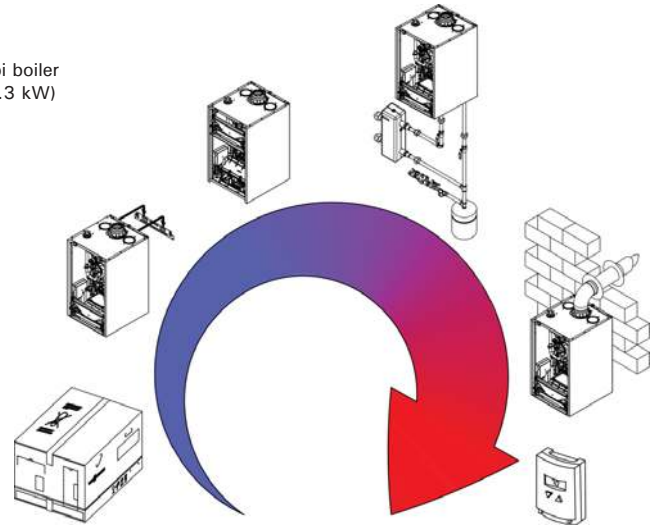
Quick Start-up Guide

for use by a licensed professional heating contractor
for typical installations

Vitodens 200-W, B2HE
Models 85 to 199
Wall-Mounted, gas-fired condensing boilers
On demand domestic hot water with Combi boiler
Heating input: 8.5 to 199 MBH (2.5 to 58.3 kW)



Before you install the boiler;

This boiler is configured for Natural Gas from the factory. If conversion to Propane Gas is required, the conversion kit supplied with the boiler must be used.

This guide is designed to provide a quick overview to the licensed professional heating contractor for installing the Vitodens 200-W B2HE boiler. It is NOT a substitute for the technical support literature supplied with the boiler and accessories.

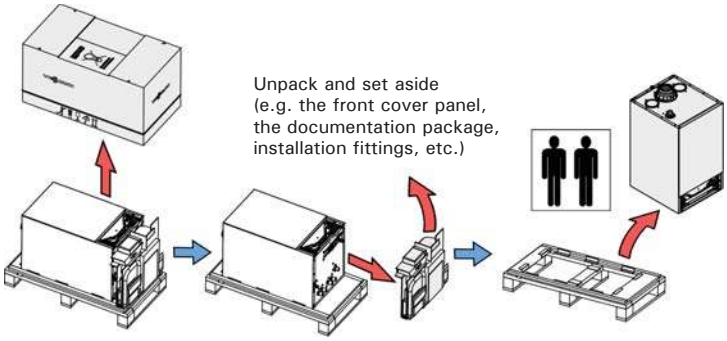
The technical support literature for each product contains the necessary safety and national/local code requirements which, if not followed exactly, may lead to property damages, personal injuries and/or loss of life. Viessmann Manufacturing assumes no responsibility for damage(s) of any kind caused by inappropriate use of this manual and/or failure to read the technical literature provided which may also render the warranty null and void.

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.

1 Unpacking and Included with Boiler

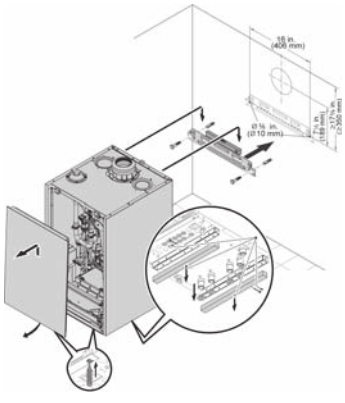


2 Boiler Installation Dimensions and Mounting Details

IMPORTANT

Ensure that the boiler bracket and boiler are securely fastened and level.

Refer to the "Dimensions and Installation" sections of the B2HE Installation and Service Instructions for more detail.



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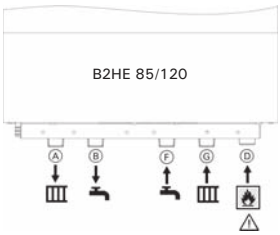
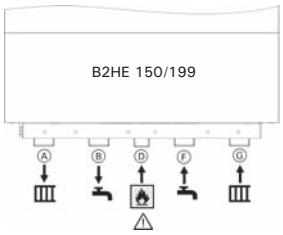
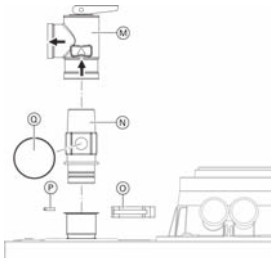
3 Installation Fittings and Typical Piping Connections



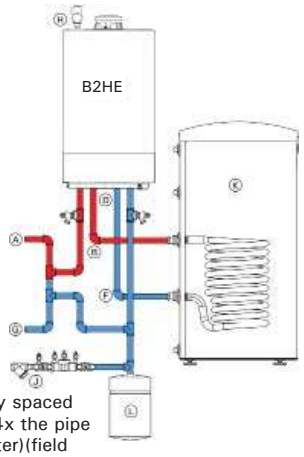




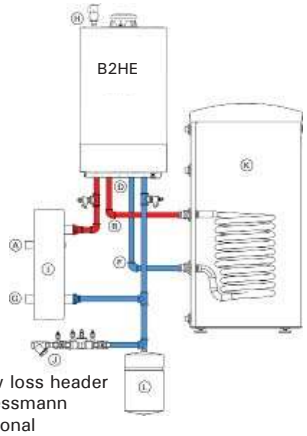
Legend
- Ⓐ Boiler heating system supply
- Ⓑ Tank heating supply
- Ⓒ DHW connection with pressure relief valve (PRV)
- Ⓓ Gas connection
- Ⓔ DCW connection
- Ⓕ Tank heating return
- Ⓖ Boiler heating system return
- Ⓗ Boiler pressure relief valve (PRV and pressure gauge)
- Ⓘ Low loss header (accessory)
- Ⓙ Boiler fill
- Ⓚ Indirect DHW tank
- Ⓛ Expansion tank

Legend
- Ⓜ Safety valve
- Ⓝ Brass adapter
- Ⓞ Retaining clip
- Ⓟ Cable ties
- Ⓠ Pressure gauge

Refer to the "Connections" section of the B2HE Installation and Service Instructions for more detail.



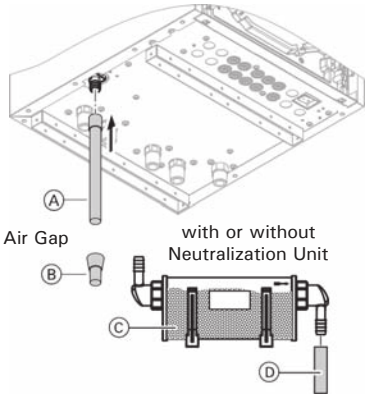
Closely spaced tees (4x the pipe diameter)(field supplied)



Low loss header (Viessmann optional accessory)

Legend
- Ⓐ Boiler heating system supply
- Ⓑ Tank heating supply
- Ⓒ DHW connection with pressure relief valve (PRV)
- Ⓓ Gas connection
- Ⓔ DCW connection
- Ⓕ Tank heating return
- Ⓖ Boiler heating system return
- Ⓗ Boiler pressure relief valve (PRV and pressure gauge)
- Ⓘ Low loss header (accessory)
- Ⓙ Boiler fill
- Ⓚ Indirect DHW tank
- Ⓛ Expansion tank

4 Boiler Condensate Connection



Install the flexible condensate discharge tube Ⓐ onto the boiler syphon discharge located at the bottom rear of the boiler.

IMPORTANT

Ensure that the condensate line is clear from any blockage and is not exposed to freezing temperatures at any point in time.

Refer to the "Neutralization Unit" Instructions supplied with the neutralization unit.

Legend
- Ⓐ Flexible condensate discharge tubing (from boiler).
- Ⓑ Condensate discharge tubing with clamps (field supplied) if required. For connection to neutralization unit and / or suitable sewage drain.
- Ⓒ Neutralizer unit (optional) **Note:** Consult local codes.
- Ⓓ Condensate discharge tubing with clamps (field supplied).

5 Filling the Siphon with Water

Fill the siphon with 10 fl. oz. (0.3 liters) of water into the boiler adaptor before start-up.

Refer to the "Connections" section of the B2HE Installation and Service Instructions for more detail.

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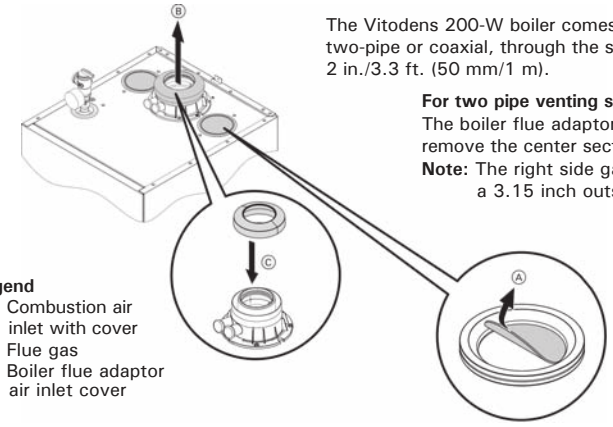
6 Preparing for Vent Connection



Legend
Ⓐ Combustion air inlet with cover
Ⓑ Flue gas
Ⓒ Boiler flue adaptor air inlet cover

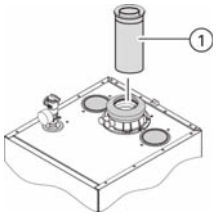
The Vitodens 200-W boiler comes with a preinstalled vent pipe adaptor. Installing the venting system, single-pipe, two-pipe or coaxial, through the side wall or roof, taking the shortest possible route and at a horizontal pitch of 2 in./3.3 ft. (50 mm/1 m).

For two pipe venting systems
The boiler flue adaptor air inlet cover Ⓒ must be installed and the combustion air inlet cover Ⓐ, remove the center section and leave the rubber seal in place.
Note: The right side gasket is sized for a 3.5 inch outside diameter, the left side gasket is sized for a 3.15 inch outside diameter, these can be interchanged if required.

For coaxial or single pipe venting system
The combustion air inlet cover Ⓐ remains installed and the boiler flue adaptor air inlet cover Ⓒ is not installed.

Refer to the "Rigid and Flex Pipe Venting Systems" Instructions supplied.

7 Coaxial Vent System Boiler Connections



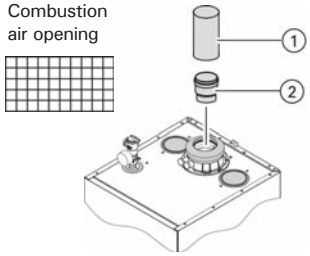
Refer to the "Rigid and Flex Pipe Venting Systems" Instructions supplied.

Maximum equivalent vent length			
B2HE	60/100	80/125	100/150 or 110/160
85/120	43 ft. (13 m)	98 ft. (30 m)	118 ft. (36 m)
150/199	--	33 ft. (10 m)	43 ft. (13 m)

Type of fitting	Equivalent length
87° elbow / 87° inspection tee	1.6 ft. (0.5 m)
45° elbow	1 ft. (0.3 m)

#	Component
①	Vent Component

8 Flue Connection for Single or Two Pipe Systems



* There is an input reduction of 2% (for the B2HE 85) and 5% (for the B2HE 120)

Maximum equivalent vent length			
B2HE	2 in. (50 mm)	3 in. (76 mm)	4 in. (102 mm)
85/120	98 ft. (30 m)*	164 ft. (50 m)	198 ft. (60 m)
150/199	--	98 ft. (30 m)	148 ft. (45 m)

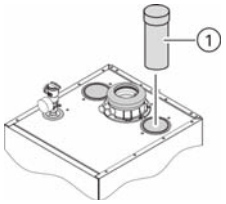
#	Component
①	Vent Component (PPs 80 mm, CPVC 3" or SS 3")
②	Vent starter adaptor (CPVC or SS)

Refer to the "Rigid and Flex Pipe Venting Systems" Instructions supplied.

Standard long sweep elbows

Approved venting material	short 90° elbow equiv. length ft. (m)	long 90° elbow equiv. length ft. (m)	long 45° elbow equiv. length ft. (m)	short 87° elbow equiv. length ft. (m)	87° elbow / 87° inspection tee ft. (m)
Stainless steel	--	3 (0.9)	2 (0.6)	--	--
CPVC plastic pipe	8 (2.4)	5 (1.5)	3 (0.9)	--	--
PP(s)	--	--	3 (0.9)	8 (2.4)	5 (1.5)

9 Coaxial Vent System Boiler Connections



* There is an input reduction of 2% (for the B2HE 85) and 5% (for the B2HE 120)

Refer to the "Rigid and Flex Pipe Venting Systems" Instructions supplied.

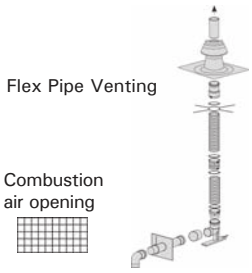
Maximum equivalent vent length			
B2HE	2 in. (50 mm)	3 in. (76 mm)	4 in. (102 mm)
85/120,	98 ft. (30 m)*	164 ft. (50 m)	198 ft. (60 m)
150/199	--	98 ft. (30 m)	148 ft. (45 m)

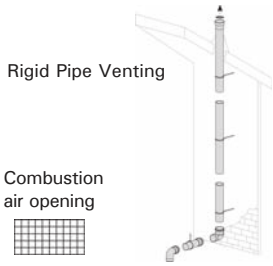
#	Component
①	Air intake component (suitable materials include PVC, CPVC and ABS)

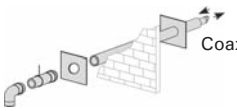
Standard long sweep elbows

Material	90° elbow equivalent length	45° elbow equivalent length
Plastic pipe	5 **ft.** (1.52 m)	3 **ft.** (0.91 m)

10 Typical Single Pipe and Coaxial Pipe Venting Layouts

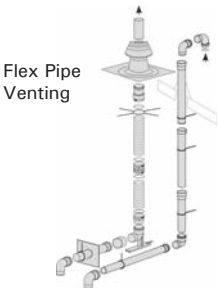


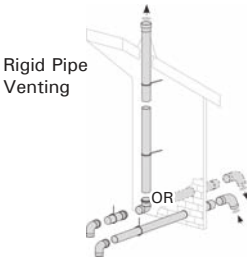


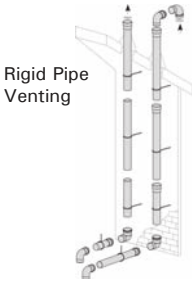


Refer to the "Rigid and Flex Pipe Venting Systems" Instructions supplied.

11 Typical Two Pipe Venting Layouts

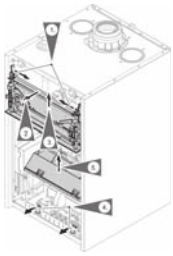






Refer to the "Rigid and Flex Pipe Venting Systems" Instructions supplied.

12 Opening the Junction Box



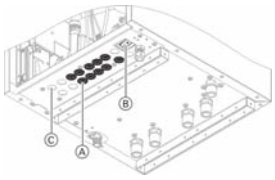
Placing the control base in the service position

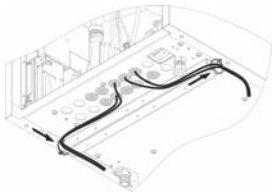
1. Release tabs on the boiler control base.
2. Pull the control base straight out.
3. Place the control base in the service position, there are positioning tabs located at the rear of the control base to be aligned with the holes in the boiler jacket and lock in place with the control base clips.

Opening the junction box

4. Release junction box cover clamps.
5. Lift the junction box cover.

13 Accessing the Electrical Connections





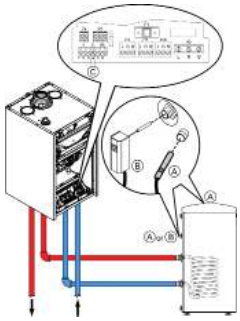
Refer to the "Control Connections" section of the B2HE Installation and Service Instructions for more detail.

Legend

Ⓐ Diaphragm grommets, low voltage
Ⓑ ON/OFF switch
Ⓒ Knockouts for 120VAC connections

Bundle cables using cable ties.
Route low voltage cables separately from 120V~ cables.
Secure the cables on the underside using the supplied cable ties.
Do not route cables over sharp edges.

14 Connecting DHW Tank Temperature Sensor (B1HE) Optional



Tank Temperature Sensor (Supplied)

Install the supplied tank temperature sensor Ⓐ into the tank (in one of two locations) to terminal 3 and 4 located in the boiler junction box Ⓒ (as shown).

Refer to the "Electrical Connections" section of the B2HE Installation and Service Instructions.

Tank Temperature Controller (Field Supplied)

To connect the field supplied Tank Temperature Controller (e.g. Aquastat). Connect the Tank Temperature Controller wiring Ⓑ to terminal 3 and 4 located in the boiler junction box Ⓒ.

Refer to the "Tank Temperature Controller" manufacturer's Instructions for more detail.

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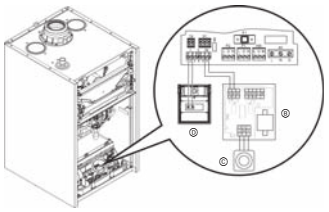
15 Fixed Setpoint With or Without Room Temperature Thermostat

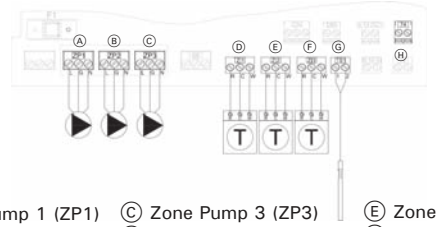


IMPORTANT

Connect one of the following fixed setpoint operations, with or without room temperature thermostat.

Refer to the "Electrical Connections" section of the B2HE Installation and Service Instructions for more detail.

16 Weather-compensated With or Without Room Temperature Thermostat



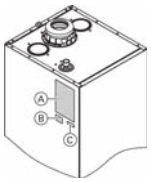
Legend
Ⓐ Zone Pump 1 (ZP1)
Ⓑ Zone Pump 2 (ZP2)
Ⓒ Zone Pump 3 (ZP3)
Ⓓ Zone Input 1 (ZI1)
Ⓔ Zone Input 2 (ZI2)
Ⓕ Zone Input 3 (ZI3)

The Vitodens 200 B2HE has the ability to control up to 3 zone circuits. Each zone circuit includes input/output for one pump and one thermostat (24VAC or Dry Contact – field supplied). For systems with primary/ secondary loops (using Low Loss Header or Closely Spaced tees) connect Low Loss Header sensor (accessory).

The Vitodens 200 B2HE can also support up to 3 mixing valve circuits using thr mixing valve extension modules (accessory).

Ⓖ Low Loss Header Temperature Sensor (TSI)
Ⓗ Plus BUS accessory connection

17 Boiler Conversion Liquid Propane Gas Labels



Legend
Ⓐ CSA Rating Plate
Ⓑ Field Conversion Label
Ⓒ Gas Type Label

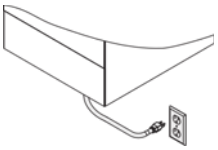
Apply new labels as shown.

IMPORTANT

The boiler control MUST be programmed for Liquid Propane Gas (LPG).

Refer to the "Fuel Conversion and Labelling Instructions" supplied with the conversion kit.

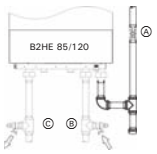
18 Boiler Power Supply



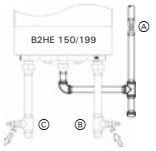
120/1/60 12A Power Supply with disconnect and protection. The Vitodens 200-W comes with a pre-installed power cord with 3 prong plug for simplified installation.
Note: the pre-installed power cord can be cut in order to be hard wired.

Refer to the "Electrical Connections" section of the B2HE Installation and Service Instructions for more detail.

19 Filling and Bleeding the Heating System

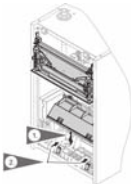


Valves/fittings on site:
Ⓐ Gas shut-off valve
Ⓑ Heating return with fill valve
Ⓒ Heating supply with drain valve

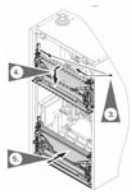


Note: The fill and purge function is a feature of the commissioning assistant, the commissioning assist will activate when the boiler is powered on for the first time.

20 Closing the Junction Box

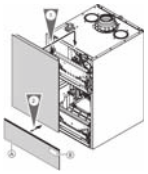


1. Place the junction box lid on the junction box.
2. Secure in place with latches.



3. Release the tabs on the boiler control base.
4. Pull the control base straight out.
5. Re-install the control base into the base of the boiler.

21 Closing the Boiler



Legend
Ⓐ Lightguide (at the top)
Ⓑ WiFi label

1. Install the front panel.

2. Install the programming unit in the control base.
Note: Before installing the programming unit remove the WiFi labels from the back of the programming unit and apply one label Ⓑ on the pro gramming unit, one in these instructions and one in the operating instructions.

22 Turning on the Boiler for the First Time

Upon initializing the power forthe first time, the boiler will automatically call up the commissioning assistant.

23 Using the Commissioning Assistant

This boiler can be commissioned using the Vitoguide Mobile App or the boilers HMI, to proceed using the app select 'With App' to continue with the boilers HMI select with programming unit.

Download on the App Store GET IT ON Google Play

Note: Apps for commissioning and service are available for iOS and Android devices.

24 Starting the Boiler Using the Commissioning Assistant

Commissioning assistant sequence	Explanations and references
Commissioning	
Language	
With programming unit	If commissioning is to be carried out at the programming unit of the heat generator.
With software tool	The appliance automatically switches on the WiFi access point. Further commissioning steps according to the instructions of the software tool used (e.g. "Vitoguide mobile")
Altitude	Set the elevation of the installation site
Units of measurement	°C/m or °F/ft
Date and time	
Operating mode (based on boiler application)	▪ Weather-compensated operation The outside temperature sensor must be connected. ▪ Constant operation Operation with constant supply temperature
Building type	▪ Detached house One shared vacation program and time program for DHW and heating ▪ Apartment building A separate vacation program can be set for each heating circuit
Gas type	If operating with LPG, switch to "LPG"
Flue system type	▪ Single connection Only one boiler is connected to the flue system (factory setting). ▪ Multiple connections Several heat generators are connected to the flue system.
Filling and purging	

If no further settings are to be performed, the commissioning assistant can now be closed.

System scheme	
Heating circuit 1 (based on boiler application)	Heating circuit without mixing valve or heating circuit without mixing valve with external hook-up (if installed)
Heating circuit 2, 3 ... (based on boiler application)	Heating circuits with mixing valve or heating circuits with mixing valve with external hook-up (if installed)
DHW ■ Not available ■ Tank with one sensor ■ Tank with one sensor and DHW circulation pump ■ Tank with temperature switch ■ Tank with temperature switch and DHW recirculation pump	external hook-up (if installed) Tank equipped with DHW temperature switch (such as an Aquastat) Tank equipped with DHW temperature switch (such as an Aquastat) and DHW recirculation pump
Low loss header/buffer cylinder ■ Not available ■ Low loss header, heating only ■ DHW heating upstream of low loss header ■ DHW heating downstream of low loss header ■ Buffer cylinder, heating only ■ DHW heating upstream of buffer cylinder ■ DHW heating downstream of buffer cylinder	Settings for the consumer circuits according to the system components There is no low loss header or heating water buffer tank in the system. System with low loss header, without DHW heating DHW heating with e.g. separate DHW tank connected upstream of the low loss header DHW heating with e.g. separate DHW tank connected downstream of the low loss header System with heating water buffer tank, without DHW heating DHW heating with e.g. separate DHW tank connected upstream of the heating water buffer tank DHW heating with e.g. separate DHW tank connected downstream of the heating water buffer tank
Solar (if installed) ■ No solar function	Solar thermal system connected to boiler via EM-S1 extension Setting subject to the design of the solar thermal system EM-S1 extension installation and service instructions
Heating zone/safety input ■ Heating zone 1 ■ Heating zone 2 ■ Heating zone 3 (based on boiler application type)	 Not available, or temperature controller or low water indicator Not available or temperature controller or monitoring for excessively low gas pressure Not available or temperature controller or monitoring for excessively high gas pressure

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24 Starting the Boiler Using the Commissioning Assistant *(continued)*

Floating contact: Function selection plug 96	If a contact has been connected to plug 96.
■ No function ■ External demand, DHW circulation pump ■ External demand (based on boiler application type) ■ External blocking ■ Heat demand (based on boiler application type)	 Pushbutton function, DHW recirculation pump runs for 5 min. Boiler demand with adjustable target supply temperature (parameter 528.0) and target primary pump speed (parameter 1100.2) Call for heat is shown in the display/menu as “Heating zone 4”.
EM-EA1 (DIO): Function selection (based on boiler application type)	If an EM-EA1 extension (DIO electronics module) is connected as a function extension.
Functions	Selection of the connected function according to the table in the EM-EA1 extension installation instructions.
Remote control units	
(based on boiler application type)	Set the type of remote control and subscriber no. as assignment to the respective heating circuit. Up to 4 heating circuits can be assigned to one remote control unit. It is not possible for several remote controls to act on one heating circuit.
Maintenance	
Interval in burner hours run until next maintenance	Interval adjustable in steps of 100 h.
Interval until next maintenance	Interval adjustable to 3, 6, 12, 18 or 24 months.

25 Setting the Room Temperature

1. Taap the header bar and select desired heating circuit.
2. Tap + − .
3. Tap + − for either reduced, standard, or comfort to adjust temperatue set point.
4. ✓ to confirm, this will take you back to the home screen.

26 Setting the Room Temperature

In the delivered condition, the slope of the heating curve is set to 1.4, the level of the heating curve is set to 0.

Typical Radiant = 0.6 slope & 0 curve set point
Typical Baseboard = 2.4 slope & 0 curve set point
Typical Fan Coil = 0.8 slope & 15 curve set point

By setting the “Heating curve”, you influence the supply temperature provided by the boiler.
To ensure your rooms are heated optimally at any outside temperature, you can adjust the “Shift” and “Slope” of the “Heating curve

Factory setting:
■ “Slope”: 1.4
■ “Shift”: 0

Tap the following buttons:
1. ☰
2. “Heating”
3. Select “heating zone or heating circuit”.
4. Select a heating zone or heating circuit, e.g. ① “Heating circuit 1”
5. “Heating curve”
6. + − for the required value for “Slope” and “Shift” respectively
   The graph displayed clearly shows the change in the “Heating curve” as soon as you alter the value for the “Slope” or “Shift”.
7. ✓ to confirm

Note: The heating curve can only be adjusted in weather-compensated operation.

Refer to the “Operation” section of the B2HE Operating Instructions for more detail.

27 Setting DHW Temperature

Tap the following buttons:
1. If applicable, ◀ ▶ for the “DHW” default display
2. + − for the required value
3. ✓ to confirm

Note: Not valid for systems with a DHW tank with temperature switch (e.g. Aquastat). The factory settings 122°F (50°C).
Note: For reasons of good hygiene, you should not set the DHW temperature lower than 122°F (50°C).

28 Fault Codes

Note: Fault messages dependent on boiler equipment level

Refer to the fault code section of the B2HE Service Instructions for the complete list of fault codes.

Displayed fault code	System characteristics	Cause	Measures
F.13	Regulates as if the outside temperature were 0°C.	Lead break, outside temperature sensor	■ Check the operating mode setting in the commissioning assistant and correct if necessary. ■ Check outside temperature sensor and connection to sensor (external plug, contacts 1 and 2). ■ Measure voltage at sensor input on electronics module. Target value: 3.3V– with sensor disconnected. Replace faulty component if necessary.
F.69	Burner in a fault state	Ionization current lies outside the permissible range	Check ionization electrode: ■ Check whether insulation block is touching electrode ceramic. ■ Check gas solenoid valve: Activate "Minimum heating output" for approx. 4 min in actuator test. If this causes a fault to occur, replace BCU burner control unit. ■ In the actuator test, switch from "Minimum heating output" to "Maximum heating output". ' If this fault occurs during modulation, check the intake screen for contamination. Replace the fan unit if necessary.
F.70	Burner in a fault state	Internal error burner control unit	Replace BCU burner control unit: See page 89.
F.71	Burner in a fault state	Fan speed too low	■ Check fan for blockage. ■ Check the gas type and flue system setting in the commissioning assistant and correct if necessary. Reset the boiler.
F.72	Burner in a fault state	Fan idle state not reached	Reset the boiler. If fault occurs repeatedly, replace fan unit.
F.73	Burner in a fault state	Internal communication error	Reset the boiler. If fault recurs, replace BCU burner control unit: See page 89.
F.182	No DHW heating	Short circuit, outlet temperature sensor (if installed)	Check outlet temperature sensor (plug X1, cores 13 and 14). Measure sensor input on electronics module. Target value: 3.3V– with sensor disconnected
F.183	No DHW heating	Lead break, outlet temperature sensor (if installed)	Check outlet temperature sensor (plug X1, cores 13 and 14).
F.299	Time/date incorrect	Real time clock setting incorrect	Set the time and date.
F.373	Burner in a fault state	Heat transfer too low during calibration Temperature limiter has shut down.	■ Ensure adequate heat transfer. ■ Check circulation pump for faults, scale or blockages. ■ Check 3-way diverter valve function in actuator test. Vent the system. ■ Check function of flow sensor. Reset the boiler.
F.378	Burner in a fault state	Flame loss during stabilization or operating phase	■ Check gas supply (gas pressure and gas flow switch). ■ Check flue gas recirculation. ■ Check for contamination of ionization electrode and burner gauze assembly. Reset the boiler.
F.379	Burner in a fault state	Flame signal not present or insufficient	■ Check ionization electrode connecting cable for damage and firm seating. ■ Check ionization electrode; replace if necessary. Reset the boiler.
F.380	Burner in a fault state	Flame loss immediately after flame formation (during safety time)	Check gas supply (gas pressure and gas flow switch). Check balanced flue system for flue gas recirculation. Check ionization electrode and burner gauze assembly: ■ Clearance to burner gauze assembly ■ Contamination on electrode Reset the boiler.
F.381	Burner in a fault state	Flame loss during operating phase	Check gas supply (gas pressure and gas flow switch). Check balanced flue system for flue gas recirculation. Check ionization electrode and burner gauze assembly: ■ Clearance to burner gauze assembly. ■ Contamination on electrode Reset the boiler.
F.446	Burner in a fault state	Deviation, boiler supply temperature sensor/high limit safety cutout	Check the supply temperature sensor/high limit safety cut-out. Check plug-in connection and lead to sensor. Reset the boiler.
F.467	Burner in a fault state	Gas supply insufficient during calibration. Contaminated or insufficiently sized gas line.	■ Test static gas pressure and gas flow pressure. ■ Check that on-site gas line and gas flow switch are correctly sized. ■ Visually inspect gas solenoid valve inlet and strainer on the inlet side for contamination. Reset the boiler. **Note:** Contamination from a brazed gas line, for example, can block up the gas solenoid valve strainer on the inlet side.

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