



Delivering Sustainable Hot Water Solutions



# Product Overview

FPC-A Flat Plate  
Solar Collector

## Product Features

FPC-A collector is a high efficiency, extra lightweight flat plate collector for use in residential and commercial solar thermal projects.

- High efficiency Tinox energy AL solar absorber
- Ultra lightweight melamine foam insulation
- Low profile only 70mm / 2.75" tall
- High tensile grade 6063-T5 black anodized aluminium collector sides
- High transparency toughened solar glass
- Harp style riser arrangement compatible with direct, closed and drain-back systems.
- Suitable for portrait or landscape orientation



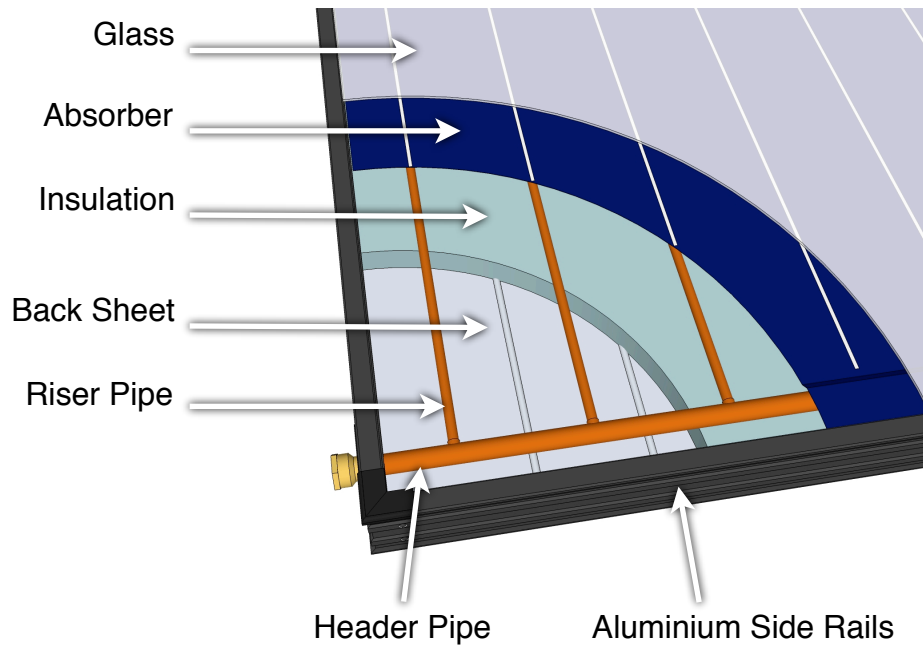
## Product Specifications

Specification	Model: FPC-A32
Length	2444 mm / 96"
Width	1223 mm / 48"
Height	75 mm / 3"
Peak Output*	2098 W / 7154 Btuh *
Conversion Factor $\eta_0$	0.749
Heat Transfer Coefficient a1	2.770 W/(m <sup>2</sup> K)
Heat Transfer Coefficient a2	0.023 W/(m <sup>2</sup> K <sup>2</sup> )
Aperture Area	2.8 m <sup>2</sup> / 30.14 ft <sup>2</sup>
Gross Area	2.98 m <sup>2</sup> / 32 ft <sup>2</sup>
Gross Dry Weight	46 kg / 101.4 lbs
Fluid Capacity	1.8 L / 0.47 US gallon
Max Operation Pressure	8 bar / 116 psi
Absorber Sheet	0.4 mm / 0.016" Aluminium Tinox Energy
Insulation	Melamine Foam
Glass Cover	3.2 mm / 0.125" Hardened Glass
Seals	HTV Silicone Rubber
Back Sheet	0.8 mm / 0.03" 5052-H16 Aluminium
Collector Side Rails	6063 Anodized Aluminium

\* Data from TUV report 154010288. Calculated at midday (trans IAM = 1), G=1000W/m<sup>2</sup>,  $\Delta T$  (tm-ta)=0

Visit the **Apricus Tech Centre** area on the [apricus website](#) for the installation manual, product certification and product documentation.

## Collector Construction



### Glass

Toughened glass (glazing) protects the absorber from the outside environment while allowing through >90% of sunlight.

### Absorber

A thin sheet of Aluminium is coated with a highly selective material that is extremely efficient at absorbing sunlight and converting it into usable heat. The aluminium sheet is ultrasonically welded to the copper riser pipes.

### Insulation

The insulation helps reduce heat loss from the sides and back of the collector. Made from ultra-light weight melamine foam, this material is chosen to greatly reduce the weight of the collector.

### Back Sheet

An aluminium alloy sheet seals the back of the panel and adds to the rigidity of the collector.

### Riser & Header Pipe

The header and riser pipes are brazed together to form a harp shaped heat exchanger that the solar system heat transfer fluid circulates through. The absorber sheet is ultrasonically welded to the riser pipes, thus transfers heat to the heat transfer fluid.

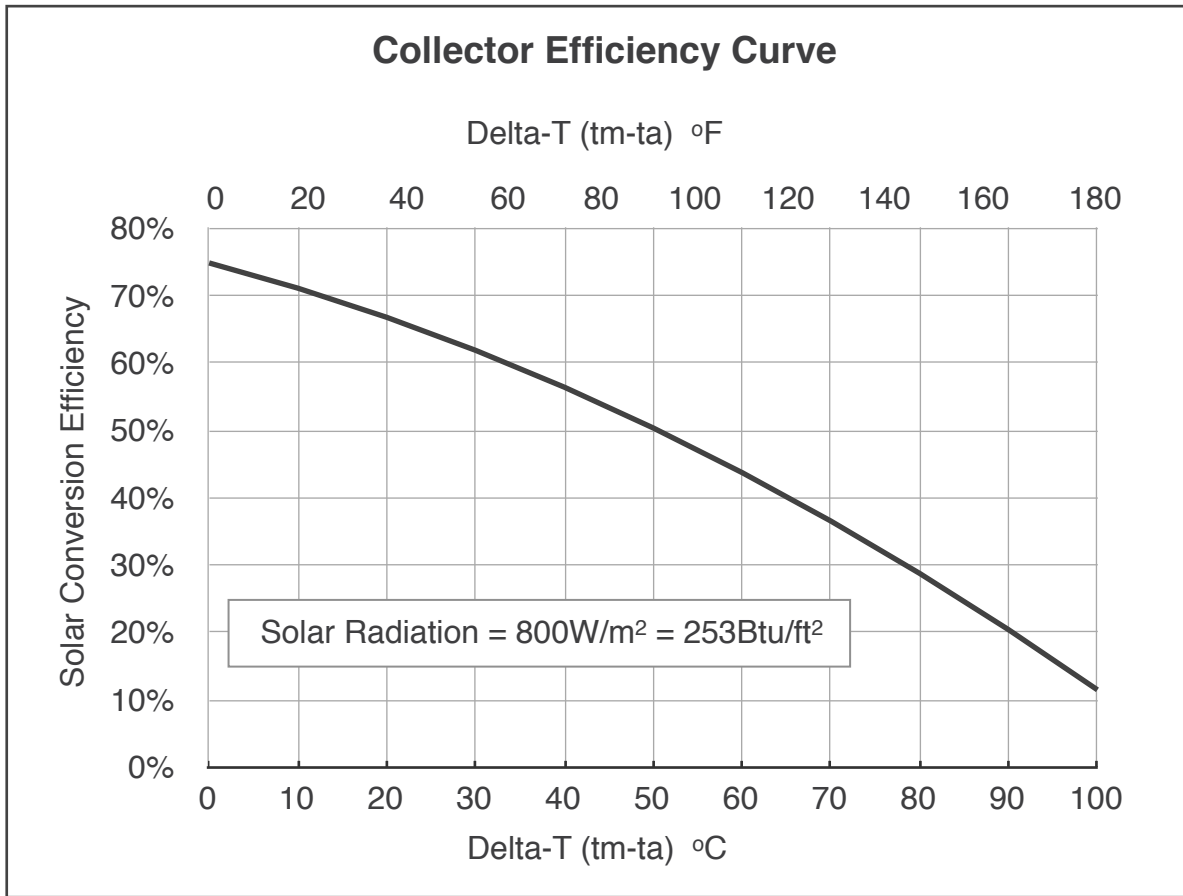
### Aluminium Rails

Extruded from high tensile 6063-T5 aluminium alloy, the rails form the outer framework of the collector and are design with wings for easy mounting frame attachment.



## Collector Efficiency

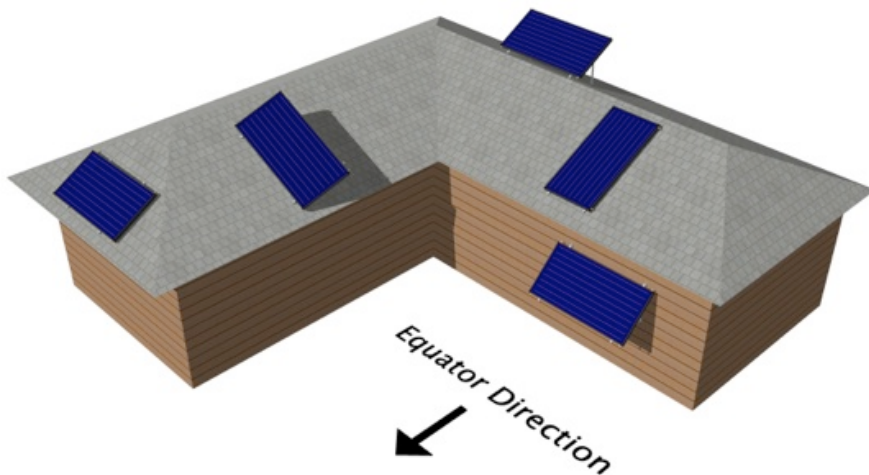
The following efficiency curve is based on  $800 \text{ Watt/m}^2$  /  $253 \text{ Btu/ft}^2$  solar radiation at midday. Actual output depends on the solar radiation level, ambient temperature, collector liquid temperature and the angle of the collector in relation to the sun.



## Installation Options

The flat plate should face the direction of the equator, so facing the midday sun. The installation angle is generally set at the same angle as the latitude ( $\pm 15^\circ$ ) to provide the maximum annual heat output.

The diagram below shows the various positions the flat plate collector can be mounted on a building to achieve optimal solar exposure. Installing at a direction up to  $45^\circ$  east or west of the equator direction is acceptable but will reduce heat output by around 5%.



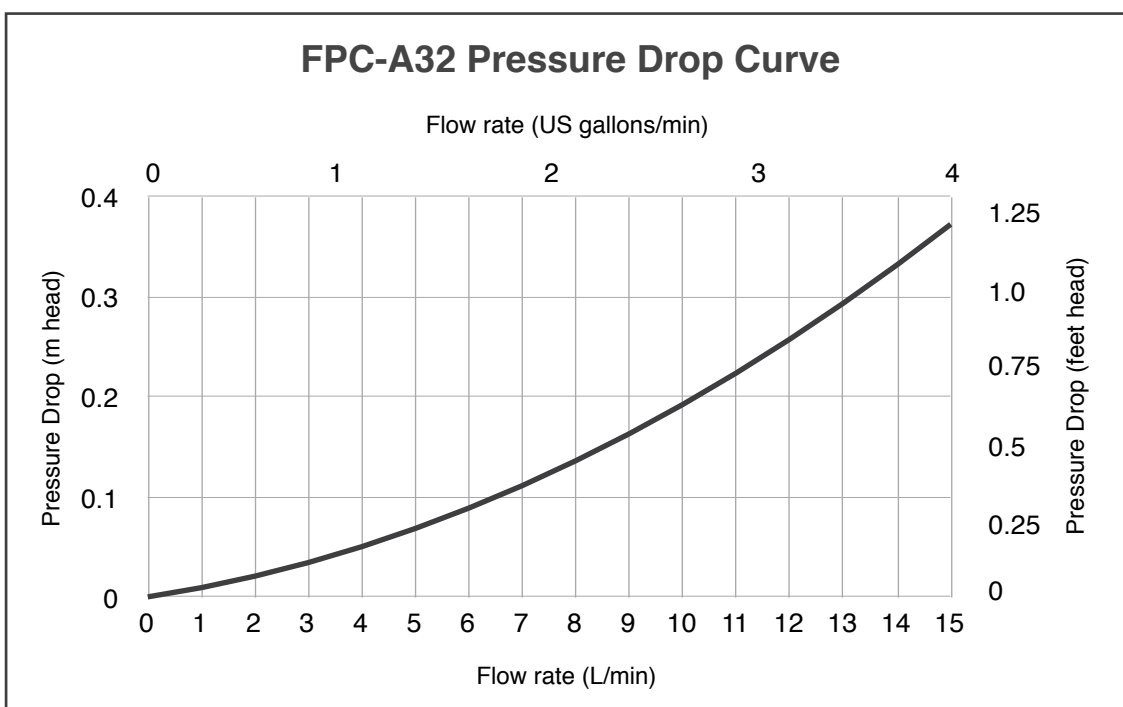
## Flow Rates

The liquid flow rate through the collector depends on the desired temperature rise. In most cases a variable speed controlled pump is recommended so a target temperature rise is maintained. The following calculations are based on water as the circulating liquid, with collector operating at the maximum rated midday output. Glycol-water mixes will provide higher temperature rises at a given flow rate compared to water due to lower heat capacity.

Flow rate (L/min)	Temp Rise (°C)
	FPC-A32
1	30.1
2	15.0
3	10.0
4	7.5
5	6.0

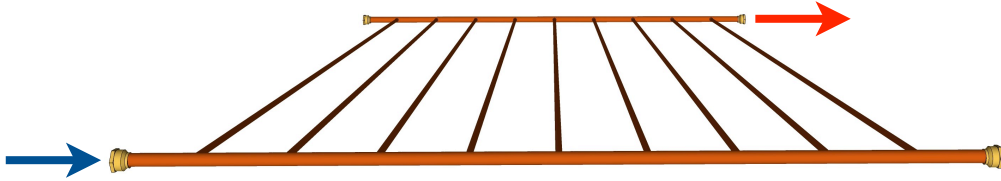
For most domestic hot water applications, if not using a variable speed pump, choose a flow rate from the above table that corresponds to around a 10°C / 18°F temperature rise. That will provide a good balance between preventing excessive rise in the summer and also reducing short cycling of the pump during periods of poorer solar radiation. Apricus offers a simple calculator to determine the above values for other flow rates or temperature rises.

The following curve provides the pressure drop values for an FPC-A32 collector. This can be used to help determine pump sizing when installing a number of collectors in series.

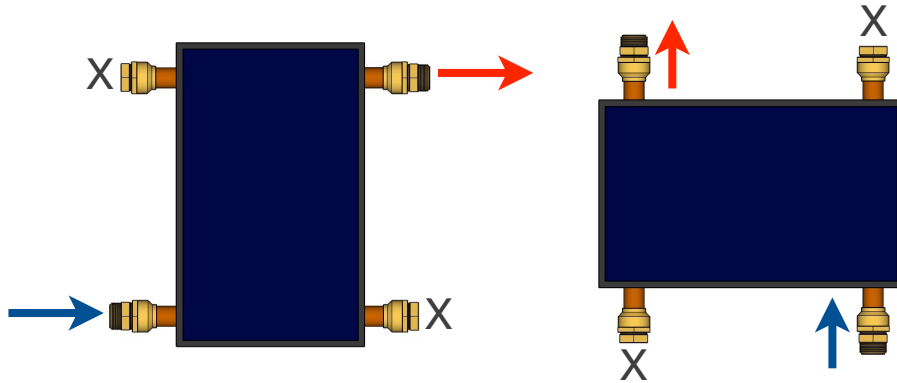


## Plumbing Connection

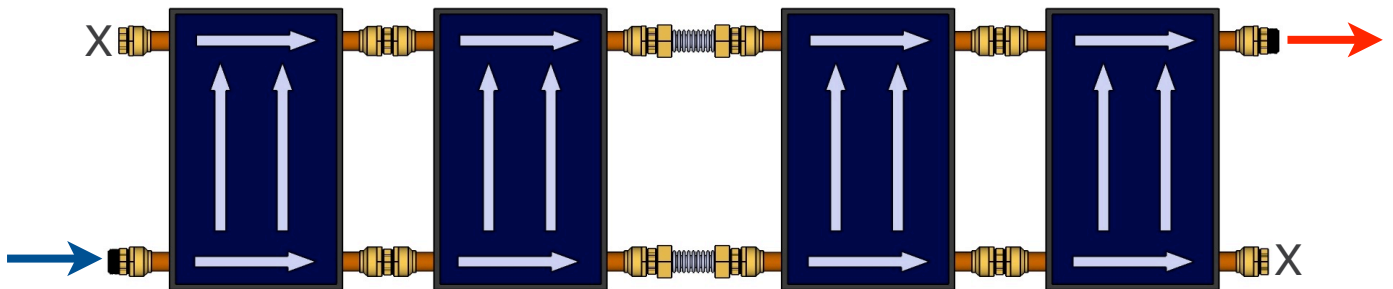
The flat plate collector's harp design provides a total of 4 ports.



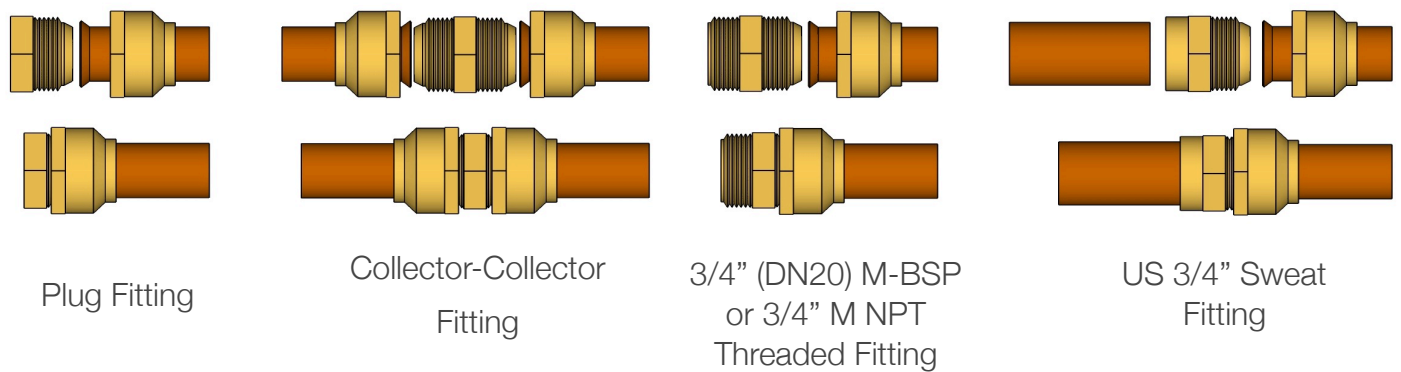
When installed as a stand alone collector two ports are blocked to facilitate bottom-in, top-out flow path.



When multiple collectors are installed in series, mid positioned collectors utilise all four ports, with blocked ports on the first and last collector only.



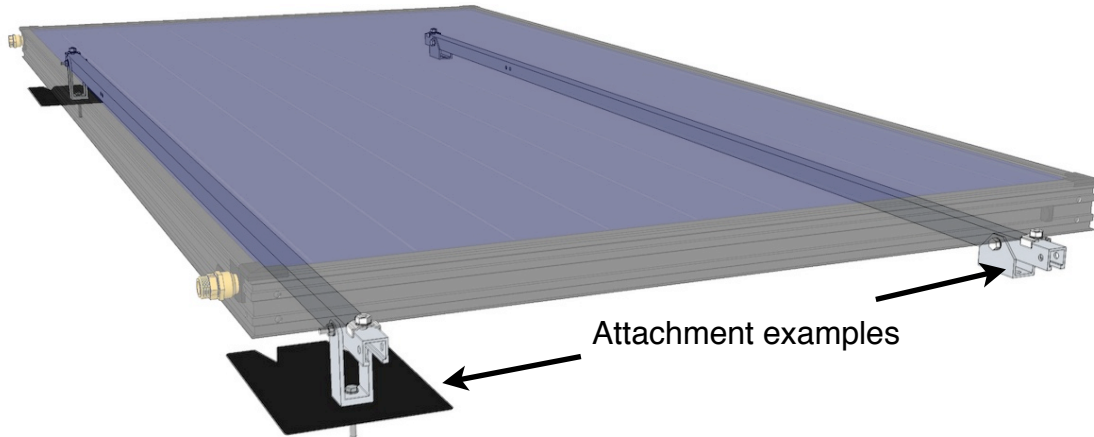
The inlet/outlet ports have a flared nut compatible with a range of standard fittings offered by Apricus.



## Mounting Frame

The FPC-A collector can be installed in landscape or portrait orientation, ideally at an angle equal to, or slightly higher than the latitude of the location. The mounting frame consists of two “front tracks” that run the height of the collector, securely attached with attachment plates at the top and bottom.

The front tracks can be attached to the roof using roof flashings, U brackets or roof attachment straps, depending on the type of roof.



For installations that require the angle of the frame to be increased, rear legs can raise the angle by up to 60°.



## MANUFACTURER LIMITED WARRANTY

### FPC-A Flat Plate Solar Collector

#### LIMIT OF LIABILITY

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WITH RESPECT TO ANY END-USER OTHER THAN A CONSUMER END-USER WHICH PURCHASES APRICUS PRODUCTS FOR COMMERCIAL, INSTITUTIONAL, INDUSTRIAL OR OTHER NON-RESIDENTIAL PURPOSES, APRICUS DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND FURTHER DISCLAIMS ANY LIABILITY FOR SPECIAL, INDIRECT, SECONDARY, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING FROM OWNERSHIP OR USE OF THESE PRODUCTS, INCLUDING PERSONAL INJURY, INCONVENIENCE, LOSS OF USE OR LOSS OF INCOME.

Apricus assumes no responsibility under this Limited Warranty for any damage to the Products caused after they have left the control of Apricus, including but not limited to damages caused by any trades people or visitors on the job site, or damage caused as a result of post-installation work. This Limited Warranty shall be invalidated by any abuse, misuse, misapplication or improper installation of the Products.

#### GENERAL

Apricus warrants its Solar Collectors and Accessories (the "Products") to be free from defects in workmanship under normal usage for the applicable Warranty Period from the date of installation. This Limited Warranty extends to the End-User of the product at the original installation location, and is not transferable.

In the event of a defect, malfunction or other failure of the Products occurring within the applicable Warranty Period which is not caused by any misuse or damage to the Product while in the possession of the End-User, Apricus will remedy the failure or defect within a reasonable amount of time. The remedy will consist of repair or replacement of the Products, or refund of the purchase price, in Apricus's sole discretion. However, Apricus will not elect to refund the purchase price unless it is unable to provide a replacement, and repair is not commercially practical and cannot be made within a reasonable timeframe. After a reasonable number of attempts by Apricus to remedy any defects or malfunction, the End-User will be entitled to either a refund or replacement of the product or its component parts. The remedies stated herein are the sole remedies for defects within the applicable warranty period.

#### WARRANTY PERIOD

The "Effective Date" of warranty coverage is the installation date as recorded on the installation record form, purchase invoice date, or, if neither are available, the date of manufacture plus sixty (60) days.

Component	Coverage
Collector Absorber and Frame	Ten years parts

#### WARRANTY EXCLUSIONS

This warranty shall be void and shall have no effect if:

- The design or structure of the Products are attempted to be modified or altered in any way, including by not limited to attaching non-Apricus approved appliances or equipment;
- The Products are not installed or repaired in accordance with applicable local codes;
- The Products are not installed by qualified, suitably licensed persons;
- The installer had not received Product installation training by an authorized Apricus distribution partner;
- The installation was not completed in line with the guidelines of the then current Apricus installation manual;
- System is exposed to excessive system pressure;
- Solar collector is exposed to flow rates in excess of 15Lpm / 4gpm;
- Any system component is damaged due to freezing;
- Any system component leaks due to corrosion;
- Water quality is not within specified limits, and/or non-approved heat transfer liquids are used;
- Failure is due to wind, hail, storms or other acts of God;
- Failure or loss of efficiency is due to lime-scale formation;
- Product serial tag or other identification is defaced or removed;
- Product is relocated from its original point of installation;
- Any operation exceeds the documented design limits of the system components or materials.

#### END USER OBLIGATIONS

In order to obtain performance of any obligation under this warranty, the End-User must:

- Firstly determine if the Product is within the applicable Warranty Periods. This can be determined by referring to the installation record form, or alternatively the original purchase invoice. If neither documents are available, the serial number and manufacturing date will need to be read off the Product serial tag. Some Products may be installed in a location that is not accessible to the End-User and so the information may only be obtained by a qualified service technician.
- Contact the company who installed the original Product, or, if unknown or unable to be contacted, contact Apricus directly.

The following information may be required to determine if the Product issue is eligible for coverage under the terms of this Limited Warranty.

- Information related to the manner in which the Product(s) were installed.
- The history of operation.
- Any repairs that may have been made.
- Evidence that the Product(s) were installed by a qualified, licensed contractor.
- Evidence that the Product(s) were installed in accordance with the applicable Products Installation Manuals and any special written design or installation guidelines by Apricus for this project.
- Evidence that the Product(s) were installed in accordance with all applicable local building, plumbing and electrical codes.

#### CUSTOMER SATISFACTION

We believe you will be fully satisfied by the service you receive from the local Apricus representatives and from Apricus. However, because our aim is your complete and lasting satisfaction, Apricus adds another feature to your warranty's protection. In the unlikely event that you feel our response to a warranty service request is not satisfactory, Apricus offers you an opportunity to air your complaint in an impartial Mediation process.

The opportunity to mediate any complaint made by an End-User is hereby extended to all End-Users. If you are a Consumer End-User, the provisions of the federal Magnuson-Moss Warranty Act provide that you may not file suit against Apricus until your claim has been submitted to Mediation for an informal dispute settlement and a decision has been reached.