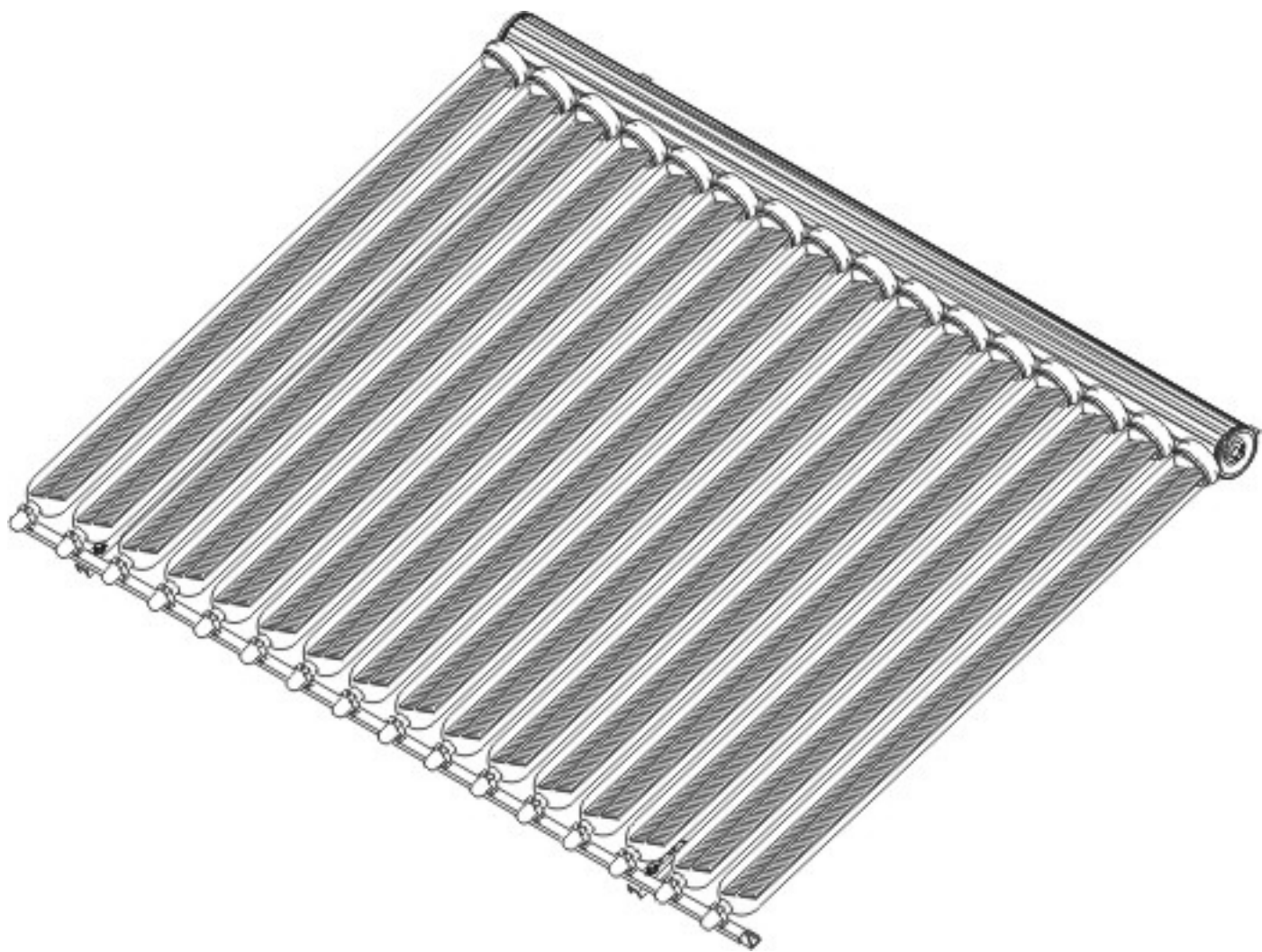


Mounting Instruction of Heat Pipe Vacuum Tube Collector Seido 1/5-8/16AS



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General safety requirement

All installations should be accomplished by professional people, especially should pay attention to the following points:

- Construction conditions
- Local government regulations
- Technical regulations (especially DIN 4757 Items 1 and 3)
- In hand available roof construction
- Safety regulation for working on roof
- Safety regulation for safe devices
- Installation instructions of collector
- Safety regulation of VDE and DVGW

Safety regulations for collector

The vacuum tubes can be heated by diffuse solar irradiation, the temperature of which condenser can be very high (over 200°C). Therefore, please don't directly expose tubes under the sun without shade. Moreover, please pay attention to the safe operation pressure of system: 6 bar.

Transportation

The collector should be transported to roof part by, and then every part is assembled together on roof.

Snow and ice load

In region, where is rich of snow in winter, man should note the regulation of local construction bureau about the collector installation angle of inclination roof. Considering stacking of snow, moving of snow by wind and freezing of snow, the load of snow will increase, so it is necessary to take measures to avoid this situation happening.

Lighting protection

One lighting rod should be considered to install. If there is ready-made lighting protection device, please connect it with collector.

Inclination angle of collector

In order to avoid unnecessary problems of utilization of collectors, a minimum inclination angle must be ensured: 15° for Seido10. If the tilt angle of roof isn't enough, please build necessary support.

Data

Dimension:

2232 x 980 x 187 mm (Seido1/5-8AS)

2232 x 1940 x 187 mm (Seido1/5-16AS)

Tube: 8/16

Gross collector area: 2.19 m² / 4.33 m²

Net absorber area: 1.39 m² / 2.77 m²

Inclination angle: 15°(Seido1)/35°(Seido5)

Aluminum nitride Absorber

Vacuum grade: 10⁻⁵ mbar

Gross weight: 50kg / 100 kg

Connection: Dn22 mm fitting

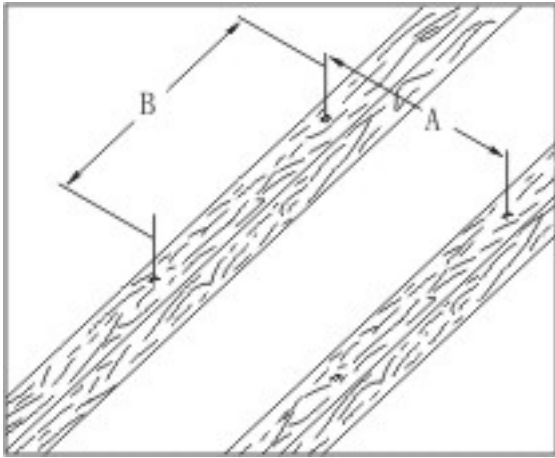
Stagnation temperature: 190°C

Pressure drop per module at 120l/h: 5 mbar

Recycling

We are responsible to use environment friendly materials in our products and to gather these materials for recycling.

Sunda is constantly improving its products; therefore specifications are subject to change without prior notice.

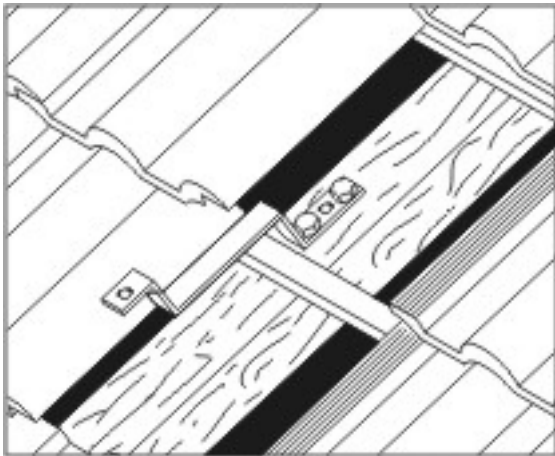


Collector assembly

I. Measure the installation area

Observe the roof and select the available roof position without shade from trees or other buildings, then mark the corner positions of the collector field. Provisionally, determinate the roof hook positions (4 per collector module) according to the following ranges:

Seido1/5-8AS:	A	500 - 770 mm
	B	1600 - 2000 mm
Seido1/5-16AS:	A	970 - 1690 mm
	B	1600 - 2000 mm

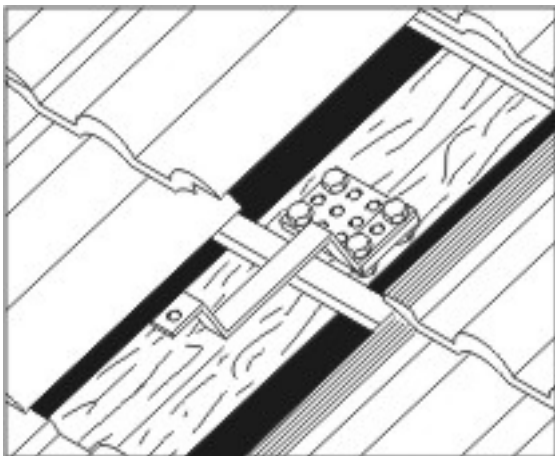


II. Mounting of roof hooks

a) Install roof hook on tile roof

First install roof hook on the eaves then on the ridge, and tighten it on rafter with bolt and screw.

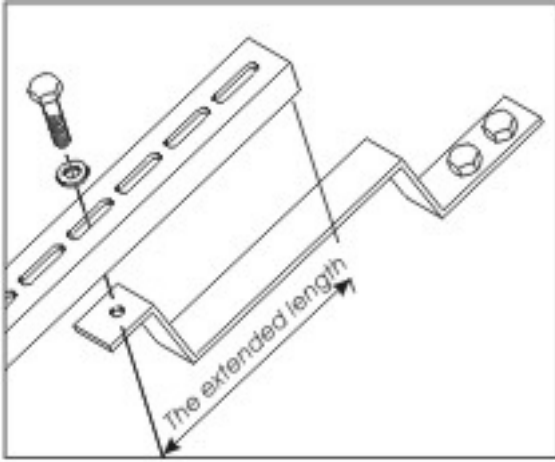
If necessary use the attached perforated plates to achieve the above measure (see data in item 1). The roof hooks must be mounted vertically and horizontally in alignment.



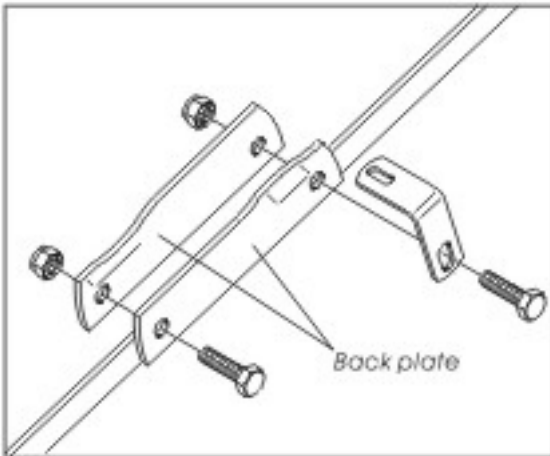
If necessary use the attached perforated plates to achieve the above measure (see data in item 1). The roof hooks must be mounted vertically and horizontally in alignment.



As picture shows, put tiles on the roof hooks, and it must be made water-proofed.

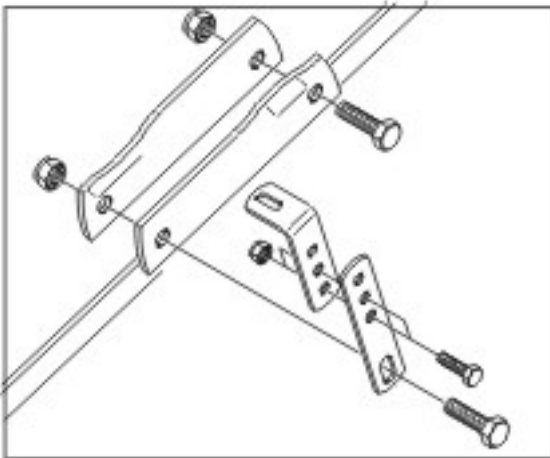


Install vertical supports on the roof hooks as picture shows, keeping the same extended length on top and bottom of the supports and install the bolts on the long hole according to drawing to avoid vertical supports slip. Then only fix screws slightly.
(Continue to item 3)

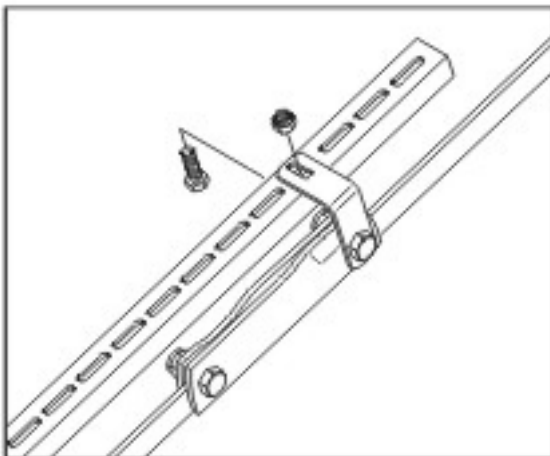


b) Install the roof hook on steel plate roof.

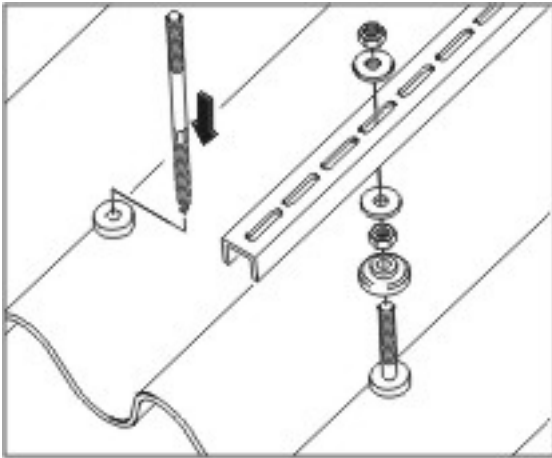
Firstly install the fixing components on the bite seam, then with screw let the Back plates clamp the bite seam, but don't need to bore.



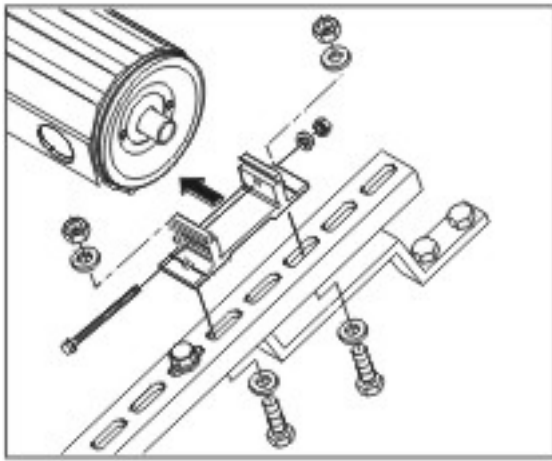
Use spacer plate if necessary.



Installing vertical supports on the roof hooks as picture shows, to keep the same stretched length between up and down and then fasten the bolts on the long hole according to the drawing to avoid vertical supports slip. Then only fix screw slightly.
(Continue to item 3)

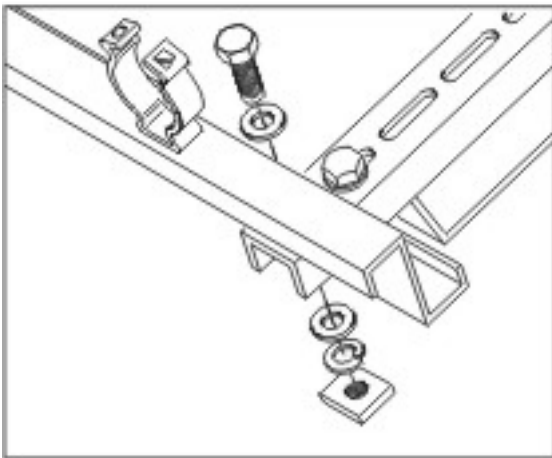


c) Install the roof hook on eternit corrugated roof
Install the thread pole on the rafter, and then install vertical support with spacer keeping the same stretched length between up and down. Fasten the bolts on the long hole according to drawing to avoid vertical supports slip. Then only fix screw slightly.



III. Assembling collector

Slide the support of the header box in to bottom of the head box. And fixing the support in the third and fifth long holes of the vertical support as picture shows.

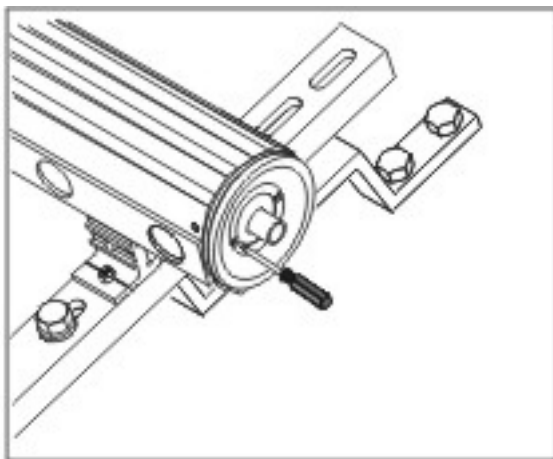


Install the bottom support on the third hole of the vertical support; fasten screw to avoid the bottom support slipping.



From right to left install the vacuum tubes, keep whole collector in parallel and note that the header box is not exact horizontal, but there is a small slope downwards to inlet.

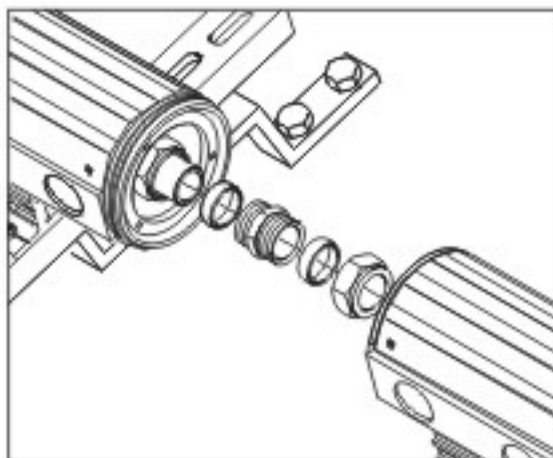
Then measure the slope and tighten all screws.



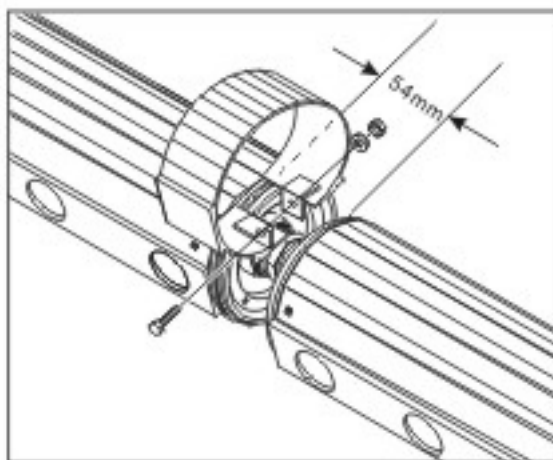
IV. Mounting of more collectors

If there are more than one collector connected together, refer to the following advice.

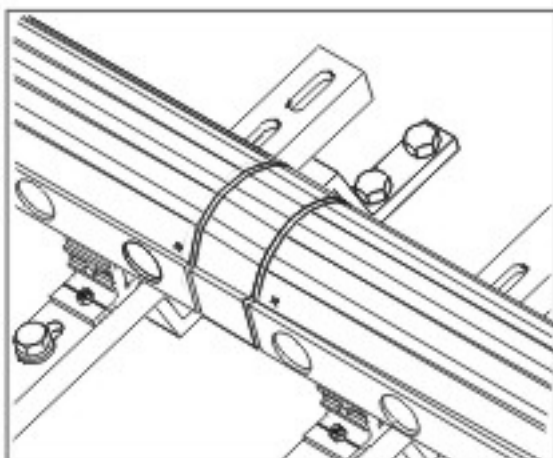
Disassemble the end cover with screwdriver.



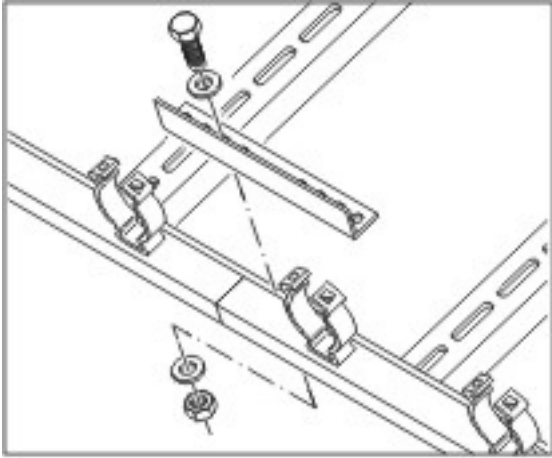
Connecting two header boxes with two-end fitting in series or according to the advanced design. To keep granularity of 54mm between the two header boxes.



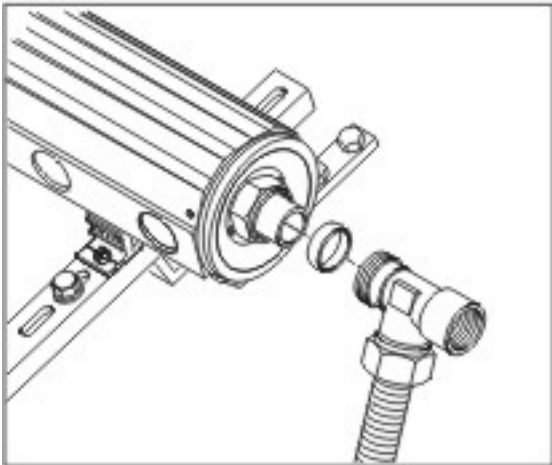
Insert the insulation material in the space, and on which cover the connection cuff.



Fasten the support of header box with the screw to clamp the connection cuff.

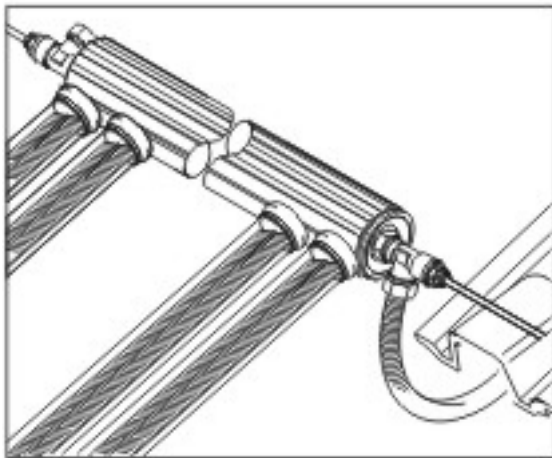


Connect two bottom supports with L-profile and tighten screws.
Repeat above steps till we get the designed geometric dimensions and stability.



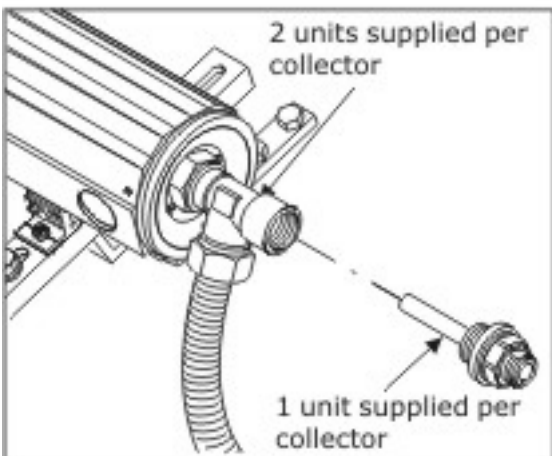
V. Connect piping

Lay the header box on the highest place if possible, otherwise use air-vent at the highest place above the collector.

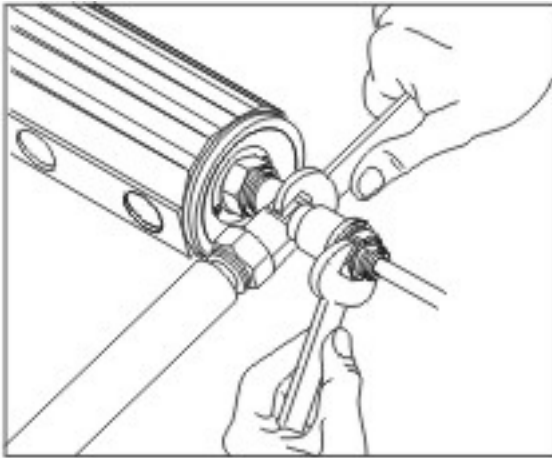


Use air ventilation tiles, which have been modified to allow for space of pipes.

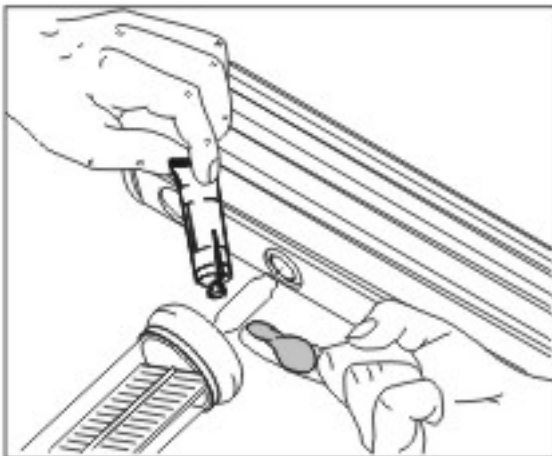
Notice: Use UV-resistant insulation



Install thermowell, which is for sensor, on the outlet pipe. Smear some heat transmission paste on sensor and insert the sensor into the thermowell.



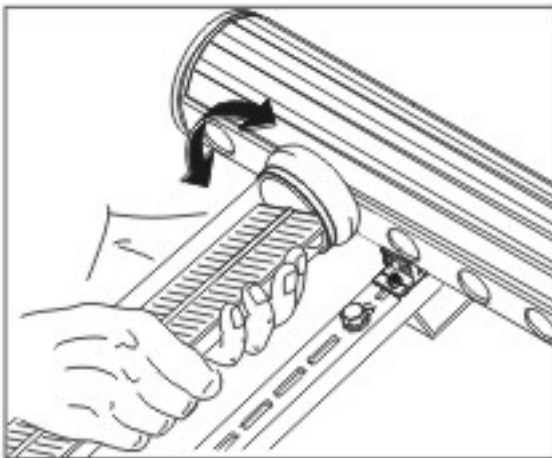
As picture shows, tighten the thermowell. Check and adjust the sensor in order to make it work well.



VI. Install the vacuum tubes

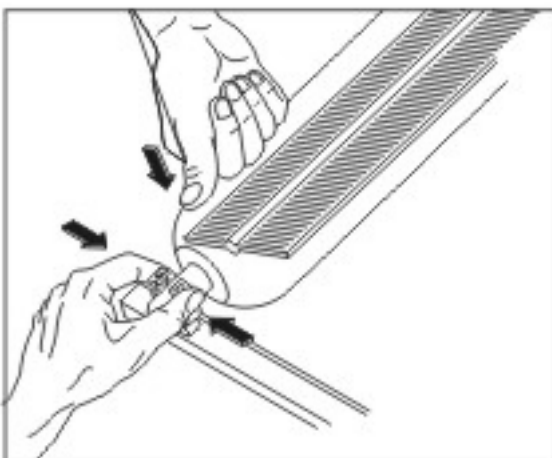
Grease condenser with heat transmission paste when it isn't hot. Then slide condenser into cartridge while turning tube gently back and forth. Meanwhile adjust the position of the bottom support, and let clips upward. Upper rubber gasket must rest on header box with slight pressure.

Notice: put some thing to cover the tubes, otherwise the temperature of condenser will be up to 200°C or even higher, when tubes are exposed under the sun.



Adjust vacuum tube and keep the selective coating side to face upward. In case the roof is not oriented exactly to the south but deviates by an angle "a", the vacuum tube should be turned with an angle of "b" into the direction of the zenith of the sun:

Roof in clination 45°:	a	10°	20°	45°
	b	7°	14°	30°
Roof in clination 30°:	a	10°	20°	45°
	b	5°	10°	26°



Put the end cap of tube into the clip, if necessary adjust the location of the bottom support. The end of the tube shall rest on the rubber strip of the bottom support. Close clip. **Watch out: Clip is sharp; take gloves!**

VII. Prepare before operation

Leakage checking

Pump air into system till 6 bar and check whether there are leakages of connections in the whole system.

System cleaning

Pump warm transfer medium into system with electrical pump or hand pump, clean system and outgas the air from system.

Adding working medium

After system cleaning, pump working medium into system till pressure to 3 bar.

Adjust the controller according to the requirement of manufacturer; fix the flow rate that relies on the absorber area and adjust it in controller. And not the unit of measuring.

Customer Checking List

Please check your solar collector according to the following list, which are FAQ. If your collector still has problem or the output of energy is not enough, please contact our service team for help.

1. Is the orientation of collector right?

Please note the Deviation to south, inclination angle of roof and shade, and check whether tubes are installed with optimal inclination angle? Is the minimum inclination angle right? Minimum 15° for Seido 1, 35° for Seido 5.

2. Is the Installation of collector correct?

Whether the tubes are inserted in the header box? Whether manifold is tightly fastened and stabile? Whether collector modules connected in series or according to the technical design?

3. Whether the heat transmission paste is properly used?

4. Whether vacuum tubes are in perfect state?

Check whether the glass tubes are broken or crack? Whether there is condensed water in tubes? Whether the selective coating fades upward? If the surface temperature of glass is 10 K higher than ambient temperature, it is worth doubting: the vacuum is lost. In this case we should change the old tubes.

5. Whether all pipes is insulated?

View whether pipe of hot water, circulation pipe, pipe of solar loop, storage tank and relevant fitting all are insulated well?

6. Whether the right heat transfer medium liquid is used?

Only high temperature and anti-freezing medium can be used (Tyfocor LS or comparable one), Ph-value should not be lower than 7.

7. Whether the sensor of collector is in proper position?

Sensor of collector must be installed on the outlet pipe of collector (warm water side) and completely inserted into the manifold.

8. Whether the sensor of storage tank is in proper position?

Sensor must be installed on the output pipe of hot water.

9. Whether there is air in system?

Whether there is air- noise when pump is turned on and shut off? If yes, please carry out outgassing.

Manifold should be in the highest position of collector, otherwise one auxiliary air-vent is installed.

10. Whether the maximal area depended flow is correct adjusted?

First set the controller in manual operation (100% pump output) state and then adjust the desired maximal area depended flow .

Rule of thumb for area depended flow:

*Collector system for preparation of warm water
40litre/hour x sqm Absorber area = area depended flow*

Through reduction of area depended flow can get the desired temperature enhancement of heat transfer medium.

Collector system for heating 25liter/hour x sqm Absorber area = area depended flow

11. Whether the operation point of controller is correct adjusted?

Ät ca. 7K adjust, whether it is properly adjusted in advance? Whether the lowest temperature of collector is too high, if so changed in controller.

12. Whether the measuring value of sensor is correct?

Check the measured value and measure the resistance, please compare the measured value with specific value of sensor.

13. Whether there is unloading of storage in night through gravity self-circulation?

At night the temperature of the thermometer, which is installed in solar loop, should not increase.

14. Whether the operation time of circulation pump of drink water is adjusted in the optimum state?

If the operation time of pump is so long, please adjust it in optimum.