



HEAT STORE COMMERCIAL SOLAR

ULTRA HIGH EFFICIENCY BT COLLECTOR

FULLY FROST PROTECTED

1,500 – 5,000 LITRES





BT collectors at Rheem Testing Facility – Rydalmere – Australia

RHEEM HEAT STORE®

What Is Heat Store?

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

A coil-in-tank heat exchanger is used to separate the potable water and solar closed circuit fluid. 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 sufficient energy is sensed at the collectors, the closed circuit fluid is pumped to the solar collectors to capture the energy and return it to the tank. 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 over boiling 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.

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.

Reduce Footprint And Save Costs

The BT collector requires less roof top area to produce the same amount of energy output compared to other collector types, and fewer collectors also means reduced on site costs.

The large capacity storage vessel is both time and **space efficient**. On site manifolding is not required with all connections simply made at the tank.

Smarter Solar

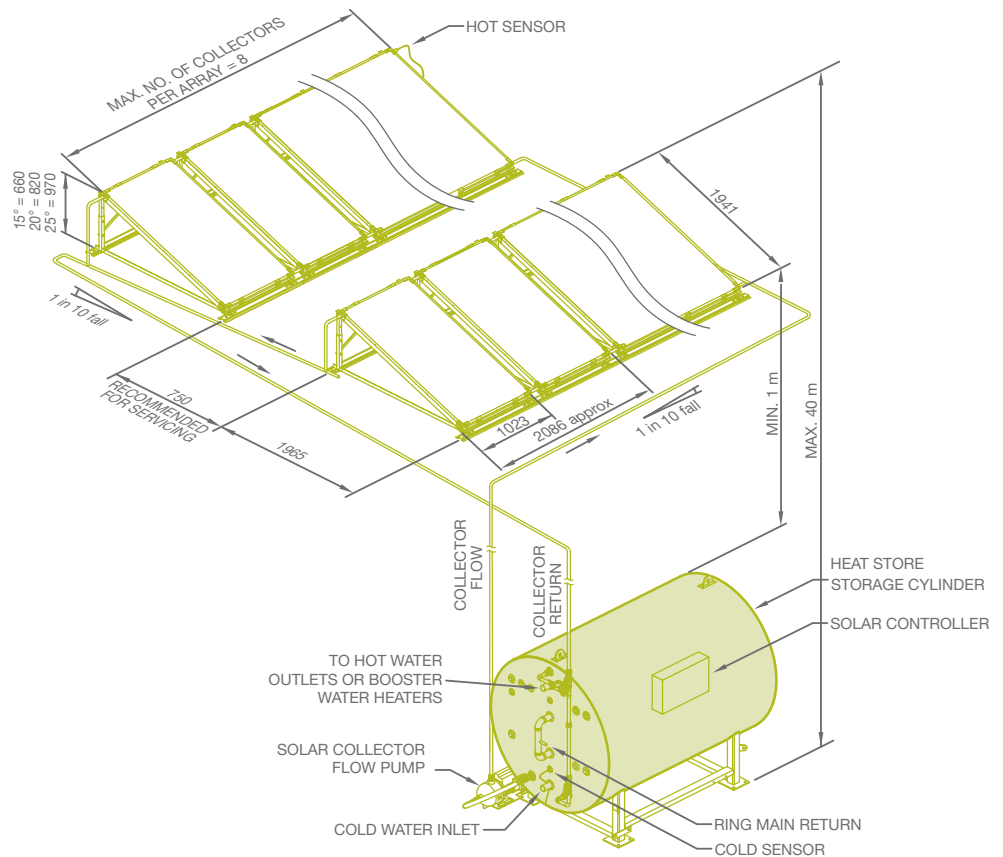
Rheem Heat Store provides more user functionality than ever before. The solar controller has **BMS output** for fault indication and can monitor the energy in the tank to divert building return water through the solar storage to **maximise solar energy** use.



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	31/33.1
Fluid Capacity	Litres	2.1
Number of Risers		13
Absorber Material		Sputtered Copper
Insulation		Glass Wool
Glazing		Matt-Matt
Tray Material		Aluminium

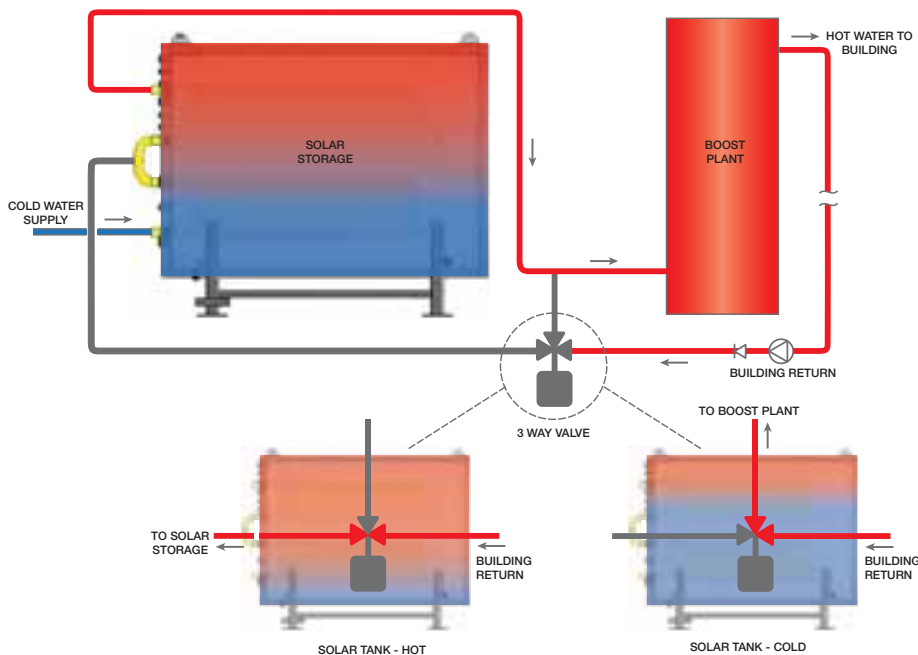
Commercial Solar Installation Tips

- Collectors should ideally face the equator. However collectors facing as far as 45 degrees either way 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
- 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. AS3500.4 has guidelines specific to the zone
- Use the table on page 4 to select the correct pipe size and pump specification to suit the application
- 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 40m



Solar Secondary Return

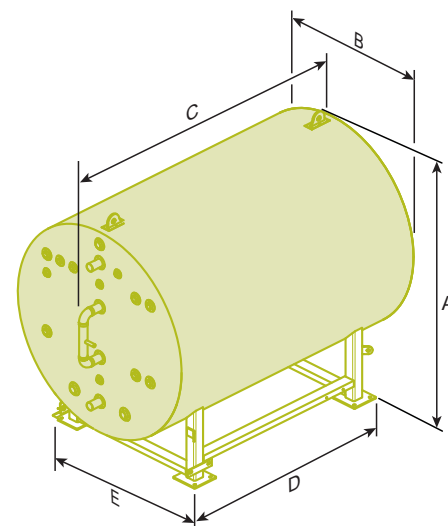
Rheem Heat Store provides more user functionality than ever before. The available energy in the storage vessel can be monitored and building return water diverted through the top half of the solar storage when sufficient energy is available to maximise solar energy use.



SOLAR SECONDARY RETURN

- **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
- It is recommended to set the boost plant thermostat to no greater than 62°C to maximise energy savings

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 ¹	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 ^{2,4}	kW		46	46	46	92
Maximum Energy Input – Gas Boost ⁴	MJ/h		200	200	200	430



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	CM10-3	
24	DN40	CM5-2	CM5-3	CM5-4	CM5-4	CM5-5	CM5-5	CM10-3	
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 • All pumps are 3 phase only

Auxiliary In-Tank Boosting

Due to the unique layered coil design auxiliary heating by gas, electric or heat pump water heaters can be used to supplement the solar energy in the top half of the Heat Store.

The Heat Store provides timer control to allow the user to select the best times for boosting to maximise solar gain.

When sized correctly Heat Pump boosted solar can provide up to 90% of the energy needs of a project, free from the sun³.

The auxiliary energy is confined to the top half of the tank only, providing a stratified layer between auxiliary boost and solar pre-heat.

A secondary hot water return connection is provided negating the need for any separate boost plant to maintain building losses³.

¹ 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.

² Electric boost energy input is based on 240 V power supply.

³ Depending on system configuration.

⁴ 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.



Warranty*

- 5 year on the collector and Heat Store
- 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

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