Propane Conversion kit instructions

Condensing gas boiler

6720615152-001.1TD

Required Input Rates

Logamax plus GB162-(L.B)80 kW 270,000 btu/hr	Logamx plus GB162-(L.B.)100 kW 315,000 btu/hr

This kit and instructions are for converting the GB162 model boilers from Natural Gas to Liquid Propane.

WARNING!
This conversion kit shall be installed by a qualified service agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction.
The information in these instructions must be followed to minimize the risk of fire or explosion or to prevent property damage, personal injury or death. The qualified service agency is responsible for the proper installation of this kit.
The installation is not proper and complete until the operation of the converted boiler is checked as specified in the manufacturer's instructions supplied with the kit.

CAUTION!
The gas supply shall be shut off prior to disconnecting the electrical power, before proceeding with the conversion.

Notice! Save these instructions for later use.

Logamax plus

GB162-80 kW
GB162-100 kW
GB 162-L.B. 80kW
GB 162-L.B. 100kW

For the contractor

Please read these instructions carefully

6 720 615 033 (11/2010) US/CA

CERTIFIED ®

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Contents

1 Safety considerations

For use in Canada the conversion kit shall be carried out in accordance with the requirements of the provincial authorities having jurisdiction and in accordance with the requirements of the CAN/CGA-B149.1 and CAN/CGA-B149.2 Installation Code. See also E.I.V.

Please observe the following safety instructions.

1.1 Application purpose

This kit and instructions are for converting the Logamax plus GB162-(L.B.)80 kW/100 kW from Natural gas to Liquid Propane.

1.2 Hazard definitions

The following defined terms are used throughout the documentation to bring attention to the presence of hazards of various risk levels. Notices give important information concerning the operation of the product.

DANGER:
Indicates the presence of hazards that will cause severe personal injury, death or substantial property damage.

WARNING:
Indicates the presence of hazards that can cause severe personal injury, death or substantial property damage.

CAUTION:
Indicates presence of hazards that will out cause minor personal injury or property damage.

CAUTION:
Indicates presence of hazards due to electric shock.

Indicates special instructions on installation, operation or maintenance that are important but not related to personal injury or property damage.

1.3 Observe the following warnings

DANGER:
due to explosion of gas.

- Work only on gas components when you have a license to do so.
- Note that the assembly of gas and vent connections, the initial start-up, the electrical connections, the maintenance and service can only be performed by a licensed service contractor or technican.

DANGER: Electric shock.
Live components are present inside the boiler.

- Isolate the electrical mains supply before working on the boiler.
- Lock-out the mains supplies to prevent accidental activation.

1.4 Additional symbols

Symbol	Function
▸	Sequence of steps
→	Cross-reference to other points in this document or to other documents
•	Listing/list entry
–	Listing/list entry (2nd level)

Tab. 1 Additional symbols

2 Parts list for converting the boiler to propane

Conversion kit propane for the GB162-80 kW/100 kW
7746900499 includes:

- assembly # 774601703A 1 ×
  - gas valve propane
  - venturi
  - orifice # 774600958A
- orifice # 871860872A (> 8.000ft.) 1 ×
- label 80 kW 1 ×
- label 100 kW 1 ×
- O-ring fan-venturi 1 ×
- sealing gas pipe 1 ×
- sealing gas flange 1 ×
- Torx key Tx25 1 ×
- Torx key Tx30 1 ×
- Torx screw 3 ×
- Screw M 5x12 thread 4 ×
- these instructions 1 ×

3 Liquid Propane conversion

To convert the boiler to liquid propane, the following instructions must be adhered to:

DANGER: Risk of explosion.
- Work on gas appliances must be carried out by competent registered personnel.

If the boiler is installed above 8,000 ft (2,440 m). altitude, the orifice needs to be changed with orifice 5.00" (1,97 mm) part nr: 871860872A.

3.1 Shut down the boiler

- Turn off the gas supply underneath the boiler.
- Switch off the boiler using the main switch (→ fig. 1, [1]).
- Disconnect the electrical power to the boiler.
- Set the thermostat or other operating control to lowest setting.

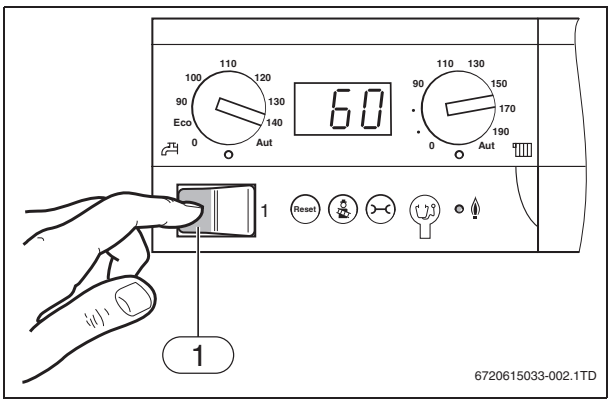

Fig. 1 Main switch

- Open the boiler door by turning the vent key through ¼ rotation anti-clockwise(→ fig. 2).

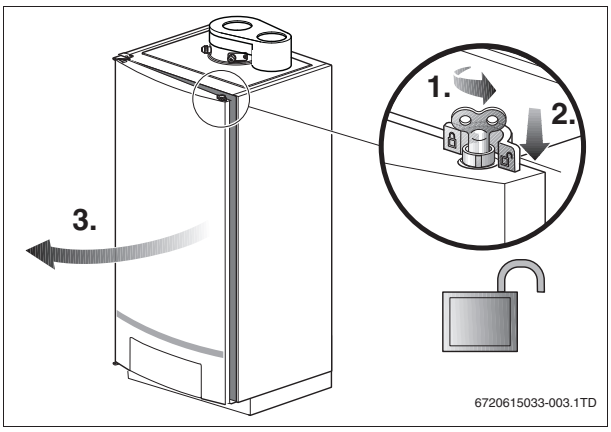

Fig. 2 Opening the boiler door

3.2 Changing the gas valve assembly

- Loosen the screw connection on the gas valve (→ fig. 3, [1]) and pull the plugs (→ fig. 3, [2]) from the gas valve.

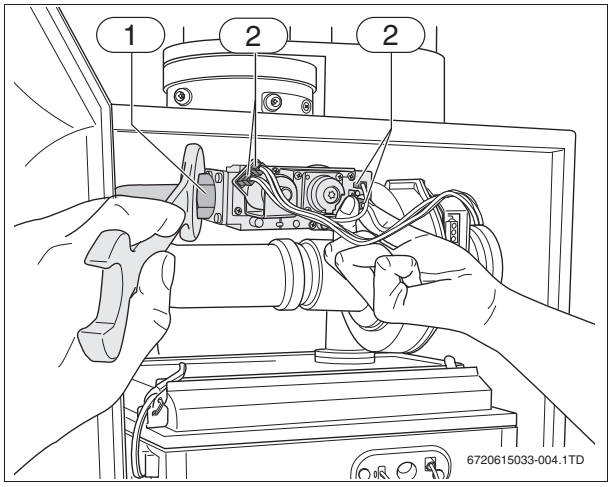

Fig. 3 Undoing the connections to the gas valve

- Pull both plugs from the fan unit (→ fig. 4, [1]).

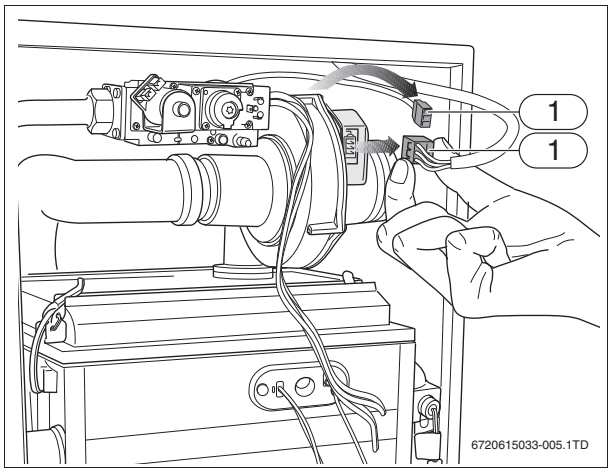

Fig. 4 Removing the connectors from the fan

- Pull the air suction tube from the fan (→ fig. 5).

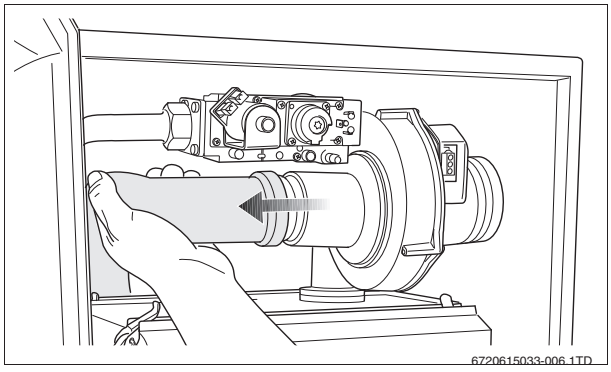

Fig. 5 Pulling the air suction tube from the fan

- Loosen both retaining clips on the burner cover (→ fig. 6).

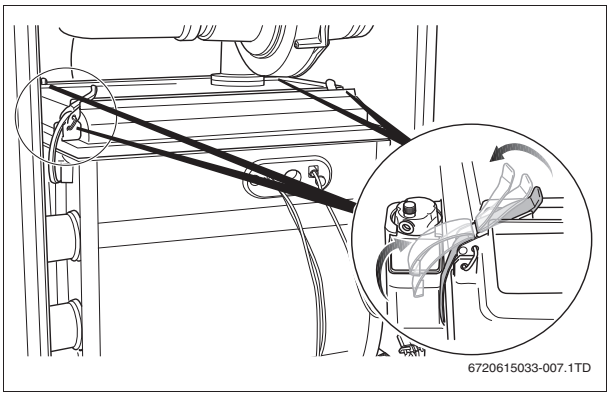

Fig. 6 Opening the retaining clips

- Remove the burner cover together with the fan unit and the gas valve (→ fig. 7).

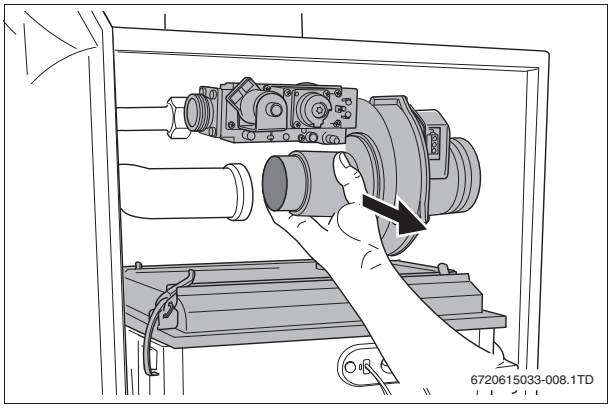

Fig. 7 Removing the burner cover with the gas/air unit

- Undo the 3 screws (→ fig. 8, [1]) and remove the gas valve with the venturi from the fan unit (→ fig. 8, [2]).

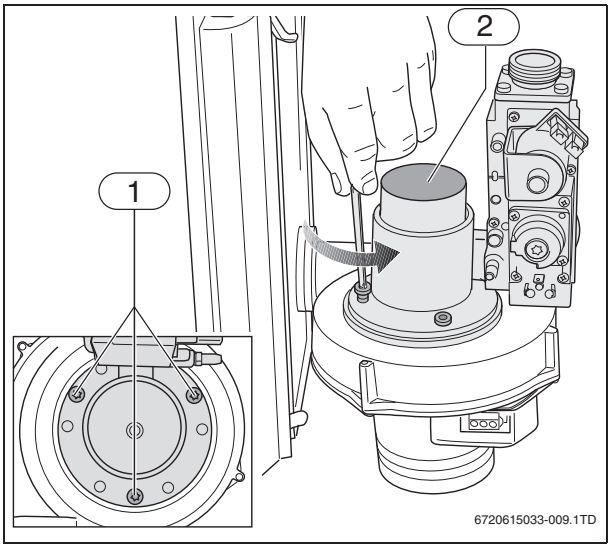

Fig. 8 Removing the screws and gas valve with venturi

- Take the gas valve and venturi from the conversion kit # 7746900499.
- If the boiler is installed above 8,000 ft (2,440 m). altitude, the orifice needs to be changed. Follow the instructions below. Otherwise, go to the next step
  - Undo the 4 screws (→ fig. 9, [1]) and remove the gas valve from the venturi (→fig. 9, [2]).

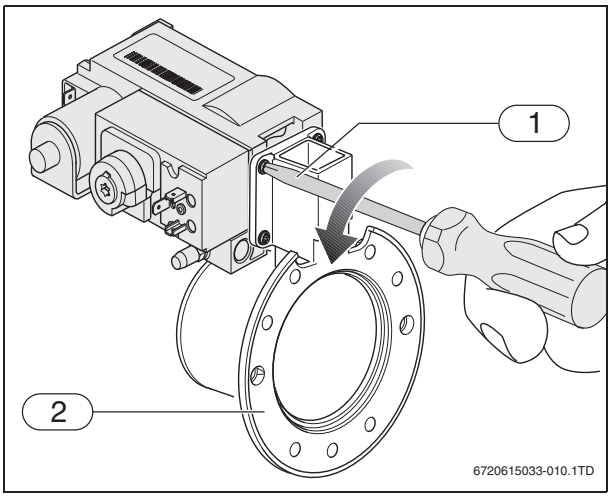

Fig. 9 Removing the gas valve

  - Change the 4.70 (0.185") orifice for the 5.00 (0.197"), (→ table 2), (→ fig. 10).

Thermal power gas boiler	Type of gas supply	Altitude ft. (m)	Gas orifice diameter inch (mm)	Venturi article number
GB162-80 kW/ 100 kW	Natural gas	0-4,000 (0-10,200)	8.40(0.331)	73983
	LPG P	0-8,000 (0-2,440)	4.70(0.193)	7746900499
	LPG P	8,000-10,200 (2,440-10,200)	5.00(1,97)	871860872A

Tab. 2 Gas orifice diameter

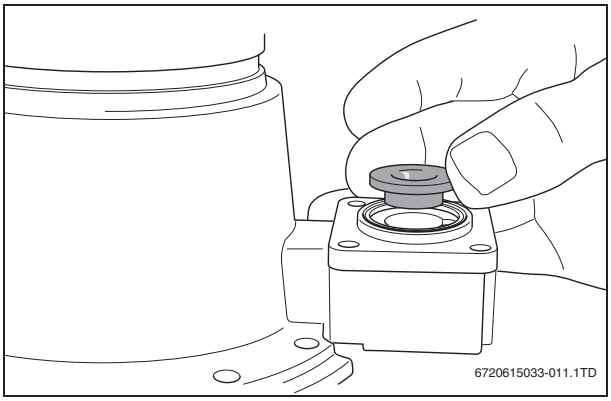

Fig. 10 Changing the orifice

– Install a new O-ring (→ fig. 11).

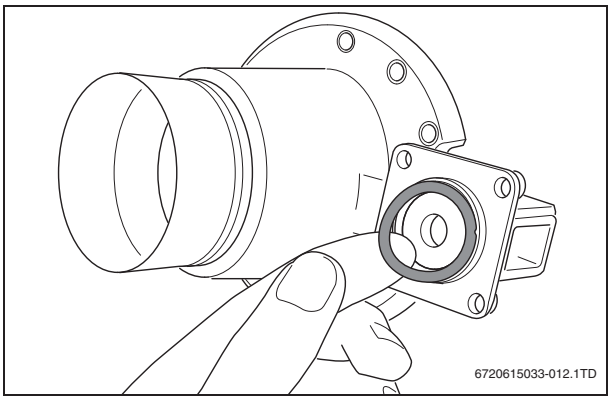

Fig. 11 Placing a new O-ring on the gas valve

– Install the venturi and gas valve of the conversion kit on the fan unit using a new O-ring (→ Fig. 11) and follow the instructions above in reverse order.

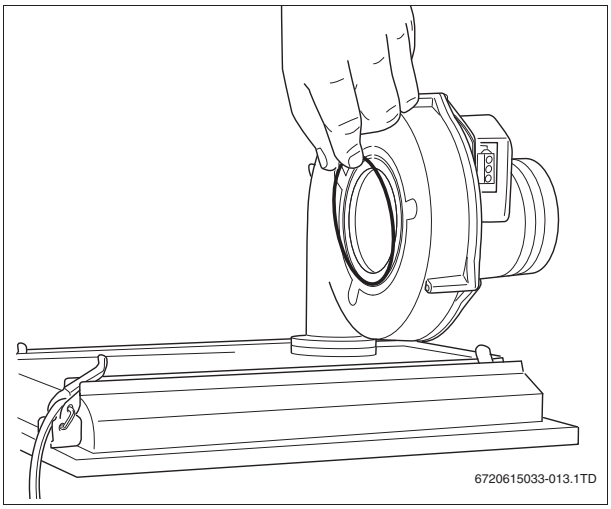

Fig. 12 Placing a new O-ring on the fan unit

▶ Install the gas flange from the natural gas assembly on the new gas valve (→ fig. 13, [1]).

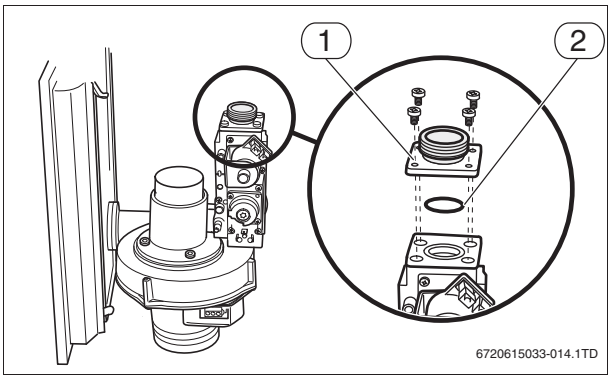

Fig. 13 Installing the gas flange

▶ Replace the seal under the gas flange with a new seal (→ fig. 13,[2]).

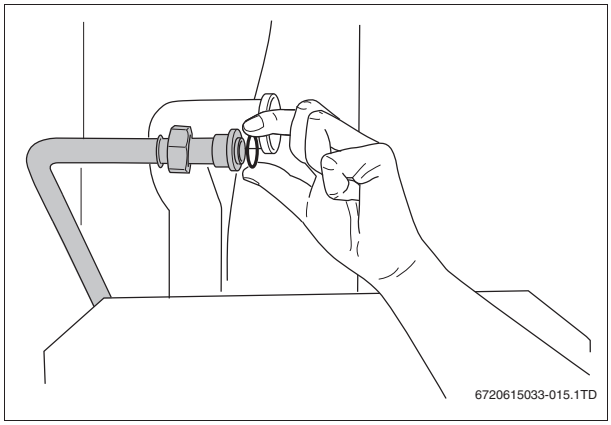

Fig. 14 Installing a new seal on the gas pipe

▶ Replace the seal from the gas pipe with a new seal (→ fig. 14).

▶ Refit all parts in reverse order. When re-installing the burner plate, make sure that the notch is on the right-hand side (→ fig. 15).

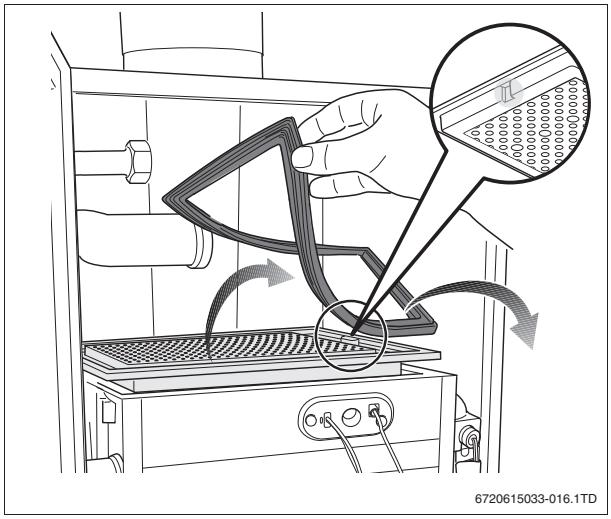

Fig. 15 Re-installing the burner plate

▶ Carry out the start-up activities and complete a new start-up report.

▶ Check all joints and gaskets affected by the installation activities while carrying out the tightness test in operating conditions.

▶ Place a new sticker underneath the existing rating plate sticker indicating the type of gas supply installed.

▶ Fill out the required information on the conversion label.

▶ Close the boiler door and lock the fastener by turning the vent key through ¼ rotation in a clockwise direction.

3.3 Testing for gas leaks

Prior to start-up of the boiler you must check the external tightness of the gas supply valve and confirm this in the start-up report.

DANGER: Risk of explosion
- Check for leaks before working on gas-carrying components.

CAUTION:
due to a short circuit.
- Cover damageable parts before leak testing.
- Do not spray the leak detection agent onto cables, plugs or electrical connection lines. Do not allow it to drip onto them either.

- Disconnect the boiler from the power supply.
- Check the exterior tightness of new conduit sections up to and including the direct sealing point on the gas burner fitting. The maximum test pressure allowed on the input of the gas burner fitting is 60 " W.C. (150 mbar).
- Check the input rates after converting the boiler to LPG to the values on the front page.

3.4 Inlet gas pressure

NOTICE
- Contact the relevant gas utility company if the required inlet gas pressure is not available.
- Install a gas pressure regulator before the gas burner fitting if the supply pressure is too high.

- Open at least 1 thermostatic radiator valve if present to allow water to flow through the boiler. Do not switch on the boiler.
- Close the gas shut-off valve. Loosen the screw plug on the inlet gas pressure testing nipple by 2 turns (→ fig. 16, [1]).
- Connect the pressure gauge connection hose to the testing nipple (→ fig. 16, [2]).
- Slowly open the gas shut-off valve.

The boiler and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 60 " W.C. (150 mbar). The boiler must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 60 " W.C. (150 mbar).

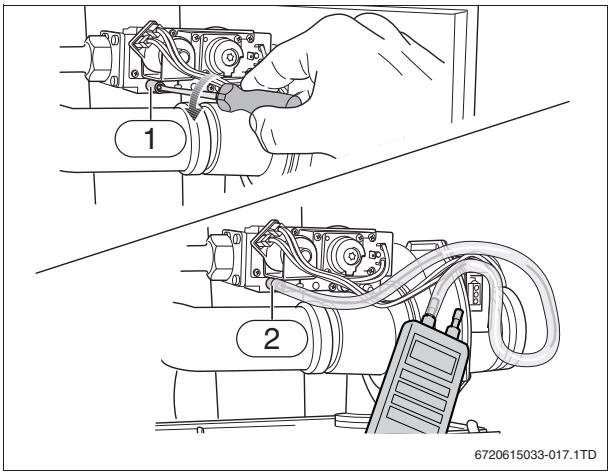

Fig. 16 Measuring the gas supply pressure

- Press on the control panel cover to open it.

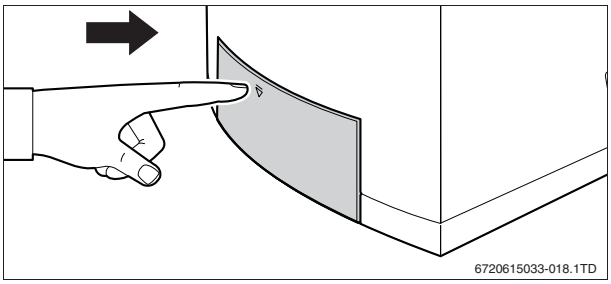

Fig. 17 Opening the control panel

- Switch on the boiler by setting the main switch to position “1” (→ fig. 1, page 5).
- Press the “Chimney Sweep” button and hold it for approx. 2 seconds until the display shows a decimal point.
- Measure the gas connection pressure as soon as the “Burner” LED lights and enter this value in the start-up report.

The inlet gas pressure must be:
- for natural gas - min. 7.0 to 10.5 " W.C. (17.4 to 26.1 mbar), nominal supply pressure 8.0" W.C. (19.9 mbar).
- for LPG - min. 8.0 to 13.0" W.C. (19.9 to 32.3 mbar), nominal supply pressure 11.0" W.C. (27.4 mbar).

- Press repeatedly the “Service” button until the temperature indication is displayed.
- Press the “Chimney Sweep” button to end the measurement procedure.
- Close the gas shut-off valve.
- Remove the connection hose again and tighten the screw plug on the testing nipple.
- Open the gas shut-off valve again.

3.5 Checking and adjusting the gas/air ratio

- Switch off the boiler using the main switch.
- Loosen the screw plug on the measuring nipple for the burner pressure by 2 rotations (→ fig. 18 [1]).
- Set the pressure gauge to 0.
- Use a hose to connect the plus terminal of the pressure gauge to the burner pressure measuring nipple (→ fig. 18, [2]).

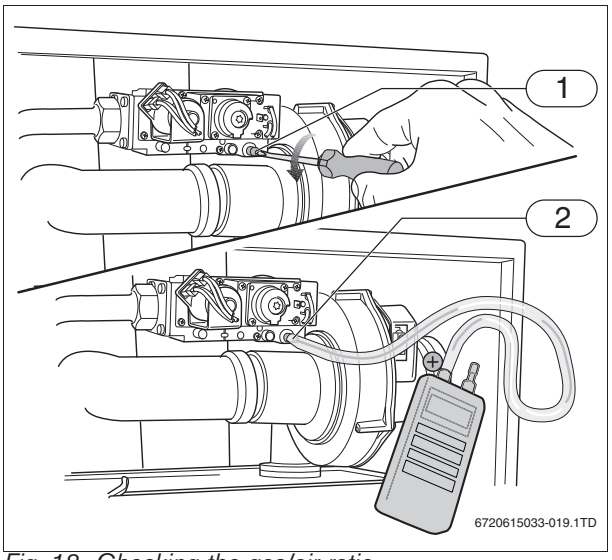

Fig. 18 Checking the gas/air ratio

- Switch on the boiler using the main switch.
- Press the "Chimney Sweep" button and hold it for approx. 2 seconds until the display shows the decimal point.
- Press and hold the "Chimney Sweep" and "Service" button, for approx. 5 seconds, until the display shows L - - (e. g. L80).
- Set the boiler to partial load (→Tab. 3).

altitude ft. (m)	Display setting GB162-80 kW	Display setting GB162-100 kW
0-4,000 ft. (0-1,220)	L25	L20
4,000-10,200 (01,220-10,200)	L36	L30

Tab. 3 Partial load set.

- Pressing the "Chimney Sweep" button for higher values or the "Reset" button for lower values.
- Read out the differential pressure.
  The differential pressure (p_{Gas}– p_{Air}) must be -0.04" W.C. (-10 Pa) (±0.02 " W.C. = ± 5 Pa) (read-out on pressure gauge: -0.06 – -0.02" W.C. = -15 – -5 Pa).
- Enter the value measured in the start-up report.
- Adjust the gas/air ratio, if not correct, using the adjustment screw (→ fig. 19, [1]). The adjustment screw is located behind the cover screw.

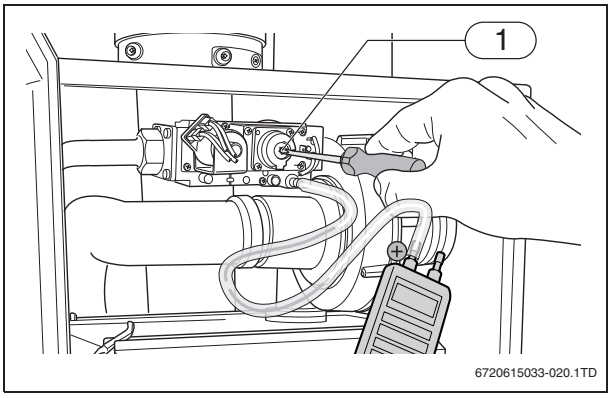

Fig. 19 Setting the gas/air ratio

- Press repeatedly the "Service" button until the temperature indication is displayed.
- Press the "Chimney Sweep" button until the decimal point is cleared from the display.
- Switch off the boiler using the main switch.
- Remove the measurement set-up, tighten the screw in the burner pressure measuring nipple.
- Switch on the boiler using the main switch.

3.6 Carrying out a tightness test in operating conditions

CAUTION:
due to a short circuit.

- Cover damageable parts before leak testing.
- Do not spray the leak detection agent onto cables, plugs or electrical connection lines. Do not allow it to drip onto them either.

- Check all gaskets and joints in the burner gas circuit for leaks while the burner is operational, using a leak detection agent.

3.7 Measuring the CO content

- Measure the CO content on the flue gas sampling point (→ fig. 20, [1]).

The CO values in an air-free condition must be below 400 ppm or 0.04 vol. %.
Values of 400 ppm and up indicate that the burner adjustment may be wrong, the gas burner fitting or the heat exchanger are dirty or that there may be burner faults.

- Establish and resolve the cause.
  The boiler must be operational when you do this.

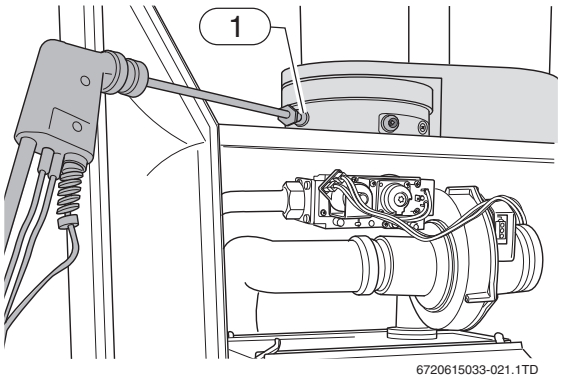

Fig. 20 Measuring the CO content

3.8 Lighting Instructions

For your safety, read before lighting.

DANGER:
What to do if you smell gas:

- No open fire! Do not smoke!
- Avoid formation of sparks! Do not touch any electric switch, phone, electric plug or bell!
- Shut off main gas supply.
- Open windows and doors!
- Notify all occupants
- Leave the building!
- Immediately call your gas supplier, heating contractor or fire department from a phone outside the building!

WARNING:
due to not following these instructions.

- If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.
- Follow these operating instructions.

This boiler is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.

Check for smell of gas around the boiler area.
Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. Do not use this boiler if any part has been under water.

Immediately call a qualified service technician to inspect the boiler and to replace any part of the control system and any gas control which has been under water.

4 Operating Instructions

Start up the boiler

STOP!

Read the safety precautions on page 10 of this manual.

- Wait 5 minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP and see the safety information on page 10. If you do not smell gas, go to the next step.
- Install the casing again.
- Open the gas shut-off valve.
- Set the thermostat or other operation control to desired setting.
- Connect the boiler to the power supply.
- Switch on the boiler using the main switch (→ fig. 21).

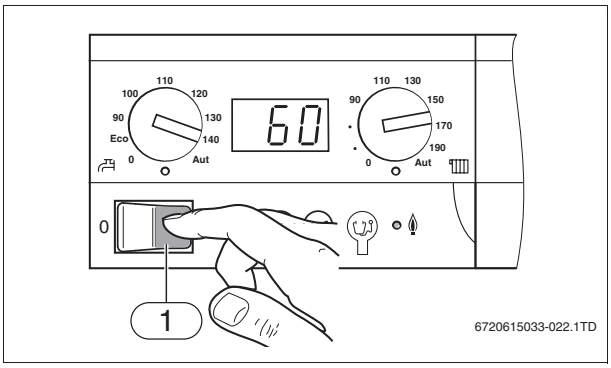

Fig. 21 Mains switch

United States and Canada

Bosch Thermotechnology Corp.
50 Wentworth Avenue
Londonderry, NH 03053
Tel. 603-552-1100
Fax 603-584-1681
www.buderus.net
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Products manufactured by
Bosch Thermotechnik GmbH
Sophienstrasse 30-32
D-35576 Wetzlar
www.buderus.de

6720615033 0005

Buderus

Technical service bulletin
Low Water Cut Off & Manual Reset High Limit

Buderus

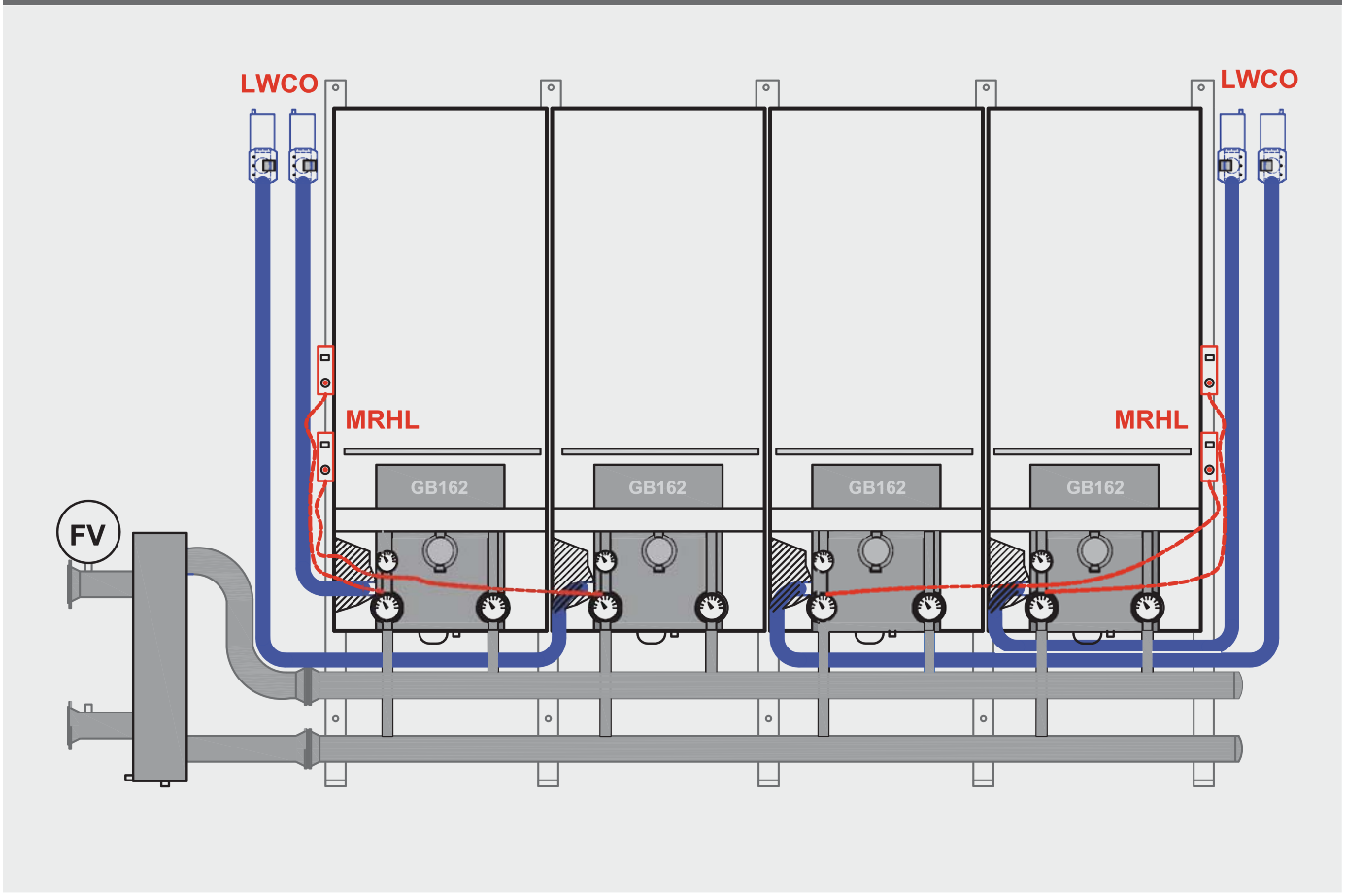
Introduction

Each GB162 boiler is equipped with several internal safety sensors and a controller that prevents boiler operation when it is unsafe to do so.

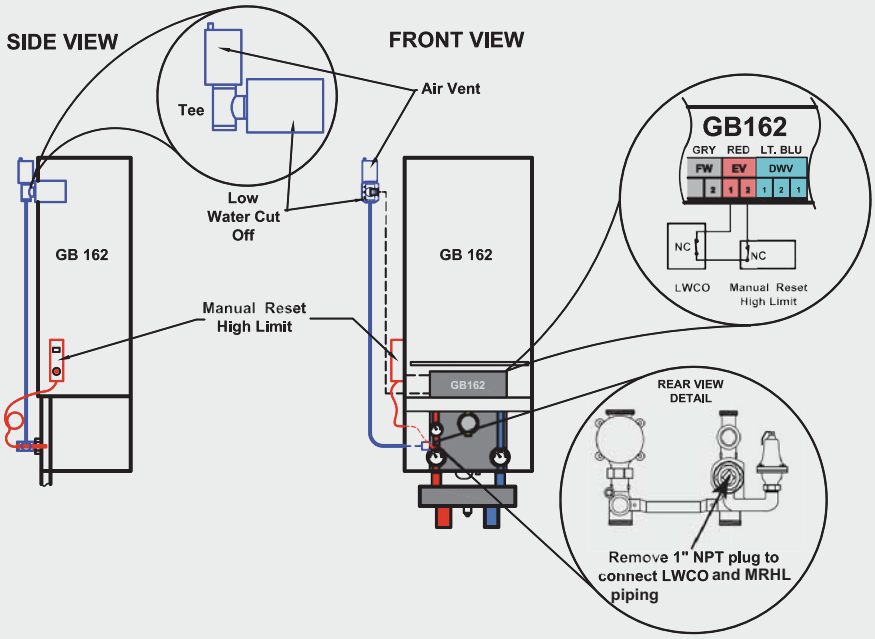
Local jurisdictions may require the installation of additional safety devices external to the boiler that meet certain requirements.

This bulletin describes the recommended location, installation and wiring for the low water cut off (LWCO) and manual reset high limit (MRHL).

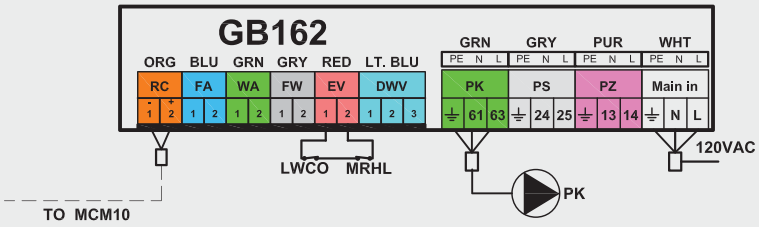
GB162 Cascade piping diagram



GB162 Low water cut off & manual reset high limit detail



GB162 Casade wiring diagram



Installation

Required components:

- 1“x3/4“ Reducer
- 3/4“ Tee (two)
- MRHL and 3/4“ well
- 3/4“ elbow
- Straight piping
- Air vent

Remove the 1“ plug from the back of the manifold. Install the reducer and tee. Thread the well from the back into the tee and slide in the MRHL probe. Route piping to the end of the cascade and up the side of the last boiler. At the height of the top of the heat exchanger install the tee, the air vent at the top, and the LWCO on the side.

Wiring

LWCO and MRHL are wired in series with the EV terminal of the respective boiler. Upon activation the MRHL or LWCO will open their normally closed (NC) contacts and interrupt the EV terminal which will immediately shut off the burner. Power to the boiler remains and the pump may continue to run.

Testing the MRHL:

Turn the MRHL threshold below the setting on the boiler dial and run the boiler. The burner will shut off as soon as the threshold is reached.

Testing the LWCO:

Follow the device‘s instructions on how to test its performance without draining fluid from the system.

Buderus

Bosch Thermotechnology Corp.
50 Wentworth Ave
Londonderry, NH 03053
Tel: (800) 283-3787
Fax: (603) 965-7581
www.buderus.us

Applications Manual

Gas condensing boiler

CAUTION!
Before putting the boiler into operation read this manual carefully.

WARNING!
Improper installation, adjustment, alteration, service or maintenance can cause injury, loss of life or property damage. Refer to this manual. For assistance or additional information consult a qualified installer, service agency or the gas supplier.

CAUTION!
The operating manual is part of the documentation that is delivered to the installation's operator. Go through the information in this manual with the owner/operator and make sure that he or she is familiar with all the necessary operating instructions.

Logamax plus GB162

Buderus

Table of Contents

1 Reference Documents

The following table references all related documentation to the GB162 series boiler. To obtain copies of these documents, please go to our website at www.buderus.us.

Document Name	Document Part No.	Description Of Contents
Installation Instructions	7 746 800 103	• Safety and general instructions • Product specifications • Installation • Electrical connections • Operation (start-up and shut down procedure) • Inspection / Maintenance
Service Instructions	6 720 614 965	• Product description • Safety and general instructions • Operation • Symptoms • Diagnosis • Actions
User‘s Instructions	7 746 800 102	• Safety information • Lighting instructions • Operating the BC10 basic controller • Boiler start-up and shut down • Operating and error messages
Installation Instructions - Pump Group	7 746 800 104	• Safety and general information • Dimensions and connections • Items supplied with pump group • Installation
Installation Instructions - Cascade Frame	7 746 800 105	• General information • Items supplied with the unit • Cascade configurations • Dimensions • Installation
Record Book - Water Quality Requirements	6 720 641 552	• Requirements • Operator‘s log
Gas Valve Replacement Instructions	6 720 615 152	• Safety considerations • Parts list • Gas valve replacement • Operating instructions
Propane Conversion Kit Instructions	6720615152-001.1TD	• Safety considerations • Parts list • Liquid Propane conversion • Operating instructions
Technical Service Bulletin: TBG-07_Boiler Water Chemistry & Freeze Prevention Guidelines	BTC 430002101 B	• Recommended steps for commissioning boiler • Water chemistry guidelines • Dielectric isolation • Cleaning requirements • Fill water and chemistry • Eliminating system leaks • Aluminum safe anti-freeze guidelines • Buderus selected suppliers of water treatment products

2 Boiler / Control Applications

This chapter outlines the numerous applications available with the GB162 series boiler when used in conjunction with the following control options:

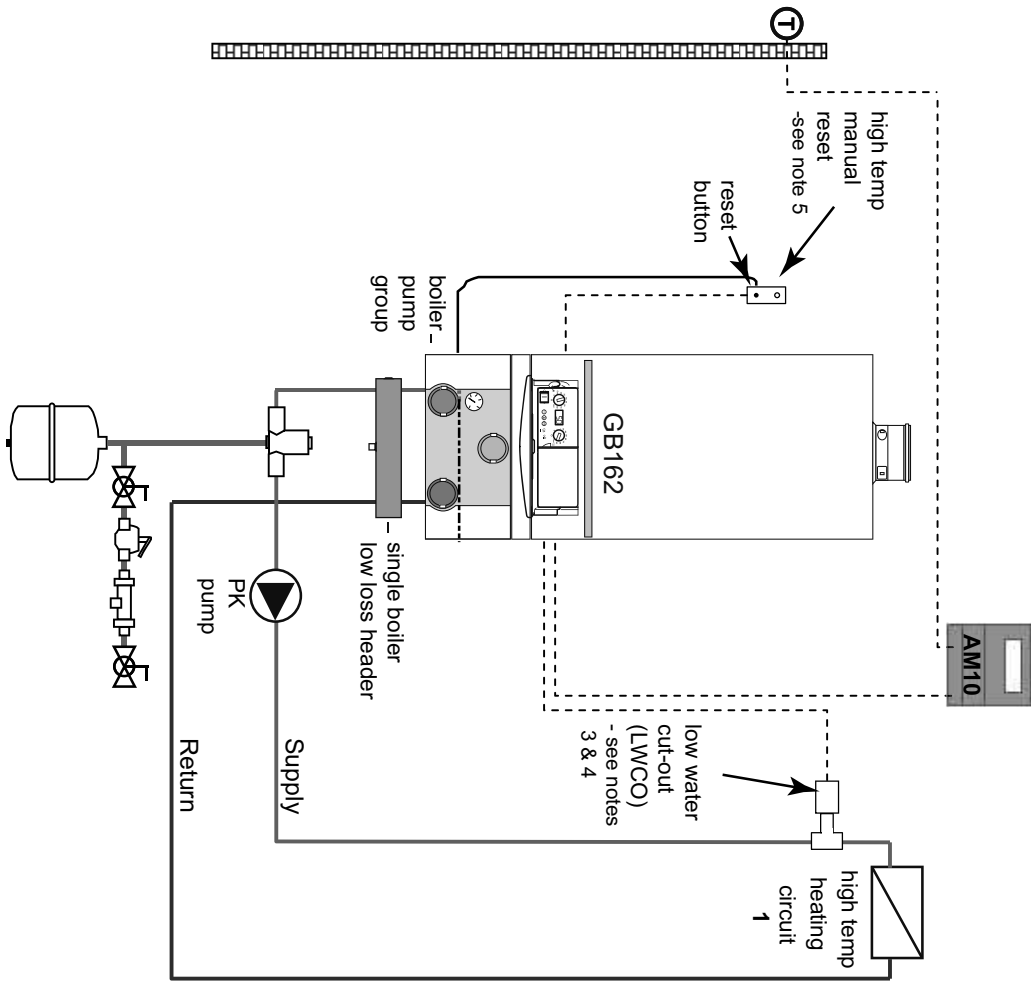
- AM10 Modulating Control
- MCM10 Multi Cascade Module
- RC35 Room Control Unit

Each section covering these applications will display the available piping diagrams with the associated wiring diagram on the following page.

2.1 AM10 modulating control

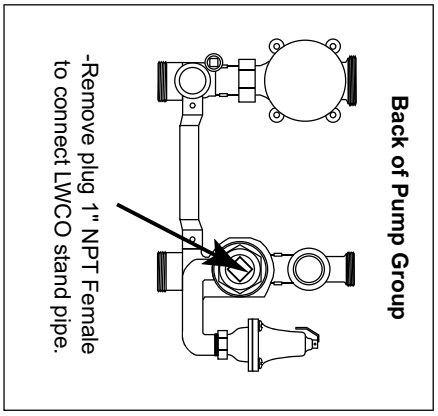
2.1.1 AM10 Piping and wiring diagrams
(LWCO low water cutout and high temp manual reset shown)

- **AM10 with one heating circuit**

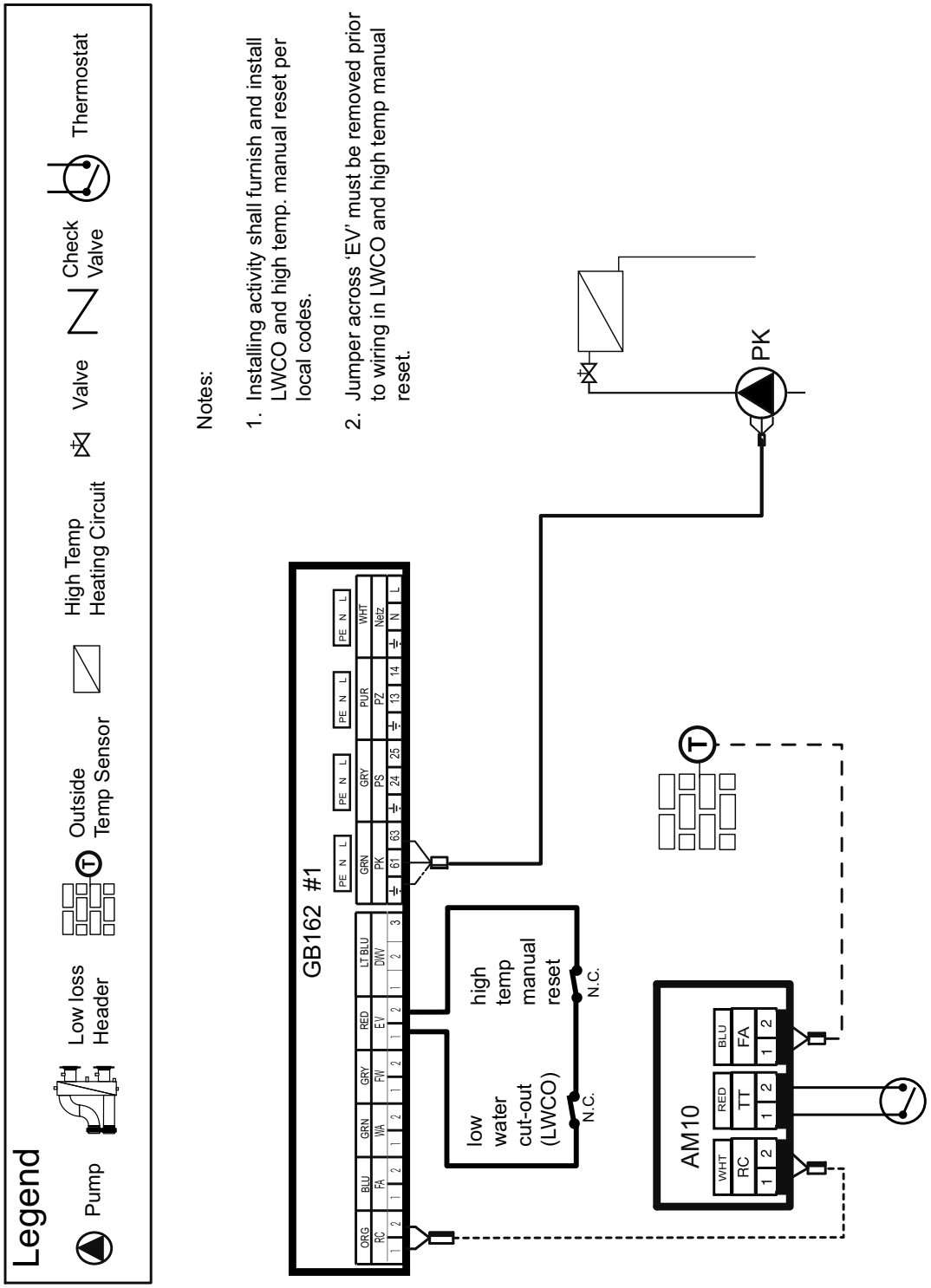


Notes:

1. Contractor to furnish and install LWCO and High Temp Manual Reset devices as requir by local codes.
2. Do not install any type of valve or check val in between LWCO and Boiler.
3. Refer to the manufacturer's instructions whe installing the low water cut-out (LWCO).
4. LWCO must be located above the highest point of the boiler heat exchanger.
5. Hi Temp Manual Reset remote sensing bulb must be in the boiler supply.



- **Wiring schematic for AM10 with one heating circuit**



2.2 Multi Cascade Module (MCM10)

- The Multi Cascade Module (hereafter abbreviated) can be applied to control cascade systems. A cascade system is a heating system consisting out of several heating appliances, which are connected in parallel in order to create a better heating performance.

- The MCM10 can control a maximum of 4 heating appliances each. Expendable with up to 4 identical modules connected to another, forming a cascade of max. 16 heating appliances.

- The MCM10 can only be applied in combination with heating appliances that have the EMS-BUS (UBA3, UBA3.5).

- Heating appliances with any level of input/output can be connected in the cascade system as long as they are EMS -compatible.

- Room controller or outdoor reset module required.

Figure 56 Multi Cascade Module (MCM10)

2.2.1 System integration

- The MCM10 controls the heating appliances within the cascade system based on a heating demand which is sent and calculated by a heating control. Therefore the MCM10 always needs to be connected to some kind of control.

- The MCM10 takes over the control of the system supply temperature. The System supply Temperature Sensors (FV) should be connected to the MCM10-Master.

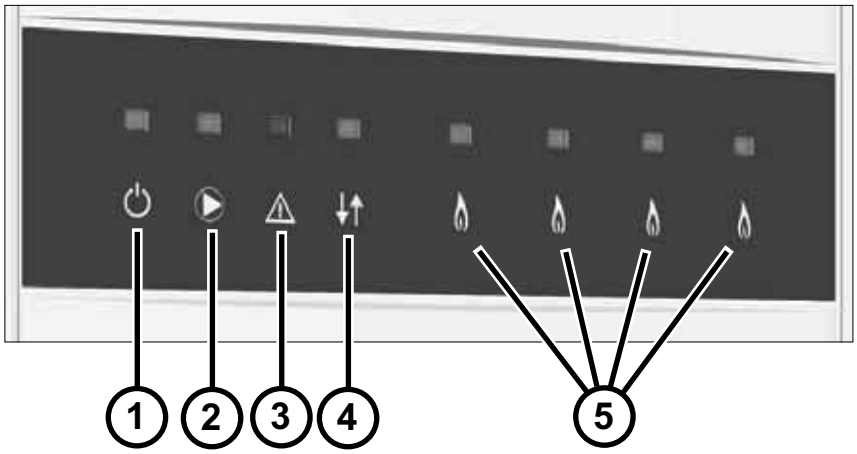
- The System Temperature Sensor at the entrance of the open header functions as an internal flow temperature sensor like in a heating appliance.

- The outdoor temp sensor (FA) could either be connected to the MCM10 or first boiler in the cascade system.

- The MCM10 comes with a WM10 low loss header module to connect the supply sensor and run a system pump (if installed).

2.2.2 MCM10 LED functions

MCM10 Front Panel



1 — GRN
- → Off: No power / internal error MCM10
- → On: Standard operation

2 — GRN
- → Off: Pump off
- → On: Pump on

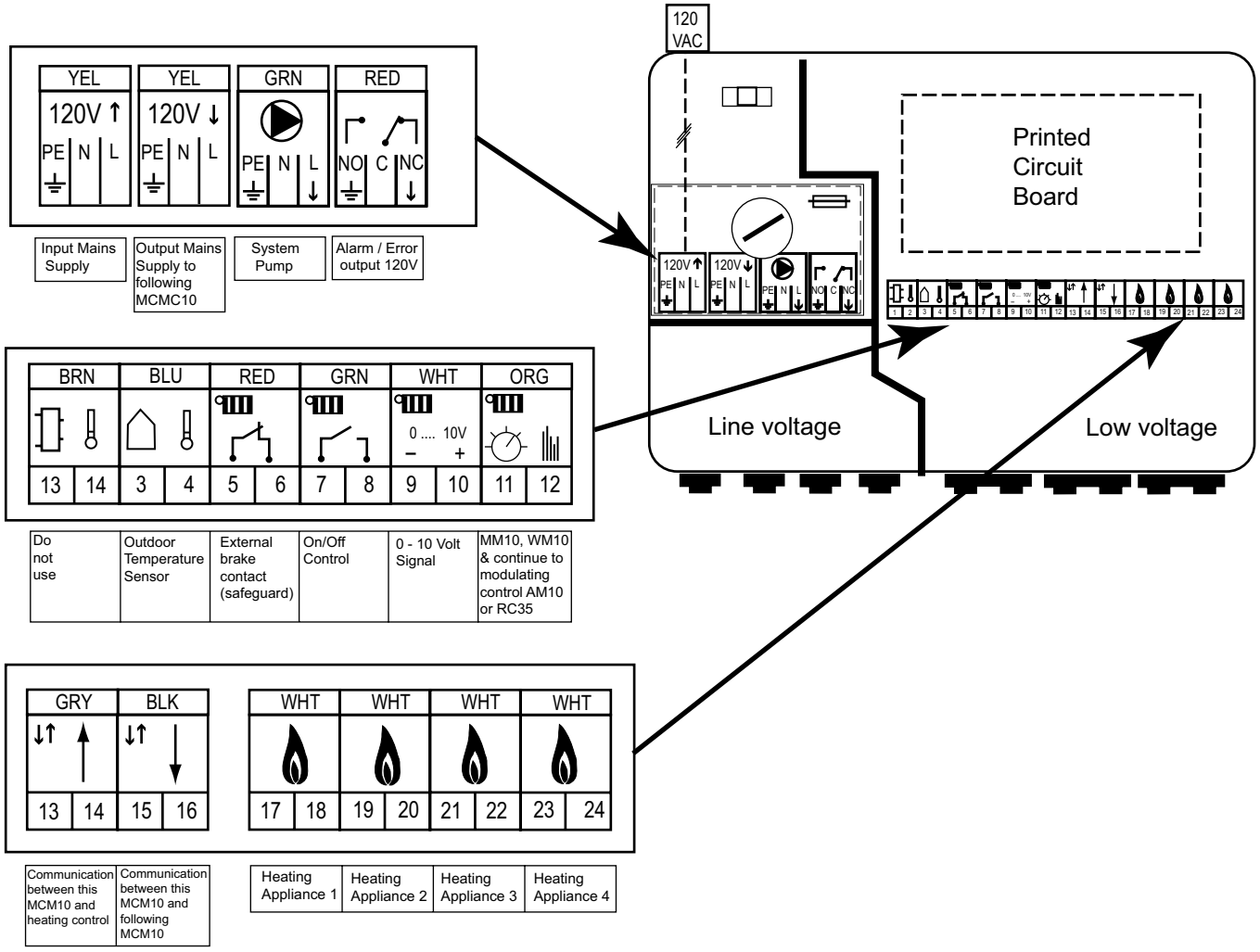
3 — RED
- → Off: Switching contact not activated
- → Blinking: System fault (example : system pressure too low or error in the heating appliance(s))

4 — GRN
- → Off: No communication
- → On: Communication between MCM10 and the previous MCM10.

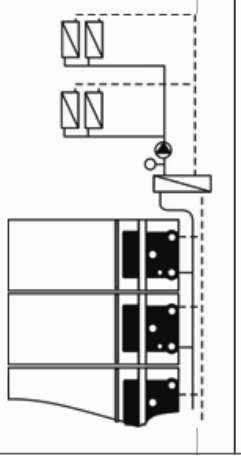
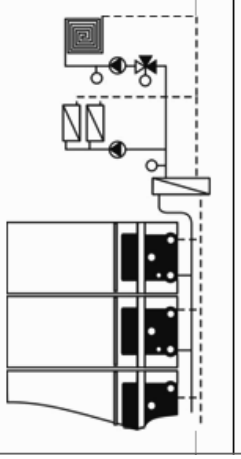
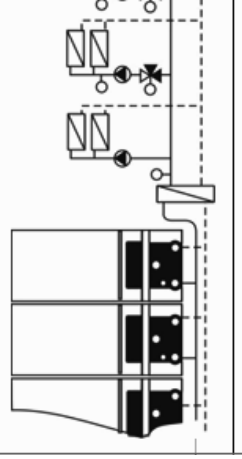
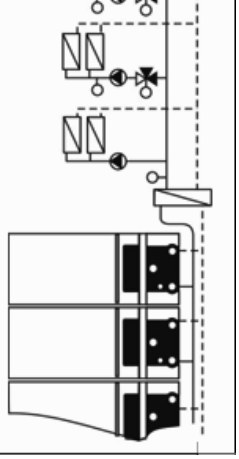
  Communication between MCM10 and a Heating Controller (e.g. RC35)

5 — GRN
- → Off: No heat demand, heating appliance stand by
- → On: Heat demand, heating appliance in operation

2.2.3 MCM10 Electrical connection diagram

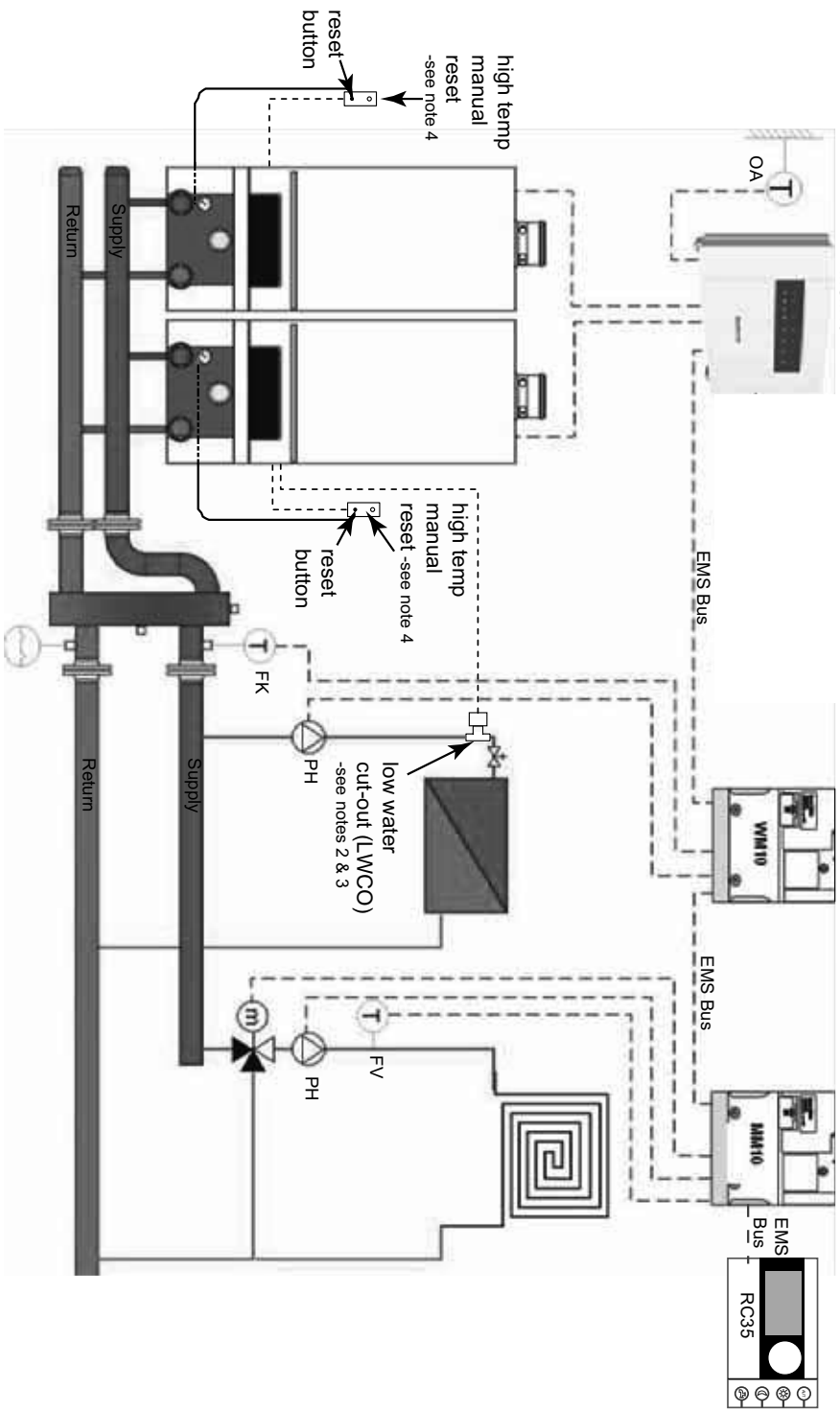


2.2.4 MCM10 Configuration possibilities

Configuration	Description	controls			
		MCM10	RC35	WM10	
	<4x GB162-100 1 heat circuit				
	<8x GB162-100 2 heat circuits	2x MCM10	RC35	WM10	MM10
	<12x GB162-100 3 heat circuits	3x MCM10	RC35	WM10	2xMM10
	<16x GB162-100 4 heat circuits	4x MCM10	RC35	WM10	3xMM10

2.2.5 MCM10 Piping and wiring diagrams

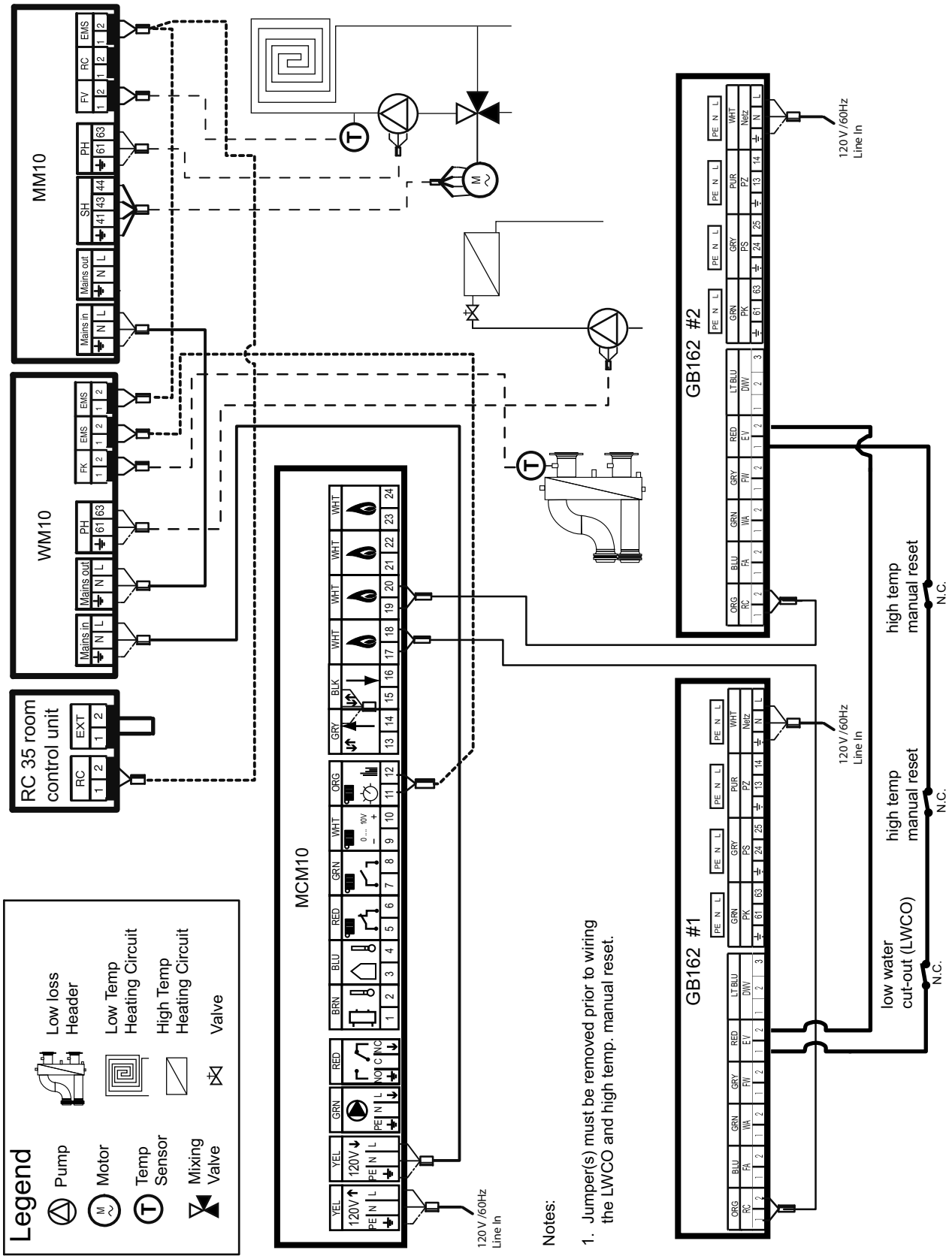
- **MCM10 with RC 35 and EMS modules:**



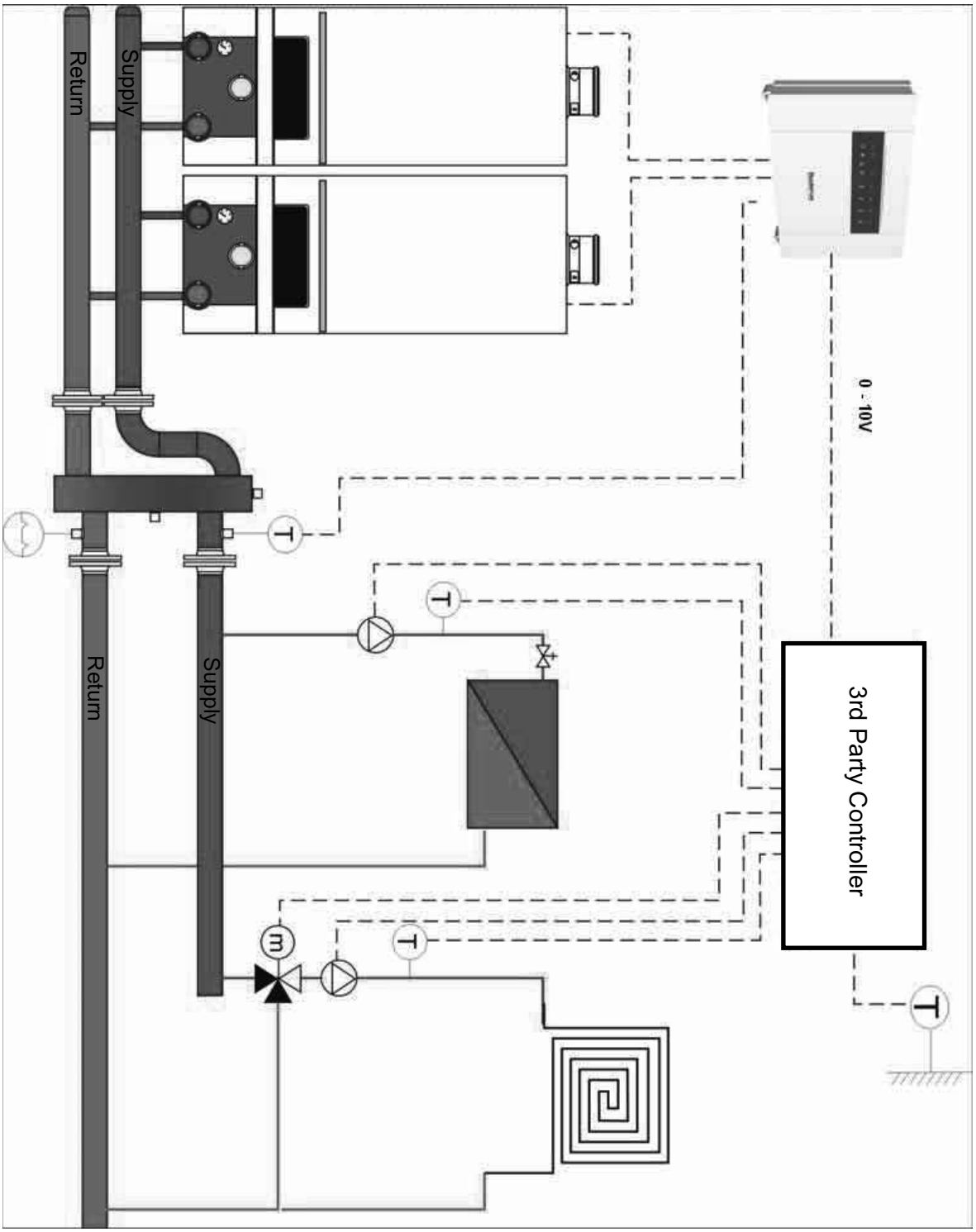
Notes:
1. See page 48 for details on where to connect LWCO standpipe to pump group.
2. LWCO and high temp manual reset are furnished and installed by others per local code.
3. LWCO must be located above the highest point of the boiler heat exchanger.
4. Hi Temp Manual Reset remote sensing bulb must be located in the boiler supply.

- see page 49 for matching wiring schematic

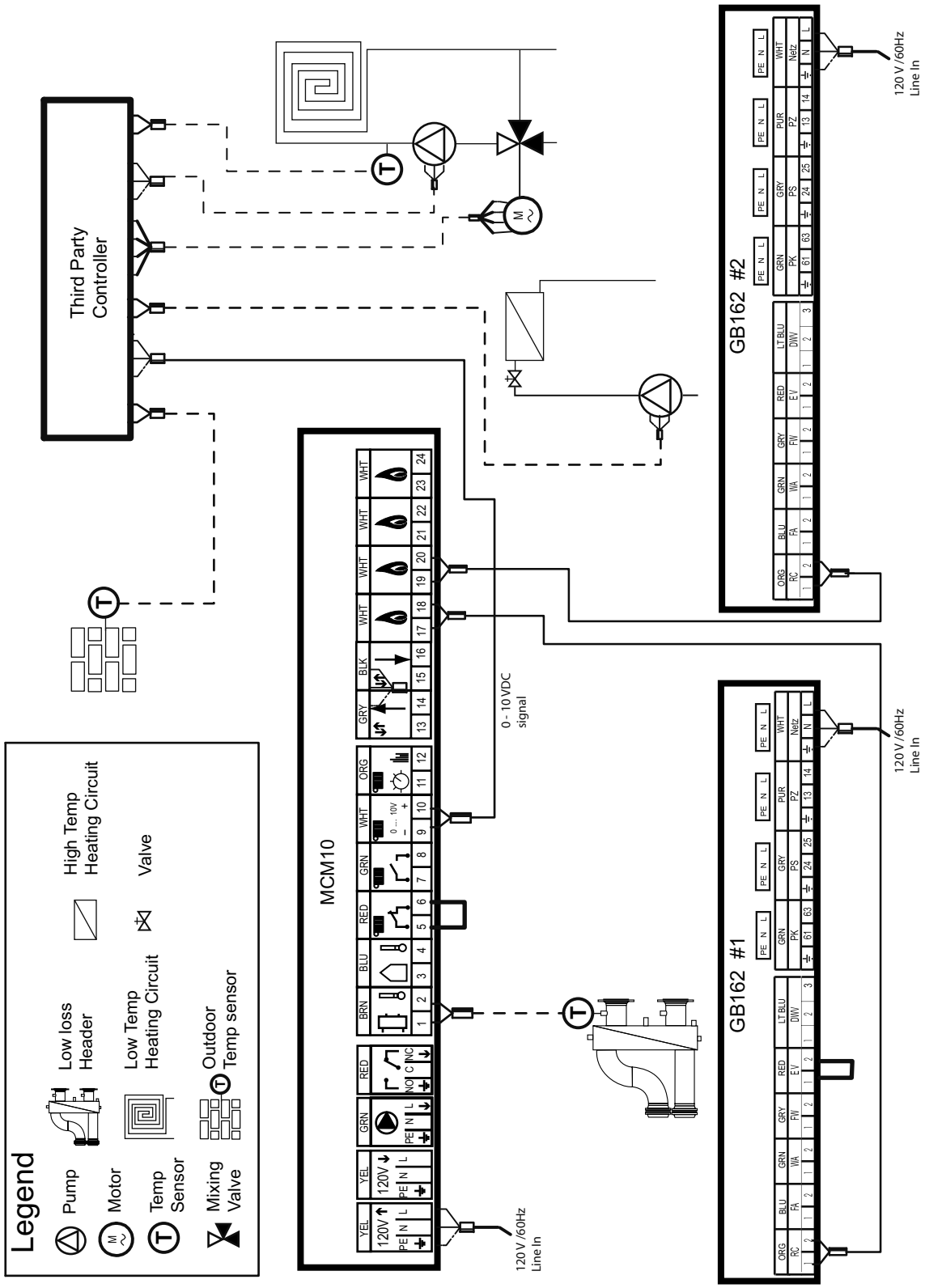
• wiring schematic for MCM10 with RC35 and EMS modules



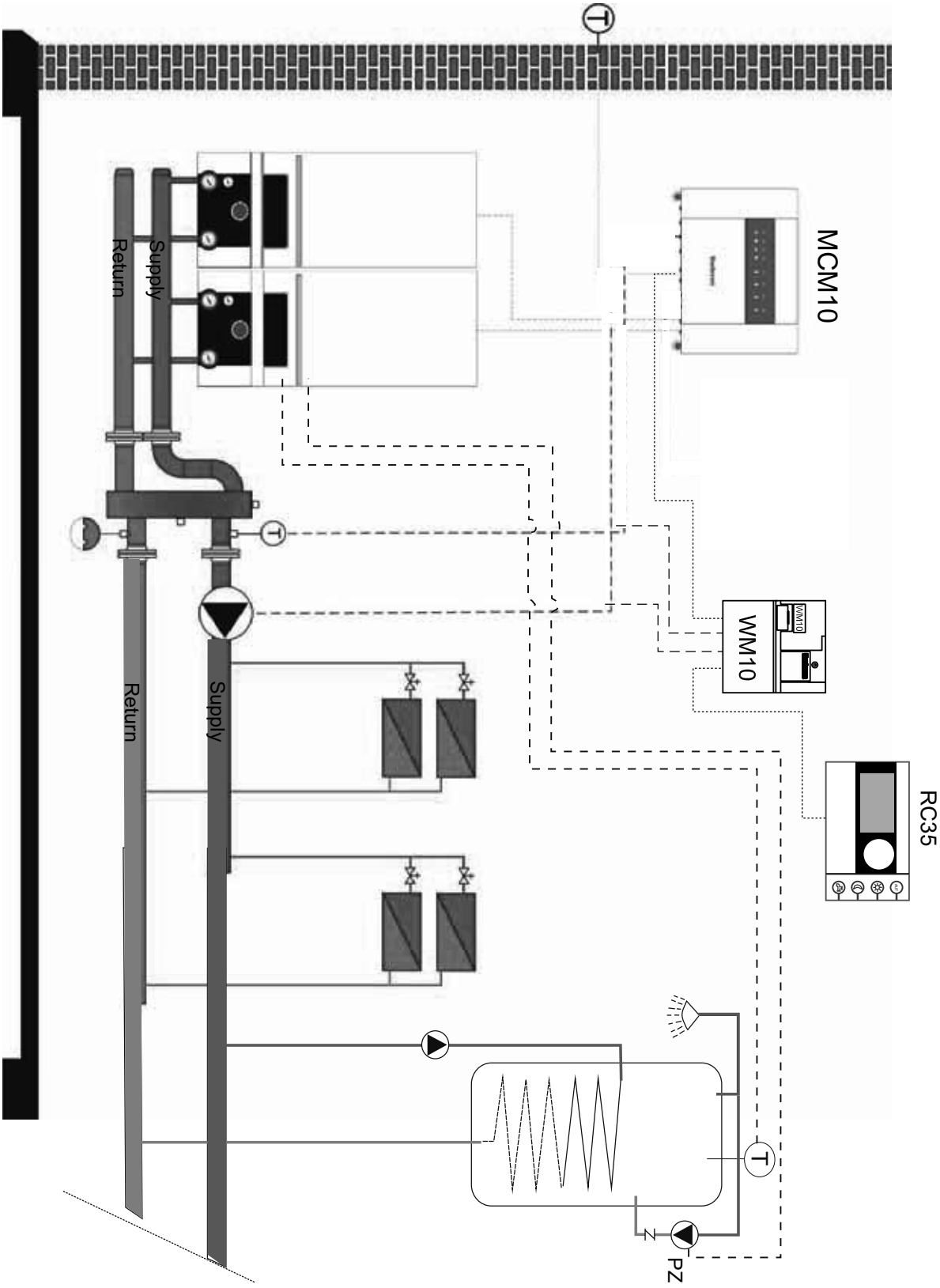
- **MCM10 with third party controls:**



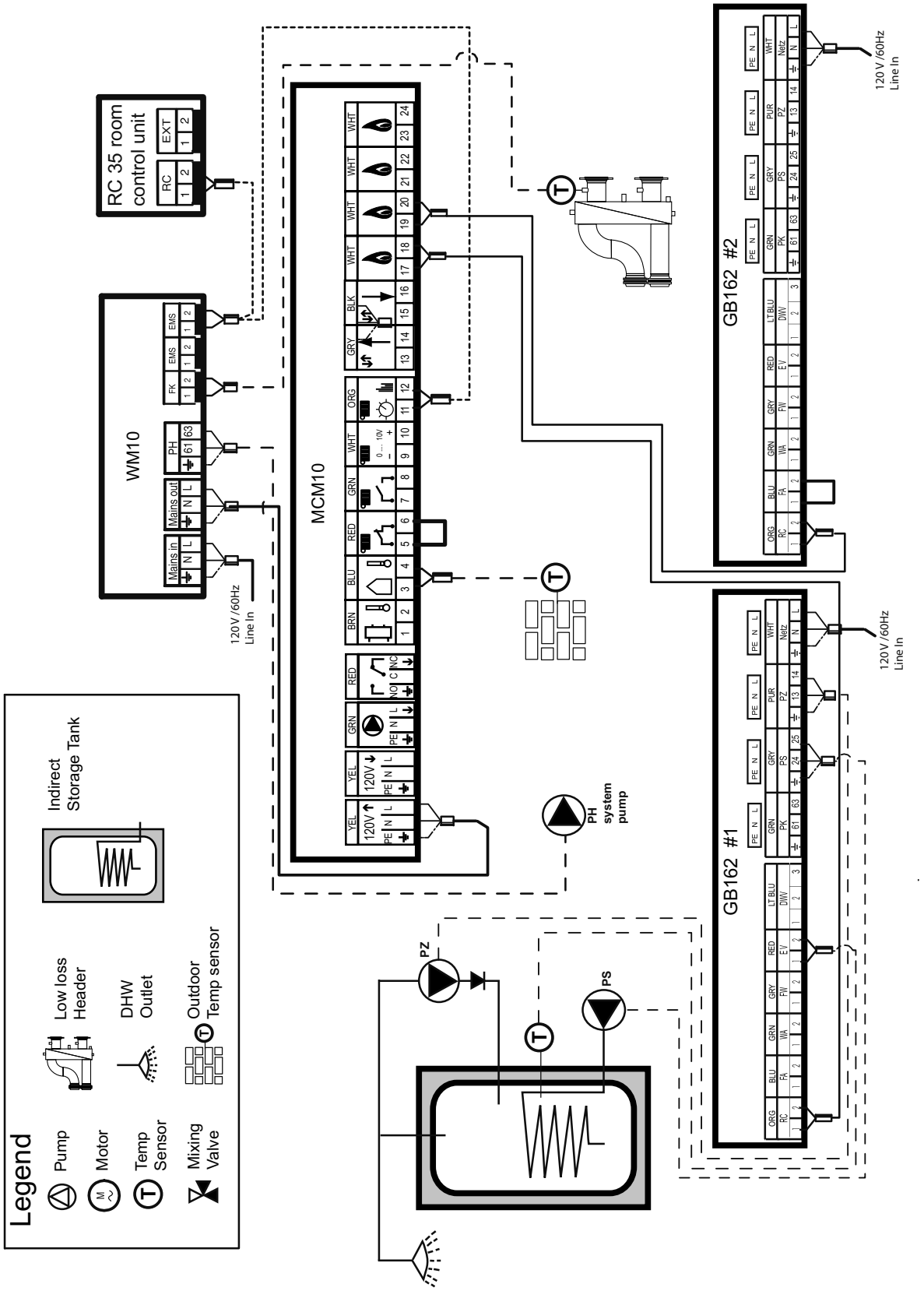
- **Wiring schematic for MCM10 with third party controls:**



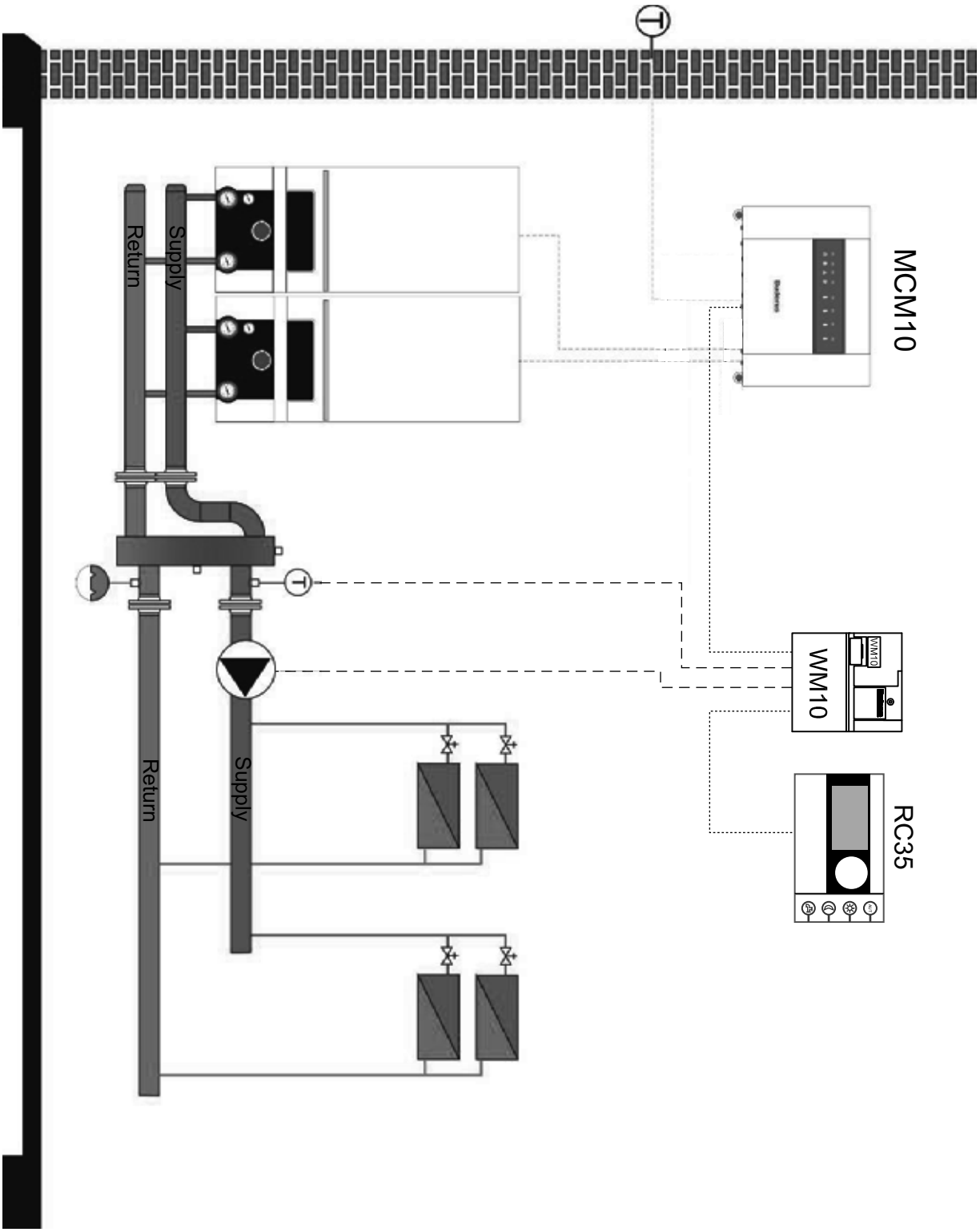
- **MCM10 with domestic hot water:**



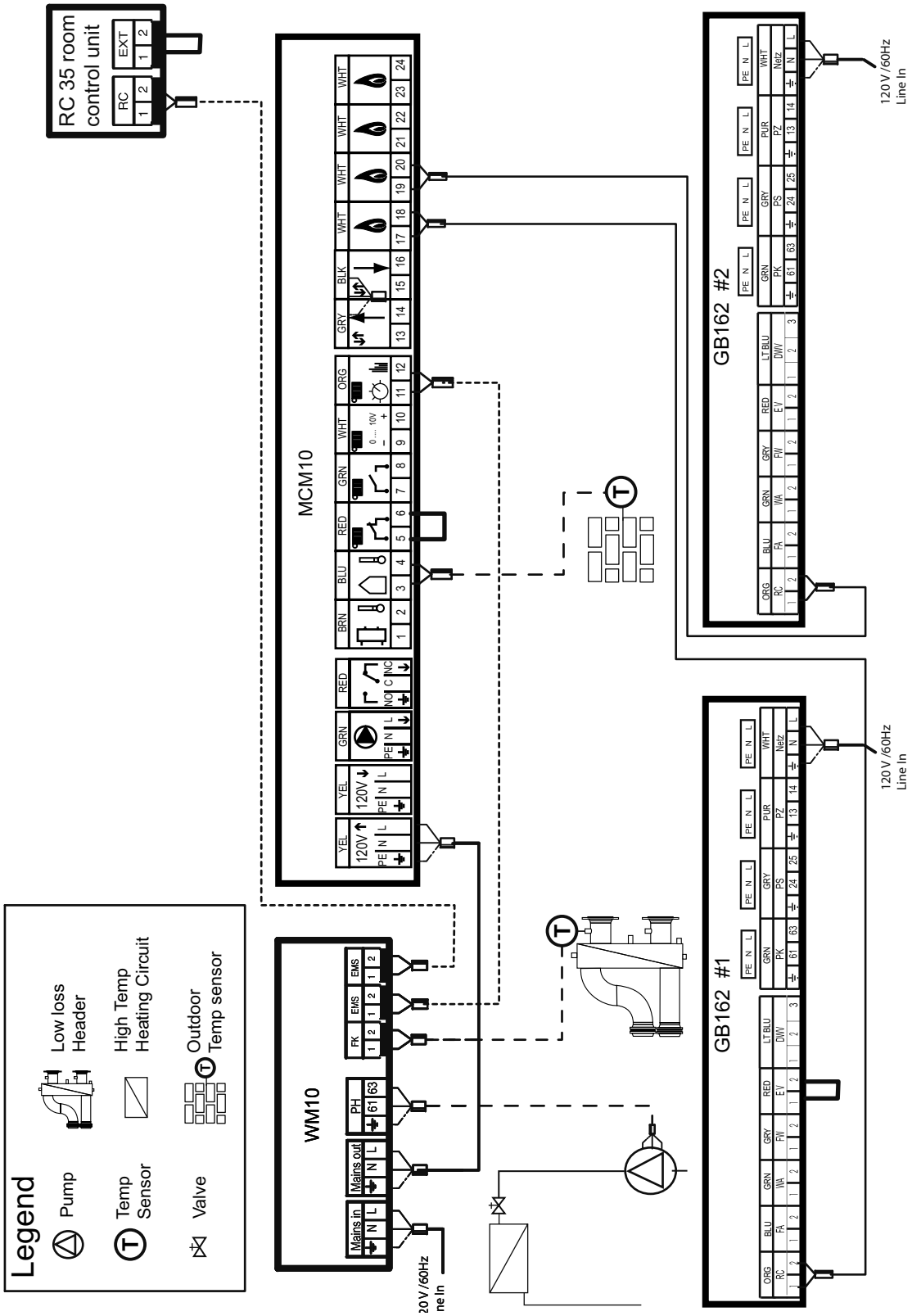
- **Wiring schematic for MCM10 with domestic hot water:**



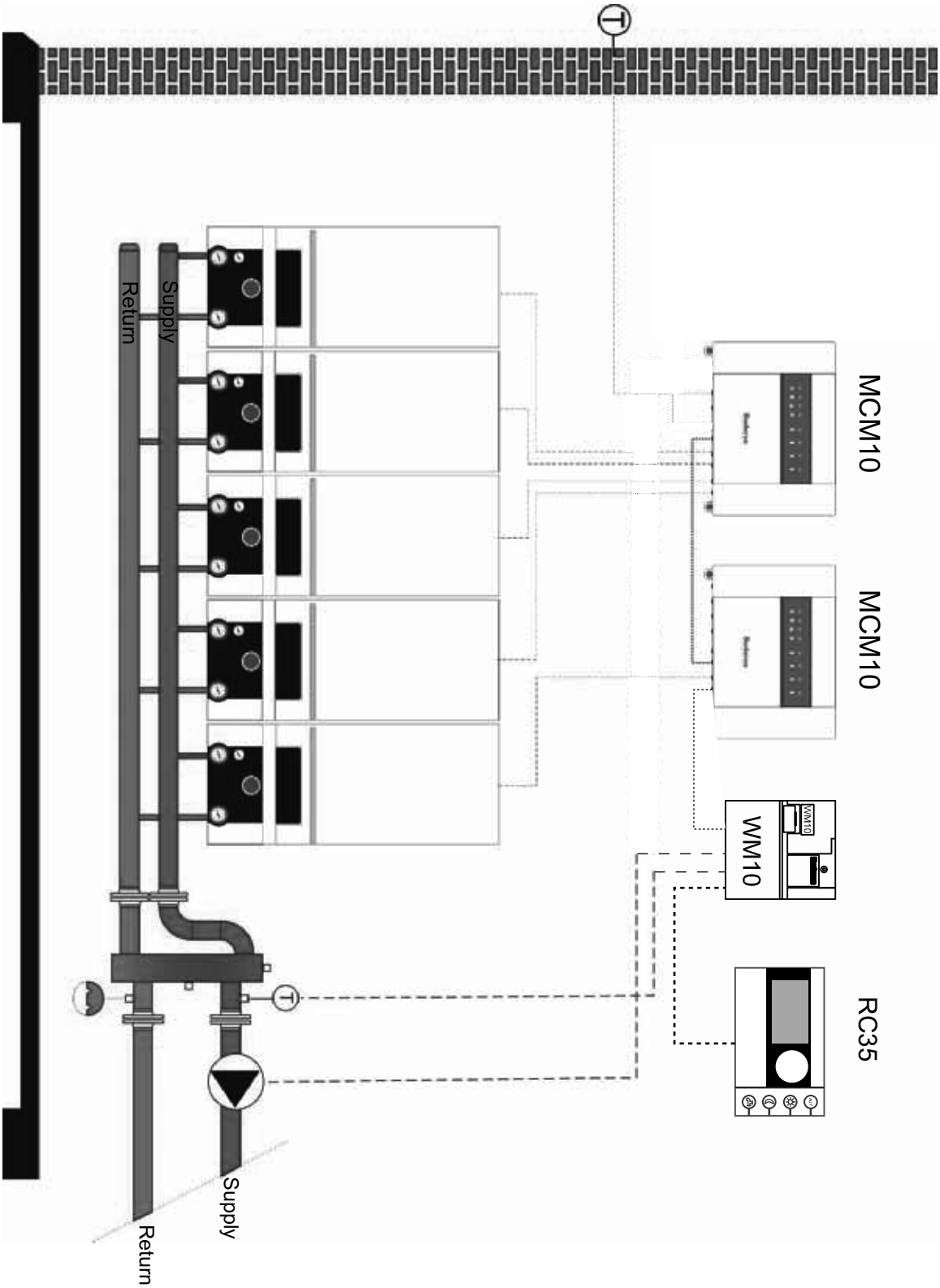
- **MCM10 with RC35, one heating circuit and one system pump**:



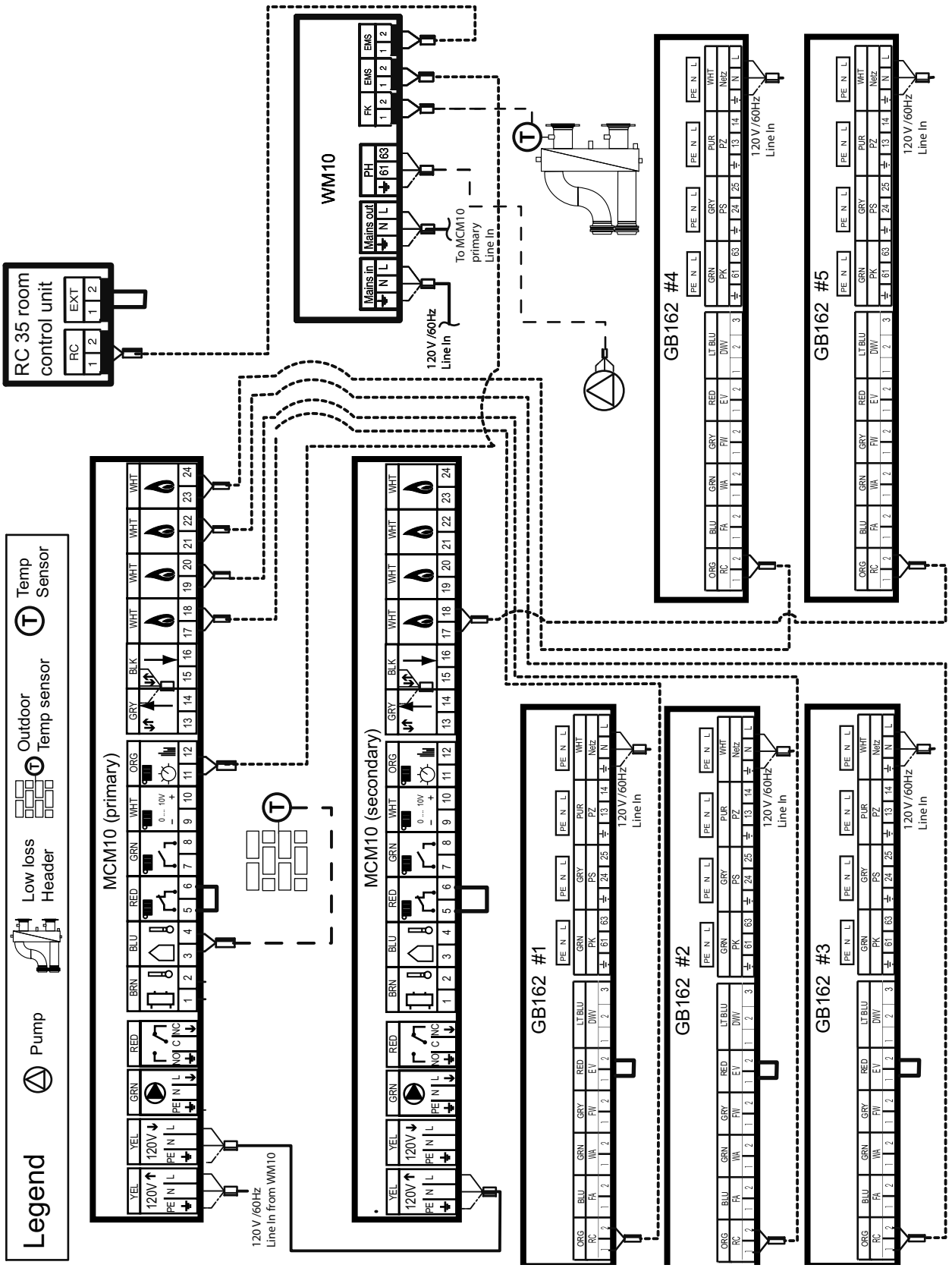
- **Wiring schematic for MCM10 with RC35, one heating circuit and one system pump:**



- **Two MCM10's with RC35, one heating circuit and one system pump:**



- **Wiring Schematic for two MCM10's with RC35, one heating circuit and one system pump:**



2.3 RC35 room control unit

2.3.1 Benefits of the RC35 room control unit

- **System benefits**
  - uniform operation
  - remote control at no additional charge
  - time programs
  - solar integration
  - operating safety, emergency operation
  - monitor
  - maintenance message
  - service information
  - electronic STB

- **Innovations and benefits**
  - ◦ more service and user friendly
    - text indicated guided operation
    - graphic supported display
    - initiation function test
    - contact data of the service provider can be entered for maintenance and error messages
  - ◦ more efficiency
    - temporary temperature adjustment
    - up to 4 heating circuits (3 with mixer)
    - 2 proprietary programs
  - ◦ more comfort
    - contact data of service provider
    - statistic function solar system and outdoor temperature

2.3.2 Description of the RC35 room control unit

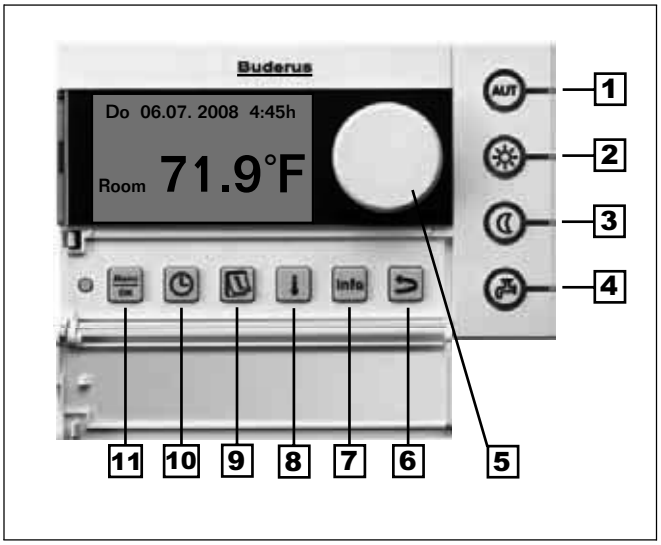
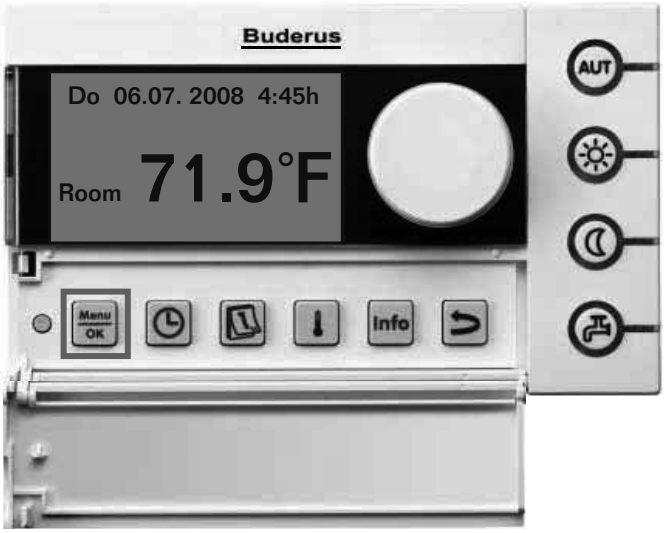


Figure 57 Description of the RC35 room control

1: Automatic operation (switching program)
2: Continuous heating (day temp.)
3: Permanently reduced (night temp)
4: Heat up hot water once
5: Change temperature temporary
6: Back
7: Show data
8: Set day or night temperature
9: Set current date
10: Set current time
11: Open User menu

2.3.3 RC35 room control programming aspects

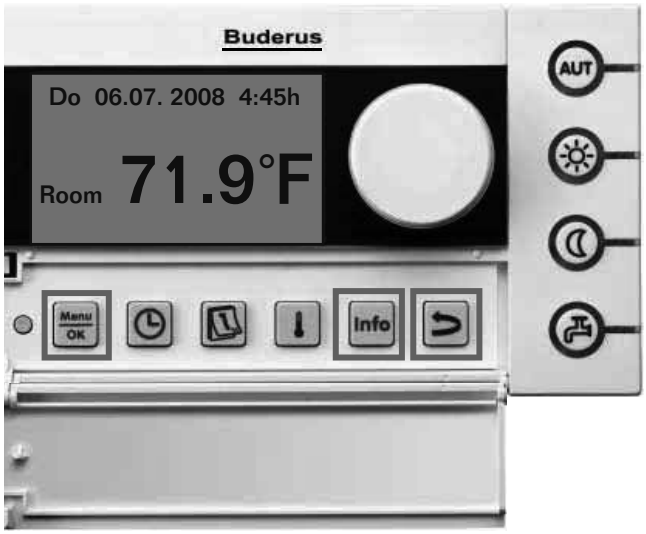
User menu:



Menu OK

- Standard display
- Operation modes
- Switching program
- Summer/winter threshold
- Summer/winter time
- DHW temperature
- Holiday
- Party function
- Pause function
- Thermally desinfection

Service menu:



Menu OK + Info +

- Quick operation
- Settings
- Diagnosis
- Servicing
- Reset

2.3.4 RC35 room control settings

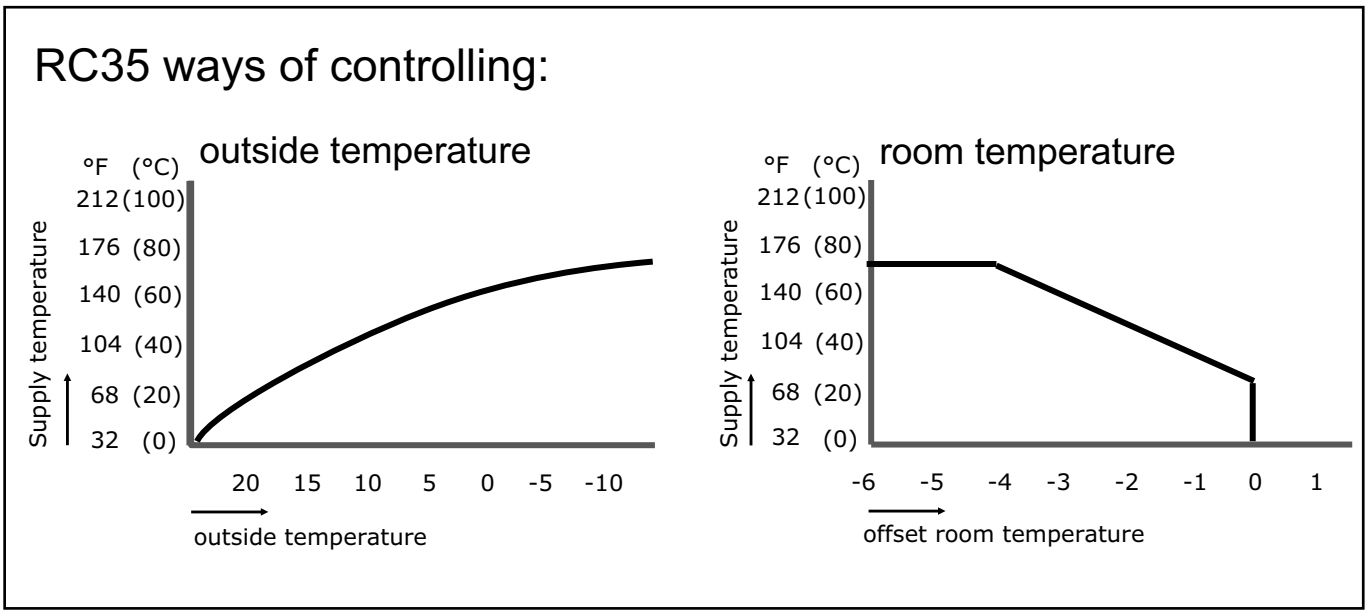


Figure 58 RC35 ways of controlling

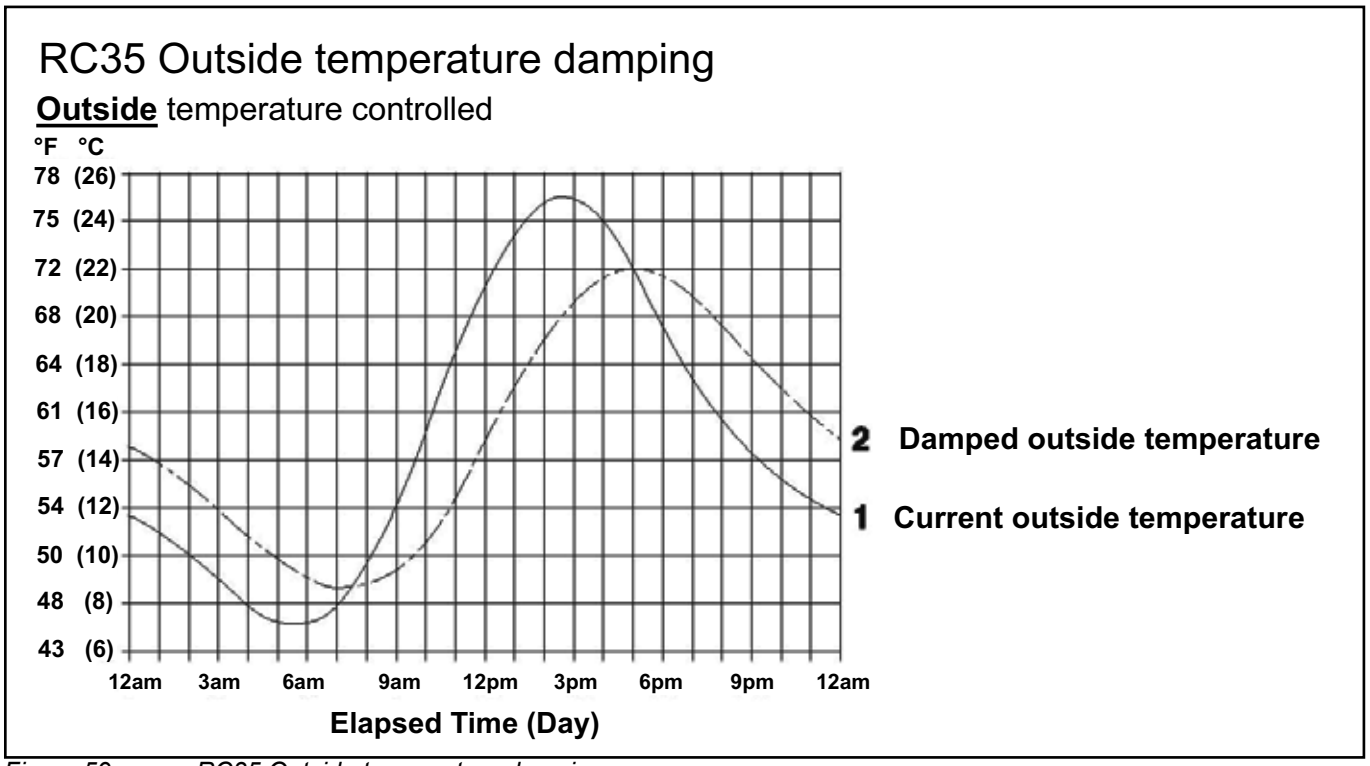


Figure 59 RC35 Outside temperature damping

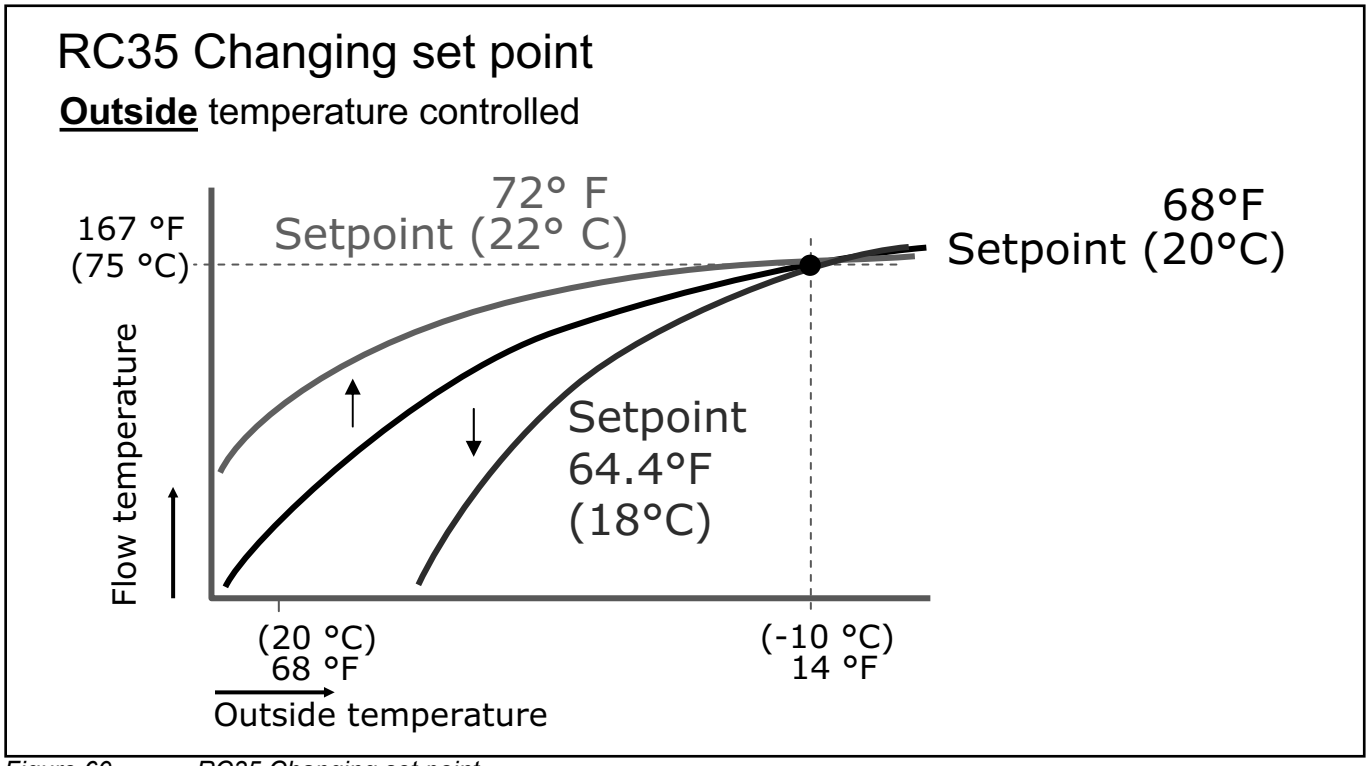


Figure 60 RC35 Changing set point

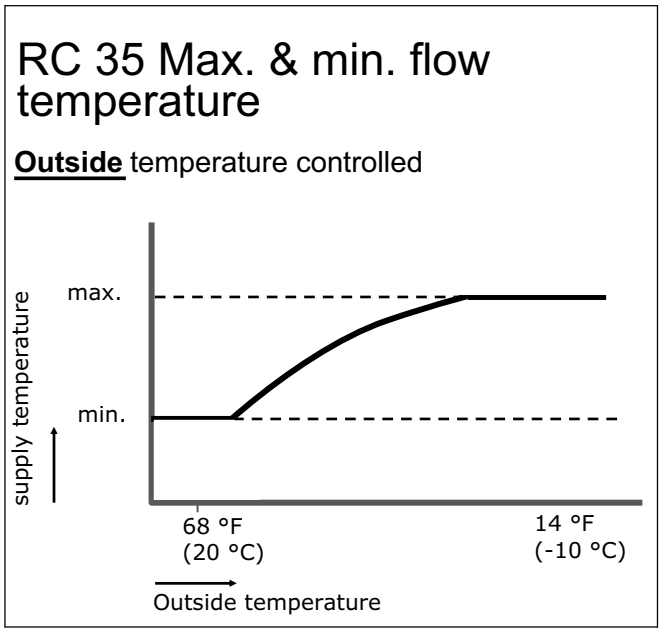


Figure 61 RC 35 Max and min flow temperature

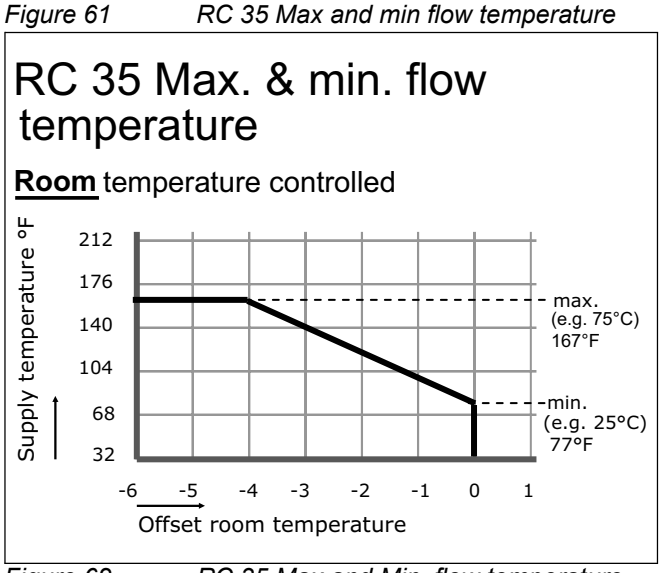


Figure 62 RC 35 Max and Min. flow temperature

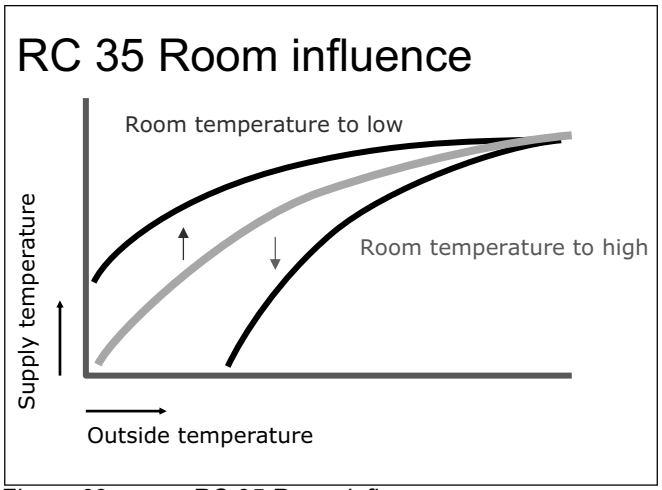


Figure 63 RC 35 Room influence

2.3.5 RC35 night set back and frost protection

Night Setback
The following are Night Setback possibilities:

Shutdown
- CH is switched off during the night. The (group) pump is switched off. Frost protection remains active.

Reduced
- CH operates during the night on a reduced night setpoint. The (group) pump is running continuous.

Room setback
- CH is switched off during the night. If the room temperature drops below the night setpoint, the CH is switched in reduced night setback operation.

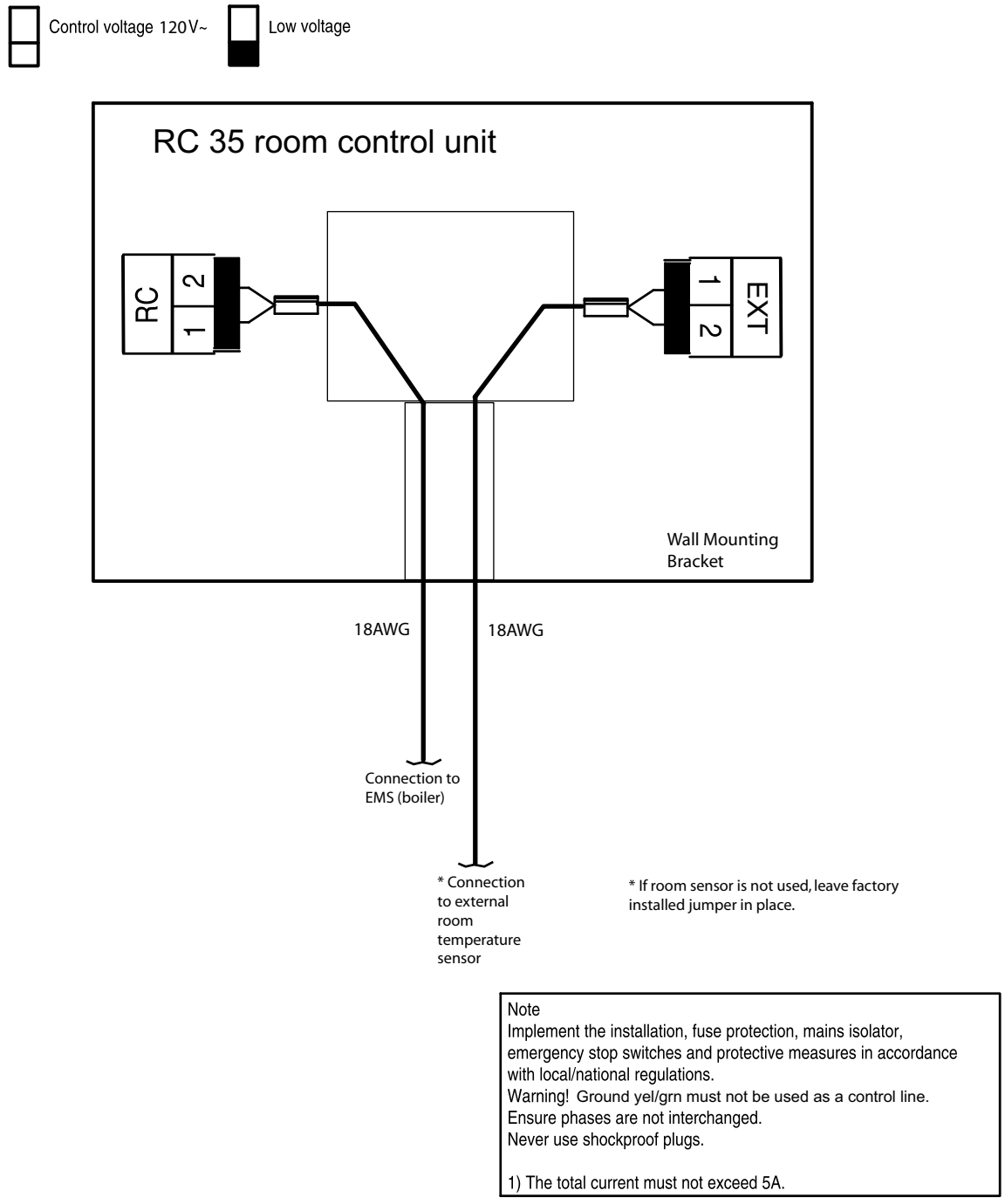
Outdoor setback
- CH is switched off during the night. If the outside temperature drops below an adjustable value, the CH is switched in reduced night setback operation.

Frost protection
The following are Night Setback possibilities:

On outside temperature
- If the outside temperature drops below a programmable outside temperature, the (heating circuit) pump will go in operation.

On room temperature
- If the room temperature drops below 41°F (5°C), the (heating circuit) pump will go in operation till the room temperature rises above 44.6°F (7°C).

2.3.6 RC35 wiring diagram



Note
Implement the installation, fuse protection, mains isolator, emergency stop switches and protective measures in accordance with local/national regulations.
Warning! Ground yel/grn must not be used as a control line.
Ensure phases are not interchanged.
Never use shockproof plugs.

1) The total current must not exceed 5A.

2.3.7 EMS modules

- Mixing Module MM10
This module MM10 extends the heating system EMS over a mixed heating circuit.

Features of the MM10:
- There is the possibility to control the heating circuits by the room temperature as well as by the outdoor temperature.
- Keyed and color coded connecting plugs
- Communication with EMS -data bus.
- Assembly: In the control system or at the wall.
- Operation mode and failure signal via LED.
- Maximum 3 modules in a heating system.
- Requires RC35 user interface.

Figure 64 Mixer Module MM10

- Low loss header module WM10
The low loss header module WM10 regulates the hydraulic isolation between the boiler circuit and the heating circuit.

Features of the WM10:
- The function is accessable with a digital time switch in the RC35 for the unmixed heating circuit.
- Keyed and color coded connecting plugs
- Communication with EMS -data bus.
- Assembly: In the control system or at the wall.
- Operation mode and failure signal via LED.
- Maximum 1 module in a heating system.

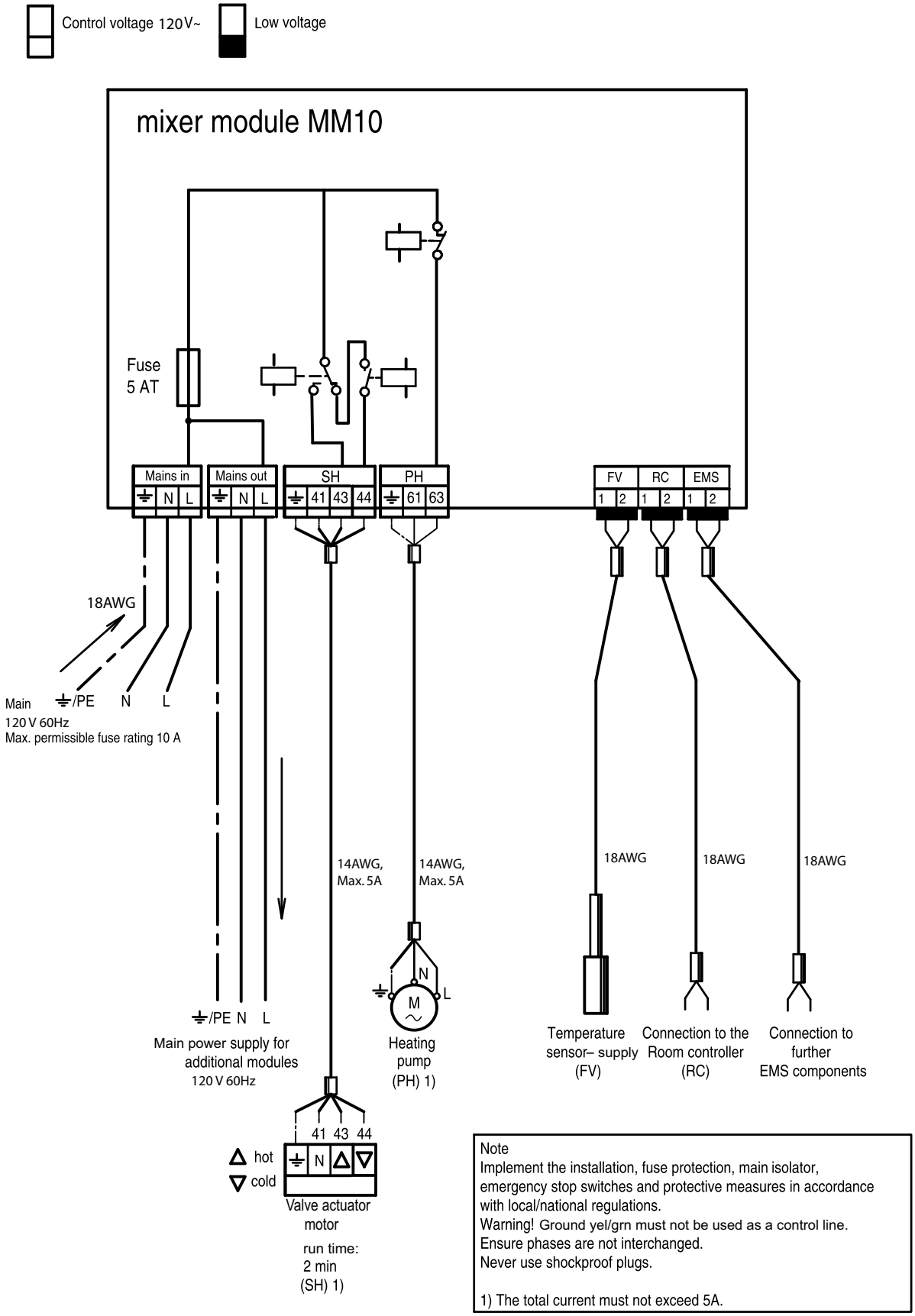
Figure 65 Low loss header module WM10

- Solar module SM10
The solar module SM10 integrates a solar system into the heating system Logamatic EMS.

Features of the SM10:
- Optimized the hot water function
- Keyed and in color coded connecting plugs
- Communication with EMS -data bus
- Installation: In the control system or at the wall
- Operation mode and failure signal about LED
- Maximum 1 module in a heating system

Figure 66 Solar module SM10

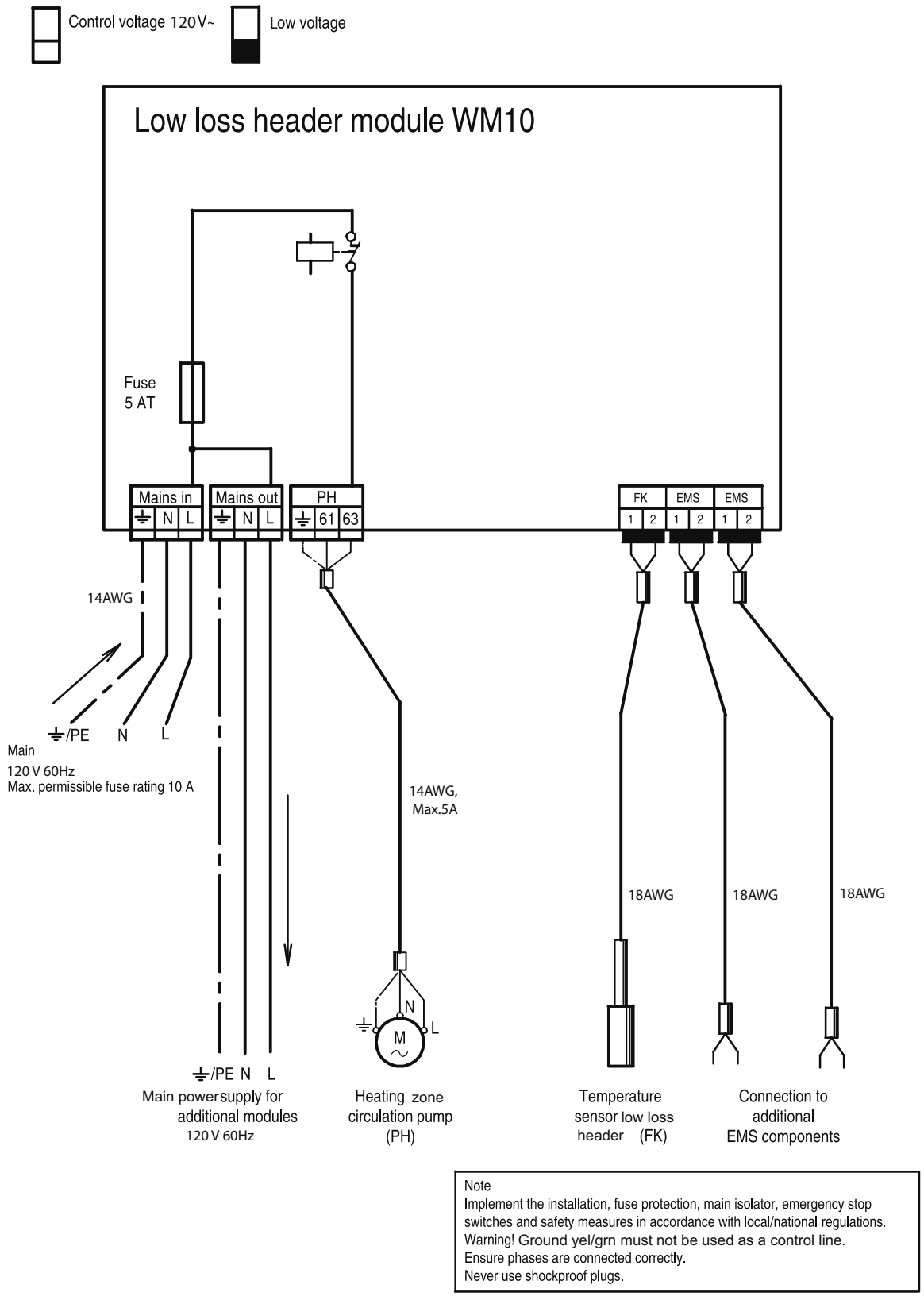
2.3.8 Mixer module MM10 wiring diagram



Note
Implement the installation, fuse protection, main isolator, emergency stop switches and protective measures in accordance with local/national regulations.
Warning! Ground yel/grn must not be used as a control line.
Ensure phases are not interchanged.
Never use shockproof plugs.

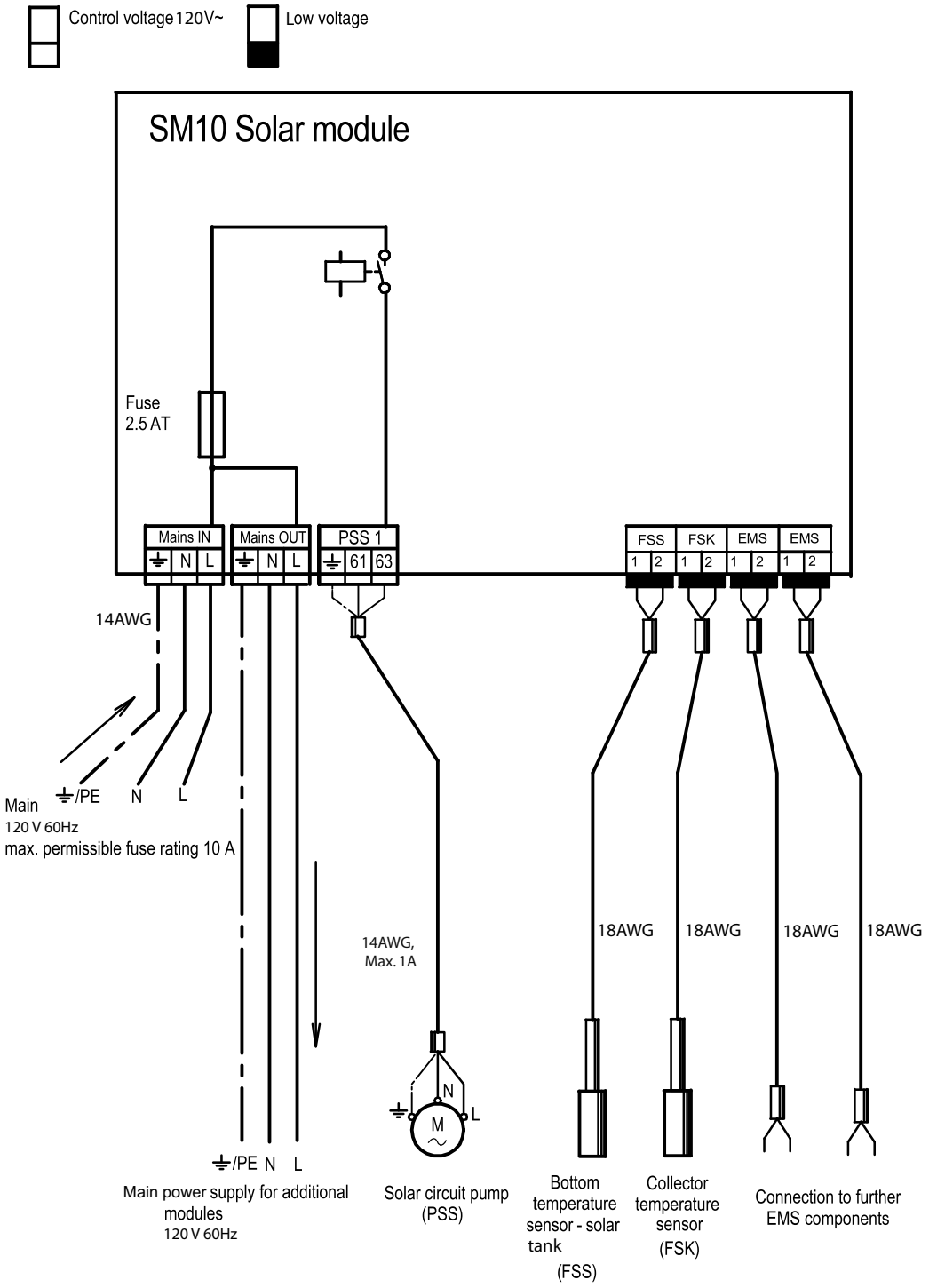
1) The total current must not exceed 5A.

2.3.9 Low loss header module WM10 wiring diagram



Note
Implement the installation, fuse protection, main isolator, emergency stop switches and safety measures in accordance with local/national regulations.
Warning! Ground yel/grn must not be used as a control line.
Ensure phases are connected correctly.
Never use shockproof plugs.

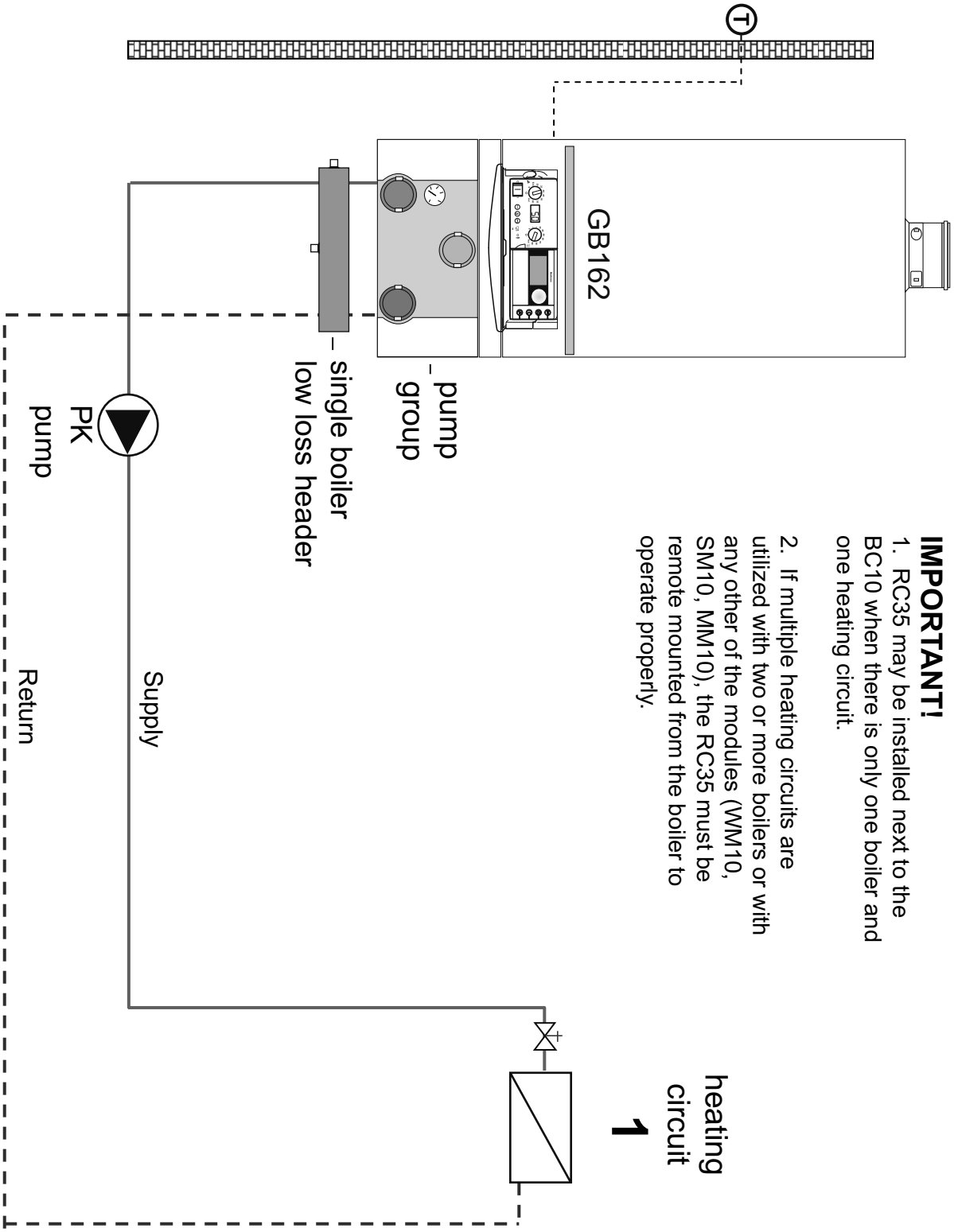
2.3.10 Solar module SM10 wiring diagram



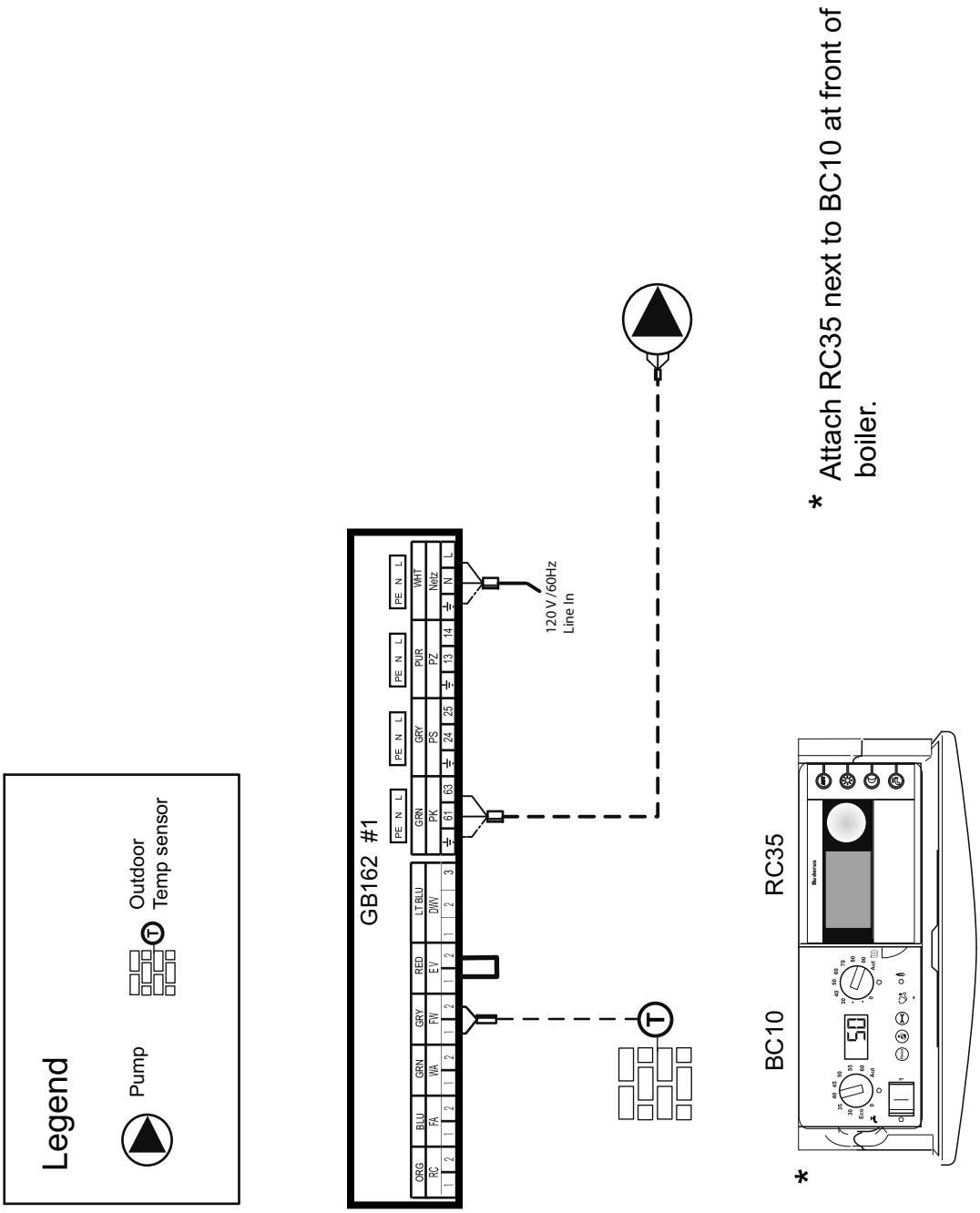
Note!
Implement the installation fuse protection, main isolator emergency stop switches and protective measures in accordance with local regulations.
Please note: Never use the Ground yel/grn conductor as control line.
Ensure phases are not interchanged.
Never use shockproof plugs.

2.3.11 RC35 piping and wiring diagrams

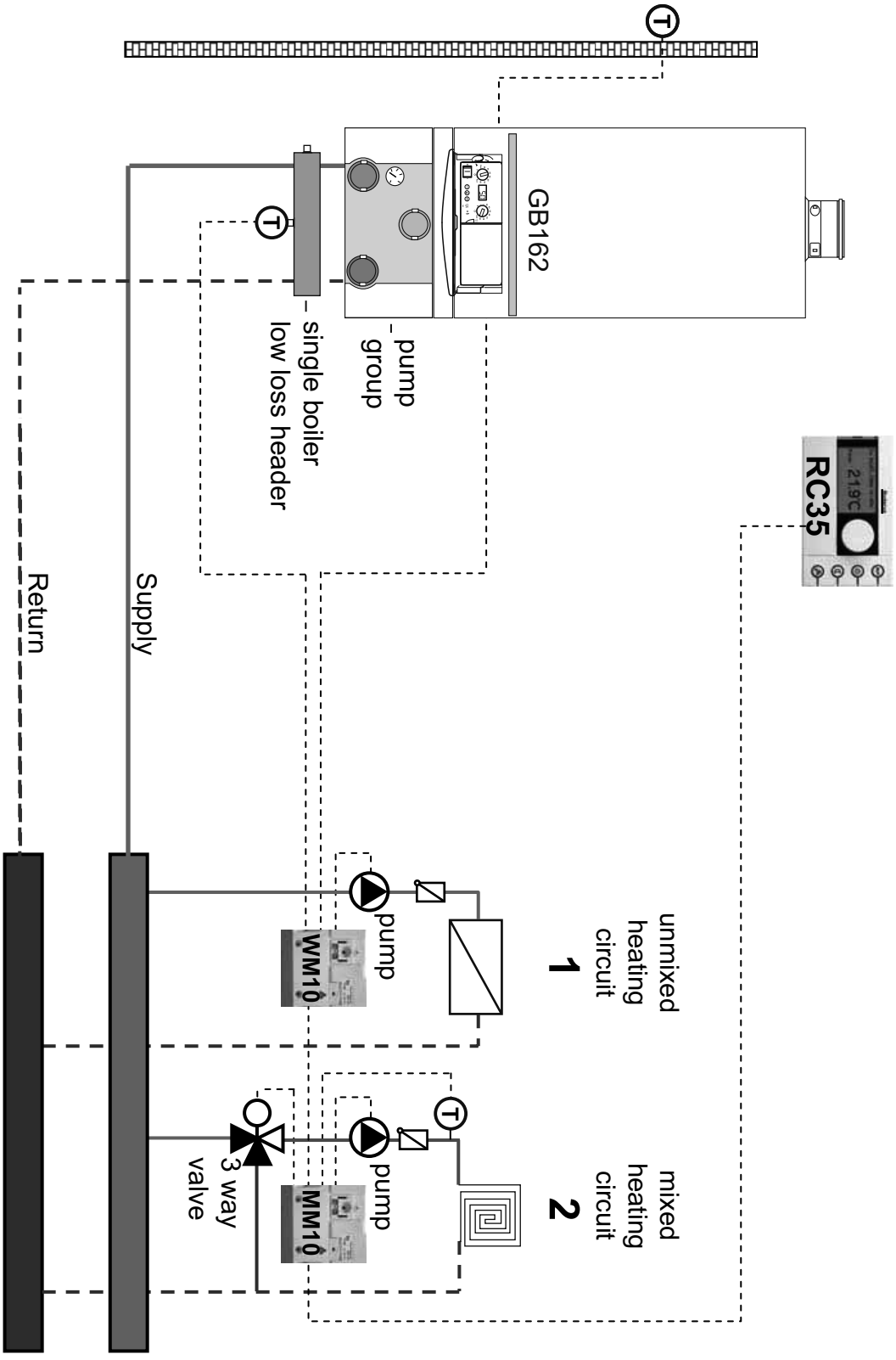
- **RC 35 with one heating circuit:**



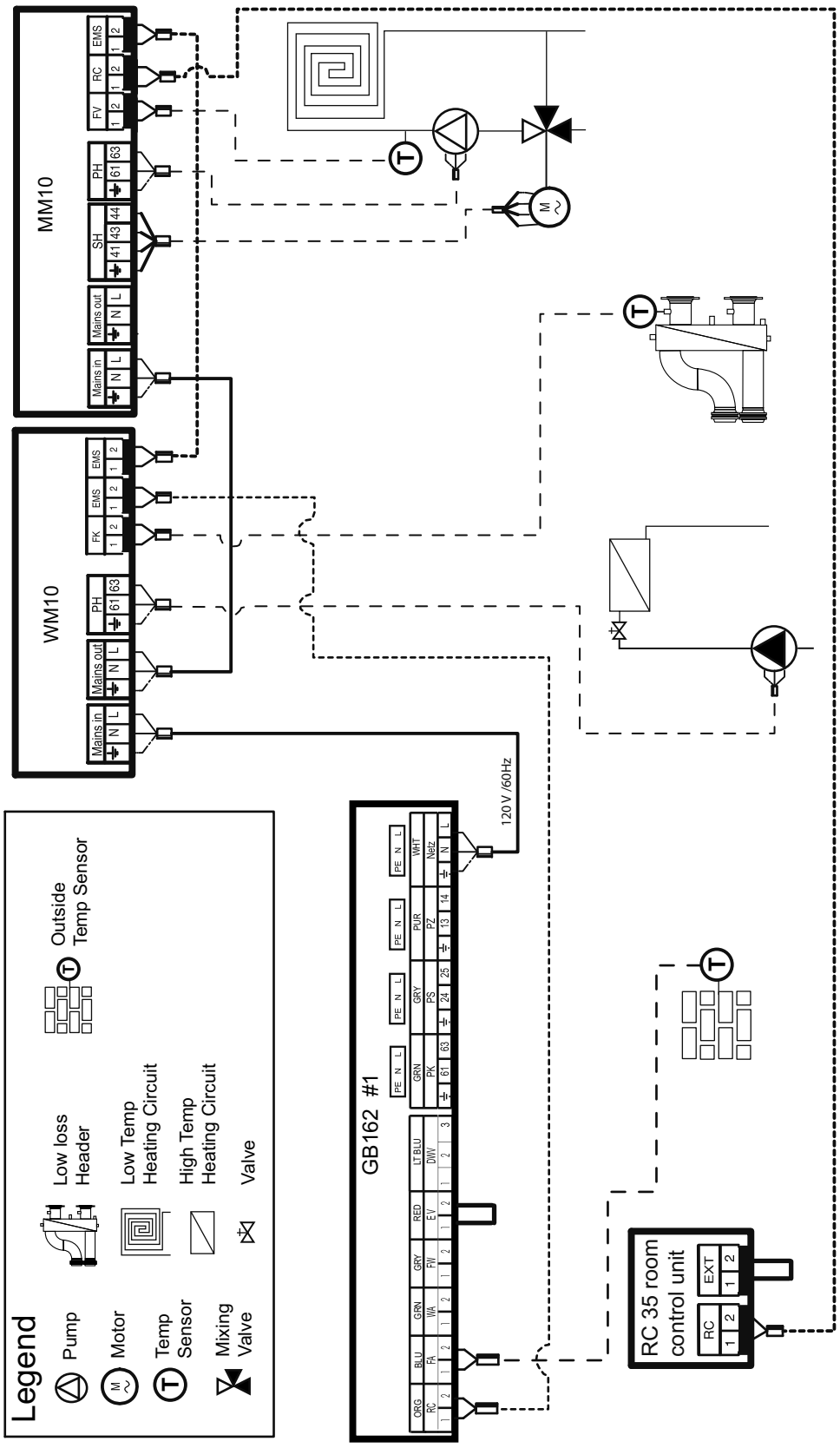
- **Wiring schematic for RC 35 with one heating circuit:**



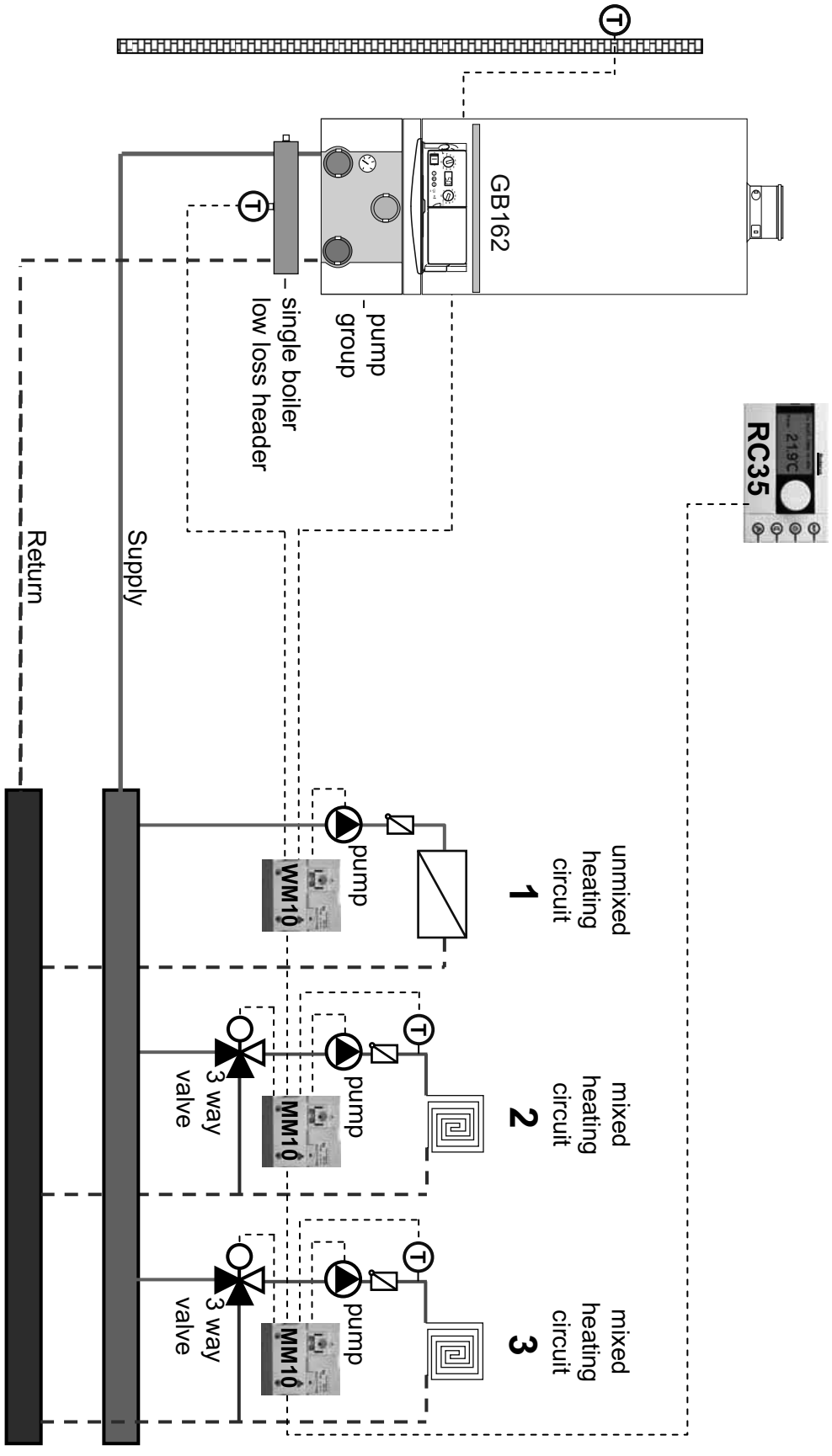
- **RC 35 with two heating circuits:**



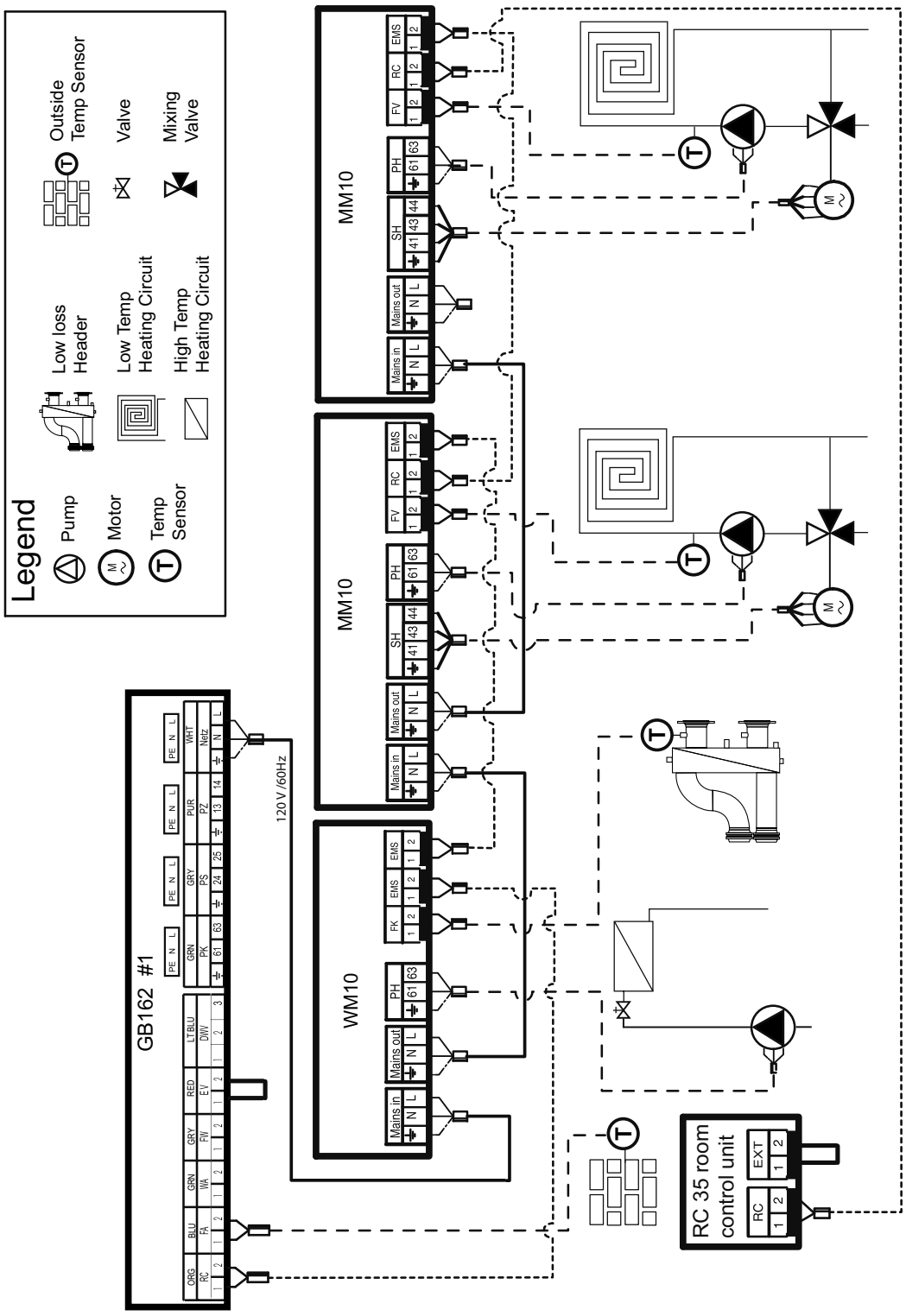
- **Wiring schematic for RC 35 with two heating circuits:**



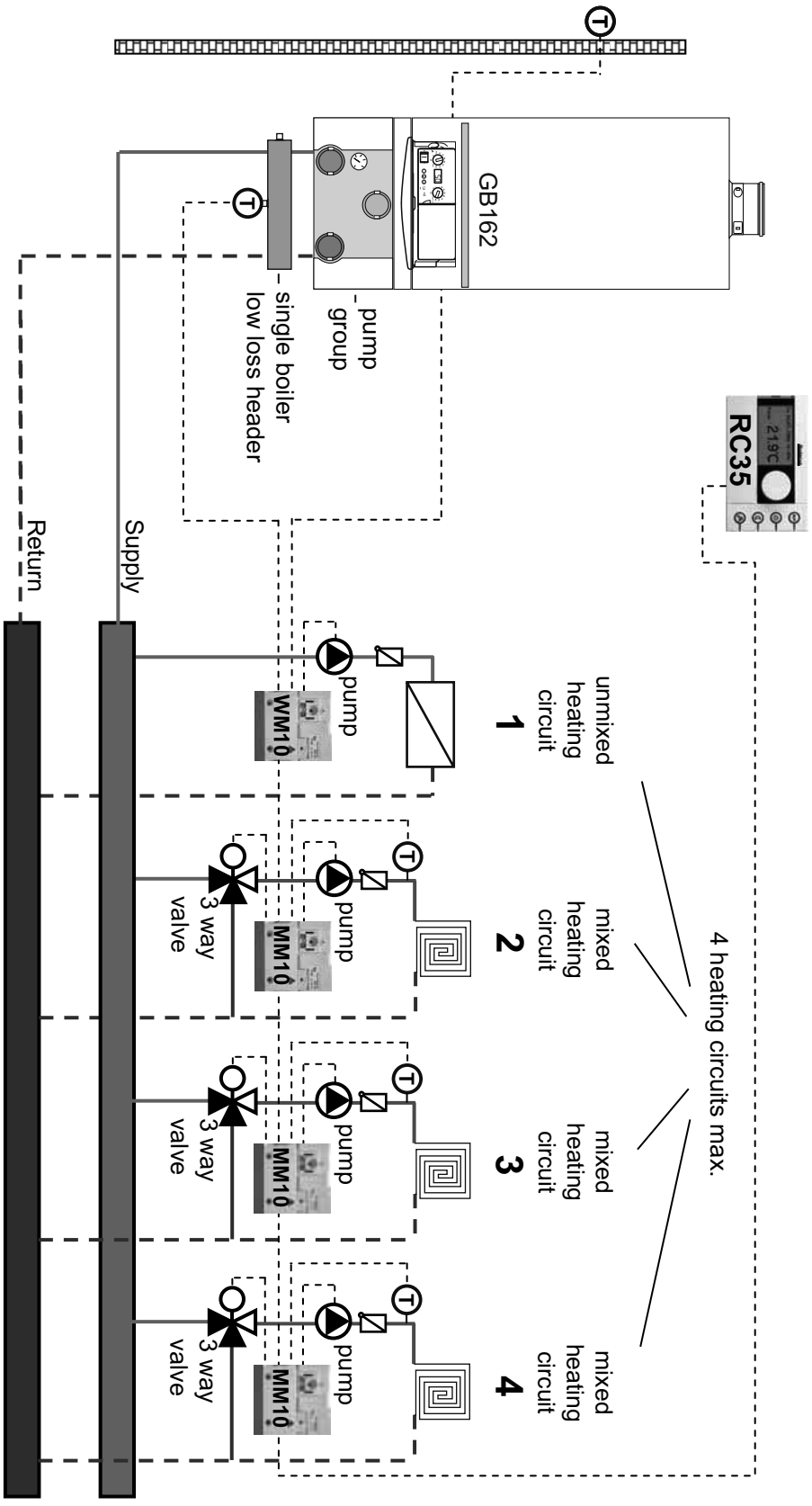
- **RC 35 with three heating circuits:**



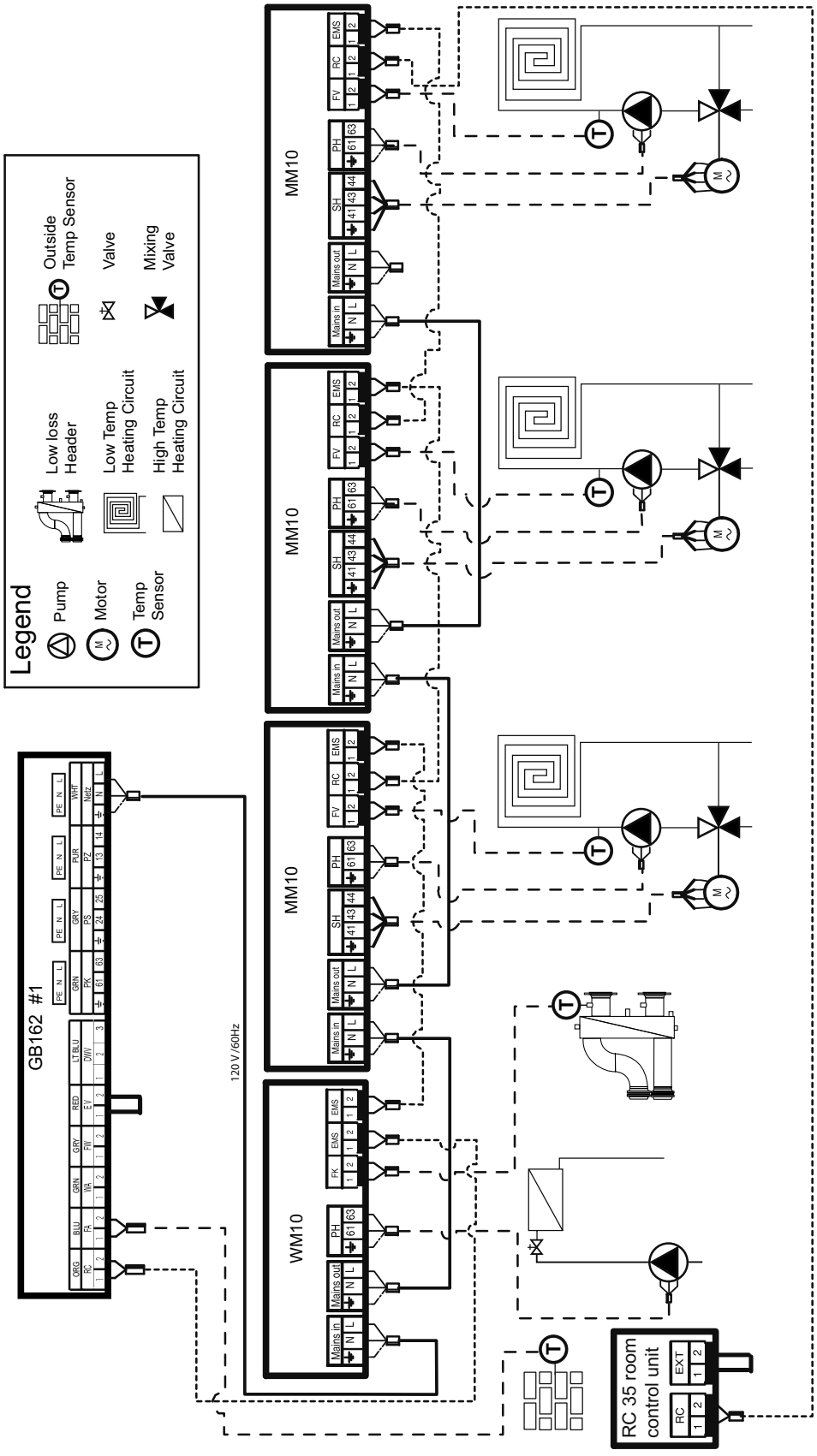
- **Wiring schematic for RC 35 with three heating circuits:**



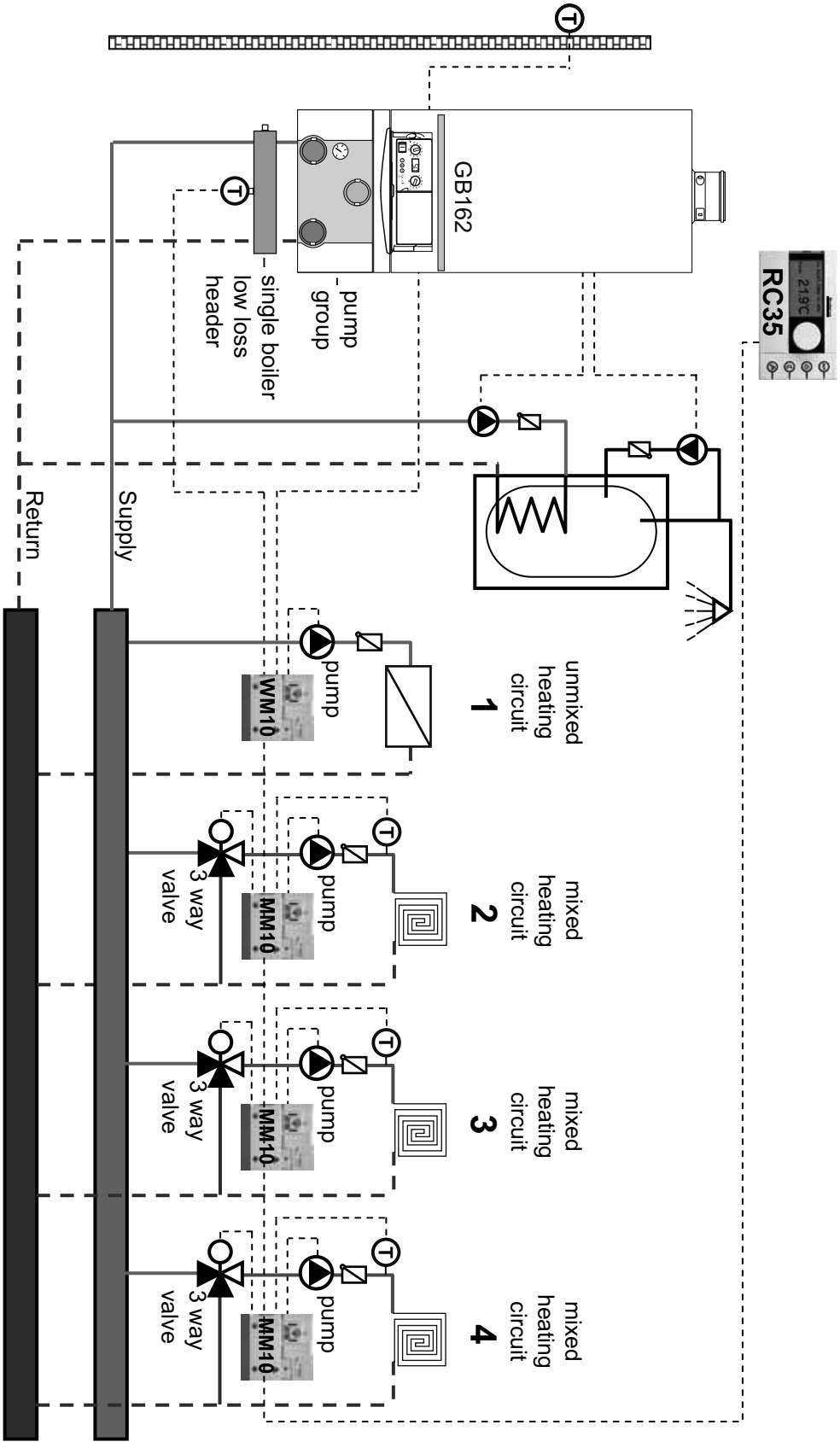
- **RC 35 with four heating circuits:**



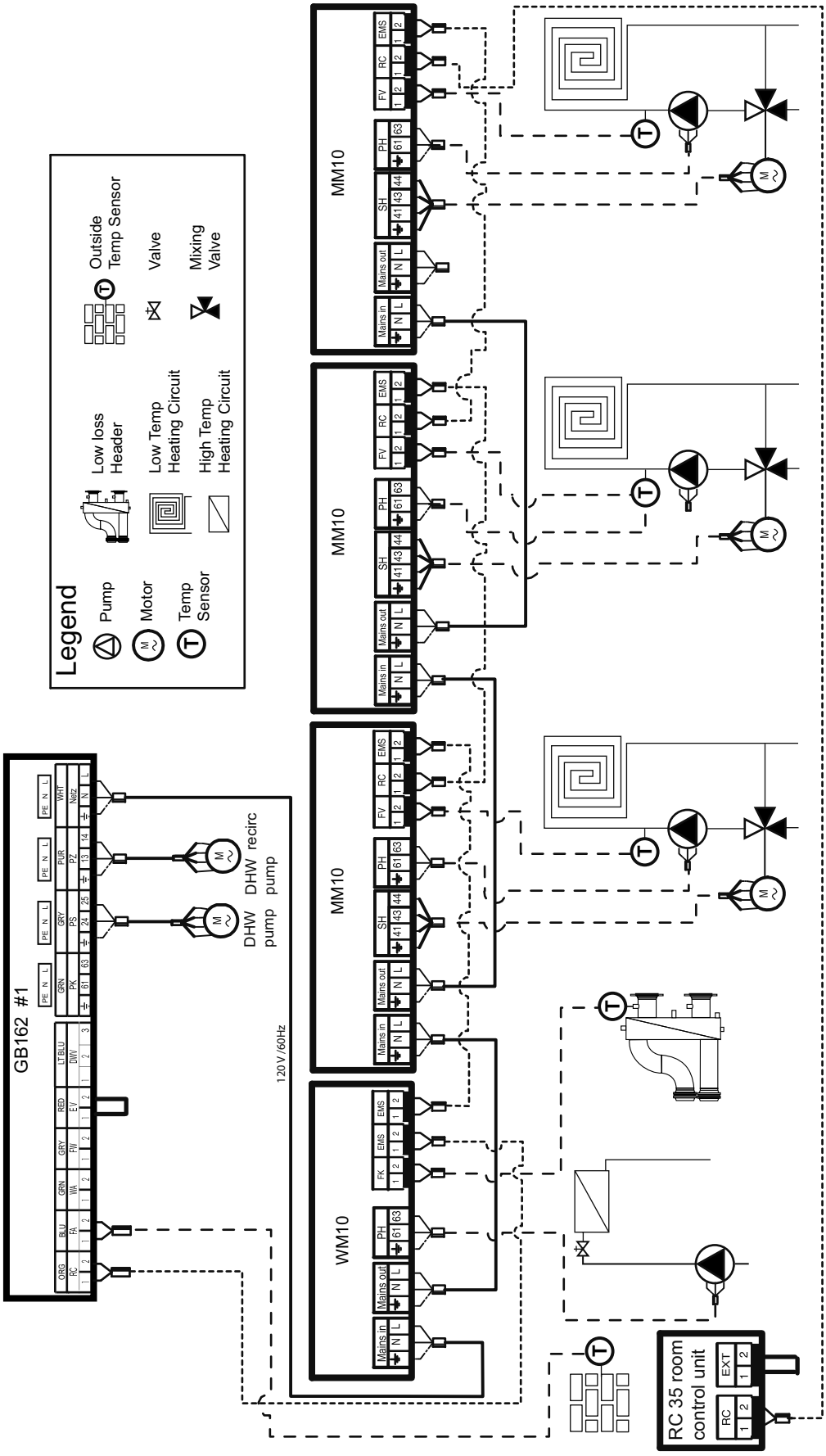
- **Wiring schematic for RC 35 with four heating circuits:**



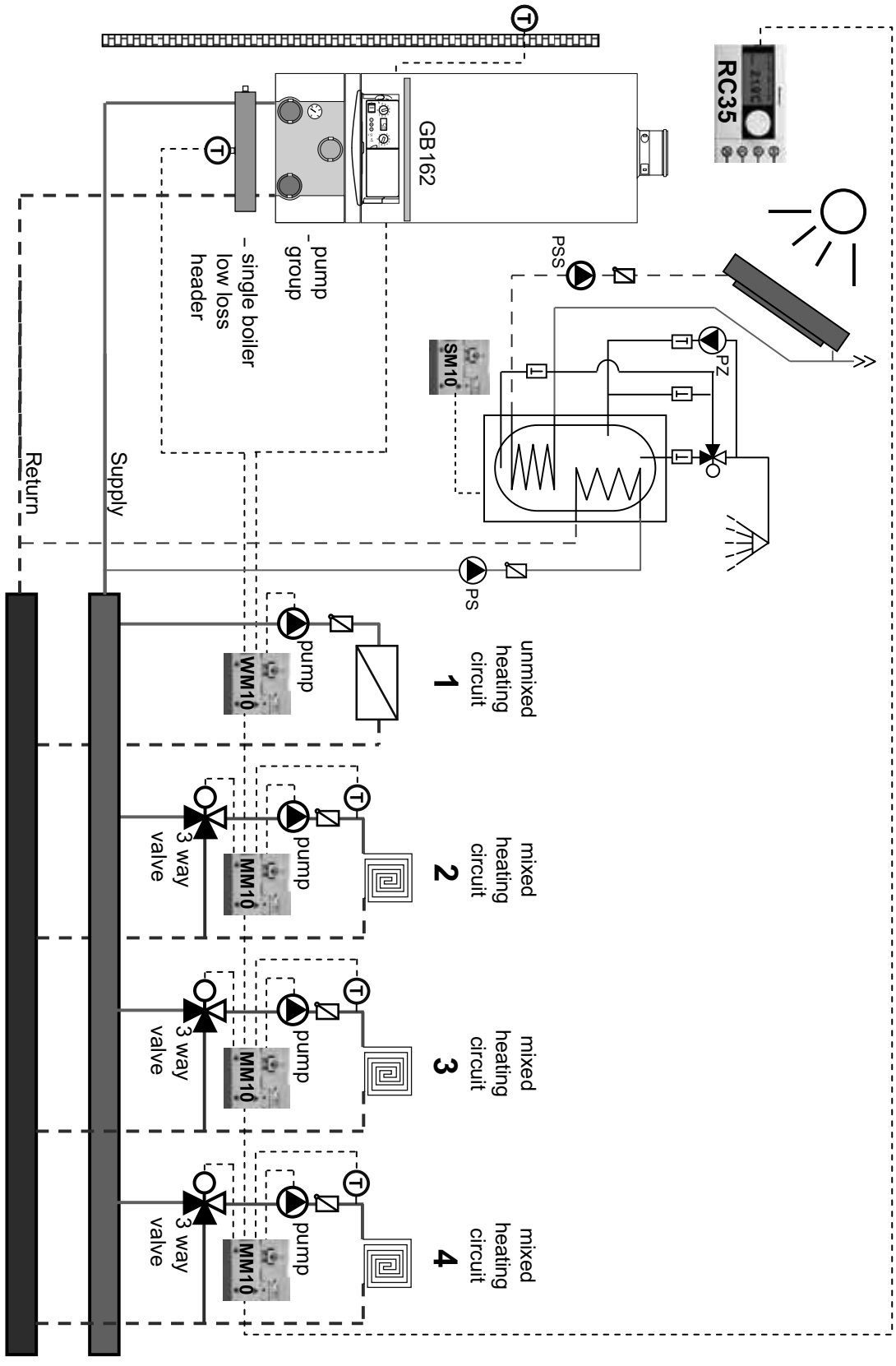
- **RC 35 - 4 heating circuits with DHW loop:**



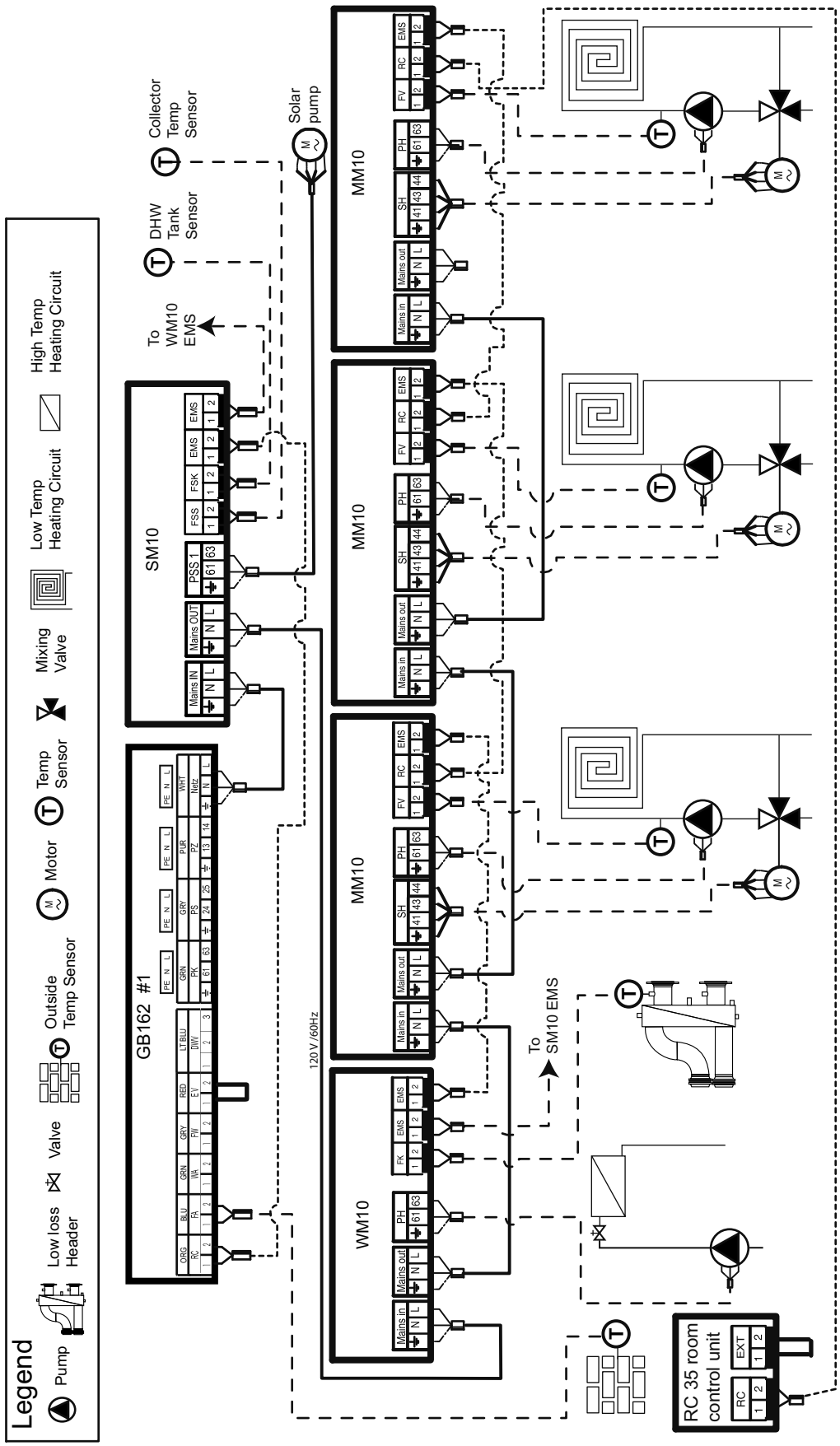
- **Wiring schematic for RC 35 - 4 heating circuits with DHW loop:**



- **RC 35 - 4 heating circuits, DHW and solar loop:**



- **Wiring schematic for RC 35 - 4 heating circuits, DHW and solar loop:**



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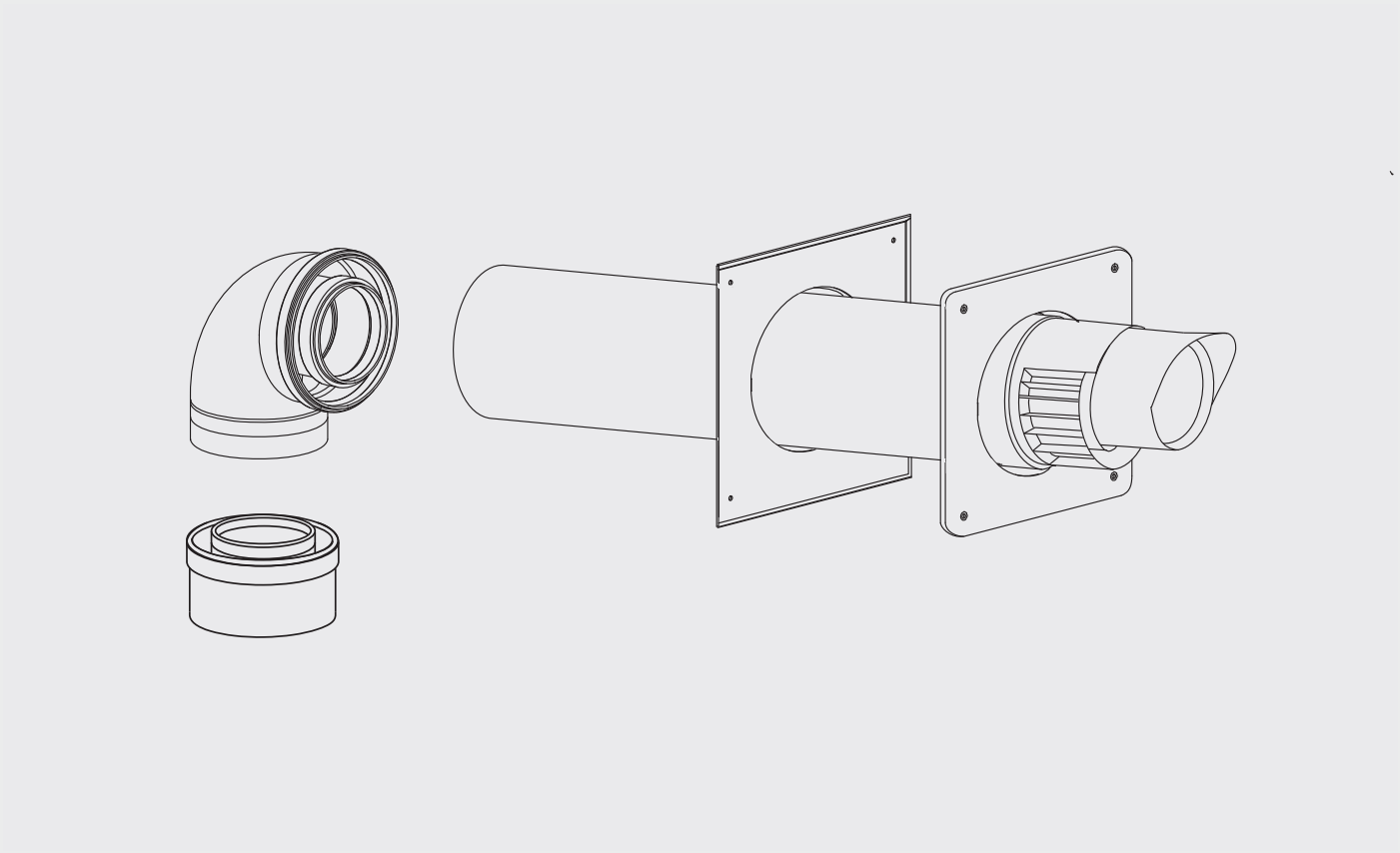

GB162 Concentric Horizontal Vent Kit

FOR BUDERUS GB162 SERIES BOILERS

Buderus

Installation Instructions

Table of Contents

1 Explanation Of Symbols

1.1 Key To Symbols

Warnings

Warnings in this document are identified by a warning triangle printed against a grey background. Keywords at the start of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

The following keywords are defined and can be used in this document:

- **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION** indicates a hazardous situation which, if not avoided, could result in minor to moderate injury.
- **NOTICE** is used to address practices not related to personal injury.

Important information

This symbol indicates important information where there is no risk to people or property.

1.2 Safety Instructions

WARNING:
Read all instructions before installing. Perform the steps in the indicated sequence. Failure to comply with these instructions can result in severe, possibly fatal, personal injury as well as damage to property and equipment.

WARNING: Installation and servicing

- Ensure that only a licensed contractor installs or services the gas appliance.
- On hot components use only material with adequate temperature rating.

WARNING: Installation and commissioning

- In the Commonwealth of Massachusetts, the gas appliance must be installed by a licensed plumber.

DANGER: If you smell flue gas

- Switch off the appliance.
- Open windows and doors.
- Inform a trained and certified installer.

DANGER: Insufficient ventilation may cause toxic flue gases to escape posing a risk of flue gas poisoning.

- Never close off or reduce the size of the air intake and outlet openings.
- The appliance must not be operated until any obstructions have been removed.
- Inform the system operator in writing of the problem and the associated dangers.

DANGER : Danger from escaping flue gases

- Ensure all vent pipes and chimneys are not damaged or blocked.
- Connect only one appliance to each vent system or chimney liner.
- The venting system piping must not feed into another air exhaust duct.
- Do not route the flue system piping through or inside another air exhaust duct.

WARNING: Combustion air

- Keep the combustion air free of corrosive substances (halogenated hydrocarbons that contain chlorine or fluorine compounds).

WARNING: Maintenance
Customers are required to:

- Sign a maintenance and inspection contract with an authorized contractor. Inspect and maintain the gas appliance on a yearly basis or more frequently if required. Service as needed.
- Use only genuine spare parts.

DANGER: Fatal accidents!
Carbon monoxide poisoning.

- Carefully plan where you install the gas appliance. Correct combustion air supply and flue pipe installation are very important. If a gas appliance is not installed correctly, fatal accidents can result such as carbon monoxide poisoning or fire.

DANGER: Carbon monoxide poisoning.

- Exhaust gas must be vented to outside using approved vent material. (In Canada use only ULCS636 approved material). Vent and combustion air connector piping must be sealed gas-tight to prevent flue gas spillage, carbon monoxide emissions and risk of fire, resulting in severe personal injury or death. Approved vent terminations must be used when penetrating to the outside.

WARNING:

- Do not obstruct the flow of combustion and ventilation air.

NOTICE:

- The complete installation must comply with national, state, and local code. The installation instructions in both the gas appliance installation manual and this vent system installation manual must be followed exactly.

NOTICE:

- The concentric horizontal vent terminal is intended for installation only with the GB162 series boilers (hereafter referred to as "appliance"):

  - GB162-80 kW
  - GB162-100 kW

2 Scope Of Delivery

The GB162 Concentric Vent Kit comes packaged as described below.

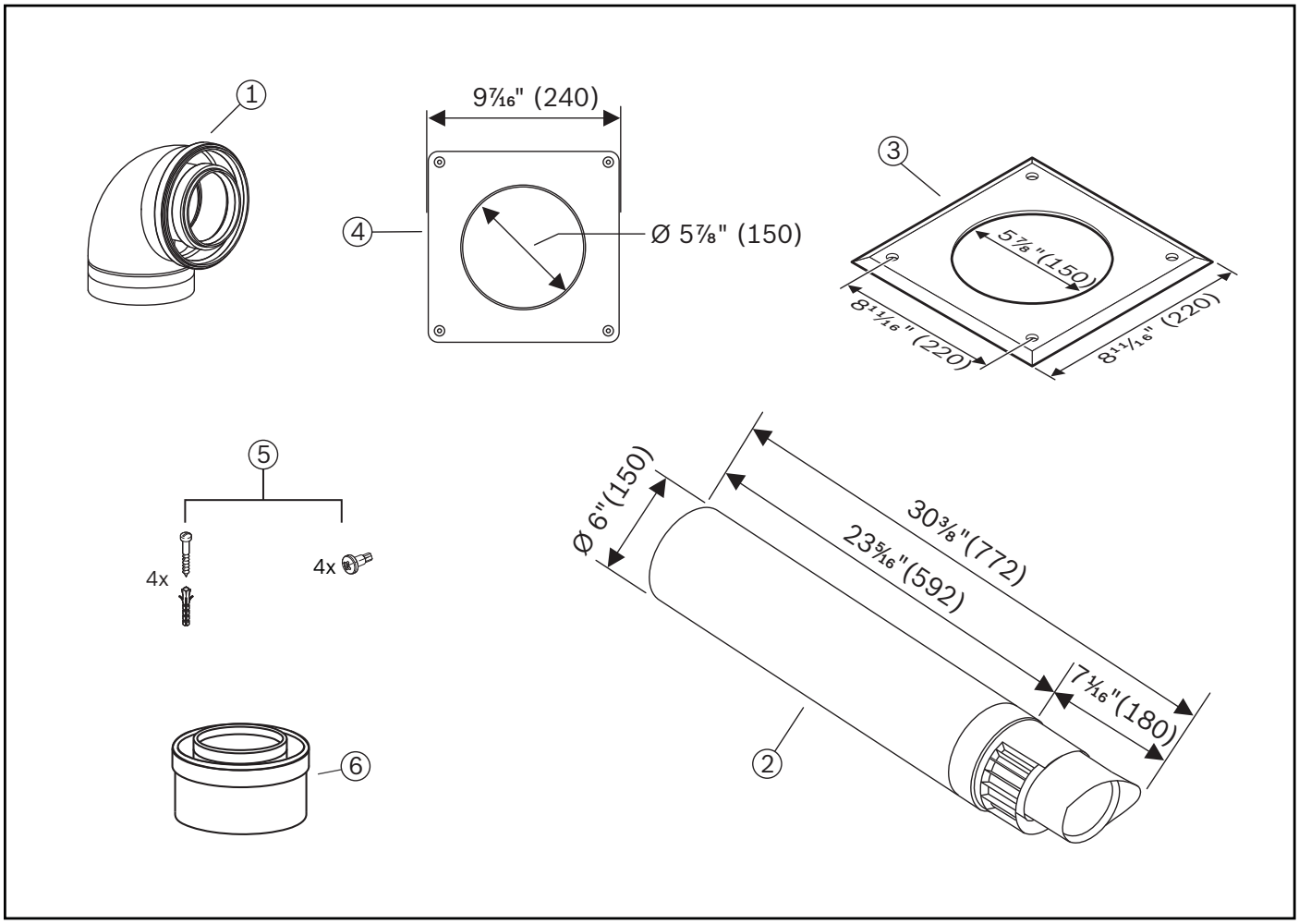

Fig. 1 Scope of delivery - dimensions in inches (mm)

Fig.1 Legend:

Components:

1 90° elbow
2 Terminal assembly
3 Inner wall seal
4 Outer wall seal
5 Connecting/securing screws and wall anchors
6 Appliance adapter

Needed Tools:

- Hole saw
- Tape measure
- Phillips screw driver
- Drinking water (as lubricant for gaskets)
- Weatherproof caulk

3 Installation

3.1 Notes On Installation

NOTICE:
It is the installer's responsibility that the appliance is installed according to the manufacturer's installation instructions, this accessory manual, as well as national, state, and local code.

CAUTION:
The location and orientation of the vent termination must follow those stated in the appliance Installation Manual. Ensure flue discharge does not create a hazard or nuisance.

NOTICE:
The concentric vent kit is approved for zero (0", 0 mm) clearance to combustibles.

NOTICE:
This vent system is ULC-S636 certified for Canada.

DANGER:

- Ensure the termination is installed at least 12" (300 mm) above the average snow line. If this is not feasible, this termination can not be used.

3.2 Appliance Adapter

Discard original appliance adapter, vent flange and gasket that was supplied with the boiler.

Set the appliance adapter down onto the pipe ensuring that the analyzer ports are facing to the front of the appliance and the adapter screw holes are aligning with those of the appliance.

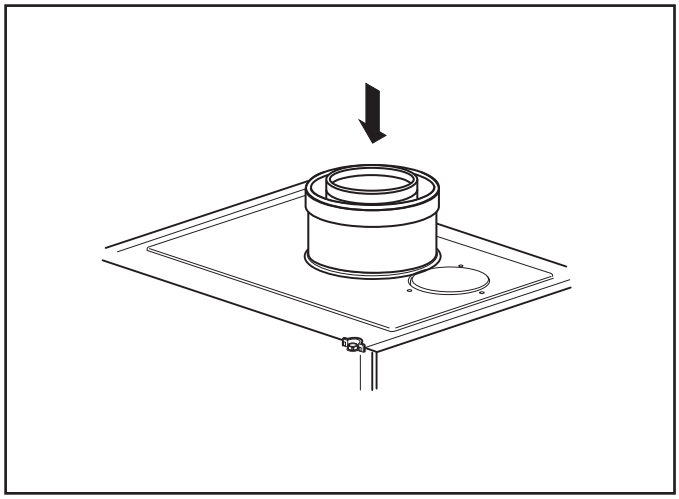

Fig. 2 Installing adapter

Insert the 4 screws, but do not tighten all the way.

3.3 Elbow and Wall Termination

- Apply a small amount of clean water as lubricant on all gaskets.
- Place elbow on top of the appliance adapter and align.

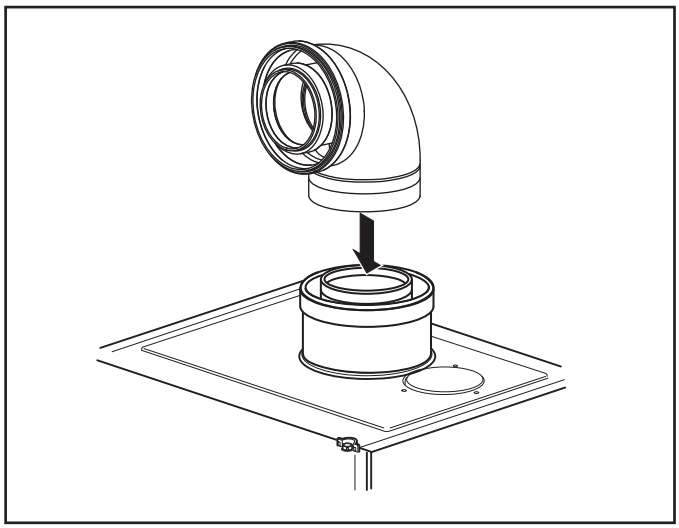

Fig. 3 Installing elbow

The appliance adapter can be swivelled around its vertical axis.

- Measure the length of the vent terminal assembly (➔Fig. 4, [1]) taking into account the thickness of the outside wall [S] and the distance from the outside wall to the end of the vent pipe [L]). It is recommended to keep at least 4" (100mm) clearance from the ceiling or joists for accessibility reasons.

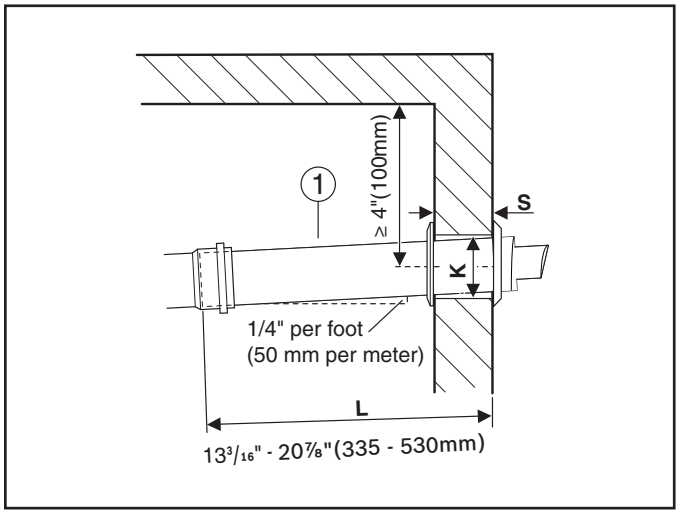

Fig. 4 Penetration through the outside wall

- Select the required diameter [K] of the hole in the wall according to the wall thickness S.

Sizing hole penetration	
Wall Thickness S	**Diameter K**
6" - 9 ½" (150 - 240 mm)	7 1/4" (155 mm)
9 ½" - 16½" (240 - 420 mm)	7 1/2" (165 mm)
16½" - 20 ⅞" (420 - 530 mm)	8" (170 mm)

- Cut the hole in the wall while allowing clearance for the required pitch of the air/vent pipe up to a maximum of 3/8" wider than the air supply pipe

- Extending the concentric pipe length is permissible. The maximum straight vent length allowed is dependant on appliance type and number of elbows used. See tables below.

Maximum straight vent pipe length allowed for Ø 4" / Ø 6" (Ø 100/150mm) concentric pipe	
# of 90° elbows used	**Maximum straight vent pipe length allowed**
1	22ft (6.705m)
2	20ft (6.096m)
3	19ft (5.791m)
4	17ft (5.181m)
5	15ft (4.572m)
6	13ft (3.962m)

Friction Loss Equivalent for Fittings		
Fitting	**Equivalent**	
	feet	**m**
45 deg 4"/6" (100/150mm), PolyPro Elbow	3.7	1.14
90 deg 4"/6" (100/150mm), PolyPro Elbow	5.6	1.72

Example:

- Model: **GB162-80**
- 90° elbows used: **3**
- 45° elbows used: **0**

Maximum straight vent pipe allowed: **19ft (5.791m)**

- Slide the outer wall seal [2] onto the terminal [1] as shown.

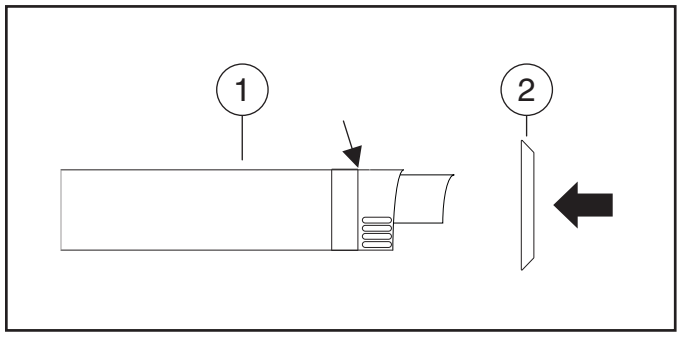

Fig. 5

- Position terminal [1] from the outside through the vent opening so rubber thimble [2] is flush against outside wall (Fig. 6) .
- Slide the inner wall seal [3] onto the terminal [1] as shown (Fig. 6).

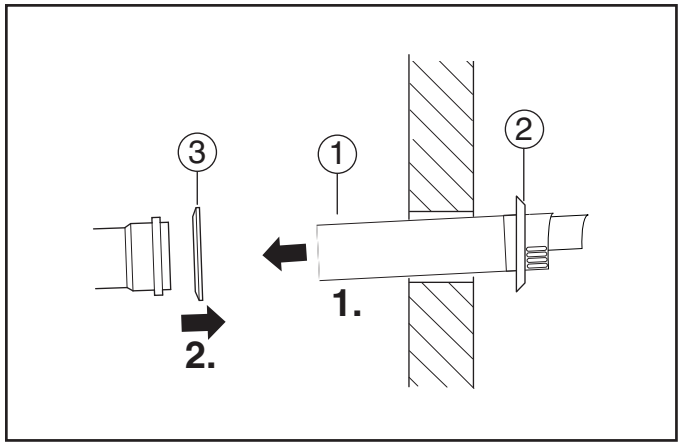

Fig. 6 Inserting termination from the outside

- Connect the termination to the elbow or to additional concentric pipe if extending the vent length.

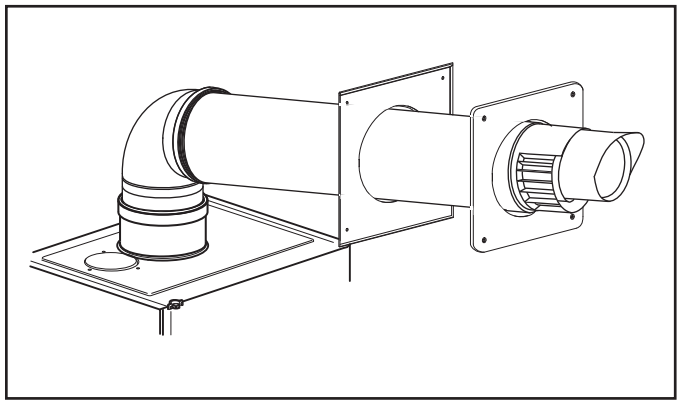

Fig. 7 Completed adapter and concentric assembly

- Ensure all components are properly connected and aligned, and that the termination has the proper pitch as shown in Fig. 4.
- Using screws provided, secure inner and outer wall seals to the wall.
- Complete installing the appliance per the Boiler Installation Instructions.

4 Spare Parts

Concentric Vent Kit Components	
Description	**Bosch Part Number**
Concentric Vent Kit PP 100/150, GB162	7738004825
Concentric Adapter GB162 PP 80-100/150	7738004826
Wall Plate pe 150	7738004835
Wall Plate Fire Stop Support alu 150	7738004836
Wall Bracket 150	7738004837
Horizontal Concentric Vent Kit Hardware	7738003237

Additional Concentric Vent Kit Accessories	
Description	**Bosch Part Number**
Extension PP 100/150 x 10 inch	7738004827
Extension PP 100/150 x 20 inch	7738004828
Extension PP 100/150 x 40 inch	7738004829
Extension PP 100/150 x 80 inch	7738004830
Elbow PP 100/150 90°	7738004831
Elbow PP 100/150 45°	7738004832
PP Inner Seal EPDM 100	7738004833
PP Outer Seal EPDM 150	7738004834

To purchase additional concentric pipe lengths and fittings, please contact Bosch Customer Service at 1-866-642-3198.

Notes:

United States and Canada

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BTC 432001102 A / 05.2015

Technical Service Bulletin
Cascade Package Flange Sizes

Buderus

Introduction

The Buderus GB162 TL and TR packages all come supplied with flanges to enable the contractor to connect to the low loss header. Listed below are flange sizes and connection information offered with each cascade package.

Flange sizes and descriptions

GB162 TL2 & TR2
This package is supplied with two 2½" (63.5 mm) welded flanges that are located on and already connected to the low loss header, for both system side supply and return connections.

Also supplied in the package are two 2" (50.8 mm) NPT threaded flanges. These can be used as an option but the system pipe sizing may have to be increased at the flanges to accommodate the system load.

GB162 TL3
This package is supplied with two 2½" (63.5 mm) welded flanges that are located on and already connected to the low loss header, for both system side supply and return connections.

GB162 TR3, TL4, & TR4
This package is supplied with two 3" (76.2 mm) welded flanges that are located on and already connected to the low loss header, for both system side supply and return connections.

GB162 TR5/6 & TR7/8
These packages are supplied with 4” (101.6 mm) welded flanges that are located on and already connected to the low loss header, for both system side supply and return connections.

Correct pipe sizing to the heating system

The sizes of the flanges supplied are based on the average requirements of a typical heating system, using a 20 degree delta T. There may be instances were the contractor will have to increase the secondary pipe sizing based on the system requirements and the heating load.

For example, a pipe of a certain diameter will only carry a certain amount of heat from the header, so it may be necessary to increase the pipe sizing after the supplied secondary connections. If a pipe has a reduced diameter, the hydraulic resistance of the system will increase and result in poor flow around the system.

The supplied flanges will be suitable for the majority of systems but it is the experience and knowledge of the contractor that will ultimately determine the correct pipe sizing to the heating system.

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Technical Service Bulletin

Heat Exchanger Serial Number Location

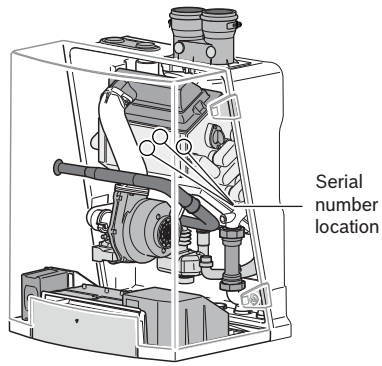
Buderus

Introduction

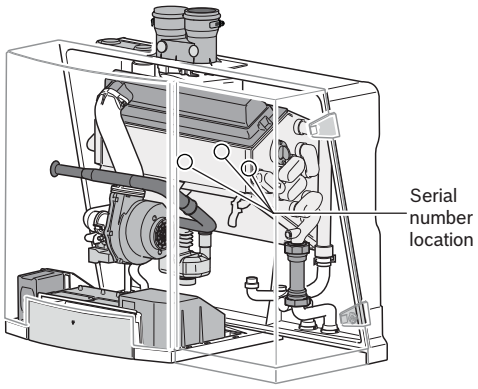
This bulletin identifies the locations of GB142 and GB162 heat exchanger serial numbers. Identifying your product's serial number is essential for customer support and warranty claims.

GB142 series boilers

Location: The heat exchanger serial number is located in labels on the heat exchanger:

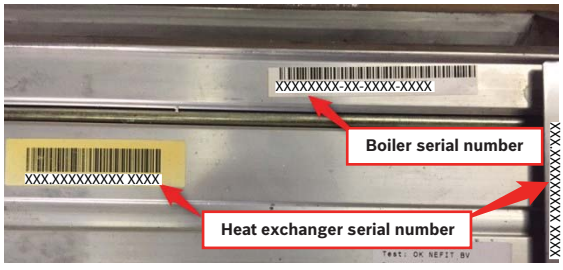


GB142-24/30



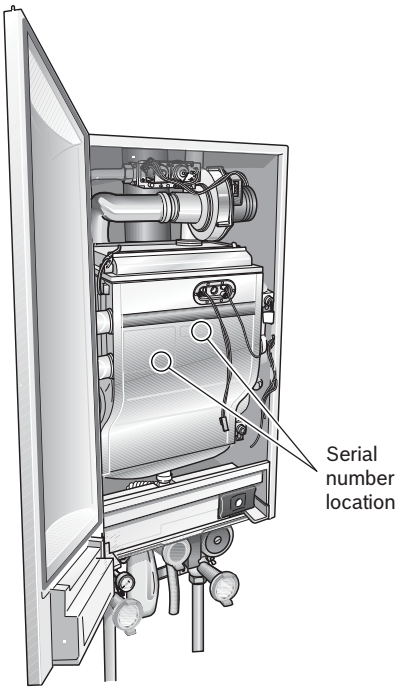
GB142-45/60

GB142 Heat Exchanger Close-up

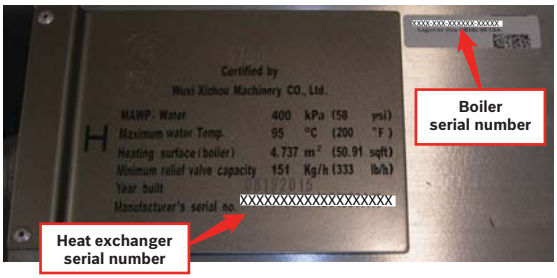


GB162 series boilers

Location: The heat exchanger serial number is located in the rating plate on the heat exchanger:



GB162 Heat Exchanger Close-up



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