

## Norama solar system fitting manual



### **KIT CONTENTS**

Domestic water storage tank with internal electric immersion heater, solar collector vacuum tubes, collector tubes frame and supports, collector header heat transfer tank, expansion tank, three speed circulating pump, temperature sensor, digital system controller.

## Closed loop pressurised hot water system



### Features

Dual 'closed loop' water systems prevent contact between heating circuit and domestic hot water.

Heating circuit can be a Glycol mix to prevent freezing.

Integral immersion heater.

Remote tank location.

Lightweight aluminium frame



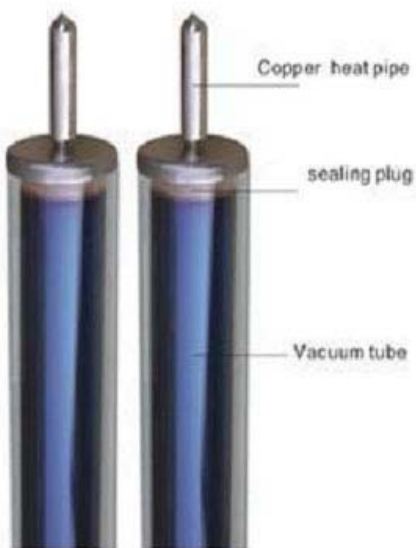
## Modular solar collector panels



### Features

Individual vacuum tubes can be removed or replaced without draining system.

Water does not pass through the tubes



High absorption performance

Low reflection ratio

15 year design life

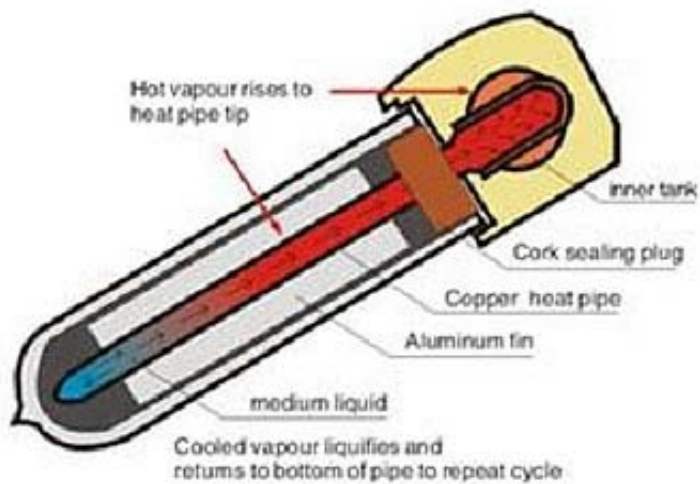
Performs to 30 degrees below freezing

Fast start up on cloudy days

Unique coating reduces cleaning requirement

Maintenance free

Easy to install without special tools.



## Digital control system



- Pump cycle function based on temperature readings
- Clear LCD display
- Preset immersion heater timer control function for night time
- Anti freeze protection
- Over temperature protection
- Temperature display
- Auto recovery memory after power cut
- Error code display
- Second pump control cycle

## Expansion vessel



- Over pressure protection of the collector circuit
- Standard  $\frac{1}{2}$  or  $\frac{3}{4}$  plumbing
- Connection depending on the model size



## Circulation Pump



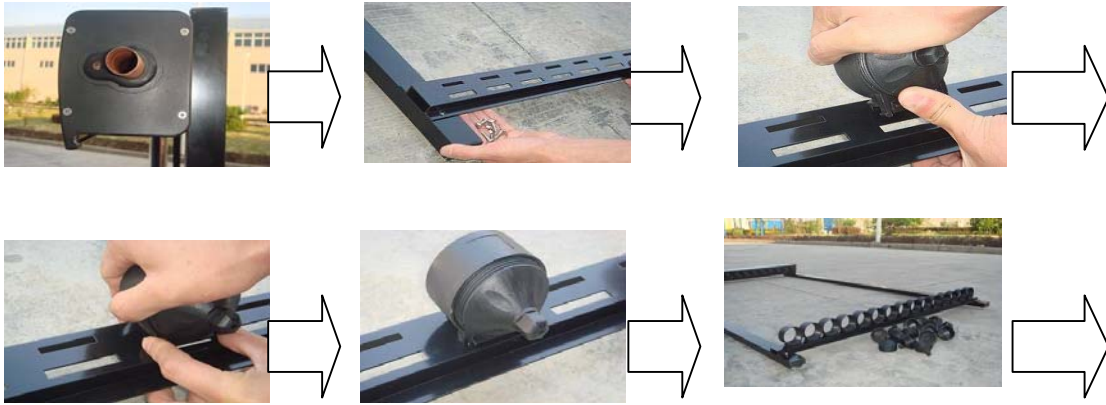
Wilo circulation pump  
Suitable for water/glycol mix  
Manual 3 speed control  
Working temperature range -10 to +110 degree  
Maximum working pressure 10 bar

## Water tank

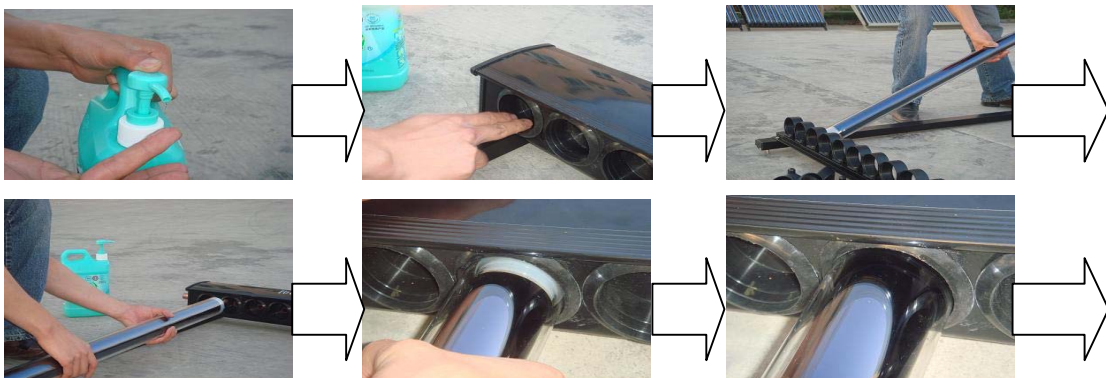
Outer tank material and thickness: galvanized sheet/0.5mm  
Inner tank material: porcelain enamel  
Copper coil heat exchanger: standard tank with one coil  
Optional second coil heat exchanger on tank capacity 200L (for secondary heating circuit)  
Insulation thickness: 40mm(100L-350L)/50mm(400L-500L)  
Working pressure < 6 bar  
Electrical heater 1.5W(100L-200L)/2.5W(250L-500L)  
Installation method: vertical  
Integral anode to prevent corrosion

## Installation

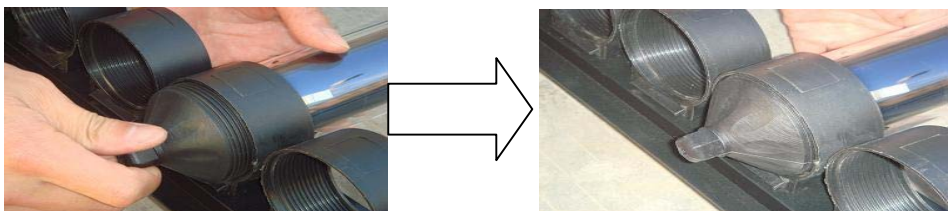
- ◆ Be careful and gentle in transportation and installation
- ◆ We recommend that all the following operations are carried out in a shaded area because the heat pipe will become too hot to touch as soon as it is in the sun.
- ◆ Connect the frame together, making sure that every screw is fully tightened.
- ◆ Fix the flow passage onto the frame with the holes side downward, and put the silicone rubbers in the holes, making sure that they are tight.
- ◆ Put the base supports in the holes of bottom supports.



- ◆ Take out of the vacuum tubes from the corrugated paper box and fit each one into the holes respectively (note: fit the bottom of the vacuum tubes into the holes of the base supports first, and then insert the upper side of the vacuum tube into the holes of the flow passage, if this step is difficult, we suggest some soap be coated on the head of the heat pipe to make the operation easier, be aware that the bottom of the tubes should not touch the ground to avoid any damage to the tubes).

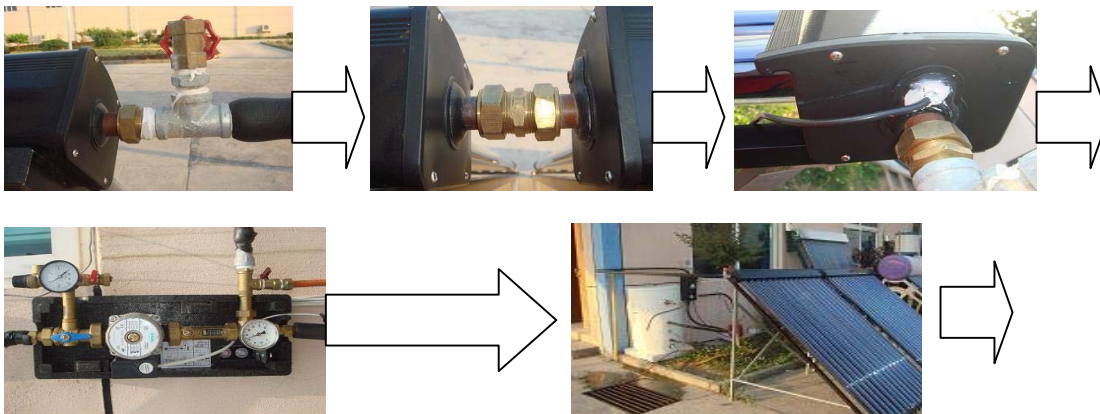


- ◆ Tighten the base supports by gently screwing them tight.



- ◆ Once the above operations are completed, the pipe work connection can commence. Connecting the heat collecting modules together, making sure they stand parallel to ensure alignment of the junctions.

- ◆ One copper pipe is connected to the water tank (the bottom circulation hole) and the other one connected to the working station (on the flow meter side) going through working station, connected to collector (without temperature sensor side), make sure there is a Union tee for Glycol filling. Through the collector flow passage, connecting the copper pipe with water tank (the upper circulation hole)
- ◆ Connect the water inlet on the water tank with the water supply.
- ◆ Connect the water outlet on the water tank with pipe to let hot water out.
- ◆ Connect the pressure relief tank with the working station if the expansion case is separate from work station.
- ◆ Connect temperature sensor of the water tank, heat collecting modules and the circulation pumps respectively according to the controller manual.
- ◆ After all of this being completed, check the whole system to see if there is any leakage from the junctions. If yes, check the connections.



## ATTENTION

- ◆ Read the instructions before operation, and resort to a professional technician when necessary.

## Connecting a lightning conductor:

- A. Connect the heat collector and the lightning rod.
- B. Raise the lightning rod, making sure that it is at least 1.5 meters higher than the system.
  - ◆ Make sure that there are no obstacles in front of the system, so that the heat collector can get maximum sunshine.
  - ◆ Ensure that there is no leakage in heat collecting modules, pipes, valves and junctions, and no damage on the heat preservation layer; all the vacuum pipes and the heat

collector joints should be connected correctly; check for colour changes to the vacuum pipes which signifies damage.

### ATTENTION WHEN INSTALLING

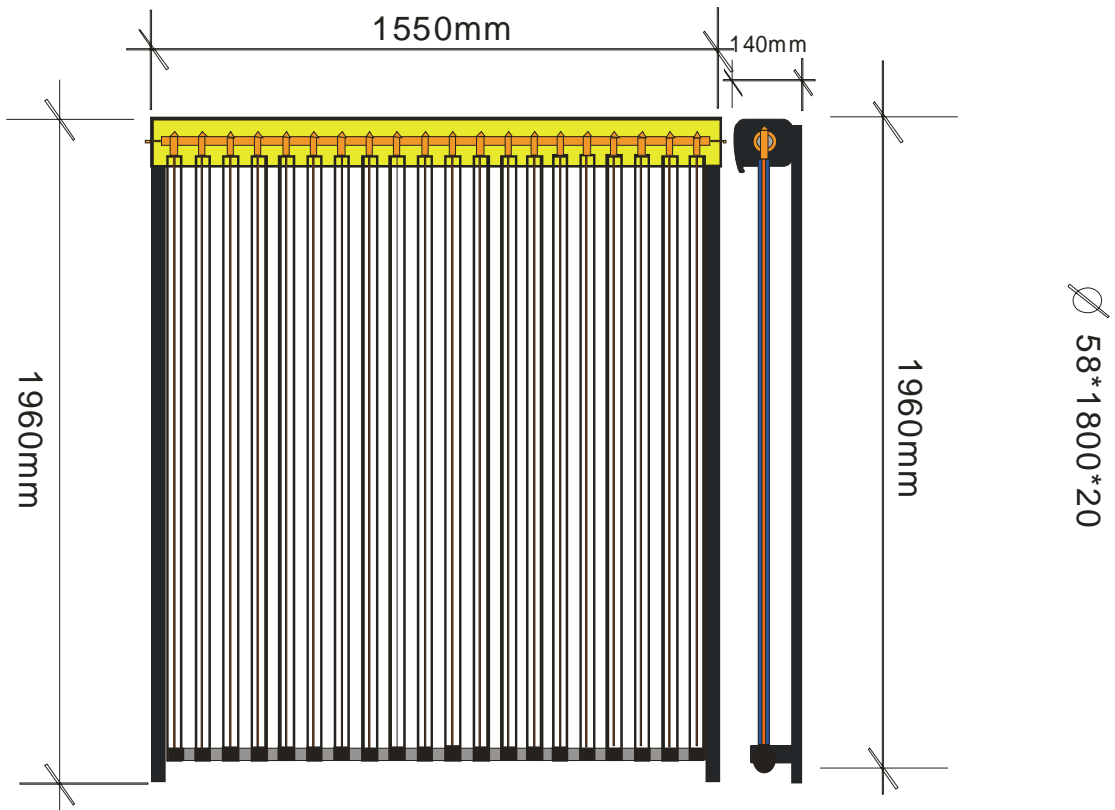
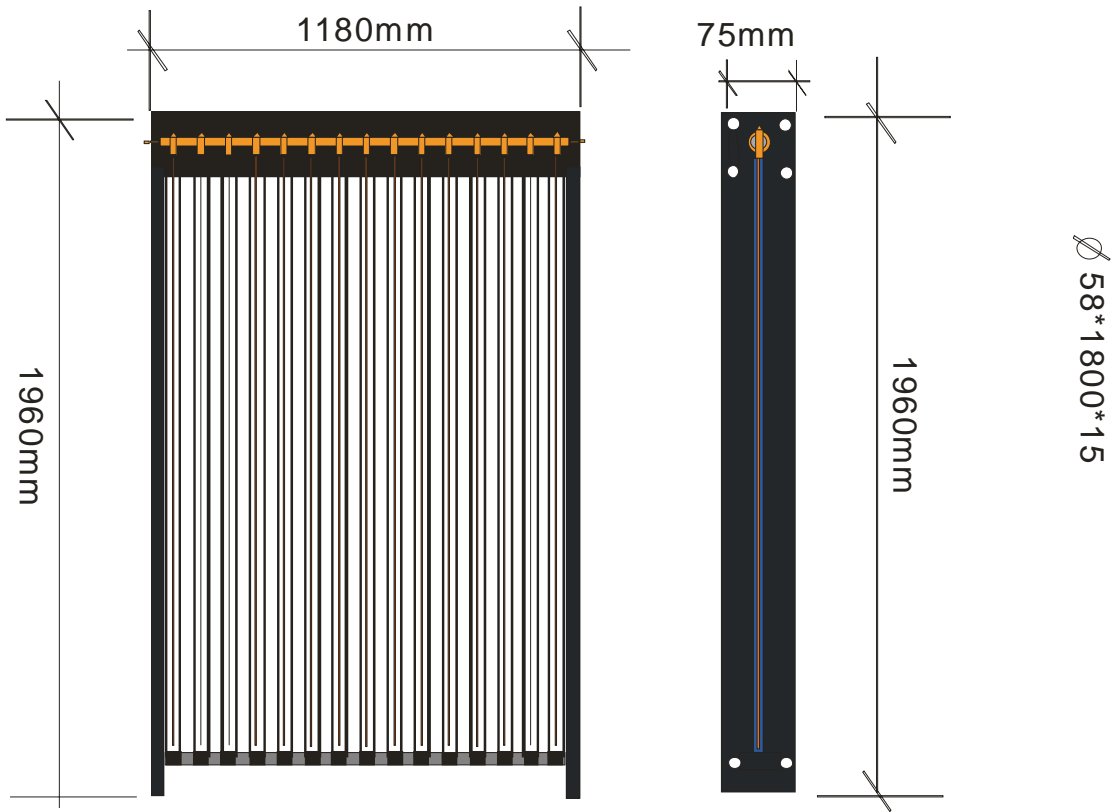
- ◆ Face to the sun with no obstacle in front of the unit when installing
- ◆ Firmly fixed to the roof or any other platform when installing
- ◆ Try to minimize the route of the water supply
- ◆ Lag all outside pipe work to prevent freezing in winter
- ◆ Avoid any damage to the vacuum pipe ends and the washer when installing, this will greatly weaken the heat preservation abilities.
- ◆ The angle and direction of collectors is especially important when installing, the collector should face south in northern hemisphere and face north in southern hemisphere when installing.

### Common problems and solutions

problem	Possible reasons	solutions
The water is not hot on sunny days	Something is covering the heat collector or the unit is in shade	Remove the obstacle or keep the vacuum pipes up straight in the sun so that it can get as much sunshine as possible or change location
	The pump does not work	Repair it/change another one
	The controller or the water temperature sensor failed	Check the wire route or change the controller or the water temperature sensors

# Technical specifications

Capture panel dimensions



## Water tank specifications

<b>product model</b>	150L	200L	250L	300L	400L	500L
<b>inner vessel diameter(mm)</b>	φ368	φ438	φ542	φ542	φ613	φ613
<b>water tank dimension(mm)</b>	φ450	φ520	φ620	φ620	φ710	φ710
<b>material and thickness of the inner vessel</b>	BTC340R 1.8	BTC340R 2.0	BTC340R 2.0	BTC340R 2.0	BTC340R 2.5	BTC340R 2.5
<b>material and thickness of the shell</b>	galvanized sheet 0.5	galvanized sheet 0.5	galvanized sheet 0.5	galvanized sheet 0.5	galvanized sheet 0.5	galvanized sheet 0.5
<b>insulation thickness(mm)</b>	40	40	40	40	50	50
<b>surface area heat exchanger(top)</b>	0.4M2	0.4M2	0.4M2	0.4M2	0.5M2	0.5M2
<b>surface area heat exchanger(bottom)</b>	0.6M2	0.6M2	0.7M2	0.7M2	0.8M2	0.8M2
<b>water pipe size</b>	G3/4"	G3/4"	G3/4"	G3/4"	G3/4"	G3/4"
<b>rated heating power</b>	1.5KW	1.5KW	2.5KW	2.5KW	2.5KW	2.5KW
<b>overall dimension (mm)</b>	φ450*1570	φ520*1530	φ620*1280	φ620*1530	φ710*1580	φ710*1755
<b>packing cubage</b>	0.384	0.492	0.59	0.697	0.917	1.013
<b>weight (kg)</b>	58	68	75	95	112	134

## Vacuum tube details

Models material, diameter, length, coating vacuum transmittance temperature Bearing hail lifetime

47\*1500 borosilicate 47mm 1500mm ss-c/cu &#8806;5\*10  
0.91 380°C ;25mm 15years

58\*1800 borosilicate 58mm 1800mm ss-c/cu &#8806;5\*10  
0.91 380°C :25mm 15years

58\*2000 borosilicate 58mm 2000mm ss-c/cu &#8806;5\*10  
0.91 380°C ;25mm 15years

70\*2000 borosilicate 58mm 2100mm ss-c/cu &#8806;5\*10  
0.91 380°C ;25mm 15years