The boiler has a drain valve incorporated for draining the heating circuit when necessary. The safety valve is not to be used for this purpose.

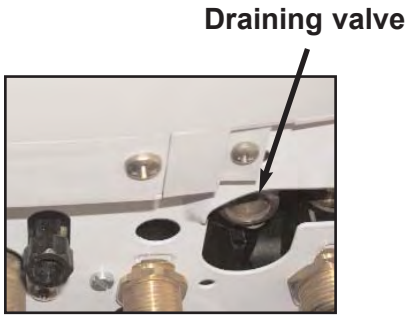

photo 3-a Boiler FE-24/27E and FEB-24/27E

Description and function of the hydraulic components:

Compact hydraulic unit: Model FEB-24E/ED

This unit consists of various hydraulic components: circulating pump, safety valve, fill valve, drain valve, plate heat exchanger, 3-way valve, flow restrictor, automatic drain valve and automatic bypass. All these together form a compact unit.

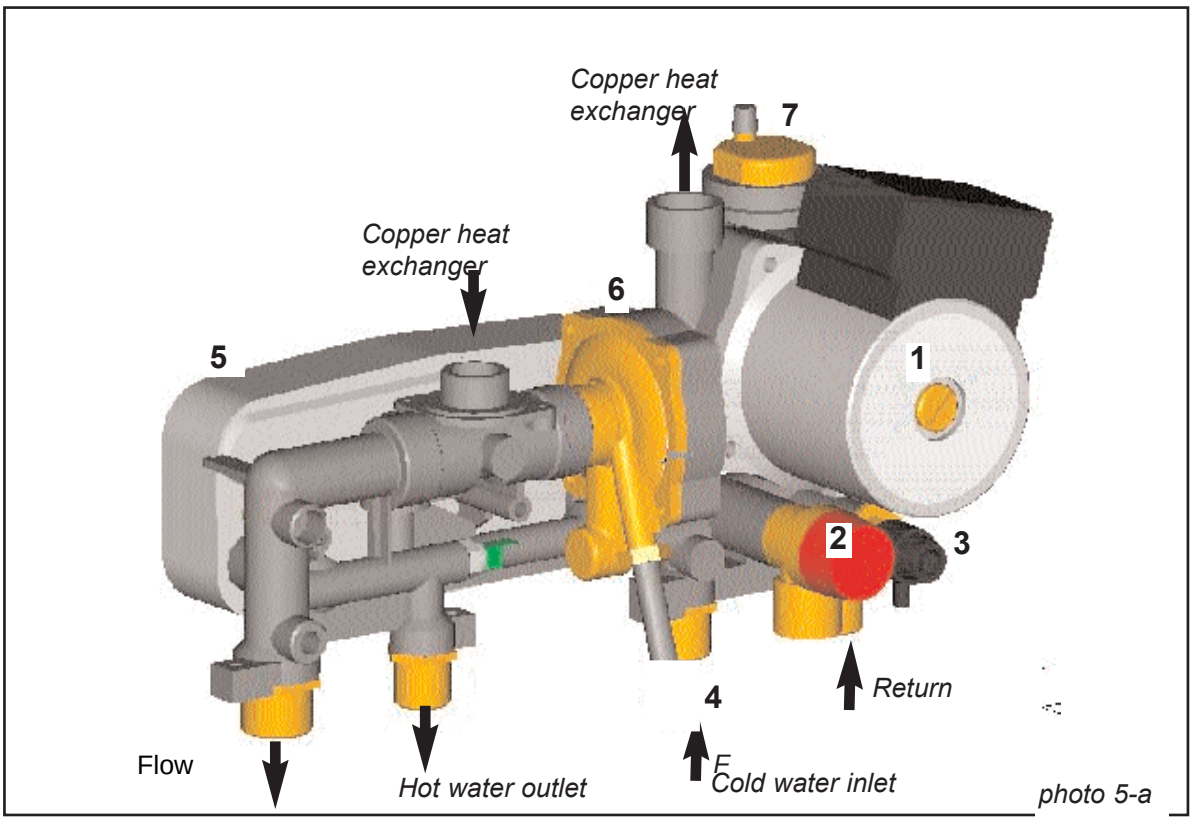

photo 5-a

Circulating pump:

This is the element which makes the water in the primary circuit circulate through the boiler and through all the radiators making up the installation. It has an automatic and manual anti-blocking system. The speed of the water as it flows through the circuit can be selected using the selector button incorporated. The capacity of this pump is a manometric head of 5 metres for the 24kW boiler.

Safety valve:

Also called an overpressure valve, this can be perfectly considered a safety component.

Its function is to prevent the heating circuit pressure from exceeding a determined value (3 bars).

~~Fill valve:~~

~~This component allows the heating circuit to be filled with water up to a certain pres-sure.~~ The pressure in the boiler when cold should be approximately 1.2 bars.

Drain valve:

This component allows the heating circuit to be drained.

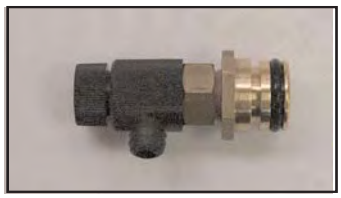

photo 6

3-Way valve:

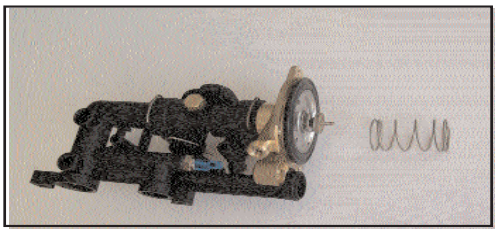

photo 7

This is integrated within the hydraulic unit. When a DHW tap is turned on, this valve acts on a micro switch which notifies the electronic circuit that a hot water tap has been turned on in the installation.

The function of this valve is to direct the water heated up in the main heat exchanger towards either the heating circuit or the plate heat exchanger, in order to produce DHW.

photo 8

The electrical installation includes a micro switch, connected to the 3-way valve. Out of location the micro switch is a normally closed contact, but when it is placed on the 3-way valve shaft it is pressed down by the latter and the contacts are opened. So, on functioning, when it is idle the contacts will be open, and when DHW is required the 3-way valve shaft will stop exerting pressure on it and the contacts will be closed, and the electronic card will receive the signal that a tap has been turned on.

Flow restrictor:

This is part of the hydraulic unit and is located at the domestic cold water inlet. It restricts the flow to 10 l/min for the 24kW boiler, and to 14 l/min for the 27kW boiler.

photo 9

Expansion vessel:

The expansion vessel is a hermetically closed receptacle with two chambers separated by an SBR membrane. One chamber contains nitrogen (air) and the other is filled with the water from the heating circuit. It has a capacity of 7 litres.

The function of the expansion vessel is to absorb the increase in volume of the heating circuit water when it is heated up.

The amount of water absorbed by the expansion vessel depends on the temperature.

3.3- Assembly and disassembly instructions

There now follows a description of the sequence for replacing and mounting the most important, complex components of the boiler.

Changing the entire hydraulic unit:

- Drain the heating circuit and the DHW circuit.

- Unplug the boiler from the mains.

- Disconnect the electrical connections, i.e. the 3-way valve micro switch and thermistor connections.

- Remove the heating return pipe (1) and the heating outlet pipe (2) from the hydraulic unit.

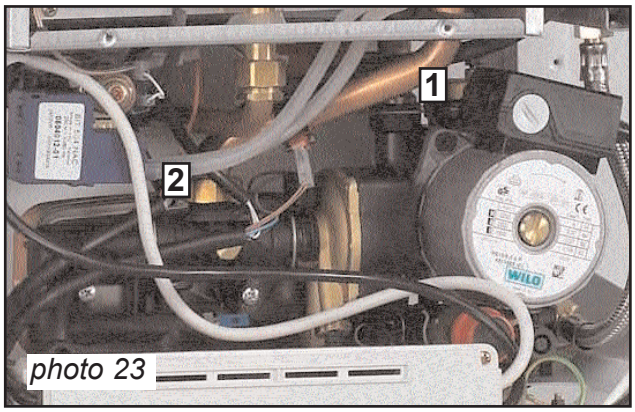

photo 23

- Remove the pressure sensor from the heating return pipe for ease of handling.

- Remove the heating outlet pipe (3) from the main heat exchanger, for ease of handling.

Remove the screws holding the hydraulic unit to the boiler base (they are on the underside).

- Release the hydraulic unit from the lower connectors (DHW inlet and outlet and heating inlet and outlet). The water intake connectors do not need to be removed.

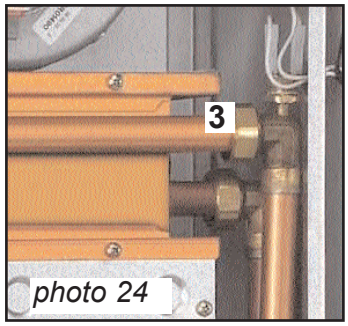

photo 24

Changing the plate heat exchanger and the 3-way valve diaphragm:

To change these elements, part of the hydraulic unit must first be disassembled. The whole unit is divided into two parts: unit 1 and unit 2 (see photograph 25).

Disassembling unit 1: (see photographs 23 and 24)

- Drain the heating circuit and the DHW circuit.

- Unplug the boiler from the mains.

- Disconnect the electrical connec-

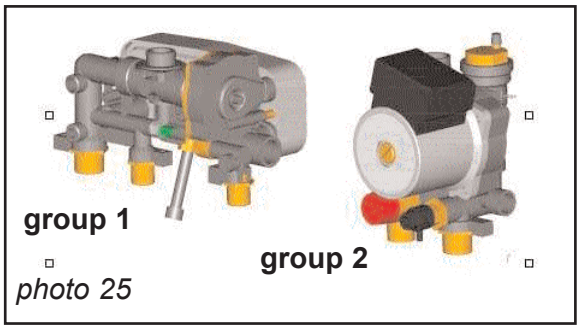

photo 25

tions, i.e. the 3-way valve micro switch and the thermistor connections.

- Remove the heating outlet pipe (2) from the hydraulic unit.

- Remove the pressure sensor from the heating return pipe, for ease of handling.

- Remove the heating outlet pipe (3) from the heat exchanger for ease of handling.

Remove the screws holding unit 1 to the boiler base (they are on the underside).

- Release unit 1 from the lower connectors (DHW inlet and outlet and heating outlet). The water intake connectors do not need to be removed.

Changing the plate heat exchanger :

- Remove the four screws holding the plate heat exchanger to unit 1 (be very careful with the O-rings; they should be changed).

Changing the 3-way valve diaphragm :

- Firstly, remove the plate heat exchanger.

- Remove the diaphragm cover (see photograph 26).

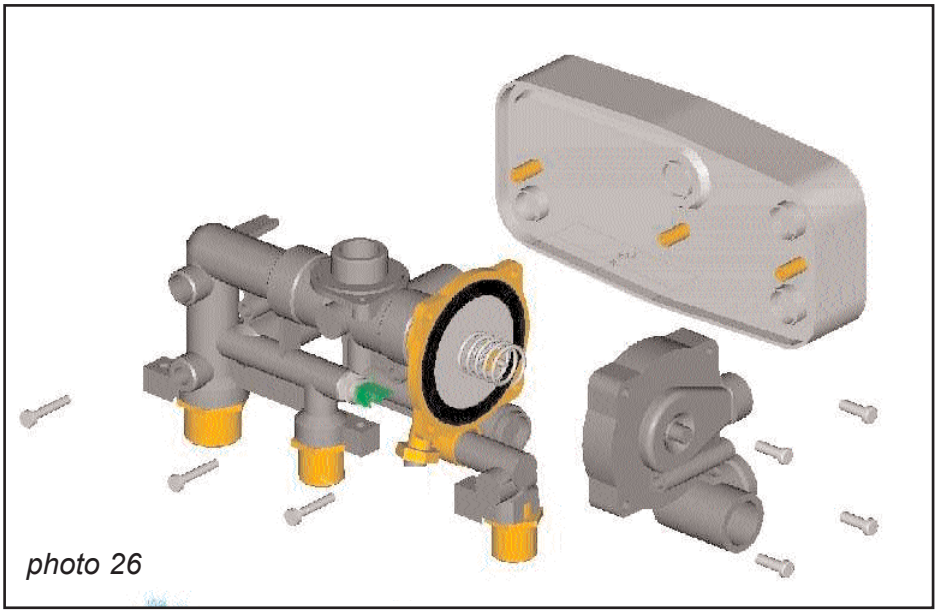

photo 26

Changing the Pump :

- Drain the heating circuit and the domestic circuit.

- Remove the four Allen screws holding the pump body to the hydraulic unit, and remove the pump.

- Remove the pump electrical connection to the card.

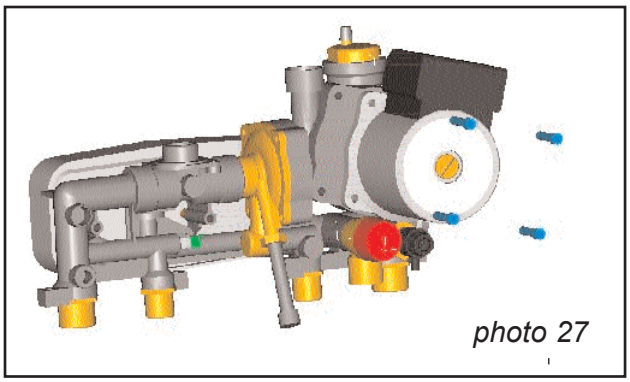
photo 27

Changing the drain valve :

- Drain the heating circuit.

- Remove the pump, and remove the clip holding the drain valve in place.

Changing the safety valve and drain valve :

Safety valve or drain valve: 2 and 3.

1. Drain the heating circuit.

2. Remove the clip and pull out the valve.

Fill valve: 1

1. Drain the heating circuit and the domestic circuit.

2. Remove the lever. Using a size 17 spanner, remove the nut holding the tap in place, and then remove the tap.

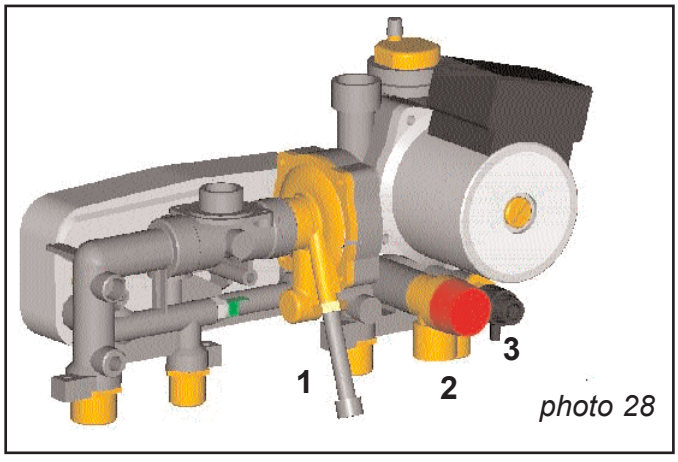

photo 28

Changing the DHW thermistor :

Changing the DHW thermistor:

- Drain the DHW circuit.

- Remove the thermistor from its location.