermostat function.
		20:6	Thermostat function and auxiliary function.
		20:7	Solar heating via external heat exchanger without additional temperature sensor.
		20:8	Solar heating via external heat exchanger with additional temperature sensor.
		20:9	Solar heating of two DHW tanks.

Heating Circuit 1, 2 and 3

Select "Heating circuit …"

Coding in the factory setting		Possible change	
Priority DHW heating			
A2:2	DHW tank priority applicable to heating circuit pump and mixing valve	A2:0	Without DHW tank priority applied to heating circuit pump and mixing valve.
		A2:1	DHW tank priority only applicable to mixing valve.
		A2:3 to A2:15	Reduced priority applied to mixing valve (the heating circuit receives a reduced amount of energy).
Economy function outside temperature			
A5:5	With heating circuit pump logic function (economy mode): Heating circuit pump "OFF" when the outside temperature (AT) is 1 K higher than the set room temperature (RTset) AT > RTset + 1 K	A5:0	Without heating circuit pump logic function.
		A5:1 to A5:15	With heating circuit pump logic function: Heating circuit pump "OFF"; see following table.

Parameter address A5:…	With heating circuit pump logic function: Heating circuit pump "OFF"
1	AT > RTset + 5 K
2	AT > RTset + 4 K
3	AT > RTset + 3 K
4	AT > RTset + 2 K
5	AT > RTset + 1 K
6	AT > RTset
7 to 15	AT > RTset - 1 K AT > RTset - 9 K

Coding in the factory setting		Possible change	
Extended economy function adjusted outside temperature			
A6:36	Extended economy function disabled	A6:5 to A6:35	Extended economy function enabled, i.e. the burner and heating circuit pump will stop and the mixing valve close at a variable value, adjustable between 41°F and 95°F (5°C and 35°C) plus 1.8°F (1°C). The base value is the adjusted outside temperature. This value is based on the actual outside temperature and a time constant, which takes the cooling down of an average building into consideration.

Heating Circuit 1, 2 and 3 *(continued)*

Coding in the factory setting		Possible change	
Extended economy function mixing valve			
A7:0	Without mixing valve economy function (only with circuits with mixing valve)	A7:1	With mixing valve economy function (extended heating circuit pump logic): Heating circuit pump also "OFF": - If the mixing valve has been closed for longer than 20 minutes. Heating circuit pump "ON": - If the mixing valve changes to control function. - If there is a risk of frost.
Pump idle time, transition reduced mode			
A9:0	Without pump idle time	A9:1 to A9:15	With pump idle time: Heating circuit pump "OFF" if the set value is altered through a change in operating mode or through a change in the set room temperature With pump idle time, adjustable from 1 to 15. 1 = Short idle period 15 = Long idle period
Room temperature hook-up			
B0:0	Only with heating circuit with mixing valve and remote control. Heating mode and reduced mode.	B0:1	Heating mode: weather-compensated Reduced mode: with room temperature hook-up.
		B0:2	Heating mode: with room temperature hook-up Reduced mode.
		B0:3	Heating mode/reduced mode: with room temperature hook-up.
Economy function room temperature			
B5:0	With remote control: No room temperature dependent heating circuit pump logic function	B5:1 to B5:8	Heating circuit pump logic function, see the following table:

Parameter address B5:…	With heating circuit pump logic function:	
	Heating circuit pump "OFF"	Heating circuit pump "ON"
1	RTactual > RTset + 5 K	RTactual < RTset + 4 K
2	RTactual > RTset + 4 K	RTactual < RTset + 3 K
3	RTactual > RTset + 3 K	RTactual < RTset + 2 K
4	RTactual > RTset + 2 K	RTactual < RTset + 1 K
5	RTactual > RTset + 1 K	RTactual < RTset
6	RTactual > RTset	RTactual < RTset - 1 K
7	RTactual > RTset - 1 K	RTactual < RTset - 2 K
8	RTactual > RTset - 2 K	RTactual < RTset - 3 K

Heating Circuit 1, 2 and 3 (continued)

Coding in the factory setting		Possible change	
Minimum supply temperature heating circuit			
C5:20	Electronic minimum supply temp. limit 68°F (20°C)	C5:1 to C5:127	Minimum limit adjustable from 34 to 260°F (1 to 127°C) (limited by boiler-specific parameters).
Maximum supply temperature heating circuit			
C6:74	Electronic maximum supply temperature limit 165°F (74°C)	C6:10 to C6:127	Maximum limit adjustable from 50 to 260°F (10 to 127°C) (limited by boiler-specific parameters).
Heating program - changeover			
D5:0	The external heating program changeover changes the heating program to "Constant operation with reduced room temperature" or "Standby mode"	D5:1	The external heating program changeover changes to "Constant operation with standard room temperature" (subject to coding address 3A, 3B and 3C).
Ext. heating program changeover to heating circuit			
D8:0	No heating program changeover via extension EA1	D8:1	Heating program changeover via input DE1 at extension EA1.
		D8:2	Heating program changeover via input DE2 at extension EA1.
		D8:3	Heating program changeover via input DE3 at extension EA1.
Slab curing function (NOT USED)			
F1:0	slab curing function disabled	F1:1 to F1:6	--
		F1:15	--
Party mode time limit			
F2:8	Time limit for party mode or external heating program changeover via push button: 8 h[1]	F2:0	No time limit for party mode[1].
		F2:1 to F2:12	Time limit adjustable from 1 to 12 h[1].

[1]   Party mode ends automatically in the "Heating and DHW" program, when the system changes over to operation with standard room temperature.

Heating Circuit 1, 2 and 3 *(continued)*

Coding in the factory setting		Possible change	
Start temperature raising			
F8:-5	Temperature limit for terminating the reduced mode 23°F (-5°C); See operating instructions. Observe the setting of coding address "A3"	F8:+10 to F8:-60	Temperature limit adjustable from +50°F to -76°F (+10°C to -60°C).
		F8:-61	Function disabled.
End temperature raising			
F9:-14	Temperature limit for raising the reduced set room temperature 6.8°F (-14°C); See operating instructions.	F9:+10 to F9:-60	Temperature limit for raising the set room temperature to the value selected for standard mode adjustable from 50°F to -76°F (10°C to -60°C).
Set supply temperature heating circuit			
FA:20	Raising the set boiler water temperature or the set supply temperature when changing from operation with reduced room temperature to operation with standard room temperature, by 20%. See operating instructions.	FA:0 to FA:50	Temperature rise adjustable from 0% to 50%.
Duration set supply temperature increase			
FB:60	Duration for raising the set boiler water temperature or the set supply temperature (see coding address "FA") 60 minutes. See operating instructions.	FB:0 to FB:150	Duration adjustable from 0 to 300 minutes; 1 step $\widehat{=}$ 2 min.

Calling up coding level 2

Note: At coding level 2, all codes are accessible, including the codes at coding level 1.

Codes that have not been assigned due to the heating system equipment level or the setting of other codes are not displayed.

Heating systems with one heating circuit without mixing valve and one or two heating circuits with mixing valve:
The heating circuit without mixing valve is designated "Heating circuit 1" and the heating circuits with mixing valve as "Heating circuit 2" or "Heating circuit 3".

If the heating circuits were given individual designations, the selected designation and "HC1", "HC2" or "HC3" appear instead:

1. Press **OK** and ☰: simultaneously for approximately 4 seconds

2. Press **OK** and ⤺ simultaneously for approximately 4 seconds

3. "Coding level 2"

4. Select group of required coding address:
   - "General"
   - "Boiler"
   - "DHW"
   - "Heating circuit 1/2/3"
   - "All codes or solar"
     In this group, all coding addresses (except the coding addresses from the "Solar" group) are displayed in ascending order.

5. Select coding address.

6. Select value according to the following tables and confirm with "**OK**".

7. If you want to reset all codes to their factory setting: Select "Standard setting" in "Coding level 2".

   Note: This also resets codes at coding level 1.

Coding in the factory setting		Possible change	
00:1	System type 1: One heating circuit without mixing valve A1 (heating circuit 1), without DHW heating	00:2 to 00:10	For system type, see the following table:

Value address 00: …	System type	Description
1	1	One heating circuit without mixing valve (heating circuit 1), without DHW heating.
2	1	One heating circuit without mixing valve (heating circuit 1), with DHW heating, (code is adjusted automatically).
3	2	One heating circuit with mixing valve (heating circuit 2), without DHW heating.
4	2	One heating circuit with mixing valve (heating circuit 2) with DHW heating.
5	2	One heating circuit without mixing valve (heating circuit 1) and one heating circuit with mixing valve (heating circuit 2), without DHW heating (code is adjusted automatically).
6	2	One heating circuit without mixing valve (heating circuit 1) and one heating circuit with mixing valve (heating circuit 3), with DHW heating (code is adjusted automatically).
7	3	One heating circuit with mixing valve (heating circuit 2) and one heating circuit with mixing valve (heating circuit 3), without DHW heating.
8	3	One heating circuit with mixing valve (heating circuit 2) and one heating circuit with mixing valve (heating circuit 3), with DHW heating.
9	3	One heating circuit without mixing valve (heating circuit 1), one heating circuit with mixing valve (heating circuit 2) and one heating circuit with mixing valve (heating circuit 3), without DHW heating (code is adjusted automatically).
10	3	One heating circuit without mixing valve (heating circuit 1), one heating circuit with mixing valve (heating circuit 2) and one heating circuit with mixing valve (heating circuit 3), with DHW heating (code is adjusted automatically).

General *(continued)*

Coding in the factory setting		Possible change	
11:≠ 9	No access to the coding addresses for the combustion controller parameters	11:9	Access open to the coding addresses for the combustion controller parameters.
20:74	Supply temperature for zone circuit 1, 164ºF (74ºC)	20:20 to 20:85	Supply temperature for zone circuits adjustable from 68ºF to 185ºF (20ºC to 85ºC) (limited by boiler specific parameters).
27:74	Supply temperature for zone circuit 2, 164ºF (74ºC)	27:20 to 27:85	Supply temperature for zone circuits adjustable from 68ºF to 185ºF (20ºC to 85ºC) (limited by boiler specific parameters).
2A:0	Without wireless outside temperature sensor	2A:1	With wireless outside temperature sensor (automatic recognition).
		2A:2	Wireless outside temperature sensor not used.
2C:74	Supply temperature for zone circuit 3, 164ºF (74ºC)	2C:20 to 2C:85	Supply temperature for zone circuits adjustable from 68ºF to 185ºF (20ºC to 85ºC) (limited by boiler specific parameters).
2D:0	DO NOT ADJUST	--	--
32:1	DO NOT ADJUST	32:0	--
33:1	Function output A1 at extension AM1: Heating circuit pump	33:0	Function output A1: DHW recirculation pump.
		33:2	Function output A1: Circulation pump for DHW tank heating.
		33:3	No function
		33:4	No function
		33:5	Zone circuit pump 1
		33:6	Zone circuit pump 2
		33:7	Zone circuit pump 3
34:0	Function output A2 at extension AM1: DHW recirculation pump	34:1	Function output A2: Heating circuit pump.
		34:2	Function output A2: Circulation pump for DHW tank heating.
		34:3	No function
		34:4	No function
		34:5	Zone circuit pump 1
		34:6	Zone circuit pump 2
		34:7	Zone circuit pump 3
35:1	With extension EA1 (automatic recognition).	35:0	Without extension EA1.
36:0	Function, output 157 at extension EA1: Fault message	36:1	Function output 157: Feed pump.
		36:2	Function output 157: DHW recirculation pump.
		36:3-5	No function
		36:6	Zone circuit pump 1
		36:7	Zone circuit pump 2
		36:8	Zone circuit pump 3
39:2	Function output 21: Circulation pump for DHW tank heating	39:0	Function output 21: DHW recirculation pump.
		39:1	Function output 21: Heating circuit pump.

General *(continued)*

Coding in the factory setting		Possible change	
3A:0	Function input DE1 at extension EA1: Not assigned	3A:1	Function input DE1: Heating program - changeover.
		3A:2	Function input DE1: External demand with set supply temperature. Supply temperature setting: Coding address 9B. Internal circulation pump function: Coding address 3F.
		3A:3	Function input DE1: External blocking. Internal circulation pump function: Coding address 3E.
		3A:4	Function input DE1: External blocking with fault message input Internal circulation pump function: Coding address 3E.
		3A:5	Function input DE1: Fault message input.
		3A:6	Function input DE1: Brief operation, DHW recirculation pump (push button function DHW recirculation pump runtime adjustment: Coding address 3D.
		3A:7	Input zone circuit 1, constant
		3A:8	Input zone circuit 1, weather compensated
3B:0	Function input DE2 at extension EA1: Not assigned	3B:1	Function input DE2: Heating program - changeover.
		3B:2	Function input DE2: External demand with set supply temperature. Supply temperature setting: Coding address 9B. Internal circulation pump function: Coding address 3F.
		3B:3	Function input DE2: External blocking. Internal circulation pump function: Coding address 3E.
		3B:4	Function input DE2: External blocking with fault message input Internal circulation pump function: Coding address 3E.
		3B:5	Function input DE2: Fault message input.
		3B:6	Function input DE2: Brief operation, DHW recirculation pump (push button function). DHW recirculation pump runtime adjustment: Coding address 3D.
		3A:7	Input zone circuit 1, constant
		3A:8	Input zone circuit 1, weather compensated

General *(continued)*

Coding in the factory setting		Possible change	
3C:0	Function input DE3 at extension EA1: Not assigned	3C:1	Function input DE3: Heating program - changeover.
		3C:2	Function input DE3: External demand with set supply temperature. Supply temperature setting: Coding address 9B. Internal circulation pump function: Coding address 3F.
		3C:3	Function input DE3: External blocking. Internal circulation pump function: Coding address 3E.
		3C:4	Function input DE3: External blocking with fault message input Internal circulation pump function: Coding address 3E.
		3C:5	Function input DE3: Fault message input.
		3C:6	Function input DE3: Brief operation, DHW recirculation pump (push button function). DHW recirculation pump runtime adjustment: Coding address 3D.
		3C:7	Input zone circuit 3, constant
		3C:8	Input zone circuit 3, weather compensated
3D:5	DHW recirculation pump runtime for brief operation: 5 minutes	3D:1 to 3D:60	DHW recirculation pump runtime adjustable from 1 to 60 minutes.
3E:0	Internal circulation pump stays in control mode at signal "External blocking"	3E:1	Internal circulation pump stops at signal "External blocking".
		3E:2	Internal circulation pump starts at signal "External blocking".
3F:0	Internal circulation pump stays in control mode at signal "External demand"	3F:1	Internal circulation pump stops at signal "External demand".
		3F:2	Internal circulation pump starts at signal "External demand".
4B:0	Function input 96: Room thermostat (Vitotrol 100) for constant temperature control	4B:1	External demand.
		4B:2	External blocking.
51:0	System with low loss header: Boiler circuit pump is always started when there is a heat demand	51:1	System with low loss header: When there is heat demand, the boiler circuit pump will only be started if the burner is running. Circulation pump is switched off when run-on time expires.
		51:2	System with heating water buffer DHW tank: When there is a heat demand, the internal circulation pump will only be started when the burner is operational.

General *(continued)*

Coding in the factory setting		Possible change	
52:0	Without supply temperature sensor for low loss header	52:1	With supply temperature sensor for low loss header (automatic recognition).
53:1	Function connection 28 of the internal extension: DHW recirculation pump	53:0	Central fault message
		53:2	External heating circuit pump (heating circuit 1).
		53:3	External circulation pump for DHW tank heating.
		53:4	No function
		53:5	Zone circuit pump 1
		53:6	Zone circuit pump 2
		53:7	Zone circuit pump 3
54:0	Without solar thermal system	54:1	With Vitosolic 100 (automatic recognition).
		54:2	With Vitosolic 200 (automatic recognition).
		54:3	With solar control module SM1 without auxiliary function (automatic recognition).
		54:4	With solar control module SM1 with auxiliary function, e.g. central heating backup (automatic recognition).
6E:50	No correction of measured outside temperature	6E:0 to 6E:100	Outside correction in 0.1 K steps 0 to 49 = -5 K to -0.1 K 51 to 100 = 0.1 K to 5 K
76:1	With LON communication module (recognized automatically).	76:0	Without communication module
		76:2	With cascade communication module (recognized automatically; only for constant temperature control units).
77:1	LON participant number	77:2 to 77:99	LON participant number, adjustable from 1 to 99: 1 = Boiler 10 - 98 = Vitotronic 200-H 99 = Vitocom **Note:** Allocate each number only once.

General *(continued)*

Coding in the factory setting		Possible change	
79:1	With LON communication module: Control unit is fault manager	79:0	Control unit is not fault manager.
7B:1	With LON communication module: Control unit transmits the time	7B:0	Does not transmit time.
7F:1	Detached house	7F:0	Apartment building Separate adjustment of holiday program and time program for DHW heating possible.
80:6	A fault message is displayed if a fault is active for at least 30 seconds	80:0	Immediate fault message.
		80:2 to 80:199	Minimum fault duration until fault message occurs, adjustable from 10 sec to 995 sec; 1 step $\overline{\wedge}$ 5 sec.
81:1	Automatic summer/wintertime changeover	81:0	Manual summer/wintertime changeover.
		81:2	Use of the radio clock receiver (automatic recognition).
		81:3	With LON communication module: The control unit receives the time.
82:0	Operation with natural gas	82:1	Operation with LPG (only adjustable if coding address 11:9 has been set).
88:0	Temperature display in °C (Celsius)	88:1	Temperature display in °F (Fahrenheit).
8A:175	Do not adjust.	--	--
8F:0	Operation in the standard menu and extended menu enabled. **Note:** The respective code is only activated when you exit the service menu.	8F:1	Operation in standard menu and extended menu blocked. Emissions test mode can be enabled.
		8F:2	Operation enabled in the standard menu and blocked in the extended menu. Emissions test mode can be enabled.
90:36	Time constant for calculating the adjusted outside temperature 6 h	90:1 to 90:199	Fast (low values) or slow (high values) matching of the supply temperature, subject to the set value when the outside temperature changes; 1 step $\overline{\wedge}$ 10 minutes.

General (continued)

Coding in the factory setting		Possible change	
94:0	Without Open Therm extension	94:1	With Open Therm extension (automatic recognition).
95:0	Without Vitocom 100 communication interface	95:1	With Vitocom 100 communication interface (automatic recognition).
97:0	With LON communication module: The outside temperature of the sensor connected to the control unit is utilized internally	97:1	Control unit receives outside temperature.
		97:2	Control unit transmits the outside temperature to the Vitotronic 200-H.
98:1	With LON communication module: Viessmann system number (in conjunction with monitoring several systems via Vitocom 300)	98:1 to 98:5	System number adjustable from 1 to 5.
99:0	DO NOT ADJUST	--	--
9A:0	DO NOT ADJUST	--	--
9B:70	Set supply temperature for external demand 158°F (70°C)	9B:0 to 9B:127	Set supply temperature for external demand adjustable from 32°F to 260°F (0°C to 127°C) (limited by boiler-specific parameters).
9C:20	Monitoring LON participants. If a participant fails to respond, the values specified inside the control unit will be used after 20 minutes. Only then will a fault message be issued.	9C:0	No monitoring
		9C:5 to 9C:60	Time adjustable from 5 to 60 minutes.
9F:8	Differential temperature 8 K; only in conjunction with mixing valve circuit	9F:0 to 9F:40	Differential temperature adjustable from 0 to 40 K.

Boiler

Coding in the factory setting		Possible change	
06:95	Maximum limit of the boiler water temperature, specified in °C by the boiler coding card	06:20 to 06:127	Maximum limit of the boiler water temperature within the ranges specified by the boiler.
0D:0	DO NOT ADJUST	--	--
0E:0	DO NOT ADJUST	--	--
13:1	DO NOT ADJUST	--	--
14:1	DO NOT ADJUST	--	--
15:1	DO NOT ADJUST	--	--
21:0	No service interval (hours run) selected	21:1 to 21:100	Number of hours run before the burner should be serviced is adjustable from 100 to 10,000 h One adjusting step $\overline{\wedge}$ 100 h.
23:0	No time interval for burner service	23:1 to 23:24	Interval adjustable from 1 to 24 months.
24:0	No "Service" display	24:1	"Service" display (the address is automatically set and must be manually reset after a service has been carried out).
2E:0	DO NOT ADJUST	--	--
38:0	Status burner control unit: Operational (no fault)	38:≠0	Status burner control unit: Fault.

DHW

Coding in the factory setting		Possible change	
56:0	Set DHW temperature adjustable from 50 to 140°F (10 to 60°C)	56:1	Set DHW temperature adjustable from 50°F to over 140°F (10°C to over 60°C). **Note:** Maximum value subject to boiler coding card. Observe the maximum permissible DHW temperature [max. 154°F (68°C)].
57:0	DO NOT ADJUST	--	--
58:0	Without auxiliary function for DHW heating	58:10 to 58:60	Input of a second set DHW temperature, adjustable from 50°F to 140°F (10°C to 60°C) (observe coding addresses "56" and "63").
59:0	DHW tank heating: Starting point -2.5 K Stopping point +2.5 K	59:1 to 59:10	Starting point adjustable from 1 to 10 K below the set value.
5B:0	DHW tank directly connected to the boiler	5b:1	DHW tank connected downstream of the low loss header.
5E:0	Circulation pump for DHW tank heating stays in control mode at signal "External blocking"	5E:1	Circulation pump for DHW tank heating stops at signal "External blocking".
		5E:2	Circulation pump for DHW tank heating starts at signal "External blocking".
5F:0	Circulation pump for DHW tank heating stays in control mode at signal "External demand"	5F:1	Circulation pump for DHW tank heating stops at signal "External demand".
		5F:2	Circulation pump for DHW tank heating starts at signal "External demand".
60:20	During DHW heating, the boiler water temperature is maximum 20 K higher than the set DHW temperature	60:5 to 60:25	The differential between the boiler water temperature and the set DHW temperature is adjustable from 5 to 25 K.
62:2	Circulation pump with 2 minutes run-on time after DHW tank heating	62:0	Circulation pump without run-on.
		62:1 to 62:15	Run-on time adjustable from 1 to 15 minutes.

DHW *(continued)*

Coding in the factory setting		Possible change	
65:0	DO NOT ADJUST	65:0 to 65:3	--
67:40	For solar DHW heating: Set DHW temperature 104°F (40°C). Reheating is suppressed above the selected set temperature.	67:0 to 67:95	Set DHW temperature adjustable from 32°F to 203°F (0°C to 95°C) (limited by boiler- specific parameters)
6F:100	Maximum output for DHW heating in %, specified by the boiler coding card	6F:0 to 6F:100	Maximum output for DHW heating adjustable from minimum output to 100%.
71:0	DHW recirculation pump: "ON" in accordance with the time program	71:1	"OFF" during DHW heating to first set value.
		71:2	"ON" during DHW heating to first set value.
72:0	DHW recirculation pump: "ON" in accordance with the time program	72:1	"OFF" during DHW heating to second set value.
		72:2	"ON" during DHW heating to second set value.
73:0	DHW recirculation pump: "ON" in accordance with the time program	73:1 to 73:6	"ON" from once per hour for 5 minutes up to 6 times per hour for 5 minutes during the time program.
		73:7	Constantly "ON".

Solar

Note: The solar group is only displayed if a solar control module, type SM1, is connected.

Coding in the factory setting		Possible change	
00:8	The solar circuit pump starts when the collector temperature exceeds the actual DHW tank temperature by 8 K.	00:2 to 00:30	The differential between the actual DHW tank temperature and the start point for the solar circuit pump can be adjusted from 2 to 30 K.
01:4	The solar circuit pump is switched off when the differential between the collector temperature and the actual DHW tank temperature is less than 4 K.	01:1 to 01:29	The differential between the actual DHW tank temperature and the stop point for the solar circuit pump can be adjusted from 1 to 29 K.
02:0	Solar circuit pump (stepped) is not speed-controlled	02:1	Solar circuit pump is speed-controlled with wave packet control.
		02:2	Solar circuit pump is speed-controlled with PWM control.
03:10	The temperature differential between the collector temperature and actual DHW tank temperature is regulated to 10 K.	03:5 to 03:20	The differential temperature control between collector temperature and actual DHW tank temperature can be adjusted from 5 to 20 K.
04:4	Controller amplification of the speed control 4%/K.	04:1 to 04:10	Controller amplification adjustable from 1 to 10%/K.
05:10	Minimum speed of the solar circuit pump 10% of the maximum speed.	05:2 to 05:100	Minimum speed of the solar circuit pump is adjustable from 2% to 100%.
06:75	Maximum speed of the solar circuit pump 75% of the maximum possible speed.	06:1 to 06:100	Maximum speed of the solar circuit pump is adjustable from 1% to 100%.
07:0	Interval function of the solar circuit pump switched off.	07:1	Interval function of the solar circuit pump switched on. To capture the collector temperature more accurately, the solar circuit pump starts for short cycles.
08:60	The solar circuit pump is switched off when the actual DHW tank temperature reaches 140°F (60°C) (maximum DHW tank temperature).	08:10 to 08:90	The maximum DHW tank temperature can be adjusted from 50°F to 194°F (10°C to 90°C).

Solar *(continued)*

Coding in the factory setting		Possible change	
09:130	The solar circuit pump stops if the collector temperature reaches 266°F (130°C) (maximum collector temperature to protect the system components)	09:20 to 09:200	Temperature adjustable from 68°F to 392°F (20°C to 200°C).
0A:5	Temperature differential for stagnation time reduction (reduction in the speed of the solar circuit pump to protect system components and heat transfer medium) 5 K.	0A:0 to 0A:40	The differential between the set DHW tank temperature and the start point for reducing the stagnation time can be adjusted from 0 to 40 K.
0B:0	Collector frost protection function switched off	0B:1	Collector frost protection function switched on (not required with Viessmann heat transfer medium).
0C:1	$\triangle$t monitoring switched on. No flow rate captured in the solar circuit, or flow rate too low.	0C:0	$\triangle$t monitoring switched off.
0D:1	Night circulation monitoring switched on. Unintentional flow rate is captured in the solar circuit (e.g. at night).	0D:0	Night circulation monitoring switched off.
0E:1	Calculation of solar yield with Viessmann heat transfer medium	0E:2	Calculation of solar yield with water as heat transfer medium (do not select as operation is only possible with Viessmann heat transfer medium).
		0E:0	Calculation of solar yield switched off.
0F:70	The flow rate in the collector circuit at the maximum pump speed is set to 1.8 USG (7 L/minute).	0F:1 to 0F:255	Flow rate in the collector circuit adjustable from 1.6 to 6.7 USG/minute (0.1 to 25.5 L/minute).
10:0	Target temperature control switched off (see coding address "11").	10:1	Target temperature control switched on.

Solar *(continued)*

Coding in the factory setting		Possible change	
11:50	Set DHW tank temperature for solar 122°F (50°C). - Target temperature control switched on (code 10:1): Temperature at which the solar heated water in the DHW tank is to be stratified. - Extended control functions set to heat two DHW tanks (code 20:8): If the actual temperature of a DHW tank reaches the selected set DHW tank temperature, heating is switched to the second DHW tank.	11:10 to 11:90	The set DHW tank temperature for solar can be adjusted from 50°F to 194°F (10°C to 90°C).
12:10	Minimum collector temperature 68°F (20°C). The solar circuit pump is only started when the set minimum collector temperature is exceeded at the collector temperature sensor.	12:0	Minimum collector temperature function switched off.
		12:1 to 12:90	Minimum collector temperature adjustable from 34°F to 194°F (1°C to 90°C).
20:0	No extended control functions enabled.	20:1	Auxiliary function for DHW heating.
		20:2	Differential temperature control 2.
		20:3	Differential temperature control 2 and auxiliary function.
		20:4	Differential temperature control 2 for central heating backup.
		20:5	Thermostat function.
		20:6	Thermostat function and auxiliary function.
		20:7	Solar heating via external heat exchanger without additional temperature sensor.
		20:8	Solar heating via external heat exchanger with additional temperature sensor.
		20:9	Solar heating of two DHW tanks.
22:8	Start temperature differential for central heating backup: 8 K. (code 20:4 must be selected)	22:2 to 22:30	Start temperature differential for central heating backup is adjustable from 21 to 30 K.

Solar *(continued)*

Coding in the factory setting		Possible change	
23:4	Stop temperature differential for central heating backup: 4 K. (code 20:4 must be selected)	23:2 to 23:30	Stop temperature differential for central heating backup is adjustable from 1 to 29 K.
24:40	Start temperature for thermostat function 104 °F (40 °C). (code 20:5 or 20:6 must be selected)	24:0 to 24:100	Start temperature for thermostat function adjustable from 0 to 100 K.
25:50	Stop temperature for thermostat function 122 °F (50 °C). (code 20:5 or 20:6 must be selected)	25:0 to 25:100	Start temperature for thermostat function is adjustable from 0 to 100 K.
26:1	Priority for DHW tank 1 with alternate heating. Only when setting code 20:9.	26:0	Priority for DHW tank 1 without alternate heating.
		26:2	Priority for DHW tank 2 without alternate heating.
		26:3	Priority for DHW tank 2 with alternate heating.
		26:4	Alternate heating without priority for one of the DHW tank.
27:15	Alternate heating time 15 minutes. The DHW tank without priority is heated at most for the duration of the set alternate heating time if the DHW tank with priority is heated up.	27:5 to 27:60	The alternate heating time is adjustable from 5 to 60 minutes.
28:3	Alternate pause time 3 minutes After the selected alternate heating time for the DHW tank without priority has expired, the rise in collector temperature is captured during the alternate pause time.	28:1 to 28:60	The alternate pause time is adjustable from 1 to 60 minutes.

Heating Circuit 1, 2 and 3

Coding in the factory setting		Possible change	
A0:0	Without remote control	A0:1	With Vitotrol 200A (automatic recognition).
		A0:2	With Vitotrol 300A (automatic recognition).
A1:0	All possible settings at the remote control can be accessed	A1:1	Only party mode can be set at the remote control (only for Vitotrol 200A).
A2:2	DHW tank priority applicable to heating circuit pump and mixing valve	A2:0	Without DHW tank priority applied to heating circuit pump and mixing valve.
		A2:1	DHW tank priority only applicable to mixing valve.
		A2:3 to A2:15	Reduced priority applied to mixing valve (the heating circuit receives a reduced amount of energy).
A3:2	Outside temperature below 34°F (1°C): Heating circuit pump "ON" Outside temperature above 37°F (3°C): Heating circuit pump "OFF"	A3:-9 to A3:15	Heating circuit pump "ON/OFF" (see following table).

Note: When selecting a value below 33.8°F (1°C), there is a risk of pipes outside the thermal envelope of the building freezing up. The standby mode in particular should be taken into consideration, e.g. during holidays.

Parameter address A3:…	Heating circuit pump	
	"ON"	"OFF"
-9	14°F (-10°C)	17.6°F (-8°C)
-8	15.8°F (-9°C)	19.4°F (-7°C)
-7	17.6°F (-8°C)	21.2°F (-6°C)
-6	19.4°F (-7°C)	23°F (-5°C)
-5	21.2°F (-6°C)	24.8°F (-4°C)
-4	23°F (-5°C)	26.6°F (-3°C)
-3	24.8°F (-4°C)	28.4°F (-2°C)
-2	26.6°F (-3°C)	32.2°F (-1°C)
-1	28.4°F (-2°C)	32°F (0°C)
0	32.2°F (-1°C)	33.8°F (1°C)
1	32°F (0°C)	35.6°F (2°C)
2 to 15	33.8 to 57.2°F to (1 to 14°C)	37.4 to 60.8°F to (3 to 16°C)

Heating Circuit 1, 2 and 3 *(continued)*

Coding in the factory setting		Possible change	
A4:0	With frost protection	A4:1	No frost protection; this setting is only possible if code "A3:-9" has been selected. **Note:** "Important" observe for code "A3".
A5:5	With heating circuit pump logic function (economy mode): Heating circuit pump "OFF" when the outside temperature (AT) is 1 K higher than the set room temperature (RTset) AT > RTset + 1 K	A5:0	Without heating circuit pump logic function.
		A5:1 to A5:15	With heating circuit pump logic function: Heating circuit pump "OFF"; see following table.

Parameter address A5:...	With heating circuit pump logic function: Heating circuit pump "OFF"
1	AT > RTset + 5 K
2	AT > RTset + 4 K
3	AT > RTset + 3 K
4	AT > RTset + 2 K
5	AT > RTset + 1 K
6	AT > RTset
7 to 15	AT > RTset - 1 K to AT > RTset - 9 K

Coding in the factory setting		Possible change	
A6:36	Extended economy function disabled	A6:5 to A6:35	Extended economy function enabled, i.e. the burner and heating circuit pump will stop and the mixing valve close at a variable value, adjustable between 41°F and 95°F (5°C and 35°C) plus 1.8°F (1°C). The base value is the adjusted outside temperature. This value is based on the actual outside temperature and a time constant, which takes the cooling down of an average building into consideration.
A7:0	Without mixing valve economy function	A7:1	With mixing valve economy function (extended heating circuit pump logic): Heating circuit pump also "OFF": - If the mixing valve has been attempting to close for longer than 20 minutes. Heating circuit pump "ON": - If the mixing valve changes to control function. - If there is a risk of frost.

Heating Circuit 1, 2 and 3 (continued)

Coding in the factory setting		Possible change	
A9:0	With pump idle time: Heating circuit pump "OFF" if the set value is altered through a change in operating mode or through a change in the set room temperature	A9:0	Without pump idle time.
		A9:1 to A9:15	With pump idle time, adjustable from 1 to 15.
B0:0	With remote control: Heating mode/reduced mode: (only change the code for the heating circuit with mixing valve)	B0:1	Heating mode: weather compensated. Reduced mode: with room temperature hook-up.
		B0:2	Heating mode: with room temperature hook-up. Reduced mode: weather-compensated.
		B0:3	Heating mode/reduced mode: with room temperature hook-up.
B2:8	With remote control unit and for the heating circuit, operation with room temperature hook-up must be programmed: Room influence factor 8 (change the code only for the heating circuit with mixing valve)	B2:0	Without room influence.
		B2:1 to B2:64	Room influence factor adjustable from 1 to 64.
B5:0	With remote control: No room temperature-dependent heating circuit pump logic function (only change the code for the heating circuit with mixing valve)	B5:1 to B5:8	Heating circuit pump logic function, see the following table:

Parameter address B5:…	With heating circuit pump logic function:	
	Heating circuit pump "OFF"	Heating circuit pump "ON"
1	RTactual > RTset + 5 K	RTactual < RTset + 4 K
2	RTactual > RTset + 4 K	RTactual < RTset + 3 K
3	RTactual > RTset + 3 K	RTactual < RTset + 2 K
4	RTactual > RTset + 2 K	RTactual < RTset + 1 K
5	RTactual > RTset + 1 K	RTactual < RTset
6	RTactual > RTset	RTactual < RTset - 1 K
7	RTactual > RTset - 1 K	RTactual < RTset - 2 K
8	RTactual > RTset - 2 K	RTactual < RTset - 3 K

Heating Circuit 1, 2 and 3 (continued)

Coding in the factory setting		Possible change	
C5:20	Electronic minimum supply temperature limit 68°F (20°C)	C5:1 to C5:127	Minimum limit adjustable from 1°F to 260°F (-17°C to 127°C) (limited by boiler-specific parameters).
C6:74	Electronic maximum supply temperature limit 165°F (74°C)	C6:10 to C6:127	Maximum limit adjustable from 50°F to 260°F (10°C to 127°C) (limited by boiler-specific parameters).
D3:14	Heating curve slope = 1.4	D3:2 to D3:35	Heating curve slope adjustable from 0.2 to 3.5 (see page 50).
D4:0	Heating curve shift = 0	D4:−13 to D4:40	Heating curve shift adjustable from −13 to 40 (see page 50).
D5:0	The external heating program changeover changes the heating program to "Constant operation with reduced room temperature" or "Standby mode"	D5:1	The external heating program changeover changes to "Constant operation with standard room temperature" (subject to coding address 3A, 3B and 3C).
D6:0	Heating circuit pump stays in control mode at signal "External blocking"	D6:1	Heating circuit pump stops at signal "External blocking" (subject to coding addresses 3A, 3B and 3C).
		D6:2	Heating circuit pump starts at signal "External blocking" (subject to coding addresses 3A, 3B and 3C).
D7:0	Heating circuit pump stays in control mode at signal "External demand"	D7:1	Heating circuit pump stops at signal "External demand" (subject to coding addresses 3A, 3B and 3C).
		D7:2	Heating circuit pump starts at signal "External demand" (subject to coding addresses 3A, 3B and 3C).
D8:0	No heating program changeover via extension EA1	D8:1	Heating program changeover via input DE1 at extension EA1.
		D8:2	Heating program changeover via input DE2 at extension EA1.
		D8:3	Heating program changeover via input DE3 at extension EA1.
E1:1	DO NOT ADJUST	--	--
E2:50	With remote control: No display correction for the actual room temperature	E2:0 to E2:49	Display correction −5 K to Display correction −0.1 K.
		E2:51 to E2:99	Display correction +0.1 K to Display correction +4.9 K.

Heating Circuit 1, 2 and 3 *(continued)*

Coding in the factory setting		Possible change	
E5:0	Without external variable speed heating circuit pump	E5:1	With external variable speed heating circuit pump.
E6:...	Maximum speed of the variable speed heating circuit pump in % of the maximum speed in standard mode. Value is specified by boiler-specific parameters	E6:0 to E6:100	Maximum speed adjustable from 0 to 100%.
E7:30	Minimum speed of the variable speed heating circuit pump: 30% of the maximum speed	E7:0 to E7:100	Minimum speed adjustable from 0% to 100% of the maximum speed.
E8:1	Minimum speed in operation with reduced room temperature subject to the setting in coding address "E9"	E8:0	Speed subject to the setting in coding address "E7".
E9:45	Speed of the variable speed heating circuit pump: 45% of the maximum speed during operation with reduced room temperature	E9:0 to E9:100	Speed adjustable from 0 to 100% of the maximum speed during operation with reduced room temperature.
F1:0	Slab curing function disabled	--	--
F2:8	Time limit for party mode or external heating program changeover via push button: 8 h[1]	F2:0	No time limit for party mode[1].
		F2:1 to F2:12	Time limit adjustable from 1 to 12 h [1].
F5:12	Run-on time of the boiler circuit pump in heating mode: 12 minutes.	F5:0	No run-on time for the circulation pump in the heating circuit connection set.
		F5:1 to F5:20	Run-on time of the circulation pump in the heating circuit connection set adjustable from 1 to 20 minutes.
F8:-5	Temperature limit for terminating the reduced mode 23°F (-5°C); See operating instructions. Observe the setting of coding address "A3".	F8: + 10 to F8:-60	Temperature limit adjustable from 50 to -76°F (10 to -60°C).
		F8:-61	Function disabled.
F9:-14	Temperature limit for raising the reduced set room temperature 6.8°F (-14°C); See operating instructions.	F9: + 10 to F9:-60	Temperature limit for raising the set room temperature to the value selected for standard mode adjustable from 50°F to -76°F (10°C to -60°C).
FA:20	Raising the set boiler water temperature or the set supply temperature when changing from operation with reduced room temperature to operation with standard room temperature, by 20%. See operating instructions.	FA:0 to FA:50	Temperature rise adjustable from 0% to 50%.
FB:60	Duration for raising the set boiler water temperature or the set supply temperature (see coding address "FA") 60 minutes See operating instructions.	FB:0 to FB:150	Duration adjustable from 0 to 300 minutes; 1 step $\overline{\overline{\wedge}}$ 2 minutes.

[1] Party mode ends automatically in the "Heating and DHW" program, when the system changes over to operation with standard room temperature.
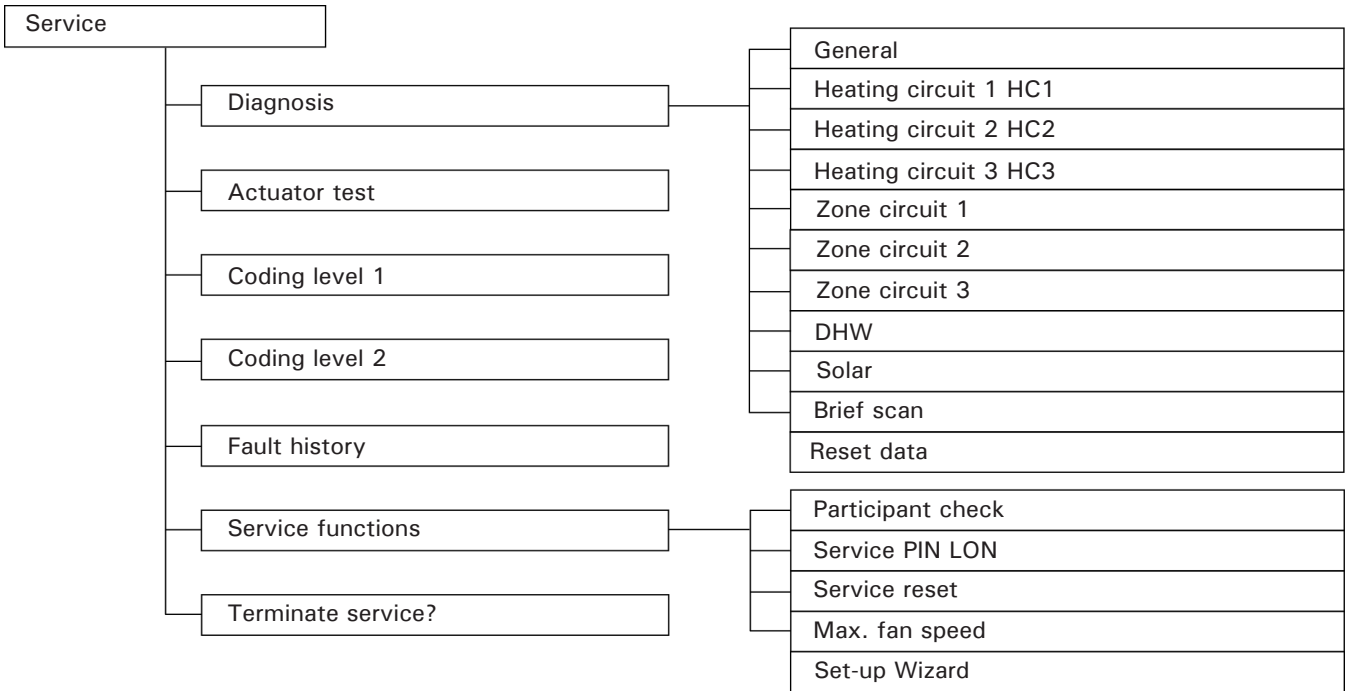
5673 649 - 20

Zone Circuit 1, 2 and 3

Coding in the factory setting		Possible change	
1B:14	Heating curve slope = 1.4	1B:2 to 1B:35	Heating curve slope adjustable from 0.2 to 3.5. Zone circuit 1
1C:0	Heating curve level = 0	1C:−13 to 1C:40	Heating curve level adjustable from -13 to 40. Zone circuit 1
68:14	Heating curve slope = 1.4	68:2 to 68:35	Heating curve slope adjustable from 0.2 to 3.5. Zone circuit 2
69:0	Heating curve level = 0	69:−13 to 69:40	Heating curve level adjustable from -13 to 40. Zone circuit 2
6A:14	Heating curve slope = 1.4	6A:2 to 6A:35	Heating curve slope adjustable from 0.2 to 3.5. Zone circuit 3
6B:0	Heating curve level = 0	6B:−13 to 6B:40	Heating curve level adjustable from -13 to 40. Zone circuit 3

Calling up the Service Level

Press OK and ☰ simultaneously for approximately 4 sec.

Service menu overview

Service

Diagnosis		General
		Heating circuit 1 HC1
Actuator test		Heating circuit 2 HC2
		Heating circuit 3 HC3
Coding level 1		Zone circuit 1
		Zone circuit 2
Coding level 2		Zone circuit 3
		DHW
		Solar
Fault history		Brief scan
		Reset data
Service functions		Participant check
		Service PIN LON
		Service reset
Terminate service?		Max. fan speed
		Set-up Wizard

Scanning and resetting the "Service" display
After the limits specified in coding addresses "21" and "23" have been reached, the red fault indicator flashes and "Service" and "🔧" appear on the programming unit display.

Acknowledging and resetting service
Press OK to acknowledge a service message.

Note: An acknowledged service message that was not reset reappears the following Monday.
After a service has been carried out (reset service)

1. Press OK and ☰ simultaneously for approx. 4 sec.

2. "Service functions"

3. "Service reset"

Note: The selected service parameters for hours run and time interval restart at 0.

Instructing the system user
The system installer must hand the operating instructions to system users and instruct them in the operation of the system.

Diagnosis

Scanning operating data

- Operating data can be scanned in six areas.
  See "Diagnosis" in the service menu overview.
  Operating data on heating circuits with mixing valves and solar can only be scanned if the components are installed in the system. For further information on operating data, see chapter "Brief scan".

Note: "- - -" appears on the display if a sensor that has been scanned is faulty.

Calling up operating data

1. Press OK and ☰: simultaneously for approximately 4 sec.
2. "Diagnosis"
3. Select required group, e.g. "General"

Refer to Operating instructions

Brief scan

In the brief scan, you can call up temperatures, software versions and connected components, for example:

1. Press OK and ☰: simultaneously for approximately 4 sec.
2. "Diagnosis"
3. "Brief scan".
4. Press OK. The display shows 9 lines with 6 fields each.

| Diagnosis Brief scan					
1:	1 F	0 A	1 2		
2:	0 0	0 0	0 0		
3:	0 0	0 0	0 0		
4:	0 0	0 0	0 0		
Select with ⬍					

For an explanation of the relevant values in the individual lines and fields, see the following table:

| Line (brief scan)	Field					
	1	2	3	4	5	6
1:	Software version Control unit		Equipment version		Burner control unit version	
2:	System type 01 to 10		Number of KM BUS participants	Maximum demand temperature		
3:	0	Software version Programming unit	Software version, Mixing valve extension 0: No mixing valve extension	0	Software version, LON module	0
4:	Software version Burner control unit		Type Burner control unit		Appliance type	
5:	0	0		0	0	0
6:	Number of LON participants		Check digit	Max. output Details in %		
7:	**Heating circuit A1 (without mixing valve)**		**Heating circuit M2 (with mixing valve)**		**Heating circuit M3 (with mixing valve)**	
	Remote control 0: without 1: Vitotrol 200A 2: Vitotrol 300A or Vitohome	Software version, Remote control 0: no remote control	Remote control 0: without 1: Vitotrol 200A 2: Vitotrol 300A or Vitohome	Software version, Remote control 0: no remote control	Remote control 0: without 1: Vitotrol 200A 2: Vitotrol 300A or Vitohome	Software version, Remote control 0: no remote control
8:	**Internal circulation pump**		**Heating circuit pump, heating circuit M2**		**Heating circuit pump, heating circuit M3**	
	Variable speed pump 0: without 1: Wilo 2: Grundfos	Software version, variable speed pump 0: no variable speed pump	Variable speed pump 0: without 1: Wilo 2: Grundfos	Software version, variable speed pump 0: no variable speed pump	Variable speed pump 0: without 1: Wilo 2: Grundfos	Software version, variable speed pump 0: no variable speed pump
9:	Internal details for calibration				Software version Extension AM1	Software version, Extension EA1

Checking Outputs (relay tests)

1. Press OK and ☰ simultaneously for approximately
   4 sec.
2. "Actuator test"

The following relay outputs can be controlled subject to system design:

Display		Explanation
Base load	Start	Burner operated at minimum output; heating circuit A1 pump is on.
Full load	Start	Burner operated at maximum output; heating circuit A1 pump is on.
Output, internal	Start	Output 21 active (DHW Pump) enabled.
Htg circ pump HC2	Start	Heating circuit pump output enabled (extension to heating circuit with mixing valve)
Mixing valve HC2	Open	"Mixing valve open" output enabled (extension to heating circuit with mixing valve)
Mixing valve HC2	Close	"Mixing valve closed" output enabled (extension to heating circuit with mixing valve)
Htg circ pump HC3	Start	Heating circuit pump output enabled (extension to heating circuit with mixing valve)
Mixing valve HC3	Open	"Mixing valve open" output enabled (extension to heating circuit with mixing valve)
Mixing valve HC3	Close	"Mixing valve closed" output enabled (extension to heating circuit with mixing valve)
Outp. int. exten. H1	Start	Output at internal extension H1 enabled
EA1 output 1	Start	Contact P - S on plug 157 for extension EA1 closed
Solar circuit pump	Start	Solar circuit pump 24 output at solar control module SM1 enabled
Solar circ pmp min	Start	Solar circuit pump output at solar control module SM1 switched to min. speed
Solar circ pmp max	Start	Solar circuit pump output at solar control module SM1 switched to max. speed
Solar output 22	Start	Output 22 at solar control module SM1 enabled
SA 104 output 1	Start	DHW recirculation pump output 28
SA 104 output 2	Start	Output heating circuit pump A1 20
SA 104 output 3	Start	

Fault Codes
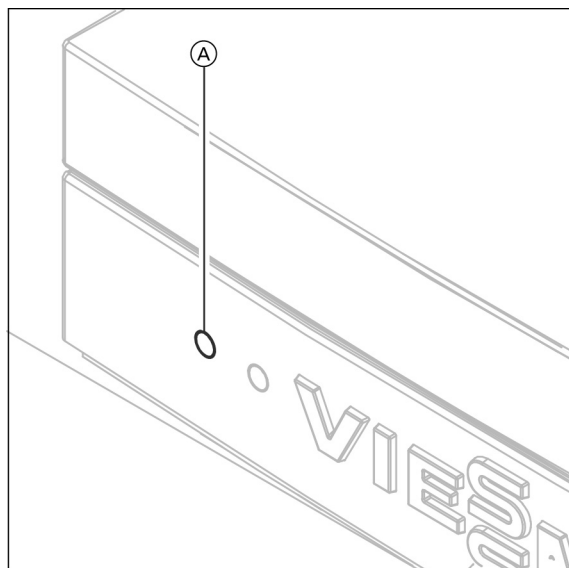
In the event of a fault, red fault indicator Ⓐ flashes. "⚠" flashes on the display and "Fault" is shown.

The fault code is displayed with OK. For an explanation of the fault code, see the following pages.
For some faults, the type of fault is also displayed in plain text.

Acknowledging a fault

Follow the instructions on the display.

Note: The fault message is transferred to the standard menu. A fault output device (e.g. light, buzzer etc.), if connected, will be switched OFF. If an acknowledged fault is not remedied, the fault message will be re-displayed the following day and the fault output device restarted.

Calling up acknowledged faults

Select "Fault" in the standard menu.
The current faults will be displayed in a list.

Calling up fault codes from the fault memory (fault history)

The 10 most recent faults (including resolved ones) are saved and can be called up.
Faults are sorted by date.

1. Press OK and ≡ simultaneously for approximately 4 seconds
2. "Fault history"
3. "Display?"

Fault Codes *(continued)*

Fault code on display	System behavior*1	Cause	Corrective action
10	Boiler operates based on outdoor temperature of 32°F (0°C)	Short circuit on outdoor temperature sensor	Check the outdoor temperature sensor (see page 93).
18	Boiler operates based on outdoor temperature of 32°F (0°C)	Outdoor temperature sensor cable broken	Check the outdoor temperature sensor (see page 93).
30	Burner blocked	Short circuit on boiler water temperature sensor	Check the boiler water temperature sensor (see page 94).
38	Burner blocked	Boiler water temperature sensor cable broken	Check the boiler water temperature sensor (see page 94).
40	Mixing valve closes	Heating circuit 2 with mixing valve supply short circuit on temperature sensor	Check the supply temperature sensor (see page 94).
44	Mixing valve closes	Short circuit, supply temperature sensor, heating circuit 3 (with mixing valve)	Check supply temperature sensor (see page 94).
48	Mixing valve closes	Heating circuit 2 with mixing valve supply temperature sensor cable broken	Check the supply temperature sensor (see page 94).
4C	Mixing valve closes	Supply temperature sensor cable broken circuit 3 (with mixing valve)	Check supply temperature sensor (see page 94).
50	No DHW heating	Short circuit on DHW tank temperature sensor	Check the DHW sensor (see page 94).
58	No DHW heating	Tank temperature sensor cable broken	Check the sensor (see page 94).
90	Control mode	Short circuit, temperature sensor 7	Check sensor 7 on solar control module
91	Control mode	Short circuit, temperature sensor 10	Check sensor 10 on solar control module
92	No solar DHW heating	Short circuit, collector temperature sensor	Check temperature sensor 6 on solar control module or Vitosolic sensor
93	Control mode	Short circuit, tank temperature sensor	Check temperature sensor at connection S3 to Vitosolic 100
94	No solar DHW heating	Short circuit, tank temperature sensor	Check temperature sensor 5 on solar control module or Vitosolic sensor
98	Control mode	Lead break, temperature sensor 7	Check sensor 7 on solar control module
99	Control mode	Lead break, temperature sensor 10	Check sensor 10 on solar control module

*1 Control mode:..............Boiler/burner fully operational (fault code must be verified and reset).
    Burner in fault mode:.....Boiler control requires manual reset before burner can resume operation.
    Burner blocked: ....If fault cause is corrected, burner resumes operation.

Fault Codes *(continued)*

Fault code on display	System behavior *1	Cause	Corrective action
9A	No solar DHW heating	Collector temperature sensor 6 cable broken	Check the sensor 6 at the solar control module.
9B DO NOT USE	Control mode	Tank temperature sensor cable broken	Check temperature sensor at connection S3 to the Vitosolic solar control.
9C	No solar DHW heating	Tank temperature sensor 5 cable broken	Check temperature sensor 5 on solar control module.
9E	Control mode	No supply rate in collector circuit or flow rate too low or temperature limiter has responded	Check solar circuit pump and solar circuit. Acknowledge fault message.
9F	Control mode	Solar control module faulty	Replace solar control module.
A7	Control mode (stays in factory default setting)	Faulty programming unit	Replace the programming unit.
B0	Burner blocked	Flue gas temperature sensor shorted out	Check flue gas temperature sensor (see page 95).
B1	Control mode (stays in factory default setting)	Communication fault; programming unit (internal)	Check connections and replace programming unit if required.
B5	Control mode (factory default setting)	Internal fault	Replace the control unit.
B7	Burner blocked	Boiler coding card missing, faulty or incorrect boiler coding card	Plug in boiler coding card or replace if faulty.
B8	Burner blocked	Flue gas temperature sensor cable broken	Check flue gas temperature sensor (see page 95).
BA	Mixing valve regulates to a supply temperature of 68°F (20°C)	Communication fault - accessory kit for heating circuit 2 with mixing valve	Check extension kit connections and code.
BB	Mixing valve regulates to a supply temperature of 68°F (20°C)	Communication error, extension kit for heating circuit 3 (with mixing valve)	Check extension kit connections and code.
BC	Control mode without remote control	Communication error, remote control Vitotrol heating circuit 1 (without mixing valve)	Check connections, cable, coding address "A0" in "Heating circuit" group and remote control unit setting.

*1 Control mode:..............Boiler/burner fully operational (fault code must be verified and reset).
Burner in fault mode:.....Boiler control requires manual reset before burner can resume operation.
Burner blocked: ....If fault cause is corrected, burner resumes operation.

Fault Codes *(continued)*

Fault code on display	System behavior *1	Cause	Corrective action
BD	Control mode without remote control	Communication error, remote control Vitotrol heating circuit 2 (with mixing valve)	Check connections, cable, coding address "A0" in "Heating circuit" group and remote control unit setting. For wireless remote control units: Check radio path connections, place remote control unit and wireless repeater close to the boiler. Check KM BUS connection to wireless base station. Replace wireless components.
BE	Control mode without remote control	Communication error, remote control Vitotrol heating circuit 3 (with mixing valve)	Check connections, cable, coding address "A0" in "Heating circuit" group and remote control unit setting. For wireless remote control units: Check radio path connections, place remote control unit and wireless repeater close to the boiler. Check KM BUS connection to wireless base station. Replace wireless components.
BF	Control mode	Incorrect LON communication module	Replace LON communication module.
C1	Control mode	Communication fault extension EA1	Check connections. Without extension EA1, set code "35:0"
C2	Control mode	Communication fault - solar control unit or Vitosolic	Check solar control or Vitosolic.
C4	Control mode	Communication fault, Open Therm extension	Check Open Therm extension.
C7	Control mode, max. pump speed	Communication fault-variable speed circulation pump,heating circuit without mixing valve, heating circuit pump A1	Check setting of coding address "E5".
C8	Control mode, max. pump speed	Communication error, external variable speed heating circuit pump, heating circuit 3 (with mixing valve)	Check setting of coding address "E5"
CD NOT USED	Control mode	Communication fault, Vitocom 100 (KM-BUS)	Check connections Vitocom 100 coding address "95"
CF	Control mode	Communication fault - LON communication module	Replace LON communication module.
D6	Control mode	Input DE1 reports a fault at extension EA1	Remove fault at appliance concerned.
D7	Control mode	Input DE2 reports a fault at extension EA1	Remove fault at appliance concerned.

*1   Control mode:..............Boiler/burner fully operational (fault code must be verified and reset).
     Burner in fault mode:.....Boiler control requires manual reset before burner can resume operation.
     Burner blocked: ....If fault cause is corrected, burner resumes operation.

5673 649 - 20

Fault Codes (continued)

Fault code on display	System behavior *1	Cause	Corrective action
D8	Control mode	Input DE3 reports a fault at extension EA1	Remove fault at appliance concerned.
DA	Control mode without room influence	Short circuit on room temperature sensor, heating circuit 1 without mixing valve	Check the room temperature sensor, heating circuit 1 without mixing valve.
DB	Control mode without room influence	Room temperature sensor, shorted out heating circuit 2 with mixing valve	Check the room temperature sensor, heating circuit 2.
DC	Control mode without room influence	Short circuit, room temperature sensor, heating circuit 3 (with mixing valve)	Check room temperature sensor, heating circuit 3
DD	Control mode without room influence	Room temperature sensor cable broken, heating circuit 1 without mixing valve	Check the room temperature sensor, heating circuit 1 and the remote control setting (see page 94).
DE	Control mode without room influence	Room temperature sensor cable broken, heating circuit 2 with mixing valve	Check the room temperature sensor, heating circuit 2 and the remote control settings (see page 94).
DF	Control mode without room influence	Room temperature sensor cable broken, heating circuit 3 (with mixing valve)	Check room temperature sensor for heating circuit 3 and remote control settings (see page 94).
E0	Control mode	Fault external LON participant	Check connections and LON participants.
E1	Burner in a fault mode	Ionization current too high during calibration	Check gap between ionization electrode and burner gauze assembly (see page 23). In open flue mode, prevent very dusty conditions for the combustion air. Press reset button **R**.
E3	Burner in a fault mode	Heat transfer too low during calibration. Temperature limiter caused shutdown.	Ensure adequate heat transfer. Press reset button **R**.

*1   Control mode:..............Boiler/burner fully operational (fault code must be verified and reset).
     Burner in fault mode:.....Boiler control requires manual reset before burner can resume operation.
     Burner blocked: ....If fault cause is corrected, burner resumes operation.

Fault Codes *(continued)*

Fault code on display	System behavior *1	Cause	Corrective action
E4	Burner blocked	Fault, supply voltage 24V	Replace the control unit.
E5	Burner blocked	Fault flame amplifier	Replace control unit.
E7	Burner in a fault mode	Ionization current too low during calibration	Check ionization electrode: - Distance to burner gauze assembly (see page 23). - Contamination of electrode. - Connecting lead and plug-in connections. Check flue system; remedy flue gas recirculation if required. Press reset button **R**.
E8	Burner in a fault mode	The ionization current lies outside the permissible range	Check gas supply (gas pressure and gas flow limiter), gas train and connecting lead. Check allocation of gas type (see page 17). Check ionization electrode: - Distance to burner gauze assembly (see page 23). - Contamination of electrode Press reset button **R**.
EA	Burner in a fault mode	The ionization current lies outside the permissible range during calibration (deviation from previous level too great)	Check flue system; remedy flue gas recirculation if required In open flue mode, prevent very dusty conditions for the combustion air. Press reset button **R**. Following several unsuccessful reset attempts, replace boiler coding card and press reset button **R**.
EB	Burner in a fault mode	Repeated flame loss during calibration	Check gap between ionization electrode and burner gauze assembly (see page 23). Check allocation of gas type (see page 17). Check flue system; remedy flue gas recirculation if required. Press reset button **R**.
EC	Burner in a fault mode	Parameter fault during calibration	Press reset button **R** or Replace boiler coding card and press reset button **R**.
ED	Burner in a fault mode	Internal fault	Replace control unit.

*1 Control mode:..............Boiler/burner fully operational (fault code must be verified and reset).
   Burner in fault mode:.....Boiler control requires manual reset before burner can resume operation.
   Burner blocked: ....If fault cause is corrected, burner resumes operation.

Fault Codes *(continued)*

| Fault code on display	System behavior *1	Cause	Corrective action
EE	Burner in a fault mode	At burner start, flame signal is missing or too weak	Check gas supply (gas pressure and gas regulator). Check gas train. Check ionization electrode and connecting cable. Check ignition: - Connecting leads to ignition module and ignition electrode. - Ignition electrode gap and contamination (see page 23). Check condensate drain. Press reset button **R**.
EF	Burner in a fault mode	Flame is lost immediately after it has built (during the safety time)	Check gas supply (gas pressure and gas regulator). Check flue gas/ventilation air system for flue gas recirculation. Check ionization electrode (replace if required): - Distance to burner gauze assembly (see page 23). - Contamination of electrode Press reset button **R**. - Check combustion air/common combustion air intake for blockages. - replace air intake adaptor.
F0	Burner blocked	Internal fault	Replace the control unit.
F1	Burner in a fault mode	Maximum flue gas temperature exceeded 230ºF (110ºC) limit.	Check heating system fill level. Bleed air from system. Check circulation pump. Check boiler water temperature sensor and cable. Press reset button **R** after vent system has cooled down.
F2	Burner in fault mode	Fixed high limit switch open (activated)	Check heating system fill level. Check the circulation pump. Bleed air from the system. Check fixed high limit switch and connecting cables. Press reset button **R**.
F3	Burner in fault mode	Flame signal already present at burner start	Check the ionization electrode and connecting cable. Press reset button **R**.

*1   Control mode:..............Boiler/burner fully operational (fault code must be verified and reset).
Burner in fault mode:.....Boiler control requires manual reset before burner can resume operation.
Burner blocked: ....If fault cause is corrected, burner resumes operation.

Fault Codes *(continued)*

| Fault code on display	System behavior *1	Cause	Corrective action
F8	Burner in fault mode	Gas valve closes too late	Check the gas valve. Check both control wiring/connections. Press reset button **R**.
F9	Burner in fault mode	Fan speed too low during burner start	Check the fan, the fan cables and power supply. Check the fan control. Press reset button **R**.
FA	Burner in fault mode	Fan not at standstill	Check the fan, the fan connecting cables and fan control. Check the fan control. Press reset button **R**.
FC	Burner in fault mode	Gas valve faulty or faulty modulation valve control; or vent system blocked	Check the gas valve. Check the vent system. Press reset button **R**.
FD	Burner in a fault state and additional fault B7 is displayed	Boiler coding card is missing	Insert the boiler coding card. Press reset button **R**. Replace control unit if fault persists.
	Burner in a fault state	Fault, burner control unit	Check ignition electrodes and connecting cables. Check whether a strong interference (EMC) field exists near the appliance. Press reset button **R**. Replace control unit if fault persists.
FE	Burner in fault mode	Damaged or incorrect boiler coding card or main PCB	Press reset button **R**. If the fault persists, check the boiler coding card or replace it or the control unit.
FF	Burner in fault mode	Internal fault or reset button **R** blocked	Restart the equipment. Replace the control unit if the equipment will not restart.

*1   Control mode:..............Boiler/burner fully operational (fault code must be verified and reset).
     Burner in fault mode:.....Boiler control requires manual reset before burner can resume operation.
     Burner blocked: ....If fault cause is corrected, burner resumes operation.

5673 649 - 20

Corrective Action
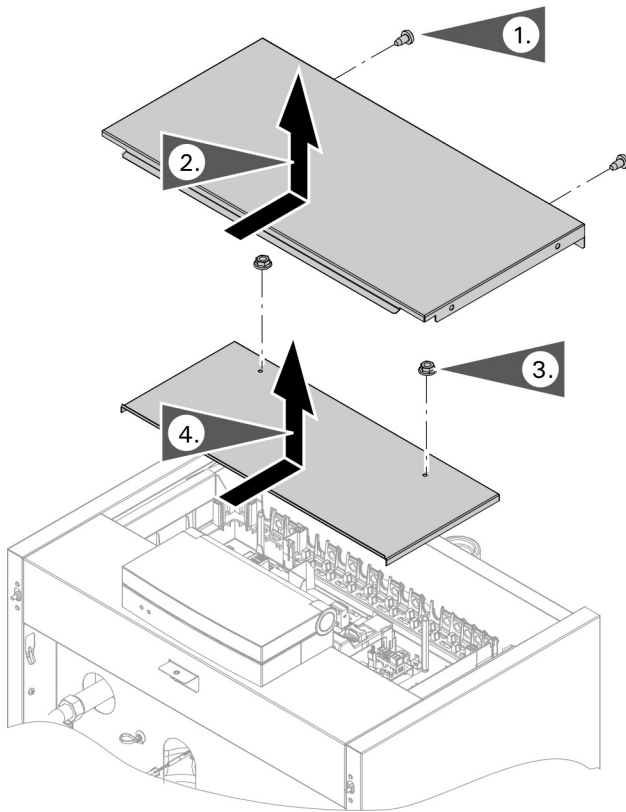
Accessing the Control Electrical Connections Box

1. Remove the screws from the top panel and set aside.

2. Slide the top panel to the rear of the boiler and lift up.

3. Remove the retaining nuts from the control connection cover and set aside.

4. Slide the control connection cover to the rear of the boiler and lift up.
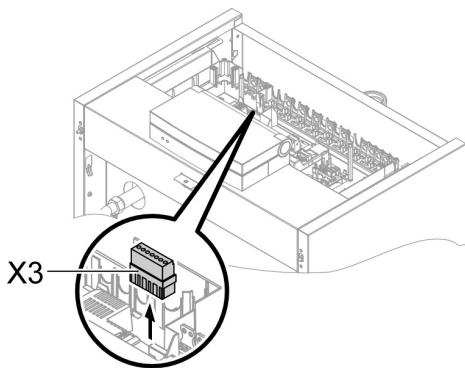
Checking the outdoor temperature sensor

1. Pull plug "X3" from the control unit.

2. Test the resistance of the outdoor temperature sensor across terminals "X3.1" and "X3.2" on the disconnected plug and compare it with the curve.

3. Where actual values deviate severely from the curve values, disconnect the wires at the sensor and repeat test on the sensor itself.

4. Depending on the result, replace the lead or the outdoor temperature sensor. Sensor type: NTC 10 kΩ
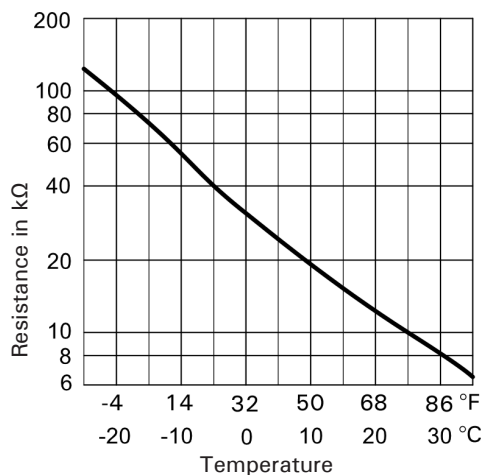
Corrective Action *(continued)*
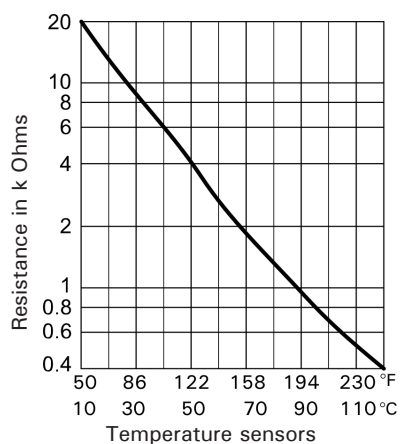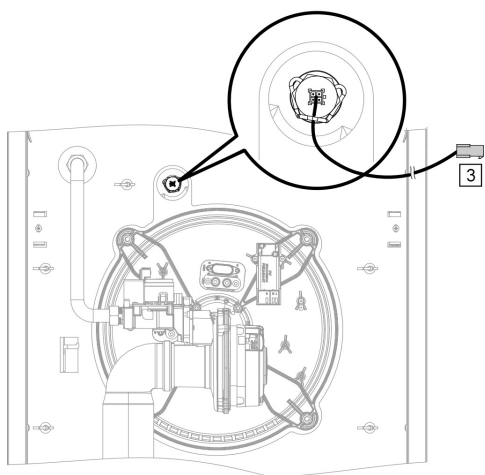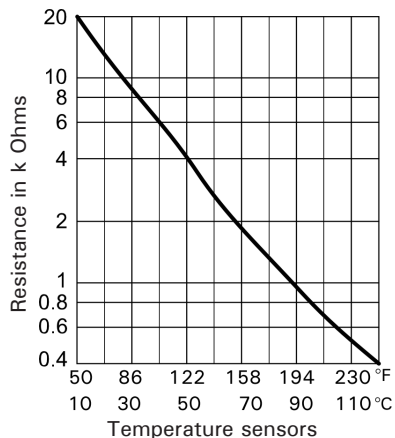
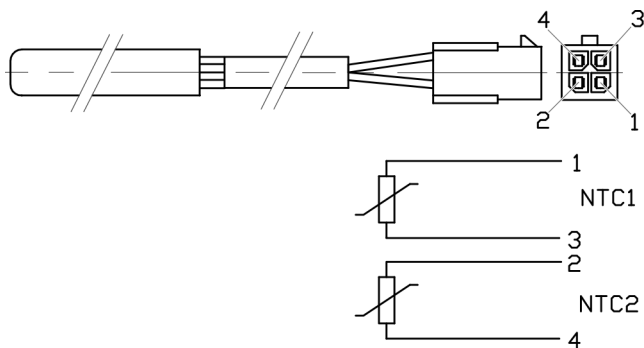**Checking the DHW / low loss header / heating circuit / room temperature sensor**

1. Pull the leads from temperature sensor.

2. Check the sensor resistance and compare it with the curve.

3. Replace the sensor in the case of severe deviation.

Checking the boiler temperature sensor

1. Pull plug 3 and measure the resistance.

2. Check the sensor resistance and compare it with the curve.

3. Replace the sensor in the case of severe deviation.

4. Release the strain relief on the sensor well and pull the sensor out of the well and disconnect plug. Install the new sensor in reverse order.

Corrective Action (continued)
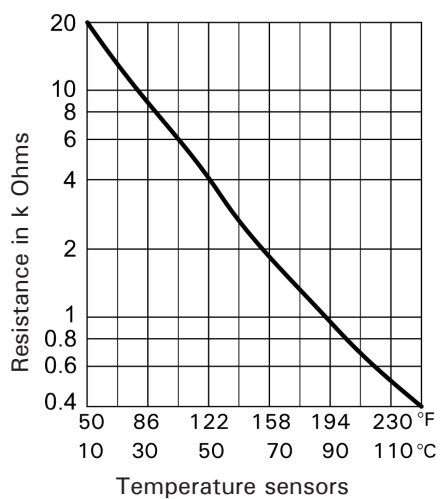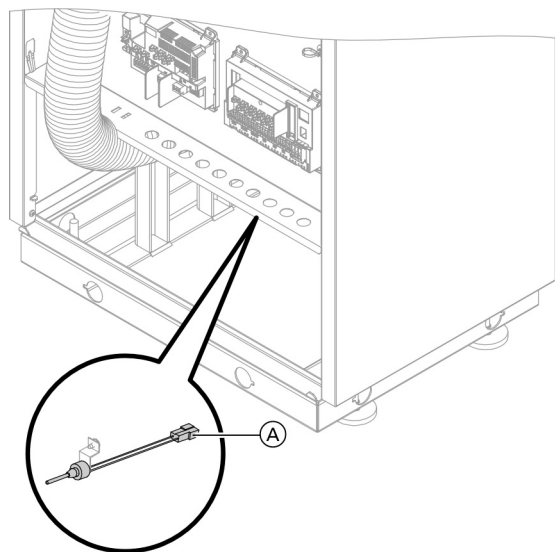
Checking the flue gas temperature sensor

The flue gas temperature sensor locks out the boiler when the permissible flue gas temperature is exceeded. Reset the interlock after the flue system has cooled down by pressing reset button R.
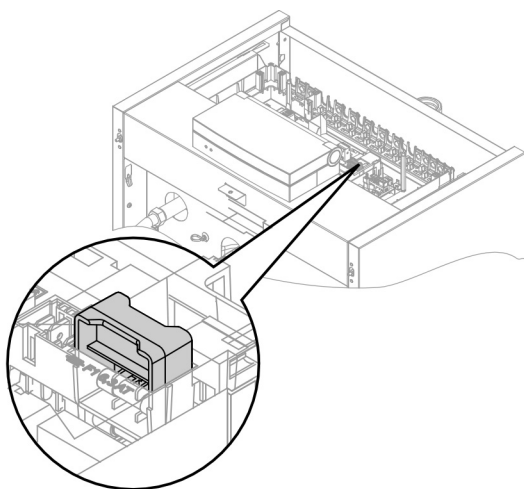
1. Pull the leads from flue gas temperature sensor Ⓐ.

2. Check the sensor resistance and compare it with the curve.

3. Replace the sensor in the case of severe deviation.

Temperature sensors

Checking the boiler fuse

1. Switch off the power.

2. Remove top panel and cover (see page 93).

3. Check fuse F1 (see connection and wiring diagram).

Corrective Action (continued)
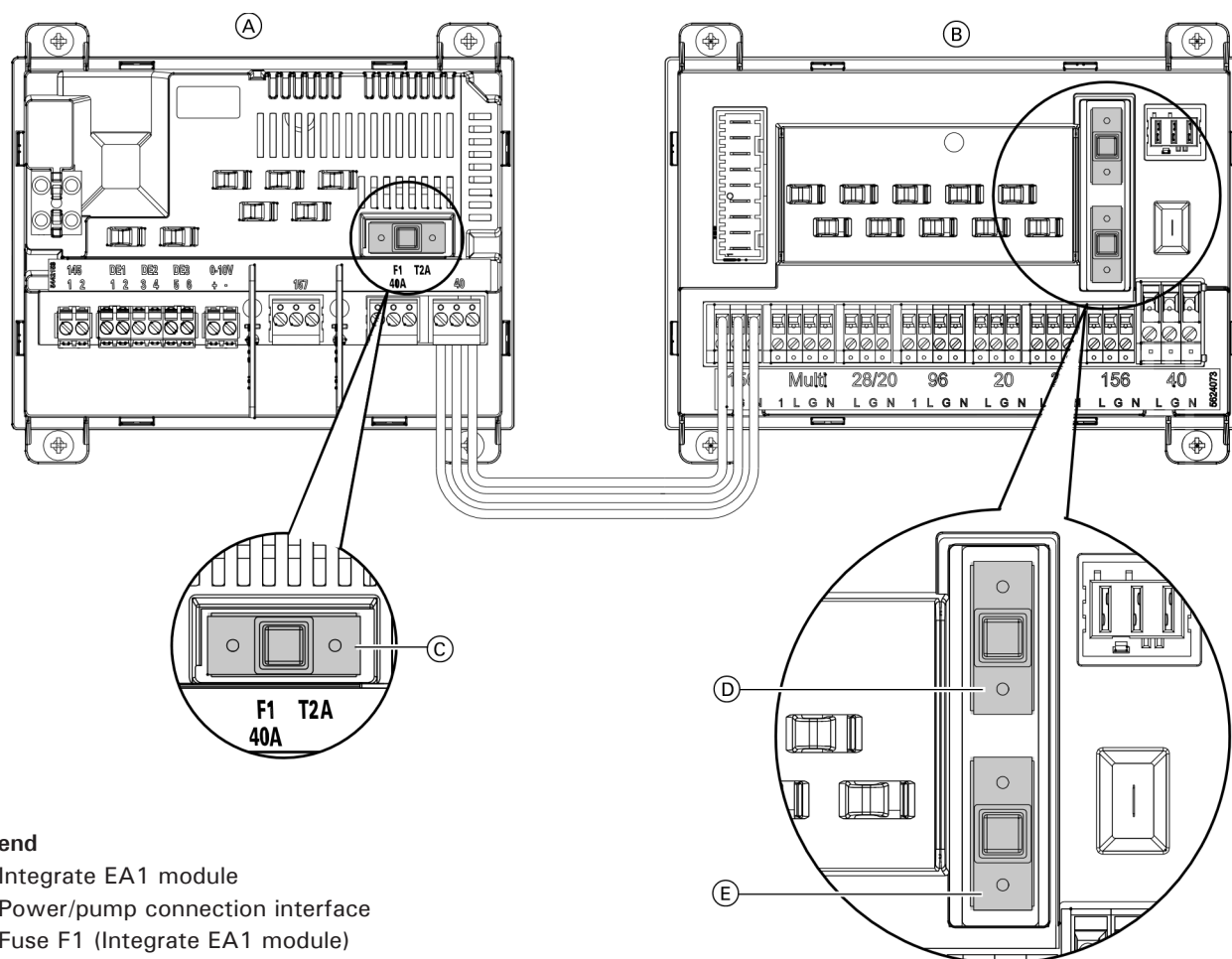
Legend

Ⓐ Integrate EA1 module

Ⓑ Power/pump connection interface

Ⓒ Fuse F1 (Integrate EA1 module)

Ⓓ Fuse F2 (Power/pump connection interface)

Ⓔ Fuse F1 (Power/pump connection interface)

Checking the electrical connect module fuse

1. Switch off the power.

2. Remove front panel and cover (see page 93).

3. Check fuse F1 and F2 of the power/pump connection interface.

4. Check fuse F1 and F2 of the integrate EA1 module.

Corrective Action (continued)

Extension kit for heating circuit with mixing valve
Checking the setting of rotary selector S1

The rotary selector on the PCB of the extension kit defines the assignment to the relevant heating circuit.

Heating circuit	Rotary selector S1 setting	
Heating circuit with mixing valve M2 (heating circuit 2)	2	
Heating circuit with mixing valve M3 (heating circuit 3)	4	

Note: The rotational direction of the mixing valve motor during its self-test. Then set the mixing valve manually to "Open".
Note: The supply temperature sensor must now capture a higher temperature. If the temperature drops, either the motor is turning in the wrong direction or the mixing valve set is incorrectly fitted.

Checking the rotational direction of the mixing valve motor

After being switched on, the boiler implements a self-test. During this, the mixing valve is opened and closed again.

Changing the rotational direction of the mixing valve motor (if required)

1. Remove the upper casing cover of the extension kit.
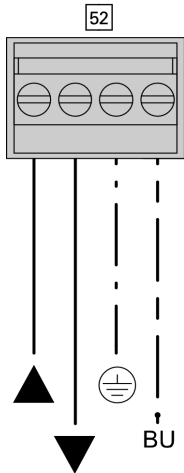
> ⚠ **WARNING**
>
> **Electric shock hazard indicates an imminently hazardous situation which, if not avoided, may result in loss of life, serious injury or substantial product / property damage. Before opening the boiler, disconnect main power.**

2. At plug 52, swap the cores at terminals "▲" and "▼".
3. Refit the casing cover.

Checking the Vitotronic 200-H (accessories)

The Vitotronic 200-H is connected to the control unit via the LON cable. To test the connection, carry out a participant check at the boiler control unit .

52

BU

Internal Extensions EA1
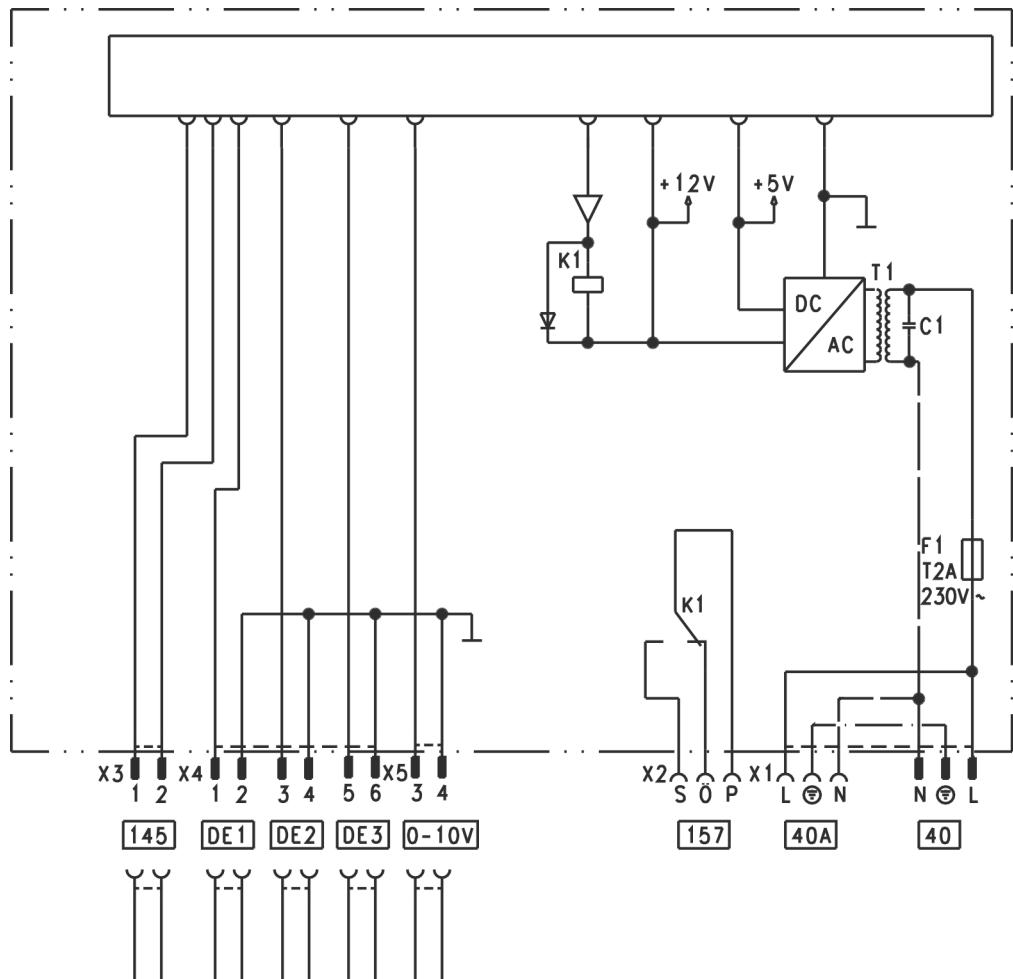
Legend

DE1   Digital input 1
DE2   Digital input 2
DE3   Digital input 3
0 – 10V   0 - 10V input
40   Power supply
40A   A Power supply for additional
                     accessories
157   Central fault message/
                     feed pump/DHW recirculation
                     pump (potential-free)
145   KM BUS

Internal Extensions EA1 *(continued)*

Digital data inputs DE1 to DE3

The following functions can be connected alternatively:

- External heating program changeover for each heating circuit
- External blocking
- External blocking with fault message input
- External demand with minimum boiler water temperature
- Fault message input
- Brief operation of the DHW recirculation pump

External contacts must be dry.

Input function assignment

Select the input functions by means of codes in the "General" group at the boiler control unit:

- DE1: Coding address 3A
- DE2: Coding address 3B
- DE3: Coding address 3C

Assigning the heating program changeover function to the heating circuits

Select the heating program changeover function for the respective heating circuit via coding address D8 in the "Heating circuit" group at the boiler control unit:

- Changeover via input DE1: Code D8:1
- Changeover via input DE2: Code D8:2
- Changeover via input DE3: Code D8:3

The effect of the heating program changeover is selected via coding address D5 in the "Heating circuit" group. The duration of the changeover is set via coding address F2 in the "Heating circuit" group.

Effect of the external blocking function on the pumps

The effect on the respective heating circuit pump is selected in coding address D6 in the "Heating circuit" group.
The effect on a circulation pump for DHW tank heating is selected in coding address 5E in the "DHW" group.

Effect of the external demand function on the pumps

The effect on the respective heating circuit pump is selected in coding address D7 in the "Heating circuit" group.
The effect on a circulation pump for DHW tank heating is selected in coding address 5F in the "DHW" group.

DHW recirculation pump runtime for brief operation

The runtime is adjusted via coding address "3D" in the "General" group.

Analog input 0 - 10V

The 0 - 10V hook-up provides an additional set boiler water temperature:

0 - 1V	taken as "no default for set boiler water temperature"
1V	$\overline{\wedge}$ set value 50°F (10°C)
10V	$\overline{\wedge}$ set value 212°F (100°C)

Ensure DC separation between the ground conductor and the negative pole of the on-site voltage source.

Output 157

The following functions can be connected to output 157:

- DHW recirculation pump

or

- Fault output device (e.g. light, buzzer etc.)

or

- Zone circuit pump

Function assignment

Select the function of output 157 via coding address "36" in the "General" group at the boiler control unit.

Control Functions

External heating program changeover

The "External heating program changeover" function is connected via extension EA1. There are 3 inputs available at extension EA1 (DE1 to DE3).
The function is selected via the following codes:

Heating program changeover	Coding
Input DE1	3A:1
Input DE2	3B:1
Input DE3	3C:1

Assign the heating program changeover function for the respective heating circuit with code D8 at the boiler control unit:

Heating program changeover	Coding
Changeover via input DE1	D8:1
Changeover via input DE2	D8:2
Changeover via input DE3	D8:3

You can select which direction the heating program changeover takes in coding address "D5":

Heating program changeover	Coding
Changeover towards "Permanently reduced" or "Permanent standby" mode (based on the selected setpoint)	D5:0
Changeover towards "Constant heating mode"	D5:1

The duration of the heating program changeover can be adjusted in coding address "F2":

Heating program changeover	Coding
No changeover	F2:0
Duration of the heating program changeover 1 to 12 hours	F2:1 to F2:12

The heating program changeover stays enabled for as long as the contact remains closed, but at least as long as the duration selected in coding address "F2".

External blocking

The "External blocking" and "External blocking and fault message input" functions are connected via extension EA1. There are 3 inputs available at extension EA1 (DE1 to DE3).
The function is selected via the following codes:

External blocking	Coding
Input DE1	3A:3
Input DE2	3B:3
Input DE3	3C:3

External blocking and fault message input	Coding
Input DE1	3A:4
Input DE2	3B:4
Input DE3	3C:4

The effect on the internal circulation pump is selected with code 5E. Select the effect on the respective heating circuit pump with code D6.

External demand

The "External demand" function is connected via extension EA1. There are 3 inputs available at extension EA1 (DE1 to DE3). The function is selected via the following codes:

External demand	Coding
Input DE1	3A:2
Input DE2	3B:2
Input DE3	3C:2

The effect on the internal circulation pump is selected with code 5F. The effect on the respective heating circuit pump is selected with code D7.
The minimum set boiler water temperature in case of external demand is selected in coding address "9B".

Zone circuit thermostat inputs	
Zone circuit	Code
Input DE1	3A:7 Constant 3A:8 Weather compensate
Input DE2	3B:7 Constant 3B:8 Weather compensate
Input DE3	3C:7 Constant 3C:8 Weather compensate

Wiring Diagram
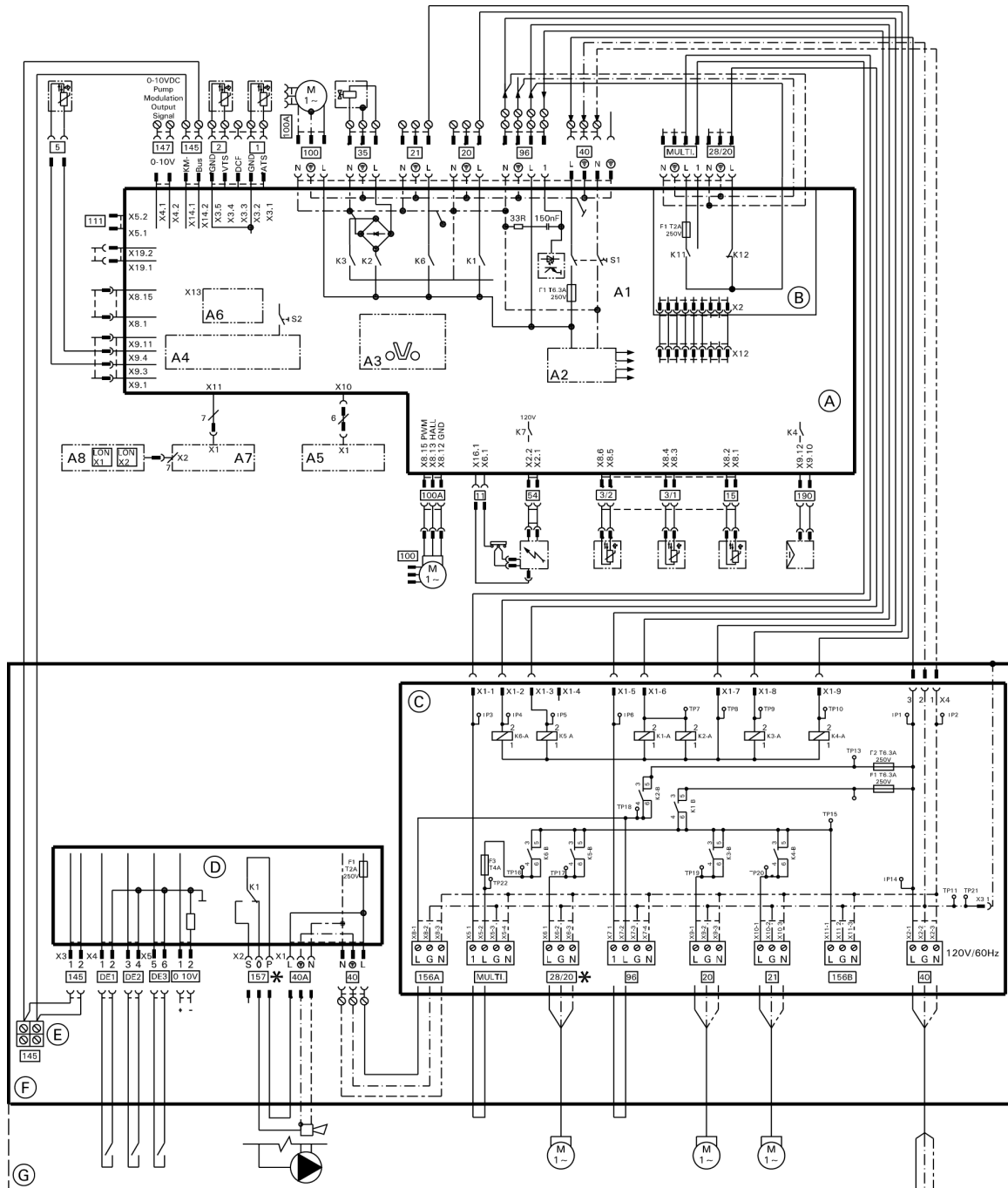
⚠ WARNING

DISCONNECT POWER BEFORE SERVICING BOILER.

If any of the original wires as supplied with the appliance must be replaced, it must be replaced with the exact equivalent.

⚠ CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.
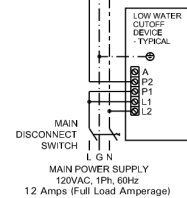
* Only one function/connection may be assigned to each connection.

Wiring Diagram (continued)

Legend

1	Outdoor Temperature Sensor
2	Supply Temperature Sensor/Low Loss Header
3/1	Boiler Temperature Sensor #1
3/2	Boiler Temperature Sensor #2
5	DHW Temperature Sensor
11	Ionization Electrode
15	Flue Gas temperature Sensor
20	Boiler Pump
21	DHW Pump
28/20	Programmable Pump Output / zone circuit pump output*
35	Gas Valve
40	Power Supply
40A	Accessory Power Output
54	Ignition Transformer
96	Powered Accessory Connection
100	Fan Motor
100A	Fan Motor Control
111	Not Used
145	KM BUS
147	Pump Modulation Output 0-10VDC
Multi	Powered Accessory Connection
156A	Switched Output F2
156B	Switched Output F1
DE1	Digital Input 1 (Dry Contact)
DE2	Digital Input 2 (Dry Contact)
DE3	Digital Input 3 (Dry Contact)
0-10V	0-10VDC Input
157	Fault Alarm/DHW Recirculation Pump / zone circuit pump output*
190	Gas Modulation Coil

* See wiring diagram

Ⓐ Boiler Control
Ⓑ External Accessory Connection Board
Ⓒ Power/Pump Connection Interface
Ⓓ Integrate EA1 Module
Ⓔ KM-BUS for External Devices
Ⓕ Electrical Junction Box
Ⓖ Field Wiring Connections
A1 Main Board
A2 Internal Power Supply Unit
A3 Optolink
A4 Burner Control Unit
A5 Programming Unit
A6 Coding Card
A7 Connection Adaptor
A8 LON Communication Module
S1 ON/OFF Switch
S2 Reset Button
X.. Electrical Interface

> ### IMPORTANT
>
> **Electrical installations must comply with the latest edition of:**
>
> - **In the U.S.A., the National Electrical Code (NEC), ANSI/NFPA 70 and any other state, local codes and/or regulations.**
>
> - **In Canada, the Canadian Electrical Code (CEC), CSA C22.1 Part 1 and any other province, territory, local codes and/or regulations.**

Fitting the Front Panel
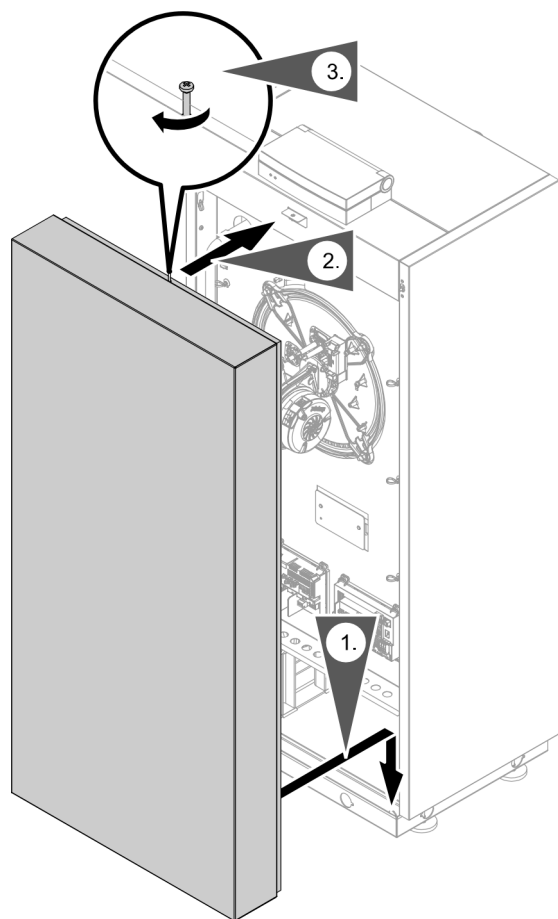
1. Place the front cover onto the locating pegs.

2. Push the top of the panel in place.

3. Secure in place with the retaining screw.

Burner Program Sequence of Operation

	Stand by	Stand-still status test (blower)	Pre-purge speed test	Pre-purge	Pre-ignition	Ignition / safety timing / flame stabilization	Burner modulation or calibration	Combination gas valve proof and closure test	Post-purge speed test	Additional Post-purge (if initiated)
Call for heat										
Water-flow switch closed										
Ignition										
Combination gas valve										
Flame signal										
Fan speed										
Fan control										
Modulation set point										
Phase	0	1	2	3	4	5	6	7	8	9
Sequence time		Normal <1s Max. <51s	Normal <1s Max. <51s	0.1s	0.4s	4.5s		Normal <3s Max. <15s	Normal <3s Max. <15s	0.15s

Modulation range   Transition

Phase 0: Stand-by
Complete shutdown until the next call for heat. In this phase both the combination gas valve and the blower are not energized.

Phase 1: Stand-still status test (blower)
A call for heat initiates internal blower sensory communications to confirm that the blower is truly in stand-still position. Blower speed measured must be <300 rpm within a 51 second period.

Phase 2: Pre-purge speed test
Controller sends and receives signal to / from fan speed controller to verify maximum rpm of the blower.

Phase 3: Pre-purge
Pre-purge cycle starts within the pre-programmed timing. Pre-purge timing is in addition to previous phase (2). The fan speed must be greater than and within the range of rpm requested by the controller.

Phase 4: Pre-ignition
The ignition spark is initiated and controlled.

Phase 5: Ignition / safety timing / flame stabilization
The gas valve opens during the safety timing period (4.5 seconds). If a flame is detected, this phase ends immediately in <1.5 seconds. If the flame is not established after 3 trials, the burner will lock out and will require a manual reset. Controller required time for flame stabilization.

Phase 6: Burner modulation operation or calibration
At the end of the flame stabilization period (4.5 seconds.), a release for modulation occurs and the burner temperature controller will take over from the flame safeguard. Forced shutdown after 24 hours continuous operation. Automatic calibration may be initiated by the controller.

Phase 7: Combination gas valve proof of closure test
If during the normal operation of the burner a controlled (or uncontrolled) shut-down occurs, a complete mechanical and electrical gas valve proof of closure test will be performed by the flame safeguard. After a successful mechanical and electrical proof of closure test, the flame safeguard will expect that the flame is not present. If, however, the flame existed for a period of >15 seconds, the flame safeguard will go into permanent lock-out.

Phase 8: Post-purge speed test
Both gas valves are closed during this phase. End call for heat.
Post-purge occurs during the programmed period.

Phase 9: Additional post-purge
If the fixed high limit trips during normal operation, the blower will purge for 15 minutes to cool the heat exchanger.

5673 649 - 20

Parts Lists

Model No.
CU3A 26, 94 Boiler
CU3A 35, 125 Boiler
CU3A 45, 160 Boiler
CU3A 57, 199 Boiler

Serial No.
7553000☐☐☐☐☐☐☐☐☐☐
7553001☐☐☐☐☐☐☐☐☐☐
7553002☐☐☐☐☐☐☐☐☐☐
7553003☐☐☐☐☐☐☐☐☐☐

Ordering Parts:
Please provide Model and Serial Number
Ⓐ when ordering replacement parts. Order
replacement components from your Viessmann
distributor.

Overview of Assemblies
Ⓐ Rating Plate and Serial Number
Ⓑ Enclosure Assembly
Ⓒ Control Assembly
Ⓓ Boiler Assembly
Ⓔ Burner Assembly
Ⓕ Other Parts (see your Viessmann distributor)

Other Parts (not illustrated)
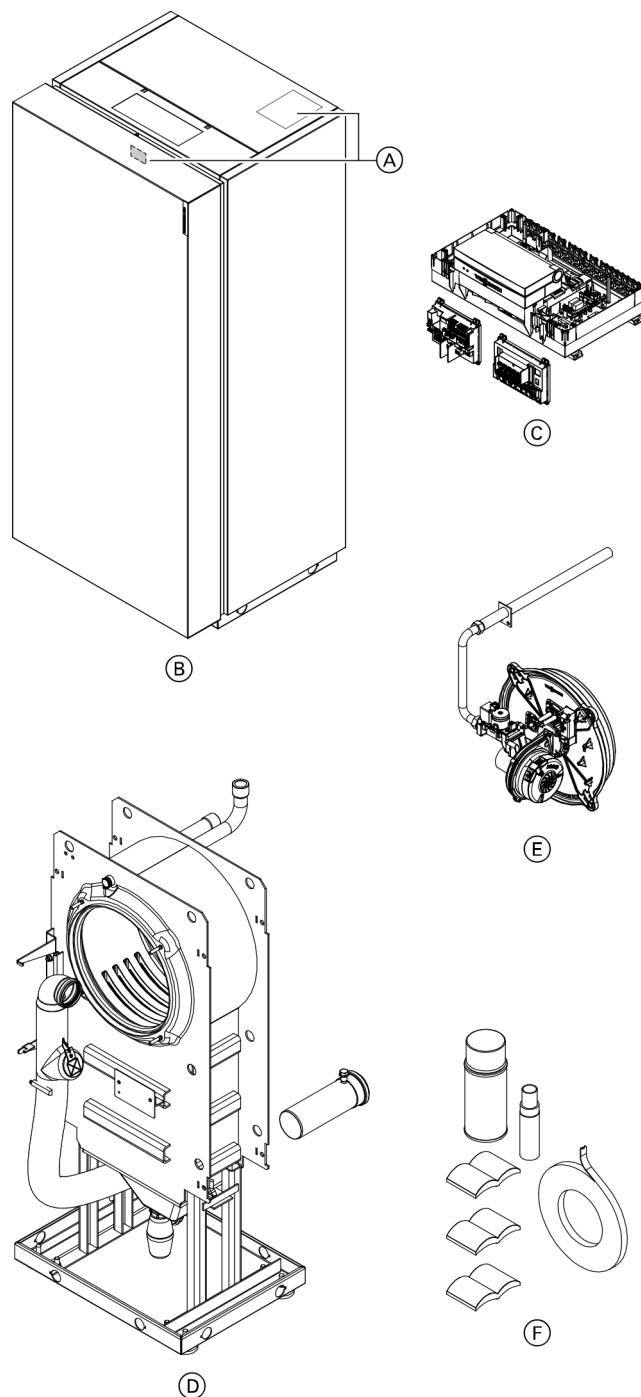0300 Installation Set *1
0404 Parts List, Vitocrossal boiler
0410 Conversion kit, NG > LP
0411 Conversion kit, LP > NG

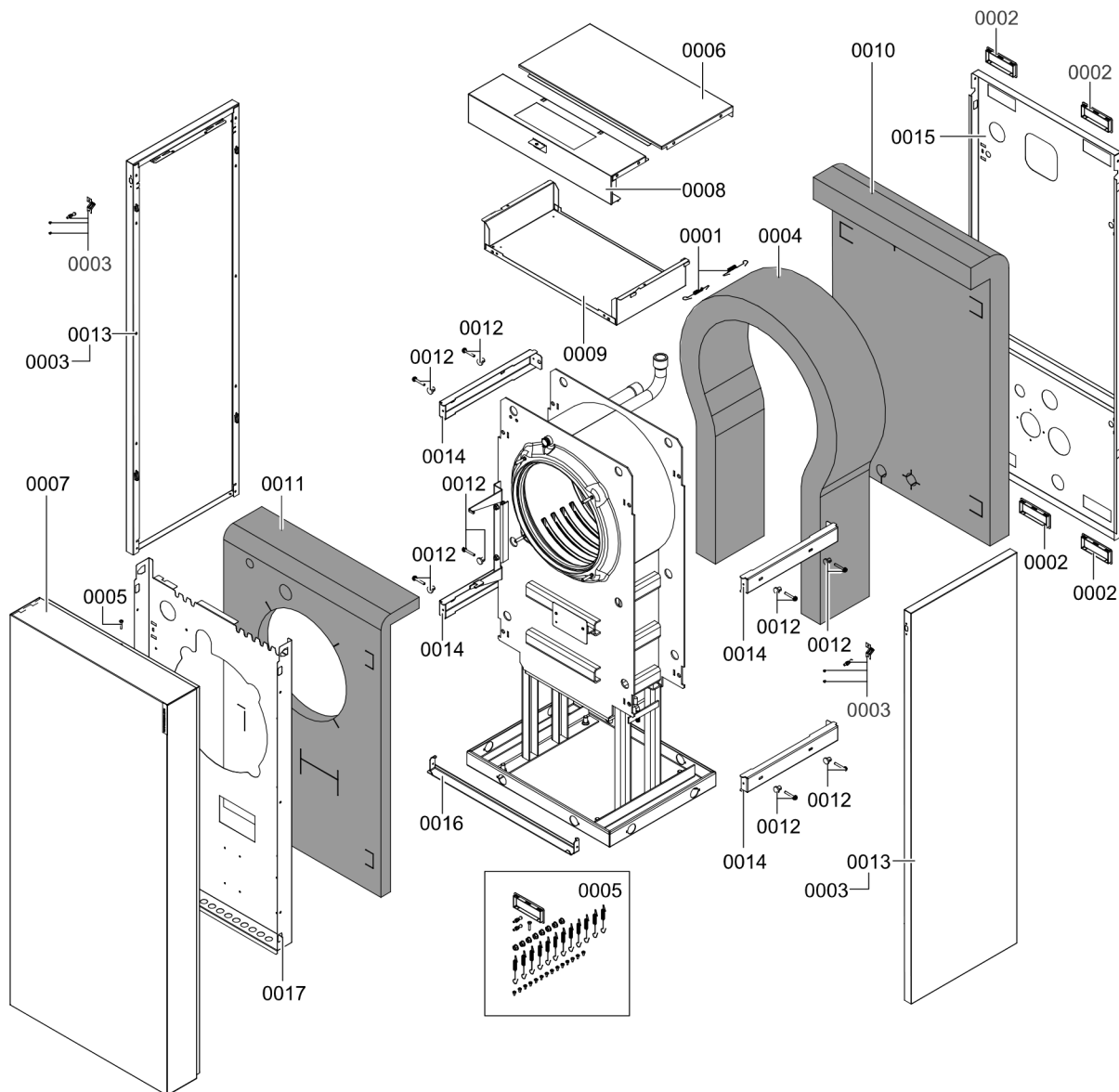*1 For installation sets please see separate parts lists on
page 110.

Parts Lists *(continued)*

Model No.
CU3A 26, 94 Boiler
CU3A 35, 125 Boiler
CU3A 45, 160 Boiler
CU3A 57, 199 Boiler

Serial No.
7553000☐☐☐☐☐☐☐☐☐
7553001☐☐☐☐☐☐☐☐☐
7553002☐☐☐☐☐☐☐☐☐
7553003☐☐☐☐☐☐☐☐☐

Parts for Main Enclosure Assembly
0001 Spring clip for insulation (set of 4)
0002 Cover, edge molding
0003 Accessory pack, front panel hardware
0004 Insulation blanket
0005 Accessory pack, insulation
0006 Top panel, rear
0007 Front panel
0008 Top panel, front

0009 Mid panel, control
0010 Insulation blanket, rear
0011 Insulation blanket, front
0012 Accessory pack, mounting fasteners (set of 4)
0013 Side panel, left/right
0014 Mounting bracket
0015 Rear panel
0016 Mounting bracket, lower/front
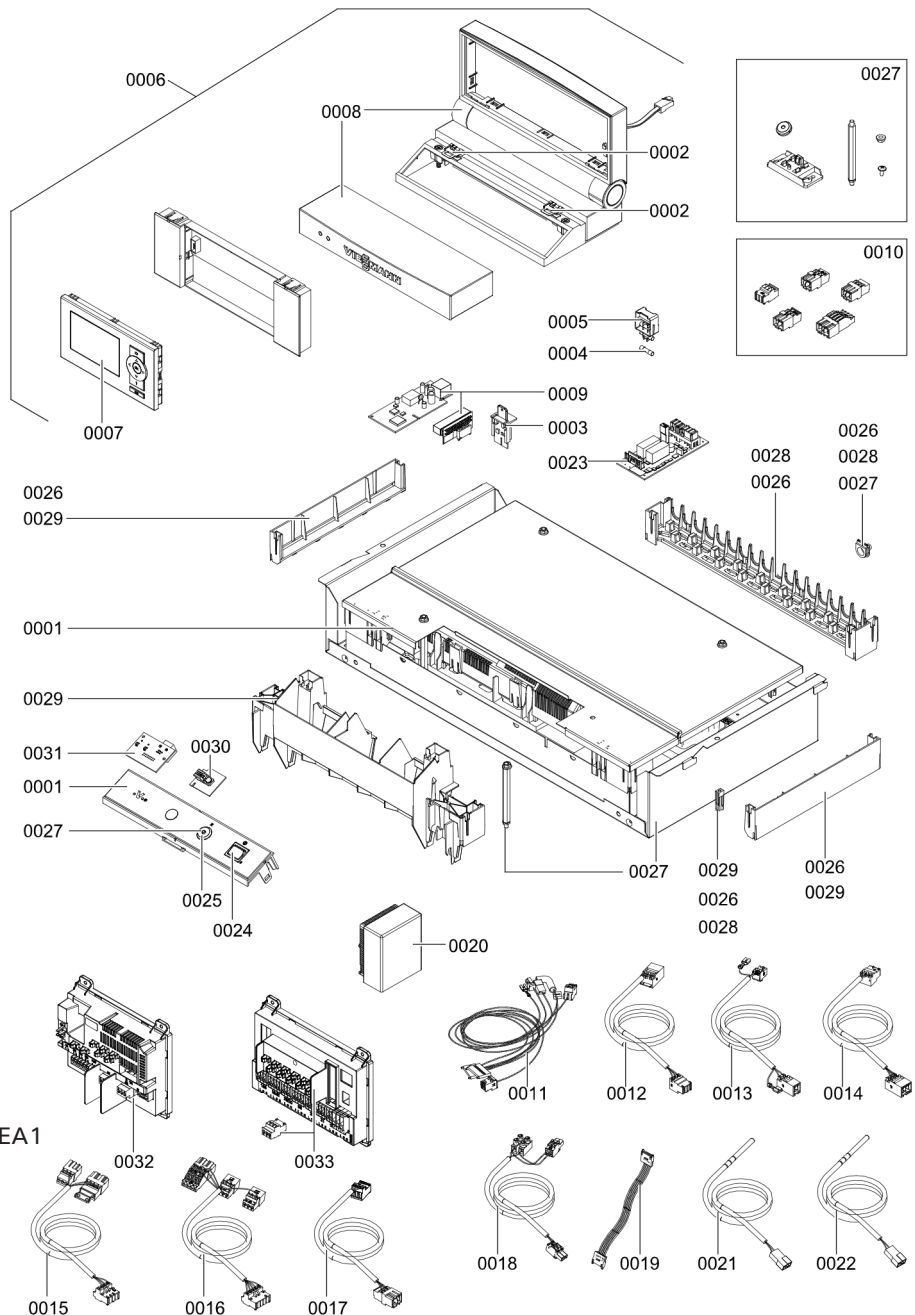0017 Mid panel, front

Parts Lists (continued)

Model No.
CU3A 26, 94 Boiler
CU3A 35, 125 Boiler
CU3A 45, 160 Boiler
CU3A 57, 199 Boiler

Serial No.
7553000☐☐☐☐☐☐☐☐☐
7553001☐☐☐☐☐☐☐☐☐
7553002☐☐☐☐☐☐☐☐☐
7553003☐☐☐☐☐☐☐☐☐

Parts for Control Assembly
0001 Boiler control
0002 Hinge for control housing (each)
0003 Coding plug
0004 Fuse, T6.3A/250V (set of 10)
0005 Fuse holder
0006 Vitotronic 200 KW6B assembly
0007 Programming unit,
     Vitotronic 200 HO1B
0008 Control housing, with harness
0009 Circuit Board (LON, IU100-B30)
0010 Accessory pack,
     plug #20/28/40/21/96
0011 Harness, X8/X9/Ionization
0012 Harness, gas valve 35
0013 Harness,
     ignition transformer 54/PE
0014 Harness, fan 100
0015 Harness, expanded functions
0016 Harness, pumps 20/21/96
0017 Harness, power 40/40A
0018 Harness, KM-BUS 145
0019 Harness, X7
0020 Sensor #1, outdoor (NTC)
0021 Sensor #5,
     DHW immersion (NTC)
0022 Sensor #3, boiler (NTC)
0023 Circuit board
     (expanded functions,
     SA100-B40)
0024 Switch, 2-pole
0025 Reset button
0026 Side cover (set of 2)
0027 Accessory pack,
     small parts for KW6B
0028 Side Cover
     with harness inlet for KW6B
0029 Front and side covers for KW6B
0030 Circuit board
     (manual reset, SA125-A00)
0031 Circuit board
     (Optolink, SA115-A20)
0032 Replacement extension module EA1
0033 Power/pump control module
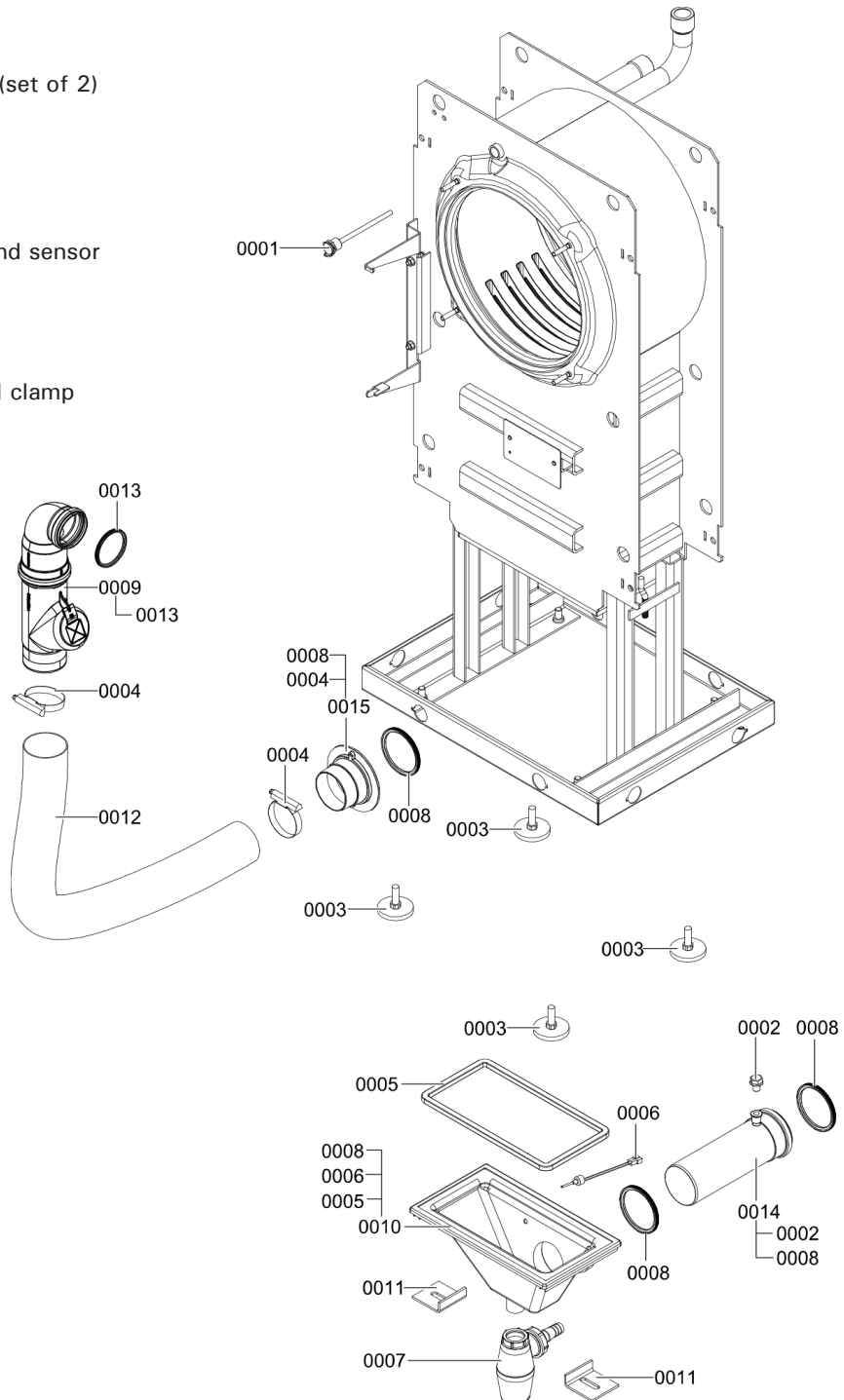
Parts Lists *(continued)*

Model No.

CU3A 26, 94 Boiler	7553000☐☐☐☐☐☐☐☐☐
CU3A 35, 125 Boiler	7553001☐☐☐☐☐☐☐☐☐
CU3A 45, 160 Boiler	7553002☐☐☐☐☐☐☐☐☐
CU3A 57, 199 Boiler	7553003☐☐☐☐☐☐☐☐☐

Serial No.

Parts for Boiler Assembly

0001 Sensor well, G½ L = 150 with clip
0002 Test port cap (set of 2)
0003 Leveling bolt (each)
0004 Clamp for fresh air hose, D70-90 (set of 2)
0005 Gasket for flue gas collector
0006 Sensor #15, flue gas
0007 Condensate siphon
0008 Gasket for flue gas
0009 Air Intake adaptor
0010 Flue gas collector, with gaskets and sensor
0011 Bracket for flue gas collector
0012 Fresh air hose, flexible, D80
0013 Gasket D65 (set of 2)
0014 Vent pipe adaptor, with gasket
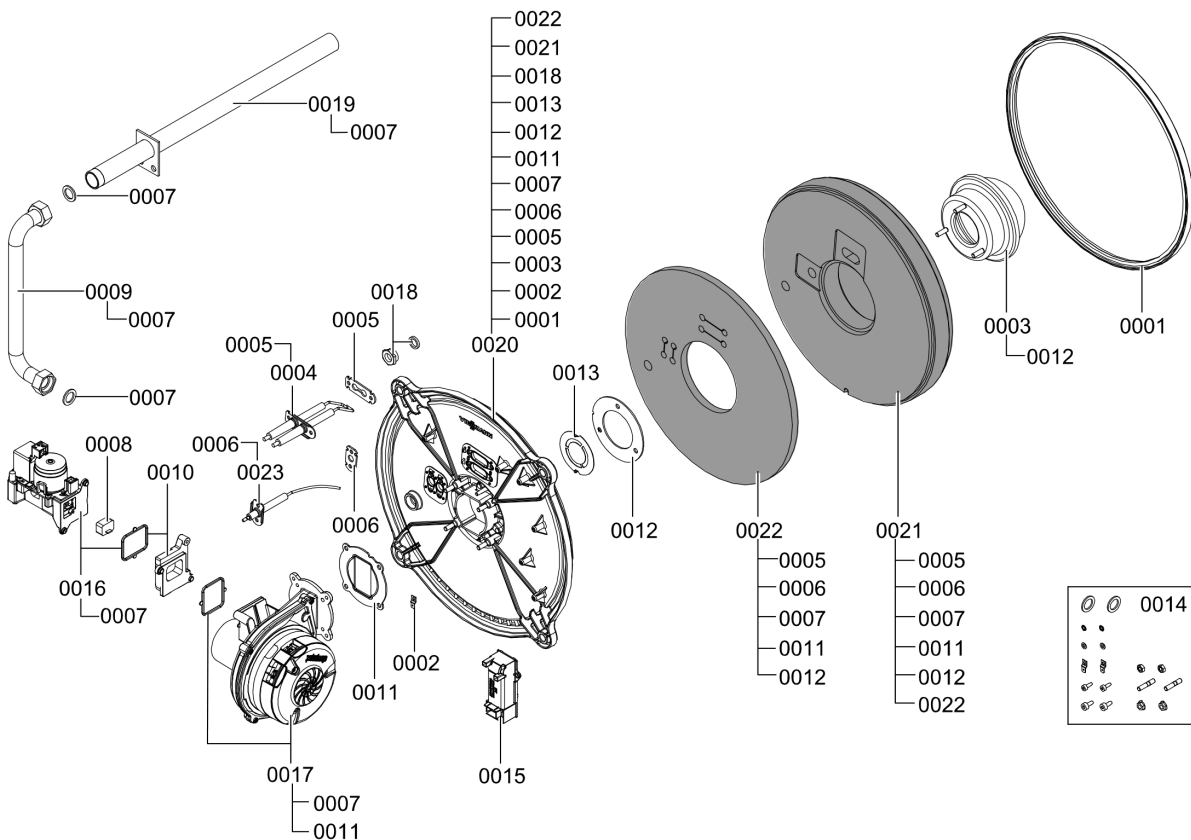0015 Fresh air adaptor, with gasket and clamp

Parts Lists *(continued)*

Model No.   **Serial No.**
CU3A 26, 94 Boiler   7553000☐☐☐☐☐☐☐☐☐
CU3A 35, 125 Boiler   7553001☐☐☐☐☐☐☐☐☐
CU3A 45, 160 Boiler   7553002☐☐☐☐☐☐☐☐☐
CU3A 57, 199 Boiler   7553003☐☐☐☐☐☐☐☐☐

Parts for Burner Assembly
0001 Burner gasket
0002 Ground terminal (set of 10)
0003 MatriX burner mesh with gasket
0004 Ignition Electrode with gasket
0005 Gasket for ignition electrode
0006 Gasket for ionization electrode
0007 Gasket for NG/LP (set of 5)
0008 Orifice
0009 Connection pipe 1, NG/LP with gaskets
0010 Adaptor CES10
0011 Gasket for radial fan
0012 Gasket for burner mesh
0013 Turbulator disc

0014 Accessory pack for burner parts
0015 Ignition module
0016 Gas valve CES10 with gasket
0017 Radial fan NRG118 with gaskets
0018 Sight glass
0019 Connection pipe 2, NG/LP with gasket
0020 Combustion chamber door assembly
     (with burner mesh)
0021 Combustion chamber door refractory
     (with gaskets and insulation)
0022 Combustion chamber door insulation with gaskets
0023 Ionization electrode with gasket

Installation Fittings

Model No.
CU3A 26, 94 Boiler
CU3A 35, 125 Boiler
CU3A 45, 160 Boiler
CU3A 57, 199 Boiler

Serial No.
7553000☐☐☐☐☐☐☐☐☐
7553001☐☐☐☐☐☐☐☐☐
7553002☐☐☐☐☐☐☐☐☐
7553003☐☐☐☐☐☐☐☐☐

Ordering Parts:
Please provide Model and Serial Number Ⓐ when ordering replacement parts. Order replacement components from your Viessmann distributor.

Parts (Installation Set 7560 593)
0301 Air vent with shut-off base, ⅜ in.
0302 Hex bushing, ¾ in. x ⅜ in.
0303 Tee, ¾ in.
0304 Pressure relief valve, 30 psig
0305 Nipple, ¾ in. x 1½ in.
0306 90° Street elbow, ¾ in.
0307 Nipple, ¾ in. x 4 in.
0308 Reduction coupling, 1¼ in. x ¾ in.
0309 Temperature and pressure gage *1
0311 Reduction tee, 1¼ in. x 1¼ in. x ½ in.
0312 Gas ball valve, ¾ in.
0313 Combustion air intake adaptor, CPVC 3 in.
0314 Reduction tee, 1 in. x 1 in. x ¾ in.
0315 Sediment Faucet, ¾ in.

Other Parts (not illustrated)
0316 Parts List, Installation Fittings

*1 Install anywhere in supply piping near boiler.

Ⓑ Vitocrossal boiler see separate Parts List
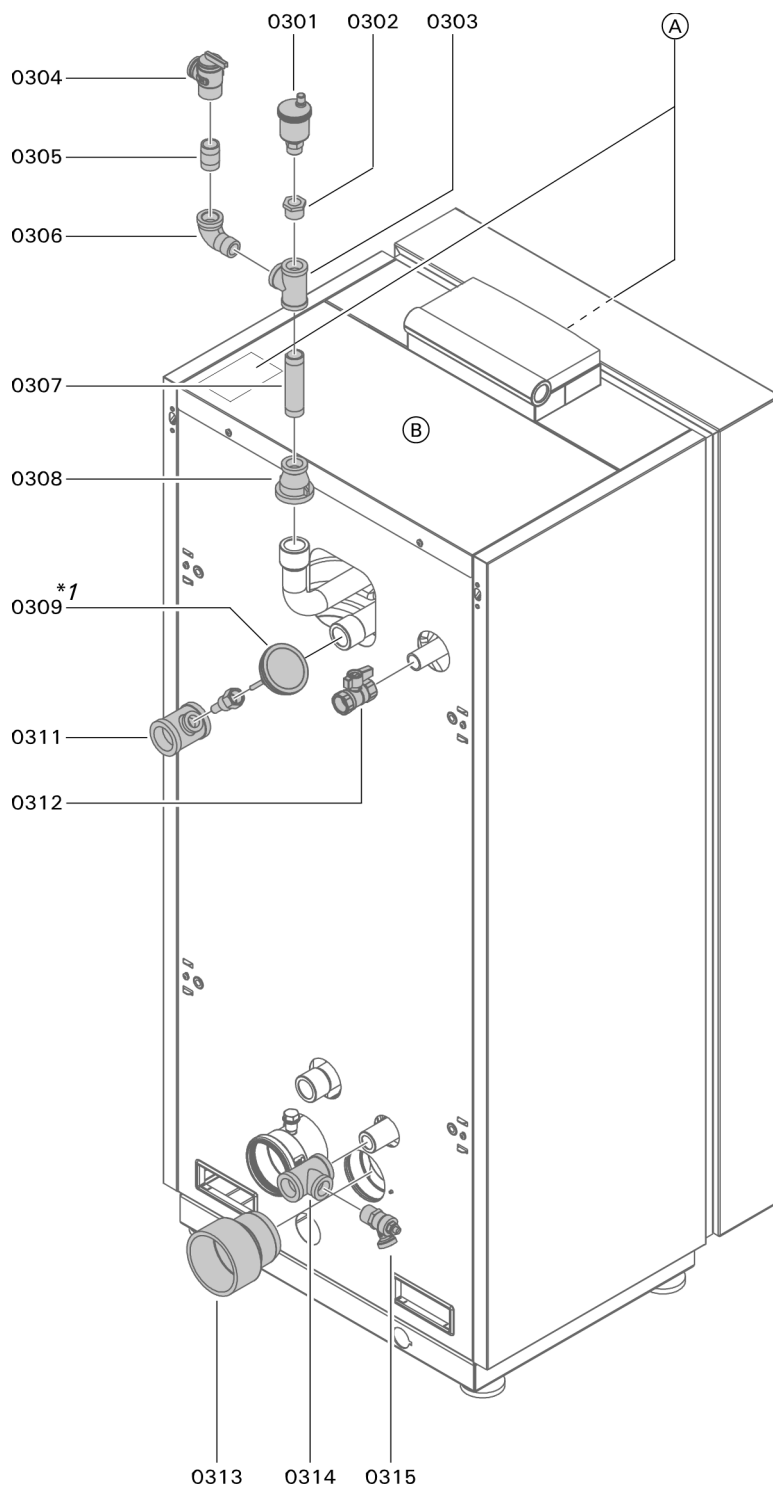
Technical Data

Boiler Model No. CU3A		26, 94	35, 125	45, 160	57, 199
Natural Gas / Liquid Propane Gas **CSA input**	MBH (kW)	19-94 (5.6-27.5)	25-125 (7.3-36.6)	43-160 (12.6-47)	43-199 (12.6-58)
CSA output / DOE heating capacity*1	MBH (kW)	17.7-87 (5.2-25.5)	23.3-116 (6.8-34)	40-149 (11.7-43.7)	40-185 (11.7-54.2)
Net AHRI Rating	MBH (kW)	76 (22)	101 (30)	129 (38)	161 (47)
Heat exchanger surface area	ft.^{2} (m^2)	16.7 (1.5)	20.7 (1.9)	34.1 (3.2)	34.1 (3.2)
Min. gas supply pressure Natural gas Liquid propane gas	"w.c. "w.c.	4 10	4 10	4 10	4 10
Max. gas supply pressure *3 Natural gas Liquid propane gas	"w.c. "w.c.	14 14	14 14	14 14	14 14
A.F.U.E.	%	95	95	95	95
Weight	lbs (kg)	269 (122)	275 (125)	352 (160)	352 (160)
Boiler water content	USG (L)	13.5 (51)	13.0 (49)	18.8 (71)	18.8 (71)
Max. operating pressure at 210ºF (99ºC)	psig (bar)	30 (2)	30 (2)	30 (2)	30 (2)
Boiler water temperature - Adjustable high limit (AHL) range space heating (steady state) DHW production - Fixed high limit (FHL)	ºF (ºC) ºF (ºC) ºF (ºC)	68-194 (20-90) 194 (90) 210 (99)	68-194 (20-90) 194 (90) 210 (99)	68-194 (20-90) 194 (90) 210 (99)	68-194 (20-90) 194 (90) 210 (99)
Boiler connections Boiler heating supply and return Pressure relief valve Boiler drain Gas valve connection	NPTM NPTF NPTM NPTF	1¼ in. ¾ in. 1 in. ¾ in.	1¼ in. ¾ in. 1 in. ¾ in.	1¼ in. ¾ in. 1 in. ¾ in.	1¼ in. ¾ in. 1 in. ¾ in.

*1 Output based on 140ºF (60ºC), 120ºF (49ºC) system supply/return temperature.

*2 Net AHRI rating based on piping and pick-up allowance of 1.15.

*3 If the gas supply pressure exceeds the maximum gas supply pressure value, a separate gas pressure regulator must be installed upstream of the heating system.

Note: For high altitude installation at 10,000 ft. the input for model Vitocrossal 300 CU3A will have an altitude de-ration of 18%.

Technical Data *(continued)*

Boiler Model No. CU3A		26, 94	35, 125	45, 160	57, 199
Dimensions					
Overall depth	inches	27	27	31½	31½
	(mm)	684	684	801	801
Overall width	inches	26	26	26	26
	(mm)	660	660	660	660
Overall height	inches	67	67	67	67
(with control interface open)	(mm)	1707	1707	1707	1707
Overall height	inches	61.5	61.5	61.5	61.5
	(mm)	1562	1562	1562	1562
Flue gas *4					
Temperature (at boiler return temperature of 86ºF (30ºC)					
- at rated full load	ºF (ºC)	113 (45)	113 (45)	113 (45)	113 (45)
- at rated partial load	ºF (ºC)	90 (32)	90 (32)	90 (32)	90 (32)
Temperature (at boiler return temperature of 140ºF (60ºC)	ºF (ºC)	167 (75)	167 (75)	167 (75)	167 (75)
Max. condensate flow rate *5					
for NG and LPG					
TS/TR = 104ºF/86ºF (40ºC/30ºC)	USG/h	0.9	1.2	1.6	2.1
	(L/h)	3.43	4.62	5.95	7.92
Condensate connection	hose nozzle Ø in.	¾	¾	¾	¾
Boiler flue gas connection *6	Ø in. (mm)	3 (80)	3 (80)	4 (110)	4 (110)
Combustion air supply connection	outer Ø in. (mm)	3 (80)	3 (80)	3 (80)	3 (80)
Sound Rating (A scale)					
- at maximum input	dB	48	55	53	58
- at minimum input	dB	32	33	33	33
Standby losses *7	BTU/hr	1128	1000	1120	995
	W/hr	330	292	328	291

*4   Measured flue gas temperature with a combustion air temperature of 68°F (20°C).

*5   Based on maximum input rate.

*6   For side wall vent installations (coaxial system):
Do not exceed max. equivalent length specified in the Installation Instructions of the Vitocrossal 300 CU3A Venting System.
Do not attempt to common-vent Vitocrossal 300 CU3A with any other appliance.
Side wall co-axial vent installation must include Viessmann protective screen!
For details refer to the Installation Instructions for the Vitocrossal 300 CU3A Venting System.

*7   Standby losses measured from the boiler temperature sensor well based on a boiler water temperature of 158°F (70°C) and a room temperature of 68°F (20°C).

For information regarding other Viessmann System Technology componentry, please reference documentation of respective product.

Maintenance Record

Measurements		Service date: by:	Service date: by:	Service date: by:	Service date: by:	Service date: by:	Service date: by:	Setpoint value
Static pressure	*"w.c.*							max. 14 "w.c.
Running pressure (supply pressure)								
☐ Natural gas	*"w.c.*							4-14 "w.c.
☐ LPG	*"w.c.*							10-14 "w.c.
Check gas type								
Carbon dioxide content CO_2								
▪ at lower end of rated input range	*vol.-%*							
▪ at upper end of rated input range	*vol.-%*							
Oxygen content O_2								
▪ at lower end of rated input range	*vol.-%*							
▪ at upper end of rated input range	*vol.-%*							
Carbon monoxide content CO								
▪ at lower end of rated input range	*ppm*							50 ppm air-free*
▪ at upper end of rated input range	*ppm*							
Ionization current	µA							

*Fuel type, altitude, venting and other site parameters may change

Lighting and Operating Instructions

### FOR YOUR SAFETY READ BEFORE OPERATING

W A R N I N G: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
WHAT TO DO IF YOU SMELL GAS
● Do not try to light any appliance.
● Do not touch any electric switch; do not use any phone in your building.
● Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
● If you cannot reach your gas supplier, call the fire department.

C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

1. STOP! Read the safety information above on this label.

2. Set thermostat or other operating control to lowest setting.

3. Turn off all electric power to the appliance.

4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

Manual gas shutoff

Closed

Open

5. Close main gas shut-off valve.

6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above on this label. If you don't smell gas, go to the next step.

7. Open main gas shut-off valve.

8. Turn on all electric power to the appliance.

9. Set thermostat or other operating control to desired setting.

10. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.
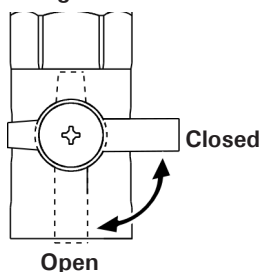
TO TURN OFF GAS TO APPLIANCE

1. Set thermostat or other operating control to lowest setting.

2. Turn off all electric power to the appliance if service is to be performed.

3. Close main gas shut-off valve.

5673 649 - 20

ºC   **ºF**

ºC	ºF
130	266
125	257
120	248
115	239
110	230
105	221
100	**212**
95	203
90	194
85	185
80	176
75	167
70	158
65	149
60	140
55	131
50	122
45	113
40	104
35	95
30	86
25	77
20	68
15	59
10	50
5	41
0	**32**
-5	23
-10	14
-15	5
-20	-4
-25	-13
-30	-22
-35	-31
-40	-40