

Vaillant solar systems:

The best solution for the sun.



■ auroTHERM, auroSTOR, aIISTOR, auroSTEP

The good feeling of doing the right thing.



Because  **Vaillant** thinks ahead.

Not only our environment benefits



Sun sends warmth... but no bill

Global temperatures are continuously rising whilst traditional energy resources are declining - therefore it is no wonder that domestic energy conservation remains of universally high priority. The development of innovative and effective renewable energy solutions is critical for our future and environmental well-being.

Your choice for your customers comfort as well as our nature: Vaillant

With over 140 years experience in developing heating products, Vaillant is well placed to offer solar heating technology. As one of Germany's and Europe's leading boiler manufacturers, Vaillant sets the standards for performance, efficiency, quality and reliability. With the focus on new technologies we continue to consolidate our position in this segment.

More importantly, it's about working with our customers to deliver exactly what they require and to delight them with our products.

By incorporating the most modern technology, Vaillant's unique Total Solar System Solution intelligently blends solar and conventional energy supplies to optimise domestic heating and domestic warm water efficiency for our environment and our customers.



but also our customers



Vaillant strives to offer you more than a high-value product. It is our aim to create components for you which fit together in a well-concepted and reliable system.

Vaillant's range of high efficient flat plate collectors has been designed to achieve the maximum solar energy. Produced in one of our German factories, high quality comes as standard.

With our easy mounting concept the collectors are suitable for a variety of applications. Given that the panels absorb diffused light as well as direct sunlight, they gain solar energy even on cloudy days. Multiple panels can be easily fitted together for larger and large systems.

Our high-efficiency auroTHERM plus collector is made with high selective absorber and anti-reflex solar glass to ensure for receiving the maximum solar gain. With our range of mounting systems the collectors can be used for pitched roofs, flat roofs or even be integrated into the roof in a highly aesthetic way. For pitched roofs Vaillant offers a wide range of roof brackets suitable for all common anchor types.

The sun's energy heats solar fluid in the solar collector. The solar fluid is then pumped by the solar pump unit to a coil designed to heat water in a dedicated enamelled steel storage or even transfer the solar energy with plate heat exchangers to buffer storages

A second coil in the storage can be connected to a conventional heating source, such as a gas boiler. Therefore additional heating can be provided even where there is insufficient solar energy available.

Thanks to our solar control, auroMATIC, the system can automatically switch between solar energy and the auxiliary energy heat source. It ensures that there is always hot water and / or heating on demand, whatever the weather.

**A complete system all from one source:
Vaillant solar thermal technology.**

Solar thermal collector auroTHERM VFK

Elegant efficiency made in Germany

Performance made in Germany

In order to offer you high-class collectors which work efficiently in each and every system combination, Vaillant has developed the flat plate collector auroTHERM. Available in several different versions, the auroTHERM is produced at Vaillant's modern facilities in Germany. The Vaillant solar domestic hot water system is a sealed, pressurised system with unique features in every component. It is consistent with our commitment to provide maximum efficiency, high performance and total reliability.

auroTHERM flat plate collectors

Vaillant auroTHERM collectors are embedded in an aluminium frame and thereby also meet customer wishes concerning design and integration into the roof aesthetics. Despite their low weight and their small depth, Vaillant auroTHERM collectors reach an absorption rate of 95% due to their highly-selective coated aluminium-copper-absorber.

The auroTHERM pro VFK 125 with its silver-coloured aluminium frame is equipped with clear safety solar glass and designed for vertical installation stands, for a basic solution for solar thermal applications.

Vertical as well as horizontal installations are possible with our VFK 145 V/H. These are embedded in black anodized aluminium frames. With their homogeneous surface of 3,2 mm solar safety structure glass, our auroTHERM flat plate collector VFK 145 reaches a transmission value of 91%.

auroTHERM VFK at a glance:

- Solar warm water generation, heating of swimming pools and/or support of central heating possible
- Compatible for on-roof installation, homogenous in-roof installation and for remote mounting on a flat roof or other area
- VFK 145 is available in horizontal and vertical installation versions
- For solar earnings even on cloudy days or days with low irradiation
- Laser-welded aluminium-copper serpentine absorber ensures optimal heat transfer
- Highly efficient insulation of rear panel
- Please kindly see technical data on page 13



Construction of flat plate collector auroTHERM plus VFK 145/V



Solar thermal collector auroTHERM exclusive VTK

Optimum use of solar energy

Tried and tested technology

Even the smallest ray of sunlight reaches the absorber via the mirrors behind the tubes. Therefore even when diagonal radiation occurs, the vacuum collector still achieves constantly high solar earnings and energy yield.

auroTHERM exclusive collectors are manufactured using toughened glass and have a glass vacuum seal for longevity. The tubes are internally coated with an aluminium nitride absorber for maximum solar efficiency.

Each collector is delivered with 6 (VTK 570) or 12 (VTK 1140) tubes per collector. They can easily be fitted in series if required. The appealing design of the Vaillant mounting brackets create a neat and attractive installation.

auroTHERM exclusive VTK at a glance:

- Vacuum tube collectors with 6 or 12 tubes
- For application in systems for solar domestic hot water generation but also for solar-supported heating systems
- Fast and safe installation on tilt or flat roofs, alongside each other or above one another
- Low weight and compact dimensions
- Easy-to-replace tubes
- For both small and large buildings
- Please kindly see technical data on page 14



Vaillant auroTHERM exclusive VTK 570 - 6 vacuum tubes



Solar system auroSTEP plus

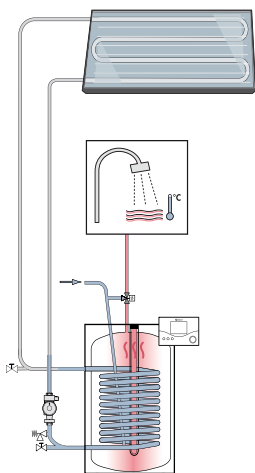
Modern technology for your independence



Drainback system auroSTEP plus

The solar system auroSTEP plus offers the opportunity to use new solar thermal technology for warm water generation in your home, without having to deal with overheats that are usually associated with solar systems. Vaillant presents a system that is easy to implement and install and offers calculable costs. An integrated solar control, a corresponding auroTHERM flat plate collector and the compatible installation accessories for the particular type of roof.

This is a well adjusted system for standard installations which does not require detailed planning. The auroSTEP plus storage is available with 150, 250 and 350 litres volume.



Solar system without expansion vessel

Drainback technology

When the auroSTEP plus system is switched off the solar liquid "drains back" into the coil of the solar storage and in the upper pipes and collectors there remains nothing than air. The system is easy to install and makes planning very easy. The "plug'n flow" system enables you to enjoy the hot water produced by your solar system almost immediately. Accessories for back-up heating are available.

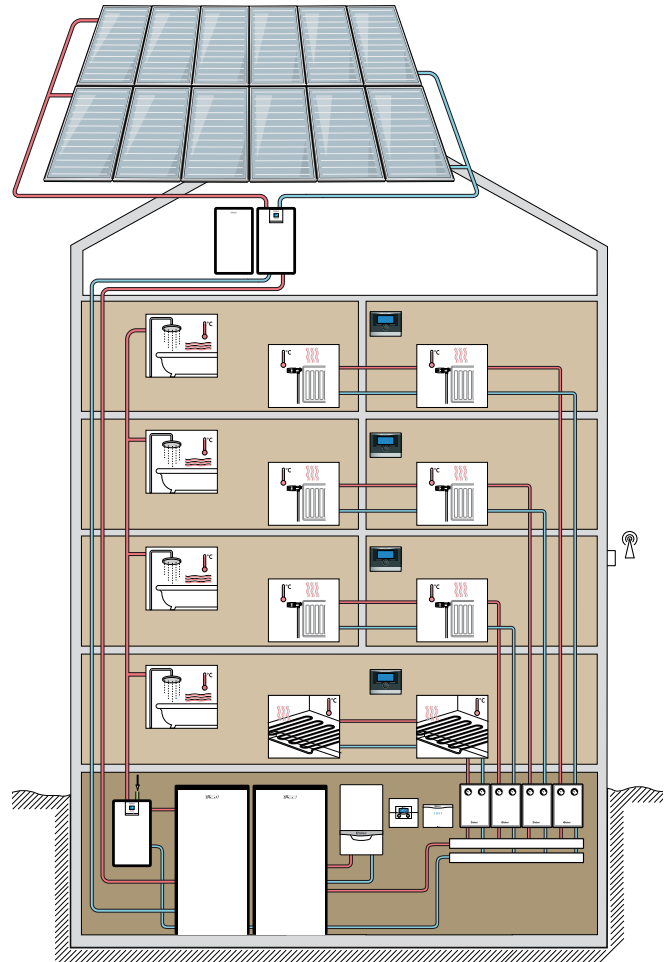
auroSTEP plus at a glance:

- Fully pre-configured and integrated components for smart and time saving handling
- For one / two-family houses
- Tank volumes 150, 250 and 350 litres
- For loading charges of up to 12m
- High efficiency pump for energy savings
- Minimal planning effort required
- Little effort needed for installation and maintenance
- Protected from stagnation overheats and frost damage
- Ideal solution especially for areas with high solar radiation
- Suitable up to 9 persons
- Please kindly see technical data on page 15



Drainback Split

Solution for high and variable demands without stagnation



The auroFLOW plus system is a modular drainback system designed for safety stagnation free operation for high and variable demands. High and variable demand with a suitable solar fraction can't be covered by pressurized solar systems because stagnation (steam in the collectors) will block delivery of solar energy.

The auroFLOW plus system can be used for 112 m² collector surface which can provide the DHW demand of a 200 bed hotel with 0 to 100 % occupation and is our solution for commercial usage.

For using the auroFLOW plus system is no rework of existing DHW solutions necessary, it is designed for using it as an add on application with integrated plate heat exchanger and own controller which takes also the functionality for cascading the modules.

Solar gain is 20% more than with pressurized systems. For low maintenance cost the auroFLOW plus system is a intrinsically safe solar system with several safety functions. High efficiency pumps will reduce running costs 1:10 compared to normal pumps. For best solar gain the circulations pumps have frequency speed control. The module has its own controller which is easy to use and no additional controller is needed.

At a glance:

- Solar thermal application
- Drainback System, no stagnation, no steam in the collectors, pressureless operation
- All components mounted in the module: solar pump, controller, safety valve
- Modules are cascadeable up to 4 x 2 units
- Up to 112 m² collector surface
- Suitable for high variable demand of DHW and heating energy
- Capable of being integrated of existing systems
- 20% more solar gain
- Intrinsically safe solar system
- Powerful high efficiency pumps
- Integrated plate heat exchanger
- Integrated controller
- Less maintenance



auroSTOR VIH S

For long hot showers



Vaillant auroSTOR 400 L



Vaillant auroSTOR 300 L

Vaillant auroSTOR VIH S storage tank provides the ultimate hot water comfort for one or two family homes. With its 300 up to 500 l tank volumes it is perfectly suited for the supply of domestic hot water in combination with solar thermal energy.

The bivalent solar storages are manufactured from stainless steel stand in a vertical position. The casing comes with a removable synthetic envelope and CPC-free 75mm warmth insulation. Furthermore the auroSTOR contains a cleaning lid as well as an integrated thermometer and the connection for an electric heating rod.

The auroSTOR VIH is extremely reliable thanks to high quality enameling on the warm water circuit.

auroSTOR VIH S at a glance:

- Domestic hot water for one / two-family homes
- Bivalent solar thermal storage technology
- Tank volumes 300, 400, 500, 750, 1000, 1500 and 2000 litre
- Combinable into a system with Vaillant heating appliances and controls
- Suitable for use of electric back-up heater (as accessory)
- storage is equipped with the connection
- Removable heat insulation for easier transport and installation
- Magnesium anode as corrosion protection
- Low standby losses
- Please kindly see technical data on page 14



The perfect system solution

aIISTOR VPS



VPS storage



VPM S



VPM W

Maximum flexibility

The multi-function storage aIISTOR is best in class in terms of flexibility and hot water capacity. The aIISTOR serves as a buffer for heating water for further transport to the heating circuits respectively to a separate water station. It works with any energy source. You can connect the aIISTOR storage cascades up to a total volume of 6,000 litre.

Multi-function storage aIISTOR at a glance:

- Highest warm water comfort for small, medium or larger demand
- Low standby losses through highly efficient thermal insulation concept
- Inlet dampers for max. shift load
- Multi connections for all needs

Great solution in a system

An aIISTOR system usually consists of the storage tank itself, a Vaillant solar station VPM S for the more efficient use of solar energy and / or a Vaillant instantaneous water heater VPM W for the highest possible hot water comfort.

Solar station pressurized VPM S at a glance:

- Single installation VPM 20 up to 20 m², VPM 60 up to 60 m²
- In cascade of 4 up to 240 m² collector surface
- Self controlled means no additional controller needed
- Integrated high efficiency pump
- Plate heat exchanger integrated
- Safety technology included
- Switch valve for high and low temperature for best shift load

Instantaneous water heater station VPM W at a glance:

- Single installation of 25/35/45 l/min at 60 °C
- In cascade of 4 up to 180 l/min. at 60°C which provides 40 showers at once
- Self-controlled means no additional controller needed
- Integrated high efficiency pump reducing energy costs
- High performance of stainless steel plate heat exchanger



Automatically calculate your own energy yield

The auroMATIC solar control

Vaillant solar systems controls enables user-defined system combinations. The auroMATIC 620 allows not only the solar system but the whole heating system to be regulated. Taking into consideration the outside temperature, it adjusts the temperature level of the system and monitors the interplay of all components. The auxiliary heating unit is only activated when the collectors cannot deliver sufficient warmth.

The auroMATIC 570 is the perfect system solution for the generation of solar domestic hot water only and independently controls up to two collector fields.



auroMATIC 620



auroMATIC 570

VMS 70

auroMATIC 620

Busmodular control system for solar supported heating which can be extended up to 14 heating circuits and up to 8 remote control appliances.

auroMATIC 620 at a glance:

- For control of the generation of solar domestic hot water and solar-supported heating
- Weather-guided control of the system
- For up to 2 heating circuits, 1 direct heating circuit, 1 mixing circuit (f.ex. for underfloor heating), extendable up to 14 heating circuits
- Comfortable text display with graphical visualizations
- Constant indication of solar earnings
- Option for remote control
- Control for heating cascades
- Easy to install with ProE connection plugs and ample inner space
- Internet gateway
- Please kindly see technical data on page 13

auroMATIC 570

Application in the solar supported creation of warm water with option of auxiliary heating tailored to specific requirements.

auroMATIC 570 at a glance:

- For solar domestic hot water generation systems
- Vaillant user comfort "turn and click"
- Symbol display, indication of operation status and cycle times, scheme and temperatur
- Detection of solar earnings, indicated over the graphical display
- Up to 2 independent collector fields
- Option to connect a 2nd storage or swimming pool heating
- Please kindly see technical data on page 13

High efficiency circulating pump for solar systems VMS 70

The new solar control auroMATIC 570 takes honor to the new generation of high efficiency speed controlled circulation pump in the solar station VMW 70. The pump speed and the resulting flow rate for the collectors will always be controlled as a function of the solar irradiation on the collectors. More efficiency for solar gain and electrical savings will be the result.

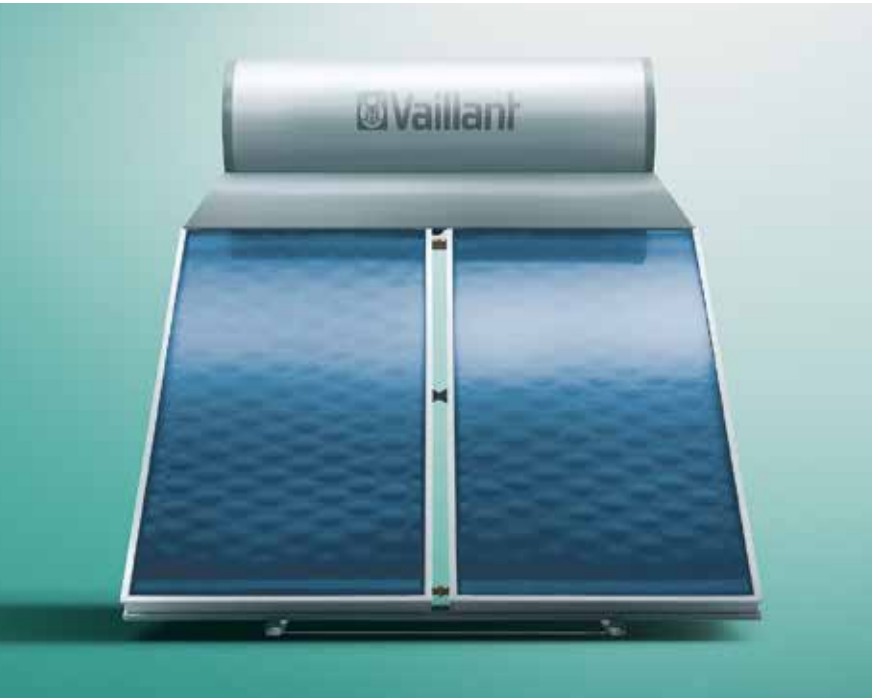
auroFLOW VMS 70 at a glance:

- Up to 70 m² collector surface
- High efficiency pump, speed control
- Safety valve and manometer included
- Air separator inside
- Compact design
- Please kindly see technical data on page 13



Solar system auroSTEP pro

proven concept in compact design



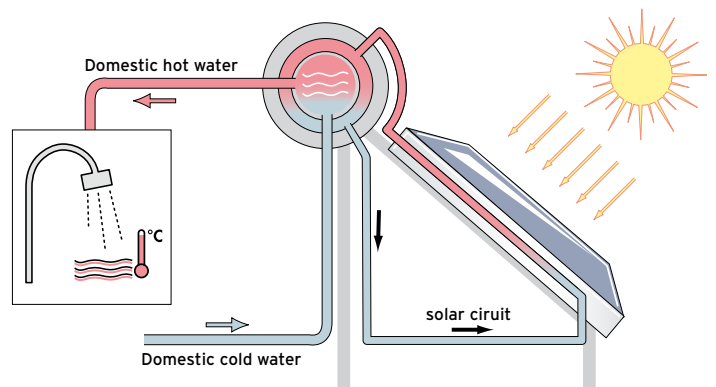
Vaillant's auroSTEP pro system contains a storage which is installed on the roof directly above the collector/s. Well crafted collectors, enamelled "tank-in-tank" storages and a coated mounting bracket give the system the known Vaillant quality.

The storages are available in the capacities of 150, 200 and 300 litres of domestic hot water.

When the solar earnings are not sufficient to cover the warm water demand, electrical backups of 2 or 3 kW can be added to the system. You can obtain further warm water comfort without great installation effort.

auroSTEP pro at a glance:

- For supply of domestic hot water in one-family houses
- Tank volumes 150, 200 and 300 litres
- No additional energy costs for the pump function
- Reduced maintenance costs
- Corrosion protection
- Electrical back-up can be added to the system
- Please kindly see technical data on page 15



auroSTEP pro functional scheme



Solar installed easily

Our range of mounting accessories



The new Vaillant mounting accessory range makes the installation of solar thermal collectors faster, easier and safer than ever before. Only one tool is required to fix and connect the panels onto the roof.

Mounting bracket for on-roof installation

The fastest installation without compromising safety: our new mounting brackets for on-roof installation. Delivered pre-assembled, the brackets are ready for use. No further tools are needed other than an Allen key.



A-frame with gravel plates for flat roof installation

The pre-screwed A-frames just have to be swung open and fastened with two bolts and pins - all necessary items are delivered as part of our installation package. No other tools are needed for the reliable fixing of your collectors.



Hydraulic connection for collectors

No more than a few stainless-steel connections are needed for the hydraulic connection between two collectors. With very little effort, the collectors can be quickly linked together and installed either alongside or above one another.

Technical data

Product properties collectors	unit	VFK 125 *	VFK 145 V	VFK 145 H
Gross area / aperture area	m ²	2,51 / 2,35	2,51 / 2,35	2,51 / 2,35
Absorber content	l	1,85	1,85	2,16
Stainless steel flat sealing connection	diameter	3/4"	3/4"	3/4"
Insulation thickness	mm	40	40	40
Operational pressure max.	bar	10	10	10
Light transmittance of the solar glass	%	91	91	91
Absorber absorption	%	80	94	94
Absorber emission	%	15	5	5
Stagnation temperature (accord. to prEN 12975-2, c <1m/s)	°C	118	171	171
Degree of efficiency (accord. to EN 12975)	%	75,3	79,1	80,1
Coefficient of efficiency k ₁	W / (m ² k)	3,94	2,41	3,32
Coefficient of efficiency k ₂	W / (m ² k ²)	0,02	0,049	0,023
Dimensions: Height / Width	mm	2033 / 1233	2033 / 1233	1233 / 2033
Depth	mm	80	80	80
Weight	kg	38	38	38
* VFK 125 for vertical installation only.				

Product properties controls	unit	auroMATIC 570	auroMATIC 620
Nominal voltage	V	220-230	220-230
Frequency	Hz	50	50
Power consumption	W	3	3
Breaking capacity		250 V AC 2A	250 V AC 2A
Ambient temperature (min./max.)	°C	0-40	0-40
Protection degree	IP	IP 40 as per DIN 40050	

Product properties solar pump	unit	auroFLOW VMS 70
Max. temperature	°C	130
Max. pressure	MPa / bar	0,6 / 6,0
Rated voltage		220 - 240 V / 50 Hz
Max. current consumption	A	0,52
Level of protection	IP	IP 24

Product properties warm water storages auroSTOR	unit	VIH S 300	VIH S 400	VIH S 500
Nominal storage capacity	l	300	400	500
Max. storage pressure	bar	10	10	10
Max. heater pressure	bar	10	10	10
Max. primary circuit temperature	°C	110	110	110
Max. hot water temperature	°C	85	85	85
Heat loss	l	1,9	2,1	2,3
Primary solar exchanger:				
Area	m ²	1,6	1,5	2,1
Volume	l	10,7	9,9	14,2
Primary heat exchanger:				
Area	m ²	0,7	1	1
Volume	l	4,7	4,5	6,6
Hot water power	l / 10min	195	190	215
Continuous power	kW	20	21	29
Continuous power	l / h	491	516	712
Dimensions: Diameter without insulation / Width with cover / Height	mm	500 / 660 / 1775	650 / 810 / 1470	650 / 810 / 1775
Weight incl. insulation and packing	kg	150	169	198
Energy Label:				
Water heating energy efficiency class		C	C	C

Technical data

Product properties vacuum tube collectors	unit	VTK 570	VTK 1140
Area (gross / aperture)	m ²	1,16 / 1	2,3 / 2
Collector content	l	0,9	1,8
Insulation high vacuum	bar	10 ⁻⁸	10 ⁻⁸
Max. function pressure	bar	10	10
CPC mirror, grade of reflection	%	85	85
Absorber absorption α	%	93,5	93,5
Absorber emission ϵ	%	6	6
Shutdown temperature	°C	272	272
Efficiency factor k_1	W / (m ² k)	0,885	0,885
Efficiency factor k_2	W / (m ² k ²)	0,001	0,001
Dimensions: Height / Width / Depth	mm	1652 / 702 / 111	1652 / 1392 / 111
Weight	kg	19	37

Product multifunction storage allSTOR	unit	VPS 300/3	VPS 500/3	VPS 800/3	VPS 1000/3	VPS 1500/3	VPS 2000/3
Nominal storage capacity	l	303	491	778	962	1505	1917
Approv. heating function overpressure	bar	3	3	3	3	3	3
Max. heating water temp.	°C	95	95	95	95	95	95
Standby energy loss	kWh / 24h	< 1,7	< 2,0	< 2,4	< 2,5	< 2,9	< 3,3
Dimensions:							
Height with insulation	mm	1833	1813	1944	2324	2362	2485
Height without insulation	mm	1735	1715	1846	2226	2205	2330
Diameter with heat insulation	mm	780	930	1070	1070	1400	1500
Diameter without heat insulation	mm	500	650	790	790	1000	1100
Weight	kg	70	90	130	145	210	240
Energy Label:							
Water heating energy efficiency class		B	B	B	B	B	B

Product properties solar loading station	unit	VPM 20/2 S	VPM 60/2 S
Solar collector area flat		for 4 - 20 m ² flat plate collector	for 20 - 60 m ² flat plate collector
Solar collector area tube		for 4 - 14 m ² vacuum tube collector	for 14 - 28 m ² vacuum tube collector
Heat exchanger		21 plates	49 plates
Max. water temperature	°C	99	99
Approv. function pressure solar side	bar	6	6
Approv. function pressure secondary	bar	3	3
Electric connection		230 V / 50 Hz	230 V / 50 Hz
Dimensions: Height / Width / Depth	mm	750 / 450 / 250	750 / 450 / 250
Weight	kg	15	16

Product properties instantaneous water heater station	unit	VPM 20/25/2 W	VPM 30/35/2 W	VPM 40/45/2 W
Warm water output at 60 °C / 65 °C	l/min	20 / 25	30 / 35	40 / 45
Warm water temperature	°C	40 - 75	40 - 75	40 - 75
Approv. system pressure heating side	bar	3	3	3
Approv. system pressure water side	bar	10	10	10
Electric connection		230 V / 50 Hz	230 V / 50 Hz	230 V / 50 Hz
Dimensions: Height / Width / Depth	mm	750 / 450 / 250	750 / 450 / 250	750 / 450 / 250
Weight	kg	16	16	19

Product properties solar drain back station	unit	VPM 15 D	VPM 30 D
Collector surface	m ²	≤ 15	≤ 30
Counts of collectors		≤ 6	≤ 12
Power of plate heat exchanger	kW	16	16
Power solar pump	W	≤ 65	≤ 130
Power storage loading pump	W	≤ 65	≤ 65
Volume storing vessel	l	20	40
Dimensions: Height / Width / Depth	mm	750 / 450 / 250	750 / 900 / 250

Technical data: auroSTEP plus drainback system - collector and storages

Product properties collectors	unit	VFK 135 D	VFK 135 VD
Gross area / aperture area	m ²	2,51 / 2,35	2,51 / 2,35
Fuid content	l	1,35	1,46
Insulation thickness	mm	40	40
Operational pressure max.	bar	10	10
Light transmittance of the solar glass	%	91	91
Absorption coefficient	%	94	95
Shutdown temperature (accord. to prEN 12975-2, c <1m/s)	°C	176	170
Coefficient of efficiency k ₁	W / (m ² k)	3,7	2,6
Coefficient of efficiency k ₂	W / (m ² k ²)	0,012	0,033
Direction of installation		horizontal	vertical
Dimensions: Height / Width / Depth	mm	2033 / 1233 / 80	2033 / 1233 / 80
Weight	kg	37	37,5

Product properties warm water storages	unit	VIH SN 150i	VIH SN 250i	VIH SN 350i
Nominal storage capacity	l	150	253	389
Max. storage pressure	bar	10	10	10
Voltage	V AC / Hz	230 / 50	230 / 50	230 / 50
Primary solar heat exchanger: area	m ²	1,3	1,3	1,6
Solar liquid demand	l	8,5	8,5	8,5
Max. flow temperature solar	°C	110	110	110
Max. hot water temperature	°C	90	90	90
Dimensions: Diameter / Depth / Height	mm	605 / 772 / 1082	605 / 772 / 1692	814 / 969 / 1592
Weight with isolation, empty	kg	110	140	210
Energy Label: Water heating energy efficiency class		B	B	B

Technical data: auroSTEP pro thermosyphon system - collector and storages

Product properties collectors	unit	VFK 118 T
Area (gross, aperture / net)	m ²	2,24 / 2,06
Efficiency	%	η ₀ = 73,7
Stagnation temperature	°C	205
Operating pressure	bar	6
Volume	l	1,15
Absorptance	%	95
Dimensions: Length / Width / Height	mm	2145 / 1045 / 77,5
Net weight	kg	37

Product properties warm water storages	unit	VIH S 150/2 T	VIH S 200/2 T	VIH S 300/2 T
Nominal storage capacity	l	150	200	300
Max. operating permissible storage	bar	6	6	6
Max. hot water temperature	°C	90	90	90
Stand-by energy loss	W / K	1,97	2,7	3,78
Area heat exchanger	m ²	0,92	0,93	1,86
Volume heat exchanger	l	9,4	11,7	18,8
Dimensions: Outer diameter / Height	mm	600 / 1000	600 / 1200	600 / 1800
Weight	kg	67	79	115
Weight ready for operation	kg	202	261	415

Your local partner for Vaillant products:

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