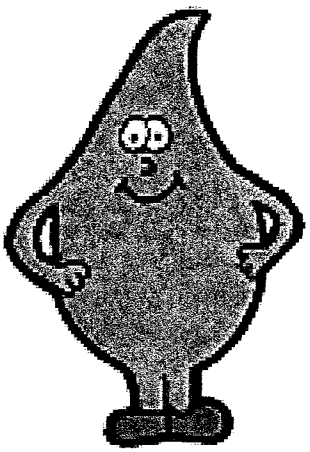
Atlasta Solar Center

SOLAR THERMAL/ HOT WATER SYSTEM

Frequently Asked Questions Answered About:

- How solar thermal hot water panels work
- What hot water panels can be used for in your home or business
- How to estimate a size for a hot water system
- Cost of solar hot water panels and installation



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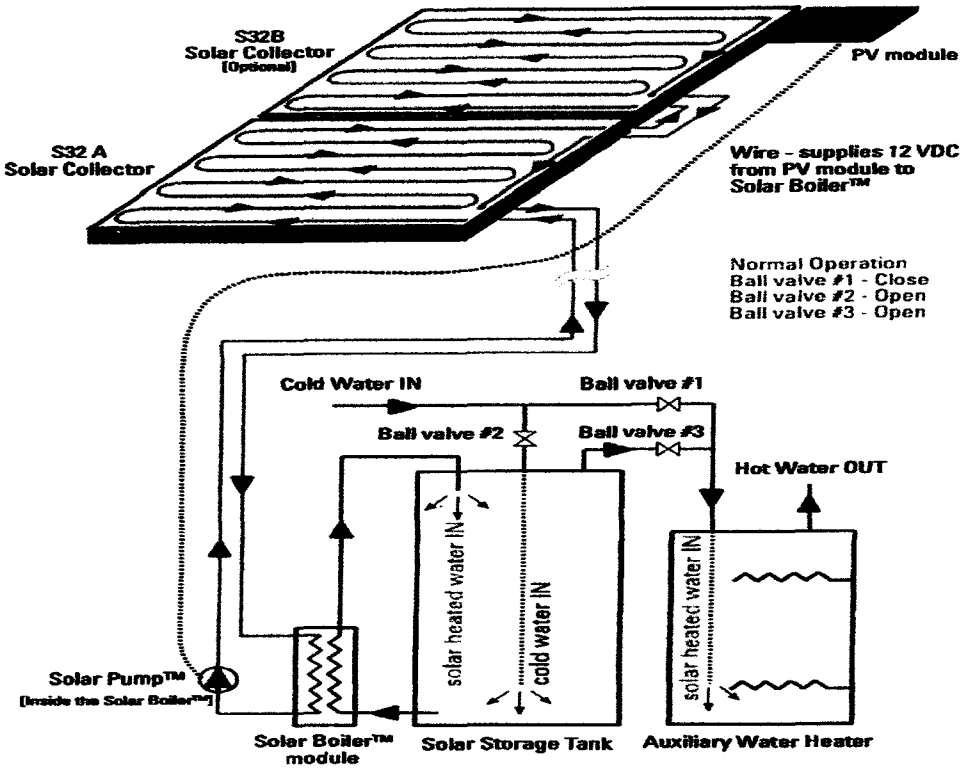
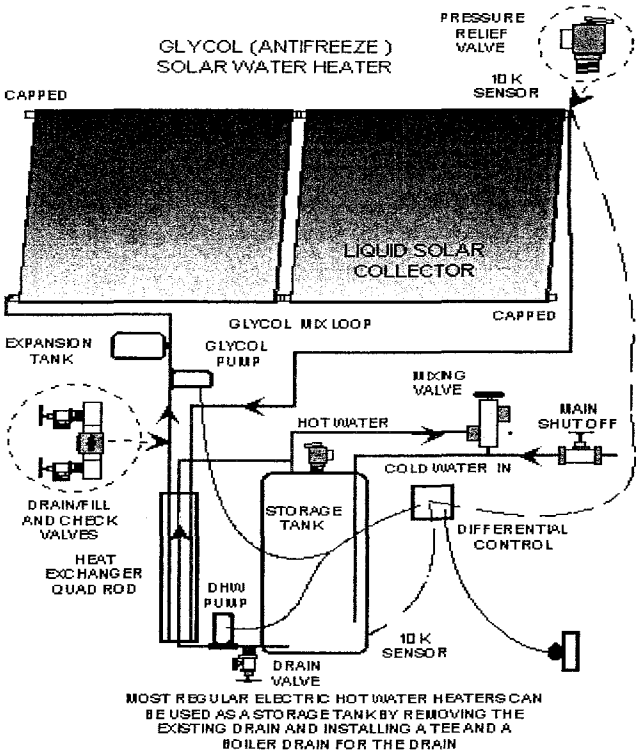


How the Solar Boiler™ works

- Solar collectors absorb sunlight and convert it to heat.
- When there is sufficient sunlight, the photovoltaic module produces electricity and turns the pump.
- The pump circulates heat transfer fluid, (HTF), through the solar collectors.
- Heat is transferred to the HTF in the solar collector.
- The HTF is returned to the heat exchanger in the Solar Boiler™ module.
- The heat is transferred to the water which circulates naturally to the top of the solar storage tank.
- Solar heated water is stored in the solar storage tank until water is drawn from the auxiliary tank (in this case an electric water heater).
- As hot water is drawn from the electric water heater it is replaced with solar heated water.
- The electric heaters increase the temperature of the solar heated water, if necessary.
- The electrical energy required to heat water is significantly less when water is preheated by the solar water heater.
- In this manner, the solar water heater saves electrical energy.

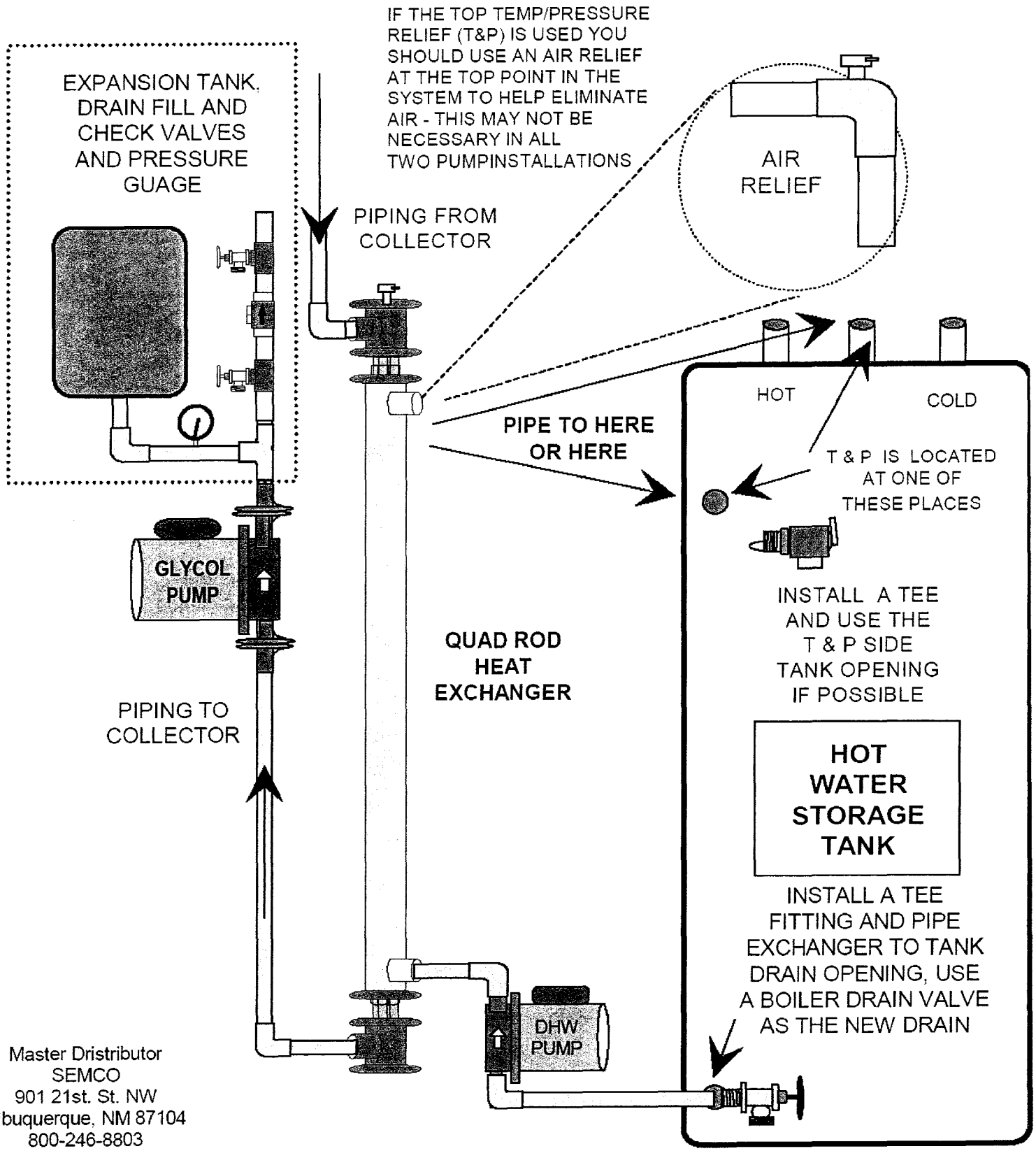
NOTE: The Solar Boiler™ is designed to shut off when a temperature of 180°F is attained in the solar storage tank.

The HTF is a 40/60 % by volume mixture of Propylene Glycol USP and distilled water, and will provide freeze protection to -10°F (-24°C)



Periodic maintenance of glycol systems must be address to two things, the condition of the glycol and the hardness of the domestic water. Glycol solutions can turn acidic after a few years of use. The solution should be checked with Litmus paper or a P.H. meter every three to five years. Acidic glycol solutions should be drained, purged with water and refilled with a new solution. Acidic solutions are usually caused by over heating the glycol loop above 225 degrees F. If the solar system is not used for an extended period of time, the collector loop should be drained and the fluid stored or the collector glazing should be covered. If hard water with high mineral content is circulated through the DHW loop, the tubes in the heat exchanger will eventually clog. This should be checked every three to five years depending on water hardness and corrected with a light acidic solution (vinegar or intech 52) circulated through the tubes until the deposits are gone. A heat exchanger that can be taken apart can be cleaned with a wire brush. A correctly designed solar water heater of this type can produce hot water in virtually any climate for decades.

QuadRod installation on Typical Hot Water Heaters



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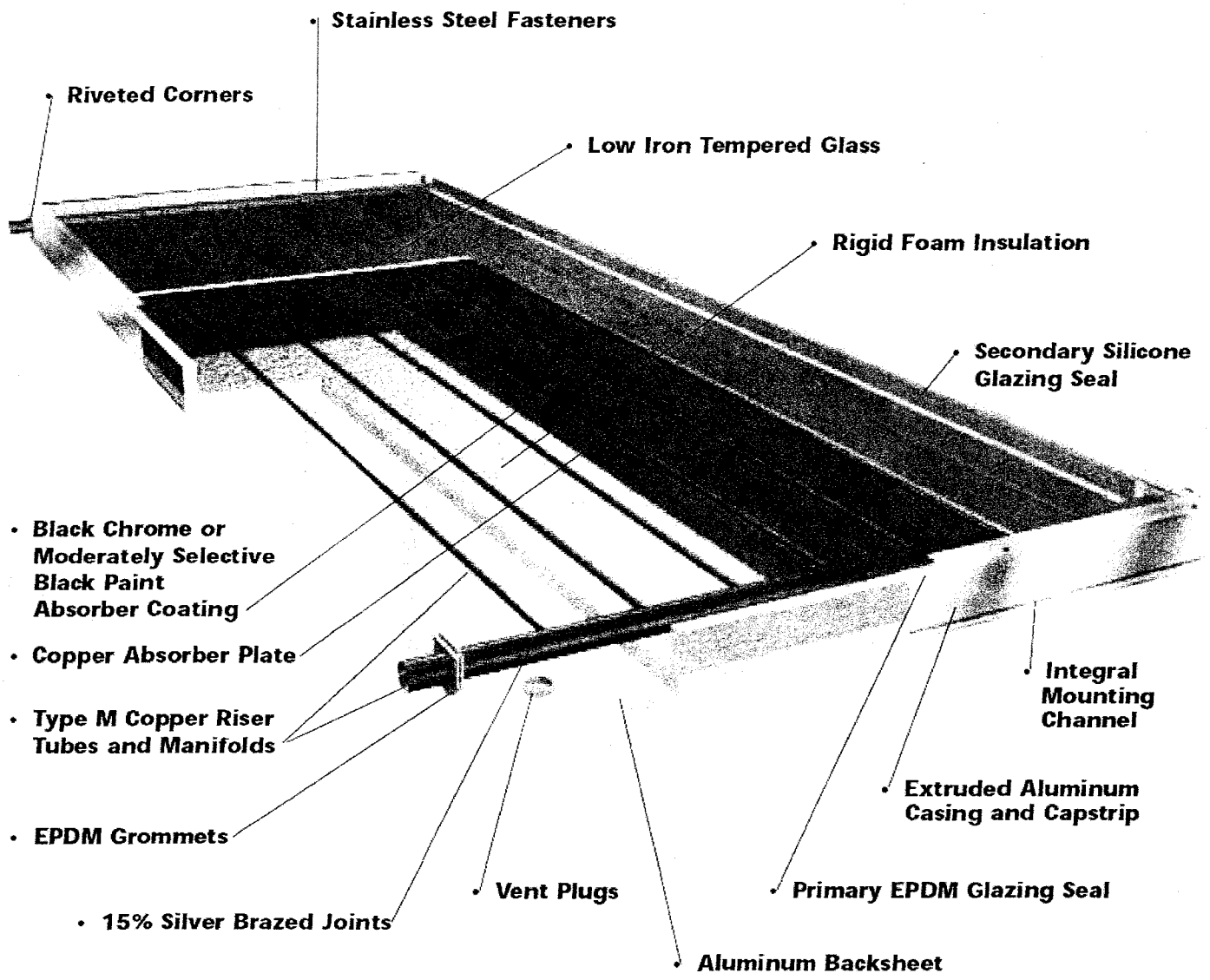

PROTECTING OUR ENVIRONMENT—SINCE 1978

Solar Water Heating

Solar water heating is a technology that every homeowner can use to save on utility bills. Solar domestic hot water (dhw) systems were installed at the turn of the century before natural gas became predominant. Over the last twenty-five years of trial and error, the systems of today are not only efficient and cost effective, but also extremely reliable.

Q. What is a solar water heater ?

A. A solar water heater uses the sun's energy to pre-heat household water before it enters the conventional gas (or electric) water heater. Because Colorado is blessed with such sunny weather, a solar water heater can actually generate up to 90% of your annual water heating needs.

Q. How hot can solar heated domestic water get?

A. Water heated by the sun can reach temperatures exceeding 212° F, but the normal temperature for household use is only 120° to 130° F.

Q. Are there different kinds of solar water heaters?

A. Solar water heaters are divided into two kinds of systems: active or passive. Active solar systems rely upon moving mechanical parts in order to transport heat, while passive units simply use the sun to accomplish this action. The bulk of systems installed in are active because they are considered to be more efficient and attractive. However, most of the systems installed worldwide are passive because they are simple and need no auxiliary power (i.e. electricity) to operate.

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Q. Will solar heating affect how much water I will have? Will I have to change my bathing and cleaning routine?

A. Yes and No. You will actually have much more hot water than ever before. No longer must you wait for the water heater to 'recharge' between showers. Solar water heaters are always installed in addition to your regular water heater. That means that even during bad weather you will still have hot water. To maximize your savings, you should attempt to use the most hot water in the late morning and early afternoon when the solar system is operating at its peak. Also, it helps to spread your cleaning load over the week. For example, instead of washing seven laundry loads all at once it would pay to do one a day. This will reduce the amount your regular water heater must operate.

Q. Will the solar system affect my existing water heater.

A. Yes. Since the water heater will operate far less frequently, solar will extend its life significantly. Some water heaters that were retrofitted with solar in 1974 are still in service today, over a quarter of a century later. The life of an ordinary gas heater without solar is between five and ten years.

Q. How much does a solar water heater cost?

A. The cost may vary from $3,500 to $6,500. It depends largely upon the following variables:

- Size of the family to be served
- Size, type and brand of solar system
- Type of roof upon which the panels are mounted
- Building code requirements
- Orientation of panels

Q. How much do I save?

A. Again, it depends upon the size of the system and the needs of your family. The average annual cost for water heating is usually over half the annual gas bill. Typically a person uses between twenty and twenty-five gallons of hot water a day, which can cost $8.00 to $15.00 per person every month. A family of four could be spending between $384 to $780 a year just for heating water. A gas bill is charged at varying rates or tiers, and the most costly level or tier is levied in winter, when you are using the most gas. A solar system can reduce your daily gas consumption and thus you will be purchasing the less expensive Tier 1 or "Lifeline" rates.

Q. How long does it take for a solar heater to pay for itself?

A. Solar heating does have a payback, and it can vary from three to six years. But it may be more useful to think of solar as an investment that yields an annual return, much as a bank savings account provides interest. A solar water heater will generate savings that would equal a bank account generating a twenty percent (20%) annual return, and the savings are not taxed as income, as is the interest you earn at the bank. The fact is, if you want hot water... you will be paying for that heat. You may prefer to pay the utility bill forever, or you may wish instead to go solar, and become your own utility. It is quite similar to the reason you once decided to buy your home and stop renting. Solar is simply the best investment available today because it guarantees a return on money that you will otherwise "burn" and helps you develop equity as you bank your savings.

Atlasta Solar Center's System #1

1 Panel Domestic Hot Water System

Includes:
One 4'x8' Thermal Panels
50 Gallon Hot Water Tank
3' Heat Exchanger

Completely assembled with all pumps, parts, & necessary equipment to install.

This system is designed for a household of up to 3 people. It is used to preheat an existing domestic hot water system for showers, as well as washing dishes and clothes

$3,995

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Atlasta Solar Center's System #2

2 Panel Domestic Hot Water & Supplemental Home Heating System

Includes:
Two 4x8 Thermal Panels 80 Gallon Hot Water Tank
4' Heat Exchanger
Completely assembled with all pumps, parts, and necessary equipment to install.

$5200

For savings reconditioned water panels are sometimes available.

Atlasta Solar Center System #3

This system is designed for a household of 4 or more. It is used to preheat domestic hot water for showers, as well as washing dishes and clothes. It also uses a radiator to heat a specific room when a thermostat determines.

Includes:
Two 4x10 Thermal Panels 120 Gallon Hot Water Tank
5' Heat Exchanger
Completely assembled with all pumps, parts, and necessary equipment to install.

$6500

For savings reconditioned water panels are sometimes available.

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Thank you for choosing...

....For all your solar needs.