



PRODUCT CATALOG





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Photo on cover provided by: Aegis Solar, FLS Energy, and Solar Service, Inc. Opposite page photo provided by Saving Oahus Solar

AE SERIES COLLECTORS



AE Series "Flat Plate" Solar Thermal Collectors, manufactured in the United States by Alternate Energy Technologies (AET); are designed to meet the needs of any system from 30 to 50,000 gallons. Collectors can be used to provide hot water, space heating, air conditioning, and industrial process heating.

Technical Information

Glazing: Low Iron, high-temperature, tempered glass (1 sheet) with a total solar energy transmission of 90%. Iron content: 0.01% iron oxide. Thickness: 1/8" or 5/32".

Glazing Gasket: UV resistant, durable EPDM U-Channel with molded corners. Prohibits water penetration and assures long life.

Grommet: Extruded Silicone with 1-1/8" bore.

Collector Frame: 6063 -T6 Aluminum extrusion (1/8" wall thickness) with electrostatic paint finish and integral mounting system.

Collector Batten: 6005-T5 Aluminum extrusion (1/8" wall thickness) with electrostatic paint finish.

Corner Bracket: Architectural aluminum angles, internal to the collector box, with aircraft-grade pin grip rivets to ensure high stability.

Backsheet: Type 3105-H14 aluminum sheet, MB-40 medium bronze, 0.019" stucco embossed, pop-riveted to aluminum frame.

Fasteners: 5056 Aluminum rivets secure the backsheet. Batten screws are 18-8 Stainless Steel, 10-24 x 3/8", hex head, with black oxide coating.

Insulation: Foil-faced Poly-isocyanurate closed cell board insulation, 1" thick (R-6.7), with 3/4" Foil-faced poly-isocyanurate board in sidewalls (R-5).

Absorber Plate: Exclusively manufactured by Thermafin™ Mfg., a 100% copper absorber plate. High frequency forge welded for a permanent molecular bond between tube and fin. No soldered or crimped joints to fail from expansion and contraction. Warrantied for 30 years on fin-to-tube joint.

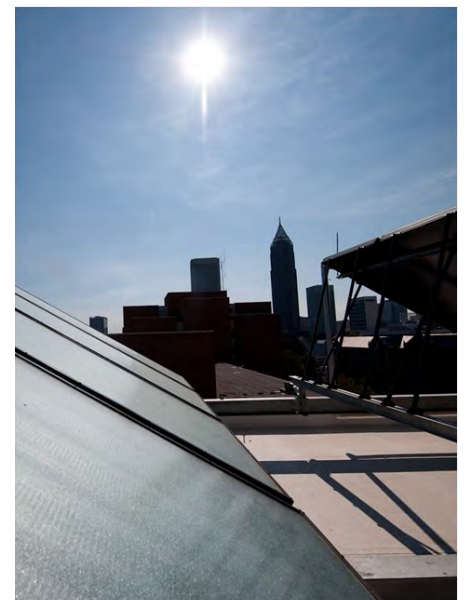
Absorber Coating: Crystal Clear Selective Coating, exclusively by Thermafin™ Mfg., formulated for high absorptivity ($\alpha > 0.96$) and low emissivity ($\epsilon < 0.08$).

Design Life: 30-50 Years

Warranty: 10 Years

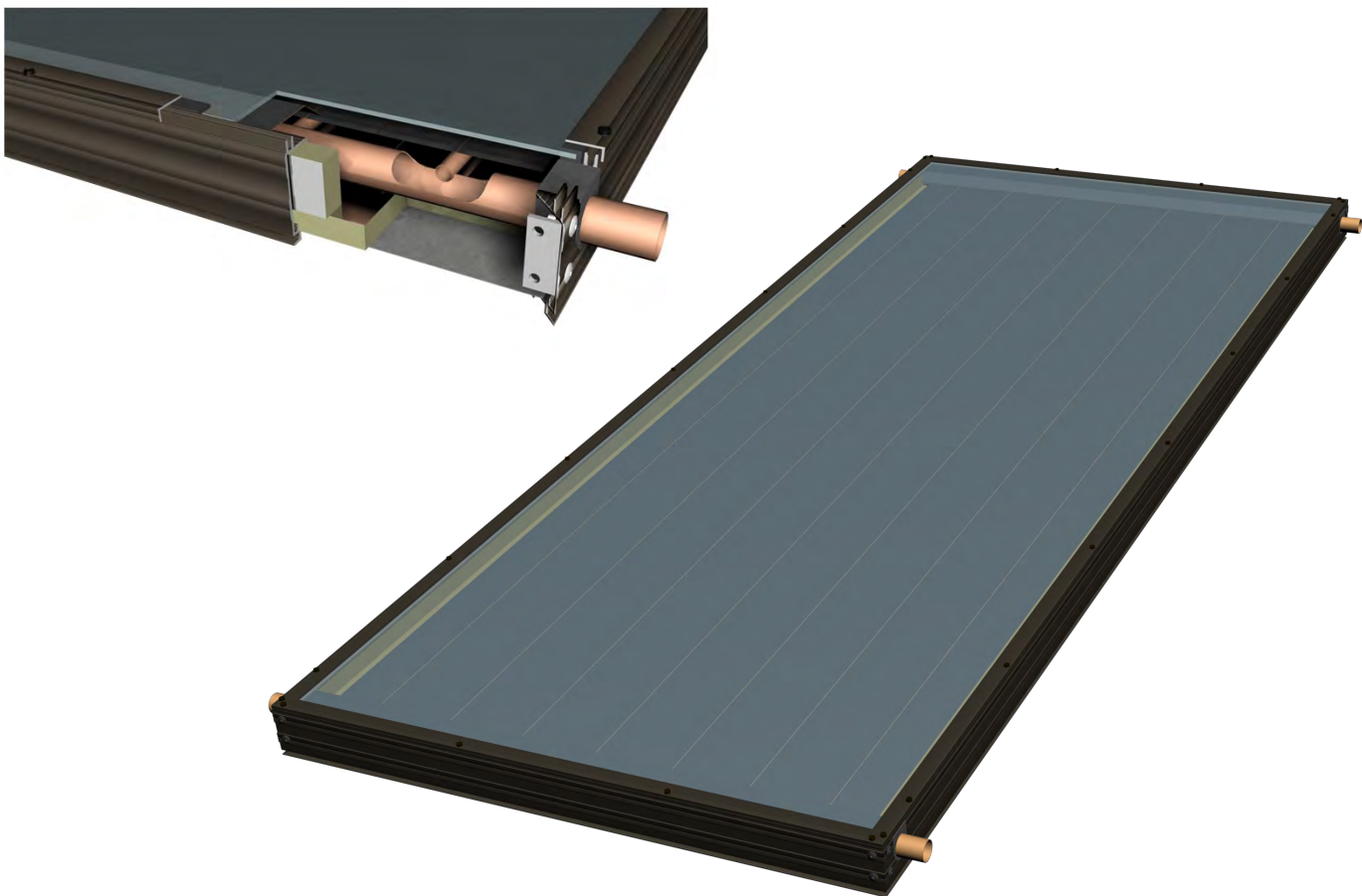
Test Pressure: 160 PSI: each absorber plate individually pressure tested to ensure quality

Working Pressure: 150 PSI



AE SERIES COLLECTORS

AE Collector SPECIFICATIONS					
Collector	AE-21	AE-24	AE-26	AE-32	AE-40
Length (in)	85.187	97.187	77.187	97.187	121.187
Width (in)	35.187	35.187	47.187	47.187	47.187
Height (in)	3.137	3.137	3.137	3.137	3.137
Gross Area	20.8	23.7	25.3	31.8	39.7
Fluid Capacity (gal)	0.7	0.8	0.90	1.1	1.2
Dry Weight (lbs)	74	85	89	110	153
Optimum Flow Rate (gpm)	0.8	0.9	1.0	1.2	1.5
Pressure Drop at optimum flow rate (psi)	0.05	0.05	0.05	0.05	0.06
BTU per panel per day (SRCC Category C - Clear Day)	20.8	23.8	25.7	32.5	41.7

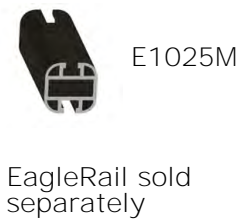
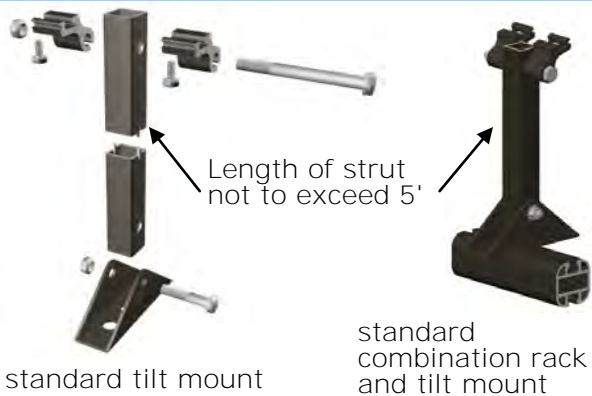


AE SERIES COLLECTOR MOUNTING HARDWARE

AE-FM Flush Mount

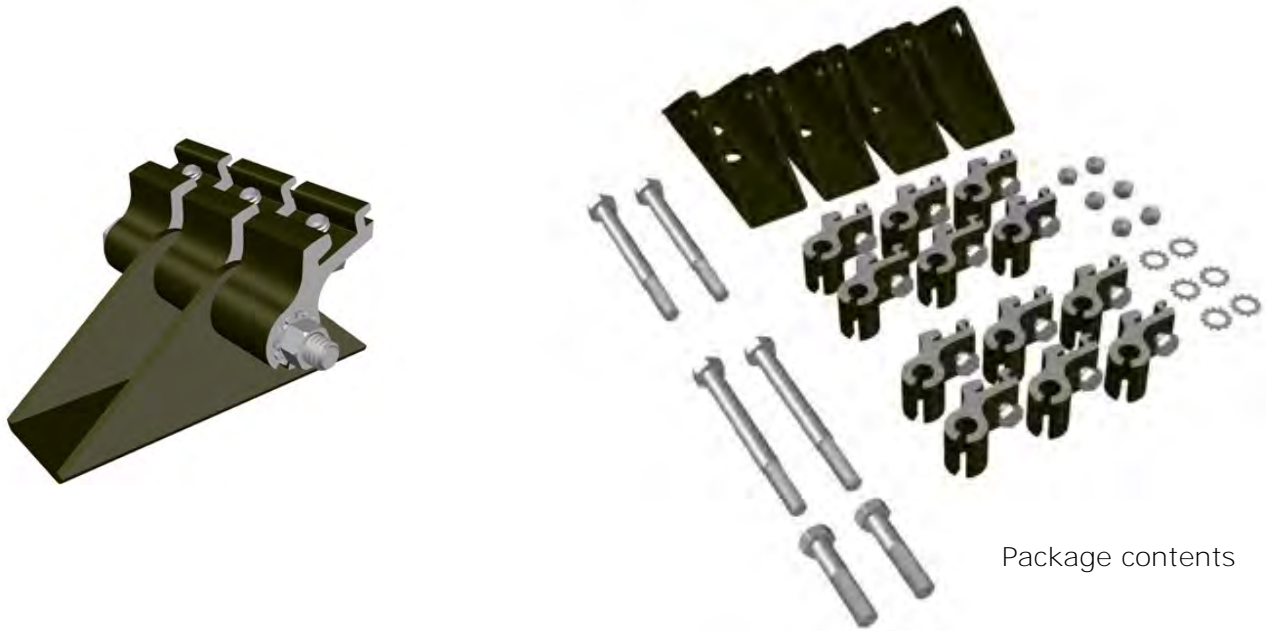


AE-MH Standard Mount for flush, rack, or tilt mounting: strut for tilt ordered separately

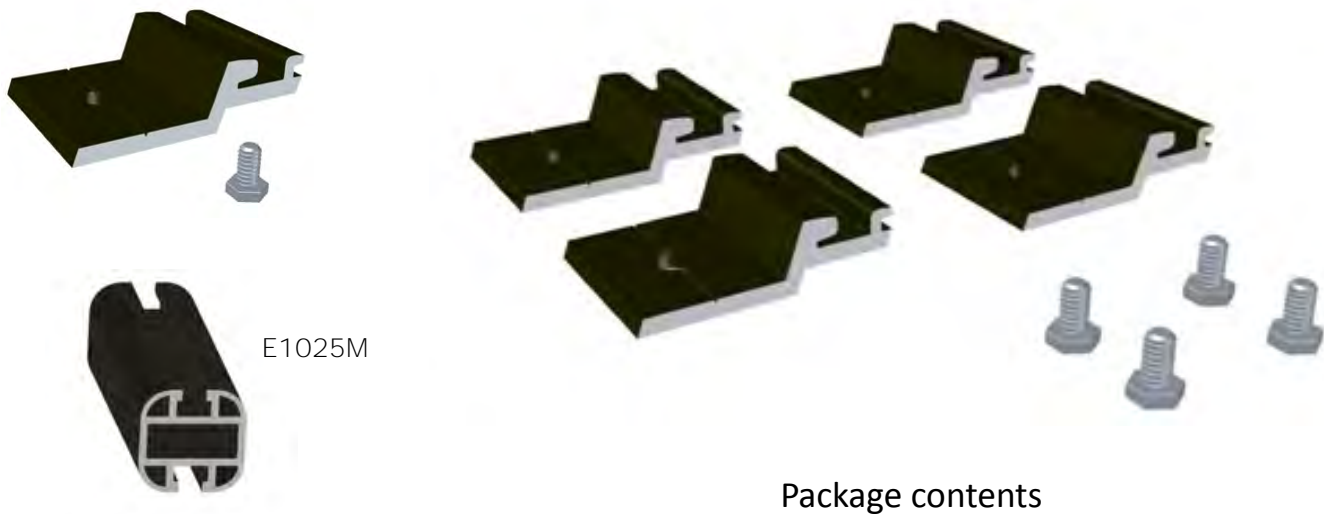


AE SERIES COLLECTOR MOUNTING HARDWARE

AE-MHX High Wind Mount



AE-RM Rack Mount



EagleRail sold separately

AE SERIES MOUNTING HARDWARE WITH EAGLERAIL

AE Mounting hardware with EagleRail



Rack Mount



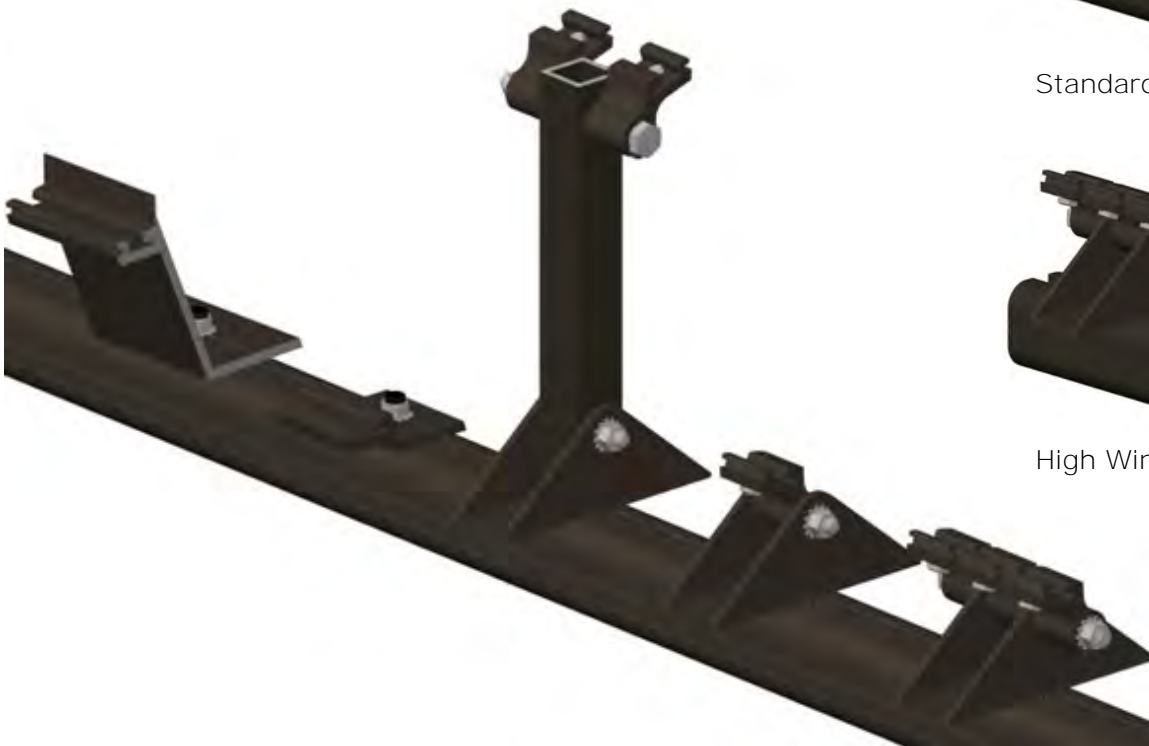
Tilt Mount



Flush Mount



Standard Mount



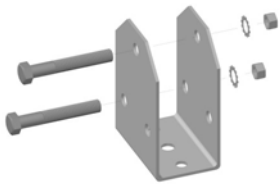
High Wind Mount

EAGLERAC MOUNTING SYSTEM

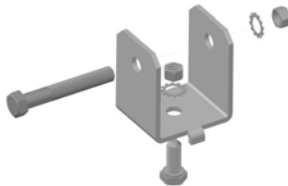
EagleRail Hardware



E1025M
EagleRail



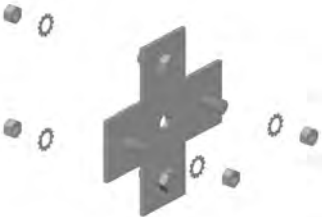
EagleRac Mount Foot Kit
M103K
(Foot only - M103)



EagleRac Mount Clip Kit
M104K
(Clip only - M104)



EagleRac Triangle Truss Kit Assembly
M-ERS-TTK



EagleRac Mount Cross Plate
M107K
(Plate only - M107)



EagleRac Mount Tee Plate
M109K
(Tee only - M109)



MS & MSC SERIES COLLECTORS



MorningStar Series "Flat Plate" Solar Thermal Collectors, manufactured in the United States by Alternate Energy Technologies (AET); are designed to meet the needs of any system from 30 to 50,000 gallons for use in hot water, space heating, air conditioning, and industrial process heating systems.

MS = Standard MorningStar Series

MSC = Commercial MorningStar Series (High Performance)

Technical Information

Glazing: Low Iron, high-T, tempered glass (1 sheet) with a total solar energy transmission of 90%. Iron content: 0.01% iron oxide. Thickness: 1/8" or 5/32". (MSC Series uses low iron, tempered, clear glass).

Glazing Gasket: UV resistant, durable EPDM U-Channel with molded corners. Prohibits water penetration and assures long life.

Grommet: Extruded Silicone with 1-1/8" bore.

Collector Frame and Batten: 6063 -T6 Aluminum extrusion (1/8" wall thickness) with anodized bronze finish for long life and strength. Extrusion includes an integral mounting system.

Corner Bracket: Architectural aluminum angles inside with aircraft-grade pin grip rivets to ensure high stability.

Backsheet: Type 3015-H14 aluminum sheet, MB-40 medium bronze; 0.019" stucco embossed. Pop-riveted to aluminum frame.

Fasteners: 5056 Aluminum rivets secure the backsheet. Batten screws are 18-8 Stainless Steel, 10-24 x 3/8", hex head, with black oxide coated.

Insulation: Foil-faced Poly-isocyanurate board insulation, 1" thick (R-6.7), with 3/4" Foil-faced poly-isocyanurate board in sidewalls (R-5). (MSC uses additional microlite insulation)

Absorber Plate: Exclusively manufactured by Thermafin™ Mfg., a 100% copper absorber plate which meets or exceeds type M specifications. High frequency forge welded for a permanent molecular bond between tube and fin. No soldered or crimped joints to fail from expansion and contraction. All copper tube meets or exceeds type M specifications. Warranted for 30 years on fin-to-tube joint. (MSC includes 1 extra riser)

Absorber Coating: Crystal Clear Selective Coating, exclusively from Thermafin™ Mfg. Formulated for high absorptivity ($\alpha > 0.96$) and low emissivity ($\epsilon < 0.08$).

Design Life: 30-50 Years

Warranty: 10 Years

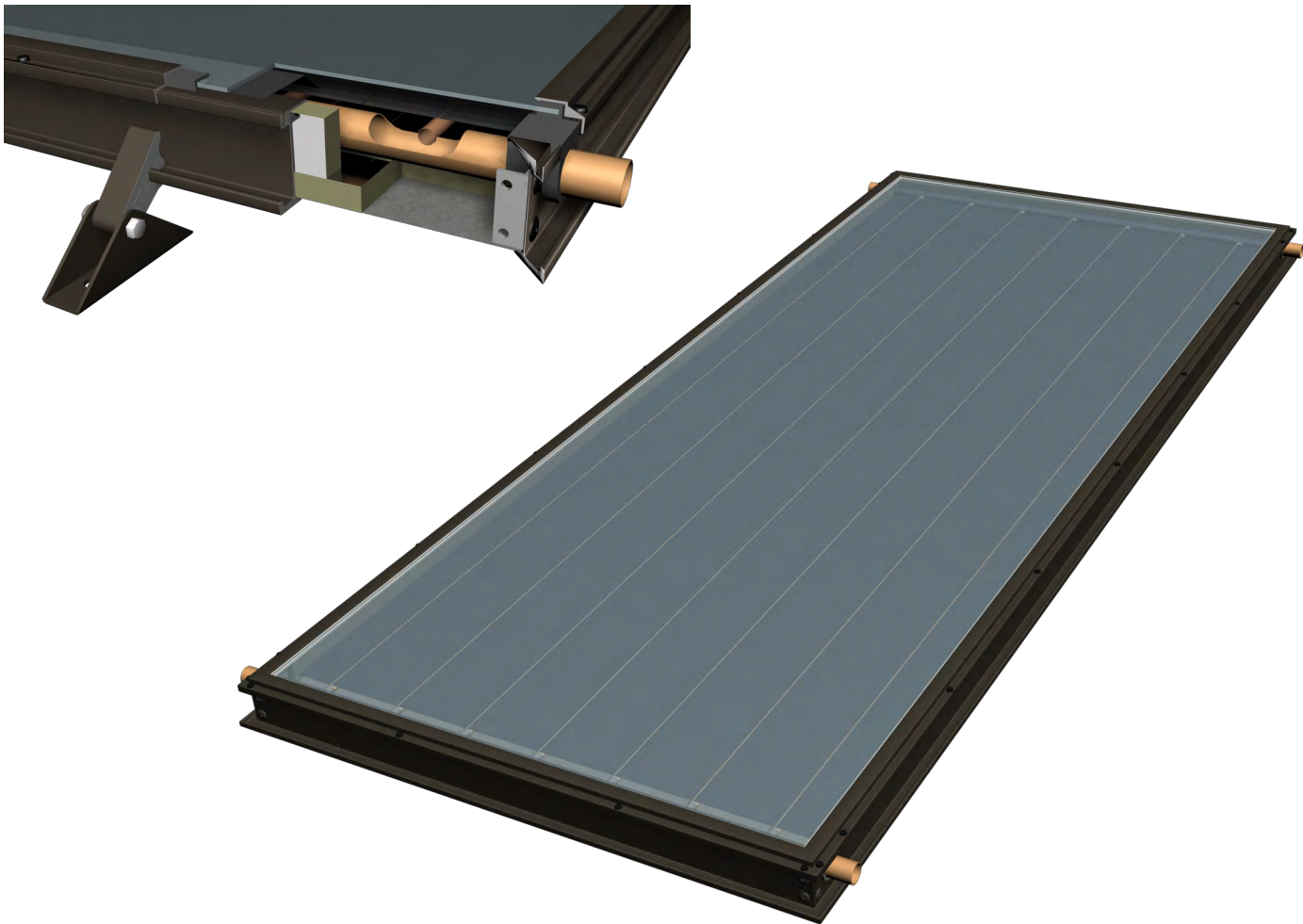
Test Pressure: 160 PSI: each absorber plate individually pressure tested to ensure quality

Working Pressure: 150 PSI



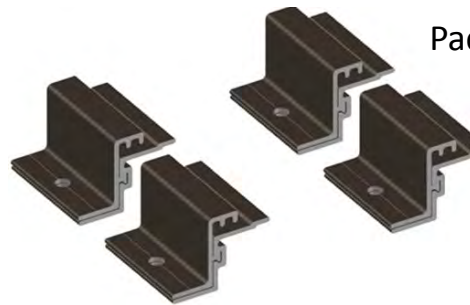
MS/MSC SERIES COLLECTORS

MSC Collector SPECIFICATIONS						
Collector	MS/C-21	MS/C-24	MS/C-26	MS/C-28	MS/C-32	MS/C-40
Length (in)	86.0	98.0	78.0	86.0	98.0	122.0
Width (in)	36.0	36.0	48.0	48.0	48.0	48.0
Height (in)	3.125	3.125	3.125	3.125	3.125	3.125
Gross Area	21.5	24.5	26.0	28.5	32.7	40.7
Fluid Capacity (gal)	0	0	0	0	0	0
Dry Weight (lbs)	76	87	91	102	116	151
Optimum Flow Rate (gpm)	0.8	0.9	1.0	1.05	1.2	1.5
Pressure Drop at optimum flow rate (psi)	0.05	0.05	0.05	0.05	0.05	0.06
BTU per panel per day (SRCC Cat C - Clear Day)	22.7	25.9	28.0	31.0	35.5	44.4



MS/MSC SERIES COLLECTOR MOUNTING HARDWARE

MSC-FM Flush Mount



Package contents

MSC-MH Standard Mount

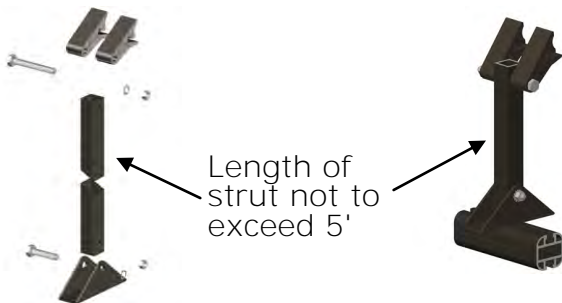
for flush, rack, or tilt mounting: strut for tilt ordered separately



standard
flush mount



standard
rack mount



standard tilt
mount

standard
combination
rack and tilt
mount



Package contents



1" strut sold
separately



EagleRail
sold
separately

MS/MSC SERIES COLLECTOR MOUNTING HARDWARE

MSC-MHX High Wind Mount



MSC-RM Rack Mount



Package contents



EagleRail sold separately



MS/MSC MOUNTING HARDWARE WITH EAGLERAIL

MSC Mounting hardware with EagleRail



Rack Mount



Tilt Mount



Flush Mount



Standard Mount



High Wind Mount

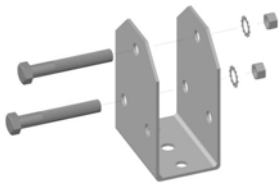


EAGLERAC MOUNTING SYSTEM

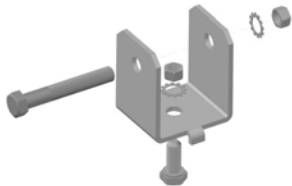
EagleRail Hardware



E1025M
EagleRail



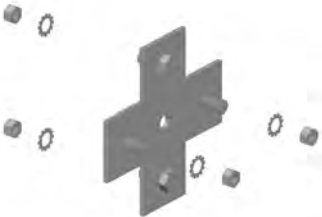
EagleRac Mount Foot Kit
M103K
(Foot only - M103)



EagleRac Mount Clip Kit
M104K
(Clip only - M104)



EagleRac Triangle Truss Kit Assembly
M-ERS-TTK



EagleRac Mount Cross Plate
M107K
(Plate only - M107)



EagleRac Mount Tee Plate
M109K
(Tee only - M109)



STORAGE TANKS

ThermoMiser Stainless Steel tanks with SS heat exchanger

- * Used in DBS system
- * Constructed of 316L stainless steel
- * Resistant to rust and dents
- * Durable plastic jacket
- * Submerged single wall heat exchanger
- * Backup 4500W heating element
- * All side port connections allowing for hidden plumbing
- * 10 year warranty

<u>Part #</u>	<u>Description</u>	<u>WT (lbs)</u>
TM-80SS-HE	80 Gal Stainless Steel with SS HX	146
TM-120SS-HE	120 Gal Stainless Steel with SS HX	215



ThermoMiser Double wall heat exchanger tanks

- * Used in DB, I, IPV systems
- * Wrap around double wall heat exchanger
- * Backup 4500W heating element
- * Glass lined
- * Top port connect, side heat exchanger connect
- * 6 year warranty

<u>Part #</u>	<u>Description</u>	<u>WT (lbs)</u>
TM-80HE-1	80 Gal Tank with Heat Exchanger	212
TM-120HE-1	120 Gal Tank with heat Exchanger	365



STORAGE TANKS

Open Loop Storage Tank Series

- * Used in DX, D, and DPV systems
- * Storage only, no heat exchanger
- * Backup 4500W heating element
- * Glass lined
- * Top and/or side port connections
- * 6 year warranty



<u>Part #</u>	Description	WT <u>(lbs)</u>
OST-65TCSC	65 Gal Top/Side Connect	152
OST-80TCSC	80 Gal Top/Side Connect	195
OST-120TCSC	120 Gal Top/Side Connect	289

Free Flow Thermosiphon Tanks

- * Free flow systems only
- * Horizontal tank for natural convection
- * Storage only, no heat exchanger or backup element
- * 5 year warranty



<u>Part #</u>	Description	WT <u>(lbs)</u>
FF-40G	40 Gal Glass Lined	84
FF-50G	50 Gal Glass Lined	102
FF-80G	80 Gal Glass Lined	156

DRAINBACK RESERVOIRS

Drainback Systems with Reservoirs

All AET Drainback Systems require a Drainback Reservoir. Reservoirs come with or without a heat exchanger, depending on the drainback system type. Tanks are constructed from stainless steel. Both types of reservoirs are available in 10, 15, and 20 gallon sizes.

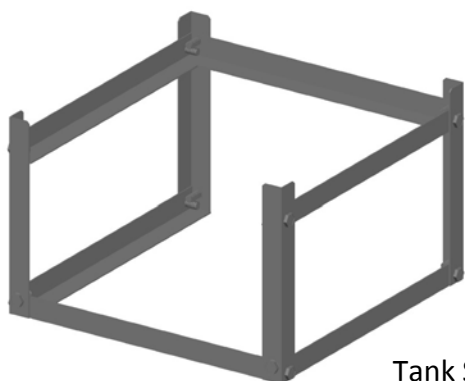
5 Year Warranty on all Drainback Tanks

All reservoirs come with site glass, fittings, pressure relief valve, AND buffer/inhibitor solution. A tank stand is available for 10 gallon reservoirs.



Drainback Reservoirs (Without Heat Exchangers)

<u>Part #</u>	<u>Description</u>	<u>Useable Capacity (gallons)</u>	<u>WT (lbs)</u>
DB-10*	10 Gallon Tank	10	39
DB-15	15 Gallon Tank	15	58
DB-20	20 Gallon Tank	20	60



Tank Stand



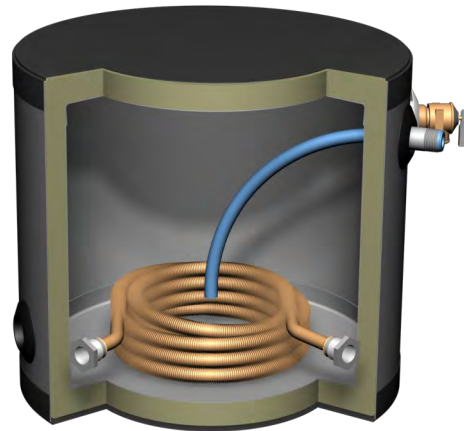
*Tank Stand available for use with 10 gallon reservoirs only

DRAINBACK RESERVOIRS

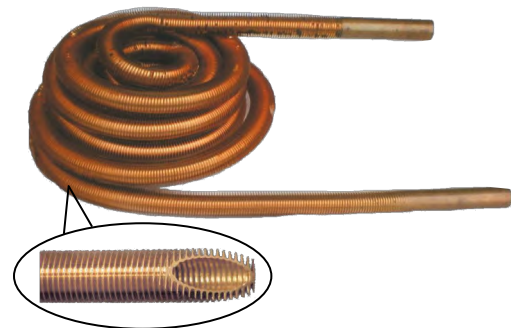
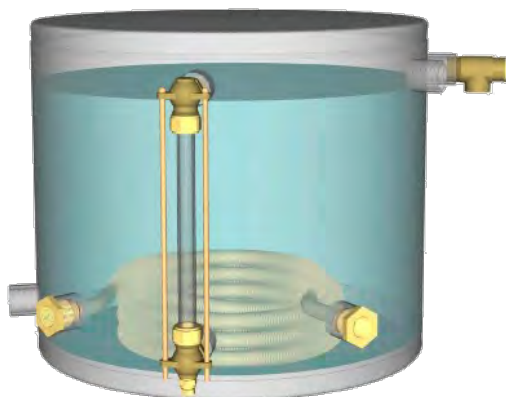
Drainback Tanks With Heat Exchanger

<u>Part #</u>	<u>Description</u>	<u>Heat Exchanger Area</u> (ft ²)	<u>Useable Capacity</u> (gallons)	<u>WT (lbs)</u>
DB-10-10X*	10 Gallon Tank	10	9.86	49
DB-15-15X	15 Gallon Tank	15	14.78	68
DB-20-20X	20 Gallon Tank	20	19.70	70

*Tank Stand available for use with 10 gallon reservoirs only



The heat exchanger is unique in its design of containing 11 fins per inch that allow for the maximum amount of surface area for the heat exchange process. The EagleSun Drainback reservoir provides an 98% heat transfer, which is the highest on the market today.



PUMPS

Grundfos (AC) Pumps

Part

Description



CP-UP15-100F*

1/25 HP, Cast Iron with Epoxy Coated Volute, Flanged, Flow 0-8 GPM, Head 0-36 ft



CP-UP15-10SU7P

1/25 HP, Stainless Steel, 3/4" Threaded Connection, Flow 0-6 GPM, Head 0-5 ft



CP-UP15-18B5

1/25 HP, Bronze, 1/2" Sweated Connection, Flow 0-15 GPM, Head 0-14 ft



CP-UP15-58F*

1/25 HP, Cast Iron, Flanged, Flow 0-14 GPM, Head 0-16 ft

* Order Flanges

Universal Isolation Flanges

for use with Grundfos and Taco Pumps

Part

Description



IFS-50

1/2" Webstone Isolation Flange Set

IFS-75

3/4" Webstone Isolation Flange Set

Grundfos Pump Flanges



Part

Description

F-GF1526

Grundfos 3/4" Cast Iron Flange Set

EagleSun Pumping Station

Part








Description



CP-ES-SPS





Eagle Sun Pumping Station with built-in pump, controller, digital readout, flow meter, sensors, gauges, air vent, and relief valve, includes 2 gallon expansion tank, w/ bracket and fittings

Taco (AC) Pumps



<u>Part #</u>	<u>Description</u>
 CP-003ST4	1/40 HP, Stainless Steel, 3/4" Threaded connection, Flow 0-6 GPM, Head 0-5 ft
 CP-009SF*	1/8 HP, Stainless Steel, Flanged, Flow 0-8 GPM, Head 0-34 ft,
 CP-009F*	1/8 HP Cast Iron, Flanged, Flow 0-8 GPM, Head 0-34 ft
 CP-009VT5*	Variable Speed Cast Iron, Flanged, with Built in Control and Sensors
 CP-006B4	1/40 HP, Bronze, 3/4" Threaded connection, Flow 0-10 GPM, Head 0-9 ft
 CP-008F*	1/25 HP Cast Iron, Flanged, Flow 0-14 GPM, Head 0-16 ft
 CP-008S*	1/25 HP, Stainless Steel, Flanged, Flow 0-14 GPM, Head 0-34 ft

* Order Flanges

Taco Pump Flanges

<u>Part #</u>	<u>Description</u>
 110-251S	Taco 3/4" Stainless Steel Flange Set
 110-251B	Taco 3/4" Bronze Flange Set
 110-251	Taco 3/4" Cast Iron Flange Set, Green
 110-251G	Taco 3/4" Cast Iron Flange Set, Grey

DC Pumps (for use with PV Panels)

<u>Part #</u>	<u>Description</u>
 CP809-24	24V DC March Pump (for use with PV-10 module)
 CP809-12	12V DC March Pump (for use with PV-20 module)

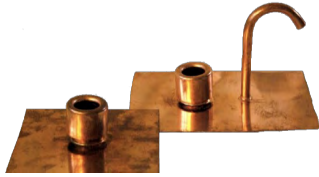
PV Modules (use DC Pump)

<u>Part #</u>	<u>Description</u>
PV-10	10 Watt 24V Module
PV-20	20 Watt 12V Module



CONTROLS AND COMPONENTS

Roof Flashing Kits



<u>Part #</u>	<u>Description</u>
RF-50	Roof Flashing W/ 1/2" Coolie Cap
RF-75	Roof Flashing W/ 3/4" Coolie Cap

Controls

Part

Description



DTC-ES-1C

Eagle Sun Controller with Variable Speed Output, BTU Meter, and 2 Sensors



DTC-GL30-LCO

Goldline Differential Temperature Control w/2 Sensors and Line Cord

Miscellaneous Components

Part

Description



T-60W

Thermometer, 35°-250°F, 1/2" MPT

TPRV

Temp & Pressure valve, 150 PSI, 3/4" MPT

S-10








Bolt/Strap-On Sensor, 10K Thermistor

FM75S

Flow Meter 1-10 GPM

CONTROLS AND COMPONENTS

Miscellaneous Components

	<u>Part #</u>	<u>Description</u>
	AVC-417	Air/Coin Vent, 125 PSI, 1/8" MPT
	MV-1170	Anti Scald Mixing Valve, 3/4" FPT
	AV-150	Air Vent, 150 PSI, 1/4" MPT
	BD-50	Boiler Drain, 1/2" MPT
	BD-75	Boiler Drain, 3/4" MPT
	BV-50	Ball Valve, 2 Way, 1/2" Sweat
	BV-75	Ball Valve, 2 Way, 3/4" MPT
	CV-50	Maxi-Flow Spring Check Valve, 1/2" SWT
	CV-75	Maxi-Flow Spring Check Valve, 3/4" SWT
	ET-20	Expansion Tank, 2.0 Gal, 1/2" MPT
	PG100	Pressure Gauge, 100 PSI, 1/4" MPT
	PGS-10	Immersion Sensor, 10K Thermistor, 1.2" MPT
	PR-150	Pressure Relief Valve, 150 PSI, 3/4" MPT
	WH-TM24	Water Heater Timer

RESIDENTIAL SYSTEMS

CHOOSING A SYSTEM



Drainback System

MANUFACTURER RECOMMENDED SYSTEM !

Advantages:

- * Maintenance free
- * Excellent reliability
- * Protects from freezing
- * Protects from overheating
- * Fewer system components
- * Non pressurized
- * Eliminates failure prone system components
- * Water can be used as a safe and efficient heat transfer fluid



Drainback Systems in depth

AET offers three types of drainback systems:

**DB
DX
DBS**

Details of each system are provided on pages 28-35





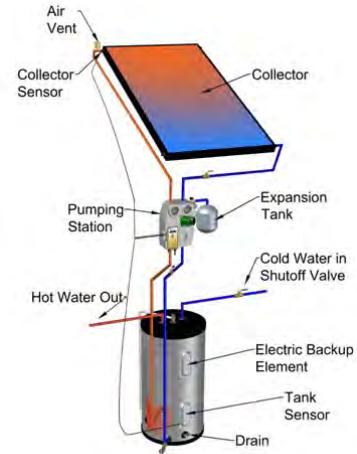
Pressurized Glycol

Advantages:

- * Protects from freezing
- * System is suited for installations where required drainback piping slope cannot be achieved
- * Requires only one tank and one pump
- * Requires smaller pump due to pressurized system design
- * PV powered DC pump can be used

Considerations:

- * Glycol must be tested every year and replaced as necessary
- * Less efficient than the drainback systems
- * Requires manual action for overheating protection
- * Some system components require replacement over time
- * Local codes may require double wall heat exchanger decreasing



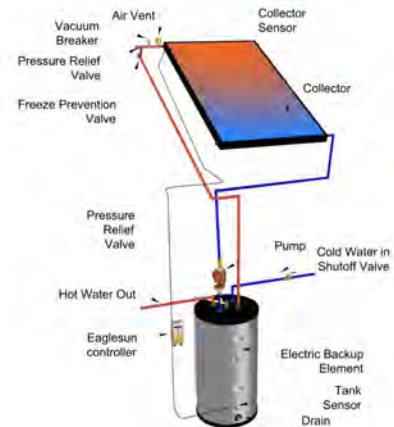
Direct Pressurized

Advantages:

- * Most efficient and least expensive active solar system
- * Requires only one tank and one pump
- * Requires smaller pump due to pressurized system design
- * PV powered DC pump can be used

Considerations:

- * No freeze protection: cannot be installed where freezing may occur
- * Cannot use where water is hard or PH is not neutral
- * Prone to scaling and corrosion as potable water runs through collectors
- * Requires manual action for overheating protection
- * Some system components require replacement over time



CHOOSING A SYSTEM

Understanding the AET Solar System Part Number

DBS-80-64

Storage Tank Size

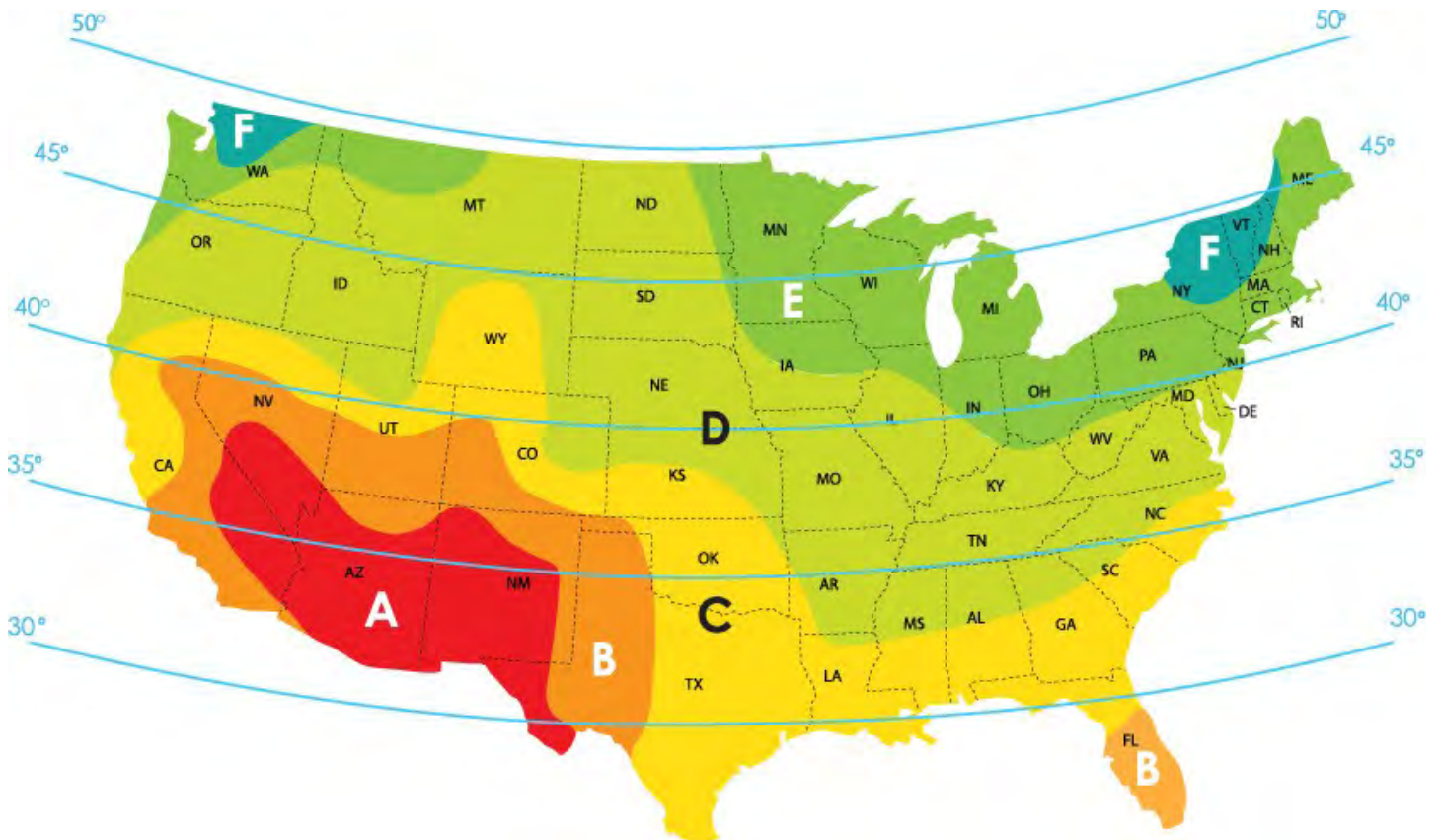
Collector Square Foot Area

Drainback System Type:

DB	Original Drainback
DBS	Stainless Steel
DX	Drainback with Reservoir Heat Exchanger
FF	Free Flow Thermosiphon
I	Indirect Glycol
IPV	Indirect Glycol with PV Panel
D	Direct
DPV	Direct with PV Panel

To choose the right Drainback System, follow these two easy steps:

STEP 1: Find the installation site **climate zone** from the map below: **A-F**



STEP 2: Using the number of **Bedrooms** in the home, find the correct system from the chart below:

3 Bedroom Homes

Climate A = DBS-80-40 / DBS-80-42

Climate B = DBS-80-40 / DBS-80-42

Climate C = DBS-80-52

Climate D = DBS-80-64

Climate E = DBS-80-64 / DBS-80-80

Climate F = DBS-80-80

4+ Bedroom Homes

Climate A = DBS-120-64

Climate B = DBS-120-64

Climate C = DBS-120-80

Climate D = DBS-120-80

Climate E = DBS-120-96

Climate F = DBS-120-96

NOTE: The **system type** above could also be a **DB** or a **DX** Drainback System;
an **I** or **IPV** Indirect Glycol System; or a **D** or **DPV** Direct System

Disclaimer: These systems are a "rule of thumb" created for due south installations or up to 25 degrees off. Anything more than 25 degrees off due south, or if the roof pitch is + or - 15 degrees off your latitude, go up a collector size.

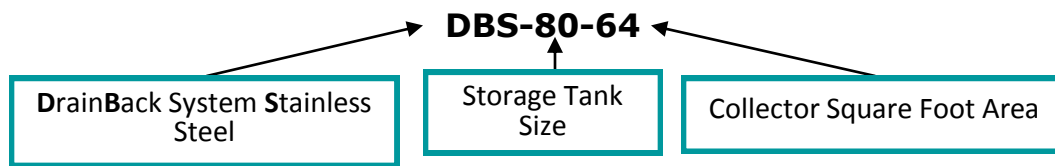
Ideal installation is flush mount. The collectors are designed to look like skylights. Please keep aesthetics in mind when installing solar collectors for the future of our industry!



DBS Drainback System

AET's PREMIER DRAINBACK SYSTEM !
The BEST of BOTH DX and DB Drainback Systems Combined !!

Understanding the DBS Series Drainback System Part Numbers

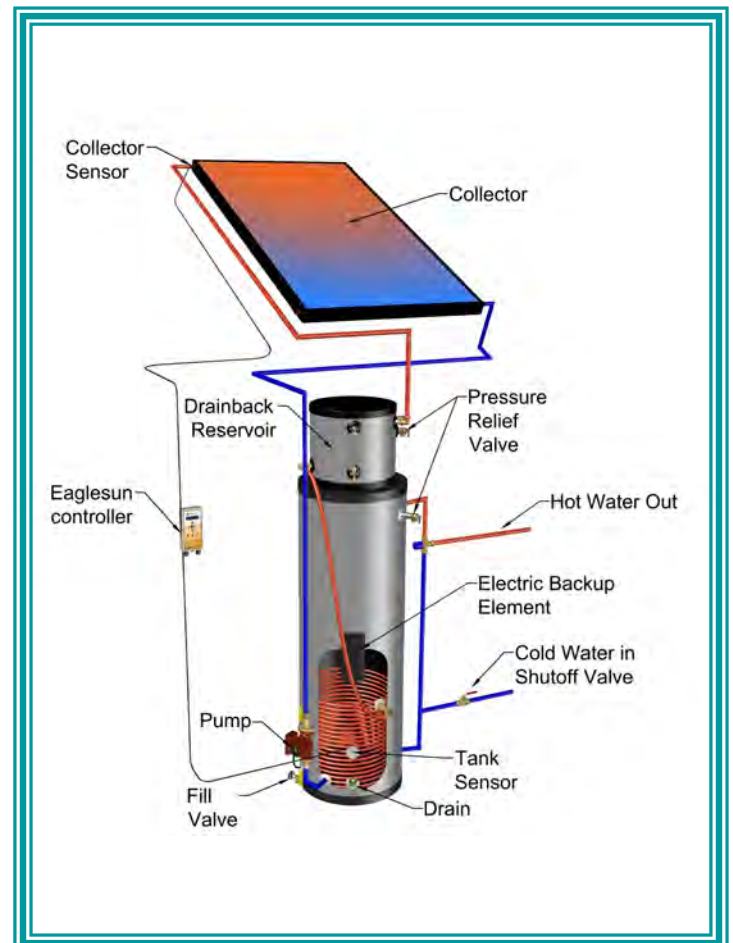


Advantages:

- * Excellent Corrosion Resistance
- * Assured Reliability
- * Stainless Steel Tank
- * Stainless Steel Drainback Reservoir
- * Stainless Steel Heat Exchanger
- * High Efficiency
- * Protects against Hard and Aggressive Water
- * Protects against overheating
- * Protects against freezing
- * No Anode Rod
- * Only one pump
- * Single wall heat exchanger for efficiency

Pre-Engineered DBS Drainback Systems

DB System Part Number	Storage Tank	Collector(s)
DBS-80-40	80 gallon	one AE-40 Collector
DBS-80-42	80 gallon	two AE-21 Collectors
DBS-80-52	80 gallon	two AE-26 Collectors
DBS-80-64	80 gallon	two AE-32 Collectors
DBS-120-64	120 gallon	two AE-32 Collectors
DBS-120-96	120 gallon	three AE-32 Collectors



All Kits Contain:

DB-10C 10 gallon Stainless Steel Reservoir



DTC-ES-1C Eagle Sun Differential Controller with 2 sensors



UP15-100F Grundfos Cast Iron High Head Pump



F-GF1526 3/4" NPT Cast Iron Flange Set



BD-75 3/4" Boiler Drain Valve



AE-FM Flush Mounting Kit



Storage Tank Sizes:

316L Stainless Steel Tank with submerged Stainless Steel Heat Exchanger

**TM-80SS-HE
TM-120SS-HE**



Suggested Additional Components:

Roof Flashings:

RF-50 1/2" Roof Flashing Set



OR

RF-50 3/4" Roof Flashing Set

MV-1170 3/4" FTP Mixing Valve



WH-TM24 Water Heater Timer



Optional Full System Warranty:

SK-5PLW Warranty 5 Year Premium Coverage on Service and Labor

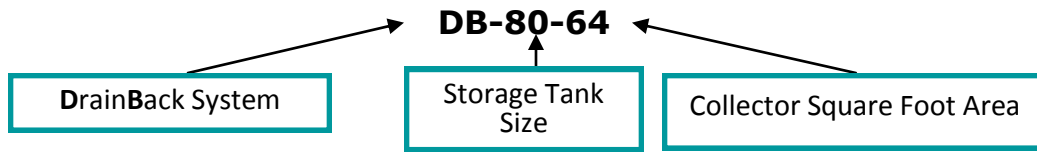
SK-12PLW Warranty 12 Year Premium Coverage on Service and Labor



DB Drainback System

Double Wall Heat Exchanger

Understanding the DB Series Drainback System Part Numbers

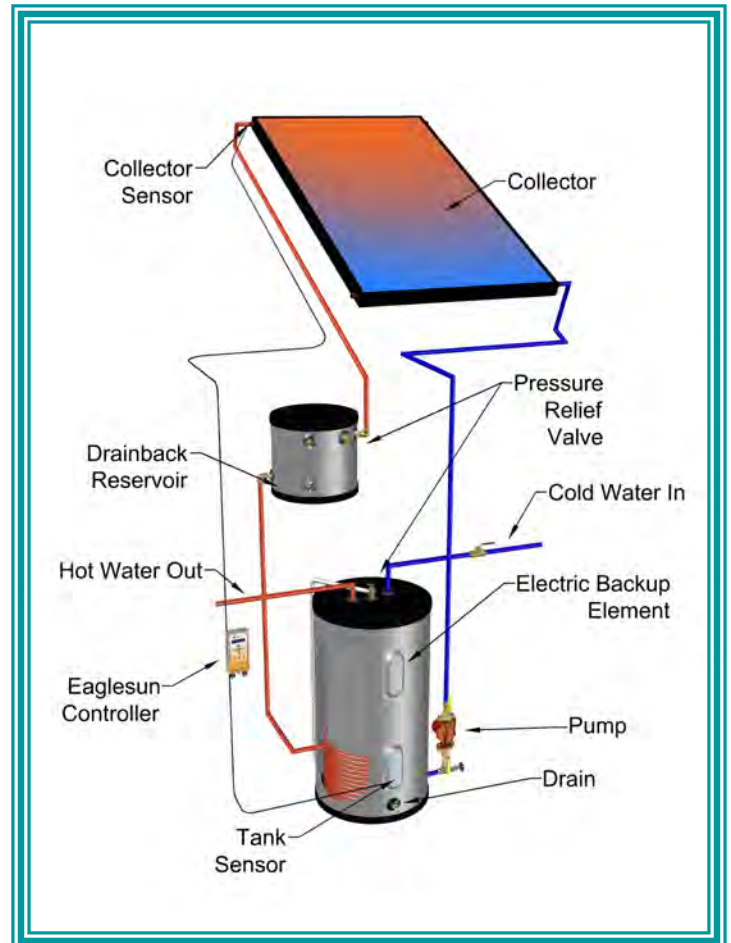


Advantages:

- * High Efficiency
- * Double Wall Heat Exchanger
- * Protects against freezing
- * Protects against overheating
- * Non-pressurized

Pre-Engineered DB Drainback Systems

DB System Part Number	Storage Tank	Collector(s)
DB-80-40	80 gallon	one AE-40 Collector
DB-80-42	80 gallon	two AE-21 Collectors
DB-80-52	80 gallon	two AE-26 Collectors
DB-80-64	80 gallon	two AE-32 Collectors
DB-120-64	120 gallon	two AE-32 Collectors
DB-120-96	120 gallon	two AE-48 Collectors



All Kits Contain:

DB-10C



10 gallon Stainless Steel Reservoir with Tank Stand



DTC-ES-1C

Eagle Sun Differential Controller with 2 sensors



UP15-100F

Grundfos Cast Iron High Head Pump



F-GF1526

3/4" NPT Cast Iron Flange Set



BD-75

3/4" Boiler Drain Valve



AE-FM

Flush Mounting Kit



Storage Tank Sizes:

Glass Lined, Wrap around double wall heat exchanger, Top port connect, side heat exchanger connect

TM-80HE-1 80 Gallon

TM-120HE-1 120 Gallon



Suggested Additional Components:

Roof Flashings:

RF-50 1/2" Roof Flashing Set

OR

RF-50 3/4" Roof Flashing Set



MV-1170 3/4" FTP Mixing Valve



WH-TM24 Water Heater Timer



Optional Full System Warranty:

SK-5PLW Warranty 5 Year Premium Coverage on Service and Labor

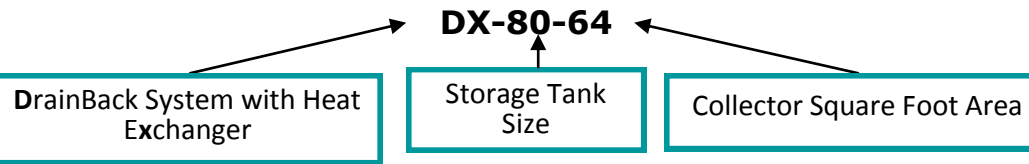
SK-12PLW Warranty 12 Year Premium Coverage on Service and Labor



DX Drainback System

Most Efficient Indirect System

Understanding the DX Series Drainback System Part Numbers

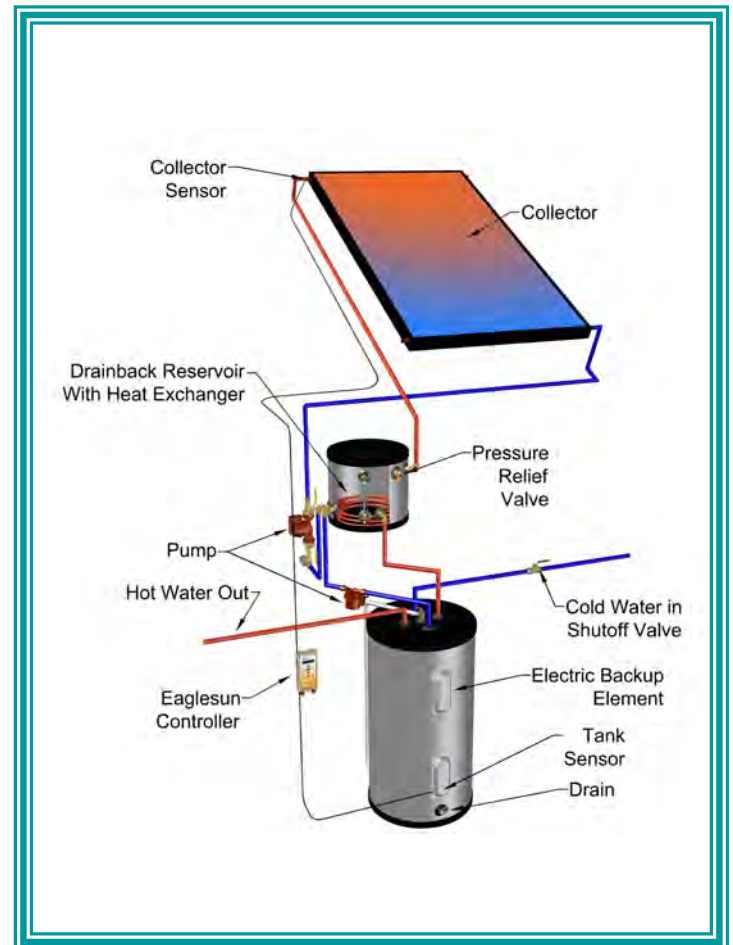


Advantages:

- * Exceptional Efficiency
- * Single Wall Heat Exchanger
- * Protects against freezing
- * Protects against overheating
- * Active Heat Exchange

Pre-Engineered DX Drainback Systems

DX System Part Number	Storage Tank	Collector(s)
DX-65-32	65 gallon	one AE-32 Collector
DX-65-42	65 gallon	two AE-21 Collectors
DX-80-40	80 gallon	one AE-40 Collector
DX-80-52	80 gallon	two AE-26 Collectors
DX-80-64	80 gallon	two AE-32 Collectors
DX-120-64	120 gallon	two AE-32 Collectors
DX-120-96	120 gallon	three AE-32 Collectors



All Kits Contain:

DB-10-10XC

10 gallon Stainless Steel Reservoir with 10 ft² Heat Exchanger with Tank Stand



DTC-ES-1C

Eagle Sun Differential Controller with 2 sensors



UP15-100F

Grundfos Cast Iron High Head Pump



F-GF1526

3/4" NPT Cast Iron Flange Set



UP15-10SU7P

Grundfos Stainless Steel Circulation Pump



BD-75

3/4" Boiler Drain Valve



AE-FM

Flush Mounting Kit



Storage Tank Sizes:

Glass Lined, 4500 W Backup Heating Element, Top and Side Port

Connections:

OST-65TSC 65 Gallon

OST-80TSC 80 Gallon

OST-120TSC 120 Gallon



Suggested Additional Components:

Roof Flashings:

RF-50 1/2" Roof Flashing Set

OR

RF-50 3/4" Roof Flashing Set



MV-1170 3/4" FTP Mixing Valve



WH-TM24 Water Heater Timer



Optional Full System Warranty:

SK-5PLW

Warranty 5 Year Premium Coverage on Service and Labor

SK-12PLW

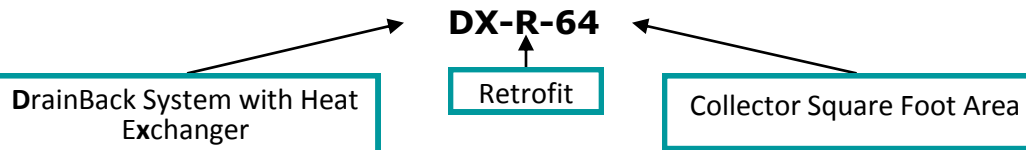
Warranty 12 Year Premium Coverage on Service and Labor



DX-R Drainback Retrofit System

Most Versatile !

Understanding the DX-R Series Drainback Retrofit System Part Numbers

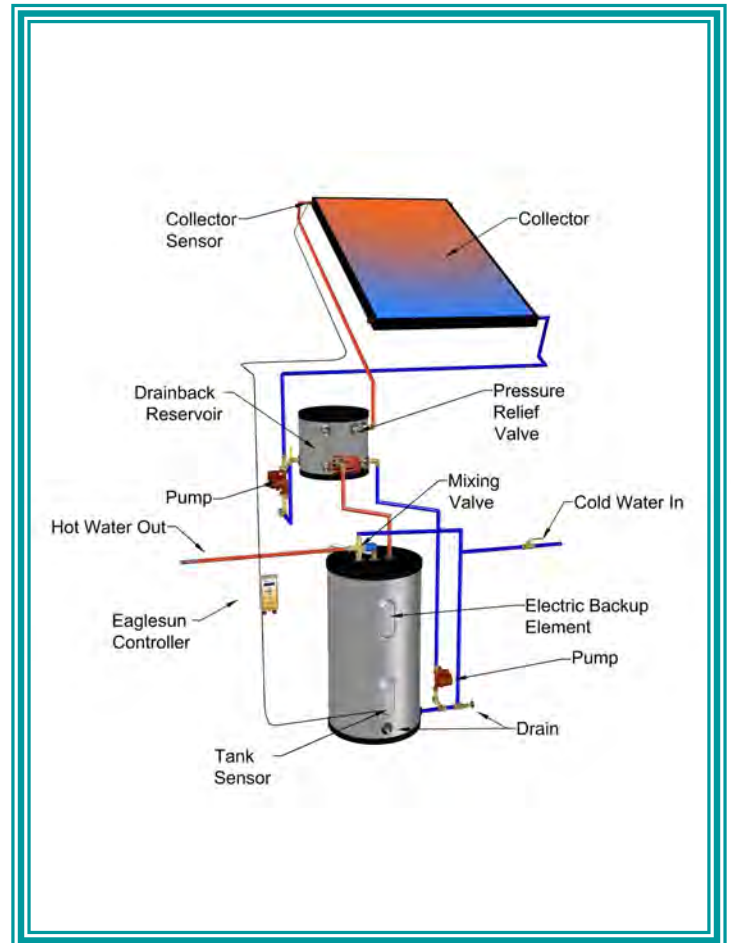


Advantages:

- * Exceptional Versatility
- * Inexpensive - uses existing water tank
- * Protects against freezing
- * Protects against overheating

Pre-Engineered DXR Drainback Systems

DXR System Part Number	Collector(s)
DX-R-26	one AE-26 Collector
DX-R-32	one AE-32 Collector



All Kits Contain:

DB-10-10XC



10 gallon Stainless Steel Reservoir with 10 ft² Heat Exchanger with Tank Stand



DTC-ES-1C

Eagle Sun Differential Controller with 2 sensors



UP15-100F

Grundfos Cast Iron High Head Pump



F-GF1526

3/4" NPT Cast Iron Flange Set



UP15-10SU7P

Grundfos Stainless Steel Circulation Pump



BD-75

3/4" Boiler Drain Valve



AE-FM

Flush Mounting Kit



Suggested Additional Components:

Roof Flashings:

RF-50 1/2" Roof Flashing Set



OR

RF-50 3/4" Roof Flashing Set

MV-1170 3/4" FTP Mixing Valve



WH-TM24 Water Heater Timer



Optional Full System Warranty:

SK-5PLW

Warranty 5 Year Premium Coverage on Service and Labor

SK-12PLW

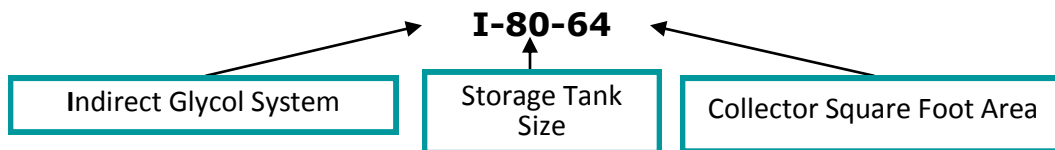
Warranty 12 Year Premium Coverage on Service and Labor



Pressurized Glycol Systems

*** Freeze Protection when Drainback is not an option ***

Understanding the Indirect Pressurized Glycol Series System Part Numbers

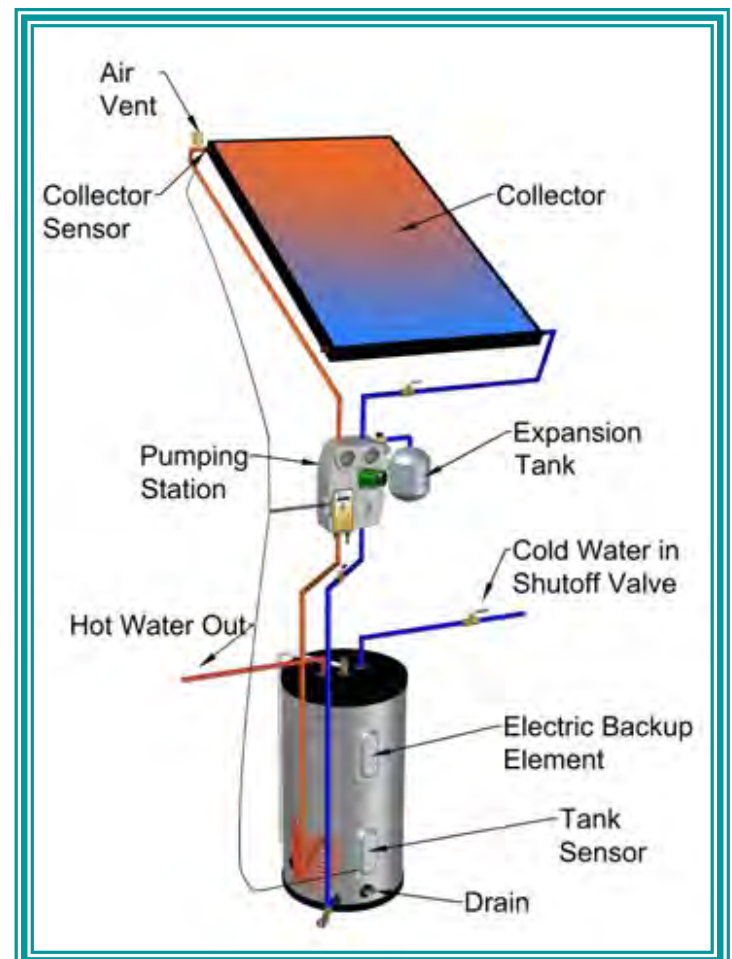


Advantages:

- * Protects against freezing
- * Pipes slope to drain - ¼" per foot slope not mandatory
- * Only one circulation pump needed

Pre-Engineered Glycol Systems

I System Part Number	Storage Tank	Collector(s)
I-80-40	80 gallon	one AE-40 Collector
I-80-52	80 gallon	two AE-26 Collectors
I-80-64	80 gallon	two AE-32 Collectors
I-120-64	120 gallon	two AE-32 Collectors
I-120-80	120 gallon	two AE-40 Collectors
I-120-96	120 gallon	three AE-32 Collectors



All Kits Contain:

CP-ES-SPS Eagle Sun Pumping Station with built-in pump, controller, digital readout, flow meter, sensors, gauges, air vent, and relief valve



ET-20 2.0 Gallon Expansion Tank



3412BPA 3/4 X 1/2 Brass Bushing for expansion tank

AV-150 1/4" Air Vent



AE-FM Flush Mounting Kit



Suggested Additional Components:

Roof Flashings:

RF-50 1/2" Roof Flashing Set



OR

RF-50 3/4" Roof Flashing Set

MV-1170 3/4" FTP Mixing Valve



WH-TM24 Water Heater Timer



Storage Tank Sizes:

Glass Lined, Wrap around double wall heat exchanger, Top port connect, side heat exchanger connect

TM-80HE-1 80 Gallon

TM-120HE-1 120 Gallon



Optional Full System Warranty:

SK-5PLW Warranty 5 Year Premium Coverage on Service and Labor

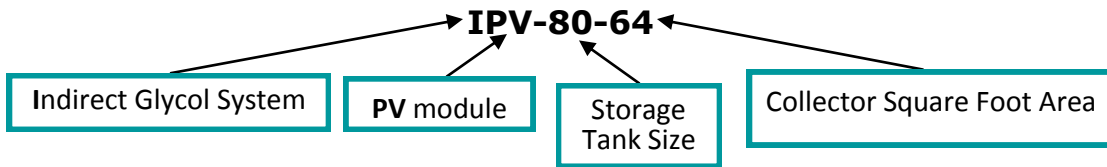
SK-12PLW Warranty 12 Year Premium Coverage on Service and Labor



Pressurized Glycol PV Systems

*** Off Grid Option ***

Understanding the Indirect Pressurized Glycol PV Series System Part Numbers

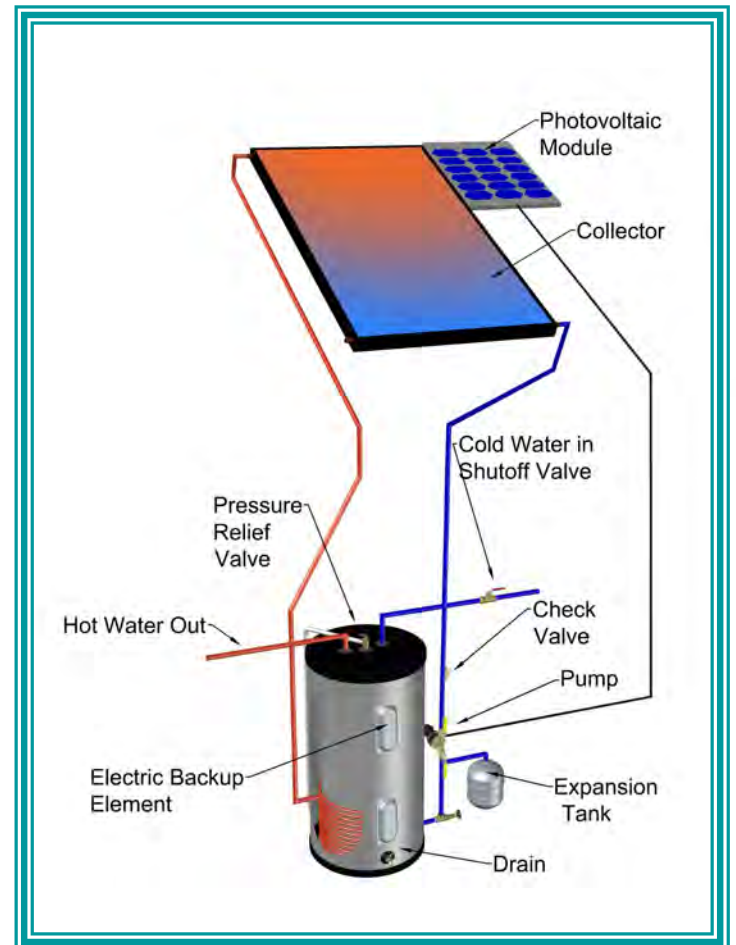


Advantages:

- * Protects against freezing
- * Pipes slope to drain - ¼" per foot slope not mandatory
- * Only one circulation pump needed
- * PV powered DC pump

Pre-Engineered Glycol Systems

IPV System Part Number	Storage Tank	Collector(s)
IPV-80-40	80 gallon	one AE-40 Collector
IPV-80-52	80 gallon	two AE-26 Collectors
IPV-80-64	80 gallon	two AE-32 Collectors
IPV-120-64	120 gallon	two AE-32 Collectors
IPV-120-80	120 gallon	two AE-40 Collectors
IPV-120-96	120 gallon	three AE-32 Collectors



All Kits Contain:

PV-10

10 Watt PV Module



CP809-24

24 Volt March DC Pump



ET-20

2.0 Gallon Expansion Tank



AV-150

1/4" Air Vent



BV-50

1/2" Ball Valve Qty 2



PG100

Pressure Gauge



BD-50

1/2" Boiler Drain Qty 2



CV-50

1/2" Check Valve



PR-75

3/4" Pressure Relief Valve



Storage Tank Sizes:

Glass Lined, Wrap around double wall heat exchanger, Top port connect, side heat exchanger connect

TM-80HE-1 80 Gallon

TM-120HE-1 120 Gallon



Suggested Additional Components:

Roof Flashings:

RF-50 1/2" Roof Flashing Set

OR

RF-50 3/4" Roof Flashing Set



MV-1170 3/4" FTP Mixing Valve



WH-TM24 Water Heater Timer



Optional Full System Warranty:

SK-5PLW

Warranty 5 Year Premium Coverage on Service and Labor

SK-12PLW

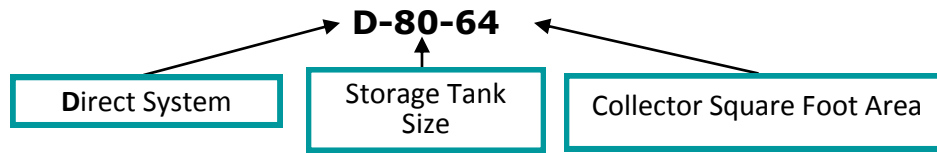
Warranty 12 Year Premium Coverage on Service and Labor



Direct Systems

*** Most Efficient Open Loop System in Tropical Climates ***

Understanding the Direct System Part Numbers

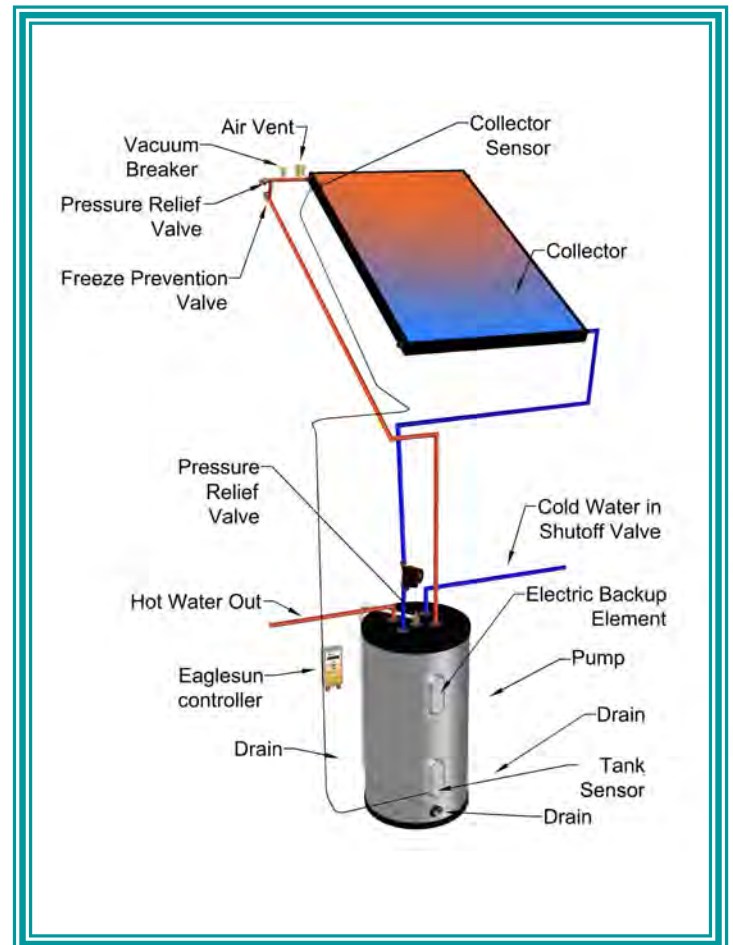


Advantages:

- * Directly heats potable water
- * Most efficient
- * Least Expensive Active System

Pre-Engineered Direct Systems

D System Part Number	Storage Tank	Collector(s)
D-65-32	65 gallon	one AE-32 Collector
D-65-42	65 gallon	two AE-21 Collectors
D-80-40	80 gallon	one AE-40 Collector
D-80-52	80 gallon	two AE-26 Collectors
D-80-64	80 gallon	two AE-32 Collectors
D-120-64	120 gallon	two AE-32 Collectors
D-120-80	120 gallon	two AE-40 Collectors



All Kits Contain:

DTC-ES-1C Eagle Sun Differential Controller with 2 sensors



CP-003ST4 1/40 HP SS, Flow 0-6 GPM, Head 0-5 ft



AV-150 1/4" Air Vent



BV-50 1/2" Ball Valve Qty 2



BD-50 1/2" Boiler Drain Qty 2



PR-150 3/4" MPT Pressure Relief Valve, 150 PSI



AE-FM Flush Mounting Kit



Storage Tank Sizes:

Glass Lined, 4500 W Backup Heating Element, Top and Side Port Connections:

- OST-65TSC** 65 Gallon
- OST-80TSC** 80 Gallon
- OST-120TSC** 120 Gallon



Suggested Additional Components:

Roof Flashings:

- RF-50** 1/2" Roof Flashing Set
- OR
- RF-50** 3/4" Roof Flashing Set



MV-1170 3/4" FTP Mixing Valve



WH-TM24 Water Heater Timer



Optional Full System Warranty:

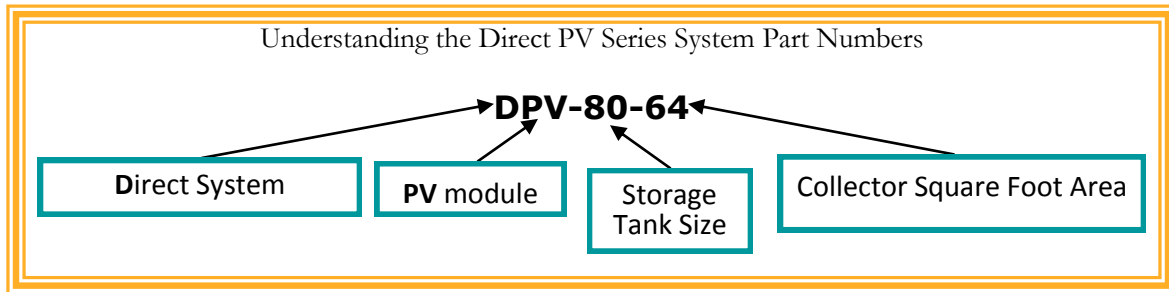
- SK-5PLW** Warranty 5 Year Premium Coverage on Service and Labor
- SK-12PLW** Warranty 12 Year Premium Coverage on Service and Labor



Direct PV Systems

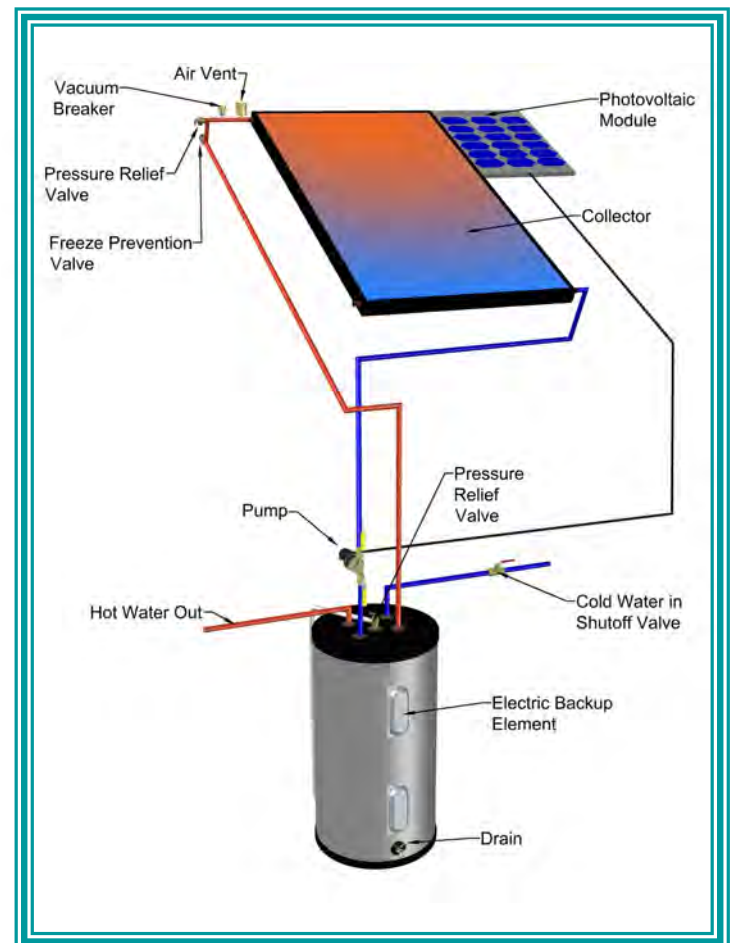
*** Off Grid for Tropical Climates ***

Understanding the Direct PV Series System Part Numbers



Advantages:

- * Directly heats potable water
- * Most efficient
- * PV powered DC pump



Pre-Engineered Direct Systems

DPV System Part Number	Storage Tank	Collector(s)
DPV-65-32	65 gallon	one AE-32 Collector
DPV-65-42	65 gallon	two AE-21 Collectors
DPV-80-40	80 gallon	one AE-40 Collector
DPV-80-52	80 gallon	two AE-26 Collectors
DPV-80-64	80 gallon	two AE-32 Collectors
DPV-120-64	120 gallon	two AE-32 Collectors
DPV-120-80	120 gallon	two AE-40 Collectors

All Kits Contain:

PV-10 10 Watt PV Module



CP809-24 24 Volt March DC Pump



AV-150 1/4" Air Vent



BV-50 1/2" Ball Valve Qty 2



BD-50 1/2" Boiler Drain Qty 2



PR-150 3/4" MPT Pressure Relief Valve, 150 PSI



AE-FM Flush Mounting Kit



Storage Tank Sizes:

Glass Lined, 4500 W Backup Heating Element, Top and Side Port

Connections:

OST-65TSC 65 Gallon

OST-80TSC 80 Gallon

OST-120TSC 120 Gallon



Suggested Additional Components:

Roof Flashings:

RF-50 1/2" Roof Flashing Set



OR

RF-50 3/4" Roof Flashing Set

MV-1170 3/4" FTP Mixing Valve



WH-TM24 Water Heater Timer



Optional Full System Warranty:

SK-5PLW Warranty 5 Year Premium Coverage on Service and Labor

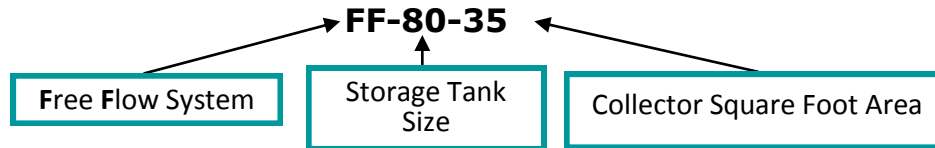
SK-12PLW Warranty 12 Year Premium Coverage on Service and Labor



Thermosiphon "Free-Flow" Systems

No external power needed !

Understanding the Free Flow Part Numbers

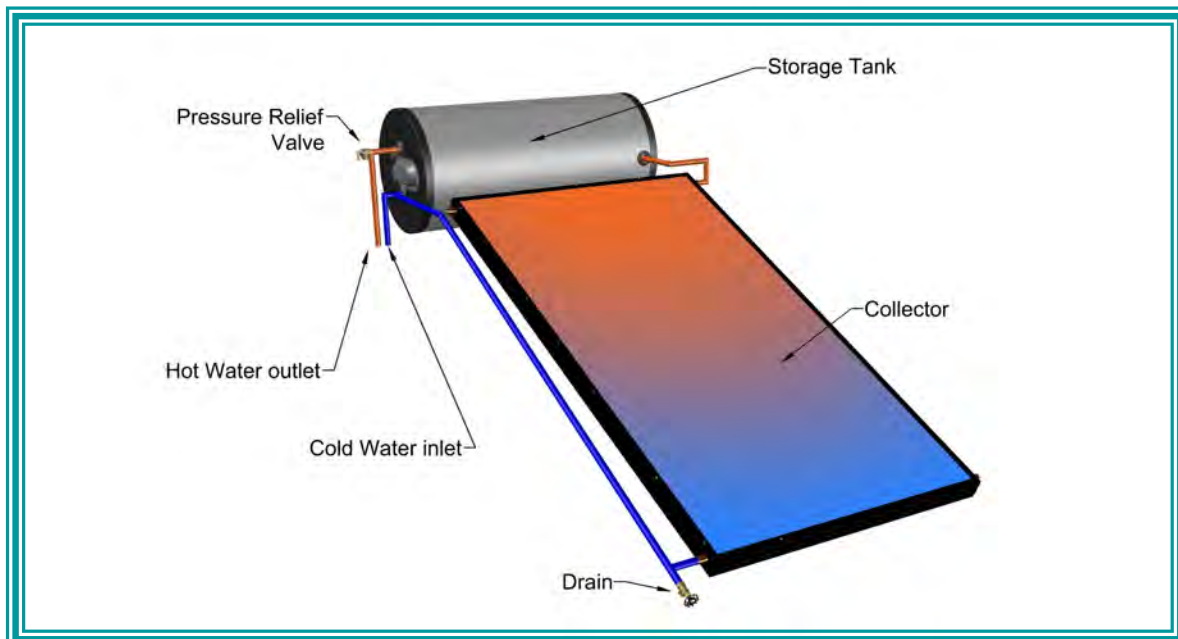


Advantages:

- * Cost effective
- * Perfect for Tropical Climates
- * Gravity fed passive system - no circulator necessary

Pre-Engineered Thermosiphon Free-Flow Systems

DBS System Part Number	Storage Tank	Collector(s)
FF-40-18	40 gallon	one AE-18 Collector
FF-50-20	50 gallon	one AE-20 Collector
FF-50-26	50 gallon	one AE-26 Collector
FF-80-36	80 gallon	two AE-18 Collector
FF-80-40	80 gallon	two AE-20 Collectors

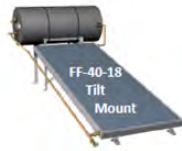


All Kits Contain:

FF-5K34 Tank Kit, with 3/4" fittings, 12 ft of soft copper tubing, and tank straps

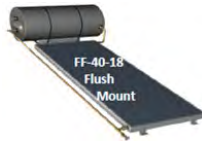
Mounting Racks:

FF-TS2224 Tilt Mount Tank Stand, 15°



OR

FF-TS2224FM Flush Mount Tank Stand



Storage Tank Sizes:

Horizontal tank for natural convection

FF-40G 40 Gallon
FF-50G 50 Gallon
FF-80G 80 Gallon



Suggested Additional Components:

Thermosiphon Backup Heating Elements:

FF-EK40GL	FF-40G Tank 2500W Electrical Kit
FF-EK50GL	FF-50G Tank 2500W Electrical Kit
FF-EK80GL	FF-80G Tank 3500 W Electrical Kit



EagleSun™ Pool Heating



Benefits

Swim Longer

Installing a solar pool heating system will increase, sometimes even double, the amount of time your swimming pool can be comfortably used during the year.

Economical

When compared to heating your pool with other methods, solar heating can pay for itself in as little as 3 years.

Environmentally Safe

Solar Pool heaters use solar energy to provide a clean energy alternative to conventional heating sources that pollute the environment.

Maintenance Free

Once the panels are installed, you can relax in your warm pool without any additional maintenance or cost involved.

Quality

With up to 35% more polypropylene and UV stabilizers than any other manufacturer, EagleSun™ Pool Panels keep your pool heated longer and have a longer life expectancy.

Hurricane Tested

EagleSun™ panels can withstand hurricane force winds of 159.6 mph!

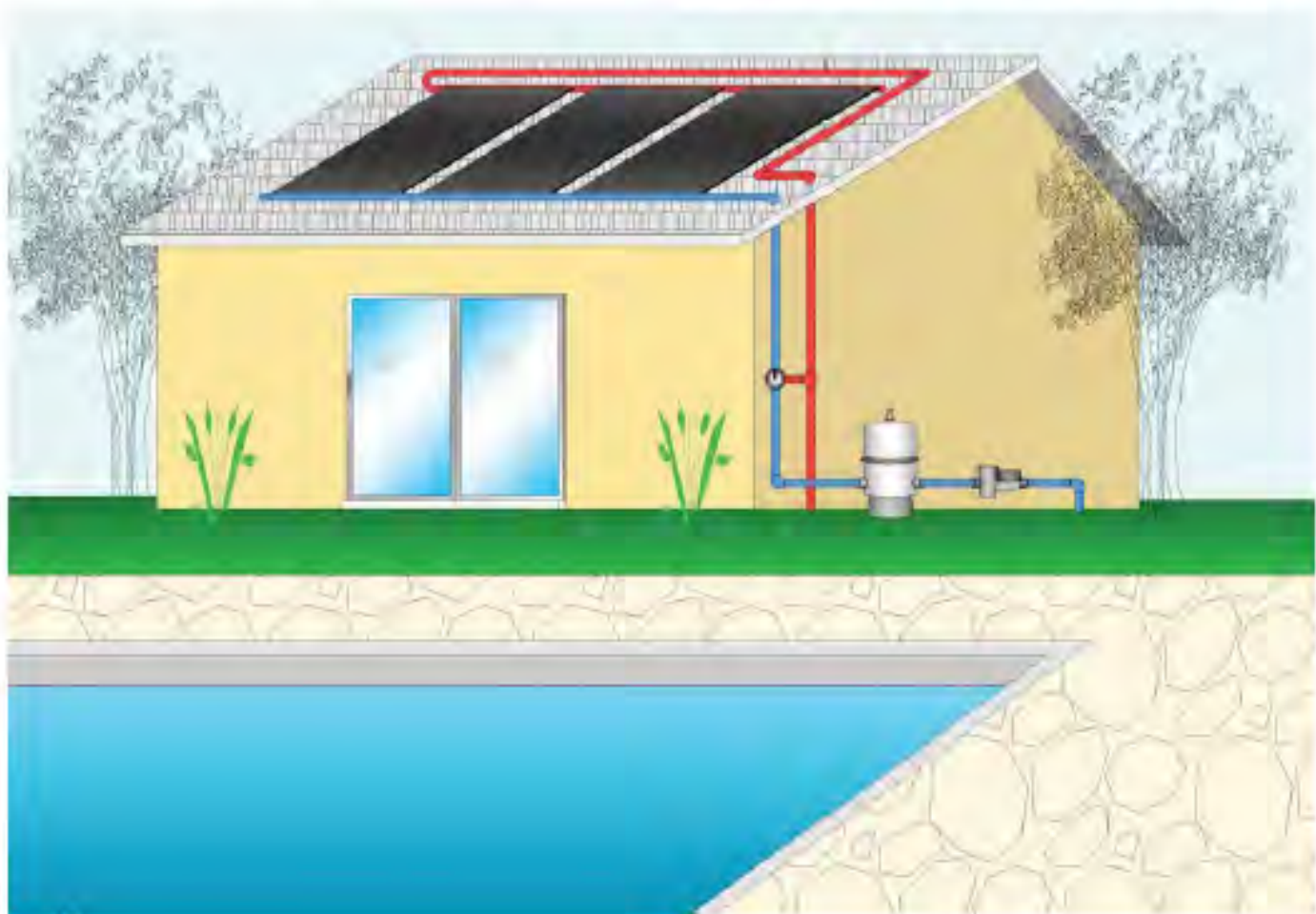
Guarantee

EagleSun™ Products are backed by a comprehensive 10 Year Limited Lifetime Warranty to ensure years of enjoyment.



Pool Heating System

1. Efficiently absorbed heat is transferred to the pool water circulating through the collectors.
2. Manual Control: Turns the pool heating system on or off as required.
3. Pump and Filter: Circulate clean water to the pool and collector when required.
4. Check Valve: Used to prevent back flow circulation in the solar collectors at night and allows for sustained drainage.
5. EPDM Collector Hoses: Join the solar collectors together and connect the supply and return piping to the collector array.
6. Long Mounting Straps: Used to secure the solar collectors to the roof.
7. Header Straps: Installed on the top header of the solar collectors only. Used to bear the weight of the collector.
8. Stainless Clips: Used to secure the mounting straps to the roof. Roof sealant is used to assure the integrity of the roof.



Technical Information

2.0" Header Solar Panel

Overall Length:

ES-48P	144"
ES-40P	120.25"
ES-32P	95.88"

Header Outside
Diameter: 2.31"
Header Length: 50.75"



Panel Kit (1 per panel)



Kit Includes	Qty
Rubber Hose	2
Hose Clamp	4
LAG Screw	5
Strap Clip	3
Pipe Strap	1

System Kit (1 per system)



Kit Includes	Qty
Rubber Hose	2
Hose Clamp	4
LAG Screw	5
Strap Clip	3
Pipe Strap	1
Pipe-to-Panel Adapter	2
Grooved Plug	2

Vacuum Breaker Kit (1 per system)



Kit Includes	Qty
Vacuum Breaker	1

Features

Most pool heating panels are designed to be repaired...

Eagle Sun Pool Panels are designed to last.

The majority of solar pool heaters are designed with "individual" round flow tubes so that if a tube leaks it can easily be plugged. Some manufacturers even state in their warranty that a damaged system will be repaired if possible. In most cases a "repair" is nothing more than a plug. The problem with this is that a plugged panel is much less efficient or effective at heating your pool.



Another problem with the design of most solar pool heating systems is that the shape and thickness of the flow tube walls do not allow for prolonged expansion or contraction that occurs during seasonal temperature changes or extreme weather such as freezing.

This patented flat panel design is proven to be more efficient and more durable than other solar pool heaters.

Here's why:

Absorb more heat

Eagle Sun Pool collectors are visibly thicker than any other pool heating collector because we use up to 35% more raw materials in our panels. This attracts more heat.

Reduce heat loss

Eagle Sun flow tubes are connected so that they stay warm longer. Other panels can cool rapidly during windy conditions because the "individual" flow tubes aren't insulated by each other.

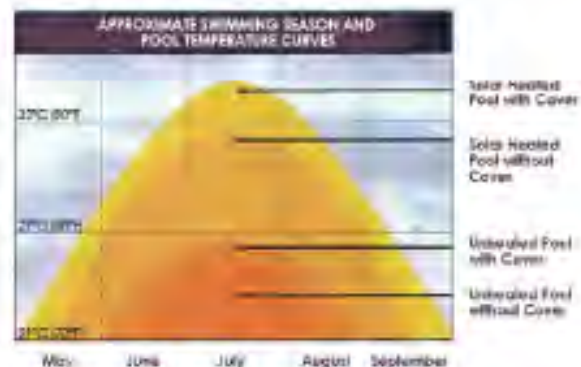
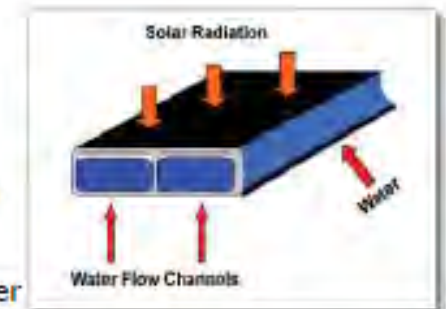
Last longer

The extra material in our panels allows for greater expansion and contraction, provides extra UV protection and prevents weak spots.

Prevent freeze damage (covered under warranty)

Because water expands by approximately 9% when turning to ice, the strain put on a solar panel's flow channel can be devastating.

Our pool heaters, however, are designed to withstand internal freezing better than any other panel on the market today. As the picture to the right illustrates, the 2 keys to our durability are the thickness of our panels and the shape of the flow channels.



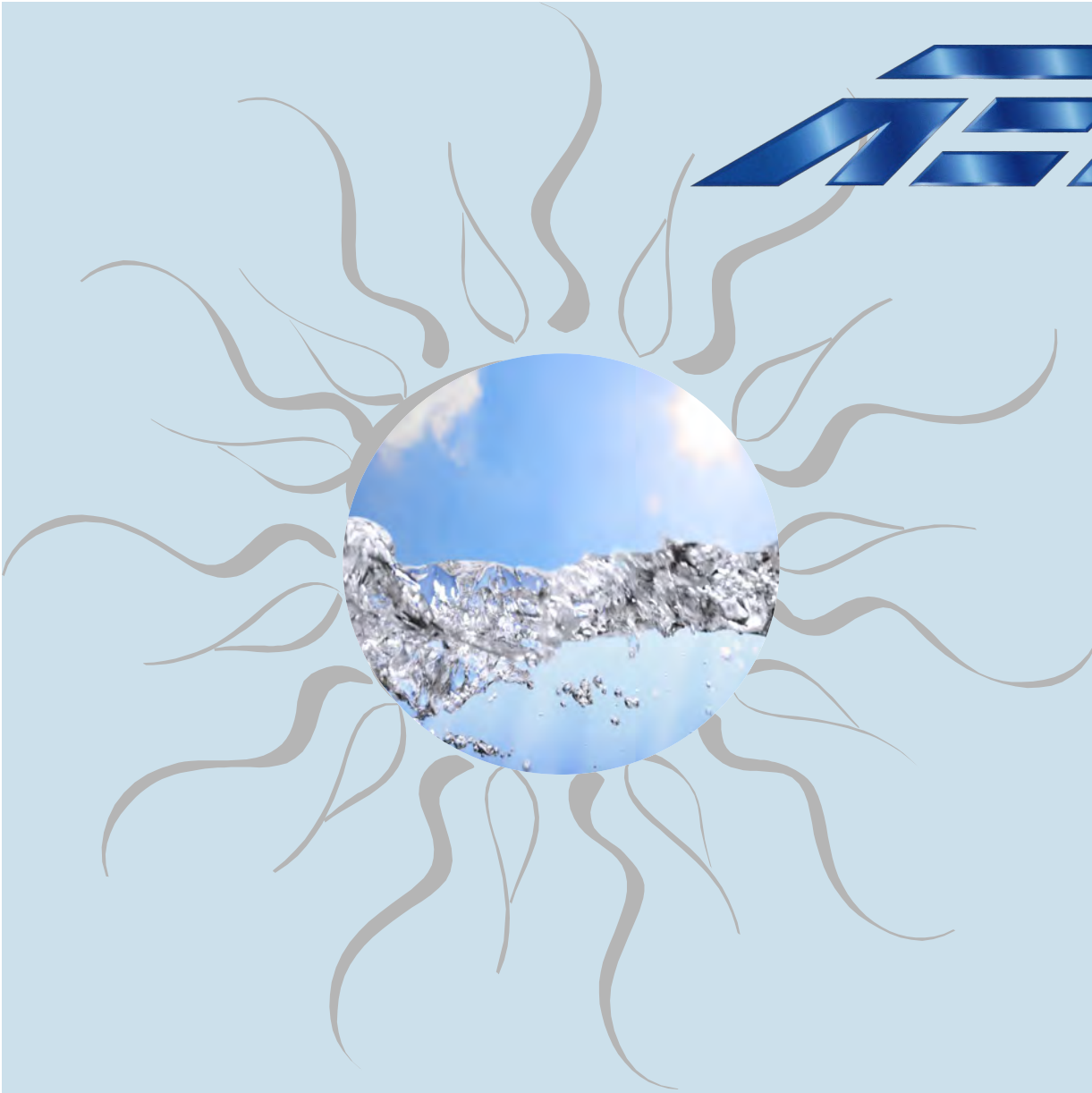
Specifications

Panel

	Size	4 x 12	4 x 10	4 x 8
	Part #	ES-48P	ES-40P	ES-32P
<u>DIMENSIONS</u>	Units			
Overall Length	In	144	120.25	95.88
Absorber Width	In	47.63	47.63	47.63
Header Length	In	50.75	50.75	50.75
Header OD	In	2.31	2.31	2.31
Header ID	In	1.89	1.89	1.89
Gross Area	Sq ft	47.725	39.87	31.809
Net Area	Sq ft	47.625	39.77	31.709
Number of Flow Channels		104	104	104
Nominal Hole Size	In	0.156	0.156	0.156
<u>WEIGHT</u>				
Dry	Lbs	30	25	20
Wet	Lbs	64.4	55.5	46.6
Wet Dispersed	Lbs/sq ft	1.31	1.35	1.41
Fluid Capacity	Gal	4.13	3.66	3.19
<u>FLOW RATES</u>				
Max	Gpm	10	10	10
Min	Gpm	3	2.5	2.5
Recommended	Gpm	4.95	4.95	4.95
Max # panels in parallel	Panels	10	12	14
<u>PRESSURE</u>				
Drop	Psi	0.15	0.15	0.15
Max test	Psi	80	80	80
Max operating range	Psi	+/- 10	+/- 10	+/- 10
Max operating spike	Psi	35	35	35
<u>PERFORMANCE</u>				
FSEC Certification	BTU/day	45600	38100	30400
Wind Load	mph	150	150	150

All Panels have a (2.0" Header)





Alternate Energy Technologies, LLC

1345 Energy Cove Court, Green Cove Springs, FL 32043

P: 800-874-2190 F: 904-529-9837

www.aetsolar.com