

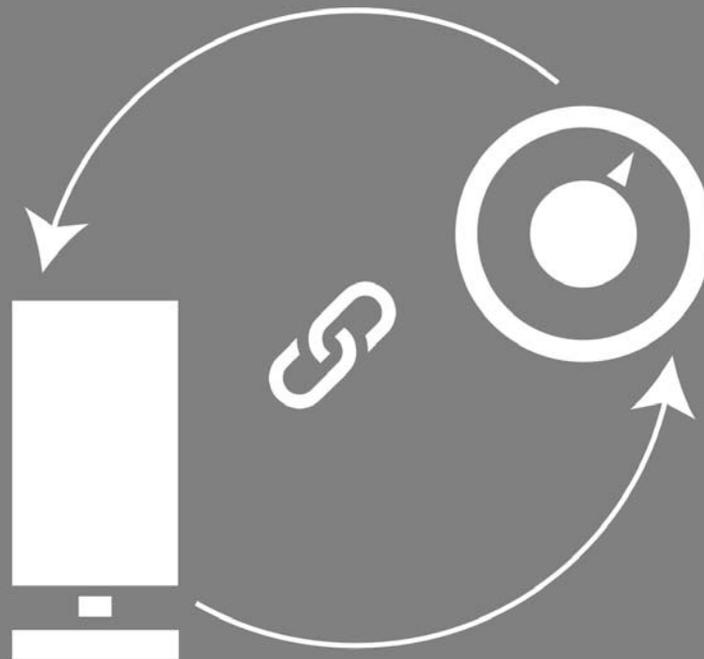
Installation and Operating Instruction Supplement

for use by heating contractor

VIESSMANN

For single boiler applications using:
Vitodens 200-W, B2HB 19 to 199 and B2HA 80 to 530
Vitodens 222-F, B2TB 19, 35, 68, 125
Vitocrossal 300, CU3A 26 to 199

Zone Circuit Control with Room Thermostat



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**

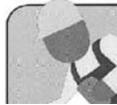
Information contained in this and related product documentation must be read and followed. Failure to do so renders the warranty null and void.



■ **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 Safety and "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.

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Important Regulatory and Installation Requirements

Approvals

Viessmann boilers, burners and controls are approved for sale in North America by CSA International.

Codes

The installation of this unit shall be in accordance with local codes. In the absence of local codes, use:

- CSA C22.1 Part 1 and/or local codes in Canada
- National Electrical Code ANSI/NFPA 70 in the U.S.

Always use latest editions of codes.

The heating contractor must comply with the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1 where required by the authority having jurisdiction.

Working on the equipment

The installation, adjustment, service, and maintenance of this product 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, burner, or control.

Power supply

Install power supply in accordance with the regulations of the authorities having jurisdiction or, in absence of such requirements, in accordance with National Codes. Viessmann recommends the installation of a disconnect switch to the 120V power supply outside of the boiler room.

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

- ▶ Please carefully read this manual prior to attempting installation. 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.

- ▶ 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.

	 WARNING
	<p>Turn off electric power supply before servicing. Contact with live electric components can cause shock or loss of life.</p>

About these Installation Instructions

 Take note of all symbols and notations intended to draw attention to potential hazards or important product information.

 **WARNING**

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

► Indicates an imminently hazardous situation which, if not avoided, could result in death, serious injury or substantial product/property damage.

 **CAUTION**

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

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

IMPORTANT

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



► This symbol indicates to note additional information



► This symbol indicates that other instructions must be referenced.

Product Information

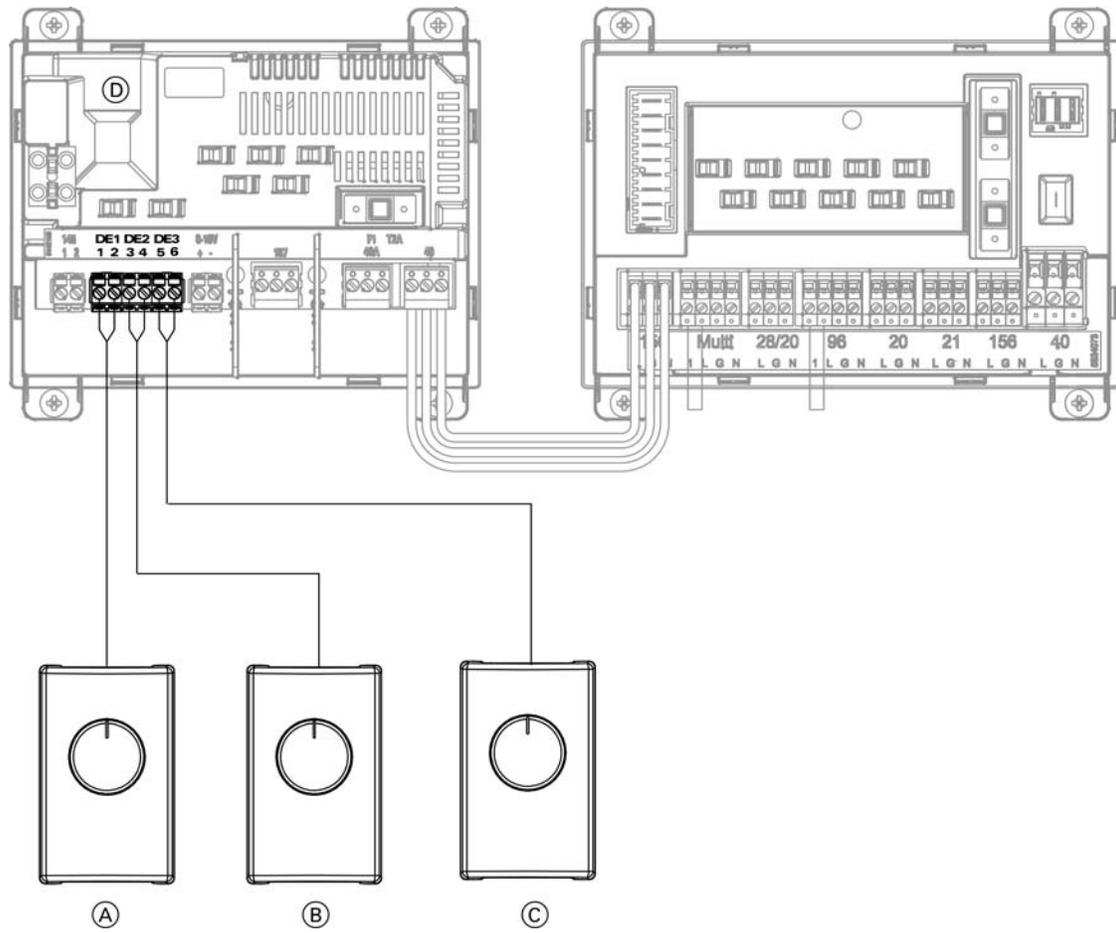
This supplement is intended to describe the added functionality of Zone Circuit Control, through the integrated boiler control for the following boiler series;

- Vitodens 200-W, B2HA and B2HB
- Vitodens 222-F, B2TB
- Vitocrossal 300, CU3A

Features and Benefits

- The unique advantage of the Viessmann implementation of Zone Circuit (ZC) controls compared to only using one single input on the boiler is to be able to set up different temperature levels for each zone circuit, thus making sure the boiler runs as efficient as possible, based on the actual heat (temperature) demand.
- To better accommodate North American system design techniques, zone circuit capabilities have been integrated into the Viessmann Residential boilers
- Zone circuit capabilities provide 3 input connections that allow easy integration of third party components such as thermostats, SIM controls, Multizone controllers, and other smart or on/off control technologies.
- The setup of these new capabilities can be done quickly with the new setup wizard that prompts the installer for the relevant information necessary to setup the system without having to go into complex levels of coding parameters.
- New User Interface (UI) dashboard. Once the ZC control capability has been selected/setup, the new home screen graphics will show additional operational information such as modulation rate and other target temperature values.
- With the new ZC control, installers can easily select a pump output to operate in conjunction with a signal from an external control. This minimizes additional wiring and relays in simplified systems of less than 4 zones.
- The unique capability of the new ZC control allows the installer to combining temperature setpoint operation and outdoor reset capability. This means that one or all of the 3 zone circuits ZC control can operate on a set temperature, or vary based on the outdoor reset curve that is selected in the setup wizard.
- To have the Viessmann control as it was, then simply select "No Zone Circuit" in the setup wizard and the control will look and perform exactly the way you are use to.

Thermostat Connection



Legend

- Ⓐ Room thermostat (dry contact) zone circuit 1
- Ⓑ Room thermostat (dry contact) zone circuit 2
- Ⓒ Room thermostat (dry contact) zone circuit 3
- Ⓓ EA1 module (integrated into the boiler)



Refer to the boiler Installation Instructions for locating and accessing the integrated EA1 module.

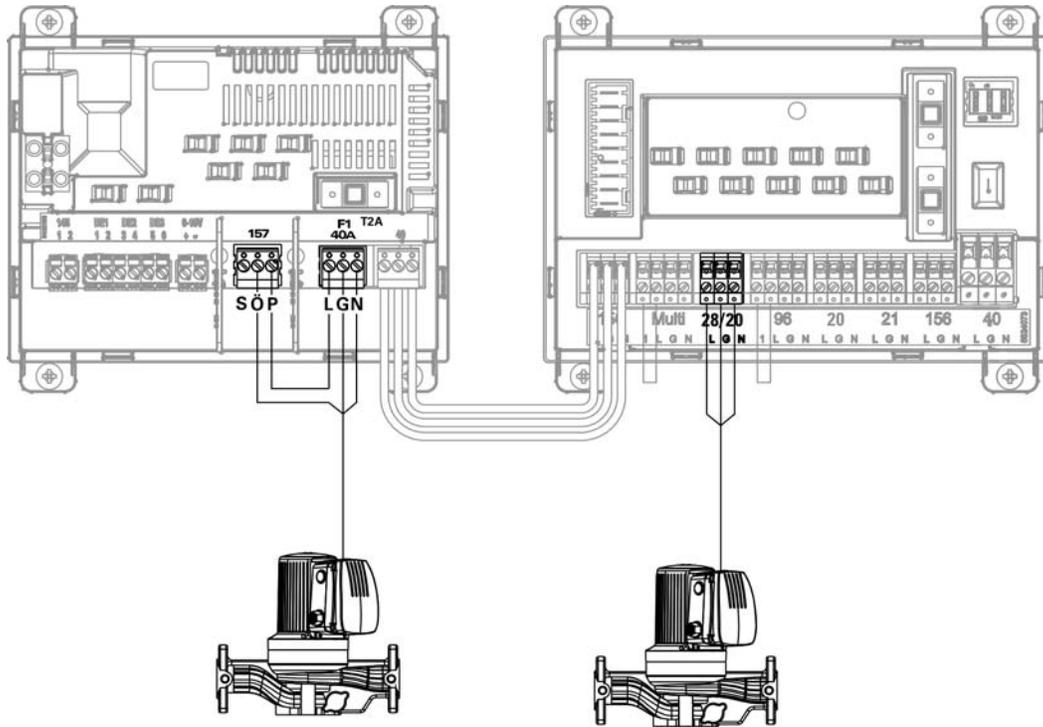
Pump Connection

Connection to boiler

Pump output assignment is done using the set-up wizard. A maximum of 2 zone circuit pumps can be connected to the boiler additional pumps will require the use of an AM1 extension module.



Refer to the boiler Service Instructions for start-up instructions.



Connection at AM1 (accessory)

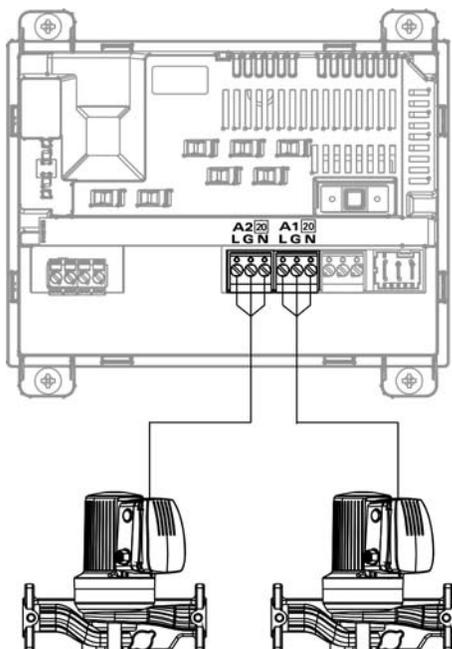
Pump output assignment is done using the set-up wizard.



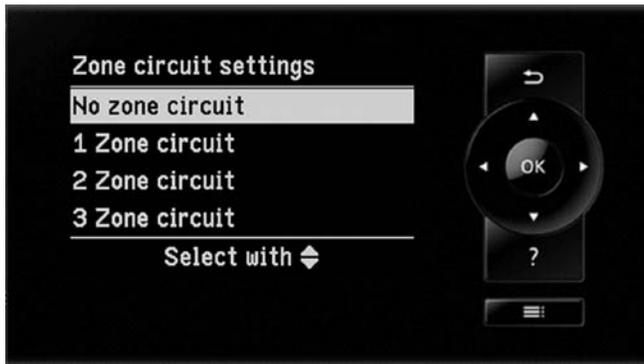
Refer to the boiler Service Instructions for start-up instructions.



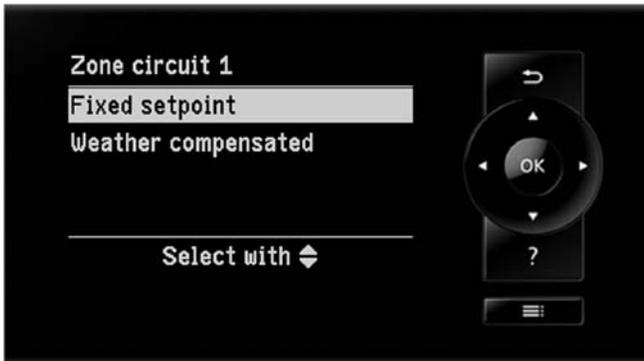
Refer to the AM1 extension module Installation Instructions for additional details.



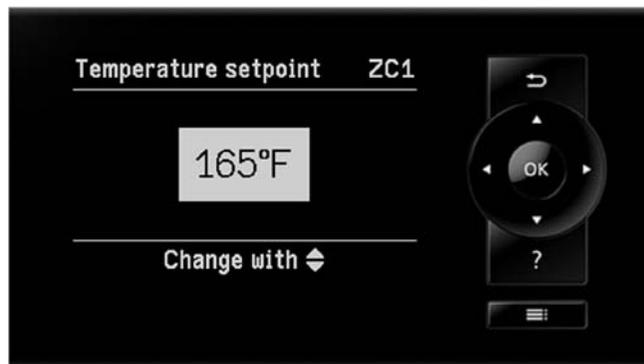
Programming Unit



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

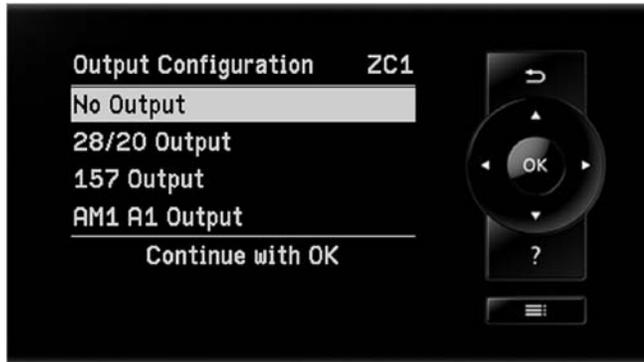


Each zone circuit can be operated either on a fixed setpoint, or weather compensated, use ▲/▼ to adjust, and press OK to select.

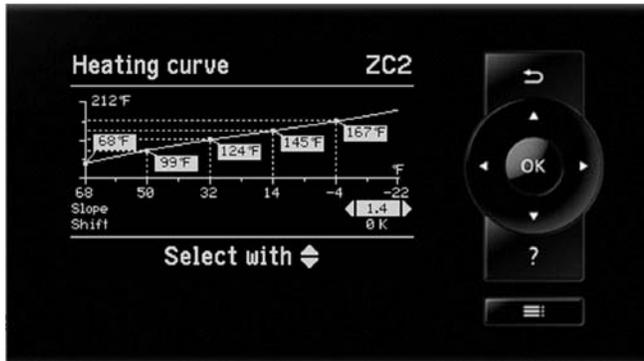


For zone circuits with fixed set point operation select the desired supply water temperature, use ▲/▼ to adjust, and press OK to select.

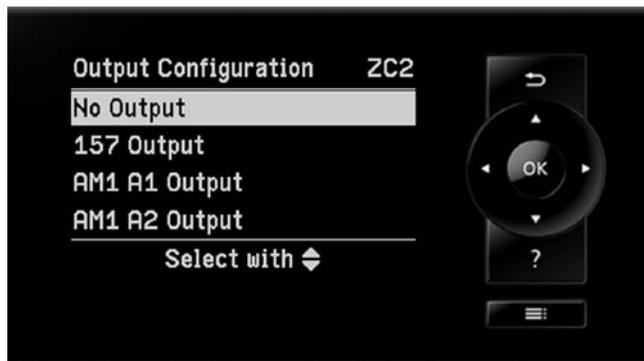
Programming Unit *(continued)*



Select desired pump output for zone circuit, use ▲/▼ to adjust, and press OK to select.



For zone circuits with weather compensated operation select the desired heating curve, use ▲/▼ to select 'slope' or 'shift' and use ◀/▶ to make adjustments.



Select desired pump output for zone circuit, use ▲/▼ to adjust, and press OK to select.

Note: Outputs using AM1 A1/A2 require the AM1 extension module accessory.

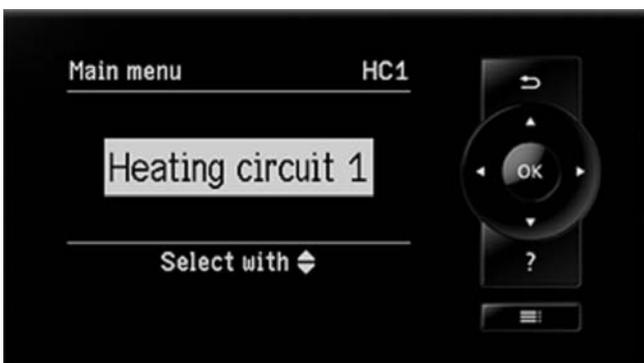
Programming Unit *(continued)*



Once the set up of the zone circuits has been completed the home screen will be displayed, the connected zone circuits can be viewed by using the ◀/▶ to scroll through

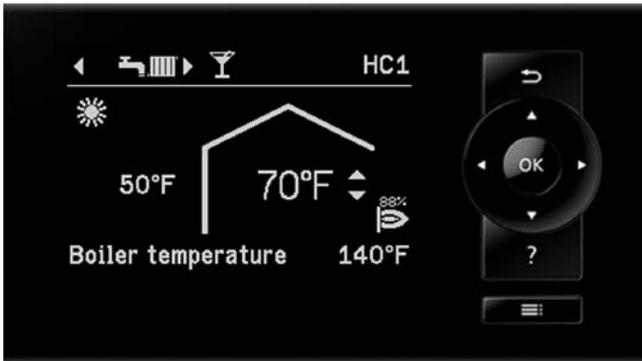


Zone circuits with weather compensated operation will display the current outdoor temperature.

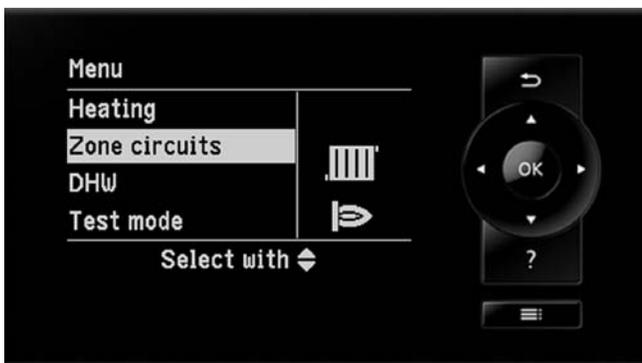


Connected heating circuits (HC1, HC2 or HC3) can be set as the home screen;
 Menu button
 Use ▲/▼ to highlight 'settings', and press OK to select.
 Use ▲/▼ to highlight 'main menu', and press OK to select.
 Use ▲/▼ to scroll though connected HC circuits, and press OK to select.

Programming Unit *(continued)*



Press until reaching the home screen



To make adjustments to the zones circuit set point temperature or heating curve;

Menu button

use up/down arrow to highlight zone circuits, and press OK to select.

Use to select desired zone circuit and press OK to select.

Use to make adjustments to the zone circuits, and press OK to select.

Press until reaching the home screen

Zone Circuit Display



Legend

- (A) Header zone circuit which is selected for operation in the standard menu.
- (B) Heating
- (C) Zone circuit pump output active
- (D) Current outdoor temperature. Only for zone circuits with weather compensated operation.
- (E) In conjunction with solar thermal system:
Solar circuit pump running
- (F) Set zone circuit temperature
- (G) Burner in operation with modulation rate in %.

Installation Examples

General

The schematics on the following pages are to be seen as guidelines only. They further do not display all system varieties, safety devices, or concepts possible. Specific system layouts may be further discussed with the local Viessmann sales representative office.

Clearances

A minimum of 2 in. (51 mm) circumferential clearance from non-insulated hot water pipes to combustible construction must be maintained. In cases where the pipes are insulated with pipe insulation of appropriate and sufficient thickness and insulation values, the above clearance may be reduced to 0 in. (refer to local gas codes).



CAUTION

For underfloor heating applications, an additional immersion or strap-on aquastat must be installed in the low temperature underfloor loop (downstream of the mixing valve) to de-energize the pump and/or boiler to prevent overheating. High water temperatures can damage concrete slabs.

IMPORTANT

The examples on the following pages depict possible piping layouts equipped with Viessmann System Technology. For boiler and tank combinations, please install only feasible combinations listed in the Viessmann Price List.

Please note that the following examples are simplified conceptual drawings only!

Piping and necessary componentry must be field verified.

A low water cut-off (LWCO) must be installed where required by local codes.

Proper installation and functionality in the field is the responsibility of the heating contractor.



WARNING

If a DHW storage tank other than a Viessmann Vitocell 100 or 300 tank is used, the installer must verify proper operation of the Viessmann DHW tank temperature sensor with the original manufacturer of the tank. Viessmann strongly recommends the installation of a temperature tempering valve in the DHW supply line.

IMPORTANT

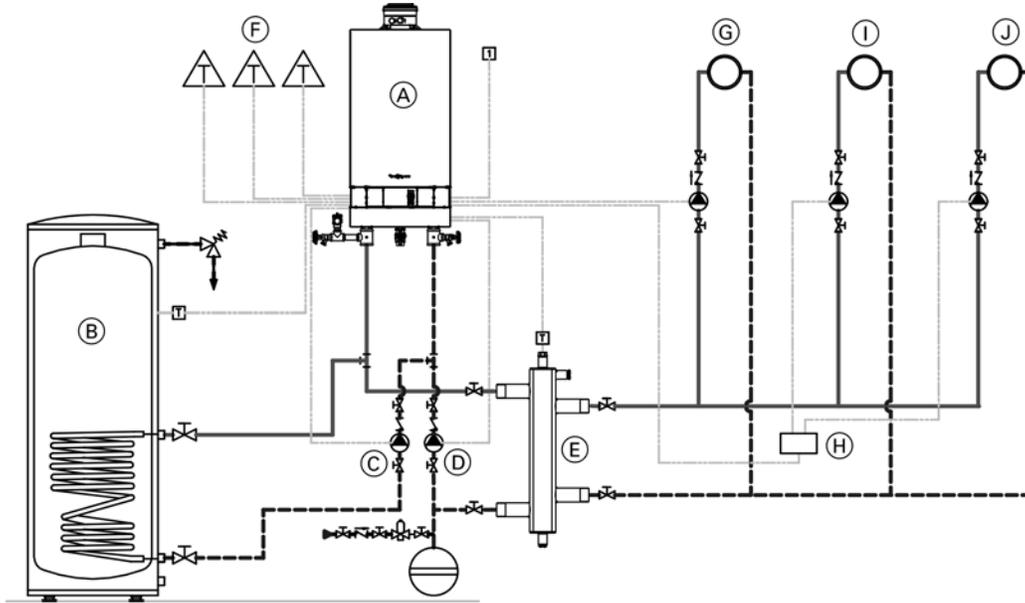
DHW supply and return piping between boiler DHW connections and the Viessmann DHW tank connections, shall be a minimum of 1 ¼ in. pipe size. This will ensure the residual head of the field supplied pump is fully utilized to overcome the resistance of the DHW heat exchanger coil and to provide sufficient water flow to the boiler heat exchanger.

In non-Viessmann DHW tank applications, perform, in addition to the above, accurate calculations for DHW tank coil pressure drop versus boiler pump (field supplied) residual head to ensure sufficient water flow to the boiler heat exchanger. Failure to heed the above instructions may cause boiler short-cycling and inadequate DHW supply.

Note: In the following piping layout examples all pumps are field supplied.

System Layout 1

- Vitodens 200-W, B2HA/B2HB with...
- DHW storage tank
 - low-loss header
 - three zone circuits



Legend

- (A) Vitodens 200-W boilers
- (B) DHW storage tank
- (C) DHW pump [output 21]
- (D) Boiler pump [output 20]
- (E) Low-loss header
- (F) Thermostat zone circuits 1, 2, 3
- (G) Zone circuit 1 [output 157]
- (H) AM1 extension module (accessory)
- (I) Zone circuit 2 [output A1 - AM1 extension module]
- (J) Zone circuit 3 [output A2 - AM1 extension module]

Installation of different heating circuits...

- DHW production
- 3 zone circuits

... with the following flow conditions:

The total flow rate of the two heating circuits is greater than the maximum possible water flow rate of the Vitodens 200-W B2HA/B boiler.

The use of a low-loss header is strongly recommended. The low-loss header is available as accessory part.

A 3-way mixing valve, built-in to achieve the low-temperature level of the under floor heating circuit, is controlled by an accessory kit for a heating circuit with a mixing valve.

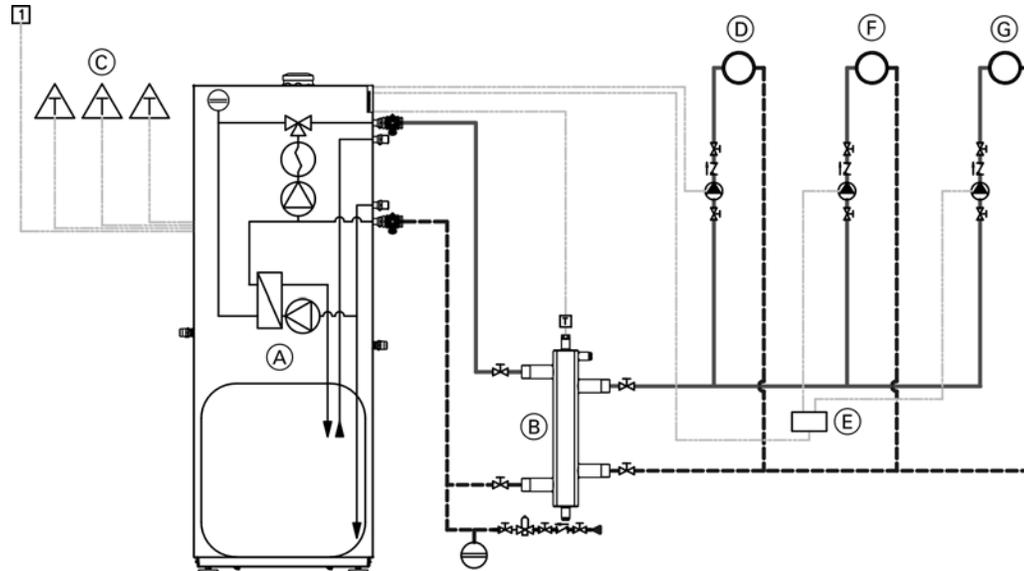
IMPORTANT

System separation is required of underfloor heating systems employing non-oxygen diffusion barrier tubing. All components on the secondary side of the heat exchanger must be made of corrosion-resistant materials.

System Layout 2

Vitodens 222-F, B2TB with...

- Integrated DHW production
- three zone circuits



Legend

- (A) Vitodens 222-F boilers
- (B) Low-loss header
- (C) Thermostat zone circuits 1, 2, 3
- (D) Zone circuit 1 [output 157]
- (E) AM1 extension module (accessory)
- (F) Zone circuit 2 [output A1 - AM1 extension module]
- (G) Zone circuit 3 [output A2 - AM1 extension module]

Installation of different heating circuits...

- DHW production
- 3 zone circuits

... with the following flow conditions:

The total flow rate of the two heating circuits is greater than the maximum possible water flow rate of the Vitodens 222-F B2TB boiler.

The use of a low-loss header is strongly recommended. The low-loss header is available as accessory part.

A 3-way mixing valve, built-in to achieve the low-temperature level of the under floor heating circuit, is controlled by an accessory kit for a heating circuit with mixing valve.

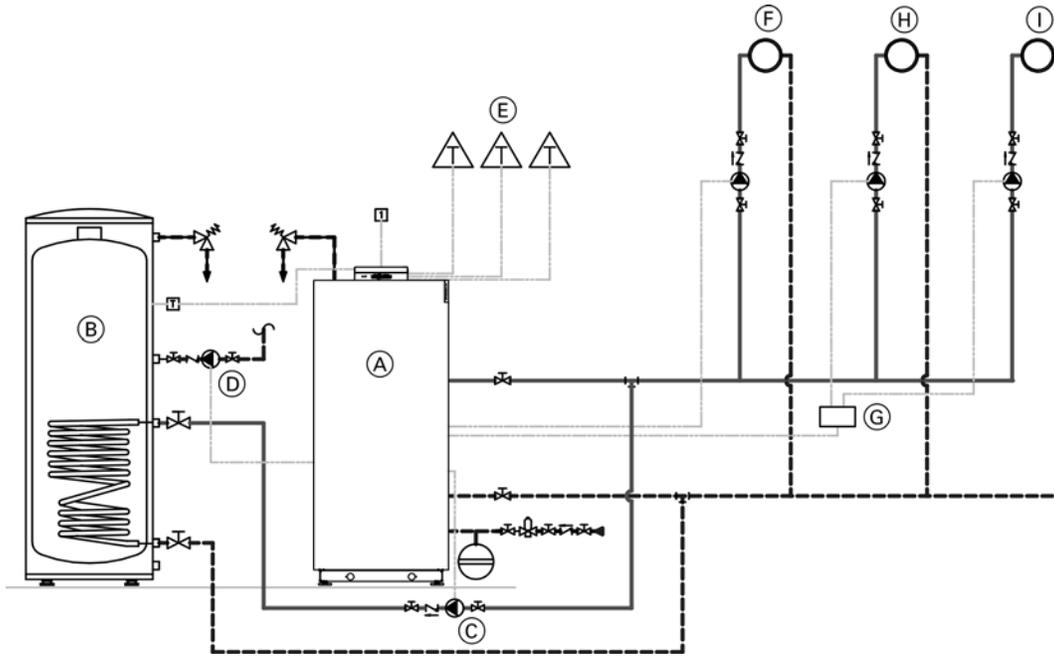
IMPORTANT

System separation is required of underfloor heating systems employing non-oxygen diffusion barrier tubing. All components on the secondary side of the heat exchanger must be made of corrosion-resistant materials.

System Layout 3

Vitocrossal 300 CU3A with...

- DHW storage tank
- one direct-connected heating circuit
- two heating circuit with a mixing valve
- three zone circuits



Legend

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

Installation of different heating circuits...

- DHW production
- 3 zone circuits

A 3-way mixing valve, built-in to achieve the low-temperature level of the under floor heating circuit, is controlled by an accessory kit for a heating circuit with mixing valve.

IMPORTANT

System separation is required of underfloor heating systems employing non-oxygen diffusion barrier tubing. All components on the secondary side of the heat exchanger must be made of corrosion-resistant materials.

General

Coding in the factory setting		Possible change	
33:1	Function output A1 at extension AM1: Heating circuit pump	33:0	Function output A1: DHW recirculation pump.
		33:2	Function output A1: Circulation pump for DHW tank heating.
		33:3	No function
		33:4	No function
		33:5	Zone circuit pump 1
		33:6	Zone circuit pump 2
		33:7	Zone circuit pump 3
34:0	Function output A2 at extension AM1: DHW recirculation pump	34:1	Function output A2: Heating circuit pump.
		34:2	Function output A2: Circulation pump for DHW tank heating.
		34:3	No function
		34:4	No function
		34:5	Zone circuit pump 1
		34:6	Zone circuit pump 2
		34:7	Zone circuit pump 3
36:0	Function, output 157 at extension EA1: Fault message	36:1	Function output 157 : Feed pump.
		36:2	Function output 157 : DHW recirculation pump.
		36:3-5	No function
		36:6	Zone circuit pump 1
		36:7	Zone circuit pump 2
3A:0	Function input DE1 at extension EA1: Not assigned	3A:1	Function input DE1: Heating program - changeover.
		3A:2	Function input DE1: External demand with set flow temperature. Flow temperature setting: Coding address 9B. Internal circulation pump function: Coding address 3F.
		3A:3	Function input DE1: External blocking. Internal circulation pump function: Coding address 3E.
		3A:4	Function input DE1: External blocking with fault message input Internal circulation pump function: Coding address 3E.
		3A:5	Function input DE1: Fault message input.
		3A:6	Function input DE1: Brief operation, DHW recirculation pump (pushbutton function). DHW recirculation pump runtime adjustment: Coding address 3D.
		3A:7	Input zone circuit 1, constant
		3A:8	Input zone circuit 1, weather compensated

General *(continued)*

Coding in the factory setting		Possible change	
3B:0	Function input DE2 at extension EA1: Not assigned	3B:1	Function input DE2: Heating program - changeover.
		3B:2	Function input DE2: External demand with set flow temperature. Flow temperature setting: Coding address 9B. Internal circulation pump function: Coding address 3F.
		3B:3	Function input DE2: External blocking. Internal circulation pump function: Coding address 3E.
		3B:4	Function input DE2: External blocking with fault message input Internal circulation pump function: Coding address 3E.
		3B:5	Function input DE2: Fault message input.
		3B:6	Function input DE2: Brief operation, DHW recirculation pump (pushbutton function). DHW recirculation pump runtime adjustment: Coding address 3D.
		3B:7	Input zone circuit 2, constant
		3B:8	Input zone circuit 2, weather compensated
3C:0	Function input DE3 at extension EA1: Not assigned	3C:1	Function input DE3: Heating program - changeover.
		3C:2	Function input DE3: External demand with set flow temperature. Flow temperature setting: Coding address 9B. Internal circulation pump function: Coding address 3F.
		3C:3	Function input DE3: External blocking. Internal circulation pump function: Coding address 3E.
		3C:4	Function input DE3: External blocking with fault message input Internal circulation pump function: Coding address 3E.
		3C:5	Function input DE3: Fault message input.
		3C:6	Function input DE3: Brief operation, DHW recirculation pump (pushbutton function). DHW recirculation pump runtime adjustment: Coding address 3D.
		3C:7	Input zone circuit 3, constant
		3C:8	Input zone circuit 3, weather compensated

General *(continued)*

Coding in the factory setting		Possible change	
53:1	Function connection <input type="checkbox"/> 28 of the internal extension: DHW recirculation pump	53:0	Function connection <input type="checkbox"/> 28: Central fault message.
		53:2	Function connection <input type="checkbox"/> 28: External heating circuit pump (heating circuit 1).
		53:3	Function connection <input type="checkbox"/> 28: External circulation pump for DHW tank heating.
		53:4	No function
		53:5	Zone circuit pump 1
		53:6	Zone circuit pump 2
		53:7	Zone circuit pump 3
Set supply temperature for zone circuits			
20:74	Supply temperature for zone circuit 1 164°F (74°C)	20:20 to 20:85	Supply temperature for zone circuits adjustable from 68 to 185°F (20 to 85°C) (limited by boiler specific parameters).
27:74	Supply temperature for zone circuit 2 164°F (74°C)	27:20 to 27:85	Supply temperature for zone circuits adjustable from 68 to 185°F (20 to 85°C) (limited by boiler specific parameters).
2C:74	Supply temperature for zone circuit 3 164°F (74°C)	2C:20 to 2C:85	Supply temperature for zone circuits adjustable from 68 to 185°F (20 to 85°C) (limited by boiler specific parameters).

Heating Circuit 1, 2 and 3

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

Quick Reference

°C	°F
-40	-40
-35	-31
-25	-13
-20	-4
-18	0
-16	+3
-14	+7
-12	+10
-10	+14
-9	+16
-8	+18
-7	+19
-6	+21
-5	+23
-4	+25
-3	+27
-2	+28
-1	+30
0	+32
+1	+34
+2	+36
+3	+37
+4	+39
+5	+41
+6	+43
+7	+45
+8	+46
+9	+48
+10	+50
+12	+54
+14	+57
+16	+61
+18	+64
+20	+68
+25	+77
+30	+86
+35	+95
+40	+104
+50	+122
+60	+140
+70	+158
+80	+176
+90	+194
+100	+212
+110	+230

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