

Oventrop flat plate solar  
thermal collector

**OV 3' x 7'**, 21 square foot model

**OV 4' x 8'**, 32 square foot model

**OV 4' x 10'**, 40 square foot model

## 1. General Specifications

### 1.01 Certifications

1) SRCC OG-100

SRCC OG-100 certification number:

**OV 3' x 7' - 100-2009-023A**

**OV 4' x 8' - 100-2009-023B**

**OV 4' x 10' - 100-2009-023C**



### 1.02 Warranty

1) 10 year full

## 2. General Solar Collectors

### 2.01 Manufacturers

1) The collector enclosures shall be of flat plate construction. The collectors will be made by Oventrop Corporation. The Oventrop flat plate collectors are manufactured in the United States of America.

a) Solar Collectors will be 3'0" wide and 7'2" long (21 square foot model),

b) Solar Collectors will be 4'0" wide and 8'2" long (32 square foot model),

or c) Solar Collectors will be 4'0" wide and 10'2" long (40 square foot model).

### 2.02 Operation

1) Flow rate: 0.5 to 1.8 GPM (recommended)

2) Maximum pressure operating capacity of 165 PSI

3) Design Life: 30 years

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### 3. Flat Plate Specifications

#### 3.01 Construction

- 1) Collector Frame and Battens: Type 6063-T6 extruded aluminum frame and battens.
- 2) Backsheet: Type 3105-H14, 0.019" stucco embossed aluminum sheet pop-riveted to aluminum frame.
- 3) Corner Bracket: Architectural aluminum angles inside with aircraft-grade pin grip rivets to insure high stability.
- 4) Insulation: Polyisocyanurate foam board insulation. Foil-faced, glass fiber-reinforced, rigid board Thermax sheathing (1-1/4" in the bed, 3/4" in the sidewalls).
- 5) Absorber Plate: Manufactured by Thermafin™ Manufacturing, a 100% copper absorber plate, high frequency forge welded to create a crystalline homogenous connection between the fin and riser tube.
- 6) Absorber Coating: Exclusively by Thermafin™ Manufacturing, Selective Crystal Clear Coating, absorptivity = 0.96, emissivity = 0.08.
- 7) Glazing: Low-Iron Tempered Glass exclusively using "High-T" tempered glass with a total solar energy transmission of 90%.
- 8) Gasket, Grommets: a UV durable EPDM, U-channel gasket with molded corners. Extruded Silicone Grommet, 1-1/8" Bore.
- 9) Fasteners: 5056 Aluminum Rivets secure the backsheet. Batten screws are 18-8 SS, 10-24 x 3/8", Hex head screws, black oxide coated.

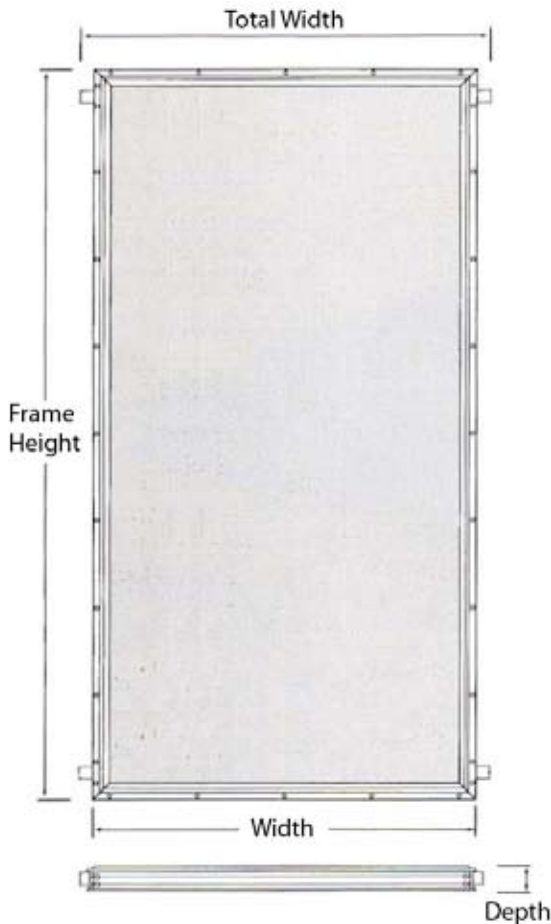
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### 4. Dimensioned Product Drawing & Specifications



**Glazing:** Tempered, low iron glass. Iron oxide content is less than 1%.

**Glazing Gasket:** EPDM channel with molded corners.

**Insulation:** 1-1/4" and 3/4" foil-faced polyisocyanurate board insulation.

**Frame Wall and Batten:** 6063 T5 aluminum extrusion with an anodized bronze finish.

**Backsheet:** 0.019 stucco embossed aluminum sheet (bronze) pop-riveted to frame wall.

**Absorber Plate:** All copper fin and tube construction. High frequency forge-welded for permanent bond between tube and sheet. No soldered or crimped connections to fail from expansion or contraction. Thirty year warranty on fin-to-tube joint.

**Absorber Coating:**

Absorptivity: 0.94 - 0.96


Emissivity: 0.09 - 0.12

**Working Pressure:** 165 psi

**Flow Rate:** 0.5 to 1.8 gpm recommended

**Warranty:** 10 years

Model (Part Number)	3' x 7' (540 03 07)	4' x 8' (540 04 08)	4' x 10' (540 04 10)
Gross Collector Area	21.5 sqft	32.7 sqft	40.7 sqft
Area of Glazing	18.9 sqft	29.5 sqft	36.9 sqft
Absorber Area	18.8 sqft	29.4 sqft	36.8 sqft
Frame Height	86 inches	98 inches	122 inches
Frame Width	36 inches	48 inches	48 inches
Frame Depth	3-1/8 inches	3-1/8 inches	3-1/8 inches
Total Width	38 inches	50 inches	50 inches
Weight	76 lbs.	116 lbs.	151 lbs.
Fluid Capacity	0.70 gallons	1.04 gallons	1.21 gallons
Glazing Thickness	1/8 inch	1/8 inch	5/32 inch

<b>SOLAR COLLECTOR CERTIFICATION AND RATING</b>   <b>SRCC OG-100</b>	<b>CERTIFIED SOLAR COLLECTOR</b>  <b>SUPPLIER:</b> <b>Oventrop Corporation</b> 29 Knipes Road East Granby, CT 06026 USA  <b>MODEL:</b> 540 03 07 <b>COLLECTOR TYPE:</b> Glazed Flat-Plate <b>CERTIFICATION#:</b> 2009023A
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**COLLECTOR THERMAL PERFORMANCE RATING**

Megajoules Per Panel Per Day				Thousands of BTU Per Panel Per Day			
CATEGORY (Ti-Ta)	CLEAR DAY	MILDLY CLOUDY	CLOUDY DAY	CATEGORY (Ti-Ta)	CLEAR DAY	MILDLY CLOUDY	CLOUDY DAY
A (-5 °C)	29.6	22.4	15.2	A (-9 °F)	28.1	21.2	14.4
B (5 °C)	26.9	19.7	12.5	B (9 °F)	25.5	18.6	11.8
C (20 °C)	22.6	15.5	8.4	C (36 °F)	21.4	14.7	8.0
D (50 °C)	13.5	7.2	1.6	D (90 °F)	12.8	6.8	1.5
E (80 °C)	5.3	0.8	0.0	E (144 °F)	5.0	0.7	0.0

A- Pool Heating (Warm Climate) B- Pool Heating (Cool Climate) C- Water Heating (Warm Climate) D- Water Heating (Cool Climate) E- Air Conditioning

Original Certification Date: 06-JUL-09

**COLLECTOR SPECIFICATIONS**

<b>Gross Area:</b>	1.997 m <sup>2</sup>	21.50 ft <sup>2</sup>	<b>Net Aperature Area:</b>	1.76 m <sup>2</sup>	18.95 ft <sup>2</sup>
<b>Dry Weight:</b>	37.2 kg	82. lb	<b>Fluid Capacity:</b>	3.2 liter	0.8 gal
<b>Test Pressure:</b>	1103. KPa	160. psg			

**COLLECTOR MATERIALS**

<b>Frame:</b>	Anodized Aluminum
<b>Cover (Outer):</b>	Low Iron Tempered Glass
<b>Cover (Inner):</b>	None

**Pressure Drop**

Flow		ΔP	
ml/s	gpm	Pa	in H <sub>2</sub> O


<b>Absorber Material:</b>	Tube - Copper / Plate - Copper Fin	<b>Insulation Side:</b>	Polyisocyanurate
<b>Absorber Coating:</b>	Selective Coating	<b>Insulation Back:</b>	Polyisocyanurate

**TECHNICAL INFORMATION**

<b>Efficiency Equation [NOTE: Based on gross area and (P)=Ti-Taj]</b>				<b>Y INTERCEPT</b>	<b>SLOPE</b>
<b>S I UNITS:</b>	$\eta = 0.691$	$-3.39600 (P)/I$	$-0.01968 (P)^2/I$	<b>0.706</b>	<b>-4.910 W/m<sup>2</sup>.°C</b>
<b>I P UNITS:</b>	$\eta = 0.691$	$-0.59821 (P)/I$	$-0.00193 (P)^2/I$	<b>0.706</b>	<b>-0.865 Btu/hr.ft<sup>2</sup>.°F</b>
<b>Incident Angle Modifier [(S)=1/cosθ - 1, 0°&lt;θ&lt;=60°]</b>				<b>Model Tested:</b>	2002001A
<b>Kα = 1</b>	-0.194 (S)	-0.006 (S) <sup>2</sup>		<b>Test Fluid:</b>	Water
<b>Kα = 1</b>	-0.20 (S)	Linear Fit		<b>Test Flow Rate:</b>	38.8 ml/s 0.61 gpm

REMARKS:

c/o FSEC ♦ 1679 Clearlake Road ♦ Cocoa, FL 32922 ♦ (321) 638-1537 ♦ Fax (321) 638-1010

<b>SOLAR COLLECTOR CERTIFICATION AND RATING</b>   <b>SRCC OG-100</b>	<b>CERTIFIED SOLAR COLLECTOR</b>  <b>SUPPLIER:</b> <b>Oventrop Corporation</b> 29 Knipes Road East Granby, CT 06026 USA  <b>MODEL:</b> 540-04-08 <b>COLLECTOR TYPE:</b> Glazed Flat-Plate <b>CERTIFICATION#:</b> 2009023B
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**COLLECTOR THERMAL PERFORMANCE RATING**

Megajoules Per Panel Per Day				Thousands of BTU Per Panel Per Day			
CATEGORY (Ti-Ta)	CLEAR DAY	MILDLY CLOUDY	CLOUDY DAY	CATEGORY (Ti-Ta)	CLEAR DAY	MILDLY CLOUDY	CLOUDY DAY
A (-5 °C)	45.0	34.0	23.0	A (-9 °F)	42.6	32.2	21.8
B (5 °C)	40.9	29.9	19.0	B (9 °F)	38.8	28.3	18.0
C (20 °C)	34.3	23.5	12.8	C (36 °F)	32.5	22.3	12.1
D (50 °C)	20.6	10.9	2.4	D (90 °F)	19.5	10.3	2.3
E (80 °C)	8.0	1.1	0.0	E (144 °F)	7.6	1.1	0.0

A- Pool Heating (Warm Climate) B- Pool Heating (Cool Climate) C- Water Heating (Warm Climate) D- Water Heating (Cool Climate) E- Air Conditioning

Original Certification Date: 06-JUL-09

**COLLECTOR SPECIFICATIONS**

<b>Gross Area:</b>	3.035 m <sup>2</sup>	32.67 ft <sup>2</sup>	<b>Net Aperature Area:</b>	2.75 m <sup>2</sup>	29.60 ft <sup>2</sup>
<b>Dry Weight:</b>	60.3 kg	133. lb	<b>Fluid Capacity:</b>	4.9 liter	1.3 gal
<b>Test Pressure:</b>	1103. KPa	160. psg			

**COLLECTOR MATERIALS**

<b>Frame:</b>	Anodized Aluminum
<b>Cover (Outer):</b>	Low Iron Tempered Glass
<b>Cover (Inner):</b>	None

**Pressure Drop**

Flow		ΔP	
ml/s	gpm	Pa	in H <sub>2</sub> O


<b>Absorber Material:</b>	Tube - Copper / Plate - Copper Fin	<b>Insulation Side:</b>	Polyisocyanurate
<b>Absorber Coating:</b>	Selective Coating	<b>Insulation Back:</b>	Polyisocyanurate

**TECHNICAL INFORMATION**

<b>Efficiency Equation [NOTE: Based on gross area and (P)=Ti-Taj]</b>				<b>Y INTERCEPT</b>	<b>SLOPE</b>
<b>S I UNITS:</b>	$\eta = 0.691$	$-3.39600 (P)/I$	$-0.01968 (P)^2/I$	<b>0.706</b>	<b>-4.910 W/m<sup>2</sup>.°C</b>
<b>I P UNITS:</b>	$\eta = 0.691$	$-0.59821 (P)/I$	$-0.00193 (P)^2/I$	<b>0.706</b>	<b>-0.865 Btu/hr.ft<sup>2</sup>.°F</b>
<b>Incident Angle Modifier [(S)=1/cosθ - 1, 0°&lt;θ≤60°]</b>				<b>Model Tested:</b>	2002001A
<b>Kα = 1</b>	-0.194 (S)	-0.006 (S) <sup>2</sup>		<b>Test Fluid:</b>	Water
<b>Kα = 1</b>	-0.20 (S)	Linear Fit		<b>Test Flow Rate:</b>	38.8 ml/s 0.61 gpm

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**COLLECTOR THERMAL PERFORMANCE RATING**

Megajoules Per Panel Per Day				Thousands of BTU Per Panel Per Day			
CATEGORY (Ti-Ta)	CLEAR DAY	MILDLY CLOUDY	CLOUDY DAY	CATEGORY (Ti-Ta)	CLEAR DAY	MILDLY CLOUDY	CLOUDY DAY
A (-5 °C)	58.1	43.8	29.7	A (-9 °F)	55.0	41.6	28.2
B (5 °C)	52.8	38.6	24.5	B (9 °F)	50.0	36.6	23.2
C (20 °C)	44.2	30.3	16.5	C (36 °F)	41.9	28.7	15.7
D (50 °C)	26.5	14.1	3.1	D (90 °F)	25.2	13.3	2.9
E (80 °C)	10.3	1.5	0.0	E (144 °F)	9.8	1.4	0.0

A- Pool Heating (Warm Climate) B- Pool Heating (Cool Climate) C- Water Heating (Warm Climate) D- Water Heating (Cool Climate) E- Air Conditioning

Original Certification Date: 06-JUL-09

**COLLECTOR SPECIFICATIONS**

<b>Gross Area:</b>	3.916 m <sup>2</sup>	42.15 ft <sup>2</sup>	<b>Net Aperature Area:</b>	3.58 m <sup>2</sup>	38.53 ft <sup>2</sup>
<b>Dry Weight:</b>	72.1 kg	159. lb	<b>Fluid Capacity:</b>	6.1 liter	1.6 gal
<b>Test Pressure:</b>	1103. KPa	160. psg			

**COLLECTOR MATERIALS**

<b>Frame:</b>	Anodized Aluminum
<b>Cover (Outer):</b>	Low Iron Tempered Glass
<b>Cover (Inner):</b>	None

**Pressure Drop**

Flow		ΔP	
ml/s	gpm	Pa	in H <sub>2</sub> O

<b>Absorber Material:</b>	Tube - Copper / Plate - Copper Fin	<b>Insulation Side:</b>	Polyisocyanurate
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