

Start-up/Service Instructions

for use by heating contractor

VIESSMANN

Vitodens 200, WB2 Series

Wall-mounted, gas-fired condensing boiler

For natural gas and liquid propane

Heating input NG 55 to 230 MBH

16 to 67 kW

Heating input LP 55 to 214 MBH

16 to 63 kW



VITODENS® 200



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 Safety 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".*



■ 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.

■ 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 "Installation Instructions".*



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.



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.

Safety**General Information****Start-up and Service****Troubleshooting****Additional information**

Safety, Installation and Warranty Requirements.....	2
Important Regulatory and Installation Requirements.....	4
About these Service Instructions.....	5
Necessary Tools.....	5
Removing and Reinstalling Front Enclosure Panel and Cover Panel.....	6
Fill Heating System with Water.....	7
Select Language.....	9
Heating Contractor Address Input.....	9
Select Appropriate Gas Type.....	10
Measure Static Pressure and Running Pressure.....	10
How the Vitodens 200 Boiler Operates.....	12
Check CO ₂ Setting.....	13
Clock Natural Gas Meter.....	14
Check Orifice Size.....	14
Check all Primary and Secondary Circuit Connections for Leaks.....	15
Perform Combustion Analysis.....	15
Check Venting System for Leaks (circular air gap measurement) For sealed combustion, coaxial vent only. ...	15
Disassemble Burner and Check Burner Gasket.....	16
Visually Check the Exterior of the Burner Mesh Assembly.....	16
Replace Burner Mesh Assembly.....	16
Check and Adjust Ignition and Ionization Electrode.....	17
Check Condensate Drain.....	17
Check Neutralization Unit.....	18
Clean Combustion Chamber/Heat Exchanger Surfaces, and Mount Burner.....	18
Check Diaphragm Expansion Tank and System Pressure.....	19
Check Functioning of Safety Valves.....	19
Check Electrical Connections.....	19
Check Gas Pipes and Fittings for Leaks.....	20
Measure Ionization Current.....	20
Verify Programming Unit System Coding Addresses ...	20
Check Extension Kit for Heating Circuit with Mixing Valve.....	21
Check Dekamatik-HK.....	22
Troubleshooting Steps.....	23
Diagnosis.....	24
Correction.....	34
Technical Data.....	40
Burner Control Unit LGM 29.XX.....	41
Control Unit for Weather-Responsive Operation.....	42
Jumper Assignment and Codings.....	65
Replacement of Circuit Board VR20.....	66
Replacement of Burner Control Unit LGM 29.....	67
Wiring Diagram.....	69
Parts Lists.....	70
Maintenance Record.....	73
Lighting and Operation Instructions.....	74

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 B214-01, where required by the authority having jurisdiction.

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.

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.

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.

Technical literature

Literature for the Vitodens boiler:

- Technical Data Manual
- Installation Instructions
- Start-up/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.

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 death, 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.

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 % CO₂ or O₂ (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 to 500°F (0 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

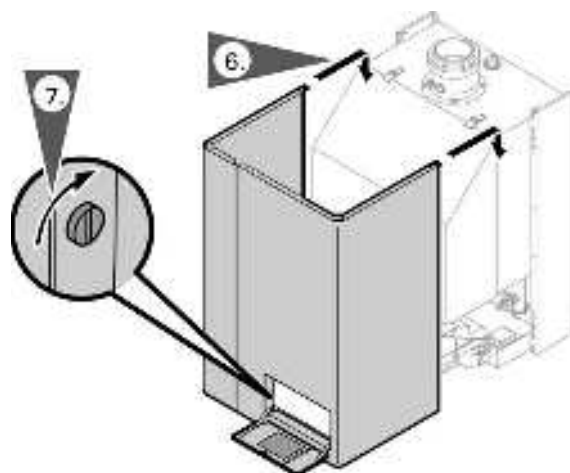
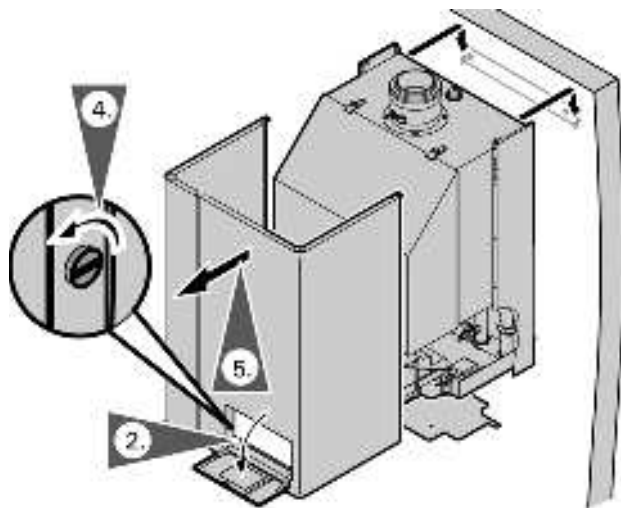
- Approved leak detection fluid for natural gas and liquid propane gas
- Pipe joint sealant

Removing and Reinstalling Front Enclosure Panel and Cover Panel

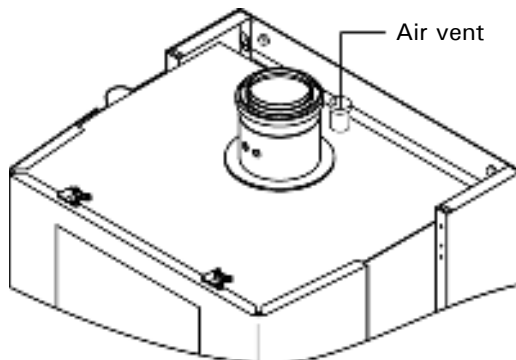
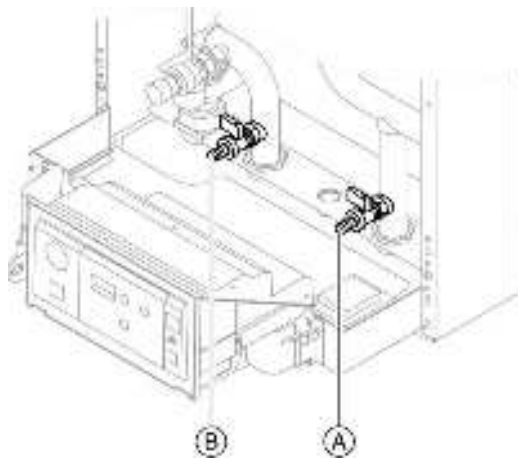
Some of the following start-up/service steps require the removal of the front enclosure panel and the cover panel. To avoid personal injury and/or product damage of any kind please follow the instructions below carefully when removing or reinstalling the front enclosure panel and cover panel.

To remove front enclosure panel and cover panel proceed as follows:

1. Close main gas supply valve.
2. Open flip-down cover of front enclosure panel (by exerting slight pressure with fingertip) and switch off system on/off switch.
3. Turn off power supply to boiler and ensure that power supply cannot be activated during the duration of the start-up/service work.
4. Unlock enclosure panel by giving cover lock a quarter turn.
5. Remove burner cover panel by unlocking the two pull-down latches located on the bottom of the panel, and slide out panel.
6. Attach front enclosure panel.
7. Secure in place by rotating slotted screw.



Fill Heating System with Water



1. Open system isolation valves (if installed).
Note: Before filling the heating system with water, check that all necessary flow check valves are installed.
2. Check inlet pressure of the diaphragm expansion tank. If the nitrogen pressure of the precharged expansion tank is less than the static pressure of the system, inflate membrane pressure to slightly exceed pressure of system.
 The static pressure required at the tank is based upon the static height of the system. The system fill pressure value must be equal to the expansion tank pressure value at approx. 60°F/15.6°C.
3. To remove debris and/or sludge ensure that the system piping is flushed out. Failure to do so could cause settlement in the boiler causing overheating and damage not covered by warranty.
 System fill pressure must be approximately 3 psig higher than the static head when the system is cold.
4. Optional:
 Fill the heating system with water at the boiler filling and drain tap (A) and drain air completely from the system at manual air bleed valve (B) (use supplied key) as per the Vitodens 200 Installation Instructions.
 Max. boiler operating pressure45 psig
 Min. boiler operating pressure12 psig
 Pressure relief valve30 psig

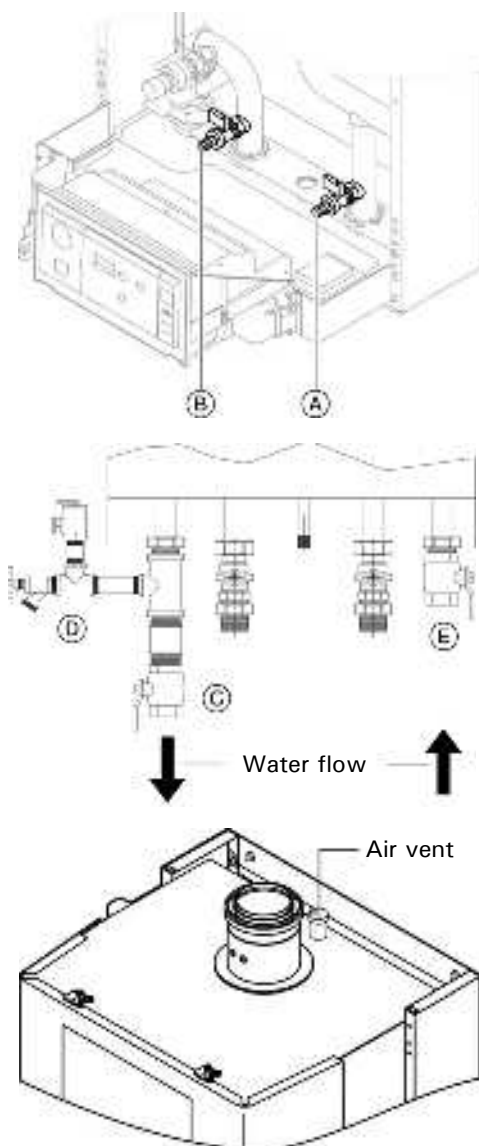
Water treatment should be considered in areas where it is known that boiler feed water contains a high mineral content and hardness. In areas where freezing might occur, an antifreeze may be added to the system water to protect the system.

Please adhere to the specifications given by the antifreeze manufacturer. Do not use automotive silicate-based antifreeze. Please observe that an antifreeze/water mixture may require a backflow preventer within the automatic water feed and influence components such as diaphragm expansion tanks, radiation, etc. A 40% antifreeze content will provide freeze-up protection to -10°F/-23°C.

Do not use antifreeze other than specifically made for hot water heating systems. System also may contain components which might be negatively affected by antifreeze.

Check total system frequently when filled with antifreeze.

Fill Heating System with Water *(continued)*



5. Check system pressure and open ball valve (E).
6. Shut off the boiler from the heating system on heating water side (close shutoff valve (C)).
7. Connect drain hose to drain valve (B) or (D).
8. Open drain valve (B) or (D) and vent the boiler with system pressure until noise due to the presence of air is eliminated.
9. Close drain valve (B) or (D) and open ball valve (C).
10. Check system pressure.
11. Ensure proper/adequate fuel supply exists. Open gas shutoff valve.

Check Power Supply Connection

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 outer conductor "L" and the neutral conductor "N" must not be interchanged. See wiring diagram in section entitled "Additional Information" in this manual.

A power module is supplied with the Vitodens 200 boiler, which requires a 120VAC power supply from a wall receptacle.

The module contains a 120/230 VAC step-up transformer to power the Vitodens 200 with 230 VAC. Refer to the Installation Instructions shipped with the module for wiring details and/or Installation Instructions of the boiler.

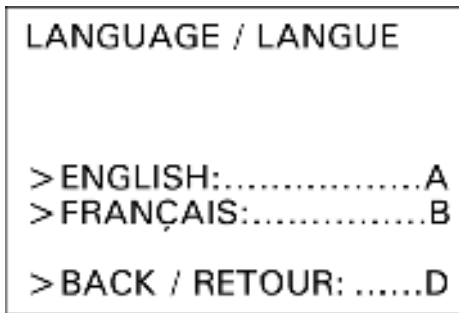
Voltage range

The voltage at connector [40] must be 230V (see wiring diagram).

Neutral conductor

The electrical power supply must have a neutral conductor.

Select Language (if required)



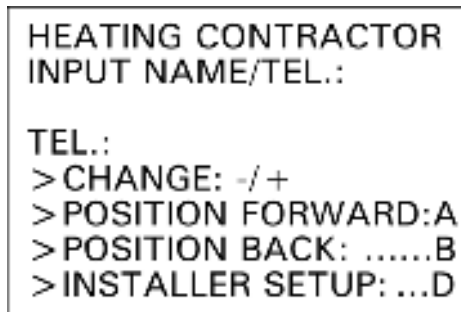
Comfortrol Menu-driven programming unit

Open cover:

Menu option	Button
➔ SYSTEM	"D"
➔ FACTORY SETTING	"A"
➔ LANGUAGE	"C"

Select language.

Heating Contractor Address Input



Comfortrol Menu-driven programming unit.

This option allows the system user to access name and telephone number of the heating contractor on the display (see Vitodens 200 Operating Instructions) almost immediately after a system fault has occurred.

Open the cover:

Menu option	Button
➔ SYSTEM	"D"
➔ INSTALLER SETUP	"C"
➔ CODE PLEASE:	"B-C-C-B"
➔ DIAGNOSIS	"A"
➔ HEATING CONTRACTOR	"C"

Position cursor as required using the "A" and "B" buttons. Select the required characters (number, letter, special character) by turning the "↶↷" selector knob (turn clockwise or counterclockwise).

Sequence of available characters:

0 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M N O P Q R
S T U V W X Y Z = < > . : k ? , - i / ()

Characters already selected can be deleted with the space character "k" or overwritten with another character.

Upon exiting the input menu (INSTALLER SETUP "C"), name and telephone number of the heating contractor are automatically stored.

Select Appropriate Gas Type

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 73.

The Vitodens 200 boiler is for use with gases whose characteristics fall within the following ranges.

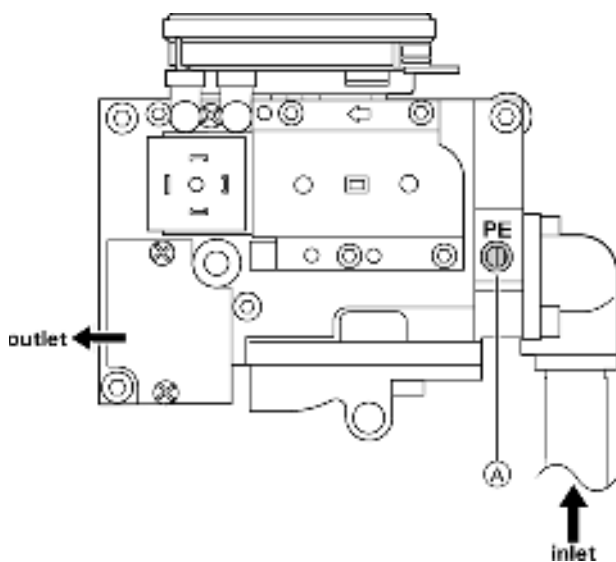
Do not use any other types of gas.

	Natural gas	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

Measure Static Pressure and Running Pressure

IMPORTANT

A CO measurement (see page 13) must be taken before and after working on gas appliances to eliminate risks to health and to guarantee the satisfactory condition of the system.



Measuring static gas supply pressure, using test nipple "PE"

Static pressure

1. To measure static and/or running pressure remove burner cover panel as per the removal and reinstallation instructions on page 6 in these instructions.
2. Close gas shutoff valve (field supplied).
3. Loosen screw in test nipple "PE" (A) 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. max. for NG
 - 14 "w.c. max. for LP
6. Enter measured value into Maintenance Record on page 73 in this manual.
7. Start up boiler, using the on/off switch on the boiler control.

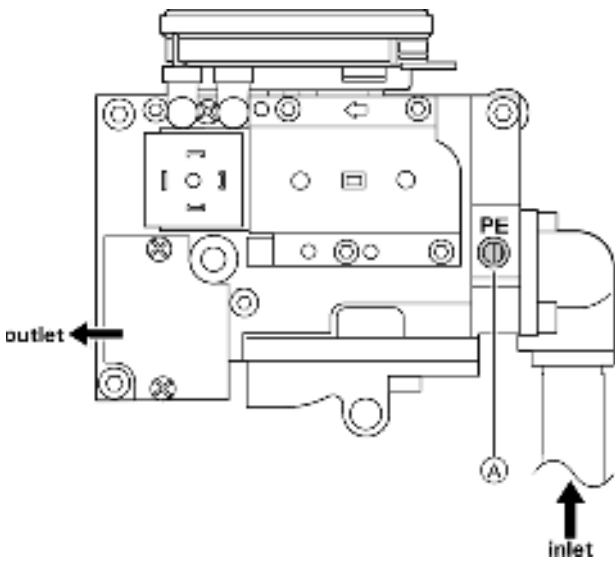
IMPORTANT

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 propane gas).

After approx. 5 seconds, press the "⬆" button to reset the burner. The ignition procedure is repeated. This boiler employs a direct spark ignition system.

Measure Static Pressure and Running Pressure *(continued)*



Measuring static gas supply pressure, using test nipple "PE"

Running pressure

8. Measure the running pressure; value must be:
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
Natural gas	Propane gas	
■ under 4 "w.c. (WB2-44) ■ under 7 "w.c. (WB2-60)	under 11 "w.c.	Do not attempt adjustment. Call local gas utility to increase pressure.
■ 4 to 14 "w.c. (WB2-44) ■ 7 to 14 "w.c. (WB2-60)	11 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. Boiler valve must not be exposed to pressure over 14 "w.c.

9. Enter gas type into Maintenance Record on page 73 in this manual.
10. Switch off the heating system on/off switch on the boiler control unit (boiler is shut down), close the gas shutoff valve, remove the manometer and re-tighten the screw in the test nipple "PE" (A).
11. Open gas shutoff valve and check that the test nipple "PE" and all gas connections are gas-tight.

! WARNING

Ensure that there is no open flame in the room.

! 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 loss of life.

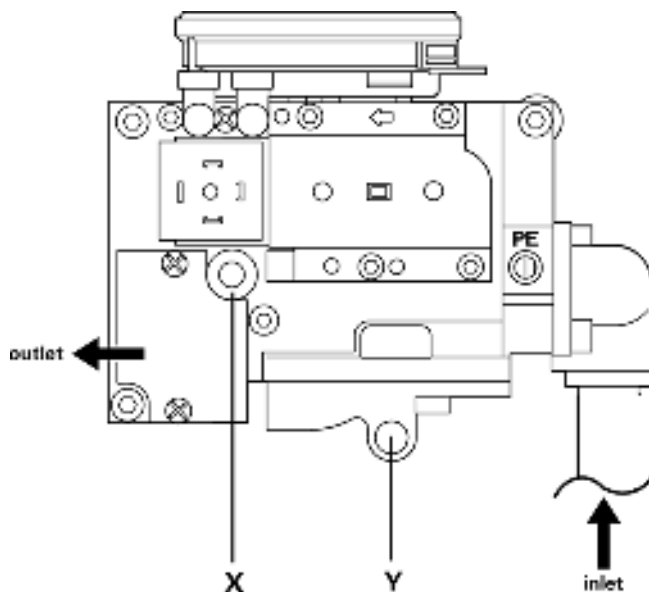
How the Vitodens 200 Boiler Operates...

The MatriX burner blower and the combination gas valve are factory calibrated and pre-adjusted for optimum boiler performance at all firing rates through a non-mechanical, pneumatic modulating link between combustion air and gas flows.

Blower speed is automatically increased or decreased based on heat demand and venting system resistances, thereby regulating the amount of combustion air drawn. The pneumatic modulating link between air and gas introduces the required amount of gas for correct combustion to meet the current heat demand, based on a linear relationship between ΔP air and ΔP gas. Optimum combustion air flow rate is recognized and monitored by the differential air pressure sensor (transducer). The output voltage signal of the transducer is analyzed for logic by the LGM 29.XX burner ignition control unit. The LGM 29.XX unit contains pre-programmed performance curves and operational safety parameters unique for every boiler model. See page 47 for sequence of operation.

Flue gas adaptation function

The Vitodens employs a flue gas adaptation function. This unique function records, processes, and reacts in real time to fluctuations in pressure drops in the vent pipe during normal operation caused by partial pipe blockages due to ice formation at the vent termination, debris and/or sudden high winds. Such increase in pressure drop, if not promptly corrected, will reduce the combustion air flow rate, and hence lead to unstable combustion. The differential air pressure sensor (transducer) records such pressure drops and supplies voltage signals to the LGM 29.XX burner ignition control unit which, in turn (based on stored performance curves and safety parameters), initiates prompt adjustment of the blower rotational speed, thus readjusting the combustion air flow rate for optimum combustion. The same automatic adaptation logic applies if combustion air is reduced (or increased) due to slower (or faster) blower speed resulting from line voltage drops (or increases) below (or above) the threshold of 85% (or 110%).



Do not adjust screws X and Y!

! WARNING

FOR FACTORY CALIBRATING PURPOSES, THE COMBINATION GAS VALVE IS EQUIPPED WITH ADJUSTMENT SCREWS X AND Y. DO NOT ATTEMPT TO ADJUST OR READJUST THESE SCREWS. ANY ATTEMPT TO TAMPER WITH FACTORY PRE-ADJUSTED SETTINGS WILL LEAD TO UNSTABLE OPERATION AND WILL AFFECT BOILER WARRANTY.

Check CO₂ Setting

The Vitodens 200 boiler is factory preset for operation with natural gas or propane. It is recommended that a CO₂ check be performed at the boiler vent pipe adaptor as part of the initial start-up/maintenance procedure.

IMPORTANT

The MatriX burner of the Vitodens 200 is preset for the entire gas group. No adjustment or readjustment of the burner is required.

IMPORTANT

Do not use the emissions test switch "A" to trigger a call for heat.

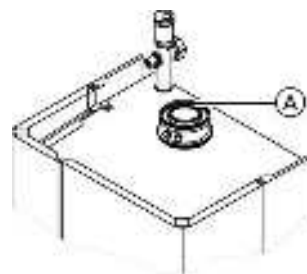
Depending on the gas type, the CO₂ value lies within the range of:

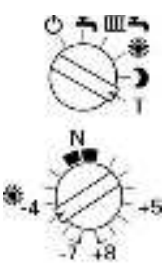
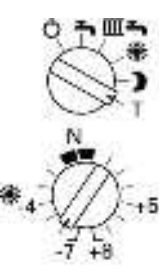
- 6.6 to 10.0% for natural gas
- approx. 10.0% for LP

The CO₂ value measured must be compared with the above CO₂ value ranges of the individual gas type.

If the CO₂ value measured lies more than 1% outside the stated range for NG, or 0.5% outside the stated range for LP, perform the following steps:

- Check that correct orifice was used (see subsection entitled "Check orifice size" on page 14 and section "Technical Data" on page 40 of this manual).
 - Check the venting system for leaks (see subsection entitled "Check venting system for leaks" on page 15 of this manual).
1. Connect flue gas analyzer to boiler vent pipe adaptor (A) ("Flue gas" measurement opening).
 2. Open the gas shutoff valve and start up the boiler.
 3. Trigger a call for heat by adjusting the setpoint value.



	4. Select the lower rated thermal load and check the CO ₂ content	5. Select the upper rated thermal load and check the CO ₂ content If value deviates by more than 1%, see page 15	6. Terminate the setting mode
Control unit type			
Control unit for weather-compensated mode with standard programming unit			<ul style="list-style-type: none"> ● Select the required heating program. ● Set rotary selector to the required value. ● Enter actual values into the service report. ● Close the test port.
Control unit for weather-compensated mode with menu-guided Comfortrol programming unit	<p>► SYSTEM "D"</p> <p>► INSTALLER SETUP "C"</p> <p>► CODE PLS "B-C-C-B"</p> <p>► DIAGNOSIS "A"</p> <p>► RELAY TEST "A"</p> <p>With menu item CONTINUE "A" up to code 10: MODULATION</p> <p><ST.90> CLOSED BURNER</p> <p><ST.41> ON</p>	<p>With menu item CONTINUE "A" up to code 11: MODULATION</p> <p><ST.90> OPEN BURNER</p> <p><ST.41> ON</p>	<ul style="list-style-type: none"> ● Close the programming unit. ● Enter actual values into the service report. ● Close the test port.

7. Exit the setting mode

- Close cover of programming unit.
- Enter the measured values into the Maintenance Record on page 73 in this manual.
- Close flue gas measurement opening (A).

Clock Natural Gas Meter

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 Vitodens 200 boiler.
2. Measure the time in seconds it takes for the boiler to use 10 cu. ft. of gas. Divide 3600×10 by the number of seconds and you get the number of cu. ft. 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.

For example:

A Vitodens 200-W 11-44 boiler (172 000 Btu/h input) requires 209 seconds to use 10 cu. ft. of natural gas. After contacting the local utility, you will find the heating value is 1000 Btu per cu. ft.

Therefore,
 $3600 \times 10 / 290 \times 1000 \cong 172\,000$ Btu/h input.
 Therefore, the boiler input is correct.

Burner input formulas

(for low altitude only):

INPUT = $(3600 \div t) \times 1000$ where

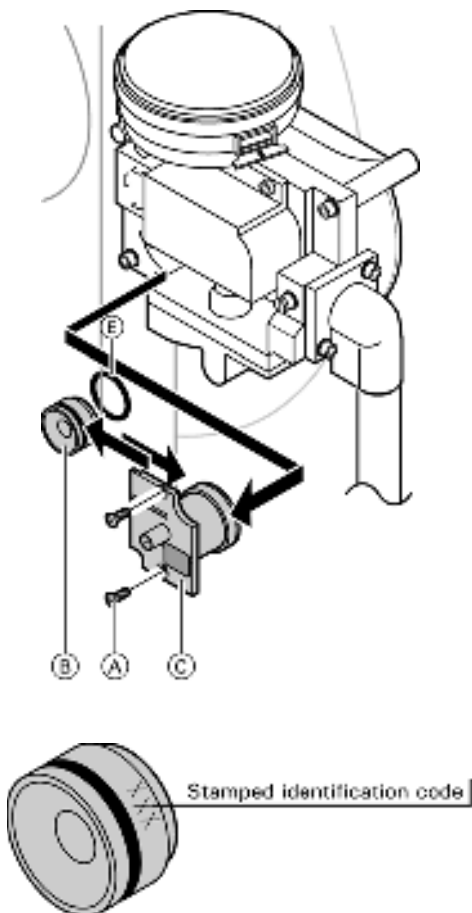
t = TIME (sec.) for 1 ft³

INPUT = $(3600 \times .01 \times 1000 \times 35.31) \div T$

where

T = TIME (sec.) for .01 m³ natural gas

Check Orifice Size



1. Remove burner cover panel (if still installed) as per the removal and reinstallation instructions on page 6 in this manual, and reinstall panel upon completion of service work.
2. Loosen screws (A) and take the gas orifice holder (C) out of the fitting.
3. Read orifice size stamped on the orifice body and cross-reference to table below. If wrong orifice is installed, proceed to next step.
4. Push the gas orifice (B) sideways out of the gas orifice holder (C). Snap new and correct gas orifice into gas orifice holder and push into the gas train. See section entitled "Technical Data" on page 40 of this manual for information on gas orifices.

IMPORTANT

Place O-ring E in groove on new gas orifice (B).

5. Tighten screws (A).
Tighten to a torque of 1.1 lb.ft./1.5 Nm.
6. Check all gas connections for leaks with an approved leak test solution.

Overview of orifices

Boiler model	WB2 11-44	WB215-60
Natural gas	E44	E60
Liquid propane	P44	P60

Check all Primary and Secondary Circuit Connections for Leaks

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.

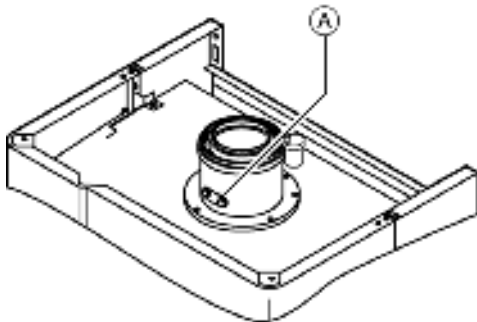
Perform Combustion Analysis

IMPORTANT

A CO measurement (see page 13) 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 73 in this manual.

Check Venting System for Leaks (circular air gap measurement) For sealed combustion, coaxial vent only.



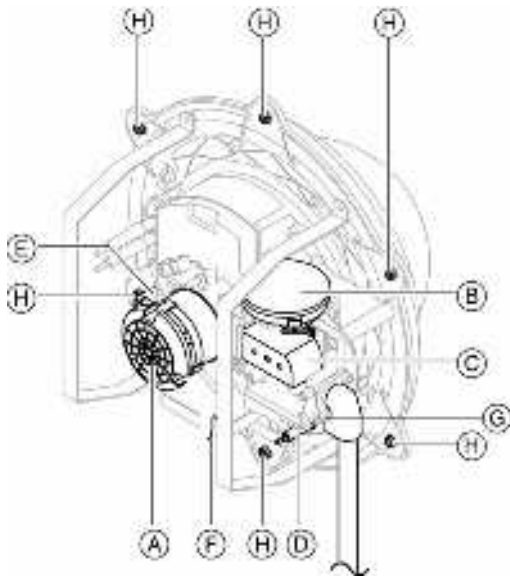
Ⓐ Combustion air measuring point

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 CO₂ concentration of the combustion air in the coaxial gap of the air intake pipe. The vent pipe is considered sufficiently leak-proof if a CO₂ concentration in the combustion air no higher than 0.2% or an O₂ concentration no lower than 20.6% is measured. If higher CO₂ values or lower O₂ values are measured, check venting system thoroughly.

Note: The vent pipe adaptor comes with two measurement ports, one for combustion air-intake measurement and one for flue gas measurement.

Note: This test is not applicable for single - wall venting system (non-sealed combustion).

Disassemble Burner and Check Burner Gasket



1. Remove burner cover panel (if still installed) as per the removal and reinstallation instructions on page 6 in this manual, and reinstall panel upon completion of service work.
2. Switch off the heating system switch on the control unit and the power supply.
3. Close gas shutoff valve and secure.
4. Disconnect electrical cables from fan motor (A), differential air pressure sensor (B), combination gas valve (C), ionization electrode (D), ignition transformer (E) and grounding (F).
5. Remove two screws (G) to disconnect gas line from gas valve.
6. Loosen six hexagon socket head cap screws (H) and remove burner.
7. Check burner gaskets for damage (see Parts List) and replace if required.



CAUTION

Do not lay burner on burner mesh assembly (wire mesh)!

Visually Check the Exterior of the Burner Mesh Assembly

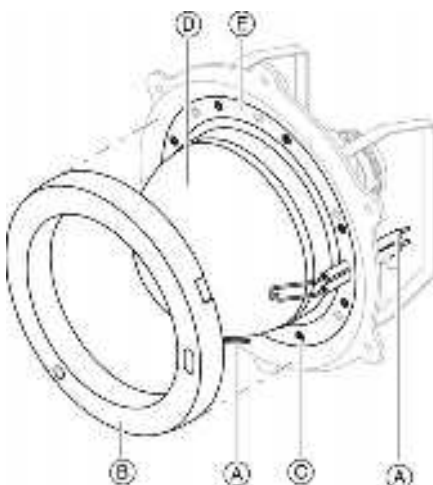
To check the exterior of the burner mesh assembly for physical damages, such as dents, corrosion and/or abnormally large holes:

1. Remove burner cover panel, if still installed (see page 6). Reinstall panel upon completion of service work.

IMPORTANT

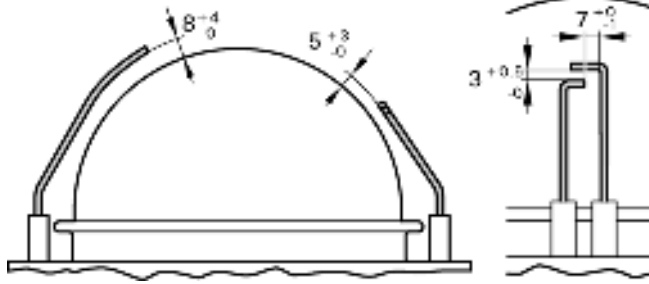
Do not replace gasket (D) when visually inspecting the exterior of the mesh assembly.

Replace Burner Mesh Assembly (if wire mesh is damaged)



1. Remove electrodes (A).
2. Turn thermal insulation ring (B) clockwise and remove.
3. Unscrew the eight Torx screws and remove burner mesh assembly and assembly gasket.
4. Remove existing burner mesh assembly gasket (E).
5. Fit new burner mesh assembly with the new gasket and tighten with the eight Torx screws. Tighten to a torque of 3.3 lb.ft. / 4.5 Nm.

Check and Adjust Ignition and Ionization Electrode

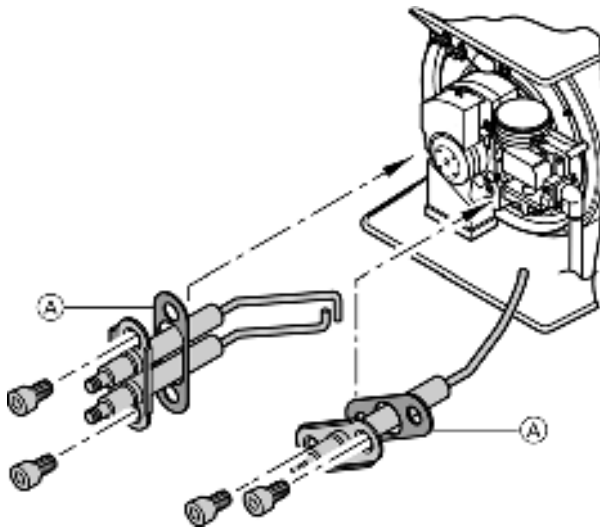


1. Remove burner cover panel (if still installed) as per the removal and reinstallation instructions on page 6 in this manual, and reinstall panel upon completion of service work.
2. Check electrodes for wear and contamination.
3. Clean electrodes with small brush or emery paper.



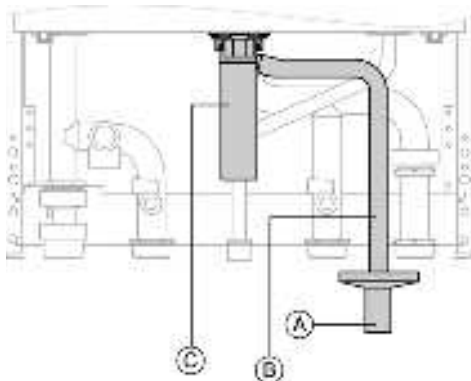
CAUTION

Do not damage wire mesh when cleaning.



4. Check clearances. If clearances are not satisfactory or the electrodes are damaged, replace electrodes and gasket (A) and align. Tighten fastening screws for the electrodes to a torque of 1.5 lb.ft. / 2 Nm.

Check Condensate Drain



Ensure condensate drains freely (e.g. at siphon trap (C)). If necessary, clean siphon trap.

IMPORTANT

If the condensate does not drain freely, condensate will accumulate in bottom part of boiler resulting in a burner shut-down (fault message).



Installation Instructions Neutralization Unit
(if applicable)

Legend

- (A) Discharge tubing
- (B) Flexible discharge tubing
- (C) Siphon trap

Check Neutralization Unit (if applicable)

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

IMPORTANT

pH measuring strip must be field supplied.

2. If contaminated: Rinse neutralization unit with tap water.
3. Add granulate as marked.

IMPORTANT

The granulate is consumed as it neutralizes the condensate. The red marking indicates the min. filling level.

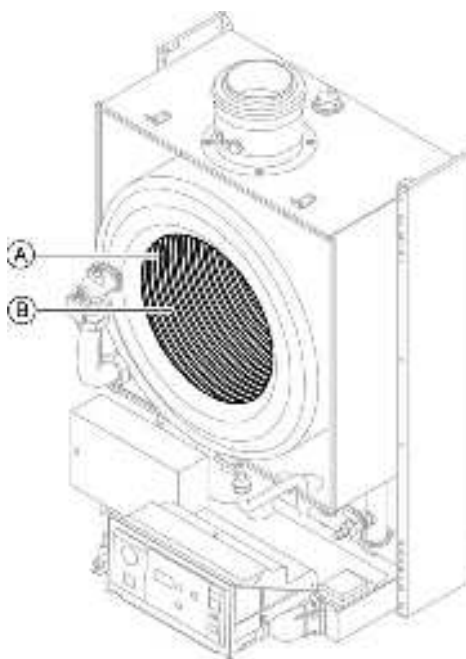


Installation Instructions Neutralization Unit.

Clean Combustion Chamber/Heat Exchanger Surfaces, and Mount Burner

WARNING

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



1. Remove burner cover panel (if still installed) as per the removal and reinstallation instructions on page 6 in this manual, and reinstall panel upon completion of service work.
2. If necessary, clean the combustion chamber (A) and heat exchanger surfaces (B) with a brush and/or rinse with water.

Use solvent-free cleaning agents to remove residues:

- Remove deposits of soot with alkaline agents containing tenside.
- Remove coatings and (yellowish brown) surface discoloration with phosphoric acid-based "Antox 75 E Plus", or citric acid-based CitriSurf 3050 by Stellar Solutions Inc.

- Rinse thoroughly with water.

Note: Be careful not to scratch parts which are in contact with flue gas. Use plastic brushes, not wire brushes!

Follow Material Safety Data Sheet (MSDS) of the cleaning agent manufacturer.

The cleaning agents must not contain hydrocarbon-based solvents or potassium.

3. Mount burner and tighten diagonally to a torque of 2.8 lb.ft. / 4 Nm (four flange locknuts).
4. Fasten threaded connection for the gas connection hose with a new gasket or O-ring.

IMPORTANT

Perform leak test.

5. Connect electrical cables to corresponding parts.

Check Diaphragm Expansion Tank and System Pressure

Perform check with the system cold.

1. Drain boiler/system and reduce pressure until the manometer reading is "0".
2. If the nitrogen pressure of the precharged expansion tank is less than the static pressure of the system, inflate membrane pressure to slightly exceed pressure of system.
The static pressure required at the tank is based upon the static height of the system. The system fill pressure value must be equal to the expansion tank pressure value at approx. 60°F / 15.6°C.

Example:

Static head of 33 ft. / 10 m (distance between boiler and topmost heat emitter surface) corresponds to a static pressure of 1 bar / 15 psig.

3. Top up with water until filling pressure is higher than the inlet pressure of the diaphragm expansion tank. With the system cold, the filling pressure must be approx. 3 psig higher than the static pressure.
Max. operating pressure:45 psig
Min. operating pressure:12 psig
4. When starting up the system for the first time, mark this value as the minimum filling pressure on the manometer. A lower manometer reading usually indicates loss of water due to leakage.
All leaks must be repaired.

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.



Installation Instructions Power Module

Check Gas Pipes and Fittings for Leaks

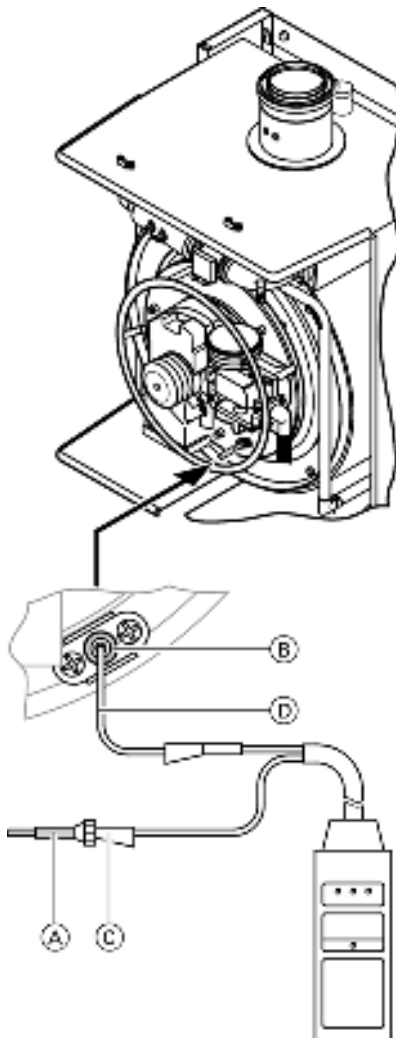
WARNING

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).

Measure Ionization Current



IMPORTANT

Switch off heating system on the control unit before connecting the measuring instrument.

1. Remove burner cover panel (if still installed) as per the removal and reinstallation instructions on page 6 in this manual, and reinstall panel upon completion of service work.
2. Connect a DC μA multimeter in series with the ionization cable as follows:
 - a) Disconnect the socket of the ionization cable (A) from the ionization electrode (B) and connect to the plug of the multimeter via adaptor (C).
 - b) Connect additional ionization measuring cable (D) to the ionization electrode (B) and the socket of the multimeter.

Note: The measurement can be made with a multimeter (measuring range 0 to 100 μA).

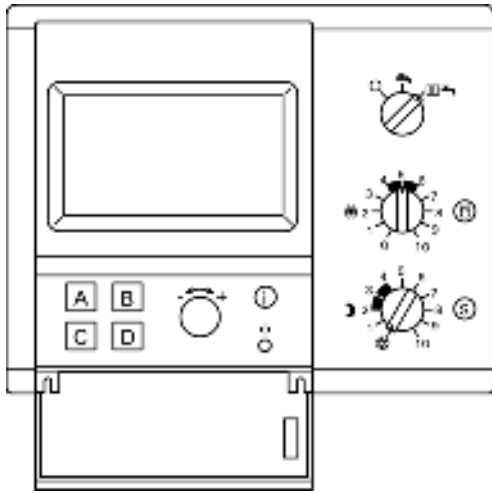
3. Start up boiler to its maximum input:
Turn emissions test switch "A" on the control unit to "B".
4. If the ionization current is less than 5 μA
 - check the electrode clearance (see page 17).
 - check the power supply connection of the control unit.

Note: The minimum ionization current must be at least 5 μA when the flame is formed (approx. 2-3 seconds after opening the gas combination valve).
5. After completing the measurement, turn emissions test switch to "A".
6. Enter the value measured in the Maintenance Record on page 73 in this manual.

Verify Programming Unit System Coding Addresses

- The control unit must be adjusted to the system equipment. See page 42 onward for information on the programming unit.
- For details on coding procedure and for an overview of the coding addresses, see page 45 onward.

Check Extension Kit for Heating Circuit with Mixing Valve



Checking the Viessmann 2-wire BUS and the data connection to Vitotronic 050

With Comfortrol programming unit

1. Check via Scan 1 on the programming unit whether the connected extension kit is recognized.

Calling up Scan 1

Open the cover:

Menu option Button

► SYSTEM "D"

► OPERATING

STATUS "B"

► CONTINUE "A" until "Scan 1" is displayed

Note: The third and fourth-placed digits from the left have the following meaning:

(_ 02 _) = with burner control unit

(_ 12 _) = additionally with Vitocom 100

(_ 03 _) = with burner control unit and variable speed heat circuit pump

(_ 13 _) = additionally with Vitocom 100

(_ 06 _) = with burner control unit and extension kit for heating circuit with mixing valve

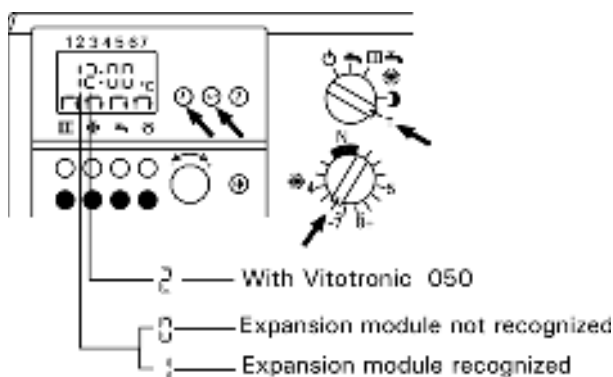
(_ 16 _) = additionally with Vitocom 100

(_ 07 _) = with burner control unit, extension kit for heating circuit with mixing valve and variable speed heat circuit pump

(_ 17 _) = additionally with Vitocom 100

2. If the extension kit is not recognized, check the coding of the heating system type (see page 45).

Note: The extension kit is only recognized when connected via the KM-BUS, not when connected via the Viessmann 2-wire BUS.



Checking the Viessmann 2-wire BUS and the data connection to Vitotronic 050

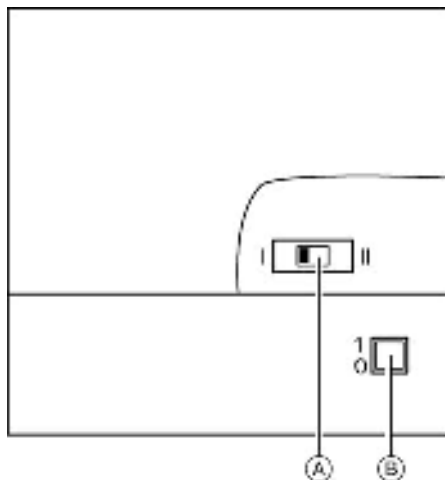
With standard programming unit

1. Set the heating program selector switch to "T".
2. Set rotary selector "☼" to "-6".
3. Simultaneously press keys "⊙" and "1-7".
4. Evaluate the display.

5. Check the correct installation if the extension module or Vitotronic 050 are not recognized.

Note: A green LED on the expansion module flashes if the data bus is active. The data cable "X 5.3" - "X 5.4" may be interchanged, if the LED is not lit.

Check Extension Kit for Heating Circuit with Mixing Valve *(continued)*



Legend

- (A) Rotational direction switch
(B) Power supply switch "0"

Check mixing valve motor

- Select rotational direction of the mixing valve motor.
 - Switch setting I for boiler return from left (factory default setting).
 - Switch setting II for boiler return from right.
- Relay test
Switch power supply switch on the motor off and on again. The unit will perform the following self-test:
 - Close mixing valve (150 sec)
 - Pump ON (10 sec)
 - Open mixing valve (10 sec)
 - Close mixing valve (10 sec)

After that normal control mode is resumed.

- Observe the rotational direction of the mixing valve motor during the automatic relay test of the extension kit. Afterwards, position the mixing valve by hand in the "Open" setting.

The supply temperature sensor must now measure a higher temperature.

If the temperature is lower, either the rotational direction of the motor is incorrect or the mixing valve insert is incorrectly fitted.



Please reference Installation Instructions of Mixing Valve Actuator.

Check Dekamatik-HK



For boilers equipped with comfortrol menu driven programming unit

- Check via Scan 2 on the programming unit whether the connected expansion module is recognized.

Calling up Scan 2

Open the cover:

Menu option	Button
► SYSTEM	"D"
► OPERATING STATUS	"B"
► CONTINUE	"A" until "Scan 2" is displayed

Expansion module

The last-placed digit has the following meaning:

2__0 = Viessmann 2-wire BUS expansion module not recognized

2__1 = Viessmann 2-wire BUS expansion module is recognized

Dekamatik-HK

The second-placed digit from the left has the following meaning:

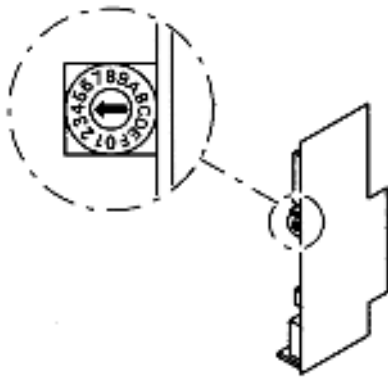
_2__ = Extension kit for a heating circuit with mixing valve or Dekamatik-HK1/-HK2 recognized

_3__ = Dekamatik-HK4 recognized

- If the expansion module or the Dekamatik is not recognized, check that they were installed correctly.

Note: A green LED will flash on the expansion module if the data BUS is intact. If the LED is not lit, the data line "X5.3"- "X5.4" may be incorrectly connected. See wiring diagram in section entitled "Additional Information".

Check Dekamatik-HK (continued)



Check setting of rotary switch

- Dekamatik-HK1:
The rotary switch on the communication module must be set to "4".
- Dekamatik-HK2:
The rotary switch on the circuit board E4 must be set to "4".
- Dekamatik-HK 4:
The rotary switch on circuit board E4.1 must be set to "4" and the rotary switch on circuit board E4.2 to "5".



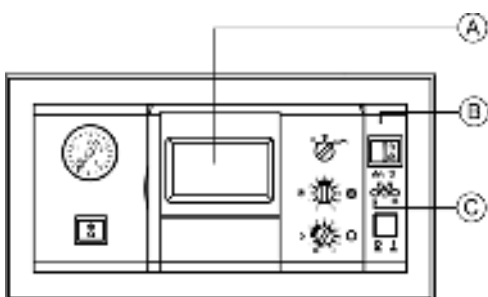
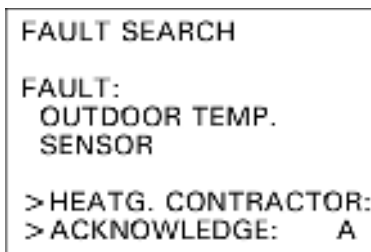
Please reference corresponding installation documentation for Dekamatik-HK.

Troubleshooting Steps



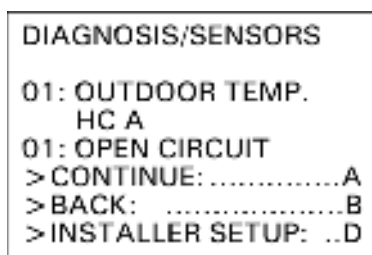
1. Establish fault message or diagnose behavior of system.
2. Look for corresponding cause of fault in the diagnostics table.
Diagnosis
Note: See page 24 for retrieval of fault codes from the fault memory.
 - for faults with fault display on control unit (see below).
 - for faults without fault display on control unit (page 33).
3. Find corrective action in the table.
4. Perform corrective action (page 26).

Diagnosis



Legend

- (A) Display window
- (B) Reset button
- (C) Burner fault indicator



Comfortrol Menu driven programming unit Faults with fault display on control unit

Faults with fault display on control unit

When a fault message is detected, ---- FAULT---- flashes in the display of the programming unit with the cover closed.

To trace the fault

1. Open cover:

► FAULT SEARCH "A". Fault code is displayed.

Note: The fault message is cleared when "ACKNOWLEDGE" is selected.

If an acknowledged fault is not corrected by 24:00 hrs on the same day, the fault message will reappear.

The acoustic alarm system (only with optional expansion board installed), is not reactivated.

The meaning of the fault codes is explained in the table starting on page 27.

2. Close the cover.

To reset the burner

If red light is on or flashing:

1. Press the "↑↓" button once to reset the burner.

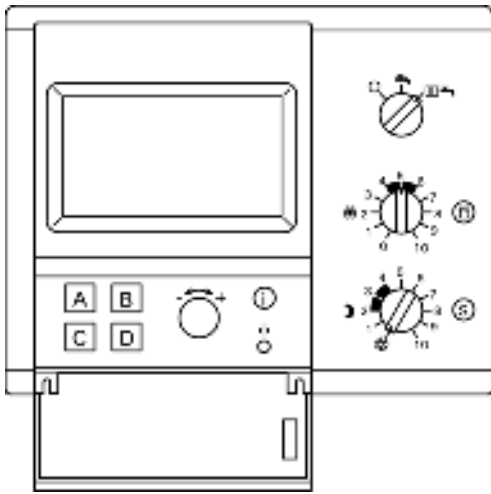
Find nature of sensor fault in plain language

Note: Please refer to the diagnostics table starting on page 27 for details on required action.

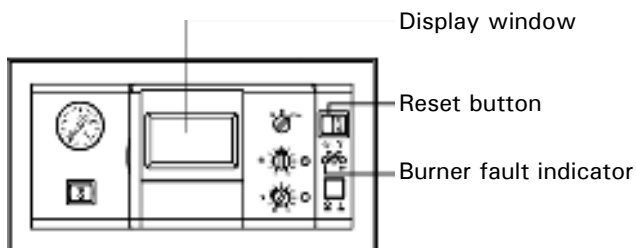
Open the cover:

Menu option	Button
► MAIN MENU	"D"
► SYSTEM	"D"
► INSTALLER SETUP	"C"
► CODE PLEASE:	"B-C-C-B"
► DIAGNOSIS	"A"
► SCAN SENSORS	"B"

Select defective sensor with the menu option CONTINUE "A".

Diagnosis (continued)

Fault code displayed on programming unit	Fault history code displayed
Fault: F9	249
Fault: FD	253
Fault: FE	254
Fault: 02	002
Fault: 04	004
Fault: 05	005
Fault: 06	006
Fault: 07	007
Fault: 08	008
Fault: 14	020
Fault: 15	021
Fault: 0A	010
Fault: 0B	011
Fault: 0S	012
Fault: 0D	013
Fault: 0E	014
Fault: 0F	015
Fault: CC	204



Control unit for weather-responsive operation with programming unit

Comfortrol Menu driven programming unit retrieval of fault codes from fault memory

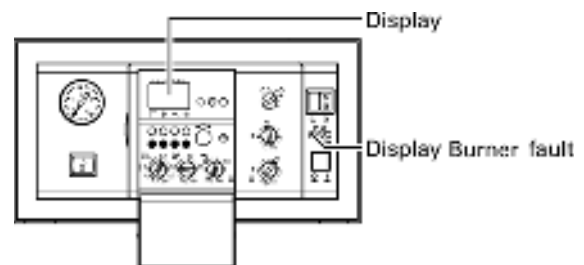
- Open the cover:

Menu option	Button
► SYSTEM	"D"
► INSTALLER SETUP	"C"
► CODE PLEASE:	"B-C-C-B"
► CODING 2	"C"

Note: All settings are made in the "Installer Setup" menu, containing "Coding 1" (the main coding addresses in plain language) and "Coding 2" (all coding addresses).
- Select coding address "0B2" by pressing button "A" (CONTINUE) or "B" (BACK).
 - With the "G" selector knob (CHANGE), set the value of the coding address to "001".
 - Confirm the change with button "D".

Changes which are made and confirmed in Coding 1 are automatically transferred to Coding 2 and vice versa.
- Select coding address "0B3".
The value which appears is the most recent fault code (value in brackets () in the diagnostics table).
- Repeat step 2, but set value of "0B2" coding address to "002". The new value which appears under coding address "0B3" is the next fault code.

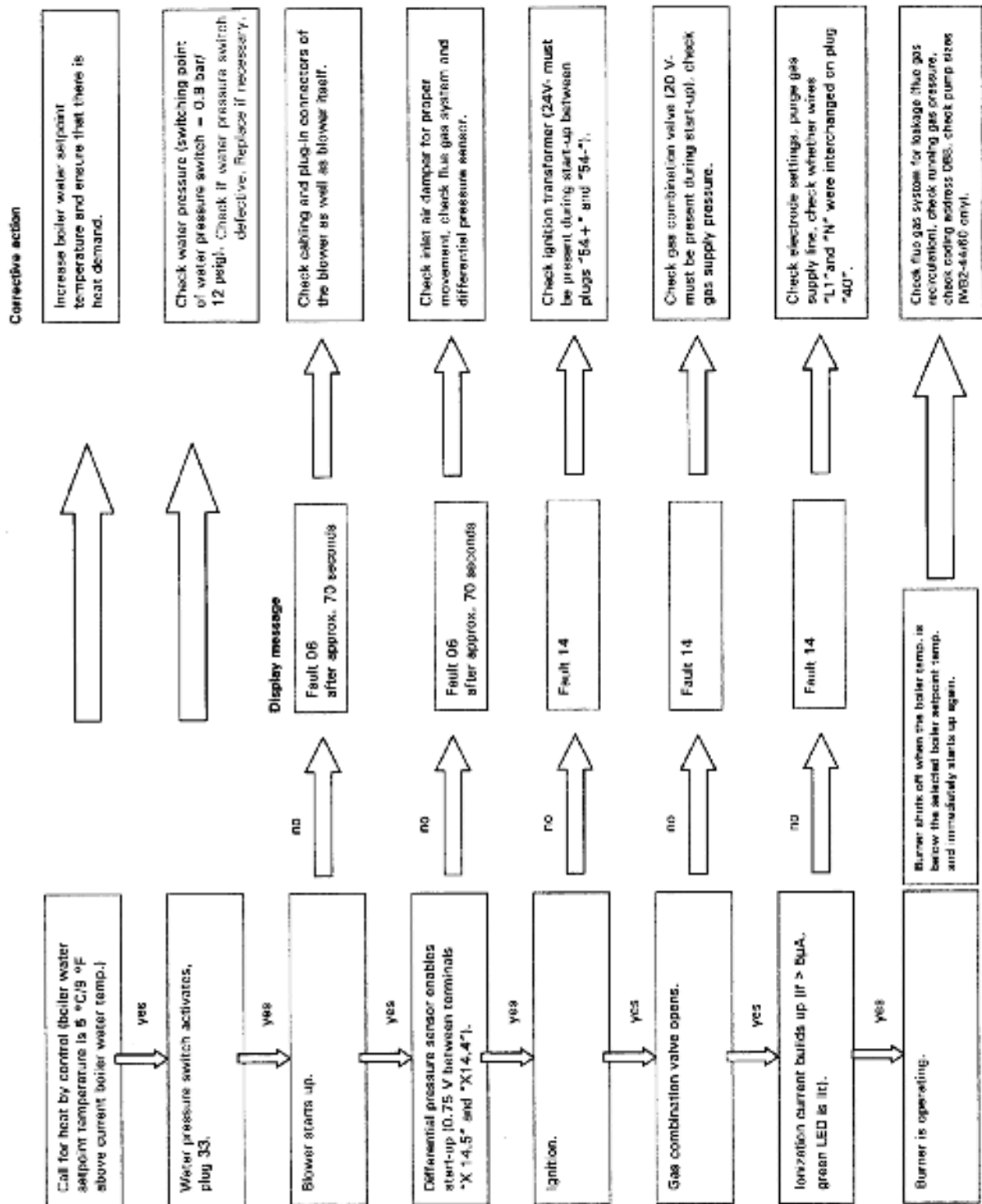
Note: 10 fault codes can be scanned.





Control unit for weather-compensated mode with standard programming unit

Diagnosis *(continued)*

Sequence of operation and potential faults during each start-up cycle.



Fault message in display window Control unit for weather-responsive operation with programming unit	Standard control	Burner fault indicator (red)	System behavior	Cause of fault	Corrective action
FAULT: OUTDOOR TEMP. SENSOR	1:1: 0	OFF	Operates based on 32°F/0°C outdoor temperature.	Short circuit – outdoor temperature sensor	Check outdoor temperature sensor (see page 34).
FAULT: OUTDOOR TEMP. SENSOR	1:1: 8	OFF	Operates based on 32°F/0°C outdoor temperature.	Open circuit – outdoor temperature sensor	Check outdoor temperature sensor (see page 34).
FAULT: SUPPLY TEMP. SENSOR	1:2: 0	OFF	Supply temperature of heating circuits too low.	Short circuit – low-loss header temperature sensor	Check supply temperature sensor (see page 35).
FAULT: SUPPLY TEMP. SENSOR	1:2: 8	OFF	Supply temperature of heating circuits too low.	Open circuit – low-loss header temperature sensor	Check supply temperature sensor (see page 35).
FAULT: BOILER TEMP. SENSOR	1:3: 0	OFF	Boiler cools down	Short circuit – boiler temperature sensor	Check boiler temperature sensor (see page 34).
FAULT: BOILER TEMP. SENSOR	1:3: 8	OFF	Boiler cools down	Open circuit – boiler temperature sensor	Check boiler temperature sensor (see page 34).
FAULT: SUPPLY TEMP. SENSOR	1:4: 0	OFF	Mixing valve is opened.	Short circuit – supply temperature sensor	 See Installation Instructions Mix. Valve Actuator. See coding address "000" (see page 49).  See coding address "0B8" (see page 57).
FAULT: SUPPLY TEMP. SENSOR	1:4: 8	OFF	Mixing valve is closed.	Open circuit – supply temperature sensor	See Installation Instructions Mix. Valve Actuator. See coding address "000" See coding address "0B8"
FAULT: TANK TEMP. SENSOR	1:5: 0 1:5: 8	OFF	DHW tank cools down.	Short circuit – tank temperature sensor	Check tank temperature sensor (see page 35). See coding address "000" See coding address "0B8" .
FAULT: TANK TEMP. SENSOR	1:6: 0 1:6: 8	OFF	DHW tank cools down.	Open circuit – tank temperature sensor	Check tank temperature sensor (see page 35). See coding address "000" See coding address "0B8"
FAULT: EXT.PROG.2	1:6: 1 1:6: 9	ON	Boiler cools down	Internal BUS fault	Replace VR20 (see page 65). Replace LGM 29 (see page 41). Replace entire control console.

Diagnostics table: Faults with fault display on control unit

Diagnosis *(continued)*

Diagnostics table: Faults with fault display on control unit (continued)

Fault message in display window Control unit for weather-responsive operation with programming unit	Standard control	Burner fault indicator (red)	System behavior	Cause of Fault	Corrective action
FAULT: 70 RS/WS REMOTE CONTROL	⌚:7: 0	OFF	Operates based on 68°F/20°C desired daytime temperature, 58°F/14°C desired nighttime temperature.	Short circuit – WS/RS remote control unit	Check WS/RS remote control unit (see page 49).
FAULT: 78 RS/WS REMOTE CONTROL	⌚:7: 8	OFF	Operates based on 68°F/20°C desired daytime temperature, 58°F/14°C desired nighttime temp.	Open circuit – WS/RS remote control unit or wrong coding	Check WS/RS remote control unit (see page 49). Check proper system coding.
FAULT: A1 KM-BUS BURNER CONTROL UNIT	⌚:A: 1	Flashes	Boiler operates in emergency mode (after approx. 30 min. BUS fault).	Internal BUS fault	Verify connections X5.3 and X5.4 for mixing valve (if applicable). Check that circuit board VR20 is inserted properly and check field supplied connection (by process of elimination if required). Check coding of LGM 29 component part. Replace circuit board VR20 or circuit board of burner control unit LGM 29*1.
	⌚:A: 1		Boiler cools down.	Open circuit – internal BUS connection	
FAULT: A2	⌚:A: 2	OFF	--	KM-BUS fault to Vitocom	Check connection to Vitocom or Vitocom defective.
FAULT: A4 KM-BUS HEATING CIRCUIT PUMP	⌚:A: 4	OFF	Pump runs at max. speed.	Open circuit – BUS connection with variable speed heating circuit pump	Check line connections to variable speed heating circuit pump. Variable speed pump electronics might be defective.
FAULT: A5 KM-BUS MIXING VALVE	⌚:A: 5	OFF	--	Short circuit open circuit – BUS connection to extension kit for heating circuit with mixing valve	Check connection of extension kit for heating circuit with mixing valve (see page 22). Check coding for system with a mixing valve. Mixing valve might be defective.
FAULT: B1		OFF	DIP switches A and B on back of are switched (e.g. A-A or B-B).		Set DIP switches to factory default setting. See symbols on back of programming unit.
FAULT: B2	⌚:b: 2	OFF	Boiler cools down.	Sensor inputs are not read correctly	Check correct connection of sensors. Check for damage on wiring harnesses. Check whether circuit board VR20 is defective. If required, replace circuit board VR20*1

Diagnostics (continued)

Diagnostics table: Faults with fault display on control unit (continued)

Fault message in display window Control unit for weather-responsive operation with programming unit	Standard control	Burner fault indicator (red)	System behavior	Cause of Fault	Corrective action
FAULT: B3		OFF	Setting via service level not possible.	Data points are not stored; internal fault VR20	Replace circuit board VR20*1.
FAULT: B6 BURNER CONTROL UNIT DEFECTIVE		OFF	Boiler cools down.	AD-converter of burner control unit defective; internal fault LGM 29	Replace burner control unit LGM 29*1.
FAULT: CC (204*1)	l:C: C	ON	Burner control unit switches to lockout (due to large line voltage fluctuations).	Differential air pressure sensor / open circuit	Check wiring, replace sensor.
FAULT: C8		OFF	Boiler does not activate.	Differential air pressure sensor / short circuit	Check wiring, replace sensor.
FAULT: C0		OFF	Boiler does not activate.	Internal fault or fault with internal data protection	Reset burner control unit.
FAULT: E4 or E...	l:E: 4 or l:E: ..	OFF	--	Fault in Dekamatik-HK heating circuit control unit connected downstream	Check Dekamatik-HK heating circuit control unit connected downstream and data transmission circuit. Check wiring connections.
FAULT: F2	l:F: 2	OFF	--	Error message to Vitocom communication unit	Check Vitocom communication unit.
FAULT: F4	l:F: 4	OFF	Variable speed pump signals a fault mode	Air in system (pump) or pump is seized	Bleed air by opening air bleed on top of boiler. Check pump and boiler isolation valves are open.
FAULT: F5	l:F: 5	OFF	--	Error message extension kit for heating circuit with mixing valve	Check coding for extension kit and the extension kit itself. Check sensor <u>2</u> of mixing valve.
FAULT: F9 (249*1)	l:F: 9	OFF/ON	Burner control switches to lockout.	Parameterization of burner control defective	Replace circuit board of burner control unit LGM 29*1.
FAULT: FB		Flashes	--	Emergency operation LGM 29	Check plug-in connection and circuit board VR20. Replace circuit board VR20 if necessary.
FAULT: FD (254*1)	l:F: d	ON	Burner control switches to lockout.	Parameterization of burner control defective	Replace circuit board of burner control unit LGM 29*1.

Diagnosis *(continued)*

Diagnostics table: Faults with fault display on control unit (continued)

Fault message in display window	Standard control	Burner fault indicator (red)	System behavior	Cause of Fault	Corrective action
FAULT: FE (254*1)	1:F: E	ON	Burner control switches to lockout	Internal fault burner control unit or interference	Check electrode settings. Check wiring harness plug X13 for proper connection or damage. Check whether flue gas system is leak-tight. If after corrective action fault "FE" still appears on display replace LGM 29.
FAULT: 02 (002*1)	1:O: 2	ON	Burner control switches to lockout	Safety chain was activated (fixed high limit)	Check fixed high limit (see page 43). Bleed air from the heating system.
FAULT: 04 (004*1)	1:O: 4	ON	Burner control switches to lockout	Fan speed too high at start (maximum fan rpm exceeded).	Fan or fan electronics defective. Replace LGM 29 and/or burner assembly.
FAULT: 05 (005*1)	1:O: 5	ON	Burner control switches to lockout	Fan speed too low at start (incorrect fan rpm).	Check fan and flue gas system.
FAULT: 06 (006*1)	1:O: 6	ON	Burner control switches to lockout	Air pressure threshold for ignition level is not reached. Feedback voltage signal to LGM 29 not available.	Check fan plug, fan, differential pressure sensor (see page 35) and inlet air damper (flapper). Check flue gas system for proper sizing and functioning.
FAULT: 07 (007*1)	1:O: 7	ON	Burner control switches to lockout	Fan speed incorrect.	Check fan and flue gas system.
FAULT: 08 (008*1)	1:O: 8	ON	Burner control switches to lockout	Fan speed too high prior to ignition (incorrect fan rpm).	Check fan and flue gas system.

*1 Displayed when fault codes retrieved from fault memory.

Diagnosis *(continued)*

Diagnostics table: Faults with fault display on control unit (continued)

Fault message in display window	Standard control	Burner fault indicator (red)	System behavior	Cause of Fault	Corrective action
FAULT: 09 (008*1)	I:O: 9	ON	Burner control switches to lockout	Fault fan speed	Check fan and flue gas system.
FAULT: 14 (020*1)	I:1: 4	ON	Burner control switches to lockout	No flame signal	Check electrical connections (see page 19). Purge air from gas line (for LP gas, purge air several times). Measure ionization current (see page 20). Check gas pressure (see page 10). Check gas combination valve (see page 10). Check ignition transformer. Check ignition electrodes (see page 17). Check condensate drain (see page 17). Check power supply polarity (L,N,G). Check proper grounding.
FAULT: 0A (010*1)	I:O: A	ON	Burner control switches to lockout	Basic level of air pressure threshold in standby mode not correct.	Check differential air pressure sensor (see page 35). Check wiring harness and connection to air pressure sensor.
FAULT: 0B (011*1)	I:O: B	ON	Burner control switches to lockout Fan does not idle after auto reset (incorrect fan rpm).	Severe wind conditions in vent system.	Protect outside wall vent termination from severe winds.
FAULT: 0C (012*1)	I:O: C	ON	Burner control switches to lockout	Flame signal still present after switching off	Check gas combination valve (see page 10). Check electrode block (see page 17).
FAULT: 0D (013*1)	I:O: d	ON	Burner control switches to lockout	Reset button "⏏" pressed repeatedly or while burner is running	Power ON/OFF boiler / acknowledge fault. Press reset button "⏏" once.

Fault message in display window	Standard control	Burner fault indicator (red)	System behavior	Cause of Fault	Corrective action
FAULT: 25	1:2: 5	OFF	Boiler operates with high boiler water temperature.	Emissions test switch "A#" turned to "B" for 30 minutes already.	Turn emissions test switch "A#" to "B".
FAULT: 26	1:2: 6	OFF	Boiler operates with continuous relay test.	Setting mode for maximum or minimum rated input active for 30 minutes already.	Set heating program selector switch to required operating mode or close cover on programming unit.
FAULT: 35	1:3: 5	OFF	Boiler does not activate.	Reset button "11" (pressed while burner is OFF) with emissions test switch "A#" turned to "B".	Turn emissions test switch "A#" to "B" and press reset button "11" once.
FAULT: 94	1:9: 4	OFF	Boiler does not activate.	Basic level of air pressure threshold in standby mode not correct.	Check differential air pressure sensor (see page 35). Check wiring harness and connection to air pressure sensor. Fault will clear if output signal of air pressure sensor is correct.
FAULT: 95	1:9: 5	OFF	Boiler does not activate.	Start-up prevented.	Check wiring, water and gas pressures.
FAULT: 51	1:5: 1	OFF	No DHW function (gas Combi boilers only).	DHW outlet sensor / short circuit	Check sensor/wiring. See coding address "000" . See coding address "0B8" .
FAULT: 59	1:5: 9	OFF	No DHW function (gas Combi boilers only).	DHW outlet sensor / open circuit	Check sensor/wiring. See coding address "000" . See coding address "0B8" .

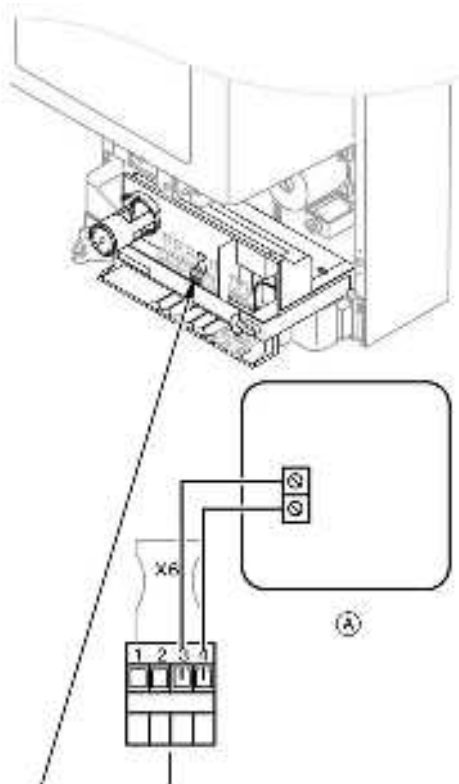
Diagnosis *(continued)***Diagnostics table: Faults without fault display on control unit**

System behavior	Cause of Fault	Corrective action
Supply temperature too cold or too warm.	Fuse	Check fuse (see page 38).
	Variable speed heating circuit pump	Check coding of heating circuit pump
	Heating system type incorrectly coded	Check coding of heating system type
Room temperature too cold or too warm.	Thermostatic radiator valves	Check thermostatic radiator valves (see page 38).
Domestic hot water temperature too cold or too warm.	Circulating pump	Check circulating pump.
Boiler constantly switches on and off.	Flue gas system leaking	Check flue gas system for leaks and perform leak test.

Diagnostics table: Faults on power module

System behavior	Cause of Fault	Corrective action
Boiler has no power (Main power on/off switch on boiler is in "ON" position).	Main power on/off switch	Check switch position.
	Power supply or boiler is not electrically connected.	Ensure that power cord and power supply cable to the boiler are plugged in properly.
	Fuse F1	Replace fuse with same type and of same rating (T2A/250V, slow blow).
Heating pump does not operate (only with expansion board installed).	Electrical connection(s) has/have been made incorrectly.	Ensure that – connections 20, 20A,21 and on the mother board – connections 20, 20A,21 and in the boiler junction box are made correctly.
	Fuse F2A	Replace fuse with the same type and of same rating (T4A/250V, slow blow).

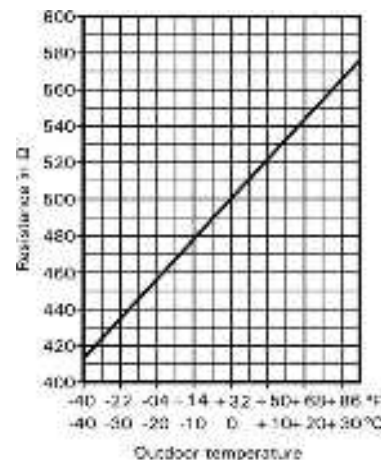
Correction



Scanning the actual and desired temperatures

Check outdoor temperature sensor

1. Disconnect connector "X6" from the control unit.
2. Measure resistance of outdoor temperature sensor (A) at the disconnected connector between "X6.3" and "X6.4", and compare with resistance/outdoor temperature curve shown below.
3. If the value measured differs significantly from the curve, disconnect wires from the sensor and repeat the measurement directly on the sensor.
4. Depending on the result, replace cable or the outdoor temperature sensor.

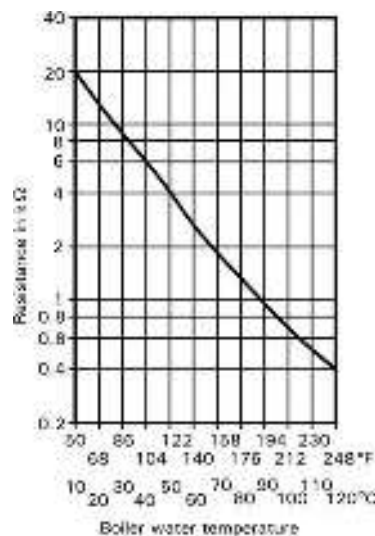


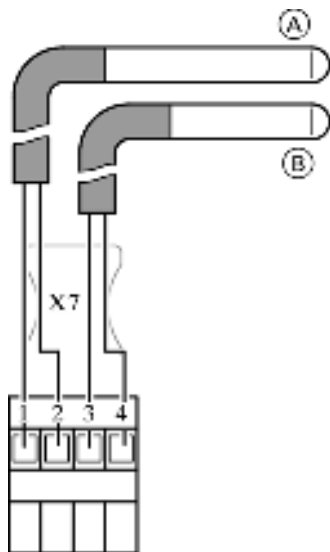
Check boiler temperature sensor

1. Disconnect cables from boiler temperature sensor (A).
2. Measure resistance of the boiler temperature sensor and compare with resistance/boiler water temperature curve shown below.
3. If the value measured differs significantly, replace the sensor.

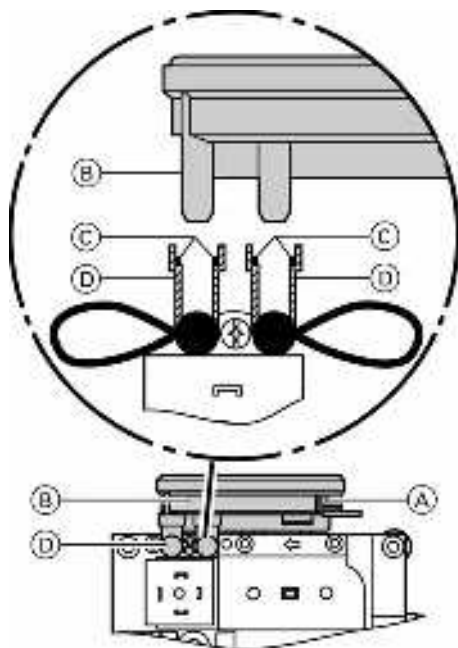
IMPORTANT

As the sensor is in direct contact with the boiler water, the boiler must be drained before changing the sensor.



Correction (continued)**Legend**

- (A) DHW tank temperature sensor
 (B) Low-loss header temperature sensor

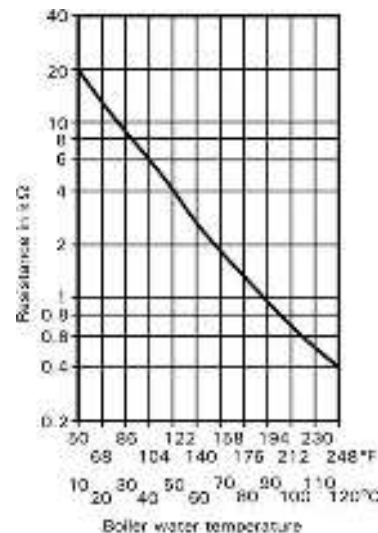
**Transducer power supply**

X14.3 Red
 X14.4 Yellow
 X14.5 Black
 Between red and black: . . . 24VDC
 Between black and yellow:

O₂ at standby 0.2 to 0.3VDC
 at ignition 0.7 to 1.0VDC
 at low fire 0.5 to 0.6 VDC
 at high fire 3.5VDC

Check DHW tank temperature sensor or low-loss header temperature sensor

1. Disconnect connector "X7" from the control unit.
2. Measure resistance of the tank temperature sensor and compare with the curve.
3. If the value measured differs significantly, replace the sensor.
4. Repeat above steps 1 - 3 for checking the low-loss header temperature sensor.

**Check and replace differential air pressure sensor**

In case of fault messages regarding the differential air pressure sensor, check that;

- the sensor was installed correctly.
- the electrical connections were made correctly.
- the O-rings in the adaptor are correctly positioned.
- the test nipples have been sealed with plugs.

If the error message persists, replace sensor.

To check O-rings:

1. Disconnect electrical plug-in connection 164 (A).
2. Remove sensor (B) by pulling off in an upward direction.
3. Check that the two O-rings (C) are correctly located in the mountings (D) of the adaptor.
4. Insert connection nipples of the sensor in the adaptor of the gas combination valve and snap into place.
5. Reconnect the electrical plug-in connection on the sensor.

Correction *(continued)*

```

DIAGNOSIS/RELAYS

O2: HEATING CIRCUIT PUMP A
<PL. 20> ON

> CONTINUE:..... A
> BACK:..... B
> INSTALLER SETUP:..... C
    
```

Relay test with comfortrol menu driven programming unit

Open cover:

Menu option	Button
▶ SYSTEM	"D"
▶ INSTALLER SETUP	"C"
▶ CODE PLEASE:	"B-C-C-B"
▶ DIAGNOSIS	"A"
▶ RELAY TEST	"A"

Select required relay to check its function with the menu option CONTINUE "A" (see below).

Note: Those relays which are not mentioned have no significance. When the relay is selected, only the corresponding unit is addressed. If no call for heat is present, the burner is omitted from the relay test. For installations with Dekamatik-HK mixing valve control, refer to the Dekamatik-HK control manual.

Display	Meaning
01 – 1st stage burner <PL41> ON	Without function (Burner on, pump not running)
02 – Heating circuit pump A <PL20> ON	Circulating pump
03 – Heating circuit pump B <PL20B> ON	Heating circuit pump with extension kit with mixing valve
04 – DHW pump <PL21> ON	DHW heating pump
05 – Not assigned	--
06 – Not assigned	--
07 – Mixing valve HC B <PL52B> CLOSED	Mixing valve CLOSED*1
08 – Mixing valve HC B <PL52B> OPEN	Mixing valve OPEN*1
10 – Modulation <PL90> CLOSED Burner <PL41> ON	Burner (min. input) Circulating pump
11 – Modulation <PL90> OPEN Burner <PL41> ON	Burner (max. input) Circulating pump
13 – Additional heating pump <PL28> ON	Additional heating pump*2
14 – Alarm output <PL56> ON	Alarm output*3

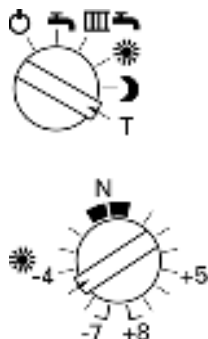
*1 Only in conjunction with mixing valve extension kit

*2 If no low-loss header is installed, pump will be operated as a DHW recirculating pump (see coding addresses "099" and "0B8").

If a low-loss header is installed, the pump will operate as a heating circuit pump (see coding address "0B8").

*3 Only in conjunction with expansion board (optional)

Correction *(continued)*



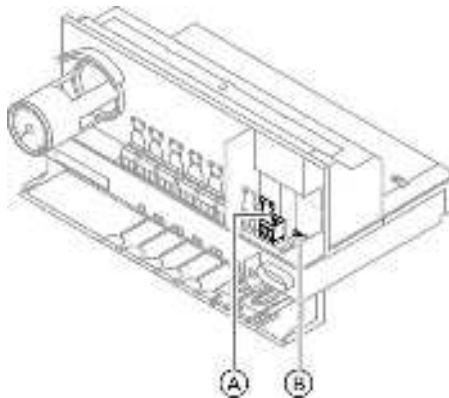
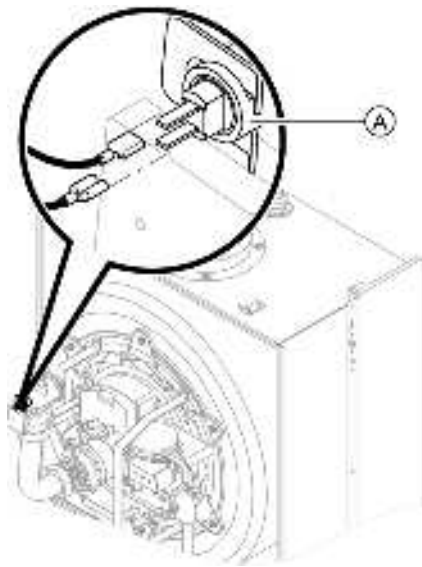
Relay test (standard programming unit)

1. Set the heating program selector switch to "T".
2. Select the required position using rotary selector "☀".

Function	Rotary selector “☼”	Flashing display
Three-way valve drive (DHW cylinder)	N	ℒ:0: 4
Heating circuit pump A	-1	ℒ:0: 2
Heating circuit pump with extension kit for a heating circuit with mixer	-2	ℒ:0: 3
Mixer open	+ 1	ℒ:0: 8
Mixer closed	+ 2	ℒ:0: 7
OHW circulation pump	-4	ℒ:0: d
No function	-3	ℒ:0: 1
Burner start with lower rated output and heating circuit pump ON	-5	Display of boiler water temperature
Burner start with upper rated output and heating circuit pump ON	-6	Fault code display from the fault memory (see page 24).

- Return the heating program selector and rotary selector "☀" to their original positions.

Correction *(continued)*



Check safety fixed high limits (FHL)

If the safety fixed high limits cannot be reset after an automatic lockout of the burner control unit, even though the boiler water temperature is below approx. 194°F / 90°C, perform the following steps:

- Disconnect one cable from each of the fixed high limit switches **A**.
- Check continuity of the fixed high limit switches with a multimeter.
- Remove defective limit switches.
- Coat new limit switches with heat conductive paste and install.
- After start-up, press the reset button "↱" on the control unit.

Check fuse

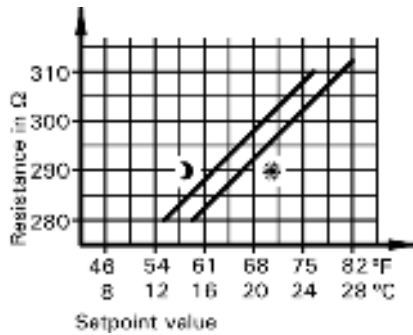
1. Disconnect connector **40** **A** in the control unit.
2. Remove fuse F3 (6.3 A) **B** by holding its grip and pulling out of the base.
3. Check continuity of fuse with a multimeter.

Check thermostatic radiator valves

Check operation and setting.

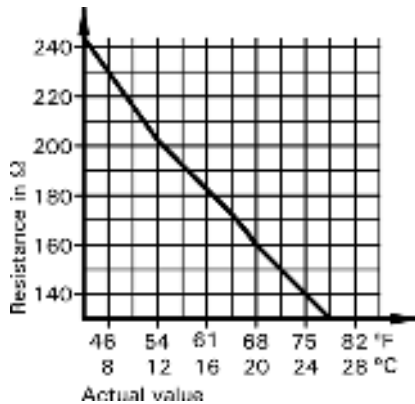
IMPORTANT

The thermostatic radiator valves must not be activated in a room in which the room temperature sensor is installed for room temperature dependent operation. In case of a weather-responsive control, with a room temperature sensor via the RS remote control unit, keep the thermostatic radiator valves fully open.

Correction (continued)

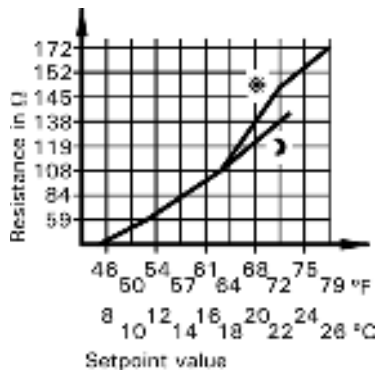
WS remote control

- ⊙ - Setpoint value between terminal "9" and "10"
- ☾ - Setpoint value between terminal "9" and "11"



RS remote control

Room temperature sensor (NTC) curve between terminal "9" and "13"



RS remote control

- ⊙ - Setpoint value between terminal "10" and "14"
- ☾ - Setpoint value between terminal "11" and "14"

Check WS remote control unit (Accessory)

Check RS remote control unit (Accessory)

The WS remote control unit is used for setting the desired room temperature values from any room in the building. The RS remote control unit is used for setting the desired room temperature values from the main living room (with room temperature dependent control).

Functionality check

Resistance measurement and control unit response test. If the presence of a fault is suspected in the customer's connecting cable, temporarily connect the remote control directly to the control unit and perform test. To calculate total resistance (NTC), add the actual value and the current resistance setpoint value.

IMPORTANT

In most cases, faulty behavior of the control unit is due to the installation of the RS remote control unit in an unsuitable location.

This can lead to draft phenomena caused by cavities behind the remote control or by the stack effect of empty pipes.

Wiring diagram: see section entitled "Additional Information".

Technical Data

Rated voltage:230 VAC
 Rated frequency:60 Hz
 Rated current:2.5 A ~

Max. ambient temperature

- at operation:32 to 104°F (–0 to +40°C)
- when storing and transporting:–4 to +149°F
 (–20 to +65°C)

Setting of adjustable
 electronic high limit167°F (75°C)

Setting of fixed high limit
 safety cut-out:210°F
 (fixed setting)99°C

Main fuse: max. 16A

Power consumption

- Circulating pump:max. 115 W
- Burner: max.60 W
- Control unit:max. 10VA



WARNING

Always ensure the correct orifices are installed in the boiler. See table below.
 The boiler must achieve the output stated on the rating plate. Do not overfire the boiler.

		Standard heating boiler	
Boiler Model	Model No.	WB2 11-44	WB2 15-60
Natural gas			
CSA input	MBH	55-172	80-230
CSA output/DOE	kW	16-50	23-67
heating capacity	MBH	49-153	71-205
Net I = B = R rating* 1	kW	14-44	21-60
	MBH	133	178
Propane gas			
CSA input	MBH	55-155	37-112
CSA output/DOE	kW	16-45	11-33
heating capacity	MBH	49-138	33-101
Net I = B = R rating* 1	kW	14-40	10-30
	MBH	120	166
Min. gas supply pressure			
Natural gas	"w.c.	4	7
Propane gas	"w.c.	11	11
Max. gas supply pressure* 2			
Natural gas	"w.c.	14	14
Propane gas	"w.c.	14	14
Flue gas* 3			
Temperature (at boiler return			
water temp. of 86°F/30°C)			
– at rated full load	°F/°C	95/35	104/40
– at rated partial load	°F/°C	91/33	95/35
Temperature (at boiler water			
return temp. of 140°F/60°C)	°F/°C	149/65	158/70
Max. natural gas flow rate	ft ³ /h	172	230
	m ³ /h	4.87	6.51
Max. propane gas flow rate	ft ³ /h	62	85.6
	m ³ /h	1.75	2.42
Burner orifices diameter			
Natural gas	Ø mm	E44) 8.40	E60) 9.00
Propane gas	Ø mm	(P44) 6.10	(P60) 6.70

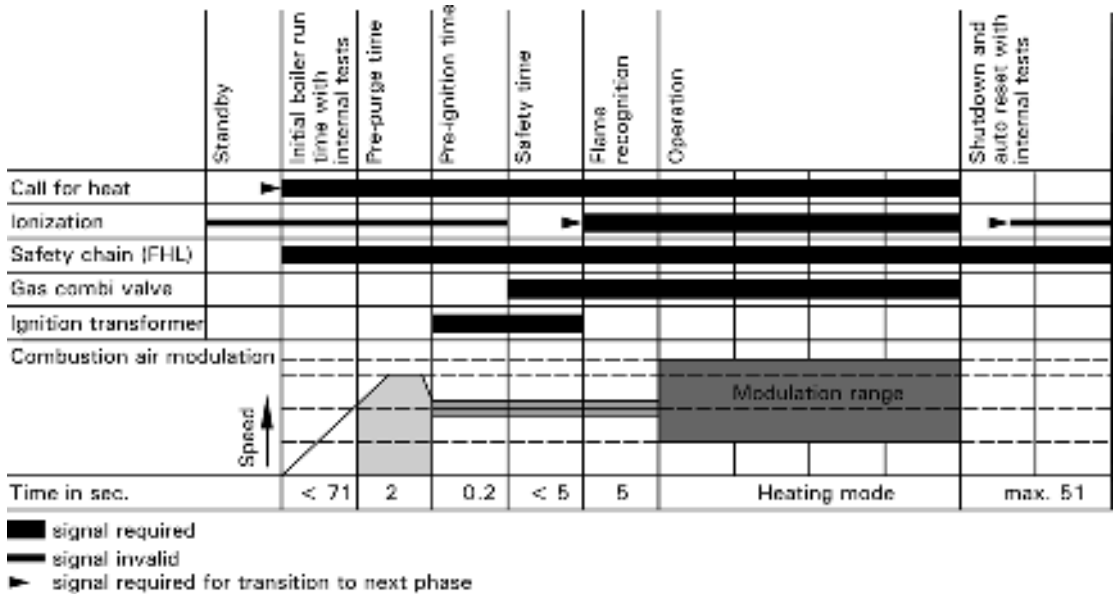
*1 Net I = B = R rating based on piping and pick-up allowance of 1.15.

*2 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.

*3 Measured flue gas temperature with combustion air temperature of 68°F / 20°C.

Burner Control Unit LGM 29.XX

Program sequence



Standby

Waiting time until next call for heat start. Differential air pressure sensor must be reset and the speed feedback signal (HALL) must record that fan is stationary.

Start-up and initial boiler run time.

Start takes place when a call for heat is received from the temperature controller, provided no air pressure is detected. The fan motor receives voltage. The speed signal (HALL) and the differential air pressure voltage signal must be received by the burner control unit LGM 29.XX within approx.

70 seconds, otherwise a fault message is transmitted. During the initial boiler run time, self-tests take place within the burner control unit LGM 29.XX.

Pre-purge time

The combustion chamber is flushed out by the fan.

Pre-ignition time

Ignition spark is initiated.

Safety time

The gas combination valve coils receive voltage (energized), flame monitoring is activated. Ignition is switched off after approx. 4 seconds.

If the flame is not recognized during ignition, automatic lockout takes place.

Burner operation (green LED is lit)

Burner operation begins after the safety time has elapsed, and flame recognition has taken place successfully.

The burner control unit modulates from its ignition load according to the currently selected setpoint value. After controlled shutdown (heat demand is satisfied), auto reset to the standby mode takes place.

Shutdown

The gas valve is de-energized. Internal tests are performed.

Test time

Auto reset is the end of the shutdown phase after controlled switch-off. Auto reset also takes place after resetting, failure of the flame during operation or after a call for heat is terminated before the start of the safety time.

Safety chain (FHL)

The fixed high limits must be closed at all times during the entire period of operation, otherwise automatic lockout takes place immediately. Burner control unit LGM 29.XX The burner control unit LGM 29.XX performs self-tests in the following instances:

- when the burner has been in continuous operation for more than 24 hours,
- before each time the burner is switched on,
- after each time the burner is switched off.

Behavior in the event of malfunctions

If faults are detected, either no start-up takes place or automatic lockout is triggered. In case of all safety relevant malfunctions, the gas supply is cut off.

Automatic lockout takes place

- when flame establishment fails before the end of the flame recognition time,
- in the event of an uninterrupted delay of the flame signal for more than 3 seconds,
- in the event of an incorrect differential air pressure sensor signal longer than 70 seconds,
- in the event of internal faults.

In the event of a line voltage drop, the burner control unit either operates without a fault indication function or goes into reset position (gas valve closed).

When the line voltage reaches its normal level again, burner control is ready for another start-up.

Control Unit for Weather-Responsive Operation with programming unit

Functional description

Space heating mode

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

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 167°F / 75°C by the electronic temperature control. The maximum adjustable high limit of the boiler is 180°F / 82°C.

The fixed high limits of the safety chain interlock the burner control unit at 210°F/99°C boiler water temperature.

Domestic hot water supply with Combi boiler

When the water flow switch detects that hot water is being drawn (> 0.8 USG/3 L), the burner and circulating pump switch on, and the 3-way solenoid valve switches to domestic hot water production.

The burner modulates based on the required domestic hot water outlet temperature and is limited by the electronic limit thermostat on the boiler side. When the comfort function is activated, the plate heat exchanger is kept at a standby temperature of "108 °F/42 °C on" and "115°F / 46°C off".

Domestic hot water supply with gas-fired space heating boiler

Domestic hot water heating is activated when the tank temperature is 4.5°F/2.5°C below the tank temperature setpoint value.

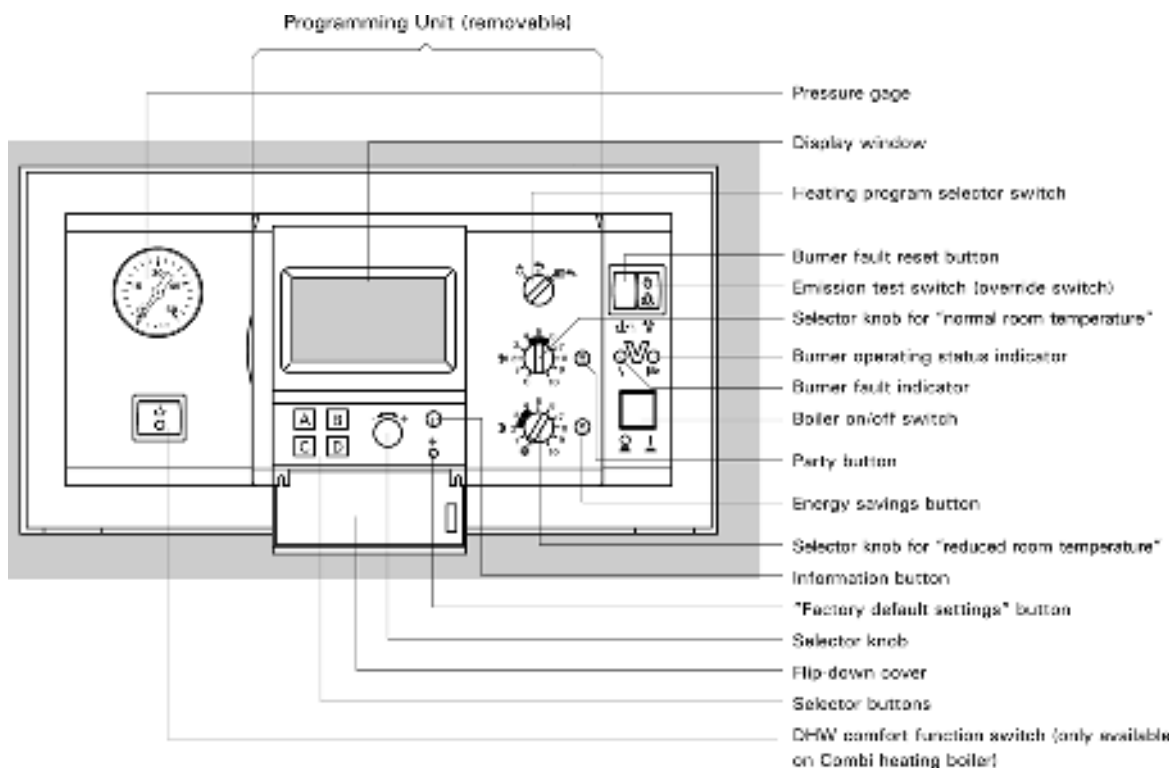
The burner and the tank DHW pump are switched on. In the factory default setting, the desired boiler water temperature is set at 36°F/20°C above the tank temperature setpoint value. When the actual tank temperature rises 4.5°F/2.5°C above the tank temperature setpoint value, the burner is switched off and the time delay function of the tank DHW pump is activated.

Additional heating function (anti-legionnaire function) for domestic hot water production

The additional heating function is activated when an activation period of 10 minutes is selected (e.g. 22.10 to 22.20 hrs).

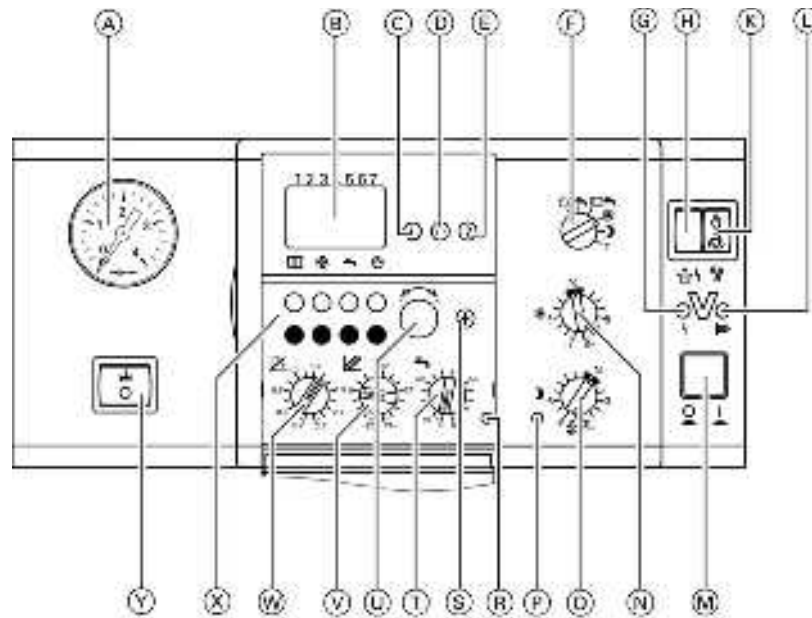
This period must lie outside the switching times for normal domestic hot water heating so that the signal is recognized by the control unit. The temperature setpoint value for additional heating is set in coding address "0A7".

Comfortrol Menu driven programming unit



Control Unit for Weather-Responsive Operation with programming unit *(continued)*

Standard programming unit



Legend

- (A) Gauge
- (B) Display
- (C) Time setting
- (D) Weekday setting
- (E) Scanning temperatures
- (F) Heating program selector switch
 - ⏻ Standby mode
 - 🔥 Only DHW
 - 🔥🔥 Heating and DHW
 - ☀ Constant standard room temperature
 - 🌙 Constantly reduced room temperature
 - T Test position
- (G) Burner fault display
- (H) Burner fault reset
- (K) Emissions test switch
- (L) Burner operation display
- (M) System ON/OFF switch
- (N) ☀ Rotary selector
"Standard room temperature"
- (O) 🌙 Rotary selector
"Reduced room temperature"
- (P) Display
"Reduced room temperature"
- (R) Display "DHW heating"
- (S) Key "Base settings"
- (T) 🔥 Rotary selector
"DHW temperature"
- (U) ⚡ Rotary selector
- (V) ⚡ Rotary selector
"Level of the heating curve"
- (W) ⚡ Rotary selector
"Slope of the heating curve"
- (X) Start-up and shutdown timing keys
- (Y) Comfort function switch
(only for gas-fired combination boilers)

Control Unit for Weather-Responsive Operation with programming unit *(continued)*

Heating system types

The control unit is adjusted to the system equipment. In the factory default setting, the heating system type is coded "000:000".

- The coding is set automatically when a tank temperature sensor is connected (for operation with a DHW tank).
- The control unit must be re-coded manually if a heating circuit with mixing valve is connected: For this purpose the corresponding heating system type is coded in the coding address "000". For other settings please note the numbers of system types. See page 45 for information of how to access the required coding level.

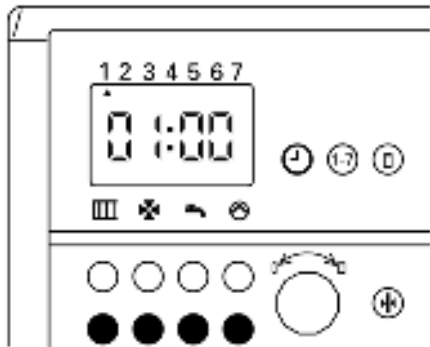
Note: If only heating circuit B with mixing valve is connected (i.e. there is no direct-connected heating circuit), the coding addresses "044, 045 and 046" must each be set to the value "001".

Refer to the Vitodens 200 Installation Instructions for piping layout details.

	<p>System type "000:000"</p> <ul style="list-style-type: none"> ■ Heating system with one heating circuit without mixing valve, without DHW heating. <p>or</p> <ul style="list-style-type: none"> ■ Heating system with low-loss header and heating circuits connected downstream with separate heating circuit control unit (Dekamatik-HK), without DHW heating.
	<p>System type "000:001"</p> <ul style="list-style-type: none"> ■ Heating system with one heating circuit without mixing valve, with DHW heating <p>or</p> <ul style="list-style-type: none"> ■ Heating system with low-loss header and heating circuits connected downstream with separate heating circuit control unit (Dekamatik-HK), with DHW heating.
	<p>System type "000:002"</p> <ul style="list-style-type: none"> ■ Heating system with one heating circuit with mixing valve, without DHW heating (with or without low-loss header) <p>or</p> <ul style="list-style-type: none"> ■ Heating system with one heating circuit with mixing valve, and one heating circuit without mixing valve, without DHW heating (with or without low-loss header).
	<p>System type "000:003"</p> <ul style="list-style-type: none"> ■ Heating system with one heating circuit with mixing valve, with DHW heating (with or without lowloss header) <p>or</p> <ul style="list-style-type: none"> ■ Heating system with one heating circuit with mixing valve, and one heating circuit without mixing valve, with DHW heating (with or without low-loss header).

*1 Circulating pump and check valve are external to the boiler and not internal as illustrated.

Control Unit for Weather-Responsive Operation with programming unit (continued)



Calling Up Coding Level 1

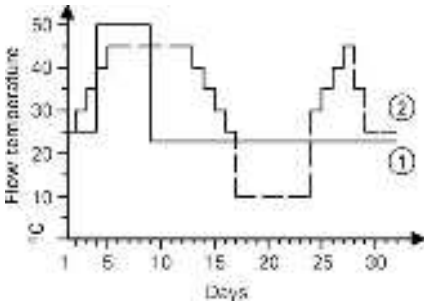
- 1. Calling up the coding level
Simultaneously press the red key “↩” and the blue key “X”.
Hold the keys down until after approx. 5 seconds “01:00” is displayed.
- 2. Coding address selection
Press key “⊕” and turn rotary selector “↩” clockwise, until the required coding address is displayed.
- 3. Changing the coding address
Press key “1-7” and turn the rotary selector “↩” until the figure of the selected value appears.
- 4. Terminating coding; Press the red key “III”.

Summary coding level 1

IMPORTANT

Coding addresses that are not described here must not be changed.

Coding in the as delivered condition Address: value	Function mode	Code change Address: value	Possible change
Boiler			
03:00	No DHW heating	03:01	DHW cylinder temperature control.
		03:02 * 1	Cylinder temperature control (optimized)
			Screed drying acc. to two optional temperature- time profiles. Observe DIN 4725-2.
		03:14 03:15	Screed-drying acc. to temperature profile ① (DIN 4725)*2 Screed drying acc. to temperature profile ② (ZV Parquet and under-floor technology)*2



* 1 Automatic adjustment, if a DHW cylinder temperature sensor is connected, can be manually changed to “01”.
* 2 After this function is completed, the system automatically changes over to the operating mode “Heating and DHW”

Control Unit for Weather-Responsive Operation with programming unit *(continued)***Summary coding level 1** (continued)

Coding in the as delivered condition Address: value	Function mode	Code change Address: value	Possible change
Boiler (continued)			
06:10	Maximum temperature limit set to 85°C	06:00 to 06:15	Max temperature limit variable between 35 and 110°C
30:00	External heating program changeover	30:01	External request
35:00	External demand or external heating program change blocked	35:01	External demand or external heating program change enabled
40:01	Boiler water temp. display	40:00	Time display
Heating circuits			
04:00 *1	One heating circuit without mixer or heating system with low loss header, without DHW heating	04:01 *1 04:02 04:03 *1	One heating circuit without mixer or heating system with low loss header, plus DHW heating One heating circuit without mixer, one heating circuit with mixer, without DHW heating One heating circuit without mixer, one heating circuit with mixer and with DHW heating
05:08 *1	Maximum temperature limit set to 75°C	05:00 to 05:15	Max temperature limit variable between 35 and 110°C
07:01 *2	Differential temperature set to 8 K	07:00 to 07:15	Differential temperature variable between 6 and 36 K
08:09 *2	Heating circuit without mixer: Heating curve slope "I _Z " set to "1.4"	08:00 to 08:15	Heating circuit without mixer: Slope "I _Z " variable between "0.2" and "2.6"
22:00	Heating circuit pump "ON" for heating system designs "04:02" and "04:03" (connection to plug "20 A")	22:01	Heating circuit pump "OFF" for heating system designs "04:02" and "04:03"

*1 For systems without mixer, the address without mixer and with recognition of the DHW heating will be set automatically, and therefore must be manually reset.

*2 Only for heating system designs "04:02" and "04:03".

Control Unit for Weather-Responsive Operation with programming unit *(continued)*

Summary coding level 1 (continued)

Coding in the as delivered condition Address: value	Function mode	Code change Address: value	Possible change
DHW cylinder			
10:01	The circulation pump starts immediately.	10:00	Circulation pump will be switched on subject to boiler temperature
13:00	Circulation pump with run on up to max. 10 min	13:01	Circulation pump without run on
14:00	Set boiler water temp. for DHW cylinder loading acc. to set DHW cylinder temp. + 20 K	14:01	Set boiler water temperature during DHW cylinder loading equals 78 °C
15:01	With DHW priority control	15:00	Without DHW priority control
21:00	Optional connection DHW circulation pump	21:01	Output signal DHW heating enabled (not when operating with a boiler circuit pump)
23:00	Setting range for DHW temperature 32 to 60 °C	23:01	Setting range for DHW temperature 52 to 80 °C
Heating circuit pump			
11:01	Heating circuit pump speed for reduced mode acc. to coding address "044: ____" of coding level 2	11:00	Heating circuit pump speed for reduced mode acc. to coding address "046: ____" of coding level 2
12:01	With variable speed heating circuit pump (automatic recognition)	12:00	Stepped heating circuit pump (e.g. transfer mode for service)
16:01	With heating circuit pump logic function	16:00	With heating circuit pump logic function
17:00	Heating circuit without mixer present	17:01	Heating circuit without mixer present
Remote control			
20:00	Without WS or RS remote control unit	20:01	With WS or RS remote control unit* 1
32:01 33:00	Weather-compensated mode in heating and reduced mode	32:00 * 2 33:00 * 2	With room temperature hook-up in heating and reduced mode
		32:00 * 2 33:01 * 2	Weather-compensated mode in heating mode With room temperature hook-up in reduced mode

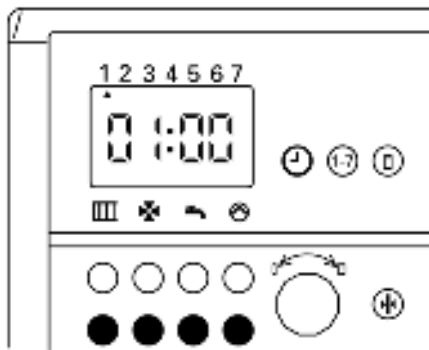
* 1 The address is automatically set and must be manually reset.

* 2 Do not adjust in the RS remote control connection.

Control Unit for Weather-Responsive Operation with programming unit *(continued)***Summary coding level 1** (continued)









Coding in the as delivered condition Address: value	Function mode	Code change Address: value	Possible change
Changeover between summer and winter			
47:01	Automatic summer / winter changeover	47:00	Manual summer / winter changeover
50:03	Summer starts: March	50:01 to 50:12	January to December
51:05	Summer starts: last day of the week	51:01 to 51:05	Week 1 to Week 5 of the selected month
52:07	Summer starts: last day of the week (Sunday)	52:01 to 52:07	Monday to Sunday
53:10	Winter starts: October	53:01 to 53:12	January to December
54:05	Winter starts: last day of the week	54:01 to 54:05	Week 1 to Week 5 of the selected month
55:07	Winter starts: last day of the week (Sunday)	55:01 to 55:07	Monday to Sunday

Control Unit for Weather-Responsive Operation with programming unit *(continued)*



Calling Up Coding Level 2

Note: For systems with wall mounting fixtures, the programming unit must be plugged into the control unit, if coding is to be carried out at coding level 2.

1. Calling up the coding level 1
Simultaneously press the red key " and the blue key "".
Hold the keys down until after approx. 5 seconds "01:00" is displayed.
2. Calling up the coding level 2
Simultaneously press the red key " and the blue key "".
Hold both keys down until after approx. 5 seconds, the display changes (e. g. to "o:000").
3. Selecting the coding address
Press key " and turn rotary selector " clockwise, until the required coding address is displayed.
4. Changing the coding address
Press key "1-7" and turn the rotary selector " until the figure of the selected value appears.
5. Terminating coding
Press the red key "".

Coding in the as delivered condition Address: value	Function mode	Code change Address: value	Possible change
Boiler			
038:040	Minimum flow temp. in heating mode	038:020 to 038:127	--
042:075	Maximum boiler water temp. in heating mode	042:020 to 042:127	Max. possible boiler temperature 82°C
102:075	Set boiler water temperature for external demand 75°C	102:000 to 102:127	Setting range of the set boiler water temp. 0 to 127°C (max. possible boiler water temp. 82°C)
108:000	Signal external blocking enabled: see the following table	108:001 to 108:007	Signal external blocking enabled: see the following table

Control Unit for Weather-Responsive Operation with programming unit *(continued)***Summary coding level 2** (continued)

Modification types - coding address 108 "External blocking"

Coding	Heating circuit pump	Heating circuit with mixing valve (extension kit)		Tank (Circulating pump for tank heating)	Burner
		Heating circuit pump	Mixing valve		
108:000	×	×	×	×	Blocked
108:001	OFF	OFF	CLOSED	OFF	Blocked
108:002	×	×	×	OFF	Blocked
108:003	×	OFF	CLOSED	×	Blocked
108:004	OFF	×	×	×	Blocked
108:005	OFF	×	×	OFF	Blocked
108:006	OFF	×	×	×	Blocked
108:007	OFF	OFF	CLOSED	×	Blocked

× = in normal control mode

Coding in the as delivered condition Address: value	Function mode	Code change Address: value	Possible change
Boiler (continued)			
125:000	Signal external demand activated: see the following table	125:001 to 125:011	Signal external demand activated: see the following table

Modification types coding address 125 "External demand"

Coding	Heating circuit pump	Heating circuit with mixing valve (extension kit)		Tank (Circulating pump for tank heating)	Burner
		Heating circuit pump	Mixing valve		
125:000	ON	OFF	CLOSED	OFF	Will be maintained at the set value acc. to coding address "102"
125:001	OFF	OFF	CLOSED	OFF	
125:002	×	OFF	CLOSED	OFF	
125:003	OFF	×	×	OFF	
125:004	ON	×	×	OFF	
125:005	×	×	×	OFF	--
125:006	OFF	OFF	CLOSED	×	--
125:007	ON	OFF	CLOSED	×	--
125:008	×	OFF	CLOSED	×	--
125:009	OFF	×	×	×	--
125:010	ON	×	×	×	--
125:011	×	×	×	×	--

× = in normal control mode

Control Unit for Weather-Responsive Operation with programming unit *(continued)*

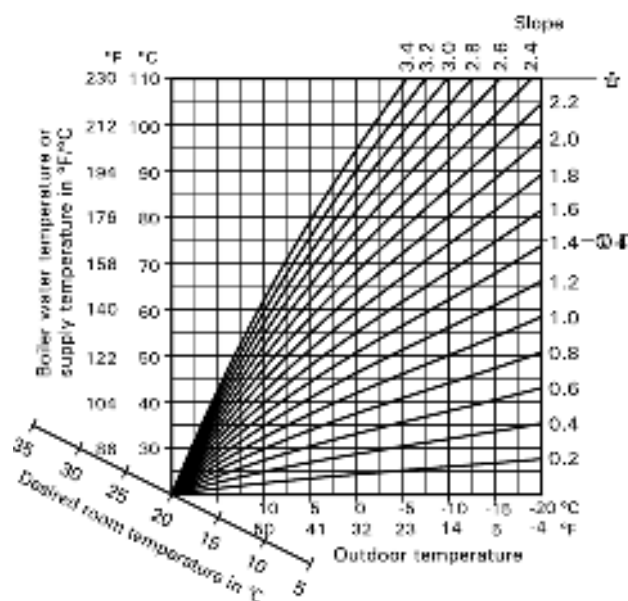
Coding in the as delivered condition Address: value	Function mode	Code change Address: value	Possible change
Heating circuit pump			
044:020	Minimum heating circuit pump speed	044:001 to 044:100 *1	Lowest value for the lower heating circuit pump speed (do not set below: "020") Highest value for lower heating circuit pump speed
045:065	Highest heating circuit pump speed	045:001 to 045:100 *1	Lowest value for upper heating circuit pump speed Highest value for upper heating circuit pump speed
046:045	Heating circuit pump speed in reduced mode	046:001 to 046:100 *1	Lowest heating circuit pump speed in reduced mode Highest heating circuit pump speed in reduced mode
DHW cylinder			
100:020 *2	Differential temperature between the set boiler water temperature and the set DHW cylinder temperature during DHW heating	100:010 to 100:050	Differential temperature setting range 10 to 50°C
107:060	Temperature supplementary function DHW heating (DHW quickly to 60°C)	107:061 to 107:090	Setting range between 61 and 90°C (max. possible boiler water temperature 82°C)

*1 Each step represents approx. 20 rpm

*2 Only effective with coding 14 00.

Note: For all non-listed coding addresses "255" will be displayed.

Control Unit for Weather-Responsive Operation with programming unit *(continued)*



Heating curve

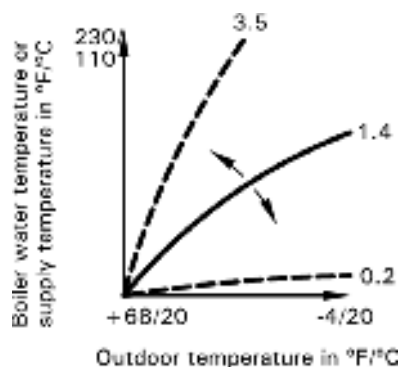
The heating curves represent the relationship between the outdoor temperature and the boiler water or supply temperature.

Put simply: The lower the outdoor temperature, the higher the boiler water or supply temperature. In turn, the room temperature is dependent on the boiler water or supply temperature.

If a different room temperature is set, the curves are shifted parallel to the desired room temperature axis.

Factory settings:

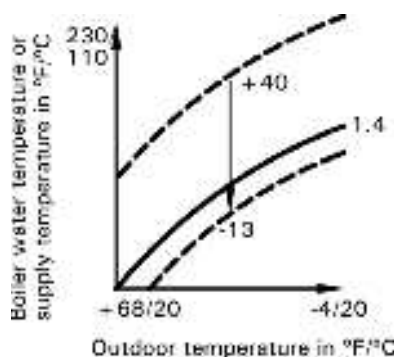
- slope "X" = 1.4
- shift "Z" = 0



1. To change the slope

Open cover on programming unit and go through menu as follows:

Menu option	Button
► HEATING CIRCUIT A	"A"
or	
HEATING CIRCUIT B	"B"
► HEATING CURVE	"B"
► CHANGE	"A"

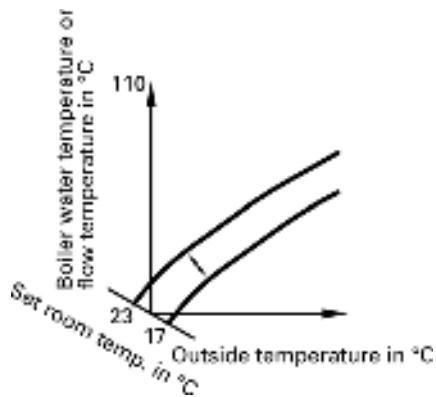


2. To change the shift

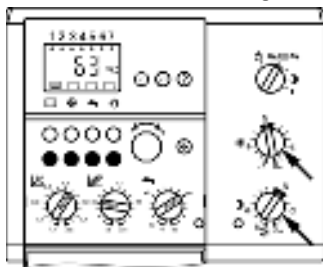
Open cover on programming unit and go through the menu as follows:

Menu option	Button
► HEATING CIRCUIT A	"A"
or	
HEATING CIRCUIT B	"B"
► HEATING CURVE	"B"
► CHANGE 2 ×	"A"

Control Unit for Weather-Responsive Operation with programming unit *(continued)*



Control unit setting:

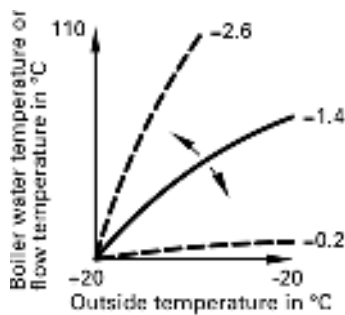


Adjusting heating curves

Room temperature set value

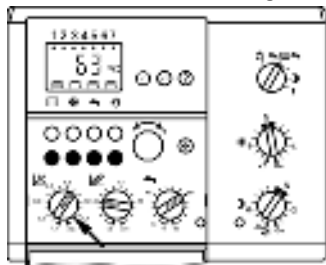
Designs "04:00" and "04:01":
Heating circuit without mixer

Designs "04:02" and "04:03":
Heating circuit with mixer



Designs "04:02" and "04:03":
Heating circuit without mixer

Control unit setting:



Heating curve slope

Designs "04:00" and "04:01":
Heating circuit without mixer

Designs "04:02" and "04:03":
Heating circuit with mixer

Designs "04:02" and "04:03":
Heating circuit without mixer
Setting of coding address "08"

Slope setting range

"08:00" = 0.2 to "08:15" = 2.6 (Change per step: 0.2)

As delivered condition: "08:09" = 1.4.

Setting of coding address "08"

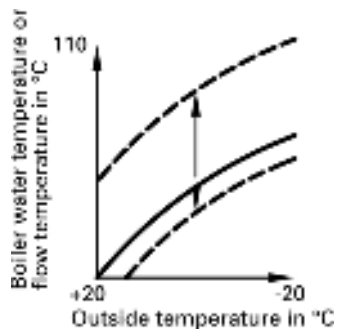
Slope setting range

"08:00" = 0.2 to "08:15" = 2.6

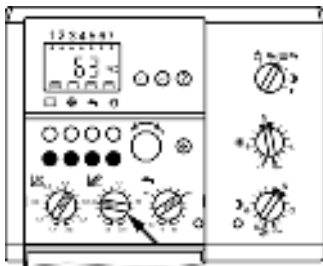
(Change per step: 0.2)

As delivered condition: "08:09" = 1.4.

Control Unit for Weather-Responsive Operation with programming unit *(continued)*



Control unit setting:



Adjusting heating curves (cont.)

Heating curve level

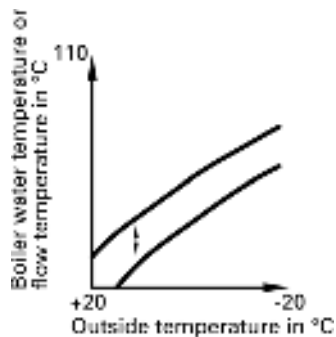
Designs "04:00" and "04:01":

Heating circuit without mixer

Designs "04:02" and "04:03":

Heating circuit with mixer

Designs "04 02" and "04 03"



Differential temperature

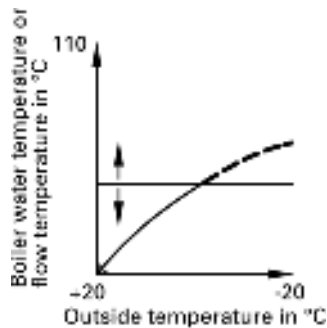
Setting of coding address "07"

Differential temperature setting range from "07:00" = 6 K to "07:15" = 36 K (Change per step: 2 K)

As delivered condition: "07:01" = 8 K.

Note: If Vitotronic 050 is connected, the set differential temperatures add up (as delivered condition respectively 8 K). Therefore set the differential temperature on Vitotronic 050 appropriately lower.

Control Unit for Weather-Responsive Operation with programming unit *(continued)*



Maximum temperature limit

Heating circuit without mixer

Setting of coding address "06"

Setting range 0 for max. temp. from "06:01" = 40°C to "06:15" = 110°C (Change per step: 5 K)

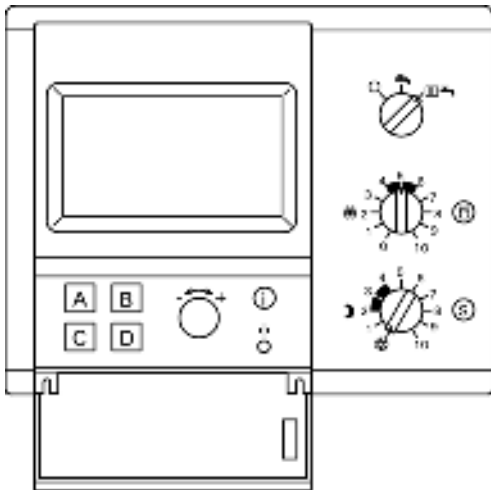
As delivered 0 condition: "06:10" = 85°C.

Heating circuit with mixer

Setting of coding address "05"

Setting range 0 for max. temp. from "05:00" = 35°C to "05:15" = 110°C (Change per step: 5 K)

As delivered 0 condition: "05:08" = 75°C.



Accessing coding addresses

The coding of the programming unit is performed by using the "A", "B", "C" and "D" buttons and the "G" selector knob.

Open cover:

Menu option	Button
► SYSTEM	"D"
► INSTALLER SETUP	"C"
► CODE PLEASE:	"B-C-C-B"
► CODING 1	"B"
or	
CODING 2	"C"

The desired coding address is selected by pressing button "A" (CONTINUE) or "B" (BACK).

The respective coding address is changed with the "←→" selector knob (CHANGE). The change is confirmed with button "D" (change is stored).

Note: All the settings are performed in the "Installer Setup" menu which contains "Coding 1" (main coding addresses in plain language) and "Coding 2" (all coding addresses). Changes made and confirmed in Coding Level 1 are automatically adopted in Coding Level 2 and vice versa.

Control Unit for Weather-Responsive Operation with programming unit *(continued)***Overview of coding addresses**

Coding addresses not discussed in this section must not be changed.

See page 50 for information of how to access coding addresses.

Coding (factory default setting) Address: Value	Function mode	Coding change Address: Value	Possible changes
000:001*1	One heating circuit without mixing valve, system with domestic hot water heating	000:000 000:002*2 000:003*1, 2	One heating circuit without mixing valve, system without domestic hot water heating One heating circuit with mixing valve, system without domestic hot water heating One heating circuit with mixing valve, system with domestic hot water heating
001:000	Do not change	--	--
003:001	DHW tank With priority switching over tank heating circuit pump(s)	003:000	Without priority switching over heating circuit pump(s)
004:000	Do not change	--	--
005:001	Heating circuit pump With heating circuit pump logic function	005:000	Without heating circuit pump logic function
006:001	Heating circuit pump Heating circuit pump speed in reduced range as per coding address "044:..."	006:000	Heating circuit pump speed in reduced range as per coding address "046:..."
007:000	DHW tank Setting range of domestic hot water temperature 50 to 140°F / 10 to 60°C	007:001	Setting range of domestic hot water temperature 50 to 158°F / 10 to 70°C IMPORTANT Note max. tank water temperature. IMPORTANT Do not adjust domestic hot water temperature more than 158°F/70°C.
008:000	Do not change	--	--
009:000	Programming unit Display of boiler water temperature	009:001	Display of outdoor temperature
010:000	Do not change	--	--
011:000	External call for heat or external switching of heating program blocked	011:001	External call for heat or external switching of heating program active at X4.1 - X4.2
012:000	Do not change	--	--
013:000	Heating circuit pump without variable speed operation (e.g. as temporary measure for servicing)	013:001	Heating circuit pump With variable speed heating circuit pump (automatic recognition)
014:000*3	Party button "YY" effective for heating circuit B	014:001*3	Party button "YY" effective for heating circuit A and heating circuit B
015:001	Do not change	--	--

*1 Coding for systems with domestic hot water heating is automatically recognized.

*2 These codings also apply on systems with one heating circuit without mixing valve and one heating circuit with mixing valve.

*3 Only on heating system types "000:002" and "000:003" (heating systems with one heating circuit with mixing valve).

Control Unit for Weather-Responsive Operation with programming unit *(continued)***Overview of coding addresses** *(continued)*

Coding (factory default setting) Address: Value	Function mode	Coding change Address: Value	Possible changes
016:000	Do not change	--	--
017:001	Do not change	--	--
018:000	Circulating pump with time delay function	018:001	Circulating pump without time delay function
019:000	Programming unit or remote control Weather-responsive operation (WS function) for all connected heating circuits	019:001 * 1 019:002 * 1	<ul style="list-style-type: none"> ■ On systems with one heating circuit without mixing valve or one heating circuit with mixing valve: Operation with room temperature dependent control (RS function) ■ On systems with one heating circuit without mixing valve and one heating circuit with mixing valve: Weather-responsive operation (WS function) for heating circuit with mixing valve and operation with room temperature dependent control (RS function) for heating circuit with mixing valve ■ On systems with one heating circuit without mixing valve or one heating circuit with mixing valve: Weather-responsive operation (WS function) in normal heating mode and operation with room temperature dependent control (RS function) in reduced operation ■ On systems with one heating circuit without mixing valve and one heating circuit with mixing valve: Weather-responsive operation (WS function) for heating circuit without mixing valve and on weather responsive basis in normal heating mode and operation with room temperature dependent control in reduced operation (WS/RS function) for heating circuit with mixing valve
020:000	Heating circuits Without WS or RS remote control unit	020:001	With WS or RS remote control unit * 2
027:000	External switching of heating program	027:001	External call for heat
028:000	Boiler During DHW production, the boiler water temp. is max. 36°F / 20°C higher than the desired tank water temp.	028:001	During domestic hot water production, the boiler water temperature is limited to 172°F / 78°C by the limit thermostat
029:001	Do not change	--	--
033:000	Do not change	--	--
034:000	Do not change	--	--
036:000	Do not change	--	--
038:020	Minimum supply temperature in heating mode	020 to 127	Min. possible supply temperature 68 to 261°F / 20 to 127°C

* 1 Change only feasible if programming unit is mounted on a wall-mount base.

* 2 Address set automatically, must be reset manually.

Control Unit for Weather-Responsive Operation with programming unit *(continued)***Overview of coding addresses** *(continued)*

Coding (factory default setting) Address: Value	Function mode	Coding change Address: Value	Possible changes
042:070	Boiler water temperature in heating mode	000 to 82	Max. adjustable temperature limit setting 180°F / 82°C
044:030	Heating circuit pump Minimum rotational speed of heating circuit pump; approx. 1100 rpm	044:001 to 044:100*1	Lowest value for maximum rotational speed of heating circuit pump; approx. 700 rpm Highest value for maximum rotational speed of heating circuit pump; approx. 2700 rpm
045:065	Heating circuit pump Maximum rotational speed of heating circuit pump; approx. 1750 rpm	045:001 to 045:100*1	Lowest value for maximum rotational speed of heating circuit pump; approx. 700 rpm Highest value for maximum rotational speed of heating circuit pump; approx. 2700 rpm
046:045	Heating circuit pump Rotational speed of heating circuit pump in reduced operation; approx. 1200 rpm	046:001 to 046:100*1	Lowest value for rotational speed of heating circuit pump in reduced operation; approx. 700 rpm Highest value for rotational speed of heating circuit pump in reduced operation; approx. 2700 rpm
049:___	Hours run ("hundreds") at 3rd place from left	049:000	Reset hours run
050:___	Hours run ("units") at 3rd place and "tens" at 2nd place from left	050:000	Reset hours run
055:040	Do not change	--	--
085:032	Do not change	--	--
086:032	Do not change	--	--
088:007	Do not change	--	--
089:008	Do not change	--	--
099:000	Possibility for connecting a DHW recirculating pump (on timer schedule)	099:001	Output signal for domestic hot water production active (ON), whenever there is a call for DHW only
0A0:020*2	Differential temperature between desired boiler water temperature and desired tank temperature with domestic hot water heating	0A0:10 to 0A0:50	--
0A1:000	Do not change	--	--
0A2:075	Boiler Desired boiler temperature with external request 167°F / 75°C	0A2:032 to 0A2:127	Setting range of desired boiler water temperature 90 to 261°F / 32 to 127°C (max possible boiler water temperature 180°F / 82°C)
0A3:___	Do not change	--	--

*1 One increment corresponds to approx. 20 rpm.

*2 Only effective with coding 028:000.

Control Unit for Weather-Responsive Operation with programming unit *(continued)*

Overview of coding addresses *(continued)*

Coding (factory default setting) Address: Value	Function mode	Coding change Address: Value	Possible changes
0A4:255	Do not change	--	--
0A5:255	Do not change	--	--
0A6:255	Do not change	--	--
0A7:060	DHW tank Setpoint value for "Additional function for domestic hot water heating" ("Anti-Legionnaire-Function" – domestic hot water heated briefly to 140°F / 60°C)	A07:061 to A07:070	Setting range between 142 to 158°F / 61 and 70°C. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">IMPORTANT Do not adjust domestic hot water temperature more than 158°F / 70°C.</div>
0A8:000	Boiler See table below for effect of external disable signal (also see page 65)	0A8:001 to 0A8:007	See table below for effect of external disable signal

Possible coding changes for coding address 0A8 "external disable"

Coding	Heating circuit pump	Heating circuit with mixing valve (extension kit)		Tank (Circulating pump for tank heating)	Burner
		Heating circuit pump	Mixing valve		
0A8:000	×	×	×	×	Blocked
0A8:001	OFF	OFF	CLOSED	OFF	Blocked
0A8:002	×	×	×	OFF	Blocked
0A8:003	×	OFF	CLOSED	×	Blocked
0A8:004	OFF	×	×	×	Blocked
0A8:005	OFF	×	×	OFF	Blocked
0A8:006	OFF	×	×	×	Blocked
0A8:007	OFF	OFF	CLOSED	×	Blocked

× = in normal control mode

Control Unit for Weather-Responsive Operation with programming unit *(continued)***Overview of coding addresses** *(continued)*

Coding (factory default setting) Address: Value	Function mode	Coding change Address: Value	Possible changes
0A9:098	Circulating pump Max. rotational speed of circulating pump for DHW production	0A9:001 to 0A9:100*1	Lowest value for rotational speed of circulating pump for DHW production Highest value for rotational speed of circulating pump for DHW production
0B2:___	Fault memory (see page 24)	--	--
0B3:___	Fault memory (see page 24)	--	--
0B4:___	Do not change	--	--
0B8:000	Space heating only - no DHW	0B8:001 0B8:002 0B8:005 0B8:006	With DHW heating Optimum DHW heating (with anti legionnaire function) (see page 42). Combi boiler only Not assigned. Must be changed to one of the other coding addresses.
0C1:011	Freeze-up protection threshold +34 / +37°F or +1 / +3°C	0C1:000 0C1:015	+50 / +18°F or +10 / -8°C +41 / +45°F or +5 / +7°C
0C2:008	Do not change	--	--
0C5:000	Boiler See table below for effect of external heat demand signal (also see page 65)	0C5:001 to 0C5:011	See table below for effect of external heat demand signal

Possible coding changes for coding address 0C5 "external heat demand"

Coding	Heating circuit pump	Heating circuit with mixing valve (extension kit)		Circulating pump for tank heating	Boiler water temperature
		Heating circuit pump	Mixing valve		
0C5:000	ON	OFF	CLOSED	OFF	Maintained at desired value according to coding address "0A2"
0C5:001	OFF	OFF	CLOSED	OFF	
0C5:002	×	OFF	CLOSED	OFF	
0C5:003	OFF	×	×	OFF	
0C5:004	ON	×	×	OFF	
0C5:005	×	×	×	OFF	
0C5:006	OFF	OFF	CLOSED	×	
0C5:007	ON	OFF	CLOSED	×	
0C5:008	×	OFF	CLOSED	×	
0C5:009	OFF	×	×	×	
0C5:010	ON	×	×	×	
0C5:011	×	×	×	×	

× = in normal control mode

*1 One increment corresponds to approx. 20 rpm.

*2 This is set automatically when a tank temperature sensor is connected; can be reset to "001" manually if required.

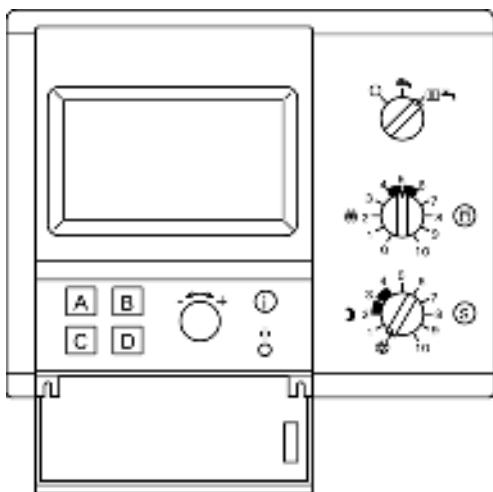
*3 Once this function has ended, the program changes automatically to the "Space heating and DHW heating" mode.

Control Unit for Weather-Responsive Operation with programming unit *(continued)*

Overview of coding addresses *(continued)*

Coding (factory default setting) Address: Value	Function mode	Coding change Address: Value	Possible changes
OC6:000	Do not change	--	--
OC7:003	Resetting to summer/winter time Automatic	OC7:000 OC7:001 OC7:002	Manual resetting to s/w / date change blocked Automatic resetting to s/w Manual resetting to s/w / date change released
OC8:001	External switching of heating program Contact open: Space heating ON/domestic hot water heating ON (according to time program) Contact closed: Central heating OFF/domestic hot water heating OFF.	OC8:000	Contact open: Central heating ON/domestic hot water heating ON (according to time program) Contact closed: Continuous space heating ON/domestic hot water heating ON (independent of preset time program)
OC9:003	Start of summer time: March	OC9:001 to OC9:012	January to December
OD0:005	Start of summer time: Last week of month	OD0:001 to OD0:005	Week 1 to Week 5 of selected month
OD1:007	Start of summer time: Last day of week (Sunday)	OD1:001 to OD1:007	Monday to Sunday
OD2:010	Start of winter time: October	OD2:001 to OD2:012	January to December
OD3:005	Start of winter time: Last week of month	OD3:001 to OD3:005	Week 1 to Week 5 of selected month
OD4:007	Start of winter time: Last day of week (Sunday)	OD4:001 to OD4:007	Monday to Sunday
OD5:000	Programming unit Normal display format with cover closed	OD5:001	Large display format for time and outdoor temperature with cover closed
OD6:000	Programming unit Temperatures displayed in "°C" (° Celsius)	OD6:001	Temperatures displayed in "°F" (° Fahrenheit)
OD7:000	Do not change	--	--

Control Unit for Weather-Responsive Operation with programming unit *(continued)*



Accessing temperature settings (with comfortrol menu driven programming unit)

The following desired and actual temperature values can be accessed and shown on the display of the programming unit:

- Outdoor temperature
- Boiler water temperature
- Supply temperature of the extension kit for the heating circuit with mixing valve
- Room temperature (if programming unit is mounted on a wall-mount base and used as a remote control).

Open the cover:

Menu option	Button
► HEATING	
CIRCUIT A or	"A"
HEATING CIRCUIT B or	"B"
SYSTEM	"D"
► OPERATING STATUS	"C" or "B"
► CONTINUE	"A"

- Domestic hot water temperature

Open cover:

Menu option	Button
► DHW	"C"
► DHW TANK	"A"
► OPERATING STATUS	"C"

Depending on the coding, the boiler water temperature or the outdoor temperature is shown in the first menu on the display.

Brief scan (with standard programming unit)

Simultaneously press keys "1" and "1-7".

Meaning of the display:

- (A) set DHW plan in coding address 03*1
- (B) set heating plan in coding address 04*1
- (C) KM BUS users:

02 with burner control unit
(12) plus Vitocom 100

03 with burner control unit and variable speed heating circuit pump
(13) plus Vitocom 100

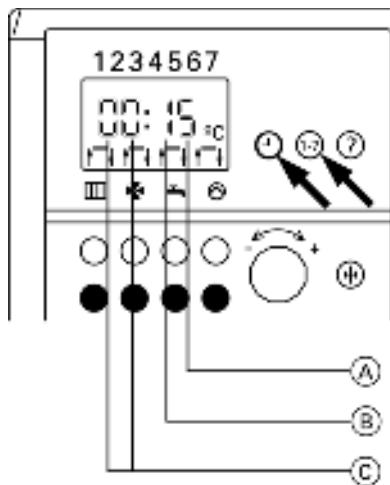
06 with burner control unit and extension kit for one heating circuit with mixer*2
(16) plus Vitocom 100

07 with burner control unit extension kit for one heating circuit with mixer*2 and variable speed heating circuit pump
(17) plus Vitocom 100

*1 For systems with wall mounting fixture plug the programming unit into the control unit

*2 The system only recognizes the extension kit if it is connected via the KM bus

Not if connected via the 2-wire Viessmann BUS



Control Unit for Weather-Responsive Operation with programming unit *(continued)*

Scanning temperatures

The programming unit enables the temperatures of connected sensors to be scanned as set and actual values.

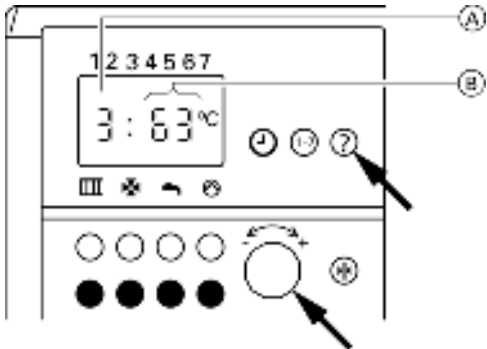
Scanning actual temperatures

1. Select the ID of the respective temperature from the table.

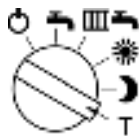
ID	Meaning of the display	Actual temperature in °C (display example)
1 *1	Outside temperature	1: 8 °C
2	Low loss header temperature	2: 45 °C
3	Boiler water temperature	3: 63 °C
4 *2	Flow temperature	4: 44 °C
5 *3	DHW cylinder temperature	5: 50 °C
7 *4	Room temperature	7: 20 °C

- *1 The display value takes weather conditions into consideration, such as wind, solar radiation and the wall temperature of the building.
- *2 Only in connection with the extension kit or heating circuits with mixer.
- *3 Only if the sensor is connected or activated.
- *4 Only if the programming unit is set into the wall mounting fixture as room temperature dependent remote control unit.

2. Press key “?” and turn the rotary selector “-↺+” anticlockwise or clockwise, until the ID (A) for the corresponding temperature is shown on the display. At the same time, the current temperature (B) will be displayed.



Control Unit for Weather-Responsive Operation with programming unit *(continued)*



Scanning temperatures (cont.)

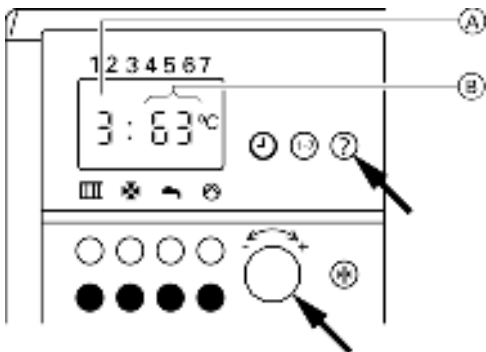
Scanning set temperatures

Note: For systems with wall-mounting fixture, the programming unit must be plugged into the control unit to be able to scan set temperatures.

- 1. Set the heating program selector switch to "T". The LEDs "Reduced room temperature" and "DHW heating" flash in the display.
- 2. Select the ID of the respective temperature from the table.

ID	Meaning of the display	Actual temperature in °C (display example)
1*1	Outside temperature	1: 8 °C
2	Low loss header temperature	2: 45 °C
3	Boiler water temperature	3: 63 °C
4*2	Flow temperature	4: 44 °C
5*3	DHW cylinder temperature	5: 50 °C
7*4	Room temperature	7: 20 °C

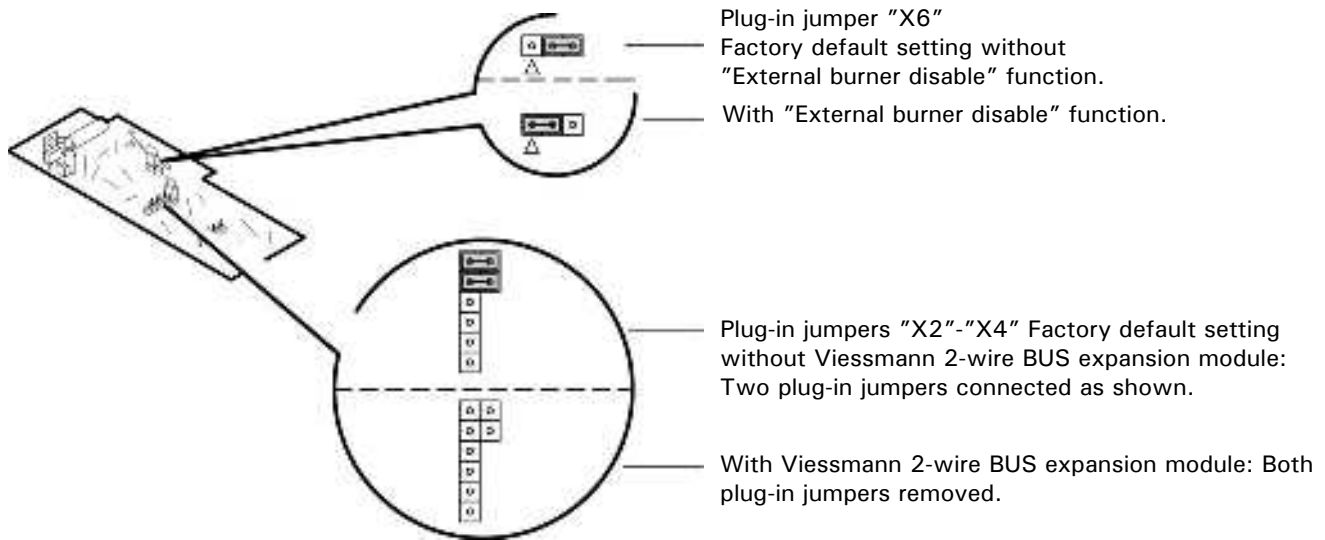
- *1 Only in connect on with the extension kit for heating circuits with mixer
- *2 Only if the sensor is connected or activated.



- 3. Press key "?" and turn the rotary selector "-↺+↻" anticlockwise or clockwise, until the ID (A) for the corresponding temperature is shown on the display. At the same time, the current temperature (B) will be displayed.

Jumper Assignment and Codings

Assignment of plug-in jumper on circuit board VR20



External switching of the heating program (telephone contact)

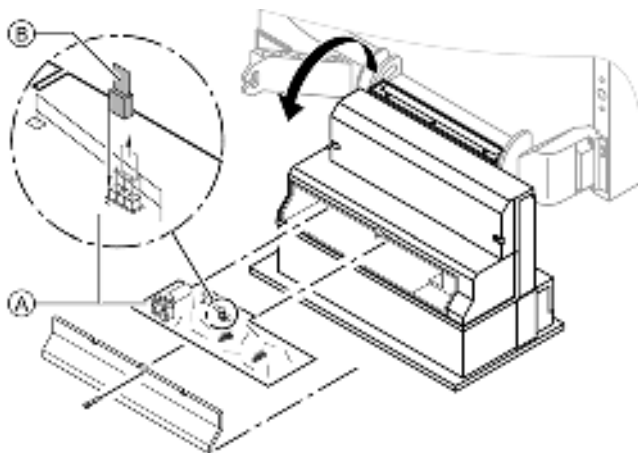
With programming unit
Change coding address "011:000" to "011:001".

External heat demand (field supplied)

With programming unit
Change coding address "011:000" to "011:001" and
"027:000" to "027:001".

Boiler start-up takes place in accordance with the settings of coding address "OC5".

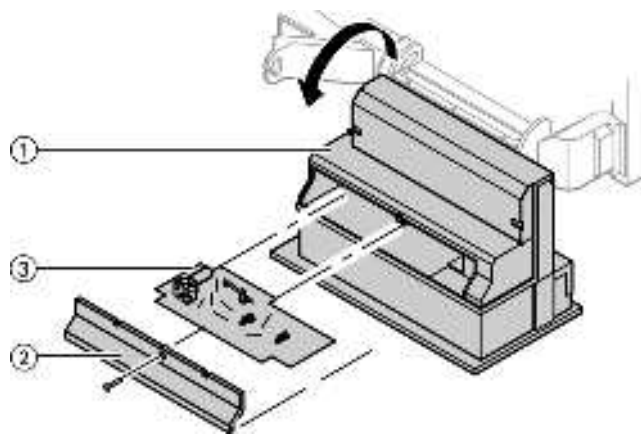
Boiler water temperature is maintained at the value selected in coding address "OA2".



External disable (field supplied)

1. Remove circuit board VR20 (A).
2. Reverse plug-in jumper "X6" (B).
3. Insert circuit board (A) again.
Boiler shutdown takes place in accordance with the settings selected in coding address "OA8".

Replacement of Circuit Board VR20



Before replacing circuit board VR20, record actual system addresses (in particular coding addresses 000, 0B8, 042, 045, 015, 017, 0A2) and their corresponding values, heating curves and DHW settings.

Removing circuit board VR20

- 1. Loosen the two screws located underneath the control and carefully fold down the control.
- 2. Unscrew and remove cover.
- 3. Slide out circuit board VR20 using supplied handle.

Installing the replacement circuit board

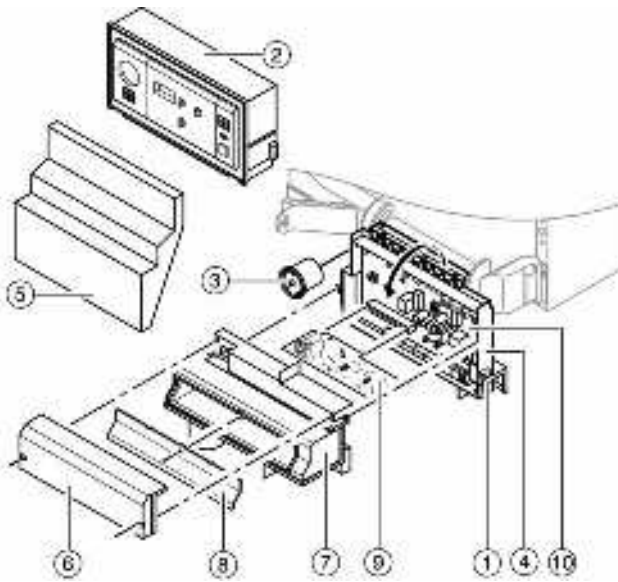
- 1. Slide circuit board VR20 back into the control. Ensure that circuit board is fully plugged in and makes positive contact.
- 2. Reinstall front enclosure panel and cosmetic piping cover.
- 3. Verify that all coding addresses and their values are programmed to recorded actual/required values. See table below.
- 4. Turn on power supply to boiler and start up boiler.

Coding information

Note: This table does not reflect all necessary coding changes required for proper operation of the boiler. See subsection “Overview of coding addresses” in this manual for other coding changes required.

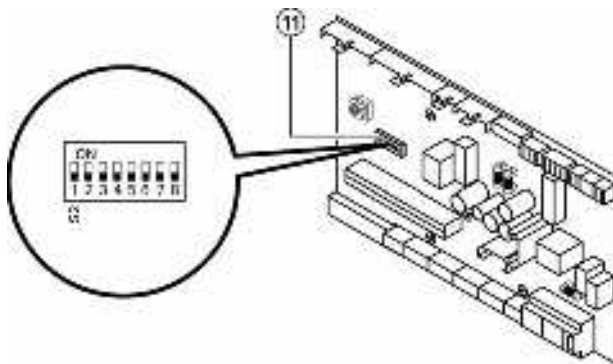
Coding address	Possible coding values	Required action
000:	001 (with DHW; factory default setting)	Set according to system layout. See page 44 for details.
015:	000 (factory default setting)	Do not change!
017:	001 (factory default setting)	Do not change!
0B8:	000 (no DHW storage tank) 001 (with DHW storage tank) 002 (with DHW storage tank optimized) 006 (not assigned)	Set to (one of) the value(s) indicated.

Replacement of Burner Control Unit LGM 29



Removing the circuit board

1. Unlock hooks (1) located on both sides of the control unit and remove the control housing (2) of the control unit.
2. Remove pressure gauge (3).
3. Loosen the two screws located underneath the control unit (4) and carefully fold down the control unit.
4. Remove covers (5), (6), (7) and (8).
5. Remove all plug-in connectors and the grounding wire.
6. Slide off circuit board VR20 (8) using the supplied handle.
7. Loosen screws holding installed circuit board LGM 29.22 (10) in place and remove carefully.



Setting the dip switch (applicable only to replacement boards)

1. Set dip switch (11) setting of the new circuit board according to the table on the following page.

IMPORTANT



The boiler must be operated in accordance with its certification (see boiler rating plate). Thus ensure that the dip switch setting is set according to the table on the following page.

Note: that in the factory default setting all switches are set to "OFF".

2. Remove fuse holder from fuse F3 of the removed circuit board LGM 29.22 and install on fuse F3 on replacement circuit board LGM 29.55.

Replacement of Burner Control Unit LGM 29 (continued)

Setting the dip switch

Boiler model no.	Dip switch setting
WB2 11-44	
WB2 15-60	

Installing the replacement circuit board

1. Install new circuit board LGM 29.55 ⑩.

IMPORTANT

Do not remove clear covers on the circuit board. These provide protection against static discharge.

2. Connect all plug-in connectors to circuit board LGM 29.55 ⑩, including #158 plug.

IMPORTANT

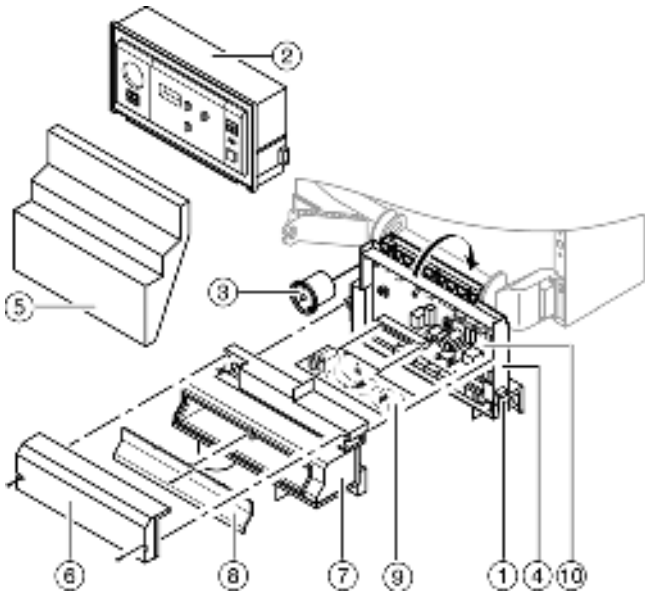
Do not interchange plug-in connectors "X6" and "X7". None of the other connectors are interchangeable.

3. Install covers and .
4. Plug in grounding wire.
5. Insert circuit board VR20 .
6. Install covers and .
7. Fold up control unit and secure, using screws.
8. Insert pressure gage (do not kink capillaries).
9. Mount control housing and lock into place with hooks located on both sides of the control unit.
10. Reinstall front enclosure panel.
11. Start up boiler and check for proper functioning of the circuit board and the heating system.

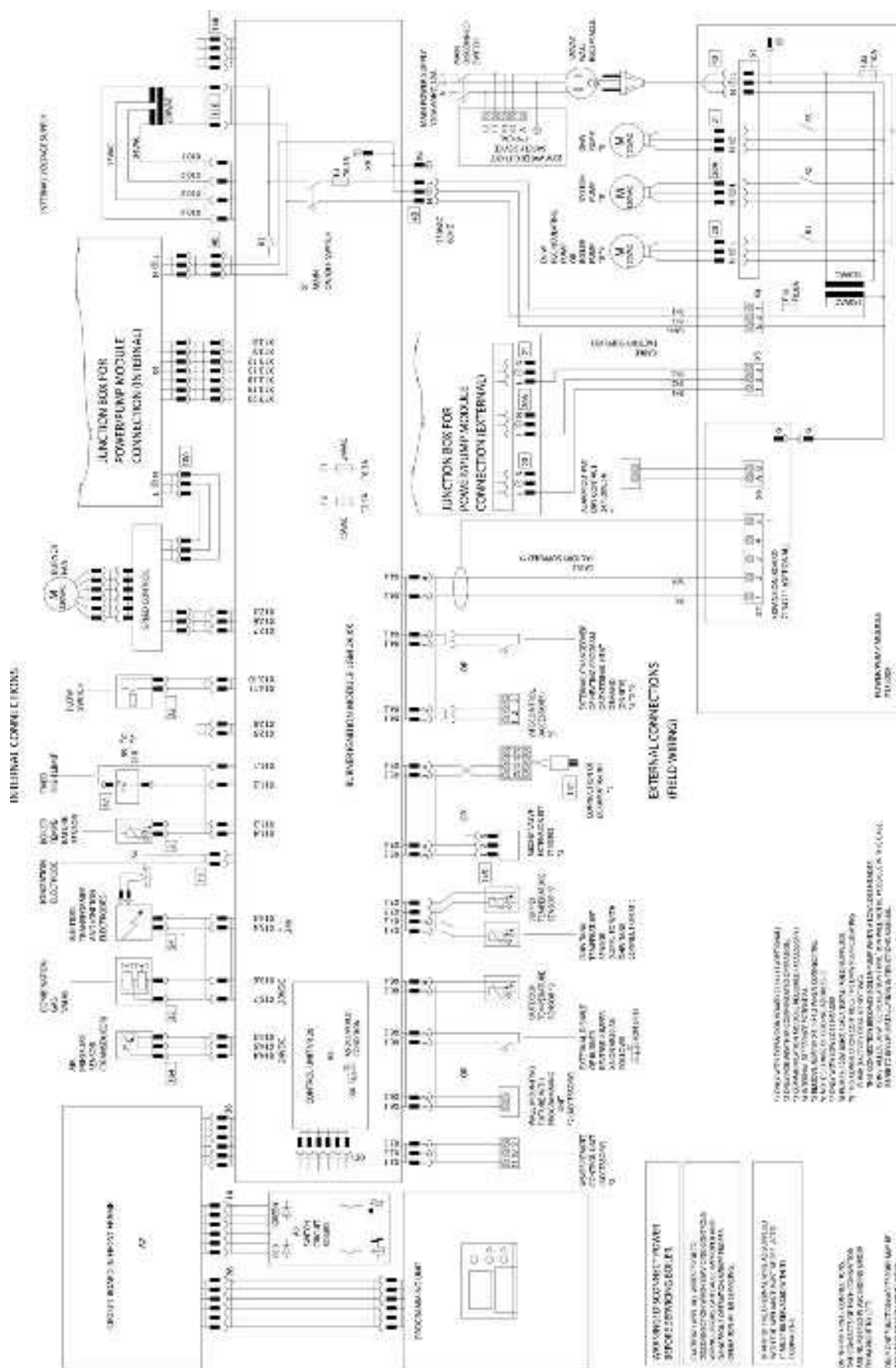


Vitodens 200 Start-up/Service Instructions

If "FAULT : FE" appears in the display of the control unit during the functionality check, check dip switch settings against table on previous page and adjust if required.



Wiring Diagram



Parts Lists

Model No.	Serial No.
WB2 11-44	7188578 □ □ □ □ □ □ □ □
WB2 15-60	7188577 □ □ □ □ □ □ □ □

Ordering Replacement Parts:

Please provide boiler Model and Serial Number from rating plate when ordering replacement parts. Order replacement components from your Viessmann distributor.

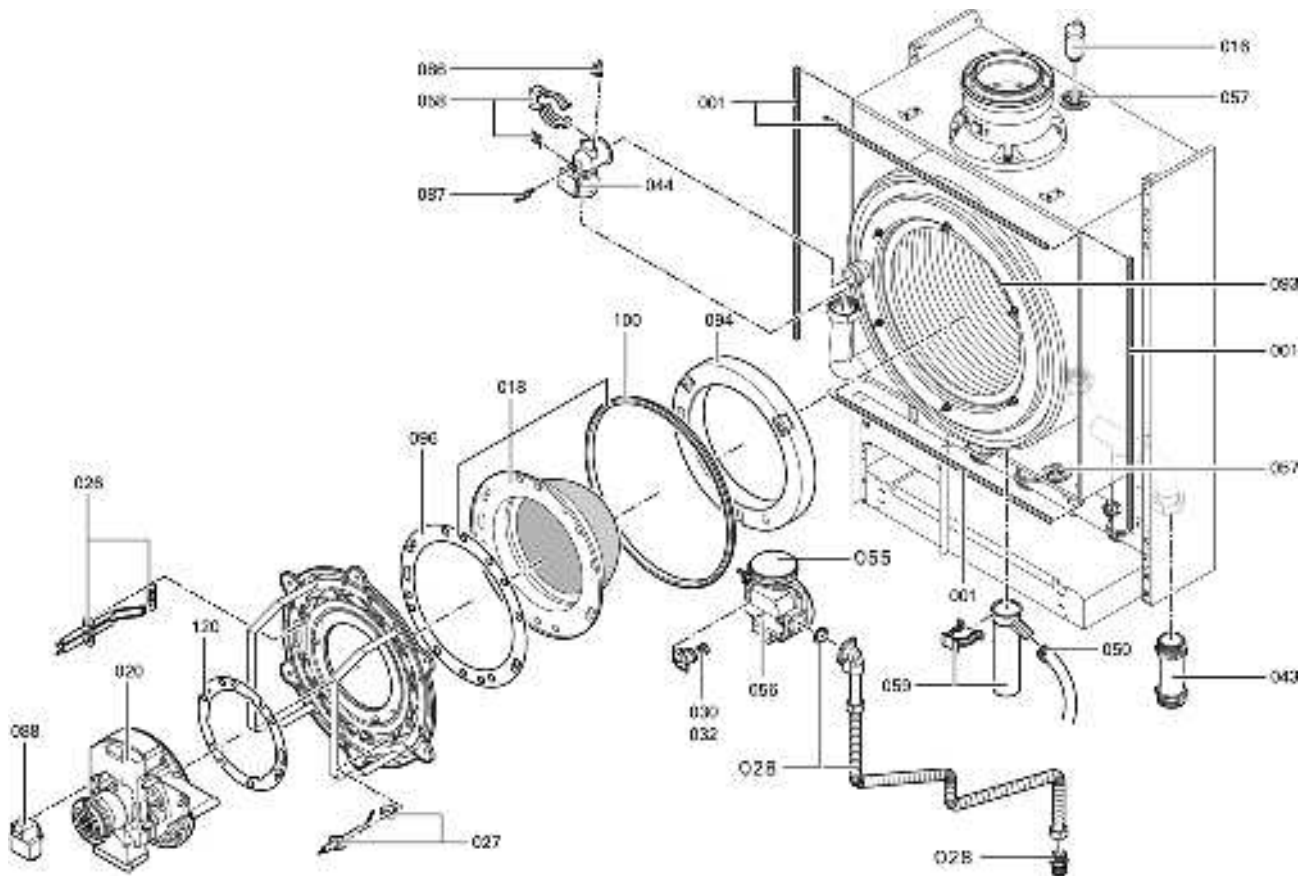
Parts

001	Profile gasket
016	Air vent without shut-off, R 3/8 in.
017	Matrix burner assembly (with Pos. 018, 026, 027, 056, 088, 094, 096, 100 and 120)
018	Matrix burner mesh (with Pos. 096 and 100)
020	Radial fan, RLS154 (without electrode)
026	Ignition electrode
027	Ionization electrode
028	Flex gas pipe, 90x1 1/2 x 1 1/2 cm
030	Conversion kit, NG
032	Conversion kit, LP
043	Connecting pipe extension (return)

044	Flow sensor
050	Condensate hose
055	Differential pressure sensor
056	Gas valve without orifice
057	Sealing grommet
058	Spring clip (set)
059	P-trap
086	Fixed high limit, 210°F / 99°C
087	Temperature sensor (with Pos. 049)
088	Ignition transformer
093	Heat exchanger assembly ASME
094	Insulation ring
096	Burner gasket (secondary)
100	Burner gasket
120	Burner gasket (primary)

Other Parts (not illustrated)

004	Operating Instructions and User's Information Manual
005	Start-up/Service Instructions
006	Parts List
007	Installation Instructions
049	Heat conductive paste



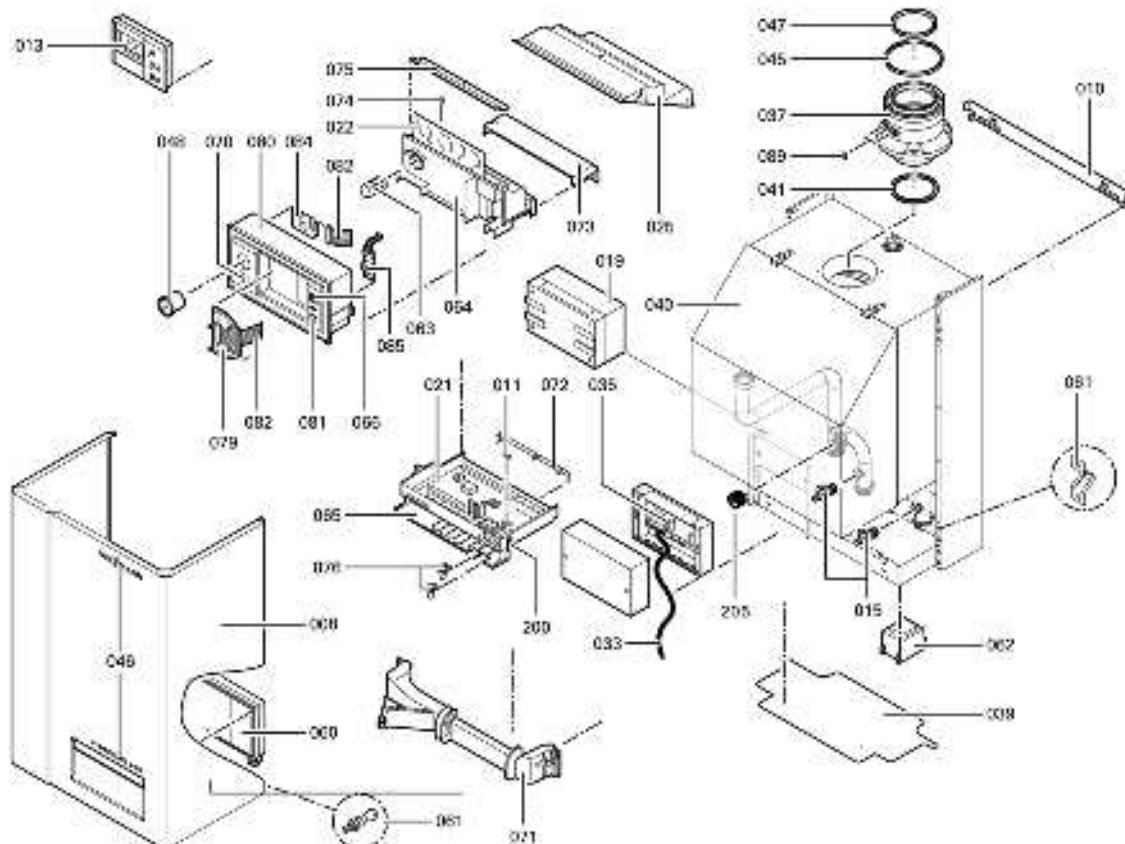
Parts Lists *(continued)***Parts**

008 Front panel (with Pos. 046, 060 and 061)
 010 Wall-mount bracket
 011 Fuse 6.3 amp (10 pack)
 013 Programming unit
 015 Ball valve, ½ in. with handle
 019 Electronics box, RLS154
 021 Burner control, LGM29.55
 022 Circuit board, VR20
 025 Hood (internal) for control unit
 033 Harness for pump output
 035 Circuit board, connection box
 037 Vent pipe adaptor
 039 Base panel
 040 Cover panel
 041 Gasket DN110
 045 Seal d = 150 mm
 046 Nameplate (set) "Vitodens 200"
 047 Seal d = 100 mm
 048 Pressure gauge (psi)
 060 Cover (flip-down)
 061 Accessory pack, front panel hardware

062 Transformer 230V
 063 Pressure gage insert
 064 Connection module cover
 065 Connection module
 066 Switch (pair, Reset/Override)
 070 Cover (blank)
 071 Mounting bracket
 072 Cable entry strip
 073 Cable entry cover
 074 Cover (poti)
 075 Circuit board cover for VR20
 076 Cable entry plug (pair)
 079 Mounting plate
 080 Control console (empty)
 081 Switch (on/off) (mechanism only-no switch)
 082 Flat cable, 26-pole
 084 Circuit board, adaptor
 085 Circuit board, Optolink
 089 Cap for vent pipe adaptor
 200 Fastening bracket (10 pack)
 205 Cap G 3/4 SW30

Other Parts (not illustrated)

023 Wiring harness, X 14
 024 Wiring harness, X 11
 034 Wiring harness, X 13
 051 Touch-up paint stick, pure white
 052 Touch-up spray paint, pure white
 053 Pressure relief valve
 054 Lubricating grease (6g)
 068 Jumper plug, ionization
 077 Counter plug (set)
 078 Accessory pack (control unit)
 090 Gasket (set)
 092 Wiring harness, X 12
 095 Accessory pack (burner parts)
 097 Accessory pack, enclosure hardware 10 pack
 099 Connection assembly DEV
 167 Wiring harness, ION/PE
 201 Sensor #1 (outdoor)
 202 Power/pump control module
 203 Gasket assortment ½ in., ¾ in.
 204 Maintenance kit
 210 Flow check valve DN25
 305 Drain valve kit, ¾ in.
 306 Power conditioner
 307 Accessory pack (strain reliefs)
 400 Service tool set "Vitodens 200"



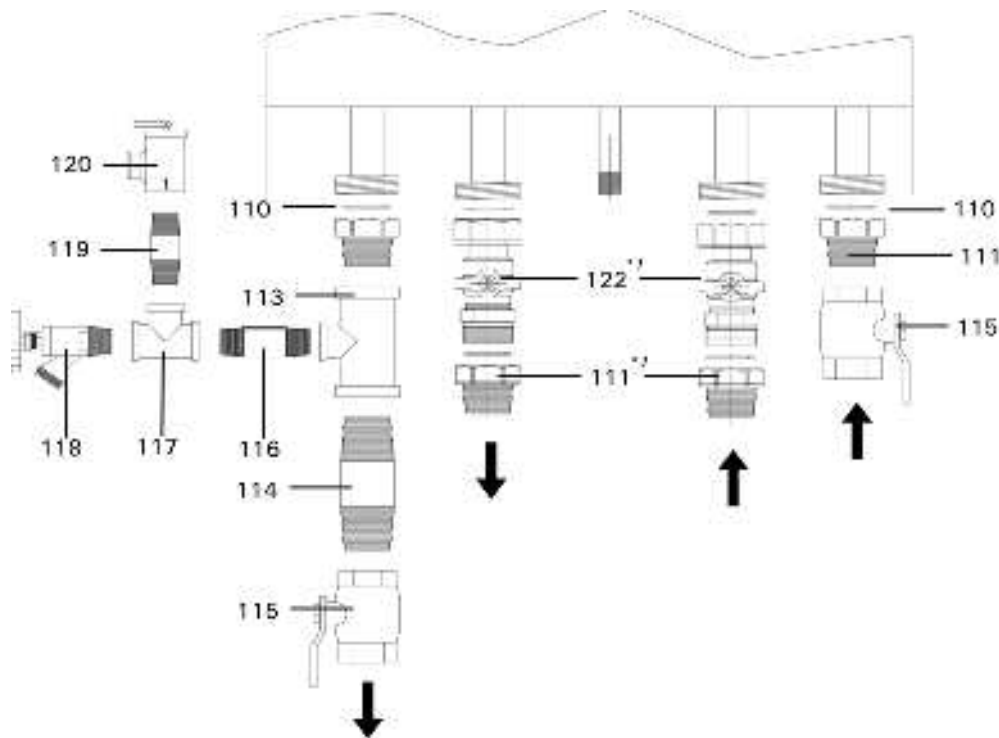
Parts Lists *(continued)***Installation fittings****Parts**

- 110 Gasket, 32 x 44 x 2 mm
- 111 Adaptor (pair with gasket) 1 ½ in. - 1 ¼ in.
- 113 Tee, 1 ¼ in. x 1 ¼ in. x ¾ in.
- 114 Nipple, 1 ¼ NPTM x 2 ½ in.
- 115 Full port ball valve, 1 ¼" FBV (T)
- 116 Nipple, ¾ in. x 3 ½ in.
- 117 Brass tee, ¾ in.
- 118 Sediment faucet, ¾ in.
- 119 Nipple, ¾ x 2 in.
- 120 Pressure relief valve
- 122 Shut-Off Valve (pair with gasket)

Parts (not illustrated)

- 130 Accessory pack (metal stud mounting kit)
- 131 Loctite sealant, 6 ml Tube
- 132 Keychain with air bleed key
- 133 Parts List

*1 Included in DHW Production Kit.



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. 1.0 %w.c.
Running pressure (supply pressure)							
<input type="checkbox"/> Natural gas	%W.C.						4-14 %w.c.
<input type="checkbox"/> LP	%W.C.						11-14 %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						Never exceed 50 ppm air-free
■ at upper end of rated input range	ppm						
Ionization current	µA						min. 5 µA

Lighting and Operating Instructions

FOR YOUR SAFETY READ BEFORE OPERATING

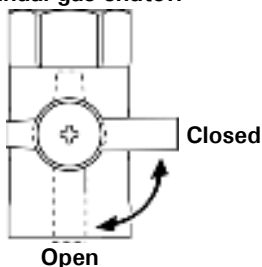
W A R N I N G: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- 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

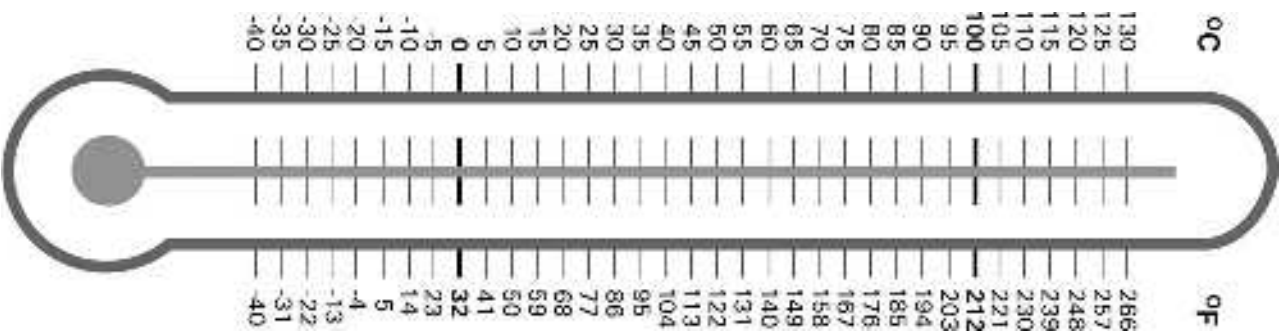
1. **STOP!** Read the safety information above on this label.
2. Set thermostat or other operating control to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
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.

Manual gas shutoff



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.



Viessmann Manufacturing Company Inc.
 750 McMurray Road
 Waterloo, Ontario • N2V 2G5 • Canada
 Techinfo Line 1-888-484-8643
 1-800-387-7373 • Fax (519) 885-0887
www.viessmann.ca • info@viessmann.ca

Viessmann Manufacturing Company (U.S.) Inc.
 45 Access Road
 Warwick, Rhode Island • 02886 • USA
 Techinfo Line 1-844-648-5886
 1-800-288-0667 • Fax (401) 732-0690
www.viessmann-us.com • info@viessmann-us.com



Printed on environmentally friendly
 (recycled and recyclable) paper.

Technical information subject to change without notice.