

Owner's Manual

Solar Water Heaters With Electric Or Gas Boosting

Electric Boosted Models:

250DPM36 | 315DPM36 | 400DPM36

Gas Boosted Models:

250DP0 | 315DP0 | 400DP0

Installation Details
Owner's Information
Warranty

For advice, repairs and service, call:

1300 365 115 (Australia)

0800 729 389 (New Zealand)



Carefully remove all packaging and transit protection from the water heater before installation. Dispose of the packaging responsibly using re-cycling facilities where they exist.



Specifications and materials may change without notice.

Effective for the above models of Dux Solar Water Heaters manufactured and sold after 1st November 2018.

H3165 029664 Rev. B



Important Safety Information

WARNING – THIS APPLIANCE MAY DELIVER WATER AT HIGH TEMPERATURE. REFER TO THE PLUMBING CODE OF AUSTRALIA (PCA), LOCAL REQUIREMENTS AND INSTALLATION INSTRUCTIONS TO DETERMINE IF ADDITIONAL DELIVERY TEMPERATURE CONTROL IS REQUIRED.

WARNING – FOR CONTINUED SAFETY OF THIS APPLIANCE IT MUST BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

General:

This water heater is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the water heater by a person responsible for their safety.

Children should be supervised to ensure they do not play with the water heater.

Animals should be supervised to ensure they do not interfere with the water heater.

DO NOT store chemicals or flammable materials, or spray aerosols near this water heater.

DO NOT modify this water heater.

DO NOT operate the water heater with any panels or covers removed.

Installation Precautions:

The water heater is intended to be installed by properly trained and licensed tradespersons.

The installer should carry out a risk assessment prior to the installation of the water heater. The risk assessment should consider at least the hazards associated with:

- Heavy components.
- Work at heights.
- Electricity
- Gas
- Water under pressure.

User Maintenance Precautions:

Stand clear of the relief valve discharge pipe outlet when lifting the easing lever on the valve.

Stand clear of the solar collector drain pipe when purging or draining the solar collectors.

Do not attempt to clean the solar collectors unless they can be safely accessed.

Draining the Water Heater:

The method of draining the storage tank and the solar collectors is described on pages 20 and 21.



Important Safety Information

Relief Valve:

The Pressure & Temperature Relief (PTR) Valve must be installed directly into the RP½"(DN15) socket marked "RELIEF VALVE".

The PTR Valve rating is 1,000 kPa and is also shown on the compliance plate.

The valve must not be tampered with or removed. The water heater must not be operated unless this valve is fitted and in working order.

The PTR Valve should be checked by a licensed tradesperson for adequate performance, or replaced at intervals not exceeding five years, or less in areas where local regulations apply.

The PTR Valve is to be operated regularly to remove lime deposits and to verify it is not blocked.

DANGER – FAILURE TO OPERATE THE PTR VALVE EASING LEVER AT LEAST ONCE EVERY SIX MONTHS MAY RESULT IN THE WATER HEATER EXPLODING.

Continuous leakage of water from the PTR Valve may indicate a problem with the water heater. This may be caused by excessive water supply pressure, a faulty PTR Valve or a faulty thermostat. Turn off the water heater and contact Dux After Sales and Service.

Relief Valve Discharge Pipe:

The discharge pipe connected to the PTR Valve is to be installed in a continuously downward direction and in a frost-free environment.

It is normal for water to drip from the discharge pipe of the PTR Valve during heating cycles. The discharge pipe must be left open to be atmosphere.

Permanent Water Connection:

The water heater is intended to be permanently connected to the water supply main, and not connected by a hose-set.

Water Supply Pressure:

This water heater is designed for direct connection to water supply pressures of up to **800 kPa**.

Where the mains pressure can exceed or fluctuate beyond this pressure, a pressure reducing valve must be fitted in the cold water inlet supply.

Temperature Protection:

Water heaters can produce very hot water. To reduce the risk of scald injury, it is mandatory that an approved temperature control device (such as a tempering valve) is fitted to the hot water supply to outlets used primarily for the purposes of personal hygiene. This device should be checked at regular intervals to ensure its operation and settings remain correct.



Important Safety Information

Electrical Safety:

This water heater is designed for single phase 240V a.c. supply only. The electrical connection must comply with Local Supply Authority Regulations and AS/NZS 3000.

Any electrical covers including the solar module cover, should be removed only by a licensed tradesperson, and only after the electrical supply to the water heater has been isolated.

In addition to the PTR Valve and the Solar Controller, electric boosted models are fitted with a combination thermostat and over-temperature energy cut-out.

These devices must not be tampered with or removed. Replacement of these devices must only be carried out by a licensed tradesperson or the manufacturer.

The water heater must not be operated unless these devices are fitted and in working order.

Electric Booster Connection:

The electric booster is to be connected to the power supply using fixed wiring. A means for disconnection must be incorporated in the fixed wiring in accordance with the Wiring Rules.

When the supply wiring has been connected, ensure the wires are kept away from the inner tank, thermostats and heating elements.

The thermostat controlling the electric booster is pre-set to 60°C and should not be adjusted.

Gas Booster Temperature Setting:

The instantaneous gas water heater must be set to 75°C as described on page 19. A remote controller must **not** be connected to the water heater.

Solar Controller Installation and Setting:

The solar collector temperature sensor is to be connected to the terminal block located under the solar module cover as described on page 11.

The temperature settings of the solar controller are pre-set and are not user adjustable.

Solar Controller Supply Cord:

If the solar controller supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

Not Using Hot Water?

If the water heater is not used for two weeks or more, a quantity of hydrogen (which is highly flammable) may accumulate inside the water heater tank.

The procedure to dissipate this gas is described on page 25.

Power Failure or Disconnection:

WARNING: Do not turn off the power supply to the solar controller. The solar controller is designed to be continuously powered.

The procedure to disconnect is on page 25.



Important Safety Information

INSTALLATION REQUIREMENTS

General:

The water heater must be installed by a licensed tradesperson, and in accordance with:

- In Australia, the Plumbing Code of Australia (PCA);
- Clause G12 of the NZ Building Code (in New Zealand).
- AS/NZS 3000 Electrical Installations (known as the Australian / New Zealand Wiring Rules).
- AS/NZS 5601.1 Gas Installations – General Installations (for Gas Boosted Models).
- Local authority regulations.
- Outside Australia and New Zealand, please refer to local plumbing and building codes and regulations.

Failure to comply with these requirements will affect the warranty.

AS/NZS 3500.4 Plumbing and Drainage – Heated Water Services provides a Deemed-to-Satisfy solution for the PCA and a Verification Method for Clause G12 of the NZBC. Other methods of compliance are available. Dux recommends that installations conform with AS/NZS 3500.4."

Note for Victoria:

The water heater must be installed by a licensed person as required by the Victorian Building Act (1993).

Only a licensed person will provide a compliance certificate, showing that the work complies with all the relevant

Standards. Only a licensed person will have insurance protecting their workmanship.

Water Heating System:

This solar water heater is designed and certified to be installed as part of a water heating system.

Please read this manual in conjunction with the manuals for the:

- Solar Collectors.
- Tempering Valve.
- Instantaneous Gas Water Heater (for Gas Boosted Models).

Frost-Prone Areas:

This solar water heating system may not be suitable for installation in all frost-prone areas. Installations in regions identified by Dux as unsuitable will affect the system's warranty.

Please consult www.dux.com.au/installation-areas or Dux After Sales and Service for further information.

Pool Heating:

The water heater must **not** be used for pool heating.

Circulated Hot Water Systems:

This water heater is not designed to be installed as part of a circulated hot water flow and return system.

If a circulated flow and return system is required, please consult Dux After Sales and Service for advice.



This page is intentionally blank



Contents

Important Safety Information	i
Installation Requirements	iv
Introduction	3
Specifications	4
Location	5
Water Supply	6
Solar Collector Pipework	7
Solar Module Cover	10
Solar Controller Connection	11
Cold Water Connections	12
Hot Water Connections – Electric Boosted Models	13
Hot Water Connections – Gas Boosted Models	15
Relief Valve	17
Electric Booster Connection	18
Gas Booster Installation	19
Fill, Flush and Drain – Storage Tank	20
Fill, Flush and Drain – Solar Collectors	21
Commissioning	22
System Maintenance	23
Non-Continuous Operation	25
Considering a Service Call?	26
Warranty	28



Introduction

General:

This Owner's Manual applies to the Dux Ecosmart range of Electric and Gas Boosted Solar Water Heaters.

Electric Boosted Solar Water Heaters:

Solar water heaters heat water by pumping it through the solar collectors when conditions are suitable.

During the winter months or when it is cloudy, there may not be enough solar energy gain available to heat the required quantity of water. An electric element is installed in the storage tank of the water heater to boost the water temperature as required. The electric element is controlled by a separate thermostat.

The plumbing and electrical connections to the solar collectors are the same for both electric and gas boosted models. The hot water plumbing connection and the electrical connection to the boost element are specific to the electric boosted models.

Throughout this manual, most pages are common to both electric and gas boosted models while some pages are specific to electric boosted models. Those pages that are specific to electric boosted models are clearly identified.

Electric Boosted Solar Water Heater Models are:

- 250DPM36
- 315DPM36
- 400DPM36

Gas Boosted Solar Water Heaters:

Solar water heaters heat water by pumping it through the solar collectors when conditions are suitable.

During the winter months or when it is cloudy, there may not be enough solar energy gain available to heat the required quantity of water. An instantaneous gas water heater is installed between the storage tank of the water heater and the hot water outlets to boost the water temperature as required. The instantaneous gas water heater is controlled separately.

The plumbing and electrical connections to the solar collectors are the same for both gas and electric boosted models. The hot water plumbing connection and the gas connection to the instantaneous water heater are specific to the gas boosted models.

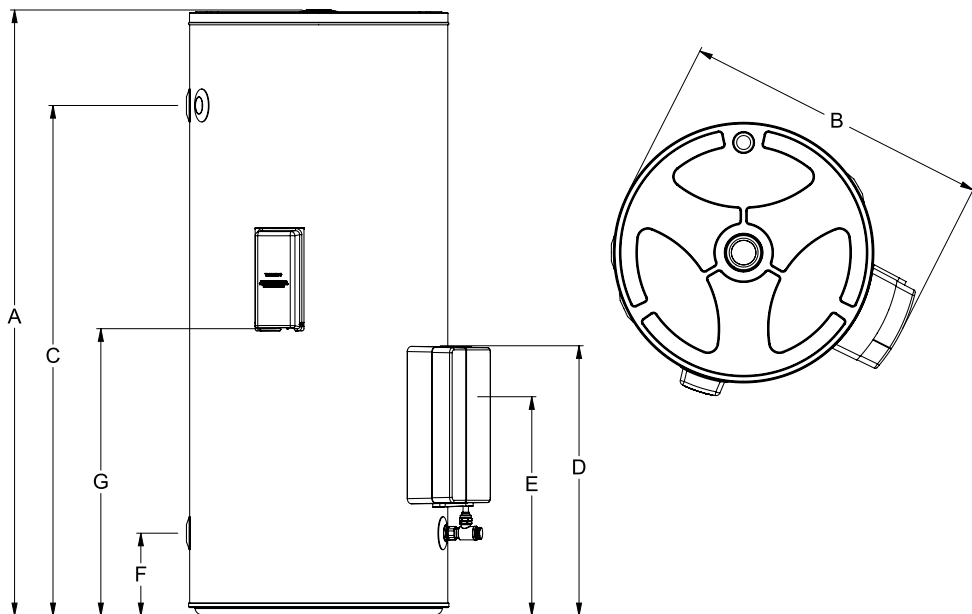
Throughout this manual, most pages are common to both gas and electric boosted models while some pages are specific to gas boosted models. Those pages that are specific to gas boosted models are clearly identified.

Gas Boosted Solar Water Heater Models are:

- 250DP0
- 315DP0
- 400DP0



Specifications



Nominal Dimensions	250L	315L	400L
A – Overall Height (mm)	1440	1760	1700
B – Overall Diameter (mm)	730	730	820
C – Outlet Height (mm)	1210	1530	1445
D – Solar Return Height (mm)	640	845	645
E – Pump Outlet Height (mm)	520	520	545
F – Inlet Height (mm)	195	195	220
G – Electrical Entry Height (mm) (Electric Boosted Models Only)	680	880	695



Location

General:

Solar water heater storage tanks are normally installed outdoors. The storage tank should be located as close as possible to the most frequently used hot water outlet. Consideration should be given to the route taken by solar collector piping and drain lines.

Ensure the compliance plate and associated warnings are clearly visible.

The storage tank must be accessible without the use of a ladder or scaffold. Adequate clearance must be available for service to the solar controller, circulation pump, relief valve, sacrificial anode, and the electrical cover of electric boosted models.

Indoor Installation:

Solar water heater storage tanks may be installed indoors. A properly drained safe tray must be installed where property damage could occur from water spillage. Refer to AS/NZS 3500.4 for further information.

Note - the warranty will not cover damage due to leakage of the water heater if a properly drained safe tray has not been installed.

Refer to local regulations before installing the storage tank in a roof space.

Water Heater Support:

The water heater storage tank must be installed on a flat, solid supporting surface. The pipework must not be used to support the water heater. The installation of the storage tank must not compromise the structural integrity of the building.

Where the storage tank is subjected to wet conditions, a plinth should be installed under the storage tank.

Gas Boosted Models:

The instantaneous gas water heater must be installed **outdoors**. It must also be located to ensure that the connection pipe to the storage tank is no more than 2 metres in length.

The location of the flue terminal must comply with the requirements of AS/NZS 5601.1 or local rules and regulations. Refer to the instantaneous gas water heater Installation Manual for further information.

Solar Collectors:

For maximum solar gain, solar collectors should face no greater than 45° east or west of true north.

Please refer to AS/NZS 3500.4 for further information relating to solar collector positioning.



Water Supply

General:

The water heater has been manufactured to suit the water conditions of most Australian and New Zealand metropolitan supplies.

Certain water supplies, especially those sourced either fully or partly from bores or artesian wells, can have a detrimental effect on the water heater and its life expectancy. If you are unsure about the chemistry of the water supply, you can obtain information from the local water supply authority.

Water Heater Storage Tank:

The water heater storage tank is designed for use in areas where the Total Dissolved Solids (TDS) content of the water supply is less than 2500 mg/L. The Extended Tank Failure Warranty does not apply in areas where the TDS exceeds 2500 mg/L.

In areas where the TDS exceeds 600 mg/L, it is possible the magnesium alloy anode (supplied in all models of solar water heater) may become over-reactive. To alleviate this, the magnesium alloy anode should be replaced with an aluminium alloy anode. Aluminium alloy anodes are available from your local Dux Supplier.

Water supplies can also be scaling. This results in minerals being deposited in the Pressure and Temperature Relief Valve.

If the water saturation index is above +0.40, an expansion control valve should be fitted. Please consult Dux After Sales and Service for advice if required.

Solar Collectors:

The solar collectors are designed for use in areas where the Saturation Index of the water supply is between -1.0 and +0.80.

Water supplies with a Saturation Index below -1.0 are corrosive and can attack copper parts. Water supplies with a Saturation Index above +0.80 are regarded as very scaling. This results in minerals being deposited on hot surfaces.

The Extended Solar Collectors Failure Warranty does not apply in areas where the Saturation Index is below -1.0 or above +0.80.

Electric Boosted Models:

If the water saturation index is above +0.80, the electric element should be replaced with a low power density Incoloy element. Please consult Dux After Sales and Service if required.

Gas Boosted Models:

The instantaneous gas water heater is also designed to suit the water conditions of most Australian and New Zealand metropolitan supplies.

A Water Quality Table is provided in the instantaneous gas water heater Installation Manual.



Solar Collector Pipework

General:

The solar flow and return pipes are to be run in DN15 copper. Plastic pipes and fittings are not to be used.

Pipes are not to be saddled to the water heater case. Damage to the internal sensor wiring caused by screws or other penetrations may not be covered by the warranty.

Pipe Insulation:

The pipes are to be fully insulated with UV stabilised insulation suitable for solar working temperatures. The insulation is to be at least equivalent to 13mm Armaflex DuoSolar with a thermal conductivity of not more than 0.045 W/(m.K) at 60°C.

Refer to the Solar Collector Installation Guide for further information.

As well as reducing heat loss from the pipes, the insulation helps to prevent the water inside the pipes freezing.

Failure to insulate the pipes correctly may affect the warranty.

Solar Return Connection:

The following fittings are supplied in the Accessories Kit:

- 2 x Ball Valves.
- 1 x Tee.
- 1 x Reducing Union.
- 2 x Compression Fittings.

The ball valves, tee, union and compression fittings are to be connected into the RP $\frac{3}{4}$ "(DN20) socket marked "SOLAR RTN" on the right hand side of the water heater in the middle.

The order of connection is shown on the page opposite. Ensure that a sealing material is applied to each fitting to prevent water leaks.

Solar Return Pipe:

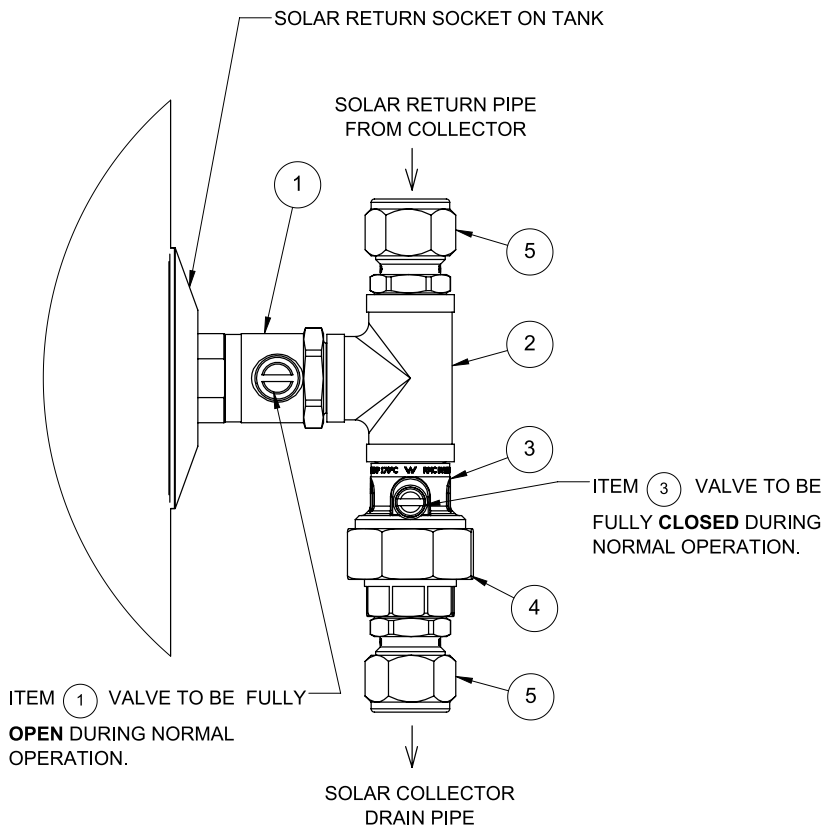
The solar return pipe runs from the outlet of the solar collectors to the solar return connection on the water heater.

A heat trap with a vertical drop of 250 mm is to be installed within 1 metre of the solar return connection. Please refer to the diagram on page 9.

Connect the solar return pipe to the DN15 compression fitting on top of the DN15 Tee and tighten the fitting.



Solar Collector Pipework



ITEM NO.	DESCRIPTION	QTY.
1	Ball Valve with 3/4" and 1/2" Male Connections	1
2	1/2" Brass Tee	1
3	Ball Valve with 1" and 1/2" Male Connections	1
4	1" to 1/2" Reducing Union	1
5	DN15 (1/2") Compression Fitting	2



Solar Collector Pipework

Solar Collector Drain Pipe:

The drain pipe is used during air purging or draining of the solar collectors.

The drain pipe is to be run in in DN15 copper. Plastic pipes and fittings are not to be used.

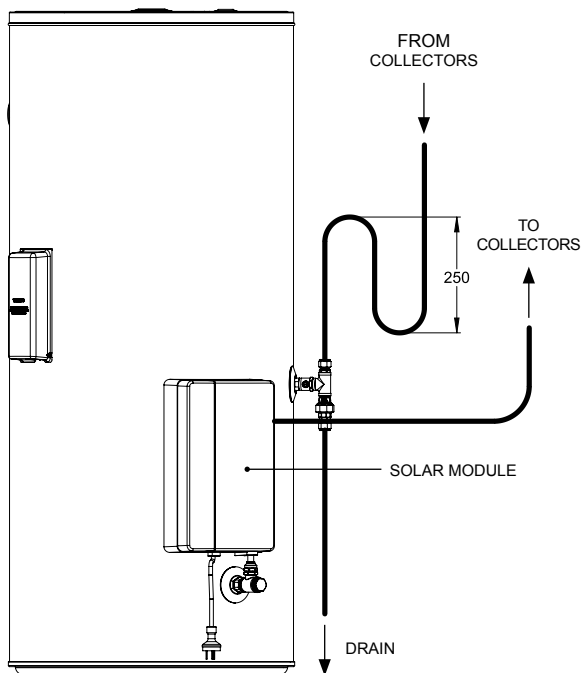
Connect the drain pipe to the DN15 compression fitting attached to the ball valve and tighten the fitting.

Steam or hot water may be discharged from the drain pipe. Ensure the drain pipe discharges away from the person operating the drain valve.

Solar Flow Pipe Installation:

The solar flow pipe runs from the outlet of the pump to the inlet of the solar collector.

1. Remove the retaining screw from the Solar Module Cover and remove the cover.
2. Connect the solar flow pipe to the DN15 compression fitting on the pump and tighten the fitting.
3. Replace the Solar Module Cover after the Collector Temperature Sensor has been installed.





Solar Module Cover

General:

The Solar Module contains the circulation pump and the solar controller.

Solar Module Cover:

The Solar Module Cover clips over the Solar Module and is fixed in place with a crosshead screw.

WARNING!

The Solar Module Cover must only be removed for installation, commissioning and fault finding.

The Solar Controller is not weatherproof and must be protected by the Solar Module Cover.

Cover Removal:

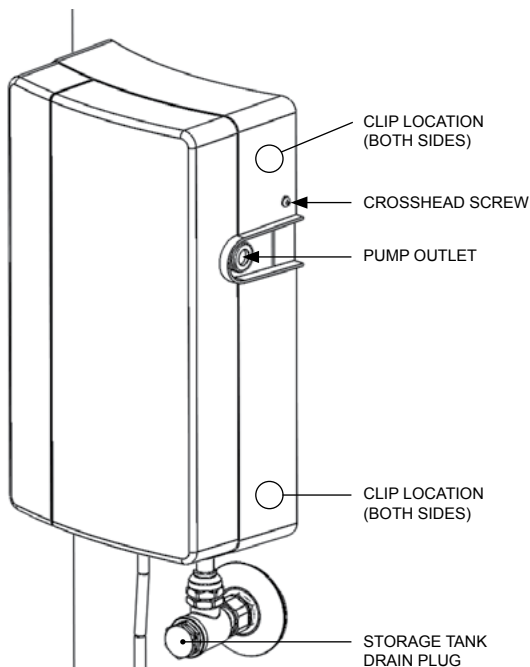
To remove the cover:

1. Remove the crosshead screw located on the right hand side of the cover above the solar pump.
2. Flex the sides of the cover outward to disengage four clips.
3. Remove the cover.

Cover Replacement:

Reverse the sequence used to remove the cover.

The crosshead screw must be replaced to maintain product safety.





Solar Controller Connection

General:

The Solar Controller is located under the Solar Module Cover.

The Solar Controller monitors water temperatures in the tank and solar collectors. It uses in-built logic to control the operation of the circulation pump.

The tank temperature sensor connections, circulation pump connection and power supply cord are factory pre-wired.

Power Supply:

The Solar Controller is supplied with a power supply cord.

A switched general purpose socket outlet (GPO) is required to be located within 1.2 metres of the Solar Module. If the GPO is not protected from the weather, it is to have a minimum degree of protection of IP33. Refer to AS/NZS 3000 for further information.

The GPO must be connected to a single phase 240V a.c continuous tariff supply.

The GPO is not to be switched on until the entire installation is complete.

Solar Collector Temperature Sensor:

The solar collector temperature sensor is supplied with the solar collectors. Please refer to the Solar Collector Installation Guide.

The solar collector temperature sensor is to be connected to the Solar Controller via a terminal block:

1. Ensure the Solar Controller power supply cord is disconnected at the socket outlet.
2. Remove the Solar Module Cover as described on page 10.
3. Connect the solar collector temperature sensor wires to the terminal block mounted below the solar controller. The wires can be connected with either polarity.
4. Replace the Solar Module Cover.



Cold Water Connections

General:

All valves and fittings must be approved by the relevant Authority. Plastic pipes or fittings shall not be used between the isolating valve and the inlet.

Water Supply Pressure:

This water heater is designed for direct connection to water supply pressures of up to **800 kPa**.

Where the mains pressure can exceed or fluctuate beyond this pressure, a pressure reducing valve must be fitted in the cold water inlet supply.

Note for New Zealand, South Australia and Western Australia:

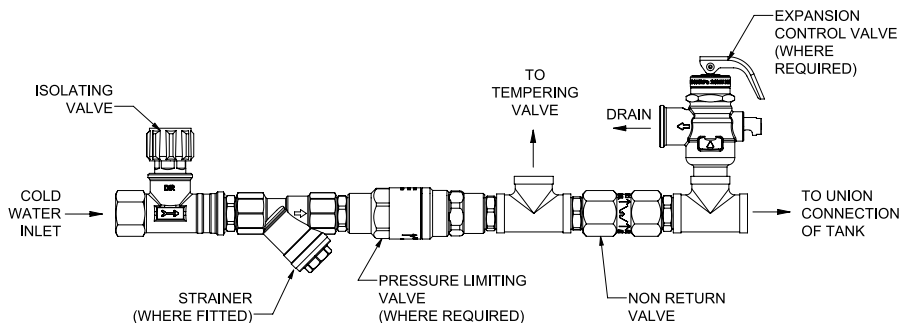
It is a requirement in these locations that an expansion control valve be fitted on the cold water supply line between the non-return valve and the water heater.

Cold Water Connection:

The required valves must be fitted between the water supply main and the RP $\frac{3}{4}$ "(DN20) socket marked "INLET" on the left hand side of the water heater towards the bottom. The cold water supply valves must be installed in the following sequence:

- Isolating valve
- Line strainer (optional but recommended)
- Pressure limiting valve (where required)
- Branch to tempering valve
- Non-return valve
- Expansion control valve (where required or recommended).

Refer to the diagram below for details.



Note: Pressure Limiting Valve required in some locations and recommended where the water saturation index is above +0.40.



Hot Water Connections

This page only applies to **Electric** Boosted Solar Water Heater Models.

General:

It is recommended that all hot water pipes are insulated. Hot water pipes installed outdoors should be insulated with UV stabilised insulation.

Plastic pipes or fittings shall not be used within 1 metre of the outlet although they may be used downstream of a temperature control valve. Refer to AS/NZS 3500.4 for further details.

Hot Water Connection:

The hot water pipe is to be connected to the RP $\frac{3}{4}$ "(DN20) socket marked "OUTLET" on the left hand side of the water heater towards the top.

Temperature Protection:

Solar water heaters can produce very hot water. To reduce the risk of scald injury, AS/NZS 3500.4 requires that an approved temperature control device is fitted to the hot water supply to outlets used primarily for personal hygiene.

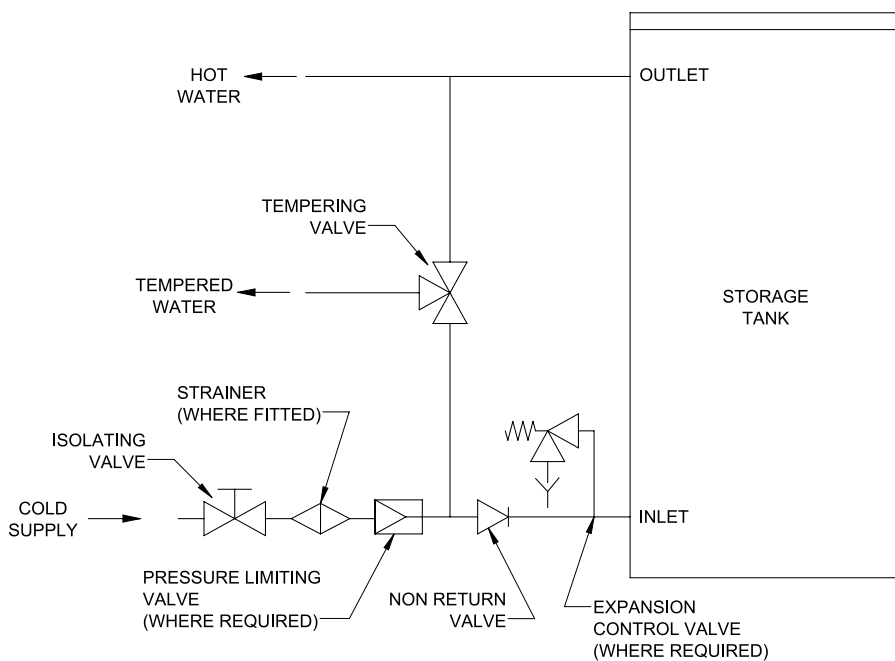
This device should be checked at regular intervals to ensure its operation and settings remain correct.

An RMC MIX15U HeatGuard Ultra Tempering Valve is supplied in the Accessories Kit. Please refer to the Installation Instructions included with the tempering valve.



Hot Water Connections

This page only applies to **Electric** Boosted Solar Water Heater Models.





Hot Water Connections

This page only applies to **Gas** Boosted Solar Water Heater Models.

General:

It is recommended that all hot water pipes are insulated. Hot water pipes installed outdoors should be insulated with UV stabilised insulation.

Plastic pipes or fittings shall not be used between the storage tank and the instantaneous gas water heater or within 1 metre of its outlet, although they may be used downstream of a temperature control valve. Refer to AS/NZS 3500.4 for further details.

Gas Booster Inlet Connection:

The Cold Water Inlet of the instantaneous gas water heater is to be connected using a DN20 copper pipe to the RP $\frac{3}{4}$ "(DN20) socket marked "OUTLET" on the left hand side of the water heater towards the top.

The length of this pipe must not exceed 2 metres.

Gas Booster Outlet Connection:

The hot water pipe that supplies the building is to be connected to the Hot Water Outlet of the instantaneous gas water heater.

Temperature Protection:

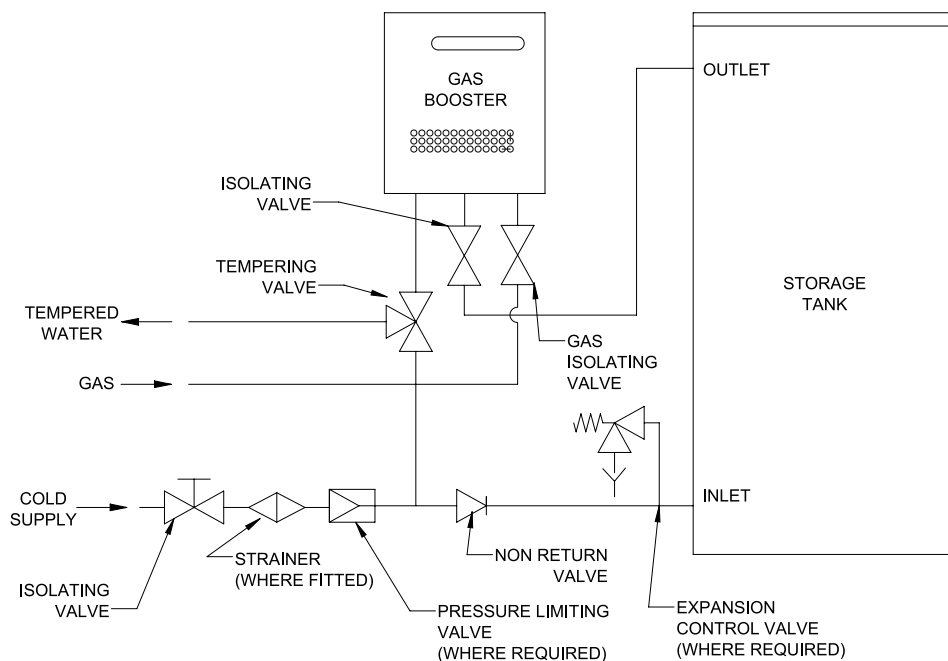
Solar water heaters can produce very hot water. To reduce the risk of scald injury, AS/NZS 3500.4 requires that an approved temperature control device is fitted to the hot water supply to outlets used primarily for personal hygiene. This device should be checked at regular intervals to ensure its operation and settings remain correct.

An RMC MIX15U HeatGuard Ultra Tempering Valve is supplied in the Accessories Kit. Please refer to the Installation Instructions included with the tempering valve.



Hot Water Connections

This page only applies to **Gas** Boosted Solar Water Heater Models.





Relief Valve

Relief Valve:

The Pressure & Temperature Relief (PTR) Valve is supplied in the Accessories Kit.

The PTR Valve rating is 1,000 kPa.

The PTR Valve rating is also shown on the compliance plate. The PTR Valve must be installed directly into the RP $\frac{1}{2}$ "(DN15) socket marked "RELIEF VALVE" on the left hand side of the water heater towards the top. Ensure that a sealing material is applied to the PTR Valve to prevent water leaks.

The PTR Valve and its drain line must not be sealed or blocked.

It is normal for water to drip from the discharge pipe of the PTR Valve during heating cycles.

Relief Valve Discharge Pipe:

The discharge pipe from the PTR Valve must be made of copper and run in accordance with the requirements of AS/NZS 3500.4. It must be installed in a continuously downward direction in a frost-free environment.

Generally, a separate drain line must be run for the valve although it may be joined with the drain line from the expansion control valve under certain circumstances.

Steam or hot water may be discharged from the drain line. Ensure the drain line discharges away from the person operating the drain valve.



Electric Booster Connection

This page only applies to **Electric** Boosted Solar Water Heater Models.

General:

An electric element is installed in the storage tank of the water heater to boost the water temperature as required. The electric element is controlled by a separate thermostat. The thermostat is pre-set to 60°C and should not be adjusted.

It may be connected to a continuous, controlled load or off-peak tariff. Large users of hot water may require connection to a continuous tariff.

The electric booster is to be fixed wired to a dedicated supply via an independent lockable isolating switch.

The element and thermostat are designed for single phase 240V a.c. supply only. The electrical connection must comply with Local Supply Authority Regulations and AS/NZS 3000.

Connection of the electrical wiring must only be carried out by a licensed tradesperson.

Connections are made at the terminal block under the water heater electrical cover.

Removing the Electrical Cover:

Before removing the electrical cover, ensure the electrical power supply is safely isolated.

The electrical cover is removed by undoing the two screws at the bottom of the cover and sliding the cover downwards to disengage the top edge.

Connections:

The cable entry is a pre-punched hole designed to accept a 20 mm conduit gland. It is located adjacent to the terminal block.

To prevent damage to the wiring, the cable entry must be fitted with a gland prior to feeding the wiring through the hole. Ensure the conduit entry is sealed correctly.

Connect the active and neutral wires to the terminal block and the earth wire to the earth tab (located on the right hand side). **Excess wire is not to be looped close to the thermostat or tank.**

When the supply wiring has been connected, ensure the wires are kept away from the inner tank, thermostats and heating elements..

Replacing the Electrical Cover:

1. Press the reset button on the thermostat to ensure the over-temperature energy cut-out is set.
2. Ensure the terminal block mounting plate is horizontal.
3. Slide the cover up, ensuring the top edge engages under the case.
4. Swing the cover down until the bottom edge contacts the case.
5. Refit and tighten both screws in the cover.

Ensure the water heater is filled with water before turning on the electricity supply.



Gas Booster Installation

This page only applies to **Gas** Boosted Solar Water Heater Models.

General:

An instantaneous gas water heater is to be installed between the storage tank of the water heater and the hot water outlets to boost the water temperature as required.

The instantaneous gas water heater is to be mounted and connected by the installer.

Electrical Requirements:

A switched general purpose socket outlet (GPO) is required to be located within 1.2 metres of the instantaneous gas water heater. If the GPO is not protected from the weather, it is to have a minimum degree of protection of IP33. Refer to AS/NZS 3000 for further information.

It is recommended a double GPO is installed to provide power to the solar controller and the instantaneous gas water heater.

Installation:

An Installation Manual and Owner's Guide is supplied with the instantaneous gas water heater.

Please refer to these documents for installation instructions.

Temperature Setting:

To inhibit the growth of *Legionella* bacteria, the instantaneous gas water heater must be set at 70°C or above.

Please refer to the instantaneous gas water heater Installation Manual for temperature setting instructions.

Bridge A **must** be installed in the remote controller terminals located behind the front cover of the water heater. This will set the water heater to 75°C.

A remote controller must **not** be installed with the water heater as this will enable the set temperature to be adjusted



Fill, Flush and Drain – Storage Tank

Filling the Storage Tank:

The water heater storage tank must be filled with water before turning on the electrical supply.

1. Ensure all hot water taps are closed.
2. Using a flat-bladed screwdriver, ensure both ball valves on the solar collector connections are closed.
3. Open the isolating valve at the cold water inlet slowly and allow the water heater to fill.
4. Slowly open the Pressure & Temperature Relief (PTR) Valve by lifting the easing lever on the valve.
5. Hold the PTR Valve open until water is relieved to waste through the drain line.
6. Lower the PTR Valve easing lever gently and check it closes correctly.
7. Open all hot water taps.
8. Close each hot water tap after the air is expelled from its line.

Turning off the Water Heater:

1. Turn off the electricity supply to the solar controller.
2. For electric boosted models, turn off the electricity supply to the electric booster.
3. For gas boosted models, close the gas supply valve and turn off the electricity supply to the gas booster.
4. Close the isolating valve at the cold water inlet.

Draining the Storage Tank:

1. Turn off the water heater as described at left.
2. Gently operate the easing lever on the Pressure & Temperature Relief (PTR) Valve to release the pressure in the water heater.
3. Disconnect the plug from the Tee under the solar module cover and attach a drain hose to the water heater.
4. Gently operate the easing lever on the PTR Valve to let air into the water heater.
5. Wait for the water to drain out through the hose.
6. Lower the PTR Valve easing lever gently.
7. Remove the drain hose and replace the plug.

Flushing the Storage Tank:

1. Carry out "Draining the Storage Tank" steps 1 to 6 above.
2. Open the isolating valve at the cold water inlet.
3. Wait for the water to run clear from the drain hose.
4. Close the isolating valve at the cold water inlet.
5. Remove the drain hose and replace the plug.



Fill, Flush and Drain – Solar Collectors

Filling the Solar Collectors:

1. Fill the storage tank as described on page 20.
2. Using a flat-bladed screwdriver, open the solar collector drain pipe ball valve.
3. Wait until water is relieved to waste through the solar collector drain pipe.
CAUTION: This water may be hot.
4. Using a flat-bladed screwdriver, close the solar collector drain pipe ball valve.
5. Using a flat-bladed screwdriver, open the solar return socket ball valve.

Draining the Solar Collectors:

1. Open a hot water tap and allow the water to run for at least five minutes. (This will assist to reduce the temperature of the water in the solar collectors).
2. Turn off the water heater as described on page 20.
3. Gently operate the easing lever on the Pressure & Temperature Relief (PTR) Valve to release the pressure in the water heater.
4. Using a flat-bladed screwdriver, close the solar return socket ball valve and open the solar collector drain pipe ball valve.
5. Loosen the DN15 compression fitting on the outlet of the pump.
6. Wait for the water to drain out of the solar collectors through the drain pipe and out of the solar flow pipe.
7. Retighten the DN15 compression fitting on the outlet of the pump.

8. Using a flat-bladed screwdriver, close the solar collector drain pipe ball valve and open the solar return socket ball valve.

Flushing the Solar Collectors:

It is recommended that flushing is carried out early in the morning before the sun starts to heat the collectors. Flushing the collectors later in the day can result in the discharge of very hot water or steam from the solar collector drain pipe.

1. Open a hot water tap and allow the water to run for at least five minutes.
2. Using a flat-bladed screwdriver, close the solar return socket ball valve.
3. Using a flat-bladed screwdriver, open the solar collector drain pipe ball valve.
4. Wait for the water to run clear from the solar collector drain pipe.
5. Using a flat-bladed screwdriver, close the solar collector drain pipe ball valve and open the solar return socket ball valve.



Commissioning

1. Filling the System:

Once all of the connections have been made, fill the water heater and solar collectors as described on pages 20 and 21.

Inspect all of the connections and pipework for leaks.

2. Turn on Power and Gas:

Plug in the solar controller and turn on the GPO.

For electric boosted models, turn on the power isolator.

For gas boosted models, turn on the gas isolator, plug in the power supply and turn on the GPO.

3. Remove Solar Module Cover:

Remove the Solar Module Cover as described on page 10.

4. Check Temperature Sensors:

To change the parameter shown on the controller display, briefly press the "+" button. Pressing the "+" button for more than 2 seconds may cause the controller to go into adjustment mode. This is indicated by "SET" on the display. As the solar controller has been factory pre-set, do not adjust any parameters. Wait about 15 seconds and the controller will revert to display mode.

Press the "+" button several times until "COL" is displayed. The temperature indicated is the collector sensor temperature. It should be between ambient and 150°C.

Press the "+" button again. "TST" should be displayed. The temperature indicated is the lower tank sensor temperature. It should be between 0°C and 30°C if the tank has just been filled with water.

Press the "+" button again. "S3" or "TSTT" should be displayed. The temperature indicated is the upper tank sensor temperature. It also should be between 0°C and 30°C if the tank has just been filled with water.

If the temperatures indicated are outside of the ranges described, or the LED under the display is red instead of green, please contact Dux After Sales and Service.

5. Check Pump Operation:

If the conditions are suitable, the circulation pump will start. Normally this will occur if:

- the collector temperature is above 15°C, and
- the collector temperature is more than 10°C above the lower tank temperature.

If the circulation pump is running, one LED will be green and one LED will be yellow.

If the pump does not start when the conditions are suitable, or if one of the LEDs is red, please contact Dux After Sales and Service

6. Check Gas Booster Operation:

For gas boosted models, test the operation of the instantaneous gas water heater as described in its Installation Manual.

7. Replace Solar Module Cover:

Replace the Solar Module Cover as described on page 10.



System Maintenance

General:

Regular servicing will help to keep the water heater operating safely and efficiently.

Your water heater warranty is not conditional on completing the regular servicing recommended in this manual. The conditions applying to your water heater warranty are set out on page 28.

Six Month Service:

This service may be carried out by the owner.

1. Stand clear of the Pressure & Temperature Relief (PTR) Valve drain pipe outlet.
2. Open the PTR Valve for approximately 10 seconds by lifting the easing lever on the valve. Confirm water discharges to waste through the drain pipe.
3. Lower the easing lever gently and check it closes correctly.
4. Repeat the above process for the expansion control valve (if installed).
5. Clean the solar collector surface as described on page 24.

Other than this, personally inspecting or servicing any part of the water heater is not recommended.

Two Year Service (Gas Boosted Models):

The instantaneous gas water heater should be serviced every two years.

Please refer to the instantaneous gas water heater Owner's Guide for further information.



System Maintenance

Five Year Service:

This service should only be carried out by a licensed tradesperson. We recommend your local Dux Service Agent.

In locations where the water has Total Dissolved Solids (TDS) exceeding 600 mg/L, this service is recommended every 3 years.

This service should include the following:

- Replace the PTR Valve.
- Replace the anode. Ensure the new anode is suitable for the water conditions. Please refer to page 9 for further information.
- Inspect and flush the expansion control valve (if installed).
- Drain and flush the water heater as described on page 20.
- Flush the solar collectors as described on page 21.
- Inspect the condition of any electrical conduit and the water heater electrical covers. Replace any damaged components.
- Inspect the insulation on the solar flow and return pipes. Repair or replace any damaged insulation.
- Clean the solar collector surface.

Replacement parts are available from your local Dux supplier.

Solar Collectors:

The efficiency of the solar collectors will be reduced if the glass becomes dirty.

It is recommended that cleaning is carried out early in the morning before the sun starts to heat the collectors. The easiest way to clean the glass is by washing it down with water from a hose.

If a more thorough clean is required, safe access will be required to the collectors. This will usually require the use of a safety harness by personnel trained in working safely at heights. The collector glass can then be cleaned with water, a soft cloth and a domestic glass cleaner if required.

Do not attempt to replace broken collector glass. It is not possible to replace the glass in a flat plate collector. It may be possible to replace the glass in an evacuated tube collector. Please contact Dux After Sales and Service for further information and advice.



Non-Continuous Operation

Power Failure or Disconnection:

WARNING: Do not turn off the power supply to the solar controller. The solar controller is designed to be continuously powered.

If the temperature of the water in the solar collectors approaches zero, the solar controller will turn on the pump for a short period to feed warm water into the collectors.

This function is provided to reduce the chance of water freezing in the collectors and causing damage.

If the power supply is interrupted, the solar controller will be unable to pump warm water into the solar collectors.

If the ambient temperature drops below 5°C, it is possible that the water in the solar collectors will freeze and damage the collectors or pipework.

If the power supply fails or the circuit to the solar controller has to be turned off, and the ambient temperature is expected to drop below 5°C, the solar collectors and pipework should be drained as described on page 21.

Not Using Hot Water?

WARNING: If the water heater is not used for two weeks or more, a quantity of hydrogen (which is highly flammable) may accumulate inside the water heater tank.

To dissipate this gas safely it is recommended that a hot tap be turned on for several minutes at a sink, basin or bath, but not a dishwasher, clothes washer or other appliance.

During this procedure there must be no smoking, open flame or any other electrical appliance operating nearby. If hydrogen is discharged through the tap it will probably make a sound similar to air escaping.



Considering a Service Call?

It is recommended that the following points be reviewed before making a service call:

No Hot Water:

If there is no hot water, both the solar collectors and boost systems are not working. Please refer to "No Solar Energy Gain" and "Booster not Operating" below.

High Energy Bills or Insufficient Hot Water:

These maybe caused by a number of factors:

- Less than expected quantities of solar heated water. Please refer to "Poor Solar Energy Gain" below.
- Underestimated hot water usage of showers, washing machines and dishwashers. Review these appliances to determine if the daily usage is greater than the capability of the water heater. If necessary check the shower flow rates with a bucket, measuring the amount of water used over a period of time. If it is not possible to adjust water usage patterns, an inexpensive flow control valve can easily be fitted to the shower outlet.
- Storage tank not large enough. Sizing details are available from your Dux supplier.

- Leaking hot water pipe or dripping hot water tap. A small leak can waste a large quantity of hot water. Replace faulty tap washers and arrange for your plumber to rectify any leaking pipe work.
- Pressure & Temperature Relief Valve discharging too much water. Please refer to "Relief Valve Discharging Water" below.

Relief Valve Discharging Water:

Continuous Trickle:

A continuous trickle of water from the Pressure & Temperature Relief (PTR) Valve is most likely due to a build-up of foreign matter. In this case, try gently raising the easing lever on the PTR Valve for a few seconds, then release gently. This may dislodge a small particle of foreign matter and rectify the fault.

Water Discharge During Heating:

It is not unusual for a small quantity of water to discharge during heating of water in the storage tank. The amount of discharge will depend on hot water usage and the size of the storage tank.

As a guide, it will discharge about 2% of the volume of the water heated.

Continuous Discharge of Water:

Continuous discharge of water from the PTR Valve may indicate a problem with the water heater. Turn off the water heater and contact Dux After Sales and Service.

No Solar Energy Gain:

Water is pumped through the solar collectors when conditions are measured as suitable by the solar controller.



Considering a Service Call?

No solar energy gain is most likely caused by a lack of power to the solar controller. Check the solar controller is plugged in and the switched socket outlet is turned on.

Poor Solar Energy Gain:

Poor solar energy gain can be caused by a number of factors:

- During the winter months or when it is cloudy, there may not be enough solar energy gain available to heat the required quantity of water.
- The collectors may be shaded by trees or other structures. A similar effect can be caused by dirty collectors. Try trimming the trees and cleaning the collectors.
- Too few solar collectors. Solar collector sizing details are available from your Dux supplier.
- Air trapped in the solar collectors. Try bleeding the collectors as described on page 21.

Solar Pump Running at Night:

If the temperature of the water in the solar collectors approaches zero, the solar controller will turn on the pump for a short period to feed warm water into the collectors.

This function is provided to reduce the chance of water freezing in the collectors and causing damage.

Booster not Operating:

Electric Boosted Models:

Electric boosted models use an electric element installed in the storage tank of the water heater to boost the water temperature as required.

Ensure the power supply circuit breaker has not "tripped". If the water heater is on a timed tariff such as controlled load or off-peak, ensure this is operating correctly.

Gas Boosted Models:

Gas boosted models use an instantaneous gas water heater installed between the storage tank of the water heater and the hot water outlets to boost the water temperature as required.

Please refer to the instantaneous gas water heater Owner's Guide for troubleshooting information.

If after checking the above points, the problem has not been identified, please contact Dux After Sales and Service.



Warranty

Introduction:

This warranty information applies to the storage tank and the components supplied with it including the solar controller, circulating pump and accessories, and to the solar collectors.

Gas boosted solar water heaters utilise an instantaneous gas water heater. The instantaneous gas water heater is warranted separately. Please refer to the warranty section of the Owner's Guide supplied with the instantaneous gas water heater.

Warranty Summary:

All components of the water heater are covered by a 1 year parts and labour warranty. The storage tank (excluding the solar controller, circulating pump and accessories) is covered for up to a further 6 years against failure. The solar collectors are covered for up to a further 4 years against failure. See below for details and conditions.

The benefits provided to you by this warranty are in addition to any other rights and remedies available to you under the Australian Consumer Law.

One Year Parts and Labour Warranty:

Dux Manufacturing Limited ("Dux") warrants against defects in the water heater arising from faulty materials or workmanship for a period of one year. Conditions apply (see below).

During this period Dux will repair or replace any failed component or where necessary, in the absolute discretion of Dux, replace the water heater, free of charge including reasonable labour costs incurred during normal business working hours.

Extended Tank Failure Warranty:

Dux also warrants against failure of the storage tank (excluding the solar controller, circulating pump and accessories) for a further period depending on the application:

- Six years for single family dwellings.
- Two years for all other applications.

Conditions apply (see below).

During this period Dux will provide a replacement water heater free of charge. Installation and other labour costs are the responsibility of the owner.

Extended Solar Collectors Failure Warranty:

Dux also warrants against failure of the solar collectors for a further period depending on the application:

- Four years for single family dwellings.
- Two years for all other applications.

Conditions apply (see below).

During this period Dux will provide a replacement solar collector(s) free of charge. Installation and other labour costs are the responsibility of the owner.



Warranty

Warranty Conditions:

The warranty only applies to the water heater itself and the components supplied with the water heater by Dux. The warranty does not cover components supplied by others, including the installer.

The extended tank failure warranty does not apply if the water heater has been connected to a water supply where the Total Dissolved Solids content is greater than 2500 mg/L.

The Extended Solar Collectors Failure Warranty does not apply in areas where the Saturation Index is below -1.0 or above +0.80.

These warranties do not apply to defects that are a result of, without limitation, the following:

- failure to install the water heater in accordance with the installation instructions or statutory requirements;
- faulty plumbing or water supply including excessive pressure;
- faulty power supply;
- use of the water heater in a manner contrary to this manual or other instructions provided by Dux;
- alterations or repair of the water heater other than by an accredited and licensed service agent or technician;
- accidental damage or abuse.

If the water heater is installed in a position that does not comply with the installation instructions or statutory requirements, then this warranty does not cover major dismantling or removal of cupboards, doors, walls or special equipment and/or excessive labour, at the determination of Dux, to make the water heater accessible for repair or replacement.

Where the Dux water heater is located outside the metropolitan area of a capital city and is more than 100 km from a Dux office or Dux agent, the owner will be responsible under the warranty for paying the costs of transporting the water heater and/or any component in the water heater to and from an approved Dux agent or Dux office (including any insurance associated with that transport), or paying the travelling time of an approved Dux agent to and from the owner's premises.

Commencement of Warranty:

The warranty period commences from the date of installation of the water heater. Where proof of the date of installation is not available, the warranty period commences on the date of manufacture of the water heater. This is shown on the compliance plate on the outside of the water heater.

The replacement of the water heater, or a component of it, under this warranty does not change the warranty commencement date. The original commencement date continues to apply.



Warranty

Consequential Losses:

Claims for damage to furniture, carpets, walls, foundations or any other consequential loss either directly or indirectly due to defects of any kind in the water heater will only be met by Dux where the damage could be considered reasonably foreseeable and the water heater was installed in accordance with the installation instructions and all relevant statutory requirements.

The Australian Consumer Law ("ACL"):

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

If Dux fails to meet a guarantee under the ACL, your remedy for such failure may be limited to any one or more of the following:

- replacement of the water heater;
- repair of the water heater;
- refunding the cost of the water heater;
- payment of the reasonable costs of having the water heater repaired;
- payment in respect of the reduced value of the water heater.

How to Make a Warranty Claim:

Warranty claims can be placed by completing the following steps:

- Contact Dux on one of the numbers listed below.
- Select the "Service" option followed by the "Hot Water" option.
- Provide the serial number and model number of the water heater. This can be found on the compliance plate on the outside of the water heater.
- Provide your full name, address and contact number.
- Provide proof of date of installation for warranty to commence from that date, rather than from the date of manufacture. See Commencement of Warranty on page 29.

Please note, if the defect or fault is not covered by the warranty or guarantee, you will be responsible for the costs incurred by the service agent or technician.

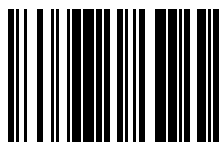
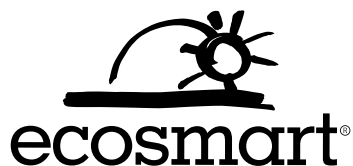
Contact Details:

Dux Manufacturing Limited
Lackey Road
Moss Vale, NSW, 2577
Australia

1300 365 115 (Australia)

0800 729 389 (New Zealand)

Email: duxaftersales@dux.com.au



H3165

Please Register Your Water Heater



Please take a moment to fill out your details for warranty registration at:

www.dux.com.au/warranty

or use your smartphone to scan this code:



This will ensure all your current details are registered with us for prompt warranty service if required.

To view our privacy policy please visit <http://www.dux.com.au/p/privacy>

Date of Installation:

Installer's Name:

Installer's Company:

Installer's Licence No:

Installer's Signature:

Serial Number