

POWERPAK



Description

The Solahart PowerPAK is an electronically controlled, closed circuit, drain back heat exchange system specifically developed to provide solar water heating in light commercial applications of up to 1200 litres per day.

The system consists of the PowerPAK module, solar collectors and solar storage tanks. PowerPAK is suitable for use in a wide range of climates, including frost prone and non-frost regions.

Applications

It is highly versatile and particularly suitable for a wide range of applications including:

- Motels, caravan park amenities blocks
- Nursing homes and retirement villages
- Restaurants
- Small to medium health care establishments
- Factory or sporting facility change rooms
- Small office and apartment buildings

Key Features

- Flexible modular design
- Optimum performance in low to high solar gain areas.
- Suitable for frost prone and freeze areas
- Fully automatic and electronically controlled for maximum efficiency
- Stylish slimline design
- Minimum visual impact
- Choice of in-series or in-tank boosting
- Choice of boost fuel types

Key Benefits

- Versatile in its application
- Saves on water heating energy consumption*
- Continuous hot water regardless of the weather
- Access to valuable government environmental incentives*
- Converts existing conventional hot water systems to solar
- Reduced energy use saves on CO₂ emissions every year*
- Peace of mind with 5/3/1+ year PowerPAK warranty

How it works

At the heart of the system is the PowerPAK 'Solar Energy Transfer Module'. This electronically controlled heat exchange system circulates Solahart Hartgard heat transfer fluid through the solar collectors and transfers the heat to potable water from the storage system. It has a capacity of 10 kW in optimum solar conditions.

A PowerPAK module can be installed with up to eight Solahart Bt solar collectors with the storage system consisting of a multiple installation of either Solahart Streamline 270, 340 or 430 tanks.

The PowerPAK's unique processor senses available solar energy and controls the flow of the closed circuit fluid. The electronic controller monitors all stages of the process and switching off when the water in the storage tanks reaches maximum temperature.

When heating is complete or during periods with insufficient sun, the Hartgard fluid is drained back into the PowerPAK module. During periods of insufficient solar gain, the water in the storage tanks is heated by the in-series gas or electric booster or in-tank electric booster to ensure a constant supply of hot water.

The Bt Collector

The PowerPAK utilises Solahart's Bt collector. Its blue sputtered copper absorber plate makes for a very efficient selective surface^ suitable for use in a wide variety of solar radiation areas.

It provides higher efficiency at higher water temperatures whilst performing well in cooler areas with lower levels of solar radiation. The Solahart Bt incorporates a range of features leading to improved overall performance in commercial applications.



Storage system

The Streamline solar storage tanks can be used for solar preheat storage with in-series water heaters installed for boosting of the water temperature during periods of poor or no solar gain, or for additional heating capacity. Typically, this type of system design will incorporate two solar storage tanks for eight solar collectors (one tank per four collectors) and offers the flexibility of being sized to meet varying levels of solar contribution. This arrangement makes for an ideal solar preheat system to an existing gas or electric storage hot water system.

Alternatively, the Streamline solar storage tanks can be installed with their heating elements connected to power to provide in-tank boosting. Typically, this type of system design will incorporate four solar storage tanks for eight solar collectors (one tank per two collectors), sized to meet 100% of the hot water needs of the premises.



Installation

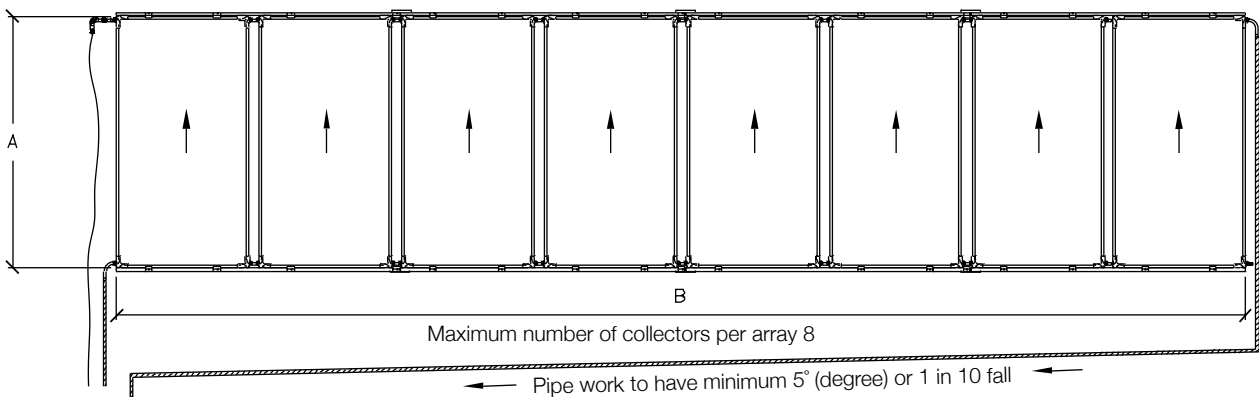
The system provides the flexibility to install the collectors on the roof and the PowerPAK module and storage tanks at a convenient location at a lower level and offers a solution for roof structures with limited structural strength. The PowerPAK module can be installed with four to eight collectors making it a suitable solution for buildings with a limited roof area.



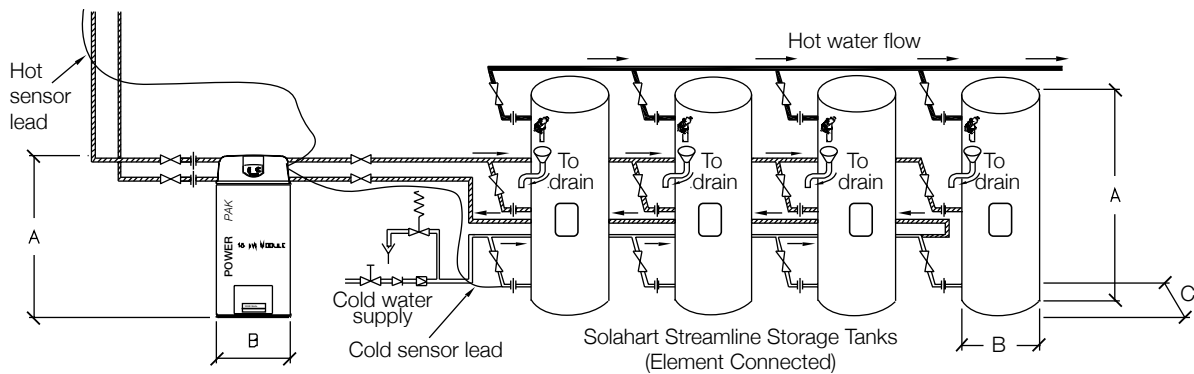
Both the PowerPAK module and the Streamline solar storage tanks, with their Colorbond jackets, are weatherproof and are suitable for either indoor or outdoor installation.

Dual PowerPAK systems can be manifolded together with an increased potable water storage capacity for hot water demands in excess of 1200 litres per day.

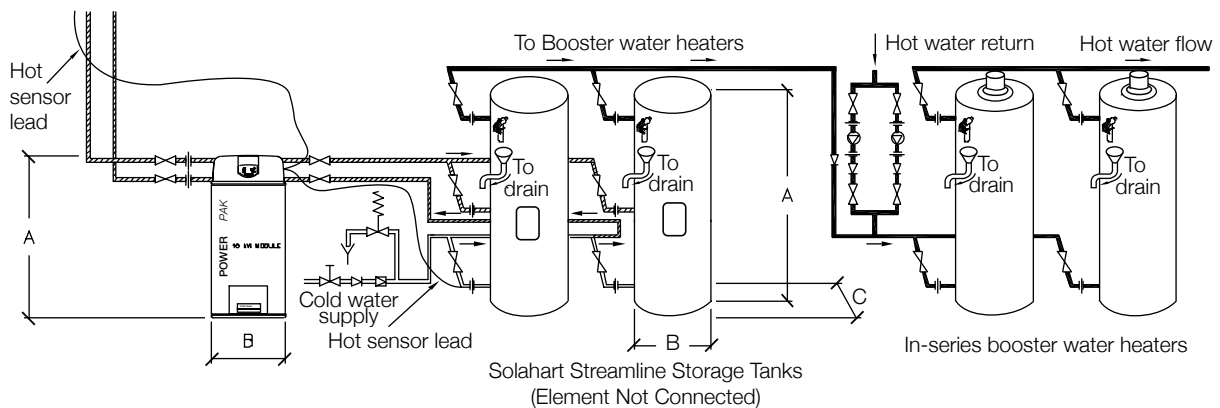
Solahart PowerPAK Installation Schematic



COLLECTOR ARRAY



IN-TANK BOOSTING



IN-SERIES BOOSTING

PowerPAK

PowerPAK Streamline Storage Tank

Tank model		10022010	270SLV	340SLV	430SLV
Storage capacity	litres	-	270	325	410
	US gal	-	71.3	85.9	108.3
Delivery capacity (solar)	litres	-	250	315	400
	US gal	-	66	83.2	105.7
Boost capacity (electric)	litres	-	160	200	285
	US gal	-	42.3	52.8	75.3
Weight empty	kg	48	70	87	111
	lbs	106	154	192	245
Weight full	kg	98	340	412	521
	lbs	216	750	908	1149
A – Height	m	1.055	1.395	1.640	1.840
	in	41.6	54.9	64.6	72.5
B – Width	m	0.480	0.640	0.640	0.690
	in	18.9	25.2	25.2	27.2
C – Depth	m	0.480	0.680	0.680	0.730
	in	18.9	26.8	26.8	28.7

Solar Pipe Work

PowerPAK to Collectors				
Max. length solar cold pipe	m	16	ft	52.5
Max. length solar hot pipe	m	16	ft	52.5
Max. height - PPK (base) to collectors (top)	m	7 ~	ft	23.0 ~
Min. height - PPK (top) to collectors (base)	m	1	ft	3.3
Working pressure	kPa	80	psi	11.5
Pipe size – PowerPAK to collectors	DN15 copper (hard drawn)			
Solar connections – PowerPAK	RP½/15			
Min. grade (fall) in pipe work	1 in 10 (5°)			
PowerPAK to Streamline Tanks				
Working pressure	kPa	1000	psi	145
Pipe size - PowerPAK to storage tanks	DN15 copper			
Water connections – PowerPAK	RP½/15			
Water connections – Streamline tank	solar	RP¾/20 (solar hot inlet to tank)		

~ For heights from 7m to 14m, a PowerPAK collector auxiliary pump (PN 12104670) is required.

Bt Collector

Aperture (heating) area	m²	1.86	ft²	20	
Dimensions	length	mm	1940	in	76.4
	width	mm	1022	in	40.3
	height	mm	77	in	3.0
Capacity	litres	2.1	US gal	0.6	
Weight	empty	kg	31	lbs	69
	full	kg	33	lbs	73
Working pressure	kPa	1400	psi	200	
Absorber surface	blue sputtered				
Absorber material	copper				
Riser material	copper				
Number of risers	13				
Tray material	0.7mm aluminium (marine grade)				
Insulation material	38mm glass wool blanket				
Glass	3.2mm tempered low iron				
Absorptivity	0.96				
Emissivity	0.08				

Electrical Specifications - PowerPAK

Supply voltage	220 V – 250 V		
Connection	10 Amp GPO – 3 pin plug		
Temperature Differential Control			
		Preset	Optional
Maximum	°C	85	70
	°F	185	158
Differential cut in temperature	°C	5	10
	°F	41	50
Differential cut out temperature	°C	2	3
	°F	36	38
Circulating Pumps			
Circulator		Primary (closed circuit)	Secondary (potable circuit)
Main body		cast iron	bronze
Flow rate (nominal)	L / min	5.5	9.0

Electric Boost Specifications Streamline In-Tank Boosting

Heating unit type	Copper sheath immersion element			
Supply voltage	220 V – 250 V			
Hourly recovery rate @ 240 V and temperature rise of:				
Rating	Current	40°C	50°C	60°C
kW	Amps	litres	litres	litres
2.4	10	52	41	34
3.6	15	77	62	52
4.8	20	103	83	69

Water Supply

TPR valve setting	kPa	1000	psi	145
ECV* setting	kPa	850	psi	125
Max. supply pressure				
with ECV	kPa	680	psi	100
without ECV	kPa	800	psi	115
Water Connections	cold	RP¾/20 (cold inlet to tank)		
	hot	RP¾/20		
	solar	RP¾/20 (solar hot inlet to tank)		

* Expansion Control Valve (ECV) is not supplied.

Collector Installation

Roof Area Dimensions	No	5	6	7	8
A -Height	m	2.0	2.0	2.0	2.0
	In	78.8	78.8	78.8	78.8
B - Width	m	5.5	6.6	7.7	8.8
	In	217	260	303	347
Weight - full	kg	185	222	259	296
	lbs	408	490	571	653

+ Warranty Details: PowerPAK 5/3/1, 5 years cylinder and collectors, 3 years labour on cylinder and collectors, 1 year parts including labour. Streamline storage tank 3/1/1, 3 years cylinder, 1 year parts, 1 year labour.

^ The term selective surface refers to the ability of the surface to be efficient in the absorption of heat but frugal in the re-radiation of heat, therefore being 'selective' and retaining heat energy. A selective surface provide higher energy yields as measured by the level of absorptivity and low level of emissivity.

* Savings and incentives will vary depending upon your location, type of Solahart system installed, orientation and inclination of the solar collectors, type of water heater being replaced, hot water consumption and fuel tariff.



hot water free from the sun