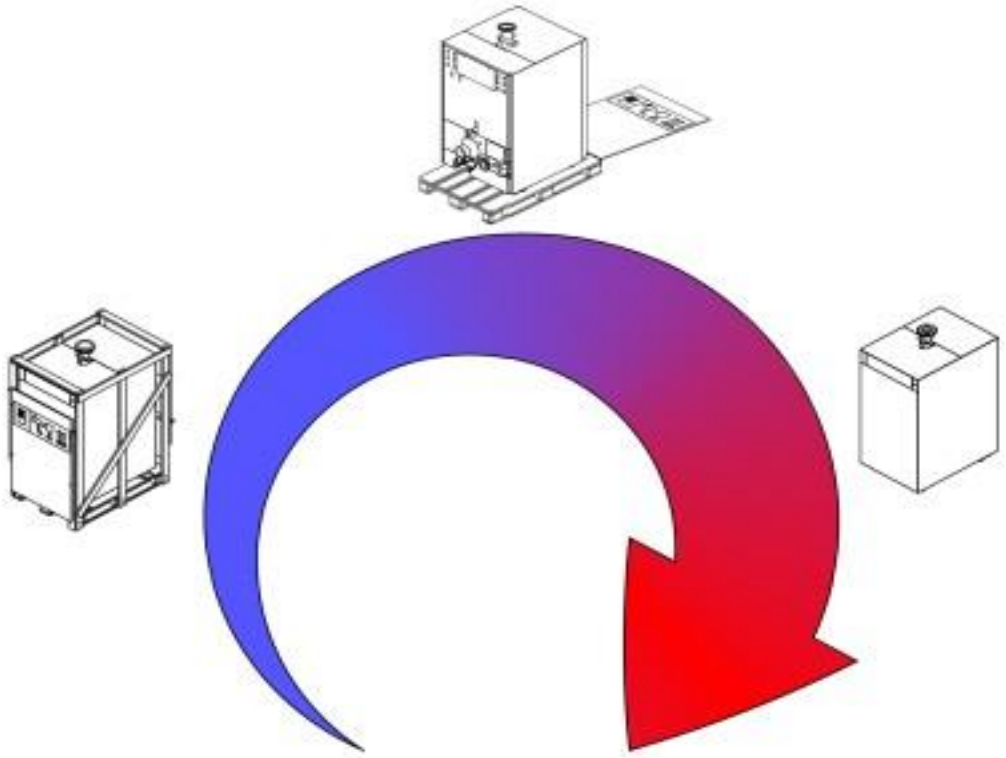
VITOCROSSAL 200 CI2

Installation and Start-up Guide

for use by a licensed professional heating contractor for typical single boiler installations

Vitocrossal 200 CI2 series
Gas condensing boilers with MatriX cylinder burners
Heating input: 399 to 2000 MBH
(117 to 586 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 Vitocrossal 200 CI2 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.

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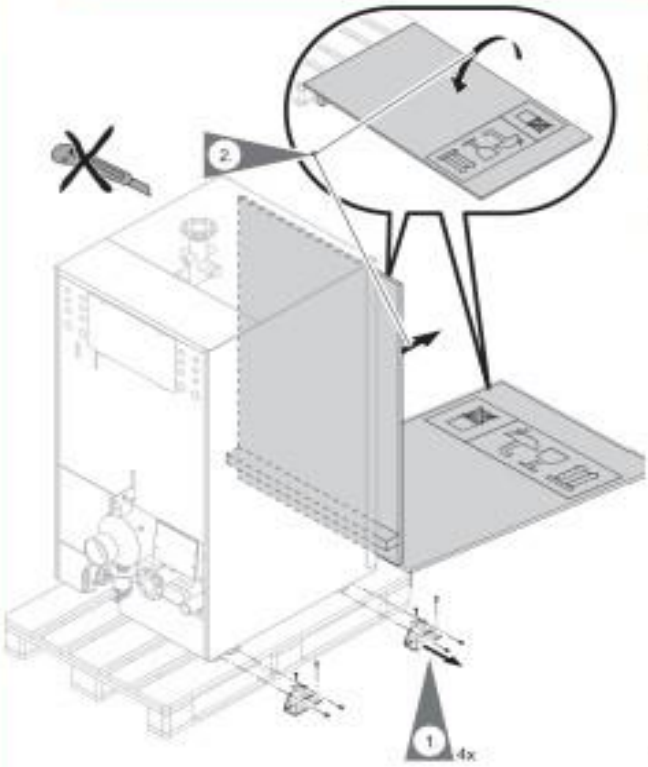
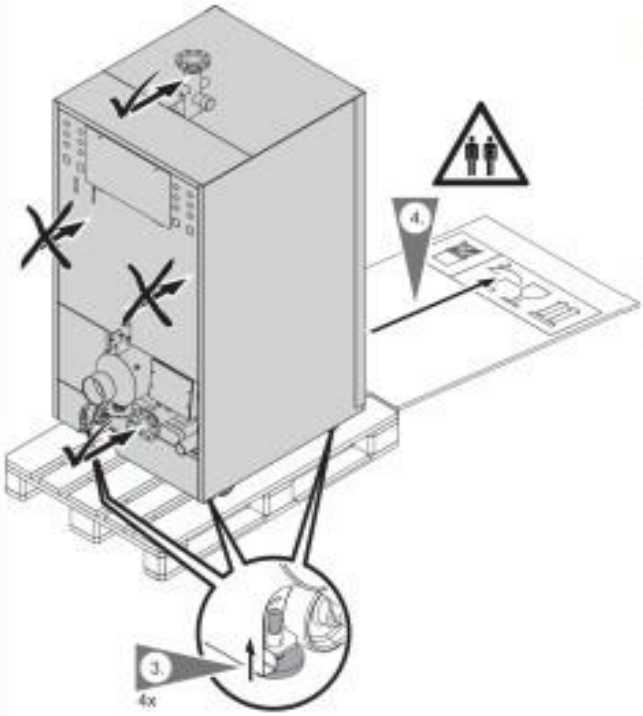
1 Unpacking the Boiler



The boiler is delivered on a wooden pallet.

Note: The boiler can be lifted by crane only while it is still packed on the skid.

1. Remove packaging unscrew the transport brackets.
2. Position the ramp at the front of the boiler. Ensure that there is sufficient room to unload the boiler from the skid. The ramp length Ⓐ is 50 in. (1270 mm) for CI2 models 399 through 1000, and 75 in. (1900 mm) for CI2 models 1500 and 2000.



3. Using an open end wrench wind in the adjustable feet.
4. Roll the boiler off the pallet.

⚠ CAUTION

Do not push on the jacketing to remove the boiler from the skid.

Note: The boiler is equipped with wheels to facilitate unloading and placement of the boiler.

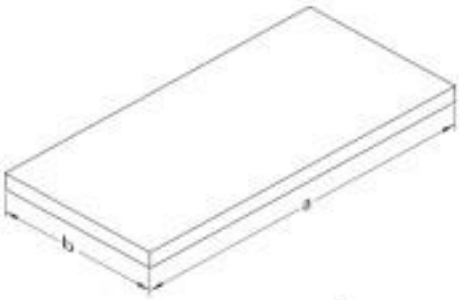
⚠ WARNING

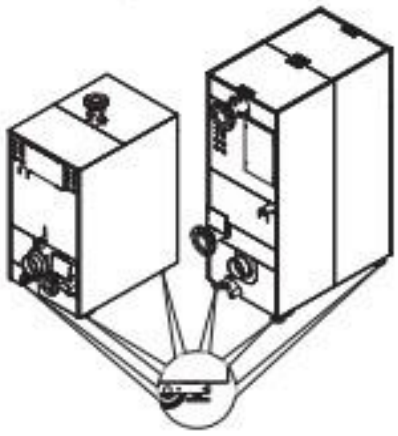
The boiler can cause serious injury if it overturns. At least 2 people are required to move the boiler. Roll the boiler in a straight line.

2 Positioning the Boiler

Positioning boiler

The boiler must be placed on a load bearing foundation. This allows for the connection of a neutralization system.





Note: The levelling feet must be used once the boiler has been placed in it's final position.

1. Using an open end wrench adjust the levelling feet in the base frame of the boiler ensuring that the wheels are off the ground.
2. It is recommended to place a flat piece of steel plate under each leveling bolt for better weight distribution and adjustment.
3. Level the boiler, by adjusting the levelling feet.

Without seismic feet

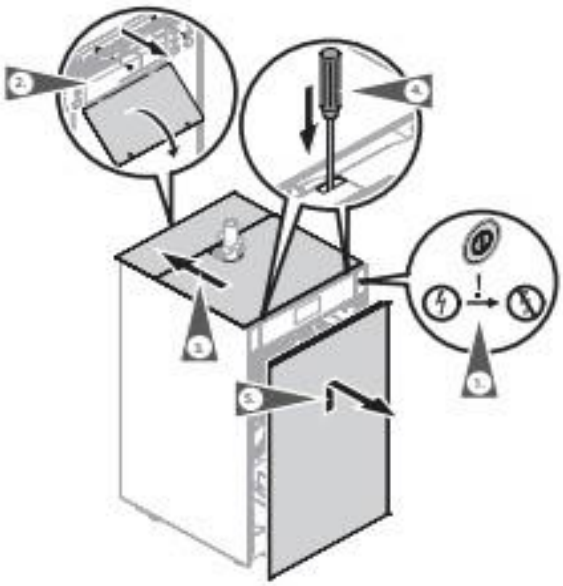
CI2 Model		399	500	750	1000	1500	2000
a	in.	32		41		47¼	
	mm	(812)		(1040)		(1200)	
b	in.	29½		29½		29½	
	mm	(750)		(750)		(750)	
Weight incl. water content		1027 lb. 358 kg		1382 lb. 627 kg		2754 lb. 1249 kg	2798 lb. 1269 kg

With seismic feet

CI2 Model		399	500	750	1000	1500	2000
a	in.	46		54		63	
	mm	(1170)		(1370)		(1600)	
b	in.	46		46		46	
	mm	(1170)		(1170)		(1170)	

3 Accessing the Boiler

CI2 399 to 1000

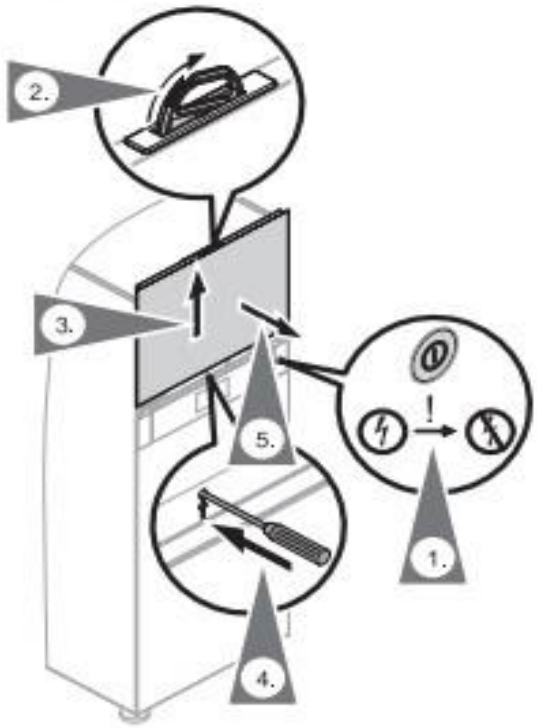


To access the BCU and control unit, panels have to be removed.

1. Turn the power switch off and disconnect the power supply to the boiler close gas shutoff valve.
2. Remove junction box retaining screws and set aside, swing the junction box access door to open.
3. Push back top panels to access the front panel release (top panel removal is not required).
4. Using a screwdriver push down on the front panel releases.
5. Pull forward at the top of the front panel and lift up to remove.

3 Accessing the Boiler *(continued)*

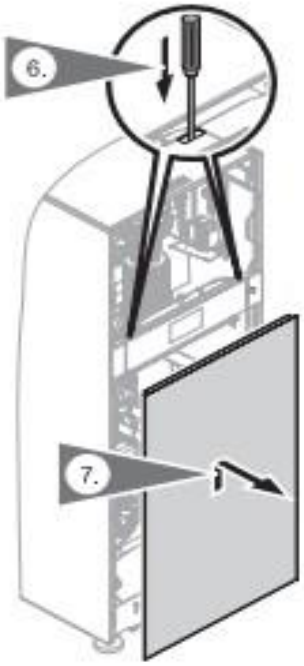
CI2 1500/2000



1. Turn the power switch off and disconnect the power supply to the boiler close gas shutoff valve.
2. Flip open the panel handle located at the top of the upper front panel.
3. Pull up the upper front panel using the panel handle.
4. While holding the panel handle, use a screw driver to release the panel retaining clip.
5. Pull up to finish removing the panel.

⚠ CAUTION

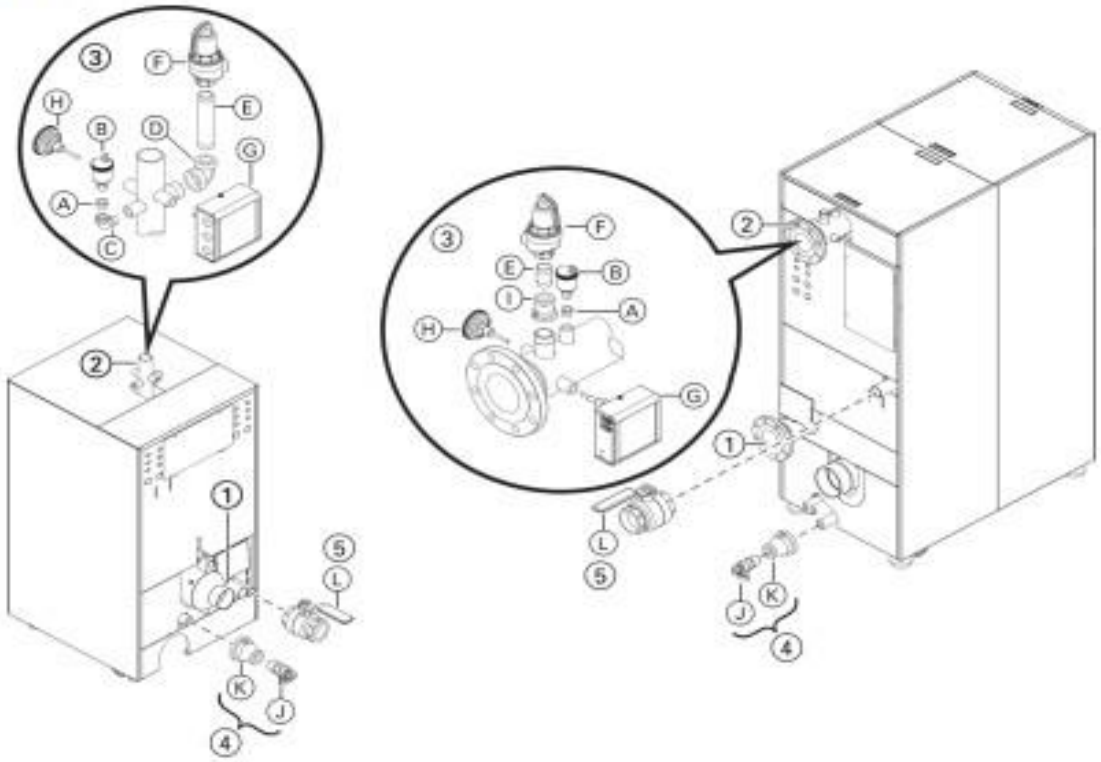
Failure to keep a firm grip on the panel handle may cause the upper front panel to fall causing injury.



6. Using a screw driver, press down on the lower front panel release.
7. Pull the top of the lower front panel away from the boiler, lift up to remove.

4 Boiler Connections

Safety Header



Legend

① Boiler return: 2 in. NPT for CI2 399/500
2 ½ in. ANSI flange for CI2 750/1000*1
4 in. ANSI flange for CI2 1500/2000*1

② Boiler supply: 2 in. NPT for CI2 399/500
2 ½ in. ANSI flange for CI2 750/1000*1
4 in. ANSI flange for CI2 1500/2000*1

*1 Counter flanges, gaskets and hardware (field supplied)

*2 Alternate pressure relief valves are available depending on operating pressure requirements. Contact your local Viessmann sales representative for details.

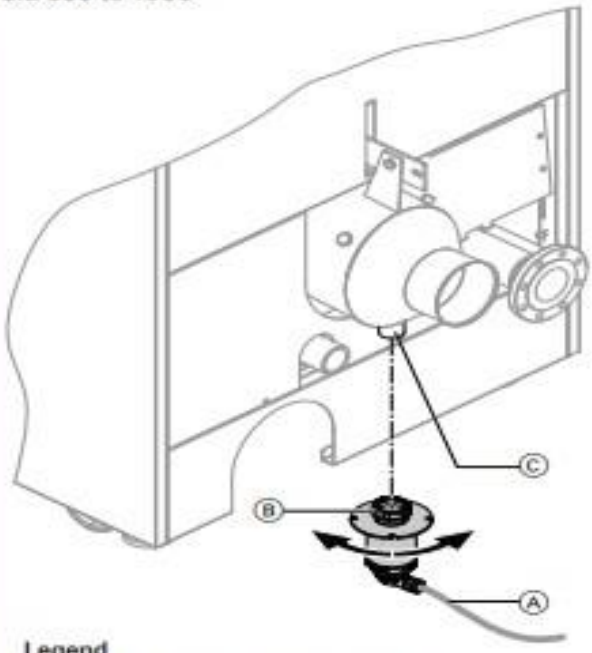
③ Safety header: (Pressure relief valve, low water cutoff, automatic air vent and temperature/pressure gauge)
- Ⓐ Hex bushing ½ in. x ⅜ in.
- Ⓑ Air vent with shut-off base
- Ⓒ Street elbow ¾ in.
- Ⓓ Reducing elbow 1¼ in. to 1 in.
- Ⓔ Nipple 1 in.
- Ⓕ Pressure relief valve, 80 psi*2
- Ⓖ Low water cutoff
- Ⓗ Temperature/pressure gauge
- Ⓘ Reducer 1½ in. to 1 in.

④ Drains:
- Ⓚ Reducer 1½ in. x ¾ in.
- Ⓙ Sediment faucet ¾ in.

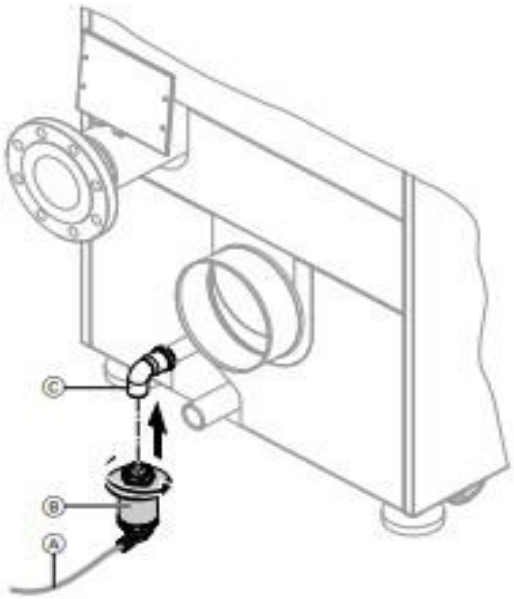
⑤ Gas line fittings:
- Ⓛ Gas shut-off valve, 1½ in. for models 399, 500, 750 and 1000, 2 in. for models 1500 and 2000

5 Installing the Condensate Trap

CI2 399 to 1000



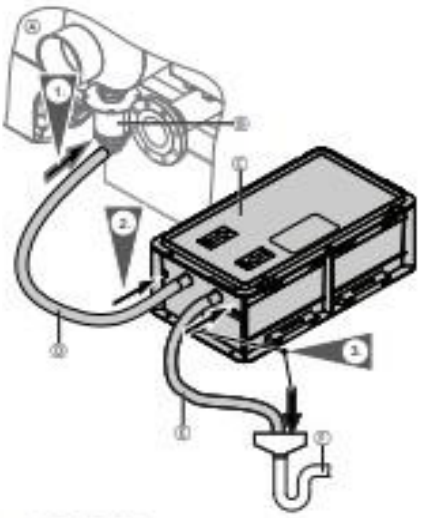
CI2 1500 and 2000



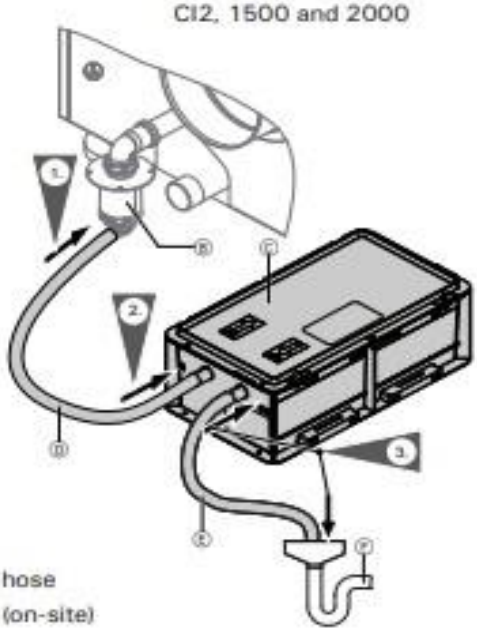
Legend
- (A) Condensate drain connection
- (B) Condensate trap
- (C) Drain line

6 Connecting the Neutralization System

CI2, 399 to 1000

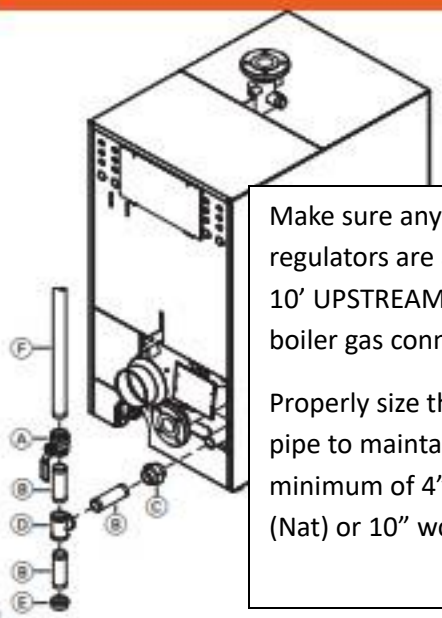


CI2, 1500 and 2000



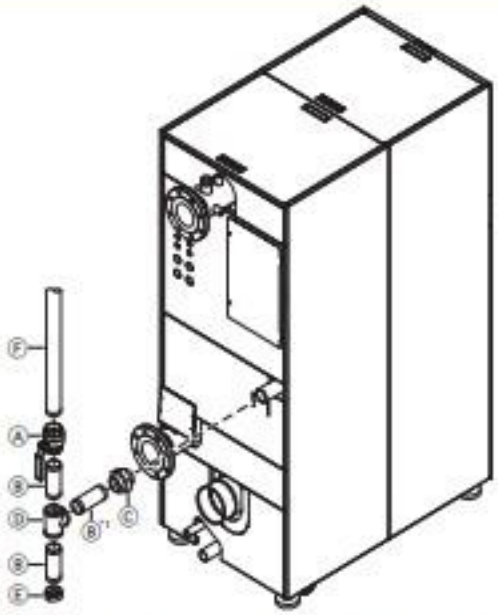
Legend
- (A) Vitocrossal 200 CI2
- (B) Condensate trap
- (C) Neutralizing system (accessories)
- (D) Condensate trap hose (included with the boiler) to neutralizing system
- (E) Drain hose
- (F) Drain (on-site)

7 Making the Fuel Gas Connections



Make sure any gas regulators are at LEAST 10' UPSTREAM of the boiler gas connection.

Properly size the gas pipe to maintain a minimum of 4" wc (Nat) or 10" wc (LPG)



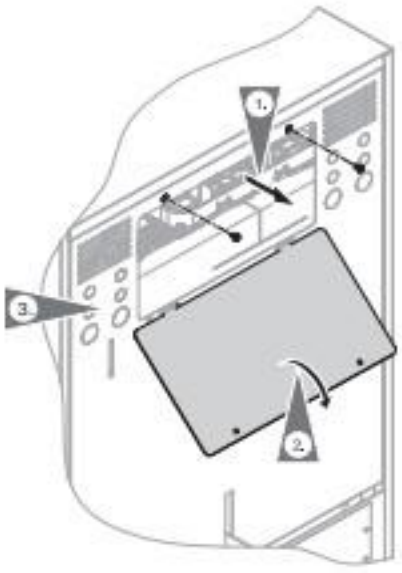
Legend

Ⓐ Manual gas shutoff valve (supplied)
Ⓑ Nipple (field supplied)
Ⓒ Ground joint union (recommended) (field supplied)
Ⓓ Tee (field supplied)
Ⓔ Cap (field supplied)
Ⓕ On site gas line

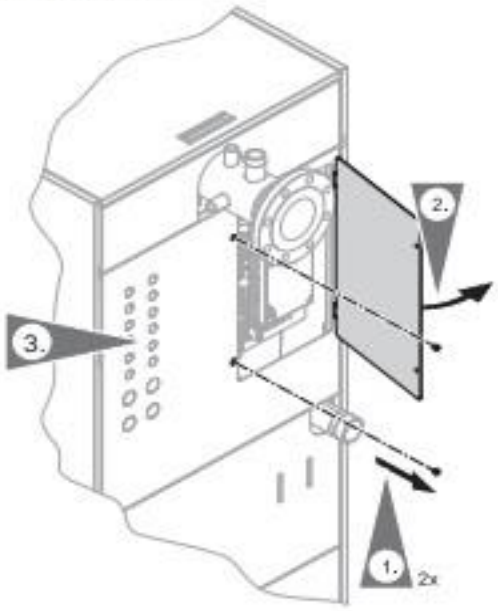
*1 If using ducted combustion air filter kit on the Vitocrossal 200 CI2 1500 and 2000 ensure to leave min. 16 in. (400 mm) clearance between boiler and drip pocket.

8 Accessing the DIN Rail

CI2 399 to 1000



CI2 1500/2000

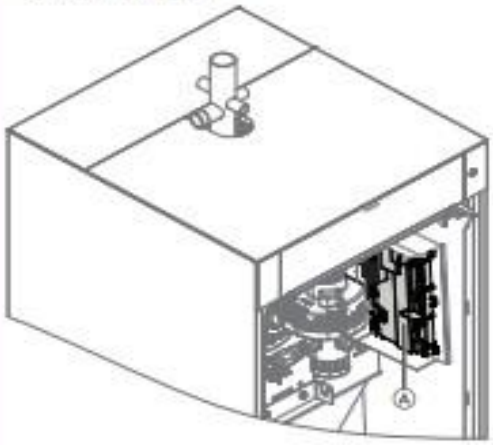


1. Remove two screws for junction box access door.
2. Rotate junction box access door to remove.
3. Select an available knock-out on the rear jacketing of the boiler. Remove the knock-out and apply a strain relief to the opening.
4. Route the cable through the strain relief to the DIN rail or Control boards (WP or MZIO), as required.

9 Boiler Control Locations

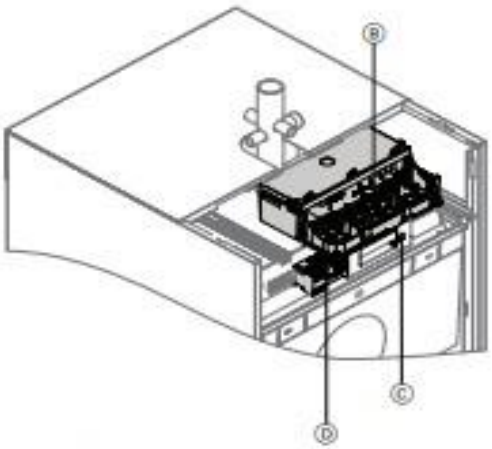
Location of the control unit components for CI2 399 to 1000

Front of the boiler



Legend
Ⓐ BCU

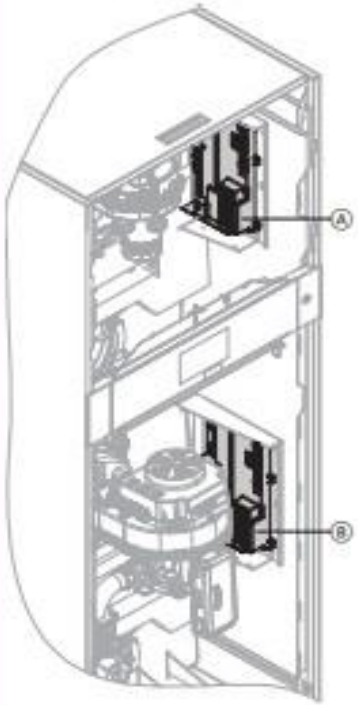
Rear of the boiler



Legend
Ⓑ Control unit with WP and MZIO
Ⓒ LAN socket
Ⓓ DIN rail

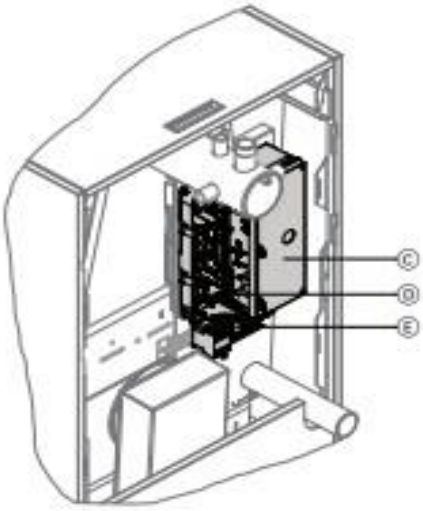
Location of the control unit components for CI2 1500/2000

Front of the boiler



Legend
Ⓐ Burner control unit 1 (BCU)
Ⓑ Burner control unit 2 (BCU)

Rear of the boiler

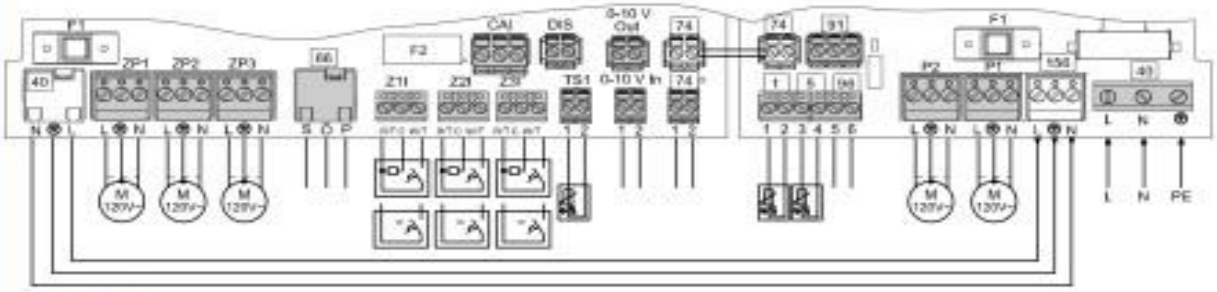


Legend
Ⓒ Control unit with WP and MZIO
Ⓓ LAN socket
Ⓔ DIN rail

10 Connection on MZIO/WP Boards

Overview of connections to the wiring panel and MZIO

Note: For further information on the connections, see the following chapters.



Wiring panel

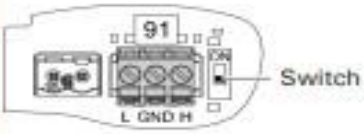
- 40 Power cable DIN rail
- P1 Output 120V for: DHW pump
- P2 Output 120V for: Heating circuit pump for heating circuit without mixing valve A1 in conjunction with low loss header and heating circuits with mixing valve or DHW recirculation pump
- 96 External call for heat
- 1 Outside temperature sensor, terminals 1 and 2
- 5 Tank temperature sensor or temperature switch such as an Aquastat, terminals 3 and 4
- 91 CAN BUS connection
- 74 PlusBus
- F1 Fuse 6.3 A (slow), 120V
- F2 Fuse 1 A (slow), 120V

When connecting accessories observe the separate installation instructions provided with them.

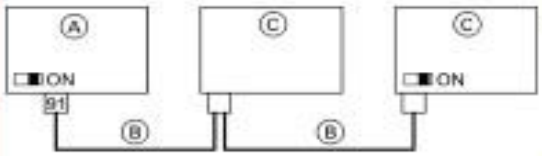
MZIO

ZP1	Zone 1, pump
ZP2	Zone 2, pump
ZP3	Zone 3, pump
66	Potential-free changeover contact S Normally closed (NC) O Normally open (NO) P COM
ZI1	Zone 1 or safety input 1
ZI2	Zone 2 or safety input 2
ZI3	Zone 3 or safety input 3
CAI	Combustion air interlock
DIS	Digital input (burner lockout)
TS1	Low loss header sensor
0-10V OUT	Output 0-10V (burner modulation feedback)
0-10V IN	Input 0-10V

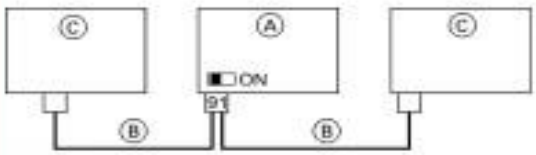
11 Connecting to the CAN Bus System



- If the boiler is not integrated into a CAN bus system: Switch must not be set to "ON".



- If the boiler is integrated in a CAN bus system and is located at the beginning or end of this system (not in the middle): Set switch to "ON" (switched on).



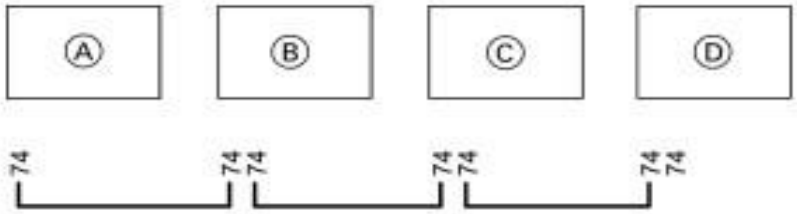
- If the boiler is integrated in a CAN bus system and is not located at the beginning or end of this system: Do not set switch to "ON" (switched off).

Legend

- (A) Boiler
- (B) CAN bus cable
- (C) Other subscribers

12 Connecting Accessories

Accessories with direct power supply



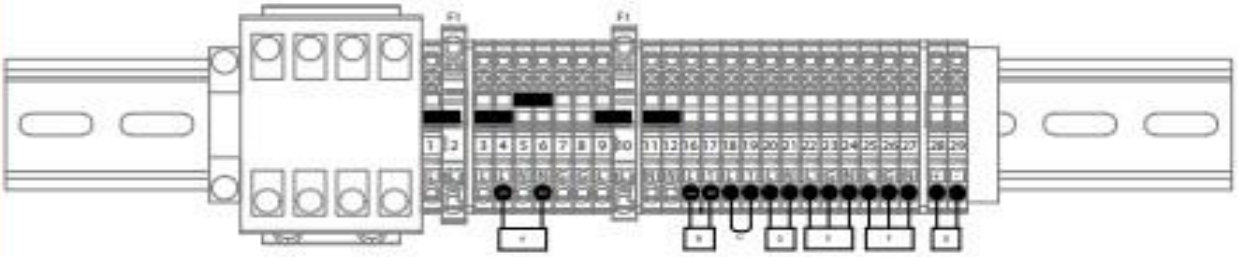
Legend

Ⓐ Lead boiler
Ⓑ Mixing valve extension kit
Ⓒ Mixing valve extension kit
Ⓓ EM-EA1 extension and/or EM-P1 extension
74 PlusBus

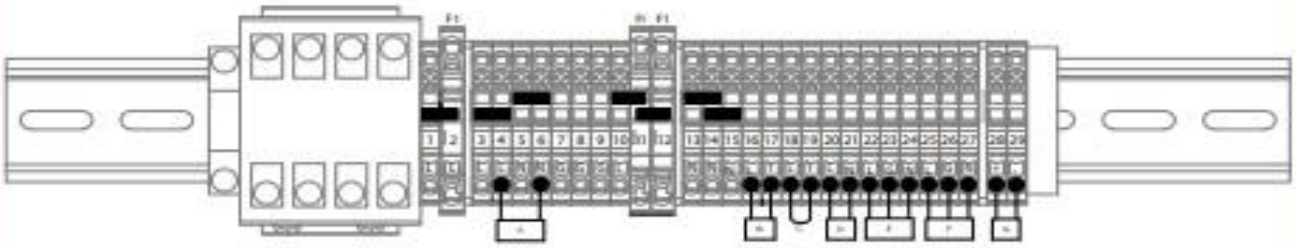
13 Electrical Connections DIN Rail

DIN rail CI2 399 to 1000

Overview of terminal block connections



DIN rail CI2 1500/2000

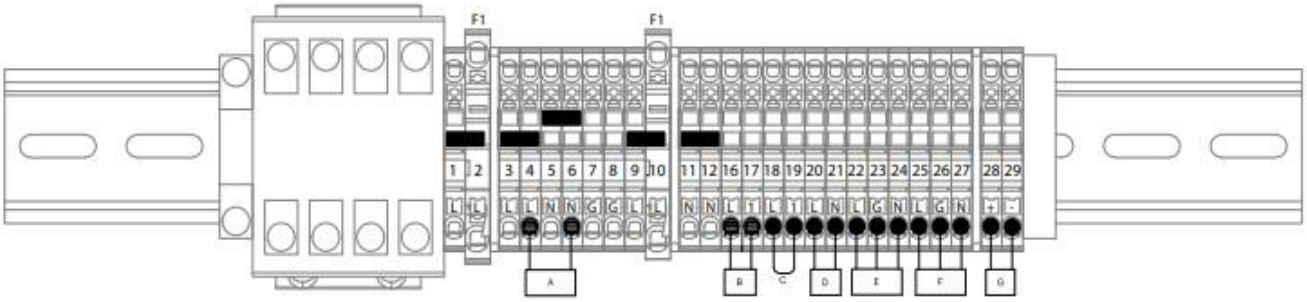


Legend

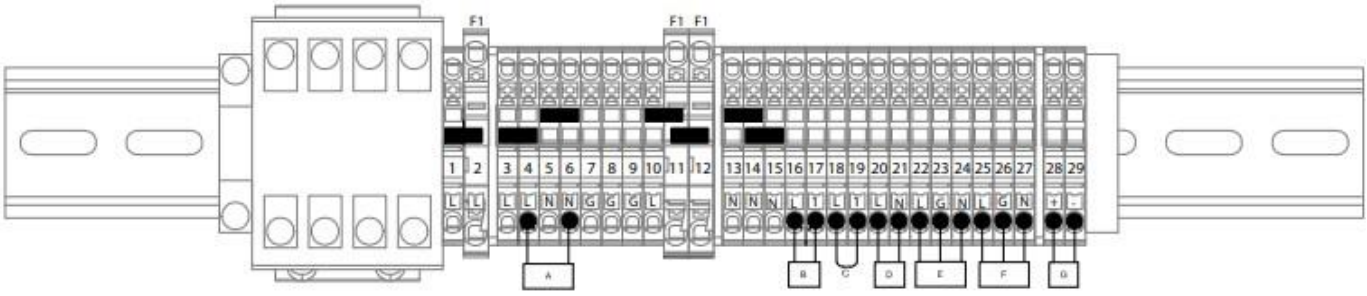
A Low water cut-off power supply
B Low water cut-off feedback
C Flue gas damper for common venting feedback (factory installed jumper)
D Flue gas damper for common venting power supply
E Boiler isolation valve (power open spring return)
F Boiler pump power supply
G Boiler pump modulation signal (0-10VDC)
F1 Fuse 6.3 (slow) 120VAC

DIN rail CI2 399 to 1000

Overview of terminal block connections



DIN rail CI2 1500/2000



Legend

A Low water cut-off power supply
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F Boiler pump power supply
G Boiler pump modulation signal (0-10VDC)
F1 Fuse 6.3 (slow) 120VAC

14 Connection of Low Water Cut-off Device

Note: The boiler is supplied with a Low Water Cutoff wiring harness.

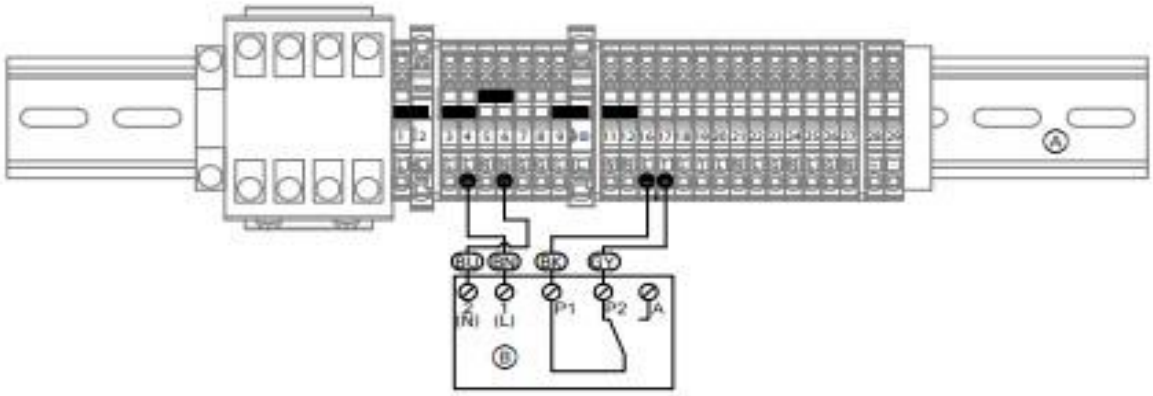
1. Make connection for Low Water Cutoff switching contact at terminals 16 and 17.
2. Power supply for low water cut-off device made at terminal 4 and terminal 6.

For additional information refer to the Installation Instructions.

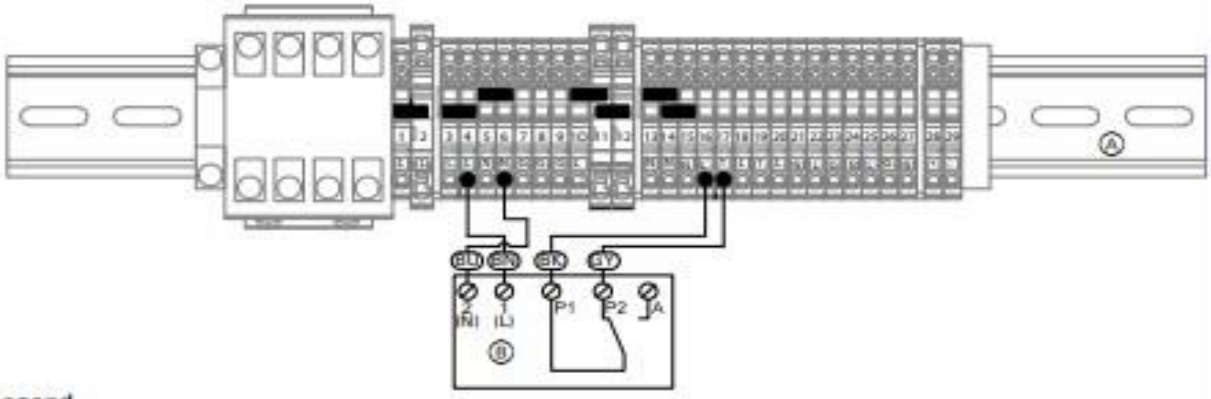
⚠ CAUTION

The diagram shown is only a simplified conceptual drawing of a typical low water cut off (LWCO) device. Refer to the manual specific to the device for interconnection details.

CI2 399 to 1000



CI2 1500 and 2000



Legend

Ⓐ Boiler DIN rail

Ⓑ Low water cutoff (typical)

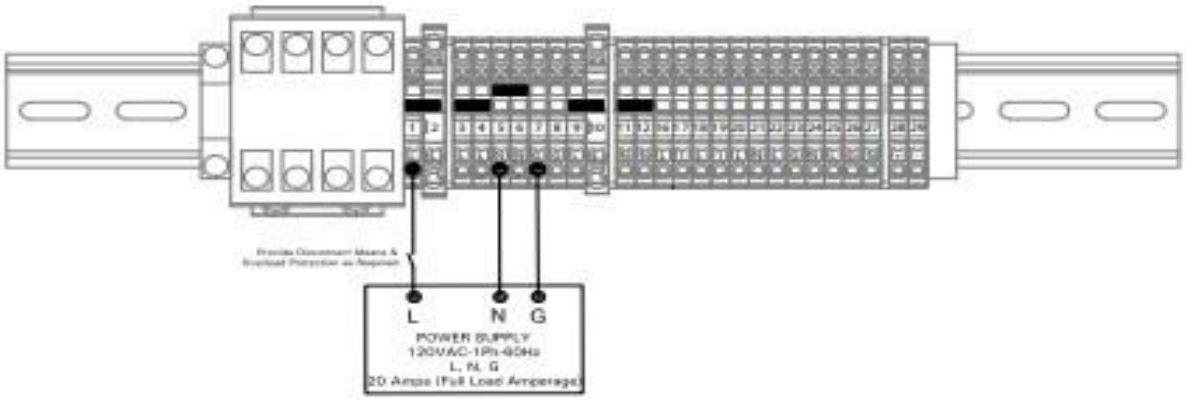
15 Connecting the Boiler Power Supply

IMPORTANT

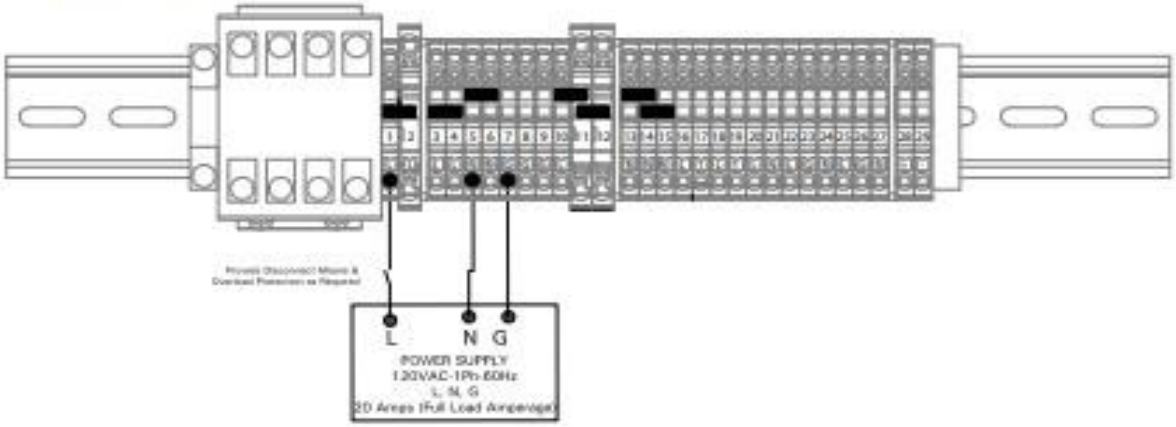
Electrical installations must comply with the latest edition of:

- In the U.S.A., the National Electrical Code (NEC), ANSI/NFPA 70 and any other state, local codes and/or regulations.
- In Canada, the Canadian Electrical Code (CEC), CSA C22.1 Part 1 and any other province, territory, local codes and/or regulations.

CI2 399 to 1000



CI2 1500 and 2000



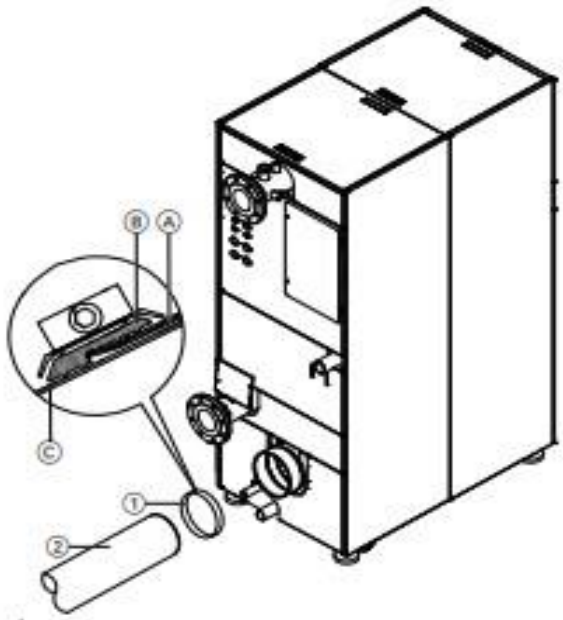
⚠ WARNING

The control must be grounded.
Ensure that 'L', 'N' and 'G' are not interchanged.

⚠ WARNING

Incorrectly executed electrical installations can lead to injuries from electrical current and result in appliance damage.

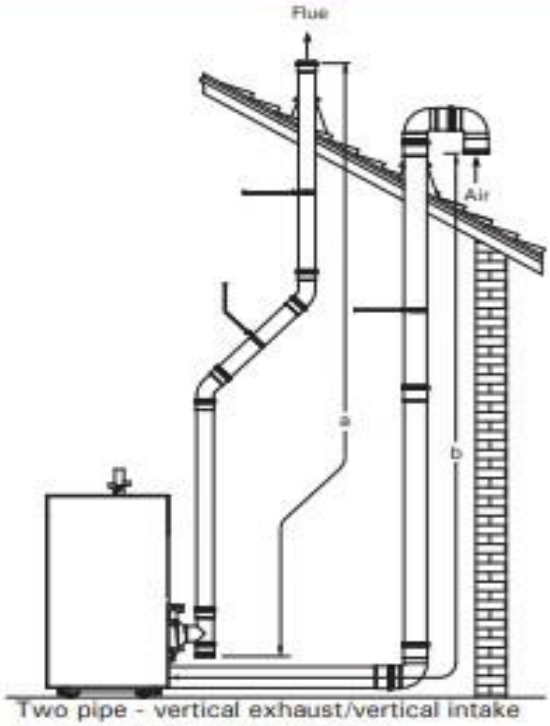
16 Making the Vent Connection



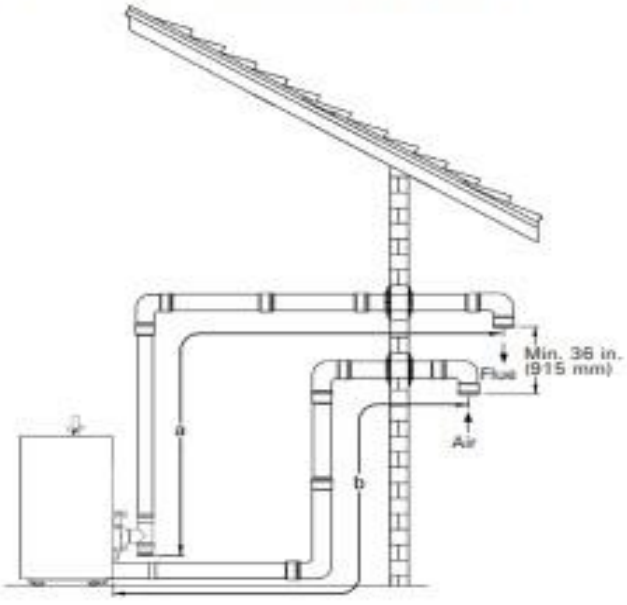
Legend

1. Flue vent collar coupling (supplied with boiler)
2. Approved venting (field supplied)

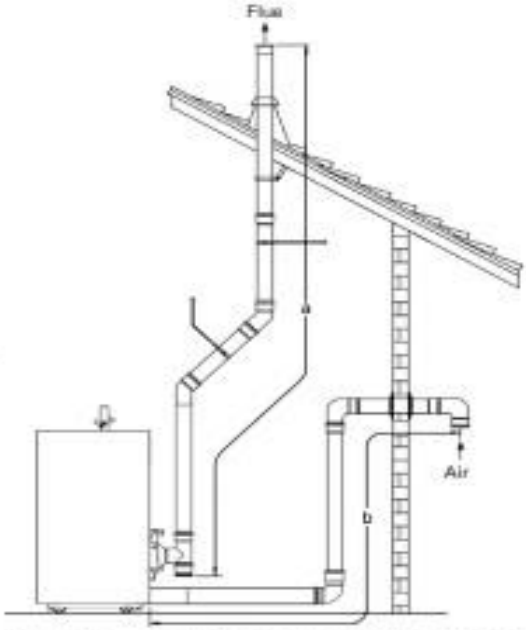
(A) Boiler Flue Collar
(B) Flue vent collar clamp
(C) Approved venting material (field supplied)



Two pipe - vertical exhaust/vertical intake
a - Equivalent exhaust length
b - Equivalent air intake length



Two pipe - horizontal exhaust/horizontal intake
a - Equivalent exhaust length
b - Equivalent air intake length



Two pipe - vertical exhaust/ horizontal intake
a - Equivalent exhaust length
b - Equivalent air intake length

Vertical intake and exhaust

Vitocrossal 200 CI2 Boiler model		399	500	750	1000	1500	2000
Boiler flue collar (internal diameter)	in. (mm)	4 (104.2)	4 (104.2)	6 (155)	6 (155)	6 (155)	8 (205.2)
Combustion air intake diameter	in. (mm)	4 (104.2)	4 (104.2)	6 (155)	6 (155)	6 (155)	8 (205.2)
Max. total equivalent length (a+b)	ft. (m)	198 (60)	198 (60)	198 (60)	198 (60)	198 (60)	198 (60)

17 Starting the Boiler Using the Commissioning Assistant

Commissioning assistant sequence	Explanations and references
Commissioning	
Language	Factory setting: English
With programming unit	If commissioning is to be carried out at the programming unit of the boiler.
With software tool	The boiler automatically switches on the WiFi access point. Further commissioning steps according to the instructions of the software tool used (e.g. "Viguide") **Note:** Apps for commissioning and service are available for iOS and Android devices. Download on the App Store GET IT ON Google Play Cascade systems can only be commissioned using the software tool.
Units of measurement	■ Temperature: °C or °F ■ Length: m or ft ■ Date format: DD.MM-YY or MM/DD/YY ■ Time: 12/24 hour clock ■ Pressure: Bar/Psi
Date and time	Set the current time.
Operating mode	■ Weather-compensated operation The outside temperature sensor must be connected, operates at weather-compensated supply temperature according to heating curve ■ Constant operation Operation with constant supply temperature
Gas type	If operating with LPG, switch to "LPG" (the delivered condition is Natural Gas)
Flue system type	■ Single connection Only one boiler is connected to the flue system (factory setting). ■ Multiple connections Several boilers are connected to the flue system (common venting).
Flue length adjustment	Specification of the effective flue and ventilation air length. To determine the effective flue and ventilation air length, see Service Instructions "Setting the Boiler Flue System Length".

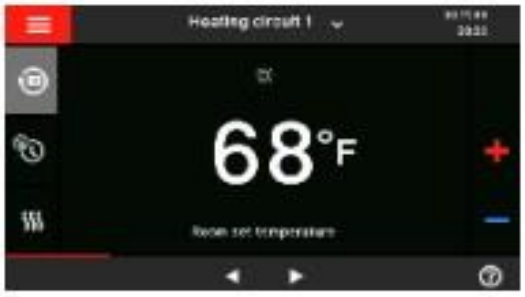
If no further settings are to be performed, the commissioning assistant can now be closed.

Commissioning assistant sequence	Explanations and references
System scheme	
Heating circuits 1	Not available or heating circuit without mixing valve
Heating circuits 2,3,4	Not available or heating circuit with mixing valve
DHW ■ Not available ■ Tank with one sensor ■ Tank with one sensor and DHW recirculation pump ■ Tank with temperature switch ■ Tank with temperature switch and DHW recirculation pump	Settings for DHW heating according to the system components System without DHW heating System with DHW tank with 1 tank temperature sensor System with DHW tank with 1 DHW tank temperature sensor and DHW recirculation pump System with DHW tank with temperature switch (such as an aquastat) System with DHW tank with temperature switch, (such as an aquastat) and DHW recirculation pump
Low loss header/buffer tank ■ Not available ■ Low loss header, heating only ■ DHW heating upstream of low loss header ■ DHW heating downstream of low loss header ■ Buffer tank, heating only ■ DHW heating upstream of buffer tank ■ DHW heating downstream of buffer tank	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
Heating zone/safety input ■ Heating zone 1 ■ Heating zone 2 ■ Heating zone 3 (based on boiler application type)	Settings for the heating zones or external safety equipment circuits according to the system components Not available or temperature controller or safety input 1 Not available or temperature controller or safety input 2 Not available or temperature controller or safety input 3

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

Commissioning assistant sequence	Explanations and references
Floating contact: Function selection plug 96	If a contact has been connected to plug 96.
■ No function ■ External demand ■ External blocking Heat demand	Heat generator demand with adjustable target supply temperature (parameter 528.0) and target primary pump speed (parameter 1100.2). ■ if the contact is closed, burner activation is blocked(except in frost protection mode). ■ If the burner was previously running, the boiler circuit pump is stopped after a delay-off time of 60 s. ■ Storage tank loading pump is stopped For operation with an external temperature controller, the boiler can be controlled by a call for heat. Once the contact is closed, the boiler starts. Call for heat is shown on 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	Vitotrol 200-E
(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.
"Primary pump"	
■ No pump ■ Boiler circuit pump ■ Boiler circuit pump	On/off control 0-10V modulation control can be configured only via Viguide app
Maintenance	Maintanance settings are made in the Viguide app.
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.

18 Setting the Room Temperature



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

19 Adjusting the Heating Curve

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 Operating Instructions for more detail.

20 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).

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