

UB INOX SOLAR

Instruction and  
recommendation booklet

IE



# UB INOX SOLAR

## 200 ERP

Storage tank unit





## **Dear Customer,**

Our compliments for having chosen a top-quality Immergas product, able to assure well-being and safety for a long period of time. As an Immergas customer you can also count on a qualified after-sales service, prepared and updated to guarantee constant efficiency of your storage tank unit.

Read the following pages carefully: you will be able to draw useful suggestions regarding the correct use of the appliance, the respect of which, will confirm your satisfaction for the Immergas product.

For assistance and scheduled maintenance contact Authorised After-Sales centres: they have original spare parts and are specifically trained directly by the manufacturer.

## **General recommendations**

All Immergas products are protected with suitable transport packaging.

The material must be stored in dry environments protected against bad weather.

The instruction book is an integral and essential part of the product and must be consigned to the new user also in the case of transfer or succession of ownership.

It must be stored with care and consulted carefully, as all of the warnings provide important safety indications for installation, use and maintenance stages.

This instructions manual provides technical information regarding installation of Immergas storage tank units. As for the other issues related to installation of the said storage tank units (e.g. safety in the work site, environment protection, injury prevention), it is necessary to comply with the provisions specified in the regulations in force and principles of good practice.

In compliance with legislation in force, the systems must be designed by qualified professionals, within the dimensional limits established by the Law. Installation and maintenance must be performed in compliance with the regulations in force, according to the manufacturer's instructions and by an authorised company, which has specific technical expertise in the system sector, as required by Law.

Improper installation or assembly of the Immergas appliance and/or components, accessories, kit and devices can cause unexpected problems to people, animals and objects. Read the instructions provided with the product carefully to ensure a proper installation.

Maintenance must be carried out by an authorised company. The Authorised After-sales Service represents a guarantee of qualification and professionalism.

The appliance must only be destined for the use for which it has been expressly declared. Any other use will be considered improper and therefore potentially dangerous.

If errors occur during installation, operation and maintenance, due to non compliance with technical laws in force, standards or instructions contained in this book (or however supplied by the manufacturer), the manufacturer is excluded from any contractual and extra-contractual liability for any damages and the appliance warranty is invalidated.

For further information regarding legislative and statutory provisions relative to the installation of gas heat generators, consult the Immergas site at the following address: [www.immergas.com](http://www.immergas.com)

## **CE DECLARATION OF CONFORMITY**

(according to ISO/IEC 17050-1)

The company **IMMERGAS S.p.A.**, with registered office in via Cisa Ligure 95 42041 Brescello (RE) whose design, manufacturing, and after sale assistance processes comply with the requirements of standard **UNI EN ISO 9001:2008**,

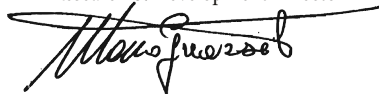
### **DECLARES that:**

The UB INOX SOLAR 200 ERP storage tank units comply with the following European Directives and Delegated European Regulations: "Eco-design" Directive 2009/125/EC, "Energy labelling" Directive 2010/30/EC, EU Regulation 812/2013, EU Regulation 814/2013, "Electromagnetic Compatibility" Directive 2004/108/EC and "Low Voltage" Directive 2006/95/EC.

Mauro Guareschi

Research & Development Director

Signature:



Immergas S.p.A. declines all liability due to printing or transcription errors, reserving the right to make any modifications to its technical and commercial documents without prior notice.

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# 1 STORAGE TANK UNIT INSTALLATION

## 1.1 INSTALLATION RECOMMENDATIONS.

The place of installation of the appliance and relative Immergas accessories must have suitable features (technical and structural) such to allow (always in safety, efficiency and comfortable conditions):

- installation (according to the provisions of the technical legislation and technical regulations);
- maintenance operations (including scheduled, periodic, routine and special maintenance);
- removal (to outdoors in the place for loading and transporting the appliances and components) as well as their eventual replacement with appliances and/or equivalent components.

Only professionally enabled companies are authorised to install Immergas appliances.

Installation must be carried out according to regulation standards, current legislation and in compliance with local technical regulations and the required technical procedures.

Before installing the appliance, ensure that it is delivered in perfect condition; if in doubt, contact the supplier immediately. Packing materials (staples, nails, plastic bags, polystyrene foam, etc.) constitute a hazard and must be kept out of the reach of children.

If the appliance is installed inside or between cabinets, ensure sufficient space for normal

servicing; therefore it is advisable to leave a gap of 2÷3 cm between the storage tank casing and the sides of the cabinet.

In the event of malfunctions, faults or incorrect operation, turn the appliance off and contact an authorised company (e.g. the Authorised Technical Assistance centre, which has specifically trained staff and original spare parts). Do not attempt to modify or repair the appliance alone. Failure to comply with the above implies personal responsibility and invalidates the warranty.

- Installation standards: these storage tanks have been designed for floor installation; they must be used for the storage of domestic hot water and similar purposes. They have not been designed for wall-installation.

**Attention:** these units are used to store water at a temperature below boiling point at atmospheric pressure. They must be connected to a boiler and to a DHW water distribution network. They must be installed in rooms where the temperature cannot fall below 0°C and must not be exposed to atmospheric agents.

"Anti-legionella" heat treatment of the Immergas storage tank (activated by the specific function present on the predisposed thermoregulatory systems): during this stage, the temperature of the water inside the storage tank exceeds 60°C with a relative risk of burns. Keep this domestic water treatment under control (and inform

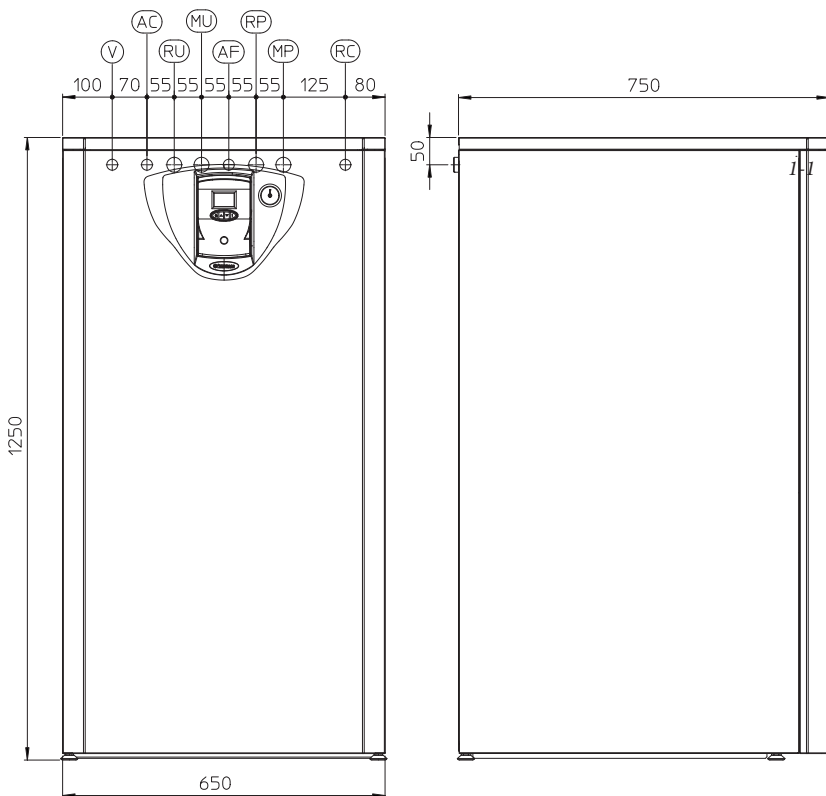
the users) to prevent unforeseeable damage to people, animals, things. If required install a thermostatic valve on the domestic hot water outlet to prevent scalding.

## 1.2 MAIN DIMENSIONS.

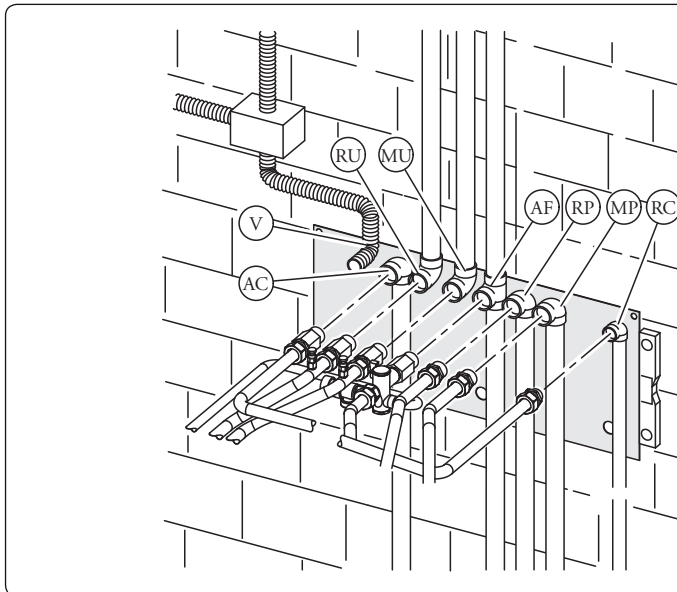
Key:

- V - Electrical connection
- AC - Domestic hot water outlet
- AF - Domestic cold water inlet
- RU - Return from boiler unit
- MU - Flow to boiler unit
- RP - Return to solar panels
- MP - Flow from solar panels
- RC - Domestic hot water recirculation (Optional)

CONNECTIONS				
SYSTEM		DOMESTIC HOT WATER		
MU - RU	MP - RP	AF	AC	RC
3/4"	3/4"	3/4"	3/4"	1/2"



### 1.3 CONNECTION UNIT.



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**Key:**

- V - Electrical connection
- AC - 3/4" Domestic hot water outlet
- RU - 3/4" return from storage tank
- MU - 3/4" flow to storage tank
- AF - 3/4" domestic cold water inlet
- RP - 3/4" return to solar panels
- MP - 3/4" flow from solar panels
- RC - 1/2" recirculation (optional)

### 1.4 HYDRAULIC CONNECTION.

Before making the connections, all of the system piping must be washed thoroughly to remove any residues that could compromise the proper operation of the storage tank. Water connections must be made in a rational way using the couplings on the storage tank template. The storage tank safety valve outlet must be connected to a draining funnel. If this is not the case, the storage tank manufacturer declines any liability in the event of flooding if the drain valve cuts in.

### 1.5 ELECTRICAL CONNECTION.

The storage tank has an IPX0D protection rating for the entire appliance. Electrical safety of the appliance is reached only when it is correctly connected to an efficient earthing system as specified by current safety standards.

**Attention:** Immergas S.p.A. declines any responsibility for damage or physical injury caused by failure to connect the storage tank to an efficient earth system or failure to comply with the reference standards.

Also ensure that the electrical installation corresponds to maximum absorbed power specifications as shown on the storage tank data-plate. The storage tank unit is supplied complete with an "X" type power cable without plug.


#### Solar manifold probe connection.

Connect the solar manifold probe to pins 45 and 46 on the terminal board (Fig.1-12 part. 17) present inside the storage tank unit, paying attention to eliminate the resistance R15 as indicated in the wiring diagram.

#### Storage tank connection to the boiler.

Connect the storage tank to the boiler as indicated in the wiring diagram, using a cable (not present) to connect clamps 36 and 37 to the boiler and to the storage tank.

#### Storage tank unit electric connection.

The power supply cable must be connected to a 230V  $\pm 10\%$  / 50Hz mains supply respecting L-N polarity and earth connection;  this network must also have a multi-pole circuit breaker with class III over-voltage category. When replacing the power supply cable, contact a qualified firm

(e.g. the Authorised After-Sales Technical Assistance Service).

For the main power supply to the appliance, never use adapters, multiple sockets or extension leads.

#### Solar collector return probe connection (optional).

Connect the solar collector return probe to pins 8 and 7 on the terminal board present inside the storage tank unit.

**Attention:** after the connections have been made, the new system layout must be set on the solar control unit as follows:

- press the "i" key for about 10 seconds;
- use the scrolling keys to find parameter 27 (system configuration);
- press the "i" key for about 2 seconds.
- upon accessing parameter 27, you will find that configuration 1 is set; use the scrolling keys to select configuration 2.
- press the "i" key to confirm the selected configuration.

### 1.6 FILLING THE SYSTEM.

Once the storage tank has been connected, fill the system via the boiler filling valve. Filling is performed at low speed to ensure release of air bubbles in the water via the boiler and central heating system vents.

Close the filling valve when the boiler manometer pointer indicates approx. 1.2 bar (see boiler instruction book).

### 1.7 DOMESTIC HOT WATER STORAGE TANK UNIT.

The storage tank unit must be connected to a boiler. It contains large coiled stainless steel heat exchanger pipes, which allow to notably reduce hot water production times. This storage tank unit, manufactured with stainless steel casing and bottoms, guarantees long duration through time. The assembly concepts and welding (T.I.G.) are implemented to the minimum detail to ensure maximum reliability.

The upper inspection flange ensures practical

control of the storage tank unit and the coil heat exchanger pipe and easy internal cleaning.

The DHW couplings are positioned on the lid of the flange (cold inlet and hot outlet). The Magnesium Anode holder cap including the same, supplied as per standard for the internal protection of the storage tank from possible corrosion, is found on the side of the storage tank.

**IMPORTANT NOTE:** have the efficiency of the storage tank Magnesium Anode checked annually by a qualified firm. The storage tank unit is prepared for introduction of the domestic hot water pump fitting.

### 1.8 DHW MIXING VALVE.

The thermostatic mixing valve mixes the cold water with the hot water and via an internal wax element, sensitive to the temperature, automatically controls the temperature of the mixed water set by the user.

**N.B.:** for excellent management of the temperatures, the mixing valve must be set by the installer at a safety temperature required by the user. The outlet temperature of the domestic hot water can also depend on the value set on the boiler, however, the upper limit temperature value of the domestic hot water is always determined by the position of the mixing valve: knob position 1 = 42°C, 2 = 48°C, 3 = 54°C, 4 = 60°C (standard) (the values indicated refer to a storage tank with water at 70°C).

**Any release of the three-way mixing valve.** If after a long period of inactivity the three-way mixing valve is blocked, it is necessary to act manually on the knob positioned on the top of the same in a way to release the shutter of the valve itself.

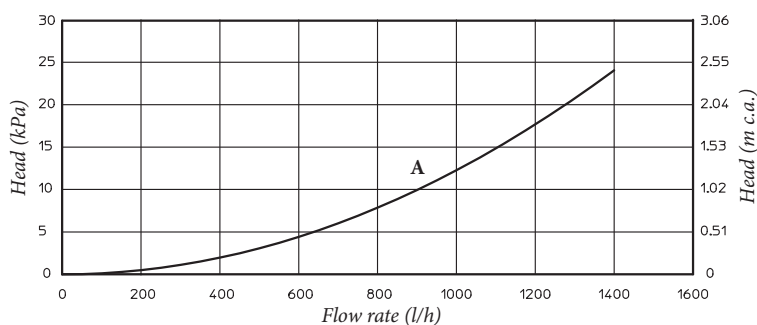
### 1.9 STORAGE TANK UNIT HYDRAULIC CIRCUIT RESISTANCE.

In order to guarantee sufficient DHW flow rate, it is important to consider the resistance of the storage tank hydraulic circuit to be coupled to the boiler. (Fig. 1-3). In order to connect the storage tank unit to Immergas boilers properly, refer to the boiler instruction book.

### 1.10 MAIN SOLAR CIRCULATION UNIT COMPONENTS.

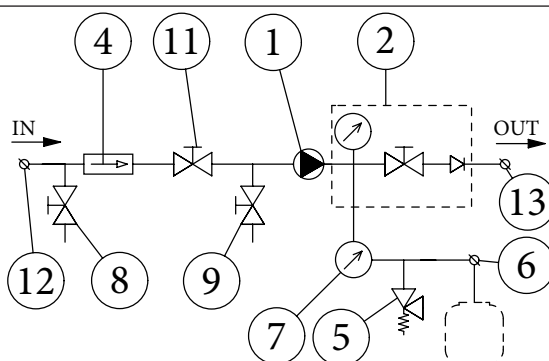
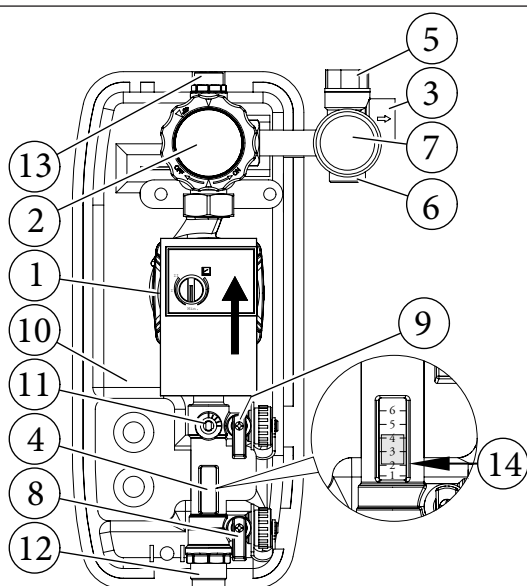
The pump unit allows you to connect the storage tank to the solar manifold, making the water circulate according to the request of the control unit.

Hydraulic circuit resistance.



A - Storage tank unit hydraulic circuit resistance.

1-3



Key:

- |  |                                      |
|--|--------------------------------------|
| 1 - Solar pump                             | 7 - Manometer                        |
| 2 - Non return valve, thermometer and cock | 8 - Draining valve                   |
| 3 - Valve drain fitting                    | 9 - Filling valve                    |
| 4 - Flow meter                             | 10 - Insulating casing               |
| 5 - 6 bar safety valve                     | 11 - Flow rate regulator             |
| 6 - 3/4" connection for expansion vessel   | 12 - Inlet                           |
|  | 13 - Outlet                          |
|  | 14 - Reference for flow rate reading |

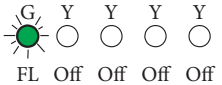
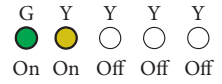
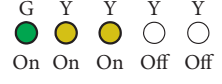
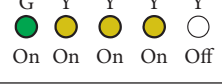
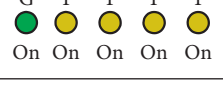
1-4

### 1.11 CIRCULATION PUMP (SOLAR HEATING SYSTEM).

The units are supplied with circulating pumps fitted with speed regulator. These settings are suitable for most systems.

In fact, the pump is equipped with electronic control to set advanced functions. For proper operation one must select the most suitable type of operation for the system and select a speed in the available range, with a focus on energy savings.

**Display of operation status.** During normal operation the status LED (2) is on green (flashing (FL) when it is in stand-by), the four yellow LEDs (3) indicate circulator absorption according to the following table:

Circulating pump LED	Absorption
 FL Off Off Off Off	Circulator in stand-by
 On On Off Off Off	0 ÷ 25 %
 On On On Off Off	25 ÷ 50 %
 On On On On Off	50 ÷ 75 %
 On On On On On	75 ÷ 100 %

**Selection of operating mode.** To see the current operation mode it is sufficient to press button (1) once.

To change operation mode press the button for between 2 to 10 seconds until the current configuration flashing, each time the button is pressed all possible functions are scrolled cyclically according to the table (Fig. 1-6). After a few seconds without doing any operation the circulator memorises the selected mode and goes back to operation display.

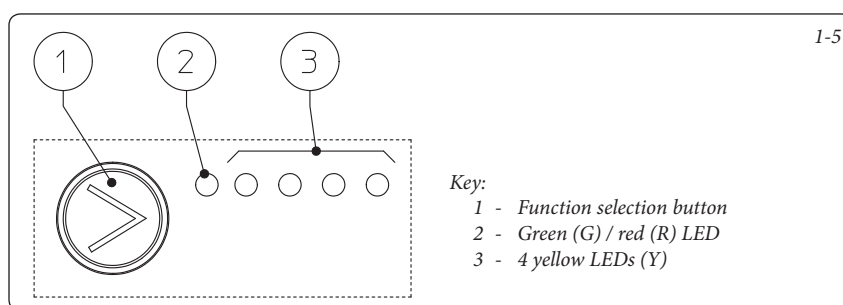
- Constant curve: the pump operates with a constant curve. The circulator working point will move up or down according to the system's demand.





















- PWM Profile: **do not use this operation mode.**





















**Selection button lock.** The button has a feature that locks its operation to prevent accidental modifications, to lock the control panel it is

necessary to press button (1) longer than 10 seconds (during which the current configuration flashes), the active lock is signalled by all LEDs of the control panel flashing. To unlock the button press again longer than 10 seconds.

**Real time diagnostics:** in the event of malfunction the LEDs provide information on the circulator operation status, see table (Fig. 1-7):

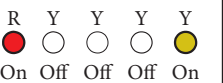

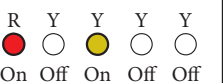


Circulating pump LED	Description
<div><div><div>G</div><div>Y</div><div>Y</div><div>Y</div><div>Y</div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div>On</div><div>On</div><div>On</div><div>Off</div><div>Off</div></div></div> <div>Constant curve speed 1</div>	
<div><div><div>G</div><div>Y</div><div>Y</div><div>Y</div><div>Y</div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div>On</div><div>On</div><div>On</div><div>On</div><div>Off</div></div></div> <div>Constant curve speed 2</div>	
<div><div><div>G</div><div>Y</div><div>Y</div><div>Y</div><div>Y</div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div>On</div><div>On</div><div>On</div><div>On</div><div>On</div></div></div> <div>Constant curve speed 3</div>	
<div><div><div>G</div><div>Y</div><div>Y</div><div>Y</div><div>Y</div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div>On</div><div>On</div><div>On</div><div>Off</div><div>On</div></div></div> <div>Constant curve speed 4 (default)</div>	

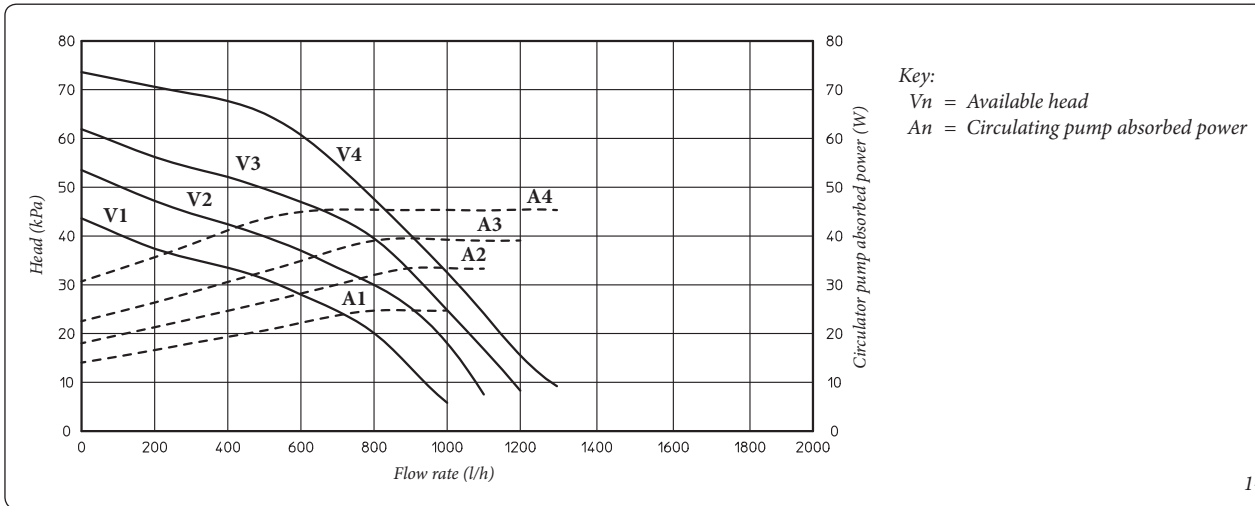
DO NOT USE					
Circulating pump LED			Description		
R	Y	Y	Y	Y	PWM Profile speed 1
					
On	Off	On	Off	Off	
R	Y	Y	Y	Y	PWM Profile speed 2
					
On	Off	On	On	Off	
R	Y	Y	Y	Y	PWM Profile speed 3
					
On	Off	On	On	On	
R	Y	Y	Y	Y	PWM Profile speed 4
					
On	Off	On	Off	On	

1-6

1-7

Circulating pump LED (first red LED)	Description	Diagnostics	Remedy
 On Off Off Off On	Circulator pump blocked	The circulator pump cannot restart automatically due to an anomaly	Wait for the circulator to make automatic release attempts or manually release the motor shaft acting on the screw in the centre of the head. If the anomaly persists replace the circulator.
 On Off Off On Off	Abnormal situation (the circulator continues operating). low power supply voltage	Voltage off range	Check power supply
 On Off On Off Off	Electrical fault (Circulator pump blocked)	The circulator is locked due to power supply too low or serious malfunction	Check the power supply, if the anomaly persists replace the circulator

## Solar circulation unit available head.



### 1.12 COMMISSIONING.

#### Preliminary checks on the solar system

Before filling the hydraulic circuit and starting the system, carry out the following checks:

- ensure that the declaration of conformity of installation of the solar system is supplied with the appliance;
- make sure the safety devices are included and are operating properly, particularly:
  - safety valve (6 bar)
  - expansion vessel
  - thermostatic mixing valve
- make sure there are no leaks in the hydraulic circuit;
- make sure there is an air vent valve positioned in the highest point of the circuit above the manifold and that it is operational.
- check connection to a 230V-50Hz power mains, correct L-N polarity and the earthing connection;
- Check that all the requirements relating to the boiler and the central heating circuit have been complied with, as described in the relative boiler instruction book.

If even only a single safety check offers a negative result, do not commission the system.

#### Expansion vessel factory-set pressure of the solar circuit hydraulic unit.

To compensate the high temperatures that can be reached by the liquid in the circuit and therefore its dilation, an expansion vessel has been fitted on the UB INOX SOLAR 200 ErP storage tank, with sufficient capacity to perform this task.

The expansion vessels are supplied factory-set at

2.5 bar. It is therefore necessary to charge them to the pressure necessary for the circuit.

The expansion vessel must be charged to:

**2 bar + 0.1 bar for every metre of the water column.**

“metre of the water column” means the vertical distance that is present between the expansion vessel and the solar manifold.

Example:

The circulation unit is found on the ground floor and the solar manifold is found on the roof at a hypothetical height of 6 m, the distance to be calculated is:

$$6 \text{ m} \times 0.1 \text{ bar} = 0.6 \text{ bar}$$

therefore the expansion vessel must be charged to:

$$2 + 0.6 = 2.6 \text{ bar}$$

#### Hydraulic unit safety valve.

There is a safety valve present on the hydraulic unit that protects the system from an excessive increase in pressure. This valve intervenes by discharging the liquid contained in the circuit when the pressure reaches 6 bar.

If the safety valve intervenes and therefore part of the liquid contained in the circuit is lost, it must be re-integrated.

### 1.13 FILLING THE SOLAR CIRCUIT SYSTEM.

The system can only be filled when:

- the system is completely assembled;
- any operational residues have been eliminated that may cause obstructions and deteriorate the features of the glycol over time;
- any presence of water in the system has been eliminated, which could otherwise cause damage to the system in winter;
- the absence of leaks has been verified by checks using air;
- the storage tank unit has been filled;
- the expansion vessel has been charged according to system requirements.

The system must be filled only using the glycol supplied by Immergas via an automatic pump. The system must be filled with vent valve closed. Proceed as follows to fill the system:

- 1 connect the flow pipe of the automatic pump to the fitting of the filling valve (9 Fig. 1-4) located under the pump and open the valve.
- 2 connect the return pipe of the automatic pump to the fitting of the draining valve (8 Fig. 1-4) and open the draining valve.
- 3 The flow-rate regulator screw (11 Fig. 1-4) must be orientated horizontally to ensure the closure of the integrated ball valve. Open the ball valve with thermometer (2 Fig. 1-4) above the pump.
- 4 Fill the filling pump tank with the amount of glycol necessary plus a minimum amount to be left on the bottom of the tank in order to prevent air circulating inside the circuit.
- 5 The filling stage must have a minimum duration of 20 ÷ 25 minutes. This time is required to completely remove all air from the circuit. Every now and again open the flow rate regulator adjustment screw in order to eliminate air from inside (vertical position).

- 6 Eliminate any air in the solar circuit preferably using the so-called "pressure shot" method, which consists in raising the filling pressure of the circuit followed by a quick opening of the return valve (8 Fig. 1-4). This method allows air to be expelled from the circuit.
- 7 Close the filling cock and switch the filling pump off, open the regulator screw of the flow rate regulator (notch in vertical position).
- 8 Leave the circuit pressurised. Any pressure drop indicates a leak in the system.

- 9 Set the functioning pressure in the circuit at 2.0 bar + 0.1 bar for every metre in the distance between the solar collector and the expansion vessel (practically, set the same pressure between expansion vessel and system).
- 10 Switch the solar pump on at a maximum speed and make it run for at least 15 minutes.
- 11 Disconnect the filling pump and close the fittings using the relevant screw caps.
- 12 Open the ball valve above the pump completely.











**Do not fill the system in conditions with strong insolation and with the manifolds at high temperatures.**

**Make sure that all air bubbles have been completely eliminated.**





#### 1.14 SOLAR CONTROL UNIT USER INSTRUCTIONS.

The solar control unit user information are described successively.

#### Description of display.







Symbol	State	Description
	Flashing	Solar pump functioning
	On	Boiler burner enabled
	On	Communication with boiler active
	Flashing	Anomaly present
	On	Solar collector temperature sufficient for functioning
	Flashing	Anti-freeze function active
	On	Digit to display the temperatures, parameters and values.
	On	Probe active S1 - DHW inhibition probe (NTC) S2 - Solar storage tank probe (NTC) S3 - Solar collector probe (PT1000)
	On	Indicates the presence of the storage tank
	On	Indicates the presence of solar panel/s



#### Description of the control panel.


Symbol	Description
	Control unit switch-on - switch-off/Return to previous menu
	Parameter/next value selection
	Parameter/previous value selection
	Access to the parameters/system info/value confirmation

#### • Programming the functions.

Access to the board parameters menu is given through the buttons present on the control unit. To access the parameters menu and modify a value necessary:

- Press and hold the  key for 10 seconds. (access to the menu)
- Scroll to the parameter to be modified by pressing the  and  buttons.
- Press the  key and then   to modify the value of the parameter selected.

- Select the value and press the  key to confirm. Otherwise, press  to exit. In this case, the value set will not be memorised, but the previous one will be kept.

- To exit the parameter menu, press the  button once or wait 60 seconds without pressing any keys.

# List and description of parameters available.

The board has 34 parameters.

The parameters that go from 1 to 11 is simple information and cannot be modified.

N° Parameter	Description of the Parameter	Values Field	Default
1	Software Version	1÷99	10
2	Current temperature S1: NTC sensor (°C)	0÷120	--
3	Current temperature S2: NTC sensor (°C)	0÷120	--
4	Current temperature S3: PT1000 sensor (°C)	0÷170	--
5	Current temperature S4: PT1000 sensor (°C)	0÷170	--
6	Maximum temperature S1 (with period of 24 hours starting from their last switch-on of the device from OFF mode): NTC sensor (°C)	0÷120	--
7	Maximum temperature S2 (with period of 24 hours starting from their last switch-on of the device from OFF mode): NTC sensor (°C)	0÷120	--
8	Maximum temperature S3 (with period of 24 hours starting from their last switch-on of the device from OFF mode): PT1000 sensor (°C)	0÷170	--
9	Maximum temperature S4 (with period of 24 hours starting from their last switch-on of the device from OFF mode): PT1000 sensor (°C)	0÷170	--
10	Current modulating pump speed (Vel.1=40% ÷ Vel.5=100%)	0÷100%	--
11	System functioning hours timer	--	--
12	Value of the Δflow - return solar collector temperature differential for solar pump switch/on (in presence of return probe)	5÷30°C	10°C
13	Value of the temperature differential for the modulation of the solar pump (for speeds 1 and 2)	5÷20°C	10°C
14	Value of the temperature differential for the modulation of the solar pump (for speeds 3, 4 and 5)	2÷10°C	5°C
15	Tank set-point (solar pump switch-off temperature)	60÷80°C	70°C
16	Value of the Δ solar collector flow - tank temperature differential for solar pump switch-on	3÷20°C *	5°C
17	Solar collector flow Maximum Temperature (°C)	90÷160°C	140°C
18	Tank Maximum Temperature (°C)	70÷95°C	80°C
19	Value of the temperature differential between the solar collector maximum temperature (PAR 17) and the solar collector temperature, above which the solar collector cooling function activates (Solar collector cooling function) (0=Function deactivated)	0÷20°C	0
20	Diverter functioning (0 = Off, 1 = Auto, 2 = On)	0 ÷ 2	1
21	Value of the Δ flow - return temperature differential below which the collector is recognised as cold (Cold solar collector recognition func.)	0÷10°C	5°C
22	Value of the Δ collector flow - tank temperature differential for solar pump switch-off	1÷10°C *	3°C
23	Solar collector anti-freeze temperature value (see Solar collector anti-freeze func.) (0=Function deactivated, 1÷10°C=Protection temperature)	0÷10°C	0
24	Solar Pump functioning (0=On/Off, 1=Modulating, 2 = On, 3 = Off)	0÷3	0
25	Appliance configuration (stand alone=1, PLB-BUS=2, PLB-BUS remote control only=3)	1÷3	1
26	Selected system layout - <b>DO NOT MODIFY</b>	1÷6	6
27	System configuration (the range of values varies on the basis of the system selected)	1÷4	1
28	Priority logic (1= S1 has priority over S2 / 2= S2 has priority over S1)	1÷2	2
29	Thermostat insertion temperature (S1)	30÷90°C	30°C
30	Thermostat disconnection temperature (S1)	30÷90°C	30°C
31	DHW set	20÷60°C	45°C
32	Priority integration (0=Function deactivated)	0÷10°C	5°C
33	Parallel integration (0=Function deactivated)	0÷20°C	10°C
34	Solar pump functioning (0 = Off, 1 = Auto, 2 = On)	0 ÷ 2	1

\*=the range of parameters 16 and 22 is dynamic, it is not allowed to set a Δ between these two parameters lower than 2.

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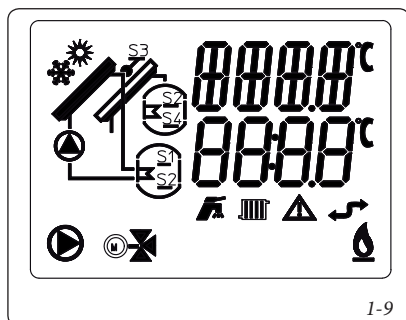
USER

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### • Use and operation.

#### - Start-up display.

Every time power is supplied to the appliance, the display will activate all symbols for 2 seconds:



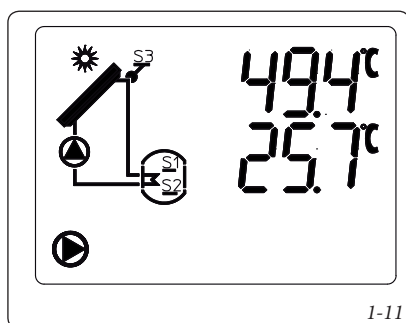
1-9

while in the next 5 seconds, the display will indicate the board software version:



1-10

After which, the following information regarding the type of system will be displayed, the temperature of the solar collector (1 ÷ 170°C upper digit) and the temperature of the storage tank probe (1 ÷ 125°C lower digit):



1-11

### • Functioning.

For the description of the parameters, refer to the table in the previous paragraph

- **OFF mode.** By pressing the (OFF) key for 3 seconds, the appliance switches to off mode (also in the event of anomalies). In this way, it is not operational and the display shows off. Only the anti-freeze protection and the pump anti-block remain active.

### - Solar pump functioning.

The pump activates and deactivates automatically when it is set in On/Off mode.

**Activation:** the solar pump will be activated by the board if the following conditions occur at the same time:

T tank < PAR15 – PAR16

and

Solar collector T - tank T > PAR16

**Disabling:** the board disables the solar pump if one of the following conditions occurs:

Tank T > PAR 15

or

Solar collector T < tank T + PAR 22

**Manual mode:** the pump can be set in On mode (always on) or Off mode (always off). In the event of manual setting, the protection functions are inhibited.

- **Solar manifold cooling function.** This function is used to manage the pump in the event of overheating of the solar panel according to the following table:

Description	Condition
Solar pump activation	PAR 15 < tank T < PAR 18 + Solar collector T > PAR 17 - PAR 19
Solar pump deactivation	Solar collector T (PAR 17 - PAR 19) -1°C or Tank T ≥ PAR 18 +1°C or Solar collector T > PAR 17 (reactivates with solar collector T < PAR17 -1°C)

With parameter 19=0, the solar collector cooling function is deactivated; the following conditions remain active:

Solar collector T > PAR17 => Solar pump off  
Solar collector T < PAR17- 1°C => Solar pump on

- **Cold solar manifold recognition function.** The board will disable the solar pump (present only with return probe) when:

Solar collector T- solar collector return T < PAR 21

- **Solar manifold anti-freeze function.** The Solar Pump activates when:

Solar collector T < PAR 23

The board will not deactivate the solar pump until:

Solar collector T > PAR 23 + 1°C

**Attention:** the default anti-freeze function is disabled PAR 23=0

- **Solar pump anti-block function.** After 24 hours of inactivity, the system pumps are activated for 3 seconds.
- **Diverter valve anti-block function.** After 24 hours of inactivity, the diverter valve will be activated for 5 seconds (in systems fitted with the diverter valve).

- **Priority solar function.** The function is active when:

DHW inhibition probe T (PAR 31 - PAR 33) < DHW set (parallel integration)

DHW inhibition probe T (PAR 31 - PAR 33) < DHW set (priority integration) and solar loading pump in off for a time > 5 minutes

### • Anomalies.

The following table describes the possible anomalous conditions that will be displayed on the basis of the system ration selected.

The possible functioning error conditions are displayed on the user interface display.

If an anomaly should occur, the (A) symbol starts to flash as well as the back light (anomaly). If a no communication anomaly should occur, the (A) + (S) symbols start to flash as well as the back light (communication anomaly).

Description of anomaly	Fault code
S1 NTC sensor fault	81
S2 NTC sensor fault	82
S3 T1000 sensor fault	83
Solar pump off	87

- **Anomaly 81 NTC Sensor faulty:** the sensor fault, i.e. a short circuit or open circuit, disables the Solar Pump (active system protection). The protection is deactivated immediately when this fault is resolved.

- **Anomaly 82 NTC Sensor faulty:** the sensor fault, i.e. a short circuit or open circuit, disables the Solar Pump (active system protection). The protection is deactivated immediately when this fault is resolved.

- **Anomaly 83 PT1000 Sensor faulty:** the sensor fault, i.e. a short circuit or open circuit, disables the Solar Pump (active system protection). The protection is deactivated immediately when this fault is resolved.

- **Solar pump Off:** the solar control unit indicates that the solar pump is in forced Off mode (parameter 24).

### • Technical data.

Power Supply:.....230 Vac + 10% ÷ 15%

Frequency:.....50 Hz ±5%

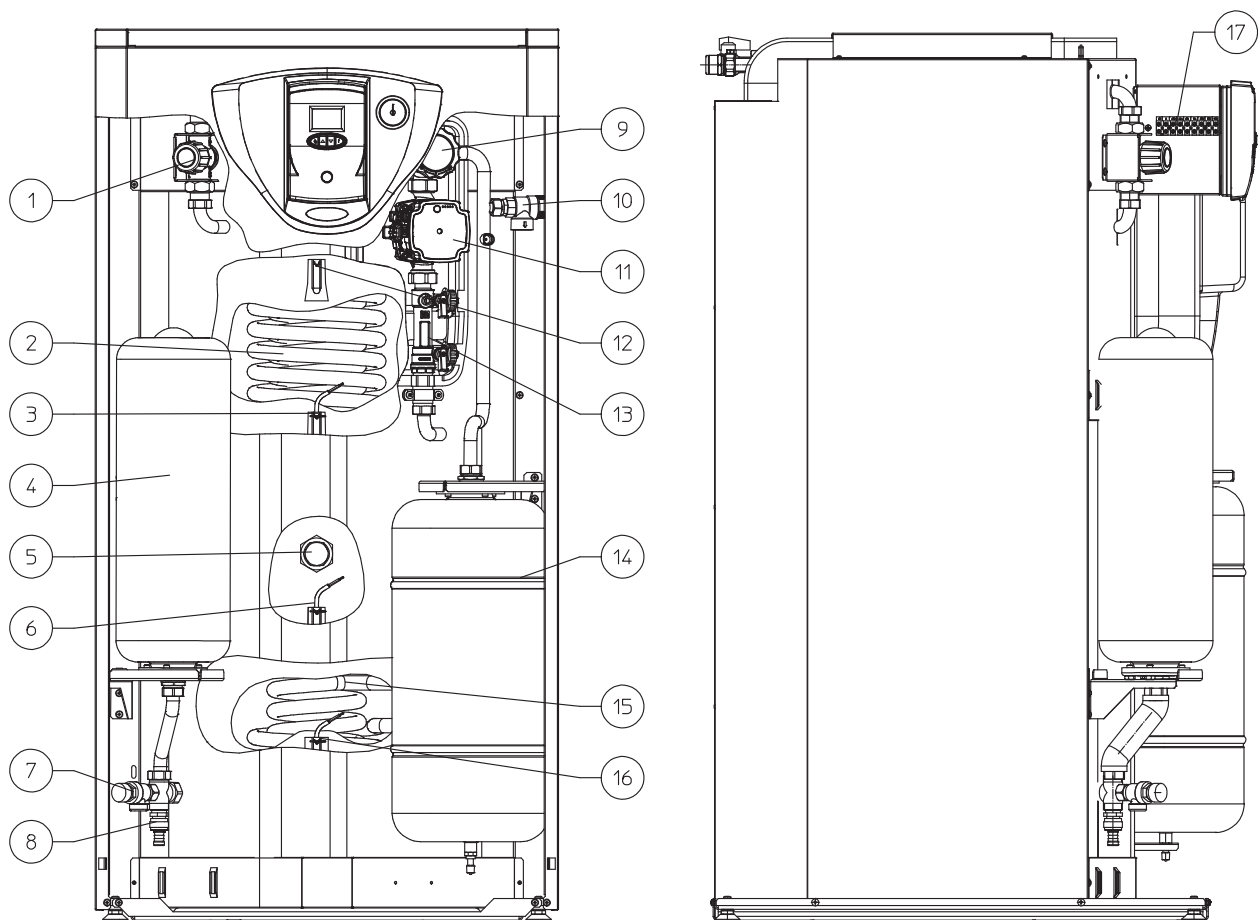
Mains (PF1):.....3.15 AF (rapid) 5x20

Free contact outputs:.....5A 30 Vdc relay,

10 A 250 Vdc

(Maximum charge allowed: 0.25 A 230 Vac)

## 1.15 MAIN COMPONENTS.



### Key:

- 1 - Domestic hot water circuit mixing valve
- 2 - Stainless steel coil for storage tank
- 3 - Domestic hot water probe
- 4 - D.H.W. expansion vessel
- 5 - Magnesium anode
- 6 - Domestic hot water unabling probe
- 7 - 8 bar safety valve
- 8 - Storage tank unit draining valve
- 9 - Shut-off valve with thermometer
- 10 - 6 bar safety valve
- 11 - Solar pump

- 12 - Thermometer probe
- 13 - Flow meter
- 14 - Solar expansion vessel
- 15 - Stainless steel coil that can be coupled to solar panels
- 16 - Solar panel probe
- 17 - Storage tank electric connections terminal board

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## 1.16 KITS AVAILABLE ON REQUEST.

- Recirculation kit (on request). The storage tank unit is prepared for application of the pump kit. Immergas supplies a series of fittings and attachments that allow connection between the storage tank unit and domestic hot water system. The pump kit attachment is also envisioned on the template.
- Electronic anode kit (on request). Direct current is made to circulate between the device and the tank to be protected via a special titanium anode. Use the free fitting on the storage tank supplier flange for installation of the anode.

The above-mentioned kits are supplied complete with instructions for assembly and use.

## 2 USE AND MAINTENANCE INSTRUCTIONS

### 2.1 CLEANING AND MAINTENANCE.

**Attention:** to preserve integrity of the storage tank unit and keep the safety features, performance and reliability, which distinguish it, unchanged over time, you must at least execute maintenance operations on a yearly basis in compliance with what is stated in the relative point at “annual check and maintenance of the appliance”, in compliance with national, regional, or local standards in force. Annual maintenance is essential to validate the Immergas warranty. We recommend stipulating a yearly cleaning and maintenance contract with an authorised local firm.

### 2.2 EMPTYING THE STORAGE TANK UNIT.

To drain the storage tank, use the special draining valve in the lower part of the storage tank (Fig. 1-12 part. 8).

Before draining, ensure that the DHW inlet valve is closed.

### 2.3 CLEANING THE CASE.

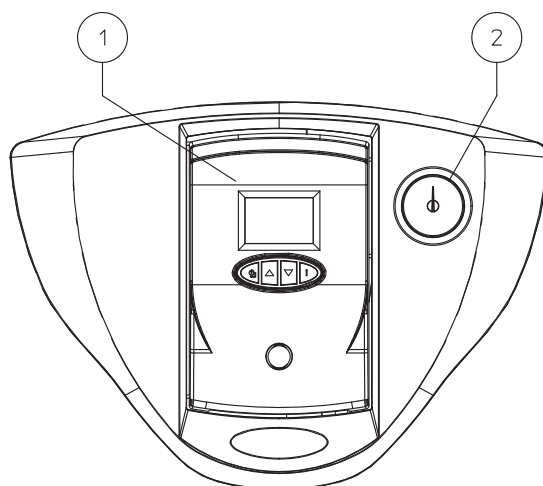
Use damp cloths and neutral detergent to clean the storage tank casing. Never use abrasive or powder detergents.

### 2.4 DECOMMISSIONING.

In the event of decommissioning the storage tank, contact an authorised company for the relative operations, among other things making sure that water supply is disconnected.

At the end of its service life the appliance must not be disposed of like normal household waste nor abandoned in the environment, but must be removed by a professionally authorised company. Contact the manufacturer for disposal instructions.

### 2.5 CONTROL PANEL.

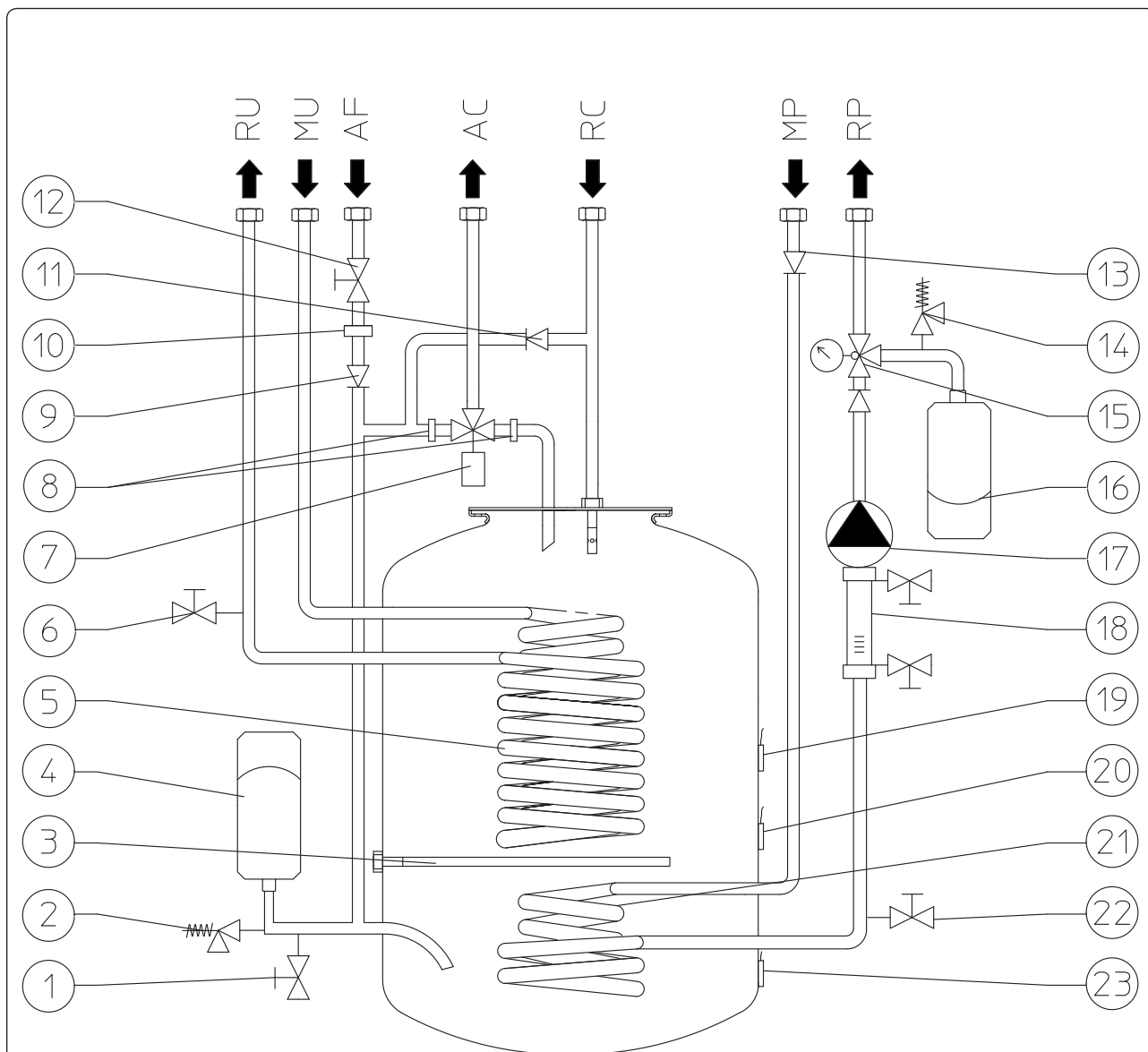


Key:  
1 - Solar control unit  
2 - Solar manometer

2-1

### 3 CHECKS AND MAINTENANCE

#### 3.1 HYDRAULIC DIAGRAM.



#### Key:

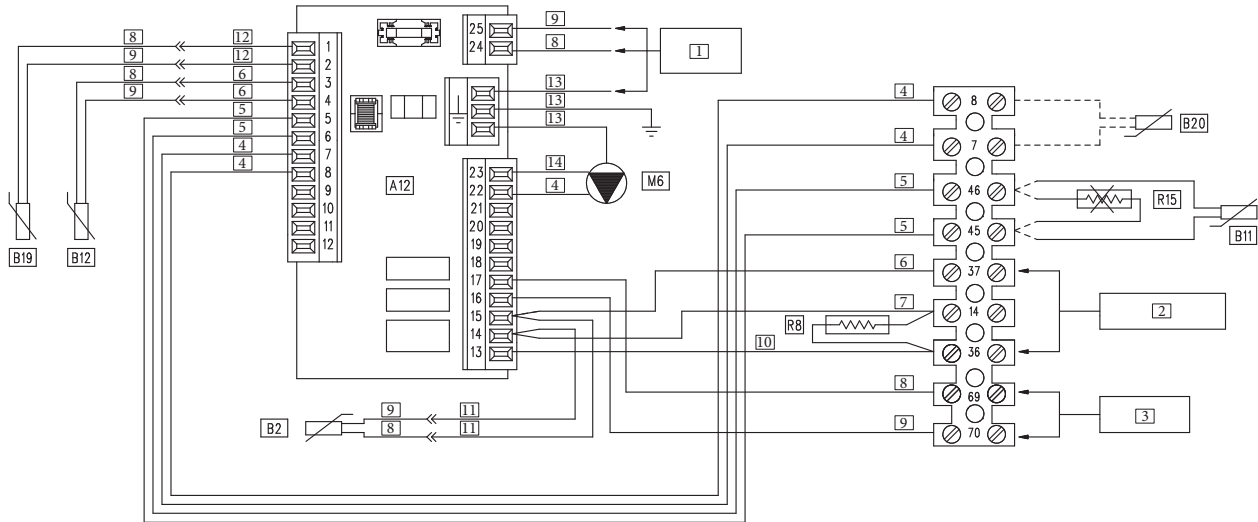
- |   |   |
|---|---|
| 1 - Storage tank unit draining valve        | 16 - Solar expansion vessel                                   |
| 2 - 8 bar safety valve                      | 17 - Solar pump   |
| 3 - Magnesium anode                         | 18 - Flow meter   |
| 4 - D.H.W. expansion vessel                 | 19 - Domestic hot water probe                                 |
| 5 - Stainless steel coil for storage tank   | 20 - Domestic hot water unabling probe                        |
| 6 - System draining valve                   | 21 - Stainless steel coil that can be coupled to solar panels |
| 7 - Domestic hot water circuit mixing valve | 22 - Solar system draining valve                              |
| 8 - Mixing valve filter                     | 23 - Solar panel probe  |
| 9 - One-way valve (OV 20)                   |   |
| 10 - Cold water inlet filter                | AC - Domestic hot water outlet                                |
| 11 - One-way valve (OV 15) (Optional)       | RC - Recirculation (Optional)                                 |
| 12 - Cold water inlet cock                  | AF - Domestic cold water inlet                                |
| 13 - One-way solar valve                    | MU - Flow to boiler unit                                      |
| 14 - 6 bar safety valve                     | RU - Return from storage tank unit                            |
| 15 - Shut-off valve with thermometer        | MP - Flow from solar panels                                   |
|   | RP - Return to solar panels                                   |

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### 3.2 WIRING DIAGRAM.



**Key:**

- A12 - Solar management control unit
- B2 - Domestic hot water probe (NTC)
- B11 - Solar manifold probe (PT1000)
- B12 - Solar storage tank probe (NTC)
- B19 - DHW inhibition probe (NTC)
- B20 - Solar manifold return probe (PT1000) (Optional)
- M6 - Solar circuit circulator
- R8 - Storage tank function unabling resistance
- R15 - Solar manifold probe unabling resistance

- 1 - Supply voltage 230 Vac 50 Hz
- 2 - Boiler clamps 36 and 37
- 3 - Domestic hot water integration
- 4 - Black
- 5 - White
- 6 - Green
- 7 - Orange
- 8 - Blue
- 9 - Brown
- 10 - Purple
- 11 - Red
- 12 - Yellow
- 13 - Yellow/green
- 14 - Grey

3-2

The solar collector probe (B11) must be connected to clamps 45 and 46 eliminating the resistance R15.

### 3.3 YEARLY APPLIANCE CHECK AND MAINTENANCE.

The following checks and maintenance should be performed at least once a year.

- Check for water leaks or oxidation from/on the fittings;
- Check that the safety and control devices have not been tampered with and in particular, the DHW regulation NTC probe;
- Check the integrity of the storage tank Magnesium anode;
- Check the state of the internal coil;
- Check for any slurry deposits on the bottom of the storage tank.

### 3.4 REMOVING THE CASING.

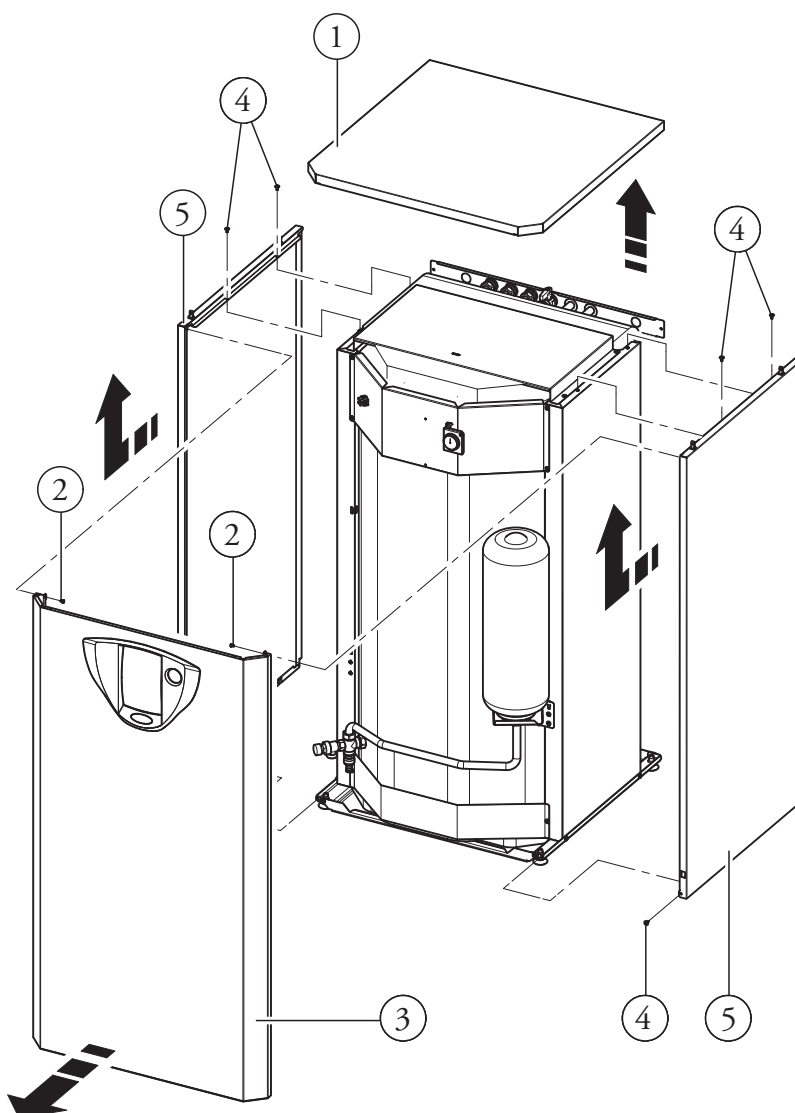
To facilitate storage tank maintenance, the casing can be completely removed as follows:

**IMPORTANT NOTE:** the procedure for removing the casing is the same for all storage tank unit models.

- remove the lid (1) by pulling it upwards;
- undo the screws (2) and pull the front panel outwards (3);
- undo the screws (4) of the sides (5) on the top and in the lower part of the sides themselves. After having released them from the screws, they can be removed by pulling them forward and then upwards.

### 3.5 REPLACING THE ANODE.

The magnesium anode must be replaced annually (Fig. 1-12 part. 5), present in the storage tank, must be replaced every year with another having the same features.

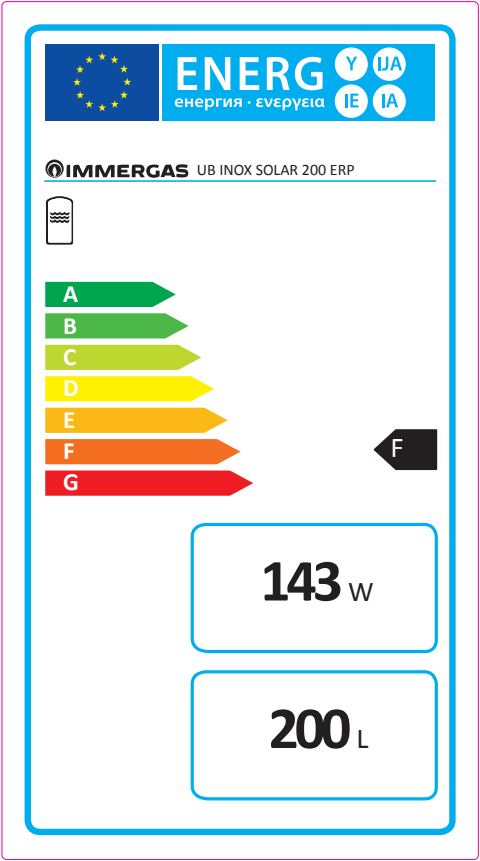


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## 3.6 TECHNICAL SPECIFICATIONS.

Storage tank useful capacity	l	200
Domestic hot water side maximum pressure	bar	8
DHW side maximum temperature	°C	99
Domestic hot water expansion vessel total volume	l	4.3
Dispersions	kW/24h	3.42
P <sub>bsol</sub>	W/K	3.17
Coil thickness	mm	0.8
Solar coil length	mm	6500
CH coil length	mm	10700
Solar coil exchange surface	m <sup>2</sup>	0.41
CH coil exchange surface	m <sup>2</sup>	0.67
Solar coil capacity	l	1.73
CH coil capacity	l	2.84
CH/solar primary fluid flow rate (coil)	l/h	1140 / 1140
Coil head loss at 1000 l/h	kPa (m H <sub>2</sub> O)	12.3 (1.25)
Central heating side maximum pressure	bar	6
Central heating side maximum temperature	°C	90
Solar heat exchange maximum output	kW	23.8
CH heat exchange maximum output	kW	26.5
Full weight	kg	310.67
Empty weight	kg	106.1
Total water content	l	204.57
Solar circuit maximum pressure	bar	6
Total volume solar expansion vessel	l	18
Solar expansion vessel pre-charge	bar	2.5
Content of glycoled water in the solar circuit	l	3.7
Power absorbed by the solar pump	W	36
EEI	-	≤ 0,20 - Part. 3
Equipment electrical system protection	-	IPX0D
Max. solar pump head	m c.a.	6
Solar circuit maximum peak temperature	°C	150
Solar circuit maximum continuous working temperature	°C	130

3.7 PRODUCT SHEET (IN COMPLIANCE WITH REGULATION 812/2013).



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