



Apricus Solar Hot Water Owner's Operating and Maintenance Manual

For Electric Hot Water Tanks (Solar-Ready)

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Installation Manual for EHW Tanks: MAN_OWNR_EHWT(AA) | 1

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CHAPTER 1: INTRODUCTION

1.1 TERMINOLOGY

- Bank: Multiple collectors in series (one after the other).
- Boost: The process where a heating component (such as an electric element or gas heater) is used to provide additional heating when solar-heated water is not of an adequate temperature
- Clean Energy Regulator (CER): Government body responsible for overseeing the implementation of the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES).
- Collector: The Apricus solar collector includes the manifold with heat pipes and evacuated tubes inserted.
- Expansion Control Valve (ECV): Installed on the cold mains line to relieve excess pressure.
- Expansion Tank: Fitting an Expansion Tank to the system allows the water to move into the expansion tank and occupy its volume, rather than increasing the system pressure. This reduces the wastage of water through the PTRV and protects the system from high pressures and undue wear.
- Evacuated Tube: functions to harness the solar energy by capturing and retaining the heat due to the presence of the vacuum.
- Flow Line: The plumbing line running from tank solar flow port to the inlet of the collector. This line incorporates the circulation pump.
- Heat Pipe: A copper pipe that sits inside the evacuated tube and is inserted into the collector manifold. A small volume of liquid acts as a heat transfer fluid. It absorbs heat via evaporation, and transfers heat to the system fluid via condensation.
- Header Pipes: The copper “heat exchanger pipes” in the manifold of the Apricus collector through which the water flows.
- Insolation: solar radiation level, expressed in kWh/m²/day.
- Manifold: Refers to the solar collector enclosure that contains the header pipes.
- Pressure Temperature Relief Valve (PTRV): installed on the hot water storage tank to relieve pressure, and excessive temperatures.
- Return Line: The plumbing line running from the solar collector to the solar return port on the tank.
- Stagnation: Stagnation is the maximum temperature a collector will reach, at which point the rate of heat gain and rate of heat loss is balanced.
- Stratification - the passive separation of water into distinct layers of different temperatures; where the temperature at the top of the tank can be significantly higher than the temperature at the bottom.

1.2 SCOPE

This manual has been designed to provide installation instructions for the installer or plumber.

CHAPTER 2: SYSTEM COMPONENTS

The system components that are a part of the electric solar hot water systems are depicted and tabulated in Figure 1 and Table 1.

TYPICAL ELECTRIC BOOSTED SYSTEM

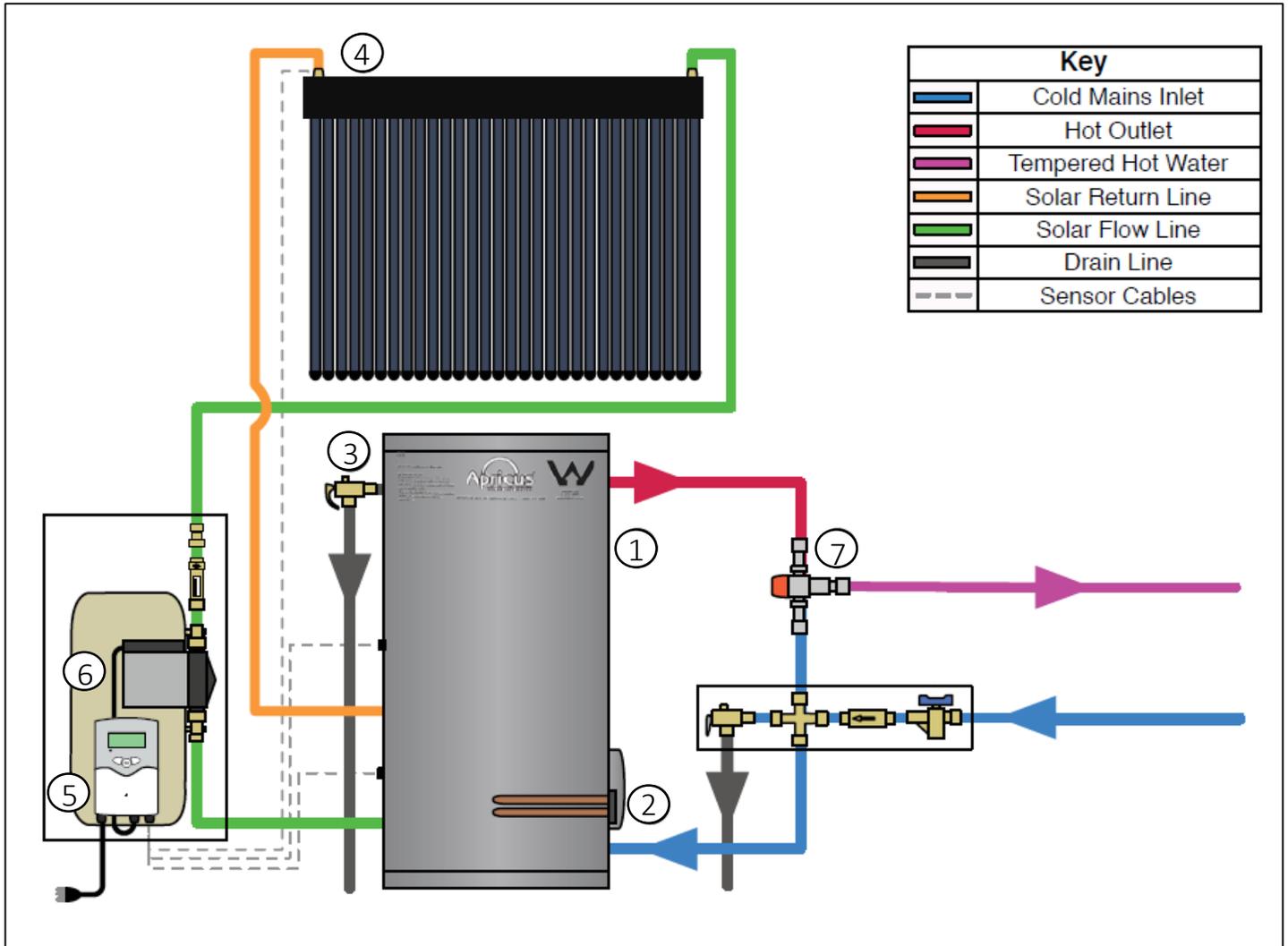


Figure 1 Typical Electric boosted solar hot water system.

Table 1 Components that make up a typical Electric boosted solar hot water system.

No.	Component	Function
1	Tank	Stores hot water for when you need it
2	Electric Element	Provides a backup energy source for cloudy days and legionella protection
3	PTRV	Pressure Temperature Relief Valve
Below are additional components required to upgrade your tank to a solar hot water system		
4	Evacuated tube collector	Solar energy collection
5	Controller	Monitors temperatures and controls the system
6	Circulation Pump	Circulates water from the tank to the manifold
7	Tempering Valve	Tempers the hot water down to a safe outlet temperature

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CHAPTER 3: SYSTEM OPERATION

AUXILIARY BOOSTING OPERATION

The auxiliary boost acts as a back up to ensure you always have hot water ready to go. Secondly, it provides protection against the growth of legionella bacteria that can lead to legionnaire's disease. The temperature requirements and frequencies of heating are in Table 2 below.

Table 2 Minimum heating requirements of different system types.

Type of Apricus system installed	Minimum heating requirements
Glass-lined Bottom element electric boosted system	Once per week to 60°C for 32 minutes

ELECTRIC ELEMENT

Apricus Solar ready EHW tanks have an element inside them located near the bottom of the tank. This element operates just like a normal electric hot water system.

Bottom element tanks may be connected to off-peak power tariffs to reduce energy bills whilst still meeting larger morning hot water loads.

CHAPTER 4: IMPORTANT FEATURES & CHARACTERISTICS

PTRV

A PTRV is installed on the hot water storage tank to relieve pressure, and excessive temperatures in the system. The PTRV discharges 3-6% of the water heaters capacity during normal heating cycles with a hot water system.

The maximum allowable PTRV water discharge as per AS/NZS 2712 is roughly 10% of tank total volume for an Apricus Australia solar DHW system.

EXPANSION CONTROL VALVE (ECV)

An ECV is installed on the cold water inlet of some water heaters to relieve pressure within the system. The ECV may discharge a small quantity of cold water rather than the PTRV discharging hot water from the tank. This conserves hot water within the storage tank, as the discharged water from the ECV is much cooler than the PTRV.

CHAPTER 5: TROUBLESHOOTING

You may encounter abnormal characteristics with your solar hot water system and would like to understand the issue to avoid a service callout from your local plumber/installer.

PTRV

The PTRV relieves 3-6% of the water heaters capacity during normal heating cycles with a hot water system. If the storage tank is discharging more than a bucket full of water in 24 hours, it may be due to the incoming water pressure being too high. Request for your plumber/installer to fit a pressure limiting valve.

There could be some debris or thread seal tape trapped in the valve mechanism. You can try lifting the valve gently and try to dislodge anything that could be causing that valve not to be re-seating properly. Please refer to Maintenance Procedures provided in Chapter 6: System Maintenance.

WE DON'T HAVE ENOUGH HOT WATER

You may be using more hot water than you realise. Look more closely into how you are using hot water around the home. Adjusting your hot water usage patterns to maximize the energy that your system can generate during the day will benefit your energy bills.

IF YOU HAVE READ ALL THE INFORMATION WITHIN THIS MANUAL AND BELIEVE THAT YOU NEED ASSISTANCE, CALL APRICUS AUSTRALIA'S AFTERSALES TEAM.

CHAPTER 6: SYSTEM MAINTENANCE

Apricus recommends that maintenance must be carried out accordingly with but not limited to the maintenance schedule in Table 3. Please refer to the manufacturer’s documentation for any non-Apricus components for maintenance guidelines. Maintenance and servicing should only be completed by a certified plumber.

Table 3 Suggested Maintenance Schedule

MAINTENANCE SCHEDULE	MAINTENANCE PERIODS			
	EVERY 6 MONTHS	EVERY 12 MONTHS	EVERY 2 YEARS	PER PRODUCT GUIDE
EXTERIOR PIPING				
All piping is insulated, with no exposed pipe	X			
All insulation is free from defects	X			
All insulation is UV and weather protected		X		
Insulation jacketing is free of degradation		X		
Check pipe hangers are in good condition		X		
Piping is labelled clearly			X	
Inspect brass fittings		X		
INTERIOR PIPING				
All hot water piping is insulated			X	
All piping is labelled clearly			X	
Check pipe hangers are in good condition			X	
All valves are clearly labelled			X	
Inspect brass fittings		X		
STORAGE TANK				
Drain and flush tank				X
Inspect anode rod (if glass-lined tank)				X
Inspect tank		X		
VALVES				
Check PTRV operation		X		
Release PTRV lever to prevent debris build up.	X			
Check tempering valve operation, that the line strainers are clear and that the pressure across tempering valve is balanced.		X		
ELECTRIC ELEMENT				
Inspect element for leaks. Check fuse, replace if required	X			

MAINTENANCE PROCEDURES

DRAINING THE SYSTEM

Draining of the tank may be required when servicing or performing maintenance on the system. Periodic flushing of the system is not required unless in areas with hard water resulting in scale formation in the bottom of the tank.

Follow the steps below to drain the collector:

1. Turn off the cold mains water supply to storage tank.
2. If the storage tank is being drained,
 - a. Disconnect all power supply to water heater.
 - b. Release pressure in the tank by carefully operating the PTRV release lever.
 - c. Undo the cold inlet and attach a drain hose.

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- d. Operate the PTRV release lever allowing air into the heater and water to drain via the hose
3. Re-fill the system by following the procedure outlined in the Apricus EHWT Installation manual, Chapter 7: Commissioning.

OVER PRESSURE PROTECTION MAINTENANCE

The lever on the PTRV should be carefully lifted and placed down once every 6 months, this will help prevent any debris of scale build up in the valve. Ensure the drain pipe from the PTRV is clear.

This should be similarly done for the expansion control valve on the cold mains line (if there is one installed).

MAGNESIUM ANODE REPLACEMENT

Glass lined storage tanks have a magnesium anode inserted into the tank. The anode prevents internal corrosion that will otherwise drastically shorten storage tank life. Apricus recommend the anode be inspected at least every three (3) years, and serviced as required. Inspect the anode on a yearly basis if tank uses hard water.

It is recommended that the manufacturer be consulted regarding suitable replacement anodes.

WARNING

If the hot water system is not used for two weeks or more, a quantity of highly flammable hydrogen gas may accumulate in the water heater. To dissipate this gas safely, it is recommended that a hot tap be turned on for several minutes or until discharge of gas ceases. Use a sink, basin, or bath outlet, but not a dishwasher, clothes washer, or other appliance. During this procedure, there must be no smoking, open flame, or any electrical appliance operating nearby. If hydrogen is discharged through the tap, it will probably make an unusual sound as with air escaping.

CHAPTER 7: GENERAL INFORMATION

WARRANTY/SERVICE CALL

If you have an issue with your Apricus solar ready tank please contact our head office on:

1300 APRICUS (1300 277 428)

SYSTEM REGISTRY

Registering your Apricus solar ready tank will ensure that your details are placed on our computer system streamlining any future after-sales/service requirements. You can register your Apricus Australia product online at: www.apricus.com.au.

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To stay up to date with the latest Apricus news, product updates, announcements, and specials. Sign up to our Apricus e-newsletter and connect with us on social media by visiting our website: www.apricus.com.au