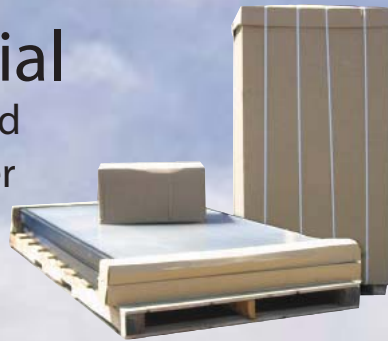


Solar Thermal

Solar Hot Water



Residential
OG300 Certified
Solar Hot Water
Packages
Easy To Ship



Solar & Hydronics

Sizing & Selection Guide

www.jtgmuir.com



Introduction

Heat Transfer Solar

Heat Transfer Solar products are represented exclusively by Manufacturers Representative JTG/Muir. For technical information, literature and a list of distributors please call 800-493-8432 and visit our web site at www.jtgmuir.com.

Experience

Our company has a combined 55 years of solar thermal experience. We are committed to providing quality systems and components with excellent performance designed to operate reliably and durably.

Total System Efficiency

All solar hot water systems are designed to preheat water for a conventionally fired system. Solar Spectrum solar systems are designed not just for solar hot water collection but for the most efficient integration with the conventionally fired hot water heater for the very best system efficiency.

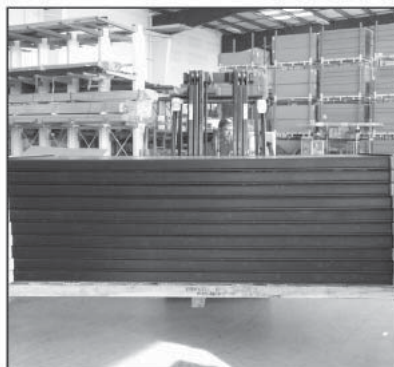
Complete SRCC Packages

Solar Spectrum provides simple SRCC OG300 certified packages for simplicity of installation and quality of all components that can be easily selected in this booklet.

Solar and Hydronic Heating

Solar Spectrum provides packages for easy integration of solar hot water heating and hydronic heating for maximum system efficiency and easy installation.

We look forward to working with you...



Solar and hydronics, million dollar California stock.

Heat Transfer Solar Selection Guide

Package Types

Package Types

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HTP Solar

Components and Data Sheets

Components and Data Sheets

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Solar Hot Water Packages

What Is A Solar Hot Water Package?

Selection: Read the following pages to determine size of the system you require, the construction of the tank, either electric or boiler backup, size and type of collectors, the type of freeze protection (closed loop or drainback).

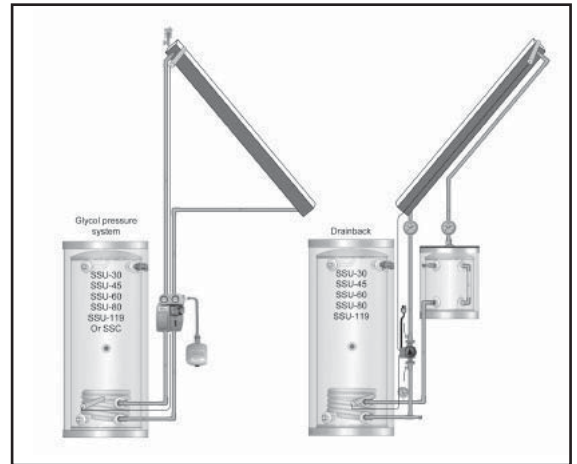
Closed Loop: Includes Solar Spectrum Collector(s), a heat exchanger tank, a Pump/control/valve pre-engineered module, expansion tank and tempering valve.


Drainback: Includes Solar Spectrum Collector(s), a heat exchanger tank, drainback tank with sight glass, Taco integrated solar variable speed control and circulator, temperature gauges and a tempering valve.

Package Pricing: Refer to your package price sheet. It looks like the example below. Simply select the tank type, and type and number of collectors required. Solar mounting kits and glycol must be selected separately. Our package pricing does not include copper piping, insulation, flashing, sensor wire, extra gauges or other miscellaneous parts.

Example:

Closed Loop, glass lined single coil, solar systems with different solar collector offerings.



ID #	PART NUMBER	RETAIL PRICE
		
CONTENDER SINGLE COIL PORCELAIN TANK SOLAR SYSTEM PACKAGES-ELECTRIC BACKUP (not including boiler)		
11328	STSSSC-50SE-148 Contender 50 gal System w/1-4'x8' Panel	\$6,561.00
11326	STSSSC-50SE-1410 Contender 50 gal System w/1-4'x10' Panel	\$7,400.00
11330	STSSSC-80SE-248 Contender 80 gal System w/2-4'x8' Panels	\$8,938.00
11329	STSSSC-80SE-1410 Contender 80 gal System w/1-4'x10' Panel	\$7,400.00
11332	STSSSC-119SE-348 Contender 119 gal System w/3-4'x8' Panels	\$11,154.00
11331	STSSSC-119SE-2410 Contender 119 gal System w/2-4'x10' Panels	\$10,288.50
MOUNTING HARDWARE KITS and GLYCOL		
ID #	PART NUMBER	RETAIL PRICE
16424	STS-MT-TM Tilt Mount	\$80.00
16425	STS-MT-FM Flush Mount	\$62.00
16426	STS-MT-FM Rack Mount	\$34.00
16428	STS-E 1022-10 1"x1"x.125" 10' Aluminum Strut-Painted	\$72.00
16429	STS-E 1022-12 1"x1"x.125" 12' Aluminum Strut-Painted	\$88.00
13339	INTP323-1 Glycol - 1 gal	\$90.00
13338	INTP323-5 Glycol - 5 gal	\$290.50

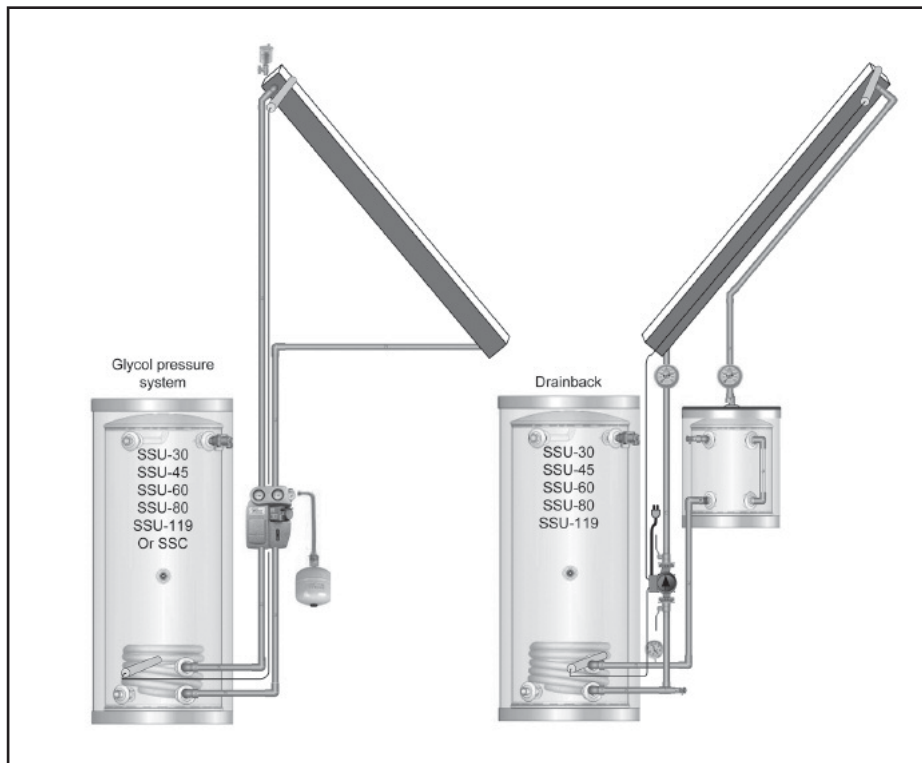
CALL FOR A BROCHURE 800-493-8432

Residential

OG300 Certified

Solar Hot Water Packages

Easy To Ship



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Types of Systems

Active Systems or Passive Systems

Active solar systems are those that employ a circulator and solar control to actively circulate water through the solar collector(s). Passive Systems are those without a circulator/control that rely on natural thermosyphon of heat from a tank or direct heating of a tank on the roof (batch heating). Solar Spectrum provides active systems because they are typically more efficient, more esthetically attractive, and can store solar energy more efficiently.

Freeze Protection

Many thousands of solar systems were lost to freezing collectors and water corrosion in the 1980s'. This is why we recommend only systems that are isolated from potable water and have positive freeze protection.



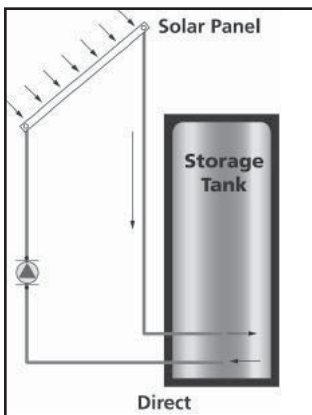
Closed Loop/ Glycol: Solar Spectrum Preferred Systems

These systems use a heat exchanger to isolate domestic hot water from the solar collectors. They use anti freeze within the solar loop to provide the best positive freeze protection. This type of system also reduces system corrosion for a long system service life.



Drainback

Drainback systems are designed to drain the water in the system from the solar collector(s) so there is no fluid to freeze in the collectors. These are very effective systems when adding additional solar surface area to a system for space heating or other applications. The pipes must be slanted correctly to assure draining the collectors.



Open Loop

These solar systems circulate potable water directly through the solar collectors. Due to freeze problems and corrosion in the past, Solar Spectrum does not recommend the use of these systems in California/Nevada.

Solar Hot Water Package Components

HTP supplies SRCC listed solar packages that include the tank, solar collector(s), racking, Solar Pump/Control module and selected accessories. These packages permit easy, predictable, pre-engineered installation of solar hot water systems.

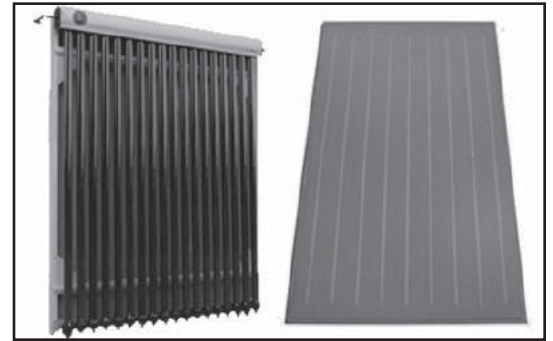
SOLAR COLLECTORS

HTP Flateplate: OG100 Certified

HTP provides OG100 certified quality 4'x8' and 4'x10' flateplate solar collectors available with selective surface. These collectors offer proven efficiency, skylight aesthetics and ease of installation.

HTP Evacuated Tube: OG100 Certified

Heat Transfer Products provides 30 tube evacuated tube solar collectors that can provide high temperatures and excellent performance in fog or diffuse sunlight. These collectors must be sized carefully to avoid over heating the system.



SOLAR TANKS

Stainless or Coated Steel Construction

HTP provides a range of open and closed loop solar tanks constructed with either premium stainless steel or flow coated steel .

Closed Loop Storage Tanks

Single Coil with Electric backup (Superstor or Contender)

These tanks have immersed solar heat exchangers that provide excellent performance with 240V electric elements for single tank electric backup applications.

Double coil with Boiler Backup

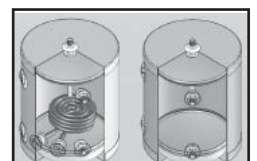
These tanks are designed for use with boiler for single tank efficiency and space saving.

Phoenix Solar Tanks

Integrated Solar and Gas Fired Tanks available in 80 and 119 gallons and 130 and 199 MBH.

Drainback Tanks

HTP offers drainback tanks from 10-20 gallons, with or without an internal heat exchanger, all including a site glass.



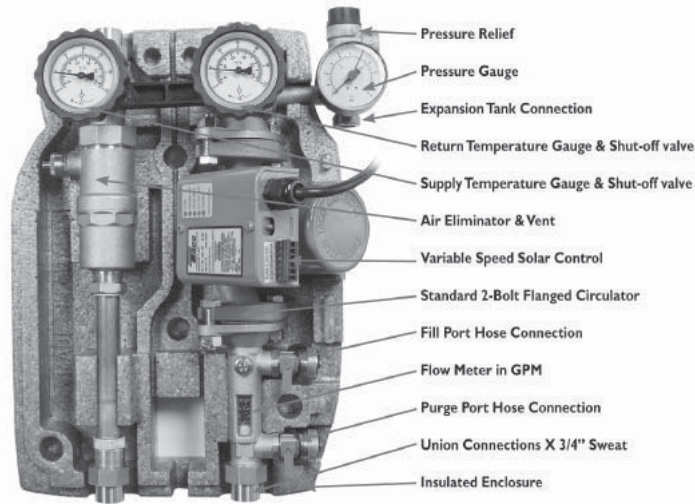
CALL FOR A BROCHURE 800-493-8432

Package Components

SOLAR INSTALLATION KITS

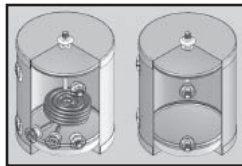
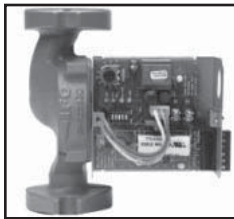
CLOSED LOOP INSTALLATION KITS

Each Installation Kit includes our pre-plumbed modules with the circulator, control, pressure relief valve, check valve, temp/pressure gauge, purge valves, expansion tank and expansion tank connection and tempering valve. Anti freeze fluid must be purchased separately.



Drainback Installation Kits

Each drainback system will require a drainback tank, a bronze or stainless steel circulator and a solar control, in addition to the solar tank and collector(s). The Taco SPS series integrated pump/control is a good choice for drainback systems because they use less energy. Drainback tank size must be selected according to the water volume in the solar system from the top of the drainback tank to the top of the highest collector.



High efficiency Variable Speed Solar Control

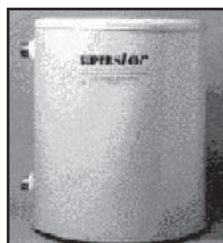
The control included in the STS??? module operates the circulator at variable speed which has been tested to enhance system performance by 20% and reduce circulator energy use by 50%. This control has many additional functions such as excess heat dump and dual tank control. See the Components section for details.

Accessories

Solar Spectrum has a range of solar accessories including piping line sets, insulation covers, sensor wire and much more. Refer to the Components section of the Price List. Example:

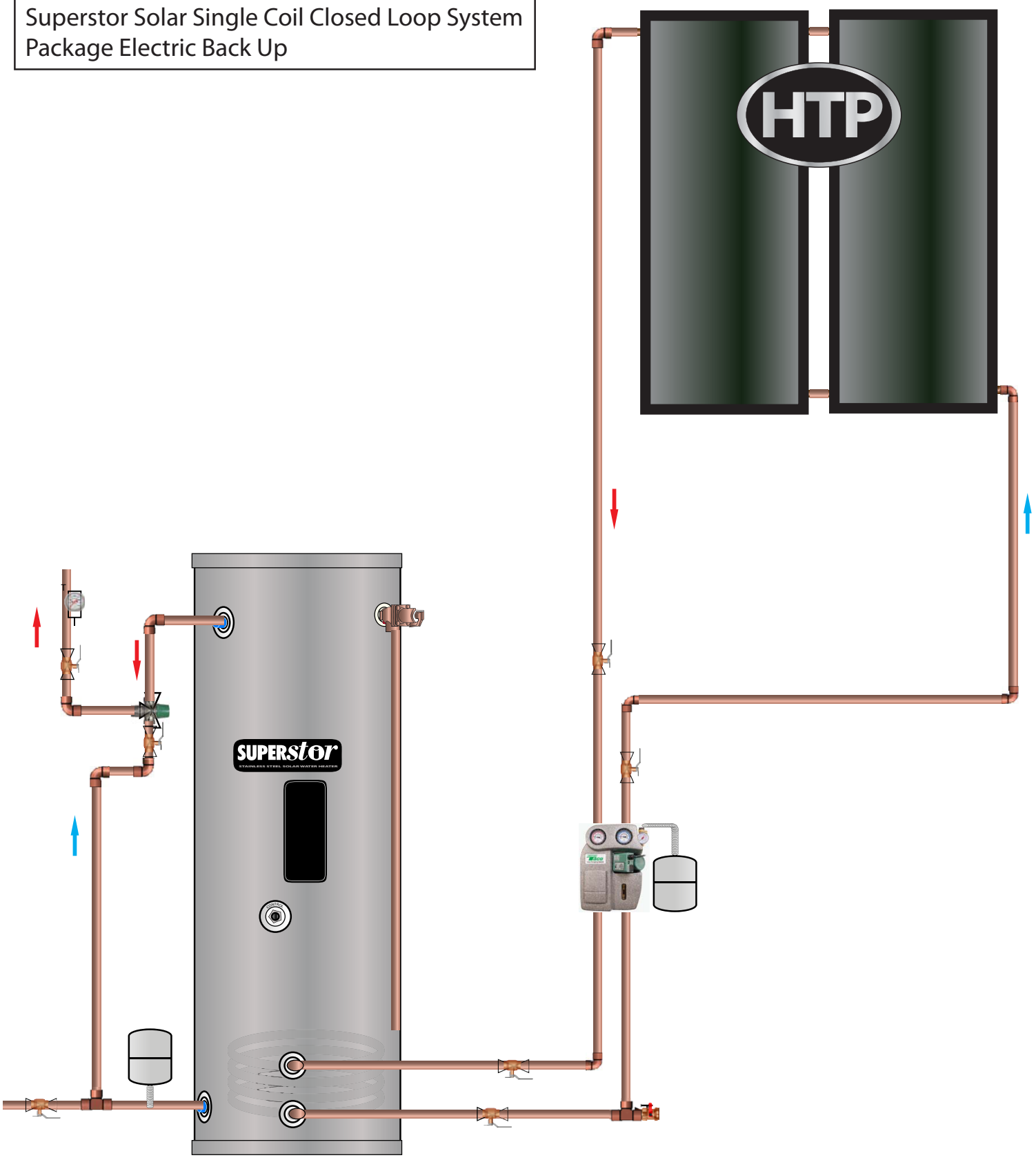
Swimming Pool Stainless Steel Heat Exchanger Tanks

A perfect product for dumping excess heat from a solar system into the pool or spa. The 10 gallon stainless tank has 1-1/2" connections for the pool and 1" connections to the cupronickel finned tube heat exchanger immersed in the tank.



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Superstor Solar Single Coil Closed Loop System
Package Electric Back Up



CALL FOR A BROCHURE 800-493-8432



A Sensible Technologies Inc. Company

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or call us at 1-800-493-8432

Closed loop system with Black chrome flatplate collectors

Selecting an OG300 Package: Select the tank type and size and the Flatplate collector(s) that match. A closed Loop Component package kit is included with each system. Need help? (links) selecting a system, types of systems, sizing a system.

Closed Loop Component Kit: (included in one shipping box) Taco solar pump module, 3/4" Sweat mixing valve (MVBS-1-FL), Expansion Tank (ELBXT-30), HTP Flatplate solar panels, installation manual.

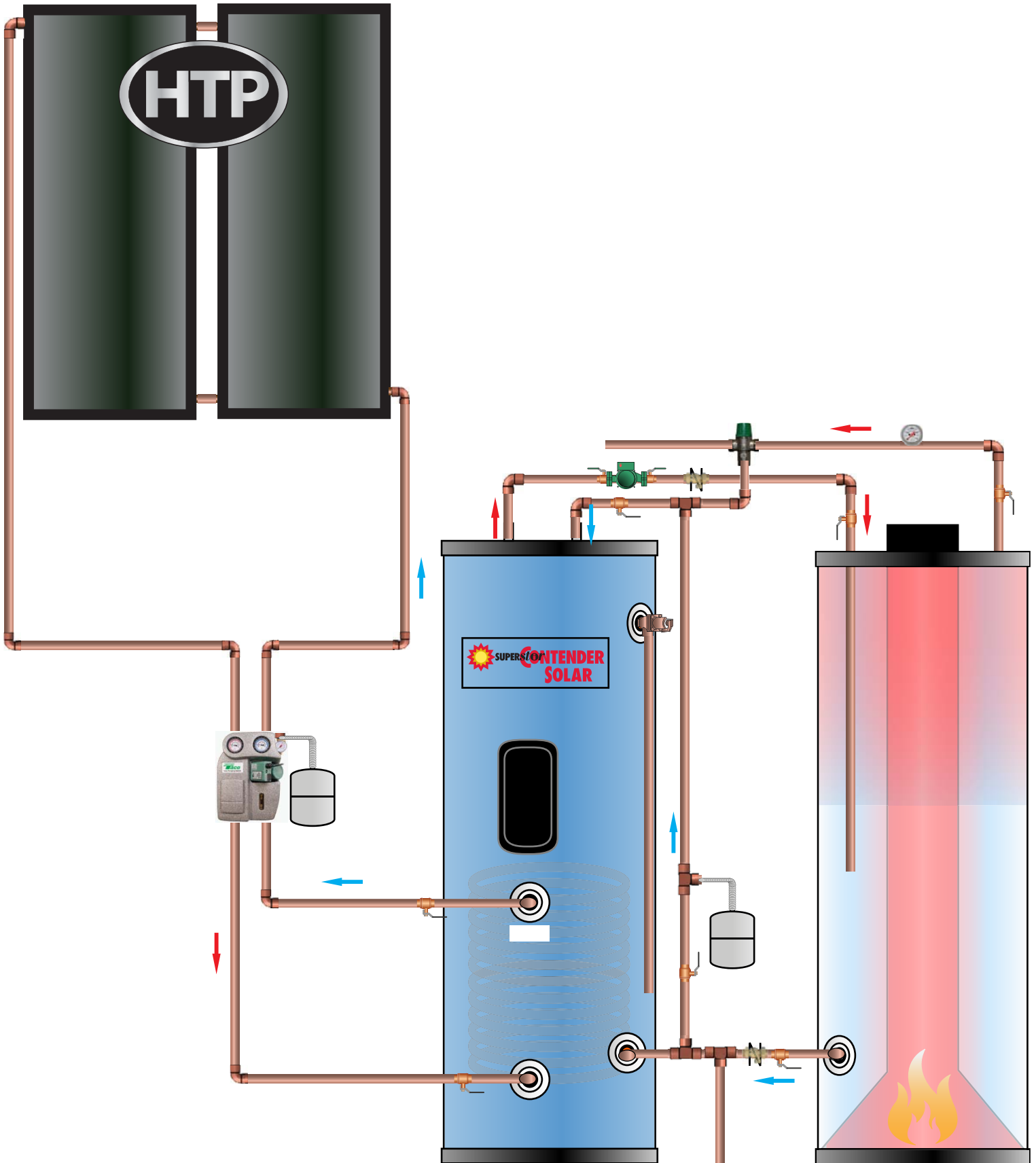
Accessories, parts, and racking: Certain accessories, such as racking and glycol, are job specific and must be added to the package.

ID#	PART NUMBER	TANK SIZE	CLOSED LOOP PACKAGE	PANEL(S)	RETAIL PRICE
11314	STSSU-60SE-148	SuperStor 60 gal	Closed Loop Component Package System	1-4'x8' Panel	\$7,967.00
11313	STSSU-60SE-1410	SuperStor 60 gal	Closed Loop Component Package System	1-4'x10' Panel	\$8,235.00
11317	STSSU-80SE-248	SuperStor 80 gal	Closed Loop Component Package System	2-4'x8' Panels	\$10,502.00
11316	STSSU-80SE-1410	SuperStor 80 gal	Closed Loop Component Package System	1-4'x10' Panel	\$8,964.00
11319	STSSU-119SE-348	SuperStor 119 gal	Closed Loop Component Package System	3-4'x8' Panels	\$14,886.50
11318	STSSU-119SE-2410	SuperStor 119 gal	Closed Loop Component Package System	2-4'x10' Panels	\$13,616.50

Mounting hardware kits and Glycol

ID#	PART NUMBER	ITEM	RETAIL PRICE
16527	HTFPF-SM	Standard Mount Kit (1 kit per panel, 4 pcs per kit)	\$74.00
16529	HTFPF-FM	Flush Mount Kit (1 kit per panel, 4 pcs per kit)	\$58.00
16530	HTFPF-RM	Rack Mount Kit (1 kit per panel, 4 pcs per kit)	\$32.00
16532	HTFPF-ST-10	1"x1"x.125" 10' Rear Leg Aluminum Strut-Painted	\$68.00
16534	HTFPF-ST-12	1"x1"x.125" 12' Rear Lef Aluminum Strut-Painted	\$80.00
13339	INTP323-1	Glycol - 1 gal	\$90.00
13338	INTP323-5	Glycol - 5 gal	\$290.50

Superstor Contender Solar / Hot Water Closed Loop System Package





Closed loop system with Black chrome flatplate collectors

Selecting an OG300 Package: Select the tank type and size and the Flatplate collector(s) that match. A closed Loop Component package kit is included with each system. Need help? (links) selecting a system, types of systems, sizing a system.

Closed Loop Component Kit: (included in one shipping box) Taco solar pump module, 3/4" Sweat mixing valve (MVBS-1-FL), Expansion Tank (ELBXT-30), Solar Spectrum solar panels, installation manual.

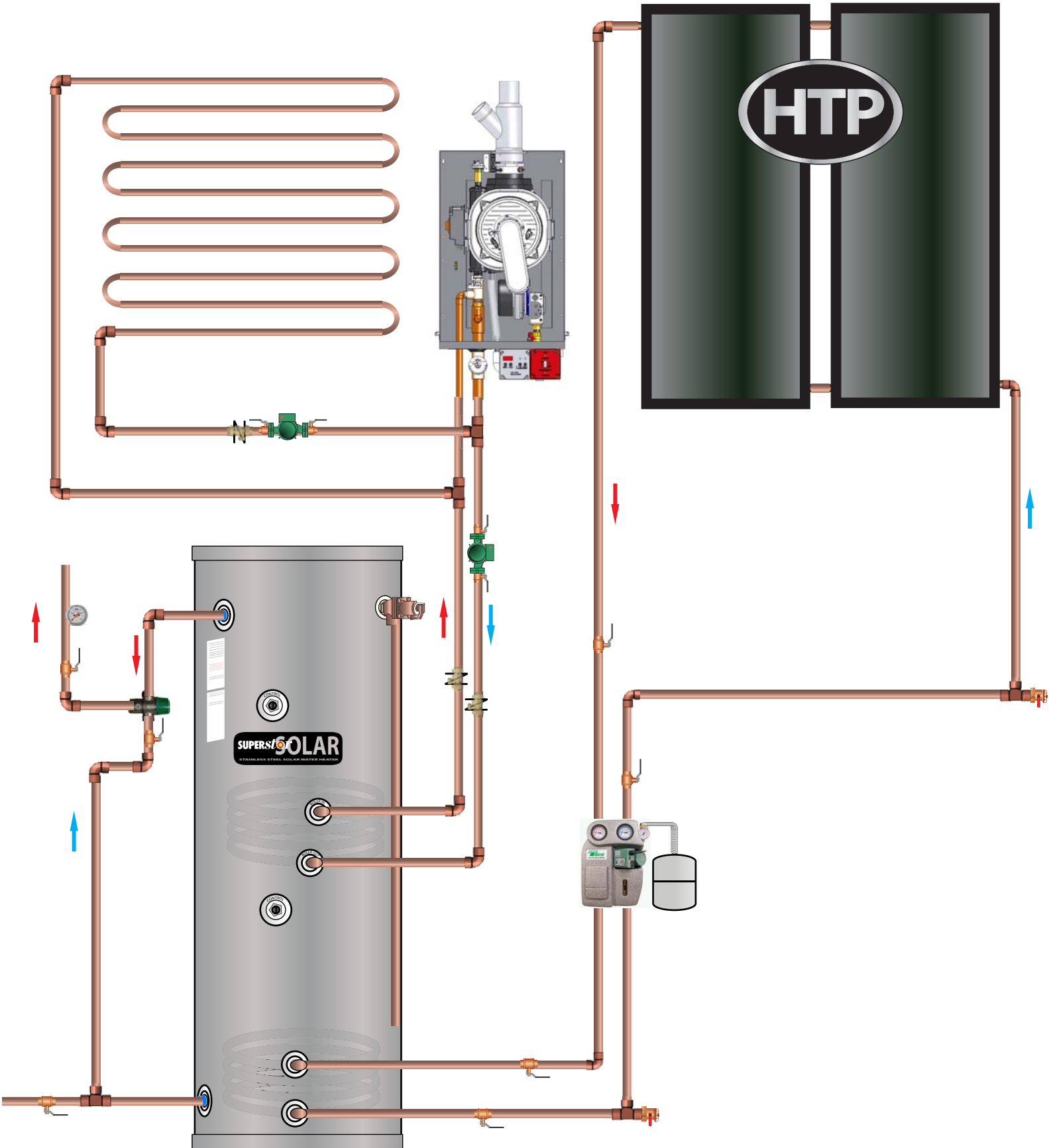
Accessories, parts, and racking: Certain accessories, such as racking and glycol, are job specific and must be added to the package.

ID#	PART NUMBER	TANK SIZE	CLOSED LOOP PACKAGE	PANEL(S)	RETAIL PRICE
11328	STSSSC-50SE-148	Contender 50 gal System	Closed loop Component Package System	1-4'x8' Panel	\$6,563.50
11326	STSSSC-50SE-1410	Contender 50 gal System	Closed loop Component Package System	1-4'x10' Panel	\$6,831.50
11330	STSSSC-80SE-248	Contender 80 gal System	Closed loop Component Package System	2-4'x8' Panels	\$8,940.00
11329	STSSSC-80SE-1410	Contender 80 gal System	Closed loop Component Package System	1-4'x10' Panel	\$7,402.50
11332	STSSSC-119SE-348	Contender 119 gal System	Closed loop Component Package System	3-4'x8' Panels	\$11,561.00
11331	STSSSC-119SE-2410	Contender 119 gal System	Closed loop Component Package System	2-4'x10' Panels	\$10,291.00

Mounting hardware kits and Glycol

ID#	PART NUMBER	ITEM	RETAIL PRICE
16527	HTFPF-SM	Standard Mount Kit (1 kit per panel, 4 pcs per kit)	\$74.00
16529	HTFPF-FM	Flush Mount Kit (1 kit per panel, 4 pcs per kit)	\$58.00
16530	HTFPF-RM	Rack Mount Kit (1 kit per panel, 4 pcs per kit)	\$32.00
16532	HTFPF-ST-10	1"x1"x.125" 10' Rear Leg Aluminum Strut-Painted	\$72.00
16534	HTFPF-ST-12	1"x1"x.125" 12' Rear Lef Aluminum Strut-Painted	\$68.00
13339	INTP323-1	Glycol - 1 gal	\$90.00
13338	INTP323-5	Glycol - 5 gal	\$290.50

Superstor Solar Closed Loop System Package





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or call us at 1-800-493-8432

Closed loop system with Black chrome flatplate collectors

Selecting an OG300 Package: Select the tank type and size and the Flatplate collector(s) that match. A closed Loop Component package kit is included with each system. Need help? ([links](#)) selecting a system, types of systems, sizing a system.

Closed Loop Component Kit: (included in one shipping box) Taco solar pump module, 3/4" Sweat mixing valve (MVBS-1-FL), Expansion Tank (ELBXT-30), HTP Flatplate solar panels, installation manual.

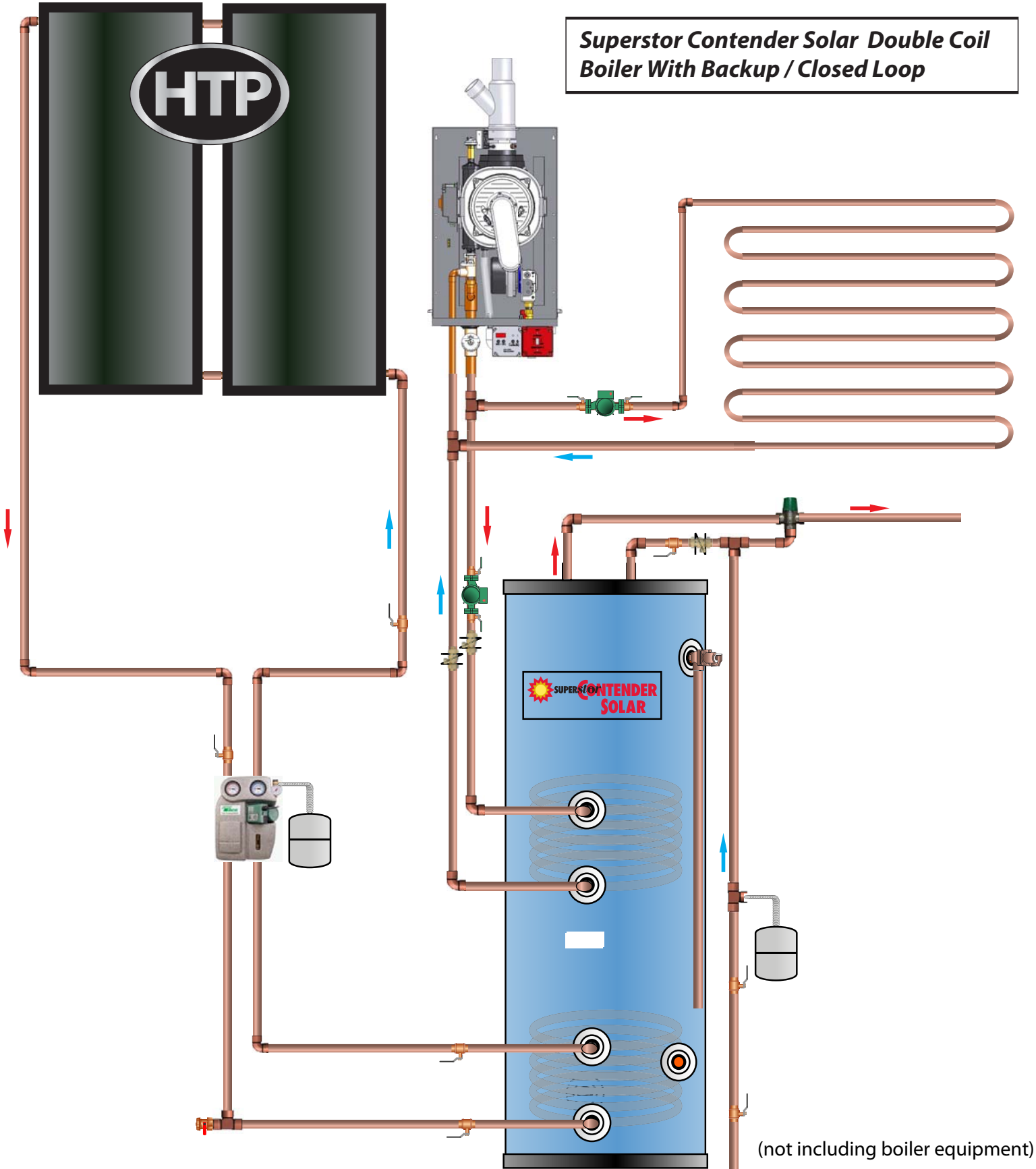
Accessories, parts, and racking: Certain accessories, such as racking and glycol, are job specific and must be added to the package.

ID#	PART NUMBER	TANK SIZE	CLOSED LOOP PACKAGE	PANEL(S)	RETAIL PRICE
11321	STSSU-60SB-148	SuperStor 60 gal	Closed Loop Component Package System	1-4'x8' Panel	\$8,247.00
11320	STSSU-60SB-1410	SuperStor 60 gal	Closed Loop Component Package System	1-4'x10' Panel	\$8,515.00
11323	STSSU-80SB-248	SuperStor 80 gal	Closed Loop Component Package System	2-4'x8' Panels	\$10,771.00
11322	STSSU-80SB-1410	SuperStor 80 gal	Closed Loop Component Package System	1-4'x10' Panel	\$9,233.00
11325	STSSU-119SB-348	SuperStor 119 gal	Closed Loop Component Package System	3-4'x8' Panels	\$15,132.00
11324	STSSU-119SB-2410	SuperStor 119 gal	Closed Loop Component Package System	2-4'x10' Panels	\$13,862.00

Mounting hardware kits and Glycol

ID#	PART NUMBER	ITEM	RETAIL PRICE
16527	HTFPF-SM	Standard Mount Kit (1 kit per panel, 4 pcs per kit)	\$74.00
16529	HTFPF-FM	Flush Mount Kit (1 kit per panel, 4 pcs per kit)	\$58.00
16530	HTFPF-RM	Rack Mount Kit (1 kit per panel, 4 pcs per kit)	\$32.00
16532	HTFPF-ST-10	1"x1"x.125" 10' Rear Leg Aluminum Strut-Painted	\$68.00
16534	HTFPF-ST-12	1"x1"x.125" 12' Rear Lef Aluminum Strut-Painted	\$80.00
13339	INTP323-1	Glycol - 1 gal	\$90.00
13338	INTP323-5	Glycol - 5 gal	\$290.50

Superstor Contender Solar Double Coil Boiler With Backup / Closed Loop



(not including boiler equipment)



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Manufacturer's Representative

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Closed loop system with Black chrome flatplate collectors

Selecting an OG300 Package: Select the tank type and size and the Flatplate collector(s) that match. A closed Loop Component package kit is included with each system. Need help? (links) selecting a system, types of systems, sizing a system.

Closed Loop Component Kit: (included in one shipping box) Taco solar pump module, 3/4" Sweat mixing valve (MVBS-1-FL), Expansion Tank (ELBXT-30), HTP Flatplate solar panels, installation manual.

Accessories, parts, and racking: Certain accessories, such as racking and glycol, are job specific and must be added to the package.

ID#	PART NUMBER	TANK SIZE	CLOSED LOOP PACKAGE	PANEL(S)	RETAIL PRICE
11334	STSSSC-50SB-148	Contender 50 gal System	Closed loop Component Package System	1-4'x8' Panel	\$6,966.50
11333	STSSSC-50SB-1410	Contender 50 gal System	Closed loop Component Package System	1-4'x10' Panel	\$7,234.50
11336	STSSSC-80SB-248	Contender 80 gal System	Closed loop Component Package System	2-4'x8' Panels	\$9,343.50
11335	STSSSC-80SB-1410	Contender 80 gal System	Closed loop Component Package System	1-4'x10' Panel	\$7,805.50
11338	STSSSC-119SB-348	Contender 119 gal System	Closed loop Component Package System	3-4'x8' Panels	\$11,962.00
11337	STSSSC-119SB-2410	Contender 119 gal System	Closed loop Component Package System	2-4'x10' Panels	\$10,692.00

Mounting hardware kits and Glycol

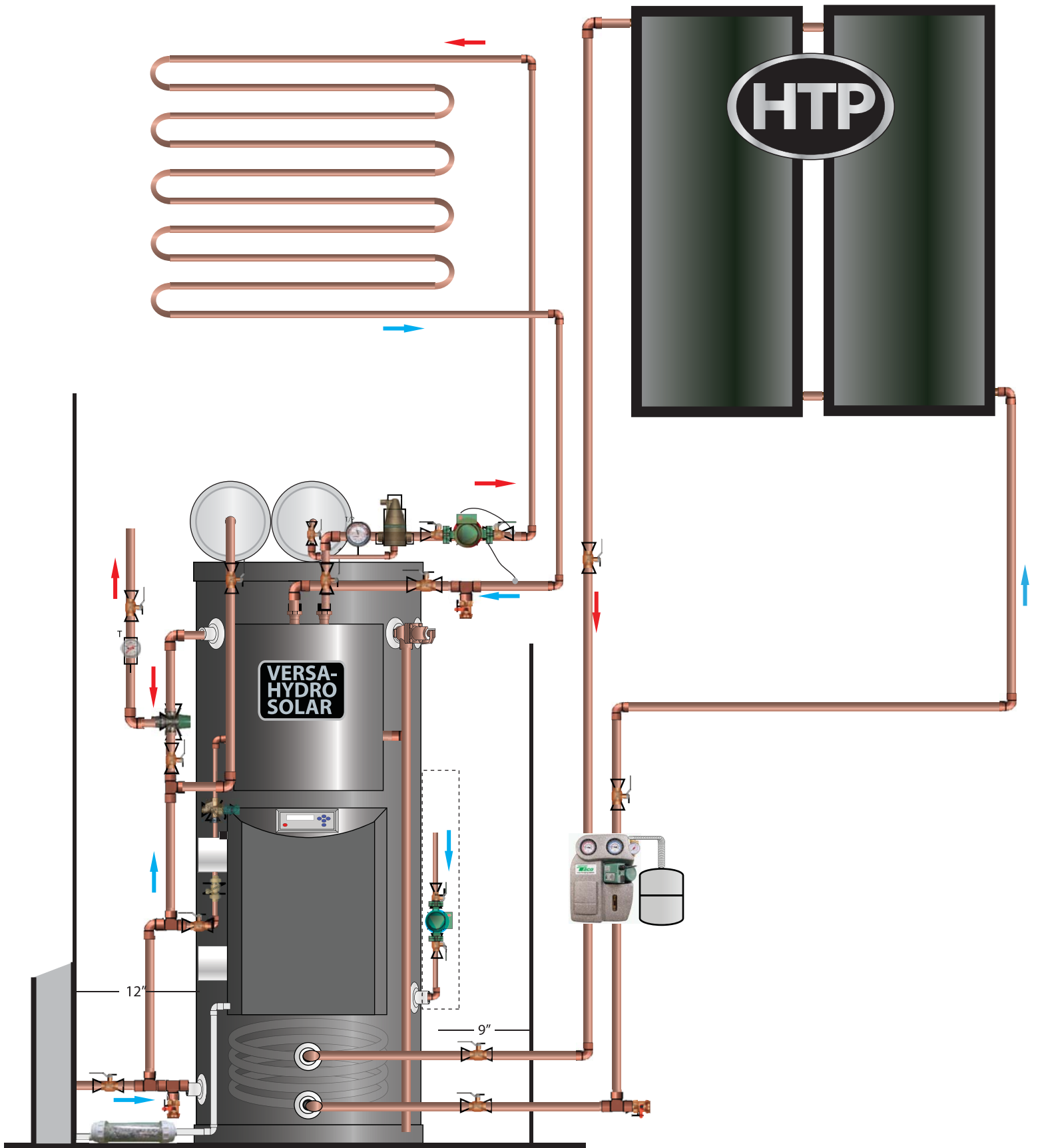
ID#	PART NUMBER	ITEM	RETAIL PRICE
16527	HTFPF-SM	Standard Mount Kit (1 kit per panel, 4 pcs per kit)	\$74.00
16529	HTFPF-FM	Flush Mount Kit (1 kit per panel, 4 pcs per kit)	\$58.00
16530	HTFPF-RM	Rack Mount Kit (1 kit per panel, 4 pcs per kit)	\$32.00
16532	HTFPF-ST-10	1"x1"x.125" 10' Rear Leg Aluminum Strut-Painted	\$68.00
16534	HTFPF-ST-12	1"x1"x.125" 12' Rear Lef Aluminum Strut-Painted	\$80.00
13339	INTP323-1	Glycol - 1 gal	\$90.00
13338	INTP323-5	Glycol - 5 gal	\$290.50

Versa-Hydro Solar
Closed Loop System Package

VERSA-HYDRO SOLAR

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Versa - Hydro Solar Closed Loop System Packages

VERSA-HYDRO

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or call us at 1-800-493-8432

Closed loop system with Black chrome flatplate collectors

Selecting an OG300 Package: select the tank type and size and the Flatplate collector(s) that match. A closed Loop Component package kit is included with each system. Need help? (links) selecting a system, types of systems, sizing a system.

Closed Loop Component Kit: HTP Versa-Hydro Solar Hot Water Heater, TACO Solar Pump Module, Expansion Tank, and Solar Panels plus installation manual. UPGRADE TO RESOL DIGITAL PUMP CONTROL MODULE + \$

ACCESSORIES, PARTS, and RACKING - Certain accessories, such as racking and glycol, are job specific and must be added to the package.

ID#	PART NUMBER	TANK SIZE	DRAINBACK PACKAGE	PANEL(S)	RETAIL PRICE
16237	STSPHE130-80S-248	Versa-Hydro 80 gal - 130 BTU	Closed Loop Component Package System	2-4'x8' Panels	\$20,575.00
16238	STSPHE130-80S-1410	Versa-Hydro 80 gal - 130 BTU	Closed Loop Component Package System	1-4'x10' Panel	\$19,037.00
16239	STSPHE130-119S-248	Versa-Hydro 119 gal - 130 BTU	Closed Loop Component Package System	2-4'x8' Panels	\$21,535.00
16240	STSPHE130-119S-2410	Versa-Hydro 119 gal - 130 BTU	Closed Loop Component Package System	2-4'x10' Panels	\$22,071.00
16241	STSPHE199-80S-248	Versa-Hydro 80 gal - 130 BTU	Closed Loop Component Package System	2-4'x8' Panels	\$22,089.00
16242	STSPHE199-80S-1410	Versa-Hydro 80 gal - 130 BTU	Closed Loop Component Package System	1-4'x10' Panel	\$20,551.00
16244	STSPHE199-119S-248	Versa-Hydro 119 gal - 130 BTU	Closed Loop Component Package System	2-4'x8' Panels	\$23,023.00
16245	STSPHE199-119S-348	Versa-Hydro 119 gal - 130 BTU	Closed Loop Component Package System	3-4'x8' Panels	\$24,829.00
16246	STSPHE199-119S-2410	Versa-Hydro 119 gal - 130 BTU	Closed Loop Component Package System	2-4'x10' Panels	\$23,559.00

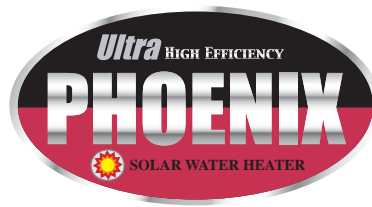
Mounting hardware kits and Glycol

ID#	PART NUMBER	ITEM	RETAIL PRICE
16527	HTFPF-SM	Standard Mount Kit (1 kit per panel, 4 pcs per kit)	\$74.00
16529	HTFPF-FM	Flush Mount Kit (1 kit per panel, 4 pcs per kit)	\$58.00
16530	HTFPF-RM	Rack Mount Kit (1 kit per panel, 4 pcs per kit)	\$32.00
16532	HTFPF-ST-10	1"x1"x.125" 10' Rear Leg Aluminum Strut-Painted	\$68.00
16534	HTFPF-ST-12	1"x1"x.125" 12' Rear Lef Aluminum Strut-Painted	\$80.00
13339	INTP323-1	Glycol - 1 gal	\$90.00
13338	INTP323-5	Glycol - 5 gal	\$290.50

Versa - Hydro installation hardware kit

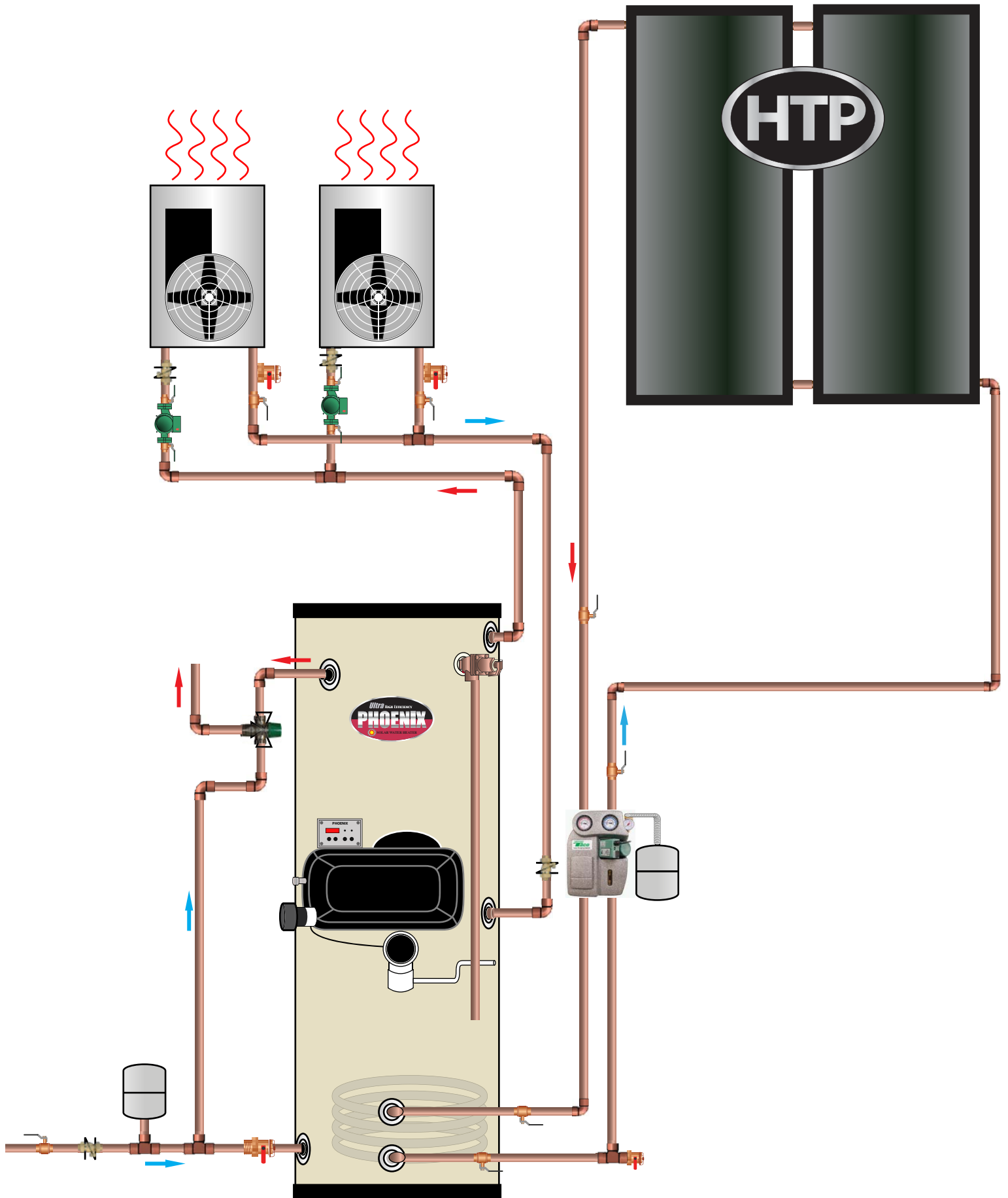
ID#	PART NUMBER	ITEM	RETAIL PRICE
****	SMALL	Versa-Hydro install kit for PHE130-55,PHE130-80 PHE130-80S, and PHE130-119S	\$2133.41
****	LARGE	Versa-Hydro install kit for PHE130-119, PHE199-80, PHE119-119, PHE199-80S, and PHE199-119S	\$2612.28

Phoenix Solar Closed Loop System Package



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Closed loop system with Black chrome flatplate collectors

Selecting an OG300 Package: Select the tank type and size and the Flatplate collector(s) that match. A closed Loop Component package kit is included with each system. Need help? (links) selecting a system, types of systems, sizing a system.

Closed Loop Component Kit: (included in one shipping box) 1-Phoenix Solar Water Heater, 1-TACO Solar Pump Module, 1-Apollo 1" Mixing Valve, 1-Elbi Expansion Tank. HTP Flatplate solar panels, installation manual.

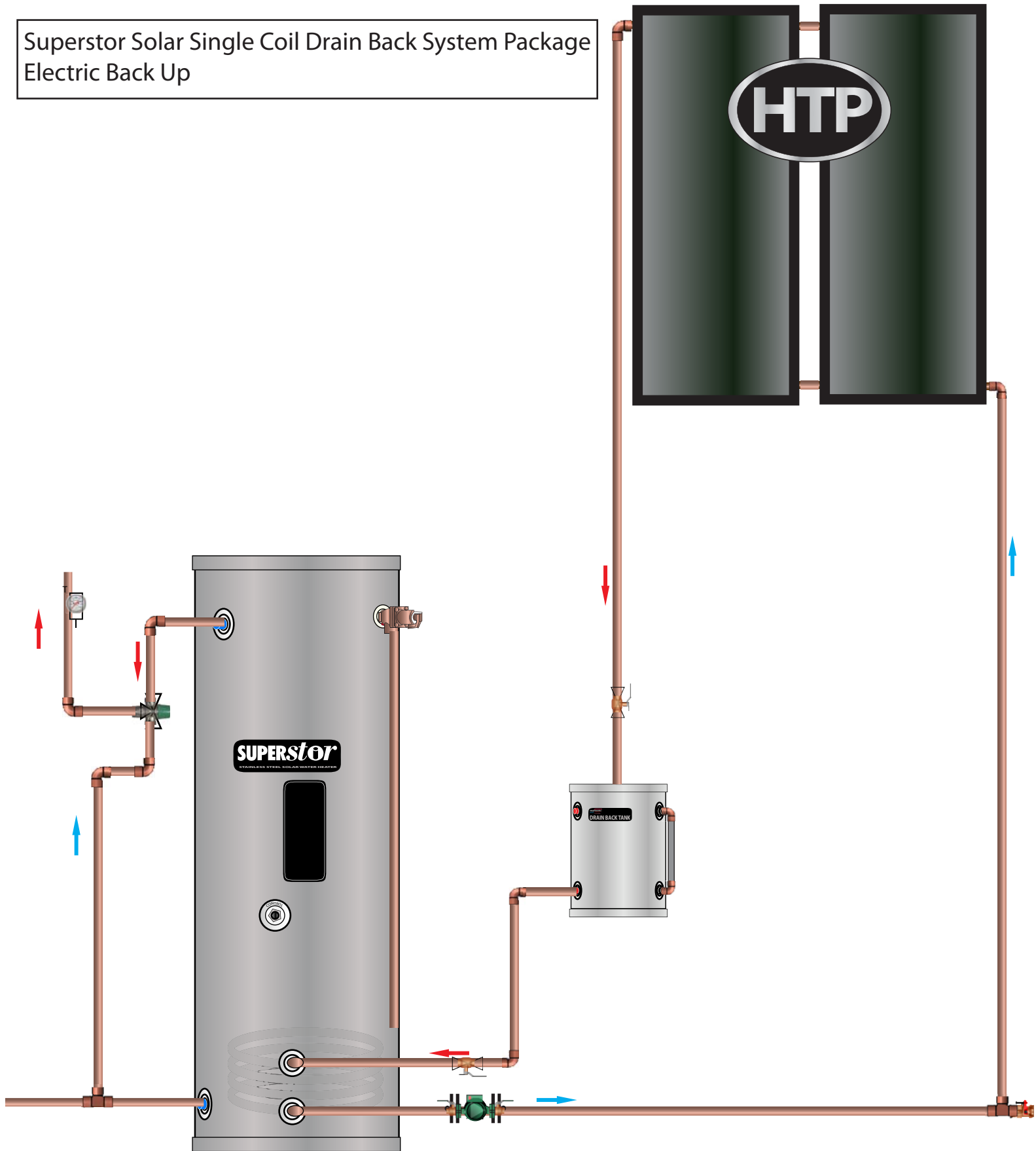
Accessories, parts, and racking: Certain accessories, such as racking and glycol, are job specific and must be added to the package.

ID#	PART NUMBER	TANK SIZE	CLOSED LOOP PACKAGE	PANEL(S)	RETAIL PRICE
11060	PH130-80S-248	Phoenix 130Btu, 80Gal	Closed loop Component Package System	2-4'x8' Panels	\$16,961.50
11309	PH130-80S-1410	Phoenix 130Btu, 80Gal	Closed loop Component Package System	1-4'x10' Panel	\$15,423.50
11311	PH130-119S-248	Phoenix 130BTU, 119Gal	Closed loop Component Package System	2-4'x8' Panels	\$17,873.50
11062	PH130-119S-2410	Phoenix 130BTU, 119Gal	Closed loop Component Package System	1-4'x10' Panel	\$16,335.50
11061	PH199-80S-248	Phoenix 199BTU, 80Gal	Closed loop Component Package System	2-4'x8' Panels	\$18,399.50
11310	PH199-80S-1410	Phoenix 199BTU, 80Gal	Closed loop Component Package System	1-4'x10' Panels	\$16,861.50
11312	PH199-119S-248	Phoenix 199BTU, 119Gal	Closed loop Component Package System	2-4'x8' Panels	\$19,287.50
11083	PH199-119S-348	Phoenix 199BTU, 119Gal	Closed loop Component Package System	3-4'x8' Panels	\$21,093.50
11063	PH199-119S-2410	Phoenix 199BTU, 119Gal	Closed loop Component Package System	2-4'x10' Panels	\$19,823.50

Mounting hardware kits and Glycol

ID#	PART NUMBER	ITEM	RETAIL PRICE
16527	HTFPF-SM	Standard Mount Kit (1 kit per panel, 4 pcs per kit)	\$74.00
16529	HTFPF-FM	Flush Mount Kit (1 kit per panel, 4 pcs per kit)	\$58.00
16530	HTFPF-RM	Rack Mount Kit (1 kit per panel, 4 pcs per kit)	\$32.00
16532	HTFPF-ST-10	1"x1"x.125" 10' Rear Leg Aluminum Strut-Painted	\$68.00
16534	HTFPF-ST-12	1"x1"x.125" 12' Rear Lef Aluminum Strut-Painted	\$80.00
13339	INTP323-1	Glycol - 1 gal	\$90.00
13338	INTP323-5	Glycol - 5 gal	\$290.50

Superstor Solar Single Coil Drain Back System Package
Electric Back Up





A Sensible Technologies Inc. Company

Please visit us at www.JTGMuir.com
or call us at 1-800-493-8432

Drainback system with Black chrome flatplate collectors

Selecting a Drainback Package: Select the tank type and size and the collector(s) that match. A DRAINBACK Component package kit is included with each system. Need help? (links) selecting a system, types of systems, sizing a system

Drainback Component Kit (included in one shipping box): Circulator (009), Drainback Tank, Boiler Drain, Pressure Relief Valve, HTP Flatplate Solar Panels, installation manual

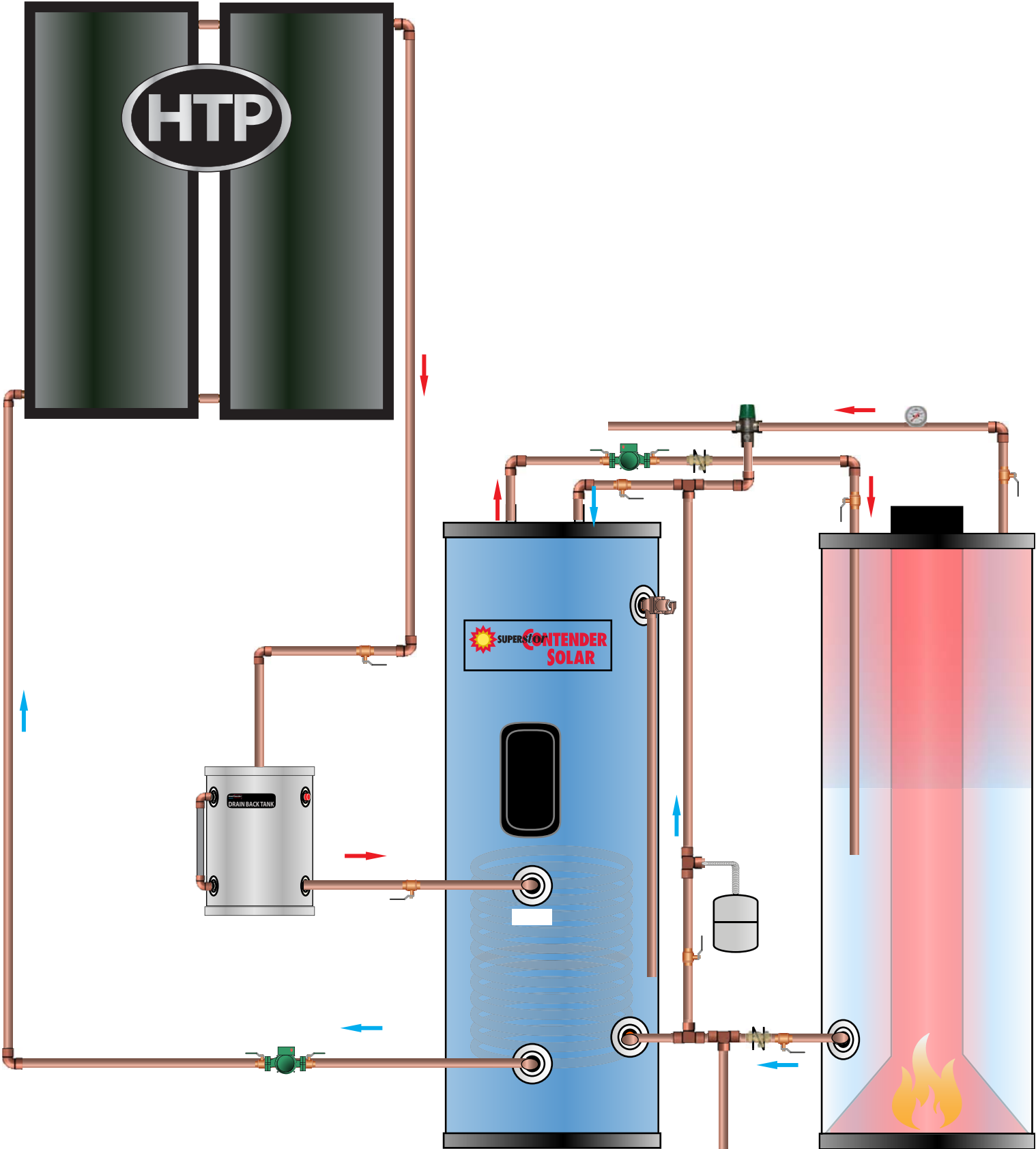
Accessories, parts, and racking: Certain accessories, such as racking and glycol, are job specific and must be added to the package.

ID#	PART NUMBER	TANK SIZE	DRAINBACK PACKAGE	PANEL(S)	RETAIL PRICE
15751	STSSU-60SE-10DB-148	SuperStor 60 gal	DRAINBACK Component Package System	1-4'x8' Panel	\$7,747.10
15752	STSSU-60SE-10DB-1410	SuperStor 60 gal	DRAINBACK Component Package System	1-4'x10' Panel	\$8,015.10
15753	STSSU-80SE-10DB-248	SuperStor 80 gal	DRAINBACK Component Package System	2-4'x8' Panels	\$10,282.10
15754	STSSU-80SE-10DB-1410	SuperStor 80 gal	DRAINBACK Component Package System	1-4'x10' Panel	\$8,744.10
15755	STSSU-119SE-15DB-348	SuperStor 119 gal	DRAINBACK Component Package System	3-4'x8' Panels	\$15,010.10
15756	STSSU-119SE-15DB-2410	SuperStor 119 gal	DRAINBACK Component Package System	2-4'x10' Panels	\$13,740.10

Mounting hardware kits and Glycol

ID#	PART NUMBER	ITEM	RETAIL PRICE
16527	HTFPF-SM	Standard Mount Kit (1 kit per panel, 4 pcs per kit)	\$74.00
16529	HTFPF-FM	Flush Mount Kit (1 kit per panel, 4 pcs per kit)	\$58.00
16530	HTFPF-RM	Rack Mount Kit (1 kit per panel, 4 pcs per kit)	\$32.00
16532	HTFPF-ST-10	1"x1"x.125" 10' Rear Leg Aluminum Strut-Painted	\$68.00
16534	HTFPF-ST-12	1"x1"x.125" 12' Rear Lef Aluminum Strut-Painted	\$80.00
13339	INTP323-1	Glycol - 1 gal	\$90.00
13338	INTP323-5	Glycol - 5 gal	\$290.50

Superstor Contender Solar / Drain Back System Package





Please visit us at www.JTGMuir.com
or call us at 1-800-493-8432

Drainback system with Black chrome flatplate collectors

Selecting a Drainback Package: Select the tank type and size and the collector(s) that match. A Drainback Component package kit is included with each system. Need help? (links) selecting a system, types of systems, sizing a system

Drainback component Kit: (included in one shipping box) Circulator (009), Drainback Tank, Boiler Drain, Pressure Relief Valve, Solar Spectrum Solar Panels, installation manual

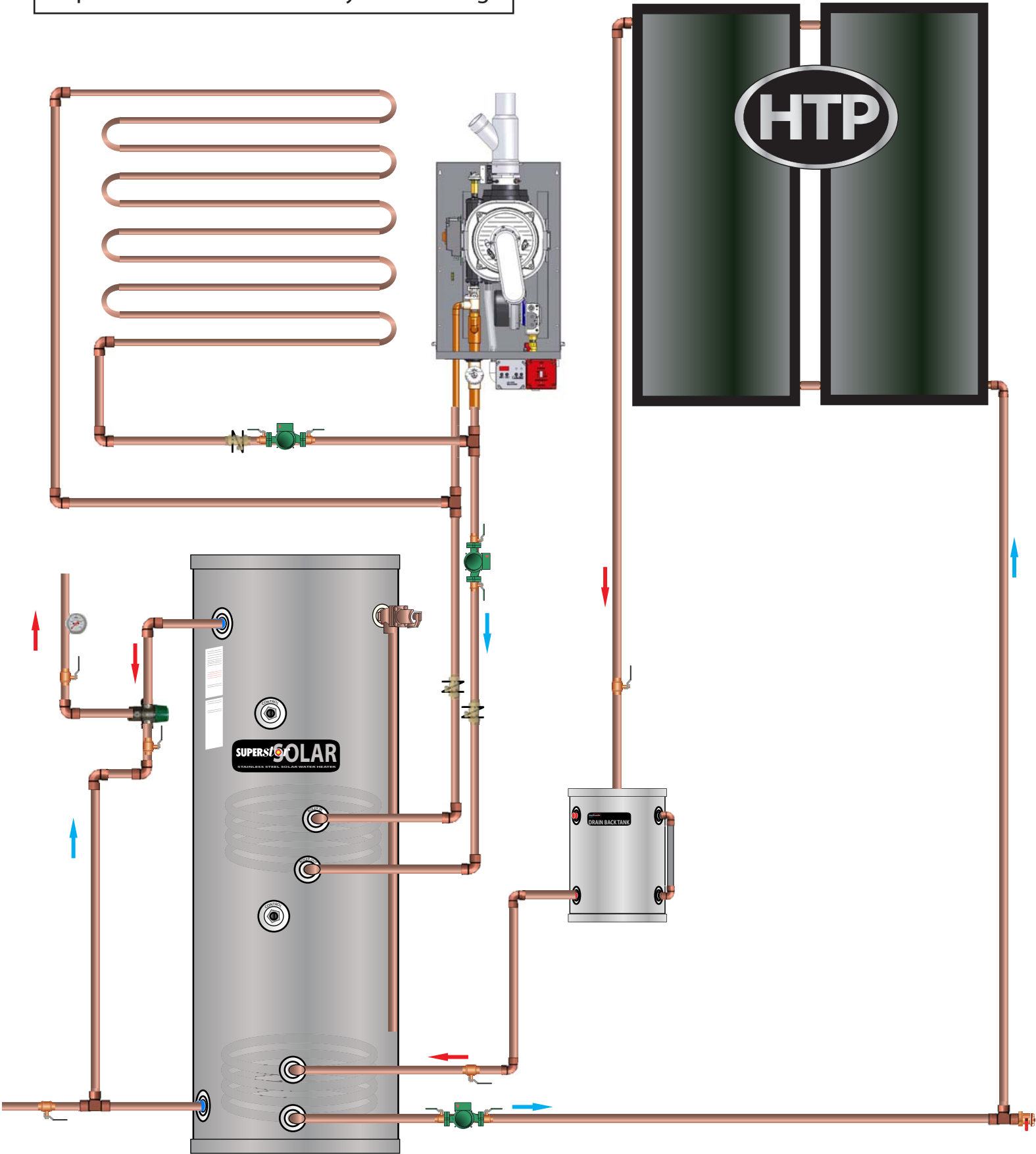
Accessories, parts, and racking: Certain accessories, such as racking and glycol, are job specific and must be added to the package.

ID#	PART NUMBER	TANK SIZE	DRAINBACK LOOP PACKAGE	PANEL(S)	RETAIL PRICE
15739	STSSC-50SE-10DB-148	Contender 50 gal System	Drainback Component Package System	1-4'x8' Panel	\$6,343.60
15740	STSSC-50SE-10DB-1410	Contender 50 gal System	Drainback Component Package System	1-4'x10' Panel	\$6,611.60
15741	STSSC-80SE-10DB-248	Contender 80 gal System	Drainback Component Package System	2-4'x8' Panels	\$8,720.60
15742	STSSC-80SE-10DB-1410	Contender 80 gal System	Drainback Component Package System	1-4'x10' Panel	\$7,182.60
15743	STSSC-119SE-15DB-348	Contender 119 gal System	Drainback Component Package System	3-4'x8' Panels	\$11,684.60
15744	STSSC-119SE-15DB-2410	Contender 119 gal System	Drainback Component Package System	2-4'x10' Panels	\$10,414.60

Mounting hardware kits and Glycol

ID#	PART NUMBER	ITEM	RETAIL PRICE
16527	HTFPF-SM	Standard Mount Kit (1 kit per panel, 4 pcs per kit)	\$74.00
16529	HTFPF-FM	Flush Mount Kit (1 kit per panel, 4 pcs per kit)	\$58.00
16530	HTFPF-RM	Rack Mount Kit (1 kit per panel, 4 pcs per kit)	\$32.00
16532	HTFPF-ST-10	1"x1"x.125" 10' Rear Leg Aluminum Strut-Painted	\$68.00
16534	HTFPF-ST-12	1"x1"x.125" 12' Rear Lef Aluminum Strut-Painted	\$80.00
13339	INTP323-1	Glycol - 1 gal	\$90.00
13338	INTP323-5	Glycol - 5 gal	\$290.50

Superstor Solar Drain Back System Package





Please visit us at www.JTGMuir.com
or call us at 1-800-493-8432

Drainback system with Black chrome flatplate collectors

Selecting a Drainback Package: Select the tank type and size and the collector(s) that match. A DRAINBACK Component package kit is included with each system. Need help? (links) selecting a system, types of systems, sizing a system

Drainback Component Kit (included in one shipping box): Circulator (009), Drainback Tank, Boiler Drain, Pressure Relief Valve, HTP Flatplate Solar Panels, installation manual

Accessories, parts, and racking: Certain accessories, such as racking and glycol, are job specific and must be added to the package.

ID#	PART NUMBER	TANK SIZE	DRAINBACK PACKAGE	PANEL(S)	RETAIL PRICE
15757	STSSU-60SB-10DB-148	SuperStor 60 gal	DRAINBACK Component Package System	1-4'x8' Panel	\$7,101.10
15758	STSSU-60SB-10DB-1410	SuperStor 60 gal	DRAINBACK Component Package System	1-4'x10' Panel	\$8,295.10
15759	STSSU-80SB-10DB-248	SuperStor 80 gal	DRAINBACK Component Package System	2-4'x8' Panels	\$10,551.10
15760	STSSU-80SB-10DB-1410	SuperStor 80 gal	DRAINBACK Component Package System	1-4'x10' Panel	\$9,013.10
15761	STSSU-119SB-15DB-348	SuperStor 119 gal	DRAINBACK Component Package System	3-4'x8' Panels	\$15,255.60
15762	STSSU-119SB-15DB-2410	SuperStor 119 gal	DRAINBACK Component Package System	2-4'x10' Panels	\$13,985.60

Mounting hardware kits and Glycol

ID#	PART NUMBER	ITEM	RETAIL PRICE
16527	HTFPF-SM	Standard Mount Kit (1 kit per panel, 4 pcs per kit)	\$74.00
16529	HTFPF-FM	Flush Mount Kit (1 kit per panel, 4 pcs per kit)	\$58.00
16530	HTFPF-RM	Rack Mount Kit (1 kit per panel, 4 pcs per kit)	\$32.00
16532	HTFPF-ST-10	1"x1"x.125" 10' Rear Leg Aluminum Strut-Painted	\$68.00
16534	HTFPF-ST-12	1"x1"x.125" 12' Rear Lef Aluminum Strut-Painted	\$80.00
13339	INTP323-1	Glycol - 1 gal	\$90.00
13338	INTP323-5	Glycol - 5 gal	\$290.50



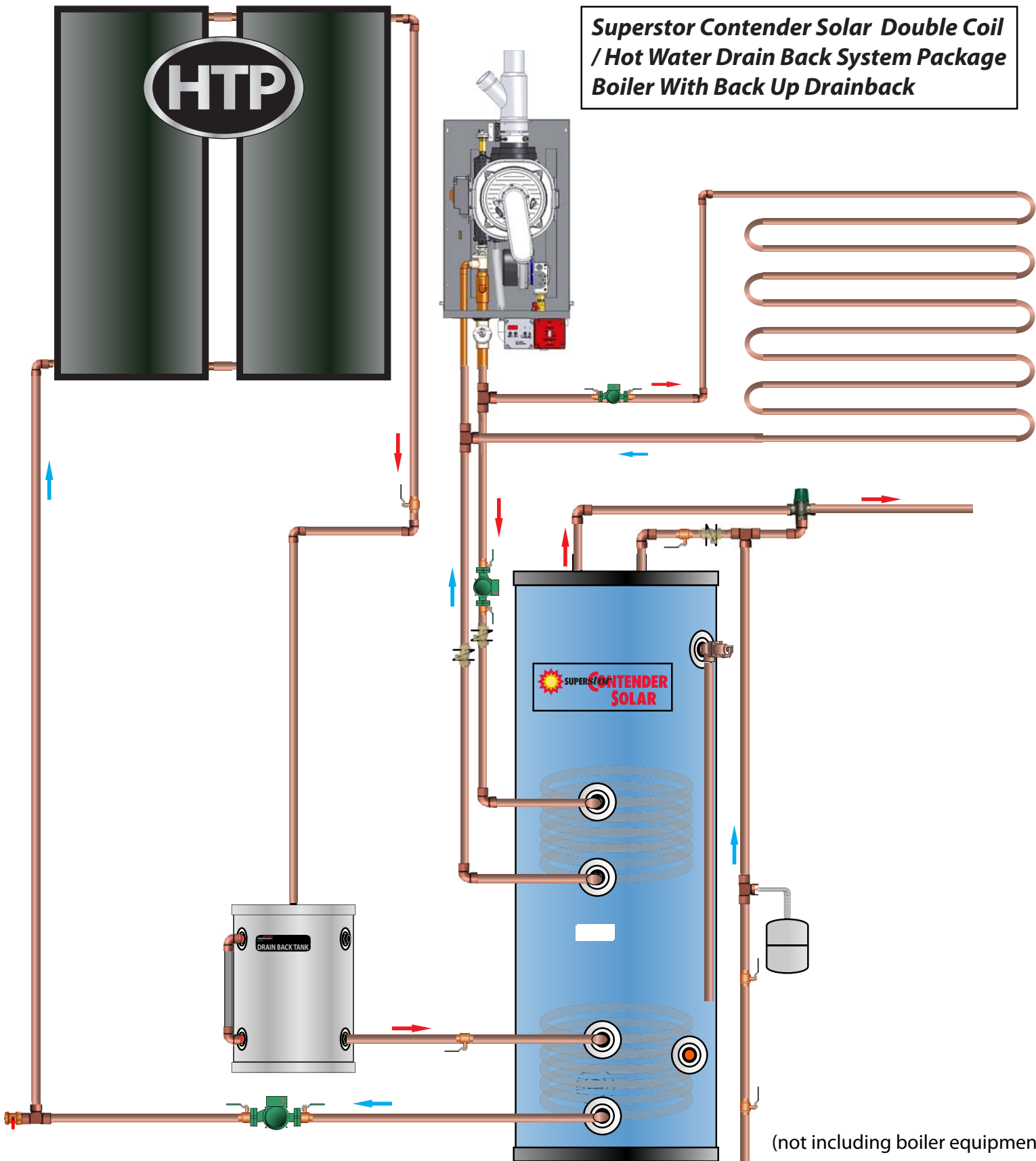
Glassed Steel Tank



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Superstor Contender Solar Double Coil / Hot Water Drain Back System Package Boiler With Back Up Drainback



(not including boiler equipment)



JTG/MUIR
Manufacturer's Representative

A Sensible Technologies Inc. Company

Please visit us at www.JTGMuir.com
or call us at 1-800-493-8432

Drainback system with Black chrome flatplate collectors

Selecting a Drainback Package: Select the tank type and size and the collector(s) that match. A Drainback Component package kit is included with each system. Need help? (links) selecting a system, types of systems, sizing a system

Drainback component Kit: (included in one shipping box) Circulator (009), Drainback Tank, Boiler Drain, Pressure Relief Valve, HTP Flat Plate Solar Panels, installation manual

Accessories, parts, and racking: Certain accessories, such as racking and glycol, are job specific and must be added to the package.

ID#	PART NUMBER	TANK SIZE	DRAINBACK LOOP PACKAGE	PANEL(S)	RETAIL PRICE
15745	STSSC-50SB-10DB-148	Contender 50 gal System	Drainback Component Package System	1-4'x8' Panel	\$6,746.60
15746	STSSC-50SB-10DB-1410	Contender 50 gal System	Drainback Component Package System	1-4'x10' Panel	\$7,014.60
15747	STSSC-80SB-10DB-248	Contender 80 gal System	Drainback Component Package System	2-4'x8' Panels	\$9,123.60
15748	STSSC-80SB-10DB-1410	Contender 80 gal System	Drainback Component Package System	1-4'x10' Panel	\$7,585.60
15749	STSSC-119SB-15DB-348	Contender 119 gal System	Drainback Component Package System	3-4'x8' Panels	\$12,085.60
15750	STSSC-119SB-15DB-2410	Contender 119 gal System	Drainback Component Package System	2-4'x10' Panels	\$10,815.60

Mounting hardware kits and Glycol

ID#	PART NUMBER	ITEM	RETAIL PRICE
16527	HTFPF-SM	Standard Mount Kit (1 kit per panel, 4 pcs per kit)	\$74.00
16529	HTFPF-FM	Flush Mount Kit (1 kit per panel, 4 pcs per kit)	\$58.00
16530	HTFPF-RM	Rack Mount Kit (1 kit per panel, 4 pcs per kit)	\$32.00
16532	HTFPF-ST-10	1"x1"x.125" 10' Rear Leg Aluminum Strut-Painted	\$68.00
16534	HTFPF-ST-12	1"x1"x.125" 12' Rear Lef Aluminum Strut-Painted	\$80.00
13339	INTP323-1	Glycol - 1 gal	\$90.00
13338	INTP323-5	Glycol - 5 gal	\$290.50

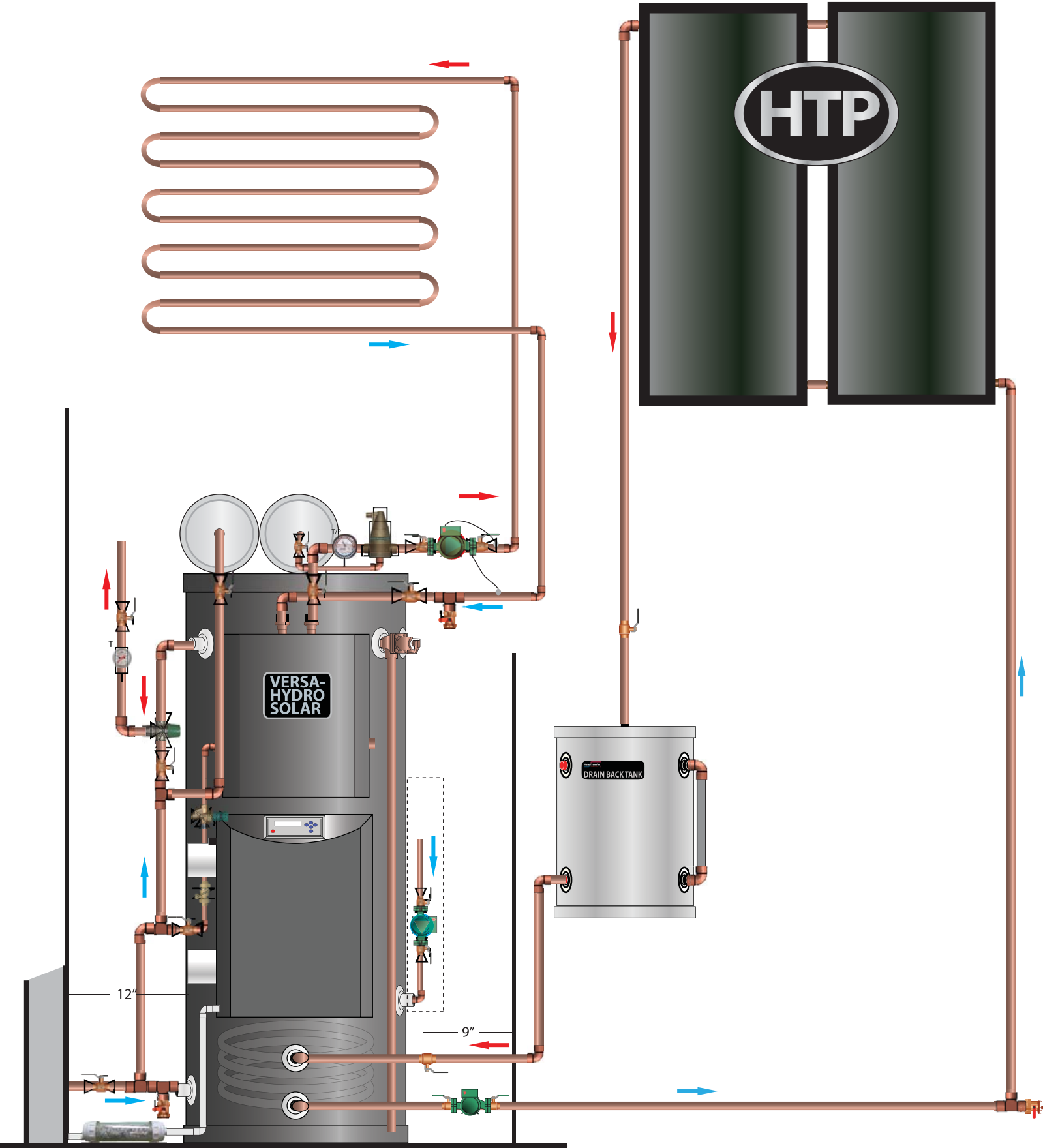
Versa-Hydro Solar
Drain Back System Package

VERSA- HYDRO SOLAR

JTG/MUIR
Manufacturer's Representative

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or call us at 1-800-493-8432



Drainback system with Black chrome flatplate collectors

Selecting a Drainback Package: Select the tank type and size and the collector(s) that match. A DRAINBACK Component package kit is included with each system. Need help? (links) selecting a system, types of systems, sizing a system

Drainback Component Kit (included in one shipping box): Circulator (009), Drainback Tank, Boiler Drain, Pressure Relief Valve, Solar Spectrum Solar Panels, installation manual
Accessories, parts, and racking: Certain accessories, such as racking and glycol, are job specific and must be added to the package.

ID#	PART NUMBER	TANK SIZE	DRAINBACK PACKAGE	PANEL(S)	RETAIL PRICE
16247	STSPHE130-80S-10DB-248	Versa-Hydro 80 gal - 130 BTU	DRAINBACK Component Package System	2-4'x8' Panels	\$20,759.60
16248	STSPHE130-80S-10DB-1410	Versa-Hydro 80 gal - 130 BTU	DRAINBACK Component Package System	1-4'x10' Panel	\$19,221.60
16249	STSPHE130-119S-15DB-248	Versa-Hydro 119 gal - 130 BTU	DRAINBACK Component Package System	2-4'x8' Panels	\$22,063.10
16250	STSPHE130-119S-15DB-2410	Versa-Hydro 119 gal - 130 BTU	DRAINBACK Component Package System	2-4'x10' Panels	\$22,599.10
16251	STSPHE199-80S-10DB-248	Versa-Hydro 80 gal - 130 BTU	DRAINBACK Component Package System	2-4'x8' Panels	\$22,273.60
16252	STSPHE199-80S-10DB-1410	Versa-Hydro 80 gal - 130 BTU	DRAINBACK Component Package System	1-4'x10' Panel	\$20,735.60
16258	STSPHE199-119S-15DB-248	Versa-Hydro 119 gal - 130 BTU	DRAINBACK Component Package System	2-4'x8' Panels	\$23,551.10
16259	STSPHE199-119S-15DB-348	Versa-Hydro 119 gal - 130 BTU	DRAINBACK Component Package System	3-4'x8' Panels	\$25,357.10
16260	STSPHE199-119S-15DB-2410	Versa-Hydro 119 gal - 130 BTU	DRAINBACK Component Package System	2-4'x10' Panels	\$24,087.10

Mounting hardware kits and Glycol

ID#	PART NUMBER	ITEM	RETAIL PRICE
16527	HTFPF-SM	Standard Mount Kit (1 kit per panel, 4 pcs per kit)	\$74.00
16529	HTFPF-FM	Flush Mount Kit (1 kit per panel, 4 pcs per kit)	\$58.00
16530	HTFPF-RM	Rack Mount Kit (1 kit per panel, 4 pcs per kit)	\$32.00
16532	HTFPF-ST-10	1"x1"x.125" 10' Rear Leg Aluminum Strut-Painted	\$68.00
16534	HTFPF-ST-12	1"x1"x.125" 12' Rear Lef Aluminum Strut-Painted	\$80.00
13339	INTP323-1	Glycol - 1 gal	\$90.00
13338	INTP323-5	Glycol - 5 gal	\$290.50

Versa-Hydro installation hardware kit

ID#	PART NUMBER	ITEM	RETAIL PRICE
****	SMALL	Versa-Hydro install kit for PHE130-55,PHE130-80 PHE130-80S, and PHE130-119S	\$2133.41
****	LARGE	Versa-Hydro install kit for PHE130-119, PHE199-80, PHE119-119, PHE199-80S, and PHE199-119S	\$2612.28

System Sizing

Residential Solar Hot Water Sizing

Residential solar hot water systems work within the daily rhythm of heating the water circulating through the collector(s) during the day and storing the energy in a tank for use during the evening and the following morning. The system needs to offer the most economically sized storage tank and the proper amount of solar collector square footage to meet the hot water demands of a home. The objective is to provide a 65-75% annual solar fraction, which is the amount conventional fuel use avoided by the solar energy contribution. It is important to avoid providing too many square feet of solar collector for a given amount of storage. Such over sizing can result in over heated systems resulting in reduced system longevity and poor economics.

Systems are sized according to the daily hot water demand for a building which is determined by the fixture count and the expected number of people to be occupying the building. Below are standard equipment selection guidelines for different household occupancy in Mediterranean zone California/Nevada. More exacting sizing, required for Title 24, can be utilized by utilizing the F-Chart sizing program available through Solar Spectrum or the program can be downloaded free of charge from the California Energy Commission web site www.energy.ca.gov/title24/sw_h_calculator/index.html

Recommended Tank/Collector Sizing: OG300 packages next page

Load /People	1-2	2-4	4-6	6-8
Tank Gallons	50-60	60-80	80-119	119
<u>Collector Sq Ft</u> Flateplate	32-40	40-64	60-80	80-96
Evacuated Tube		1-30 Tube	1-30 Tube	2-30 Tube

This sizing presumes a 65%-75% solar fraction, 35 degree inclination and orientation within 15 degrees +/- of South.

If there are additional loads than domestic hot water, such as space heating, a spa or pool, the solar collector surface area may be increased according to the size and occurrence of the additional load (see Heat Dumping).

Sizing single tank Phoenix Solar/ Boiler Solar:

While the top of each tank in a single tank solar design is heated by conventional fuel (gas or electric), solar will heat all the tank, including that portion in the top of the tank. Single tank system should be sized with the same methodology as shown above.

CALL FOR A BROCHURE 800-493-8432

Building A Package

Package Prescriptions: SRCC

Residential solar hot water packages should be listed under the SRCC OG300 system certification program. Under SRCC OG300, specific brands and sizes of collectors are matched with particular tank sizes and pump/control assemblies. This makes system selection an easy task. Follow the instructions below.

STEP BY STEP



Select a Tank Size

The number of bathrooms and people in the house will determine the tank size. (Refer to solar/sizing on the previous page).



Select a Tank Type (See system packages in next section)

Glass Lined or Stainless Construction

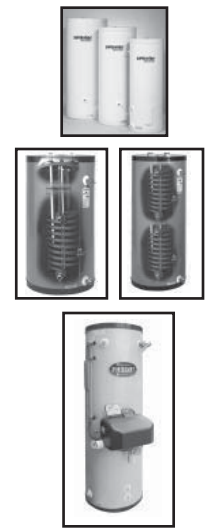
Stainless steel tanks are very long lived but glassed lined or Flow Coated tanks are considerably less expensive.

Single Heat Exchanger or Dual

Dual heat exchanger solar tanks are employed for use with boilers in a single tank design. Single heat exchanger tanks are used within dual tank designs

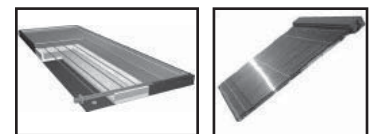
Phoenix Solar

Tank sizing is the same for Phoenix as any solar system but the designer must also size load requirements for the gas fired portion of the system separately.



Select a Solar Collector Type

Determine the type of solar collector, Flatplate or Evacuated tube, desired for the project. See Components section and consult with your salesman for evaluation of the project demands.



Select SRCC OG300 Collector/Tank Combinations

THE FOLLOWING COMBINATIONS ARE CERTIFIED BY SRCC:

Tanks	Flatplate Collector(s)	HTP Evacuated
50 gallon	1-4x8	
60 gallon	1-4x10 or 2-4x8	1-30 tube
80 gallon	2-4x8	1-30 tube
119 gallon	3-4x8 or 2-4x10	2-30 tube



Select an Install Package - Closed Loop or Drainback

Select either a closed loop system with glycol freeze protection or a drainback system that uses water that drains from the collector(s). See page 11 for description.

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Solar Hot Water

Solar Storage^{Plus} System

More Solar, Less Gas

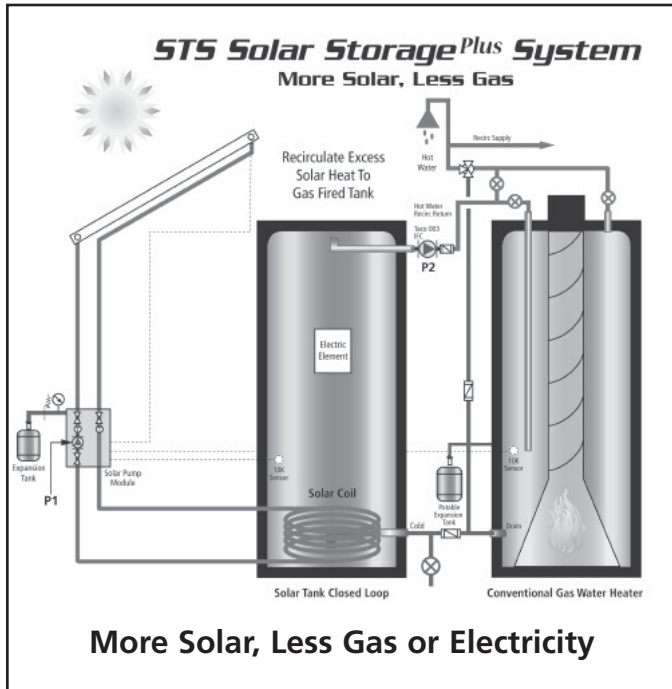
Total System Efficiency

The Way Its Been

Solar hot water systems usually deliver solar hot water to a conventional water heater only when there is domestic hot water demand. If there is no domestic demand a conventional gas fired water heater is usually turning on and off due to standby losses and recirculation pump losses, even while hot solar water can be readily available.

Extra Solar Storage: *Storage^{Plus}* Reduced Stagnation Time.

Using the conventional water heater for auxiliary storage reduces system stagnation time and virtually eliminates the use of auxiliary heat during most months of the year. When the solar tank has reached operating limit during the day, a second circulator pulls solar hot water into the gas water heater, keeping the solar system operating at acceptable temperatures.



Storage^{Plus} Increase Total System Efficiency

By using the conventional water heater for auxiliary solar storage, the use of gas or electricity is significantly reduced by reducing standby and recirculation losses and adding more solar energy for domestic hot water

How It Works: Heat Transfer Solar systems use Taco Smarts

The Heat Transfer Solar control/pump module uses the Taco VT variable speed solar control. This control not only increases solar collection effectiveness by 20% but also has the ability to switch on a secondary circulator when the solar tank reaches operating limit, pumping solar hot water into the gas water heater, sensing the temperature in the conventional water heater and turning off the secondary circulator when the operating limit is satisfied or solar energy is no longer available.

Conventional Tank Hot Water Heater or Tankless?

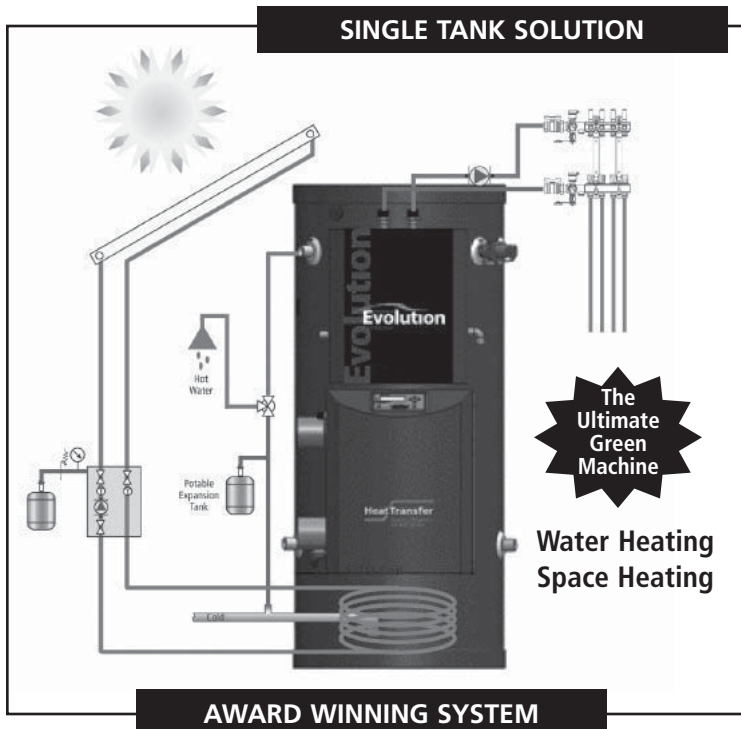
The Solar^{Plus} System results in far less firing of the convention water heater thus gas/electric tank inefficiency is far less relevant economically. A tankless is more efficient than a standard tank but is far more costly. A tankless is much more likely to need delimiting and general servicing than a conventional water heater. Conventional water heaters accommodate hot water recirculation systems most effectively.

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Solar & Hydronics



A 96% gas fired water heating, space heating and solar heating appliance



Phoenix Solar combines the superb features of the Phoenix 96% modulating stainless steel combi water heater with solar thermal...all in one SRCC OG300 performance certified appliance! This merging of existing technologies not only provides superb energy performance but excellent value by eliminating redundant components, making installation easier and saving space.

The Optimum Mix - All In One

Phoenix Solar Systems provide the optimum financial mix of high solar domestic hot water solar fraction (65% to 75% of total load), a small, cost effective solar space heating solar fraction (10% to 20% of total load) and very high efficiency utilization of conventional fuel sources.

New Construction Value

The addition of solar to the Phoenix water heater provides an excellent investment while producing ample Title 24 credit and displacing TONS of carbon emissions over 10 years.

Single Tank Design

The Phoenix Solar is designed as a fully stratified one tank system. While solar can heat all the tank, the gas fired storage is completely thermally isolated in the top of the tank to provide primary hot water and space heating requirements. Care should be taken in sizing the system. For example, a 119 gallon Phoenix Solar tank will have 60 gallons of gas fired storage available, so care should be taken in estimating the peak hot water loads for the building, with special attention to whirlpool baths. Rated input of the heater can be increased to provide greater hot water recovery, if required.

Residential and Commercial

A single Phoenix Solar system is available in a variety of capacities that can serve the needs of a 2000 sq ft home or a 6000 sq ft mansion. For commercial applications, large loads combined with the 30% uncapped federal solar hot water tax credit and ultra high efficiency utility rebates, in some areas, make for very attractive returns on investment for a wide range of commercial building owners. Multiple Phoenix Solar heaters can meet large water and space heating loads.

Total System Efficiency

- 96% Gas Fired Efficiency
- Single Tank Solution
- Low Standby Loss (.5% hr)
- Load Matching Modulation
- Small Footprint
- Finned Cupernickel SolarHeat Exchanger
- Stainless Steel Tank
- Super Quiet
- PVC Venting
- Sealed Combustion
- Preplumbed Solar Module

SEE PAGE 31 FOR SYSTEM DIAGRAMS

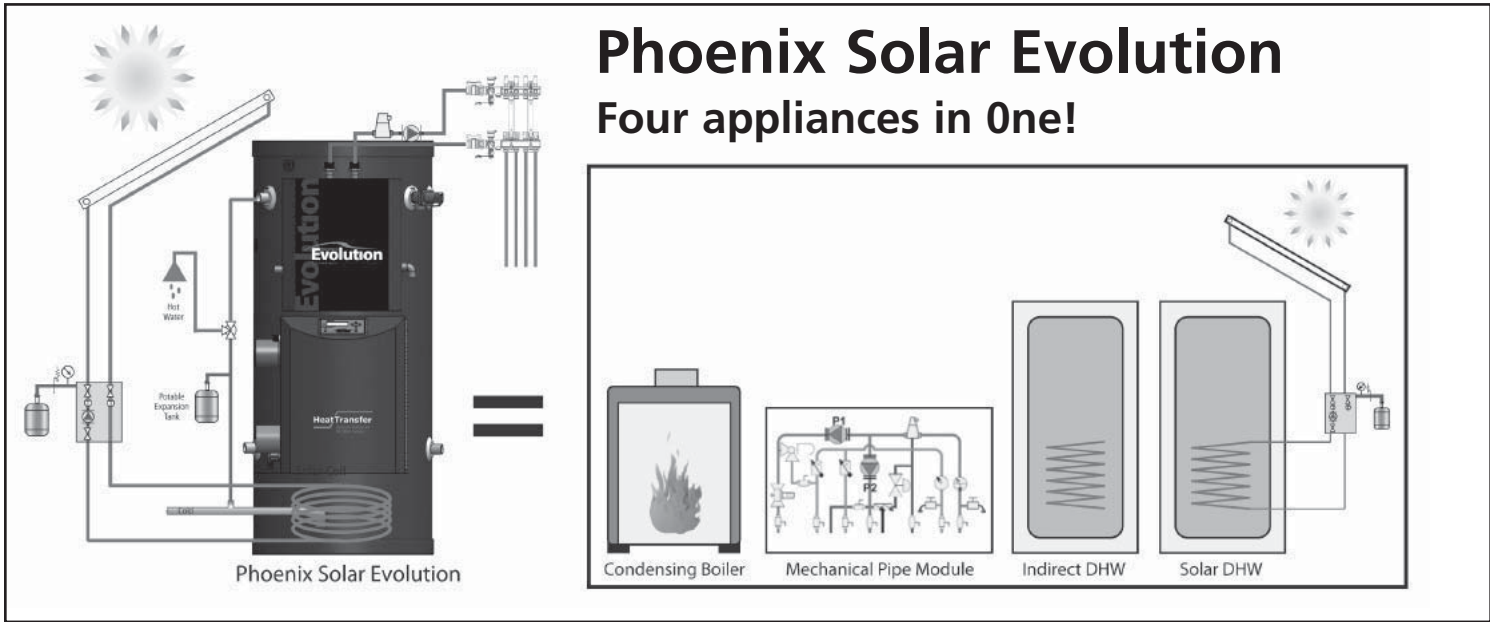
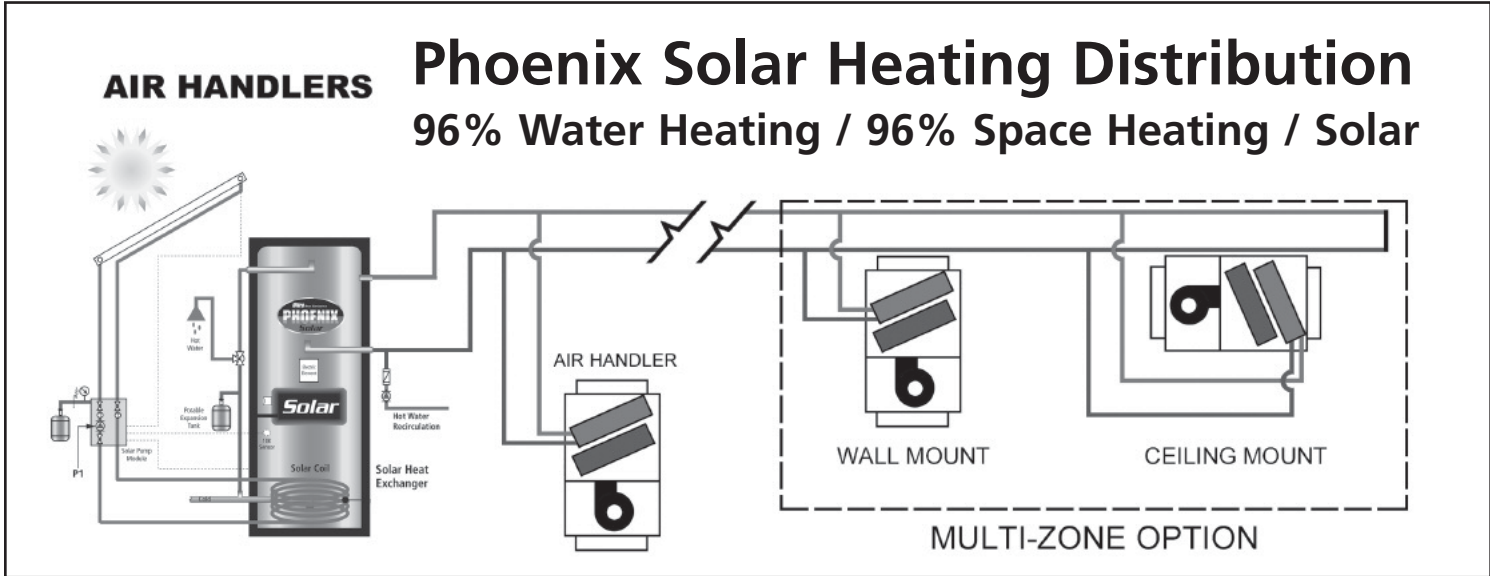
Phoenix Solar Package: A Complete SRCC OG300 Certified System Each System Includes:

Collector(s): HTP Flatplate or Evacuated Tube, Phoenix Solar Tank and Solar Installation Kit. Refer to "Building a Package" in this booklet.

Phoenix Solar Ready?

The Phoenix Solar may also be purchased and installed for high efficiency water heating and hydronic heating, permitting the client to add solar collectors in the future at a much lower installed cost.

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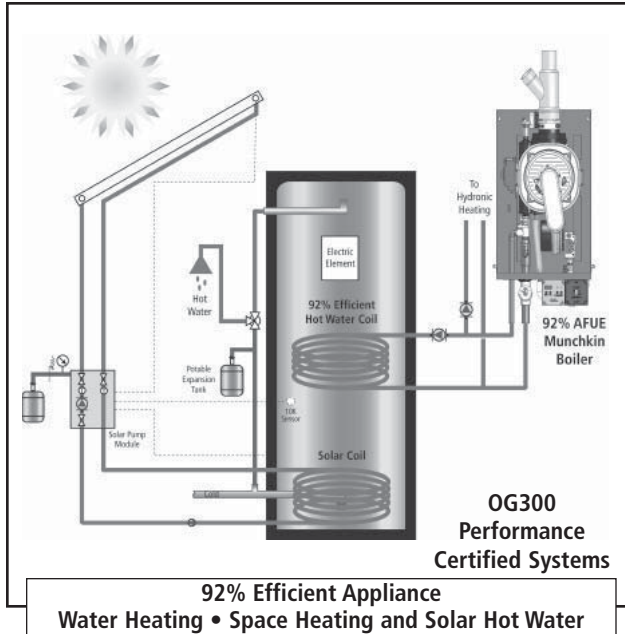


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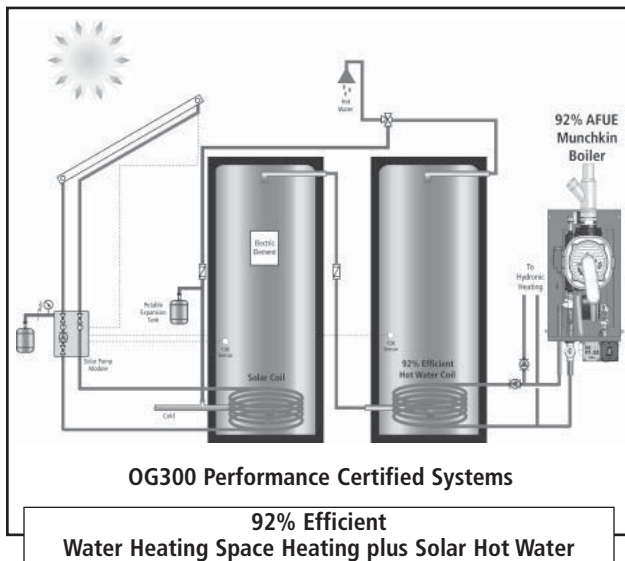
Solar & Hydronics

Boiler Solar

Total System Efficiency



The single tank Boiler Solar System saves space and installation costs using a single tank for solar and conventional hot water.



The dual tank Boiler Solar System provides more solar storage for high capacity hot water systems.

Solar Integration with a Hydronic Boiler

Integrating a condensing boiler with solar hot water heating provides the great efficiency advantages of 95%+ combined hydronics with renewable energy in one lean package which is a far superior solution to tankless or conventional hot water heaters.

Single Tank Systems: Save Space and \$

A single tank systems employ a storage tank with two hot water heat exchanger coils, the solar one in the bottom of the tank and the indirect fired coil in the upper portion of the tank. These tanks are designed for thermal isolation of the top and bottom portion of the tank. This system is very popular in Europe because it saves both space and the additional cost of a separate tank.

Single Tank Sizing

Because only one of the storage tank can be counted upon for gas fired water heating storage, care should be taken in sizing the system. For example, a 119 gallon tank will have 60 gallons of gas fired storage available, so care should be taken in estimating the peak hot water loads for the building, with special attention to whirlpool baths. Generally speaking, homes with more than 3 bathrooms should employ a two tank system design.

Two Tank High Capacity Systems

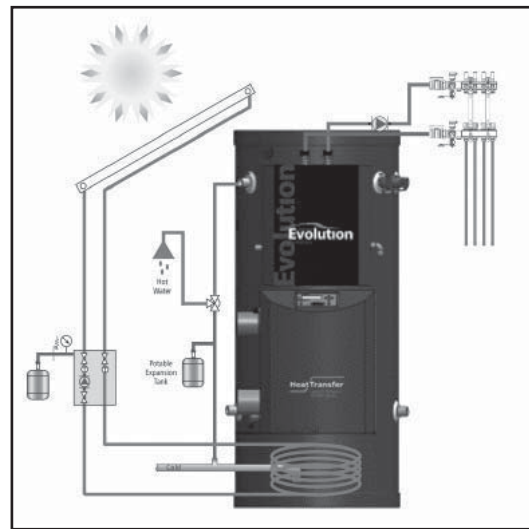
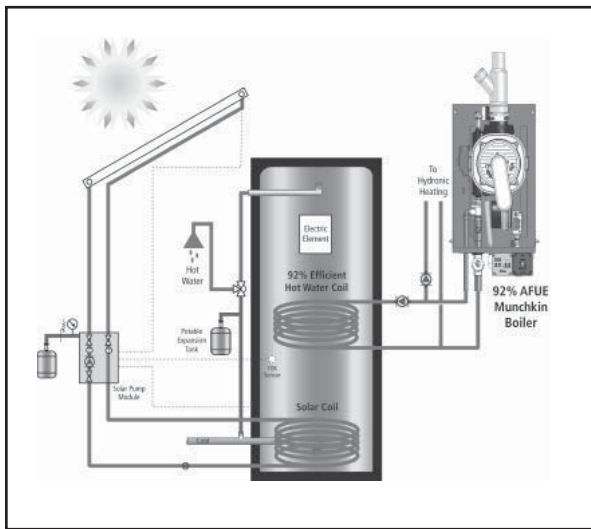
Two tank Boiler/Indirect systems work very much like a conventional solar system with a gas fired water heater backup, except that the gas fired portion of the system is far more efficient. These systems provide both extra solar and gas fired storage for high capacity systems used in large homes. This system can also use the Storage+ control and piping strategy to further expand solar utilization.

CALL FOR A BROCHURE 800-493-8432

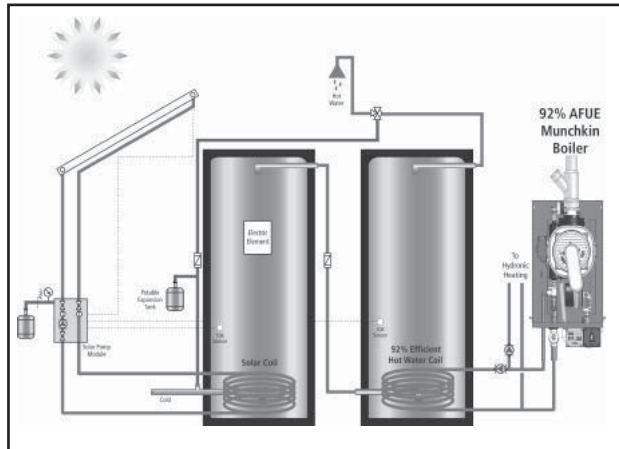
Single Tank and Two Tank System Design

A single tank design, which is very popular in Europe, stores both the solar and conventional hot water in a single tank with special thermal traps. These systems save both equipment costs, space and offer the advantage of incorporating very high efficiency gas fired conventional systems simply and effectively. Single tank systems, with reduced storage for gas fired hot water, will meet their capacity with roughly three bathrooms or about 4,000 sq ft. Consult us for hot water demand sizing. Two tank designs are useful for large homes with very large hot water demands or when a client wants a larger solar space heating participation with a Phoenix Solar system.

EXAMPLES: Single Tank Systems-Standard Capacity



EXAMPLES: Double Tank Systems-High Capacity



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Solar Spectrum

Components

Product Selection Guide 2010

CALL FOR A BROCHURE 800-493-8432

Flatplate Collectors



Solar Spectrum Collectors

with exclusive selective "Crystal Clear" inside



Glazing:

Low-Iron tempered glass, exclusively using our "High-T" tempered glass, with a total solar energy transmission of 90%.

Collector Frame and Battens:

Type 6063-T6 extruded aluminum frame and battens with electrostatic bronze plate finish that facilitates long life and strength.

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).

Mounting Hardware:

The variable "Quick Lock" mounting hardware reduces mounting time and makes it simple for anyone to install. The Quick Lock System allows the highest flexibility in mounting and is tested to wind load conditions of 195 mph. Mounting possibilities include: Pitched roof, Flat roof, Ground, Balcony, and Facade mounting.

Design Life: 30 Years

Warranty: 10 Years

Working Pressure: 165 PSI

Flow Rate: 0.5 to 1.8 GPM (recommended)

Absorber Plate:

Manufactured by Thermafin™ Mfg., a 100% copper absorber plate, the fin and the riser tube are molecularly bonded by high-frequency forge welding.

Absorber Coating:

Exclusively by Thermafin™ Mfg., a Selective "Crystal Clear" Coating.

$\alpha = 0.96$ $\epsilon = 0.08$

Gasket Grommets:

A UV durable EPDM, U-channel gasket with molded corners which prohibits water penetration and assures long life. Extruded Silicone Grommet with 1-1/8" Bore.

Corner Bracket:

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

Fasteners:

5056 Aluminum rivets secure the backsheet. Batten screws are 18-8 SS, 10-24 x 3/8", hex head screws, and black oxide coated.

Backsheet:

Type 3105-H14, 0.019" stucco embossed aluminum sheet (bronze) pop-riveted to aluminum frame.

Specifications

Collector	FP-26SC	FP-32SC	FP-40SC
Length (in)	77.187	97.187	121.187
Width (in)	47.187	47.187	47.187
Height (in)	3.137	3.137	3.137
Gross Area (ft ²)	25.3	31.8	39.7
Transparent Area (ft ²)	23.6	29.9	37.4
Dry Weight (lbs)	90	113	153

Solar Spectrum Collector Ratings

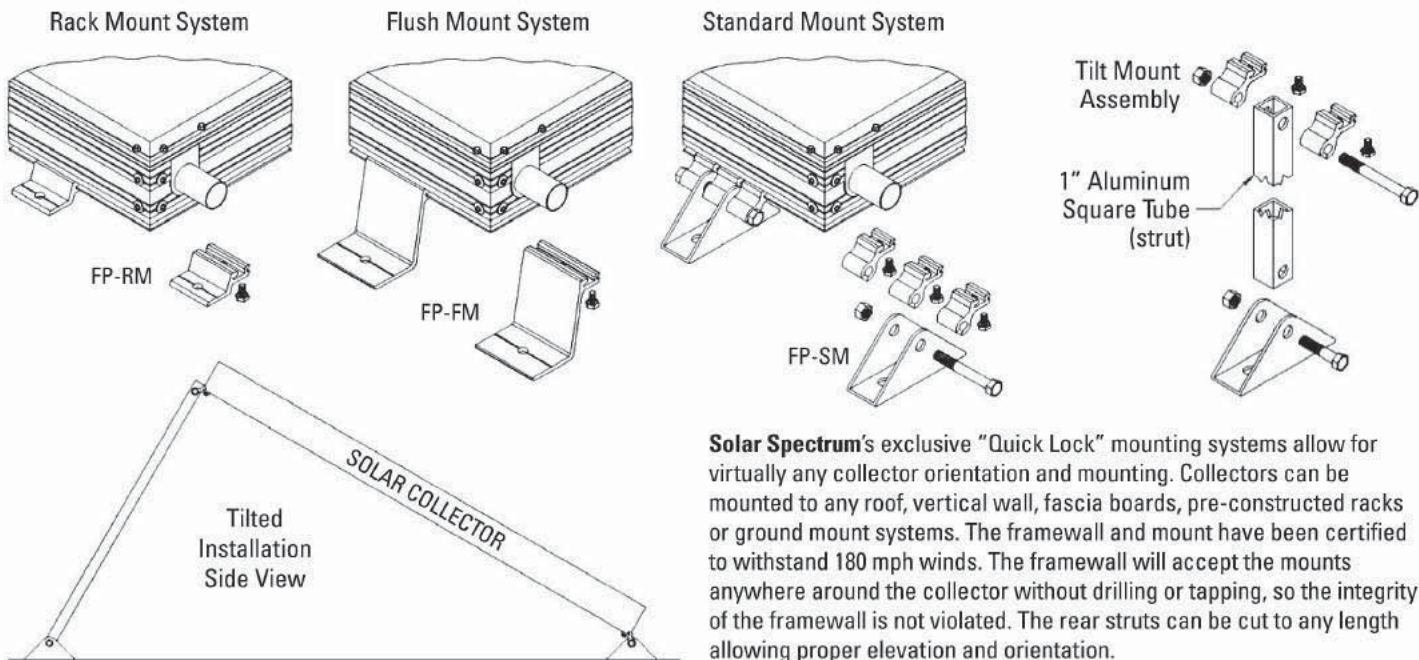
Solar Rating Certification Corp.

Metric (SI) Units / English (Inch-Pound Units)

Model No. ▶	FP-26SC			FP-32SC			FP-40SC		
	Kilojoules/Thousands of Btus per panel per day								
Weather Category (Ti-Ta) ▼	Clear Day 2000 Btu/ft ² .d			Mildly Cloudy Day 1500 Btu/ft ² .d			Cloudy Day 1000 Btu/ft ² .d		
	Megajoules/Thousands of Btus per panel per day								
A (-9F)	35 / 33	26 / 25	18 / 17	44 / 42	33 / 31	23 / 21	55 / 52	41 / 39	28 / 27
B (9F)	32 / 30	23 / 22	15 / 14	40 / 38	29 / 28	19 / 18	50 / 47	36 / 35	23 / 22
C (36F)	27 / 25	18 / 17	10 / 9	33 / 32	23 / 22	13 / 12	42 / 40	29 / 27	16 / 15
D (90F)	16 / 15	8 / 8	2 / 2	20 / 19	11 / 10	2 / 2	25 / 24	13 / 13	3 / 3
E (144F)	6 / 6	1 / 1	—	8 / 7	1 / 1	—	10 / 9	1 / 1	—

Flatplate Collectors

Solar Spectrum Collectors Mounting Hardware Options



Solar Spectrum's exclusive "Quick Lock" mounting systems allow for virtually any collector orientation and mounting. Collectors can be mounted to any roof, vertical wall, fascia boards, pre-constructed racks or ground mount systems. The framewall and mount have been certified to withstand 180 mph winds. The framewall will accept the mounts anywhere around the collector without drilling or tapping, so the integrity of the framewall is not violated. The rear struts can be cut to any length allowing proper elevation and orientation.

Engineering Specification

Solar collectors shall be as provided by Heat Transfer Products, Inc.

Model No. _____, and shall be of the glazed, flat plate liquid type. The number of collector for this project is _____ at _____ ft² per panel, equaling a total collector area of _____ ft². Collectors shall be _____" in length, _____" in width, and _____" in height. The enclosure box frame shall be an aluminum extrusion (alloy: 6063-T5) with anodized or electrostatic paint finish, architectural bronze in color. The collector back plate shall be painted, textures aluminum and not less than .019" thick. The collector cover back plate shall be a minimum 1/8", low iron oxide, tempered glass with a minimum transmissivity of 91%. All screws and bolts shall be of 18-8 stainless steel. Gaskets and grommets shall be of silicone or EPDM high temperature rubber. Insulation in the bed of the box shall be non-absorbing, closed cell polyisocyanurate foam board, foil faced on both sides, 1-1/4" thick in a box bed, 5/8" thick in box sides.

Absorber plate shall be of (0.008" thick) corrugated copper fin /copper tube construction welded together using a high-frequency, forged welding process.

Each plate must be factory pressure tested to 90 psig. Fluid passageways must not be less than 1/2" O.D. copper tube. All manifold connections shall be brazed.

Absorber surface shall be selective Crystal Clear™ coated with a minimum absorptivity of 0.96% (96%) and a maximum emissivity of 0.08 (8%).

Collector instantaneous efficiency curve shall not have less than a first order Y- Intercept of 0.06 and a Slope of not more than 0.865 Btu/hr.ft².°F.

The complete collector assembly shall be structurally certified to withstand a wind load of 141 mph or 51 psf.

Collectors shall have a design life of 30 years and shall be warranted for not less than 10 years. Collectors shall be certified by FSEC and SRCC.

Code Approvals

Solar Spectrum Collectors have been designed and constructed to meet major applicable nationwide codes, including the following:

Solar Rating and Certification Corporation SRCC Standard 100 – *Test Methods and Minimum Standards for Certifying Solar Collectors (ASHRAE Std 93-1986)*

Florida Solar Energy Center – *Test Methods and Minimum Standards for Solar Collectors (ASHRAE Std 93-1986)*

Miami Testing Laboratory *Wind Load Test (ASTM E 3300) Certification No. 94-1028.01*

International Association of Plumbing Mechanical Official (IAPMO) *Uniform Solar Energy Code (USEC) File No. S-5038*

International Testing

Bodycote Materials Testing Canada Inc. *Report No. 02-08-0513*

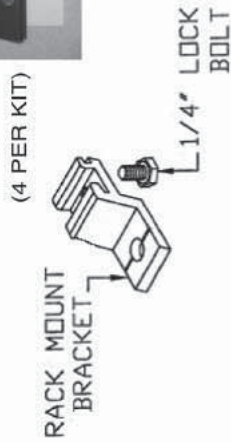
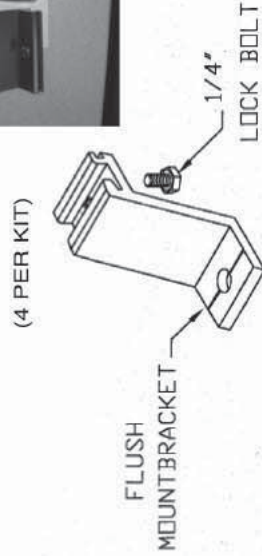
TÜV Bayern Sachen e.V. (DIN 4757) Report No. 28600399

Bundesforschungs – und Prüfzentrum Arsenal ÖNORM M 7714 - *Order No. M 4 015*

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Mounting Hardware

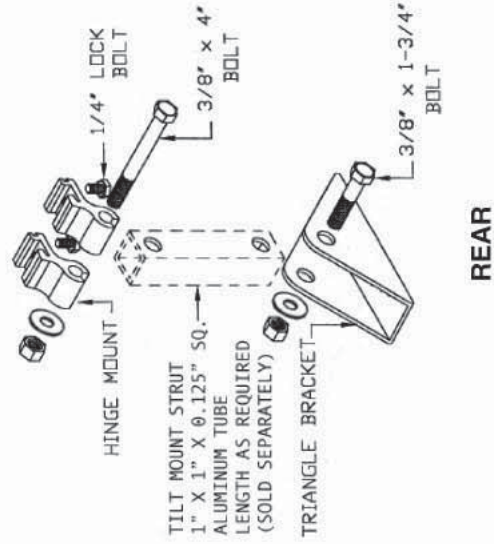
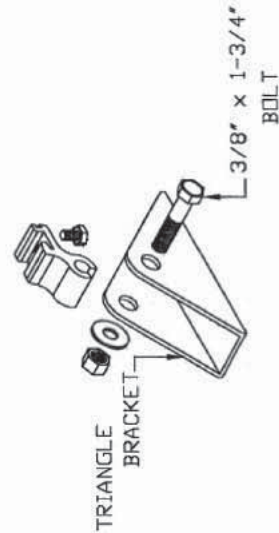
MT-FM Flush Mount



MT-TM Tilt Mount

(*strut not included)

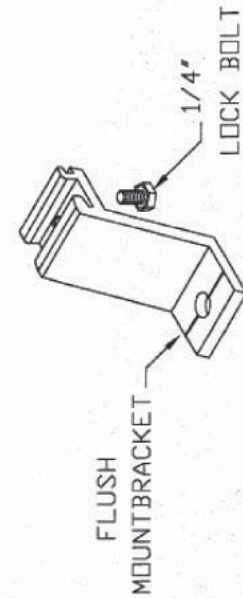
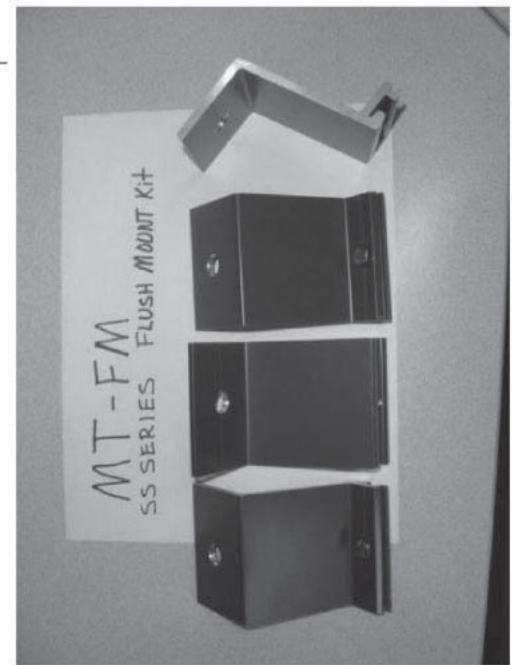
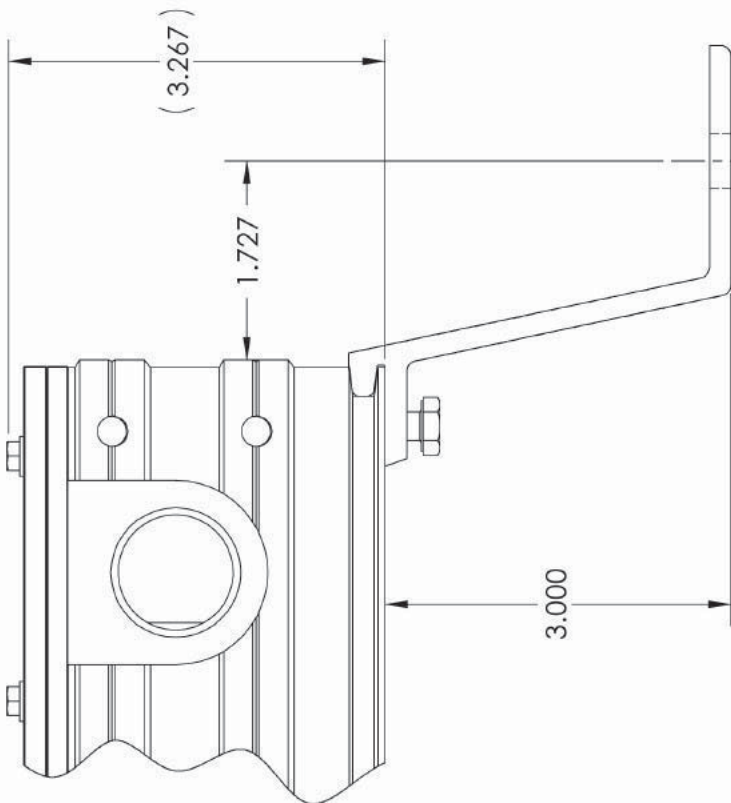
(2 FRONT, 2 REAR PER KIT)*



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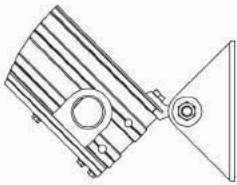
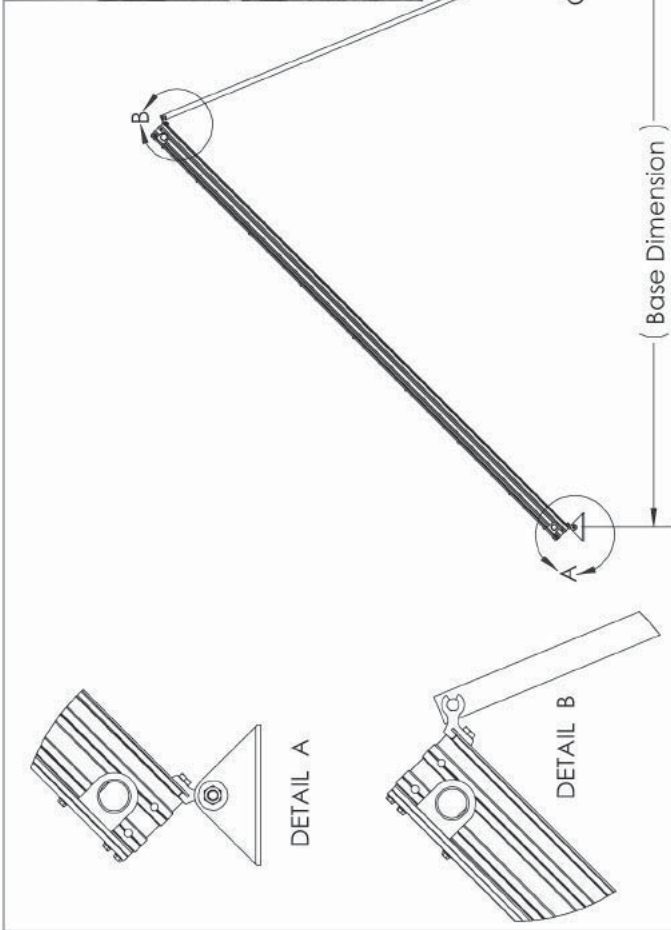
Flush Mount Kit

MT-FM Flush Mount Kit (4 PER KIT)

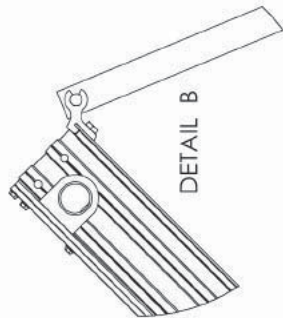


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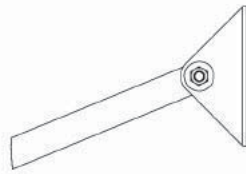
Tilt Mount



DETAIL A



DETAIL B



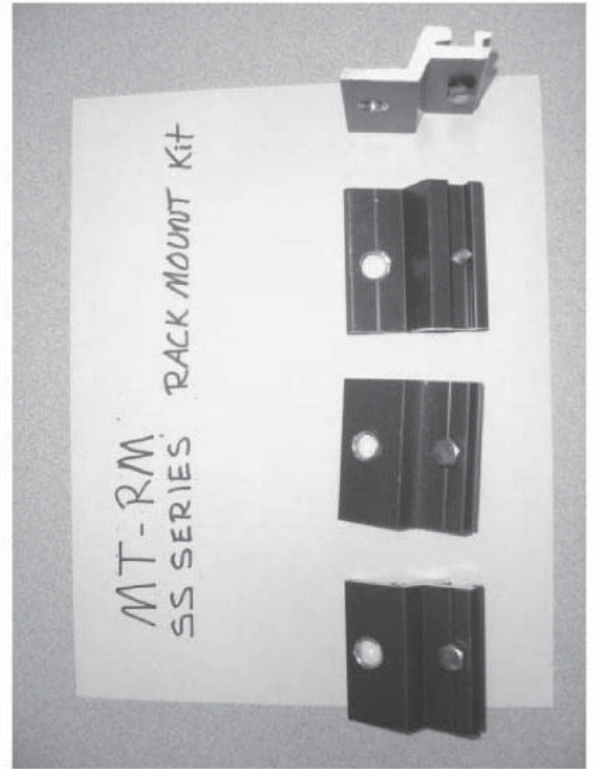
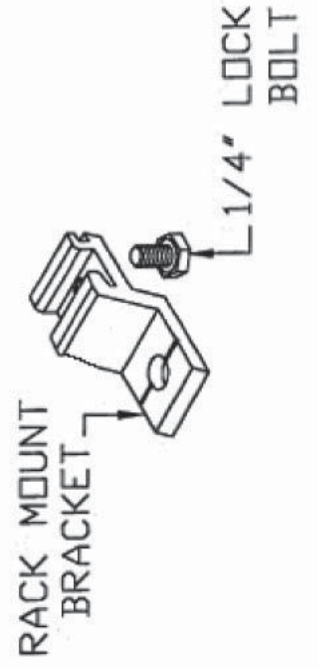
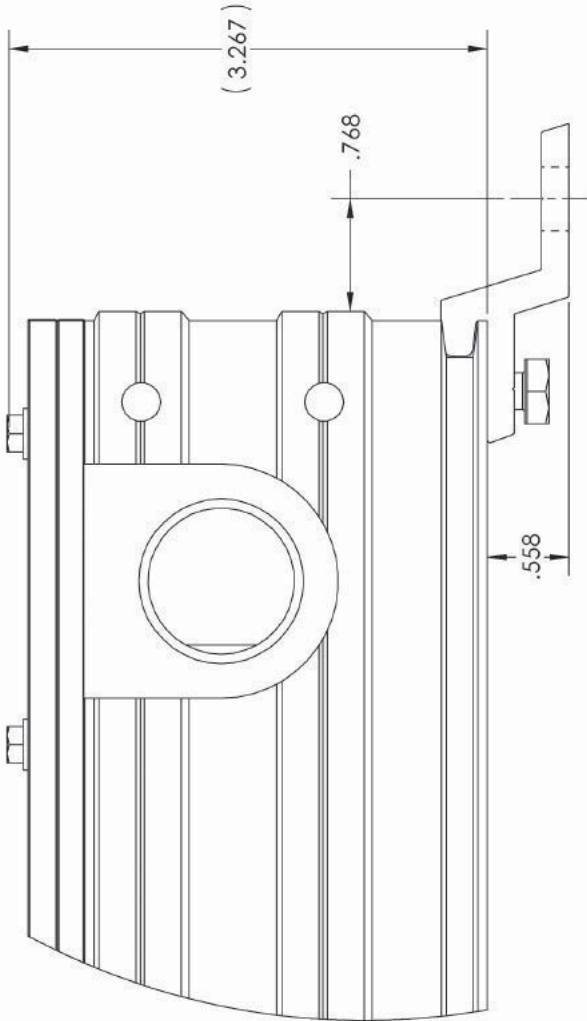
DETAIL C

Collector	SS-21	SS-24	SS-26	SS-28	SS-32	SS-40
Base Dimension	86	98	78	86	98	122

<h2 style="margin: 0;">SS Series Tilt Mount</h2>		NAME	DATE	 <small>engaging the sun</small>	
		SDS	5/4/09		
<small>UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/8 ANGULAR: MACH.1 BEND ± TWO PLACE DECIMAL ± 01 THREE PLACE DECIMAL ±.005</small>		DRAWN	5/4/09	TITLE: SIZE DWG. NO. A CD1029 REV SCALE: 1:20 WEIGHT: SHEET 1 OF 1	
		CHECKED	5/4/09		
<small>INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL FINISH</small>		ENG APPR.		COMMENTS: DO NOT SCALE DRAWING	
		MFG APPR.			
NEXT ASSY	USED ON	APPLICATION		5	
<small>PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SOLAR SKIES MFG., LLC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SOLAR SKIES MFG., LLC IS STRICTLY PROHIBITED.</small>		Q.A.: COMMENTS:		1 2 3 4 5	

Rack Mount Kit

MT-RM Rack Mount Kit (4 PER KIT)

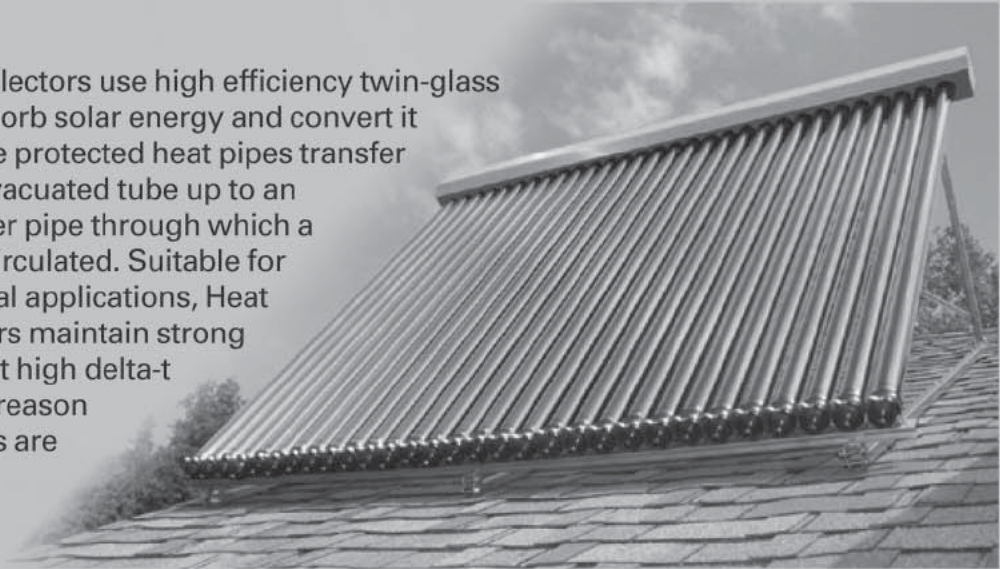


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Heat Transfer 30-Tube Collector

Overview

Heat Transfer Solar Collectors use high efficiency twin-glass evacuated tubes to absorb solar energy and convert it into usable heat. Freeze protected heat pipes transfer heat from within the evacuated tube up to an insulated copper header pipe through which a heat transfer liquid is circulated. Suitable for domestic or commercial applications, Heat Transfer Solar Collectors maintain strong efficiency levels even at high delta-t temperatures. For this reason Heat Transfer collectors are ideal for cold regions and high temperature applications.



Included in Package

Part #HP-30SC

- Manifold with 30 Evacuated Tubes
- Standard Roof Frame
- Conductive Heat Paste

Internationally
Certified
Product



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Evacuated Tube Collectors

Basic Collector Data

Collector Size	30 Tubes
Overall Length of Frame Front Track	80" (1980mm)
Overall Height of Frame Front Track and Manifold	6.14. (156mm)
Overall Width of Manifold	86.4 (2196mm)
Absorber O.D. Inner Tube x Exposed Tube Length	25.8 ft
Aperture I.D. of Outer Glass Tube x Exposed Tube Length	30.3 ft
Gross Area	46.8 (4.35m ²)
Gross Dry Weight	208.5lb (94.8kg)
Fluid Capacity	24 fl oz (710ml)

Copper Header Specifications

Material	99.93% Copper
Length	L + (X - 1) x 2.759 + 9.45
Header Dimensions	ø0.7" OD x 0.047 M Grade Copper Pipe
Brazing Rod Materials	45% Ag, 30% Cu, 25% Zn (BAg45CuZn) & 93% Cu, 7% P (Bcu93P)
Inlet & Outlet	ø0.866" OD x 0.039"
Temperature Sensor Port	ø0.039" OD x 0.039"
Recommended Flow Rate	0.026G/Tube/min (10tube=0.26G/min)
Max Flow Rate	3.9G/Min (15L/min)
Max Operating Pressure Rating	800kPa (116psi)

Manifold Casing and Insulation

Manifold Length	L = (x-1) x 2.759 + 6.3
Height	5.15" / 130mm
Width	5.512" / 140mm
Tube Spacing	2.759" / 70mm
Manifold Material	0.03" Alum (Grade 5005-H16)
Glass Wool Insulation	4.36 lb / ft

Frame

Material	0.059" thk 439 Stainless Steel
SS Tube Clips	301 Stainless Steel
Bolts, Washers and Nuts	304 Stainless Steel & 5005-H16 Aluminum

Evacuated Tubes

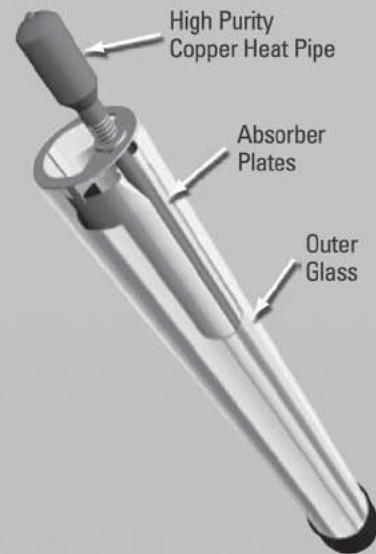
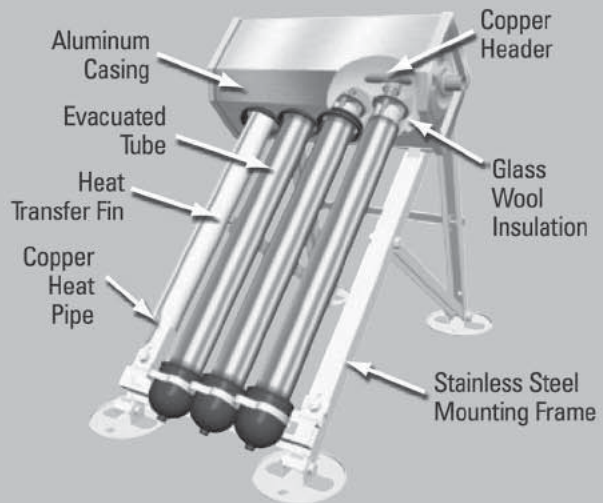
Tube Length	70.8" / 1800mm
Outer Tube Dimensions	ø2.28x0.07 / ø 58mm x 1.8mm
Inner Tube Dimensions	ø1.85 x 0.07 ø47mm x 1.8mm
Weight	4.4lb / 2kg
Glass Material	Borosilicate Glass 3.3
Absorber Material	Graded-Index Coating AL-N
Thermal Expansion	3.3 x 10 ⁻⁶ °C
Absortance(λ)	>92% (AM1.5)
Emittance(λ)	<8% (80°C)
Vacuum	P < 5 x 10 ⁻³ Pa
Stagnation Temperature	>395°F / >200°C
Heat Loss	<0.8W/(m ² ·°C)
Maximum Strength	120psi / 0.8Mpa
Absorber Area per Tube	0.86ft ² / 0.08m ²
Heat Transfer Fins	0.0078" / 0.2mm Aluminum Fins


Heat Pipes

Length	70.8" (1800mm)
Material	ø0.314" OD x 0.027" Oxygen Free Copper
Condenser Dimensions	ø0.78" OD x 1.18" (ø20mm OD x 30mm)
Heat Transfer Liquid	Purified Water (non-toxic)
Maximum Working Temperature	577° (300°C)
Startup Temperature	<86°F (<30°C)
Vacuum	P < 5 x 10 ⁻³ Pa
Vertical Installation Angle	20-70°
Spring Plate	0.8mm/0.03" Aluminum (Grade 5005-H16)
Spring	301 Grade Stainless Steel
Washer	1.5mm/0.05" Aluminum (Grade 5005-H16)

Rubber Components

Material	HTV Silicone Rubber (UV Stabilized)
Density	1.15g/cm ³ ± 0.05
Durometer Hardness	50-70 (Depending on Components)
Elongation	320%
Rebound	54%
Max. Working Temperature	577° (300°C)
Tensile Strength	6.4 Mpa
Tear Strength	12.5 KNM



<p>Solar Collector Certification and Rating</p>  <p>SRCC-OG-100</p>	<p>CERTIFIED SOLAR COLLECTOR</p> <p>SUPPLIER: Heat Transfer Products 120 Braley Road East Freetown, MA 02717</p> <p>MODEL: HTP-Evacuated Tube HP-30SC</p> <p>COLLECTOR TYPE: Tubular</p> <p>CERTIFICATION #: 100-2008-019A</p>
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Collector Thermal Performance Rating

CATEGORY (Ti-Ta)*	Megajoules Per Panel Per Day			CATEGORY (Ti-Ta)	Thousands of Btu Per Panel Per Day		
	Clear Day 23 MJ/m ² -d	Mildly Cloudy 17 MJ/m ² -d	Cloudy Day 11 MJ/m ² -d		Clear Day 2000 Btu/ft ² -d	Mildly Cloudy 1500 Btu/ft ² -d	Cloudy Day 1000 Btu/ft ² -d
A (-5°C)	41	31	21	A (-9°F)	39	29	20
B (5°C)	39	29	19	B (9°F)	37	28	18
C (20°C)	37	27	17	C (36°F)	35	25	16
D (50°C)	32	22	12	D (90°F)	30	21	12
E (80°C)	27	17	8	E (144°F)	26	16	7

A-Pool Heating (Warm Climate) B-Pool Heating (Cool Climate) C-Water Heating (Warm Climate)
D-Water Heating (Cool Climate) E-Air Conditioning
*Ti = Inlet temperature to the collector
*Ta = The ambient air temperature
(For the methodology of this thermal performance rating see
www.solar-rating.org/standards/ogdocuments/RM-1_2002.PDF)

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Evacuated Tube Collector Racking

Evacuated Tube: HT 30 Tube Collector Racking

There are three stainless steel racking kits available for the HT 30 Tube collectors: Low: 11-13 degrees inclination, Medium: 21-28 degree inclination, High: 27-52 degrees inclination.

Solar Collector Low Angle Frame Kit

Part #: FR-XX-LOW-RFOOT/RTRACK

The components contained in this package combine with the standard frame to form the complete frame assembly shown below.

Notes:

- There are two mounting options, ROUND FEET or ROOF TRACKS.
- When using the Roof Tracks, attachment to the roof may be via roof attachment straps (# FR60/100-RASTRAP) or rubber pads (# FR-SRPAD, FR-TRPAD) depending on roof surface.
- ROUND FEET provide adjustable angle of 11-13 deg. ROOF TRACKS provide a set angle of 12 deg.

Nuts and bolts are already attached to the appropriate components.

⚠ WARNING

SAFETY CONSIDERATIONS

- Wear gloves when handling frame components
- If installing on galvanized iron roofs, always use rubber pads, thus preventing direct contact between galvanized iron and stainless steel frame.
- Ensure roof attachment points are structurally sound
- Follow relevant safety regulations regarding working on roofs

Frame Packing List

Part #	Component Quantities	
	FEET	R. TRACK
1. FR-RCON		6
2. FR-FCON		6
3. FR-RTRACK	-	3
4. SR-SRLEG		3
5. FR-RXB-MID-XX		4
6. FR-RFOOT		-
7. FR-BOLT-M8x50		15
8. FR-BOLT-M8x40		4
9. FR-BOLT-M8x20		4
10. FR-NUT-M8		23
11. FR-SWASH		23
12. FR-WASH-S		38
13. FR-WASH-B		-
14. FR-NLOCK		8
15. FR-SPAN-12/14		1

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Solar Tanks



*Patent Pending

Sealed-Combustion Gas-Fired Mod/Con Water Heaters



Certifications and Ratings:

The water heaters are UL/ULC listed and meet or exceed thermal efficiency and standby loss requirements of current ASHRAE standards. All water heaters are supplied with AGA/ASME rated temperature and pressure relief valve. The control panel is an integrated solid state temperature and ignition control device with integral diagnostics, LED fault display capability and a digital display of temperature settings. Meets all safety and construction requirements of ANSI Z21.10.3

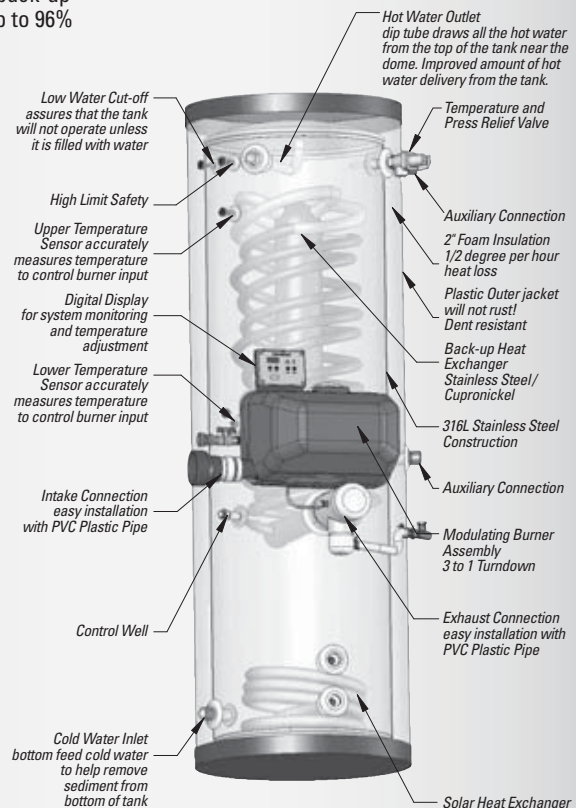
CERTIFIED FOR A 150 PSI MAXIMUM WORKING PRESSURE.

The First Solar Water Heater with an integrated gas fired back-up ...all in one water heater!

The Phoenix Solar is truly a revolutionary product. Designed with an internal solar heat exchanger for a solar panel that combines with a highly efficient 96% Gas Fired Back-up heat exchanger all in one storage tank. The Phoenix Solar will transfer all the energy the sun can provide and also provide lots of hot water through the internal gas fired back-up when the sun is not shining. Designed with the most advanced technology available, with a 96% efficiency, these products optimize efficiency and operating reliability.

Construction Features:

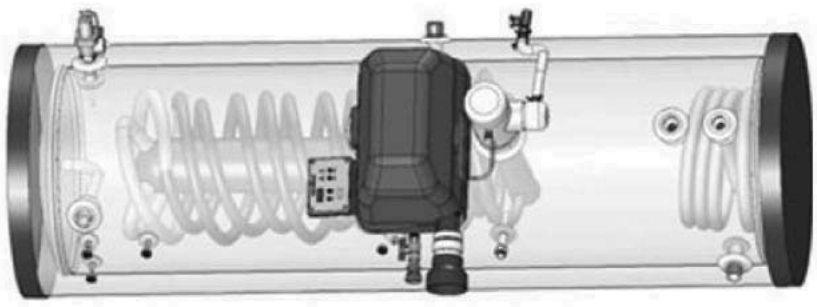
- 316 L stainless steel tank construction (Requires no anode rods)
- Corrosion resistant, high efficiency with a combined Cupronickel /Stainless combustion heat exchanger.
- Internal Solar Heat Exchanger – Provides maximum heat transfer of Solar Energy into hot water.
- Highly efficient gas fired back-up – Thermal efficiency of up to 96%
- Load matching modulating gas fired burner with a 3 to 1 turndown
- Low Nox Emissions. Meets SCAQMD Rule 1146.2
- No chimney required; direct vent using plastic pipe
- Ability to vent up to 85 equivalent feet of length
- High Impact plastic jacket eliminates dents.
- 2" of non-CFC polyurethane foam insulation.
- Less than 1/2 degree per hour heat loss (R17).
- Self diagnostic electronic control with digital readout for water temperature, set point and differential settings.
- Removable front cover allows easy access to burner assembly
- Auxiliary Connections for air handlers or radiant heat.
- Gas –Back up Temperature Range from 70 F to 160 F
- Zero clearance to all combustible surfaces.
- Factory installed AGA/ASME rated T&P relief valve.



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Solar tanks

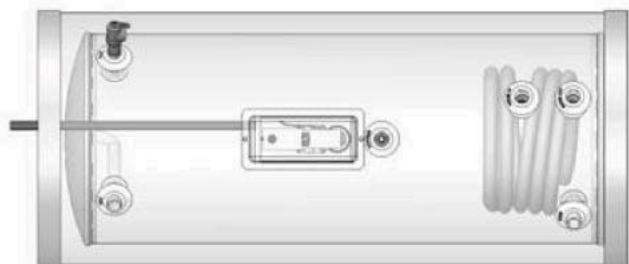
Solar Phoenix
PH199-119S
PH199-80S
PH130-199S
PH130-80S



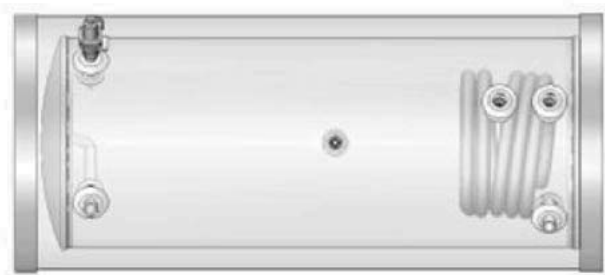
SSU-45SB
SSU-60SB
SSU-80SB
SSU-119SB



SSU-45SE
SSU-60SE
SSU-80SE
SSU-119SE



SSU-45
SSU-60
SSU-80
SSU-119



SSU-10DBX
SSU-15DBX
SSU-20DBX



SSU-10DBX
SSU-15DBX
SSU-20DBX

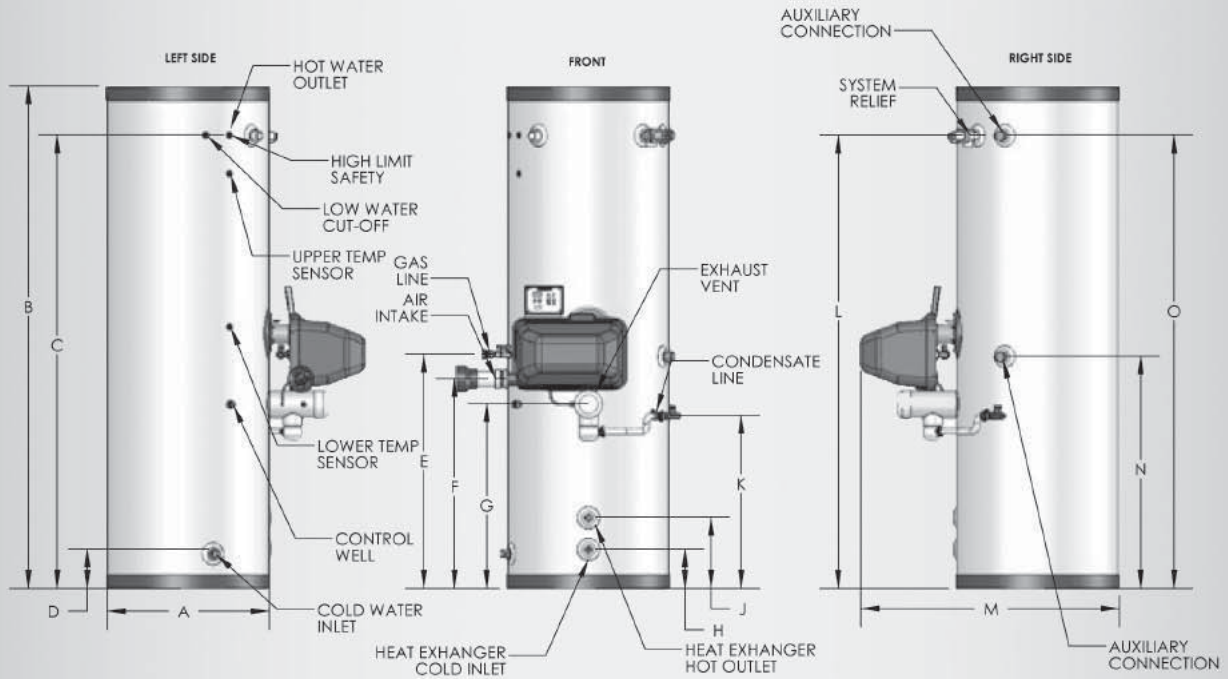


CALL FOR A BROCHURE 800-493-8432

Solar Tanks



Dimensional Information



PHOENIX SOLAR WATER HEATER DIMENSIONS

MODEL #	GALLONS	A	B	C	D	E	F	G	H	J	K	L	M	N	O
PH-80S	80	23"	72"	64"	5-1/4"	32"	29"	25-1/2"	5-3/4"	9-3/4"	27-3/4"	64"	36"	32"	64"
PH-119S	119	27"	74"	66"	7-1/4"	34"	31"	27-1/2"	7-1/2"	11-1/2"	25-3/4"	66"	40"	34"	66"

ALL DIMENSIONS ARE APPROXIMATE

PHOENIX SOLAR WATER HEATER SPECIFICATIONS

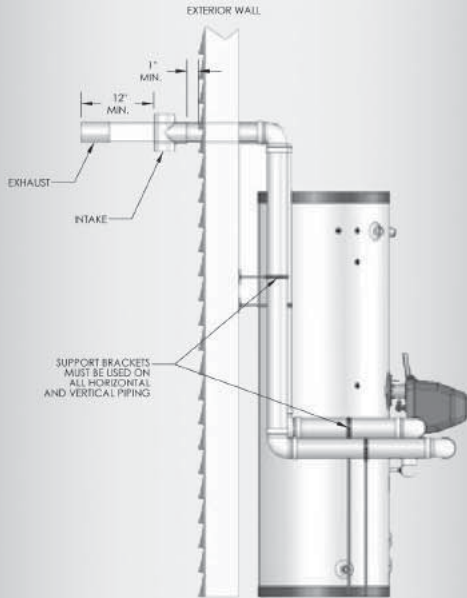
MODEL #	GALLONS	BTU'S	AIR INTAKE/ EXHAUST VENT SIZE	WATER INLET/ OUTLET SIZE	HEAT EXCHANGER SIZE	AUXILIARY CONN.	GAS LINE CONN.	SYSTEM RELIEF PIPE SIZE	SHIPPING WEIGHT
PH-80S	80	130,000	2"	1-1/2" NPT	1"	1"	3/4"	3/4"	245 LBS.
		199,000	3"						
PH-119S	119	130,000	2"	1-1/2" NPT	1"	1"	3/4"	3/4"	415 LBS.
		199,000	3"						

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Solar Tanks

PHOENIX Venting Options

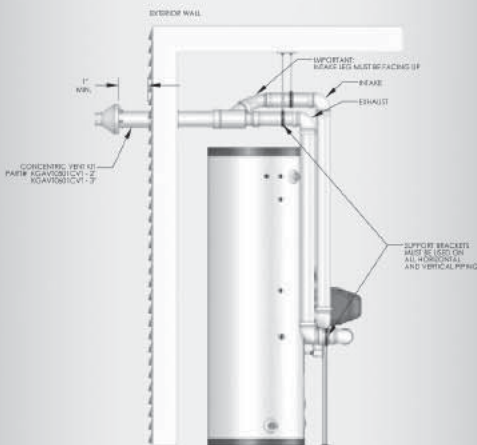
SIDEWALL VENTING WITH TEE (INTAKE) AND COUPLING EXHAUST



LEFT SIDE VIEW

LP-201-C

SIDEWALL VENTING WITH TEE (INTAKE) AND COUPLING (EXHAUST)



LEFT SIDE VIEW

LP-201-B

PHOENIX Solar Recovery Capacities

Model	Gallon Capacity	Input BTU/hr	Heated Water Volume of Gas Back-Up at First Draw	Recovery Of Back Up in Minutes	
				65° Rise	90° Rise
PH199-119S	119	66,000-199000	61 GAL	10 MIN	14 MIN
PH199-80S	80	66,000-199000	41 GAL	7 MIN	10 MIN
PH130-119S	119	44,000-130000	61 GAL	16 MIN	21 MIN
PH130-80S	80	44,000-130000	41 GAL	11 MIN	15 MIN

PHOENIX Specification

The Phoenix Water Heater shall be manufactured by Heat Transfer Products, Inc. with identification of model number PH_____. The water heater shall be a sealed combustion system, taking only outside air for combustion and exhausting the flue gas with PVC Schedule 40 or 80 PVC, or CPVC solid core pipe. The heater as well as all related intake air and exhaust intake air and exhaust gas piping shall be approved for zero clearance to any combustible surface. The units total combined equivalent venting length, including fitting allowances for both the intake air and exhaust gas shall not exceed 85' (in the units native size as manufactured and stated on the unit model product data sheet) in 2", or 3" pipe or 125' for the next size up of 3" or 4" from the heaters location.

The solar heaters tank shall be constructed of 316L stainless steel. The primary gas fired condensing heat exchanger shall be constructed of 90/10 cupronickel. The secondary gas fired heat exchanger shall be constructed of 800H stainless steel and 90/10 cupronickel. The tank insulation shall be water blown foam 2" thick in the side wall with a rating of R14.2 and 3" thick in the top with a rating of R21.3. Insulation shall be enclosed in a plastic jacket on the sides as well as the top and bottom. All components shall be located on the front of the heater for easy access and serviceability. All related hardware shall be constructed of stainless steel studs with brass nuts for serviceability. All water connection nipples shall be constructed of stainless steel and be attached to the side of the tank. The top and bottom of the tank shall be smooth with no pipe tappings on the top or legs on the bottom.

Solar models shall have an additional internal heat exchanger on the bottom of the tank to connect to a solar system.

The heaters shall be UL/ULC listed and will exceed the minimum efficiency requirements of ASHRAE 90.1b -1992. All heaters shall be approved in accordance with ANSI Z 21.10.3. All heaters will be supplied with a factory installed ASME rated temperature and pressure relief

valve. All heaters shall be supplied with a factory installed low water cutoff, and upper hot water sensor, and lower cold water sensor. All heaters shall be furnished with a factory installed condensate trap assembly ready for easy connection to a field supplied condensate drain.

The heater shall have an integrated digital controller device with integral diagnostics, LED fault and temperature settings for establishing set point, temperature differential. Ignition shall be with direct spark with ignition taking place at a pre-set ignition speed for the burner blower. The control shall utilize an algorithm to fully adjust the burner modulating firing rate while maintaining the desired temperature. The pre-mix stainless steel burner uses a 120 volt motor with pulse wave modulation control to change the fan speed, thus the combustion air volume of fuel and air through the burner to establish an infinite BTU input range equal to the water heating set point requirement. The digital LED control display shall provide means, via push buttons, for adjustments of operating temperatures, differential adjustment, ECO reset, service mode, and real time status mode. In addition there shall be provided a computer connection via laptop computer for perpetual history including all fault codes, and hours of operation above 50% of input, below 50% of input as well as real time status reporting of all operations. The burner assembly shall be mounted so as to be easily removed as an integral unit for easy serviceability.

The heater shall be in compliance with the NOx Emissions limit as set forth in SCAQMD Rule 1146.2 - 1998.

The heater shall be factory assembled; test fired for correct BTU input and adjusted for proper combustion parameters. Complete operating and installation instructions shall be furnished with every heater as packaged by the manufacturer with the heater for shipping.

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Solar Tanks

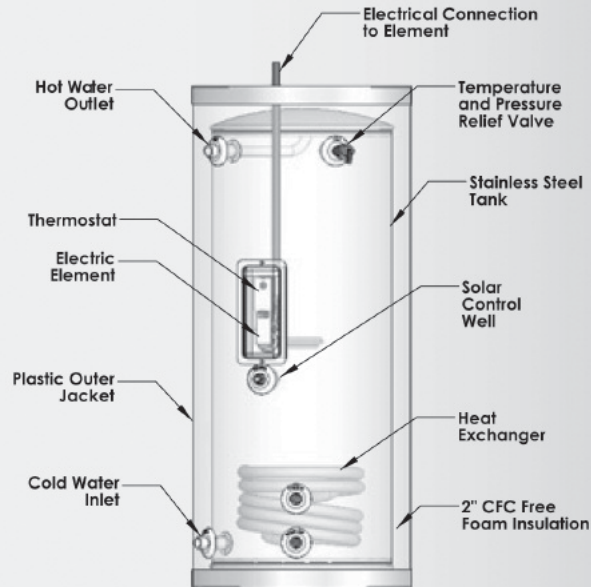
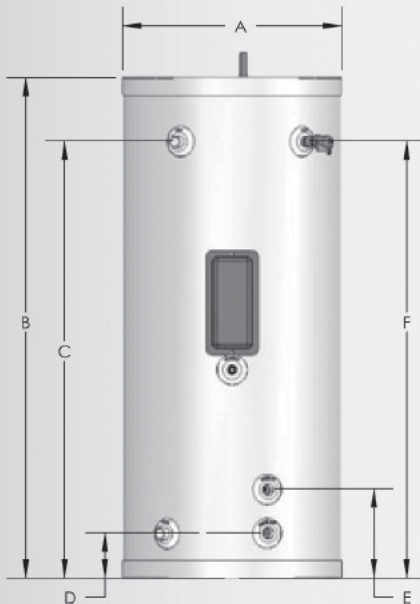


Solar Water Heater
(with Back-up Electric Element)



Features:

- Tank Construction of type 316L Stainless Steel with tolerance for high temperatures. Superior resistance to corrosion
- High output heat exchanger provides maximum efficiency to transfer the energy from the solar panels into hot water
- High output electric back up element, constructed of high grade stainless steel incoly making it more resistant for longer life
- Environmentally safe CFC free water blown, extra thick foam insulation allows less than 1/2 degree F per hour heat loss, the best in the industry
- Outer Shell constructed of silver finished durable plastic for rust and impact resistance
- Limited lifetime warranty – 7 Year commercial and lifetime residential
- Easy to install and maintain
- Factory supplied Temperature and Pressure Relief Valve
- SRCC OG300 Certified – applies to Federal Tax Credit when connected to a Solar Panel



SUPERSTOR SOLAR WATER HEATER DIMENSIONS							
MODEL #	GAL.	DIMENSIONS					
		A	B	C	D	E	F
SSU-60SE	60	23"	52"	46"	5"	9-1/4"	46"
*SSU-80SE	80	23"	72"	64-1/2"	5"	9-1/4"	64-1/2"
*SSU-119SE	119	27"	74"	66-1/2"	7-1/2"	11-1/4"	66-1/2"

* DW SOLAR COIL MODELS SPECIAL ORDER, CONSULT FACTORY

SUPERSTOR SOLAR WATER HEATER SPECS						
MODEL #	GAL.	HEAT EXCHANGER OUTLET SIZE	INLET/OUTLET SIZE	DRY WEIGHT	WET WEIGHT	SHIPPING WEIGHT (lbs)
*SSU-80SE	80	1" NPT	1" NPT	121	656	146
*SSU-119SE	119	1" NPT	1" NPT	200	1722	215

SUPERSTOR SOLAR SE SERIES							
MODEL	SOLAR HX VOLUME GALLONS	WATER VOLUME OF BACK UP	MAX. OPERATING PRESSURE OF COIL	RECOVERY OF BACK UP IN MINUTES		FIRST DRAW*	
				65° RISE	90° RISE	65° RISE	90° RISE
SSU-60SE	1 GAL	35 GAL	150 PSI	74 MIN	102 MIN	40 GAL	28 GAL
SSU-80SE	1 GAL	49 GAL	150 PSI	104 MIN	143 MIN	60 GAL	40 GAL
SSU-119SE	1 GAL	64 GAL	150 PSI	135 MIN	187 MIN	90 GAL	60 GAL

* AMOUNT OF WATER DRAWN OUT OF STORAGE TANK WITHOUT ANY ENERGY INPUT

LP-195
03/27/08

All tank dimensions are approximate. Heat Transfer reserves the right to make product changes or updates without notice. Heat Transfer will not be held liable for typographical errors in literature. For questions, please consult the factory.

CALL FOR A BROCHURE 800-493-8432

Solar Tanks

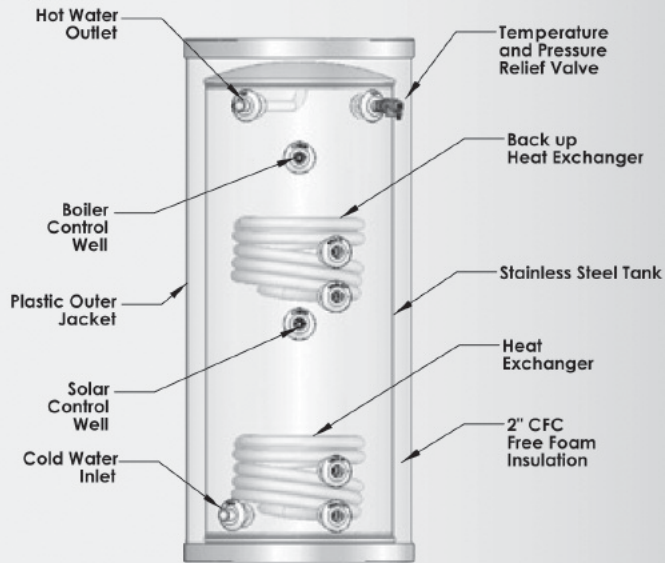
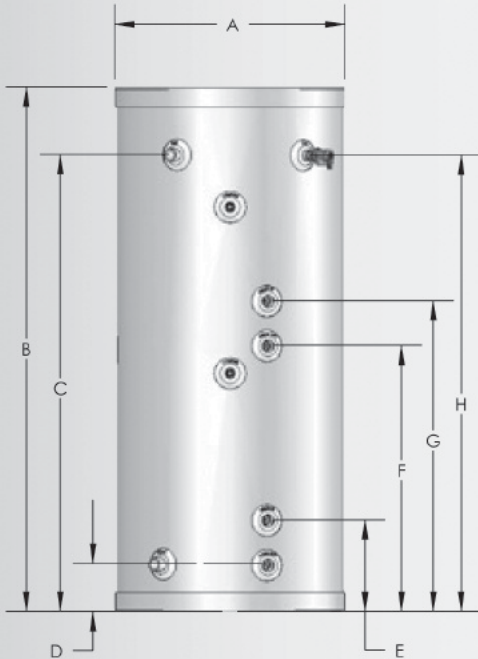


Solar Water Heater (with Back-up Heat Exchanger)



Features:

- Tank constructed of type 316L Stainless Steel with tolerance for high temperatures. Superior resistance to corrosion.
- High output heat exchanger for both the boiler back up heat exchanger and solar heat exchanger
- Environmentally safe CFC free water blown, extra thick foam insulation allows less than 1/2 degree F per hour heat loss, the best in the industry
- Outer shell constructed of silver finished durable plastic for rust and impact resistance
- Limited lifetime warranty – 7 year commercial and lifetime residential
- Easy to install and maintain
- Factory supplied Temperature and Pressure Relief Valve
- SRCC OG300 Certified – applies to Federal Tax Credit when connected to a solar panel



SUPERSTOR SOLAR WATER HEATER DIMENSIONS									
MODEL #	GAL.	DIMENSIONS							
		A	B	C	D	E	F	G	H
SSU-60SB	60	23"	52"	46"	5"	9-1/4"	26-1/2"	31"	46"
*SSU-80SB	80	23"	72"	64-1/2"	5"	9-1/4"	36-1/2"	41-1/2"	64-1/2"
*SSU-119SB	119	27"	74"	66-1/2"	7-1/2"	11-1/4"	38-1/2"	43-1/2"	66-1/2"

* DW SOLAR COIL MODELS SPECIAL ORDER, CONSULT FACTORY

SUPERSTOR SOLAR WATER HEATER SPECS						
MODEL #	GAL.	HEAT EXCHANGER OUTLET SIZE	INLET/OUTLET SIZE	DRY WEIGHT	WET WEIGHT	SHIPPING WEIGHT (lbs)
SSU-60SB	60	1" NPT	1" NPT	100	492	120
*SSU-80SB	80	1" NPT	1" NPT	131	656	151
*SSU-119SB	119	1" NPT	1" NPT	210	1722	220

SUPERSTOR SOLAR SB SERIES									
MODEL	HX VOLUME GALLONS		HEATED WATER VOLUME OF BACK UP	MAX. OPERATING PRESSURE OF COIL	RECOVERY OF BACK UP IN MINUTES		BOILER OUTPUT FOR TEST RECOVERIES	FIRST DRAW *	
	SOLAR	BOILER			65° RISE	90° RISE		65° RISE	90° RISE
SSU-60SB	1 GAL	1 GAL	35 GAL	150 PSI	11 MIN	16 MIN	104,000 BTU/HR	40 GAL	28 GAL
SSU-80SB	1 GAL	1 GAL	49 GAL	150 PSI	14 MIN	19 MIN	114,000 BTU/HR	60 GAL	40 GAL
SSU-119SB	1 GAL	1 GAL	64 GAL	150 PSI	22 MIN	31 MIN	121,000 BTU/HR	90 GAL	60 GAL

* AMOUNT OF WATER DRAWN OUT OF STORAGE TANK WITHOUT ANY ENERGY INPUT

LP-196
5/15/08

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CALL FOR A BROCHURE 800-493-8432

Solar Tanks

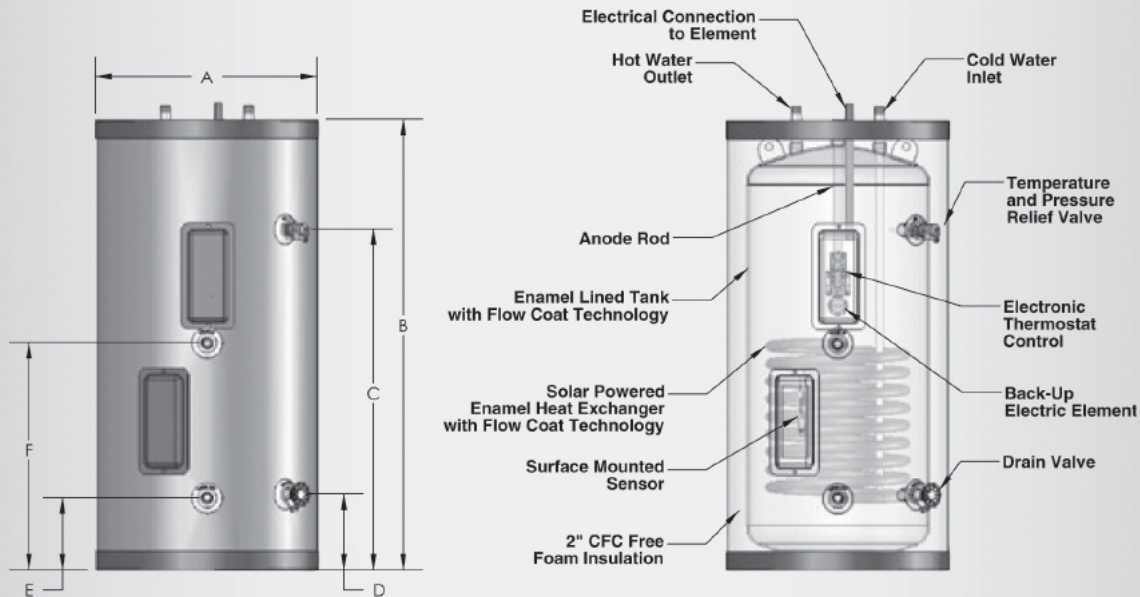


Solar Water Heater (with Back-up Electric Element)



Features:

- Specially formulated Enamel Flow Coat guarantees 100% tank coverage. No exposed welds
- Solar Heat Exchanger - provides maximum heat transfer of solar energy into hot water
- Back-Up Electric Element - provides back-up heat source from Electric Element if Solar fails to keep up with hot water demand
- Environmentally safe CFC free water blown, extra thick foam insulation allows less than 1/2 degree F per hour heat loss, the best in the industry
- Outer Shell constructed of silver finished durable plastic for rust and impact resistance
- Limited warranty – 5 years commercial and 7 years residential
- Factory Supplied Temperature and Pressure Relief Valve and Drain Valve
- SRCC OG300 Certified – applies to Federal Tax Credit when connected to Solar Panel



CONTENDER SOLAR WATER HEATER DIMENSIONS							
DIMENSIONS							
MODEL #	GAL.	A	B	C	D	E	F
SSC-50SE	50	23"	46-1/2"	36-1/2"	8"	7-3/4"	23-1/2"
SSU-80SE	80	23"	71-1/2"	60-1/4"	8"	7-3/4"	33-1/2"
SSU-119SE	119	27"	64"	51"	10-1/2"	10"	27"

ALL DIMENSIONS ARE APPROXIMATE

CONTENDER SOLAR WATER HEATER SPECS				
MODEL #	GAL.	HEAT EXCHANGER OUTLET SIZE	INLET/OUTLET SIZE	SHIPPING WEIGHT (LBS)
SSC-50SE	50	1"	3/4" NPT	175
SSC-80SE	80	1"	1-1/2" NPT	237
SSC-119SE	119	1"	1-1/2" NPT	336

CONTENDER SOLAR GLASS LINED SE SERIES						
MODEL	SOLAR HX VOLUME GALLONS	HEATED WATER VOLUME OF BACK UP	RECOVERY OF BACK UP IN MINUTES		FIRST DRAW *	
			65° RISE	90° RISE	65° RISE	90° RISE
SSC-50SE	2 GAL	18 GAL	38 MIN	53 MIN	20 GAL	14 GAL
SSC-80SE	2 GAL	37 GAL	78 MIN	108 MIN	38 GAL	26 GAL
SSC-119SE	2 GAL	67 GAL	141 MIN	196 MIN	70 GAL	46 GAL

* AMOUNT OF WATER DRAWN OUT OF STORAGE TANK WITHOUT ANY ENERGY INPUT

LP-197
03/27/08

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CALL FOR A BROCHURE 800-493-8432

Solar Tanks

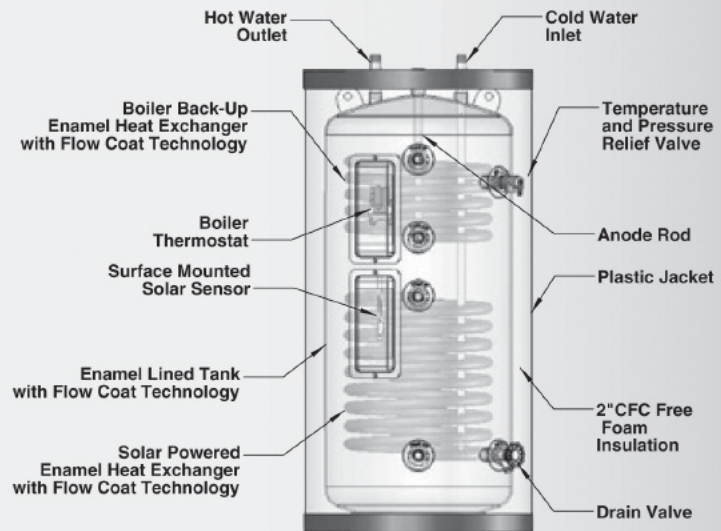
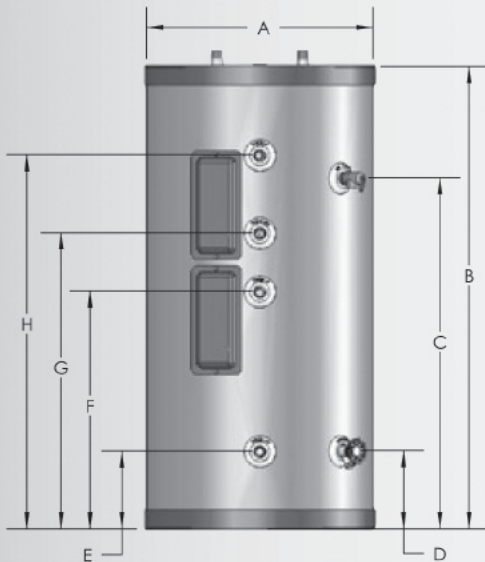


Solar Water Heater (with Back-up Heat Exchanger)



Features:

- Specially formulated Enamel Flow Coat guarantees 100% tank coverage. No exposed welds
- Solar Heat Exchanger - provides maximum heat transfer of solar energy into hot water
- Back-Up Boiler Heat Exchanger - provides back-up heat source from the boiler if the solar fails to keep up with the hot water demand
- Environmentally safe CFC free water blown, extra thick foam insulation allows less than 1/2 degree F per hour heat loss, the best in the industry
- Outer Shell constructed of grey finished durable plastic for rust and impact resistance
- Limited warranty – 5 years commercial and 7 years residential
- Factory supplied Temperature and Pressure Relief Valve and Drain
- SRCC OG300 Certified – applies to Federal Tax Credit when connected to Solar Panel



CONTENDER SOLAR WATER HEATER DIMENSIONS									
		DIMENSIONS							
MODEL #	GAL.	A	B	C	D	E	F	G	H
SSC-50SB	50	23"	46-1/2"	36-1/2"	8"	7-3/4"	23-1/2"	30"	37-3/4"
SSC-80SB	80	23"	71-1/2"	60-1/4"	8"	7-3/4"	33-1/2"	43"	55-1/2"
SSC-119SB	119	27"	64"	51"	10-1/2"	10-1/2"	27"	36"	47-1/4"

ALL DIMENSIONS ARE APPROXIMATE

CONTENDER SOLAR WATER HEATER SPECS				
MODEL #	GAL.	HEAT EXCHANGER OUTLET SIZE	INLET/OUTLET SIZE	SHIPPING WEIGHT (lbs)
SSC-50SB	50	1" NPT	3/4" NPT	187
SSC-80SB	80	1" NPT	1-1/2" NPT	286
SSC-119SB	119	1" NPT	1-1/2" NPT	367

CONTENDER GLASS LINED SOLAR SB SERIES								
MODEL	HX VOLUME GALLONS		HEATED WATER VOLUME OF BACK UP	RECOVERY OF BACK UP IN MINUTES		BOILER OUTPUT FOR TEST RECOVERY	FIRST DRAW*	
	SOLAR	BOILER		65° RISE	90° RISE		65° RISE	90° RISE
SSC-50SB	2 GAL	1.5 GAL	18 GAL	12 MIN	17 MIN	80,000 BTU/HR	20 GAL	14 GAL
SSC-80SB	2 GAL	1.5 GAL	37 GAL	17 MIN	24 MIN	90,000 BTU/HR	38 GAL	26 GAL
SSC-119SB	2 GAL	1.5 GAL	67 GAL	22 MIN	31 MIN	100,000 BTU/HR	70 GAL	46 GAL

* AMOUNT OF WATER DRAWN OUT OF STORAGE TANK WITHOUT ANY ENERGY INPUT

LP-198
06/22/07

Heat Transfer reserves the right to make product changes or updates without notice. Heat Transfer will not be held liable for typographical errors in literature. For questions, please consult the factory.

CALL FOR A BROCHURE 800-493-8432

SUPERstor GL

GLASS LINED STORAGE TANK



Available in 50-, 80-, 119-, and 175-Gallon Models

The most efficient way to store hot water for residential and commercial applications. More hot water and increased storage capacity. Installed individually or in multiple applications, The SuperStor Coil Booster Glass Lined Storage Tank can provide 80% draw capability without an appreciable temperature decrease in single temperature applications.

Construction Features

- **Long life tank design**
Unique steel formulation with high-temperature porcelain enamel to maximize corrosion resistance resulting in a superior tank design. Heavy duty magnesium anode rod(s) are installed for longer tank life.
- **Efficient design**
Rigid polyurethane foam insulation provides superior insulating qualities that allow less than 1 degree F per hour heat loss (24 degrees F in 24 hrs.) resulting in reduced operating costs. The patented process of injecting foam into the insulating cavity adds additional durability and toughness to the tank.

- **Tank Openings**
Circulating line connections and hot outlets are 3/4" NPT on the GL-50, 2" NPT on the GL-80 and GL-119 and 2-1/2" NPT on the GL-175. Other openings are provided for relief valve and temperature control. The GL-175 is equipped with a hand-hole cleanout.

Certifications and Ratings

- **Optional ASME Construction**
ASME construction is available on storage models GL-80 ASME/GL-119 ASME/GL-175 ASME. Certified to ASME boiler and pressure vessel code standards.

Limited Warranty

- This product features a five-year limited warranty against tank leaks. See warranty brochure for complete details.

CALL FOR A BROCHURE 800-493-8432

Solar Tanks

Dimensional Information

Plastic Jacketed (Non-ASME)

Model Number	Units	A	B	C	D	E	Water Connections		Tank Capacity		Maximum Working Pressure	Approximate Shipping Weight
							Hot Outlet	Front Side	Gallons	Liters		
GL-50 (non-ASME)	inches	52"	19-1/4"	14"	7"	45"	3/4" NPT-M	3/4" NPT-M	50	189	150 PSI	120 lbs.
	mm	1320	489	355	177	1143	19	19			1034 kPa	54 kgs
GL-80 (non-ASME)	inches	59"	23-1/4"	13"	7"	51-1/4"	2" NPT-M	2" NPT-M	80	303	150 PSI	165 lbs.
	mm	1498	590	330	177	1302	50	50			1034 kPa	75 kgs
GL-119 (non-ASME)	inches	64"	27"	13"	4-1/16"	55"	2" NPT-M	2" NPT-M	115	435	150 PSI	250 lbs.
	mm	1625	685	330	177	1397	51	51			1034 kPa	113 kgs

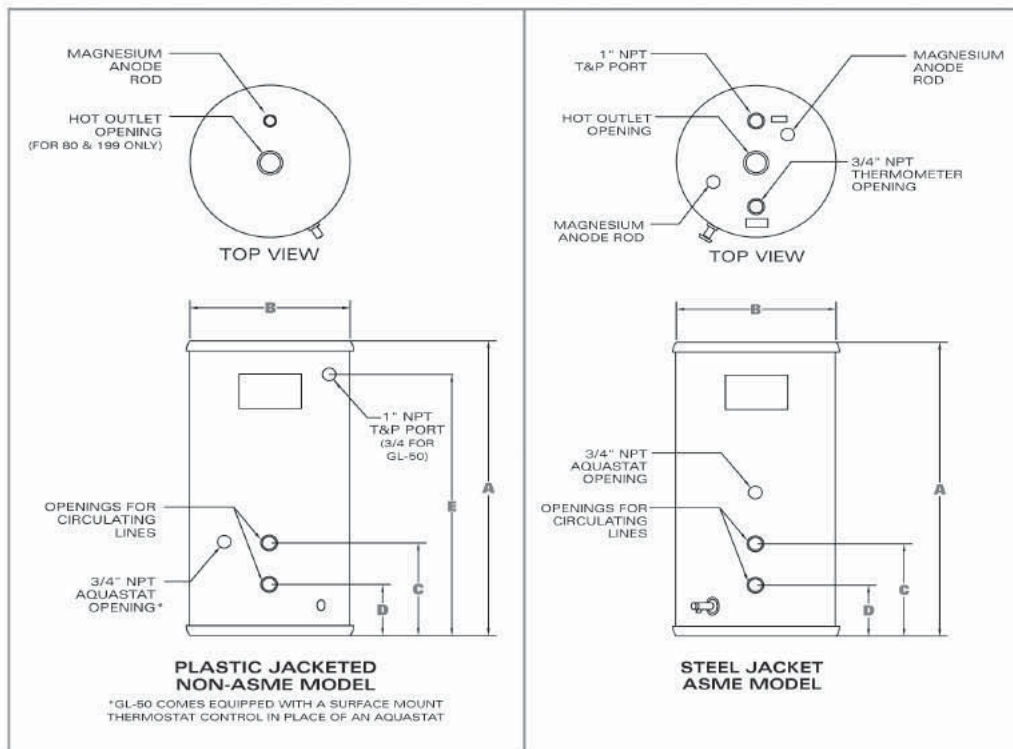
Metal Jacketed (ASME)

Model Number	Units	A	B	C	D	Water Connections		Tank Capacity		Maximum Working Pressure	Approximate Shipping Weight
						Hot Outlet	Front Side	Gallons	Liters		
GL-80 ASME	inches	58-5/16"	24-7/16"	13-3/16	6-3/16	2" NPT-M	2" NPT-M	80	303	125 PSI	260 lbs.
	mm	1481	621	335	157	51	51			862 kPa	118 kgs
GL-119 ASME	inches	59-1/4"	28-1/4"	11-1/16"	4-1/16"	2" NPT-M	2" NPT-M	115	435	160 PSI	340 lbs.
	mm	1505	718	281	103	51	51			1103 kPa	154 kgs
GL-175 ASME*	inches	67-1/4"	32-1/4"	12-9/16"	5-9/16"	2-1/2" NPT-M	2-1/2" NPT-M	175	662	150 PSI	600 lbs.
	mm	1708	819	319	141	64	64			1034 kPa	272 kgs

*Also available in non-ASME model

Specifications

Tank(s) interior shall be coated with a high temperature porcelain enamel and furnished with two magnesium anode rods rigidly supported for the metal jacketed and one magnesium anode for the plastic jacketed. Storage Tank(s) shall exceed the efficiency requirement of ASHRAE Standard 90.1b-2001. Tank(s) shall have a working pressure rating of 150 psi, and shall be completely assembled. Tank(s) shall be insulated with rigid polyurethane foam insulation. Storage Tank(s) shall be covered by a five year limited warranty against tank leaks.



ASME Constructions

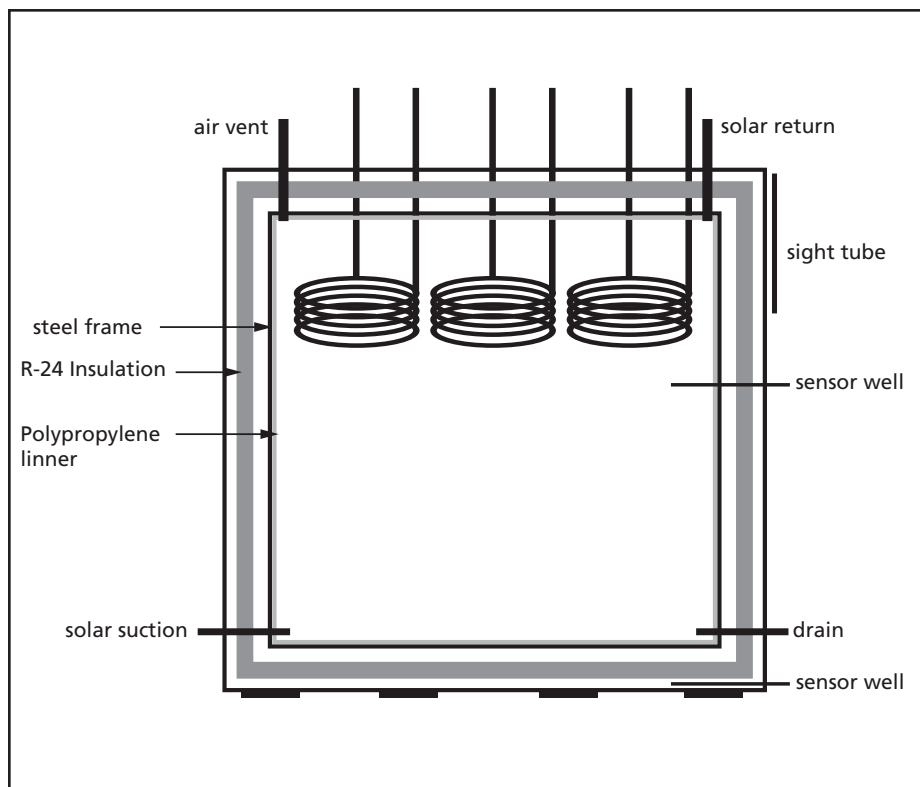
Metal Jacketed Storage Tank(s) shall be constructed in accordance with the requirements of the ASME Boiler Pressure Vessel Code, Section IV Part HLW.

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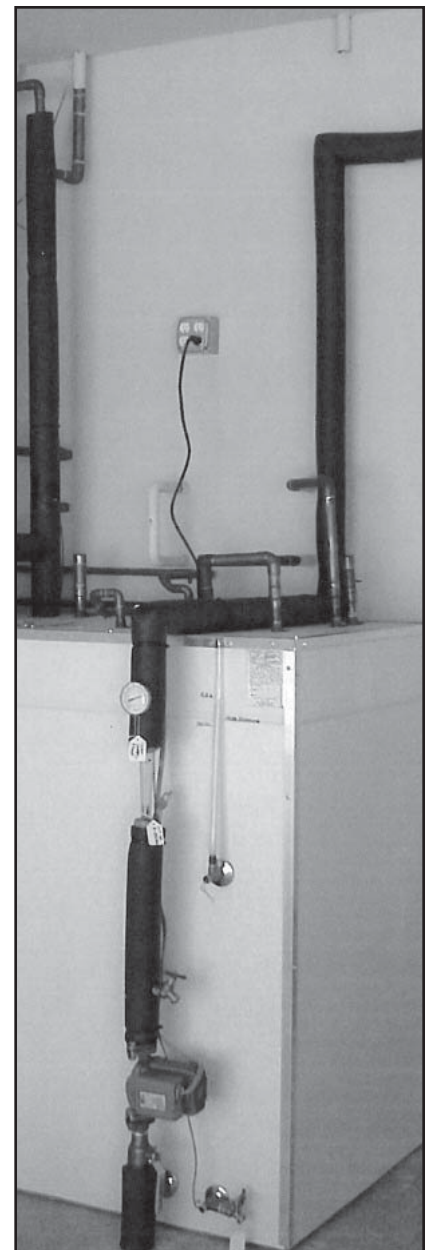
Solar Tanks

High Capacity Drain Back Tanks

Solar Spectrum custom polypropylene lined, insulated tanks are ideal for multiple load designs including domestic hot water, pool heating, space heating or spa heating.



60 - 2000 Gallon Capacity

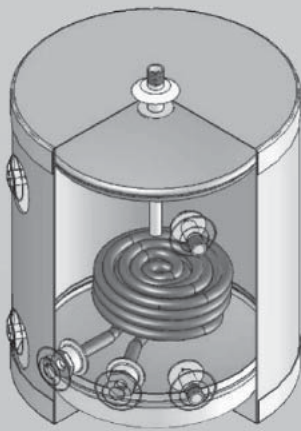


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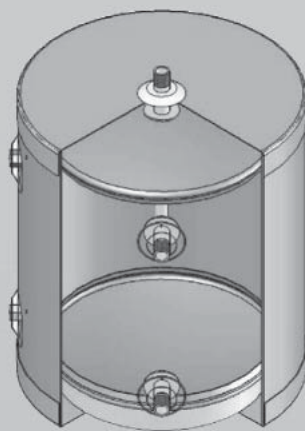
DRAIN BACK TANK

Product Specifications Sheet

The **Drain Back Tank** is designed to allow the solar collectors to drain all the water from collector and related pipe connections into the drain back tank reservoir to protect the system from both freezing and overheating. The Drain Back Tank comes with either an internal heat exchanger for use with a storage tank or without a heat exchanger to be connected to a tank with an internal heat exchanger or plate frame heat exchanger. Drain back systems are a smart choice when designing a solar thermal system to supplement central heating and domestic hot water heating when overheating during the warmer months is a problem. Drain back systems have less components, so maintenance is reduced, compared to a pressurized glycol system. Drain back systems also provide protection where water quality may be a problem.



SSU-DBX with Heat Exchanger



SSU-DB without Heat Exchanger

Drain Back Features

- Tank constructed of durable 304 stainless steel
- Plastic Jacket will not dent
- Light weight construction
- Maintenance free operation
- 5 year warranty against leaks
- Available with or without heat exchanger
- Highly efficient Copper Heat Exchanger with large surface area
- Site Glass to monitor water level
- Internal dip tube enhance heat exchanger performance

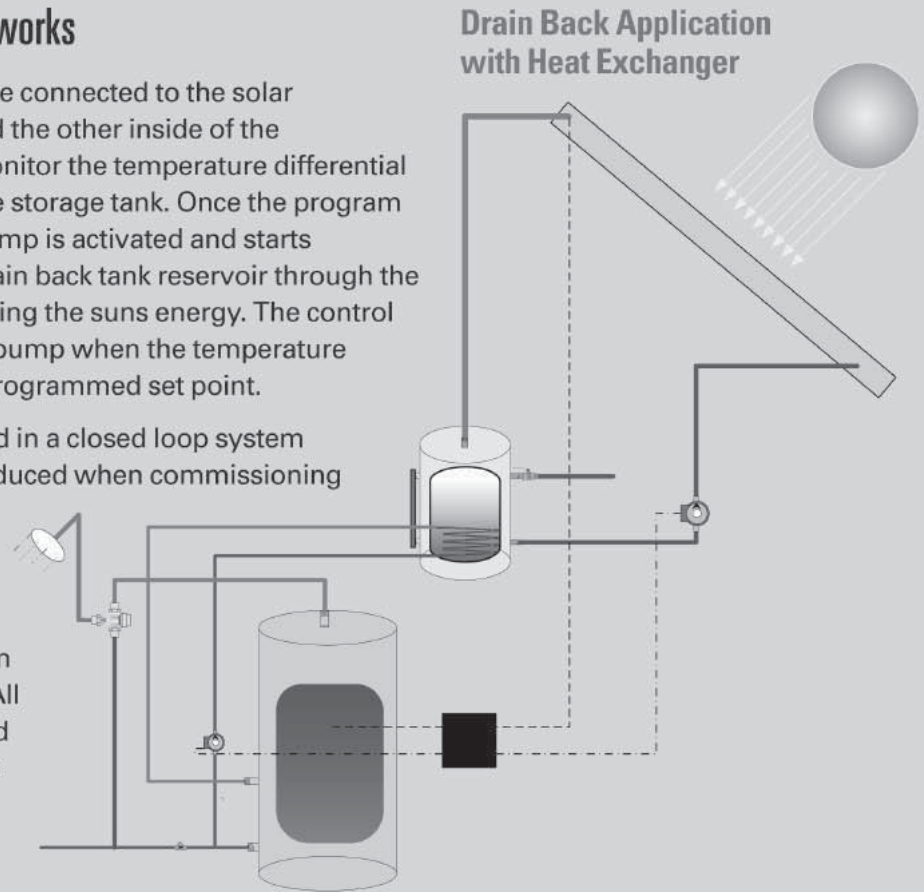
CALL FOR A BROCHURE 800-493-8432

Drain Back Tank

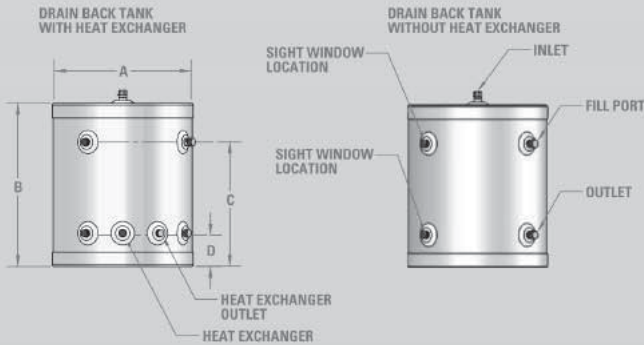
How the Drain Back Tank works

There are two sensors that are connected to the solar control – one on collector and the other inside of the storage tank. The sensors monitor the temperature differential between the collector and the storage tank. Once the program differential is reached, the pump is activated and starts circulating water from the drain back tank reservoir through the solar collector to start absorbing the sun's energy. The control will deactivate the circulator pump when the temperature difference drops below the programmed set point.

The drain back system is used in a closed loop system where the water is only introduced when commissioning the system. When the circulator shuts down, all the water must drain back into the tank reservoir so any exposed piping or system components will not freeze. All drain back tanks are equipped with a sight glass to determine water level inside the tank.

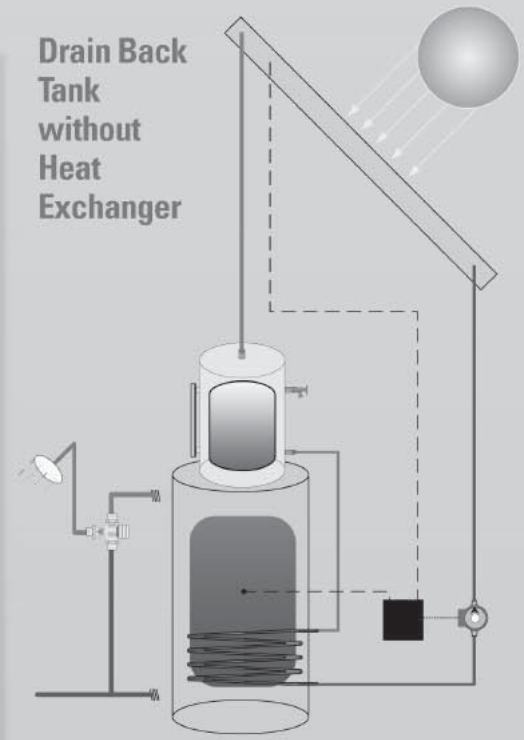


Specifications



Model	A	B	C	D	Inlet/Outlet	Capacity	Heat Hx	Shipping Weight
SSU-10 DB	16.25	19.00	14.60	2.60	3/4" NPT	10 Gal	N/A	25 lbs.
SSU-10 DBX	16.25	19.00	14.60	2.60	3/4" NPT	10 Gal	10 Sq. Ft.	31 lbs.
SSU-15 DB	19.25	23.00	17.00	4.50	3/4" NPT	15 Gal	N/A	37 lbs.
SSU-15 DBX	19.25	23.00	17.00	4.50	3/4" NPT	15 Gal	15 Sq. Ft.	44 lbs.
SSU-20 DB	19.25	27.00	21.80	4.50	3/4" NPT	20 Gal	N/A	44 lbs.
SSU-20 DBX	19.25	27.00	21.80	4.50	3/4" NPT	20 Gal	20 Sq. Ft.	55 lbs.

Drain Back Tank without Heat Exchanger



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LP-267 Rev. 9/22/08

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SUPERstor

HEAT TRANSFER PRODUCTS

INSTALLATION & INSTRUCTION MANUAL

STAINLESS STEEL POOL HEATER
(SSU-20PH)



***Why use a special pool heater when your existing boiler
and a new Super Stor pool heater can do the job?***

FEATURES

- Constructed of type 316L stainless steel; tolerates high temperatures, won't melt; superior corrosion resistance
- Heat exchanger is constructed of high grade 90/10 cupronickel
- Maximum heat transfer efficiency
- Control provides flexibility and serviceability for zone valves or circulator installation
- 2" thick, environmentally-safe, water-blown foam insulation-less than 1/2 deg F. per hr. heat loss-best in the industry!
- Easy installation and cleaning

OPTIONAL ACCESSORIES

SP-30-GL-235-x284 Includes the SP-30 pool control with sensor and transformer.

OPERATION

This pool heater and control are intended to be hooked into an existing/new boiler. The basic operation requires a boiler that has adequate BTU capacity, and a circulator to transfer the BTUs to the pool heater. Finally, an optional control is available, to monitor pool water temperature; only when the pool filter pump is on. This system won't operate if the boiler or pool filter pump is not operating.

SET-UP

Location: If pool heater is located outside, **it must be in a covered area, sheltered from rain and sun.** For winterizing, the pool heater must be completely drained and have one gallon propylene glycol (non-toxic) anti-freeze installed, to prevent freezing. You must also consider how plumbing will be routed, both boiler and pool piping; along with an electrical supply that needs to be accessible.

POOL PIPING

The pool water side piping (pool in & pool out; see figure #1) is recommended to be 1 1/2" PVC. A bypass will be necessary between the inlet and outlet of the pool heater (see figure #1). The bypass will allow the boiler to keep up with the pool heater. If the bypass is not installed, the boiler may not be able to provide adequate temperature.

BOILER PIPING

The boiler piping should be 1 1/4" copper, to and from the pool heater. **It is very important that the boiler circulator is sized properly to match the total system flow rates and pressure drop (feet of head)** (see chart #1). The circulator sizing also has to be matched to the boiler's output. If the boiler is 100,000 BTU/H, then you will need 6 GPM flow rate through the heat exchanger. If the boiler is 125,000 BTU/H, then you will need 7 GPM flow rate through the heat exchanger. To achieve these flow rates you must calculate friction loss for the length of piping, plus the number of fittings, elbows, and tees, etc.; then add to the pool heater, heat exchanger friction loss. The pool heater heat exchanger friction loss is 4.5' at 6 GPM, 7' at 7 GPM, and 9.2' at 8 GPM. The minimum boiler temperature must be maintained at 160 degrees F. or higher. Low boiler temperature will dramatically reduce the life of the boiler.

CONTROL

The control is approved to be installed outside, in the weather. The transformer for the control, however, must be kept out of the weather. A ground fault outlet is mandatory. The control probe needs to be installed into inlet line to the pool heater. This will monitor incoming temperature to pool heater when only pool filter is running. It may be necessary during start-up at beginning of season, to leave pool filter on for several days, to heat pool. See figure #2 to determine actual heating time; see figure #3 for wiring.

SENSOR INSTALLATION

Proper sensor installation is critical for reliable and efficient operation. Sensor should be located as close to inlet of pool heater as possible. Pool heater inlet must be after the pool filter. Mount sensor by following the diagram on page 4. If the wiring needs to be longer, use commonly available thermostat "TT" wire, on the transformer line to boiler. If a standard control is used, install a tee in the inlet line, and use a standard aquastat well to mount control bulb.

FIGURE 1

SPA OR SWIMMING POOL WATER HEATER

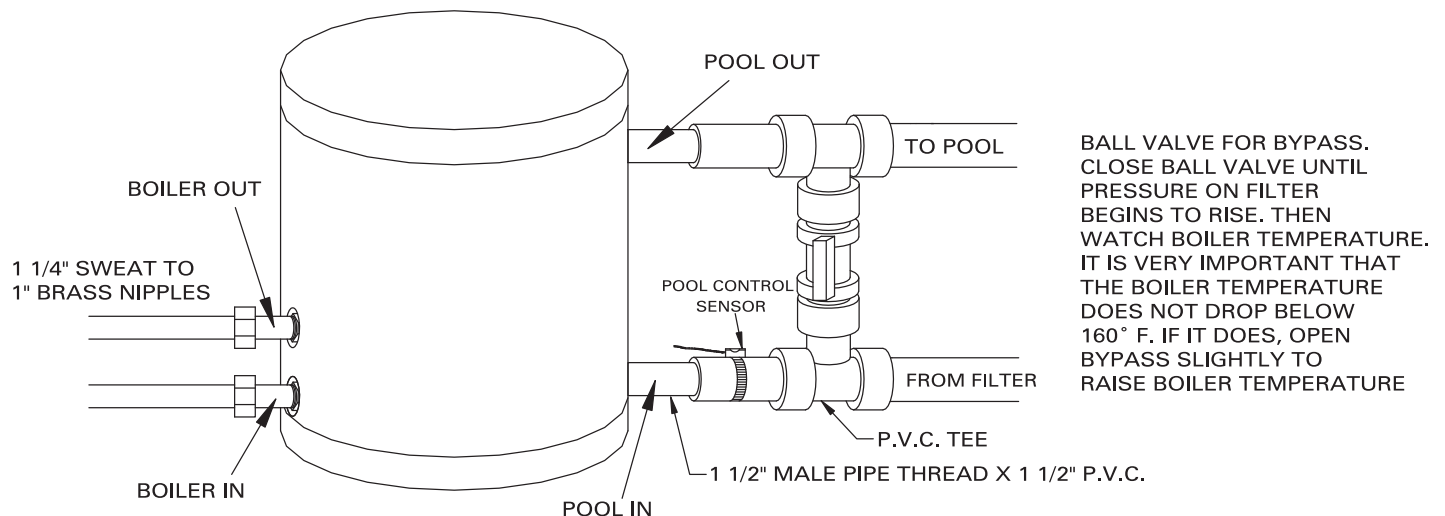


FIGURE 2

WATER HEATER SIZING FOR SWIMMING POOLS AND BAPTISTRIES						
HEATING TIME IN HOURS	FACTOR					
	20 DEG. F. RISE	25 DEG. F. RISE	30 DEG. F. RISE	40 DEG. F. RISE	50 DEG. F. RISE	60 DEG. F. RISE
6	40	50	60	80	100	120
12	20	25	30	40	50	60
24	10	12.5	15	20	25	30
48	5	6.3	*7.5	10	12.5	15
72	3.4	4.25	5.1	6.8	8.5	10.2
96	2.5	3.0	3.75	5.0	6.25	7.5
120	1.7	2.0	2.5	3.3	4.25	5.0
144	1.4	1.7	2.2	2.8	3.5	4.25
168	1.3	1.6	2.1	2.7	3.4	4.1
192	1.2	1.5	2.0	2.6	3.3	4.0
216	1.1	1.4	1.9	2.5	3.2	3.9
240	1.0	1.25	1.8	2.4	3.1	3.8

*DEPENDING ON CHART

NOTE: THE SSU-20PH CAN TRANSFER A MAXIMUM OF 200,000 BTU FROM THE BOILER. PLEASE MAKE SURE TO SIZE THE PUMP OFF OF THE BOILER CORRECTLY (SEE CHART 1, ON PAGE 4)

NOTE: The following is presented as a guide to determine the heating time in hours, for water heaters used to heat swimming pools and baptistries:

EXAMPLE FORMULA TO ESTABLISH RECOVERY OF POOL:

Boiler 84,000 (BTU/hour) divided by pool capacity, (gallons) = factor

TO FIND POOL'S CAPACITY IN GALLONS:

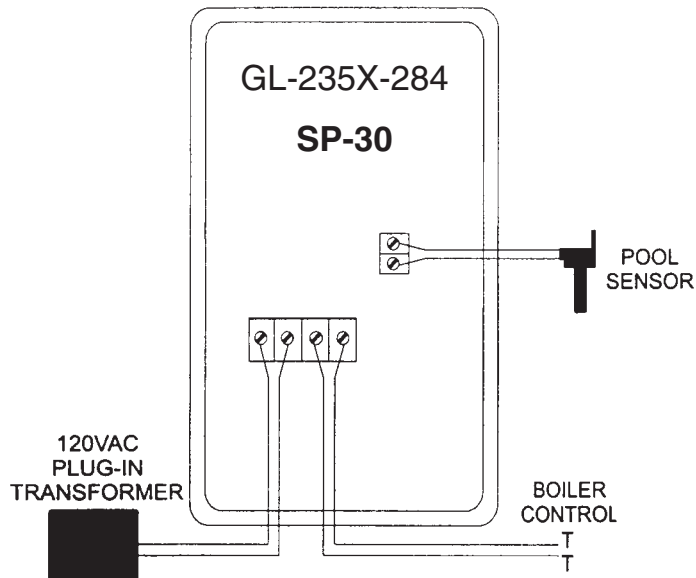
1. Find volume of pool (or baptistry tank) in cubic feet. Length X width X average depth = cubic feet of water.
2. Convert cubic feet of water to gallons = multiply by 7.5.
3. Use SSU-20PH, I.E. 84,000 BTU/hour
4. To determine how long it is going to take to heat up pool, divide 84,000 (BTU/hour using SSU-20PH) into pool capacity (in gallons). The answer should be matched up with the figures in the above chart under the required temp. rise column.

Example A:

7500 gallon pool needs to be heated from 40 degrees F. to 70 degrees F. (30 degrees F. rise) = 84,000 BTU divided by 7500 gallons = 11.2* (*see table above) under 30 degree F. rise columns. See that in just under 48 hours this can be done.

5. You must also have enough boiler to supply the gross output shown for the Super Stor selected. Once the pool is at temperature (70 degrees F. in our example), the Super Stor will require very few BTU/hour to maintain the pool at that temperature.

FIGURE 3



WIRING FOR SENSOR

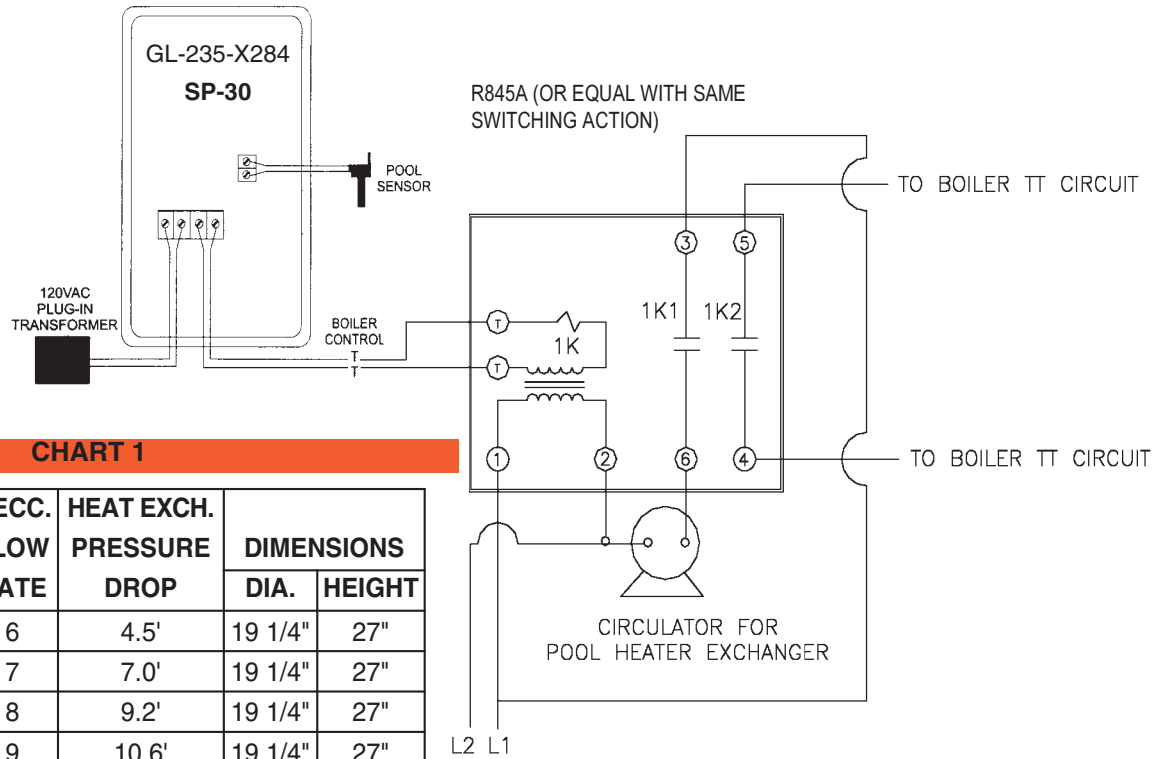
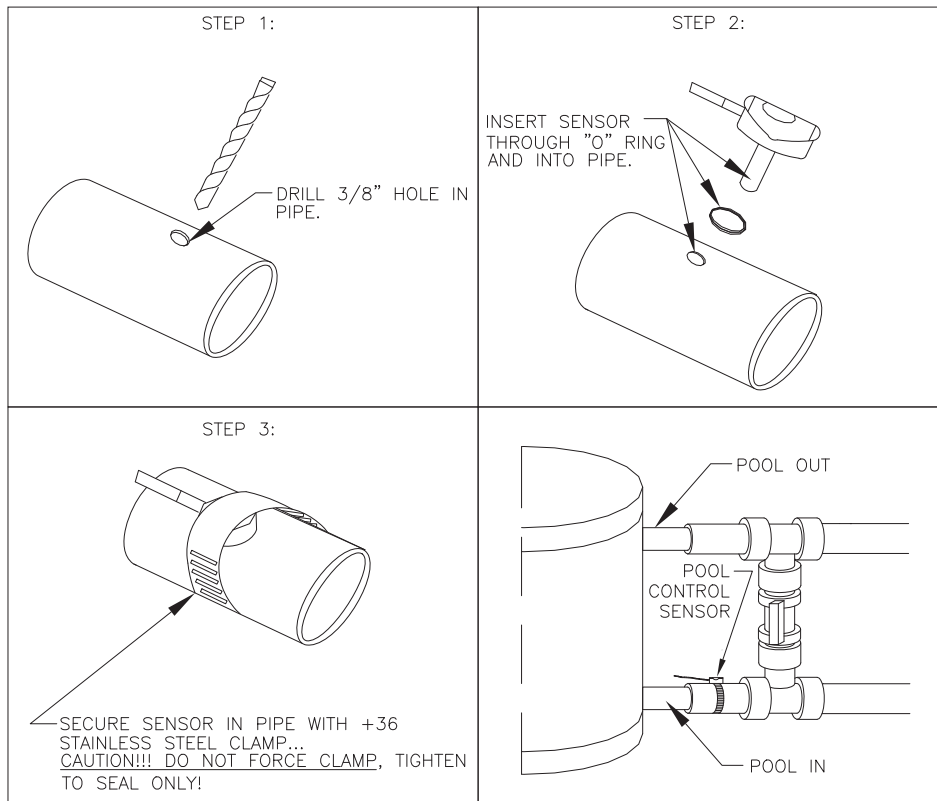


CHART 1

MODEL	REQ. BTU OUTPUT	RECC. FLOW RATE	HEAT EXCH. PRESSURE DROP	DIMENSIONS	
				DIA.	HEIGHT
SSU-20PH	100,000	6	4.5'	19 1/4"	27"
	125,000	7	7.0'	19 1/4"	27"
	150,000	8	9.2'	19 1/4"	27"
	195,000	9	10.6'	19 1/4"	27"
	200,000	10	12.5'	19 1/4"	27"

MOUNTING THE SENSOR



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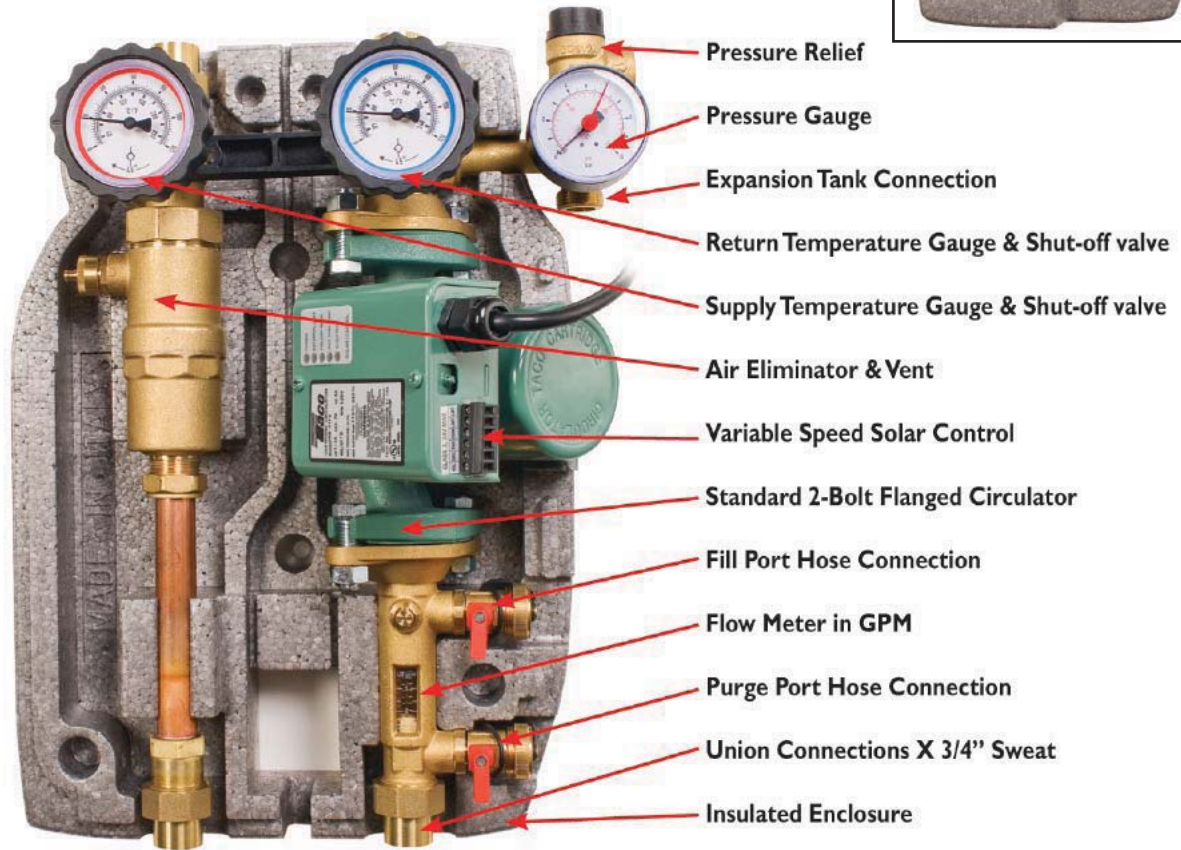
P.O. BOX 429, 120 BRALEY ROAD
EAST FREETOWN, MA 02717

508-763-8071 OR (outside of MA) 1-800-323-9651

VISIT OUR WEB SITE AT: WWW.HTPRODUCTS.COM

Solar Preplumbed Module

PREPLUMBED SOLAR MODULE



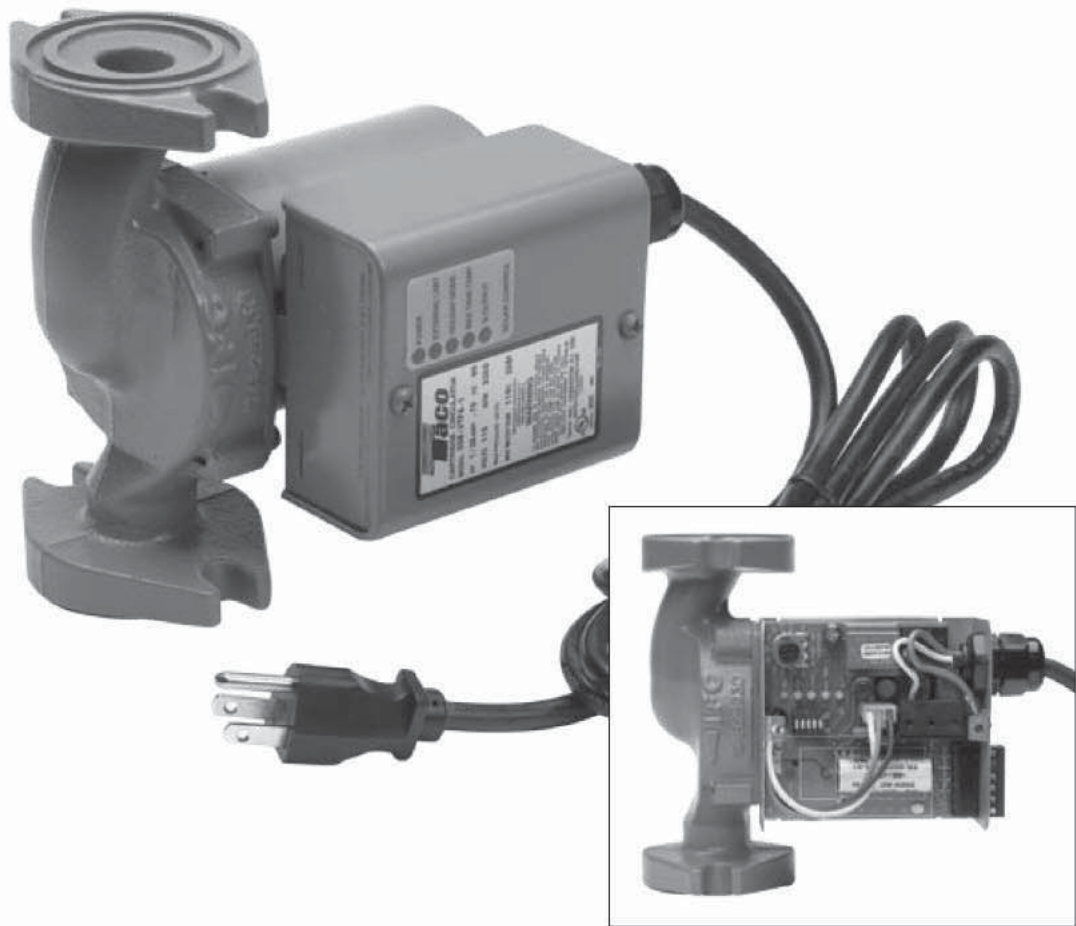
*Expansion tank bracket and flex line included.

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Water Circulation Pumps & Circulators

Circulator with Integral Variable Speed Solar Control

The Taco Variable Speed Solar Control Circulators combine the advanced features of our external speed and solar controls with the reliability and convenience of our 00® Cartridge Circulators. All the wiring for power and sensors is done directly to the circulator while the LED status panel makes it easy to check functionality. Dip switch based user configurable settings makes for a fast set-up, no matter the solar application. The circulator continually adjusts its speed, maximizing the output of the collector, increasing the usable higher temperature water throughout the day, eliminating short cycling and increasing system performance by 20%.



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Solar Controls

Submittal Data Information Variable Speed 00[®] Solar Circulators

Submittal Data # 101-135
Supersedes: New

Effective: 01/02/09

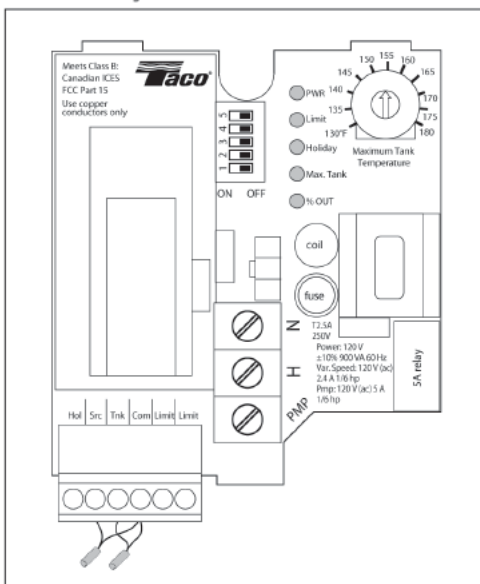
Features:

- All-in-One Pump and Variable Speed Solar Control
- Variable Speed Benefits
 - Matches Output of Collector
 - No Short Cycling of Circulator
 - +20% Increased Performance
- Available in Several Sizes, 006, 008, 009 and 0011
 - Cast Iron and Non-Ferrous
- User Definable Line Voltage Output, Supports
 - External Heat Exchanger
 - Collector Sink / Dump
 - Storage Tank Supplement
 - Booster Pump Function
- Supports Drain Back Applications
- Freeze Protection for Open Systems
- Holiday Function, Minimizes Collector Stagnation
- Factory Installed Line Cord
- Adjustable Storage Tank Maximum Setting
- LED Status Panel
- Supports 1 or 2 Storage Tank(s)
- External Limit Input
- Exercising of Collector Circulator
- 2 Sensors Included
- Snap-in PC Board
- UL Approved



FOR INDOOR USE ONLY

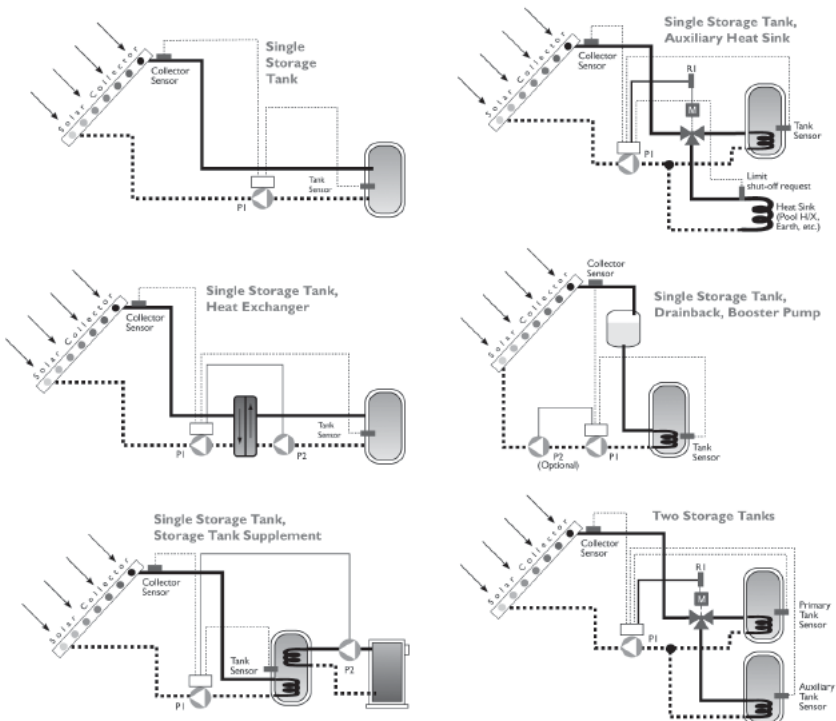
PC Board Layout



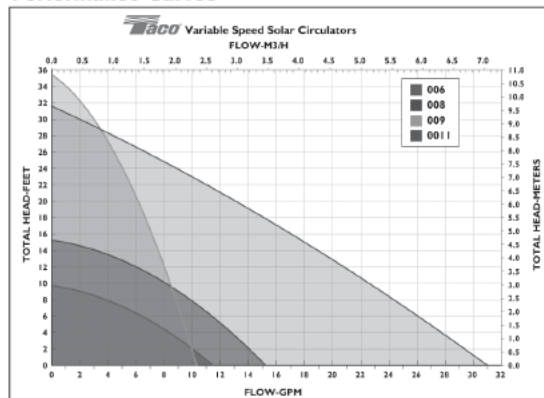
Variable Speed Pays Big Performance Dividend

The Solar Variable Speed Circulator (00-VT) continuously optimizes the flow through the collector to achieve maximum energy gain. For example, there is no benefit of pulling 80° water out of the collector when you are trying to maintain 120° in a tank. If a proper delta T is maintained through the collector then higher source temperatures can be achieved over longer periods of time, no matter the weather conditions.

With the flip of a dip switch the Taco all-in-one Solar Circulator can be easily set-up to work in numerous solar applications, some of the most popular are detailed below. For additional application and installation information go to www.taco-hvac.com.



Performance Curves



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Instruction Sheet

Variable Speed - Solar (00-VT)

"00" and Load Match® Cartridge Circulators

102-358

SUPERSEDES: New

EFFECTIVE: January 1, 2009

Plant ID# 001-3921

The Variable Speed - Setpoint "00" Cartridge Circulator (00-VT) is a microprocessor-based pump designed to regulate the temperature difference between a solar thermal collector and storage tank through variable speed injection mixing.

Applications

The following are typical applications the 00-VT supports. The 00-VT includes a five DIP package with DIP switches 1 and 2 used to configure the control for a given application. DIP switch 3 is used to select the drainback feature. DIP switch 4 is used to select the intermittent freeze protection feature.

DIP switch 5 is used to select whether one or two storage tanks is used.

00-VT-1: Single Storage Tank

Essential Settings

ON OFF

The 00-VT adjusts the variable speed output to the collector pump P1 to maintain a setpoint temperature difference (ΔT) between the collector sensor and the tank sensor.

00-VT-2: Single Storage Tank, Heat Exchanger

Essential Settings

ON OFF

The 00-VT adjusts the variable speed output to the collector pump P1 to maintain a setpoint temperature difference (ΔT) between the collector sensor and the tank sensor. A heat exchanger is included to isolate the collector from the storage tank. The storage tank pump P2 operates in parallel with the collector pump P1.

00-VT-3: Single Storage Tank, Storage Tank Supplement

Essential Settings

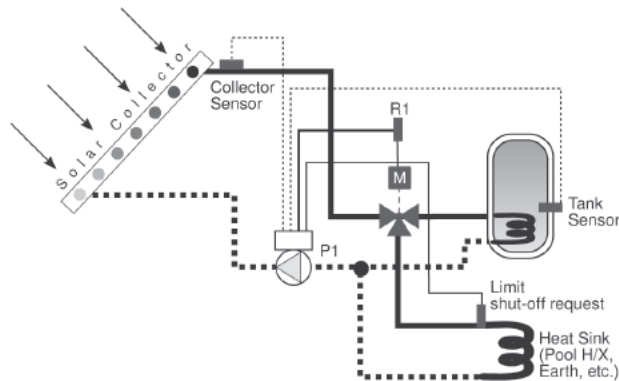
ON OFF

The 00-VT adjusts the variable speed output to the collector pump P1 to maintain a setpoint temperature difference (ΔT) between the collector sensor and the tank sensor. A boiler is included to supplement the storage tank. The boiler and boiler pump P2 operate independently from the collector to maintain the storage tank at a setpoint temperature.

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Solar Controls

00-VT-4: Single Storage Tank, Auxiliary Heat Sink

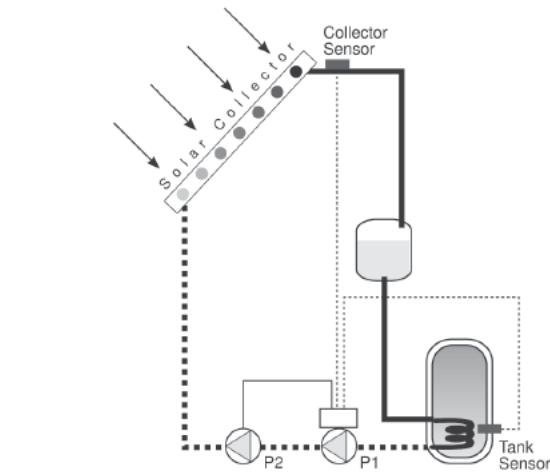


Essential Settings



The 00-VT adjusts the variable speed output to the collector pump P1 to maintain a setpoint temperature difference (ΔT) between the collector sensor and the tank sensor. An auxiliary heat sink is included to accept heat in the event both the storage tank and the collector become too hot. During this condition, the diverting valve operates and the collector pump runs at full speed to transfer heat from the collector to the auxiliary heat sink.

00-VT-5: Single Storage Tank, Drainback, Booster Pump

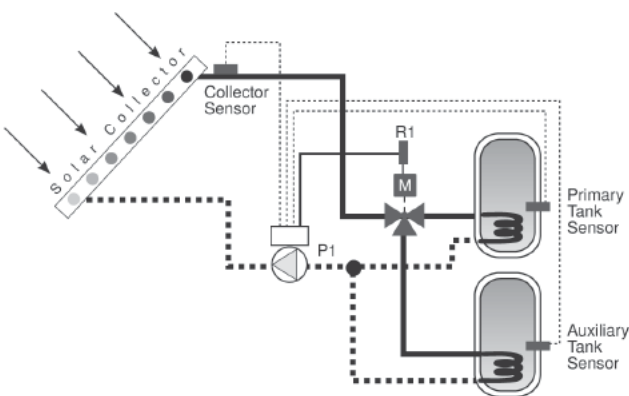


Essential Settings



The 00-VT adjusts the variable speed output to the collector pump P1 to maintain a setpoint temperature difference (ΔT) between the collector sensor and the tank sensor in a drainback system. A booster pump is included in order to provide the necessary head requirements on startup to fill the system. When operation is required, the control turns on the booster pump and operates the collector pump at full speed for 3 minutes. After the 3 minute period elapses, the booster pump turns off and the collector pump operates to maintain the setpoint temperature difference. When operation is not required, the control turns off the collector pump draining the fluid back into the drainback tank.

00-VT-6: Two Storage Tanks



Essential Settings



The 00-VT provides operation for two storage tanks. When operation is required for the primary storage tank, the control adjusts the variable speed output to the collector pump P1 to maintain a setpoint temperature difference (ΔT) between the collector sensor and the primary tank sensor. When the primary storage tank is satisfied, the control switches to provide operation for the auxiliary storage tank. For the auxiliary storage tank, the control operates the diverting valve and adjusts the variable speed output to the collector pump P1 to maintain a setpoint temperature difference between the collector sensor and the auxiliary tank sensor. Note: the holiday feature is not available.

SEQUENCE OF OPERATION

Whenever the 00-VT is powered up, the green PWR LED turns on and operates to maintain a setpoint temperature difference (ΔT) between a heat source (solar collector) and a heat sink (storage tank). The percent output (% OUT) LED flashes at different rates based on the speed of the collector pump. As the % OUT LED flashes faster it indicates a faster speed of the pump. A fully on LED indicates the pump is at 100% capacity.

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Solar Controls

The holiday feature is activated when the holiday terminal is connected to the sensor common terminal. Once activated, the control adjusts the collector pump to full speed, and if applicable, turns on the auxiliary relay when the storage tank temperature is greater than storage tank maximum temperature and the storage tank temperature is 10°F warmer than the collector temperature. The output(s) then remain on until the storage tank temperature drops to 130°F.

The holiday feature is only available when the 00-VT is configured for a single storage tank.

Limit Input

The control includes a limit input feature that allows for certain operation to be terminated. The limit input operation is also dependent on whether the control is configured for one or two storage tanks.

If the 00-VT is configured for a single storage tank and collector sink operation, and a limit input is received, all outputs are turned off. However, the collector pump can still operate based on the requirements of the collector and the storage tank. This configuration would be typical of a pool being used as the auxiliary heat sink. In this case, a strap-on high limit pool aquastat could be used to provide a limit input terminating operation.

If the 00-VT is configured for two storage tanks or an application other than collector sink, and a limit input is received, all outputs are turned off. This configuration would be typical when servicing is required of the solar system requiring the control to be disabled.

Intermittent Freeze Protection (DIP switch 4)

The 00-VT includes a freeze protection feature that intermittently operates the collector pump to prevent the potential of the fluid in the collector distribution system from freezing. The 00-VT turns on the collector pump when the collector temperature falls below 35°F. The collector pump then remains on until the collector pump rises above 40°F. This feature is selected by setting DIP switch 4 to the On position. It is recommended that this feature should only be used in a climate where the outdoor temperature does not remain below freezing for prolonged periods of time.



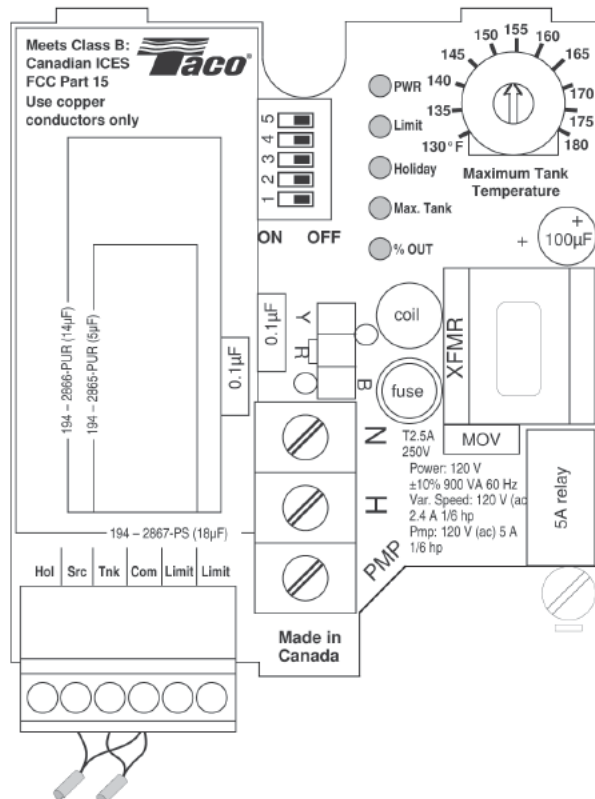
Note: Intermittent freeze protection does not apply when the 00-VT is configured for Drainback.

Exercising

During long periods of no operation, the 00-VT is designed to exercise for 10 seconds every 3 days of no operation in order to prevent precipitate build-up in the pump. The % OUT LED turns on during the exercising function.

WARNING: Wiring connections must be made in accordance with all applicable electrical codes.

CAUTION: To prevent electrical shock, disconnect electric power to system at main fuse or circuit breaker box until installation is complete. When a service switch is installed, more than one disconnect switch may be required to deenergize this device for servicing.



Powering the control

Insert the line voltage wires through the knockout of the enclosure and connect the live wire to the H terminal and the neutral wire to the N terminal on the PC Board. Ensure that no power is present during this process.

Limit Input

The limit input signal may be provided by shorting the Limit Com and Limit Dem terminals. 24 V (ac) applied across the terminals will also provide a limit input signal.

This signal may come from a switching device including a dry contact switch or high limit device.

Sensors

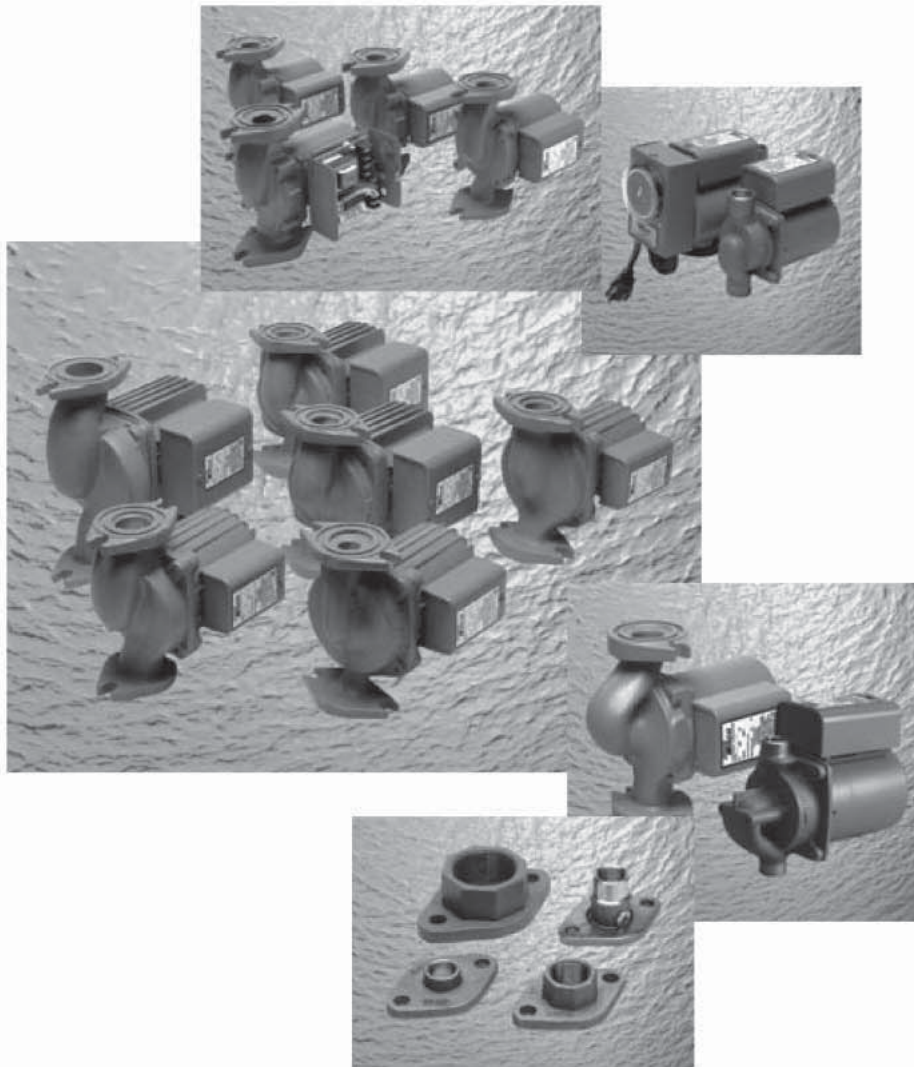
Do not apply power to these terminals as this will damage the PC Board. The wiring terminals for the sensors may be removed for ease of installation.

Do not run the wires parallel to telephone or power cables. If the sensor wires are located in an area with strong sources of electromagnetic interference (EMI), shielded cable or twisted pair should be used or the wires can be run in a grounded metal conduit. If using shielded cable, the shield wire should be connected to the Com terminal on the PC Board and not to earth ground.

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Taco® “00” Series Cartridge Circulators

For over 70 years, Taco has led the industry with the highest quality circulators you can buy. Designed for a wide range of residential and light commercial applications, every “00” comes with the reliability that has made Taco famous.



HYDRONIC COMPONENTS & SYSTEMS

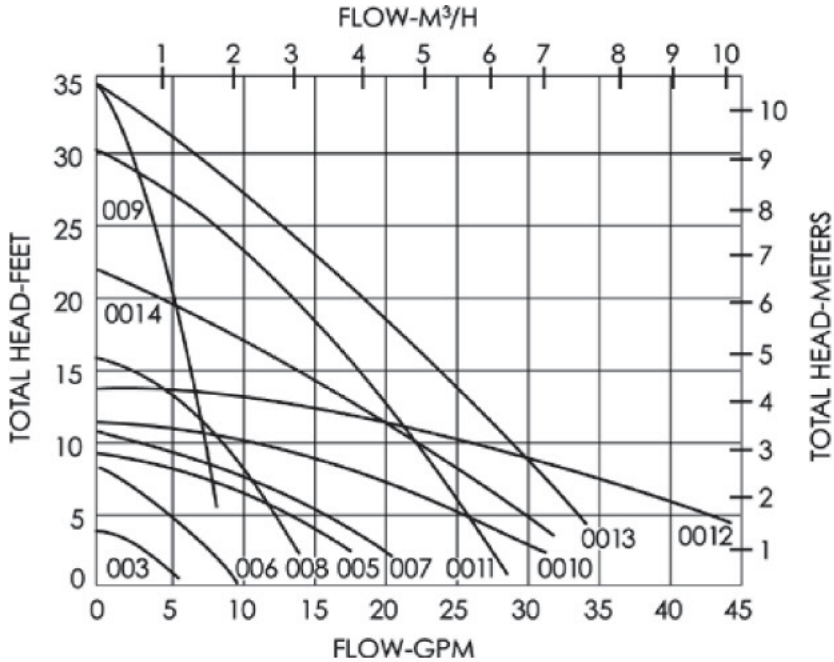
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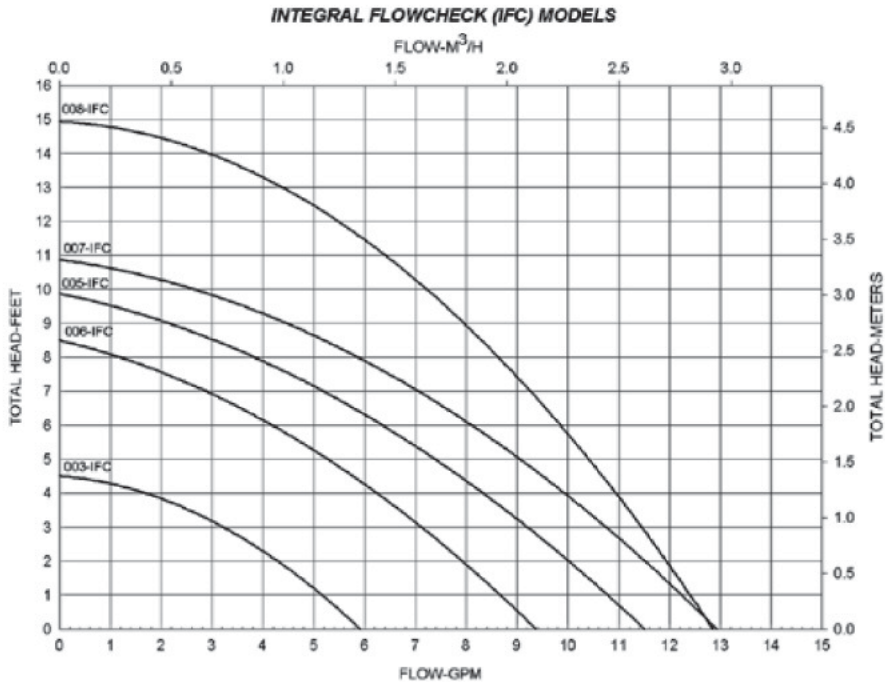
Solar Circulators

Performance Field Information

60 Hz Performance Field



60 Hz Performance Field



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Notes

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