Installer's Guide

IMPORTANT INFORMATION
Read This Document First
On completion, sign and leave with owner

sunpro®
(Gas Post-Boost) Solar Water Heater

Models: D2FN26, D2FL26,
D3FN26, D3FL26,
D4FN26, D4FL26
D2FN20, D2FL20

Installation by a licensed tradesperson and in accordance with:

- AS/NZS 3500.4 "National Plumbing & Drainage Code Hot Water Supply Systems – Acceptable Solutions"
- AS5601/AG601 Gas Installation
- Adherence to local authority and OH&S regulations
- Victorian PIC Requirements

For advice, repairs and service, call:

1300 365 115 (Australia)
0800 729 389 (New Zealand)

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

Specifications and materials may change without notice
Effective for Sunpro gas post-boosted solar water heaters manufactured and sold after 1st Sept 2006.

H4110 4110 Rev. F

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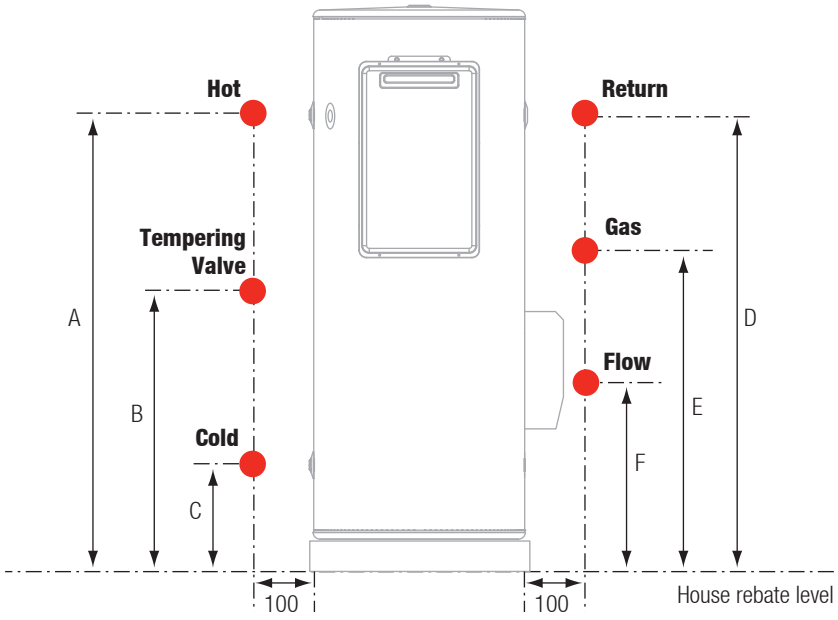
Rough In Diagram



● Approximate location of pipework. A tolerance of 25mm is acceptable to dimensions shown in table below.

Note: Ensure pipes protrude horizontally from wall, and leave enough length of pipe to allow easy connections.

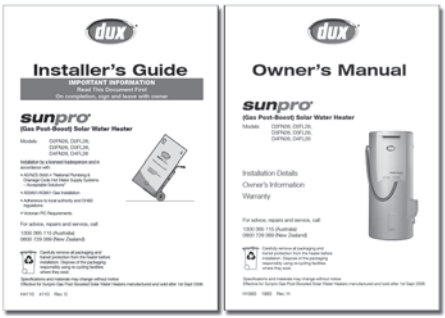
		250 L	315 L	400 L
	Tank Height	1444	1754	1703
	Overall diameter	617	617	705
A	Hot water outlet	1230	1300	1450
B	Tempered water outlet (mid-way between A and C)	505	540	615
C	Cold water inlet	220	220	220
D	Return from solar collectors	1231	1541	1466
E	Gas entry	770	820	820
F	Flow to solar collectors	600	600	600

Installer's Guide

Read This Document First

Step 1

- This *Installer's Guide* and the *Owner's Manual* (also included in the product carton) contain important information about installation and use of this water heater.



Note: For an easier installation, please read this document before you begin.

Safety Audit

Step 2

- Arrive at site, park vehicle as close as allowable to installation, and conduct a safety audit, also known as Work Method Statements (WMS) or Job Site Analysis (JSA).
- Prior to working at heights, it is the responsibility of the installer to ensure that all practices are compliant with any relevant OH&S legislation.

Note: Do not commence a job where the risks cannot be controlled.

- Refer to local working at heights regulations. **NSW Ref: "Safe Work on Roofs – Part 2 Residential" Code of Practice 2004, Work Cover NSW.**

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Removal of Existing Tank

Step 3

- The existing tank (if applicable) should be drained and removed in a responsible manner.

Note: Do not drain on to grass or garden beds.

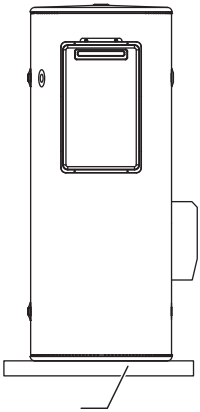
Placement of New Tank

Step 4

- Safely position new storage tank on a level surface in accordance with all plumbing and building regulations.

Note: We recommend a plinth be installed under the water heater where the water heater is subjected to wet conditions.

- Refer to the section called "**Rough In Diagram**" on page 1 for detailed information on position of plumbing.



Install a plinth under the water heater where the water heater is subjected to wet conditions

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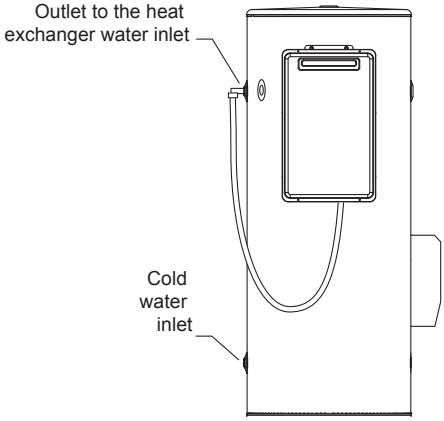
Water Connections

Step 5

- Using correct plumbing methods, connect the cold water pipe to the storage tank.
- According to local regulations and the plumbing code, fit any and all valves that are necessary e.g. tempering valves, pressure limiting valves, line strainer, duo valves, cold water expansion valves etc.
- We recommend the use of new valves for all Installation. Refer to plumbing code and/or local requirements.
- Connect the supplied hose from the top left tank outlet to the heat exchanger water inlet.



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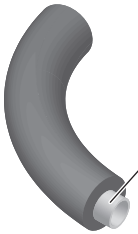
Pipes – Important Points

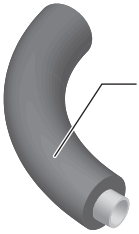
Step 6

Critical: Due to the high temperature imposed by solar heated water, all solar system pipes and fittings must be DR brass and copper, including collector compression fittings (as supplied). No plastic pipes or fittings.



Pipes must be DR brass and copper. Refer to AS/NZS 3500.4.

- Flow and return lines must be installed as direct as possible between tank and collector.
- Pipes **must be fully insulated** with UV stabilized insulation suitable for solar working temperatures. We recommend Armaflex DuoSolar / Solar insulation, minimum 13mm thick (refer to local regulations).



Pipes must be fully insulated with UV stabilized insulation suitable for solar working temperatures, minimum 13mm thick (refer to local regulations)

Note: Warranty will be void if this minimum insulation requirement is not used.

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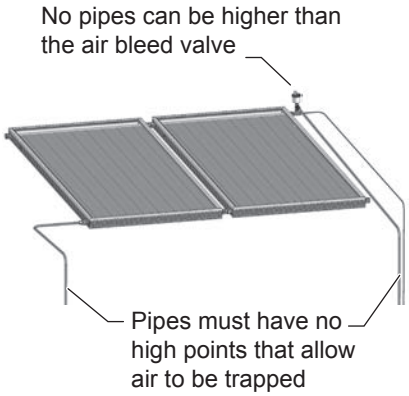
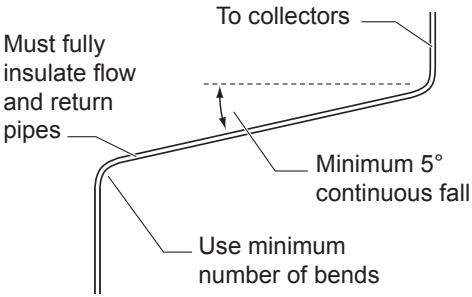
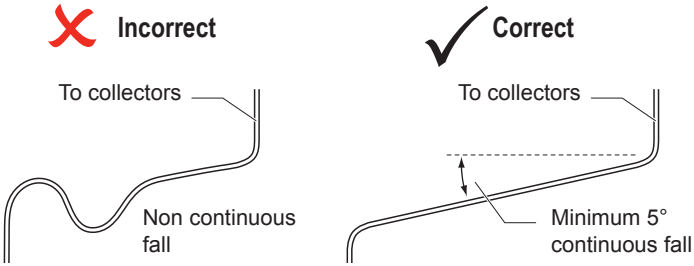
- It is **critical** to stop any chance of an air lock developing, so ensure that:
  - no pipework is higher than the automatic air vent valve
  - flow and return pipes from the solar collectors to the water storage tank have a minimum of 5° continuous fall
  - pipes have no high points that allow air to be trapped
  - the minimum number of bends in the pipes are used.
- Flow and return lines should be neatly installed and hidden inside the roof cavity if possible.
- Take care when running flow and return lines through the roof, cladding and the eaves.

Note: Where roof and the eaves are made from asbestos, specialised handling and advice is necessary.





Ensure flow and return pipes from the solar collectors to the water storage tank have a minimum of 5° continuous fall



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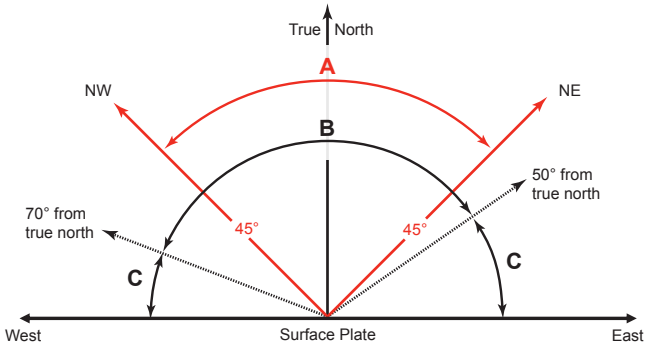
Collectors – Alignment and Inclination

Step 7

Solar Collector Alignment

- For the most efficient solar gain, the collectors must be aligned ±45° from true north (i.e. north west to north east). See **Collector Orientation Compass** below.

Collector Orientation Compass



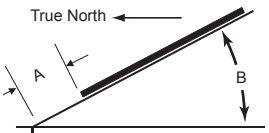
A. Dux preferred range
B. Industry accepted range
C. If orientations A or B are not practical, an additional collector can be installed at the home owner's discretion in range C (not required north of Tropic of Capricorn)

Note: When establishing the correct Collector Orientation, please account for the Magnetic Declination of your geographic location

Solar Collector Inclination

- For the most efficient solar gain, the collectors must be inclined within 10° to 45° from horizontal. See **Collector Inclination Guide** right.

Collector Inclination Guide



A = 500mm, or greater if roof allows
B = Between 10° and 45°

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Collectors – Important Points

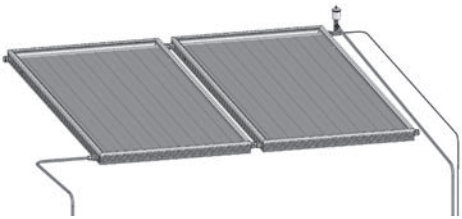
Step 8

- Inspect fittings after collectors are pressurized with water.

Critical: Fittings must be as tight as possible.

Warning: Only pressurize the the collectors for inspection and de-pressurize them immediately after inspection.

Critical: Do not leave collectors pressurised for longer than 24 hours.



- To prevent damage, collectors should be left pressurised **only** when connected to the storage tank with appropriate pressure relief valves.
- Collectors can be located a maximum of 20 metres (with minimal bends) from the storage tank if pipe layout is simple.

Note: For more energy efficiency, locate the collectors as close as possible to the tank

- This system is suitable for 2 storey homes.

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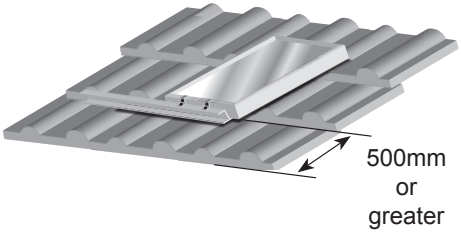
Collectors – Attaching to Roof

Step 9

For Both Metal and Tiled Roofs

- Locate the lower mounting rail a minimum of 500mm distance from the gutter, or greater if roof allows.

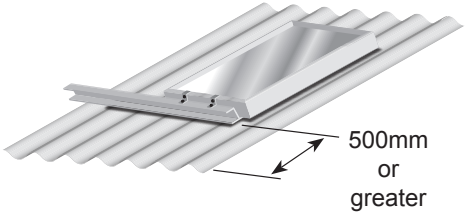


Note: Ensure that the rail is parallel with the gutter.

Step 10

For Metal Roofs Only

- Fix roofing screws through the mounting straps on both sides, using rubber grommets to prevent corrosion.



Note: A minimum of 3 roofing screws of 40mm length must be used to fix the collector strap to the truss.

- Ensure that the rail is parallel with the gutter.

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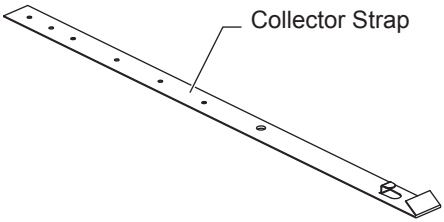
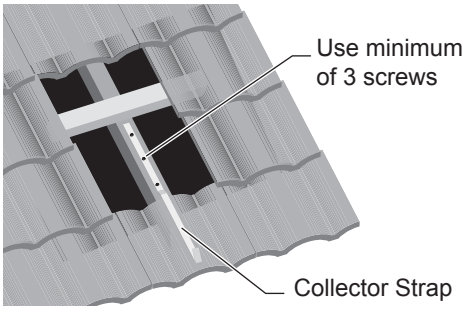
For Tiled Roofs Only

- Carefully remove a roof tile and locate the nearest roof truss.
- Attach the first (2 per mounting rail) stainless steel collector strap to the mounting rail.
- Shape the collector strap over the tile and position over the roof truss.



Note: A minimum of 3 roofing screws of 40mm length must be used to fix the collector strap to the truss.



- Ensure collector strap is located on truss vertically.
- Repeat this process for the collector strap at the other end of the mounting rail.

Step 11

- Once the bottom rail has been secured, the collector can now be lifted on to the roof.

Note: Ensure this is done with full consideration to OH&S regulations. Care should be taken.

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Collectors – Attaching Fittings

Step 12

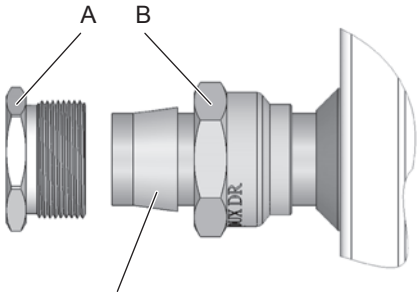
All connections must be brass and all pipe work must be copper

- Ensure fitting is fully engaged on to the header pipe. This is very important for correct connection.
- To ensure leak proof installation, hold fitting A (see illustration in margin) while tightening nut B to prevent twisting the header pipe.

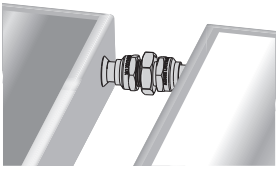
Critical: Do not use multi grips or similar tool, as you will damage the brass fittings. Ensure you use the correct size spanner.

Critical: The fitting must be as tight as possible on the barrel union to prevent the fitting coming loose.

Hold fitting A while tightening nut B to prevent twisting the header pipe



Ensure the brass conetite compression fitting is installed in the correct direction



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Step 13

- Secure the collectors to the mounting rail with the Z brackets, screws, nuts and bolts provided with the water heater.

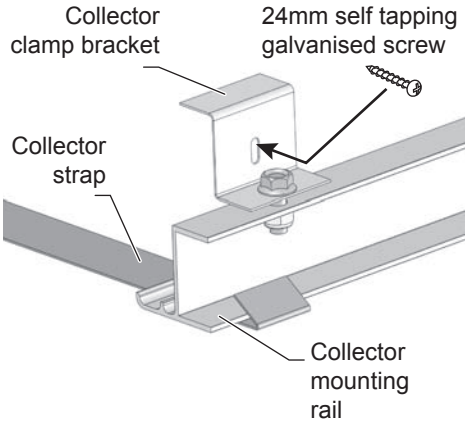
Step 14

- Repeat the process for the second collector.

Note: Ensure this is done with full consideration to OH&S regulations. Care should be taken.

Step 15

- Now position the top mounting rail and repeat the above steps for that rail.
- Join the top connections with the brass compression fittings supplied.



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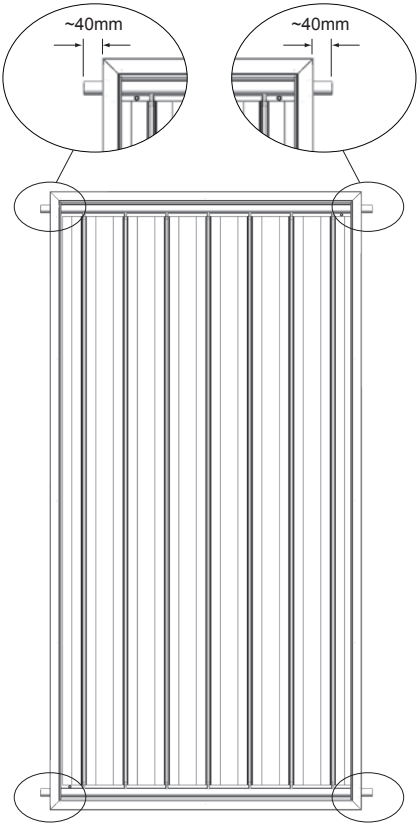
Step 16

- Connect collector flow and return pipes to the collectors.
- Ensure that you connect the solar flow (cold) and solar return (hot) pipes to the correct connections:
  - the solar flow (cold) pipe connects to the **bottom** of the collectors
  - the solar return (hot) pipe connects to the **top** of the collectors, diagonally opposite to the solar cold pipe connection.
- We suggest when you install pipes through roof, that you consider colour coding the pipe ends to show flow and return.

Critical: During connection, the header pipe can move in the collectors. It is critical that the header pipe is centred to provide about 40mm of tube on both sides of the collector.



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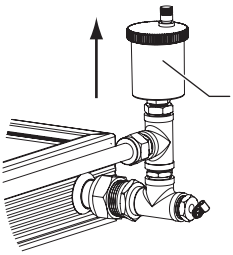
4 Way Union Assembly

Step 17

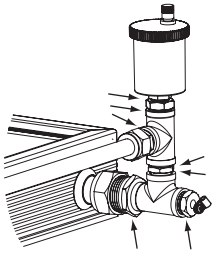
- Using correct plumbing methods, install the 4 Way Union assembly and air bleed valve at the **highest point in the system**, at the top of the collector diagonally opposite the solar collector inlet pipe.
- The air bleed valve **must stand vertically** straight towards the sky.



Valve must be vertical and at highest point in system

Note: If installed in top left/ bottom right of collector, then T should be reversed.

- When fitting the 4 Way Union assembly, we recommend Loctite 577 Thread sealant and/or a good quality pink teflon tape to secure the air bleed valve. Tighten by hand. **Do not use spanner**.



Use Loctite 577 thread sealant or pink teflon tape to seal all threads

Anti-Frost Valve

Step 18

- The areas in gray in the map on the next page may be vulnerable to frost.
- In these areas, you **must** install an anti-frost valve.

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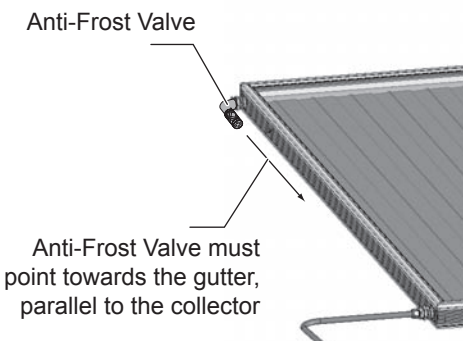
- However, **TWO** anti-frost valves must be installed if you live in alpine areas or areas subject to extreme frost, such as the ACT and Snowy Mountain regions.
- The anti-frost valve comes in kit form and must be ordered seperately.
- Connect the anti-frost valve to the top collector connection, on the opposite collector to where the thermowell/air bleed valve is installed.
- Ensure the valve is pointing down the collector towards the gutter, parallel to the collector.



Frost Protection Installation Map

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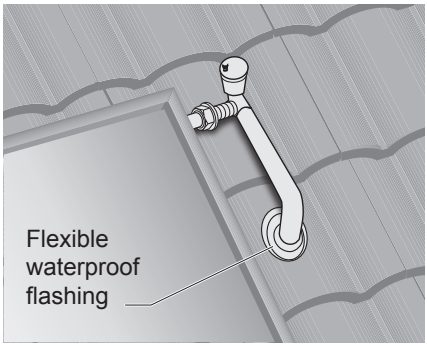
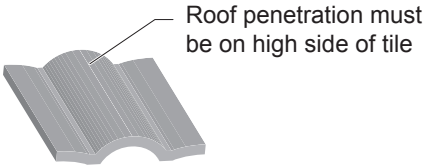
Flashing

Step 19

- As per local authority regulations, use an approved method of flashing on the flow and return lines, e.g. Dektite or lead collars.
- Where flow and return lines penetrate the roof surface, the penetration must occur on the high side of the roof profile, not in the valley.
- Seal the roof penetration with a flexible waterproof flashing. We recommend the use of the appropriate Dektite brand solar flashing (available for either tile or steel roofs).





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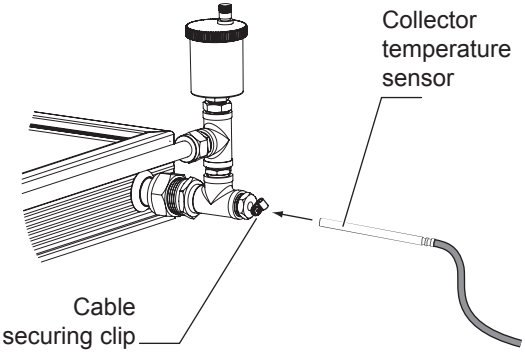
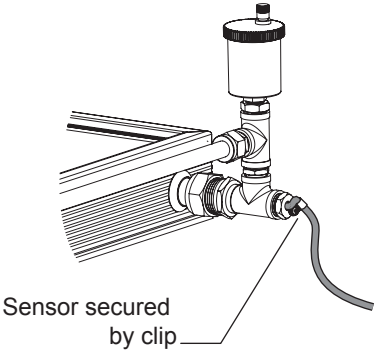
Temperature Sensor

Step 20

- Insert the end of the collector temperature sensor (supplied in collector rail kit) into the sensor dry well.
- The sensor must be **fully** inserted and touch the end of the thermowell.
- Firmly secure the sensor using the cable securing clip.





Warning: Install the sensor cable such that it does not touch the roofing material surface.

Warning: Conceal all temperature sensor cables in the roof cavity so that they are not exposed to sunlight or heat.

Warning: The collector sensor cable is a silicon rubber that may require additional conduit protection in extreme UV radiation conditions.

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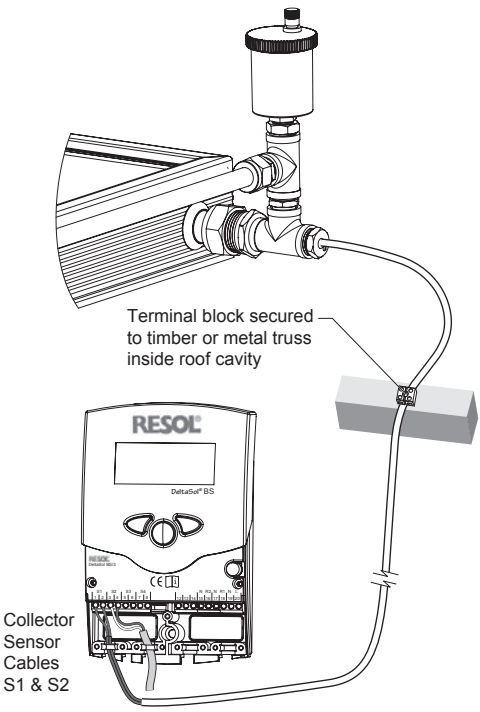
Step 21

- Connect collector sensor cable to terminal block and secure to the timber or metal truss inside the roof cavity.
- Connect extension collector sensor cable to junction block.
- Do **not** run collector sensor cable in contact with the copper pipes as it may melt and cause signal interference.
- Connect collector sensor cables as shown in diagram.
- There is no polarity for which collector sensor cable goes into which terminal block connection.
- Ensure terminal block is covered, ideally installed within the roof space and secured to a truss. **Do not leave exposed.**
- If the terminal block cannot be located within the roof space, it must be enclosed within a waterproof junction box.



Warning: If sensor cable is on top of a steel roof, the heat produced from the roof may cause the sensor wire to melt and cause signal interference or failure.

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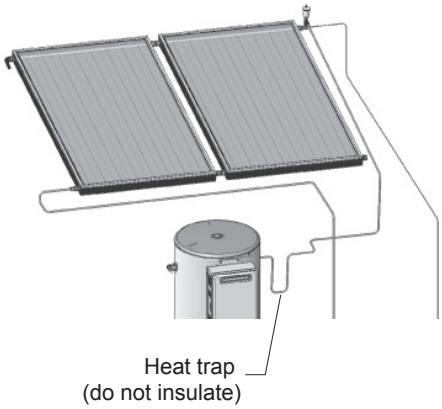
Heat Trap/Non Return Valve

Step 22

- The hot water return pipe from the solar collector must run horizontally to the tank, to allow for a heat trap to be installed where the pipe enters the tank.
- The heat trap prevents heat loss due to thermo-siphoning.

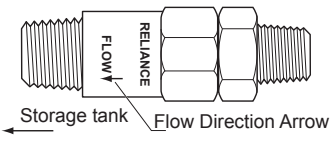


Warning: This uninsulated pipe is very hot. Please Do Not Touch.

- Flow and return lines should be neatly installed. Care needs to be taken when running flow and return lines through the eaves.

Note: Where eaves are made from asbestos, specialised handling and advice is necessary.

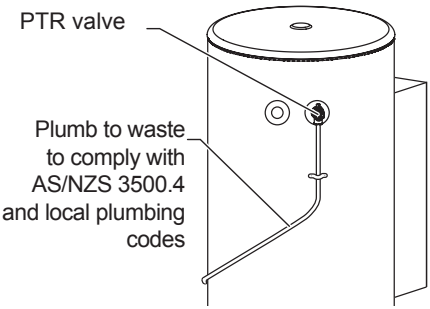
- If a heat trap is not possible (e.g. due to lack of space), a non-retun valve can be used instead of a heat trap. Dux recommends a high temperature Reliance brand non return valve.
- If using a non return valve, ensure that it is installed so that the flow direction arrow faces the storage tank.
- All pipe work must be insulated, but do **not** insulate the U bend section of the heat trap.



PTR Valve

Step 23

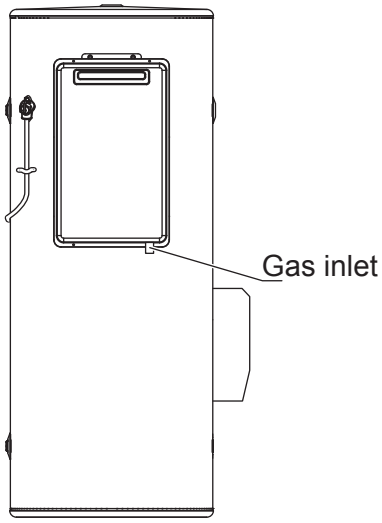
- Connect the PTR valve and plumb to waste to comply with AS/NZS 3500.4 and local plumbing codes.
- The pipe from the PTR valve **must**:
  - be easily seen
  - pose no risk of damage to the building or injury to persons.



Gas Connection

Step 24

- Pipe sizes should be in accordance with AS5601/AG601.
- Fit a union to the water heater gas inlet for easy connection and removal. The thread diameter is R¾"/20mm.
- Fit an AGA approved isolating gas cock in the supply line adjacent to the water heater gas connection.
- Ensure that the supply pipe and the gas pressure regulator (LPG or Natural Gas) has sufficient flow capacity for this and other appliances connected to the fitting line.
- For LPG appliances, ensure that gas cylinders are of sufficient size. The water heater alone will require a regulator of 4kg per hour capacity.



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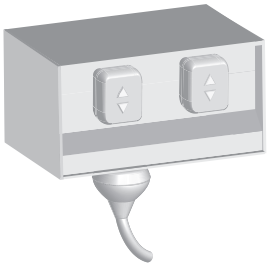
- Before connecting to the gas service, purge any debris or air. Venting of purged gas shall be an area free of sources of ignition.
- Close the isolating gas cock prior to connection of the appliance.
- After connection, check all joints for leaks with an approved leak tester.

GPO

Step 25

- Install a Weatherproof GPO for the system.
- This water heater is designed for connection to the following:
  1. Solar Pump Module – CONTINUOUS TARIFF
  2. Tank Boost – Off Peak, single phase 240V A.C. supply



Note: This water heater is also designed to allow the tank boost to be connected to continuous tariff to satisfy heavy daytime users of hot water that exceed the capacity of the off peak boost option.

Warning: Power cables should be routed away from any hot water pipes. If this is not practical, insulate the hot water pipes to avoid direct contact with the power cables.

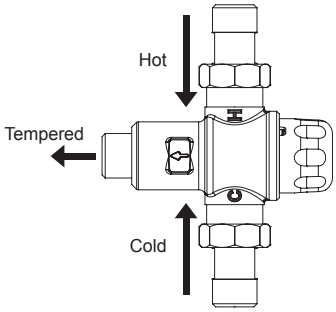
Installer's Guide

Tempering Valve

Step 26

- Fit the solar tempering valve that is included with this water heater.

Note: Any adjustment to the valve should be made according to the valve manufacturer's recommendations.



Testing the Gas

Step 27

Gas Fitter:

- Test operation by lighting the water heater. Check that the gas inlet and test point pressures comply with the Data Plate on the side of the gas water heater. If necessary, adjust accordingly by following the instructions under "Adjustments". Failure to accurately set the pressure can result in damage to the water heater, and automatically cancels the Manufacturer's Warranty.

  Note: Instruct owner in water heater operation before leaving.

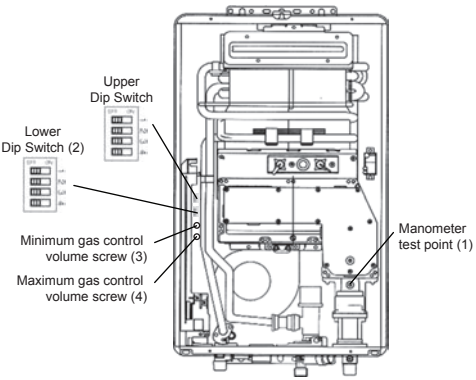
Installer's Guide

Burner Test Point Pressure

Step 28

Adjustments –
Burner Test Point Pressure

- The high and low test point pressures can be adjusted by doing the following:
  - Unscrew the four front cover retaining screws and remove the front cover.
  - Unscrew the blanking screw from the manometer test point (label 1) and connect the manometer to the test point.



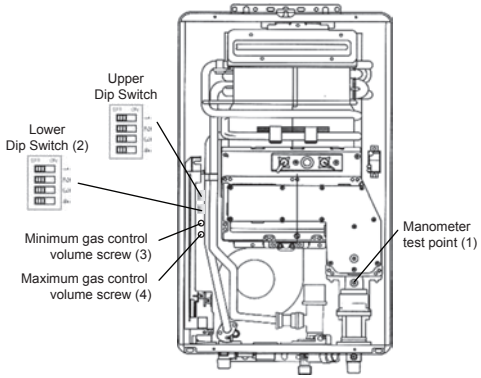
Setting the Low Burner Rate

Step 29

Setting the Low Burner Rate

- Set the Lower Dip Switch Block (label 2) for minimum output setting as shown below.

- Open a hot water outlet fully in order to start combustion
- Slowly rotate the minimum gas control volume screw (label 3) clockwise or anti-clockwise until the correct low rate test point pressure is achieved.



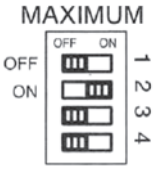
- Close the hot water outlet, then repeat the above sequence to confirm the setting.
- Close the hot water outlet.

Setting the High Burner Rate

Step 30

Setting the High Burner Rate

- Set the Lower Dip Switch Block (2) for maximum output setting as shown right.



- Open a hot water outlet fully in order to start combustion.
- Slowly rotate the maximum gas control volume screw (4) clockwise or anti-clockwise until the correct high rate test point pressure is achieved.
- Close the hot water outlet, then repeat the above sequence to confirm the setting.
- Close the hot water outlet.
- Return the Lower Dip Switch Block (2) to the OFF position as shown right.
- Disconnect the manometer from the test point and replace the blanking screw.
- Replace the front cover.

Commissioning Checklist

Tick	Task	See Step No.
☐	Installer's Guide read	1
☐	Safety audit conducted	2
☐	Existing tank removed	3
☐	Tank positioned on a level fireproof base in accordance with all plumbing and building regulations	4
☐	Cold and hot water pipes connected	5 – 6
☐	Collectors aligned and attached to roof	7 – 11
☐	Fittings attached to collectors	12 – 16
☐	4 Way Union Assembly fitted	17
☐	Anti Frost Valve fitted	18
☐	Roof penetration sealed with a flexible waterproof flashing	19
☐	Temperature sensor installed	20 – 21
☐	Heat Trap/Non Return Valve fitted	22
☐	PTR valve fitted	23
☐	Gas connected	24
☐	GPO installed	25
☐	Tempering valve fitted	26
☐	Testing the gas	27
☐	Adjusting Burner Test Point Pressure	28
☐	Setting the Low Burner Rate	29
☐	Setting the High Burner Rate	30

Installation Declaration

Location of Installation: .....

.....

.....

Tank Serial Number: ....

Tank Model Number: .....

Date Installed: .....

Dux Hot Water terms and conditions of warranty will apply only if the below is signed by the installer. This notifies Dux Hot Water that all the requirements of proper installation have been carried out by the installer in accordance with the Dux Hot Water Installation Commissioning Checklist and all other requirements noted in the Dux Hot Water Owner's Manual supplied with the solar water heater.

Upon completion of installation, this document **must** be given to the home owner in its entirety. When required by Dux Hot Water the home owner will provide this document as evidence that the installation of the solar water heater was carried out in accordance with Dux Hot Water installation requirements.

Declaration

I have installed the Dux Hot Water solar water heater in accordance with the above instructions. If the instructions have not been followed then I understand that the Dux Hot Water terms and conditions of warranty will be void.

Name: .....

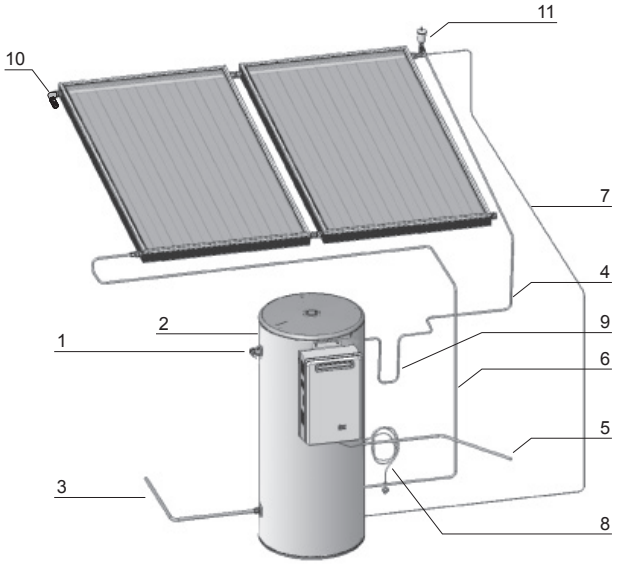
Signed: .....

Company: .....

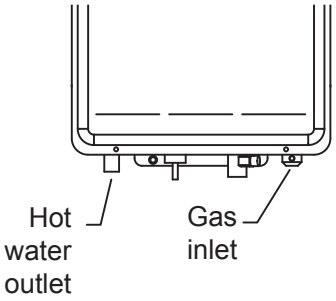
Plumber's Licence Number: .....

Date: .....

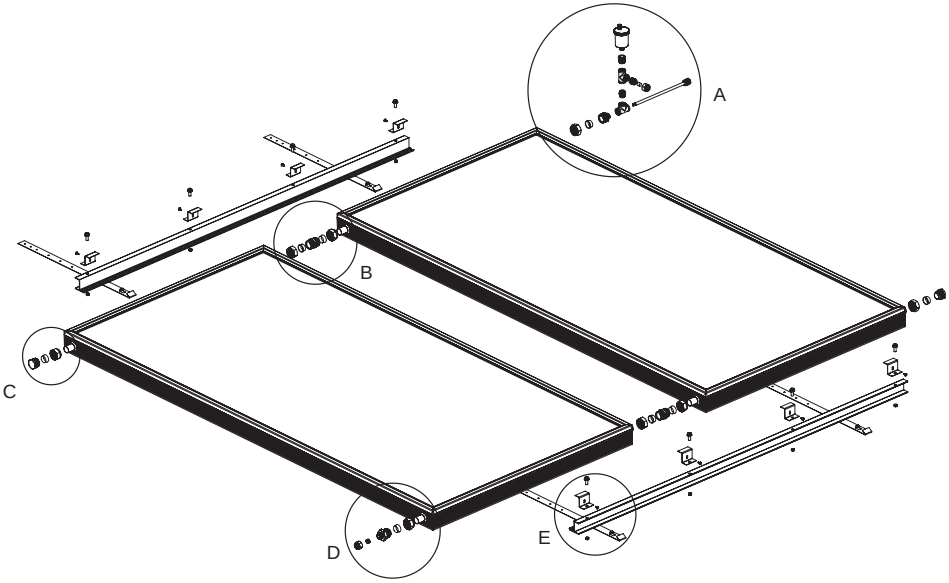
Components

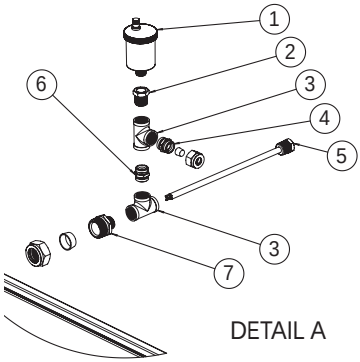


	System Components
1	PTR valve
2	Hot water outlet to house
3	Cold water inlet
4	Solar collector return
5	Gas inlet
6	Cold water outlet to solar collector
7	Solar collector sensor lead
8	Power supply cord
9	Heat trap (300mm recommended)
10	Anti-frost valve (if fitted)
11	Air bleed valve

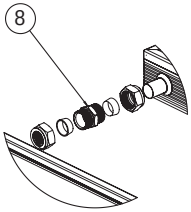


Components





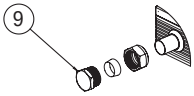
DETAIL A



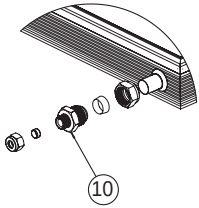
DETAIL B

System Components	
1	Air bleed valve
2	Bush
3	15mm Female Tee
4	Union 15mm M × 15mm C
5	Sensor Dry Well
6	Hex nipple
7	Union 1" C × ½" M
8	Union conetite

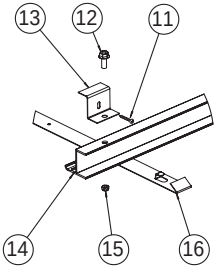
Components



DETAIL C
SCALE 1 : 10



DETAIL D



DETAIL E

System Components	
9	End Stop 1" conetite
10	Union 1" C × ½" C
11	24mm galvanised screw, self tapping
12	Bolt
13	Bracket - clamp
14	Solar heater rail
15	Nut
16	Collector strap

sunpro®

(Gas Post-Boost) Solar Water Heater

Models: D2FN26, D2FL26,
D3FN26, D3FL26,
D4FN26, D4FL26
D2FN20, D2FL20

For Advice, Repairs And Service, Call:

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0800 729 389 (New Zealand)

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