

### **8.0. MAINTENANCE, CLEANING AND GUARANTEE**

As required (depending of the water quality) the hot water heater have to be checked and cleaned from scale and the sediment. At STEB-200 and STEB-300 the opening for cleaning is situated on the lower foundation of the hot water heater while at STEB-600 the opening for cleaning is situated behind the console of the control panel. With opening of the control panel console is allowed the access to electric parts of the hot water heater (control panel), and also to electric heater and sensor of the solar hot water heater. Before any opening and cleaning of the hot water heater it is obligatory to switch off the power supply. We recommend the cleaning and service to be done by a qualified person.

Guarantee rights are included in the guarantee conditions of the guarantee.



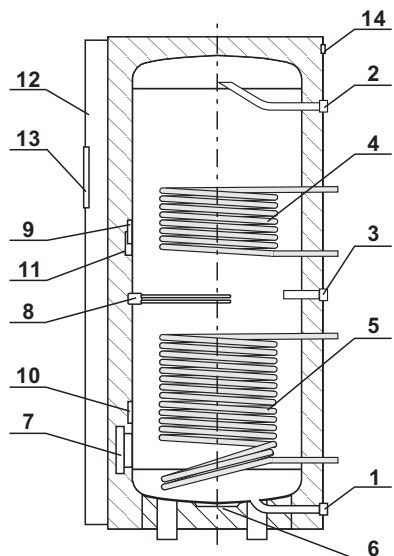
## **TECHNICAL MANUAL**

Installation, use and maintenance  
of solar water heater



**STEB**

Picture 1. - STEB - basic parts



1. Cold sanitary water supply
2. Hot sanitary water backflow
3. Circulation line
4. Boiler tube heat exchanger
5. Solar tube heat exchanger
6. Opening for cleaning (STEB-200, STEB-300)
7. Opening for cleaning (STEB-600)
8. Electric heaters
9. Place for the sensor (Tsprem1g) - sanitary water temperature - boiler circuit
10. Place for the sensor (Tsprem1d) - solar circuit
11. Safety thermostat
12. Console of the control panel
13. Digital regulation with ordinary terminal
14. Rubber wire introducer

**TECHNICAL DATA**

SOLAR WATER HEATER TYPE		STEB-200	STEB-300	STEB-600
Volumen	(lit.)	200	300	600
Height C	(mm)	1400	1890	2005
Width B	(mm)	585	645	815
Depth A	(mm)	710	765	935
Boiler heat exchanger	(m <sup>2</sup> )	0,4	0,5	0,8
Solar heat exchanger	(m <sup>2</sup> )	1,01	1,18	1,78
Cold sanitary water supply <sup>*1</sup>	(R")	3/4	3/4	3/4
Hot sanitary water backflow <sup>*1</sup>	(R")	3/4	3/4	3/4
Circulation <sup>*1</sup>	(R")	3/4	3/4	3/4
Heat exchanger connectors <sup>*2</sup>	(R")	3/4	1	1
El. heaters	(W)	2000	3000	2x2000

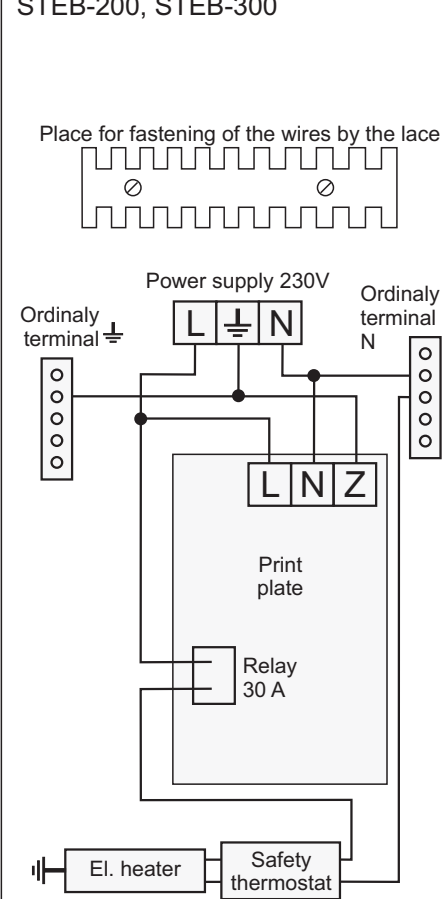
\*1 Inner thread.

\*2 Outer thread-hermetto coupling φ 22-3/4" for STEB-200, φ 28-1" for STEB-300 and STEB-600.

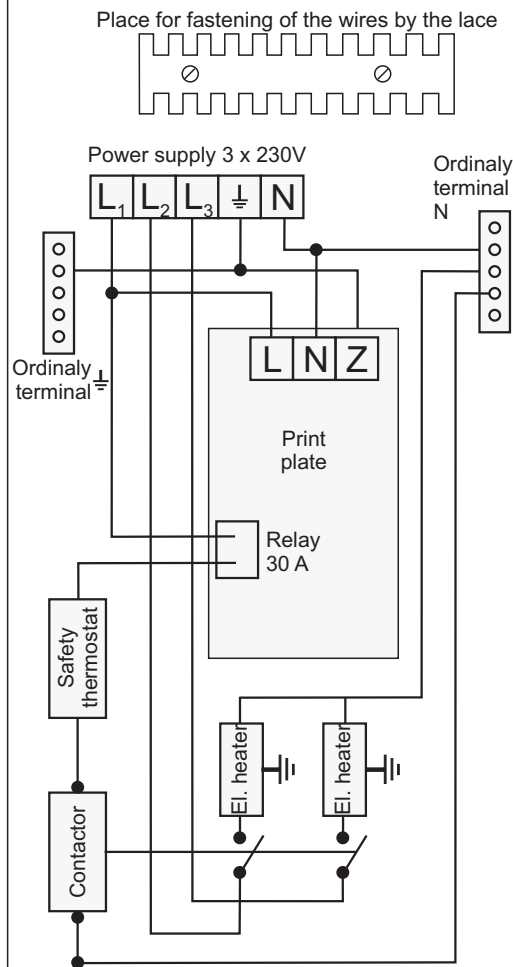
**7.0. ELECTRIC CONNECTION**

All electric operation must be done with respect to valid technical norms by a qualified person. The description of the electric installation is shown on the scheme 3 and 4. The power supply of the hot water heater is perform with the connection of the PGP conductor 2,5 mm, by the fix joint on the electrical network of the facility.

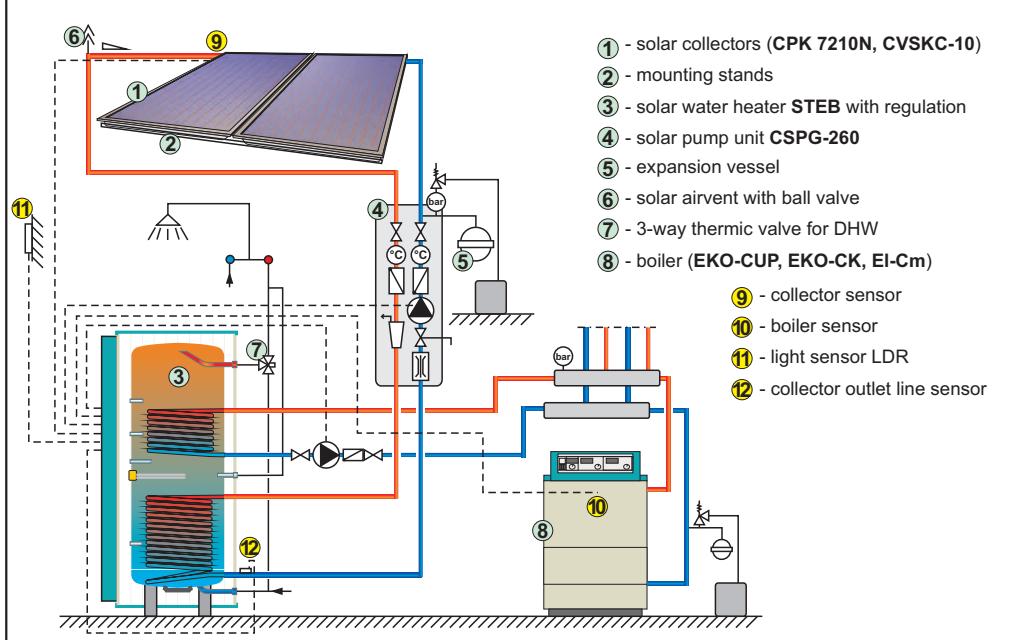
**Scheme 3.**  
Electric scheme  
STEB-200, STEB-300



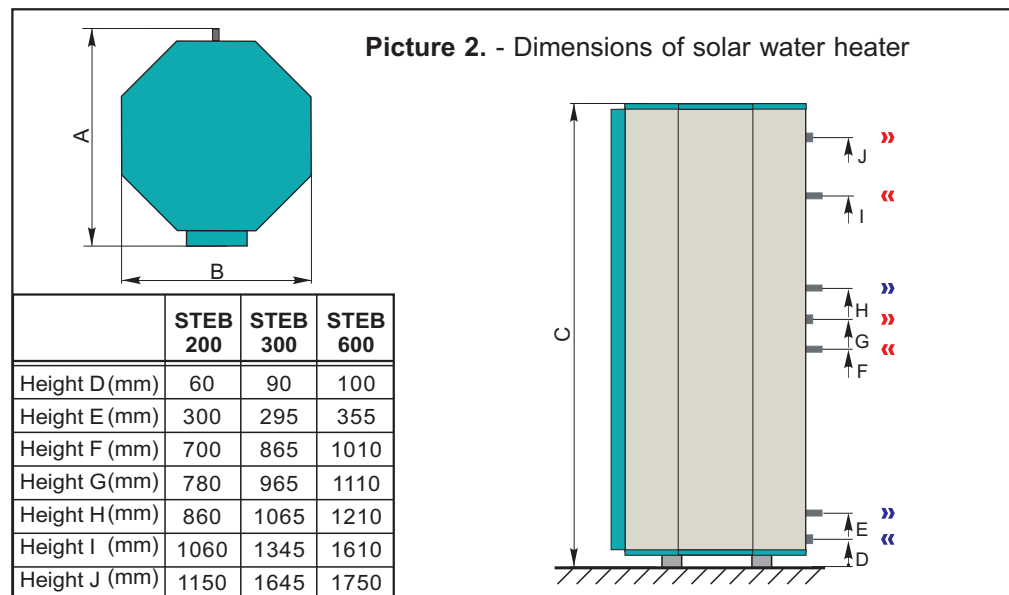
**Scheme 4. - Electric scheme STEB-600**



**Scheme 2. - Connection to the collector and boiler installation**

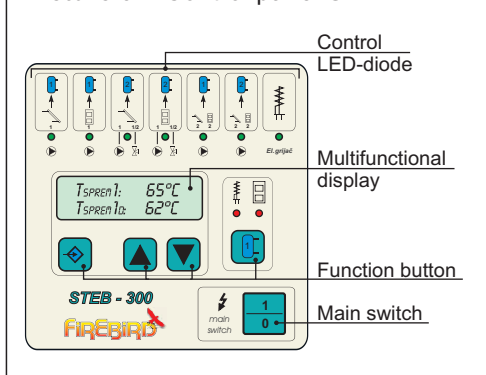


**Picture 2. - Dimensions of solar water heater**



**6.0. HOW THE REGULATION UNIT WORK**

**Picture 3. - Control panel STEB**



Detailly description how the regulation unit operate is described in solar regulation unit manual (it is placed in the console of the regulation panel).

On the picture 3. Is shown the solar regulation STEB with the basic parts:

- main switch
- function button
- multifunctional display
- control LED diode which indicate the momentarily status of the control panel operation.

**1.0. PRESENTATION**

The solar water heater STEB is manufactured with most modern welding technology, made from materials of great quality which assures high efficiency when using and guarantees the product quality. The water heater is manufactured from stainless steel and was tested under the probe pressure of 12 bar. The water heater has two inbuilt stainless steel heat exchanger coils, electric heaters and regulation. It is delivered together with thermal isolation of the mineral wool on the Al-folie covered with plastificated panneling.

By following the technical manual which indicate the construction, operation, connection and maintenance of the solar water heater STEB in order to assure a long life and proper operation conditions for Your water heater.

**2.0. USE**

Solar water heater is assigned for production of the hot sanitary water in households, craftmanships, and other areas where we would like to have bigger quantity of hot sanitary water.

The advantage of STEB is in using the different energy sources (sun, oil, gas, solid fuel, electrical...), possibility of producing a greater quantity of the hot water, rationally consumption energy sources (oil, gas, solid fuel, el. energy) great isolation and modern effecient construction base which all together give us the lower costs in insert energy on the one unit of the produced hot water.

Sanitary water is warming up with the sun energy by the solar collector which is connect to the lower heat tube exchanger, then with boiler water by the upper heat tube exchanger and with the electric heater. **Electric heater is not the main energy source.** It can be used only periodically, when all other energy sources momentary are not available.

On the front side of the water heater is placed the solar regulation with all elements which You need for the controlling, proper and safety operation of the water heater and economic exploiting of all disposal energy sources.

Connection of the electrical conductor (circulation pump, sensor for solar and boiler circle and electric current feed) is made through the opening on the back side of the water heater.

### 3.0. MOUNTING

Solar water heater STEB is anticipated for the installation on horizontal surfaces in a room which functionally replies for installation of products of that kind (boiler room, energetic station, etc.). With the water heater is delivered the boiler sensor, solar collector sensor with plastic hanger, thermal paste and lace, back flow collector sensor, light sensor LDR with the mounting equipment and hermetto couplings for the connection of the water heater on the installation. Factory adjust configuration of the solar system contain one collector circuit and one boiler circuit. In this case it is necessary to install collector sensor (into the foreseen place in the collector), boiler sensor (into the foreseen place in the boiler), sensor of the collector outlet line (as near as possible to the water heater, on the pipe of the exchanger from hot water heater to the collector), light sensor LDR (on the external wall of the house), which is shown on the scheme 2. If the realistic configuration is different from upper mentioned or is improperly installed or the certain sensor is not installed, the regulation will notify the error which need to be checked in the "Manual for the solar regulation STEB". For the proper installing and configuration of the solar regulation look at "Manual for the solar regulation STEB".

### 4.0. CONNECTION TO THE WATER SUPPLY SYSTEM (WATER INSTALLATION)

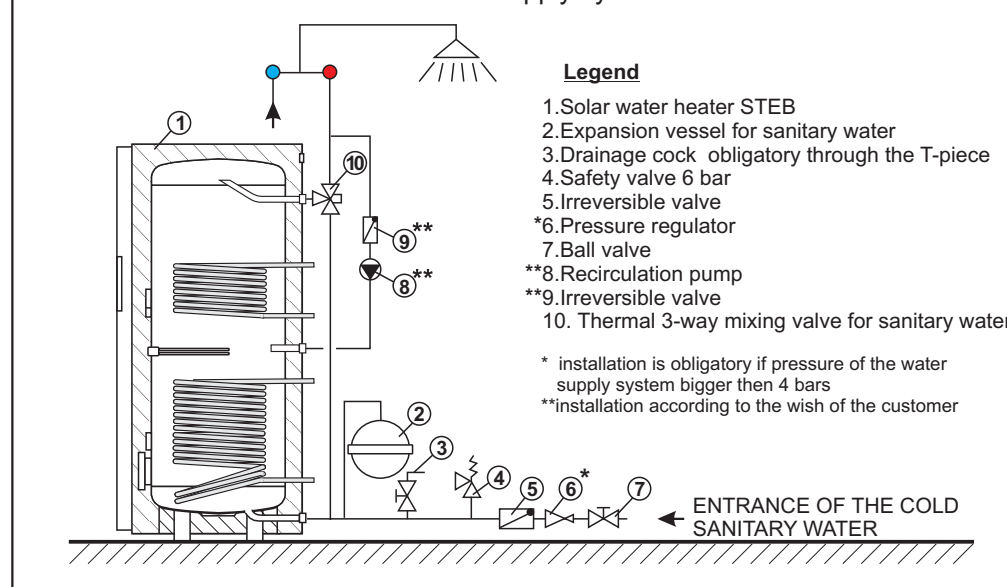
The connection of the solar water heater to the water supply system must be done with respect to valid technical norms by a qualified person (Scheme 1). The in line and backflow of the sanitary water on the connection pipes of the water heater (pipe tube 3/4"), is marked with blue sticker (in line of the cold water) and with red sticker (backflow of the hot sanitary water).

On the entrance of the cold sanitary water to the water heater, **it is obligatory to install:**

- expansion vessel for the sanitary water
- drainage cock for the water from the water heater (obligatory install it with the T-piece)
- the safety valve have to be certificate with the opening pressure 6 bar
- irreversible valve
- pressure reduction valve which decrease the pressure of the inlet cold sanitary water to the 4 bar (if its pressure is higher).

In order to have a longer operation life we recommend to install a water softener, especially in regions where is connection of the water heater with the city water pipe line ("hard" water and water with chlorine) and galvanized water tubes which have harmful effects on stainless steel materials. Connection of the circulation line (pipe tube 3/4") is placed between upper and lower heat tube exchanger mark with red sticker.

Scheme 1. - Connection to the water supply system



### 5.0. CONNECTION TO THE SOLAR AND BOILER INSTALLATION

On the scheme 2 we recommend the manner of the connection the water heater to the solar and boiler circuit for warming up the sanitary water.

Connection pipes of the tube heat exchangers are marked with red sticker (in line of the hot collector/boiler water) and with blue sticker (backflow of the cooled collector/boiler water). Connecting is done by the hermetto couplings, which are packed in the console of the regulation. Before the water heater starts to operate it is necessary to airvent both heating circuits (solar and boiler).

The collector sensor is a contact sensor and it has to be mounted in the tube which is placed at the exit of the hot water from the collector. If You dont have mounted our collector, the collector sensor is delivered with plastic handle with the lace and mounting manual for the mounting on the backflow pipe of the collector. The boiler sensor is also contact sensor and it has to be mounted in the tube which is placed in the boiler. Light sensor LDR has to be mounted on the wall, protected from the rain and direct sun (see mounting scheme), and it is obligatory not to mount it near the night lighting.

The sensor of the collector outlet line is contact sensor and need to be is installed as near to the boiler as possible on the pipe of the collector heat exchanger - pipe from the hot water heater to the collector (see scheme 2).

Connection of the collector and boiler sensors with the regulation is made with the conductor 2x0,5 mm<sup>2</sup>, **which must not be placed near the current electric feed conductor.** All other examples and possibilitys for the solar water heater connection on the installation can be seen in the solar regulation unit manual STEB.