



48 Commercial Solar NPT200 collectors provide hot water to St. Mary's Villa – Concord.

COMMERCIAL SOLAR SOLUTIONS

THE RANGE

Rheem has been at the forefront of solar water heating design and manufacture for decades. This experience provides peace of mind when selecting large scale solar thermal systems.

Rheem has the largest range available to suit all design requirements and most correctly designed Rheem Commercial Solar systems are eligible to generate Small-scale Technology Certificates (STCs).



Rheem 610430 410L Storage tanks

Loline Direct Solar

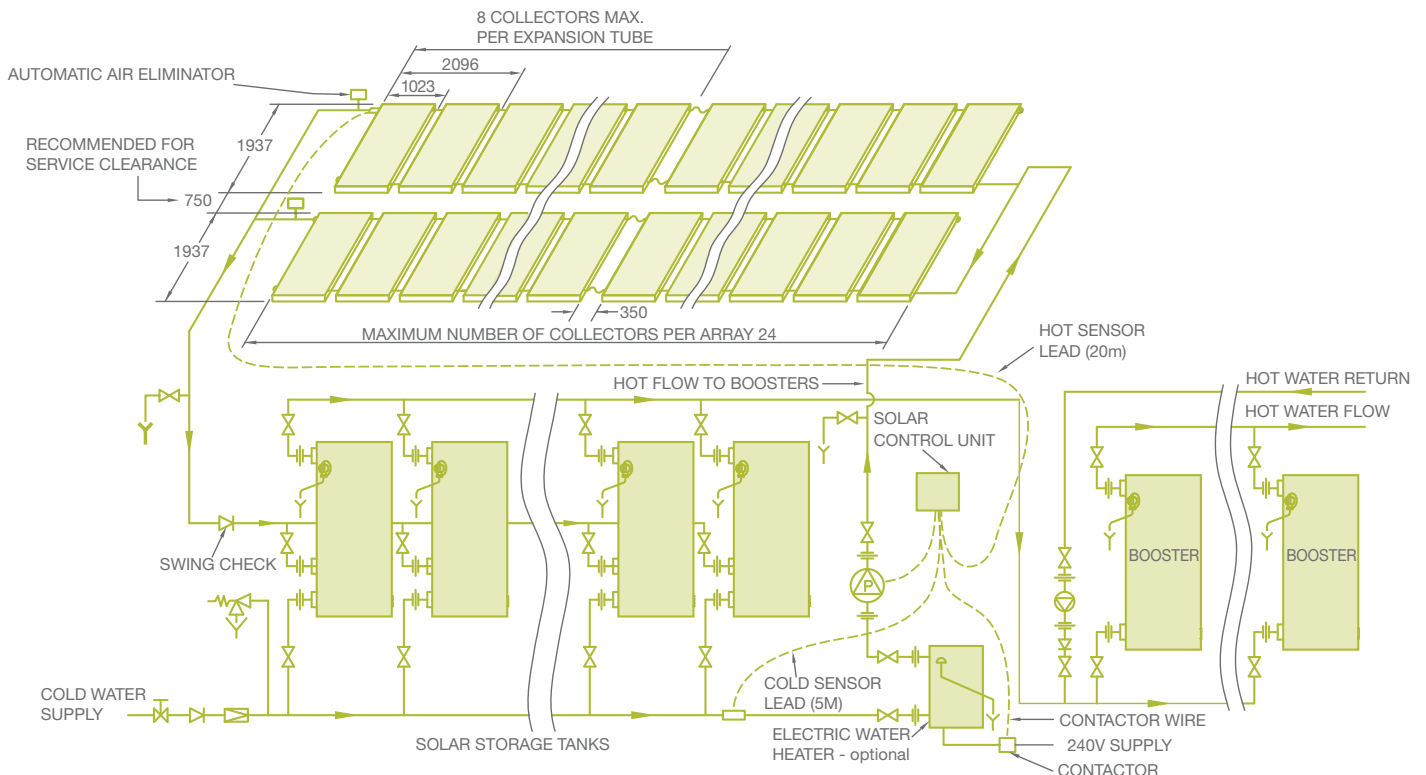
- Modular design provides flexibility
- NPT200 collector provides good performance in all locations
- 325, 410 or 1000 litre storage modules
- Provides partial protection against freeze

Premier Hiline®

- Close coupled collectors and stainless steel 300 litre tank
- S200 collector provides good performance in all locations
- Fully frost protected
- Better suited to poor water quality areas

Heat Store

- Split solar system employing drain back technology
- BT collector provides high efficiency
- 1,500 to 5,000 litre capacity
- In-tank or in-series boost
- Fully frost protected



LOLINE

Flexibility

Rheem Loline® provides flexibility in design. Storage tanks can be mounted at the same level or below the collectors to suit site requirements and tank/collector ratios can be closely matched to maximise system efficiency. Use Equa-Flow® manifolding to connect as many tanks as required in a variety of configurations.

Storage Modules

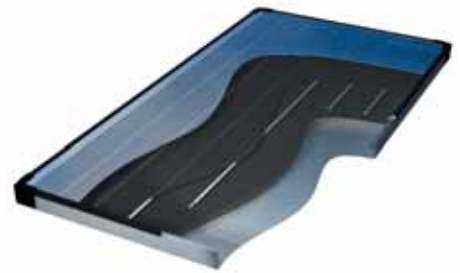
Select from 325 litre and 410 litre vitreous enamel storage tanks or 1000 litre stainless steel storage tanks where less footprint is required. Rheem commercial storage tanks are designed for heavy duty applications and are supplied with high temperature enamel and 50mm fittings as standard.

Freeze Protection

Freeze protection is provided by sensors which activate the solar circulator before freezing occurs in the collectors. Rheem Loline® is warranted against freeze damage in areas below 400m altitude.

Options

An electric water heater can be incorporated in the design to assist in freeze protection.



NPT200 COLLECTOR TECHNICAL DATA

Overall Dimensions H x W x D	mm	1941 x 1023 x 80
Aperture Area	m ²	1.86
Weight (empty /full)	kg	36/37
Fluid Capacity	Litres	1.5
Number of Risers		7
Absorber Material		Black Polyester Aluminium
Insulation		Polyester
Glazing		Tempered
Tray Material		Zincalume®

COMMERCIAL SOLAR SOLUTIONS

Typical Installation Commercial Solar Heat Store

HEAT STORE®

What Is Heat Store?

Rheem Heat Store® takes commercial solar thermal to the next stage.

Solar energy is collected and stored in the storage vessel and transfers the heat to the potable water as it passes through multi-start copper coils on demand.

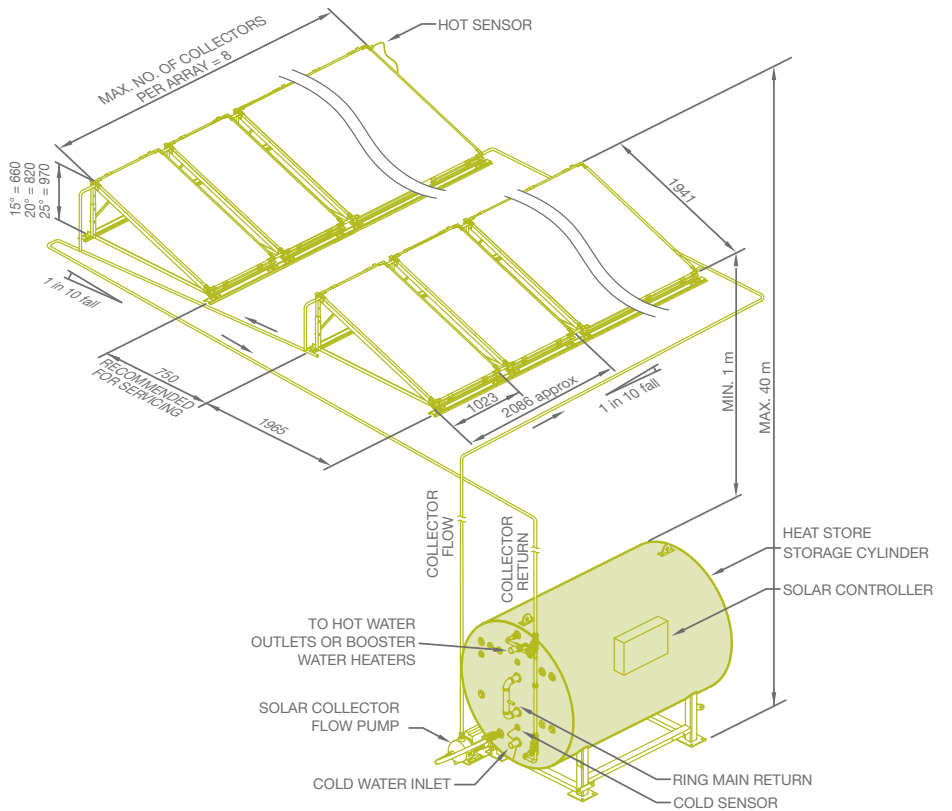
Drain Back Technology

Rheem Heat Store employs Drain Back technology. When heating is not required, the fluid in the collector automatically drains back to the storage vessel.

This control strategy provides many benefits. Highly efficient Rheem BT collectors can be used without the undesirable effects of boiling collector fluid on hot summer days. All of the energy captured is transferred to the storage vessel, further increasing system efficiency, and the system provides inherent frost protection of the solar collectors. The closed circuit protects the solar collectors from the effects of harsh water conditions.

Note:

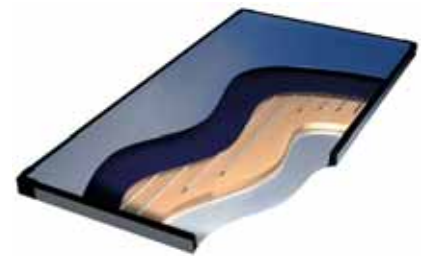
- To enable correct Drain Back function the base of the solar collectors must be located at least 1 metre above the top of the storage vessel
- The maximum height from the base of the storage vessel to the top of the collectors must not exceed 40 metres.



BT Collector

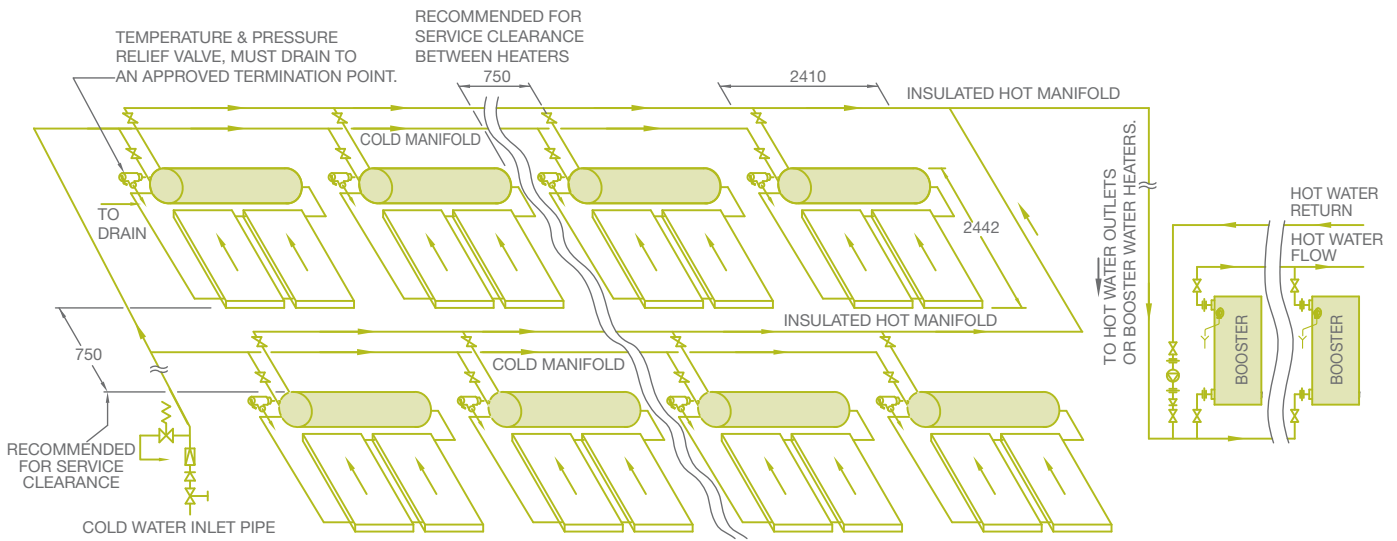
The BT collector is Rheem’s premium solar collector, designed to generate maximum solar performance in all climatic conditions. The collector comprises 13 riser tubes laser welded to a copper absorber panel to maximise heat transfer. The absorber is coated with a sputtered selective surface which enhances absorption and minimises emission. Glass wool insulation further enhances heat retention.

The collector is mounted in an aluminium tray for superior weather protection and tempered glass improves transmission efficiency.



BT collectors at Rheem Testing Facility – Rydalmere – Australia

BT COLLECTOR TECHNICAL DATA		
Overall Dimensions H x W x D	mm	1941 x 1023 x 80
Aperture Area	m ²	1.86
Weight (empty /full)	kg	31/33
Fluid Capacity	Litres	2.1
Number of Risers		13
Absorber Material		Sputtered Copper
Insulation		Glass Wool
Glazing		Matt-Matt
Tray Material		Aluminium



PREMIER HILINE®

Simplicity In Design

Rheem Premier Hiline® uses natural thermosiphon principles to efficiently transfer the energy from the collectors into the stainless steel storage tank. There is no need for circulators and primary flow and return lines. And the close coupled tank and collector saves plant room foot print. A closed circuit fluid transfers the energy via an internal heat exchanger into potable water stored in the tank.

Storage Tank

Premier Hiline® is supplied with a 300 litre stainless steel storage tank. This reduces the tank weight which reduces the structural load on the roof members. Choose to boost in tank with an electric heating unit or in series with specified Rheem commercial water heaters.

Freeze Protection

The system utilises propylene glycol as the heat transfer fluid which provides freeze protection to as low as -28°C.

S200 COLLECTOR TECHNICAL DATA

Overall Dimensions H x W x D	mm	1941 x 1023 x 80
Aperture Area	m ²	1.86
Weight (empty /full)	kg	48/52
Fluid Capacity	Litres	3.8
Number of Risers		33
Absorber Material		Black Polyester Steel
Insulation		Polyester
Glazing		Tempered
Tray Material		Zincalume®

COMMERCIAL SOLAR INSTALLATION TIPS

Correct design and installation is critical to achieving maximum performance from your commercial solar system. The following is a guide to aid in good design:

- Collectors should ideally face due north (in the southern hemisphere), however a system installed with the collectors facing as far as north-east and north-west will experience approximately 5% drop in operating efficiency
- Collectors should be inclined at approximately the latitude angle, however 15° either way is

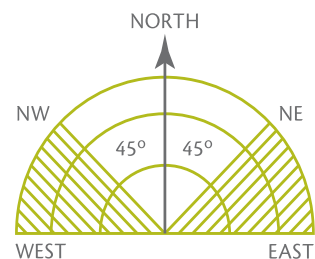
acceptable, but not less than 10° from the horizontal for Premier Hiline and Heat Store. For flat roof installations, Rheem can supply variable pitch frames suitable for either 1 or 2 collectors with pre-set pitch angles of 15, 20 and 25°

- Copper flow and return lines only MUST be used between the solar storage tanks and the collectors
- The copper pipe must be well insulated and sheathed if externally mounted. AS/NZS 3500.4 has guidelines specific to the zone

- See the relevant Pipe Size and Pump Selection Table for the correct specification of pipe size, pump selection and speed setting

Collector Positioning

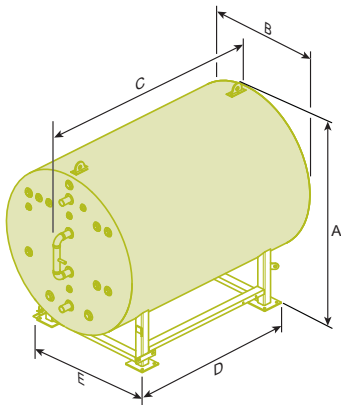
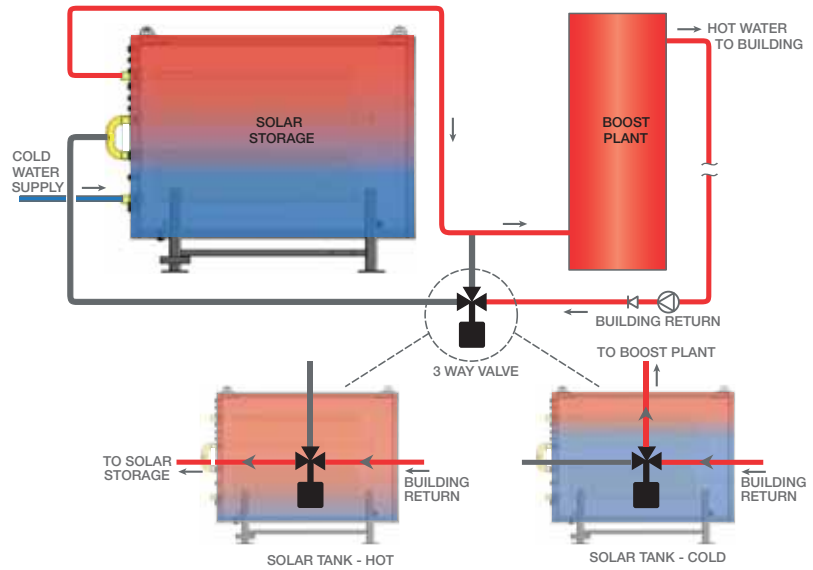
Recommended Aspect N.E. to N.W.



COMMERCIAL SOLAR SOLUTIONS

Solar Secondary Return

- Rheem Commercial Solar provides more user functionality than ever before, depending on the system. The available energy in the storage vessel can be monitored and building return water diverted through the upper portion of the solar storage when sufficient energy is available to maximise solar energy use.
- Solar Tank – Hot**
When there is sufficient energy in the solar storage tank the 3 way valve diverts building return water to the solar storage and this passes through the in-line boost plant without further heating required to maintain ring main temperature.
- Solar Tank – Cold**
When insufficient energy is detected in the solar storage tank, the building return water is diverted through the in-line boost plant to maintain ring main temperature.



HEAT STORE TECHNICAL DATA

Model		1500DBs	2200DBs	3500DBs	5000DBs
Nominal Storage Capacity	L	1500	2200	3500	5000
Peak Flow Rate	L/min	60	120	120	180
Pressure Drop	kPa	33	33	33	33
Dimensions					
Height	A mm	1422	1672	1966	2210
Diameter	B mm	1112	1362	1656	2016
Length	C mm	2150	2150	2150	2150
Base Length	D mm	1400	1400	1400	1400
Base Width	E mm	800	1050	1250	1500
Weight Empty	kg	720	950	1280	1670
Weight Full	kg	2135	3160	4630	6770
Inlet/Outlet Connections (DHW)	DN	32	50	50	80
ECV Setting ⁶	kPa	850	850	850	850
Water Supply Pressure					
Max (potable water)	kPa	680	680	680	680
Min (potable water)	kPa	140	140	140	140
Relief Valve Setting (non potable water)	kPa	90	90	90	90
Number of BT Solar Collectors		8-16	10-24	16-35	24-48
In-Tank Boost Storage Capacity	L	820	1220	2000	3280
Maximum Energy Input – Electric Boost/ Heat Pump ^{7,8}	kW	46	46	46	92
Maximum Energy Input – Gas Boost ⁸	MJ/h	200	200	200	430

⁶ ECV is supplied with water heater. The maximum supply pressure can be increased to 960kPa if a 1200kPa expansion control valve is used in lieu of the supplied 850kPa valve. Operating pressure must not exceed the rating of any appliance in the hot water circuit downstream of the ECV.

⁷ Electric boost energy input is based on 240 V power supply.

⁸ The maximum energy input may be increased if the In-Tank Boost plant has TPR valves with sufficient thermal energy relief. Please consult with Rheem Technical Advisory Service.

COMMERCIAL SOLAR PIPE SIZE / PUMP SELECTION - RHEEM HEAT STORE

Total Number Collectors	Pipe Dia	Total Height from Base of Storage Tank to Top of Collector (metres)							
		10	15	20	25	30	35	40	
8	DN25	CM3-2	CM3-2	CM3-3	CM3-4	CM3-4	CM3-5	CM3-6	
12	DN25	CM3-2	CM3-3	CM3-4	CM3-4	CM3-5	CM3-6	CM3-6	
16	DN32	CM3-2	CM3-3	CM3-4	CM3-5	CM3-5	CM3-6	CM5-5	
20	DN32	CM5-2	CM5-3	CM5-4	CM5-4	CM5-5	CM5-5	CM5-6	
24	DN40	CM5-2	CM5-3	CM5-4	CM5-4	CM5-5	CM5-5	CM5-6	
28	DN40	CM5-3	CM5-3	CM5-4	CM5-5	CM5-5	CM10-3	CM10-3	
32	DN40	CM10-2	CM10-2	CM10-2	CM10-3	CM10-3	CM10-3	DN50/CM10-3	
36	DN40	CM10-2	CM10-2	CM10-2	CM10-3	CM10-3	CM10-3	DN50/CM10-3	
40	DN40	CM10-2	CM10-2	CM10-3	CM10-3	CM10-3	CM10-3	DN50/CM10-3	
45	DN50	CM10-2	CM10-2	CM10-2	CM10-3	CM10-3	CM10-3	DN65/CM10-3	
50	DN50	CM10-2	CM10-2	CM10-2	CM10-3	CM10-3	CM10-3	DN65/CM10-3	

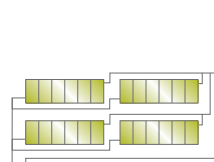
Notes: • If actual number of collectors falls between an array size, use the next biggest array • If actual head height falls between two dimensions, use next highest • Minimum pipe diameter is as shown in second column of table except where shown with the pump selection • Pumps in bold are for three-phase only. All other pumps may be three-phase or single phase.

COMMERCIAL SOLAR PIPE SIZE / PUMP SELECTION / SPEED SETTING – RHEEM LOLINE

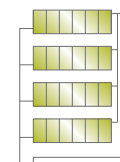
Total Number Collectors	Combined Tank & Array Piping Length (m) ⁹	Total Length (flow and return) Between Storage Tanks and Collector Array (m) ¹⁰											
		10	20	30	40	50	60	70	80	90	100	150	200
15	30	DN20/20-60/1		DN20/20-60/2						DN20/20-60/3		DN20/32-80/2	DN20/32-80/3
		DN25/20-60/1										DN25/20-60/2	
30	53+	DN25/20-45						-	-	-	-	-	-
		DN25/20-60/2		DN25/20-60/3						DN25/32-80/2		DN32/20-60/2	
	53++	DN25/20-45						-	-	-	-	-	-
		DN25/20-60/2		DN25/20-60/3						DN25/32-80/2		DN32/20-60/2	
45	63+	-	DN25/32-80/3				-	-	-	-	-	-	-
	90++	-	DN32/20-45						DN32/20-60/3			DN32/20-60/3	
60	79+	-	DN32/32-80/3						-		-	-	
		DN40/20-45						DN40/20-60/3		DN40/32-80/3			
	120++	-	DN32/32-80/3				-	-	-	-	-	-	
		DN40/20-45						DN40/20-60/3		DN40/32-80/3			
75	92+	-	-	DN40/32-80/3						-		-	
		DN50/20-45						-		-			
	111++	-	-	DN40/32-80/3						-		-	
		DN50/20-45						-		-			
90	105+	-	-	DN40/32-80/3						-		-	
		DN50/20-60/3						DN50/32-80/2		DN50/32-80/2			
	159++	-	-	DN40/32-80/3		-	-	-	-	-	-	-	
		DN50/20-60/3						DN50/32-80/2		DN50/32-80/3			
105	118+	-	-	-	DN50/32-80/3						-		
	160++	-	-	-	DN50/32-80/3						-		
120	131+	-	-	-	DN50/32-80/3						-		
	215++	-	-	-	DN50/32-80/3						-		

⁹ Total length of pipe inter-connecting tanks and collector arrays.
¹⁰ Lineal length.

- Notes:
- Pump selections are Grundfos. 20-60 = UPS20-60N, 20-45 = UP20-45N, 32-80 = UPS32-80N
 - UPS20-60N set to speed 3 can be substituted for a UP20-45N, but not the reverse
 - If actual number of panels falls between an array size, use the next biggest array
 - If actual pipe length between tanks and collectors falls between the lengths shown, use the next longest length



++Side by Side Array



+Parallel Array

SOLAR RADIATION DATA

Location	Latitude	Solar Radiation (MJ/m ² /day)	Best Solar Month	Zone	Collector to Tank Ratio – NPT200					
					610 340		610 430		1000SS	
					Min	Max	Min	Max	Min	Max
Darwin	12°	24.7	August	1	2.0	3.0	2.5	4.0	2.5	4.0
Cairns/ Townsville	17° 19°	24.0	September	1	2.3	3.5	2.8	4.0	2.8	4.0
Brisbane	27°	23.2	January	3	2.0	3.0	2.5	4.0	2.5	4.0
Perth	32°	28.9	January	3	2.0	3.0	2.3	3.5	2.3	3.5
Sydney	34°	23.5	December	3	2.2	3.5	2.7	4.0	2.7	4.0
Adelaide	35°	28.2	January	3	2.0	3.0	2.4	3.5	2.4	3.5
Canberra	35°	27.0	January	3	2.0	3.0	2.5	4.0	2.5	4.0
Melbourne	38°	24.4	January	4	2.0	3.1	2.5	4.0	2.5	4.0
Hobart	42°	23.6	January	4	2.4	3.5	3.0	4.5	3.0	4.5

Warranty*

- 5 year on the collector
- Loline and Heat Store 5 year on cylinder
- Premier Hiline 3 year on cylinder
- 1 year parts and labour on remainder

* **Conditions apply:** For full terms and conditions please contact Rheem or see Owner's Guide and Installation Instructions, available at www.rheem.com.au