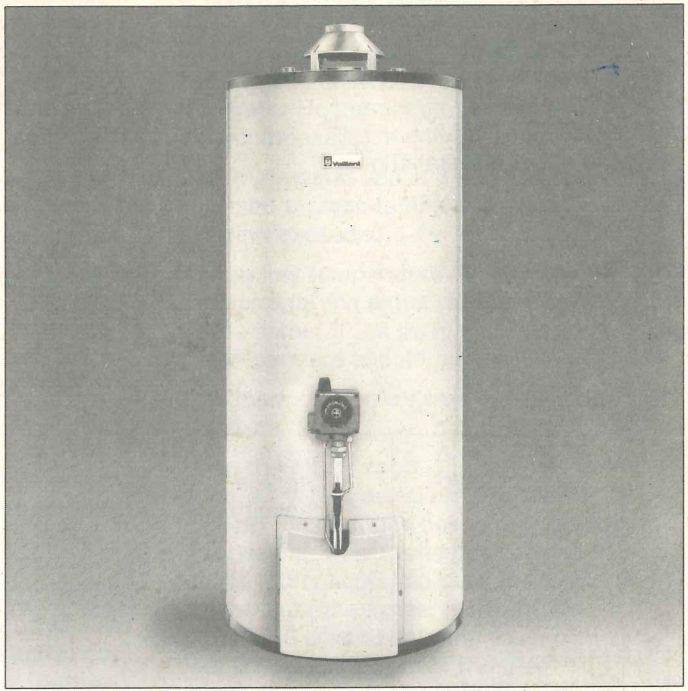
Instructions for installation and use

Gas-fired storage water heater VGH.../3Z

FOR GB ONLY



VGH 130/3Z
130 ltr storage capacity

VGH 160/3Z
160 ltr storage capacity

VGH 190/3Z
190 ltr storage capacity

VGH 220/3Z
220 ltr storage capacity

This appliance shall be installed in accordance with the relevant Codes of Practice by an authorized installer (CORGI member)

On installation please hand this pamphlet to your customer

Vaillant®

Vaillant

Europe's big name in heating, controls and hot water

0020094665GB01

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Appliance type type	Storage capacity ltr.	Nominal output kW	Nominal input kW
VGH 130/3Z	130	6,0	7,3
VGH 160/3Z	160	7,3	8,9
VGH 190/3Z	190	8,2	10,0
VGH 220/3Z	220	8,6	10,6

1 Application and designs

The Vaillant VGH Gas Fired Storage-Type Domestic Water Heaters provide 130, 160, 190 and 220 ltr (28, 35, 42 and 48 Imp. Gal) respectively of hot water with a relatively low gas consumption, sufficient for the adequate supply of larger homes in single- and multi-dwelling houses and trade premises.

The high withdrawal capacity makes it possible to take water from several taps at the same time. The VGH storage heater must only be used on an open vented system supplied from a water storage tank.

Thanks to the built-in regulating and safety controls, these appliances offer the user a maximum of security, reliability, ease of operation and last but not least very little care and maintenance effort.

With all types, the inner containers are glasslined to prevent corrosion. Insulation is ensured by a high-quality foam lagging. The dimensions are shown in the illustration (fig. 1).

2 Method of operation and safety arrangements

The gas control assembly of the Vaillant Gas Fired Storage-Type Domestic Water Heater comprises the following components:

a. A thermostat which prevents the selected storage temperature from being exceeded.

b. A safety temperature limiter, which interrupts the entire gas supply to the burner if the permissible storage temperature should be exceeded.

c. A thermo-electric flame supervision device.

When the rotary knob is in the "●" position, all valves are closed. In the "✶" position the pilot gas line is opened so that gas can flow to the pilot burner after the rotary knob has been pressed. Operation of the igniter will light the pilot flame which heats the thermocouple. The current from the thermocouple flows via the safety temperature limiter to the magnet and keeps the gas solenoid valve open. By turning the rotary knob to "🔥", the main gas passage is opened through which the gas passes to the main burner where it is ignited by the pilot flame.

The temperature sensor acts directly on the main gas valve and thus controls the ON/OFF regulation. If the thermocouple is not sufficiently heated up, the current through the thermocouple is reduced and the gas solenoid valve is closed by the valve spring. If the maximum permissible water temperature is exceeded, the temperature limiter interrupts the thermocurrent and also provides a safety switch-off facility. The appliance must only be switched on again after the fault has been remedied.

3 Dimensions

VGH.../3Z	130	160	190	220	Di-mension
a	1195	1368	1533	1760	mm
b	1071	1244	1409	1636	mm
c	1057	1230	1395	1622	mm
weight	68	76	83	91	kg
weight with water	198	236	273	311	kg

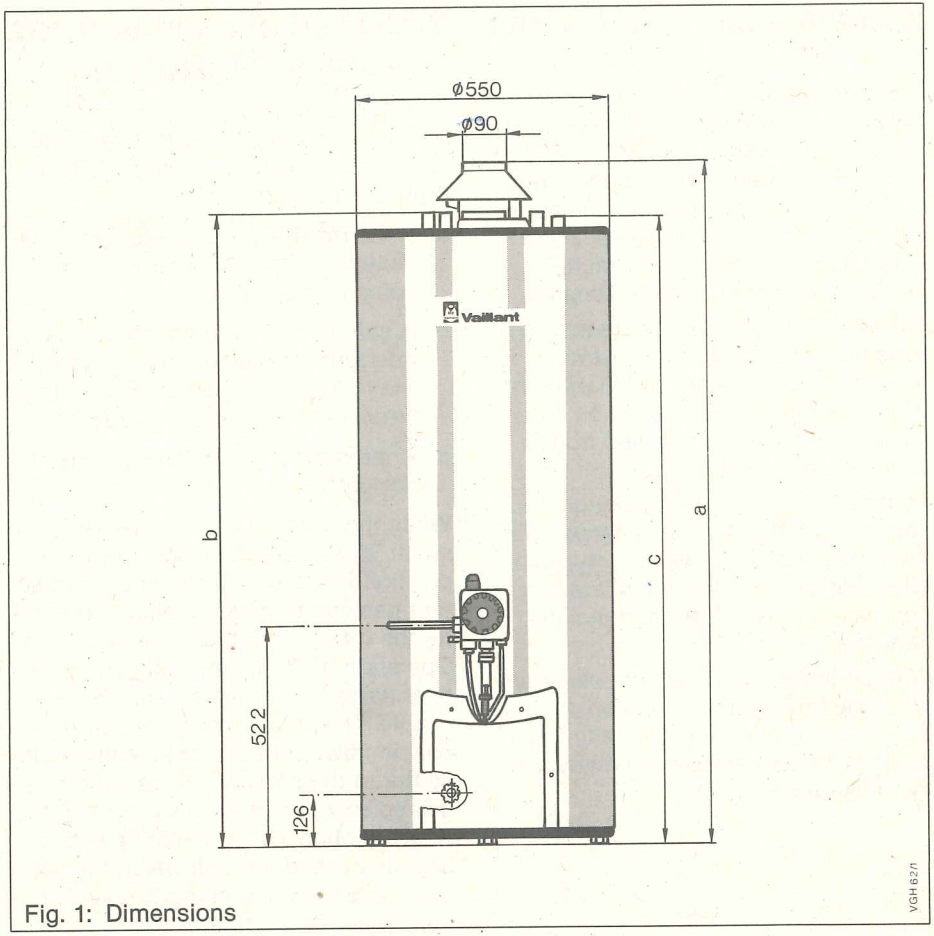


Fig. 1: Dimensions

4 Installation

4.1 Regulations

The installation of the VGH storage heater must be in accordance with the relevant requirements of the Gas safety.
(Installation and use) Regulations, Building Regulations, Building Standards (Scotland) Regulations and the byelaws of the local water undertaking.
It should also be in accordance with any relevant requirements of the local gas region and local authority and the relevant recommendation of the following British Standard Codes of Practice:

CP 342 Part 2: Centralized hot water supply.
BS 5440: Flues and air supply for gas appliances of rated input not exceeding 60 kW.
BS 5482: Domestic butane and propane gas burning installations
BS 5546: Installation of gas hot water supplies for domestic premises.
BS 6700: Design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.
BS 6891: Installation of low pressure gas pipework of up to 28 mm in domestic premises.

4.2 Installation

Before installing the Vaillant VGH Storage Water Heater, check that the local conditions, particularly the type of gas, correspond to the values given on the appliance data plate.

4.3 Positioning of the storage water heater (Fig. 2, page 6)

Important
This open-flued appliance must not be installed in a bathroom, bedroom or garage.

The Vaillant Storage-type domestic water heaters VGH must be positioned to allow the provision of a satisfactory flue and air supply. The floor on which the heater stands must be flat and level and able to take the weight of the heater filled with water. Clearance should be provided to permit removal of the gas assembly and burner for servicing.

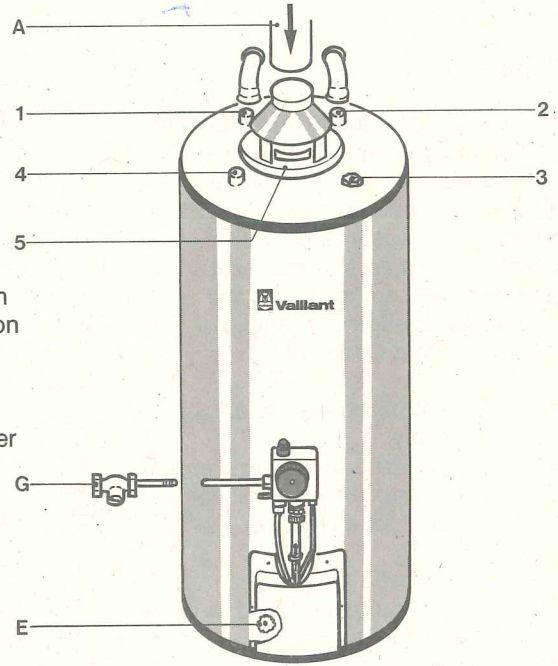
5 Gas-side installation

5.1 Gas connection

The gas connection line must be blown through thoroughly before connection, to prevent fragments of metal, hemp and other foreign matter from entering the gas fitting.
The first two turns of the gas connection pipe thread must not be covered with any sealing material. Neither hemp nor sealing compound must enter the gas fitting. The length of the pipe thread must remain below 19 mm, to prevent the pipe from entering too deeply into the gas fitting. The gas piping is connected to the gas fitting with a ½" pipe via a gas stop cock.

5.2 Flue installation

Detail recommendations for flues are given in BS 5440: Part 1, The following notes are intended to give general guidance.
The flue fitted to the water heater must have a cross sectional area not less than the area of the flue outlet on the appliance draught diverter.
The flue installation must be checked to ensure adequate draught and clearance of products of combustion.



1 hot water connection
2 cold water connection
3 protection anode
4 recirculating connection R¾"
5 down draught diverter

A = flue connection
G = gas supply
E = drain valve

Fig. 2: Installation

VGH 6/1

5.3 Air supply

Detail recommendations for air supply are given in BS 5440: Part 2. The following notes are intended to give general guidance.

5.3.1 Room or internal space air supply

The room or space in which the heater is located must have a permanent air vent. This vent must be either direct to the outside air or to an adjacent room or internal space which must itself have a permanent air vent of at least the same size direct to the outside air.
The minimum effective area of permanent air vent(s) is specified below and is related to the maximum rated heat input of the unit.

Appliance	cm^2	in^2
VGH 130/3Z	35	5
VGH 160/3Z	35	5
VGH 190/3Z	35	5
VGH 220/3Z	35	5

5.3.2 Cupboard or compartment air supply

Where the heater is to be installed in a cupboard or compartment, permanent air vents are required in the cupboard or compartment at high and low level. These air vents must either be both direct to the outside air or both open to a room. Where the cupboard or compartment air vents are open to a room or internal space, this room or internal space must itself be provided with an air vent direct to the outside air as detailed in 5.3.1.

5.3.3 Effect of an extract fan

If there is any type of extract fan fitted in the premises there is the possibility that if adequate air inlet area from outside is not provided spillage of the products from the flue could occur when the extract fan is operation. Where such installations occur a spillage test as detailed in BS 5440:1 must be carried out and any necessary action taken.

Pos. of air vents	appliance	Air vent areas			
		Air from room or internal space		Air direct from outside	
		cm^2	(in^2)	cm^2	(in^2)
High level	VGH 130/3Z	66	11,0	33	5,2
	VGH 160/3Z	80	12,5	40	6,5
	VGH 190/3Z	90	14,0	45	7,0
	VGH 220/3Z	96	15,0	48	7,5
Low level	VGH 130/3Z	132	21,0	66	11,0
	VGH 160/3Z	160	25,0	80	12,5
	VGH 190/3Z	180	28,0	90	14,0
	VGH 220/3Z	192	30,0	96	15,0

Note: Both air vents must communicate with the same room or internal space or must be both on the same wall to the outside air.

6 Water connection (fig. 2, 3)

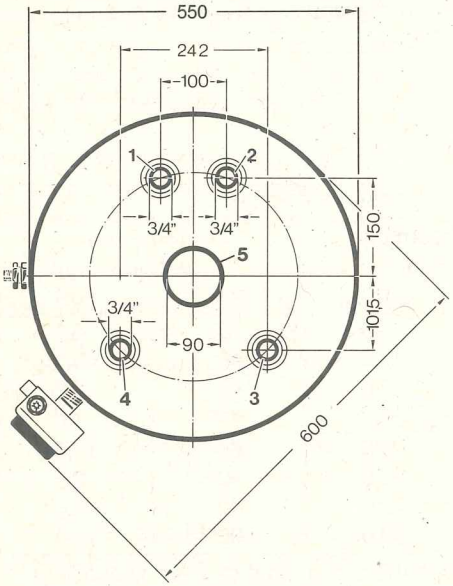


Fig. 3: Water connection

The cold water supply to the appliance is connected with ¾" pipework.
The supply from the water storage tank must be from a distributing pipe to which no fitting for other purposes is connected.

The hot water connection is made with ¾" pipe to the socket (top left).

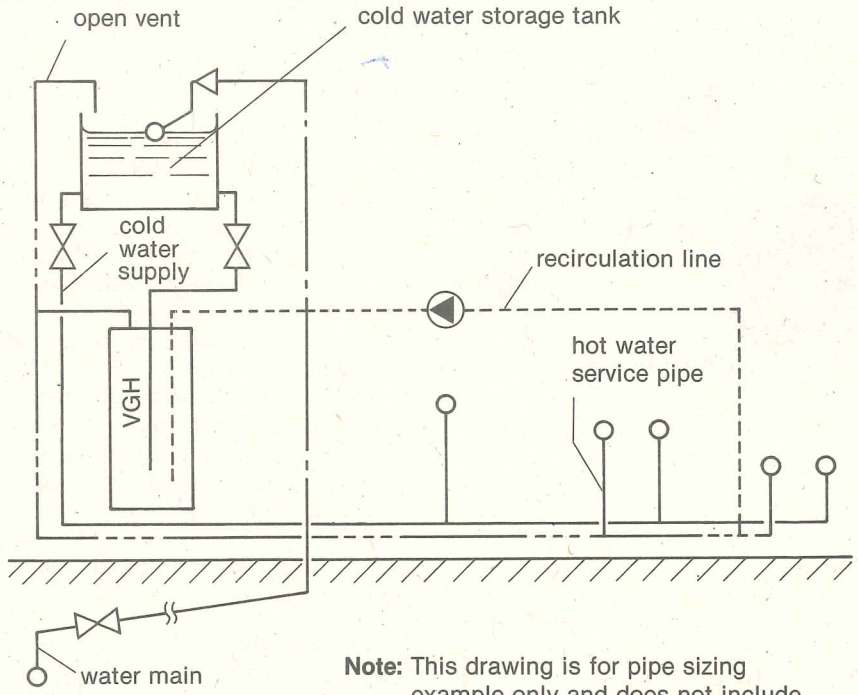
Before connecting the storage water heater, the cold water feed piping must be flushed thoroughly to avoid damage through dirt and other foreign matter. Before starting up, the storage water heater must be filled until water runs out of the hot water taps. On first lighting it must be ensured that the additional water volume produced inside the appliance by thermal expansion is in fact discharged via the open vent pipe.

1 hot water connection
2 cold water connection
3 protection anode
4 recirculation connection R¾
5 down draught diverter

6.1 Recirculating line (fig. 4)

If you want to supply several widely spaced taps, it is possible to connect a hot water recirculating line, to ensure that you will have hot water immediately without having to wait until the cooled water has been drained from the piping. This will give you hot water immediately from any of the hot water taps.

To provide this facility, a small time controlled recirculating pump (m) and a non-return valve (d) have to be fitted into a pipe running between the hot water taps and the recirculation connection.



Note: This drawing is for pipe sizing example only and does not include all necessary valves and backflow prevention devices.
For further details ask Vaillant Ltd.

VGH 97/0

Fig. 4: Typical recirculation system

7 Setting the gas valve assembly

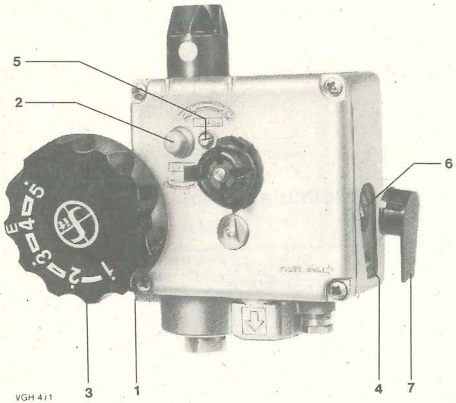


Fig. 5: Setting of the gas valve assembly

1 Inlet presure test point
2 Locking screw with protective cap
3 Thermostat knob (pulled off)
4 Pilot gas adjusting screw
5 Main burner adjusting screw
6 Burner pressure test point
7 Protective cap

7.1 Check the appliance type

Check against the data plate that the heater design corresponds to the local gas supplied.
If necessary the appliance can be converted by changing the pilot and main burner injector nozzles. See section 8.

7.2 Gas setting of the main burner

Because of the locally different gas conditions, but particularly also because of the different calorific values, an exact setting of the gas valve assembly ex works is not possible. To ensure proper operation and long service life of the storage water heater it is therefore absolutely necessary to carry out a gas adjustment according to the local conditions in the way described below. For an accurate setting, the gross calorific value) of the available gas must be known. The different gas flow rates can be obtained from the gas setting tables (page 11).

7.3 Please note!

A proper gas adjustment is only possible if the required inlet pressure (page 16, Technical Data) does in fact exist at the site of installation. If the pressure differs from these values, the local gas supply authority must be notified.

7.4 Natural gas

Pull off the temperature selector knob (3), pull off the red protective cap and turn locking screw (2) anti-clockwise up to the end position. Then turn adjustment screw (5) clockwise (more gas) or anti-clockwise (less gas) until the necessary gas flow rate has been reached (see gas adjustment tables, 7.8, page 11).

7.5 L.P.G.

In the case of **liquefied gas**, there is no setting arrangement. Instead, the gas flow rate and the burner pressure are fixed as follows:

a) Pull off the thermostat knob (3).
b) Pull off the red protective cap and turn locking screw (2) clockwise up to the end position (screw will click).
c) Push on the red protective cap and the thermostat knob (3).

The inlet pressure must be
28 mbar (for Butane) or
37 mbar (for Propane).
The flames must burn properly, evenly and with a limited blue core and they must not flash back.

7.6 Town gas and gas/air mixtures

Pull off the temperature selector knob (3), pull off the red protective cap and turn locking screw (2) anti-clockwise up to the end position. Then turn adjustment screw (5) clockwise (more gas) or anti-clockwise (less gas) until the necessary gas flow rate has been reached (see gas adjustment table, 7.9, page 11).

7.7 Pilot flame adjustment

a) Start the appliance
b) Check the pilot flame with the main burner shut off (ignition position ✱): When it is burning correctly, the pilot flame embraces the thermocouple.
To achieve this, adjust as follows, with the main burner shut off.
c) Take off protective cap (7).
d) Regulate pilot flame with the pilot gas adjusting screw (4).
Clockwise rotation — Less gas
Anti-clockwise rotation — More gas.

7.8 Natural gas (Gross calorific value 37.8 MJ/m³ (1014 Btu/ft³) 15° C, 1013 mbar dry)

Appliance type	Rated output kW (Btu/h)	Gas flow rate l/min. (ft³/h)
VGH 130/3Z	6.0 (20550)	11.6 (24.6)
VGH 160/3Z	7.3 (25000)	14.1 (29.9)
VGH 190/3Z	8.2 (28000)	15.9 (33.6)
VGH 220/3Z	8.6 (29400)	16.8 (35.6)

7.9 Town gases and gas/air mixtures

Appliance type	Rated output kW (Btu/h)	Gas flow rate l/min (ft³/h) at a gross calorific value in MJ/m³ (Btu/ft³) (15° C, 1013 mbar, dry) of:						
		16 (430)	18 (480)	20 (540)	22 (590)	24 (640)	26 (700)	28 (750)
VGH 130/3Z	6.0 (20.550)	27.4 (57.9)	24.3 (51.4)	21.9 (46.3)	19.9 (42.1)	18.3 (38.6)	16.8 (35.4)	15.6 (32.9)
VGH 160/3Z	7.3 (25.000)	33.4 (70.8)	29.7 (62.9)	26.7 (56.6)	24.3 (51.5)	22.3 (47.2)	20.5 (43.4)	19.1 (40.5)
VGH 190/3Z	8.2 (28.000)	37.5 (79.4)	33.3 (70.5)	30.0 (63.6)	27.3 (57.8)	25.0 (53.0)	23.1 (48.9)	21.4 (45.3)
VGH 220/3Z	8.6 (29.400)	39.8 (84.3)	35.3 (74.8)	31.8 (67.4)	28.9 (61.2)	26.5 (56.1)	24.5 (51.9)	22.7 (48.1)

8 Conversion of the storage water heaters to other types of gas

The Vaillant Gas-Fired Storage Type Domestic Water Heaters must only be converted to another gas with the conversion sets supplied by us. The conversion sets contain all the parts needed for conversion. The various conversion components are listed in the table below according to gas group appliance type.

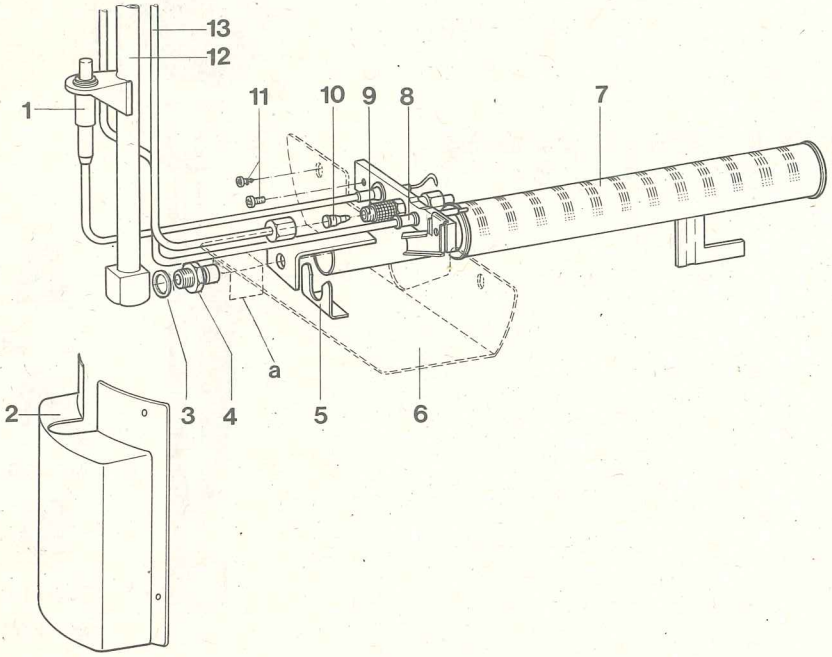
8.1 Carrying out the conversion (Fig. 6)

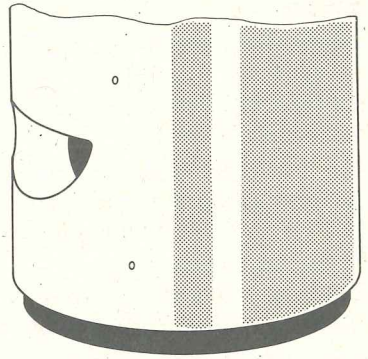
a) Isolate the gas supply to the heater
b) Remove the cover cap (2)
c) Release the connection of the pilot gas tube and the thermocouple at the gas control assembly
d) Remove the nozzle cover sheet
e) Release the clamping device (5) on the burner nozzle (4)
f) Remove the screws (11)
g) The burner (7) can now be withdrawn from the combustion chamber
h) Unscrew the pilot burner tube (13) from the pilot support
i) Replace pilot burner nozzle (10)
j) Replace main burner nozzle (4) and washer (3)
k) Reassembly in reverse order
l) After conversion the gas flow rate must be set.
Refer to section 7 for details.
m) Check the performance and operation of the flame supervision device.

Gas type	Town Gases				Natural Gases				Liquid Gases				
Appliance	VHG[1] 130/3Z	VGH 160/3Z	VGH 190/3Z	VGH 220/3Z	VGH[1] 130/3Z	VGH 160/3Z	VGH 190/3Z	VGH 220/3Z	VGH[1] 130/3Z	VGH 160/3Z	VGH 190/3Z	VGH 220/3Z	
Burner nozzle*	430	460	490	490	240	260	260	280	132	138	142	142	marking
Pilot burner nozzle	70	70	70	70	35	35	35	35	20	20	20	20	marking

*) The burner nozzle are marked with the 100-fold value of their diameter.

[1] With nozzle-cover sheet (6).





1 Piezo igniter
2 cover cap
3 washer
4 burner nozzle
5 clamping device (burner nozzle)
6 nozzle-cover sheet
7 burner
8 thermocouple
9 pilot burner
10 pilot burner
11 screw
12 main gas tube
13 pilot gas tube

a cover sheet only for VGH 220 PB

VGH 63/3

Fig. 6: Conversion of the storage water heater

9 Operating instructions

9.1 Starting up

a) Ensure the heater is filled with water. Check by running water from a hot tap. Check the gas cock in the gas supply is open.

b) Turn the rotary knob (1) from the closed position ● to the ignition position ✶ by pressing it in and turning.

c) Press the rotary knob (1) down and operate the piezoelectric igniter (3).

d) Keep rotary knob pressed down for about 10 seconds. If the pilot flame should go out, when rotary knob is released, wait 3 minutes before repeating the lighting procedure.

e) Turn the rotary knob (1) anti-clockwise to the ON position 🔥.

f) The Temperature selector (2) can be set to any temperature between
position 1 about 40 °C
position 5 about 70 °C
For normal hot water consumption and in the case of hard water we recommend the setting 3.

9.2 To turn off the heater

Turn the rotary knob (1) to the OFF position ●.

If the appliance is to be kept out of service for a very long period, the gas service cock has to be shut off in addition.

Important:

Wait at least 3 minutes after turning off the heater before lighting again.

1 rotary knob
2 temperature selector
3 piezo igniter

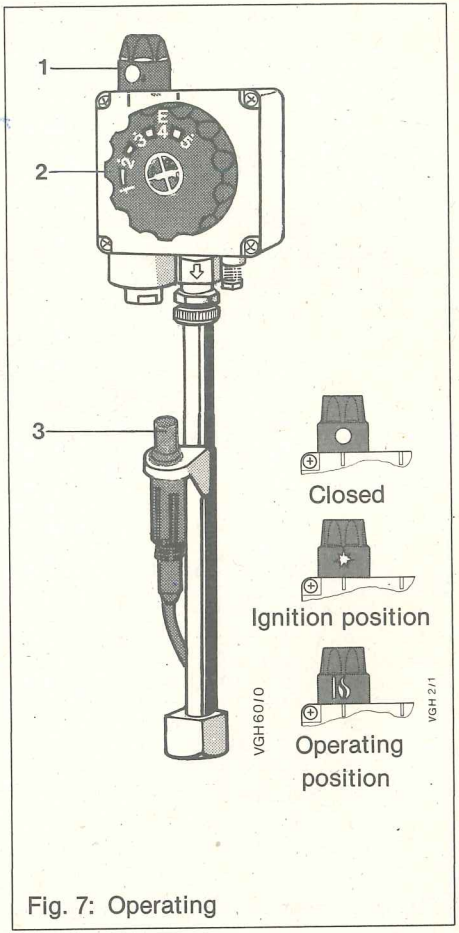


Fig. 7: Operating

10 Care and maintenance

10.1 Avoiding frost damage

If there is a danger of frost, it is advisable to keep the storage water heater running at a low level, i.e. below the "position 1" setting. The built-in thermostat then maintains the water temperature at low cost at a level which will prevent freezing of the heater.

If the storage water heater is kept out of use for a fairly long period in an unheated room, for example if the dwelling is left for some time during the cold season, the appliance should be turned off, isolated from the gas and water supplies and completely drained.

10.2 Cleaning

For cleaning the external parts, a moist cloth, possibly with soapy water, is sufficient. All abrasive and dissolving cleaning agents (scouring powders of all kinds, solvents etc.) must be avoided.

10.3 Maintenance

It is important that every gas-fired appliance is serviced once a year.

A maintenance agreement may be arranged with your local servicing company or Vaillant Ltd. Contact Vaillant Ltd. for details.

Before any work is carried out on the appliance the gas service cock must be closed.

Remove the burner and clean carefully. The same applies to the dirt collection panel on the base of the storage heater. After cleaning, check the performance of the control and safety devices, and the gas flow rate (see section 7).

We recommend that the internal storage container should also be checked for deposits. If such deposits are found, they can be rinsed out through the drain outlet. In the case of very hard water, descaling may be necessary.

The Vaillant Domestic Water Storage Heaters are equipped with a protective magnesium anode. Under normal operating conditions, this anode has a service life of about 5 years. However, it should regularly be unscrewed on the hexagon whenever maintenance work is carried out and checked for wear: the diameter should be at least 12 mm still and the surface should be sufficiently homogeneous. If necessary, it should be changed for a new original replacement anode to protect the internal container against corrosion.

11 Technical data

[1]) s.t. = standard conditions of 15° C, 1013 mbar dry

Appliance type	VGH 130/3Z	VGH 160/3Z	VGH 190/3Z	VGH 220/3Z	Units
Nominal output	6.0 20550	7.3 25000	8.2 28000	8.6 29400	kW BTU/h
Nominal input (based on Gross C.V.)	7.3 25000	8.9 30400	10.0 34100	10.6 36200	kW BTU/h
Gas rate natural gas (s.t.) based on Gross C.V. 37,8 MJ/m³, 1014 BTU/ft³	11.6 24.6	14.1 29.9	15.9 33.6	16.8 35.6	l/min ft³/h
Gas rate L.P.G. (s.t.) based on Gross C.V. 95,8 MJ/m³, 2571 BTU/ft³	4.6 9.8	5.6 11.9	6.3 13.3	6.6 14.0	l/min ft³/h
Gas rate town gas (s.t.) based on Gross C.V. 15,9 MJ/m³, 427 BTU/ft³	27.6 58.6	33.6 71.2	37.7 79.9	40.0 84.7	l/min ft³/h
Gas rate LPG/air mixtures (s.t.) based on Gross C.V. 26,5 MJ/m³, 711 BTU/ft³	16.5 35.0	20.2 42.8	22.6 47.9	24.0 50.8	l/min ft³/h
Gas inlet pressure required natural gas	20 (8)	20 (8)	20 (8)	20 (8)	mbar (in WG)
LPG (Propane)	37 (14.8)	37 (14.8)	37 (14.8)	37 (14.8)	mbar (in WG)
Town gas	8 (3.2)	8 (3.2)	8 (3.2)	8 (3.2)	mbar (in WG)
LPG/air mixture	8 (3.2)	8 (3.2)	8 (3.2)	8 (3.2)	mbar (in WG)
Flue gas connection	∅ 90	∅ 90	∅ 90	∅ 90	mm
Water connections	R¾	R¾	R¾	R¾	
Maximum operating head	60	60	60	60	m
Nominal water capacity	130	160	190	220	l
Heating-up time △t = 50 K	72	74	77	83	min
Weight (cpl. with water)	198	236	273	311	kg

We cannot accept responsibility for damage caused as a result of non-observance of these installation and operating instructions.

Vaillant®

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