

1ST SUNFLOWER RENEWABLE ENERGY



Brief Introduction about 1st Sunflower

Balance-Nature

Basic elements for the Earth

Human beings are born from nature, the nature satisfies with mind. So in the relationship with nature, 1st Sunflower claims the harmony of man with nature and the blend with five elements (of metal, wood, water, fire, and earth). We can ask for from the nature, but it should not be too much to destroy the balance of environment.

Cherish life, in awe of Nature; honest and faithful, relieved and tolerant. These are the humanity.

Many people advocate for environmental protection, but environmental protection is not a fashion, but a concept which is extremely urgent to work steadily. 1st Sunflower successfully created the Fifth-generation solar water heater with more reasonable construction through diligent study with a quiet mind for many years. These type solar water heaters have high temperature/coldness resistance. It makes the products and buildings combines as one complete unit through fashion and beautiful design. Inexhaustible solar energy supply the user the best hot water using plan, in the meantime, it can achieves the goal to protect environment and save the energy resources which is seeked and devoted by credit Sunflower Solar.

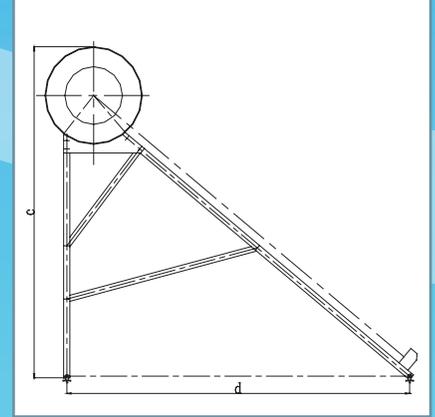
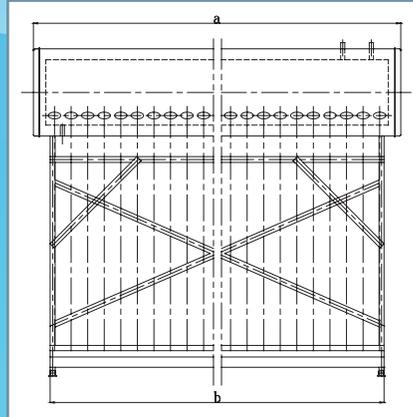
Love clear water and blue sky, establish a splendid homeland. 1st Sunflower adheres to integrity-based, advocates to users' needs as its responsibility, proposes healthy sustainable living for its purpose. Please let us join hands together, creating a prosperity and a bright future!



SFA Model: Thermosyphon Tubular Solar Water Heater

Description:

The design of this type uses the principle of Thermosyphon. It is a natural circulation process. This type uses double layers glass solar tubes. The water fills in the tubes, which is heated in the tank (which can vary between 85 and 220litres) by convection. It has obvious advantages: with a tank and the fittings are very low-cost.



Item No.	Specification				Tank's Capacity	Total Capacity	Effective collector area M ²	size(mm)				Qty(set)	
	Diameter of water tank	Qty. of solar tubes	Diameter of solar tube	Length of solar tube				a	b	c	d	20'ft	40'ft
SFA42154715	Ø 420mm	15pcs	Ø 47mm	1.5M	84.2L	104.4L	1.25	1170	1060	1307	1346	77	157
SFA42184715	Ø 420mm	18pcs	Ø 47mm	1.5M	100.5L	124.7L	1.49	1380	1270	1307	1346	66	134
SFA42204715	Ø 420mm	20pcs	Ø 47mm	1.5M	111.4L	138.3L	1.66	1520	1410	1307	1346	60	122
SFA42244715	Ø 420mm	24pcs	Ø 47mm	1.5M	133.3L	165.5L	1.99	1800	1690	1307	1346	52	105
SFA42304715	Ø 420mm	30pcs	Ø 47mm	1.5M	166L	206.3L	2.49	2220	2110	1307	1346	42	85
SFA47155818	Ø 470mm	15pcs	Ø 58mm	1.8M	132.3L	172.9L	1.89	1348	1228	1594	1655	50	101
SFA47185818	Ø 470mm	18pcs	Ø 58mm	1.8M	148.6L	197.3L	2.27	1591	1471	1594	1655	43	87
SFA47205818	Ø 470mm	20pcs	Ø 58mm	1.8M	164.9L	219L	2.52	1753	1633	1594	1655	38	78
SFA47245818	Ø 470mm	24pcs	Ø 58mm	1.8M	197.5L	262.5L	3.03	2077	1957	1594	1655	33	68
SFA47305818	Ø 470mm	30pcs	Ø 58mm	1.8M	246.3L	327.5L	3.78	2563	2443	1594	1655	26	54

Features:

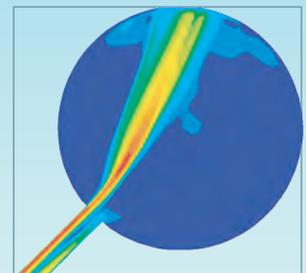
1. Beautiful in design and very convenient for family use.
2. Reliable and efficient with twin-glass solar tubes.
3. No corrosion: It can prevent corrosion caused by chlorine ion, sea water, salt water or buck water.
4. No leakage: Apply for special anti-corrosion layer.
5. Sanitary water: The qualities showed above make it possible that water quality is pure and no twice pollution.
6. Using the polyurethane to preserve heat, which makes people enjoy hot water in cold evenings.
7. Designing the immersion heater hole in advance for the cloudy, snowy, rainy days.
8. Easy plug-in installation.

Scope of Application:

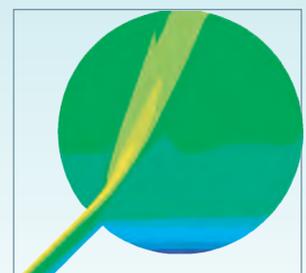
SFA is very popular in Asia, Africa, torrid zone and warm area.

Notice:

1. The angle of the frame can be changed in the production process according to the local latitude condition of the customers. We can design the suitable angle for customers.
2. We offer the spare accessories and tubes for your orders for free.
3. We can offer water tanks, frames and tubes in different materials according to your request.
4. We offer the fittings of this system, such as immersion heater, water supplier, magnesium and so on. You can buy according to your requirement.



VELOCITY



TEMPERATURE

SFVA Model: All-glass Evacuated Solar Collector Tube

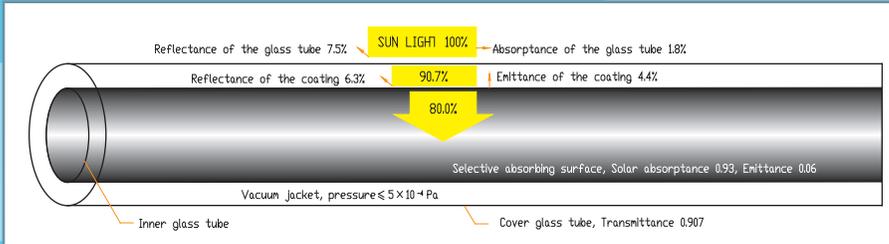


1st SUNFLOWER
RENEWABLE ENERGY

Operation principle:

Apply for selective absorbing coating material of normal all-glass vacuum tube to collect solar energy.

Item No.	Specification	
	Diameter of solar tube	Length of solar tube
SFVA4715	Ø47mm	1.5M
SFVA5818	Ø58mm	1.8M



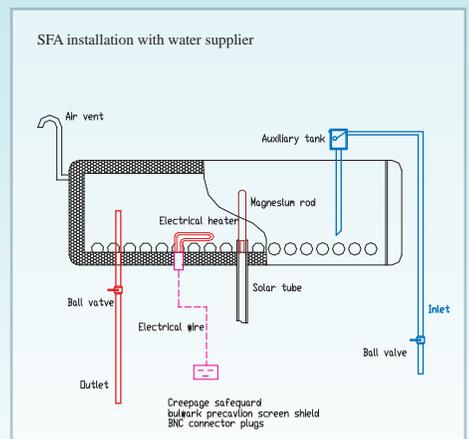
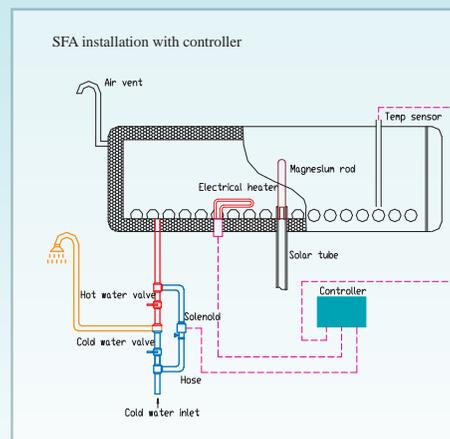
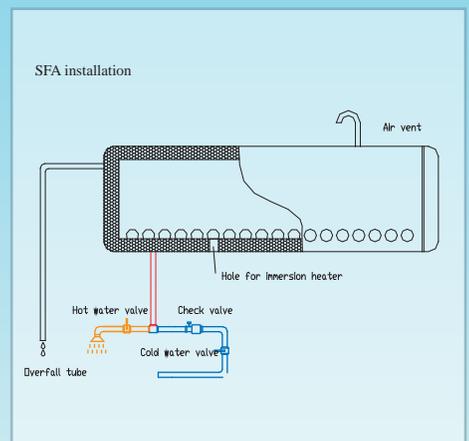
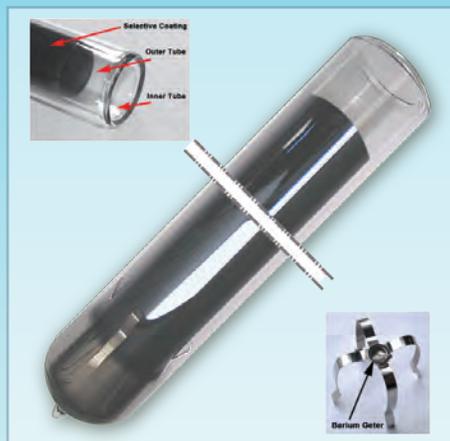
Features:

1. Apply for two layers of 3.3 high boron silicon glass tube.
2. The two layers glass tube, with the same axis vacuum zed between them, can reach 5×10^{-2} Pa.
3. Coated with ALN\VAL selective absorbing coating material.
4. High absorbing efficiency: The vacuum magnetic-control sputtering selective absorptive coating on the heat-collecting plates has a high absorption. Coefficient is more than 93%, and the emission coefficient is around 6%.
5. Long life: The life span can reach 15 years.
6. High practicability: Able to endure impact of hail less than 25mm in diameter, with high heat efficiency throughout the year.

Notice:

1. If you want to buy the samples, the quantity isn't limited by the minimum order quantity and it can be decided by the actual need of the customers.
2. We offer the spare tubes for samples and orders for free.
3. We can make laser brand on tubes according to customers' special request.
4. The information above is the simple description of our products. If you are interested in our products, please contact us and we'll send more detailed brochures of our products to you by e-mail.

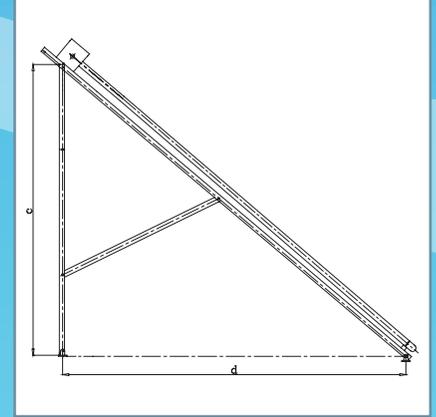
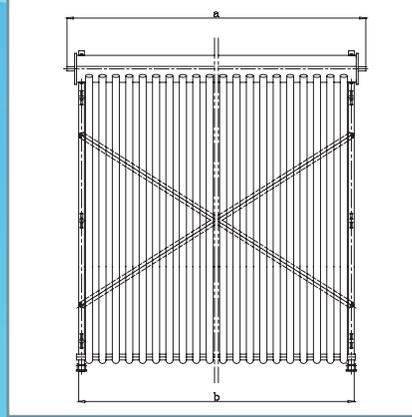
Length	1500mm	1800mm
Outer tube diameter	47mm	58mm
Inner tube diameter	37mm	47mm
Weight	1.3kg	2.2kg
Glass thickness	1.6mm	1.6mm
Material	Borosilicate Glass 3.3	Borosilicate Glass 3.3
Absorptive coating	Graded A1/N/A1	Graded A1/N/A1
Vacuum degree	$P < 5 \times 10^{-3}$ Pa	$P < 5 \times 10^{-3}$ Pa
Thermal expansion	$3.3 \times 10^{-6} / ^\circ\text{C}$	$3.3 \times 10^{-6} / ^\circ\text{C}$
Insolation Temperature	$> 200^\circ\text{C}$	$> 200^\circ\text{C}$
Absorptance	$> 93\%$	$> 93\%$
Emission	$< 8\%$	$< 8\%$
Heat loss	$< 0.8\text{W}/(\text{m}^2\text{C})$	$< 0.8\text{W}/(\text{m}^2\text{C})$
Maximum strength	0.8Mpa	0.8Mpa
Resist cold	-35°C	-35°C
Resist hailstone	Ø 25mm	Ø 25mm
Resist wind	30m/s	30m/s
Start-up temperature	$\leq 25^\circ\text{C}$	$\leq 25^\circ\text{C}$



SFB Model: All-glass Evacuated Tubular Solar Collector with Heat Pipe

Description:

SFB model uses All-glass Evacuated Tubular Solar Collector Tube with Heat Pipe as its heat-absorption element. It can be connected to the pressurized system. It can resist the cold weather of -35degree.



Item No.	Qty. of solar tubes	Specification			Effective collector area M ²	Capacity (Liter/Day)	size(mm)				Qty (set)	
		Diameter of solar tube	Length of solar tube	Copper Heat Pipe			a	b	c	d	20'ft	40'ft
SFB104715	10pcs	Ø 47mm	1.5M	Yes	0.83	70	870	750	1000	1174	197	401
SFB204715	20pcs	Ø 47mm	1.5M	Yes	1.66	140	1570	1450	1000	1174	126	256
SFB304715	30pcs	Ø 47mm	1.5M	Yes	2.49	210	2270	2150	1000	1174	86	176
SFB105818	10pcs	Ø 58mm	1.8M	Yes	1.26	90	960	840	1200	1398	128	261
SFB205818	20pcs	Ø 58mm	1.8M	Yes	2.52	180	1760	1640	1200	1398	76	155
SFB225818	22pcs	Ø 58mm	1.8M	Yes	2.77	198	1920	1800	1200	1398	71	145
SFB305818	30pcs	Ø 58mm	1.8M	Yes	3.78	270	2560	2440	1200	1398	52	106

Features:

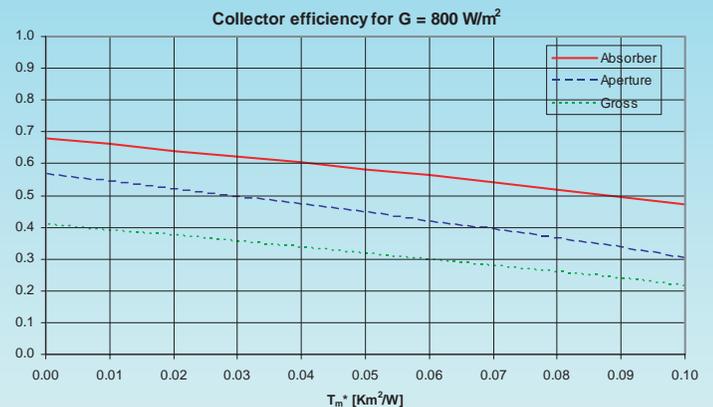
1. High efficient solar absorber by using All-glass Evacuated Solar Collector Tube with Heat Pipe.
2. Suitable for main water pressure (up to 6bar/87psi).
3. Silver brazed copper header for corrosion resistant.
4. Excellent insulator in rock wool to keep the heat.
5. Collectors can be connected in series to increase water heating capacity.
6. Ideal for commercial solar water heating applications.
7. Able to be used in all climates.
8. Using simple frame, the system can be easily fixed on the roof.
9. It looks smart and without worry about the supporting capability of the roof.
10. Tubes can be easily replaced if broken- it can be also used with broken tubes.
11. Maintenance free.

Scope of Application:

SFB is very popular in Europe. It can resist the -45 Celsius. It is a good choice for big projects.

Notice:

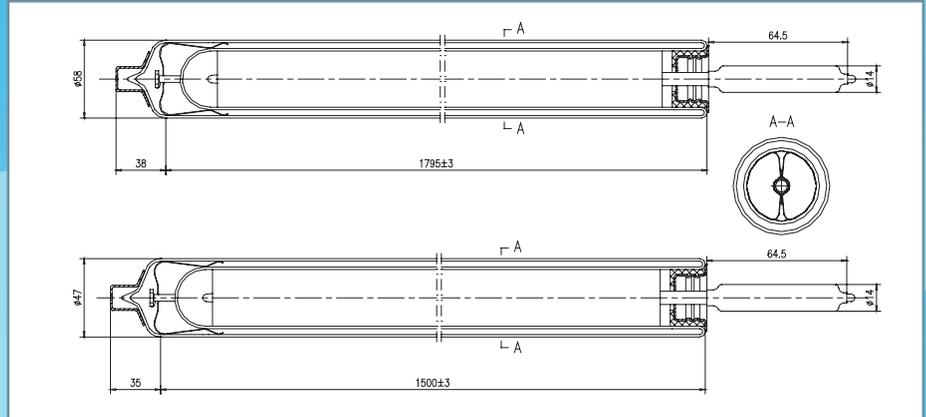
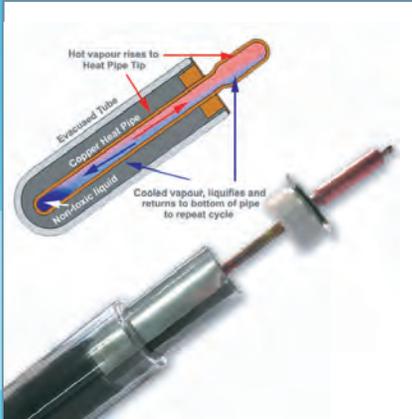
1. The angle of the frame can be changed in the production process according to the local latitude condition of the customers. We can design the suitable angle for the customers.
2. We offer the spare accessories and tubes for your order for free.
3. We can offer the standing frame for SFB if the customers need.
4. We can change the quantity of tubes of each SFB solar collector according to customers' request.
5. We can manufacture the manifold in different materials according to the customers' requirements.



SFVB Model: All-glass Evacuated Solar Collector Tube with Heat Pipe

Operation principle:

SFVB uses double layers glass tubes with a heat pipe inserted in.



Item No.	Specification	
	Diameter of solar tube	Length of solar tube
SFVB4715	Ø47mm	1.5M
SFVB5818	Ø58mm	1.8M

Features:

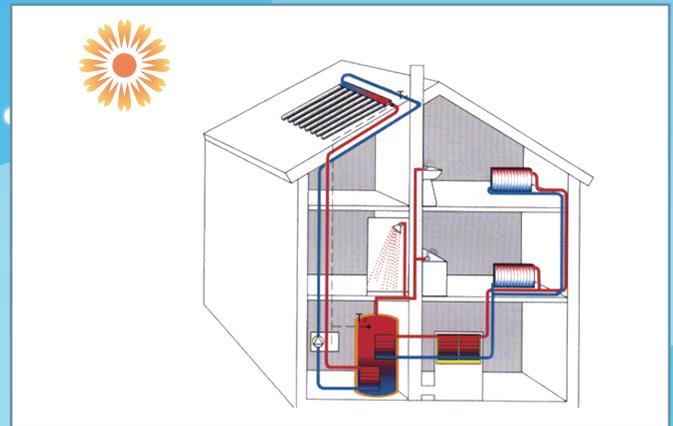
1. The tube structure is between all-glass evacuated tube and metal-glass evacuated tube with heat pipes.
2. Suitable for frigid zones because there is no water in the tube.
3. Designed for pressure system.
4. Heat pipe material: TP2 copper.
5. The heat collecting part is a vacuum glass tube which can reduce the heat loss.
6. Stable solar conversion throughout the day, with the round shaped tube allowing solar penetration from all angles.

Notice:

1. If you want to buy the samples, the quantity isn't limited by the minimum order quantity, and it can be decided by the actual need of the customers.
2. We offer the spare tubes for sample and order for free.
3. We can make laser brand on tubes according to customers' special request.
4. The information above is the simple description of our products. If you are interested in our products, please contact us and we'll send more detailed brochures of our products to you by e-mail.



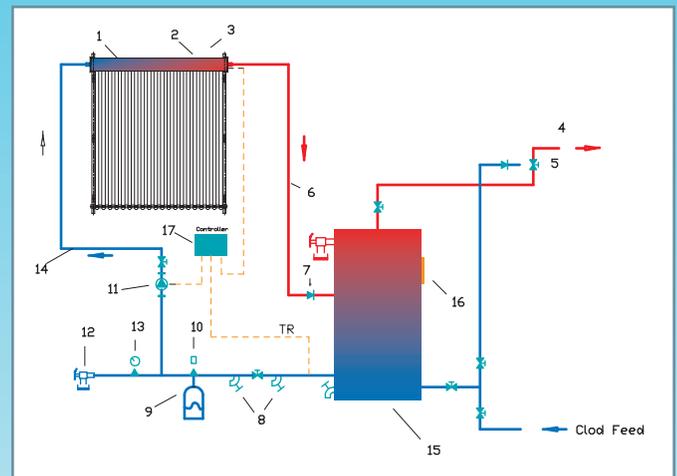
Solar Heating System



Active Open Loop System

Open Loop System is designed for climates where there is no risk of freezing. Recirculation freeze protection can be provided by the recirculation feature in the controller. An Open Loop Water Heating System provides many advantages. It is the simplest and the most typically reasonable active system to install. There is no heat exchanger, which allows efficient heat transfer to the water directly. The system operates at standard line pressure. It is easy to add capacity to the system if demand changes. The system can be integrated easily with existing systems.

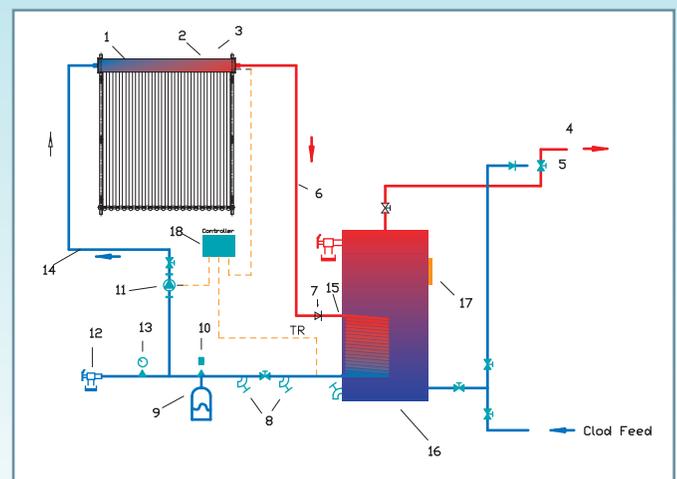
1. Collector
2. Collector Sensor
3. Manual Air Valve
4. Hot Water to Taps
5. Tempering Valve
6. Collector Return
7. Check Valve
8. Hose Bibs For Filling And Flushing
9. Expansion Vessel
10. Air Scoop & Air Vent
11. Circulating Pump
12. Pressure Relief Valve
13. Pressure Meter
14. Collector Supply
15. Pressurized Tank
16. Immersion Heater
17. Controller



Active Closed Loop System

Closed Loop Solar Heating Systems are suitable for both single and multiple solar heating application systems, such as domestic solar water heating, solar water heating hot tub, solar swimming pool heating or solar space heating systems. The Closed Loop Solar Systems are suitable for areas with questionable water and all climate conditions. The Closed Loop Solar Heating Systems are better choice for extremely cold areas.

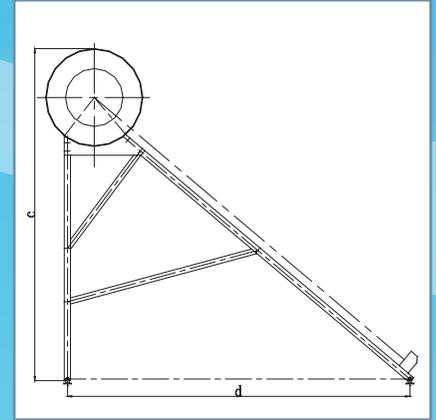
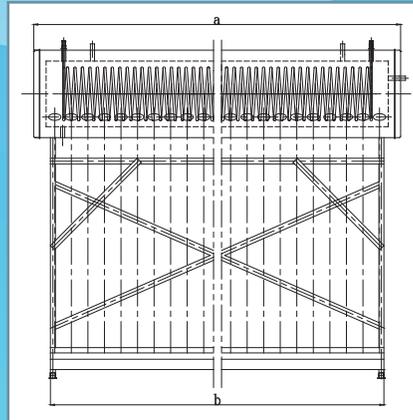
1. Collector
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4. Hot Water to Taps
5. Tempering Valve
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7. Check Valve
8. Hose Bibs For Filling And Flushing
9. Expansion Vessel
10. Air Scoop & Air Vent
11. Circulating Pump
12. Pressure Relief Valve
13. Pressure Meter
14. Collector Supply
15. Heat Exchange Coil
16. Pressurized Tank
17. Immersion Heater
18. Controller



SFD Model: Pressure Tubular Solar Water Heater with Copper Coil

Description:

SFD model has a special copper coil heat exchanger in the inner tank. The coil copper pipe can bear 6 bars pressure, water tank is non-pressurized. The water in the tank is used as the heat transfer medium, rather than using it directly. The obvious advantage is with water supplier, which can supply cold water into the tank automatically; It can be connected to pressurized system. SFD is suitable for torrid zone and warm area.



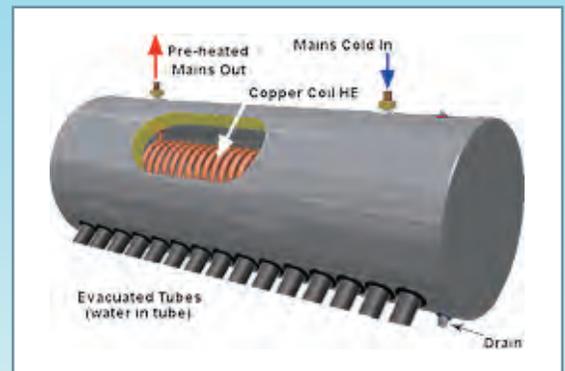
Item No.	Specification				Tank's Capacity	Total Capacity	Effective collector area M ²	size(mm)				Qty(set)	
	Diameter of water tank	Qty. of solar tubes	Diameter of solar tube	Length of solar tube				a	b	c	d	20'ft	40'ft
SFD47155818	Ø 470mm	15pcs	Ø 58mm	1.8M	132.3L	172.9L	1.89	1348	1228	1594	1655	50	101
SFD47185818	Ø 470mm	18pcs	Ø 58mm	1.8M	148.6L	197.3L	2.27	1591	1471	1594	1655	43	87
SFD47205818	Ø 470mm	20pcs	Ø 58mm	1.8M	164.9L	219L	2.52	1753	1633	1594	1655	38	78
SFD47245818	Ø 470mm	24pcs	Ø 58mm	1.8M	197.5L	262.5L	3.03	2077	1957	1594	1655	33	68
SFD47305818	Ø 470mm	30pcs	Ø 58mm	1.8M	246.3L	327.5L	3.79	2563	2443	1594	1655	26	54

Features:

1. Copper coil heat exchanger can be used as a part of a closed or open loop system, providing heating to a main hot water tank.
2. Water supplier: supplying the water vapour slowly into the tank in time.
3. Designed to resist main pressure and cold water.
4. Reliable and efficient with twin-glass solar tubes.
5. Collectors can be connected in series to increase water heating capacity.
6. Ideal for commercial solar water heating applications.
7. Easy plug-in installation.

Scope of Application:

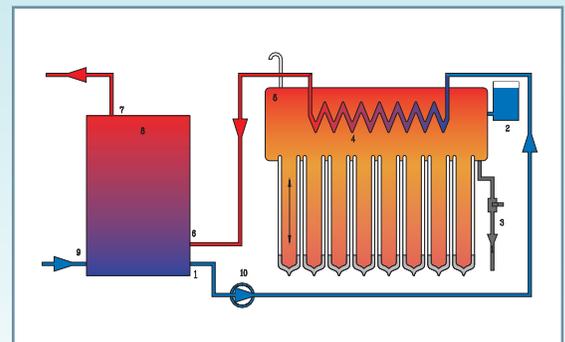
It is suitable for the areas where are very hot and it can reach the best efficiency when it is used near to the equator.



Notice:

1. The angle of the frame can be changed in the production process according to the virtual geographical condition of the customers. We can design the suitable angle for the customers.
2. We offer the spare accessories and tubes for your order for free.
3. We can offer the water tanks, frames, and tubes in different materials according to your request.

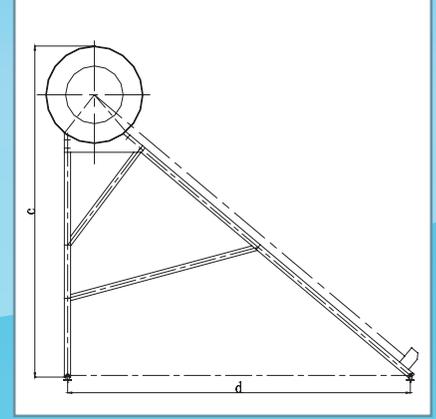
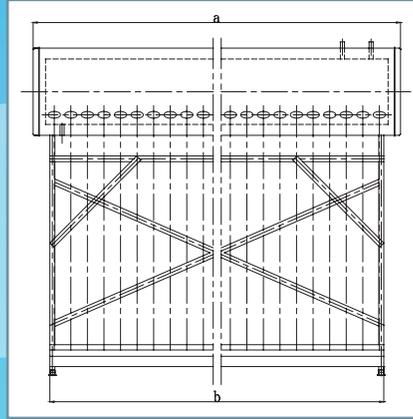
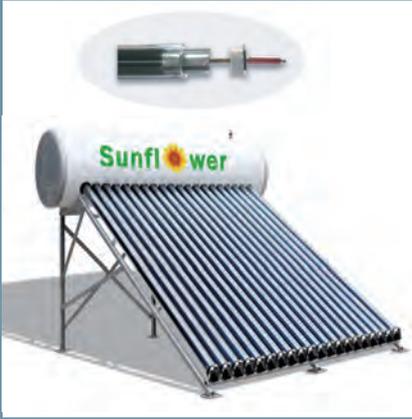
1. Cold water outlet
2. Water supplier
3. Drain valve
4. Heat exchanger
5. Vent
6. Hot water inlet
7. Hot water outlet
8. Water tank
9. Cold water inlet
10. Circulation pump



SFH Model: Integrated Pressure System

Description:

Enamel inner tank, pressurized system integrated with immersion heater, controller, P/T valve, etc. Let SFH consider more for you!



Item No.	Specification				Tank's Capacity	Total Capacity	Effective collector area M ²	size(mm)				Qty(set)	
	Diameter of water tank	Qty. of solar tubes	Diameter of solar tube	Length of solar tube				a	b	c	d	20'ft	40'ft
SFH47155818	Ø 470mm	15pcs	Ø 58mm	1.8M	132.3L	172.9L	1.89	1440	1228	1594	1655	45	90
SFH47185818	Ø 470mm	18pcs	Ø 58mm	1.8M	148.6L	197.3L	2.27	1680	1471	1594	1655	38	78
SFH47205818	Ø 470mm	20pcs	Ø 58mm	1.8M	164.9L	219L	2.52	1840	1633	1594	1655	34	70
SFH47245818	Ø 470mm	24pcs	Ø 58mm	1.8M	197.5L	262.5L	3.03	2160	1957	1594	1655	29	61
SFH47305818	Ø 470mm	30pcs	Ø 58mm	1.8M	246.3L	327.5L	3.79	2640	2443	1594	1655	23	48

Features:

- 1) Superior heat preservation ensured by 75mm polyurethane foam insulation layer
- 2) Designing the immersion heater hole in advance for the cloudy, snowy, and rainy days
- 3) Suitable for mains pressure water (up to 0.6MPa)
- 4) Immersion heater connects with SFH water tank
- 5) Material: galvanized sheet
- 6) Inner tank material: using pressurized material, the inner tank has the advantages as follows:
 - a) No corrosion: can prevent corrosion lead from chlorine ion, sea water, salt water or buck water
 - b) No leakage: applied for special anti-corrosion layer
 - c) Sanitary water: the qualities showed above make it possible that water quality is pure and no twice pollution
- 7) Able to be used in all climates
- 8) Automatic water supply, could supply water self-acting without any other installation and could able to be pressured



Scope of Application:

It suit for the climate where are very hot, it will reach the best efficiency when use it near to the equator.

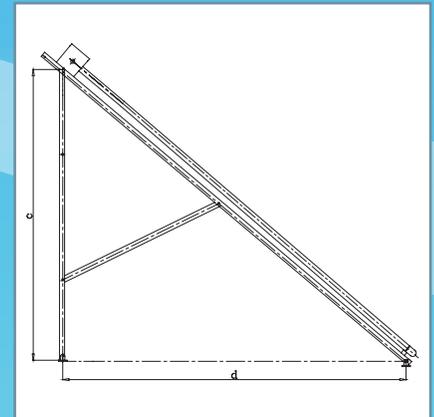
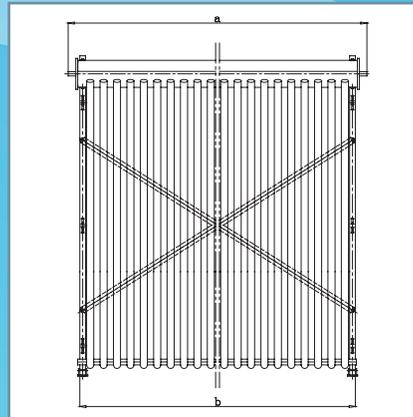
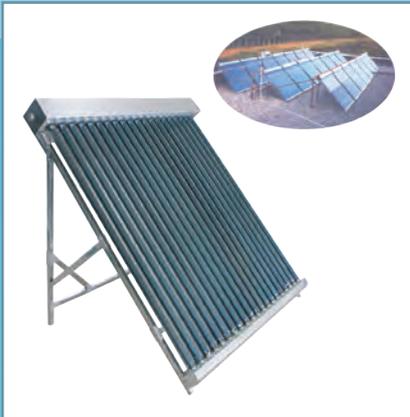
Notice:

1. The angle of the frame can be changed in the production as the virtual geographical condition of the customers. We can design the suitable angle for the customers.
2. We offer the spare accessories and tubes for your order for free.
3. We can offer the different material of water tank , frame , and tubes according to your request.

SFE Model: Tubular Solar Water Heating System

Description:

SFE is non-pressurized product which is similar to SFA but without water tank. It can only be used in non-pressurized system. It is a very cheap choice.



Item No.	Specification						size(mm)				Qty (set)	
	Qty. of solar tubes	Diameter of solar tube	Length of solar tube	Copper Heat Pipe	Effective collector area M ²	Capacity (Liter/Day)	a	b	c	d	20'ft	40'ft
SFE104715	10pcs	Ø 47mm	1.5M	No	0.83	70	870	750	1000	1174	134	268
SFE204715	20pcs	Ø 47mm	1.5M	No	1.66	140	1570	1450	1000	1174	123	251
SFE304715	30pcs	Ø 47mm	1.5M	No	2.49	210	2270	2150	1000	1174	86	175
SFE105818	10pcs	Ø 58mm	1.8M	No	1.26	90	960	840	1200	1398	83	166
SFE205818	20pcs	Ø 58mm	1.8M	No	2.52	180	1760	1640	1200	1398	78	159
SFE305818	30pcs	Ø 58mm	1.8M	No	3.78	270	2560	2440	1200	1398	54	110

Features:

1. High efficient and economical system.
2. Especially suitable for projects.
3. Designed for commercial solar water heating applications.
4. Reliable and efficient with twin-glass solar tubes.
5. Polyurethane insulation ensures a good heating performance and minimal heat loss.
6. Easy plug-in installation.
7. Can be connected in series to increase water heating capacity.

Scope of Application:

SFE are very popular in some hot areas.



Notice:

1. The angle of the frame can be changed in the production process according to the local latitude condition of the customers.
2. We can design the suitable angle for the customers.
3. We offer the spare accessories and tubes for your order for free.
4. We can change the quantity of tubes of each SFE solar collector according to customers' request.
5. We can manufacture the manifold in different materials according to the requirement of customers.

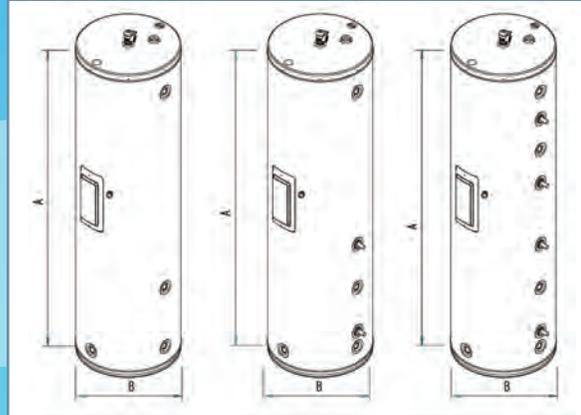
Pressurized Tank



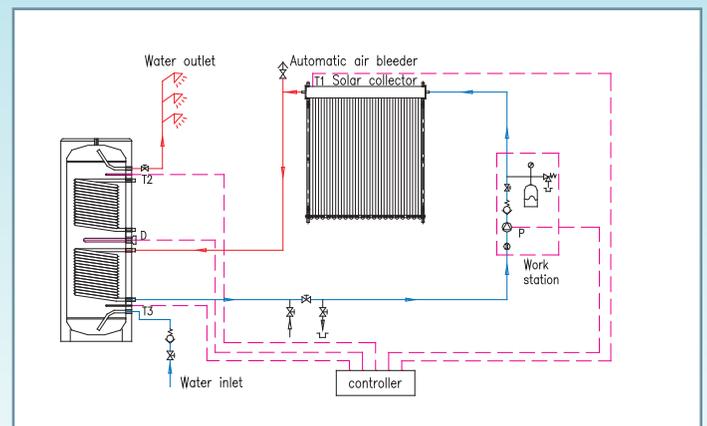
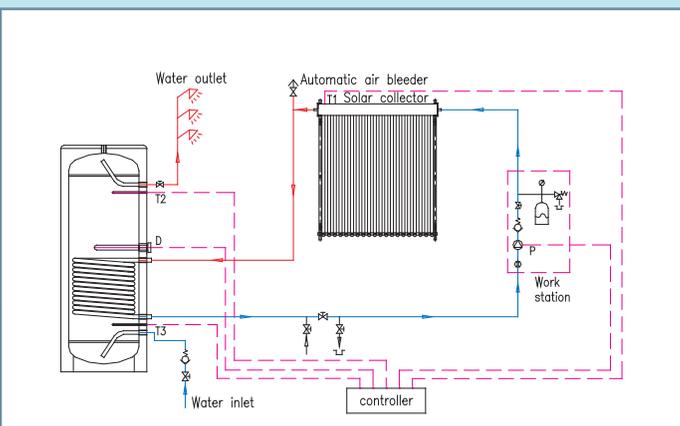
1st **SUNFLOWER**
RENEWABLE ENERGY

Description:

Pressurized tank is used for the connection of SFB pressurized solar collectors. Our tank includes electric immersion heater for backup, magnesium stick, P/T valve, one-direction safety valve.

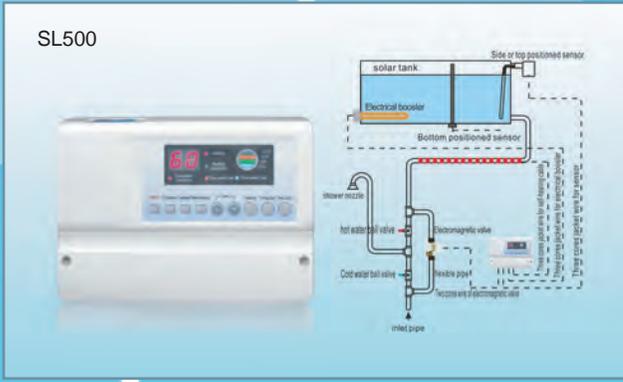


Model	100L	150L	200L	250L	300L	400L	500L
Inner tank diameter (mm)	Ø368	Ø368	Ø438	Ø542	Ø542	Ø613	Ø613
Outer tank diameter (mm)	Ø450	Ø450	Ø520	Ø620	Ø620	Ø710	Ø710
Material & thickness of the inner tank	BTC340R 1.8	BTC340R 1.8	BTC340R 2.0	BTC340R 2.0	BTC340R 2.0	BTC340R 2.5	BTC340R 2.5
Material & thickness of the shell	galvanized sheet 0.5						
Insulation thickness (mm)	40	40	40	40	40	50	50
Surface area of top heat exchanger (m ²)	--	--	0.4	0.4	0.4	0.5	0.5
Surface area of bottom heat exchanger (m ²)	0.6	0.6	0.6	0.7	0.7	0.8	0.8
Size of water pipe	NPT3/4"						
Immersion heater	1.5KW	1.5KW	1.5KW	1.5KW	2.5KW	2.5KW	2.5KW
Overall dimension (mm)	Ø450×1105	Ø450×1570	Ø520×1530	Ø620×1280	Ø620×1530	Ø710×1580	Ø710×1715
Package size (mm)	480×480×1200	480×480×1665	550×550×1625	655×655×1375	655×655×1625	740×740×1675	740×740×1800
Weight (kg)	46	58	68	75	95	112	122



Auxiliary Parts

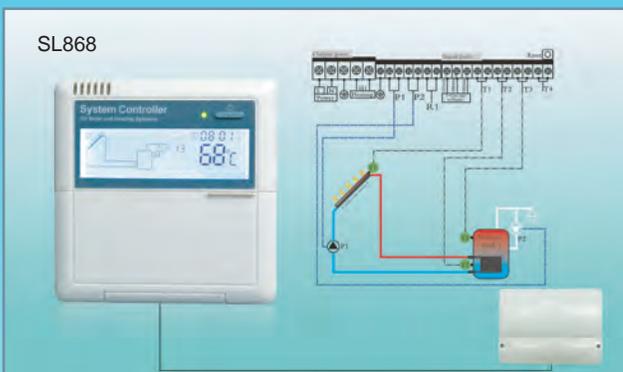
SL500



The diagram shows a solar tank with an electrical booster, side or top positioned sensor, and bottom positioned sensor. It also includes a shower mixer, hot water ball valve, cold water ball valve, magnetic valve, and inlet pipe.



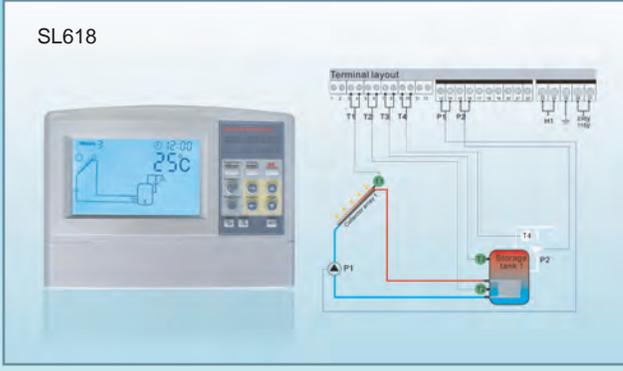
SL868



The diagram shows a system controller with a display showing 58°C. It includes a terminal layout with connections for P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12, P13, P14, P15, P16, P17, P18, P19, P20, P21, P22, P23, P24, P25, P26, P27, P28, P29, P30, P31, P32, P33, P34, P35, P36, P37, P38, P39, P40, P41, P42, P43, P44, P45, P46, P47, P48, P49, P50, P51, P52, P53, P54, P55, P56, P57, P58, P59, P60, P61, P62, P63, P64, P65, P66, P67, P68, P69, P70, P71, P72, P73, P74, P75, P76, P77, P78, P79, P80, P81, P82, P83, P84, P85, P86, P87, P88, P89, P90, P91, P92, P93, P94, P95, P96, P97, P98, P99, P100.



SL618



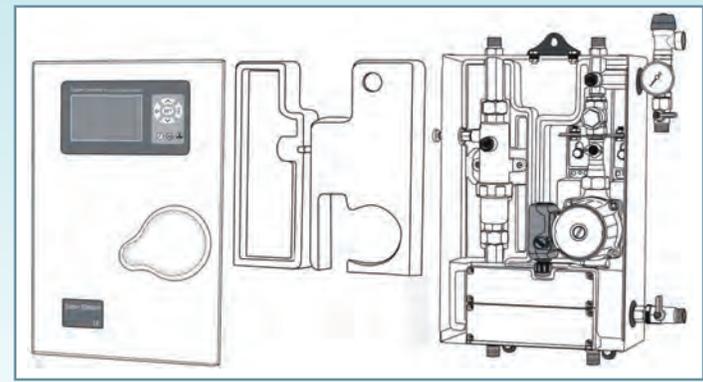
The diagram shows a terminal layout with connections for T1, T2, T3, T4, P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12, P13, P14, P15, P16, P17, P18, P19, P20, P21, P22, P23, P24, P25, P26, P27, P28, P29, P30, P31, P32, P33, P34, P35, P36, P37, P38, P39, P40, P41, P42, P43, P44, P45, P46, P47, P48, P49, P50, P51, P52, P53, P54, P55, P56, P57, P58, P59, P60, P61, P62, P63, P64, P65, P66, P67, P68, P69, P70, P71, P72, P73, P74, P75, P76, P77, P78, P79, P80, P81, P82, P83, P84, P85, P86, P87, P88, P89, P90, P91, P92, P93, P94, P95, P96, P97, P98, P99, P100.



Integrated Working Station



Circulation Pump: (WILO)
220V50HZ,RS15/6
Max flow:2.5(t/h)
Max lift: 5.5m
Suitable power of electrical heater:1pc,<1500W
INPUT:
One Sensor for collector(pt1000,probe≤500°C,Silicon cable≤280°C)
Two Sensors for tank (pt1000,probe≤135°C,pvc cable≤105°C)
Ambient temperature: -10~50°C



Solar Energy is
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It makes the world
a healthier,
better place to
live.

Solar Energy is
free

No more worries
of rising fuel
costs.

Solar Energy is
unlimited

No one on earth
has the power to
control it.

1ST SUNFLOWER
makes it available
to those who care,
and at an
affordable price.





1ST SUNFLOWER RENEWABLE ENERGY

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