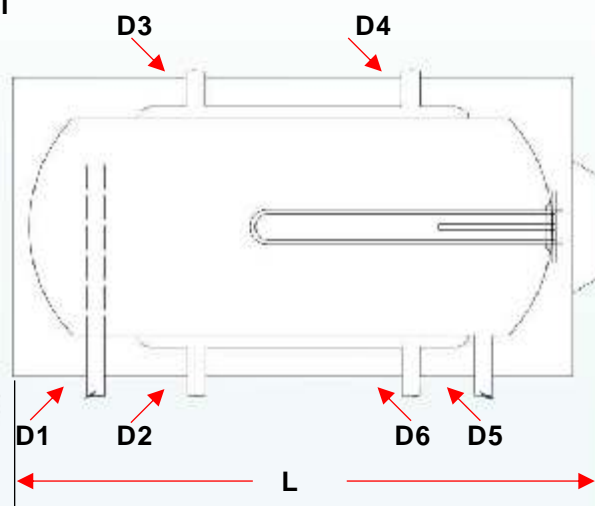


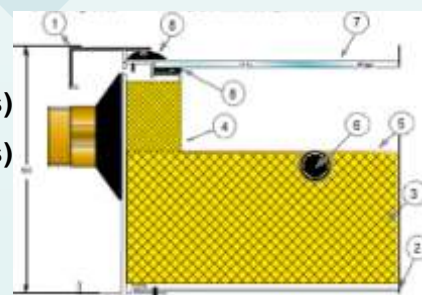
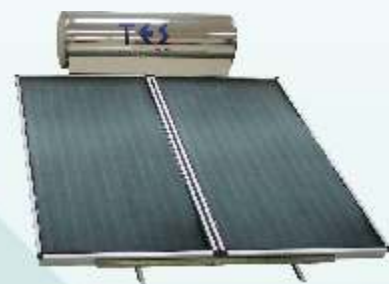
TECHNICAL SPECIFICATIONS OF THE SOLAR TANK

- External casing : Anodized aluminium or stainless steel
- Tank's insulation : Polyurethane foam 50mm
- Cylinder's material : Low carbon steel 2.5mm
- Jackets material : Low carbon steel 1.5mm
- Cylinder's internal Protection : TINANO
- Additional Protection : Magnesium rod
- Max working pressure : 1.2Mpa
- Test pressure : 1.7Mpa
- Electric resistance : Stainless steel or copper
- Thermostat : Bipolar of four contacts(20°C to 80°C)
- Power rate : Available from 0.8kw-4kw

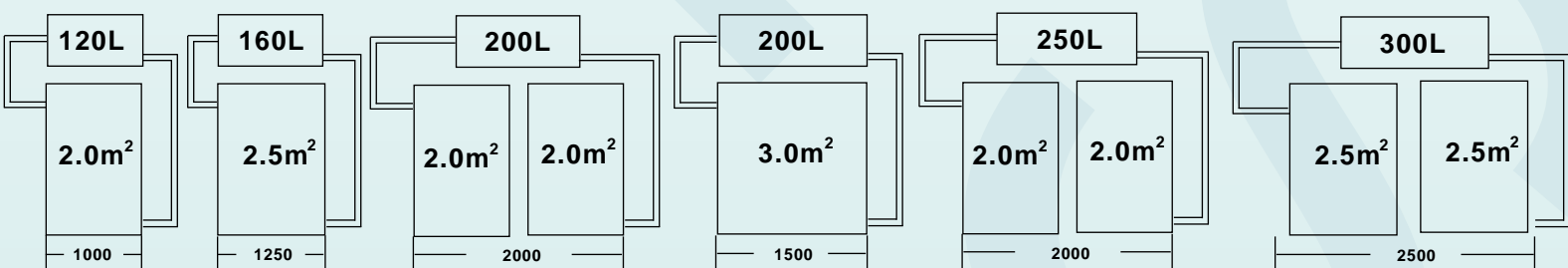


TECHNICAL SPECIFICATIONS OF THE SOLAR COLLECTOR

- External frame : Anodized aluminum profile
- Water-tightness : A)EPDM rubber
B)Transparent silicone
- Cover : Solar tempered glass or low iron glass
- Absorber : A unified sheet of copper or aluminum with blue selective/black paint or black chrome coating/ ultrasonic welding
- Absorbers tubes : Cooper pipes 8-10-15&22mm(risers and headers)
- Side insulation : Cooper pipes 8-10-15&22mm(risers and headers)
- Back insulation : Glass wool 50mm or rock wool
- Back side : Galvanized sheeting or aluminum



EXTERNAL DIMENSIONS-ALL MODELS



EXTERNAL DIMENSIONS-ALL MODELS

TES MODEL	STORAGE TANK		COLLECTOR				
	Dimensions Aluminum Mm	Dimensions Stainless Steel Mm	Dimensions Mm	Collectors	Surface M ²	Weight kg (Per Collector)	Pressure Test
TES-120	500X1015	500X1000	1500X1000X90	1	1.5 M ²	33	1.2Mpa
TES-160	500X1265	500X1270	2000x1250x90	1	2.5 M ²	55	1.2Mpa
TES-200	500X1460	500X1470	2000x1000x90	2	2x2.0 M ²	90	1.2Mpa
TES-200	500X1460	500X2000	2000x1500x90	1	3.0 M ²	66	1.2Mpa
TES-250	500X2000	500X2000	2000x1000x90	2	2x2.0 M ²	90	1.2Mpa
TES-300	500X2245	500X2245	2000x1500x90	2	2x2.5 M ²	110	1.2Mpa

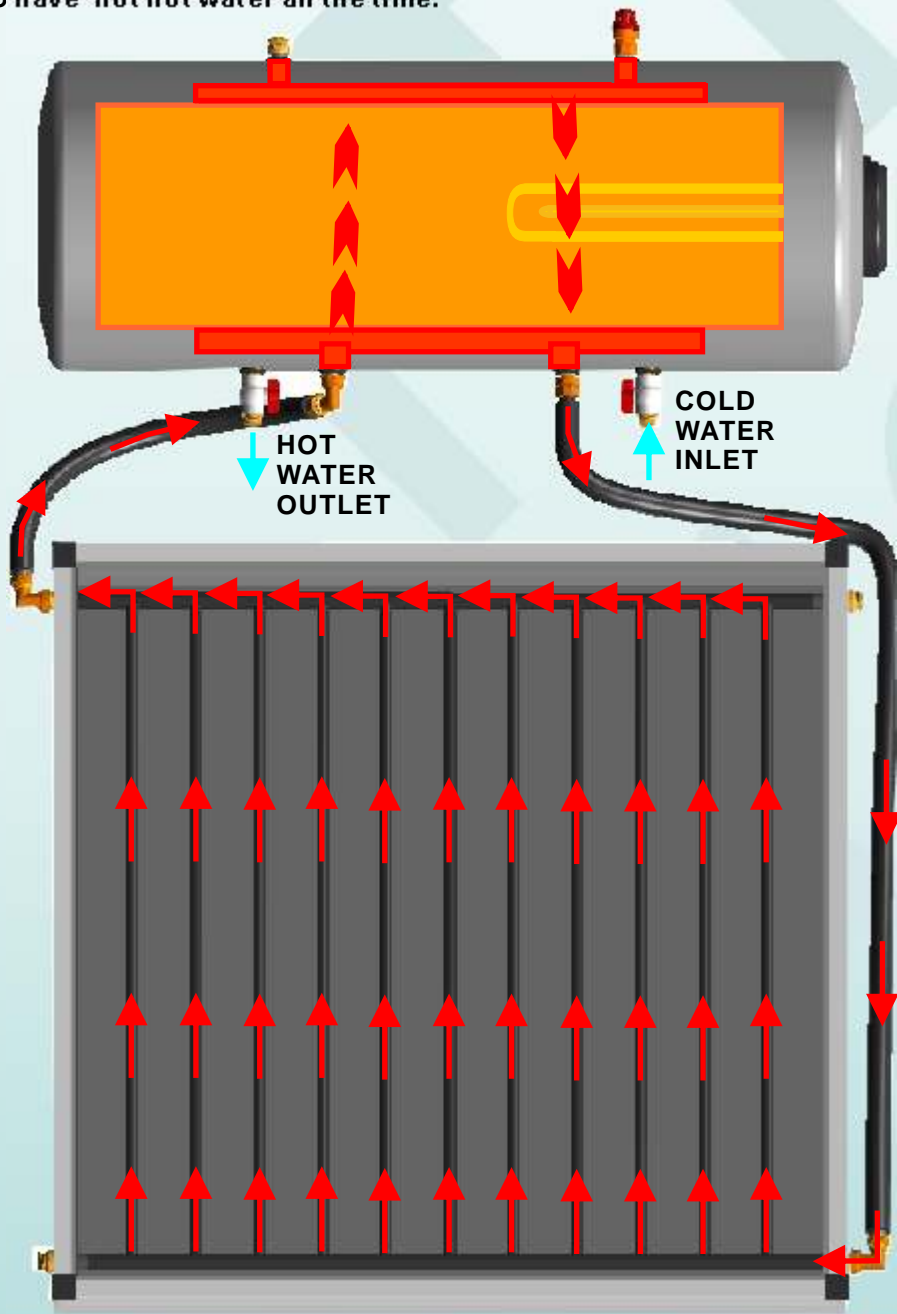
Note: The company reserves the right to change the specifications, without prior notice.

PACKING OF THE SOLAR WATER HEATER

- All TES appliances (storage tank, collector, support base and connection accessories) are delivered well packed to the customer.
- The storage tank is placed between two round styrofoam covers of 7 cm each, which are tightened on the storage tank with stretch film. Then it is placed in a hard carton pack, on which the indications of each model are displayed on the outside.
- The collector is packed with 4 plastic protective elbows, attached on each corner, which are fastened around the collector with a plastic strap (Upon special order, the collectors could be delivered in groups of 10 purchase on a wooden pallet).
- All the parts of the support base, the plastic bag with the connection fittings, the thermal fluid and other accessories are packed in a carton box, on which the indications of each model appear on the outside.
- The plastic bag contains all the connection fittings of each appliance like, screw, nuts for the support base, brackets, pipe unions, moly plugs, screw-nuts, safety valves, plugs and filling funnel of the thermal fluid.
- All the tubes of the storage tank and collectors are covered with plastic plugs, in order to protect their turns from striking during the transportation.

WHAT YOU SHOULD KNOW ABOUT THE TES SOLAR WATER HEATER

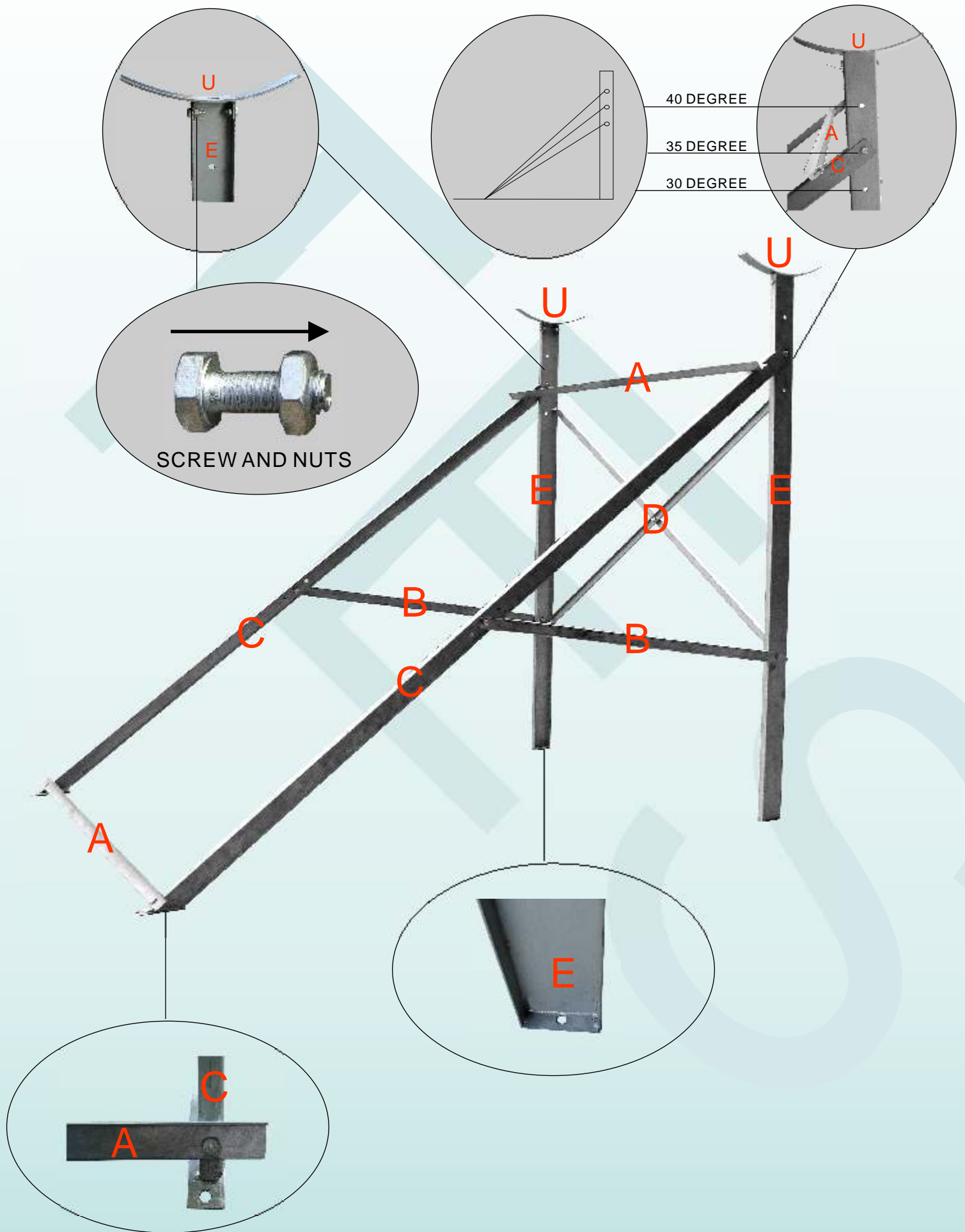
- The advanced technology's TES Solar water heater use a closed circuit of natural circulation. The special thermal fluid Used in the closed circuit, enhances the performance of the heater, protects it from the freeze and it prevents the salt scale deposition inside the tubes of the collector. The closed Circuit(Jacket) where the thermal fluid is circulating, is independent and does not communicate with water storage tank.
- It is very important to choose with the local representative of TES, the right size of the solar water heater, which will fulfil your needs.
- For a better choice of the appliance, the local climate conditions must be taken into a serious consideration, as well as your needs for hot water.
- The energy saving that you will have with the TES solar water heater, depends on the use of hot water, the use of the electric resistance and the local weather conditions under favourable weather conditions, the energy e saving may reach up to 100%. On sunny days, the power of solar radiation is greater between 10:30 am to 15:30pm. For this reason it better to schedule your heavy consumption of hot water(Washing machines etc) in the middle of the day.
- The energy saving that you will have with the TES solar water heater, depends on the use of hot water, the use of the electric resistance and the local weather conditions under favourable weather conditions, the energy saving may reach up to 100%. On sunny days, the power of solar radiation is greater between 10:30 am to 15:30pm.
- During days with low sunshine and low ambient temperature,we suggest you to turn on the electric resistance, in order to have not hot water all the time.



INSTALLATION INSTRUCTIONS:

- Before you start installing the solar water heater, please read carefully all the installation instructions stated and illustrated in this manual.
- Before the installation of the solar water heater, it is very important that customer and installer agree on all the details concerning the correct and safe installation of the appliance, such as location, placement-point, static resistance and control of the surface on which the appliance will be placed, piping and wiring run etc.
- The position you will choose for the installation of the solar water heater, should not be shaded by any obstacles (trees, buildings etc.) All around year.
- The installation should be done according to the electric and plumbing regulations applicable in your area.
- For optimum performance, the solar water heater must face the south, for countries located in northern hemisphere and north for countries located in the southern hemisphere. In case that it is not totally possible for the solar water heater to face the equator, you can turn it towards East up to 30 degree if major hot water draw is before 2pm, or towards West up to 30 degree if major hot water draw is after 2 pm. In both cases, the losses of the total annual solar contribution, is no more than 6%.
- If the solar water heater must be installed on a roof where the inclination is less than 15 degree or more than 32 degree, then a different the standard equipment of the support base must be used, similar to the one used for regions with typhoons, hurricanes and heavy winds.
- For the safer installation of the solar water heater on sloping roofs, it is necessary to install the support base in such a position so that the storage tank to be placed exactly over a roof timber and in no case way between two timbers.
- If the surface on which the solar water heater will be installed (sloping or flat) is not compatible with the standard equipment supplied with each appliance, then a different equipment must be used. The installer has to choose, propose and install this different equipment, always under the concurrent opinion of the customer.
- For installation on a sloping roof, the D plates must be screwed with the appropriate screws and nuts on the roof timber, in order to secure the right and safe installation of the solar water heater.
- In regions subject to heavy snowfalls, it is very important to ensure, that too much snow does not accumulate behind the storage tank, and to check if the supports of the standard equipment are good enough to withstand the weight of the expected snow. The same attention must be paid, for regions with the heavy winds and storms. In these cases, the storage tank must be placed in a stable way on the roof and must be tightened with the additional metal straps. It is absolutely necessary to use the typhoon set.
- The tubes of the solar water heater as well as the cold/hot water piping must be very well insulated.
- Special attention must be taken for the filling and connection of the closed circuit. Only experienced technicians can provide you with the connection and the filling. Before filling the closed circuit with thermal fluid, the storage tank must be completely filled with water.
- Before starting the installation of the solar water heater, you must read carefully all the instructions, described and illustrated in this manual.
- After you have finished the installation clean the area where all the work took place. Fill in the warranty with all the required details and have customer sign it.

Assembly diagram of the support base on a flat surface



LENGTHS OF THE SUPPORT BASE PLATES:

A=810MM FOR 120L-160L

A=1250MM FOR 200L-250L

A=1800MM FOR 300L

B=800MM FOR ALL MODELS

C=1660MM FOR 1.5 SQUARE METERS SOLAR COLLECTOR

C=2160MM FOR 2.0 SQUARE METERS SOLAR COLLECTOR

D=840MM FOR 120L-160L

D=1220MM FOR 200L-250L

D=1405MM FOR 300L

E=1200MM FOR 1.5 SQUARE METERS SOLAR COLLECTOR

F=2160MM FOR 2.0 SQUARE METERS SOLAR COLLECTOR

ASSEMBLY INSTRUCTIONS

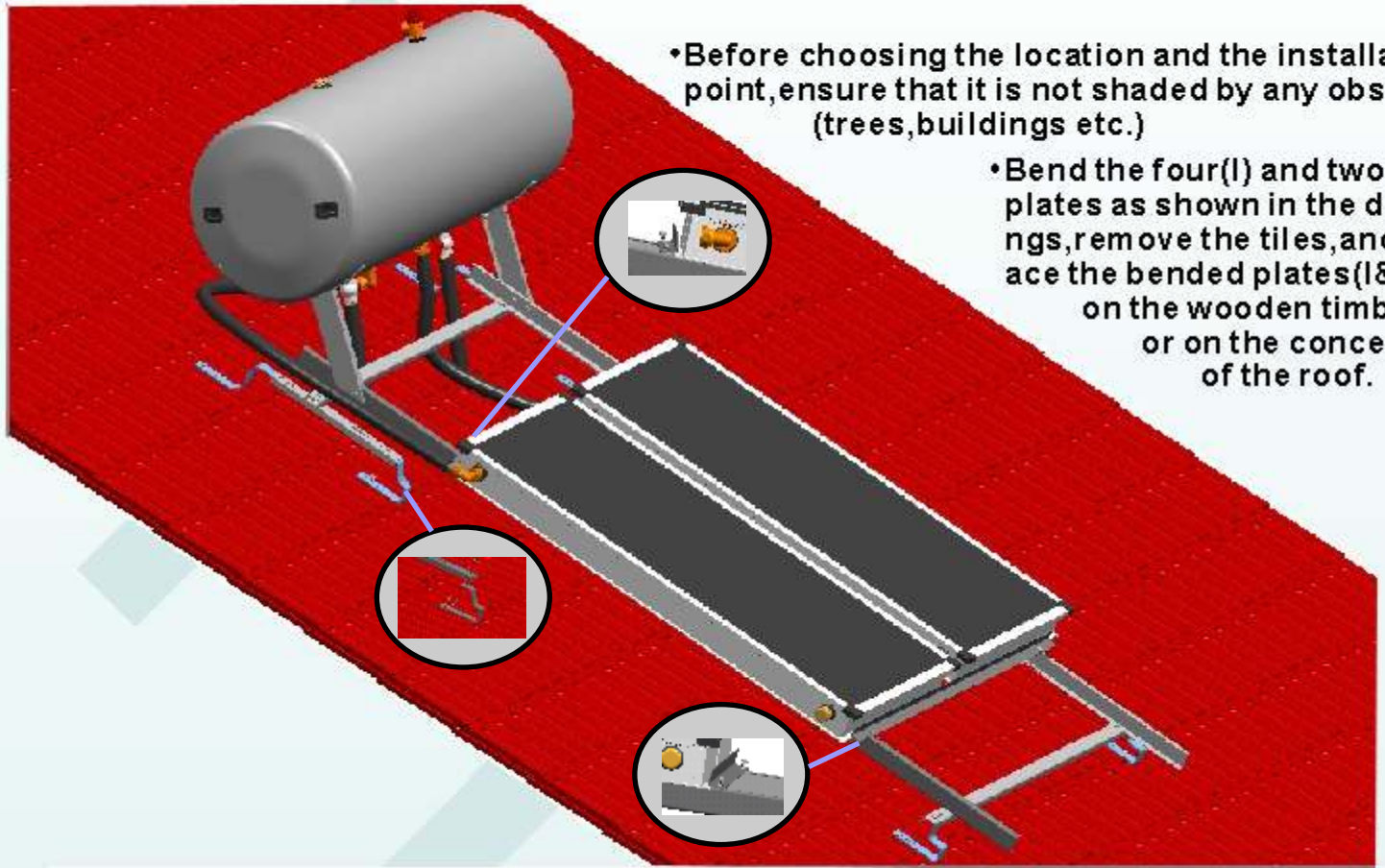
- Before choosing the location and the installation point, ensure that it is not shaded by any obstacle (trees, buildings etc.)
- Connect the plates A,B,C,D,E and U by screwing them tight as shown in the drawings

ATTENTION:

- Plumb the support base on the flat surface level. Place the collector(s), on the support base and then screw it with moly plugs and the screw nuts on the concrete, according to your countrys regulations.

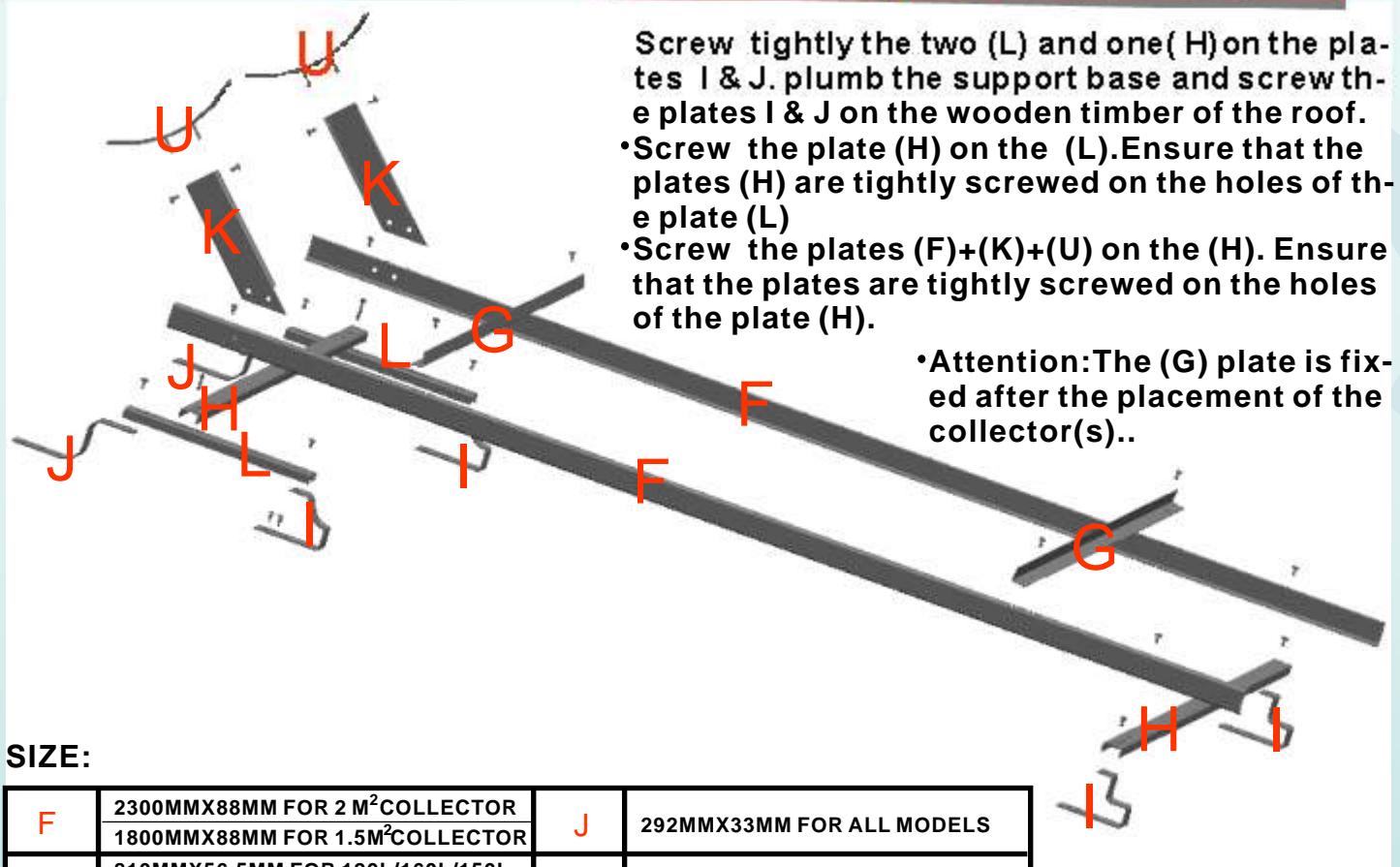
ASSEMBLY DIAGRAM OF THE SUPPORT BASE ON A SURFACE WITH MAXIMUM INCLINATION OF 32°

ASSEMBLY INSTRUCTIONS:



• Before choosing the location and the installation point, ensure that it is not shaded by any obstacle (trees, buildings etc.)

• Bend the four (I) and two (J) plates as shown in the drawings, remove the tiles, and place the bended plates (I&J) on the wooden timbers or on the concrete of the roof.



Screw tightly the two (L) and one (H) on the plates I & J. plumb the support base and screw the plates I & J on the wooden timber of the roof.

• Screw the plate (H) on the (L). Ensure that the plates (H) are tightly screwed on the holes of the plate (L)

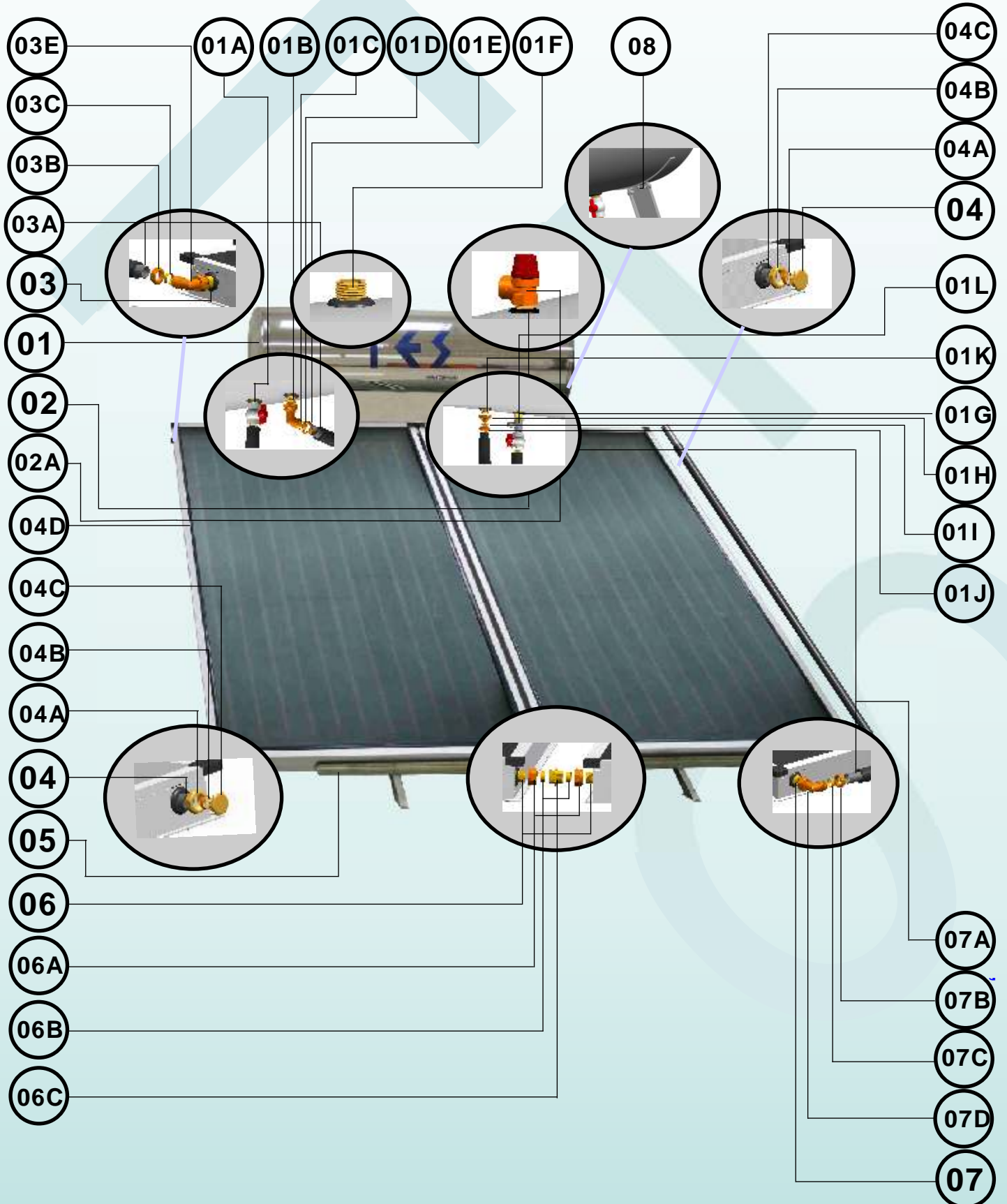
• Screw the plates (F)+(K)+(U) on the (H). Ensure that the plates are tightly screwed on the holes of the plate (H).

• Attention: The (G) plate is fixed after the placement of the collector(s)..

SIZE:

F	2300MMX88MM FOR 2 M ² COLLECTOR	J	292MMX33MM FOR ALL MODELS
	1800MMX88MM FOR 1.5M ² COLLECTOR		
G	810MMX56.5MM FOR 120L/160L/150L	K	300MMX103MM FOR ALL MODELS
	1250MMX56.5MM FOR 200L/250L		
	1800MMX56.5MM FOR 300L		
H	1200MMX73MM FOR ALL MODELS	L	400MMX73MM FOR ALL MODELS
I	292MMX33MM FOR ALL MODELS	U	300MMX30MM FOR ALL MODELS

Analytical description of the storage tanks and collectors Components

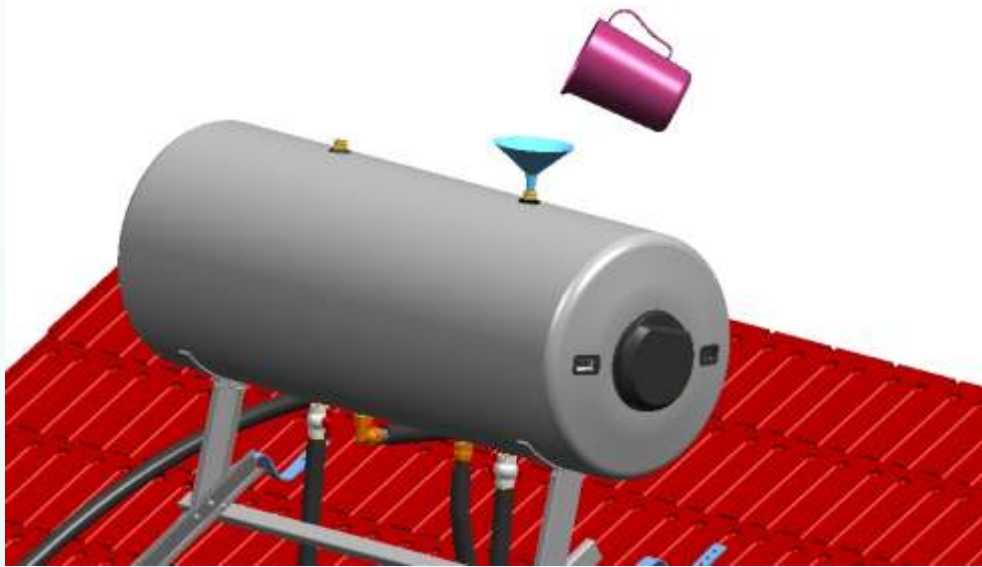


Analytical description of the storage tanks and collectors Components

- 01 Storage tank
- 01A Hot water outlet pipe(1/2''
- 01B Thermal fluid inlet pipe (from the storage tank to the collector)(1/2''
- 01C Elbow raccord
- 01D Water-tight compression ring
- 01E Screwing
- 01F Filling pipe for the closed circuit(1/2''
- 01G Cold water inlet pipe(1/2''
- 01H Pipe Union
- 01I Water-tight compression ring
- 01J Screwing
- 01K Thermal fluid outlet pipe (from the storage tank to the collector)(1/2''
- 01L Valve

- 02 Filling pipe for the closed circuit (1/2''
- 03 Thermal fluid outlet pipe(from the storage tank to the collector)
- 03E Elbow raccord
- 03C Water-tight compression ring
- 03B Screwing
- 03A Smalll connection tube with insulated cover
- 04 Thermal fluid pipe plug
- 04A Water-tight compression ring
- 04B Screw ring
- 04C Thermal fluid pipe
- 05 Collector(s) fixed iron unit
- 06 Thermal fluid pipe
- 06A Screwing
- 06B Water-tight compressing ring
- 06C Pipe unions (Collector connectors).Only for modes with two collectors.
- 07 Thermal fluid pipe
- 07A Large connection tube with insulation cover
- 07B Screwing
- 07C Water-tight compression ring
- 07D Elbow raccord

FILLING INSTRUCTIONS OF THE CLOSED

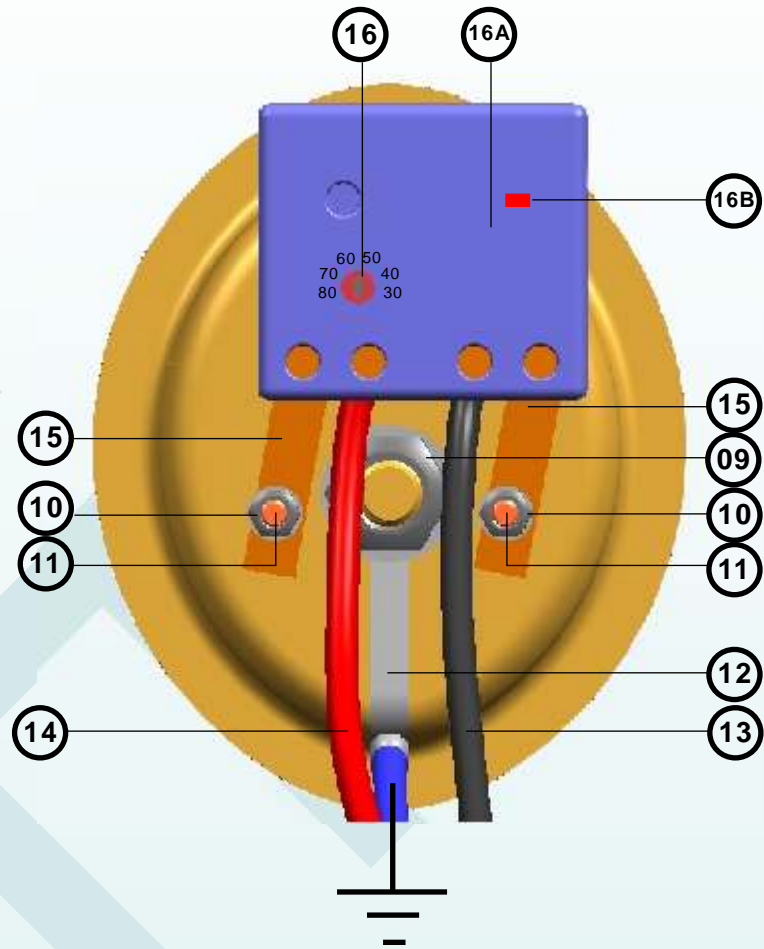


- For the antifreeze protection of the solar water heater, please follow the ratio of antifreeze protection stated in the table here below.
- Mix well the thermal fluid with water.
- Start filling the closed circuit with the mixture.
- During the filling, we advise you to shake the system, so that to ensure that no air is trapped inside the storage tank and the collector.
- Continue this procedure until the closed circuit is completely full.

MODEL		TES 120X2.0m ²	TES 160x2.5m ²	TES 200x3m ²	TES 200x4m ²	TES 250x4m ²	TES 300x5m ²
CLOSED CIRCUIT TOTAL CAPACITY		10lt	12lt	13lt	15lt	19lt	25lt
TEMPERATURE	RATIO						
-5 °C	Water Fluid	8lt 2lt	10lt 2lt	10lt 3lt	11lt 4lt	16lt 3lt	5lt 20lt
-11 °C	Water Fluid	7lt 3lt	9lt 3lt	9lt 4lt	10lt 5lt	15lt 4lt	19lt 6lt
-18 °C	Water Fluid	6lt 4lt	8lt 4lt	8lt 5lt	9lt 6lt	14lt 5lt	18lt 7lt
-20 °C	Water Fluid	6lt 4lt	8lt 4lt	8lt 5lt	9lt 6lt	14lt 5lt	18lt 7lt
-27 °C	Water Fluid	5.5lt 4.5lt	7lt 5lt	7lt 6lt	8lt 7lt	13lt 6lt	17lt 8lt
-36 °C	Water Fluid	5lt 5lt	6lt 6lt	6.5lt 6.5lt	7.5lt 7.5lt	9.5lt 9.5lt	12.5lt 12.5lt

DESCRIPTION OF THE PARTS OF THE ELECTRIC RESISTANCE AND THERMOSTAT

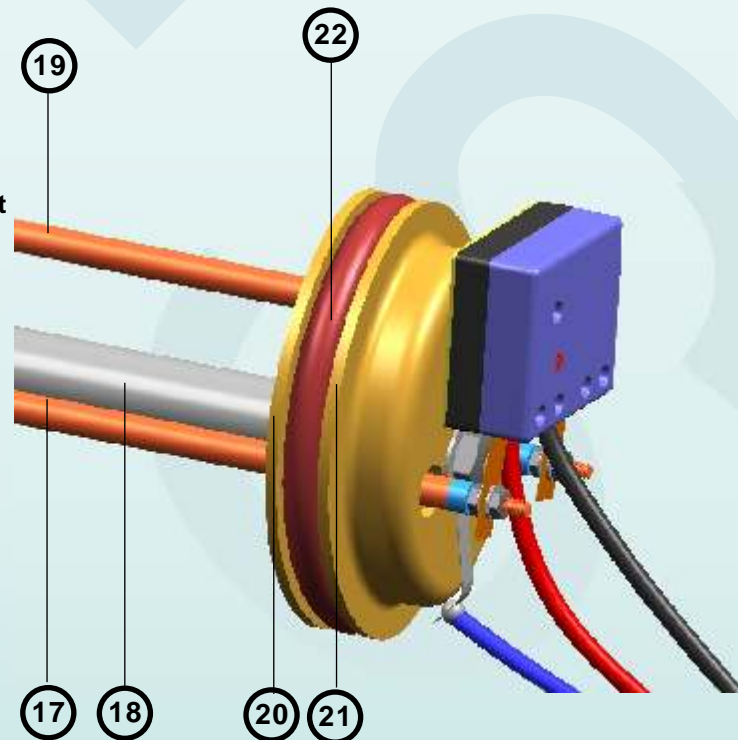
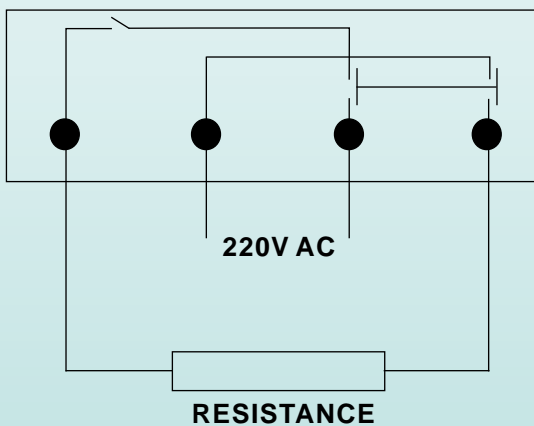
- 09 Center nut
- 10 Tightening nuts
- 11 Electric resistances' lug (for the electric lines)
- 12 Metal wires for the ground
- 13 Power cable
- 14 Power cable
- 15 Metal wires for the connections of the resistance with thermostat
- 16 Temperature control
- 16A Thermostat
- 16B Safety thermal switch
- 17 Electric resistance
- 18 Magnesium rod
- 19 Temperature sensor
- 20 Resistances' cover
- 21 Thermostat's socket
- 22 Rubber flange for water tightness
- 23 Protection cover

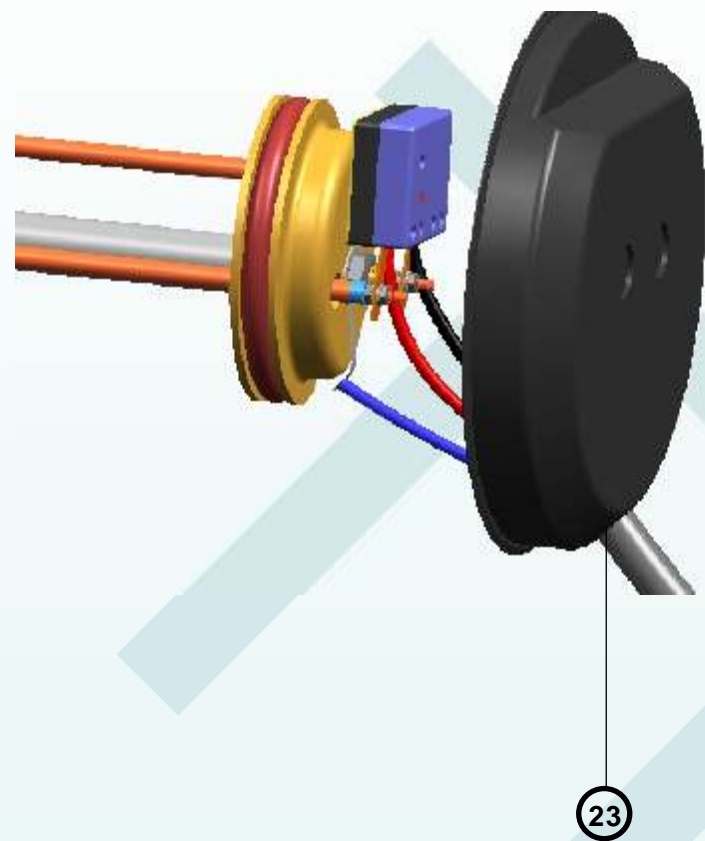


CONNECTION OF THE CABLES

- Turn off the power main supply.
- The cover of the electric resistance is on the right hand side of the storage tank. Unscrew the two screws and remove the cover.
- The thermostat is adjusted from the factory at 60°C. You can adjust it at the temperature you wish, by using the temperature control (16). In that case we advise that the temperature you will fix not exceed 75°C.

DIAGRAM OF ELECTRIC CONNECTION OF THE THERMOSTAT





- Check the safety thermal switch on the thermostat. The safety switch is in operation when it is pushed in.
- Connect the lug 2 and lug 3 with the AC220V electric.
- Pass the wire through the hole of the cover (23) and connect the wires on the power line connector. Screw the cover (23) on the storage tank.

Attention:

- The grounding lug on the power line connector, must be connected with the grounding wire of the building.
- The power cable must be connected to a switchboard, of which the separating distance of the contacts is more than 3mm.

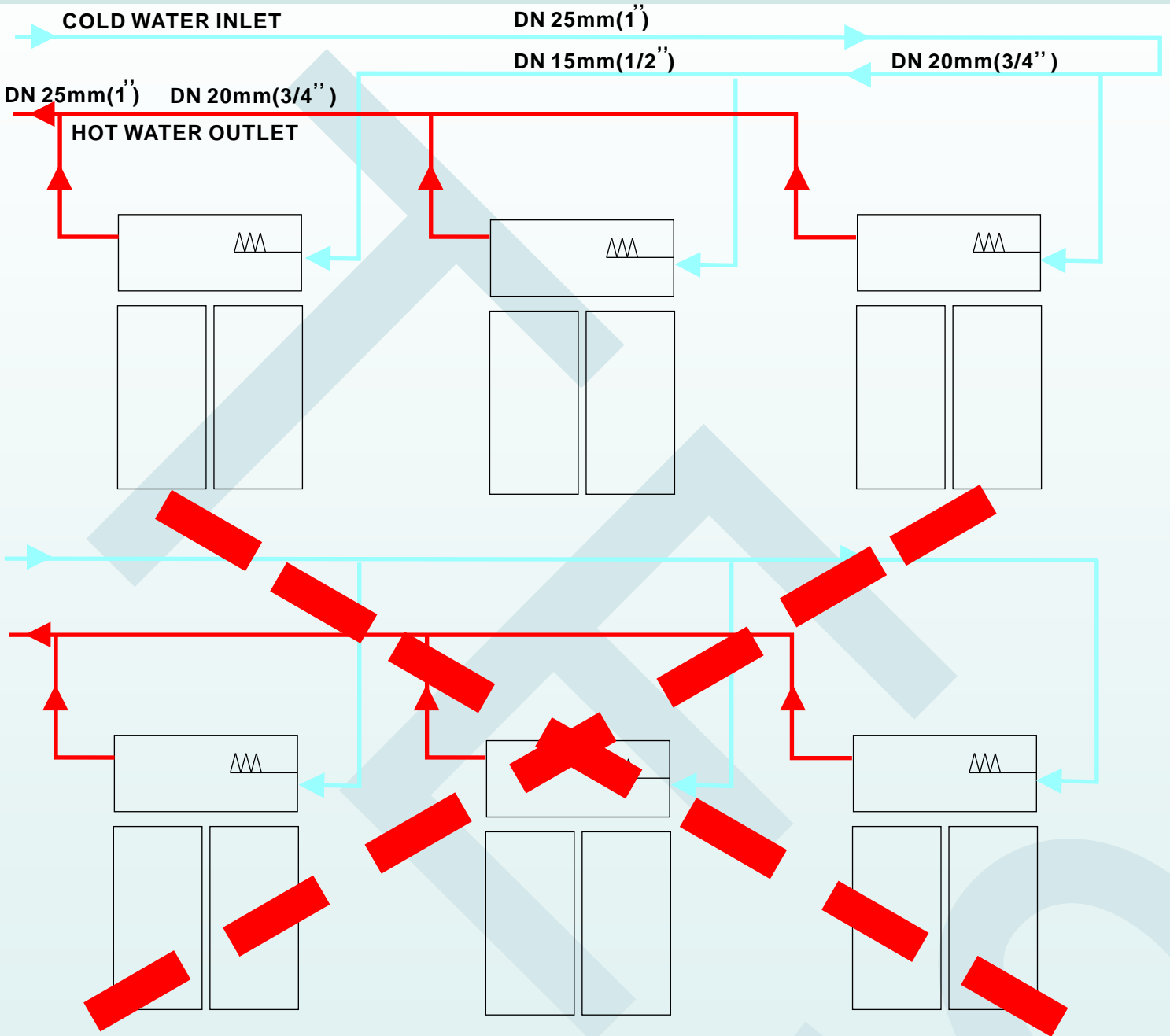
Note:

- A certified electrician must make all the electric connections.
- Ensure that all the electric connections comply with the electric regulations applicable in your area and your building.
- Do not turn on the electric resistance, when the storage tank is empty.

INSTRUCTIONS AFTER THE INSTALLATION

- The solar water heater reaches the optimum performance two days after the installation. During these two days, it is recommended to avoid the hot water consumption, even if there is sunshine.
- Check every year the level of the fluid in the closed circuit. Use only the thermal fluid to fill it.
- In regions with too much dust, we recommend you to clean the glass of the collector with water, every two months in order to remove the dust from the glass, unless there is enough rain.
- In case of a glass damage, replace the glass immediately to avoid further damage of the collector.
- For all water heaters, the main principles and codes require that the function of the valves is checked once a year. We also recommend that during the same period you check the screws, the nuts, the plates, the moly plugs, the screw nuts and the support plates, for looseness or any damages, especially when the appliance is installed near the sea. In case of damages, they must be replaced by owner's expenses.
- During a long absence(such as summer holidays), it is recommended to cover the collector(s) with an opaque cover.

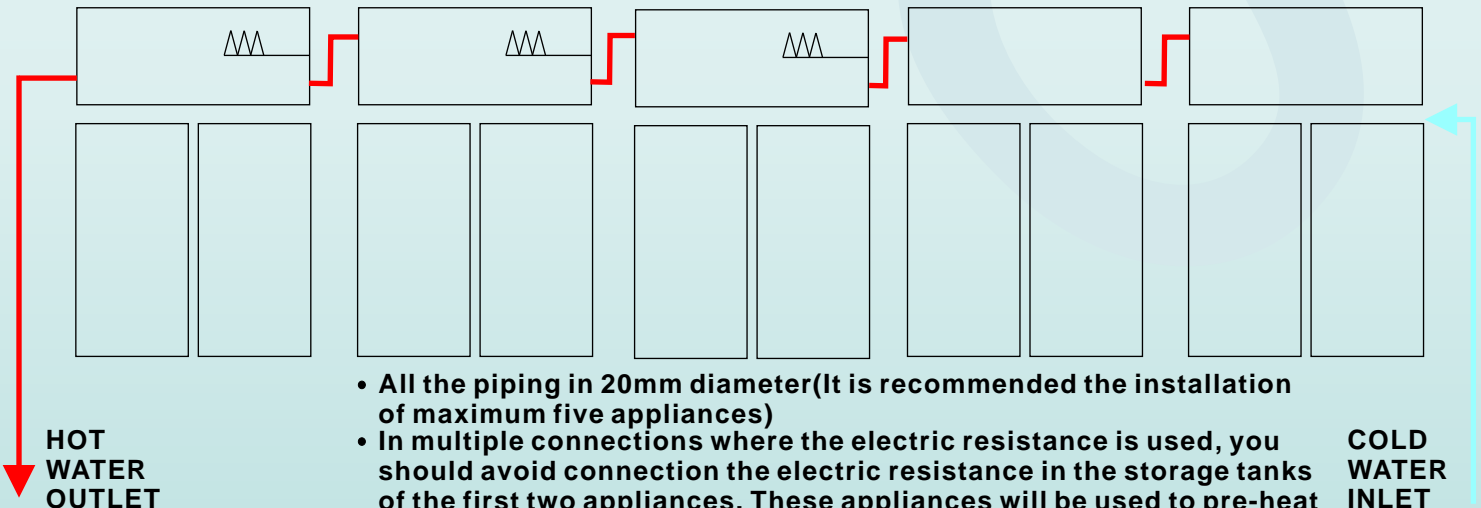
PARALLEL CONNECTION OF MULTIPLE SYSTEMS



Notes:

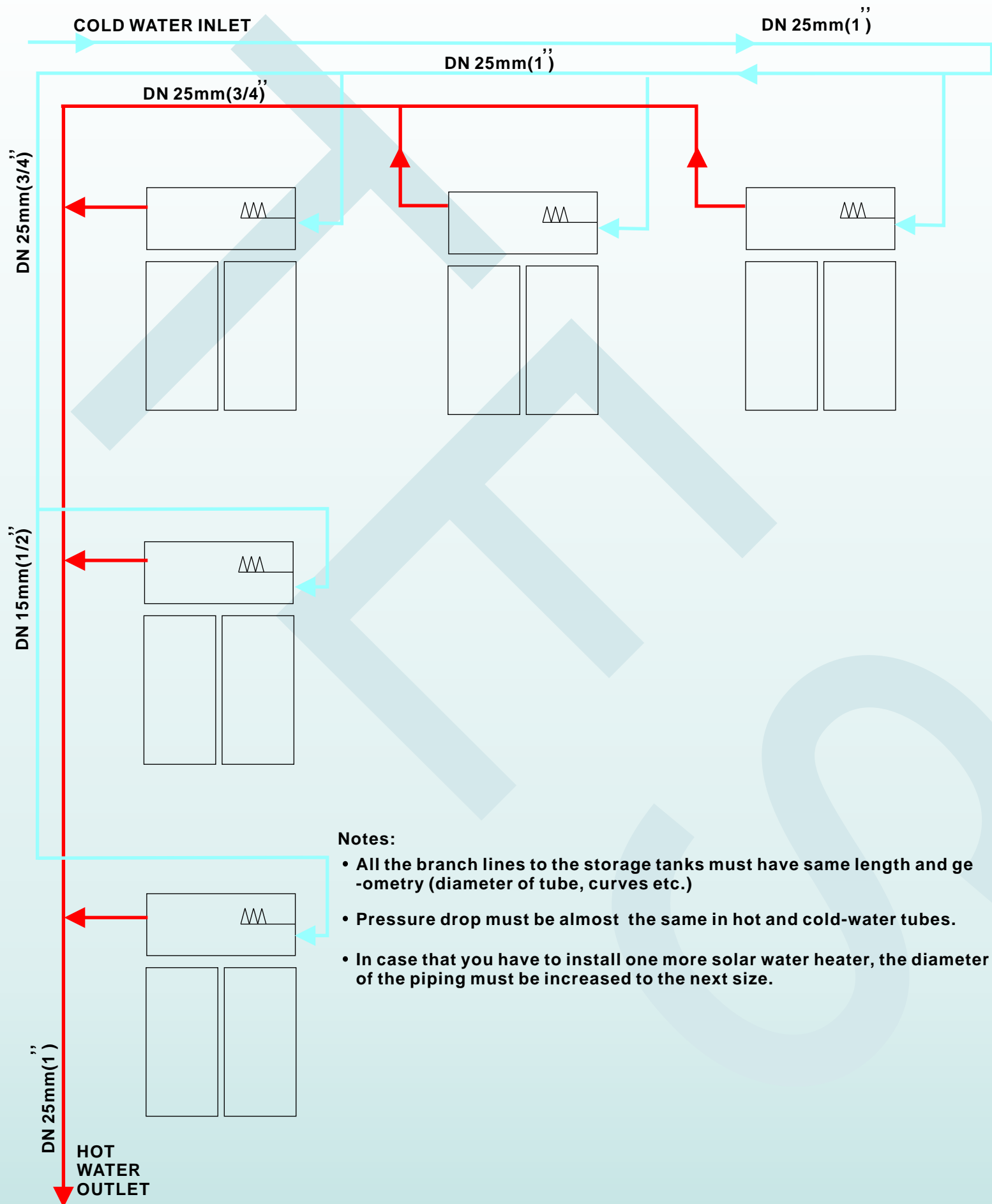
- All the branch lines to the storage tanks must have same length and geometry(diameter of tube, curves etc.)
- Pressure drop must be almost the same in hot and cold-water tubes.

SERIAL CONNECTION OF MULTIPLE SYSTEMS

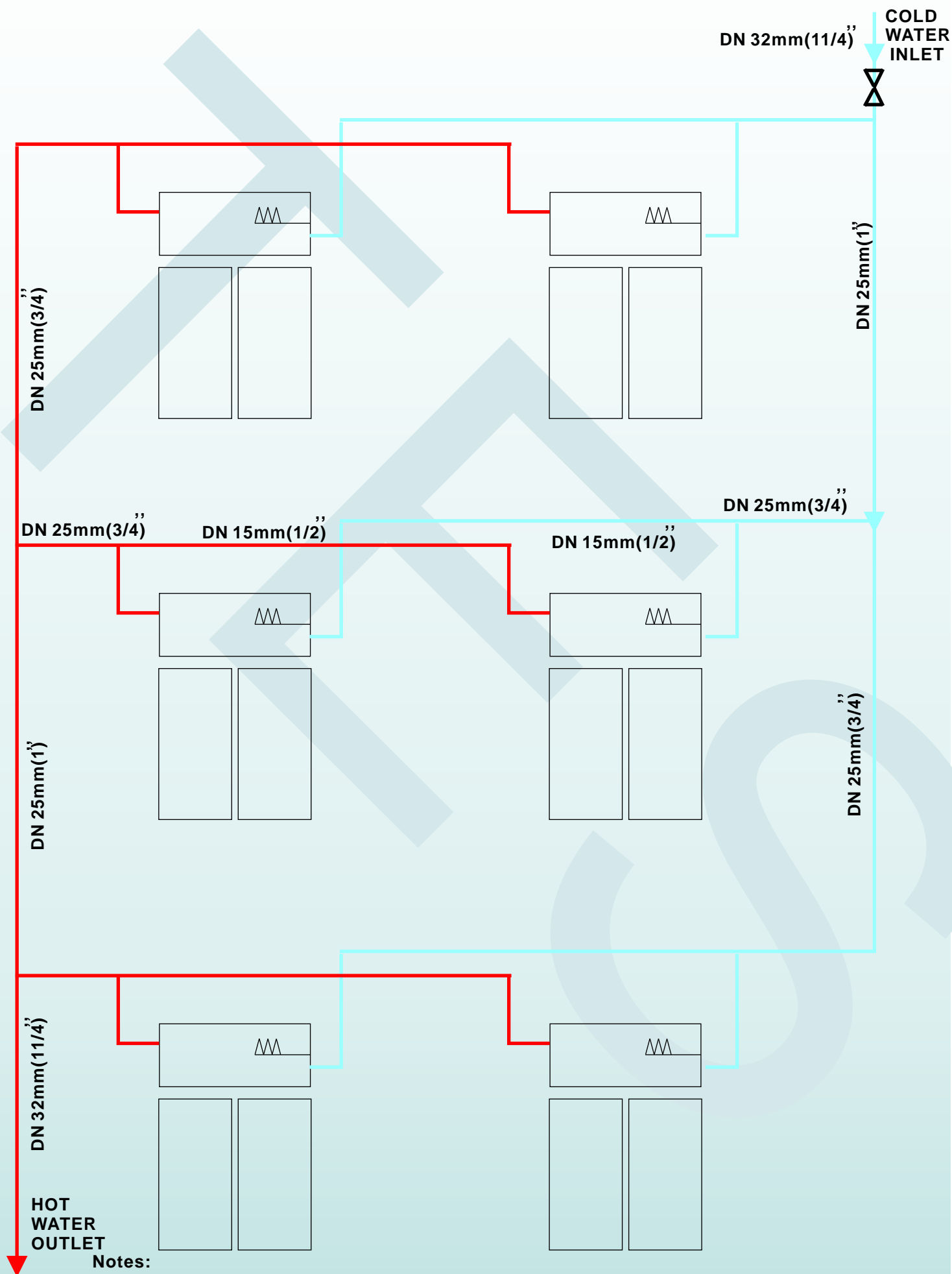


- All the piping in 20mm diameter(It is recommended the installation of maximum five appliances)
- In multiple connections where the electric resistance is used, you should avoid connection the electric resistance in the storage tanks of the first two appliances. These appliances will be used to pre-heat the water for the consumption.
- For this kind of installation(or for more than three solar water heaters connected in a row) you have to make a special request for inlet-out lets pipes on the storage tank. We recommend you to use a maximum of

TYPICAL INSTALLATION OF MULTIPLE UNITS



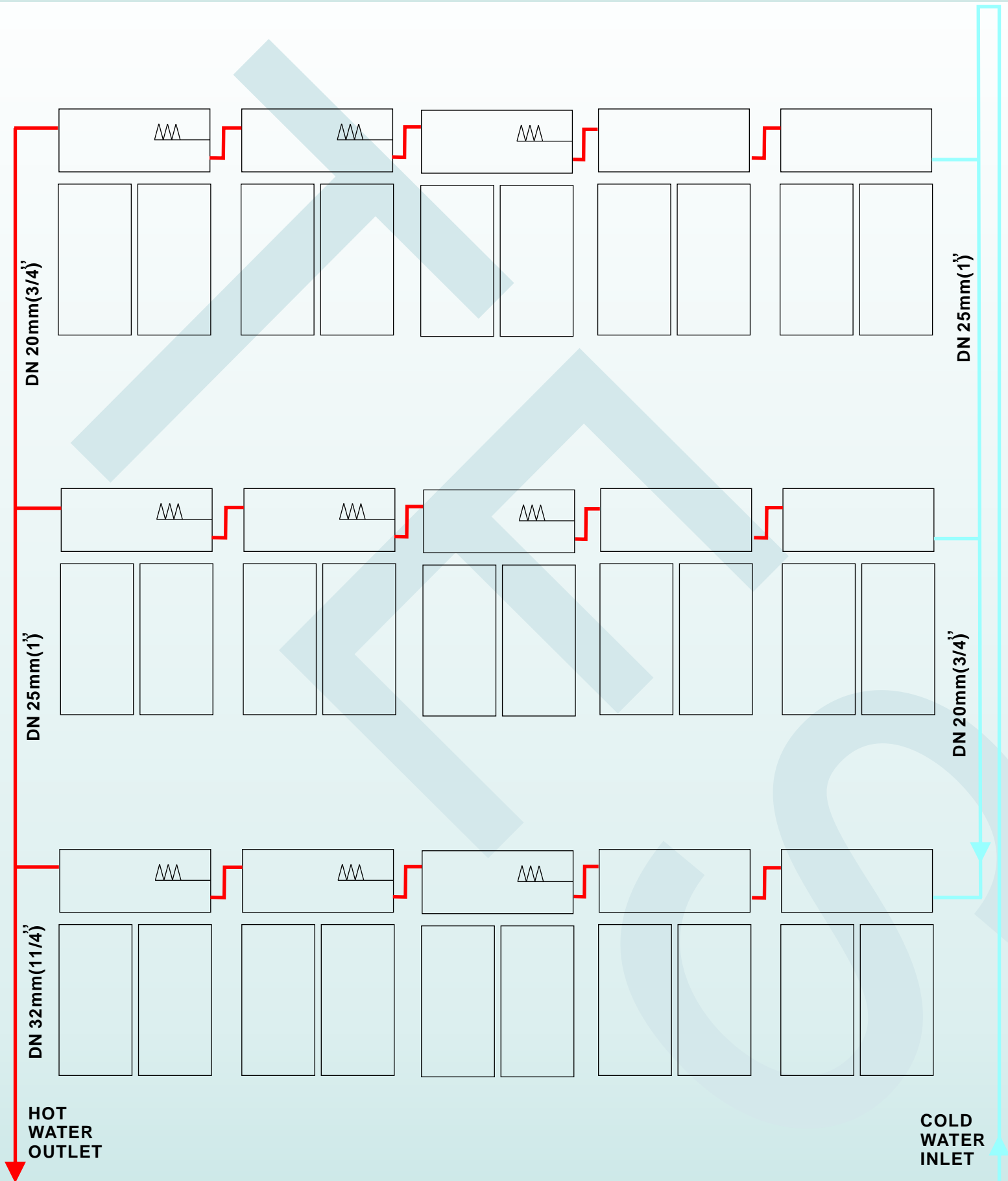
TYPICAL INSTALLATION OF MULTIPLE UNITS-PARALLEL CONNECTION



Notes:

- All the branch lines to the storage tanks must have same length and geometry(diameter of the tubes,curves etc.)
- Pressure drop must be almost the same in hot and cold-water tubes.

PARALLEL CONNECTION OF MULTIPLE SYSTEMS IN SERIES



Notes:

- All the piping in 20mm diameter. For this kind of installation (or for more than three solar water heaters connected in a row) you have to make a special request for inlets/outlets pipes on the storage tank.
- We recommend you to use a maximum of five appliances in a row.