For the operator

Operating instructions

Solar heating system with auroSTOR

Solar hot water system

GB, IE

Vaillant

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1 Notes on the documentation

The following instructions are intended to guide you through the entire documentation.
Further documents apply in combination with these operating instructions.
We do not accept liability for any claims or damages resulting from failure to observe these instructions.

1.1 Other applicable documents

- When operating the solar heating system, you must observe all operating instructions for system components and for other accessories used in the system.

These operating instructions are included with the individual components and accessories.

1.2 Storing documents

- Store these operating instructions and all other applicable documents in such a way that they are available whenever required.

1.3 Symbols used

The symbols used in the text are explained below.

Symbol that denotes useful tips and information

- Symbol for a required action

1.4 Applicability of the instructions

These instructions apply for the following only:

Unit type	Cylinder volume	Article number
VIH S GB 210/2 S	210 litres	0020115422
VIH S GB 260/2 S	260 litres	0020115425
VIH S GB 310/2 S	310 litres	0020115428

Table 1.1 Applicability of the instructions

- The article number of the unit is displayed on the identification plate.

1.5 Cylinder identification plate

The identification plate is attached to the front of the cylinder at the factory.

1.6 CE label

CE labelling shows that, based on the type overview, the units comply with the basic requirements of the applicable directives.

1.7 Benchmark

benchmark
COLLECTIVE MARK
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

Vaillant Ltd. supports the Benchmark Initiative. A benchmark checklist for commissioning gas-fired boilers is attached to these installation instructions. It is very important that this document be filled out properly when installing, commissioning and handing-over to the operator of the installation.

2 Safety instructions

2.1 Safety and warning information

When operating the system, observe the basic safety instructions and the warning notes which appear before each of the actions.

2.1.1 Classification of action-related warnings

The action-related warnings are classified in accordance with the severity of the possible danger using the following warning signs and signal words:

Warning sign	Signal word	Explanation
	Danger!	Imminent danger to life or risk of severe personal injury
	Danger!	Risk of death from electric shock
	Warning!	Risk of minor personal injury
	Caution!	Risk of material or environmental damage

2.1.2 Structure of warnings

Warning signs are identified by an upper and lower separating line and are laid out according to the following basic principle:

Signal word!
Type and source of danger!
Explanation of the type and source of danger.
➤ Measures for averting the danger

2.2 Intended use

The Vaillant solar heating system has been constructed using state-of-the-art technology in accordance with recognised safety regulations.
Nevertheless, there is still a risk of injury or danger of death to the operator or others or of damage to the unit and other property in the event of improper use or use for which the unit is not intended.
These components of the Vaillant solar heating system are not intended to be used by persons (including children) with limited physical, sensory or mental capabilities or insufficient experience and/or knowledge, unless they are supervised by a person who is responsible for their safety or have been instructed by this person on how to use the unit.
Children must be supervised to ensure that they do not play with the unit.
The cylinders work with the pressure of the water supply line and do not need a cold water tank for their supply.
The purpose of the Vaillant solar heating system is to provide a solar-supported hot water supply.
Vaillant auroSTOR VIH S GB 210/2 S, VIH S GB 260/2 S, and VIH S GB 310/2 S solar cylinders are unvented, indirectly heated domestic hot water cylinders for solar heating systems designed for use with gas-fired wall-hung boilers as per GB standards for hot water supply systems.

They are used only to supply potable water heated up to 80 °C by means of a solar collector array. They may only be used for this purpose. The cylinders can be used in combination with a downstream gas-fired wall-hung boiler for hot water production in accordance with GB standards.
Any other use that is not specified in these instructions, or use beyond that specified in this document shall be considered improper use.
Any direct commercial or industrial use is also deemed to be improper. The manufacturer or supplier is not liable for any damage resulting from such use. The user alone bears the risk.
Intended use includes the following:
- observance of accompanying operating, installation and servicing instructions for Vaillant products as well as for other parts of components of the system
- compliance with all inspection and maintenance
- conditions listed in the instructions.

Improper use of any kind is prohibited!

2.3 Basic safety instructions

Installation, commissioning, and maintenance
Installation and adjustment as well as service, maintenance and repair must be carried out by a competent person approved at the time by the Health and Safety Executive and be in accordance with the relevant requirements of the Local Authority, Building Regulations, Building Regulations (Scotland), Building Regulations (Northern Ireland), and the bye-laws of the local Water Undertaking.

Cylinder safety information
This product has been checked for adherence to the building regulations for unvented domestic hot water cylinder systems. It may not be changed or modified in any way whatsoever.
- ➤ You must also observe the guidelines of the local water utility companies.

If the water does not meet the requirements of The Water Supply (Water Quality) Regulations 2000 (Amendment) Regulations 2007, corrosion damage may occur to the cylinder.
- ➤ Only use the cylinder to heat potable water.

Avoiding burns and scalds
If the system is in stagnation, hot steam can discharge from the expansion relief valve of the solar pump unit. This may be visible in the receptor canister. Should this occur contact your installer for advice.
The temperature of the stored water could reach high temperatures after solar charging and your Vaillant solar installer will have fitted a tempering valve so as to prevent this reaching the hot water taps. Should excessively hot water reach your hot taps contact your installer immediately.

Preventing frost damage
You must not turn the boiler off completely so that you can still use all safety functions for your central heating system. If you want to take the unit out of operation for a relatively long period of time in an unheated room at risk from frost, you must arrange for a competent person to completely drain the auroSTOR.

Avoiding damage caused by leaks
If there are leaks in the pipework, close off the cold water stop valve on the safety assembly and notify a competent person so that they can rectify the leaks.

Preventing damage due to unauthorised changes to the unit
Changes to the system may only be carried out by a competent person!
- ➤ The installed safety devices must always be used.

Avoiding damage resulting from the closing of the expansion relief valve
- ➤ Never shut off the expansion relief valve or relief valve termination.

Lightning and hail
We recommend declaring the solar heating system as an increase in value to the insurance and insuring it explicitly against lightning. It may also make sense to take out an insurance against hailstorms in particularly prone areas.

3 Description of the unit

The auroSTOR solar cylinder is available in three sizes: 210, 260 and 310 litres and meets the requirements of EN 12897:2006. The cylinder is made from stainless steel and is insulated with EPS with heat radiation absorbers.
The cylinder works with the pressure of the water supply line and does not need a cold water tank for its supply. To enable the cylinder to work as well as possible, a cold water supply with an appropriate pressure and flow rate is required.

Hot water temperature control
You can set the hot water temperature and primary heating times in the upper half of the cylinder on the controller. One of the following controllers may be used depending on the design of your system:
- Vaillant auroMATIC VRS 560 solar controller or
- Vaillant dual-channel eBUS controller
- Cylinder thermostat in conjunction with a timer

Observe the operating instructions for the installed controller or timer.

Electric immersion heater
The cylinder is equipped with an additional electric immersion heater with a heating output of 3 kW. The electric immersion heater is located behind the top front cladding. The electric immersion heater is designed for use in unvented cylinders and has a thermostat with a temperature controller and a thermal cut-out (TCO) with a reset button.

Safety devices
The solar cylinder has been provided with all safety and control devices for operation of the unvented domestic hot water supply:
- Temperature/pressure relief valve (90 °C, 7 bar)
- Pressure reducing valve (3.5 bar) with line strainer
- Expansion relief valve (one-way valve, 6.0 bar)
- Solar pump thermal cut-out, set to 80 °C, connected with the solar pump in order to isolate this heat source if there is a fault in the solar control.
- Thermal cut-out for electric immersion heater
- Solar cylinder thermal cut-out, set to 80 °C, to be connected to the two port motorised valve in order to isolate the primary heat source if a domestic water supply thermostat fault occurs.

Solar heating system
The Vaillant solar heating system is a closed hydraulic system in which the special heat transfer fluid of the solar heating system transfers the heat to the water in the cylinder via a heat exchanger.

The water in the auroSTOR solar cylinder is heated by two separate circuits.
The cooler water in the lower part of the cylinder is heated by the solar circuit. The relatively low water temperatures in the lower section ensure optimum heat transfer from the heat exchanger of the solar circuit to the water in the cylinder even if the solar radiation is low.
The warmer water in the upper part of the cylinder is heated by the gas-fired wall-hung boiler in the primary heating circuit or by an electric immersion heater. The ready-to-use volume in the top part of the cylinder amounts to around half of the total cylinder volume.

4 Operation

4.1 Operating the solar heating system

Danger!
Risk of scalding and bursts due to inappropriate alterations!
There is a risk of escaping steam, bursting, and damage to the system if you make any changes to the cylinder, control system, supply lines for water and power (if present), relief valve termination, or expansion relief valve for the cylinder water.
- ➤ Do not make any improper changes.

Warning!
Risk of scalding
The output temperature of the draw-off points can reach 85 °C if the mixing valve is set incorrectly.
- ➤ Do not adjust the mixing valve.
- ➤ If the output temperature at the draw-off point is too high or low, contact a competent person to set the output temperature.

Warning!
Risk of burns from hot system components!
The collectors and pipes can become extremely hot!
- ➤ Be careful when touching system components which carry heat.

Caution!
Risk of damage from leaks!
Leaks in the water pipes between the cylinder and tap can result in water damage.
- ➤ If a leak occurs, close the cold water stop valve on the cylinder.
- ➤ Contact a competent person to eliminate the leak.

The cold water stop valve is located in the pipe connection of your domestic water connection for the cylinder (cold water inlet) right next to the cylinder.

The solar heating system is set up during the commissioning process and then works automatically. You do not even need to make any adjustments when you go on holiday.

Observe the following to ensure your Vaillant solar heating system works perfectly:
- ➤ Do not open or close any of the valves.
- ➤ Never switch the solar heating system off, even if you go on holiday or suspect a fault.
  Contact a competent person in such cases.
- ➤ Do not take out the fuse or switch off the fuse box.
- ➤ Do not under any circumstances fill the solar circuit yourself.

4.2 Controlling the solar heating system

For information on controlling the solar heating system, see the operating instructions for the relevant solar controller.

4.3 Setting the hot water temperature

The hot water temperature is set to the required value by the competent person during the cylinder commissioning process.

If an external controller is installed for hot water temperature control, you can set the hot water temperature and primary heating times using this controller.
For information on making settings, see the operating instructions for the controller

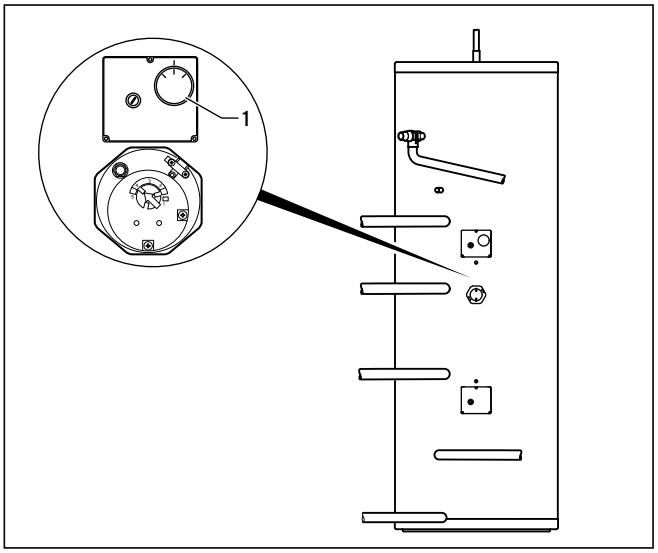

Fig. 4.1 Setting the cylinder thermostat

Key
1 Cylinder thermostat

If no controller for hot water temperature control is installed, you can set the required hot water temperature on the cylinder thermostat (**2**). You can set the reheating times on the installed hot water timer.
Observe the operating instructions for the hot water timer.

➤ Set the desired cylinder hot water temperature on the cylinder thermostat (**1**).

In order to avoid calcification, the temperature should be set to a maximum of 60°C.

➤ Use the operating instructions for the gas-fired wall-hung boiler to make sure that the unit is ready for operation.

If you are heating up water for the first time or after a long switch-off period, the full cylinder performance is only available following a waiting period.

If the auroSTOR has been installed in a cupboard used for airing clothes, make sure that clothing and other objects are not placed on the cylinder, control devices, pipes or other system components.

Always make sure that there is clear access to the cylinder to enable the use of the hot water thermostat controller and the thermostat mixer.

4.4 Switching off hot water production

➤ Switch off the gas-fired wall-hung boiler (see operating instructions for the gas-fired wall-hung boiler) to temporarily switch off the heating and hot water system.

4.5 Frost protection

4.5.1 Frost protection of solar heating system

➤ Arrange for a competent person to check the frost protection of the solar heating system once a year.

The checking of the frost protection is a usual component of a maintenance agreement with a competent person.

Do not add any fluid to the solar circuit.
Do not mix the solar fluid with other fluids.

4.5.2 Cylinder frost protection

Caution!
Risk of damage due to frost!
If the cylinder is placed out of operation for a relatively long period of time in an unheated room (e.g. during a winter holiday), the cylinder must be completely drained.

➤ Contact a competent person to drain the cylinder.

If you are absent during a relatively long period when there is a risk of frost, make sure that you leave the central heating on and that the temperature in the cylinder room and in all other rooms is kept above freezing.

4.6 Cleaning the solar collector and cylinder

4.6.1 Cleaning the solar collectors

There is actually no need to clean the collectors. Like skylights, solar collectors do get dirty. However, they are kept reasonably clean naturally by rainfall.

4.6.2 Cleaning the cylinder

➤ Clean the outside of the cylinder only with a damp cloth, using soapy water if it is especially dirty.

Do not use abrasive cleaning agents or solvents (any type of scouring agent, petroleum etc.) since they can damage the cladding and the cylinder fixtures.

4.7 Fault finding

What do I do if...

Fault	Remedy
... fluid is dripping from the system?	If possible, collect the fluid in a bucket and inform a competent person.
... the fluid level rises in the collecting container under the solar pump unit?	Inform a competent person.
... fluid or steam is escaping from the expansion relief valve?	Inform a competent person.
... the controller issues a message telling me the sensor is faulty or there is a cable break?	Inform a competent person.
... the pressure shown on the pressure gauge of the solar pump unit falls below the minimum operating pressure?	Inform a competent person.
... the panel on a flat collector has been damaged?	Do not touch the collector interior. Inform a competent person.
... the glass tubes of a tube collector have been damaged?	Do not touch the collector interior. Inform a competent person.
... the cylinder is not providing sufficient hot water?	Check that the hot water temperature is set correctly on the controller (→ **section 4.3**, max. 60°C recommended). If the settings are correct, the cylinder may be calcified. Then: Inform a competent person.
... a thermal cut-out trips?	Inform a competent person.
... water flows from the expansion relief valve?	Inform a competent person.

Tab. 4.1 Troubleshooting by the operator

5 Inspection and maintenance

An annual inspection/maintenance run for the solar heating system by a competent person is a prerequisite for ensuring that the solar heating system is permanently ready for operation, reliable, and has a long working life.
It is important that your hot water cylinder is serviced annually.
We recommend entering into a maintenance agreement.

Danger!
Risk of death from electric shock!
Improperly executed work on the solar heating system can result in risk to life and limb.
- ➤ Never try to rectify solar heating system faults yourself.
- ➤ Contact a competent person to rectify all faults.

Danger!
Risk of injury resulting from improper maintenance or repair.
Failure to arrange for the system to be maintained and repaired and improper maintenance and repair can impair the operational safety of the unit, leading to personal injury and material damage.
- ➤ Never attempt to perform maintenance work or repairs on the solar heating system yourself.
- ➤ Always employ a competent person.

Servicing
After servicing, the servicing engineer must complete the relevant Service Interval Record section of the Benchmark Checklist located on the inside back pages of this document.

6 Recycling and disposal

Both the Vaillant auroSTOR and its transport packaging consist mainly of recyclable raw materials.

6.1 Unit

You must not dispose of your Vaillant auroSTOR or any of its accessories in normal domestic rubbish. Make sure that the old unit and any accessories are disposed of properly.

6.2 Packaging

Arrange for the competent person who installed the unit to dispose of the transport packaging.

7 Customer service and manufacturer's guarantee

7.1 Vaillant service

To ensure regular servicing, it is strongly recommended that arrangements are made for a Maintenance Agreement. Please contact Vaillant Service Solutions (0870 6060 777) for further details.

7.2 Vaillant guarantee

Vaillant provides a full parts and labour guarantee for this appliance.
The appliance and all associated pipe work and controls must be installed by suitably competent persons in accordance with all current and relevant safety, building control and planning regulations and in full compliance with the manufacturer’s instructions.
All unvented domestic hot water cylinders must be installed by a competent person to the prevailing building regulations at the time of installation (G3).
Terms and conditions apply to the guarantee, details of which can be found on the guarantee registration card included with this appliance.
Failure to install and commission this appliance in compliance with the manufacturer’s instructions will invalidate the guarantee (this does not affect the customer’s statutory rights).

8 Technical data

	Unit	VIH S GB 210/2 S	VIH S GB 260/2 S	VIH S GB 310/2 S
Total capacity	litres	210	260	310
Actual capacity	litres	209,4	254,4	297,2
Hot water capacity (upper coil)	litres	104,8	142,0	144,2
Hot water capacity (solar coil)	litres	203,3	246,1	271,1
Dedicated solar volume	litres	104,6	112,4	153,0
Maximum supply pressure to pressure reducing valve	MPa (bar)	1,2 (12)		
Rated pressure of cylinder	MPa (bar)	0,7 (7)		
Maximum operating pressure of heating coil	MPa (bar)	0,35 (3,5)		
Maximum operating pressure of solar coil	MPa (bar)	0,6 (6)		
Operating pressure	MPa (bar)	0,35 (3,5)		
Pressure limiting valve	MPa (bar)	0,35 (3,5)		
Expansion relief valve	MPa (bar)	0,6 (6)		
Temperature and pressure relief valve	°C, MPa (bar)	90, 0,7 (7)		
Charge pressure of hot water expansion vessel	MPa (bar)	0,4 (4)		
Maximum temperature of heating circuit	°C	85		
Maximum temperature of potable hot water	°C	85		
Maximum temperature of solar fluid	°C	85		
Standing heat loss	kW/24 h	1,98	2,15	2,35
Heat up time according to EN 12897	mins	20	27	28
Recovery time (70% capacity)	mins	15	20	21
Primary heat exchanger performance	kW	16,7	16,5	16,0
Flow rate for primary heat exchanger performance	l/min	23,3		
Primary heat exchanger pressure drop	mbar	79	78	79
Primary heat exchanger volume	Liter	2,37		
Primary heat exchanger surface area	m^2	0,5		
Heat up time according to EN 12897 (solar)	min	32	40	49
Solar heat exchanger performance	kW	19,7	19,5	17,2
Flow rate for solar heat exchanger output	l/min	23,3		
Solar heat exchanger pressure drop	mbar	97	95	98
Solar heat exchanger volume	Liter	2,94		
Solar heat exchanger surface area	m^2	0,62		
Dimensions				
Height	mm	1593	1843	2153
Height with hot water draw off	mm	1625	1875	2185
Topple measure	mm	1680	1918	2217
Diameter	mm	554,5		
Depth	mm	624		
Net weight	kg	40	43	50
Weight (full)	kg	249	298	347
Connections				
Cold water inlet		22 mm unprofiled pipe (crimp joints)		
Hot water draw off		22 mm unprofiled pipe (crimp joints)		
Balanced pressure cold water outlet		22 mm unprofiled pipe (crimp joints)		
Secondary return		15 mm unprofiled pipe (crimp joints)		
Primary heater flow		22 mm unprofiled pipe (crimp joints)		
Primary heater return		22 mm unprofiled pipe (crimp joints)		
Solar flow		22 mm unprofiled pipe (crimp joints)		
Solar return		22 mm unprofiled pipe (crimp joints)		
Primary heating circuit immersion sleeve size	mm	8		
Solar circuit immersion sleeve size	mm	8		

Tab. 8.1 Technical data for auroSTOR solar cylinder

	Unit	VIH S GB 210/2 S	VIH S GB 260/2 S	VIH S GB 310/2 S
Electrical connections				
Immersion heater (according to EN BS 60335)		2.7 kW, 230 V, 50 Hz		
Length of immersion heater	inch	14		
Two port motorised valve		230/240 V, 50 Hz		
Cylinder thermostat		230/240 V, 50 Hz		
Thermal cut-out solar		230/240 V, 50 Hz		
Material data				
Cylinder body material		Stainless steel (1.4521)		
Cylinder jacket material		Polypropylene		
Insulation material		EPS with infrared absorber		
Insulation thickness	mm	50		
Corrosion protection		Stainless steel		
Blowing agent for insulation material		Pentane (GWP < 5)		
ODP		0		

Tab. 8.1 Technical data for auroSTOR solar cylinder (continued)

Supplier

Vaillant Ltd
Nottingham Road ▮ Belper ▮ Derbyshire ▮ DE56 1JT
Telephone 0845 602 2922 ▮ www.vaillant.co.uk ▮ info@vaillant.co.uk

Manufacturer

Vaillant GmbH
Berghauser Str. 40 ▮ D-42859 Remscheid ▮ Telefon 0 21 91/18-0
Telefax 0 21 91/18-28 10 ▮ www.vaillant.de ▮ info@vaillant.de

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