

Kingspan SOLAR

The Ultimate Solar Package





Introduction

Climate change is now a generally accepted fact which has increased our focus on alternative energy sources such as Solar thermal water heating, ground source heat pumps, biomass and wind turbines.

The most cost-effective, affordable renewable energy technology currently available for domestic and commercial applications is solar water heating.

The technology to effectively collect and utilise solar energy currently exists.

Solar energy can be converted into heat to generate hot water for domestic and commercial properties whilst at the same time helping to reduce carbon emissions and reduce global warming.

The process is simple and effective and entirely renewable – something which has to be good for both the environment and for future generations.

Challenging government targets for renewable energy in new homes has resulted in most UK house builders looking at solar as part of their strategy to meet such targets. In order to maximise the benefit from solar, the systems have to be purpose-designed for the application and this is where the **Kingspan Solar total package solution** is proving to be of significant interest.

Kingspan Solar is part of Kingspan Group plc who are a major player in the building products sector with emphasis on energy conservation and environmentally friendly solutions.

If you demand a superior mixture of skill and service... we've got the formula.



Kingspan Solar provide the domestic and commercial markets with a solar energy system that is custom-made to suit the individual needs of each application.

From the perspective of a new installation, Kingspan Solar custom design, supply and advise on solar systems. The system can incorporate the latest condensing boiler technology, underfloor heating, or the traditional radiator system. The system is then coupled to a high performance Range Tribune HE Duplex stainless steel solar cylinder. We can incorporate electric heating systems and other heat sources including oil fired boilers with a specific cylinder configuration.

Kingspan Solar Package Features

- Total design and supply of package with full professional indemnity insurance cover.
- 25-year anti-corrosion guarantee on the cylinder.
- 10-year panel performance guarantee on flat plate panels and 5 years on vacuum tubes.
- 2-year guarantee on all parts associated with the system.
- Generates free hot water.
- Fully approved installer network.
- Environmentally friendly.
- Full design service/Indemnity.
- Training and Certification.
- Site orientation planning.
- Full stock availability.

Marvel Flat Plate Thermal Panel



A Custom-Designed Package

For maximum efficiency, the complete package is custom-designed for each specific application. Solar panels and hot water storage cylinder are sized to meet the requirements of the property, and in the case of new build properties site orientation plans can also be prepared.

Solar Collectors

High quality flat panel or evacuated tube solar collectors are supplied as part of the total package.

Flat panel collectors are available for 'on-roof' or 'in-roof' installation – the choice is yours.

Evacuated tube solar collectors are not available for 'in-roof' installation.

Solar Cylinders

Sold separately or as part of our full solar package. The Tribune HE solar cylinders manufactured by Range, are the perfect partners.

Manufactured from high grade Duplex stainless steel, the cylinders come with a 25-year guarantee on the inner container.

Tribune HE Solar cylinders are available as Indirect models (gas, oil or electric boilers providing the supplementary heat source) or Direct models (supplementary heat source is electricity).

Accessories

A range of accessories is available for the installation of the Kingspan Solar thermal domestic hot water system in a variety of situations.

Thermomax Vacuum Tube Thermal Panel



The Benefits of Kingspan Solar Package

The Kingspan Solar package offers a number of significant benefits.

- The complete package is custom-designed for each specific application.
- All components sourced from quality, market leading manufacturers.
- 10-year panel performance guarantee on flat plate panels and 5 years on vacuum tubes.
- 25-year transferable guarantee on the inner container of Range Tribune HE Solar cylinders.
- 2-year transferable guarantee on all other components.
- All guarantees backed by on-site service support, including parts and labour.
- Controls and accessories supplied as 'First' and 'Second' fix kits to aid installation and reduce on-site time.
- Purpose-designed solar cylinders available as part of total solar package.
- Solar package can be linked to traditional UK heating systems.
- Low environmental impact: can reduce carbon dioxide emissions by 400kg per year (depending on the fuel replaced).
- Can reduce hot water heating costs by up to 60% annually.
- National technical support, after sales service and access to training.
- Full range of accessories available.

Kingspan Solar – The Ultimate Solar package

How Solar Thermal Systems Work?

The solar panels collect energy from the sun which heats the fluid in the solar panels.

When the fluid in the panels is hot enough, the pump station circulates the hot fluid around the system. The hot fluid is pumped around the coil at the bottom of the solar cylinder and heats the water contained within the cylinder.

The solar controller is the brains of the system, managing the solar system during daylight hours, enabling you to time your hot water, just like a central heating programmer, and measure the amount of energy you have gained from the sun.

If the temperature sensor in the cylinder detects that the solar panel hasn't collected enough energy to heat the hot water to the required temperature, that's when supplementary heat source cuts in and tops up the temperature of the hot water so that it comes out of your taps at the temperature required.

A Few Facts

Renewable energy solutions have been around for some time now. Many thousands of ecologically minded UK homeowners have taken green initiatives in an attempt to reduce their carbon footprint in one way or another, not least of all by installing solar thermal hot water systems in their homes.

Climate change is now a generally accepted fact. This has increased our focus on alternative energy sources, such as solar thermal water heating, and a greater understanding is emerging that even normal daylight is sufficient to generate some hot water via solar collectors and the sunny climes of the continent are not sole beneficiaries of the most abundant power source on the planet, the sun.

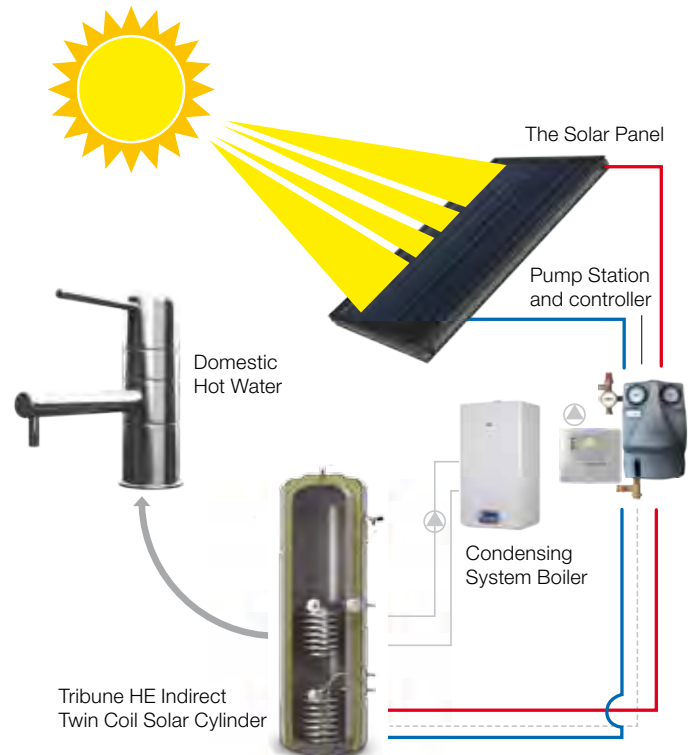
How Much Of Our Water Heating Energy Needs Could Be Provided By Solar?

During the summer months as much as 100% of the energy needed could be provided by solar. In winter, despite the lower intensity of the sun's rays and fewer daylight hours as much as 30% could be solar. On average throughout the year up to 70% of a dwelling's hot water requirement can be provided by solar power.

The balance is normally provided by traditional means; either indirect (via a gas, oil or electric boiler heating a second coil within the cylinder) or direct (via electric immersion heaters in the cylinder).

Government Grant Assistance - Low Carbon Building Programme

The Low Carbon Building Programme provides grants to householders for renewable technologies, including solar thermal hot water systems.



The programme, which started from 1st April 2006, replaced DTI's Clear Skies and Solar PV programmes which closed for applications on March 31st, 2006.

The programme is UK wide (apart from the Channel Islands and the Isle of Man). Two streams of grants are available:

- Phase One applies to smaller projects for home owners and community groups among others.
- Phase Two applies to larger projects, including larger businesses, community organisations and the public sector.

There are a number of energy efficiency measures that must be undertaken before the homeowner is eligible to apply for a grant under the Low Carbon Buildings Programme. These measures will ensure that energy requirements are minimised and are as follows:

- A minimum of 270mm loft insulation.
- Installed cavity wall insulation (if the house has cavity walls).
- Using low energy light bulbs in all appropriate light fittings.
- Installed basic controls for the heating system to include a room thermostat and a programmer or timer.

For further details of grants available, and conditions that apply, please contact the Energy Saving Trust on 0800 512 012 or visit www.lowcarbonbuildings.org.uk

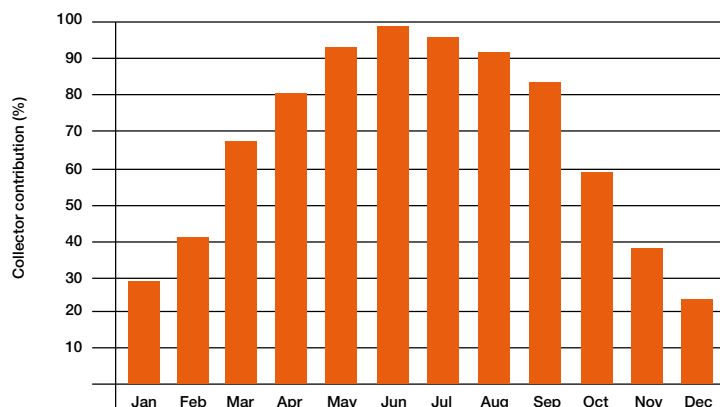


Solar domestic hot water system benefits

The installation of a Kingspan Solar system is designed to supply up to 70% of free hot water throughout the year. In the summer months it is estimated that at least 95% of all hot water is free. Therefore the boiler will be switched off, which means less contamination of the atmosphere from the emission of flue gases.

In the winter months the solar energy will 'pre-heat' the incoming cold water, thus saving energy by not using the primary hot water supply from the boiler system as much as a normal non-solar system. A saving in energy of up to 25% can be achieved in these winter months depending on the geographical location within the United Kingdom, as well as usage of the system.

Solar energy is a 'free' source of energy available throughout the year. By taking advantage of the knowledge in technology of Kingspan Solar you will be saving the use of fossil fuels which in turn helps the environment by creating less carbon dioxide and other greenhouse gases that may pollute the atmosphere.

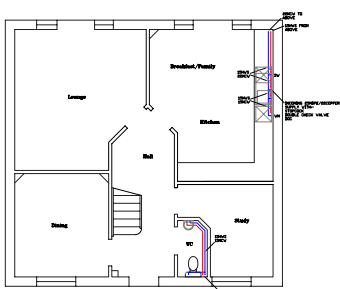


In comparison to the high costs of other energy sources, solar energy provides a saving of up to 70% in hot water heating, or 30% of the total heating and hot water costs in a year.

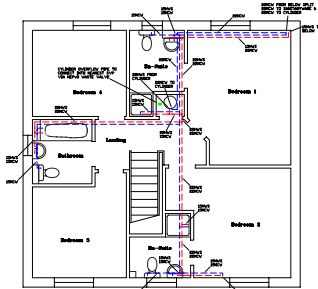


Custom designed for maximum operating efficiency

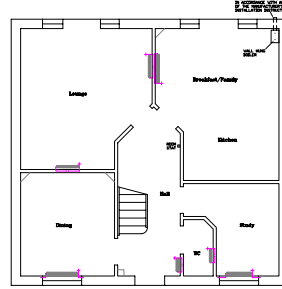
All designs and drawings are carried out by Coates Environmental & Renewable Design Partnership, one of the UK's leading consultancy practices and now part of Kingspan Hot Water Systems. Drawings and schemes are produced using the latest AutoCAD technology by experienced design engineers. Drawings include:



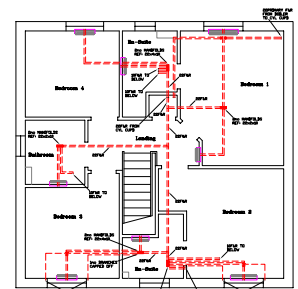
Ground Floor



First Floor



Ground Floor



First Floor

Typical Hot & Cold Water Layout

- Layout plans of property.
- Position of panels in plan (section and elevation if required).
- Cylinder and pump/controller positions.
- Pipe routes and sizes.
- Roof fixing details.
- Specification.

cdp Coates Environmental
& Renewable
Design Partnership

Kingspan SOLAR

Typical Heating System Layout

- All heating, hot and cold water layouts.
- Solar panel installation schematics.
- Plot specific site orientation take-offs.
- Site surveys.
- Supervision.
- Full training and certification of nominated contractors.
- Project management.



Site Orientation

Kingspan Solar are able to offer site orientation at any stage of the project, we indicate all properties suitable for solar installations whether they be South or East/ West orientation.

Training

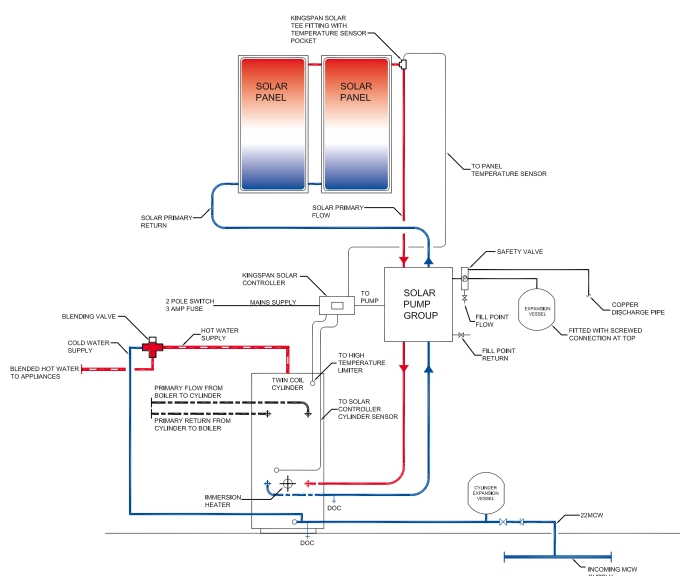
The contractors used will be fully trained and Kingspan approved. Should the site heating/plumbing contractor be the installer of the solar panels we will undertake the training of the contractor to ensure their full understanding and knowledge of the systems.

All contractors will be presented with certificates on completion of training. Upon completion of training and proof of competency in understanding the processes, each operative will be issued with a “Certificate of Registration” as detailed, complete with certification number.

- Product knowledge and familiarity.
- System design.
- How heat is generated by panels and transferred to cylinder.
- Pump and controls.
- Understanding how the control panel works.
- Site requirements and handling.
- Health and Safety.
- We will not supply products to any contractor who is not fully certified.

South Facing

2 panel system with twin coil
(fossil fuel and solar) cylinder



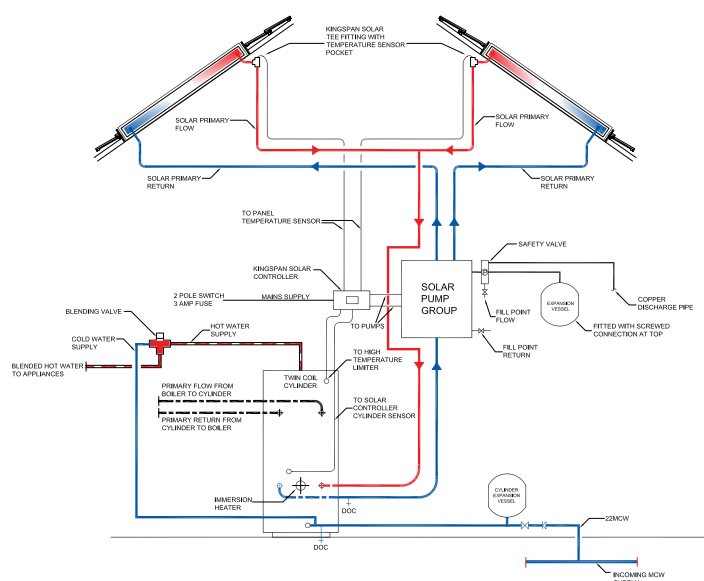
Professional Indemnity Insurance

Coates Environmental & Renewable Design Partnership carries a standard £2m Professional Indemnity Insurance cover policy, which can be increased if required. The policy covers costs of all repairs/reinstatement work required should a fault arise through design negligence only.

Any other work required through poor workmanship, faulty installation, inability to follow design drawings is not covered by the policy. Kingspan Solar has partnered with Coates Environmental & Renewable Design Partnership to providing this service and it is not available to any other solar panel provider.

East / West Facing

2 panel system with twin coil
(fossil fuel and solar) cylinder



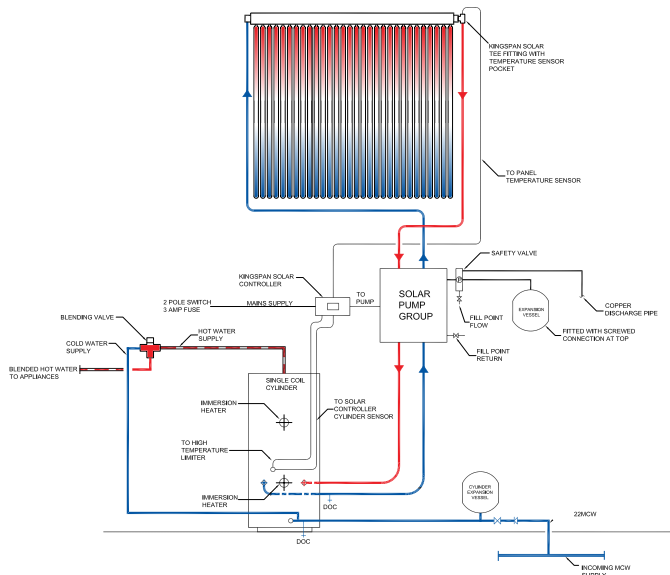
Domestic & Commercial Applications

As well as being the No 1 in the Domestic market for the 'complete' package offering, Kingspan Solar is experienced in commercial applications. A sample of the commercial packages are:

- Swimming pools.
- Commercial kitchens.
- Hotels / Hostels.
- Multiple high rise apartment blocks.
- Garages.
- Schools.

South Facing

1 panel system with direct electric single coil cylinder



Electric System

This system utilises a single 'solar' coil in the base of the cylinder. Solar panels are connected to the coil and immersion heaters provide a supplementary heat source as back up.

Tribune HE Solar Cylinder

The perfect partner for the Ultimate Solar Package



Solar Cylinder Selection

We recommend the use of the Range Tribune HE high performance Duplex stainless steel solar cylinder range.

Lots of powerful hot water

*hour after hour, day after day,
month after month... year after year!*

Some applications simply require the best the market has to offer. In such a case specify a Range Tribune HE. No home need be without the outstanding user benefits that come as standard with every Tribune HE cylinder. Fantastic flow rates, assured reliability and extremely low running costs are just some of the benefits.

Mains Pressure	- Powerful Showers
High Flow Rates	- Baths fill very quickly - Ideal for multiple bathrooms
Fast Reheat	- Hot water quickly available
Very Well Insulated	- Low heat loss - Economical to run
Stove Enamelled Steel Outer Casing	- Smart, tough and wipe clean
Low Maintenance	- No hidden costs
25-Year Fully Transferable Guarantee	- Peace of mind

It's not just any Solar cylinder... It's a Range **Tribune HE** Solar unvented cylinder



Range Tribune HE Solar cylinders have been designed specifically with Solar applications in mind and are based on the highly successful Range Tribune unvented units. Featuring a purpose designed solar coil which allows maximum heat transfer of solar energy into the stored water, the cylinders are suitable for use with a wide range of solar systems now available in the UK and are an efficient and environmentally friendly way of providing domestic hot water. Tribune HE Solar cylinders also offer the benefit of mains pressure hot water – powerful showers and fast filling baths.

Range Tribune HE Solar cylinders are available in a range of sizes from 180 to 300 litres and in Direct or Indirect versions.

Range Tribune HE Indirect Solar cylinders are now also available in a highly popular plug-in, pre-plumbed format, designed to significantly

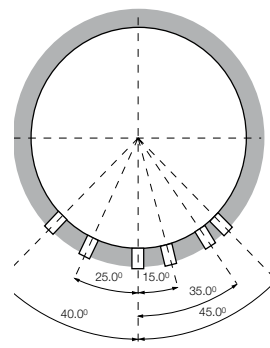
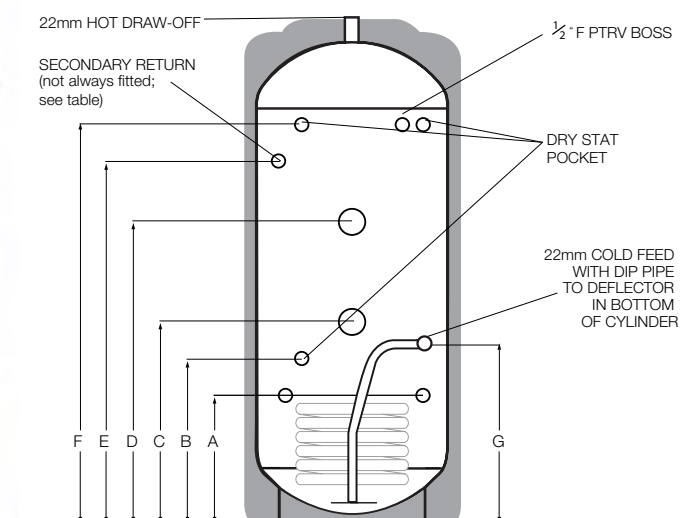
reduce on-site time. As the units are factory assembled and both pre-plumbed and pre-wired, installation is easy and straightforward and there is no need for an electrician on site.

Tribune HE Indirect Solar pre-plumbed cylinders not only simplify and speed up the installation but they also increase the quality and integrity of the central heating system, which reduce costly call-backs and delays.

As with the rest of the Range Tribune HE family, Tribune HE Solar cylinders are manufactured from high grade Duplex stainless steel and come with a 25-year fully transferable Guarantee on the inner container.

Also available are Open Vented and Thermal Store solar cylinders dependent upon the design/installation criteria.

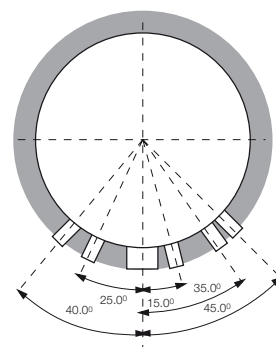
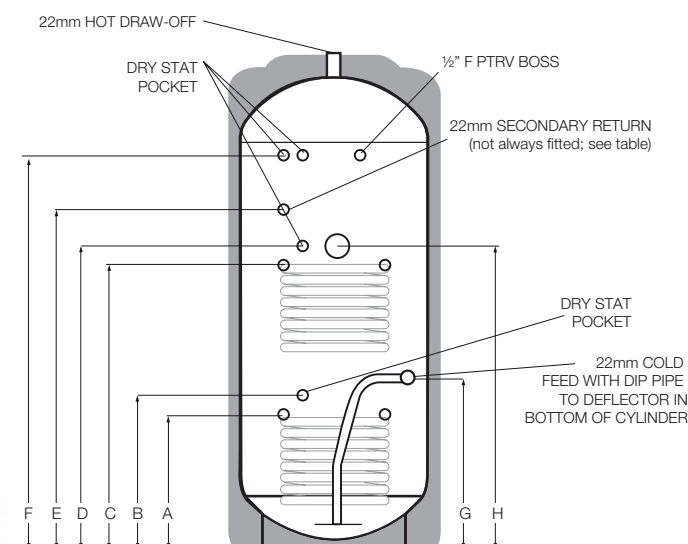
Tribune HE Direct Solar Technical Specification



CODE	CAPACITY (Litres)	HEIGHT	DIAMETER	A	B	C	D	E	F	G	WEIGHT (Kg-EMPTY)	WEIGHT (Kg-FULL)
TSS180	180	1281	550	290	345	445	710	N/F	1080	390	45	225
TSS210	210	1469	550	365	420	500	810	1150	1268	465	50	260
TSS250	250	1719	550	365	420	670	1045	1400	1519	465	55	305
TSS300	300	2032	550	365	420	670	1100	1600	1831	465	60	360

All dimensions are in mm and are of the cased unit. N/F = not fitted

Tribune HE Indirect Solar Technical Specification



CODE	CAPACITY (Litres)	HEIGHT	DIAMETER	A	B	C	D	E	F	G	H	WEIGHT (Kg-EMPTY)	WEIGHT (Kg-FULL)
TT180	180	1281	550	290	345	674	729	N/F	1080	390	725	50	230
TT210	210	1469	550	365	420	779	834	1150	1286	465	830	55	265
TT250	250	1719	550	365	420	950	1005	1400	1518	465	1000	60	310
TT300	300	2032	550	365	420	979	1034	1600	1831	465	1030	65	365

All dimensions are in mm and are of the cased unit. N/F = not fitted

Tribune HE Pre-plumbed Solar Technical specification



- » Simplified on-site installation
- » Up to 70% quicker to install
- » Factory assembled for reliability - reduces costly call-backs and delays
- » Consistent electrical and plumbing layout - neat, professional finish
- » Greater customer satisfaction
- » ISO 9001:2008 quality assured
- » Aids with Part P (Electrical wiring) as installer doesn't need an electrician on site to change any components, simply plug & go!

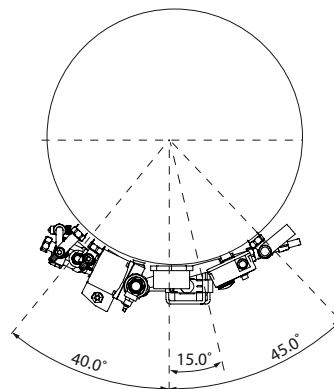
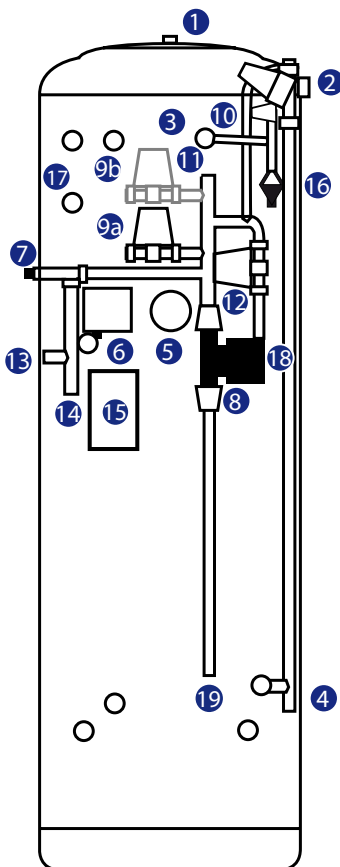
CODE	CAPACITY (Litres)	HEIGHT	DIAMETER	WEIGHT (Kg-EMPTY)	WEIGHT (Kg-FULL)
TT180P1	180	1281	550	60	240
TT210P1	210	1469	550	65	275
TT250P1	250	1719	550	70	320
TT300P1	300	2032	550	75	375

All Dimensions are in mm and are of the cased unit.

More detailed information regarding the connection heights is available on request.

Connections:

1. 22mm Hot Water Draw-Off
2. Inlet Control Set
3. Temperature Relief Valve
4. Cold Feed Drain Elbow
5. Immersion Heater 3kW
6. Twin Thermostat
7. 22mm Auto Bypass Valve
8. Circulating Pump
- 9a. Central Heating Flow 2 Port Valve Zone 1
- 9b. Central Heating Flow 2 Port Valve Zone 2 (optional)
10. Filling Loop Flexible Hose
11. Manual Bottle Air Eliminator
12. 22mm DHW 2 Port Valve
13. 28mm Return from Radiator Circuit
14. 28mm Return to Boiler
15. Wiring Centre
16. Tundish
17. Secondary Return on 210L, 250L & 300L cylinders only
18. DHW Drain
19. 28mm Flow to Boiler





Marvel Flat Plate Solar System Package

Designed for the UK climate, the Marvel panel has everything you could look for in a flat plate solar thermal panel.

These are robust, hard wearing and high performance flat plate panels delivering excellent levels of efficiency, flexibility in installation and a sleek and subtle design of all components.

The Marvel solar panel is a flat plate, aluminium cased, low iron tempered glass unit containing copper risers with copper plate, 'tinox' coated absorber, ultrasonically welded to give a full covering of copper within the unit.

The glazing is tested to BS 12975 hail test and is guaranteed under these extreme conditions.

The glazing is EN572-5 / EN12150-1 certified.

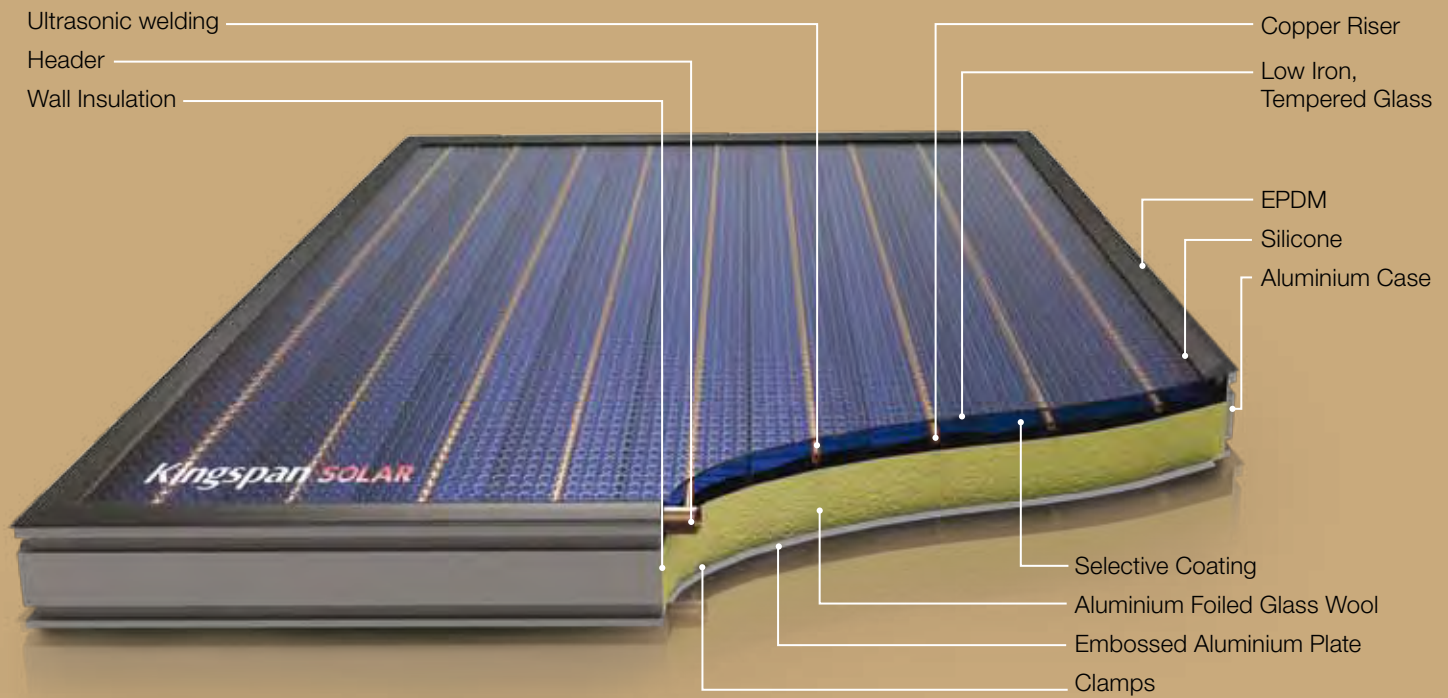
Units are sealed with EPDM materials which are UV durable. Glazing gaskets are one piece channel type to ensure weather proofing.

These solar panels can be mounted either 'in-roof' or 'on-roof'. 'In-roof' installation comprises the solar panel which is encased

in a cassette unit that is mounted directly on to the roof battens. The solar panel/cassette unit is then tiled into the roof to give a weather tight installation maintaining the integrity of the roof – this type of installation normally takes place on new build properties.

'On-roof' installation, designed for fitting to existing properties, means that the solar panel is mounted on top of the existing roof tiles, on brackets that penetrate through the roof and are bolted to the rafters to ensure a secure fixing. (A variety of fixing brackets is available to suit all types of roof tiles including concrete, slate and clay peg).

Marvel flat plate panels are guaranteed for a period of 10 years of operational use and offer a straight forward solar thermal solution perfect for the needs of UK homes.



Panel Details

- Panel - Ultrasonic welded selective surface coated copper plate.
- Glaze - Low iron, tempered glass with 91% transmission (EN 572-5 - EN 12150-I certified).
- Sealing - Enclosure seals are UV durable EPDM materials. Glazing gaskets are one piece channel type with moulded corners to assure long life and avoids all water penetration.
- Case - Collector cases are all aluminium coated with electrostatic black colour.
- Insulation - CE Certificated High Density Rockwool.
- Flexible Connection - For ease of installation.
- Back Sealing - Provided by clamps and silicone.
- Air Ventilation Holes - Prevent internal condensation.
- Back Plate - Embossed aluminium plate.
- Wall Insulation - Special matt black painted glass wool for increased performance.

Approved Quality

Marvel is the celebrated, trademark collector line of Kingspan Solar. Its aim is to attain the highest level of quality in both its design and production. For this reason, the materials that are utilized in production are those of the highest quality in comparison to those used in comparable products on the market. Moreover, Marvel collectors have been analysed time after time in many countries of Europe, in the USA and in Australia for performance issues such as productivity, absorption and durability and have passed these tests successfully. With this track record, Marvel collectors, which have proven to be environmentally responsible through their employment of choice materials in the production process, have succeeded in receiving more than ten approval certificates from respected institutions.



Solar - Specification summary



Marvel 1808 Flat Plate Thermal

Size:	1945 x 945 x 105
Panel weight:	37.5 kg
Panel volume of liquid:	2.36 litres
Test Pressure:	20 bar
Max operating pressure:	10 bar
Pressure loss across panel:	1.0 mbar
*Zero Loss Collector Efficiency (η_l):	0.773%
*Heat Loss Coefficient (a_l):	3.913 w/m ² K
Absorption level:	95%
Thermal emission level:	3%
UV absorbance level:	97%
CO ₂ Displacement:	383kg CO ₂ (per panel per annum)
Absorber Plate:	Copper
Internal Pipework:	Copper
Glass:	low ironed tempered safety
Glass Transmission:	91%
Insulation:	Rockwool
Base thickness:	60 mm
Side thickness:	20 mm
High limit temperature:	232° C
Casing:	Aluminium
Back Plate:	Embossed Aluminium
Riser to Absorber plate fixing:	Ultrasonic weld
Type of Mounting:	In-roof and on-roof
Gross area:	1.84 sq m
Aperture - Nett Area:	1.67 sq m

* Items required for SAP calculations



Marvel 2108 Flat Plate Thermal

Size:	2006 x 1059 x 105
Panel weight:	41.57 kg
Panel volume of liquid:	1.07 litres
Test Pressure:	20 bar
Max operating pressure:	10 bar
Pressure loss across panel:	1.6 mbar
*Zero Loss Collector Efficiency (η_l):	0.773%
*Heat Loss Coefficient (a_l):	3.913 w/m ² K
Absorption level:	95%
Thermal emission level:	3%
UV absorbance level:	97%
CO ₂ Displacement:	1 tonne CO ₂ (per panel per annum)
Absorber Plate:	Copper
Internal Pipework:	Copper
Glass:	low ironed tempered safety
Glass Transmission:	91%
Insulation:	Rockwool
Base thickness:	60 mm
Side thickness:	20 mm
High limit temperature:	232° C
Casing:	Aluminium
Back Plate:	Embossed Aluminium
Riser to Absorber plate fixing:	Ultrasonic weld
Type of Mounting:	In-roof and on-roof
Gross area:	2.12 sq m
Aperture - Nett Area:	1.944 sq m

* Items required for SAP calculations



Thermomax

Vacuum Tube Solar Systems

Thermomax advanced vacuum tube solar systems provide hot water in all seasons.

Thermomax solar vacuum collectors are the premium product on the market, acknowledged as the most efficient method of generating solar hot water even in cold, wet and windy conditions. This is due to the low thermal losses from the collector.

By creating a vacuum of 10^{-6} bar within the tube, thermal losses caused by conduction and convection are eliminated. This enables the collector to be very effective in utilising low amounts of radiation (diffused radiation).

The tube is made from glass with unique properties that gives it good transmissibility with low reflection losses and good durability.

High absorption of solar energy is achieved by using an absorber. The main assembly parts of the absorber are the absorber plate and the heat transfer tube.

The absorber plate is coated with a special high efficiency selective coating that ensures maximum radiation absorption and minimum thermal radiation losses.

Thermomax offer 2 models of evacuated tube collectors:
DF100
HP200



Thermomax

Vacuum Tube Solar Systems

Installation

- Unique 'plug and play' design of Thermomax solar collectors provides fast and simple installation.
- Usually installed facing south or east/west, and fixed to the roof using easy fit brackets.
- Designed for flexible building integration: can be installed on sloping roofs, flat roofs or façades – individual tubes can be angled up to 20° to achieve best performance for building orientation.
- **There is no need for heavy lifting equipment as tubes can be carried on to the roof individually, separate to the manifold (Health & Safety).**

Applications

In addition to domestic hot water, the superior performance of a Thermomax vacuum tube collector can also provide central heating support for standard or underfloor heating and more specialised industrial hot water heating for high temperature applications and solar cooling.

Best Efficiency

- Faster payback.
- Rapid conductivity and transfer of energy into heat.
- 30% more effective than conventional flat plate panels (Source: SPF Test).
- Designed and manufactured specifically for Northern European climates.
- User friendly with long service life.
- Improved SAP ratings.

Choosing your collectors

Before you choose your collector, you need to decide where it will be positioned on your house. Between the best and worst orientation, annual energy contribution can be nearly halved (see adjacent graph). To get the best efficiency, the collector should be installed, facing due south at an angle of 30-40°.

Kingspan Solar Thermomax range consists of two evacuated tube collectors, both suitable for domestic use: HP200 and DF100. The information below should help you decide which is the best for your home. For all Thermomax collectors, deviation from south can be compensated as individual tubes can be rotated up to 25°.

HP200 Heat Pipe Collectors

HP200 is a 'Dry System' and is recommended for domestic use. It works efficiently and effectively in Northern European climates. HP200 Heat Pipe Collectors are perfect for when the ideal installation position on the building is achievable. They have a unique temperature limitation device that protects the system from high temperature.

Features:

- Dry system for ease of installation and maintenance
- Highly efficient heat transfer
- Temperature limitation safety feature - memory spring to limit temperature to 95°C
- 'Plug and play' design

DF100 Direct Flow Collectors

This versatile product provides the perfect solution when the ideal position is not available. It's simple and easy to install and cost-effective.

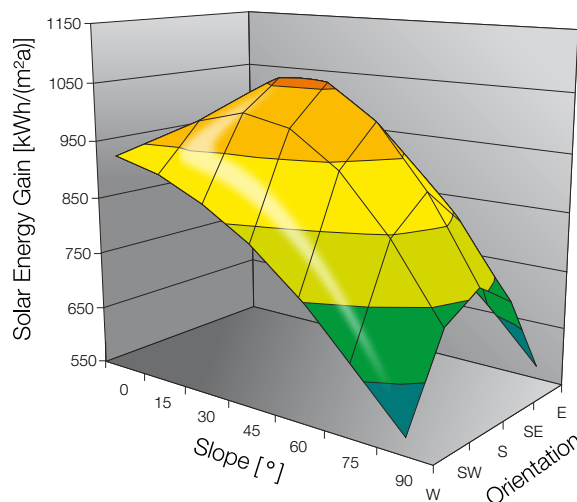
DF100 Direct Flow Collectors can be installed on façades and flat roofs, as seen in the diagram.

Features:

- Versatile Direct Flow solar collector
- Perfect for when the ideal position is not available
- Cost-effective, simple and easy to install
- 'Plug and play' design

Please see specification sheets on pages 21 and 22 of this brochure for differences in efficiency.

How Collector Positioning Effects Solar Energy Production



Collector Positions

1. Ideal slope 40°
2. Roof kit angled 40°
3. Elevated 20°
4. Horizontal ideal slope
5. Horizontal façade
6. Flat
7. Vertical façade



Solar - Specification summary

The DF100 Collector

This collector is a direct flow type collector. The heat medium to be heated is passed down through the collector tube within a coaxial heat exchanger.

This product can be installed on a pitched or horizontal surface, and the tube can be rotated 25° to compensate for installations that deviate from south. As this collector is a fully pumped unit there is no minimum angle of inclination for the collector.

DF100 collectors are available in 3 sizes:

10 Tube = 1.07m² aperture area

20 Tube = 2.15m² aperture area

30 Tube = 3.23m² aperture area

Up to a maximum of 5 x 30 tubes collectors can be joined together in series with a flow rate of 15 Ltrs/min.

	DF100 - 10 tube panel	DF100 - 20 tube panel	DF100 - 30 tube panel
Dimensions			
Aperture Area	1.07m ²	2.15m ²	3.23m ²
Overall Dimensions	1996 x 709 x 97mm	1996 x 1418 x 97mm	1996 x 2127 x 97mm
Width of Manifold	709mm	1418mm	2127mm
Length (Tube and Manifold)	1996mm	1996mm	1996mm
Depth	97mm	97mm	97mm
Fluid Volume (In Manifold)	1.8 Ltr	3.6 Ltr	5.6 Ltr
Inlet and Outlet Dimensions	22mm	22mm	22mm
Weight (Empty)	25kg	55kg	81kg
Mounting			
Recommended Inclination	0-90°	0-90°	0-90°
Operating Data			
Efficiency	Based on Aperture	Based on Aperture	Based on Aperture
eta 0 - Zero loss collector efficiency (η_0)	0.773	0.773	0.773
k1 - Heat loss coefficient (a_1)	1.43 W/m ² K	1.43 W/m ² K	1.43 W/m ² K
k2 - Heat loss coefficient (a_2)	0.006 W/m ² K ²	0.006 W/m ² K ²	0.006 W/m ² K ²
Flow Rate			
Rated	80 Ltr / h	160 Ltr / h	240 Ltr / h
Minimum	60 Ltr / h	120 Ltr / h	180 Ltr / h
Maximum	150 Ltr / h	300 Ltr / h	480 Ltr / h
Maximum Operating Pressure	8 Bar	8 Bar	8 Bar
Stagnation Temperature	286°C	286°C	286°C
Heat Transfer Fluid	Water/Glycol	Water/Glycol	Water/Glycol
Materials			
Absorber	Copper	Copper	Copper
Coating	Selective Coating	Selective Coating	Selective Coating
Absorbance	95%	95%	95%
Emissivity	5%	5%	5%
Mounting frame and clips	Stainless Steel, Aluminium, EPDM	Stainless Steel, Aluminium, EPDM	Stainless Steel, Aluminium, EPDM
Glass	Low Iron - Transm. 0.92	Low Iron - Transm. 0.92	Low Iron - Transm. 0.92
Vacuum	<10 ⁻⁶ mbar	<10 ⁻⁶ mbar	<10 ⁻⁶ mbar
Quality Certification			
Solar Keymark	011-7S060R	011-7S060R	011-7S060R

Solar - Specification summary

The HP200 Collector

This collector is a 'dry' heat pipe product. In this collector, the heat pipe is attached to the back of the absorber plate. Evaporator fluid is contained within the heat pipe. The energy absorbed by the absorber causes the fluid to change from a fluid state to a vapour state and the vapour rises to the condenser bulb.

The condenser is connected directly into the manifold via a dry pocket. Within the manifold the solar system solution is passed across the dry pocket that houses the condenser.

The condenser releases the latent heat of evaporation to the solar system solution and condenses, the condensate returns to the heat pipe and the cycle is repeated.

Due to the dry connection the HP200 tubes can be replaced without the need of draining down the solar system.

HP200 collectors are available in 3 sizes:

10 Tube = 1.07m² aperture area

20 Tube = 2.16m² aperture area

30 Tube = 3.23m² aperture area

	HP200 - 10 tube panel	HP200 - 20 tube panel	HP200 - 30 tube panel
Dimensions			
Aperture Area	1.07m ²	2.16m ²	3.23m ²
Overall Dimensions	2005 x 709 x 97mm	2005 x 1418 x 97mm	2005 x 2127 x 97mm
Width of Manifold	709mm	1418mm	2127mm
Length (Tube and Manifold)	2005mm	2005mm	2005mm
Depth	97mm	97mm	97mm
Fluid Volume (In Manifold)	0.6 Ltr	1.1 Ltr	1.7 Ltr
Inlet and Outlet Dimensions	22mm	22mm	22mm
Weight (Empty)	25kg	50kg	75kg
Mounting			
Recommended Inclination	20-70°	20-70°	20-70°
Operating Data			
Efficiency	Based on Aperture	Based on Aperture	Based on Aperture
eta 0 - Zero loss collector efficiency (η_0)	0.726	0.726	0.726
k1 - Heat loss coefficient (a_1)	1.55 W/m ² K	1.55 W/m ² K	1.55 W/m ² K
k2 - Heat loss coefficient (a_2)	0.006 W/m ² K ²	0.006 W/m ² K ²	0.006 W/m ² K ²
Flow Rate			
Rated	80 Ltr / h	160 Ltr / h	240 Ltr / h
Minimum	60 Ltr / h	120 Ltr / h	180 Ltr / h
Maximum	150 Ltr / h	300 Ltr / h	480 Ltr / h
Maximum Operating Pressure	8 Bar	8 Bar	8 Bar
Stagnation Temperature	217°C	217°C	217°C
Heat Transfer Fluid	Water/Glycol	Water/Glycol	Water/Glycol
Materials			
Absorber	Copper	Copper	Copper
Coating	Selective Coating	Selective Coating	Selective Coating
Absorbance	95%	95%	95%
Emissivity	5%	5%	5%
Mounting frame and clips	Stainless Steel, Aluminium, EPDM	Stainless Steel, Aluminium, EPDM	Stainless Steel, Aluminium, EPDM
Glass	Low Iron - Transm. 0.92	Low Iron - Transm. 0.92	Low Iron - Transm. 0.92
Vacuum	< 10 ⁻⁶ mbar	< 10 ⁻⁶ mbar	< 10 ⁻⁶ mbar
Quality Certification			
Solar Keymark	011-7S125R	011-7S125R	011-7S125R



VARISOL

Next Generation Thermomax Direct Flow Technology

The new Varisol combines Thermomax DF vacuum tubes with a unique modular manifold for increased flexibility in system design and installation, whilst retaining their top quality performance.

The design of the Varisol product offers a modern and flexible alternative wherever a rigid manifold system cannot be installed due to space limitations. Quick and easy to install, Varisol allows individual tubes to be simply 'clicked' together to create solar panels of varying sizes. This means collectors can be sized to the exact needs of the end user.

Benefits for everyone

Total flexibility and high performance are not the only benefits of this unique new design. The combination of high performance polymer materials and 'click-fit' technology creates a product that is easier to order, store and install and is also more environmentally friendly.

Installer

- Rapid installation.
- No heavy manifold.
- Can size collectors to fit available space e.g. in between windows

End user

- Sized exactly to meet your needs.
- Only pay for what you need e.g. 24 tube collector - exactly sized.
- Expandable as needs change - the system can grow with your family.
- No gaps in larger systems improving overall appearance.

Environment

- Less use of energy intensive metals.
- No brazing or welding, reducing energy usage in manufacturing.
- Polymer materials are 100% recyclable.
- Lighter weight and reduced packaging minimise the impact of transport.

1 Insert Varisol tube



2 Rotate down



3 Click into position



Features

- Total flexibility
- Precision sizing - 100% accurate
- High performance of Thermomax Direct Flow technology
- High performance polymer material
- Manifold component and tube pre-assembled
- Box sizes of 1, 5 and 10
- Expandable
- Suitable for domestic and commercial applications
- 10-year guarantee when installed by a Kingspan Solar Accredited Installer
- Collector size up to 150 tubes
- 100% European design and manufacture
- 5-year guarantee against hail damage

Specification	
Dimensions (Each Tube)	1950 x 97 x 97mm
Weight (Each Tube)	2.2kg
Volume (Each Tube)	0.19 litres
Pipe Connections	22mm compression
Max Operating Pressure	6 bar
Min Slope	0 degrees
Max Slope	90 degrees

The Ultimate Pa ...The litt

Solar Controller



The Solar controller has an integrated easy to read display screen that allows access to information on the performance of your solar hot water system.

Glycol



High spec Glycol, specially formulated for modern solar systems. Pre-mixed with distilled water, saving both time and complication on site. This can then be used in conjunction with the optional filling station to provide a simple commissioning process. The Glycol acts as an antifreeze and has the added benefit of having corrosion inhibiting additives built in.

Pump Stations



East/West Facing South Facing

The pump station provides an easy and effective solution integrating all major components in one simple to mount, pre-insulated unit. The integration of components saves installation time as they dispense with the need for separate components (pump, overpressure valve, air catcher, expansion vessel connection, flow setter/flushing points).

Catchment Tanks



Solar Fluid Catchment tank is a fit for purpose vessel, which allows for safe collection of the solar fluid discharge (Glycol) in a quick and tidy manner for reuse later. Available in two capacities – 5L and 10L, to suit requirements of various size solar systems, it is manufactured from copper for corrosion resistance, strength and durability. It is also insulated with environmentally friendly foam lagging to prevent scalding when in operation.



ckaged Solution e extras!



Recommended Optional Extras

First Fix Kit



First fix kits contain all the necessary components to complete the roof mounted plumbing, ready for pressure testing. They include all couplings, seals, 2 x 2m lengths of pre-insulated flexible stainless steel pipework and roof solar sensor (requires no specialist tools).

The 1st and 2nd fix kits are easily formed by hand and being double annealed, they retain their shape when bent or straightened

Pipework operates from -50°C to $+200^{\circ}\text{C}$

Second Fix Kit



Second fix kits contain all components to complete the plumbing of the solar system by connecting the hot water cylinder and pumping station to the previously installed roof mounted plumbing. They include all couplings, seals and 20m of pre-insulated flexible pipework.

The 1st and 2nd fix kits are easily formed by hand and being double annealed, they retain their shape when bent or straightened

Pipework operates from -50°C to $+200^{\circ}\text{C}$



Toolkit

All necessary items are supplied in a metal carry case. These include pipework press tool, pipe cutter, specialist solar fittings and appropriate washers. Kingspan Solar recommend the use of this high quality kit which adds to the integrity and continuity of the overall system.



Filling Station

Allows the Installer to quickly and effectively fill, de-air and pressurise a solar system within minutes. It's easily portable so it can be used in lofts and in confined spaces. This speeds up the whole commissioning process.

Products List

Kingspan offer a complete range of renewable energy and related products for both domestic and commercial applications. Our complete solar package solutions include initial advice, professional design specifications and technical assistance through to a network of fully trained Kingspan Solar Accredited Installers who are kept up-to-date with the latest regulations and available grants.

Our range of products consists of:



Tribune HE cylinders, manufactured from Duplex stainless steel, offer the benefits of mains pressure hot water – powerful showers and fast filling baths, making them particularly suitable for use in properties with multiple bathrooms. They offer fast reheat times and exceptionally low heat loss.

Tribune HE range comprises over 50 models in Direct and Indirect version to suit a wide variety of applications. Reduced diameter cylinders are also available, as well as pre-plumbed models designed to save on-site installation time and solar units to use with renewable energy sources.



Albion Water Heaters and Manchester Calorifiers design and manufacture a large range of open vented and unvented calorifiers for commercial and industrial use in copper, stainless steel and mild steel. They also offer marine calorifiers and hot water provision for light commercial vehicles. All products feature high quality, durability and exceptional performance.

For maximum efficiency, units can be custom-designed for each specific application. A renewable heat source, e.g. solar panels, can also be incorporated into the system and sized to meet the heating and hot water requirements of the property.



New generation of Thin film photovoltaic panels. Tandem technology guarantees high energetic yields. Factors that often hamper performance including widespread radiation, partial overshadow or less than perfect orientation are overcome in most cases. With tandem technology these factors have little effect on performance. In most cases, Tandem technology guarantees yields of up to 10% more than silicon crystalline products.



Albion AEROCYL

Albion Aerocyl is the new range of copper unvented hot water cylinders and buffer tanks. The cylinders have been designed specifically to be installed in conjunction with a heat pump only or a solar thermal system and additional input from a heat pump. Manufactured from high grade copper, Aerocyl unvented cylinders feature energy efficient, CFC and HCFC-free foam insulation for low standing heat loss and are environmentally friendly way of providing Domestic Hot Water.

Aerocyl buffer tank is integrated into the space heating system when additional volume of hot water is required to provide smooth and uninterrupted operation of a heat pump and prevent the radiators or underfloor heating from cooling during the heat pump defrost cycle. They are available for both open vented and sealed systems in a range of capacities to suit different size heat pumps available in the UK.



Kingspan AEROMAX

Aeromax heat pumps use natural heat from the air outside to provide central heating (underfloor heating or traditional radiators) and/or hot water for your home. Highly efficient, the units are compact and easy to install. Incredibly quiet, they require virtually no maintenance. Offered with complete package solutions and can be coupled with the highly efficient Range Tribune HE renewable energy cylinder to maximise efficiency benefits.



RANGE

Range Cylinders manufacture open vented copper cylinders in over 400 different sizes, types and styles. They are designed to heat up quickly and to retain their heat for long periods, offering a good economical system for domestic applications.

Range of products includes Solarmax - a double feed indirect twin coil cylinder for use with solar collectors. Bottom coil is designed to accept input from a renewable heat source. When this input is not sufficient, the water can be heated by traditional gas, oil or electric boiler.





ClearSkies
Quality Certificate, UK



ISFH DIN EN 12975-2
Quality Certificate, Germany



CE
Quality Certificate, Europe



ITW
Quality Certificate, Germany



SEI
Quality Certificate, Ireland



Solarkeymark
Quality Certificate, Europe



FSEC
Quality Certificate, USA



TUV
Factory Inspection Certificate
from TUV, Germany



INTA
Quality Certificate, Spain



SP
Quality Certificate, Sweden



Sai Global
Quality Certificate, Australia



SRCC
Quality Certificate, USA

Kingspan Solar have a policy of continuous product development and may introduce product modifications from time to time.
As a consequence details given in this brochure are subject to alteration without notice.



Kingspan Renewables Limited

180 Gilford Road, Portadown, Co. Armagh, Northern Ireland,
BT63 5LF, United Kingdom.

Tel: +44 (0) 28 3836 4500 Fax: +44 (0) 28 3836 4501

E-mail: info@kingspansolar.com

www.kingspansolar.com

Kingspan Solar

Tadman Street, Wakefield, WF1 5QU.

Tel: +44 (0) 1924 376 026 Fax: +44 (0) 1924 385 015

Freephone (GB only) Tel: 0845 812 0007 Fax: 0845 812 0008

E-mail: sales@kingspansolar.co.uk

www.kingspansolar.co.uk