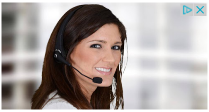
HELIATOS MH-38 Solar Water Heater Panel Instruction Manual

December 7, 2022



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MH-38 Solar Water Heater Panel

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Standard System Installation Instructions (1-Row)

General System Layout Sketch

SW-38 or MH-38 Solar Panels

PV panel

Can use Standard Copper, CPVC or
PEX Pipes
Pump
Bottom Feed Connector

Existing Water Heater

SW1 BW1

Standard System Installation Instructions (1-Row)

Introduction

This document describes how to install SW or MH series panels. The SW and MH series panels are designed to be easily installed on any flat surface. They are equipped with 3/8″ compression fittings so making reliable tight connections is easy and fast. We offer inexpensive fittings kits that make connection to standard ½″ pipe of any type easy. No soldering or special tools are required. It is the installer’s responsibility to assure that the panels themselves as well as the method and place of installation are in full compliance with all applicable regulations. Please consult the datasheet for the panels you are considering and assure that they are permissible and appropriate for your location.

Surface Preparation

In general, the surface you are planning to use for your installation should be fairly flat. Our panels are unique in that they can accommodate a base that is up to 1/4″ uneven under each panel. Because of the special polycarbonate glazing they can flex a small amount without damage. The panels are equipped with four “feet”. Each foot has a hole that is sized for a #8 deck screw. If you are mounting the panels to a surface that is suitable for using exterior deck screws, they are ready to install out of the box. However, if you require bigger bolts, you will have to enlarge the holes with a drill. Do not make the holes larger than 1/4″, as the feet will not have sufficient strength to hold the panels down. If you are using a rack to tilt your panels towards the sun, please make sure the feet all rest flat on the surfaces of the rack and all feet are securely fastened to the rack. Rack mounted panels can be subject to large wind forces.

Step 1

Unpack the panels from the box and lay them on the installation surface next to each other. Each panel is connected to the next with a compression union. The compression nuts that are pre-installed onto the tube in the panels thread onto the two ends of these unions.

SW1 BW1

Standard System Installation Instructions (1-Row)

Step 2

In this step you connect the panels to each other. The connection is formed by the included compression unions. First some sealant has to be applied to the union. You should put a ring of sealant around the inside lip of both sides of the union as shown in the illustration.
Start threading the union into the nuts on one panel and hand tighten only to allow some flexibility when lining up the panels. Bring the panels close to each other so the nuts on the second panel can be threaded onto the union, hand tighten. Slightly tighten the nuts on both sides. Not much torque is needed to form a tight seal. Once the system is pressurized you can tighten until all leaking stops.

Repeat steps 1 and 2 for all your panels

SW1 BW1

661-7SOLAR7 support@heliatos.com

Step 3

This installation manual assumes that you have one of our Connection Fittings kits. These kits contain all the fittings needed to make the connection. The direction of flow through the array of panels does not matter. It can go from left to right or the other way around. You can use 1/2″ copper or 1/2″ CTS CPVC pipe or 1/2″ PEX tubing. No soldering is required even if you are using copper pipe. First thread two 3/8″ compression to push-fit adapters onto the nuts on the two end panels (left and right) and hand tighten. Apply sealant as in step 2.

Next push the pipes going to and from the tank into the push-fit adapters making sure they are seated all the way in.

SW1 BW1

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Standard System Installation Instructions (1-Row)

Step 4

The panel array has to be securely tied down. This is especially true if it is mounted on a rack or on rails so that wind can catch the panels from below. We show a simple set of deck screws here, but depending what method you are planning to use you should follow the directions provided with your mounting hardware. Please remember that these panels are very light so that under no circumstances can you rely on their weight to hold them in place.

Mounting directly on a flat surface as well as on racks or rails is accomplished in a similar way. To achieve full wind loading capability it is important to attach all tabs securely to your mounting system.

Step 5

The exposed fittings and pipes have to be insulated next. This can be done by surrounding each joint with a foam or fiberglass sleeve. If you are using plastic foam a piece of aluminum adhesive tape should be wrapped around the foam sleeve to prevent rapid UV degradation.

SW1 BW1

Install a foam sleeve over every fitting between panels as well as at the ends of the panel array.

Completed Array Installation

SW1 BW1

Bottom Feed Connector Installation

The “Bottom Feed” solar water heater connector is meant to connect solar water heater panels directly to your existing standard water heater. It’s main advantages are ease of installation, efficiency, and that under most circumstances it eliminates the need for check valves and the associated increased pumping power requirements. To install this connector your water heater must be equipped with a standard “boiler drain”. Almost all water heaters have this drain. The only exceptions are extremely small point of use heaters (2.5 gals.) and some side connecting units. The connector and boiler drain have standard pipe threads, so during installation apply a generous amount of Teflon tape to the threads before installation.

Step 1

Turn off the water heater and locate the “boiler drain”. All standard drains are located near the bottom of the water heater. Drain the water heater using a standard garden hose.

Step 2

Once the tank is empty unscrew the drain valve to remove it from the water heater tank. The Bottom Feed Connector has a built in new metal boiler drain so the existing one will not be needed any more.

Step 3

The bottom feed connector consists of 2 main parts that are held together by the large nut in the middle. First you have to separate the two parts by unscrewing the big nut. Then thread the steel part (gray metal) into the water heater where the boiler drain used to be using a generous amount of plumbing sealant (included) on the threads.

SW1 BW1

Step 4

This is easiest accomplished on a workbench. Install the pump on the “cold” side of the bottom feed connector (marked with a C).

The pump should end up oriented as shown in the picture. The pumping direction is very important for the efficiency of the system. There is always a marking on pumps which indicates in which direction the pump moves the water. This must be AWAY from the bottom feed connector. You should NOT use the included blue sealant on the pump. Instead use the included Teflon tape. Use at least 7 wraps of the tape on both sides of the pump.

SW1 BW1

Install the supplied push fit to female adapter on the pump with Teflon tape. Then thread the push fit to male adapter on the ball valve on the hot side (marked with an H). On this you should use the blue sealant.

IMPORTANT There is a small setting port on the back of the pump. Use the included plastic key to move the arrow in the setting port between the two 5’s. If you don’t set the pump the system will not operate efficiently.

Installation Warning:

When tightening threaded fittings and adapters to the ball valve on the hot side of the Bottom Feed Connector DO NOT allow the ball valve to rotate. It is important to prevent rotation of the ball valve with a wrench while tightening fittings to it.

Step 5

Now the pre-assembled Bottom Feed Connector main body can be re-attached to the steel section that was previously threaded into the water heater. Make sure the rubber sealing ring that was inside the big nut is in place. Do not use sealant or Teflon tape on this joint as it seals with the rubber gasket.

Step 6

The final step is to insert the pipes going to the panels into the push to fit adapters or the compression fittings. If you are using piping that is not flexible, especially copper please make sure that the weight of the piping does not rest on the bottom feed connector and especially not the pump. The pipe connected to the pump should go to the “cold” side of the panels. To operate the system open BOTH of the ball valves.

Completed Bottom Feed Connector Installation With Ball Valves in OPEN position

Pump and PV Panel Connection

Standard System Installation Instructions (1-Row)

The PV panel has a small terminal box on the back. After opening it you can connect the included wire, red to the positive terminal and brown (or black) to the negative side. The pump comes with a red and a black wire. Connect the red wires together using the included wire nuts and connect the brown (or black) wire to the black one on the pump. After connecting the pump you have to set the pump for direct connection to a PV panel.

General Installation Hints

· No matter how warm the climate at your location the insulation of all exposed fittings / pipe is extremely important. Even small exposed areas will cause a lot of the solar heat to be lost. The system WILL NOT FUNCTION PROPERLY until ALL the insulation is installed.

· After installation and when re-starting the system after it was drained all air has to be bled out of the system. To do this you can slightly loosen one of the fittings near the highest point of the system and let the air escape. Once water starts to leak out re-tighten the fitting. Under normal operating conditions this should not have to be repeated.

· Please observe the polarity of the pump connecting the positive supply to the red wire and the negative to the black wire. Connecting in reverse will instantly destroy the electronics in the pump.

· The lower you set the gas or electric control of the water heater the more benefit you derive from the solar heater.

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