



USER MANUAL

INSTALLATION INSTRUCTIONS

WARRANTY REGISTER

GREENGLO MAINS PRESSURE INTEGRATED WATER HEATER
SINGLE COIL SERIES & DOUBLE COIL SERIES
GREENGLO MAX

Customer

Congratulations for choosing a GreenGlo integrated water heater
We recommend you read page 1 to 5 of this manual.

It may save you time and trouble later.

Please register the product warranty as per page 20 of this manual

The other pages of the manual are intended for the installer.

For a further assistance or information contact our service desk

☎ 0800 447 336

✉ info@greenglo.co.nz

IMPORTANT INFORMATION

GreenGlo are purposely-built heavy duty mains pressure cylinders. Installation of GreenGlo could be different than other tanks.

GreenGlo water heaters must be installed by a registered plumber and in accordance with these installation instructions, NZ.3500.4 National plumbing regulations; municipal building codes other relevant statutory regulations.

Observation of these instructions and the associated component instructions is most important and failure to do so could void the benefits of warranty.

The information contained in this manual, and all other information or advice provided by GreenGlo Limited in connection with the purchase, installation use and service of GreenGlo water heater is given in good faith. GreenGlo Limited will not be liable for any person for any inaccuracy or omission in the information arising through the fault of GreenGlo Limited directly or indirectly.

A pressure-limiting valve of 500kPa max rating must be fitted. Failure to install a pressure limiting valve where required will void the warranty.

SAFETY

Scalding occurs at 50°C. This appliance is capable of providing hot water above this temperature. All installers must advise customers of the potential hazard of scalding in accordance with the relevant National standards including NZS3500.4.

Young children should not play with the appliance.

A combination Temperature Pressure Relief valve with a maximum rating of 850kPa must be fitted.

Water may drip from the discharge pipe of this valve.

This pipe must be left open to the atmosphere.

For more information, please refer to the Regular Care section on page 5 of this manual.

Also fitted to the water heater is a special auto reset thermostat.

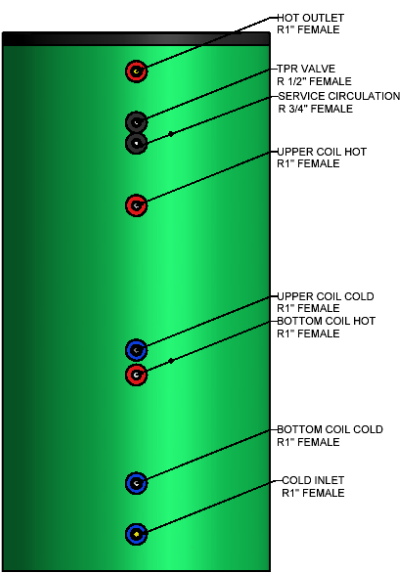
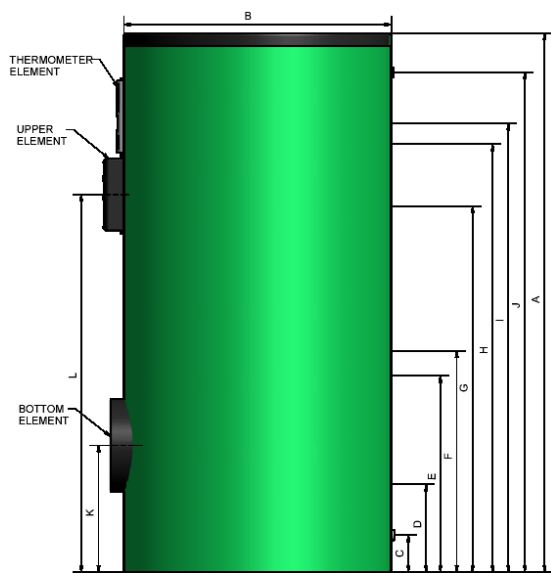
These safety devices must not be tampered with or removed from the appliance under any circumstances.

Use a separate circuit breaker for each of the electrical heating elements

ABOUT YOUR WATER HEATER

1. GreenGlo & GreenGlo Max is a high technology storage tank, backed up by new manufacturing methods offering quality of goods to consumers.
2. The main goal of producing GreenGlo water heaters is heating and storing potable hot water in a main pressure storage tank using electricity. GreenGlo also offers optional heating equipment such as solar, gas and wetback. Potable hot water is stored in the main water storage tank separately from the heating fluids in the coils.
3. The heating fluid, which is heated in the heat source, is circulated between the heat source and cylinder's coil. The warmed fluid takes its heat from the heat source and transmits to the water heater.
4. GreenGlo cylinders inner surface is enamelled. The process used is a double enamelling process that coats the inside surface of the cylinder.
5. GreenGlo cylinders are protected by a magnesium anode rod in order to prevent cathode corrosion. The magnesium anode rod ought to be checked and replaced if required, every 36 months by a certified plumber, and can be done by following this manual page 16.
6. GreenGlo exterior surface is covered by 40 kg/m³ and 50 mm polyurethane insulation (except 800D and 1000D) in order to diminish the loss of the heat. The GreenGlo 800D and 1000D insulation is removable. This convenience allows easy delivery and access through narrow doorways. **Do not remove covers** unless essential and only after receiving specific instructions from GreenGlo service desk
7. GreenGlo is an indoor tank and shall be install in a well vented space to prevent condensation
8. There is a choice of double or single or double coil GreenGlo depending on the application needed. I.E. if the cylinder will be heated with a wetback or a solar system, GreenGlo single coil water heater would be appropriate. On the other hand, if the cylinder will be heated with both wetback and a solar system, GreenGlo double coil would be appropriate.
9. GreenGlo water heaters have been produced to suit a wide range of applications and installations and are complying with NZS4606
In this manual we present the most common applications, however if you require advice on any other application, please contact our service desk on 0800 447 336 or info@greenglo.co.nz

PRODUCT INFORMATION



Note: 800D & 1000D foam insulation is removable
Do not remove cover unless essential
Contact GreenGlo service desk before removal of cover
GreenGlo models have a soft blanket cover for extra insulation

GreenGlo Max

Dimensions may change without notice	180S	300S	180D	300D	400D
	Single Coil		Double Coil		
	S Series		D Series		
Volume (<i>litres</i>)	180	300	180	300	400
A – Height (<i>mm</i>)	1100	1800	1100	1800	1850
B – Diameter (<i>mm</i>)	575	575	575	575	630

Outdoor models are available



PRODUCT INFORMATION

General product information

Maximum working pressure 800kPa

Maximum water temperature 90°C

Maximum coils working pressure 800kPa

Maximum heat exchange temperature 95°C

Enamelled steel automatically welded

50 mm polyurethane in accordance to NZS4692.1 and NZS4692.2

Indoor use only

Note : The product must not be exposed direct sunlight, rain, etc. Uninsulated pipework exposed to outdoor decrease heater performance & may increased energy consumption.

Specific product information

Dimensions may change without notice	180S	300S	180D	300D	300DS	400D	500D	800D	1000D
	Single Coil		Double Coil						
	S Series		D Series						
Volume (<i>litres</i>)	180	300	180	300	300	400	500	800	1,000
A – Height (<i>mm</i>)	1650	1780	1650	1780	1240	1580	1860	1750	2090
B – Diameter (<i>mm</i>)	520	615	520	615	755	755	755	1060	1060
C - Cold Inlet	180	80	180	80	95	75	60	395	395
D - Bottom Coil Cold	280	350	280	350	355	385	235	495	495
E - Bottom Coil Hot	500	655	500	655	565	595	690	870	920
F - Upper Coil Cold	N/A	N/A	570	755	655	690	780	965	1020
G - Upper Coil Hot	N/A	N/A	855	1210	865	1040	1320	1190	1510
H -Service Circulation	740	920	740	920	730	790	1010	710	760
I - TPR Valve	1430	1570	1430	1570	940	1300	1580	1270	1610
J - Hot Outlet	1585	1720	1585	1720	1100	1490	1765	1365	1715
K - Bottom Element	240	290	240	290	300	335	315	385	385
L - Upper Element	N/A	N/A	935	1285	N/A	1060	1395	1260	1580
Element Rating (<i>kW</i>)	3.0	3.0	2 x 2.0	2 x 2.0	3.0	2 x 2.0	2 x 3.0	2 x 4.8	2 x 4.8
O - Ports Thread	1" F	1" F	1" F	1" F	1" F	1" F	1" F	2" F	2" F
Tank Thickness (<i>mm</i>)	3	3	3	3	3	3	3	4	4
Angle of ports	45°R	45°R	45°R	45°R	45°R	45°R	45°R	90°R	90°R
Max energy Bottom coil (<i>kW</i>)	9.0	17.5	9.0	17.5	20.0	24.6	39.3	35.0	37.2
Max energy upper coil (<i>kW</i>)	N/A	N/A	13.6	26.2	30.0	39.3	54.0	70.0	89.3
Weight (<i>kg</i>)	90	112	103	127	128	198	229	293	326

WATER QUALITY

GreenGlo water heaters have been manufactured to deal with most local body water supplies. Desired water quality levels:

pH Level between 6.5 and 8.5

Chlorides: up to 200 ppm

Total Dissolved Solids (TDS) up to 1000 mg/L

Saturation Index between -0.8 and +0.8

If your water quality or the heating liquids are outside the above range, you should fit appropriate water filtration.

Caution:

If water TDS is above 600 mg/L, there is a possibility of hydrogen gas accumulating in the top of the water heater during long periods of no use.

If the water heater has not been used for more than 2 weeks:

- Open the hot water tap and let water flow for 1 minute.
- Hydrogen gas is flammable; therefore make sure that there is no smoking, sparks or naked flames near the tap.
- Do not operate any hot water appliance such as a washing machine or a dishwasher prior to the above procedure.

REGULAR CARE

Six Monthly:

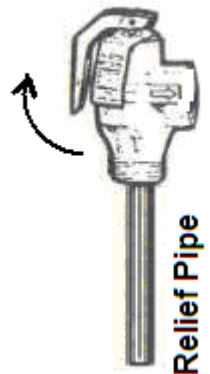
Near the top of the water heater you will find the TPR Valve (Temperature Pressure Relief Valve). Raise the lower lever and gently release some water into the relief pipe.

Note:

- If water does not flow down the relief pipe, or if water does not stop flowing once you released the lever, contact your plumber
- It is normal for the valve to release small amount of water during heating cycles
- Never block the relief drain pipe

Five yearly maintenance:

A qualified plumber should check and if needed replace the sacrificial anode in the water heater as per pages 16 & 17 Consider also replacement of the TPR valve, and clean coils of the cylinder via the clearing door if needed



PLUMBING CONNECTION

Delivering and mounting the GreenGlo cylinder

- The product should be kept away from sharp tools during loading or delivering and ports should be protected.
- The product should not be left or placed where it's exposed directly to weather such as direct sunlight, rain snow etc.
- Chose a dry and well vented space. Access moisture may cause tank condensation and may void the warranty.
- Mount the bottom of the tank clear of the floor. Usage of a drain tray is highly recommended
- If the product is installed on the floor, the floor must be dry and moisture-proof. Consider a drainage tray when required.
- If possible leave headroom of half water heater length so the anode can be inspected or replaced. Remember you may have to remove the entire water heater later for servicing as per pages 16 & 17.
- Cylinder must be strapped and mounted in accordance to NZS3500.4
- GreenGlo Limited does not accept any responsibility, if the product is physically damaged or operates inefficiently due to wrong handling
- The product must be carried vertically – if in doubt, **fasten** the bolts of the upper and lower dome prior to installation

Basic Plumbing connection of the Water heater

- The size of the GreenGlo tank needs to be chosen carefully in order to maintain the hot water supply demand.
- Start with the Basic Diagram of page 7 before conducting any specific application connection
- Fit the cold inlet valves prior to commissioning the cylinder
- Ensure that the TPR Valve is fitted and that the service circulation is **plugged off** or connected prior to filling up the cylinder with water
- Lag all hot water pipes coming out of the water heater

Plumbing Connection of additional applications

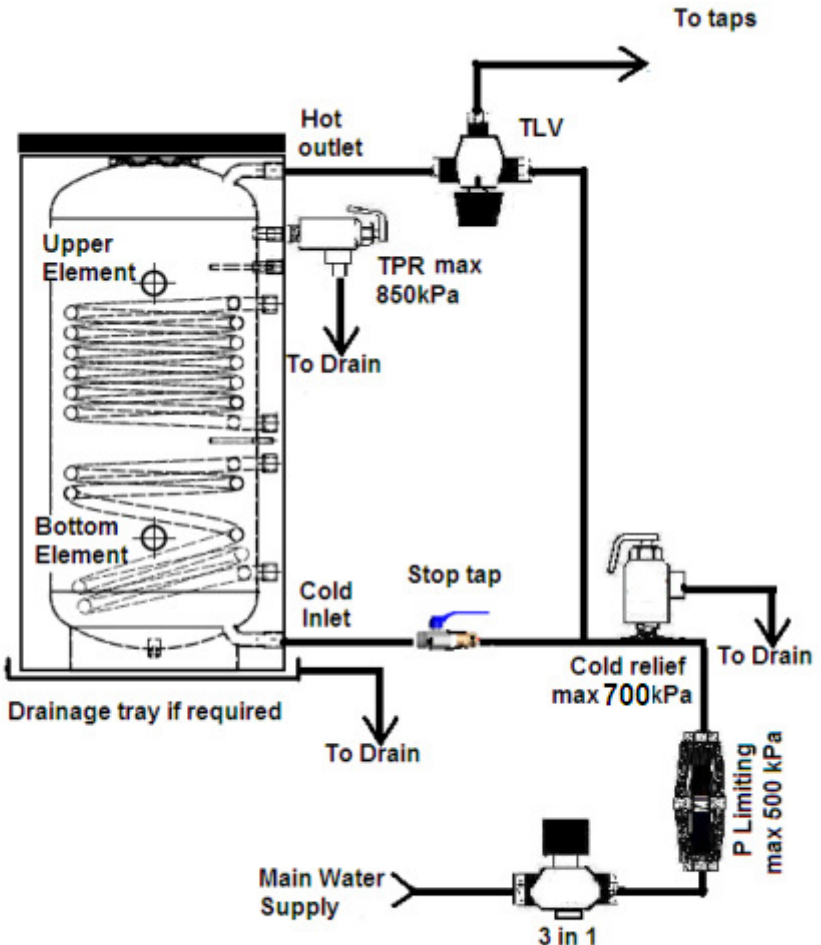
- Simply follow the diagrams and the notes of page 8 to 12
- If you are in doubt or attempting to install an application outside the below diagrams, please contact GreenGlo service desk for advice.

IMPORTANT NOTE:

When using brass fitting, use **PTFE** tape or a **dialectic connector** between the brass fitting and the port thread to prevent electrolysis.

Hemp is only allowed if Heldite is used

GreenGlo basic plumbing connection diagram



Important Notes:

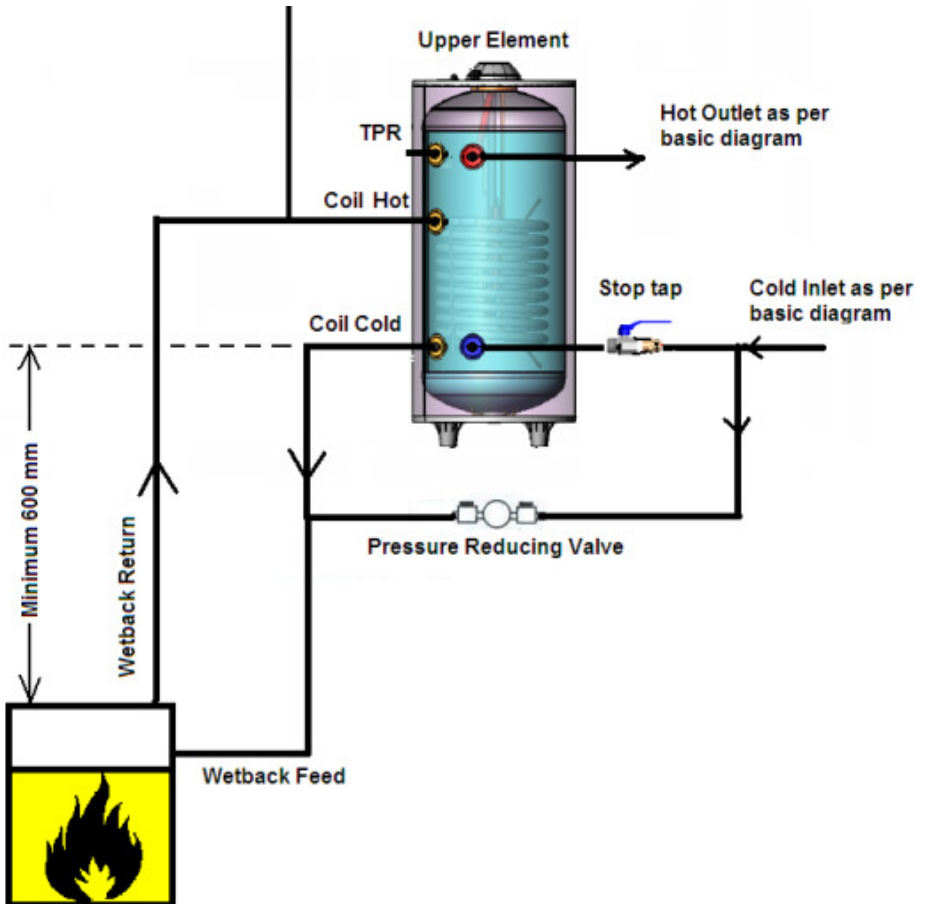
Valves are not supplied with the water heater

The above diagram describes valves for a mains pressure arrangement; however the cylinder could also be fitted to a low pressure system.

GreenGlo tanks are equipped with a service circulation port.

Use this port for **ring main** or other external applications.

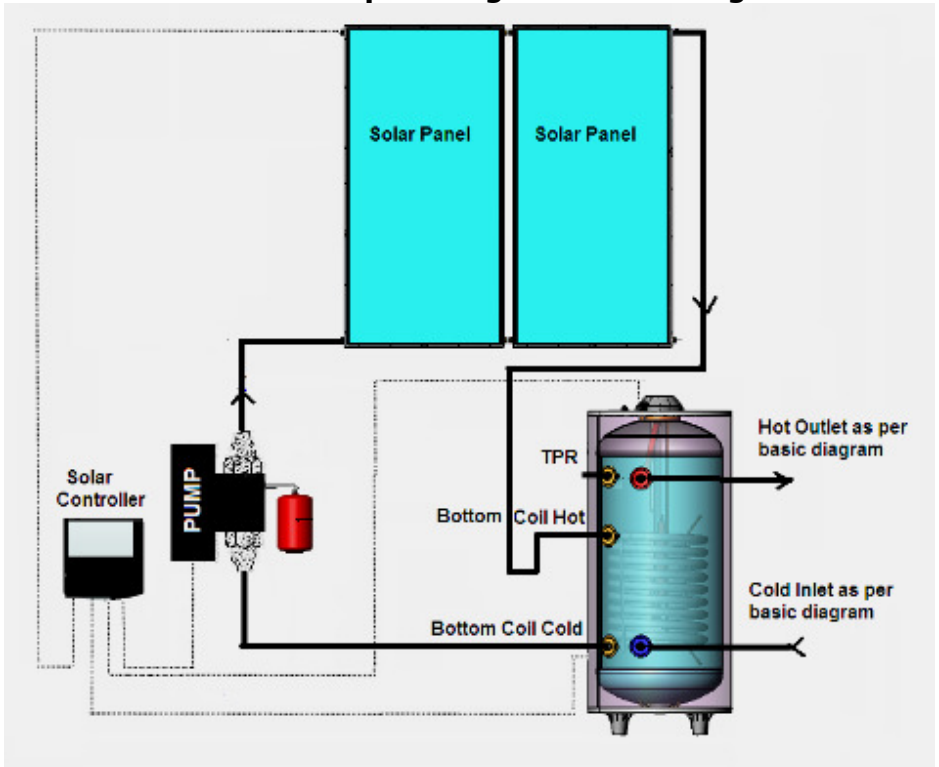
GreenGlo wetback plumbing connection diagram



Important Notes:

1. No valves or restrictions are allowed on the wetback loop
2. When installing Wetback and Solar using GreenGlo D Series, connect wetback to upper coil and solar to bottom coil. Wetback should be installed to the bottom coil with all other multiple connections
3. Wetback output **shall not** be greater than 1kW per 100 litres storage.
4. **Add 100ml** of Fernox F1 or similar to the static water in the coil

GreenGlo Solar plumbing connection diagram

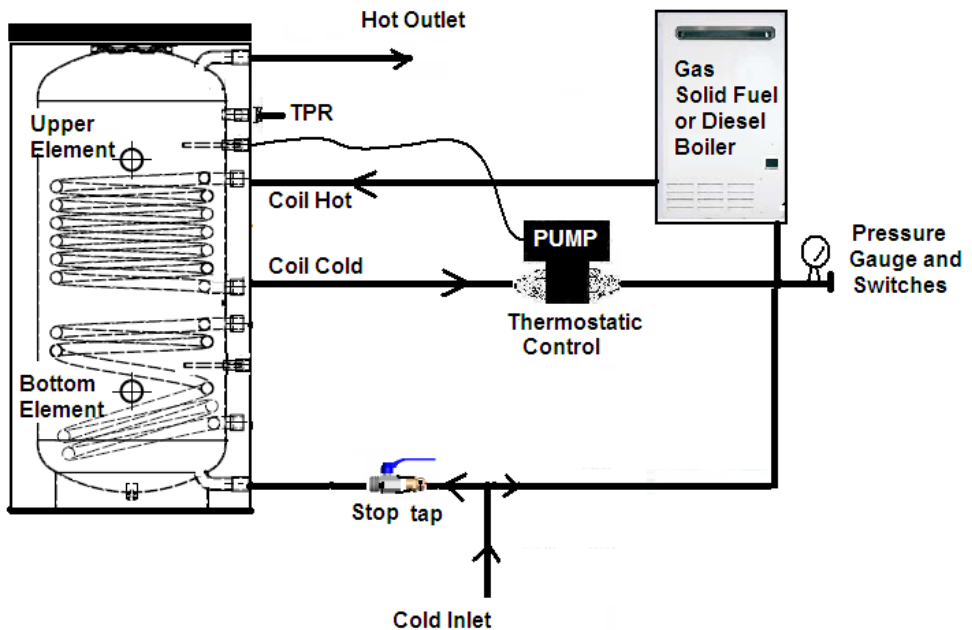


Important Notes:

1. The diagram shows generic drawings of connections to and from GreenGlo cylinder. Follow the specific instructions of the solar panel supplier for the actual detailed arrangement, components and valves.
2. When using GreenGlo D series, solar collectors should be installed to the bottom coil - boiler, wetback or heaters should be installed to upper coil.
3. It is highly recommended running the solar system via the GreenGlo coil on a close loop arrangement. Open loop solar is also possible using the Service Circulation port for the solar return instead of the Coil Hot port, and branching off the Cold Inlet instead of using the Coil Cold port.
4. When connecting commercial solar systems, ensure that the energy going through the solar coil is lower than the max kW rating of the coil as per page 4. Excess energy above the coils rating will void the warranty.

Warning: Open loop solar carries frost risks to the panels if antifreeze is not used

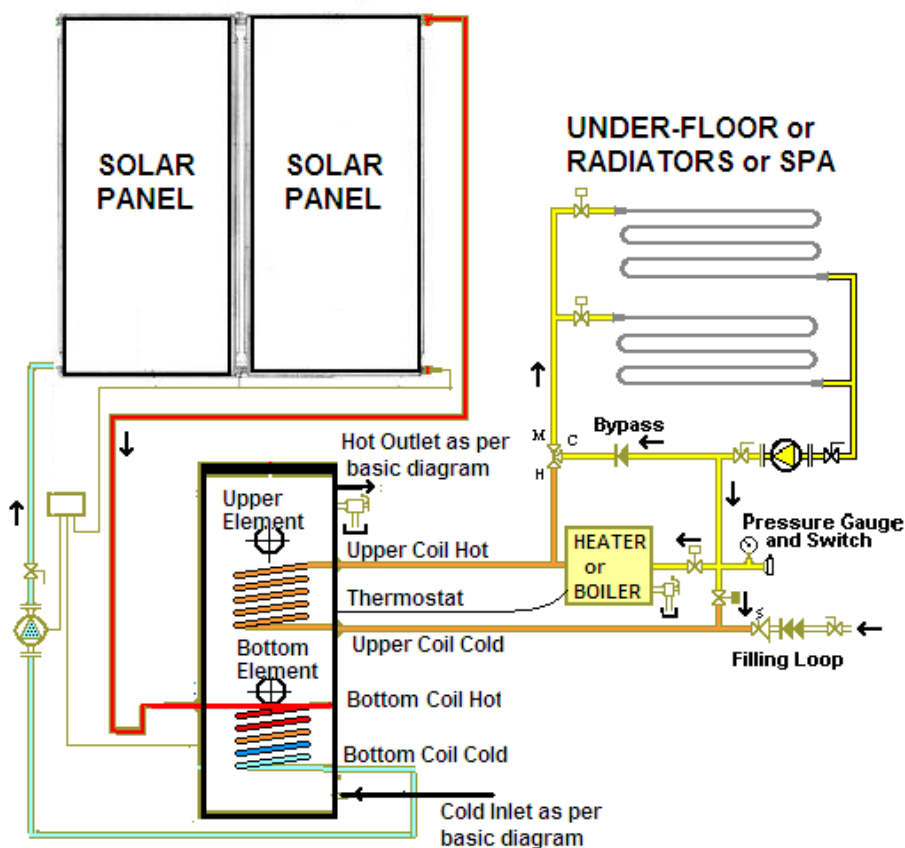
GreenGlo Gas/Solid Fuel/Diesel plumbing connection diagram



Important Notes:

1. The diagram shows generic drawings of connections to and from GreenGlo cylinder. Follow the specific instructions of the heater / boiler supplier for the actual detailed arrangement, components and valves.
2. The heater / boiler must have an integrated relief valve
3. The energy input of the boiler must be smaller than the max kW rating of the coil.
4. Excess energy above the coils rating will void the warranty.
5. The above diagram will maximize hot water flow rate of water.
6. Instantaneous water heaters should be installed after hot water outlet for temperature top up, in cases where high water flow is not required.
7. **Add 100ml** of Fernox F1 or similar to the static water in the coil

GreenGlo Solar *plus* Heater/Boiler *plus* Underfloor Heating / Radiator / SPA - plumbing connection diagram

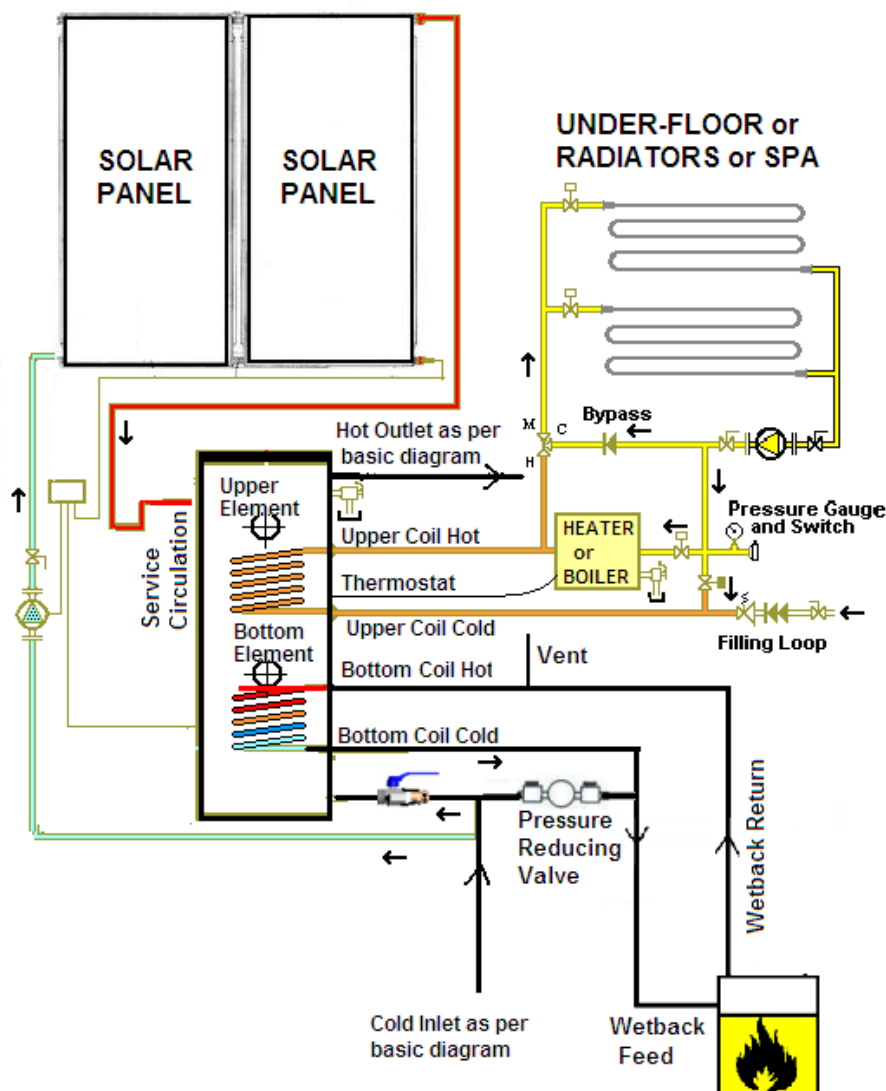


Important Notes:

1. Applicable for GreenGlo D series only
2. The diagram shows generic drawings of connections to and from GreenGlo cylinder. Follow the specific instructions for the heater / boiler supplier, the Solar Panels supplier and the Underfloor / Radiators or SPA supplier for the actual detailed arrangement, components and valves.
3. The heater / boiler must have an integrated relief valve
4. **Add 100ml** of Fernox F1 or similar to the static water in the boiler coil
5. The energy input of the boiler must be smaller than the max kW rating of the coil. Excess energy above the coils rating will void the warranty.

More options are available

GreenGlo Solar *plus* Wetback *plus* Heater/Boiler *plus* Underfloor Heating / Radiator / SPA - plumbing diagram



Refer to the notes of page 11

COMMISSIONING

VERY IMPORTANT:

Prior to turning on the power supply and prior to turning on any heating application such as solar, wetback or a heater, the cylinder MUST BE FILLED UP WITH WATER

- Open a hot water tap, making sure that all other hot water taps are shut down
- Open the inlet tap fully to fill up cylinder
- Open each hot water tap till water flows freely
- Check all pipes for leaks
- Switch on the elements and set the timer/controller (if one is installed)
- Attend to any other external heating applications

DRAINING THE WATER HEATER

- Turn off the power supply to the elements
- Turn off all external heating applications
- Turn off cold inlet supply at the 3 in 1 valve or at the meter
- Open a hot water tap to drain the pipework
- Disconnect the hot water outlet union
- Open to atmosphere Cold Water Expansion Valve to let water flow via the drain pipe

ELECTRICAL CONNECTION

NOTE: Power supply must be OFF until water heater filled with water

All electrical work must be carried out by a qualified person (per AS/NZS3000).

All water heaters are manufactured for 230VAC, 50HZ single phase.

GreenGlo 800D 1000D elements also capable to operate on a 3-phase 400VAC

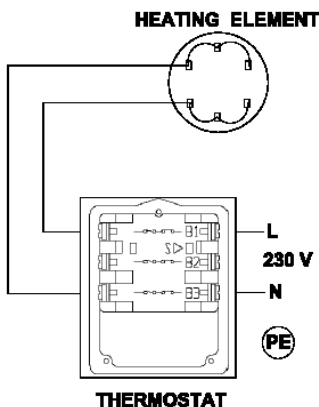
A flexible 20mm conduit is required for the electrical cable to the water heater

Booster Elements and Thermostats setting:

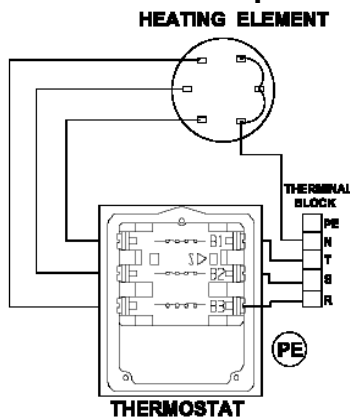
Adjust the thermostat temperature to the customer requirements.

The booster elements and the thermostats are single phase factory pre-wired.

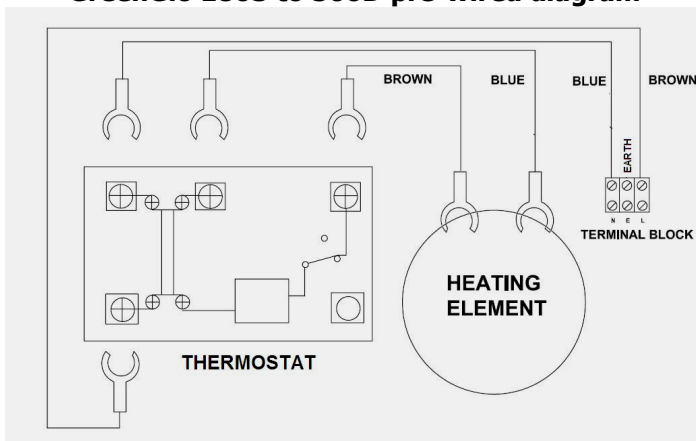
800D & 1000D on Single phase



800D & 1000D on Three phase

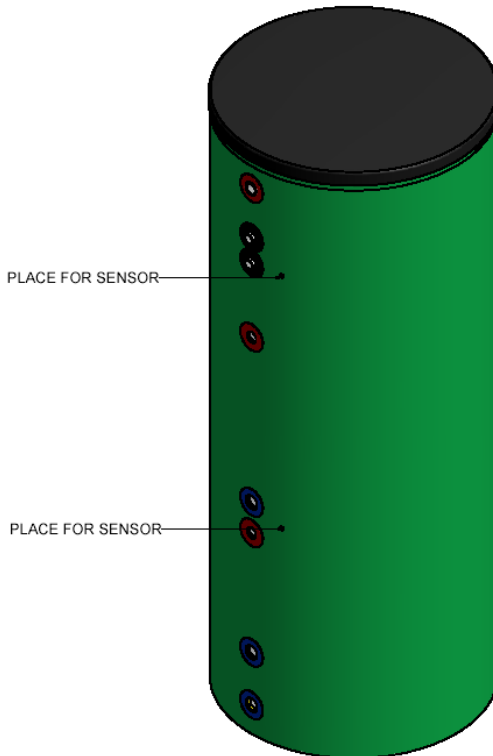


GreenGlo 180S to 500D pre-wired diagram



The lower element can be connected to the **Off Peak electricity supply**.

SENSORS CONNECTION



Sensors sense the temperatures when the cylinder is connected to heating applications, and transfer the reading to the controllers, such as 3 way valve, pumps and other electronic controllers.

Sensor pockets are located in the most appropriate level for heat distribution in the cylinder. Sensor holders must be used and supplied by the electronic control unit supplier. The holders attach the sensor to the surface which prevents the sensors from falling down from the pocket.

Make sure that probes are pushed all the way into the sensor tubes.

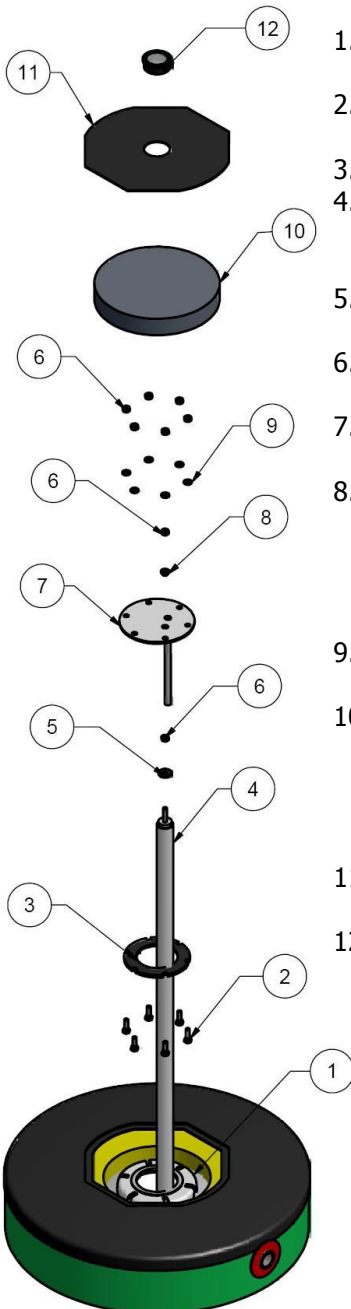
Use a thermal paste.

Secure the probe cable

Locate sensors above the electrical elements when required

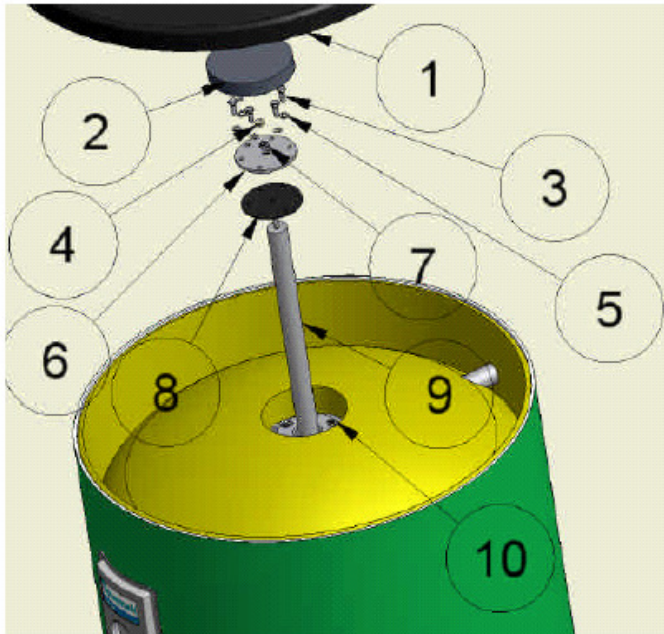
REGULAR CARE – SERVICE PERSON

Anode Replacement GreenGlo 180S, 180D, 300S, 300D



1. Disconnect the power supply to the water heater
2. Drain approximately 5 to 10 lt. from cylinder as per page 13 instructions.
3. Unscrew service cap (11) gently
4. Take out the soft foam insulation (10) and disassemble anode ground cable from flanges cap (7).
5. Disassemble the flanges (7) and then remove the flanges gasket (3).
6. Open the nut that is on the flanges (6) and attach it to the anode rod.
7. Remove old anode rod (4) over flanges and insulation gasket (5) and the washer (8).
8. Assemble new anode rod from the side of enamelled flanges (7); with a new insulation gasket (5) with a new washer (8) on the other side, and fasten the anode nut (6) over anode rod.
9. Return flange gasket (3) to position. Replace gasket if needed
10. Locate flange exactly central side of the cylinder flange. Fasten nuts in a cross tightening order as per page 18. Don't leave out nut flakes (6) – it needs to be directly opposite flange slots (1) as shown.
11. Conduct a pressure test and check for any leaks or sweat
12. Assemble insulation; place the tail of thermometer couple in the pocket, which is on the flange. Locate the service cap on the bush of top cap.

Anode Replacement GreenGlo 300DS to 1000D



6. Disconnect the power supply to the water heater.
7. Drain approximately 5 to 10 lt. from cylinder as per page 13 instructions.
8. 800D & 1000D: Drain entire water from cylinder as per page 13.
9. Remove cylinder top cap (1)
10. Take out insulation carefully and disassemble anode ground cable from flanges cap (6) then from flanges (10).
11. Disassemble the flanges (6) and (3) by removing the nuts.
12. Remove the flanges gasket (8).
13. Disassemble the flanges nut (4) and attached the anode rod (9).
14. Remove old anode rod (9) over flanges and keep the anode isolation bush and anode gasket (8).
15. Assemble new anode rod from the side of enamelled flanges (7) and leave isolated bush (5) on the other side, and install nut over anode behind the beam gear side.
16. Locate flange gasket through inlet of the cylinder. Replace gasket if needed
17. Locate flange exactly central side of the cylinder flange. Fasten nuts in a cross tightening order per page 18. Don't leave out nut flakes (5) – it needs to be opposite flange number (1) as shown.
18. Close the service cap on the bush of top cap.

Cylinder Coils Cleaning via Clearing Door

Access door is located on the cylinder top for GreenGlo 180S to 300D models.
Access door is located on the cylinder side for GreenGlo 300DS to 1000D.
GreenGlo access door dimensions are designed to the European standards.

Over the years, cylinder coils become covered with lime and other mineral deposit depending upon water quality. After a while, heat transfer will become difficult and the cylinder's efficiency reduces due to the deposits. Therefore, clearing the coils should be periodically done thru the access door.

1. Disconnect the power supply to the water heater
2. Drain entire water from cylinder as per page 13 instructions.
3. Remove nuts of access door and remove service door
4. Gently water blast coils removing the mineral deposits
5. Return access door ensuring that gasket is in place. Replace gasket if required
6. It is **essential** to tighten up access door nuts in the order shown below:

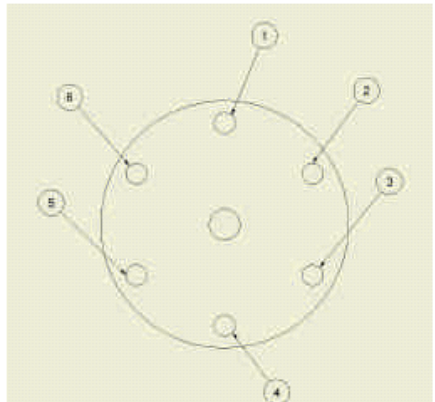
GreenGlo S Series, 180D, 300D

Order: 1-5, 3-7, 2-6 torque: 17Nm



GreenGlo 300DS to 1000D

Order: 1-4, 6-3, 2-5 torque: 8Nm



7. Fill up and pressurise water heater and check for leaks
8. Place a maintenance sticker on the water heater

WARRANTY

GreenGlo Limited will repair or if necessary replace a defective water heater or parts failure due to faulty manufacturing as per the following schedule:

Component	Installation	Warranty period	Coverage
All	All types of standard installations	First 12 months	Repair or replace 100% water heater and components free including labour at GreenGlo discretion
Internal heat exchanger	Domestic standard installations	Year 2 to 7	Repair or replace 100% water heater free. Owner responsible for installation and labour costs SUBJECT TO 5 YEARS SERVICE
Internal heat exchanger	Commercial and other standard installations	Year 2 & 3	Repair or replace 100% water heater free. Owner responsible for installation and labour costs
		Year 4 & 5	Repair or replace 50% of water heater value. Owner responsible for installation and labour costs

Durability

GreenGlo water heaters meet the requirements of NZS4606 given that:

1. Installed and maintained by a qualified person and according to the building code and this manual
2. Not damaged in any way
3. Water quality according to page 5 of this manual
4. Max kW Rating of all heater connections as per page 4 of this manual

Change of Ownership

This warranty extends beyond the original purchaser of the water heater.

Standard Installation

Standard installation includes all connections as per this manual and any other connections that may be approved by GreenGlo service desk.

The tank shall be accessible and easy to remove

WARRANTY REGISTRATION

Warranty registration is highly important, as it confirms installation date and the type of installation to ensure that you enjoy the full benefits of the product warranty.

Registration **Option 1:** go to www.greenglo.co.nz under warranty register

Registration **Option 2:** Call our service desk on 0800 447 336

Registration **Option 3:** Fax the below form to 09 353 1445

Registration **Option 4:** Send the below form to
Solar Group Limited
PO Box 35588
Browns Bay, Auckland

Name: _____

Address: _____

Phone: _____

email: _____

Name of Installer: _____

Main Application: _____
e.g..Wetback, Solar, Gas, etc

Domestic usage? Yes / No – if no specify: _____

GreenGlo Water Heater Model: _____

Product Serial Number: _____

Notes: _____



REGULAR CARE LOGON

Installation Date: _____ / ____ / ____

6 months: TPR Valve check date: _____ / ____ / ____

12 months TPR Valve check date: _____ / ____ / ____

18 months TPR Valve check date: _____ / ____ / ____

2 years TPR Valve check date: _____ / ____ / ____

30 months TPR Valve check: _____ / ____ / ____

3 years service by: _____ date: _____ / ____ / ____

42 months TPR Valve check date: _____ / ____ / ____

4 years TPR Valve check date: _____ / ____ / ____

54 months TPR Valve check: _____ / ____ / ____

5 years service by: _____ date: _____ / ____ / ____

19. Warranty Exclusions:

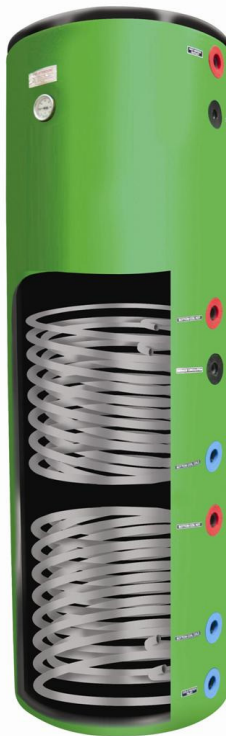
GreenGlo warranty will not cover the following situations:

1. Failure because of misuse, damage or neglect
2. Product is not installed or serviced in accordance with this manual or the NZ building code
3. Damage caused by an act of God
4. Water quality outside the range of page 5 of this manual
5. Connection of any associated heater with a max kW Rating higher than the coil capacity as per page 4 of this manual
6. Installation of tanks in moisture environment
7. Use of water temperature or pressure, or coil temperature or pressure, outside the restrictions of page 4 of this manual
8. Water hammer or negative pressure occurring in water pipework
9. Neglect to protect the coils with anti corrosive

Note:

- GreenGlo Limited is not liable for any sequential damages such as walls, carpets, furniture etc.
- Replacement parts provided under this warranty does not carry a new warranty. The unexpired warranty remains effective.
- GreenGlo Limited is only liable for the water heater and will not assume directly or indirectly any other obligations in connection with the product
- GreenGlo Limited does not cover access labour replacement costs of GreenGlo tanks installed: 30KM outside main centre, weekend charges, labour due to difficult access to tank
- You may have other rights in addition to this warranty under the Consumer Guarantee Act

Installer / Service Provider details



greenglo.co.nz