



Operating & Maintenance

Manual

For

WaterLite Solar Water Heaters



Patent number 2010/07967

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Congratulations on your purchase of a WaterLite solar water heater. You have taken the first step to reduce your monthly electricity bill and do your bit to save our planet.

With a good installation and with minor maintenance your WaterLite solar water heater will serve you well for years to come.

WaterLite Solar Water Heaters are made in South Africa & have been specifically designed for our African conditions.

Introduction/Description

The WaterLite name originates from a simple scientific principal, namely that cold water is heavier than hot water, and therefore it sinks.

Hot water is lighter and floats above cold water.

WaterLite close coupled systems operate on the thermo siphon principle as can be seen from the diagram below.

From the diagram it can be seen that WaterLite close coupled systems have 2 water tanks or containers:

The inner tank which contains the potable or water for usage and the outer surrounding tank which contains the water for the jacket and tubes.

When the water in the tubes heats up it rises, thereby forcing cold water down the tubes.

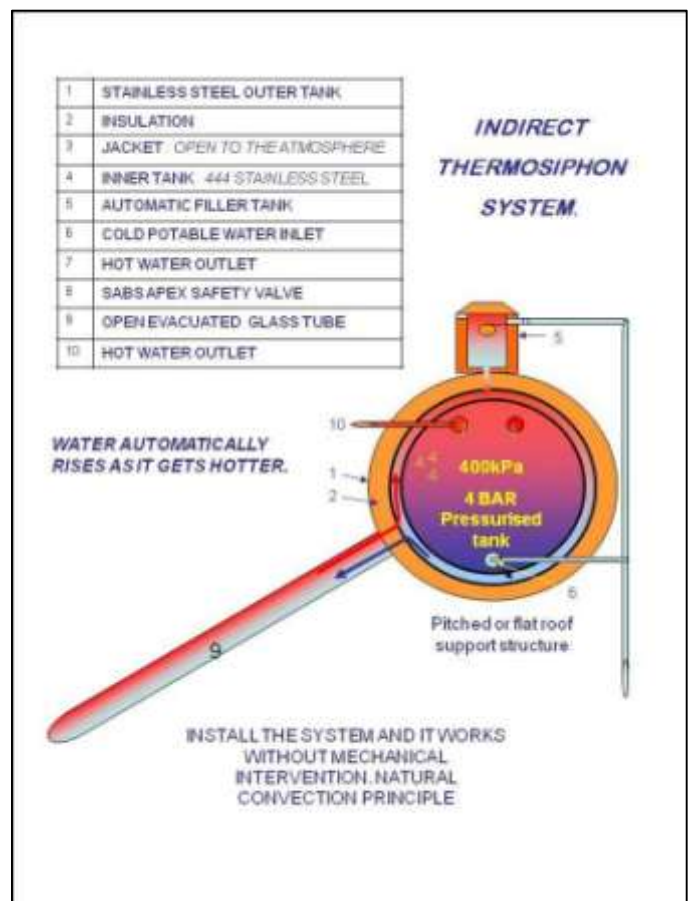
The hot water then rises into the surrounding jacket to act as the heat transfer medium to the inner tank.

The thermo siphon principle means that there is a reduction in moving parts & therefore less system maintenance.

Cold water flows into the header tank, the surrounding jacket and into the tubes.

This design is unique to WaterLite. **Patent No: 2010/07967**

This is a continuous process, as long as there is heat in the atmosphere the cycle will continue.





Installation

NB For safe and effective performance, the water heater shall be installed, maintained and repaired strictly in accordance with the appropriate and relevant requirements of SANS 10254. SANS 10106

NB installations are to be undertaken only by qualified plumbers and electrical contractors.

Installations not undertaken by qualified professional may result in damage firstly to the person and secondly to property and system.

Systems not installed by trained or qualified installers will result in the warranty becoming void.

WaterLite installers have all been trained to install WaterLite systems in accordance with SABS and SANS specifications.

INSTALLING THE PITCHED ROOF FRAME – Inclination Angles

These systems must be installed in accordance with SANS 10254, SANS 10252-1 and SANS 10106

WaterLite manufactures both pitched and flat roof frames to suit the roof.

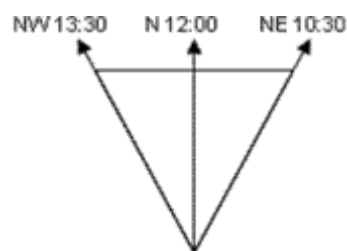
The flat roof stands have a 30° angle and are NOT designed to be used on pitched roof installation greater than 5°.

The pitched roof frames are designed to work with varying angles from 5° to 35° Maximum.

The pitched roof frame does not need to be adjusted to suit angles 10° - 35°, the back load support has been designed to sit flush with the roof type (Tiles, slate, corrugated etc)

Angles greater than 35° will require a compensation frame to be built to reduce the angle – contact your WaterLite representative should this be required.

WaterLite system should ideally be installed with a north facing orientation, (with as little shade as possible falling on the collector during the day), but orientations between NE to NW are acceptable.



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1-Fixing the galvanized strips onto the roof trusses

The galvanized strips provided can be bent to suit the roof tiles so as to ensure the roof tiles remain waterproof; a galvanized coach screw (min 8 x 60mm) should be drilled into the roof truss to hold the galvanized strip in place. (see below)



2-Frame placement on the roof tiles

The back on the frame must rest on the strongest section of the tiles. This can be seen when you lift a tile and expose the branding, the frame will rest on top of 2 tiles and over the branding as can be seen below, the red line represents the placement of the back plate. The back plate runs the length of the system and acts as a load spreading beam



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3- Attaching the frame to the galvanized strips.

Once the strips are securely fastened to the roof truss the tiles must be pulled back into position and be flush with the tile it is resting on.

To attach the strips to the frame use the 8x 16 Set screws with hex head and tighten with a spanner.



4- Frame complete and secure on the roof.

Now that the frame is on the roof, make sure that the frame is sitting flush on all the tiles i.e. the frame is not rocking on the tiles. If rocking is occurring then make sure the tiles are interlocking correctly.



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5-Place the tank onto the frame

The tank is placed onto the frame and guided in place by guiding the threaded bolts attached to the bottom of the tank into the slots on the cradle of the frame.



NB Should a pitched roof frame be installed on a roof with an angle greater than 35°, there is additional strain placed on the frame and galvanized support strapping which could result in the system pulling off the roof.

FITTING THE HEADER TANK AND FLOAT VALVE

The header tank connects to the main tank by means of a 22mm drop nut with a 6mm black seal which is fixed inside the header tank



When fitting the header tank, the 2 holes in the header tank must face backwards, the drop nut must have the black seal placed on it and then hemp put on the thread.



Once the drop nut is inside the header tank, the nut can be tightened with an element spanner; do not over tighten the nut (the black seal must not be pushing out from the drop nut)

The float valve gets placed in one of the holes, with the float valve seal on the inside and the white plastic nut on the outside holding the float valve in place.



Attach the flexi hose to the float valve and leave the mini ball cock closed till you need to fill the tubes.

TIMER & ELECTRICAL CONNECTIONS

Please note: All electrical installations must be undertaken by a qualified electrician



CORRECT ELECTRICAL CONNECTION – Element & Thermostat are connected – thermostat set to 55°



INCORRECT ELECTRICAL CONNECTION – only element has been connected

A timer installed in connection with your geyser will greatly reduce your monthly electricity bills.

If a WaterLite system has been installed under the Eskom DSM guidelines, then a timer is compulsory and has been pre set for you by WaterLite or our registered installers.

The timer should be set for the following times (or at least avoid the peak times): 3am-6am & 3pm-6pm, these times are set as per Eskom request to avoid peak periods (7am-10am & 6pm-8pm).

Please note that timers installed in office blocks are set from 4am-6am & 2pm-4pm.

All timers supplied have their own instruction manuals which you should read through and keep with this manual.

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(Contact WaterLite should you require a copy)

GEYSER PIPING CONNECTIONS (HOT & COLD)

All WaterLite Geysers are supplied with an initial pipe work which has been pressure tested and wrapped and painted with waterproofing paint so as to extend the life of the insulation.

The WaterLite geysers have a pressure rating of 400kPa, before connecting the cold water check that the house has a pressure reducing valve (PRV) and it is rated at 400kPa (RED label)

If there is not one installed already or the rating is higher than 400kPa, then one will have to be installed.

If not installed then this will void the 10 year warranty.

The hot water connects to a 22mm connex fitting or the Tempering valve and the cold water connects to a 22mm connex fitting on the Ball-o-Cock (Blue Stop Cock/Lever Valve).

Once all connections have been made and the water is being turned on it is important to open a hot tap in the house to release the air that will build up. Once the water is flowing out the hot water tap it can be turned off.

NB!! Once the system has been filled and there is pressure build up, all connections from the geyser to the usage point must be inspected for leaks.

All pipes installed on the outside of the building have to be copper, only once the pipes are inside the roof can you change to Multi layer pipe (plastic pipe).

All pipes (both hot & cold) exposed to the atmosphere MUST BE insulated, to reduce heat loss and freezing in certain areas.

To maximise efficiency, hot water pipes should be insulated as far as possible to the usage points (amount will depend on quote agreed upon)



FITTING THE TUBES

WaterLite makes use of evacuated tubes on their SWH. Whilst WaterLite tubes are subjected to rigorous testing, all glass can break. With this in mind caution is to be given whilst fitting these tubes as they are glass. Special attention is to be given to the glass nipple at the base of the tube. Fitting the tubes should be the last task of the installation; evacuated tubes exposed to the sunlight will get hot.

NB!! Once the tubes have been fitted they need to be filled with water immediately to prevent them from cracking as a result of adding cold water into a hot glass tube. You can turn the 15mm stop cock on half way in the beginning so that water slowly fills as the tubes are being inserted.

Step 1

Ensure all of the red seals found within the storage tank are fitted correctly.

Step 2

Making use of soapy water solution, lubricate the open end of the tube.

Step 3

Place the black dust seal, with its smooth surface facing the base of the tube, over the open end of the tube.



Step 4

Lubricate the tube for a second time with the soapy water; gently place the tube into the whole in the storage tank at the same time twisting the tube as opposed to just pushing it in. You will know the tube is in when you hear the tube touch the inner tank.

Step 5

Push the black seal up into the tank sealing the opening between the storage tank and the tube.

If you have not already turned the 15mm stop cock on (connected to the Flexi Hose), then you need to do this now, so that the tubes can fill with water and not crack from standing in the sun

SAFE & CORRECT OPERATION OF WATERLITE SOLAR WATER HEATERS

Installers

NB For safe and effective performance, the water heater shall be installed, maintained and repaired strictly in accordance with the appropriate and relevant requirements of SANS 10254. SANS 10106NB installations are to be undertaken only by qualified plumbers and electrical contractors. Installations not undertaken by qualified professional may result in damage firstly to the person and secondly to property and system.

When installing on a roof it is advisable to secure the ladder to the building so as that the ladder does not slide out from under or fall down when somebody is on it.

It is highly recommended that when working on a roof that those working on the roof wear safety harnesses and these are secured to the roof while still allowing free movement on the roof.

As mentioned the evacuated tubes are glass and can break, with this in mind those handling and fitting the tubes should wear appropriate rubber gloves to prevent any cuts from broken glass.

Systems not installed by trained or qualified installers will result in the warranty becoming void. WaterLite installers have all been trained to install WaterLite systems in accordance with SABS and SANS specifications.

Home Owner

WARNING – When using electrical appliances, basic safety precautions to reduce the risk of fire, electric shock, or injury to persons should be followed, including:

READ ALL INSTRUCTIONS BEFORE USING THIS WATER HEATER.

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Use this water heater only for its intended use as described in this manual.

A WaterLite Solar Water heating system is very efficient and high temperatures can be reached in the tank. It is usually powered by the sun, which cannot be switched off. Due to the above reasons a solar system could present dangers, If not handled professionally.

Therefore, do not tamper with any part of the installation. Particularly

- Do not tamper with any components on the system
- As with any appliance, close supervision is necessary when used by children. NB Do not let children play on the system, particularly the evacuated tubes
- Do not tamper with the electrical connections, either inside your Distribution board or by opening the electrical cover on the side of the geyser. *(SEE Point 7 in Maintenance)*
- A mixing valve has been installed according to building regulations and the hot water supplied will be regulated at 55°, if the mixing valve is tampered/opened fully then Hot water in excess of 65° will be supplied to the house and this could results in burns to those using the water.

Maintenance

WaterLite systems boast the lowest total cost of ownership simply because maintenance on your new system is automated and only costs you a few drops of water as and when required. As a result of our superior quality stainless steel inner tank there is no need to fit a sacrificial anode in the system so it does not require changing as per conventional or other solar water heaters.

The following points should be adhered to so as to ensure the longevity of your WaterLite solar water heater.

1. The Temperature & Pressure (TP) relief valve will release water from the system when the temperature inside the pressurized tank reaches 93°, this acts as a safety precaution. With this in mind the TP valve is not a working valve, should you notice water constantly dripping from the valve then it is advisable to contact a licensed plumbing contractor to come inspect the TP valve
2. Periodically inspect the Evacuated tubes (solar collector) to ensure that the vacuum has not been compromised, tubes that are damaged will display a milky/smoky white colour and not silver at bottom of tube.
3. It is advisable that the collector (Evacuated tubes) is cleaned to retain maximum thermal performance in high dust areas.
4. It is recommended that when leaving the unit unused for more than 2/3 weeks the Evacuated Tubes (solar collector) be covered with plastic sheeting to prevent un-necessary water loss from overheating OR get somebody to use some water on a weekly basis.

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5. DO NOT FILL THE SYSTEM WITH GLYCOL, ALCOHOL OR ANTI-FREEZE, the solar water heater works on a thermo siphon principle with water as the heat transfer fluid.
6. DO NOT FILL HOT TUBES WITH COLD WATER as the tubes will break. Tubes must be filled while cold, early morning. Alternatively contact your WaterLite representative and they will replace and refill system
7. Should the usable water not be getting sufficiently hot when the element is needed/turned on then firstly check that the geyser is switched on at the Distribution Board (DB), SHOULD THE BOARD BE SWITCHED ON BUT THE ELEMENT NOT WORKING THEN CONTACT YOUR LOCAL DEALER OR WATERLITE REPRESENTATIVE TO COME AND INSPECT THE PROBLEM. (FREE IF WITHIN ONE YEAR; see warranty conditions: LABOUR IN WARRANTY), alternately contact an electrician to perform the task.
8. Reductions/drop in system pressure need to be inspected by a qualified plumber or WaterLite installer so as to ascertain the problem area(s)
9. Leaking of the system; i.e. TP valve, filler tank, tubes, drain-cock, stopcock etc, you are required to call a licensed plumber immediately so as to identify and rectify the leaks.
10. It is recommended that you have your thermostat/geyser controller set to 55-60°C in winter and 50°C in summer, if a mixing valve has been installed according to building regulations then the hot water supplied will be regulated at 55°.
11. When setting the timer for your Geyser, one should not set it for longer than 3 hours at any one time, and NOT between 6am-11am & 6pm-11pm as these are Eskom peak load periods.
12. Valves to be checked yearly for blockages and possible lime scale build up. DO NOT FILL THE SYSTEM WITH GLYCOL, ALCOHOL OR ANTI-FREEZE, the solar water heater works on a thermo siphon principle with water being used as the heat transfer fluid.
13. Periodic checks on the Kleen flo valve (in the filler tank) are recommended so as to ensure that there is always water flowing in the jacket.
14. The TP valve should be inspected AT LEAST ONCE EVERY THREE YEARS, and replaced with an original Calefi/Apex valve, if necessary, by a licensed plumbing contractor. FAILURE TO RE-INSPECT THIS VALVE COULD LEAD TO INJURY OR PROPERTY DAMAGE

Warranty Conditions

Notwithstanding delivery, ownership remains vested with MaxLite until the full purchase price has been paid.

MaxLite reserves the right to remove any unpaid equipment at the customer's expense and the customer gives MaxLite unconditional right of access to property.

MaxLite accepts no responsibility whatsoever for claims arising from the faulty existing installations or equipment, or building structure

MaxLite will not be liable or responsible for non-performance where the product was not installed by a licensed plumber. MaxLite will advise and supply free assistance within the area to enable system performance.

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Warranty

The period of the warranty is calculated from the date of installation, provided that the client can provide the proof of installation

This warranty offers the owner of the WaterLite solar water heating system the following protection:

The manufacturer warrants the WaterLite solar water heating system against manufacturing defects, faulty materials and/or workmanship and also leakage from corrosion, upon the following terms:

- 1) STORAGE CYLINDER is warranted for 10 years from the date of the original installation, with the last 5 years on a sliding scale basis
- 2) ELECTRICAL COMPONENTS (VKF11/RS1008 Thermostat & Electrical back-up element/s) and VALVES (Drain-cock, filler tank Valve & 400Kpa Temperature & Pressure relief valve) are warranted for one year from the date of the original installation (*see point 3 in maintenance for correct operation of TP valve*)
- 3) WARRANTY LABOUR. For a period of one year from the date of the original installation MaxLite or agent will remove, repair or replace the parts subject to this warranty at no cost to the owner



Exclusions

In the unlikely event of a water leak occurring, MaxLite will not be held liable for damage caused. Home-owners household insurance will have to be completed and claimed by the client.

Please note that any damage claims will NOT be considered 7 (seven) days after the completion of the installation.

Evacuated tubes are not covered by this warranty, but normal household insurance policy with glass coverage will usually include collector/Evacuated tubes. Contact your insurance company for coverage.

The systems are SANS 1307 tested and complaint for hail and freeze tests.

This warranty is considered valid when a WaterLite solar water heating system is installed and operated in accordance with the Owner's Manual and Installation instructions, and under normal household use or service.

Furthermore a valid MaxLite representative signature is required as proof of correct installation practices.

This warranty does not apply:

- ⊗ *When the evacuated tubes and filler tank are filled with any fluid other than water i.e. heat transfer or anti-freeze.*
- ⊗ *Where the temperature & pressure relief valve (safety valve) has not been serviced and or replaced with a non original valve.*
- ⊗ *Where a 400kPa pressure reducing valve is required, but is not installed or has been altered or tampered with.*
- ⊗ *Where the storage cylinder is not installed in accordance with SANS 10254 and SANS 10106.*
- ⊗ *Where elements have burnt out as a result of the cylinder running dry, this will void the 1 year warranty*
- ⊗ *Where failure or damage occur to the filler tank valve, due to high concentrations of acidic and/ or chlorine related products or substances.*
- ⊗ *Vacuum breakers that have been tampered with in any way invalidates the 2 year guarantee.*
- ⊗ *When the product was not installed by a licensed plumber.*

(Refer to maintenance for correct upkeep of your WaterLite SWH)

The manufacturer shall be under no obligation under this warranty in the case of accident, acts of God, or installation/repairs carried out by others outside of WaterLite's installation and maintenance instructions. Under this warranty no responsibility is accepted for any consequential loss or damage caused by a defect.

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Additional important information

- Should the product be sold outside of the Republic of South Africa, certain conditions apply that will affect the interpretation of this warranty. Refer to MaxLite for details.
- The connection, attachment, integration, or general association of other equipment or parts, which either directly or indirectly affects the operation or performance of this equipment as supplied by MaxLite could void the warranty

Date of installation.....

MaxLite





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Client Handover & Installation Confirmation

Client name:.....

Clients Address:.....

.....

.....

Tank Serial Number:.....

Date of installation:.....

Clients Signature:

By signing this page you confirm that the installer has explained all aspects of the WaterLite Solar system and its correct usage, and has provided your with your operating and maintenance manual.

Should you not be happy with the installation or the installer or his team, please don't hesitate to call your WaterLite representative.