PUMP UNIT TO DELIVER FRESH HOT DOMESTIC WATER (HDW) FWC3

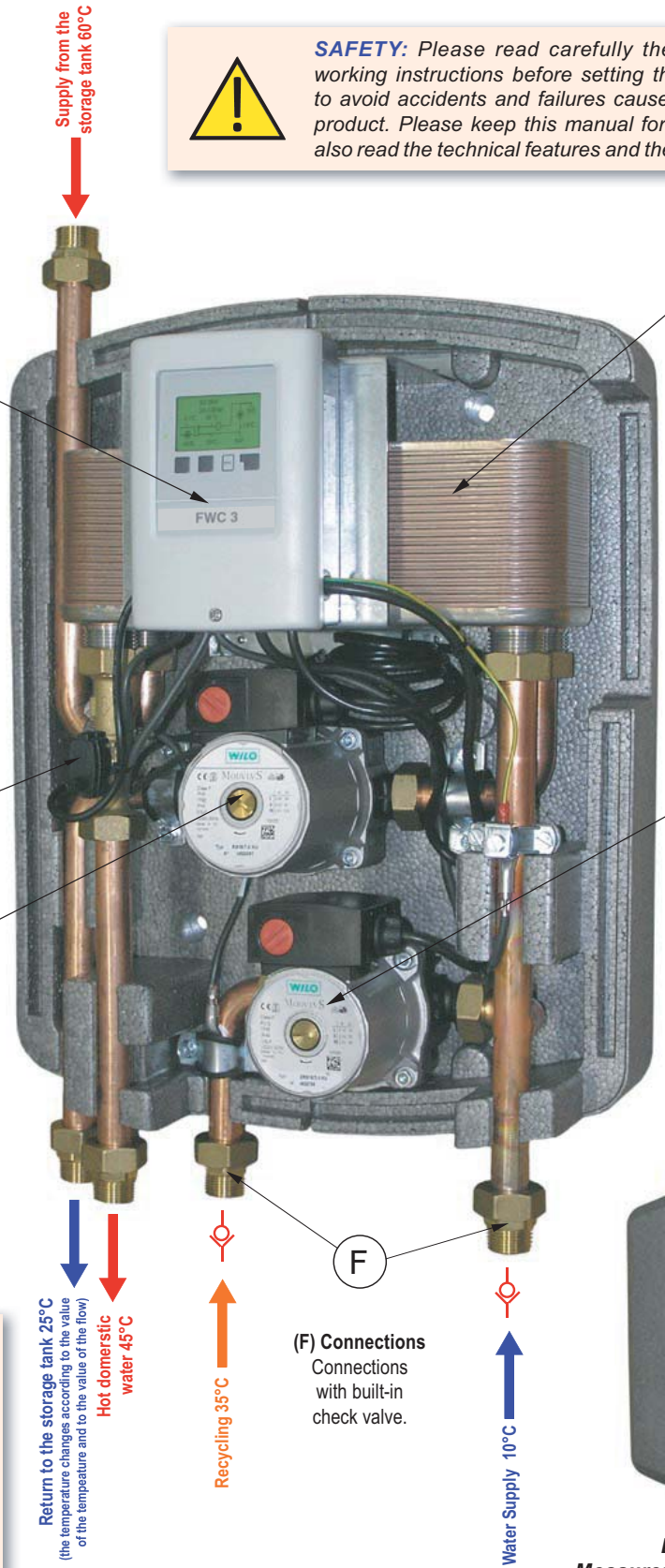
List of features of main components

SAFETY: *Please read carefully the mounting and the setting working instructions before setting the pump unit going, in order to avoid accidents and failures caused by an incorrect use of the product. Please keep this manual for future consultations. Please also read the technical features and the instructions of the controller.*

(A) Controller
The flow, the temperatures and the instant power produced by the installation are immediately displayed on the controller.

(B) VFS digital flow counter
Thanks to this special device the regulations and the settings of the pump unit are no longer required. The required variation of flow is immediately read by the digital sensor, therefore the controller adjusts the speed of the circulating pump to get the better performance of your nstallation. The flow appears on the LCD display. Availlable measuring ranges: 1-20 l/min and 2-40 l/min.

(C) Primary circulating pump
The special electronics adjusts the speed of the primary circulating pump, from a minimum speed of 12% up to the maximum selected speed, in order to assure always the selected temperature (f.i. 45°C).



(D) Heat exchanger
Weld-braised plate heat exchanger made in stainless steel AISI 316. The large heat exchange surface assures a great heat exchange that allows the return of the water to the storage tank at a low temperature down to 15°C. This low temperature allows a perfect performance of the solar or of the heat pump supply. The heat exchanger can be easily removed for the service and/ or the cleaning by means of the right-hand side opening od the insulation box.

(E) Recycling
Recycling way *(optional)*. The recycling circuit, provided with a special circulating pump, allows to get an outlet flow already at the required temperature. It works "on demand" or on "time band". The circuit is provided with check valves. A special anti-legionnaire's disease function allows to sterilize all the secondary hydraulic circuit.

(F) Connections
Connections with built-in check valve.

DANGER: SCALDS

During the sterilization the safety level (60°C) is exceeded. Provide antiscald devices at the outlets.

EPP insulation box
Measurements: 398 x 500 x 207 mm.
A special metal back plate fixes the unit to the insulation box and it allows a quick fitting to the wall or to the storage tank.

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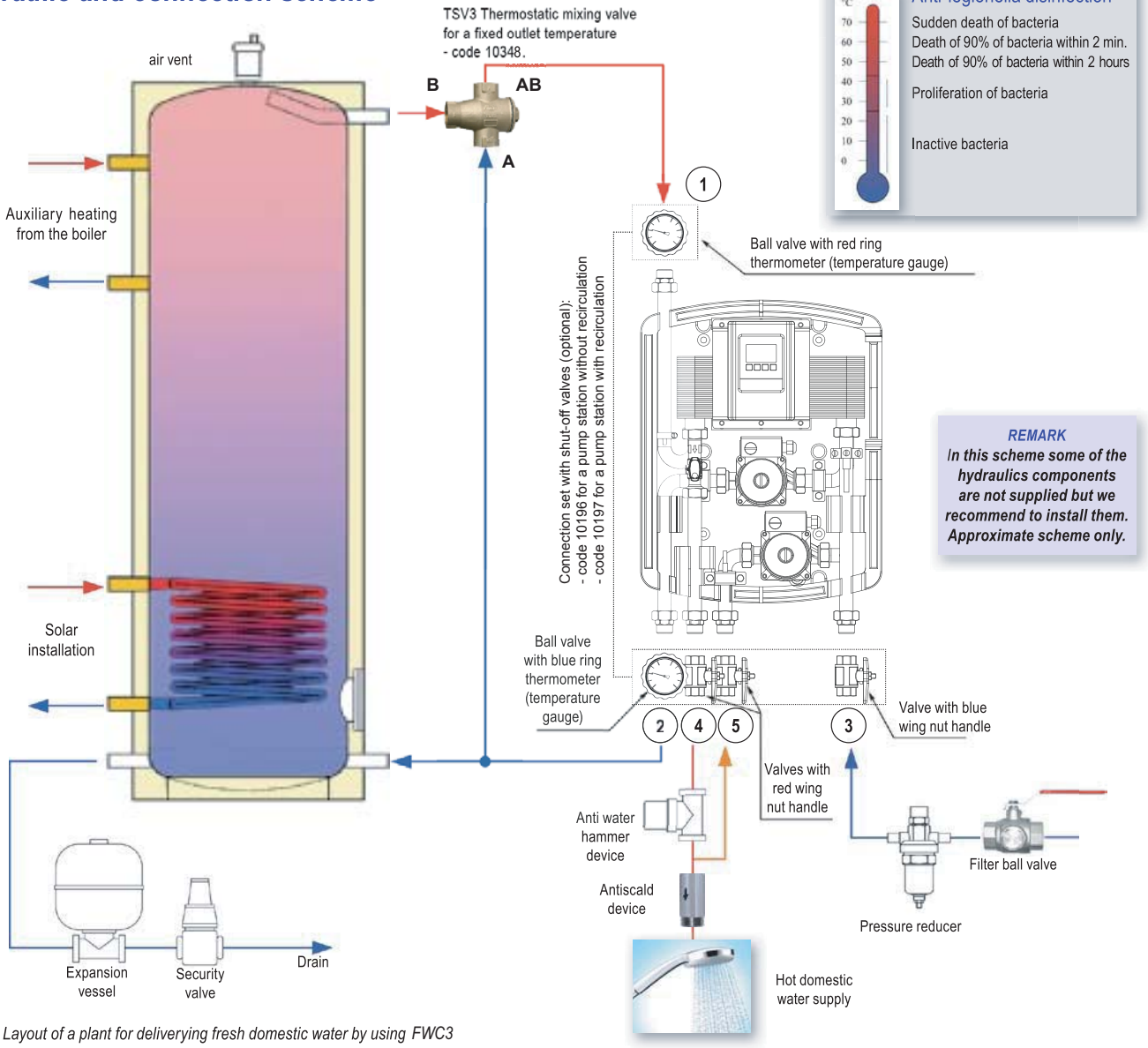
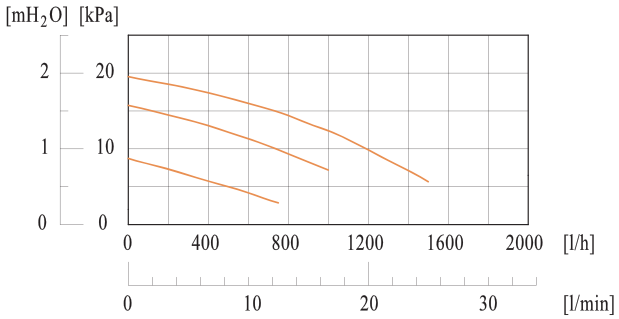
Hydraulic and connection scheme



***Pict. 1**: Layout of a plant for deliverying fresh domestic water by using FWC3*

Technical Features

Maximum allowed pressure (without water hammer):	***6 bar***
Working temperature:	***2 ÷ 95°C***
Headloss in the secondary circuit (at the flow of 40 l/min) *(100 kW model)*:	***5 mH_2O***
Headloss in the recycling circuit (at the flow of di 5 l/min):	***0,3 mH_2O***



Peculiar diagram of the recycling circulating pump (if present).

Connections and links

PRIMARY CIRCUIT

1. **Supply from the storage tank:** 3/4" ISO 228 male connection. Minimum diameter of the pipe DN20 (Cu 22x1). Maximum length: 3 m.
2. **Return from the storage tank:** 3/4" ISO 228 male connection. Minimum diameter of the pipe DN20 (Cu 22x1). Maximum length: 3 m.

SECONDARY CIRCUIT

3. **Cold water supply:** 3/4" ISO 228 male connection with check valve.
   Minimum diameter of the pipe DN20 (Cu 22x1).
4. **Outlet hot domestic water:** 3/4" ISO 228 male connection. Minimum diameter of the pipe DN20 (Cu 22x1).
5. **Recycling (optional):** 3/4" ISO 228 male connection with check valve.
   Minimum diameter of the pipe DN15.

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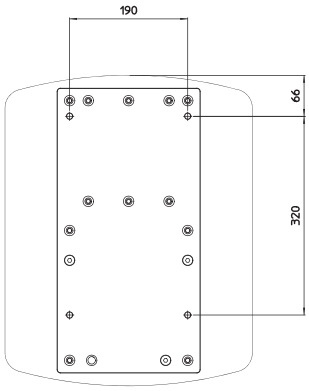
Materials

Pipe fittings	Piping	Insulation	Heat exchanger	Gaskets	Circulating pumps
Copper alloy CW617N / CW614N	Copper	EPP	Stainless steel AISI 316 L Copper	EPDM	Composite material, WRAS approved for recycling circ. pump

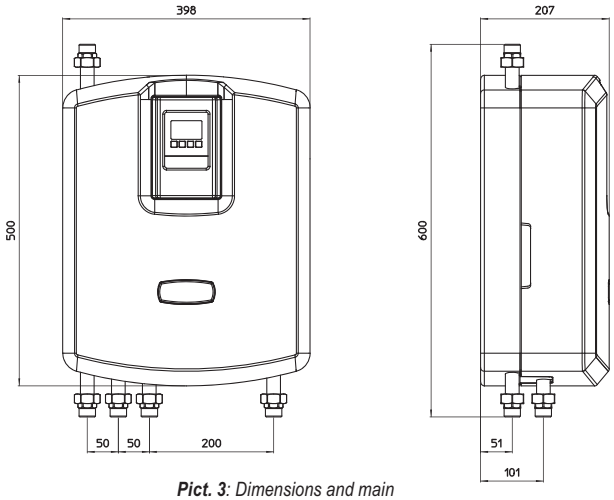
Installation

The pump unit can be mounted directly on the storage tank, if it is provided with the proper connections (see “Recommendations”) or to the wall, near by.
For the wall mounting follow the directions:

Find the position of the 4 holes to be made into the wall according to the scheme *Pict.2*;
Bore and put the proper screw anchors;
Remove the cover and fix the pump unit;
Mount the connection valves set (optional) according to the *Pict.1*;
Connect the pipes in accordance to the connection scheme follwing the directions in *Pict.3*.



***Pict. 2**: Back plate for wall mounting*



***Pict. 3**: Dimensions and main center-to-center distances of the pump unit*

Filling

The pump unit has been wet seal tested under pressure in the factory. Anyway we recommend to verify again the connections.

The storage tank must be put under pressure (about 2 bar).

Open slowly the valve in the position 1 *(supply from the storage tank)*, purge the circulating pump of the primary circuit, open slowly the valve in the position 2 *(return to the storage tank)*;
Open slowly the valve in the position 3 *(cold water supply)* and in case the valve in the position 5 (recycling) and purge its circulating pump;
Open slowly the valve in the position 4 *(hot domestic water)*;
Open slowly one or more outlets for some minutes to let the air going out from the secondary circuit;
Close the entry points, close the purgings of the circulating pumps;
Give off steam from the storage tank and in case restore the pressure.

Electrical connections

DANGER

The pump unit is pre-wired. A Shuko plug is necessary to connect it to the electric system. Voltage: 230 VAC ± 10%. Frequency: 50÷60 Hz. Maximum absorbed power: 200W.

Setting up

Read carefully the instructions of the controller;
Plug;
Select the language, set the hour and the date;
Now the controller suggest: ”*Would you like to start the setup wizard?*”

We recommend to push **[Yes]**. Youll’be guided step by step trought the required settings.
Push **[Continue]**. From time to time the controller suggests some parameters. Push **[Confirm]** to go to the following parameter or before modify the values by the buttons **[-]** or **[+]**; At the end push **[Yes]** at message “*Do you want to save the changes?*”.
Push repeatedly the button **[esc]** to come back to the display mode.

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Suggestions / Remarks on the delivery capacity

The temperature into the storage tank must be almost 5K higher than the desired temperature of the domestic water. Higher differences of temperature allow to extend the delivery time of the hot water. In presence of calcareous water we recommend to not exceed the temperature of 70°C (supply from the storage tank) to avoid limescale into the secondary side of the plate exchanger, in case put a thermostatic valve (*Pict.1*).
In the following table the main working parameters of this pump unit are indicated (the data have been taken with a cold water supply temperature of 10°C):

DANGER: SCALDS

To avoid scalds to the user the supplied water must never be over 60°C. This temperature limit is preselected into the controller, anyway it can be reduced.

HDW pump unit FWC3 100 kW: delivered flow			
Requested flow [l/min]	*Hot water selected temperature [°C]*	*Needed supply temperature from the storage tank [°C]*	*Supplied power [kW]*
20	*50*	*56*	*56*
30	*50*	*63*	*84*
40	*50*	*70*	*112*

Return temperature to the storage tank

To allow a better thermic contribution of eventual other sources of energy as heat pumps, solar thermal, etc. it is recommended to set the installation in such a way as to get the lower possible return temperature to the storage tank. Usually to do that it is necessary to reduce the speed of the circulating pump of the primiry circuit as much as possible, requested domestic water temperature permitting; or to increase in the same time the storage tank temperature.

Recommendations

If the pump unit is stratight fixed to the storage tank it is necessary to put a check valve (*optional, code* ***CRKZ03689***) into the union identified with "Supply from the storage tank" to avoid a natural circulation in the primary circuit (*Pict.4*).

Try to avoid pressure peaks during the working and the filling of the installation, to avoid the damaging of the VFS sensor. Eventually put nearby it a water hammer reducer.

The VFS sensor, depending upon type, begins to record the flow rate starting from 2 l/min.
For a correct working following minimum flow rates are recommended: 3÷4 l/min.

The VFS sensor records also the flow of the recycling circuit (if included).
This flow, given by the sizes and by the headlosses of the recycling circuit, must be read on place during the setting up of the installation (menu **4.2 Manual**; start up the relay "**R2**" and read the flow "**S6**", then exit from the menu).
The read value of "**S6**" must be always lower than the value registered in the menu **5.9 Circ.max FR.** (default: 10 l/min); therefore, if necessary, reduce the speed of the circulating pump by means of its selector, or register a higher value into the menu **5.9**.
Otherwise the recycling pump stops as soon as it is activated. This function avoids that the recycling pump is activated during the normal working of the pump unit.

Be sure that the electric installation is provided with an efficient ground tap.

Pict. 4*: NRV supply from the storage tank*

ATTENTION

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