

# Installation Manual

**Weiser Power Collector**



**AKOTEC**  
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# TECHNOLOGY AND NATURE IN HARMONY



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# INSTALLATION MANUAL WEISER POWER COLLECTOR

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# 1

## General Information

### General Safety Instructions:

Installation may only be carried out by qualified personnel under the applicable regulations and standards are implemented. An inappropriate Installation can damage the collectors and the entire system. In addition to these important applicable standards, the national ones must also be observed Installation regulations, legal regulations for accident prevention, e.g. Environmental protection and professional associations, as well as the relevant Safety regulations of DIN, EN, DVGW and VDE.

DIN EN 1991-4 and DIN EN 1991-3	Basics of structural design and action on structures- snow loads and wind loads
DIN EN 623053 and DIN VDE 0185	grounding and lightning protection
EnEV	Insulation of pipelines

### Transportation and Storage:

- Store tubes and collectors in a dry place until assembly and keep them in their packaging to protect them from damage. The ground must be level.
- The tubes and collector boxes apart from identical boxes not load from above. Stack a maximum of 7 tube boxes on top of each other.
- Pipes and collectors transport and store horizontally and taking into account the upper and underside.
- Handle full vacuum tubes carefully and only with cotton glove touch.

# 1

## General Information

### **Dangers and precautions during filling, assembly and maintenance:**

Only plug in the vacuum tubes at the very end, after filling and the pressure and leak test.- Do not switch off the system when it is exposed to the sun and do maintenance work carry out low-radiation weather.

### **Danger! Risk of burns!**

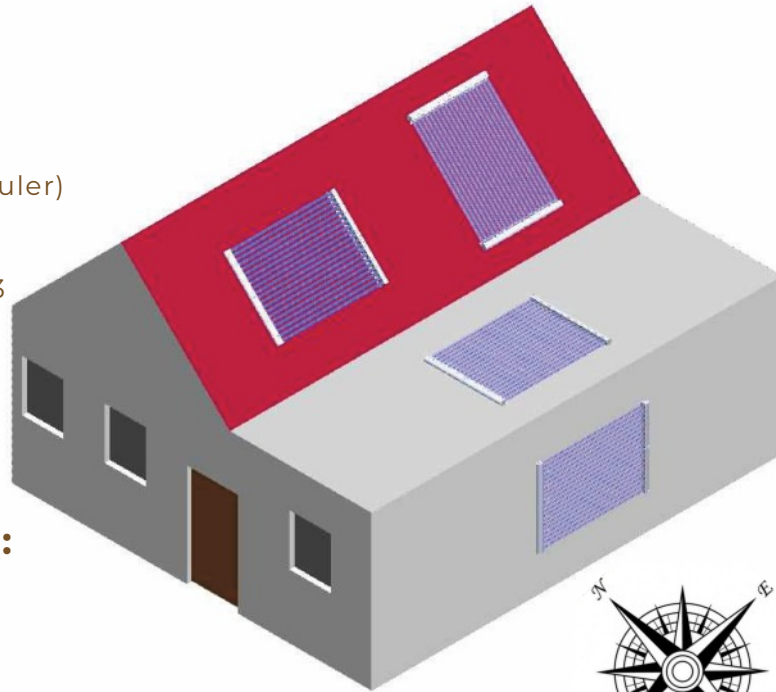
- System components can be hot!
- Do not store unpackaged full vacuum tubes in the sun, the condenser gets very hot!
- Hot liquid and steam can escape from the system's safety valve!

## Work Protection:

- Wear a helmet, ear protection and safety goggles
- Put on fall arrest equipment
- Only touch glass tubes with gloves

## Tools:

- drilling machine
- Tape measure (folding ruler)
- spirit level
- Open-end wrench SW 13
- Socket wrench size 13
- hammer
- angle grinder



## Types of mounting:

- flat roof
- Facade
- Pitched roof
- free standing



## Important:

The distributor tube must be in position either on the top, on the right side or on the left. In the case of transverse installation, the tubes must be protected by an adequate snow guard arranged above the tubes! Always align the tubes to the sun.

## 2

## Dimensions

### Dimensions of the Weiser Power collectors

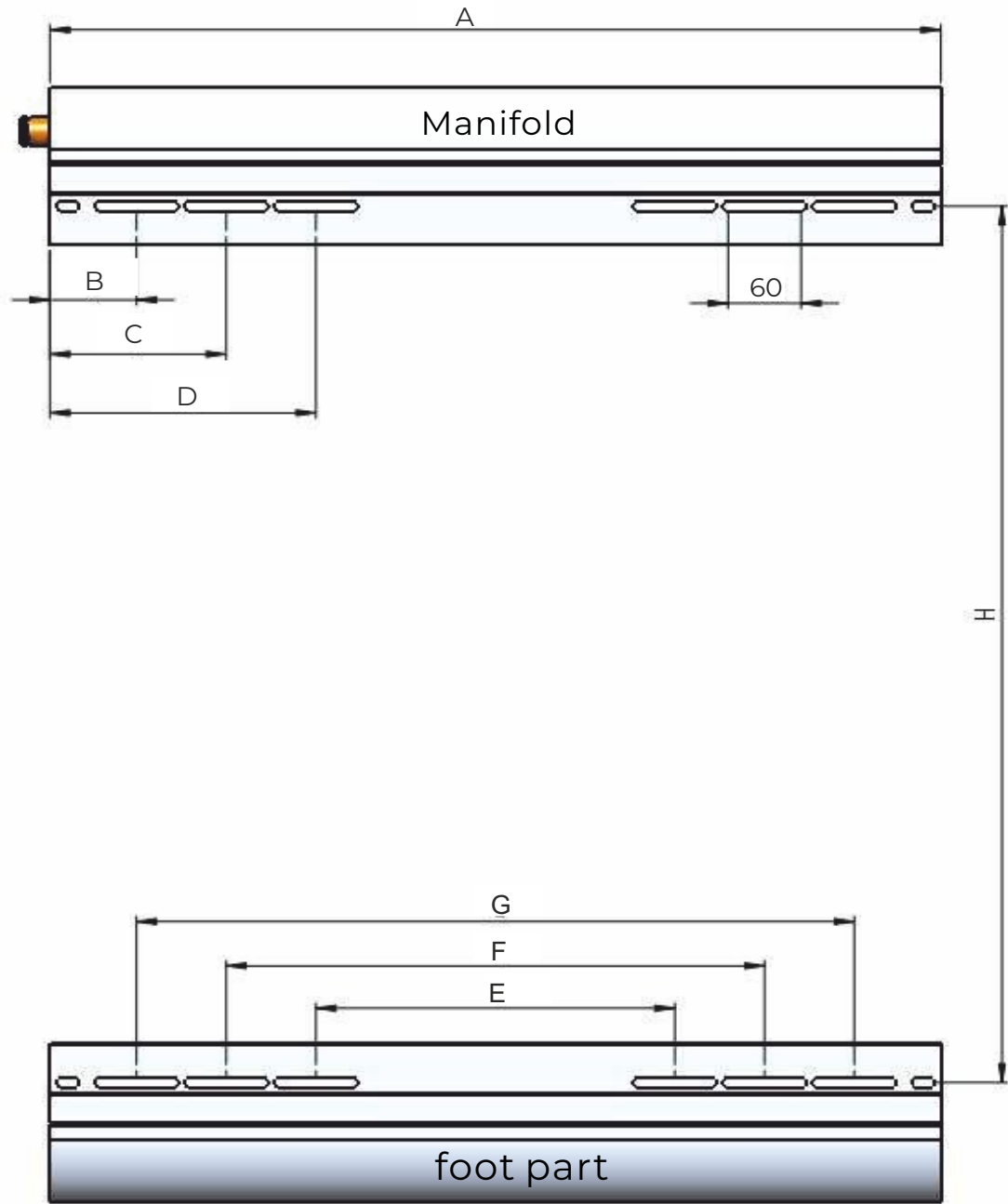
collector	length (mm)	width (mm)	weight net (kgs)	weight * (kgs)	area gross (m <sup>2</sup> )
with 10 df tubes	2110	745	23	38	1,57
with 15 df tubes	2110	1120	34	43	2,35
with 20 df tubes	2110	1495	47	58	3,15
with 30 df tubes	2110	2245	70	87	4,74

\*with collector

### Installation dimensions of the Weiser Power collectors

collector	A	B	C	D	E	F	G	H
10 tubes	745	72,5	147,5	222,5	300	450	600	1945
15 tubes	1120	72,5	147,5	222,5	67,5	825	975	1945
20 tubes	1495	297,5	372,5	447,5	600	750	900	1945
30 tubes	2245	447,5	522,5	597,5	1050	1200	1350	1945
The elongated holes allow deviations of + / - 30 mm.*								

\*Note: dimensions exclusive of the end caps



**upto 1961,5 mm**



# 3

## Mounting

### For all types of mounting

#### Assembly of the collector

- fasten the collector with washer/nut
- align and tighten the nuts



#### Assembly of the foot part

- fasten the base with washer and nuts
- align and tighten the nuts
- Assemble collector / foot part in one line
- use a spirit level



**Optional:** The installation of the reflector plate can be found in the Installation instructions for the reflector sheet.

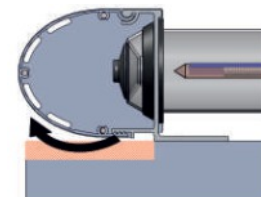
#### Dismantling the cover of the foot part

- Press the cover (on the tooting side) down
- then turn up and out
- put the lid aside

To avoid malfunctions and assembly errors, always use an AKOTEC fastening set.

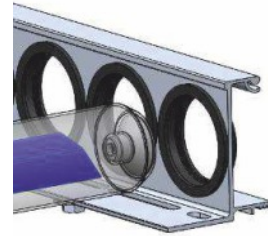
Note that with a completely overlying collector the housing cannot be dismantled.

**Note:** For assembly and disassembly of the housing cover is a minimum distance of 5 mm between the substructure and the housing cover necessary.

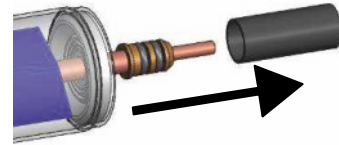


## Assembly of the vacuum tubes

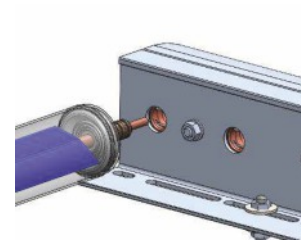
- Put on gloves (cotton).
- the tube bushing and the tube in the lower one spray the part with a mixture of washing-up liquid and water
- insert the tube into the with a slight turning movement mount foot part



- the O-rings (in the upper part) are covered with silicone grease pre-greased
- the O-rings are protected by a protective cap
- remove the protective cap before assembly

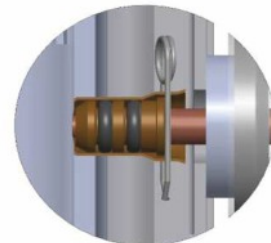


- insert the tube into the collector as far as it will go
- both O-rings must pass the spring clip
- the spring clip behind the brass component must lock
- check that the tube is firmly seated by pulling!



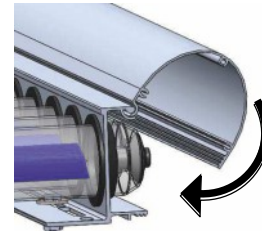
- All tubes must sit in a line in the collector
- Grease accidentally degreased O-rings generously

For south-facing roofs and vertical installation rotate the absorber towards the sun.



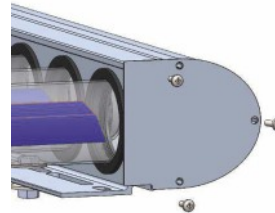
### Installing the foot part cover

- reinstall the base cover
- put the cover on and turn it down until the cover clicks into place



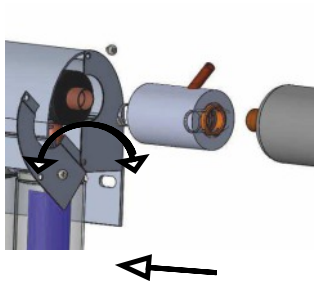
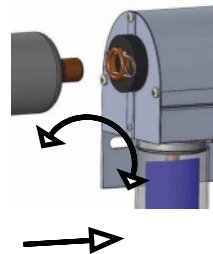
### Installation of the side cover foot part

- mount the side covers on the left and right to the base, using the attached screws



### Installation of the connector (rigid piping or corrugated hose)

- mount the rigid piping to the collector inlet side with a slight turning movement
- then mount the divided side cover
- mount the collector connector with immersion sleeve on the collector outlet side by turning it slightly
- finally mount the divided side cover



### Important: Please check regularly:

- whether the spring clips are properly seated
- the entire detent

### **Attention:**

- When using rigid piping, the fixed point of the pipe should be determined in such a way that the collector header pipe can expand sufficiently.
- The rigid piping must NOT be shortened. The further connections must be supported after a maximum length of 15 cm.

### **Notes on the continuing pipeline**

- Do not solder on the collector and the supplied connections. The design of the collector must not be modified.
- Only use components for installation that are suitable for the high temperatures that occur, for example gunmetal and brass fittings, copper and stainless steel tubing. When using hemp, only use pressure and temperature resistant solar sealant.
- When using compression fittings, all pipe ends must be square and deburred. Slide the union nut and the clamping ring onto the pipe and coat the threads with a little oil. Push the tube into the compression fitting as far as it will go. Tighten the nut by hand first, then tighten  $\frac{3}{4}$  of a turn.

### **Mounting the sensor**

- Insert the sensor into the sensor immersion sleeve
- connect with shrink tubing
- Shrink the shrink tubing with a heat source or wrap it with the enclosed protective film

## Line-up of collectors & connecting the collectors

- first align a header and tighten the mounting screws
- attach the following collector with the DF collector connector to the mounted collector
- couple with slight twisting movements and little pressure
- check the locking by gently pulling
- It may be necessary to couple the subsequent collector rotated 90° upwards and then swing it into position

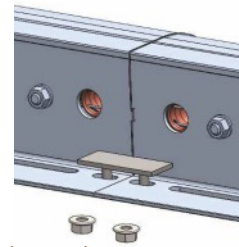
### Important:

Collectors must be installed aligned with each other, otherwise leaks can occur.



## Assembly of the housing connectors

- Install and tighten the casing connector using the enclosed self-locking nuts



### Danger:

If the solar system is not filled with fluid immediately after installation, the collectors can be damaged. The collectors must therefore be protected from the sun with a cover. Large systems can be commissioned field by field. Appropriate shut-off devices must be provided for this purpose.

### Flat roof mounting

See installation instructions for collector fastening - Vario Pro basic set (item no. 20200), freestanding installation basic set (item no. 20070), flat roof DF fixing set (item no. 20160)

### Pitched roof mounting

See assembly instructions for collector fastening - on-roof tile (item no. 20084), On-roof slate (item no. 20200)

### Facade mounting

see assembly instruction facade (item no. 20165)

### Observe the angle of the collectors

With a system for domestic water heating, we recommend aligning the absorber at 45° to the sun. With the combination of domestic water heating and heating support, we recommend aligning the absorber at 60° to the sun.

### Observe the operating pressure

The operating pressure (min. operating pressure) of system  $P_0$  should be set when cold (20°C) so that the pressure at the level of the collectors (collector) is 1.5 bar.

**Example:** The collector was installed at a height of 10 m above the membrane expansion tank (MAG).  $P_0 = (h \times 0.1) + 1.5$  bar,  $P_0 = (10 \times 0.1) + 1.5$  bar corresponds to  $P = 2.5$  bar. The pre-pressure of the MAG should be set 0.3 - 0.5 bar below the system pressure  $P_0$  in the depressurized state. This is just a rough guide. For the design, please use the **easy-planner**, which you can download from [www.akotec.eu](http://www.akotec.eu).

# 4

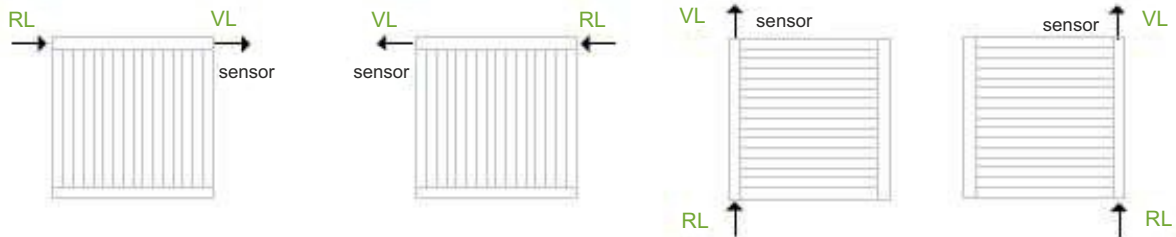
## Interconnection

### Collector interconnections df-collector

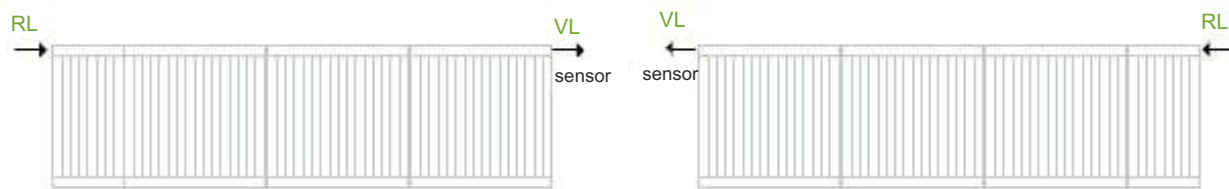
Note: Always install sensors on the flow side!

#### Connection options:

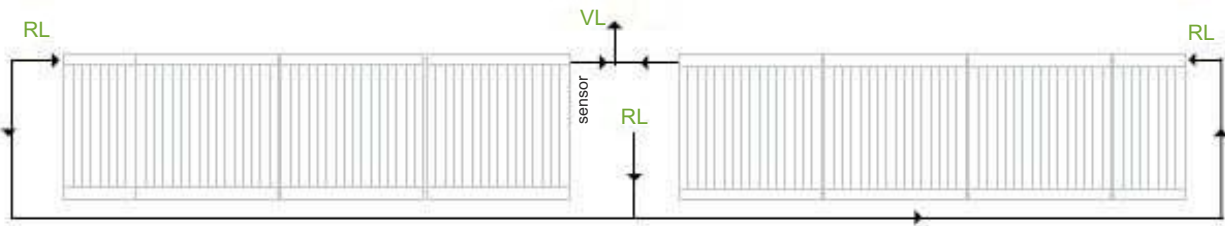
##### One collector



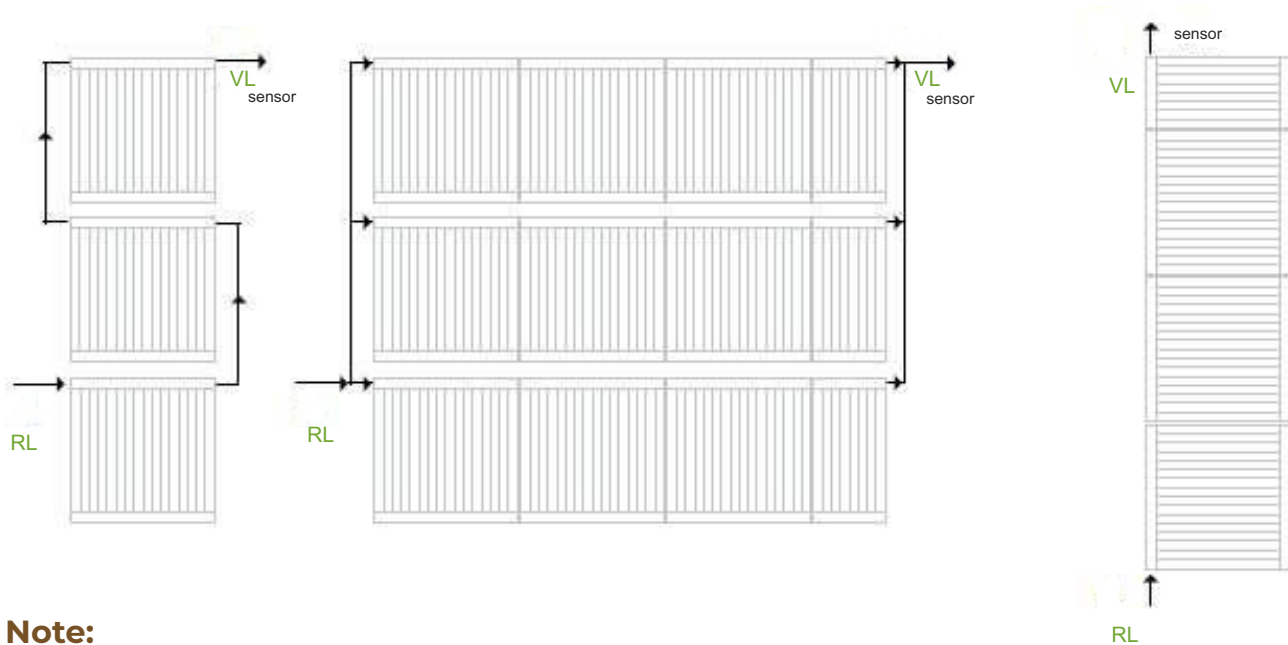
##### Several horizontal collectors in series (max. 70 tubes)



## Several horizontal collectors in series and parallel (max. 70 tubes)



## Several vertical collectors in series and in parallel (max. 70 tubes)



### Note:

When connecting collector surfaces in parallel, care must be taken to ensure that the subfields are the same size (number of vacuum tubes) and that the interconnection is "clean" according to Tichelmann.

Due to the high pressure loss, only one Weiser Power 1500 can be installed in a row of collectors.



# 5

## Checklist

### Overview of important point that must be observed

#### 1. Insert the vacuum tube into the collector with a twisting motion

- Remove the protective cap from the vacuum tube.
- Spraying the tubes with a detergent-water mixture makes tube assembly easier.
- Check the locking with a slight pull.
- Wear cotton gloves!

#### 2. Attention! Do not use automatic air vents for a solar system!

- common error because it is common in a standard heating system.
- Automatic air vents can be destroyed by high temperatures. Heat transfer fluid escapes, frost protection not guaranteed.
- Functionality of the system is no longer guaranteed. Use air pots with manual bleed screw.

#### 3. Filling the system

- The heat transfer fluid must be filled with an electric flushing pump/solar filling station. It is essential to observe the minimum flushing time of 30 minutes so that the heat transfer fluid no longer contains any air pockets.
- The filling quantity depends on the number of collectors installed and the line lengths. Flow values, see point 4.

#### 4. Setting up the solar station

- Set the solar station to a sufficient heat transfer fluid volume flow! The regulated volume flow must be set in the DeltaSol SLL controller (litr./h).

number of tubes		20	30	40	50	60	80	100	120	140
heat transfer fluid flow rate		1,0- 1,5 l/min.	2,0- 2,5 l/min.	2,5- 3,0 l/min.	3,0- 4,0 l/min.	4,0- 5,0 l/min.	5,0- 6,5 l/min.	6,5- 8,0 l/min.	7,5- 9,5 l/min.	9,0- 11,0 l/min.

## **Note:**

We expressly point out that the ready-to-use heat transfer fluid VT51 or a heat transfer fluid that we have tested should be used in order to ensure long-term safe operation of the solar system.

### **5. Expansion tank - sizing**

- For the correct dimensioning of the expansion tank, we recommend our easy-planner ([akotec.eu/english/easy-planner](http://akotec.eu/english/easy-planner))

### **6. Storage**

- it should be dimensioned between 50 l/m<sup>2</sup> and 70 l/m<sup>2</sup> gross collector area.

### **7. Controller**

- if no AKOTEC controller is used: the alternatively selected solar controller must have a vacuum tube collector function.

### **8. Insulation**

- a complete and sufficient insulation of the solar lines is causing obligation

### **9. Lightning Strike**

- The collector field must be grounded to protect against lightning strikes.

### **10. Air pot**

- The air pot must always be installed at the highest point and at the flow.

## **maintenance instructions**

The antifreeze content of the heat transfer fluid and the safety devices (safety valve and MAG) must be checked annually! A regular function check of the controller and the electrical components is required!

## **Use background reflection!**

A reflector is required for the Weiser Power for maximum performance. Any material that reflects well is suitable as a reflector, such as zinc sheeting or a light-colored wall. If there is no reflective background on site, a reflector can be ordered as an accessory.

# THE SUPER POWER OF NATURE



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