



Owner's Manual

Your Solar Hot Water System

Thank you for your investment in the Sungrabber™ Solar Hot Water System. Since 1969 our goal has been to design, test, and produce solar heating systems that save you money and add value to your home. Please read the following pages carefully to get the most out of your Sungrabber™ Solar Hot Water System. The maintenance procedures should be followed properly in order to maintain warranty and a trouble-free system that provides energy and maximizes savings. The Sungrabber™ Solar Hot Water System is designed for many years of reliable operation and is backed by the warranty found at the end of this manual.

What you can expect from your Solar Hot Water System

The Sungrabber™ Solar Hot Water System is designed to provide a significant portion of the water heating energy required in a typical home. As wonderful and abundant as solar energy is, performance varies considerably with available solar energy, outside air temperature, ground water temperature and household hot water demand. These conditions will vary from home to home even in the same neighborhood and affect how much energy your solar system will save you. Savings will also vary throughout the year due to weather variation and different amounts of sunlight available by season. Naturally, summer will provide the largest amount of solar hot water heating, but a useful contribution will be provided by the other seasons as shown in the table on the right. This translates to over half of a typical household's annual hot water needs:

Hot water provided by solar

Spring	20 to 50%
Summer	60 to 90%
Autumn	20 to 50%
Winter	0 to 30%

Operation

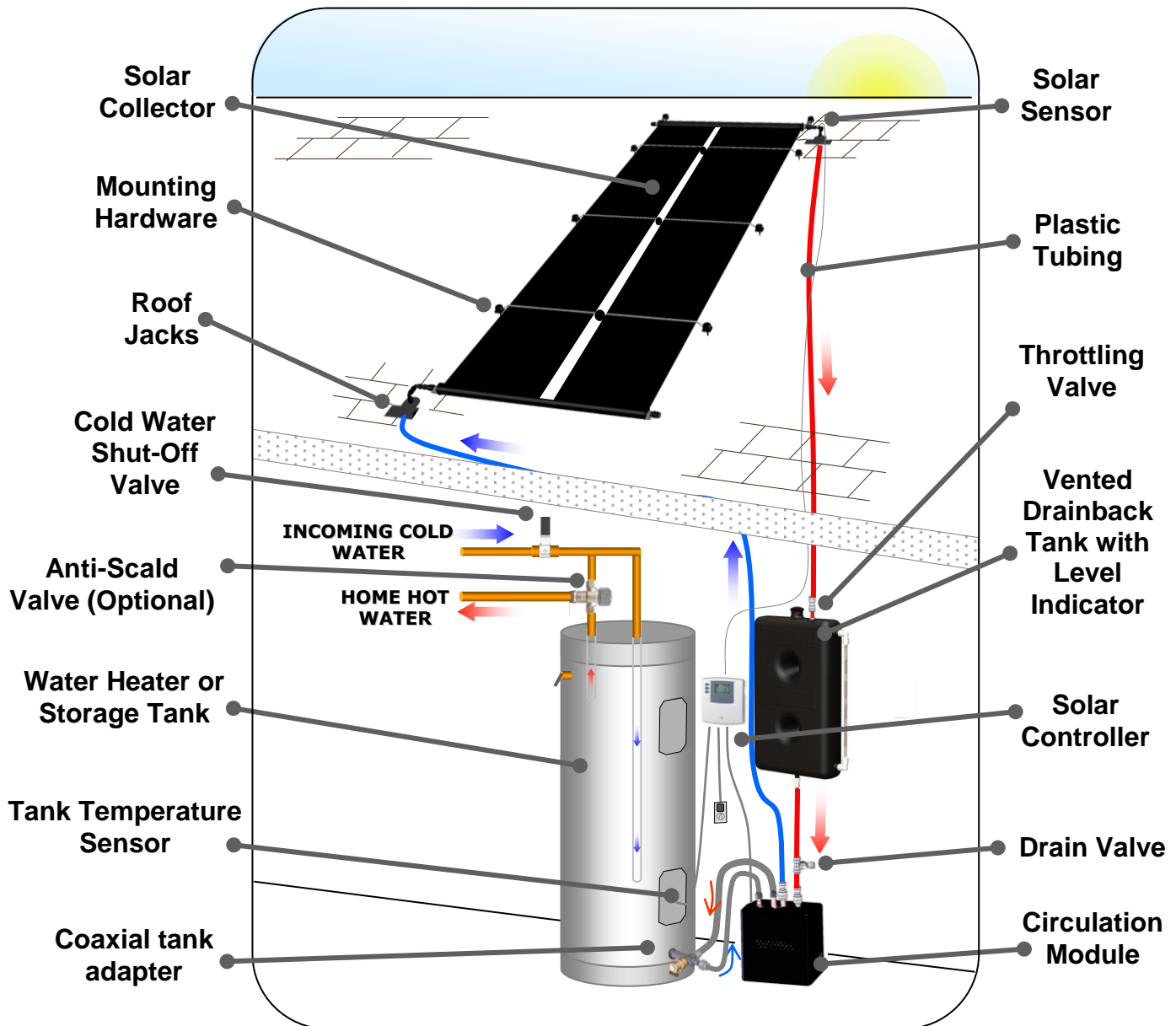
Solar energy is absorbed by the solar collectors and heated water is circulated through the fixtures and appliances that require hot water such as clothes washer, dishwasher, bath, shower, and other fixtures. The system is designed to operate automatically, taking advantage of solar energy when it is available. An electronic solar controller signals the system to turn on when solar energy can be added to the water heater. The solar controller will activate the circulation module which will push water up to the solar collectors and begin circulation. When solar energy becomes unavailable or when heated water is not required, the system will turn off and all water will gravity drain into the drainback tank so the water cannot freeze on your roof or in your attic.

System Layout

The schematic below shows the primary components of your Sungrabber™ system. There are many Sungrabber™ system configurations for electric and gas water heaters including:

- Single Tank Electric Systems
- Dual Tank Electric or Gas Systems
- Single Tank Systems with Electric or Gas Instantaneous Water Heater

Specific components may vary based on your system configuration. Your system may include an optional anti-scald valve for enhanced hot water scald protection and code compliance. Dual tank systems have additional plumbing including a bypass valve.

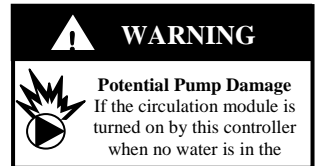


Solar Controller

The electronic solar controller is your interface to the Sungrabber™ Solar Hot Water System. It automatically turns the solar system on when solar energy can be added to your water heater.

The display shows you:

- If the system is on or off
- Solar collector temperature
- Solar storage tank temperature

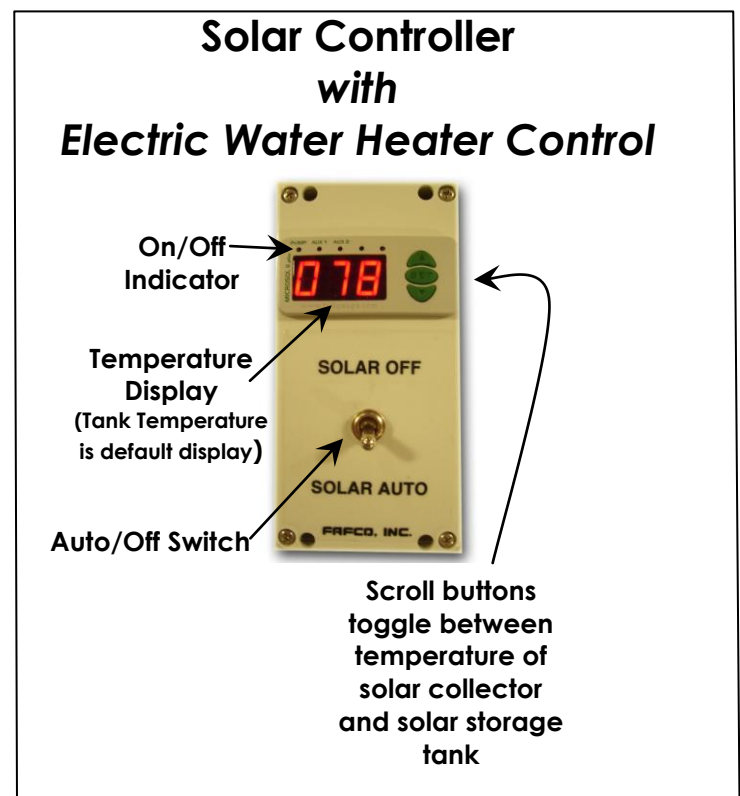
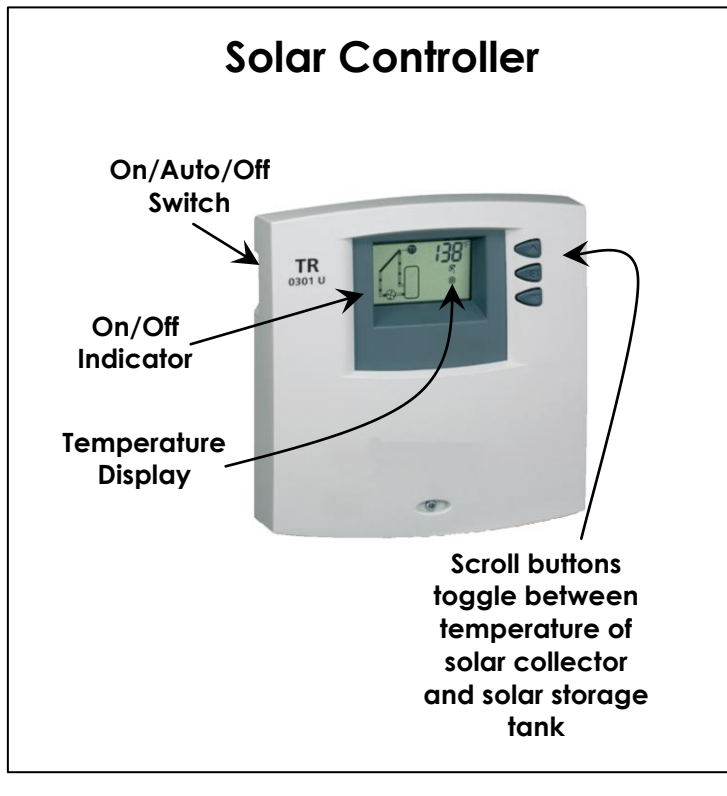


You can use this displayed information to determine if your Sungrabber™ Solar Hot Water System is operating and heating the water in the solar storage tank. Typical tank or collector temperatures during a warm sunny day range from 80°F up to 140°F.

The controller default settings will activate your system when there is a 10°F difference between the solar collector temperature and solar storage tank temperature. The system will deactivate when there is a 4°F difference. The system may also deactivate if the solar storage tank exceeds 140°F. These controller settings can be changed. Your Sungrabber™ Contractor may have modified these settings already to optimize performance.

Your system includes a separate owner's manual for your electronic solar controller. Please refer to this manual for specific details on your solar controller.

Your system is installed with one of the following solar controller types:



Electric Water Heater Control

The electric water's lower heating element is automatically deactivated during daytime hours, (default deactivation time is 5am and reactivation time is 7pm). This allows solar heated water to be efficiently added to your electric water heater immediately following early morning hot water usage. If you experience a lack of hot water during periods of heavy hot water usage or cool weather, temporarily flip the Auto/Off Switch to "SOLAR OFF" allowing the bottom electric element to heat the tank. Contact your Sungrabber™ contractor if a lack of hot water is a reoccurring problem. Refer to this controller's owner's manual for details on how to adjust these settings.

Maximize Energy Savings

You can increase energy savings by scheduling large hot water usage (such as laundry and dishwasher) for the afternoon when there is plenty of free solar energy. If you have a single tank system with water heater timer, turn the bottom element off for enhanced solar performance (this may negatively impact your delivered water temperature on poor weather days).

Maintenance

Ensure Freeze Protection

Extended periods of cold weather can cause freezing in exposed parts of the system. The system should be installed so that water in the solar collectors and exterior tubing can completely gravity drain to the drainback tank when the system is not operating. If there is any concern that the solar collectors and tubing are not sufficiently sloped to allow water to gravity drain, contact your Sungrabber™ contractor to discuss the option of adding non-toxic anti-freeze (food grade propylene glycol) to the solar circulation loop.

FREEZE DAMAGE IS NOT COVERED UNDER WARRANTY

Check Water Level

It's advisable to frequently check on your drainback tank water level. The drainback tank site glass is equipped with a red "Minimum water level" sticker. While the system is running, ensure the water is at or above the red line. If the water level is below the red line, turn the system off and wait one hour. Fill drainback tank to within one inch of the top of the tank. Replace the cap before turning the system on.

Remove Roof Debris

Leaves and dirt may build up on and around your solar collectors. The solar collectors should be kept free of debris for maximum performance.

- WARNING -

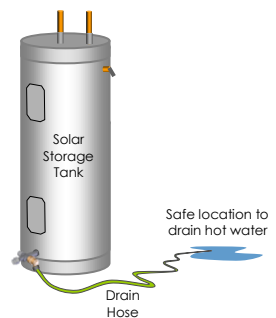
The following maintenance tasks involve working with high water pressure, high water temperature, and high voltage or flammable gas and should only be performed by a qualified Sungrabber™ contractor :

Flush water heater

The solar storage tank (or electric water heater for single tank systems) should be routinely flushed in order to prevent debris, sediment, or scale build up from entering your Sungrabber™ system. Flushing should be more frequent in regions with poor water quality. Systems are typically flushed every 6 months to 2 years.

Clean Filter

In regions with poor water quality, it may be necessary to clean the filter located inside the circulation module. Cleaning prevents debris, sediment, or scale build up from reducing system performance and potentially damaging the circulation pump.



Consult your Sungrabber™ contractor for a maintenance program

SIMPLE SOLUTIONS – BEFORE YOU CALL FOR SERVICE

Your Sungrabber™ Solar Water Heater is designed to operate trouble-free for many years. Use the table below to troubleshoot unexpected problems before calling your Sungrabber™ contractor.

Problem:	The system is not activating
What to do:	1) Confirm that the system is not activating:
	<ul style="list-style-type: none"> Place your hand on the circulation module or attached pipes. You should feel heat, feel a slight vibration, and hear a slight hum
	<ul style="list-style-type: none"> Listen for water flowing inside the drainback tank
	2) If the system is not activating:
	<ul style="list-style-type: none"> Verify temperature difference between the solar collector and tank is greater than 10°F Check that the solar controller is plugged into a working 120VAC outlet and the circulation module is plugged into the solar controller Verify the controller is properly programmed (refer to the solar controller owner's manual for programming) Verify that the water level in the drainback tank is above the red line on the sightglass
Problem:	The system is operating, but not providing enough hot water
What to do:	Increase the temperature setting on the anti-scald valve (if installed)
	Flush the filter located inside the circulation module (refer to maintenance section on the previous page)
	For a single tank electric system, verify that the bottom element is activated or solar is providing sufficient heat when using a large amount of hot water. Refer to the controller owner's manual to modify settings.
	Ensure that the gas or electric water heater is properly sized and is operating correctly. Refer to your water heater instruction manual for proper thermostat setting. During cool weather, the solar system will provide less hot water and rely more on the water heater.
	Discuss these options with your Sungrabber™ contractor: <ul style="list-style-type: none"> Add additional solar collectors to increase solar performance Install a larger water heater or solar storage tank
Problem:	Solar system leaks
What to do:	Contact your Sungrabber™ Contractor

Installer's Record

Installation Details:

- 1) System Type: Single Tank Electric Dual Tank Electric or Gas
 2) Heat Transfer Fluid (Check One): Water Food Grade Glycol
 3) Installation Date:

4) Any other details:

1. SCOPE OF COVERAGE

Warranty applies to a new Sungrabber™ solar hot water system installed by a Sungrabber™ contractor. Warranty applies only to defects in materials and workmanship subject to the terms, conditions, and limitations described herein. Labor for repair or replacement of solar collectors or components is excluded.

- A. **Sungrabber™ solar collectors** are warranted for ten (10) years from the completion of initial installation. Sungrabber™ will provide a repair kit or, at its option, replace a defective solar collector.
- B. **Sungrabber™ system kit components** are warranted for one (1) year from the completion of initial installation at a residence. Sungrabber™, at its option, will replace a defective component with a new or refurbished component.

2. NECESSARY MAINTENANCE

The buyer is expected to provide all reasonable and necessary maintenance in accordance with the Sungrabber™ Owner's Manual. The manual is an integral part of the Sungrabber™ system warranty. Noncompliance with the manual or improper maintenance will void the buyer's warranty rights. If the buyer believes or becomes aware that any warranted component or part is not functioning properly, the buyer must promptly notify SUNGRABBER™. Early attention to a minor problem may help avoid serious problems later. A failure to report a problem on a timely basis may void the buyer's warranty rights.

3. REGISTRATION

In order to validate the warranty, the buyer must submit an online warranty registration at www.Sungrabber.com or call Sungrabber customer service toll free at 866-786-4722.

4. IDENTITY OF WARRANTEE

The warranty is extended by Sungrabber™ and is extended only to the original consumer/buyer of the Sungrabber™ system. This warranty is not assignable and applies only to the original buyer. This warranty terminates upon the sale by the buyer of the premises at which the system was installed.

5. CLAIMS

If a solar collector or component is found to be defective, notify the installing Sungrabber™ contractor for service or contact SUNGRABBER™ customer service toll free at 866-786-4722 to locate a Sungrabber™ contractor near you. A service call may be scheduled for repair or replacement.

6. WHAT IS NOT COVERED - EXCLUSIONS

1. Installations that are not in accordance with the Sungrabber™ installation instructions.
2. Damage resulting from failure to provide reasonable and necessary maintenance in accordance with the Sungrabber owner's manual including any misuse, abuse, neglect, accident or alterations.
3. Damage caused by water hammer, thermal expansion, or system pressure in excess of 80 psi.
4. Sungrabber™ system moved from the original installation location.
5. Freeze damage.
6. Damage resulting from a component which is not part of the Sungrabber™ system.
7. Damage resulting from failure to properly flush hot water heater or solar storage tank upon installation of the Sungrabber™ system.
8. Damage resulting from failure to routinely flush hot water heater or solar storage tank in order to maintain sufficient water quality that does not promote debris, sediment, or scale build up inside of the Sungrabber™ system.
9. Normal fading and minor deterioration of surfaces.
10. Hardware, accessories, or any component or part that is not part of the Sungrabber™ system.
11. Conditions resulting from attempted repair or alteration by someone other than a SunGrabber™ contractor.
12. Sungrabber™ makes no warranty as to the level of performance of its Sungrabber™ system, fuel or cost savings, or any particular temperature or level to which the water will be heated. Actual performance will depend upon the amount and intensity of sunlight and other variable factors that Sungrabber™ does not predict and that are beyond Sungrabber's control. The performance of the system is heavily dependent upon latitude, related weather conditions and other factors.

7. EXCLUSIVE AGREEMENT AND LIMITATIONS OF REMEDIES

Unless otherwise explicitly agreed to in writing, it is understood that this is the only written warranty for the Sungrabber™ System. Sungrabber HEREBY DISCLAIMS ANY WARRANTIES, WHETHER EXPRESS OR IMPLIED, OF ANY KIND, INCLUDING WITHOUT LIMITATION ANY WARRANTIES REGARDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, WHICH WARRANTIES ARE SPECIFICALLY WAIVED BY BUYER. In no event shall SUNGRABBER be liable for damage to property, lost profits, injury to goodwill or any other special, incidental or consequential damages resulting from any use or inability to use solar hot water system, DAMAGES FOR PERSONAL INJURY, RESULTING DIRECTLY OR INDIRECTLY TO BUYER OR ANY OTHER PERSON FROM THE POSSESSION, OWNERSHIP, OR USE OF THE SUNGRABBER™ SYSTEM OR PARTS DEEMED TO BE DEFECTIVE, EVEN IF SUNGRABBER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, or any breach of the above express warranty, for negligence or otherwise. THIS LIMITATION SHALL APPLY WHETHER A CLAIM ARISES IN CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE. SUNGRABBER'S MAXIMUM LIABILITY TO BUYER, WHETHER ARISING IN CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE SHALL NOT EXCEED THE AGGREGATE AMOUNT OF PAYMENTS RECEIVED BY SUNGRABBER FROM BUYER UNDER THIS AGREEMENT. Some states do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion or limitation may not apply to you. The above warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



SOLAR **HOT** WATER

We want your feedback!

Please log on to www.Sungrabber.com and click on the customer service/product registration link on the home page.

Click on the support link to browse the customer support suite.

Contact your Sungrabber™ contractor for service and support at:

866.786.4722 / FAX 530.332.2109
www.Sungrabber.com