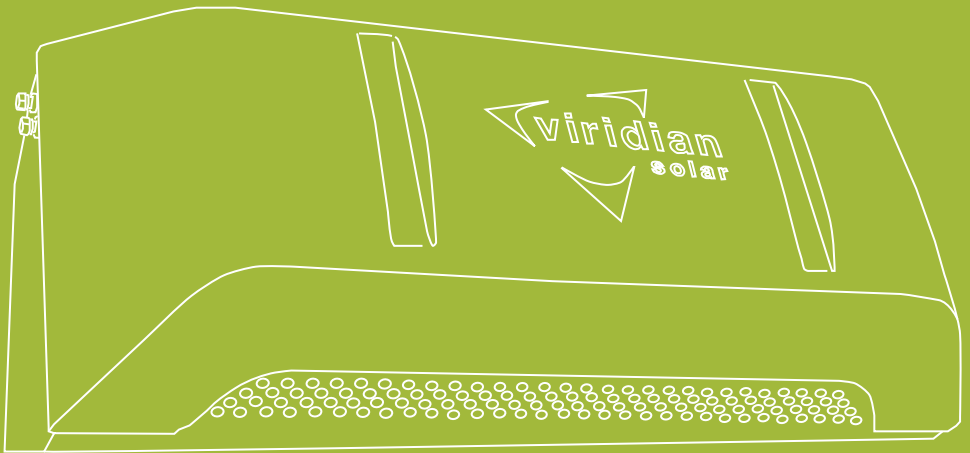
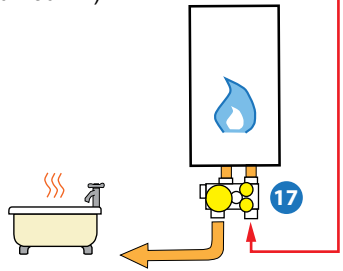
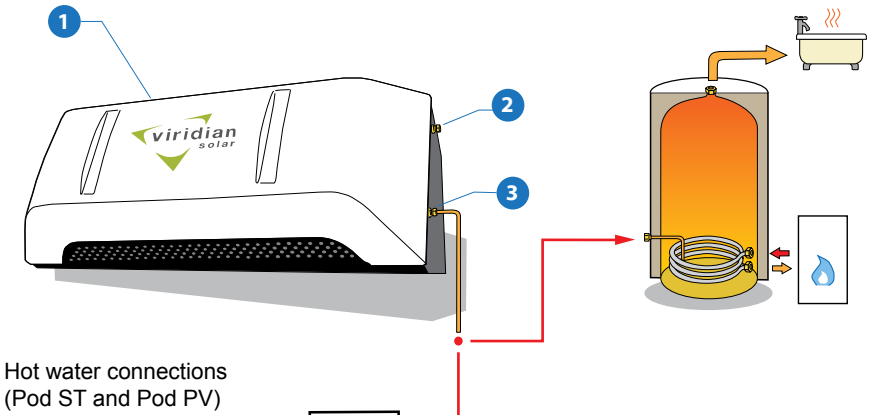
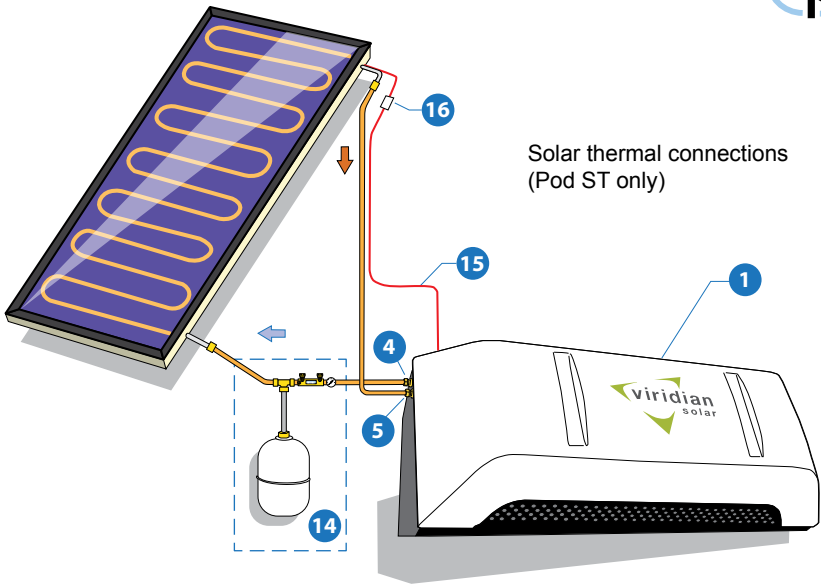


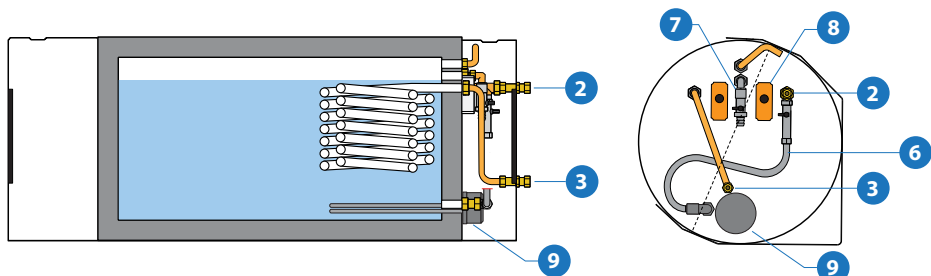


Installation, Operation & Maintenance

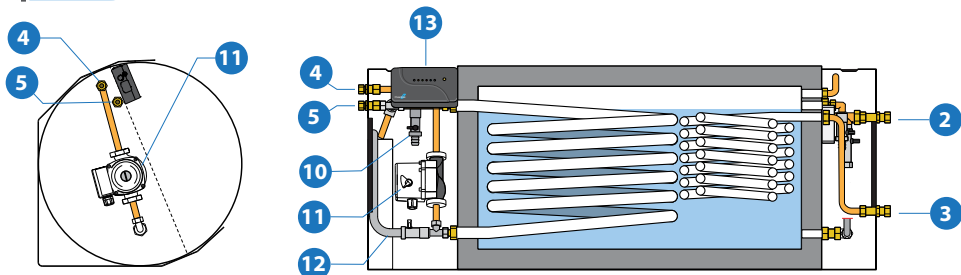




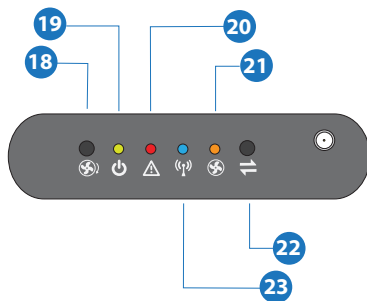
pod^{PV}



podST



	Pod-ST	Pod-PV
1 The Pod	✓	✓
2 Cold water inlet (15mm)	✓	✓
3 Preheated water outlet (15mm)	✓	✓
4 Solar panel return (10/15mm)	✓	
5 Solar panel flow (10/15mm)	✓	
6 Heat store fill loop	✓	✓
7 Heat store fill level valve	✓	✓
8 High limit thermostat (95C)	2x	1x
9 Immersion heater (3kW)		✓
10 Drainback fill level valve	✓	
11 Solar pump	✓	
12 Drainback filling hose	✓	
13 Solar controller (factory set 80C)	✓	
14 Optional pressurised solar kit	Order V2411	
15 Panel signal cable	Order V223	
16 Panel signal cable connector		
17 Combi diverter valve set	Where required order V243	



Pod-ST Solar controller display

- 18 Pump test button
- 19 Power indicator light
- 20 Error indicator light
- 21 Pump indicator light
- 22 Wireless connect button
- 23 Wireless activity light

Contents

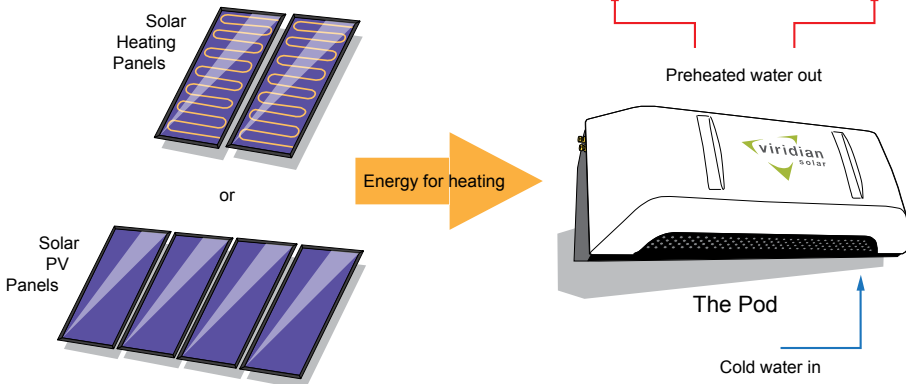
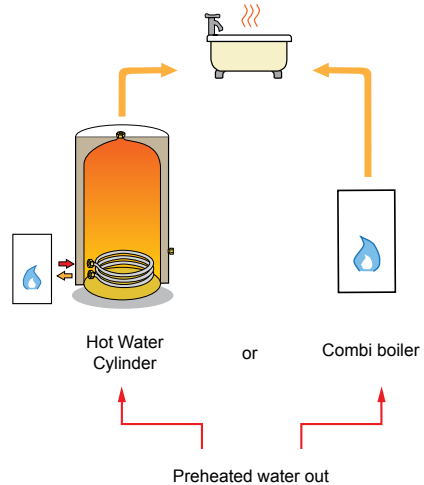
User Guide	4
Installation	
1. Positioning the Pod	5
2. Connecting to the hot water system	6
3. Filling the Pod cylinder	8
4. Pod PV electric solar heating	8
5. Pod ST solar thermal heating	9
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About Solar Water Heating

The Pod saves you money and helps the environment by converting the light hitting a solar panel into hot water which reduces energy bills for water heating.

Pod ST is heated by solar heating panels. The solar heating panel absorbs light and traps the heat generated behind its cover glass. A liquid is pumped through the solar panel which carries the collected heat to the Pod. An electronic controller inside the Pod decides when to turn on the pump based on the temperature difference between the solar panel and the Pod.

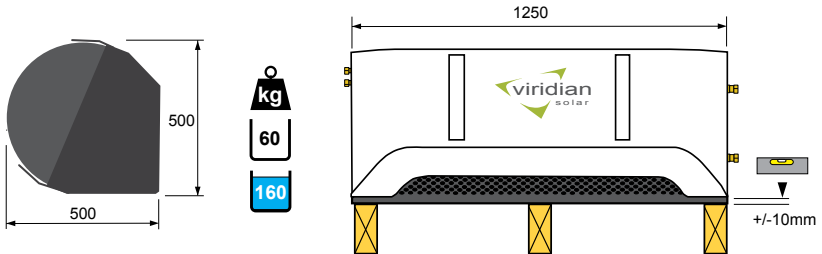
Pod PV is heated by an electric immersion heater. A PV switch (not supplied) is used to divert electricity to the heater when the photovoltaic system is generating more electricity than the property is using.



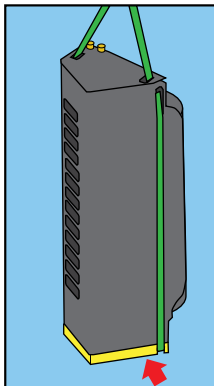
Use

The Pod operates automatically, with minimal maintenance required (page 14).

1. Positioning the Pod



Without its lid, the Pod will fit through a standard 520 x 520 mm loft hatch. If using a lifting sling, secure it to the Pod as shown.

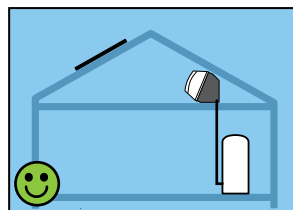
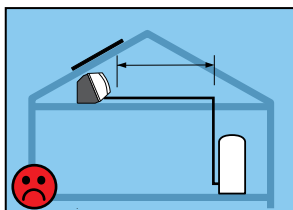


! Leave packaging in place during handling to protect connections

Ensure the installation location can support the weight of the filled Pod. A span of at least three joists, avoiding any that are already supporting loads, is likely to be necessary. Timber bearers can be used to transfer the load to rafter nodes. If in doubt, consult a structural engineer.

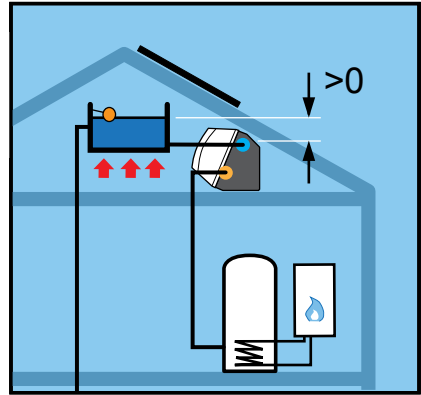
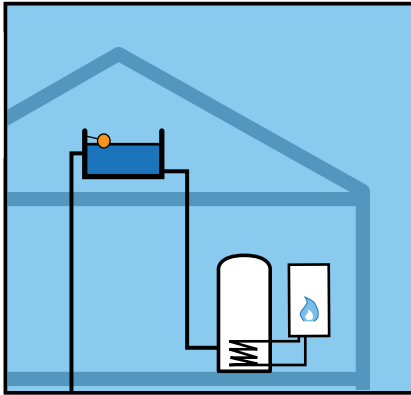
Best energy performance is achieved by minimising the length of the pipe to the heating system. For Pod-ST in drainback, see also section 5a.

In some climates, freeze-prevention measures such as removing loft insulation beneath the Pod, or trace heating with an immersion, may be required.



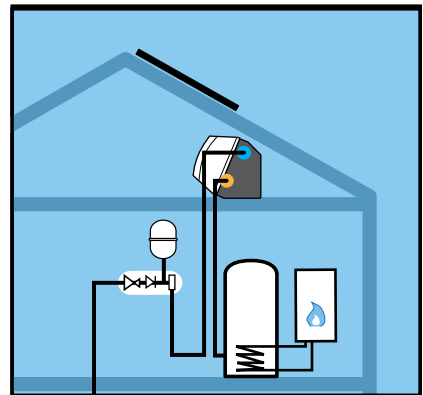
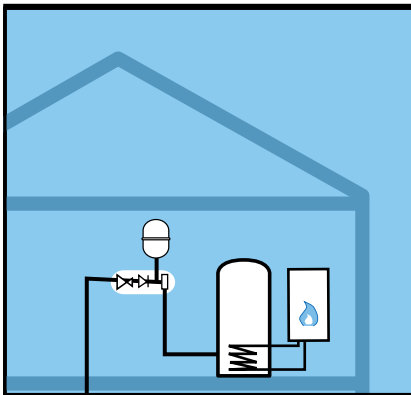
2. Connecting to the Hot Water System

2a. Vented Hot Water Cylinder



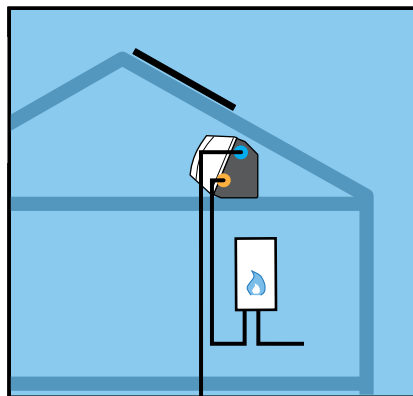
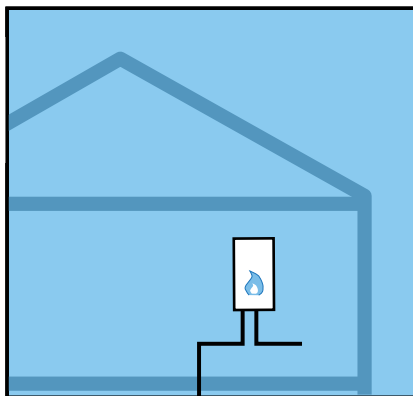
For a vented hot water cylinder, connect from the header tank to the cold water inlet (2) and from the preheated water outlet (3) to the cylinder cold inlet. The water level of the header tank must be higher than the Pod cold water inlet. In some circumstances it may be necessary to raise the header tank further or add a shower pump to maintain hot water flow rates. Insulate pipes in unheated areas and between Pod and cylinder.

2b. Unvented Hot Water Cylinder



For an unvented hot water cylinder, connect from the inlet control set to the Pod cold water inlet (2) and from the preheated water outlet (3) to the cylinder cold inlet. Insulate pipes in unheated areas and between Pod and cylinder.

2c. Combi-boiler



For a combi-boiler connect a cold water feed to the Pod cold inlet (2) and from the preheated water outlet (3) to the combi boiler cold water inlet. Insulate pipes in unheated areas and between Pod and boiler.



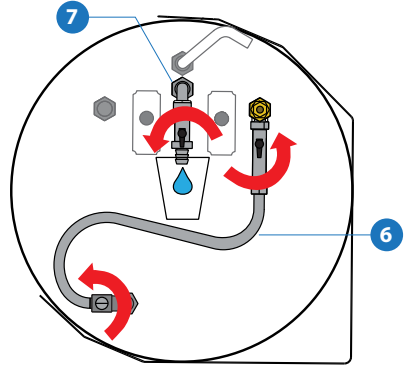
Confirm the specified maximum inlet water temperature for the boiler


The temperature of the preheated water from the Pod should be controlled to suit the specification of the boiler and to maintain a safe hot-tap temperature. See the table below.

Boiler Maximum Inlet Temperature (°C)	Recommended Temperature Control
>60	Thermostatic mixing valve set to 60°C
45-60	Thermostatic mixing valve set to boiler max
28-45	Combi diverter valve (part number V243) Refer to separate documentation
<28	Not suitable

3. Filling the Pod Cylinder

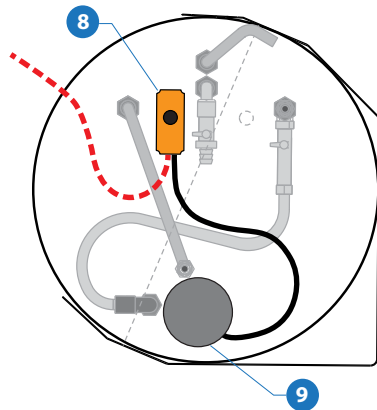
Once the connection to the hot water system is made you can fill the Pod cylinder. Open the fill level valve (7) and then open both valves on the filling loop (6). Once water over-flows from the fill level valve shut both filling loop valves and disconnect the filling loop. Once water stops flowing out, close the fill level valve (7)



 Close fill level valve (7) after fill loop valves (6) to avoid over-filling

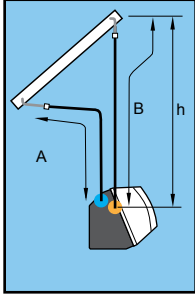
4. Pod PV Electric Solar Heating

The Pod PV is heated by a 3kW electric immersion heater (9) wired via a high-limit thermostat (8). Connect the thermostat to a 230V electricity supply controlled by a PV switch (not supplied).

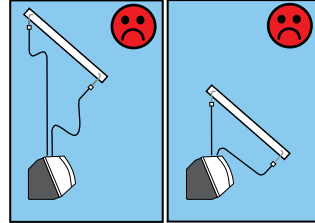


5. Pod ST Solar Thermal Heating

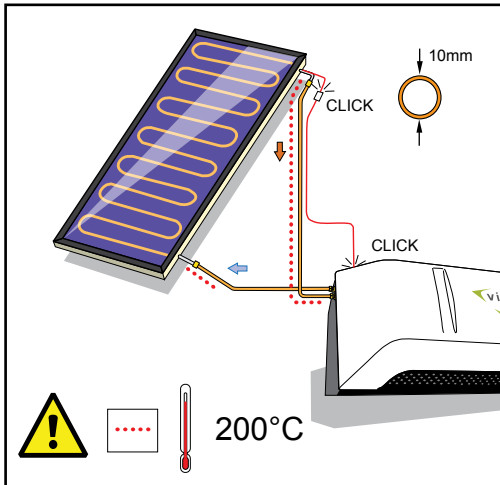
5a. Drainback Solar System



Panel Area (m ²)	Maximum A+B (10mm pipe)		Maximum h (m)
	Clearline	Highline	
2	57m	46m	5.0
3	48m	N/A	
4	40m	19m	



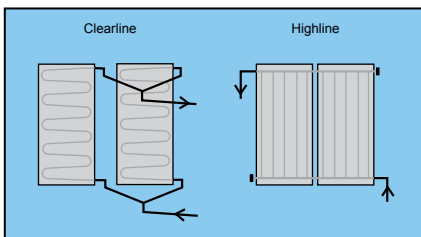
(i) The total fluid volume of solar panels plus pipes should not exceed 4.25 litres. The table above gives maximum pipe lengths to achieve this for 10mm pipe. In addition, the panel outlet should not be more than 5m higher than the Pod. The pipes must have a continuous fall greater than 1 in 30.

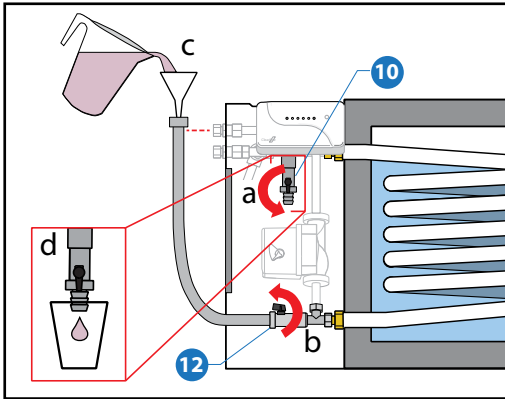


(ii) Install pipe from the solar return (4) to the lower panel connection and the solar flow (5) to the upper panel connection. 10mm copper pipe is recommended to minimise fluid volume (see table above).

Use high temperature solder or compression fittings for any connections.

Connect the panel sensor cable to the top of control unit (13) using the panel signal cable (15) and cable connector (16).





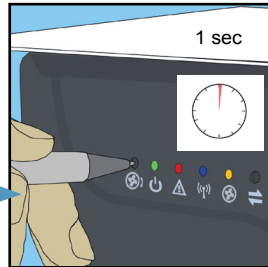
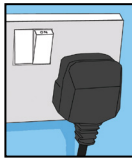
(iii) Open the drainback fill level valve (10) and the drainback filling hose (12) valve.

Holding the filling hose above the outlet fittings (4) & (5), pour in solar fluid until fluid overflows from the fill level valve (approximately 5 litres). Close all valves.



USE ONLY VIRIDIAN SOLAR FLUID
Do not dilute

Code: V225

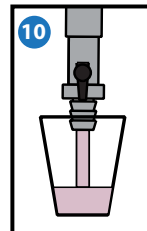


1	4 min	
+1	12 h	
+1	Automatic solar control	

(iv) Switch on the power. Check for error flashes on indicator light (20).

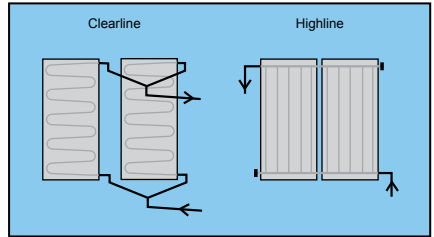
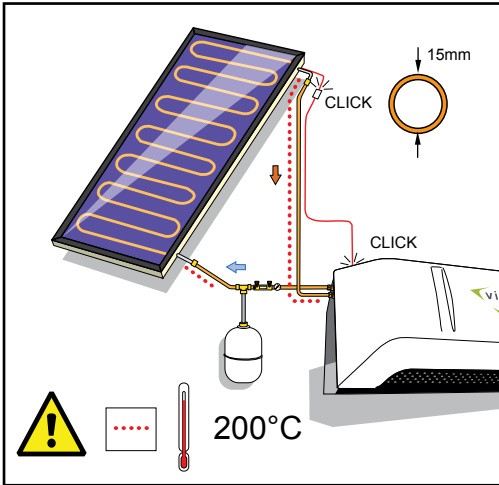
Two pump test modes are accessible by pressing the pump test button (18). The mode is indicated by the pump indicator light (21) blinking off.

Press the pump test button (18) and hold for one second to run the pump for 4 minutes. Briefly open fill level valve (10) to check for good flow back from top of solar panel(s) to Pod. If there is no flow check for airlock or adjust speed setting on the pump (11)



SCALD RISK

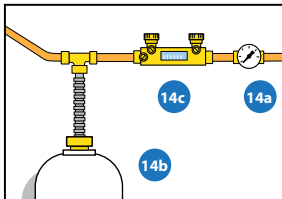
5b. Pressurised Solar System



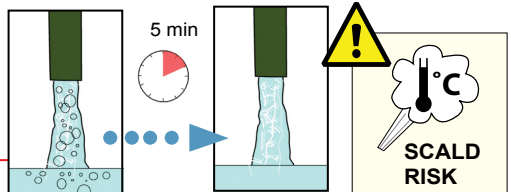
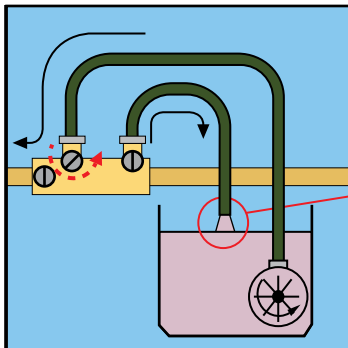
(i) Install pipe from the solar return (4) to the lower panel connection and from the solar flow (5) to the upper panel connection.

Use high temperature solder or compression fittings for any connections.

Connect the panel sensor cable to the top of control unit (13) using the panel signal cable (15) and cable connector (16).

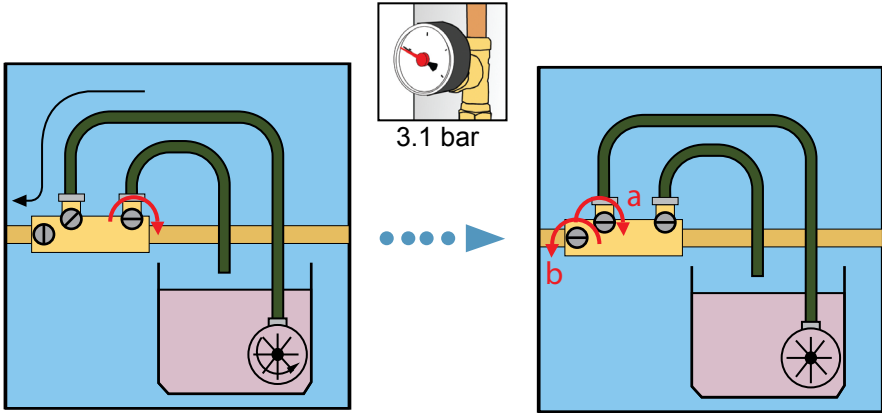


V2411 kit includes pressure gauge (14a), expansion vessel (14b) with connecting hose and fixing bracket and flow indicator, non-return valve and filling set (14c). These should be fitted into the solar return pipe.



(ii) Connect an external filling pump to the filling set (14c). Ensure the flow is towards the solar panel(s). With the inlet valve closed, switch on the external pump. Gradually open the valve to achieve a good flow rate at the outlet. Continue pumping until the return flow is bubble-free.

USE ONLY VIRIDIAN SOLAR FLUID
Do not dilute
Code: V225



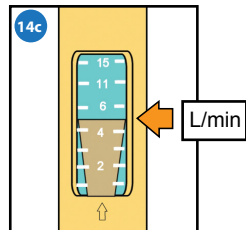
(iii) Close the outlet valve and continue pumping to pressurise the system to 3.1 bar. Close the inlet valve and switch off the external pump set. Open the intermediate valve.

1	4 min	
+1	12 h	
+1	Automatic solar control	

(iv) Switch on the power. Check for error flashes on indicator light (20).

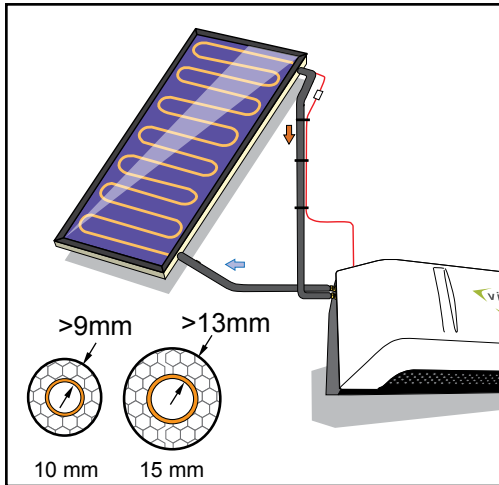
Two pump test modes are accessible by pressing the pump test button (18). The mode is indicated by the pump indicator light (21) blinking off.

Press the pump test button (18) and hold for one second to run the pump for 4 minutes. Check the flow rate on the indicator (14c) against the table. Adjust the speed setting on the pump if necessary.



Panel Area (m ²)	Target Flow (L/min)
2	2.0
3	2.5
4	3.5

5c. Insulating the Solar Pipes



Fully insulate the solar pipes with high temperature insulation. Avoid foamed polyethylene, use foamed rubber (e.g. Armaflex), Polyurethane, mineral fibre.

If fixing the panel sensor cable to the pipe, secure it outside the insulation.



Now complete and sign the Commissioning Checklist on page 16.

Maintenance

With regular simple maintenance, your Viridian Solar water heating system should provide years of trouble-free operation. It is not necessary to clean the solar panel, the action of rain will keep it clear.

Annual : Service A

All models: Inspect the pipe work and insulation for leaks or damage. Top up the Pod cylinder by reconnecting the filling loop (6) and following installation step 3 on page 8.

Pod ST Drainback: Check for error messages. Press the pump test button, and check for flow. See installation step 5a.(iv), page 10. If there is no flow follow installation step 5a.(iii).

Pod ST Pressurised. Check for error messages. Press the pump test button, and check for flow. See installation step 5b.(iv), page 12. Check the pressure indicator (14c) which should indicate a pressure close to the set pressure noted in the commissioning record (page 16) or around 3 bar. If pressure is low, or in the case of no flow, recharge following installation steps 5b.(ii) to (iv) on page 11-12.

Every 5 Years : Service B

As for Service A plus solar system fluid replacement (Pod ST only).

Pod ST Drainback. Switch off the power and drain the solar system from the filling hose (12) by opening the fill level valve (10) and the filling hose valve. Follow installation steps 5a.(iii) to (iv), page 10.

Pod ST Pressurised. Switch off the power and drain the solar system. Follow installation steps 5b.(ii) to (iv), page 11.



Use only system fluid from Viridian Solar (Product Code V225). Failure to use correct system fluid will invalidate your warranty and put the system at risk of freeze damage and corrosion.

Dispose of the system fluid at your local waste disposal centre.
Propylene Glycol Solution.

Specification

		Pod-ST	Pod-PV
Volume	litres	100	100
Length	mm	1250	1250
Width	mm	500	500
Height	mm	500	500
Weight (empty)	kg	60	55
Weight (empty, lid off)	kg	55	50
Weight (full)	kg	154	150
Cylinder maximum pressure	bar	0.6	0.6
Heat loss per 24h 65°C EN	kWh	1.5	1.5
Solar coil surface area	m ²	0.4	-
Solar coil maximum pressure	bar	10	-
Solar coil volume	litres	4.6	-
Hot water coil surface area	m ²	1.6	1.6
Hot water maximum pressure	bar	10	10
Hot water coil volume	litres	1.2	1.2
Maximum temperature solar controller	°C	80	-
High limit thermostat setting	°C	95	95
Immersion heater power	kW	-	3
Immersion heater set temperature	°C	-	77
Immersion heater safety cutout	°C	-	85

Commissioning Checklist

The Commissioning Checklist is to be completed in full by the person who commissioned the Pod and solar system as a means of demonstrating compliance with manufacturer's instructions. This booklet should be handed to the customer to keep for future reference. Failure to install and commission this equipment to the manufacturer's instructions may invalidate the warranty, but does not affect statutory rights.

Customer Name _____

Address _____

Commissioned by (print name) _____

Company Name _____

Telephone _____

Company Address _____

Commissioning Date _____

Checklist

ROOFING

	Pitched	Flat
Protective cover removed from panel? _____	<input type="checkbox"/>	<input type="checkbox"/>
Roof fixing kit correctly installed? _____	<input type="checkbox"/>	<input type="checkbox"/>
Frame hold-down adequate? _____	<input type="checkbox"/>	<input type="checkbox"/>
Panel sensor connected? _____	<input type="checkbox"/>	<input type="checkbox"/>

MECHANICAL AND ELECTRICAL

	Pod PV	ST Drainback	ST Pressurised
Location suitable to support filled weight of Pod? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frost protection measures in place? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Solar loop pipes of correct diameter and material? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compression fittings, solar press fit or high temperature solder used in solar loop? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Continuous pipe fall from panels to Pod? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High temperature insulation on solar loop? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pipes from Pod to hot water cylinder or combi boiler insulated? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pipes in unheated areas insulated against freezing risk? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check for leaks / weeping joints? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No red flash on controller? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Confirm fluid circulation? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drainback resting level at correct height? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
System pressure 3.0-3.1 bar? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expansion vessel pressure 3.0 bar? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

_____ bar
 _____ bar

Declaration

The system has been installed and commissioned in accordance with the manufacturer's instructions
 The system controls have been demonstrated and understood by the customer
 The manufacturer's literature, including Checklist and Service Record has been explained and left with the customer

Installer's Signature _____

Service Record

<p>1A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>	<p>2A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>
<p>3A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>	<p>4A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>
<p>5B Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>	<p>6A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>
<p>7A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>	<p>8A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>
<p>9A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>	<p>10B Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>

Service Record

<p>10A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>	<p>12A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>
<p>13A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>	<p>14A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>
<p>15B Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>	<p>16A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>
<p>17A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>	<p>18A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>
<p>19A Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>	<p>20B Technician _____</p> <p>Company _____</p> <p>Telephone _____</p> <p>Notes _____</p> <p>_____</p> <p>Signature _____ Date _____</p>

Pod ST Controller Lights



Green light on - controller has power



Orange light on continuously - the solar pump is running
One flash per second - pump disabled - Pod or solar panel at maximum temperature



An error is indicated by the red light. The number of times the light blinks off per ten second period identifies the error.

Blinks per 10 sec.	Error	Remedial Action
1	Pump Error	Check pump, check for airlock or blockage
2	Cylinder Sensor Open Circuit	Reconnect sensor cable to controller
3	Cylinder Sensor Closed Circuit	Reconnect sensor cable to controller
4	Panel Sensor Open Circuit	Reconnect sensor cable to controller
5	Panel Sensor Closed Circuit	Reconnect sensor cable to controller
10	Microcontroller Error	Power down 10 seconds, then on again

Viridian Solar
Atlas Building, 68 Stirling Way
Papworth, Cambridge.
CB23 3GY
T 01480 831 501
F 01480 831 831
www.viridiansolar.co.uk

