American Solar Works

Harness Your Energy™

ASW-18F Assembly Manual v03

September 1, 2008

CAUTION

Never leave the evacuated tubes in direct sunlight before installation, this will cause the heat pipes to begin the phase change cycle and expand the heat transfer coupling making it impossible to install in the manifold and will cause the tubes to break upon installation.

CAUTION

YOU MUST INSTALL ALL PLUMBING MECHANICALS AND CHARGE SYSTEM BEFORE YOU INSTALL TUBES OR RISK DAMAGE TO SYSTEM COMPONENTS.

Please read and understand the installation manual fully before attempting to assemble your collector.

ASW-18F
Assembly Manual

COLLECTOR ASSEMBLY

Tools Required

The following tools are all you'll need to assemble your collector:

1. 3/8" drive ratchet with 3" extension
2. 9/16" socket
3. 1/2" socket
4. 1/2" box wrench
5. 9/16" box wrench
6. Gloves
7. Eye protection

Parts List

Unpack and check all parts for any signs of damaged or missing parts.

A. Header (1)
B. Lower frame (extruded aluminum) (1)
C. Vertical frame rails ('U' channel) (3)
D. Horizontal frame rail sets ('C' channel) (4)

E. Tube retention rings/cups (22 or 30 of each)
F. Reflectors (21 or 29) – Not pictured
G. Plastic reflector clips (22 or 30)

Tube retention cup is delivered as a single piece –

F

Additional parts:

- ½" x 1 1/2" bolts (6)
- ½" nuts (6)
- Tube of dialectic grease (1)
- 58mm x 1800mm evacuated tubes with heat pipes installed (22or 30)

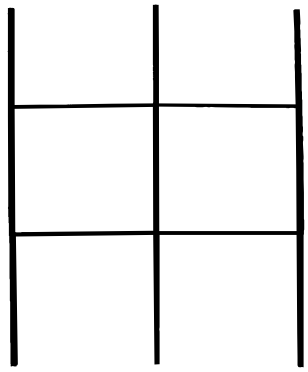
Unpack and inspect the evacuated tubes for any signs of vacuum loss, the barium getter at the bottom of tube will be white instead of clear when the vacuum has been lost. DO NOT INSTALL ANY TUBES THAT HAVE LOST VACUUM. If the heat coupling is showing signs of discoloration you can use 00 emery cloth to clean before installation in header.

Frame Assembly

1.Take the three vertical ('U' channel) frame rails (Part C) and set them down approx three feet apart positioned vertically. The larger space should be between the tab and hole and should face up.

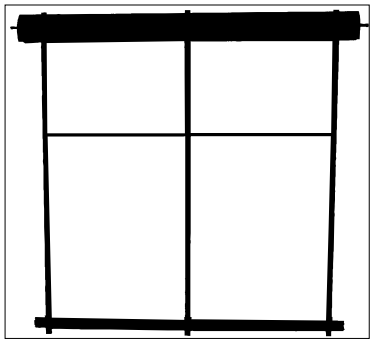
2.Take the four small horizontal rails ('C' channel, Part D). With tabs facing middle channel, set them horizontally on the vertical rails. Align the holes in the ends of the C channels with the two holes in the 'U' channels. Tighten with the 1/2" nuts and bolts.

3.IF YOU ARE MOUNTING THE COLLECTOR TO A RACK OR BRACKETS WHERE YOU HAVE ACCESS TO THE UNDERSIDE OF FRAME, YOU MAY DO SO NOW.



ASW 18F Assembled frame

4.Take the Header (Part A) and orient it so the holes for the tubes face down. The slot in the header will slip in the tabs on the frame rails. The stainless steel clips will fit in the slot at the other side of header, See illustration below. Adjust and tighten bolts. YOU MUST CENTER THE HEADER ON THE FRAME RAILS BEFORE YOU TIGHTEN THE BOLTS.



ASW 18F frame with Header

STAINLESS STEEL CLIP ASSEMBLY

Side view of assembled clip

Follow arrow: bolt through front half of clip, through frame rail, then through back half of clip and secure with nut

5. Take the Lower frame rail (Part B) and center it on the bottom of the stainless steel frame rails so the wider side faces down and fits in the tab. The stainless steel clips will fit on the other side, adjust and tighten bolts. YOU MUST CENTER THE BOTTOM RAIL ON THE FRAME RAILS BEFORE YOU TIGHTEN THE BOLTS.

Tube Installation

YOU *MUST WEAR EYE PROTECTION* AND SAFTEY GLOVES DURING THE TUBE INSTALLATION, OR RISK SERIOUS INJURY.

CAUTION YOU MUST INSTALL PLUMBING MECHANICALS AND CHARGE SYSTEM BEFORE INSTALLATION OF TUBES OR RISK DAMAGING THE SYSTEM COMPONENTS.

1. Take one tube and apply a thin coat of dielectric grease to the heat transfer coupling. If the heat transfer coupling is discolored clean with 00 emery cloth.

2. Hold the tube firmly at a two foot space starting one foot from the end with the heat transfer coupling, and with a twisting motion slip the heat transfer coupling into the hole in the manifold. Make sure that the heat transfer coupling fits in the small copper port inside the header.

3. Take one tube retention cup and separate it. Take part F and slip onto the bottom of the tube and snap into place. Take part E and thread into part A making sure not to over tighten (allow slight movement of tube for expansion).

4. Repeat steps one thru three for 2 additional tubes.

5. Only install three tubes at this time to allow for the reflector installation.

Reflector Installation

CAUTION YOU MUST WEAR EYE PROTECTION & GLOVES DURING THE REFLECTOR INSTALLATION OR RISK SERIOUS UNJURY.

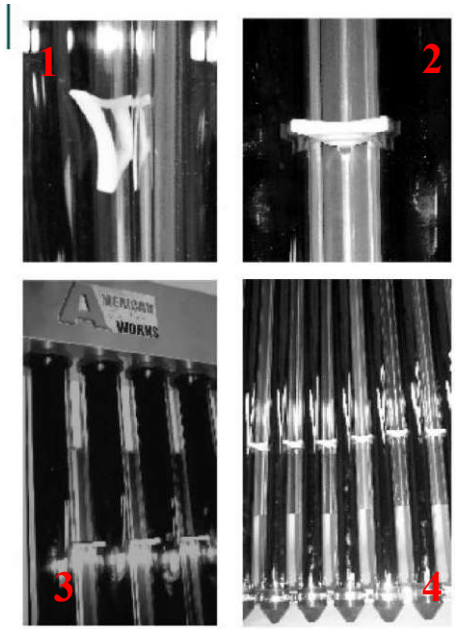
1 Take one reflector and place between and behind two tubes.

2 Take clip and place vertically in slot in reflector and turn 45˚, this will hold reflector in place.

3 Repeat for the other slots in reflector.

4 Repeat steps one thru three for following reflectors.

5 Repeat the tube installation and reflector installation in an alternating order.



STAND ASSEMBLY

Tools Required

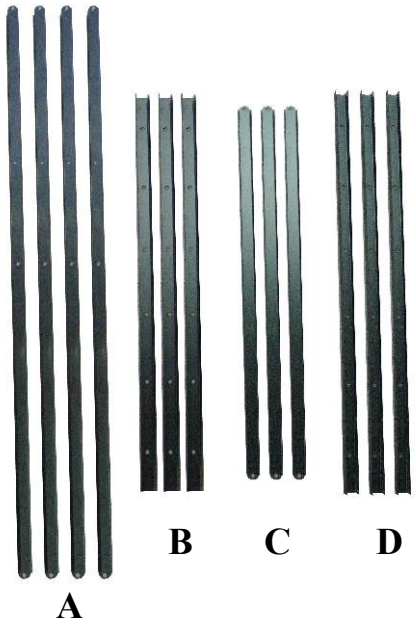
The following tools are all you'll need to assemble your collector:

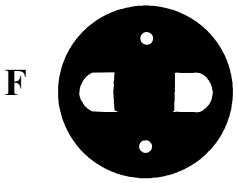
3/8" drive ratchet with 3" extension
9/16" socket
1/2" socket
1/2" box wrench
9/16" box wrench
Gloves
Eye protection

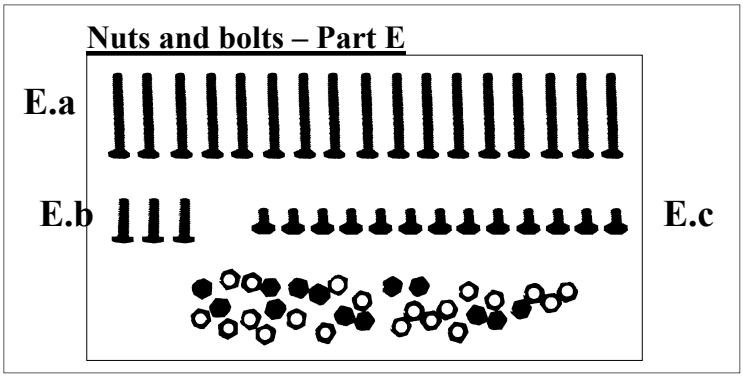
Parts List

Unpack and check all parts for any signs of damaged or missing parts. If any parts are missing please call ASW for prompt replacement.

A. Knife Frame pieces (4)
B. Moving Stand pieces (3)
C. Side Frame pieces (3)
D. Back Stand pieces (3)
E. Nuts and bolts
    a. 8 x 50 mm (15) + extra
    b. 8 x 25 mm (2) + extra
    c. 8 x 12 mm (12) + extra
F. Stand Feet (6) – OPTIONAL







Stand Assembly

LEG ASSEMBLY (Repeat 3 times):

1. Assemble each leg from 1 back stand piece (Part D), and 1 moving stand piece (Part B).
   Fit moving stand into back stand. Adjust to desired height. Bolt together with 2 of the 8 X 50 mm nuts/bolts.

   Repeat for each leg.

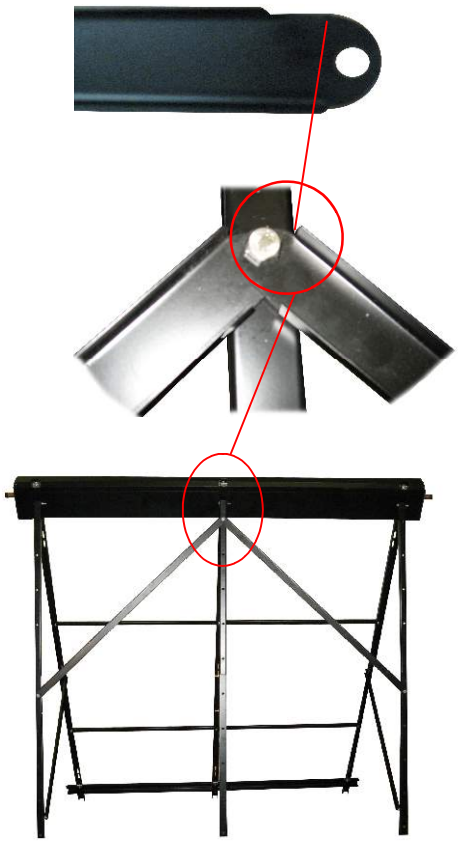
2. ATTACH LEGS TO FRAMERAIL: Insert leg with back stand inside the vertical frame rail at the header.

2. Install one side rail with 1 8X12 mm nut/bolt to center hole on vertical frame rail and an appropriate hole on the back leg to achieve desired angle.

3. Repeat steps 3 & 4 for the two remaining legs.

CREATE KNIFE FRAME

1. When attaching the knife frame piece at the top of the center leg, orient all knife frame pieces so that notches are facing down. The knife frame piece should face up at the bottom of the center leg.



2. Install remaining 2 knife frame pieces with the 8X25 mm bolt/nuts at the center to form two 'X's.

3. Use 8X12 mm nut/bolts to secure ends of the knife frame to the vertical leg of stand.

INSTALL FEET (OPTIONAL)

1. Secure 1 foot to each of the three frame legs and each of the three collector legs. Use one 8X50 mm nut and bolt each to secure each foot.

TROBLESHOOTING

The ASW52-B will provide many trouble-free years of service when installed in accordance with the procedures found in the assembly manual. The following are generalized guidelines. The majority of faults found in association with the ASW-18F have been attributed to the balance of system components and/or design/workmanship not provided by American Solar Works.

1) There are no serviceable parts in the evacuated tube/heat pipe assembly. If one is found to be defective or becomes damaged contact American Solar Works for replacement. Serious injury can occur during an improper disassembly/repair attempt. Under no circumstances should you attempt to manipulate the evacuated tube/heat pipe assembly in a manner not in accordance with the assembly manual.

2) A leak in the header/manifold assembly will most likely be due to insufficient freeze protection. In the event a leak is detected return the header/manifold assembly to American Solar Works for repair or replacement (as determined by ASW).

3) If the 3/4 inch copper inlet/outlet become out-of-round, it can be trued using an industry standard tool, or up to 1/2 inch may be cut back using a quality pipe cutting tool. Be sure that sufficient surface remains available for appropriate fitting of a 3/4 inch compression fitting to both the inlet and outlet for interconnection to the balance of system circulating components.

4) If any of the frame components become damaged, minor repairs can be made using standard hand tools. Always use heavy gloves and eye protection when manipulating these components to avoid serious injury. Any of the frame parts can be replaced by contacting American Solar Works.

5) If any of the balance of components included with the ASW-18F be found to be missing, lost, or damaged please contact American Solar Works for replacement.

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