Double-Contact™ Heat Pipe and Manifold System

For

New RUBY™ Solar Collector

- **The introduction of Heat Pipe types used in Solar Collectors**

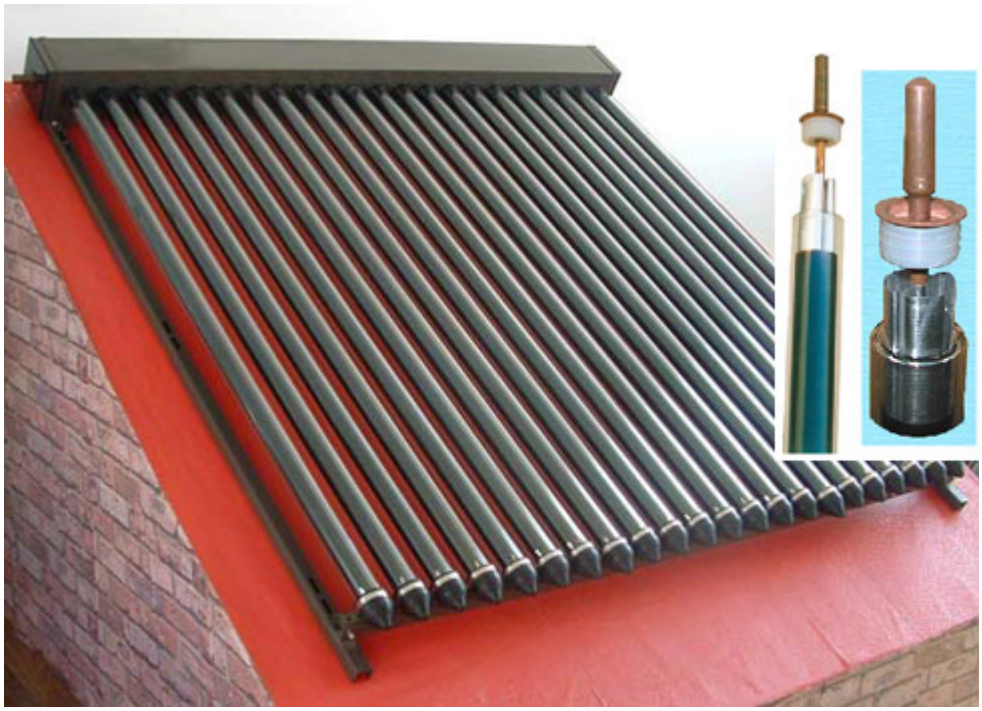
1. Big Heat Pipe:

This type was the first one. It is composed of a big glass tube (diameter of 70mm or more) of one layer, and a copper fin and pipe inside of the glass tube, a cap to cover the glass tube. The glass tube is evacuated.

Big heat pipe has higher efficiency than Small Heat Pipe, but this type is very difficult to make, because the cap and the glass can hardly be sealed together.

2. Small Heat Pipe:

Small heat pipe is relatively easy to make. It uses a two layer vacuum glass tube (47 or 58mm in diameter). The heat pipe is put into the inner tube. The Sun light heats the vacuum glass tube first, then the copper pipe get the heat inside the tube. So, the efficiency is a little lower than big heat pipe.

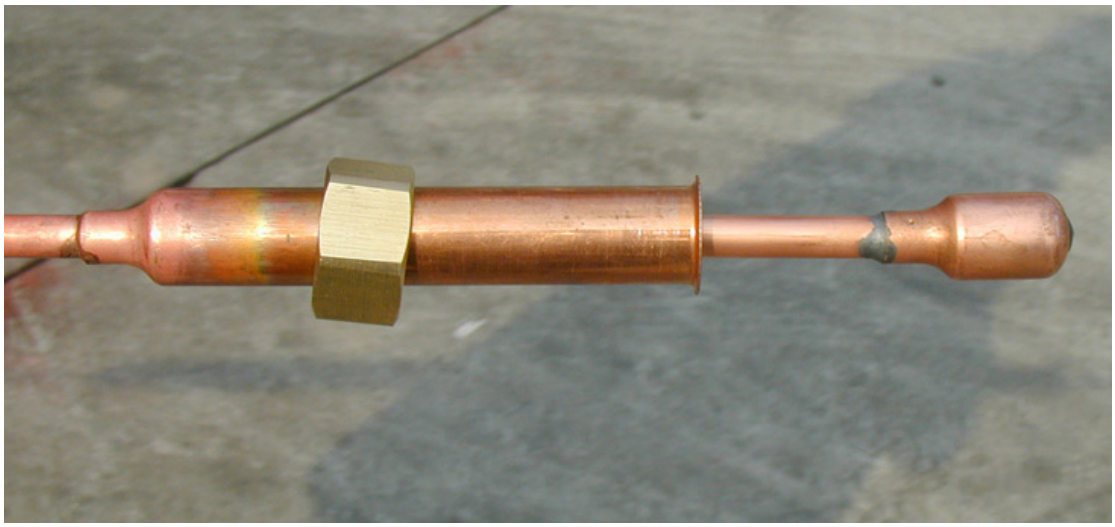


3. Small Tube U-Heat Pipe

The above small tube heat pipe exchanges the heat by means of the copper condenser at the end of the pipe. But, U-heat pipe is different. The liquid inside the U-pipe absorbs the heat inside the vacuum glass tube, and then it carries the heat directly to the tank through the U-heat pipe. So, the efficiency of U-heat pipe is the highest, and it is also most expensive.

4. Double-Contact™ Heat Pipe and Manifold System

Whether big or small heat pipe, they use the same manifold system to exchange the heat. U-heat pipe needs no manifold, it is already a circuit. But, the condenser of the heat pipe needs to be precisely contacted to the manifold hole, or, the heat transfer efficiency would be very low. In consideration of this respect, our **Double-Contact™ Heat Pipe and Manifold System** was developed.



- **Main features and functions of the Double-Contact™ Heat Pipe and Manifold System**

1. Out copper tube sleeve: this sleeve was fastened to the manifold by the screw. And then the liquid inside the manifold can flow into the sleeve, and carries the heat to the tank by direct flow. The liquid inside the sleeve gets heat either from the sleeve (which gets the heat from the top part of the glass tube), or from the heat pipe (which gets heat from all the glass tube).

2. Heat pipe: the condenser end of the heat pipe is directly into the

liquid inside the manifold, which is totally different with normal Big or Small Heat Pipe system.

3. By means of the above two ways of heat transfer, the total efficiency is higher.

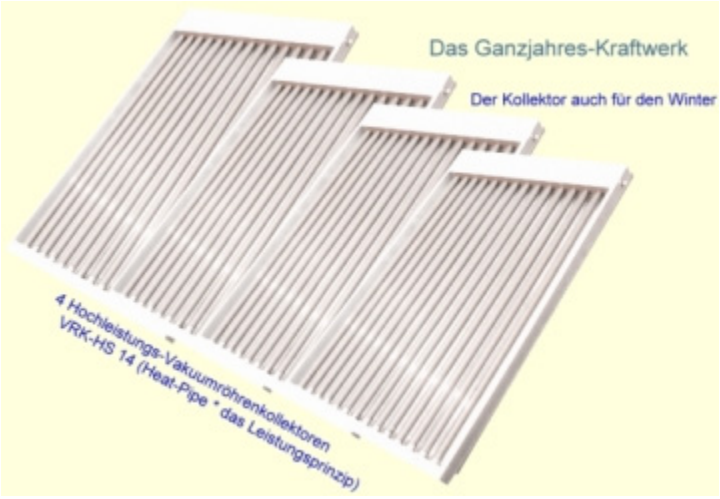
4. Because the temperature of the sleeve is lower than normal heat pipe, so the rubber or plastic seals are safer and has longer life.

5. The total reliability is higher than normal heat pipe system, due to two way heat transfer. Even the heat pipe fail, the sleeve still can exchange heat to the liquid.

6. Manifold: unlike normal heat pipe manifold, our manifold let the condenser end of the heat pipe directly plug into the liquid. And the liquid inside our manifold moves more easily. It brings constant high efficiency.

- **New RUBY™ Solar Collector**

Using the above **Double-Contact™ Heat Pipe and Manifold System,** we make our modular solar collector, **New RUBY™.**



Specifications:

Model	Dims	Vacuum tubes	Heat pipes	Collector area (m^2)	Total weight (Kg)	Average hot water output
RUBY14	1650*1072*76	14	14	1.4	30	140
RUBY12	1650*936*76	12	12	1.2	28	120
RUBY10	1650*800*76	10	10	1.0	26	100