

SOLAREKS

**Natural Circulated
Closed Loop System**

SOLAREKS

NATURAL CIRCULATED PRESSURIZED CLOSED LOOP SYSTEM

TECHNICAL SPECIFICATIONS

Solareks Solar Energy Systems

İmes San. Sitesi A Blok 106. Sk. No:48
Yukarı Dudullu / Ümraniye - İstanbul / Türkiye
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<http://www.solareks.com>

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NATURAL CIRCULATED PRESSURIZED CLOSED LOOP SYSTEM

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A. General Information

1.0 Product Description

Solareks Natural Circulated Pressurized Closed Loop Solar Water Heating Systems are designed to have high efficiency ratio and a long useful life. The closed loop system design is used in systems to increase the useful life of the systems. In closed circuit systems the mains water does not run in the collector thus the pipes of the collector does not get blocked by the lime in the water and also in winter time the system can be protected against freezing by using anti-freeze solutions, the collectors does not burst due to freezing water. Water is circulated naturally in the system thus there is no pump used in the system. Systems are pressurized and can be directly connected to water mains. Solareks 188/232/233 series solar collector is used in the system with a single boiler that gives a great look on the roof. The systems are designed according to geographical area and market conditions.

1.1 Dimensions

188 Series Collector

Dimensions: 1940 x 940 x 100 mm

Collector Area: 1.82 m²

Absorber Area: 1,66 m²

Connection: 3/4"

Net Weight : 32 kg

232 Series Collector

Dimensions: 1940 x 1200 x 100 mm

Collector Area: 2.32 m²

Absorber Area: 2,0 m²

Connection: 3/4"

Net Weight : 40 kg

233 Series Collector

Dimensions: 2040 x 1200 x 100 mm

Collector Area: 2.448 m²

Absorber Area: 2.15 m²

Connection: 3/4"

Net Weight : 42 kg

Boiler

75 lt: 1000 x Ø500 mm

100 lt: 1000 x Ø540 mm

150 lt: 1400 x Ø540 mm

180 lt: 1670 x Ø540 mm

200 lt: 1880 x Ø540 mm

240 lt: 1760 x Ø590 mm

300 lt: 2000 x Ø590 mm

For boiler specifications please visit
www.solareksboiler.com

2.0 Product Use

2.1 Product Applications

Solareks NCCL systems have a more common use in single houses, multi-flat buildings and various kinds of shops.

2.2 Single house use

75 lt: 2-3 people

100 lt: 3 people

150 lt: 4-5 people

180 lt: 5-6 people

200 lt: 6 people

240 lt: 6-7 people

300 lt: 7-8 people and commercial usage

Not: System usage capacities changes according to countries

2.3 Geographic and Climatic Limitations

Because the systems are closed loop they may operate even in very cold geographic areas. Solareks NCCL systems are mostly used in cold geographic areas and the places where the mains water has a high percentage of lime.

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3.0 About The Company

3.1 Quality Policy

The success of Solareks company is maintained by its young, dynamic and innovative nature. The continuous innovation process and quality aspect in the products and services are the key components of its today's success and promising future.

CUSTOMER SATISFACTION

The most appropriate product/solution for the needs of the customer is proposed. After sales service is always ready and on time when the customer needs it.

PROTECTION OF THE COMPANY'S REPUTATION

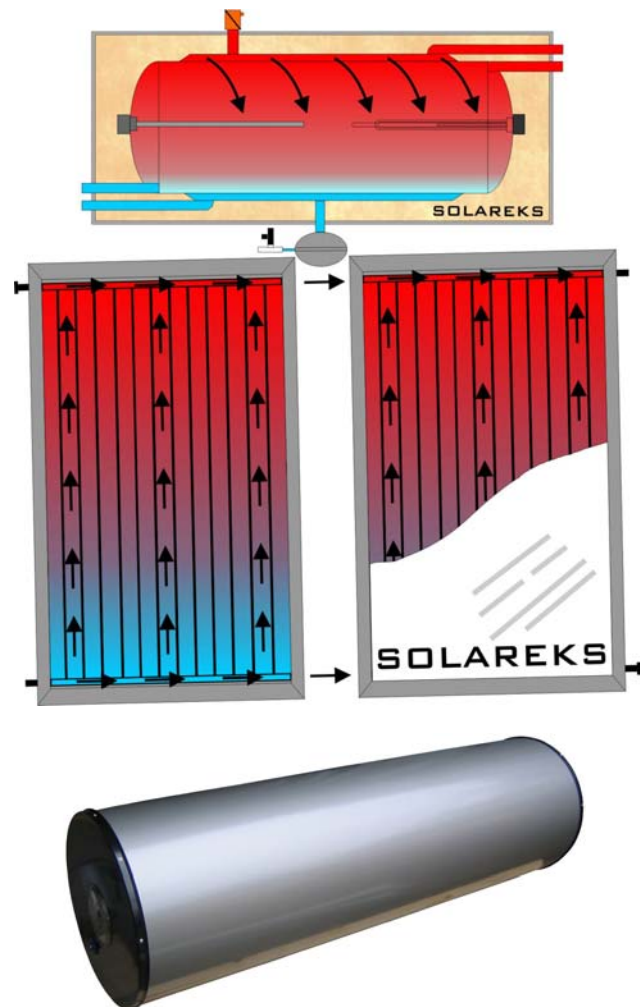
The right system for the right need is installed the right way at the first time thus the reputation of the Solareks company is protected.

COST REDUCTION

The production process is analyzed and improved continuously in order to reduce the cost of the goods.

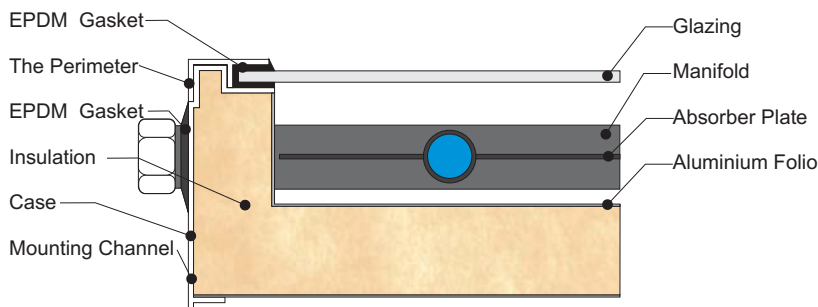
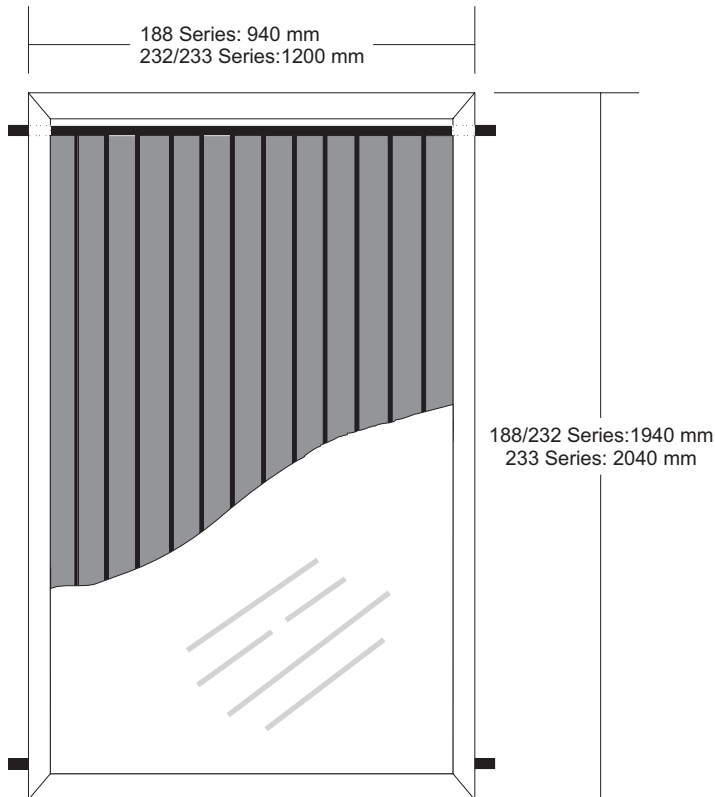
PROTECTION OF THE ENVIRONMENT

Solar Energy Systems only use solar energy thus reduce the consumption of solid, liquid and gas fuel and prevent the toxic gases being released to the atmosphere. Solar Water Heating Systems are environmentally friendly solutions for a better world.



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B. Collector

1. General Description

In Solareks NCCL system 188/232/233 series solar collector is used. With the new absorber plate design collector can absorb more solar energy. In order to have more efficient collectors polyurethane insulation material, special solar glass with high transparency ratio and copper absorber plate (high absorbing and heat transfer ratio) are used. In the systems all of the materials except insulation material are %100 recycleable.

2. Absorber

The absorber plate consists of copper pipes with fins and two pieces of manifolds that the copper pipes are attached to. The most particular feature of the absorber plate is that the copper fins are ultrasonic welded to the rising pipes. By the absorber plate the fins that gather the solar energy can transfer the heat energy efficiently to liquid that is in the copper pipes. The volume of the liquid that is in the pipes is kept small in order to reduce the period of time to get to the regime state. Black paint is used to coat the absorber plate. Selective and aluminium collectors are also available.

For more information please read collector catalogues.

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3. Glazing System

The transparent cover is the 4 mm thick normal/tempered glass or low ironed tempered solar glass. With the low iron ratio Solar glass permits more sun light to pass thorough. With the solar glass more sunlight passes through giving more heat the the collector thus to the water. Total light permeability that is % 91,0 ± 0,5 (ISO 9050) is quite high. (DIN 1249, DIN EN 572-5)

4. Insulation

The case of the Solareks solar collector is insulated with glasswool/rockwool or polyurethane in order to prevent the heat losses that occur at the sides and bottom of the collector case. The polyurethane insulation is covered with aluminium folio in order to create heat reflection and increase the heat transfered to the absorber plate. Another mission of the Polyurethane insulation is to create a robustness to the case of the collector.

5. Sealant

The collectors are insulated with EPDM (Etilen propilen dien monomer rubber) wicks and seals in order to protect the collector from the external factors like the rain and dust etc...and a perfect protection is achieved. EPDM insulation also prevents heat losses.

6. Case

The case of Solareks solar collector is manufactured from aluminium by extrusion technic in order to fit any kind of installation. The weight of the collector is reduced with the use of extruded aluminium. Having low weight collectors is a great help while installing the collector on the roof. The backside of the case has a blocking foil plate and does not let the rain water in.



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C. Boiler

1. General Description

A BC series boiler is used in NCCL system. Because the BC series boilers are pressurized there is no need for a second boiler. Thus a more aesthetic view is achieved and the user has the advantage of having hot water at the pressure of mains water.

2. Material

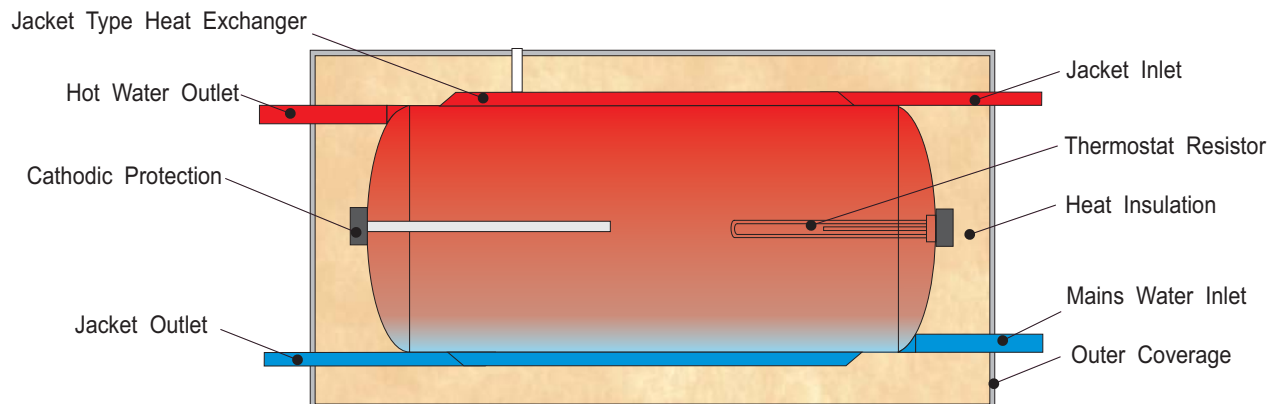
BC Series boilers are produced from A1 quality iron sheet by our certificated and experienced welders.

3. Corrosion Protection

With the closed circuit design in BC series the boiler and the collectors are protected against corrosion. The boilers are coated with 80 – 100 μ zinc in order to achieve rustproof and increase the useful life of the boilers. In addition to that BC series boilers are protected with magnesium anodes. The same technic is used for the protection of ships against rusting. The boiler is produced by 304 or 316 Stainless Steel sheet also.

4. Insulation

BC series boilers are insulated with glasswool/rockwool in order to prevent heat losses that may occur at the sides. Heat bridge is prevented with the specially designed installation kit.



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D. Installation

1. General Description

The systems can be installed in two different ways. The boiler can either be under or on the roof. Regardless of the way of the installation the system is installed in a very secure practical and easy way. Solareks installation kit has an installation compatability to any kind of roof.

2. Installation Place

The best installation place on the roof is determined by the experienced installation team. The system is installed on a place that is not shaded by any kind of obstacle like a tree or a building during all day. In a way that it faces south in order to receive solar energy the most. The slope angle of the collectors is the same with the angle of latitude of the geographical area. The system is installed so that nothing like leaves can accumulate under collectors.

3. Mounting Frame

The specially designed Solareks installation kit is used in order to mount the collectors and the boiler to the roof. Steel construction fixes the boiler and the collectors on the roof in a very secure and practical way.

4. Waterproofness of the roof

All the precautions during and after the installation is taken in order to guarantee waterproofness of the roof. The mounting points are isolated with special insulation materials and checked after the installation.

5. Security

The system installed so that the the roof is affected the least. In geographical areas where the snow is very intense there is a space left between the roof and the collectors so that the snow can not behind the system. The system is installed so that it can be very near to the surface of the roof.

E. Systems Equipments

1. General Description

Extra protective elements are used in the systems in order to increase the efficiency of the boiler and protect the boiler and to create a smooth use of hot water.

2. Closed Expansion Tank

Closed expansion tank lets the liquid that runs in the closed circuit expand when the temperature increases with its flexible mebrane. The natural circulation rate of the system is increased with the closed expansion tank thus ensuring a better heat transfer in the closed circuit.

3. Automatic Air Vent

Removes the air that is blocked inside the closed loop by that way the fluid circulates perfectly.

4. Pressure Limiting Valve

The boiler is designed to work under mains pressure but it has an extra protection with the pressure limiting valve against the sudden pressure increases in the mains esp. at night time.

5. Thermostat resistor

In order to create a more comfortable use the systems may be equipped with a thermostat resistor for use in winter if it is required by the customer. In the winter time when there is no sun light thermostat resistor heats up the water in the boiler to the required temperature.

Boiler Capacity (lt)	Heating Power (W)	Mains Voltage (V)	Total Amperes (Amp)	Heating Power density (kW/m ²)
x	x	220	-	107

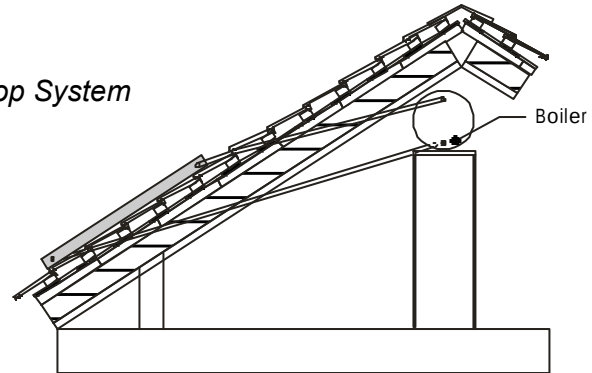
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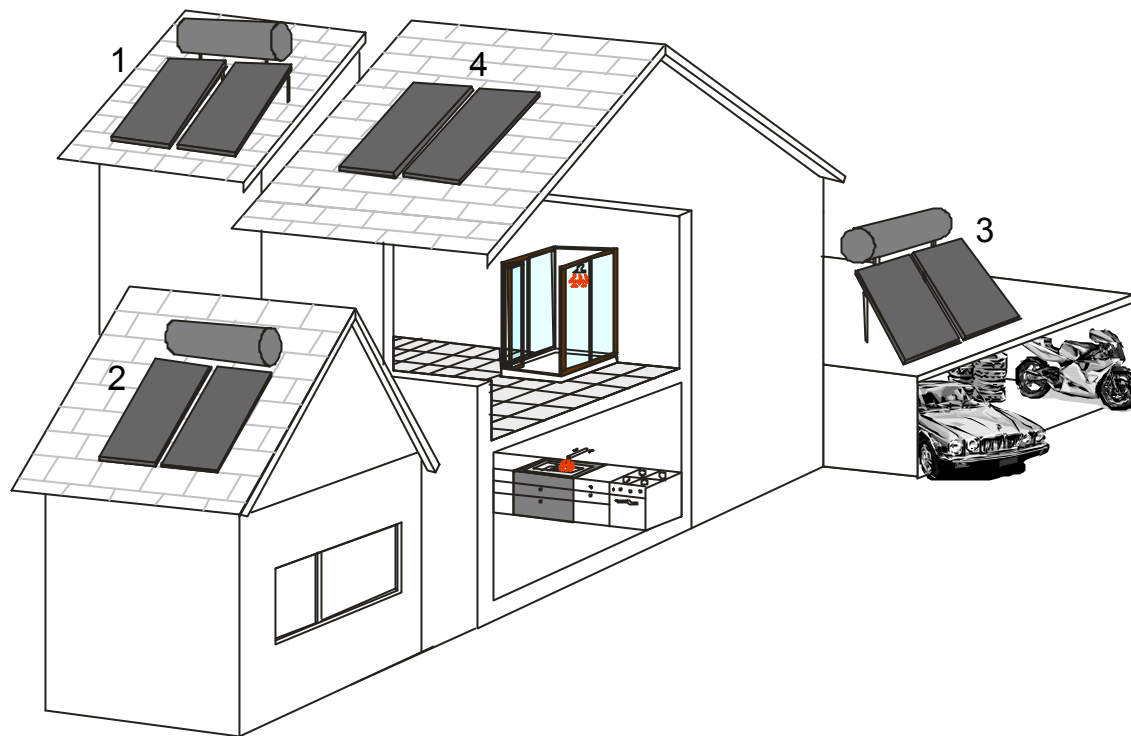
Installation Ways;

A. Natural Circulated Pressurized Closed Loop System

1. With angle on the roof
2. Parallel with the roof
3. On a flat roof
4. Boiler under the Roof



4. Under the roof natural circulated system installation



Natural Circulated Pressurized Closed Loop System mounting types

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G. Maintenance and Warranty

1.0 Cleaning and Yearly Maintenance

Generally there is no need to clean the dust that accumulates on the collector manually rain water will clean it automatically. Under extreme conditions if it is required to clean the collector glass cleaning detergents may be used. The anti-freeze water in the boiler should be controlled every year and advised anti-freeze should be added if required.

2.0 After Sales Service

Solareks has a 24 hour after sales service. Please visit our website to reach your nearest after sales service.

Website: www.solareks.com

3.0 Spare Parts

Any spare part can be obtained from our company.

4.0 Warranty

The products with galvanized boiler has a warranty of 2 years. The products with stainless steel boiler has a warranty of 5 years.

4.1 Warranty Conditions

The anti-freeze water that runs in the boiler should be controlled every year and be added if required. The Cathodic protection should be controlled every two years and be replaced if needed. Please read the user guide to be well informed about warranty conditions.

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System Features	75 lt	100 lt	150 lt
User	2-3 people	3 people	4-5 people
Boiler	Pressurized Closed Loop	Pressurized Closed Loop	Pressurized Closed Loop
Corrosion Protection	Hot Deep Galvanized or Stainless Steel + Cathodic Protection	Hot Deep Galvanized or Stainless Steel + Cathodic Protection	Hot Deep Galvanized or Stainless Steel + Cathodic Protection
Outer Coverage	Stainless Steel	Stainless Steel	Stainless Steel
Insulation	Glaswool	Glaswool	Glaswool
Dimensions	1000 x Ø 500 mm	1000 x Ø 540 mm	1400 x Ø 540 mm
Weight	49 kg	54 kg	65 kg
Working Pressure	6 bar	6 bar	6 bar
Test Pressure	9 bar	9 bar	9 bar
Heating Power	2000 W – 220 V	2000 W – 220 V	2000 W – 220 V
Collector	1 piece of 188/232/233 coll.	1 piece of 188/232/233 coll.	2 piece of 188/232/233 coll.
Absorber Plate Material	Aluminium, Copper	Aluminium, Copper	Aluminium, Copper
Rising Tube Number	Aluminium: 12-16 piece extr.profile Copper: 10-11 piece	Aluminium: 12-16 piece extr.profile Copper: 10-11 piece	Aluminium: 12-16 piece extr.profile Copper: 10-11 piece
Absorber Coating	Matt-Black or Selective	Matt-Black or Selective	Matt-Black or Selective
Heat Insulation	Glasswool/Rockwool or Polyurethane	Glasswool/Rockwool or Polyurethane	Glasswool/Rockwool or Polyurethane
Glazing	Normal/Tempered or Solar Glass	Normal/Tempered or Solar Glass	Normal/Tempered or Solar Glass
Sealant	EPDM	EPDM	EPDM
Case	Eloxal Coated Aluminium	Eloxal Coated Aluminium	Eloxal Coated Aluminium
Dimensions	188: 1940 x 940 x 100 mm 232: 1940 x 1200 x 100 mm 233: 2040 x 1200 x 100 mm	188: 1940 x 940 x 100 mm 232: 1940 x 1200 x 100 mm 233: 2040 x 1200 x 100 mm	188: 1940 x 940 x 100 mm 232: 1940 x 1200 x 100 mm 233: 2040 x 1200 x 100 mm
Weight	32-42 kg	32-42 kg	32-42 kg
Connections	¾"	¾"	¾"
Mounting Frame	Demontable	Demontable	Demontable
Corrosion Protection	Hot Deep Galvanized	Hot Deep Galvanized	Hot Deep Galvanized
Equipments			
Pressure Regulator	√	√	√
Safety Valves	√	√	√
Automatic Air Vent	√	√	√
Closed Expansion Tank	√	√	√
M-M Record&Caps	√	√	√
System Overall Dimension	Width: 1000 mm Height: 1895 mm Depth: 2150 mm	Width: 1000 mm Height: 1895 mm Depth: 2150 mm	Width: 2180 mm Height: 1935 mm Depth: 2150 mm

Note: Specifications may be changed upon order of 20 feet container

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System Features	180 lt -200	240 lt	300 lt
User	5-6 people	6-7 people	7-8 people – commercial usage
Boiler	Pressurized Closed Loop	Pressurized Closed Loop	Pressurized Closed Loop
Corrosion Protection	Hot Deep Galvanized or Stainless Steel + Cathodic Protection	Hot Deep Galvanized or Stainless Steel + Cathodic Protection	Hot Deep Galvanized or Stainless Steel + Cathodic Protection
Outer Coverage	Stainless Steel	Stainless Steel	Stainless Steel
Insulation	Glaswool	Glaswool	Glaswool
Dimensions	1600 x Ø 540 - 1880 x Ø 540 mm	1660 x Ø 590 mm	2000 x Ø 590 mm
Weight	73 kg 86 kg	86 kg	105 kg
Working Pressure	6 bar	6 bar	6 bar
Test Pressure	9 bar	9 bar	9 bar
Heating Power	2000 W – 220 V	2000 W – 220 V	2000 W – 220 V
Collector	2 piece of 188/232/233 coll.	2-3 piece of 188/232/233 coll.	3 piece of 188/232/233 coll.
Absorber Plate Material	Aluminium, Copper	Aluminium, Copper	Aluminium, Copper
Rising Tube Number	Aluminium: 12-16 piece extr.profile Copper: 10-11 piece	Aluminium: 12-16 piece extr.profile Copper: 10-11 piece	Aluminium: 12-16 piece extr.profile Copper: 10-11 piece
Absorber Coating	Matt-Black or Selective	Matt-Black or Selective	Matt-Black or Selective
Heat Insulation	Glasswool/Rockwool or Polyurethane	Glasswool/Rockwool or Polyurethane	Glasswool/Rockwool or Polyurethane
Glazing	Normal/Tempered or Solar Glass	Normal/Tempered or Solar Glass	Normal/Tempered or Solar Glass
Sealant	EPDM	EPDM	EPDM
Case	Eloxal Coated Aluminium	Eloxal Coated Aluminium	Eloxal Coated Aluminium
Dimensions	188: 1940 x 940 x 100 mm 232: 1940 x 1200 x 100 mm 233: 2040 x 1200 x 100 mm	188: 1940 x 940 x 100 mm 232: 1940 x 1200 x 100 mm 233: 2040 x 1200 x 100 mm	188: 1940 x 940 x 100 mm 232: 1940 x 1200 x 100 mm 233: 2040 x 1200 x 100 mm
Weight	32-42 kg	32-42 kg	32-42 kg
Connections	¾"	¾"	¾"
Mounting Frame	Demontable	Demontable	Demontable
Corrosion Protection	Hot Deep Galvanized	Hot Deep Galvanized	Hot Deep Galvanized
Equipments			
Pressure Regulator	√	√	√
Safety Valves	√	√	√
Automatic Air Vent	√	√	√
Closed Expansion Tank	√	√	√
M-M Record&Caps	√	√	√
System Overall Dimension	Width: 1980/2500 mm Height: 1935 mm Depth: 2150 mm	Width: 3200 mm Height: 1985 mm Depth: 2170 mm	Width: 3200/4000 mm Height: 1985 mm Depth: 2170 mm

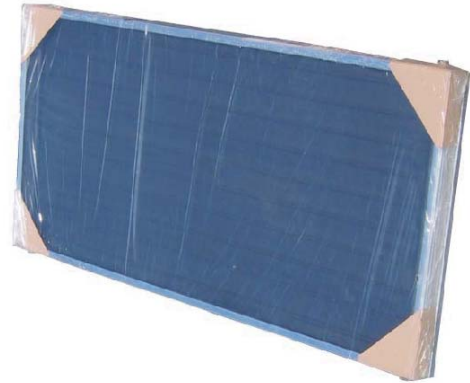
Note: Specifications may be changed upon order of 20 feet container

**NATURAL CIRCULATED
PRESSURIZED CLOSED
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PACKING DETAILS			
Boiler	Collector	Mounting Frame	Equipments
Wooden Box	Nylon&Cardboard at the edges	Nylon	Cardboard Box



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