



**Sun-In-One™**  
New Electrical Solar Light and Power Products



## SPECIFICATIONS

	COLLECTOR
NUMBER OF TUBES	30
DIMENSIONS	96" x 79"
ABSORBER AREA	44.75 ft <sup>2</sup>
FLUID CAPACITY	0.4 gl
DRY WEIGHT	190 lbs
WARRANTY	10 Years
OPTIONAL TANK SIZE	75 gl
	CASING & FRAME
HEADER CASING	Anodized Aluminum
FRAME MATERIAL	Stainless Steel
MANIFOLD INSULATION	Rock Wool, 2.36" Thick
INTERNAL MANIFOLD PIPING	1 1/4" Copper – Schedule M
SEALING	Silicone
INSTALLATION ANGLE RANGE	15° – 90°
	EVACUATED TUBE / HEAT PIPE
TUBE LENGTH	70.8"
EMISSARY COEFFICIENT	8%
TUBE ABSORBER COATING	Copper, Stainless Steel, Aluminum
ABSORPTIVE COEFFICIENT	92%
GLASS MATERIAL	Borosilicate Glass
OUTER GLASS TUBE DIAMETER	2.28"
INNER GLASS TUBE DIAMETER	1.85"
VACUUM	5 x 10 <sup>-2</sup> PA
STAGNATION TEMPERATURE	482°
HEAT PIPE MATERIAL	Copper
HAIL RESISTANCE	~1" Diameter
	MANIFOLD / OPERATION
RECOMMENDED FLUID	Water or Water/Glycol
WIND LOAD RATING	120 mph
MAX OPERATING PRESSURE	159 psi
RECOMMENDED FLOW RATE	0.8 ~ 1.2 gpm

## Evacuated Tube Collector Complete Solar Hot Water Heater Kit

The SIO-30A is a high-efficiency evacuated tube collector. Used to produce domestic hot water in space heating systems. Powers absorption chillers for solar air conditioning systems. Perfect for residential, commercial and industrial applications.



## FEATURES / BENEFITS

- Complies with BAA and ARRA requirements
- SRCC Certified OG-100 and OG-300  
Qualifies for Federal, State, Local Rebates & Tax Credits
- High-Performance – High Efficiency  
High heat performance in all weather conditions – ideal for hot water, space heating and air conditioning in all climates
- Top Quality Materials and Construction including Anodized Manifold/Header, Stainless Steel Frame, Borosilicate Glass Tubes
- Extra Glass Tubes Included



## ORDERING INFORMATION FOR EVACUATED TUBE COLLECTOR

**SIO-30A-00 (WITHOUT TANK)**  
**SIO-30A-01 (WITH TANK)**



**Sun-In-One™**  
[suninone.com](http://suninone.com)  
302-762-3100





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## Evacuated Tube Collector, continued

### COMPLETE KIT – WITH TANK

- 75-Gallon Tank
- Pumping Station and Glycol Pkg including Pumps, HE, Controller, Mounting Bracket, Sensors (2), 50' Sensor Wire
- Expansion Tank (4.4 Gal) Extrol SE-30
- Connection Hose for Expansion Tank (Stainless Steel 3/4" MxF 18")
- Mounting Bracket for Expansion Tank (Stainless Steel)
- Thermal Grease (14 oz)
- Adapter 3/4" MPT to 1/2" FPT Brass Reducer
- Extra Glass Tubes included (2)

### COMPLETE KIT – WITHOUT TANK

- Pumping Station and Glycol Pkg including Pumps, HE, Controller, Mounting Bracket, Sensors (2), 50' Sensor Wire
- Expansion Tank (4.4 Gal) Extrol SE-30
- Connection Hose for Expansion Tank (Stainless Steel 3/4" MxF 18")
- Mounting Bracket for Expansion Tank (Stainless Steel)
- Thermal Grease (14 oz)
- Adapter 3/4" MPT to 1/2" FPT Brass Reducer
- Extra Glass Tubes included (2)



### SRCC Certification Data: Collector Thermal Performance Rating

BTU PER PANEL PER DAY			
CATEGORY (TI-TA)	CLEAR DAY 2000 BTU/FT2/DAY	MILDLY CLOUDY 1500 BTU/FT2/DAY	CLOUDY DAY 1000 BTU/FT2/DAY
A (9F)	47,000	36,000	24,000
B (9F)	46,000	34,000	22,000
C (36F)	43,000	31,000	19,000
D (90F)	36,000	25,000	13,000
F (144F)	79,000	18,000	7,000

- (Ti) Temperature Inlet: Refers to temperature of fluid entering manifold.
- (Ta) Temperature Ambient: Refers to the ambient temperature, or the outside air temperature.
- (Ti-Ta) Refers to the inlet fluid temperature subtracted from the outside ambient temperature. For example, if temperature entering the manifold is 100F, and outside air temperature is 30F, Ti-Ta would be 70F.
- (A) Pool Heating (Warm Climate)
- (B) Pool Heating (Cool Climate)
- (C) Water Heating (Warm Climate)
- (D) Water Heating (Cool Climate)
- (F) Air Conditioning



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The solar collector listed below has been evaluated by the Solar Rating & Certification Corporation™ (SRCC™) in accordance with SRCC OG-100, Operating Guidelines and Minimum Standards for Certifying Solar Collectors, and has been certified by the SRCC. This award of certification is subject to all terms and conditions of the Program Agreement and the documents incorporated therein by reference.

#### COLLECTOR THERMAL PERFORMANCE RATING

Kilowatt-hours (thermal) Per Panel Per Day				Thousands of Btu Per Panel Per Day			
Climate -> Category (1) (a)	High Radiation (6.3 kWh/m <sup>2</sup> .day)	Medium Radiation (4.7 kWh/m <sup>2</sup> .day)	Low Radiation (3.1 kWh/m <sup>2</sup> .day)	Climate -> Category (1) (a)	High Radiation (2000 Btu/ft <sup>2</sup> .day)	Medium Radiation (1500 Btu/ft <sup>2</sup> .day)	Low Radiation (1000 Btu/ft <sup>2</sup> .day)
A (5 °C)	13.9	10.5	7.0	A (9 °F)	47.4	35.7	24.0
B (5 °C)	13.4	10.0	6.5	B (9 °F)	45.8	34.0	22.3
C (20 °C)	12.5	9.1	5.7	C (36 °F)	42.8	31.1	19.4
D (50 °C)	10.7	7.2	3.9	D (90 °F)	36.4	24.7	13.2
E (80 °C)	8.5	5.2	2.0	E (144 °F)	26.8	17.9	7.0

A- Pool Heating (Warm Climate) B- Pool Heating (Cool Climate) C- Water Heating (Warm Climate)  
D- Space & Water Heating (Cool Climate) E- Commercial Hot Water & Cooling

#### COLLECTOR SPECIFICATIONS

Gross Area:	4.610 m <sup>2</sup>	51.76 ft <sup>2</sup>	Dry Weight:	86 kg	190 lb
Net Aperture Area:	4.157 m <sup>2</sup>	44.74 ft <sup>2</sup>	Fluid Capacity:	1.6 liter	0.1 gal
Absorber Area:	0.000 m <sup>2</sup>	0.00 ft <sup>2</sup>	Test Pressure:	600 kPa	87 psi

#### TECHNICAL INFORMATION

Tested in accordance with:

ISO Efficiency Equation (NOTE: Based on gross area and (P)=1) (a)

SI UNITS:  $\eta = 0.477 - 0.93740(P/G) - 0.00055(P^2/G)$

Y Intercept: 0.481 Slope: -1.334 W/m<sup>2</sup>.°C

IP UNITS:  $\eta = 0.477 - 0.16521(P/G) - 0.00064(P^2/G)$

Y Intercept: 0.481 Slope: 0.235 Btu/hr.ft<sup>2</sup>.°F

#### Transverse Incident Angle Modifier

#### Longitudinal Incident Angle Modifier at 50°:

0	10	20	30	40	50	60	70	Test Fluid:	Water
K <sub>tr</sub>	1.01	1.06	1.12	1.18	1.17	0.78	-1.53	Test Mass Flow Rate:	0.0202 kg/(s.m <sup>2</sup> ) 14.88 lb/(hr.ft <sup>2</sup> )

#### REMARKS:

*John Higgins*

Technical Director



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ADDITIONAL INFORMATION			
Test Lab:	Bodycote	Test Report Date:	July 30, 2008
Test Report Number:	07-08-0528	Test conducted:	

SOLAR COLLECTOR CONSTRUCTION DETAILS					
Header Enclosure:					
Gross Length:	0.000 m	Gross Width:	0.000 m	Gross Depth:	
Tube Bank:					
Gross Length:		Gross Width:			

COLLECTOR MATERIALS					
Outer Cover:	Other	Enclosure back:	Steel	Back Insulation:	
Inner Cover:	None	Enclosure side:	Steel	Side Insulation:	
Absorber Description:		Flow Pattern:			
Riser Tube:	Copper	Fin:			
Absorber Coating:	Selective	Tube to fin connection			

Glazing	Outer Cover	Inner Cover
Material:	Other	None
Surface Characteristics:		
Thickness:	0.0 mm	N/A
Transmissivity:		
Gross Tube Length (uninstalled):	0.000 m	
Diameter:	0.000 m	
Tube Glazing to Header Enclosure Seal:		
Reflector Shape:		Reflector Material:

ABSORBER:
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Header Material:		Header OD:		Header Wall:	
Riser Tube Material:	Copper	Riser Tube OD:		Riser Tube Wall Thickness:	
Fin Material:		Fin Thickness:	0.00 mm		
Flow Pattern:		Number of Flow Tubes / Heat Pipes:	0	Tube / Heat Pipe Spacing:	
Number of absorber tubes:	0	Flow Tube to Fin Bond:		Length of Flow Path:	0.00 m
Length of Flow Path:	0.00 m	Riser to Fin/Plate Bond:			

INSULATION:					
Location	Type	Thickness	Location	Type	Thickness
Back - Top Layer:			Sides - Inner Layer:		
Back - Bottom Layer:			Sides - Outer Layer:		
Enclosure Fastening Methods:			Header Enclosure:		

Power Output per Collector(W) [ Ti-Ta, G = 1000 W/m² ]				
0	10	30	50	70

PRESSURE DROP				
Flow	$\Delta P$		Flow	$\Delta P$
m/s	Pa		gpm	in H <sub>2</sub> O
20			0.32	
50			0.79	
80			1.27	

