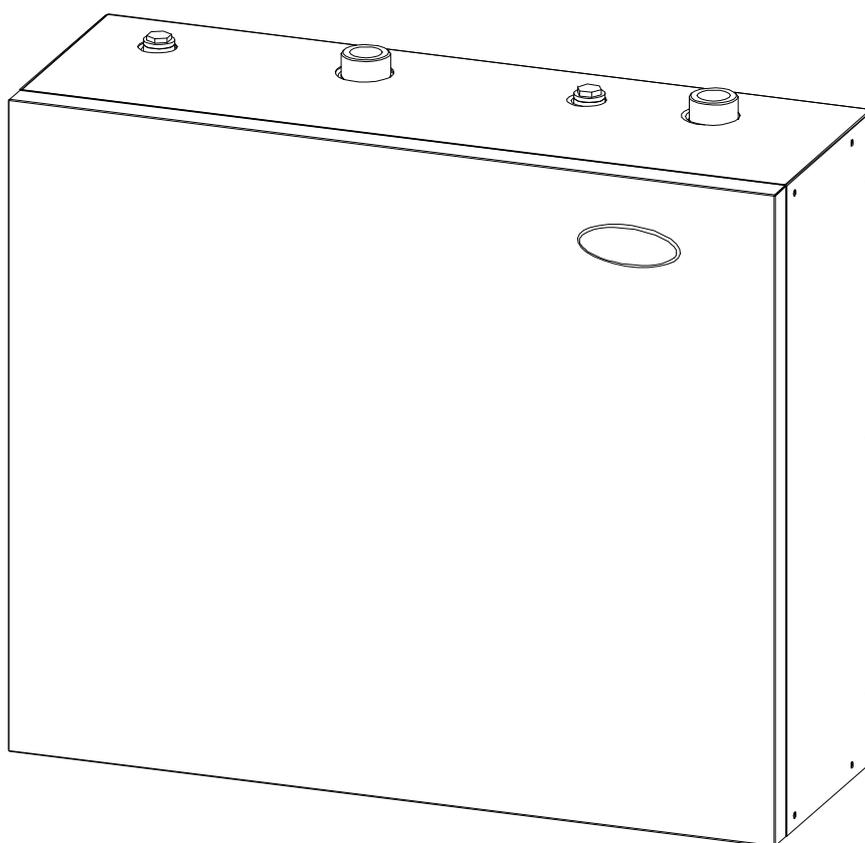


INSTALLATION AND OPERATING INSTRUCTIONS

↳ BIO DMS KIT



DOMUSA
T E K N I K

Thank you for choosing a DOMUSA TEKNIK product. From the range of **DOMUSA TEKNIK** products, you have chosen the **BIO DMS Underfloor Heating Kit**. With a suitable hydraulic installation, installed and connected to a **BioClass NG** pellet boiler, this accessory will provide the ideal level of comfort for your home.

This manual forms an essential part of the product and it must be given to the user. Read the warnings and recommendations in the manual carefully, as they contain important information on the safety, use and maintenance of the installation.

This accessory must be installed by qualified personnel only, in accordance with the legislation in force and following the manufacturer's instructions.

Start-up of these products and any maintenance operations must only be carried out by a **DOMUSA TEKNIK** Official Technical Assistance Service.

Incorrect installation of this appliance could result in damage to people, animals or property, and the manufacturer will hold no liability in such cases.

DOMUSA TEKNIK informs all parties concerned that, in compliance with section 1 of the first additional provision of Law 11/1997, the responsibility for delivering packaging waste or used packaging for its proper environmental management will be that of the final owner of the product (Article 18.1 Royal Decree 782/1998). At the end of its useful life, the product must be taken to a selected collection point for electrical and electronic equipment or must be returned to the distributor at the time of purchasing a new equivalent appliance. For more detailed information on the collection schemes available, contact either the collection facilities of the local authority or the distributor where the purchase was made.

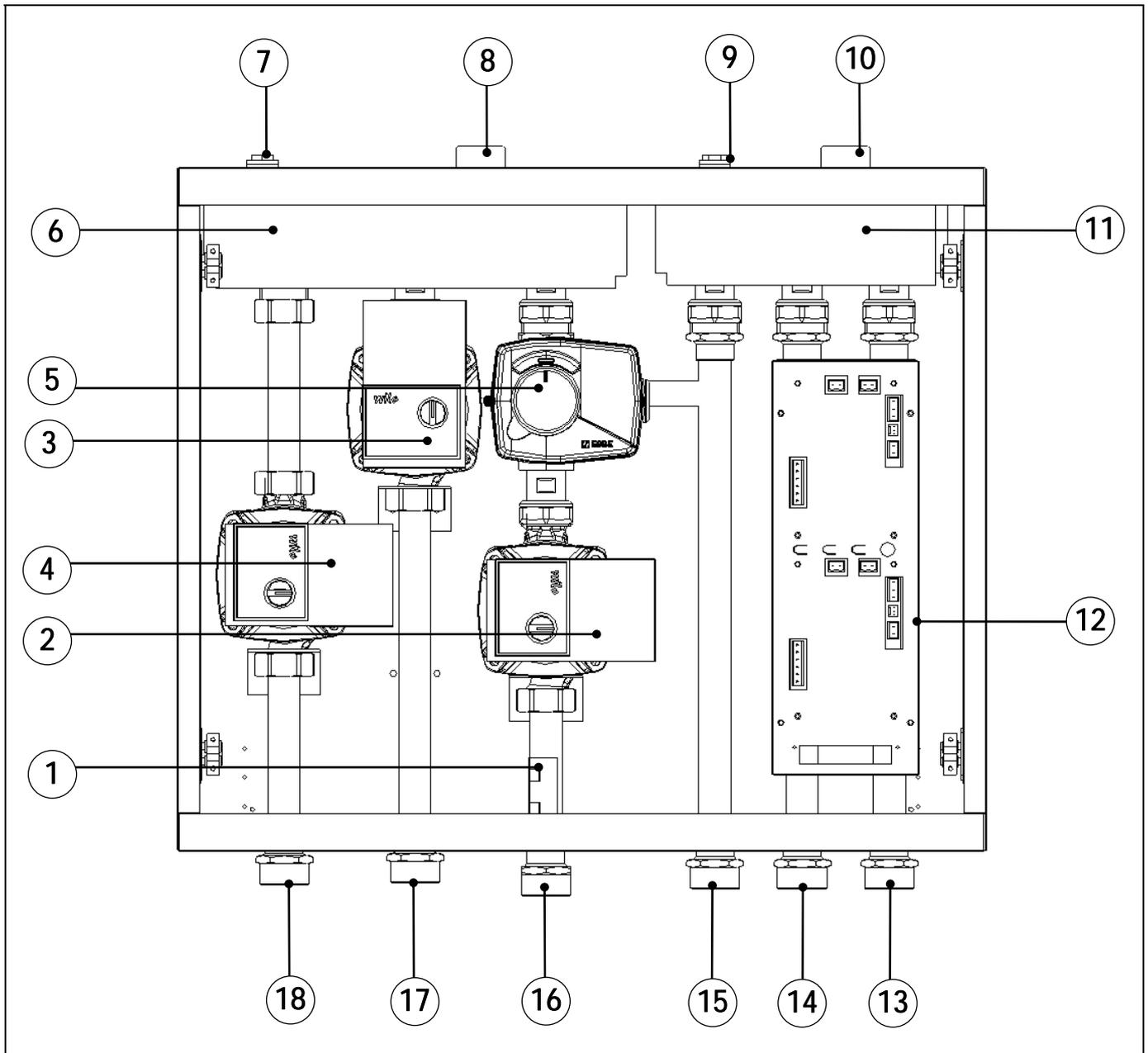
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BIO DMS Kit

1 LIST OF COMPONENTS



- | | |
|--------------------------------------|-------------------------------|
| 1. Mixed circuit temperature sensor. | 10. Outlet to boiler. |
| 2. Mixed circuit pump. | 11. Return manifold. |
| 3. Direct circuit pump | 12. Electronic control. |
| 4. Direct circuit DHW pump | 13. Direct circuit DHW return |
| 5. 3-way motorised mixing valve. | 14. Direct circuit return. |
| 6. Flow manifold. | 15. Mixed circuit return. |
| 7. Drain valve socket. | 16. Mixed circuit flow. |
| 8. Inlet from boiler. | 17. Direct circuit flow. |
| 9. Drain valve socket. | 18. Direct circuit DHW flow |

2 INSTALLATION INSTRUCTIONS

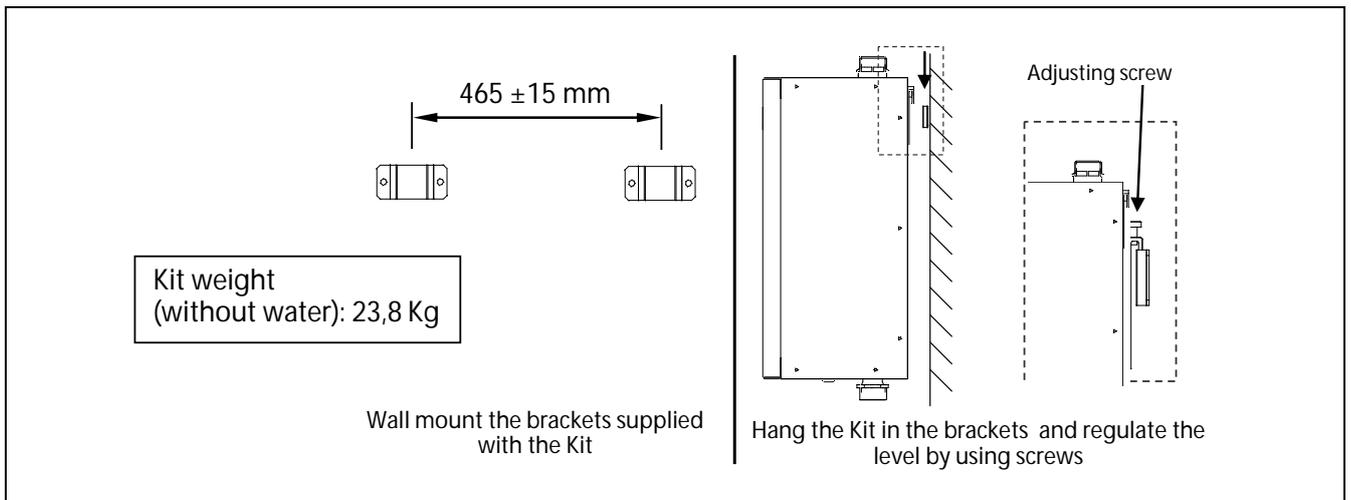
The **Bio DMS Underfloor Heating Kit** must be installed by personnel authorised by the Department of Industry in accordance with the applicable regulations and standards in force. However, the following recommendations must be complied with when installing the kit:

2.1 Wall-mounting the Bio DMS Underfloor Heating Kit

The Kit must be installed in a sufficiently ventilated place and preferably near the boiler.

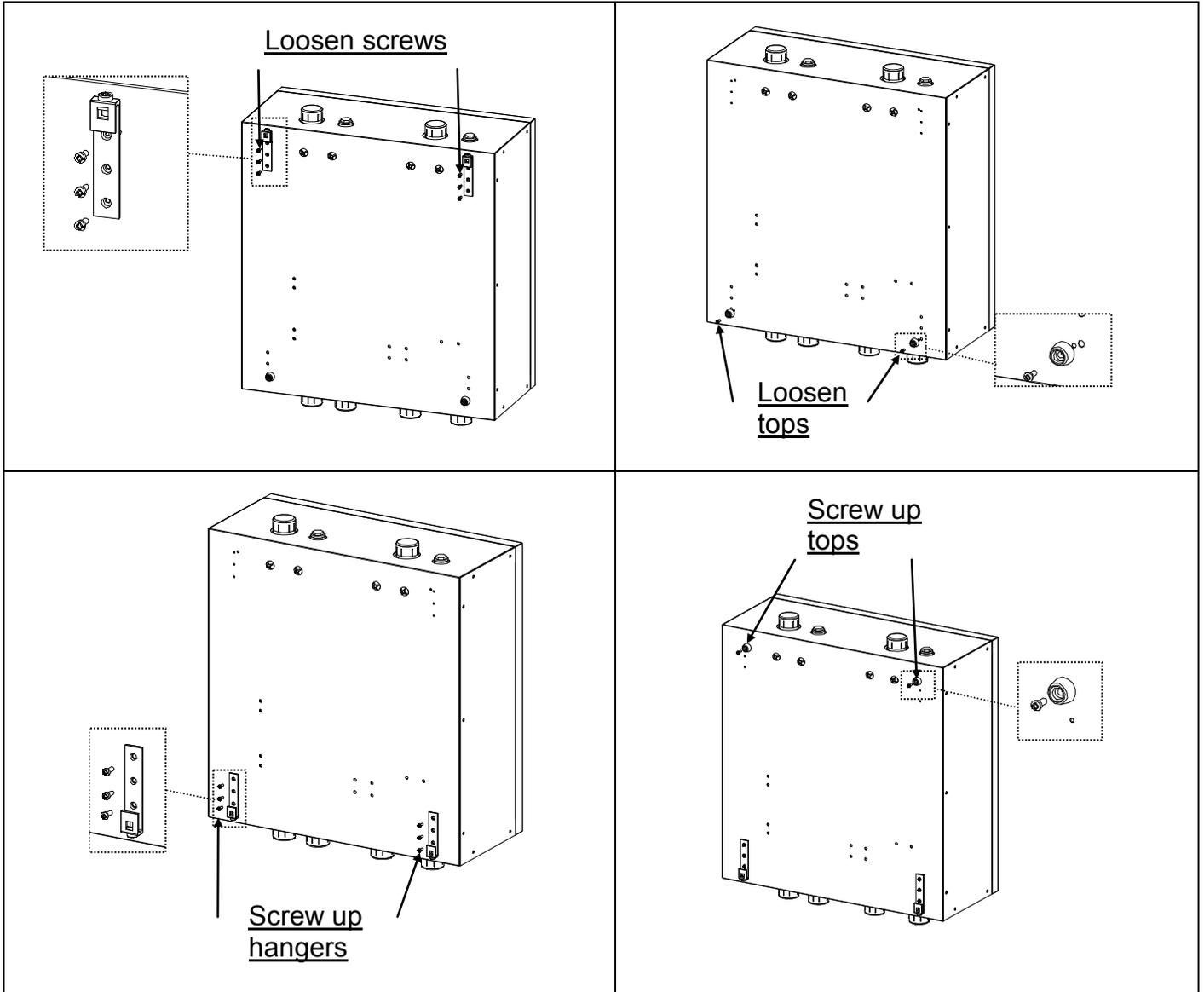
A space must be left at the front for access, and the kit must therefore not be installed opposite any obstacles that would prevent this access.

Wall-fixing system:



BIO DMS Kit

To assemble the Kit, with the flow and return boiler outlets on the bottom part, follow these steps:



Nota

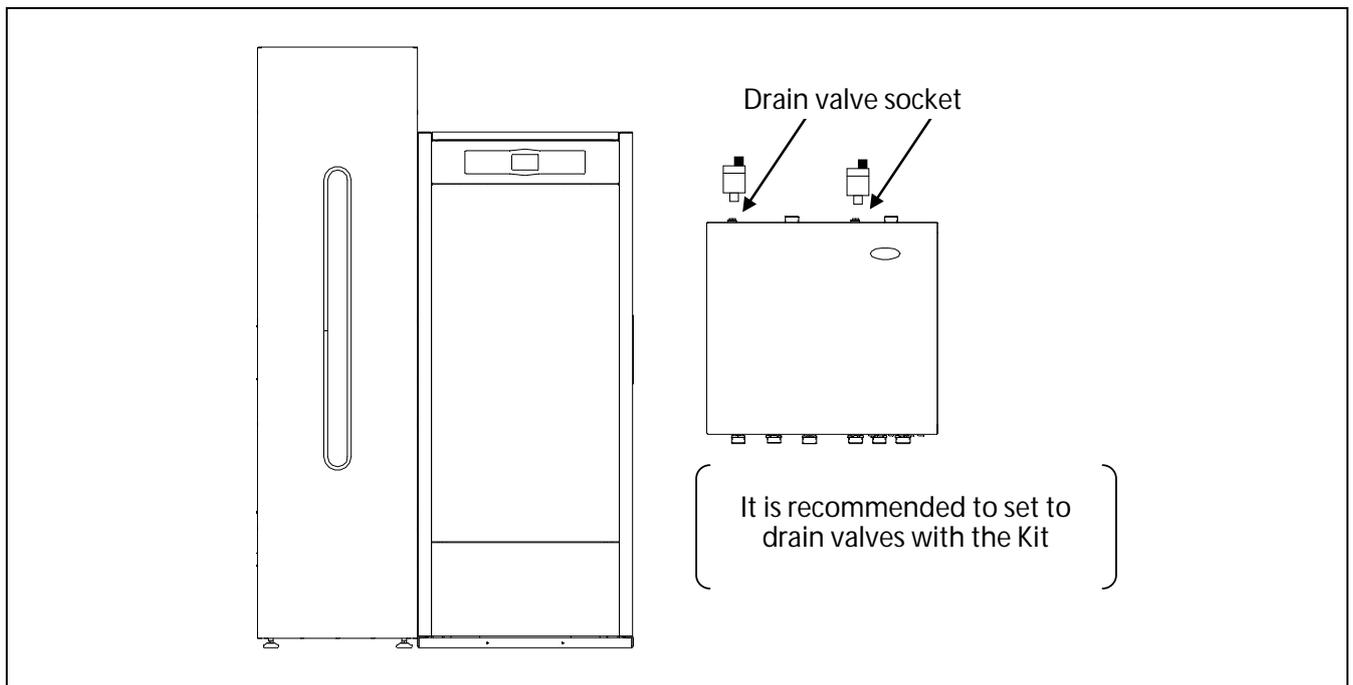
In this case, the drain valve outlets are not used.

2.2 Hydraulic Installation

The hydraulic installation must be made by personnel authorised by the Department of Industry, in accordance with the applicable legislation. However, we would recommend the following:

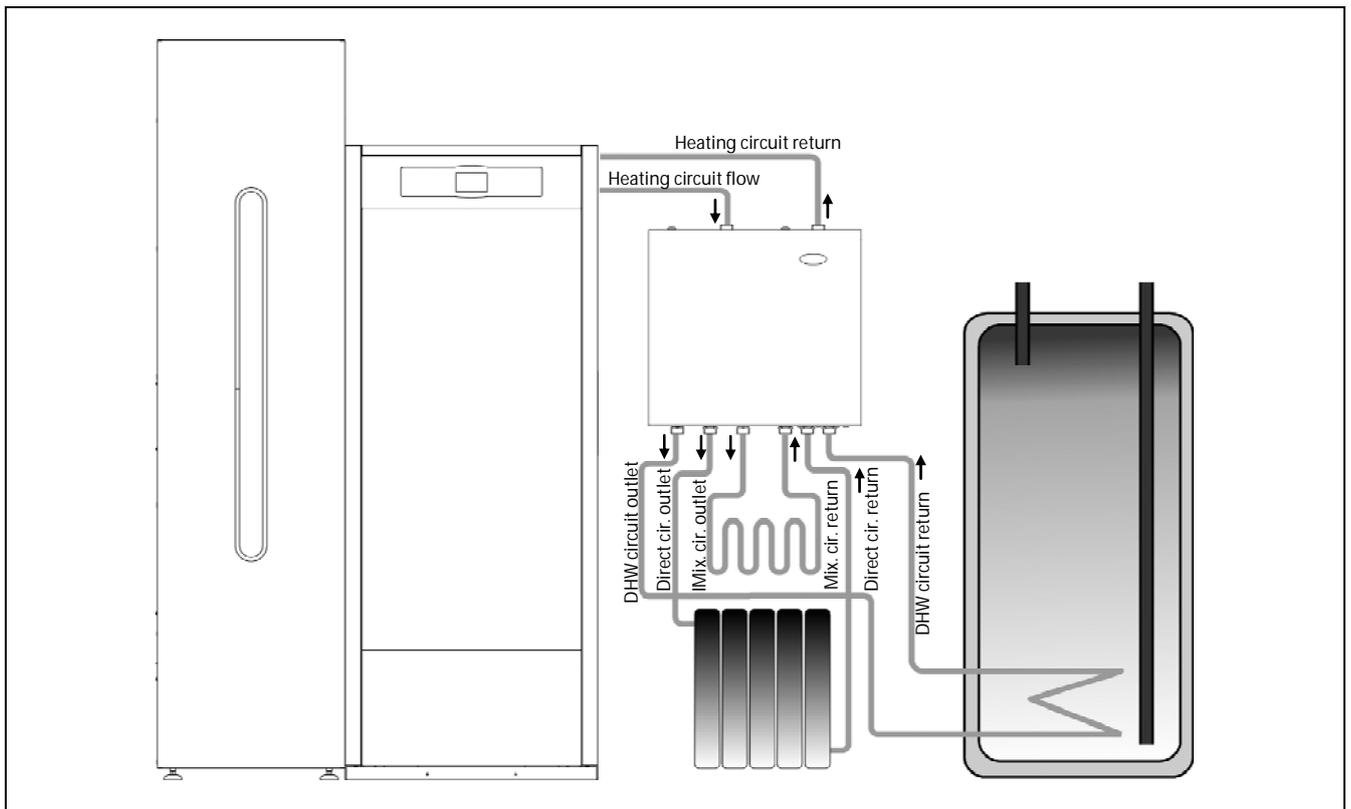
- Before making the hydraulic connection, the inside of the heating installation pipes should be thoroughly cleaned.
- It is recommended to fit shut-off valves to the heating installation flow and return pipes, to avoid having to drain the installation when maintenance work is carried out.
- Bleed the air from the kit and the heating installation. Ensure there is no air in the heating circuit.

If the kit is installed on a higher level than the lower part of the boiler, it is recommendable to install a drain valve in the socket provided for this purpose on the kit manifold, to prevent the creation of any siphons in the installation.



BIO DMS Kit

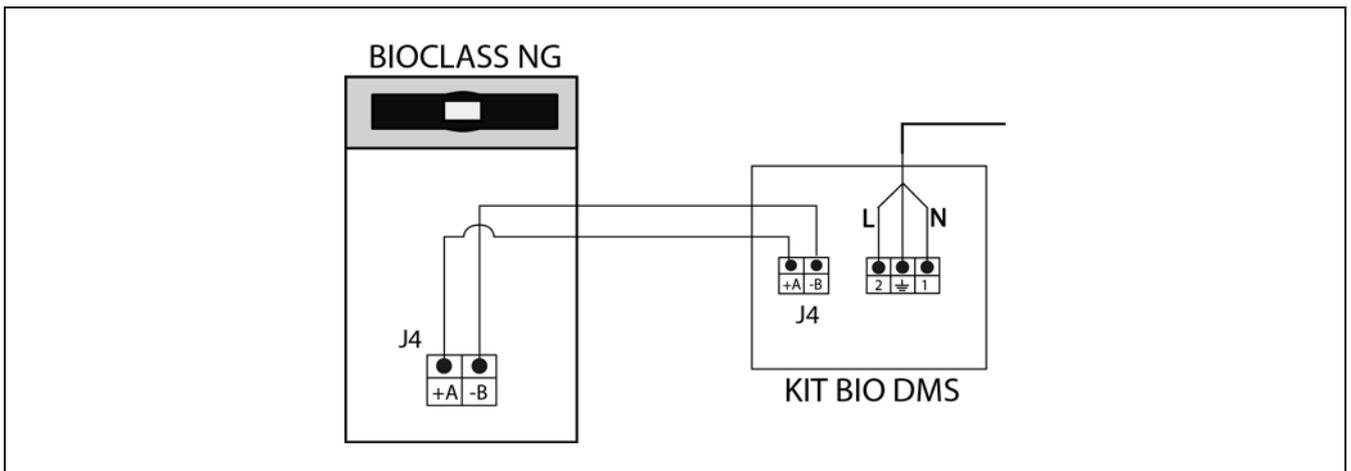
To correctly connect the **Bio DMS Underfloor Heating Kit** proceed as shown in the diagram below:



2.3 Electrical Connection

The **DMS Underfloor Heating Kit** is designed for electrical connection to terminals **1** and **2** on the terminal strip, at a voltage of 230 V~ / 50Hz. **An earth connection is essential.** The maximum electrical consumption of the kit is 142 W.

For the **Bio DMS Underfloor Heating Kit** to function correctly in combination with a BioClass NG boiler, carefully follow the connection diagram provided in the "*Connections Diagram*" section of this manual. Specifically, the BioClass NG boiler connection input terminals (J4 connector) must be connected to connection terminals **+A** and **-B** (J4 connector) of the **Bio DMS Underfloor Heating Kit**. The Underfloor Heating Kit will then be connected to the BioClass NG boiler.



Furthermore, the **Bio DMS Underfloor Heating Kit** includes the **J14 connector** prepared for connection to a room chronothermostat or thermostat (T_{am1}) to manage the heating demand of mixed circuit no 1, and, in turn, includes the **connector J19** prepared for connection to a DHW sensor, **S** (provided in the Kit) to manage the demand of the DHW service. (see "*Connections Diagram*").

If any metal hydraulic pipes are installed (copper, iron, etc.) an earth connection must be made.

The electrical installation must comply with all national and local laws and regulations concerning electrical installations applicable at the time and place of installation.



For the proper interconnection of the hydraulic kit and the boiler, the kit should be electrically connected first.

Nota

The power supply must be connected so that the kit can be totally isolated and disconnected for safely carrying out any maintenance operations.

BIO DMS Kit

3 OPERATION

The **Bio DMS Underfloor Heating Kit** is equipped with a Heating Module and a DHW Service Module in charge of managing and controlling the 3 circuits built in to the Kit.

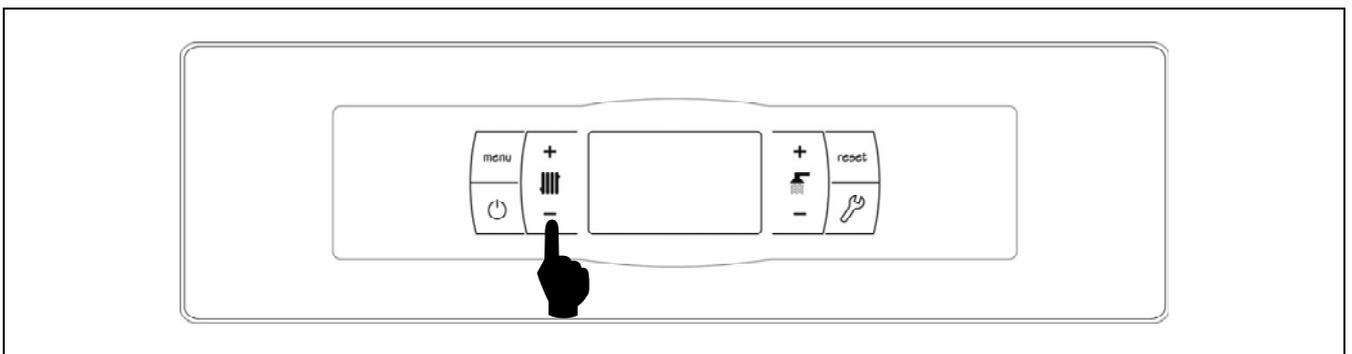
These modules through orders received from the central unit are capable, through the sensors integrated in the kit, of independently regulating 3 heating zones; circuit no. 1, with mixing valve (e.g. underfloor heating); circuit no. 2, a direct circuit (e.g. radiators); and circuit no. 3, of DHW service, regulating the installation according to the needs of the house, measuring outside temperature optionally via the AFS outdoor temperature sensor supplied with the Kit and regulating the DHW service via the S_a sensor also supplied with the Kit.

3.1 Functioning without an outdoor sensor

Operation of mixed circuit (circuit no1)

The mixed heating circuit (circuit no.1) is a circuit made up of a heating pump (B_{CM1}), a mixing valve (V_{M1}) and a mixed flow temperature sensor (Sr_1).

The mixed circuit will work with the selected setpoint temperature on the boiler control panel and the temperature of the room thermostat, T_{aM1} , connected on the Bio DMS Hydraulic Kit.



To select the circuit flow temperature, press **MENU** to browse until the $\updownarrow III_1$ icon appears on the display with the **SET** symbol flashing. The temperature can be changed by pressing the “+” and “-” Heating symbols.

The permitted flow temperature range for mixed circuit 1 is 10 - 45 °C.

The value of the boiler setpoint temperature is calculated by adding 20 °C to the mixed circuit flow setpoint temperature, with a maximum limit of 80 °C and if the calculated setpoint is lower than 65 °C, it will be set at 65 °C.

Operation of direct circuit (circuit no2)

In the Bio DMS Underfloor Heating Kit, circuit no.2 is set up for a direct heating circuit. The direct heating circuit will work with the selected boiler setpoint temperature and the temperature of room thermostat T_{a1} (connected to boiler).

By pressing “+” and “-” Heating symbols on the boiler control panel, you can select the desired boiler operating temperature.

The boiler setpoint temperature can also be selected by pressing **MENU** until the  icon appears on the display, with the word **SET** flashing. The value of the setting can be changed by pressing the "+" and "-" Heating symbols.

The permitted flow temperature range for circuit 2 is 65 - 80 °C.

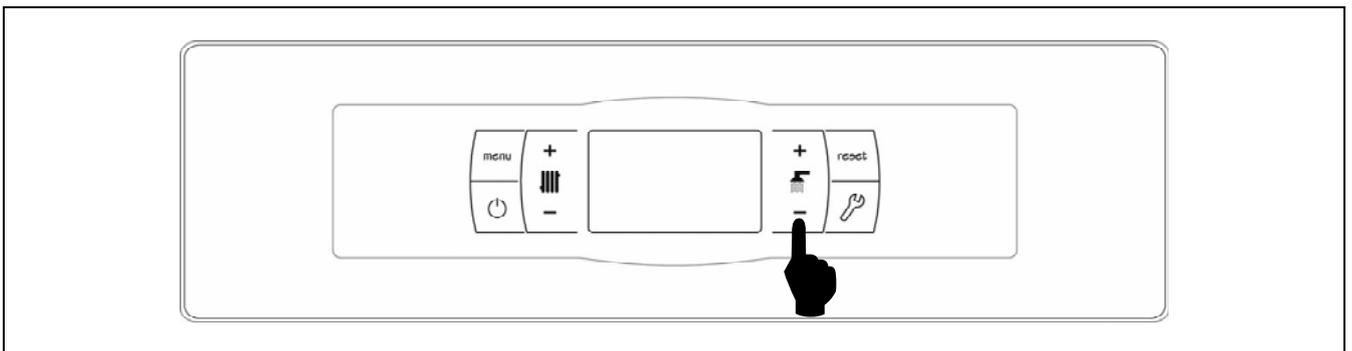
DHW service functioning

In the Bio DMS Underfloor Heating Kit, the accumulator loading pump of the D.H.W. (**B_A**) will work with the selected D.H.W. setpoint on the boiler control panel and will aim to reach the temperature of the D.H.W. sensor, **S_a**, (connected to the Kit according to "*Connections Diagram*").

The boiler will then work in DHW service when a temperature is detected by the DHW sensor (**S_a**), connected to the terminals 19 and 20 of the DHW Service module, which is below the DHW setpoint temperature set minus a hysteresis of 3 °C. The outlet **B_A** of the DHW Service Module will activate or deactivate the DHW pump.

The desired DHW temperature can be selected by pressing the "+" and "-" DHW symbols. If they are not pressed for 2 seconds, the display will return to "standard" mode.

The DHW setpoint temperature can also be selected by pressing **MENU** until the  icon appears on the display, with the word **SET** flashing. The value of the setting can be changed by pressing the "+" and "-" DHW symbols.



BIO DMS Kit

3.2 Functioning with an outdoor sensor

To activate its operation according to the outdoor temperature conditions, an outdoor AFS sensor (supplied with the Kit) must be connected and the setting **P.10** from the "Technical Menu" must be set to ON.

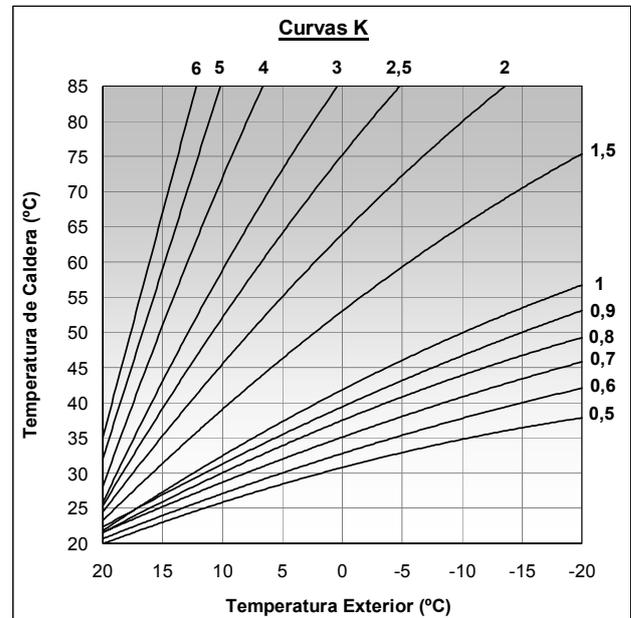
Operation of mixed circuit (circuit no1)

When this operating mode is activated, the heating flow temperature is determined in accordance with the slope of the K curve (in setting **P.11** of the "Technical Menu"). If the installation is correctly dimensioned, the boiler temperature and/or flow temperature calculated will ensure the room temperature is in accordance with the set point programmed.

The K curve relates the external temperature reading on the sensor installed outside the home to the boiler temperature setpoint. The graph shows the temperature ratio for each point on the K curve.

For underfloor heating, we recommend selecting a value for K lower than 0.8 in order to protect the installation from overheating.

If setting **P.11** is set to "OFF", the operation will be deactivated depending on the outdoor sensor for this circuit and a fixed flow temperature can be selected for this circuit.



Operation of direct circuit (circuit no2)

When this operating mode is activated, the direct heating boiler temperature (circuit no.2) is determined in accordance with the slope of the K curve (in setting **P.12** of the "Technical Menu"). In this case, select a curve of at least 1.

If setting **P.12** is set to "OFF", the operation will be deactivated depending on the outdoor sensor for this circuit and a fixed flow/boiler temperature can be selected for the circuit via the corresponding heating temperature selection function.

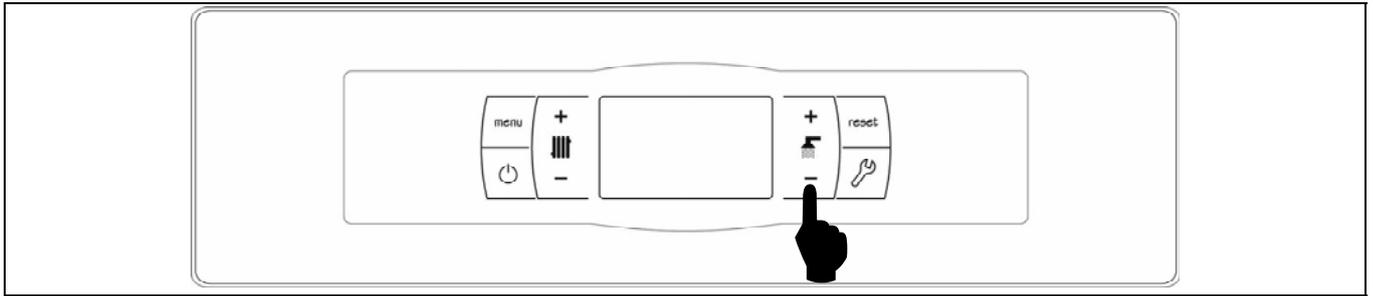
DHW service functioning

In the Bio DMS Underfloor Heating Kit, the accumulator loading pump of the D.H.W. (**B_A**) will work with the selected D.H.W. setpoint on the boiler control panel and will aim to reach the temperature of the D.H.W. sensor, **S_a**, (connected to the Kit according to "Connections Diagram").

The boiler will then work in DHW service when a temperature is detected by the DHW sensor (**S_a**), connected to the terminals 19 and 20 of the DHW Service module, which is below the DHW setpoint temperature set minus a hysteresis of 3 °C. The outlet **B_A** of the DHW Service Module will activate or deactivate the DHW pump.

The desired DHW temperature can be selected by pressing the "+" and "-" DHW symbols. If they are not pressed for 2 seconds, the display will return to "standard" mode.

The DHW setpoint temperature can also be selected by pressing **MENU** until the  icon appears on the display, with the word **SET** flashing. The value of the setting can be changed by pressing the “+” and “-” DHW symbols.



The hot water set point temperature range permitted is 15 - 65 °C.

IMPORTANT: To connect the outdoor sensor carefully follow the connection instructions provided in the "*Connections Diagram*" section.

4 LAGO FB OT+ REMOTE CONTROL (OPTIONAL)

The remote control (LAGO FB OT+) can optionally be supplied together with the **Bio DMS Underfloor Heating Hydraulic Kit**. This remote control can be used to fully operate the boiler and the kit from any room in the home in which it is installed. The LAGO FB OT+ remote control governs the settings of a heating circuit and the installation's domestic hot water production (if applicable).

This remote control allows the hours of home comfort to be programmed for heating circuit, adjusting the installation to the particular requirements of the home by measuring the room temperature and consequently adapting the installation temperature. The remote control can also be used to adjust the DHW and heating setpoint temperatures at any time, and for viewing the different boiler operation settings. It also warns of any functioning anomalies affecting the boiler.

When the outdoor AFS sensor is connected in the boiler, the remote control can adjust the home comfort level according to the weather conditions at each particular time, optimising fuel consumption and heating comfort in the home.

When a LAGO GB OT+ is connected to the **Bio DMS Underfloor Heating Hydraulic Kit**, the different temperatures and settings which can be selected via the remote control cannot be modified through the boiler control. It is easy to install, only requiring 2 wires for communication between the Kit and the LAGO FB OT+ control. It is connected to the Kit by connecting the two wires on terminal strip **J13** to control Circuit no. 1 and the DHW service. (see *Connections Diagram*). For correct installation and functioning, carefully read the instructions enclosed with the remote control.

The following sections contain a general explanation of the LAGO FB OT+ remote control's different operating modes and options.

NOTE: Only the supplied "outdoor AFS sensor" can be connected to the Hydraulic Kit. NO other sensor is compatible for reading outdoor temperature.

4.1 Functioning without an outdoor sensor

Installing mixed circuit (circuit no 1)

The maximum temperature for heating circuit no1 (mixed circuit), the scheduled heating times and the desired room temperatures can be selected on the remote control. The LAGO FB OT+ remote control will calculate the boiler temperature required at each particular time, depending on the room temperature, and it will enable or disable the heating mode of the circuits, depending on the scheduled heating times and room temperatures.

Installing direct circuit (circuit no 2)

Circuit no. 2 (direct circuit) is adjusted and controlled via the boiler control panel. It is also possible to control the direct circuit (no. 2) via another remote Control LAGO FB OT+, which will be connected to the boiler. For installation instructions, read the Installation and Operating Manual of the BioClass NG.

4.2 Functioning with an outdoor sensor

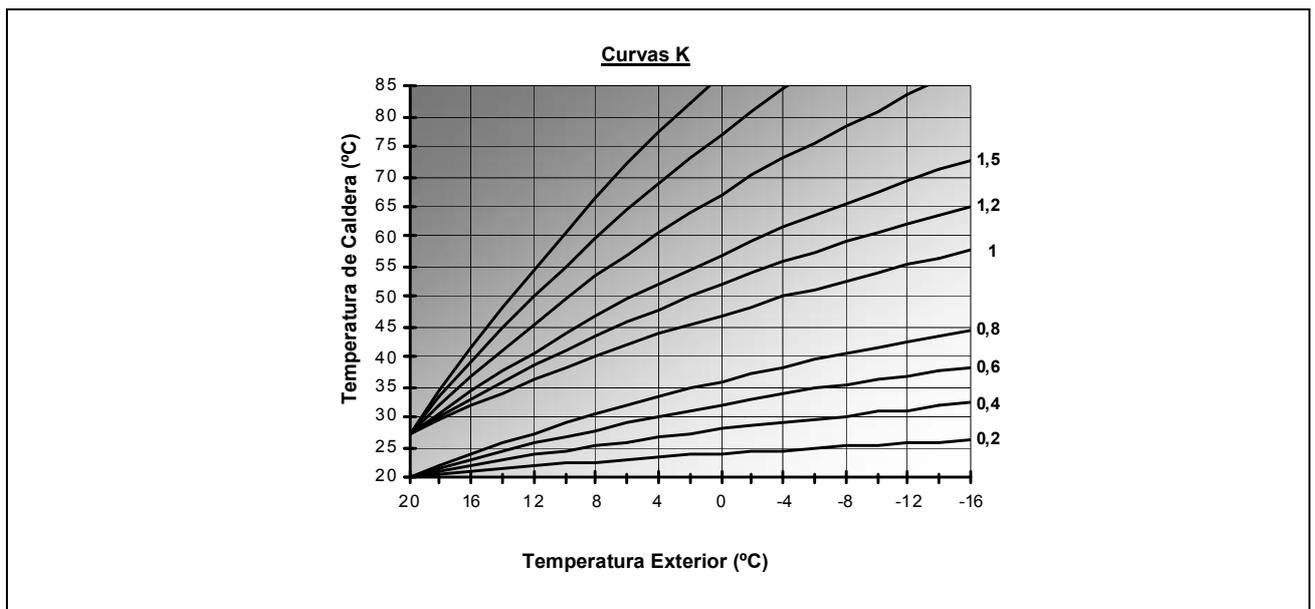
If the Kit is fitted with an outdoor temperature sensor ("Outdoor AFS sensor"), the LAGO FB OT+ control can calculate the heating temperature of heating circuit according to the outside weather conditions at each particular time, with optimum adjustment of the heating installation conditions for improved comfort in the home and energy savings.

The maximum temperature, an operating curve for heating circuit (see instructions enclosed with the LAGO FB OT+ remote control) and the desired heating times and room temperatures can all be selected on the remote control. The LAGO FB OT+ remote control calculates the required boiler temperature at each particular time, depending on the temperature inside the home and the outside weather conditions, in accordance with the operating curve selected (setting 01 of the "User Menu" on the LAGO FB OT+), switching the heating on and off in accordance with the programmed heating times and the room temperatures.

Depending on the type of heating circuit, the following adjustments should be made:

Installation of mixed circuit (circuit no1)

In setting 01 of the LAGO FB OT+ "User Menu", select a curve of less than 0.8. We also recommend selecting a maximum flow temperature NO HIGHER THAN 85°C, to protect the underfloor heating installation from overheating. To do this, select the maximum flow temperature of heating circuit 1 in setting 07 of the LAGO FB OT+ "Service Menu".



Installation of direct circuit (circuit no2)

Circuit no. 2 (direct circuit) is adjusted and controlled via the boiler control panel. It is also possible to control the direct circuit (no. 2) via another remote Control LAGO FB OT+, which will be connected to the boiler. For installation instructions, read the Installation and Operating Manual of the BioClass NG.

In setting 01 of the of the LAGO FB OT+ "User Menu", select a curve of at least 1. The maximum boiler temperature can also be selected on the LAGO FB OT+ remote control.

BIO DMS Kit

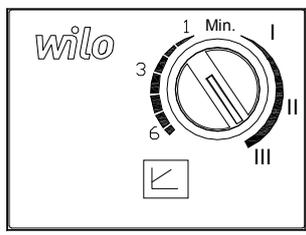
4.3 DHW function

When the remote control is connected to the **Bio DMS Underfloor Heating Kit**, the desired DHW temperature and the desired hours for DHW use can be selected on the LAGO FB OT+ remote control. The LAGO FB OT+ remote control regulates the DHW tank temperature at each particular time, and enables or disables the DHW function according to the times scheduled.

5 CIRCULATION PUMP

The **DMS Underfloor Heating Hydraulic Kit** pumps are high efficiency circulation pumps which allow savings of up to 70 % in energy consumption in comparison to conventional pumps.

5.1 Characteristic curves of the pumps



The pump (model Yonos Para RKC 15/6) can be adjusted in two ways:

1-Constant speed I, II, III (traditional mode):

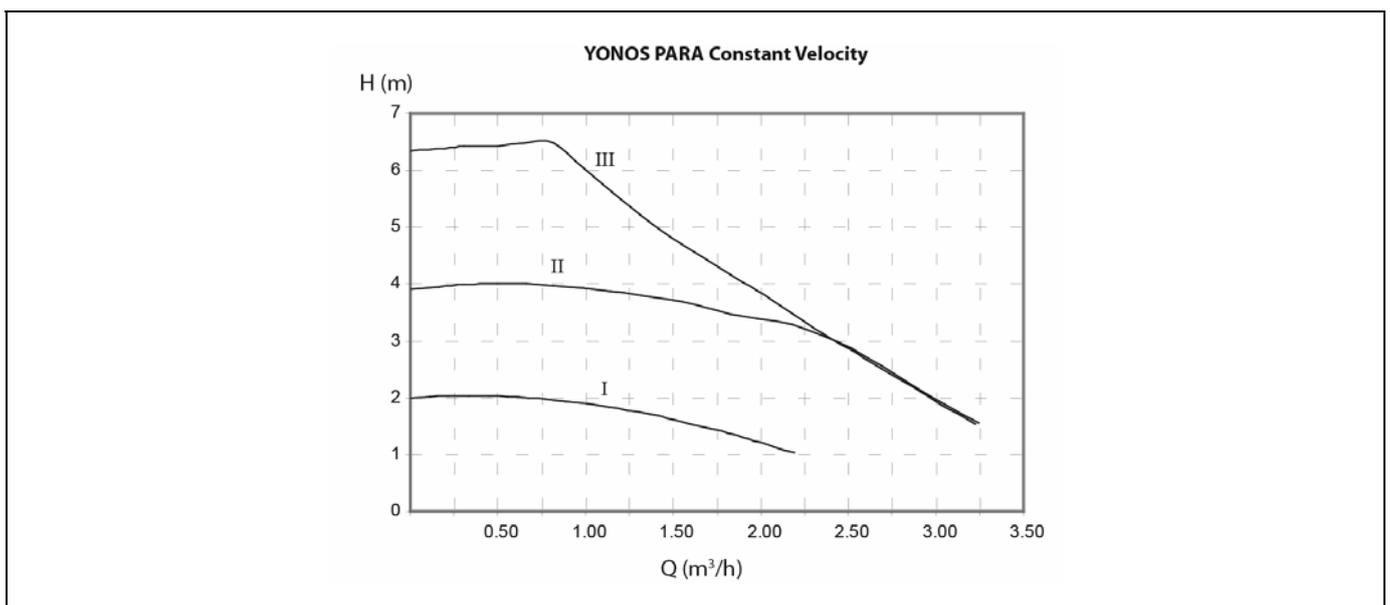
The pump operates at a constant, pre-set speed.

2-Variable differential pressure ($\Delta p-v$):

The setpoint value of the differential pressure H increases in a straight line between $\frac{1}{2}H$ and H within the permitted flow margin. The differential pressure generated by the pump is adjusted to the appropriate setpoint value of differential pressure.

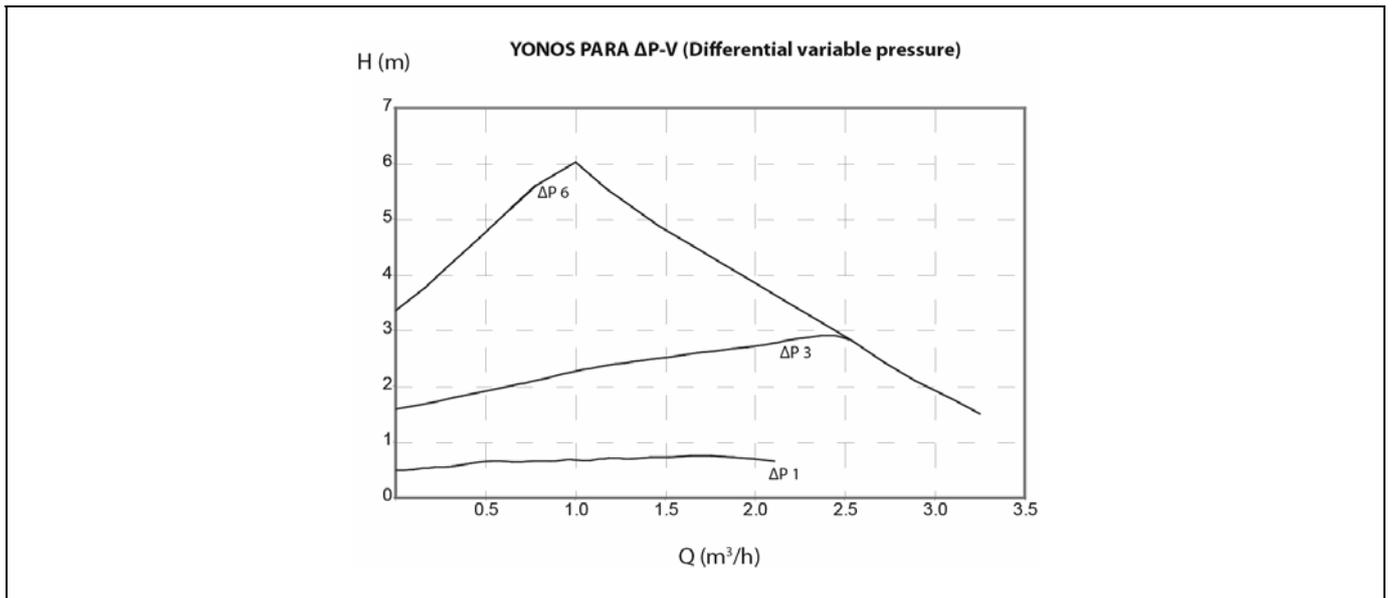
The graphs below show the operating curves for the pump integrated in the kit. These graphs show the curves, corresponding to the different options of the circulating pump.

Characteristic curve of the circulation pump for the constant speed mode I, II, III:

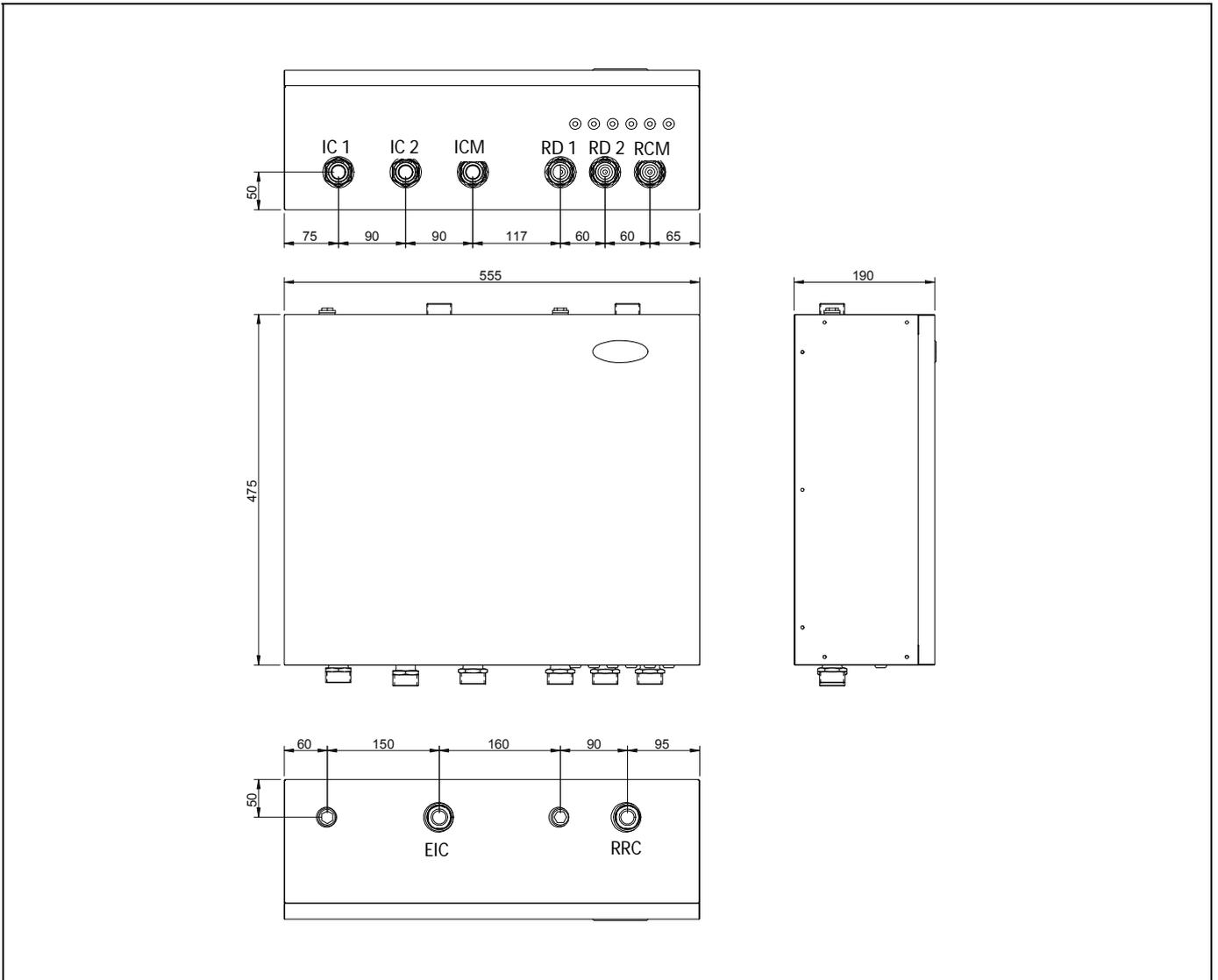


BIO DMS Kit

Characteristic curve of the circulation pump for the variable differential pressure mode:

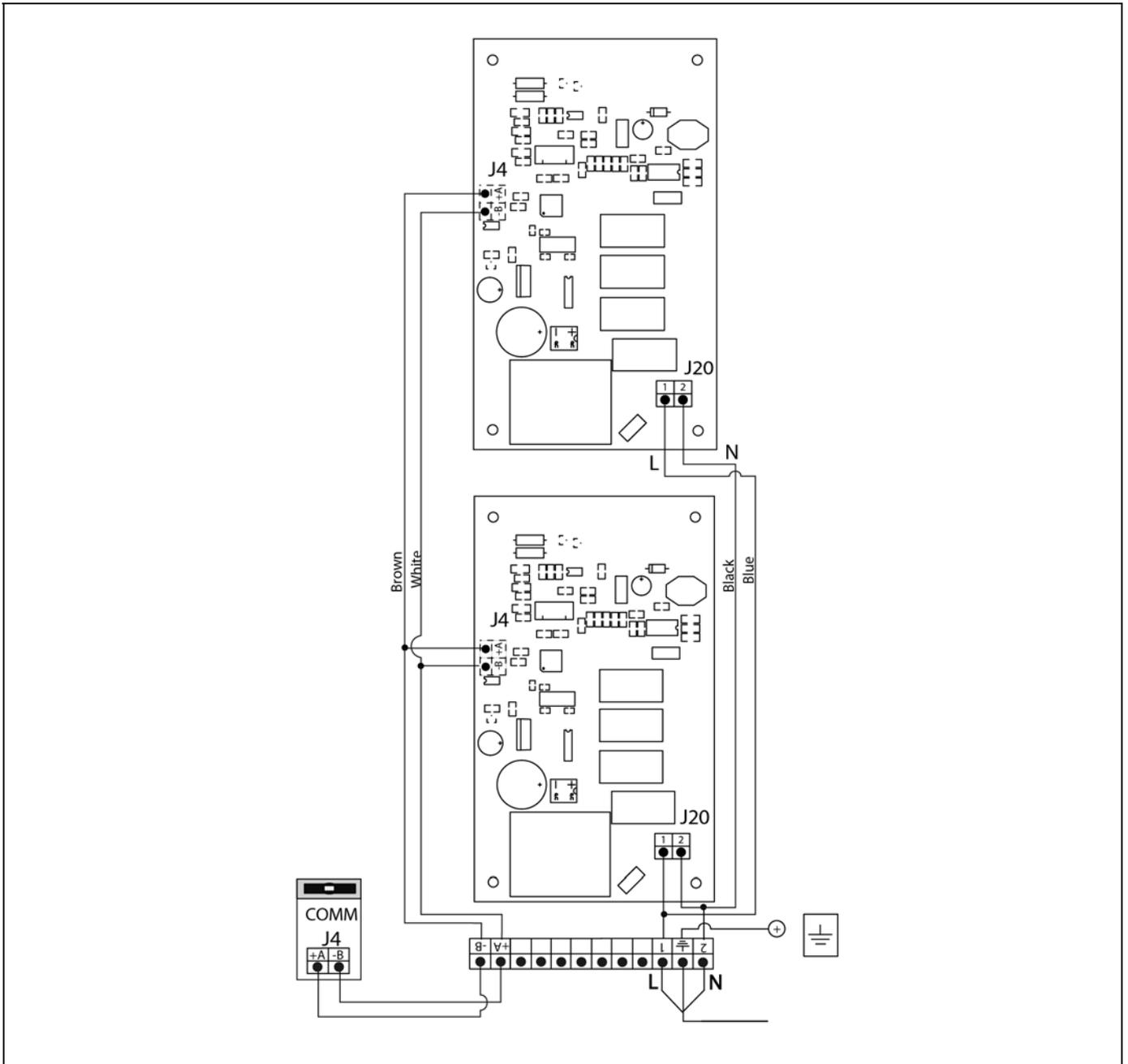


6 DIAGRAMS AND MEASUREMENTS



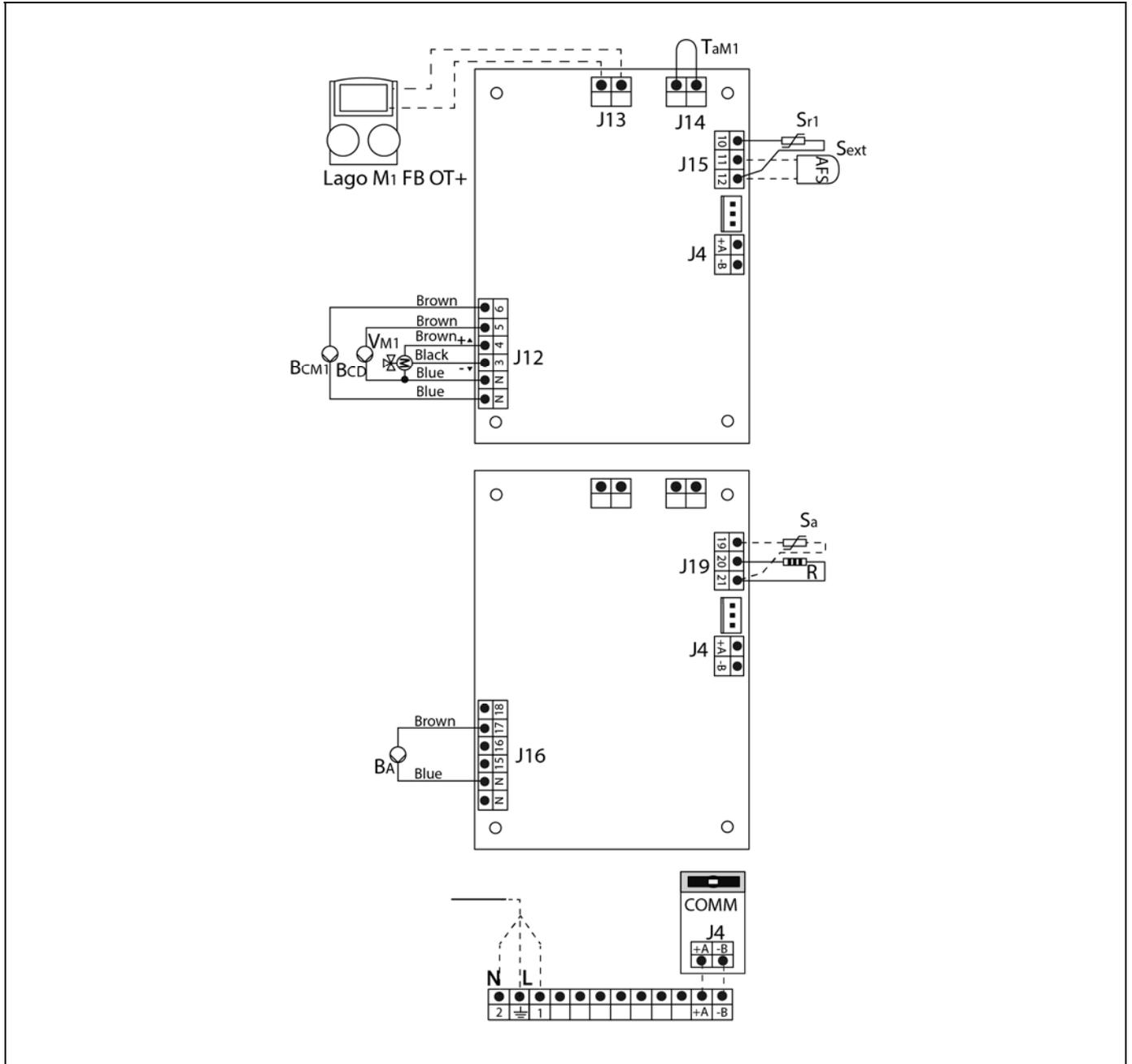
- IAC:** DHW circuit flow (1" M).
- IC:** Direct circuit flow (1" M).
- ICM:** Mixed circuit flow (1" M).
- RCM:** Mixed circuit 1 return (1" M).
- RC:** Direct circuit 2 return (1" M).
- RAC:** Mixed circuit return (1" M).
- EIC:** Inlet from Boiler Flow (1" M).
- RRC:** Return from Boiler Return (1" M).

7 ELECTRICAL DIAGRAM



- L:** Line.
- N:** Neutral.
- COMM:** Communication to boiler connection.
- J4:** Communication connector.
- J20:** Supply connector.

8 CONNECTIONS DIAGRAM



L: Line.

N: Neutral.

VM1: Mixing valve no 1.

BCM1: Mixed circuit pump no1.

BCD: Direct circuit pump.

BA: DHW pump.

TaM1 : Mixed room thermostat no 1.

Sr1: Mixed circuit no 1 sensor.

Sa DHW sensor

Sext: AFS sensor.

R: Resistor

COMM: Communication to boiler connection.

J4: Communication connector.

J11: Supply connector.

J12: Component connector.

J13: Remote control connector.

J14: Room thermostat connector 1.

J15: Sensor connector.

J16: Component connector.

J19: Sensor connector.

9 ALARM CODES

9.1 Alarms displayed on the boiler control panel

The **BioClass NG** boiler has an electronic control able to detect any malfunctioning in the Hydraulic Kit. When the electronic control detects a functioning error, this is indicated by an alarm code on the display. The table below shows a list of the alarm codes that may appear:

CODE	CAUSE	DESCRIPTION
E-03	DHW sensor S_a open circuit.	The DHW sensor is damaged or disconnected. Contact your nearest official technical assistance service to have it replaced.
E-04	DHW sensor S_a shortcircuited.	
E-30	Flow sensor S_{r1} open circuit.	The flow tank S_{r1} is broken or disconnected. Contact your nearest official technical assistance service to have it replaced.
E-31	Flow sensor S_{r1} short circuited.	
E-34	Outdoor sensor S_{ext} open circuit.	The outdoor sensor S_{ext} is broken or disconnected. Contact your nearest official technical assistance service to have it replaced.
E-35	Outdoor sensor S_{ext} short circuited.	
E-37	Communication failure with heating module.	Communication failure between the Hydraulic Kit card and the pump supply card. If this alarm occurs repeatedly, you should contact the nearest official technical assistance service

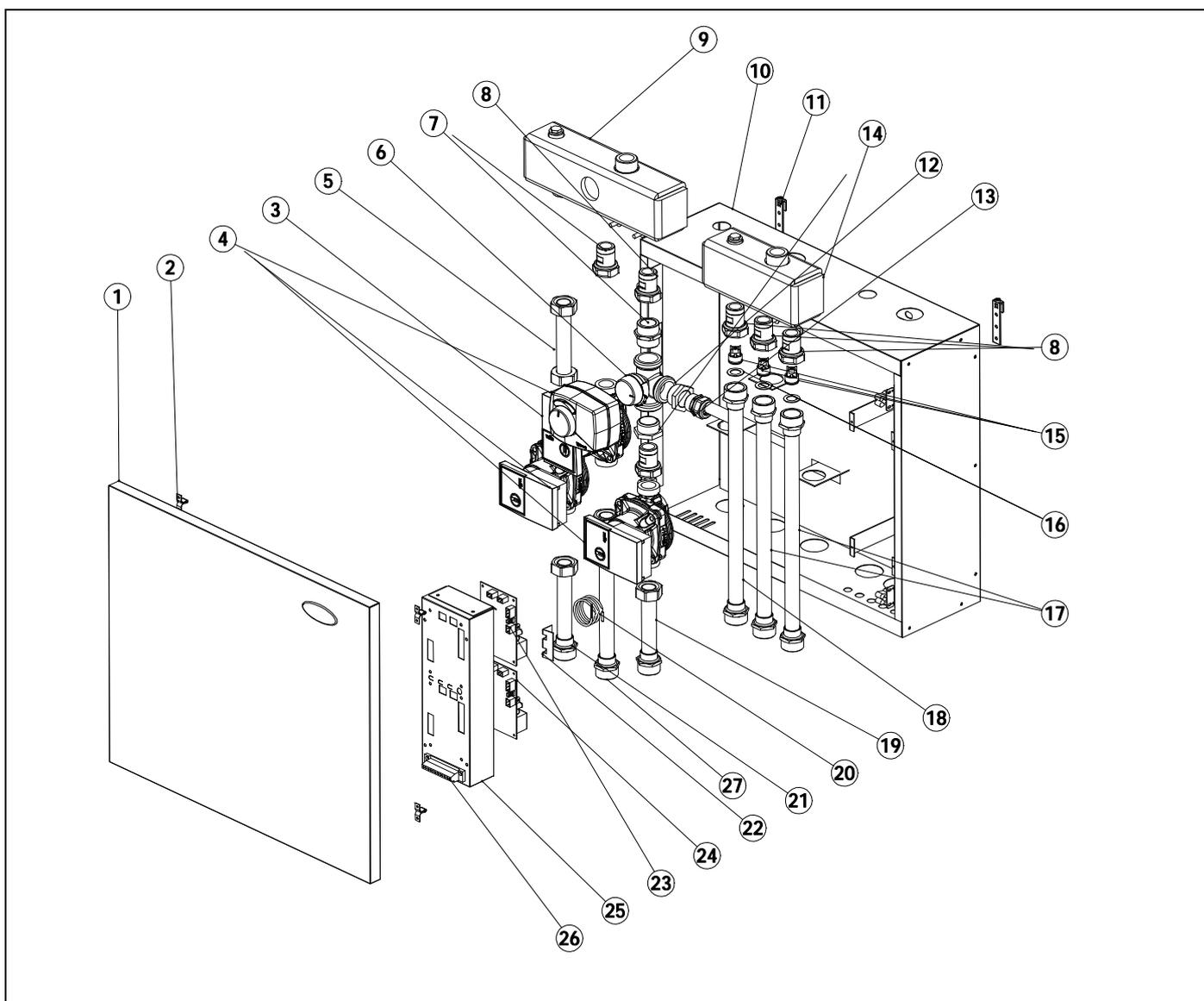
9.2 Circulating pump alarms

The high efficiency pumps of the **Bio DMS Underfloor Heating Hydraulic Kit** include a Led (light) which displays their status.

PUMP LIGHT	DESCRIPTION	STATUS	CAUSE	SOLUTION
It is lit green	The pump is functioning	The pump operates according to its setting	Standard functioning	
It flashes red/green	The pump is ready for service but is not functioning	The pump will start up again automatically once the error has been solved	1. Low voltage $U < 160\text{ V}$ or Excess voltage $U > 253\text{ V}$	1. Check the power supply $195\text{ V} < U < 253\text{ V}$
			2. Excess temperature of the module: the temperature of the motor is too high	2. Check the room temperature and that of the fluid
Flashes red	The pump is out of order	The pump is stopped (blocked)	The pump does not start up automatically.	Change the pump. Please contact your nearest official technical assistance service to have it replaced
Light off	There is no power supply	The electrical system is not receiving power supply	1. The pump is not connected to the power supply	1. Check the connection of the cable
			2. The LED is faulty	2. Check if the pump works
			3. The electrical system is faulty	3. Change the Pump. Change the pump. Please contact your nearest official technical assistance service to have it replaced

BIO DMS Kit

10 SPARE PARTS LIST



N°	Code	Description
1	SEPO001760	Door
2	CFER000045	Closure
3	CFOV000143	Pump
4	CFOV000023	Motor
5	SCOB012639	Direct outlet
6	CVAL000015	Three way valve 1"
7	CFOL000007	Hexagonal nipple 1"
8	122-P	Brass fittings pump
9	SCON000804	Manifold outlet
10	RKITBIO007	Case
11	CFER000041	Hanger
12	CFOL000016	Reducing hex. Bush 3/4x1
13	CFOV000047	Telescopic stud union 3/4
14	RKITBIO014	Manifold return

N°	Code	Description
15	CVAL000006	Non return valve 3/4"
16	CTOR000053	Nylon washer
17	SCOB012638	Direct return
18	SCOB012637	Mixed return
19	SCOB012650	Mixed outlet
20	CELC000234	Sensor
21	SCOB012628	Direct outlet
22	SCHA006943	Fastening bulb
23	REBI137XXX	Electronic card
24	REBI237XXX	Electronic card
25	SCHA009538	Rear electrical board cover
26	CELC000042	Weidmuller strip 12 poles
27	SCOB012711	Direct outlet

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