SOLARHOT™

Drainback Solar Thermal System

Installation/ Owner's Manual

Description / Applications

System Overview

The SOLARHOT[M] solar thermal drainback system can provide 70-90% of your domestic hot water needs annually. Water running through a solar collector is heated by the sun. The heat is then transferred to the potable water in your hot water tank. Water is circulated through each "loop" by a high efficiency circulation pump through a brazed plate heat exchanger. The collector loop contains distilled water and air so that when the pumps are not running, the water in the loops falls into the drainback tank, leaving the collectors and the pipes that are exposed to freezing temperatures empty and safe from freeze damage.

The pumps are controlled by a differential control which reads the temperatures at the collector and in the tank. It provides power to the pumps when the temperature in the collectors is 16° higher than the tank water. The control includes a digital display with touch pad to easily program temperature limits, differentials, vacation modes, and other advanced options.

solarH$_2$Ot®

Contents

⚠ WARNING **Electrical Shock, Fire, Explosion and Burn Hazards**

This system must be installed, adjusted, and put into operation only by a trained, qualified professional or service agency in accordance with the National Electric Code ANSI/NFPA 70 (Canada CSA C22.1), state and local codes, and authorities having jurisdiction.

The installer must carefully read and follow the installation and service instructions contained in this manual. Make them available to the equipment owner, so they can be kept for future reference.

Features

SOLARHOT Drainback Advantage

Solarhot has uniquely created the SolVelox package, which pre-assembles and integrates an oversized stainless steel heat exchanger along with the pumps and valves necessary to drive a two-loop solar system. The heat exchanger and pumps are sized to meet the heat output of up to six solar collectors, so one SolVelox appliance provides an economical solution as you scale the system to meet your particular needs. Also, the Solvelox is externally mounted in order to reduce maintenance issues.

Safety

The best performance will come from a solar collector with aluminum sides and low iron solar glass well sealed to hold the heat. These materials weigh 80-150 lbs., depending on the size of the collector.

⚠ WARNING **Electrical Shock and Fall Injury Hazard.**

Use extreme caution when mounting collectors on a roof or when connecting any wiring or electrical hookups.

- ALWAYS use fall protection
- Secure all ladders on level ground
- Locate all possible hazards, overhead wires, loose shingles etc
- Make sure power is turned off before adding water to the system
- NEVER connect power to the water heater or storage tank until it has been filled.
- Use a tempering valve or mixing valve to prevent scalding
- Consult proper authorities and check with your local building inspector for permit requirements and local building codes before project commencement. System must meet local code requirements for penetrating structural members and fire-rate assemblies.

Certification

The solar energy system described by this manual, when properly installed and maintained, meets the minimum standards established by the SRCC. This certification does not imply endorsement or warranty of this product by the SRCC.

Materials List

DBS_ _ Drainback System

System requirements:

- □ SOLARHOT Platinum solar collectors with 1” gasketed unions or SOLARHOT Silver collectors
- □ (1) SOLARHOT SolVelox drainback pump package (pumps, heat exchanger with Elastomeric insulation, solar differential control), including mounting bracket, six (6) screws, two (2) sensors (third sensor optional), strain reliefs for sensors, and 50 ft. sensor wire
- □ (1) 10 gal. drainback tank with sight glass
- □ (1) Flush mount hardware per collector
- □ (1) Solar Dip tube
- □ (1) ASSE 1017 certified mixing / anti-scald valve
- □ (1) Roof kit per collector array (flashing, caps, plug, reducing elbows)
  - (1) 3/4” copper roof flashing with special adapter cap
  - (1) 3/4” copper roof flashing with gooseneck
  - (1) Row Kit (for Platinum collectors, Silver collectors add (2) gasketed unions per collector or copper couplings and caps.
  - (2) 1”x3/4” elbows

DBS_ _ _RM Drainback System with Adjustable Mount Hardware

System requirements:

- □ SOLARHOT Platinum solar collectors with 1” gasketed unions or SOLARHOT Silver collectors
- □ (1) SOLARHOT SolVelox drainback pump package (pumps, heat exchanger with Elastomeric insulation, solar differential control), including mounting bracket, six (6) screws, two (2) sensors (third sensor optional), strain reliefs for sensors, and 50 ft. sensor wire
- □ (1) 10 gal. drainback tank with sight glass
- □ Adjustable mount hardware (telescoping legs to vary mounting angle)
- □ (1) Solar Dip tube
- □ (1) ASSE 1017 certified mixing / anti-scald valve
- □ (1) Roof kit per collector array (flashing, caps, plug, reducing elbows)
  - (1) 3/4” copper roof flashing with special adapter cap
  - (1) 3/4” copper roof flashing with gooseneck
  - (1) Row Kit (for Platinum collectors, Silver collectors add (2) gasketed unions per collector or copper couplings and caps.
  - (2) 1”x3/4” elbows

Additional Materials Required

- □ Electric water heater to use for solar storage tank, 80 gal. minimum
- □ 3/4” copper tubing, standard brass and copper fittings
- □ Mounting hardware
- □ 1” elastomeric insulation (e.g. Nomaco K-Flex LS)
- □ PVC insulation jacketing (e.g. Speedline Smoke Free PVC)
- □ Vinyl tape
- □ Approximately 9 gallons of distilled water
- □ Flow meter that allows backflow (optional, see Installing the Drainback Tank)
- □ Drip pan (optional, see Installing the Drainback Tank)

Drainback System Specifications

DBS_ _ and DBS_ _ _RM

Congratulations on the installation of your SOLARHOT System! Correctly installed and maintained, your system should provide you with many years of uninterrupted solar hot water. The solar collectors are designed to last 25-35 years, electric water heaters 10-20 years, and pumps, controls, and valves 5-10 years. Local water quality and usage will greatly affect life expectancies.

Solar Collector: (Recommended)

SOLARHOT S-SC-126P_ _ Platinum flatplate collectors

Solar Storage Tank (80 gal. minimum), not included:

Whirlpool EE3Z80HD055V
American Premier E62-80H-045DV
Rheem 81VR80TC-1
Lochinvar FTA082K

Pumps:

Collector Loop Drainback: Wilo Star 32B Tank Loop: Wilo Star 8B

Controller:

Differential Control TR 0301U, includes two (2) (third sensor optional) PT1000 sensors, one is prewired

Heat Exchanger:

SOLARHOT P-HX-210512

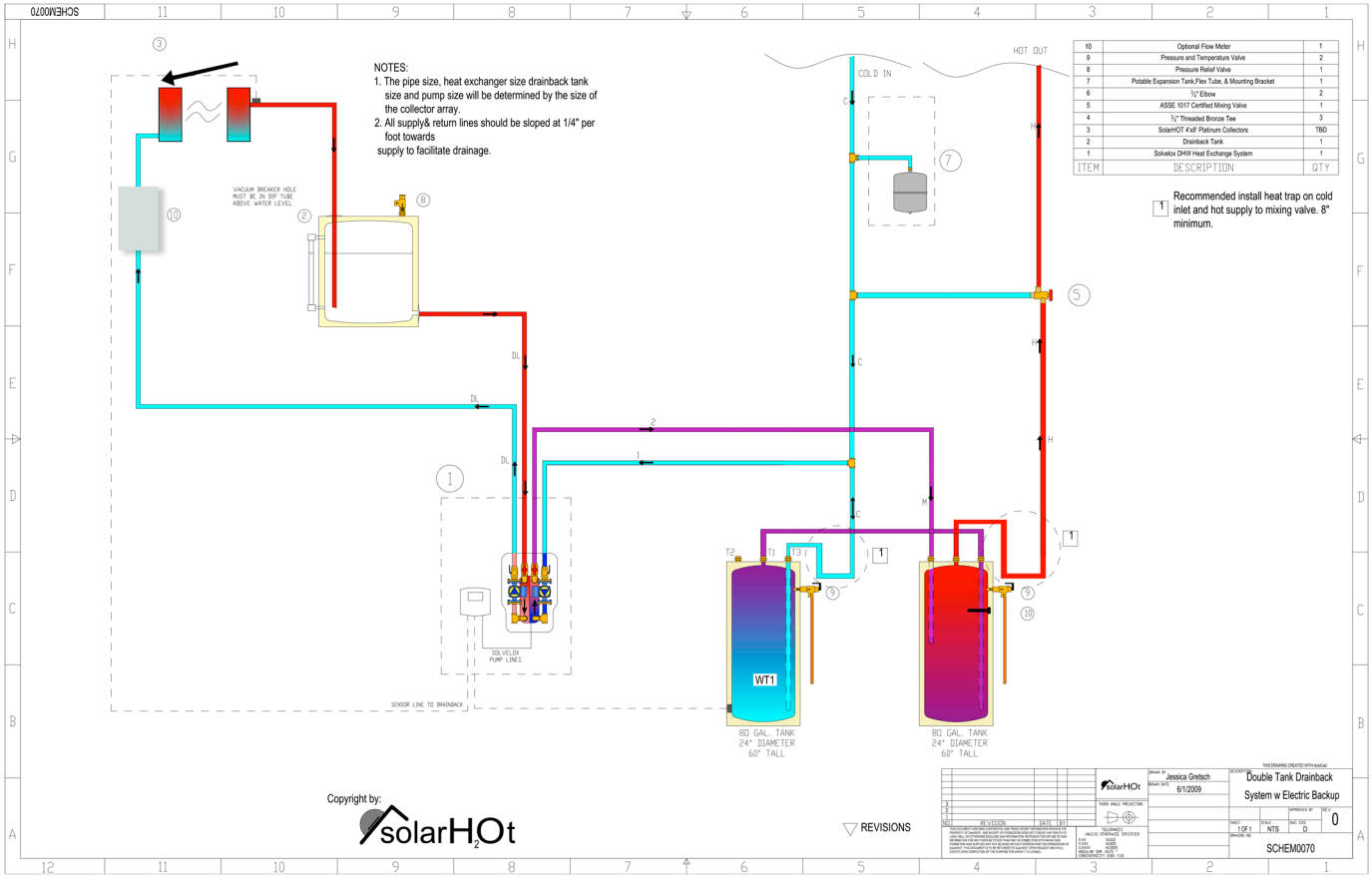
System operating parameters:

Flow meter should read about 5 gpm on the collector loop and 3.5 on the tank loop

Installation

Refer to ***Figure 1*** for the relative location of the pipes, collectors, and SolVelox pump package. Positioning the drainback tank higher in the system is preferable, but it must be located where it is not in any danger of freezing. The cold water supply line to the solar storage tank must be covered with a minimum of 7/8" x 1/2" insulation for 5 feet from the water heater. Please note that if the water storage tanks are located in or above living spaces, a drip pan with a drain line to the outside of the building is required.

Figure 1 - Installation Diagram



Notes:

- The pipe, heat exchanger, drainback tank, and pump size will be determined by the size of the collector array.
- All supply and return lines must be sloped at 1/4" per foot for drainage.
- All pipes 3/4" diameter minimum.
- An expansion tank should be installed on the potable water side for systems that do not allow backflow.
- If used, the flow meter should be installed at the same level as the drainback tank on the collector feed side of the loop, and must allow backflow. See "Installing the Drainback Tank" for more information.
- Refer to manufacturer's instructions regarding installation of the tempering valve.

There are two basic methods for mounting collectors on the roof or ground, as outlined in ***Figure 2***.

1. **Flush Mount**– This is the most common method. If the existing roof line is not suitable for any reason, the adjustable mount may be employed.
2. **Adjustable Mount**– This is sometimes required on a flat roof or in the case of a ground mount to optimize available solar energy.

Figure 2 - Mounting Options

Flush Mount:

Adjustable Mount:

Collector Orientation

The collectors should be mounted as close to due south as is reasonable, considering the roof line. However, if the collector is mounted within 45 degrees of south any performance drop is insignificant. The aesthetics of flush mounting a collector on the roof will generally outweigh performance improvements less than 5%.

The collectors should ideally be inclined at the same angle as the latitude, i.e. if you are located in Raleigh, NC (latitude 38 degrees) you would ideally have the collectors inclined 38° from horizontal. Testing has shown that mounting a collector within ±15° of the site's latitude will lead to no significant degradation in the collector's annual performance.

Pay close attention to the angle and direction of the roof line. If your roof line doesn't match the ideal criteria listed above, we recommend adding collector area as opposed to mounting the collector at a tilt. For example: If your roof faces the southeast, you may use three collectors instead of the two collectors which would be typical for a family of four.

Further, minimize the shade over the collectors. Collectors should receive 6-8 hours of direct sunlight each day for optimal performance.

In a drainback system, collectors should also slope 1/4" per foot towards the inlet. See "***Mounting the Collectors.***"

Installing the Collectors

⚠ WARNING Fall Injury Hazard.

Prepare the roof to work safely, employing roof scaffolding methods approved by OSHA.

Unfortunately there are no stud finders for rooftops, but it is important to mount the collectors into the rafters. Here are a couple of ideas for how to locate a rafter:

- From inside the attic, drill an angled hole from the intersection of the roof deck and the rafter at a 45° angle into the roof deck from the intersection. The spot where the drill first penetrates the roof should be approximately the center of the rafter.
- From the attic, measure the distance from an existing roof protrusion to the nearest rafter. Use that same measurement on the outside of the roof.
- Drill from the outside of the roof. Measure from the attic side of the hole to the nearest rafter. Use the same dimensions of the outside.
- Using a 3/16” x 12” long drill bit, drill from the inside of the house through the rafter to the outside.

Installing the Mounting Brackets

1. Mark a 10’ long horizontal line at least 18” below the peak of the roof.
2. Measure 97½“ down from the first horizontal line and mark another 10’ line as shown in ***Figure 3.***

Figure 3 - Spacing

3. Locate the center of a rafter and mark vertically along the rafter with a chalk line between the two horizontal lines.
4. Using the rafter spacing, make vertical marks over the center of the rafters, marking all the rafters that the collectors will span.
5. Using the mounting foot as a template, hold the mounting foot at the center of each intersection. Holding the foot at the intersection of the chalk lines, mark the holes with a marker. Repeat this procedure until each of the mounting foot locations have been marked. (four mounting feet for each collector)
6. With a 3/16” bit, drill a pilot hole at each one of the marks you just made.
7. Place the mounting feet over the pilot holes. Screw the brackets to the rafters using 3/8” x 2 1/2” stainless steel lag screws, flat washers, and lock washers as in ***Figure 4a or 4b***.

Figure 4a - Flush Mount Shown

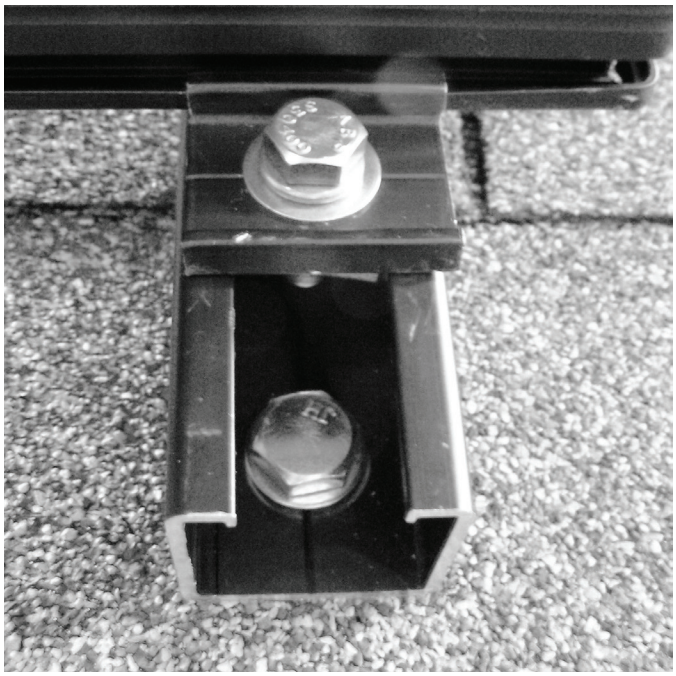


Figure 4b - Adjustable Mount Shown

Preparing the Collectors

⚠ WARNING Burn hazard.

When working with the solar collectors, cover the panels until installation is complete.

Both the panels and unions quickly begin to collect heat and pose a burn hazard.

The end of the collectors with the SOLARHOT name plate should be installed closest to the ridge of the roof, as there are weep holes to release condensation on the other end. The corners of the collectors will have 1” unions preinstalled. These will be mounted with elbows as in ***Figure 5a***. Depending on system flow configuration, the two ends not in use will have end caps as in ***Figure 5b***.

Figure 5a - Collector Configuration

Figure 5b - Collector Configuration

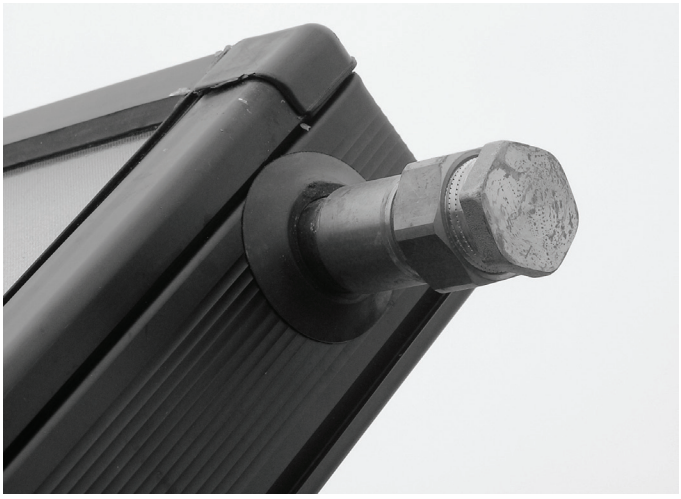
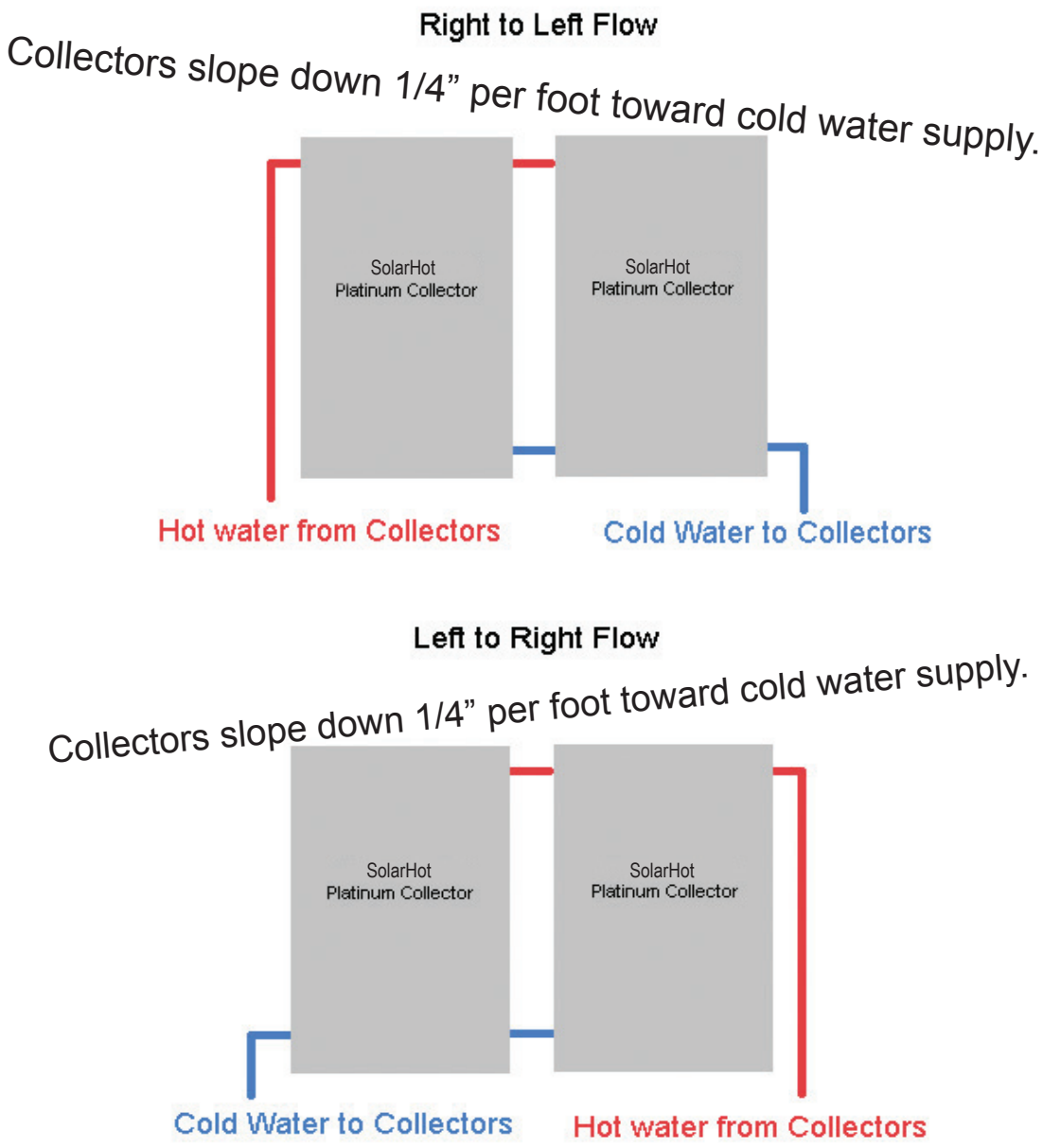


Figure 6 - Collector Flow



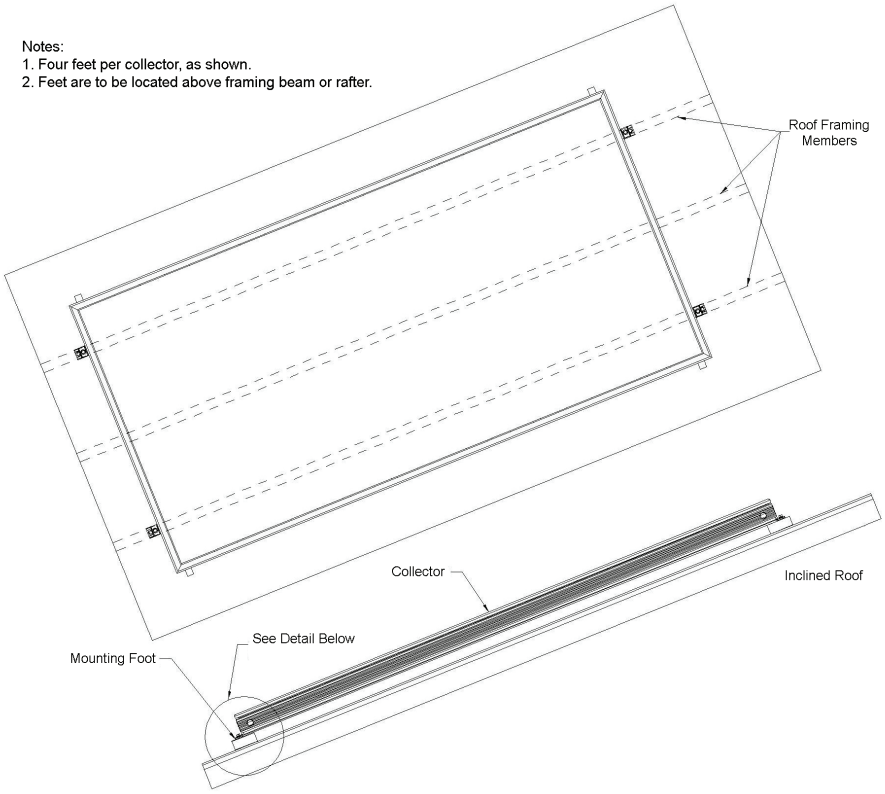
Mounting the Collectors

Mount the collectors so that there is a 1/4” drop per foot towards the inlet as in ***Figure 6***. This facilitates draining of the system should it be required.

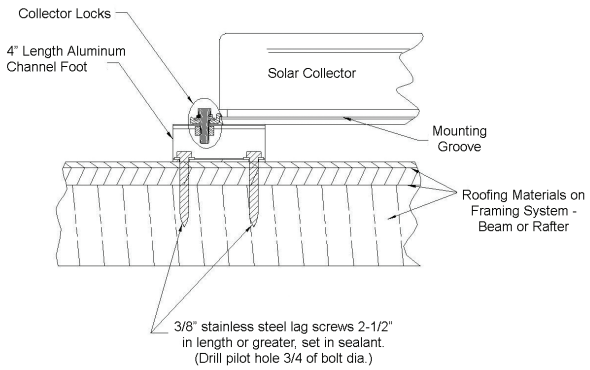
Refer to *Figure 7* for proper installation.

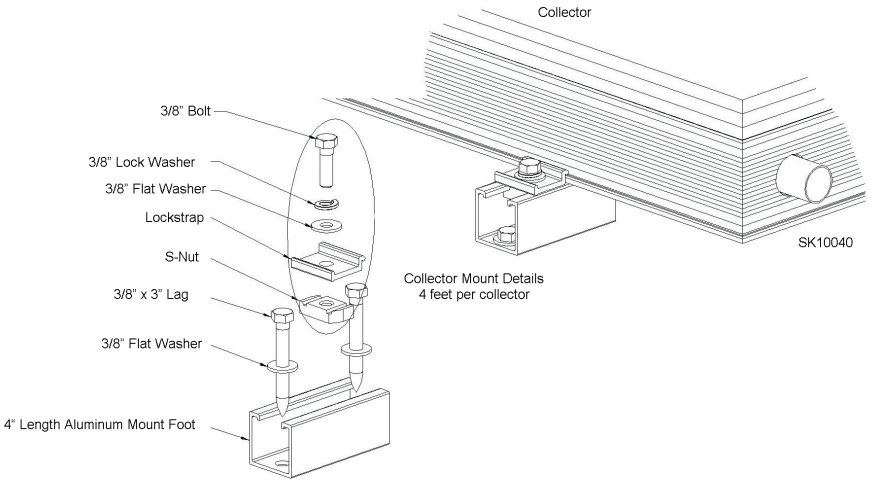
1. The mounting clip is made up of two parts joined by a stainless steel bolt with lock washer as in ***Figure 8a and b.*** Before taking the collectors up to the roof, slide the stainless steel sliding nut into the anodized aluminum channel foot. Now carefully place the first collector so that the mounting clip fits in the mounting groove that runs around the bottom edge of the collector and tighten the bolt. Ensure that the clips are installed securely.

Figure 7a: Flush Mount



Mounting Detail





Collector Mount Details
4 feet per collector

Figure 7b: Adjustable Mount

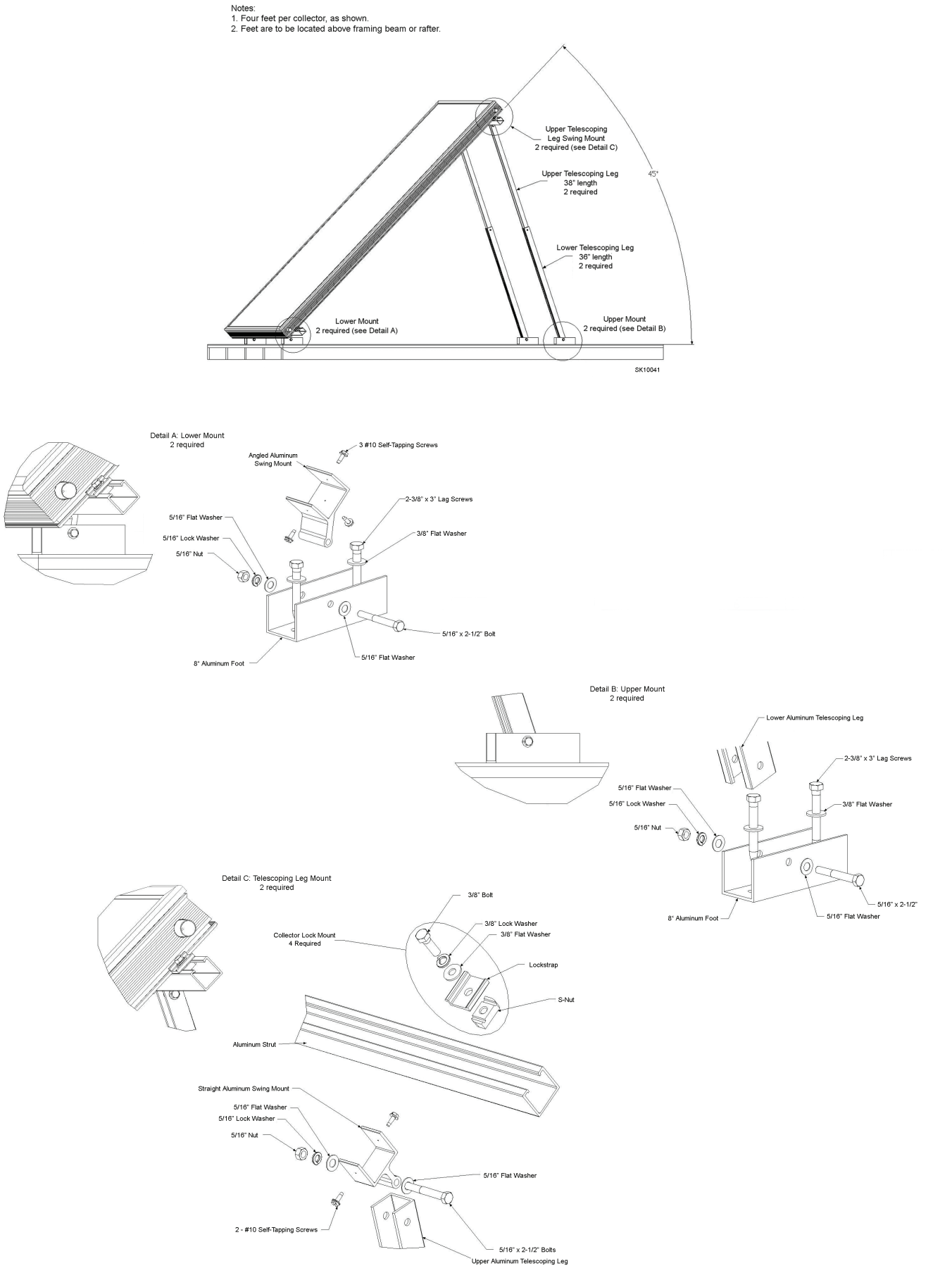


Figure 8a: Mounting Clips for Flush Mount

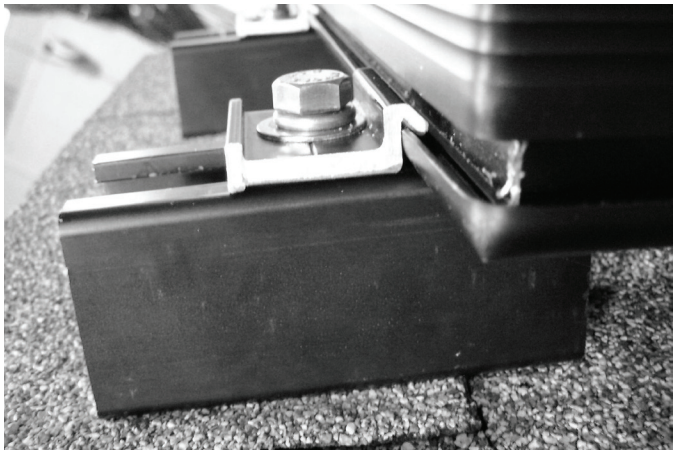
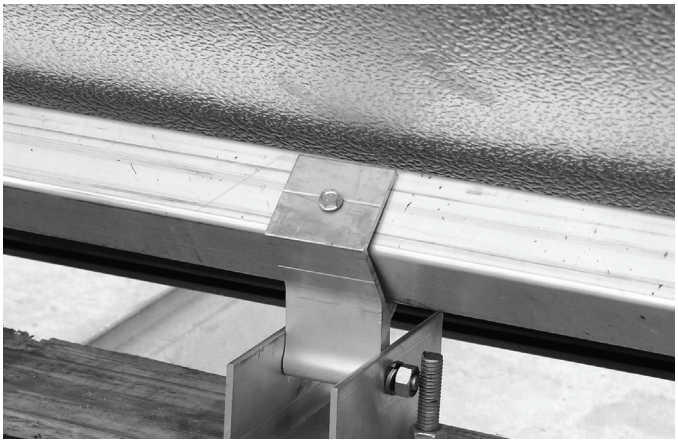
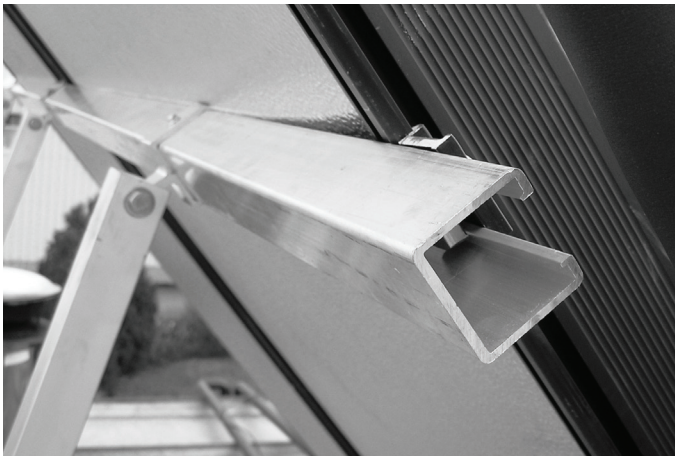


Figure 8b: Mounting Clips for Adjustable Mount





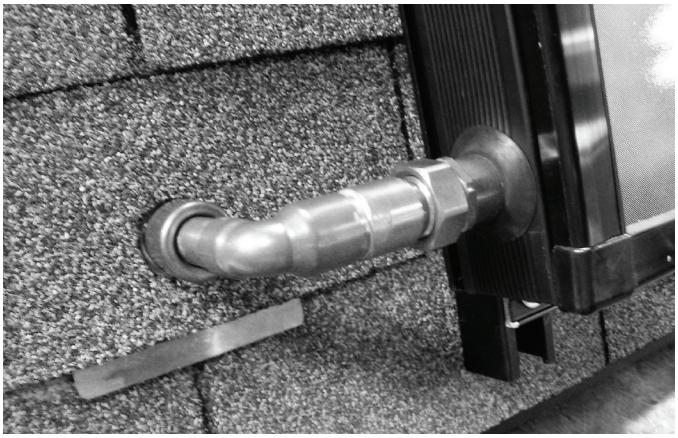
2. Mount the next collector so that the unions join to the first collector and secure the mounting clips as in ***Figure 9*****.**

Figure 9: Joining Collectors

Connect to Pipes

1. Using a wood bit the same size as your pipes, drill a hole in the center of a shingle below where the bottom corner of the collector inlet will be and in the opposite corner, where the collector outlet will be.
2. Apply sealant to the underside of the copper flashing. Carefully raise the drilled shingle, place flashing underneath and insert collar through the hole as shown in ***Figure 10***.
3. Run pipes from attic through the copper flashing and sweat connect them to the street elbows. ***See "Pipe Runs" section for specific instructions.***

Figure 10 - Copper Flashing



Installing the Temperature Sensor

1. Strap the PT1000 probe sensor to the copper pipe at the collector outlet using a stainless steel screw clamp as shown in ***Figure 11a***.

2. Feed the sensor wire through the gooseneck of the copper flashing as in ***Figure 11b***. The flashing can then be soldered to seal it from leaks.

3. For sensor to operate correctly it must be isolated from exterior conditions. All of the exposed copper, as well as the sensor itself, needs to be **completely covered** with insulation and UV jacketing.

Pipe Runs

Use 3/4" copper tubing. All pipe runs must have at least a 10° slope in a drainback system to allow the collectors to drain out completely (All pipe runs to and from the collector should have at least a 10° slope unless rigid and well supported copper pipes are used, in which case the slope can be 1/4" per foot). All pipes should be wrapped with at least 3/4" thick insulation. We recommend 1" Elastomeric insulation. Outdoor pipes should also be jacketed with UV protection material or some other means to protect it from moisture and ultraviolet deterioration. We

Figure 11a - Sensor Installation

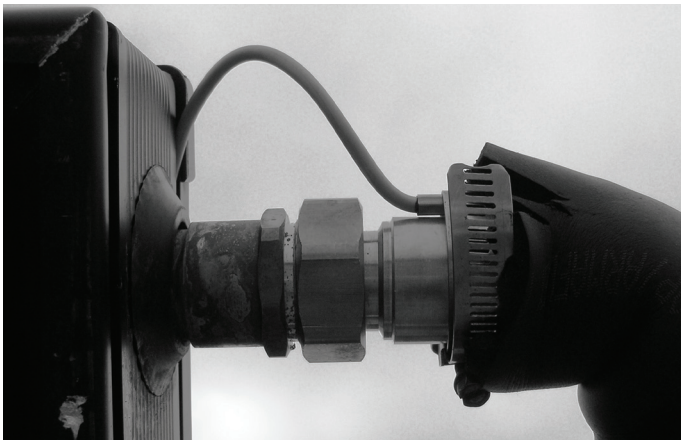
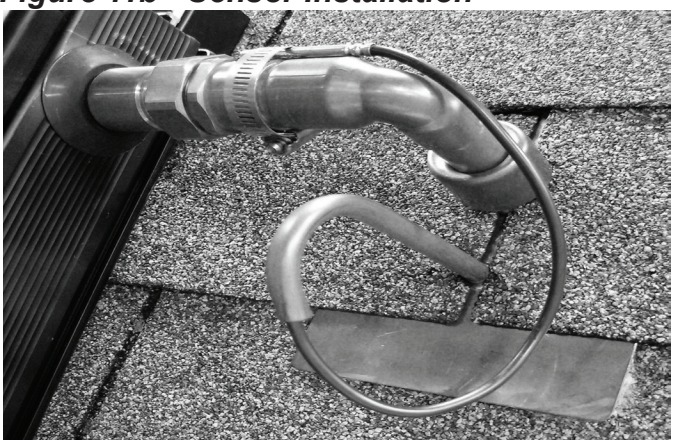


Figure 11b - Sensor Installation



recommend Nomaco K-Flex LS with Speedline Smoke Safe PVC Fitting Covers and vinyl tape. All pipes must be well supported or they will sag. Sagging pipes may trap water. Hanger should spread the load so that the insulation is not compressed. Place supports every 4.7 feet.

Installing the Tempering Valve

Refer to manufacturer's instructions for information on installing the tempering valve.

⚠ WARNING **Burn and Scald Hazard.**

Be sure to install the Watts 1170-M2 hot water temperature valve to control water temperature at a safe operating level. Carefully follow the manufacturer's procedures for installation to ensure accurate water temperature sensing and effective control operation.

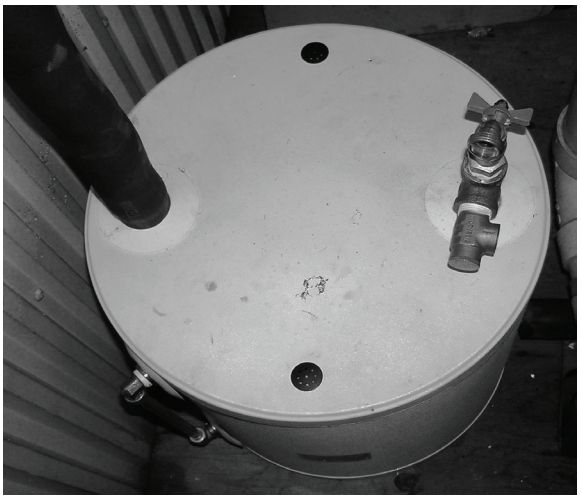
Installing the Drainback Tank

NOTICE If the water storage tanks are located in or above living spaces, a drip pan with a drain line to the outside of the building is required.

1. The drainback tank should be located higher than the pumping station and installed in a fashion that allows filling.
2. Position the pressure relief valve on the top of the tank as shown in ***Figure 13***. SolarHot stainless steel 10 gallon drainback tanks include a sight glass.

Figure 12 - Drainback Tank

Figure 13 - Pressure Relief Valve

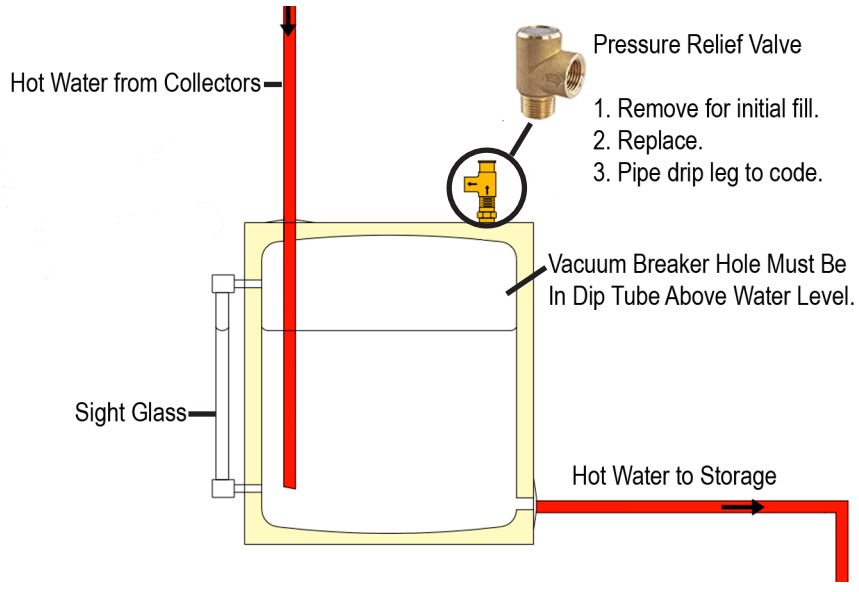


3. Refer to ***Figure 14*** for piping the drainback relief valve.

NOTICE Optional flow meter:

If using a drainback tank other than SOLARHOT, use copper tees to install a sight glass such as the Conbraco 20-100: Standard Pattern Bronze Water Gauges OR install a flow meter at the same level as the drainback tank on the collector feed side of the loop. A flow meter in a drainback system must allow backflow.

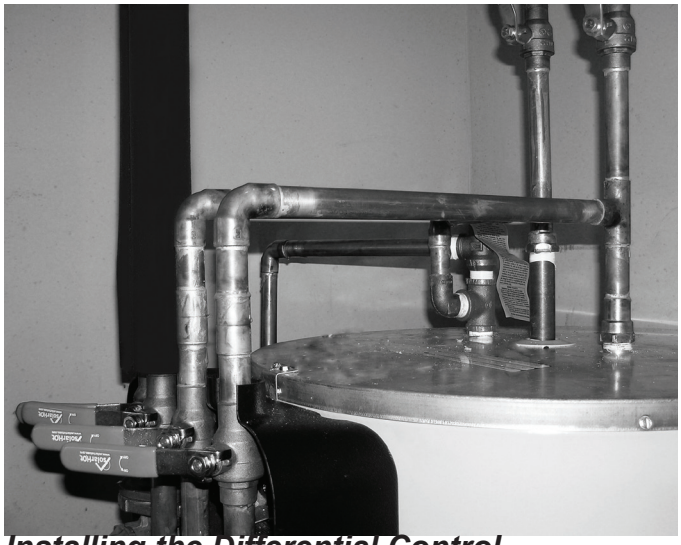
Figure 14 - Drainback Tank Relief Valve Piping



Mounting the SolVelox on the Storage Tank

1. Confirm that the P&T valve is on the side of the tank. If it is on the top of the tank, unscrew it and place it in the port on the side of the tank if a side port is available.
2. Use needle nose pliers to remove the heat trap from the hot side of the tank and set aside.
3. Feed the solar dip tube into the tank, closed end down into the port previously noted as the “hot” port until it seats.
4. Lay the tank down on the ground on top of cardboard or towels.
5. Place the bracket over the SolVelox and place the assembly on the side of the tank. The side of the SolVelox should be 1” to the left of the top electrode cover. The bracket should lie flat on the top of the tank. Scribe the tank to match the bracket location.
6. Using two #10 - 16 x 3/4” self drilling screws, screw the top of the bracket to the top of the hot water tank. Ensure that the vertical section of the bracket above the heat exchanger is flush with the side of the tank before you drive in the screws.
7. While holding the bracket and the SolVelox firmly against the tank, drive four #10-16 x 3/4” self drilling screws into the bracket with two just above and two just below the heat exchanger. It is critical that you hold the bracket and SolVelox firmly against the tank at this point, otherwise it will be loose when you stand the tank upright. Seek assistance to make sure you get the product snug on the tank.
8. Connect a 3/4” brass tee to the cold water inlet to the tank as in ***Figure 15.***
9. Using 3/4” copper pipe and fittings or 3/4” MxF flexible stainless steel pipe, join the top right ball valve on the SolVelox assembly with the Tee connected to the cold inlet. This is the cold water input to the SolVelox.
10. Using 3/4” pipe and fittings or 3/4” MxF flexible stainless steel pipe, connect the hot water inlet (where you previously installed the solar dip tube) to the second ball valve from the right on the SolVelox. This is the hot water return to storage.
11. Connect the linefrom the bottom of the drainback tank to the solvelox via the second ball valve from the left.

Figure 15 - SolVelox Piping



Installing the Differential Control

Your drainback system is automated by the differential control located on the face of the SolVelox cover, as shown in ***Figure 16***.

When installing the SolVelox pump package, consult the appliance manufacturer’s instructions for additional information on wiring, installing the three sensors, and programming the control. ***See also Figure 17.***

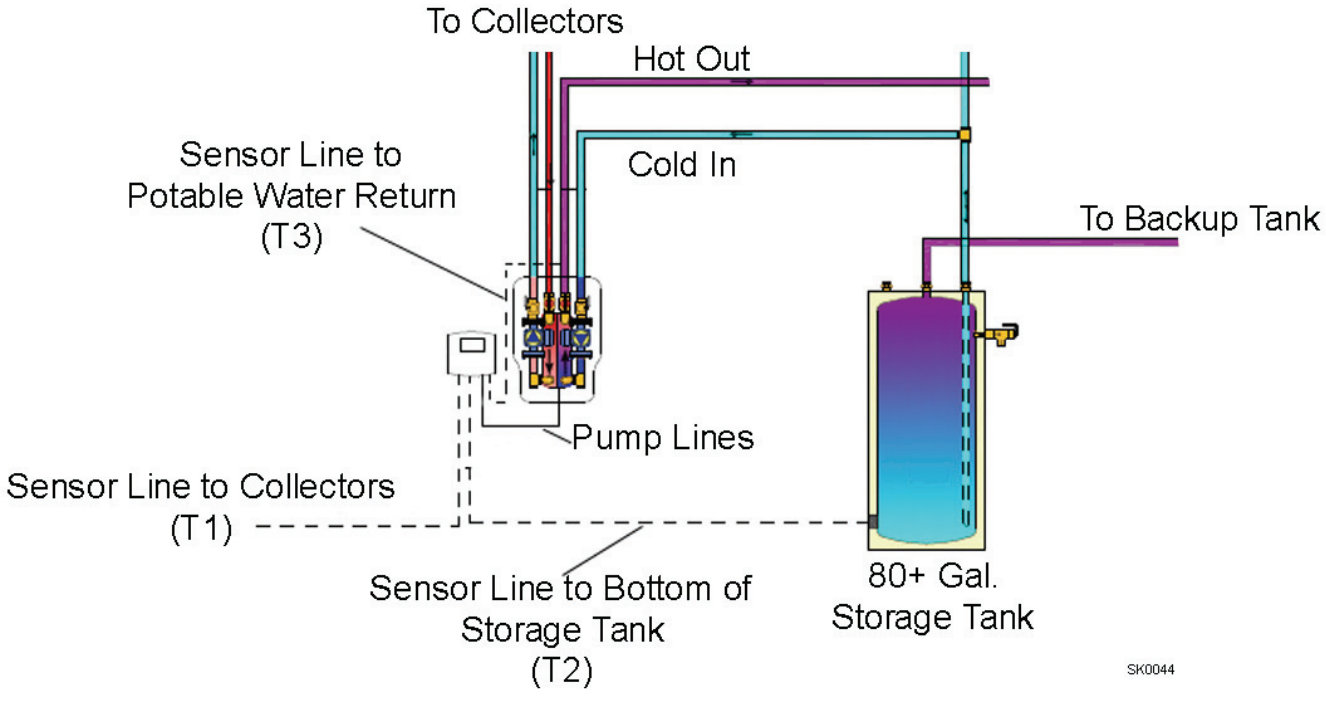
⚠ WARNING **Burn and Scald Hazard.**

Excessive water temperatures could cause explosion, burns, scalding, pressure relief flooding and fitting leaks. Carefully follow the outlined procedures for temperature sensor installation to ensure accurate water temperature sensing and effective control operation.

1. For the first sensor, 50’ of 18 gauge sensor wire is included to reach the panel collectors. If you require more wire for your system design, use UV stable (black) 18 gauge sensor wire. This sensor is denoted by T1 on the Steca display.
2. The lower tank sensor is approximately 6’ long. Remove the lower access panel shown in ***Figure 18*** and place the sensor firmly against the interior tank surface. The

Figure 16 - SolVelox Wiring

Figure 17 - SolVelox Wiring Diagram



heavy insulation should hold it securely in place. While the panel is open, turn the bottom heating element to its lowest set point. This sensor is denoted by T2 on the Steca display.

3. The short sensor wire is to be installed on the pipe returning to the backup water heater (potable water return) from the heat exchanger by using a stainless steel screw clamp. It should be placed on the pipe as far from the control as possible. Insulate over the sensor. This sensor is denoted by T3 on the Steca display.

Figure 18 - Lower Tank Sensor

Check Collector Loop for Leaks

1. Open all shut-off valves on collector loop before system has been filled with distilled water.
2. Attach a female to male adapter to the drain valve on the bottom left of the SolVelox.
3. Open drain valve and attach gas test block with pressure gauge.
4. Apply 60 psi pressure for 15 minutes. Any drop in pressure during that time indicates a leak.
5. Find the source of the leak and repair it. Repeat this procedure until the loop holds pressure.

Filling and Starting the System

1. Confirm that all shut-off valves are fully open.
2. Remove pressure relief valve from the top of the drainback tank and fill the system with distilled water as shown in ***Figure 19***. You will need about 8-9 gallons of distilled water, depending on the length of your piping. There are 0.025 gallons of water per foot of ¾" copper, so nine gallons will fill 360' of ¾" copper piping. Add water until sight glass is completely full.
3. Replace pressure relief valve.
4. Turn on system and let it run for 5 minutes.
5. Adjust upper element of the water heat to a maximum of 120° F for back up heat.
6. Set the high limit on the control to no more than 185° F. Refer to differential control owner's manual.

Check System Operation

Let the system run for 15 minutes on a sunny day, preferably around noon. Three temperatures will show on the control: the collector outlet

Figure 19 - Filling the System

temperature, the bottom of the tank temperature, and the temperature of the water returning to the tank. Typically you should see the temperature at the bottom of the tank vary from 60-80° F (city water temperature) to 185° (high limit set on the control) The water at the top of the tank will be typically higher than the water at the bottom, but should not exceed the high limit set on the control. The Temperature and Pressure Relief Valve on the storage tank is set to 210° F.

The system will automatically turn on the pumps when the collector temperature is 16° higher than the water at the bottom of the tank. It will shut off the system when the temperature differential is 8° F. Collector temperatures may rise well above 200° F, but the system will not run beyond the high limit set on the control.

A system correctly installed will show the water returning to the tank to be at least 3-10° F warmer than the water at the bottom of the tank.

Operation

Please refer to the differential control user's manual for system operation or adjustments.

Vacation Settings

If the system is not to be used for any extended period of time, the system should be turned off at the differential control.

1. Set the switch on the left side of the Steca control to the "OFF" position.
2. To resume operations, set the switch to "AUTO."

Emergency Shut Off

1. If there is a leak or other issue requiring the collector loop to be drained, turn the system off by setting the switch on the left side of the differential control to the "OFF" position.
2. Attach a hose to the drain valve on the lower left of the SolVelox. ***See Figure 20.***
3. Open the drain valve.

Maintenance

Your solar water system requires very little by way of maintenance, but a few regular system checks can extend the life of your system well beyond 20 years.

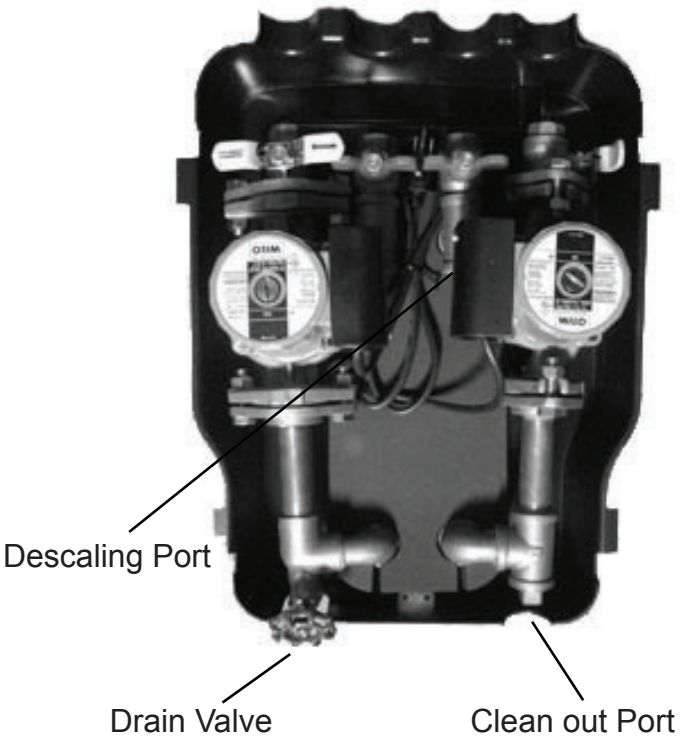
⚠ WARNING **Burn Hazard.**

Exercise extreme caution when draining, as the water in the port may be dangerously hot.

Freeze Protection

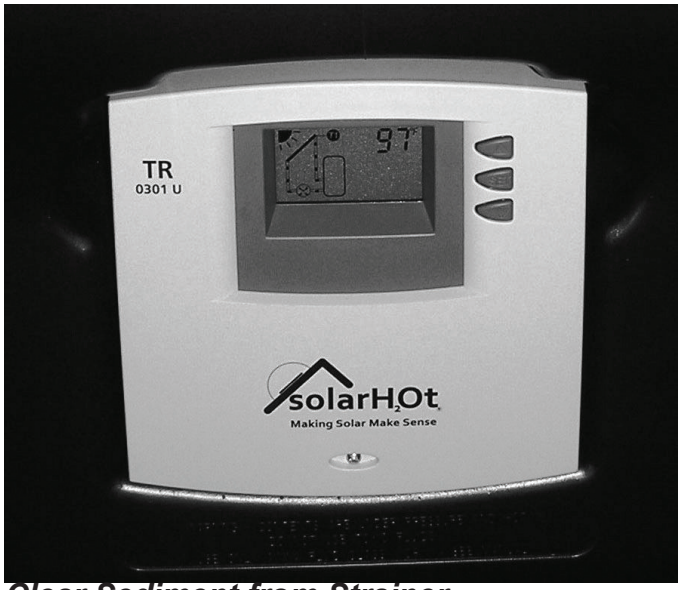
This system is designed to protect itself from freeze damage to temperatures as low as -21°F as long as the drainback tank remains above 32°F. Freeze tolerance limits are based upon an assumed set of environmental conditions. In the event of extreme or prolonged cold weather, protect your system by shutting down the system and draining the collector loop as described in

Figure 20 - SolVelox Ports



the “Vacation Settings” and “Emergency Shut-Off” sections.

Figure 21 - Differential Control



Clear Sediment from Strainer

1. Turn off your solar water system with the switch on the side of the differential control and disconnect the power to the SolVelox by unplugging it from the wall outlet.
2. Close the two shut-off flanges on the right side of the SolVelox. Refer to ***Figure 22***.
3. Open the clean out port. **See *Figure 20.***
4. Remove any sediment buildup from the clean out port.
5. Close and tighten clean out port.
6. Return shut-off flanges to the open position and reconnect the power to the SolVelox.

⚠ WARNING **Burn Hazard.**

Exercise extreme caution when draining, as the water in the port may be dangerously hot.

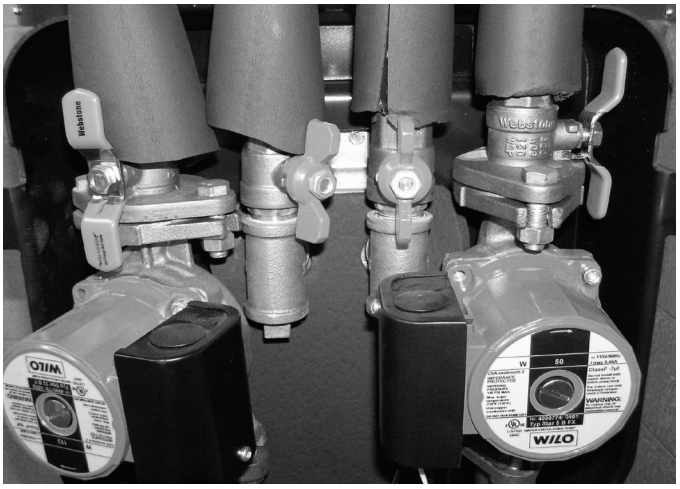
Descaling the Heat Exchanger

1. Turn off your solar water system with the switch on the side of the solar differential control and disconnect the power to the SolVelox by unplugging it from the wall outlet.
2. Close the two shut-off flanges on the right side of the SolVelox. Refer to ***Figure 22.***
3. Unscrew the plugs to open the descaling and clean out ports shown in ***Figure 20***.
4. Remove any sediment buildup from the clean out port.
5. Flush the heat exchanger with a weak solution of white vinegar and water.
6. Close and tighten descaling and clean out ports.
7. Return shut-off flanges to the open position and reconnect the power to the SolVelox.

Add Distilled Water or Change Heat Transfer Fluid

Your system will perform best when you have the maximum amount of heat transfer fluid in the collector loop. Check fluid levels annually and add distilled water until the sight glass is completely full. You can check the water level in the drainback tank with a sight glass or you can install a flow meter on the same level as the drainback tank on the collector feed side of the loop. Note: A flow meter in a drainback system must allow backflow.

Figure 22 - Shut-off Flanges



NOTICE There must be enough air in the system so that the collectors and exposed pipes are empty when the system is not running.

Pumps

The circulation pumps have a life expectancy of 5-10 years. If a pump should require servicing or replacement:

1. Turn off the system with the switch on the side of the differential control.
2. Close all the ball valves at the top of the SolVelox. Leave the system off for several hours until the pumps are completely cooled to room temperature.
3. Solar pumps are flanged so they can be easily removed by loosening the flange's nuts and bolts. Potable loop pumps use bolts and must be unscrewed.

Service

To obtain service for your SolVelox™, notify the dealer who installed or sold the SolVelox™. In notifying your dealer, provide identification of your SolVelox™, date of purchase (with proof) and the nature of the defect. Ship the SolVelox™ complete in the assembled condition. Use adequate packaging to prevent damage to the pump during shipment.

To obtain the location of the nearest authorized SOLARHOT service and/or distribution facility, call (919) 439-2387 or write to:
SOLARHOT Ltd.
2800 Perimeter Park Dr. Suite A
Morrisville, NC 27560
or on the web at:
http://www.solarhotusa.com
email: sales@solarhotusa.com

Warranty Information

Limited Two Year
MANUFACTURER'S WARRANTY
For SolVelox Drainback System

SolarH^{2}Ot Limited warrants to buyer for a period of twenty-four (24) months from the date of being placed in service (but not to exceed thirty (30) months after the date of shipment) that the equipment at the time of shipment will be free from defects of design, material and workmanship.

- If any defects or malperformance occur during the warranty period, SOLARHOT's sole obligation shall be limited to alteration, repair or replacement at SOLARHOT's expense, F.O.B. Factory, of parts or equipment, which upon return to SOLARHOT and upon SOLARHOT's examination prove to be defective.
- Equipment and accessories not manufactured by SOLARHOT are warranted only to the extent of and by the original manufacturers' warranty.
- SOLARHOT shall not be liable for damage or wear to equipment caused by abnormal conditions, acts of God, failure to properly prime or to operate equipment without flow or caused by corrosives, abrasives or foreign objects.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

IN NO EVENT SHALL SOLARHOT BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES.

5 year extended warranty is available - please speak to your installer or dealer.

Limited Ten Year
MANUFACTURER'S WARRANTY
For SolarHot Platinum Collectors

SolarH^{2}Ot Limited warrants to buyer for a period of ten (10) years from the date of sale that the equipment at the time of shipment will be free from defects of design, material and workmanship.

- If any defects occur during the warranty period, SOLARHOT's sole obligation shall be limited to alteration, repair or replacement at SOLARHOT's expense, F.O.B. Factory, of parts or equipment, which upon return to SOLARHOT and upon SOLARHOT's examination prove to be defective.
- Equipment and accessories not manufactured by SOLARHOT are warranted only to the extent of and by the original manufacturers' warranty.
- SOLARHOT shall not be liable for damage or wear to equipment caused by abnormal conditions, acts of God, failure to properly prime or to operate equipment without flow or caused by corrosives, abrasives or foreign objects.

Please note that the warranty does not apply to conditions or damage caused by:

1. A failed component or part that is not a part of the SOLARHOT collector.
2. Freezing conditions.
3. Misuse, abuse, neglect, accident, or alteration.
4. Cosmetic discoloration of the frame-wall, absorber plate, or glazing over time.
5. Glass breakage.
6. The introduction of harmful chemicals, caustic fluids, or liquids deleterious to copper tubing, including improperly applied or maintained heat transfer fluids and chlorinated water. The use of SOLARHOT collectors for pool or spa heating is not covered by this warranty unless the pool or spa water is isolated from the collector through the use of a heat exchanger.
7. Heat transfer fluids other than distilled water or propylene glycol are used.
8. Propylene glycol pH levels exceeding 10 or falling below 8.
9. Stagnation in excess of 30 days.
10. Excessive pressure.
11. Excessive flow rates.
12. Improper plumbing configurations.
13. Clouding or condensation naturally resulting from temporary intrusions of moisture into the collector.
14. Acts of God.
15. Installation methods, including mounting, that do not conform to relevant national, state, or local codes and ordinances, good industry practices, or current applicable SOLARHOT manuals, diagrams, or installation instructions.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

IN NO EVENT SHALL SOLARHOT BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES.

Field labor to repair or replace any defective SOLARHOT product is reimbursable as follows:

Year 1: $100 per collector

Year 2-5: $75 per collector

Year 6-10: $50 per collector

After one (1) year of warranty, freight and shipping costs are the responsibility of the owner.

DRAINBACK SYSTEM

SOLARHOT Ltd.
2800 Perimeter Park Dr. Suite A · Morrisville, NC 27560 · Phone: 919.439.9061
Fax 919.573.0791 · Email: sales@solarhotusa.com
www.solarhotusa.com

Form No. 61747 Rev. 01, Printed in USA 01/10