

Gas Instantaneous Water Heater

WR 11/14/18 .B..



BOSCH

Installation Manual and Operating Instructions



Read installation manual prior to installation of this unit!
Read user manual before putting this unit in operation!



Observe the warnings in the manuals!
The installation room must fulfil the ventilation requirements!



Installation by an authorised person only!


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1 Key to symbols and safety instructions

1.1 Key to symbols

Warnings




Warnings in this document are identified by a warning triangle printed against a grey background.

Keywords at the start of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

The following keywords are defined and can be used in this document:

- **NOTICE** indicates a situation that could result in damage to property or equipment.
- **CAUTION** indicates a situation that could result in minor to medium injury.
- **WARNING** indicates a situation that could result in severe injury or death.
- **DANGER** indicates a situation that will result in severe injury or death.

Important information



This symbol indicates important information where there is no risk to people or property.

Additional symbols

Symbol	Explanation
	Step in an action sequence
→	Cross-reference to another part of the document
•	List entry
–	List entry (second level)

Table 1

1.2 Safety Instructions

If there is a smell of gas:

Close the gas valve.

Open windows.

Do not operate any electrical appliances or switches (on/off).

Extinguish any naked flames.

Phone the gas company or an authorized technician from a safe distance.

If there is a smell of burnt gases:

Disconnect the appliance.

Open doors and windows.

Inform an installation company.

Burn-back (fire in burner tube or chamber)

In the event of a burn-back, where the flame burns back to the injector, immediately turn off the gas supply at the control valve on the panel.

After ensuring the flame ~~extinguished~~, wait for one minute and re-light the appliance in the normal manner.

Should the appliance again ~~burn~~ back, close the control valve and call a service technician.

Do not use the appliance again until the service technician has declared that it is safe to do so.

Fitting, modifications

The fitting and modification of the installation of the appliance must be carried out only by an authorized technician.

The installation ~~of~~ the water heater ~~may~~ only be carried out by a registered installer ~~and~~ that such installations shall comply with the requirements of SANS 10087-1.

The pipes carrying burnt ~~gas~~ must not be modified.

Do not close or reduce air circulation holes.

Maintenance

We recommend to have the system regularly serviced in order to ensure that it functions reliably and safely.

The installer is responsible for the safety and environmental compatibility of the installation.

The appliance should be serviced annually.

Only original spare parts must be used.

Explosive and inflammable materials

Inflammable materials (paper, solvents, ink, etc.) should not be stored near the appliance.

Combustion air and ambient air

To avoid corrosion, combustion ~~air~~ and ambient air should be free of aggressive substances (for example halogenated hydrocarbons containing chlorine and fluoride composites).

Important information for the user

This appliance may only be installed by a registered LP Gas installer.

All registered installers are issued with a card carrying their registration number.

Ask to be shown the card before allowing the installation work to commence and make note of the Installer QCC number. Upon completion of the installation, the installer is required to explain the operational details of the appliance together with the safety instructions. You will be asked to sign acceptance of the installation and be provided with a completion certificate. You should only sign for acceptance of the installation when the installation is completed to your satisfaction. Note that your invoice is required in the event that you wish make a guarantee claim.

Important information for the installer

This appliance may only be installed by a LP gas installer registered with the Liquefied Petroleum Gas Association of Southern Africa.

The appliance must be installed in accordance with the requirements of SANS 10087-1 and any fire department regulations and/or local by laws applicable to the area. If in doubt check with the relevant authority before undertaking the installation.

Upon completion of the installation you are required to fully explain and demonstrate to the user the operational details and safety practices applicable to the appliance and the installation.

Client information

Inform the client about the function and operation of the appliance.

Caution clients against performing modifications or repairs themselves.

Risk of damage due to operator error

Operator errors can result in injury and damage to property.

Ensure that children never operate this appliance unsupervised or play with it.

Ensure that only personnel who can operate this appliance correctly have access to it.

2 Technical Characteristics and Dimensions

2.1 Declaration of conformity with relevant EEC regulations

This appliance fulfills European directive requirements 2009/142/EC, 2006/95/EC, 2004/108/EC and corresponds to the specifications described in the corresponding EEC certificate of proof.

Model	WR 11/14/18 B...
Category	II ₂ H ₃ +
Type	Type B

Table 2

2.2 Explanation of Model Code

W	R	11	B	23 31	S....
W	R	14	B	23 31	S....
W	R	18	B	23 31	S....

Table 3

- [W] Gas Water Heater
- [R] Proportional power adjustment
- [11] Capacity (l/min)
- [B] Electronic ignition powered by 1.5 V batteries
- [23] Indicator number of natural gas H
- [31] Indicator number of LPG
- [S...] Country code

The code number indicates the gas group according to EN 437:

Identification Code	Wobbe Index (Ws) (15 °C)	Gas type
23	12,7-15,2 kWh/m ³	Natural Gas - Group H
31	20,2-21,3 kWh/m ³	LPG - Group B/P

Table 4

2.3 Accessories (Included with Appliance)

- Gas water heater,
- Attachment elements,
- Installation accessories,
- Two 1.5 V batteries type R
- Heater documentation.

2.4 Description of the heater

Operating convenience, as the heater is ready to operate by simply pressing a switch.

- Heater for wall-mounting,
- Ignition by electronic device triggered when the water valve opens,
- Great savings in comparison with conventional heaters, due to the possibility of power adjustment and no permanent pilot flame,
- Natural gas/LPG burner,
- Semi-permanent pilot burner which only functions during the period between the opening of the water valve and the ignition of the main burner,
- Heat exchanger in copper without tin/lead covering,
- Water valve in fibreglass-reinforced polyamide, 100% recyclable,
- Automatic adjustment of the water flow by means of a device which permits a constant flow to be maintained in spite of variable pressure supplies,
- Gas flow adjustment proportional to the water flow to maintain a constant high temperature.
- Safety devices:
 - Ionisation probe to check for accidental extinction of the burner flame,
 - Flue gas safety device which turns off the heater in case of inadequate combusted gas evacuation conditions,
 - Temperature limiter which prevents overheating of the heat exchanger.

2.5 Type overview

The type plate is located at the bottom left of the appliance. There you will find details of appliance output, model number, approval data and the serial number.

2.6 Special accessories

- Conversion kit from natural gas to butane/propane.

2.7 Dimensions

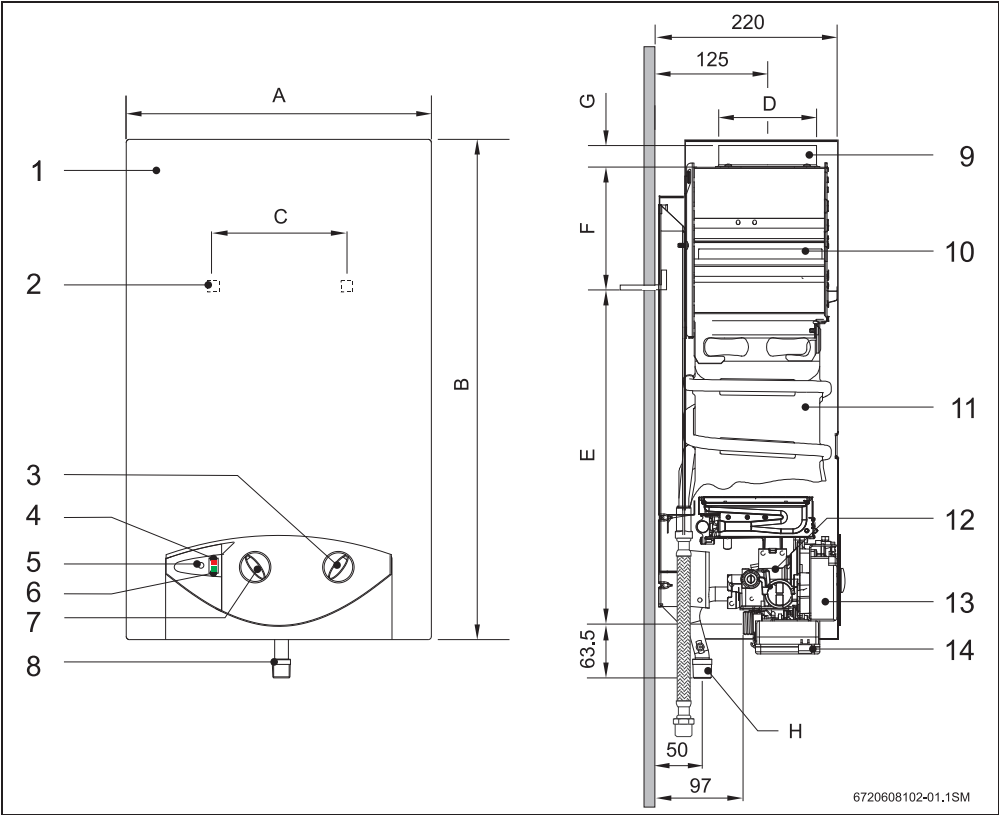


Fig. 1

- [1] Front cover

[2] Hole for fixing to wall

[3] Temperature control

[4] Led indicator for battery charge level

[5] ON/OFF switch

[6] Led indicator for burner status

[7] Output control
- [8] Gas connection

[9] Flue socket

[10] Draught diverter with flue gas monitor

[11] Heat exchanger

[12] Automatic gas valve

[13] Igniter unit

[14] Battery compartment

Dimensions (mm)	A	B	C	D	E	F	G	H (Ø)	
								Natural gas	LPG
WR11B	310	580	228	112,5	463	60	25	1/2"	1/2"
WR14B	350	655	228	132,5	510	95	30	1/2"	1/2"
WR18B	425	655	334	132,5	540	65	30	1/2"	1/2"

Table 5 Dimensions

2.8 Electrical diagram

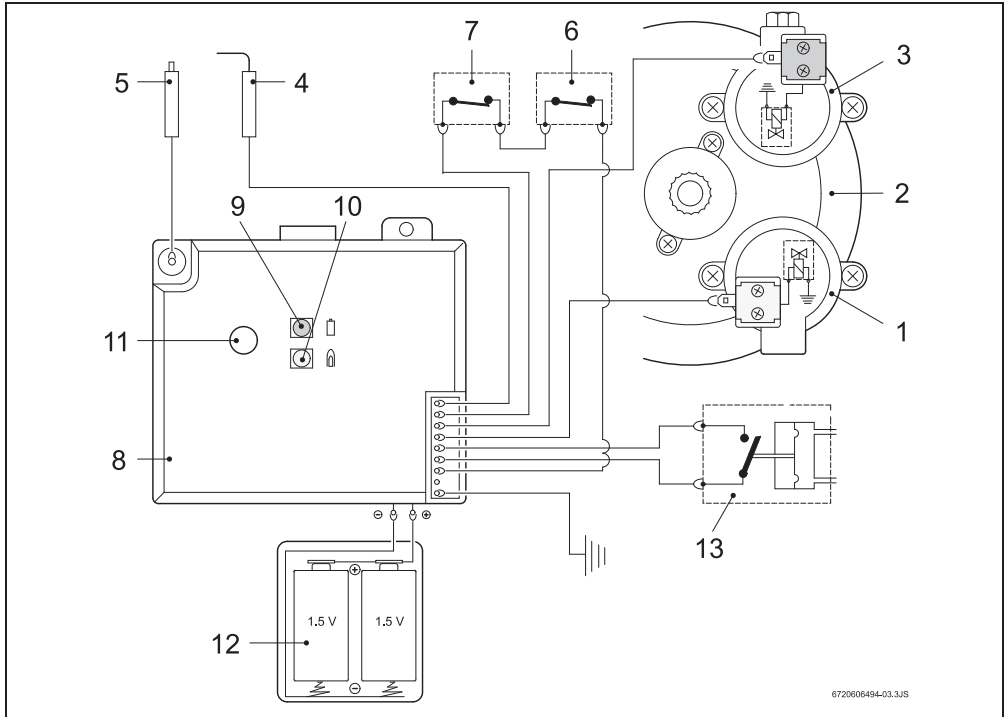


Fig. 2 Electrical diagram

- [1] Servo valve (normally open)
- [2] Diaphragm valve
- [3] Main valve (normally closed)
- [4] Ionisation detector
- [5] Igniter electrode
- [6] Flue gas safety device
- [7] Temperature limiter
- [8] Igniter unit
- [9] LED indicator for battery charge level
- [10] LED indicator for burner status
- [11] ON/OFF switch
- [12] Batteries, 1.5V
- [13] Microswitch

2.9 Function

This gas heater is equipped with automatic electronic ignition which simplifies its operation.

To do so, just turn on the switch (Fig. 5).

After this procedure, automatic ignition occurs whenever a hot water tap is opened. First, the pilot burner is lit and approximately four seconds afterwards the main burner. The

pilot burner flame is then extinguished after a short period of time.

This is a way of saving a great amount of energy as the pilot burner only operates for the minimum necessary time to ignite the main burner, in contrast to conventional systems which operate permanently.



Air in the gas supply pipe when the heater is started up may cause ignition to fail.

If this happens:

Close and open the hot water tap to repeat the ignition process until all the air has been purged.

2.10 Technical characteristics

Technical characteristics	Symbol	Units	WR11	WR14	WR18
Power and flow					
Nominal useful power	P _n	Btu/h	65570	80595	104165
Minimum useful power	P _{min}	Btu/h	23905	23905	23905
Useful power (adjustment range)		Btu/h	23905-65570	23905 - 80595	23905 - 104165
Nominal thermal flow	Q _n	Btu/h	74450	92210	117825
Minimum thermal flow	Q _{min}	Btu/h	27660	27660	27660
Gas data ¹⁾					
Supply pressure					
Natural gas H	G20	kPa	2	2	2
LPG (Butane/Propane)	G30	kPa	2,8	2,8	2,8
Consumption					
Natural gas H	G20	m ³ /h	2,2	2,77	3,5
LPG (Butane/Propane)	G30	Kg/h	1,75	2,2	2,79
Number of injectors			12	14	18
Water data					
Maximum permissible pressure ²⁾	p _w	psi	170	170	170
Temperature selector in fully clockwise position					
Temperature rise		°C	50	50	50
Flow range		l/min	2 - 5,5	2,0 - 7	2,0 - 8,8
Minimum operating pressure	p _{wmin}	psi	1,5	1,5	3,0
Minimum pressure for maximum water flow		psi	3,6	5,0	7,2
Temperature selector in fully anti-clockwise position					
Temperature rise		°C	25	25	25
Flow range		l/min	4 - 11	4 - 14	4 - 17,6
Minimum pressure for maximum water flow		psi	8,7	14,5	19
Combustion products ³⁾					
Minimum low pressure		mbar	0,015	0,015	0,015
Flow		g/s	13	17	22
Temperature		°C	160	170	180

Table 6

- 1) Hi 15 °C - 1013 mbar - dry: Natural gas 34.02 MJ/m³ (19.5 kWh/m³)
LPG: Butane 45.65 MJ/kg (12.7 kWh/kg) Propane 46.34 MJ/kg (12.9 kWh/kg)
- 2) Considering the water dilution effect, this value must not be exceeded.
- 3) For nominal calorific power.

3 Use



Open all water and gas blocking devices.
Purge the pipes.



CAUTION:

The front panel in the burner and pilot burner area may reach high temperatures, with risk of burning in case of contact

3.1 Before starting up the heater



CAUTION:

Initial startup must be performed by a qualified technician who will provide the client with all the necessary information for optimum operation of the gas heater.

Check if the gas indicated on the rating plate is the same as the one used at the location.

Open the gas valve.

Open the water valve.

3.2 Batteries

Battery insertion

Insert the two 1.5 V R20 batteries.

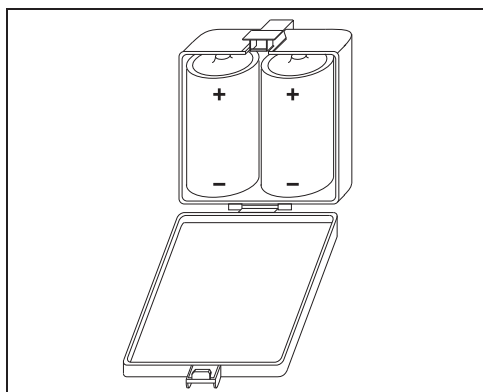


Fig. 3 Inserting the batteries

Replacing the batteries

The batteries must be changed if the red LED starts flashing.

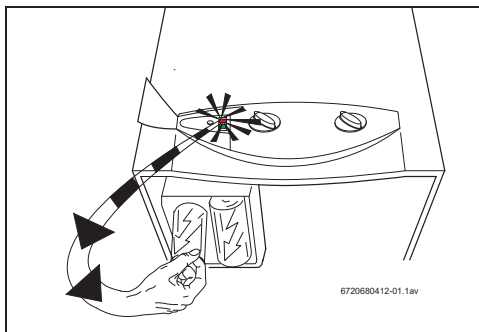


Fig. 4 Replacing the batteries

Precautions when using the batteries

- Do not dispose of batteries as domestic waste. Take them to appropriate collecting places for recycling.
- Do not insert flat batteries.
- Only use the type of batteries indicated.

3.3 Turning the heater on and off

Turning on

Press the switch , position .

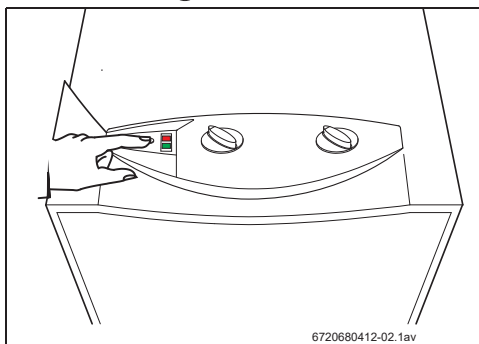


Fig. 5

Green light on = Main burner on

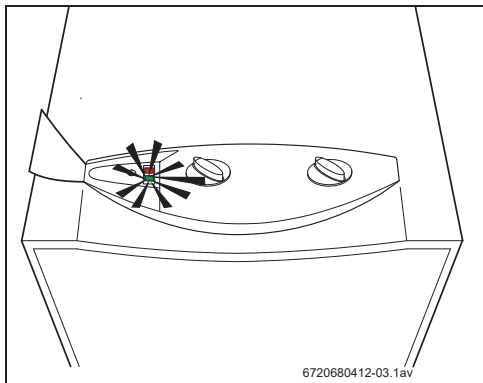


Fig. 6

Turning off

Press the switch , position .

3.4 Power adjustment

Lower water temperature.

Less power.

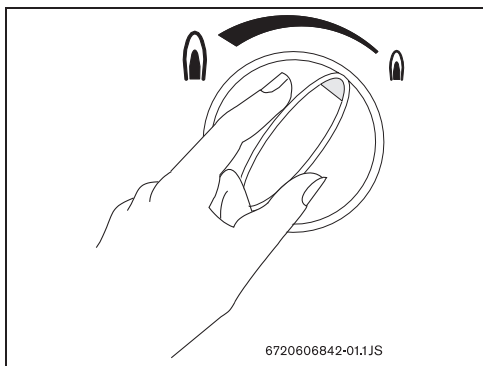


Fig. 7

Higher water temperature.

More power.

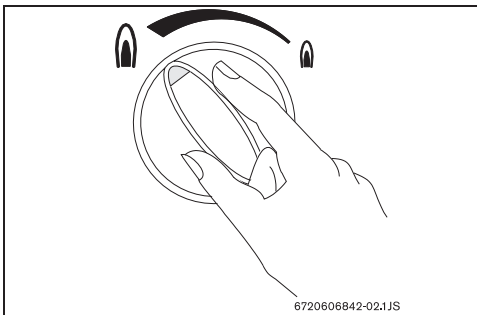


Fig. 8

3.5 Temperature/flow adjustment

Turn anti-clockwise

Increases flow and decreases water temperature.

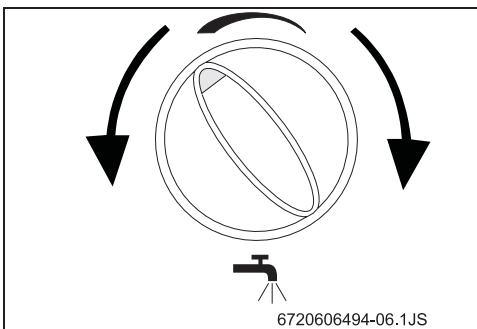


Fig. 9

Turn clockwise.

Decreases flow and increases water temperature.

Regulating the temperature to the minimum required value reduces energy consumption as well as the possibility of limescale deposits in the heat exchanger.

3.6 Purge the appliance

If there is a risk of freezing, proceed as follows:

Remove the retaining clip from threaded bushing (Fig. 10, [1]).

Remove threaded bushing (Fig. 10,[2]) from water valve.

Empty the appliance of all water.

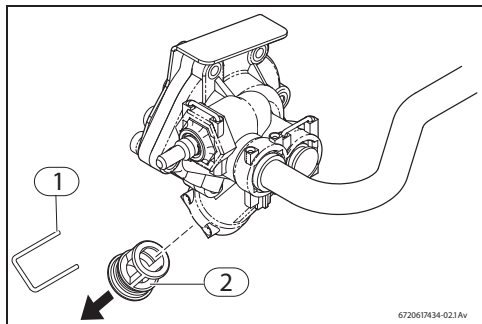


Fig. 10 Purge

- [1] Retaining clip
- [2] Threaded bushing

3.7 Cleaning

Clean the front cover using a damp cloth and detergent.



Do not use abrasive or corrosive cleaners.

4 Regulation

Any local by-laws and regulations pertaining to installation and use of gas-heated appliances must be observed. Please refer to the laws that should be attended in South Africa.

5 Installation (must be carried out only by qualified technicians)



DANGER: Explosion!

Always turn off the gas cock before carrying out any work on components which carry gas.



Installation, electrical connection, gas installation, connection of inlet and exhaust pipes and initial of the water heater may only be carried out by a registered installer and that such installations shall comply with the requirements of SANS 10087-1.



The appliance can only be sold in the countries mentioned in the type plate.

5.1 Important information

Before installing, call the gas company and check the standard relating to gas heaters and ventilation requirements for rooms.

Install a gas cut-off valve as close as possible to the heater.

After finishing the gas system, the pipes must be thoroughly cleaned and leak-tested; to avoid damaging the gas valve by excess pressure, a test must be performed with the gas valve of the heater closed.

Check if the heater corresponds to the type of gas provided.

Check if the flow and pressure through the installed reducer are appropriate for the consumption of the heater (see technical data in the table 4).

5.2 Selection of the place of installation

Requirements regarding the place of installation

- Do not install the heater in rooms with a volume of less than 8 m³ (not including the volume of the furniture providing this does not exceed 23 m³).
- Comply with the specific instructions for each country.
- Assemble the gas heater in a well-ventilated location where it will not be exposed to temperatures below zero and in a place where there is an evacuation pipe for combustion gases.
- The gas heater must not be installed over a heat source.
- To avoid corrosion, the combustion air must be free from harmful substances. Examples of particularly corrosive substances: halogenated hydrocarbons contained in solvents, paints, glues, engine gases and various domestic detergents. If necessary, take adequate measures.
- Respect the minimum installation clearances indicated in Fig. 11.
- The heater must not be installed in locations where the room temperature can reach 0 °C.

In case of a frost risk:

- Turn off the heater,
- Remove batteries,
- Purge the heater → section 3.6).

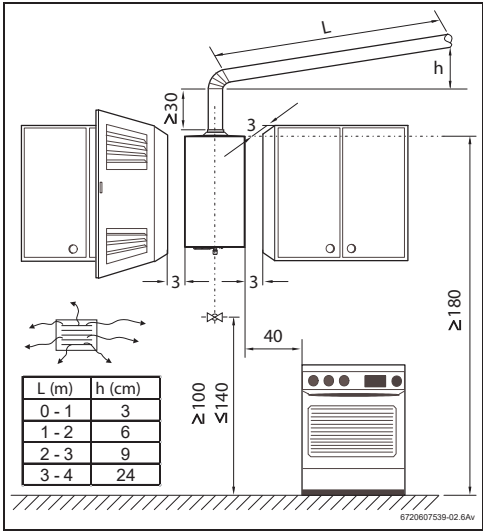


Fig. 11 Minimum clearances

Combustion gases



DANGER:
Make sure that all flue connections are tight and sealed.

Failure to follow this requirement may cause dangerous exhaust gases to enter living space which may result causing personal injury or loss of life.

- All gas heaters must be connected in a leak-proof manner to a gas evacuation pipe of adequate dimensions.
- The flue must:
 - be vertical (reduced horizontal sections or no horizontal sections at all)
 - be thermally insulated
 - have an exit above the maximum roof level.
- The combustion gases evacuation pipe must be inserted in the flue ring. The external diameter of the pipe must be slightly less than the diameter of the flue indicated in the table of heater dimensions.
- The extremity of the evacuation pipe must be protected against wind/rain.



CAUTION:
Ensure that the extremity of the evacuation pipe is placed between the ledge and the ring of the flue.

If these conditions cannot be met, a different location must be selected for the gas intake and evacuation.

Surface temperature

The maximum surface temperature of the heater is less than 85 °C, with the exception of the combustion gases evacuation device. No special protection measures are required for flammable construction material built-in furniture items.

Air intake

The place where the heater is to be installed must have an area of air supply according to the table.

Heater	Minimum useful area
WR11B	60 cm ²
WR14B	90 cm ²
WR18B	120 cm ²

Table 7 Useful areas for air intake

The minimum requirements are listed above; however, each country's specified requirements must also be respected.

5.3 Heater mounting

Remove the temperature/flow selector and the power selector.

Unscrew the front fixing screws.

With a simultaneous movement downwards you and upwards, release the front of the two lugs from the back.

Fix the heater vertically, using the provided screw hooks and plugs.



CAUTION:
Never support the gas heater on the water or gas connections.

5.4 Water connection

It is advisable to purge the installation beforehand, because the presence of dirt may reduce the flow and, in extreme cases, cause a blockage.

Identify the cold water pipe (Fig. 12, item A) and the hot water pipe (Fig. 12, item B), so as to avoid any possible mis-connection.

Connect the water pipes to the water valve using the provided connection accessories.

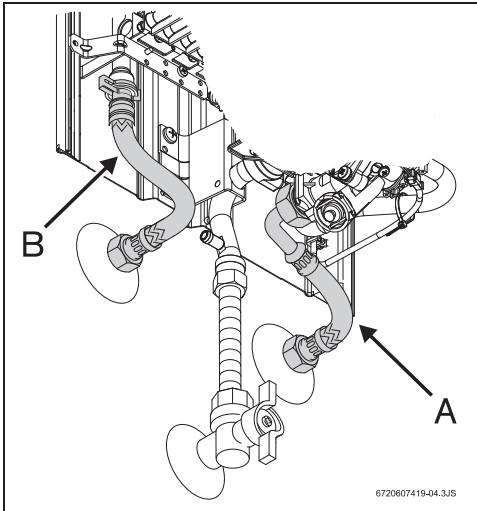


Fig. 12 Water connection



It is advisable to install a non-return valve on the supply side of the heater to avoid problems caused by sudden changes in supply pressure.

5.5 Gas connection



DANGER:
If local regulations are not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.



Only use accessories recommended in this manual.

Gas pressure regulator

This appliance requires an operating pressure of 2,8 kPa at the appliance. A suitable LPG regulator that complies with the requirements of SANS 1237 must be installed.

Any local by-laws and regulations pertaining to installation and use of gas-heated appliances must be observed. Please refer to the laws that should be attended in your country.

5.6 Inlet/exhaust pipe installation

Pipes should be installed according to the instructions in the relevant manual.



DANGER: Make sure that all flue connections are tighten sealed.

Failure to follow this requirement may cause dangerous exhaust gases to enter living space which may result causing personal injury or loss of life.

Once connected, the pipe should be inspected and the seal guaranteed.

5.7 Startup

Open the water and gas valves and check that all connections are leak-tight.

Check the flue gas safety device is functioning correctly, proceed as explained in "Section 7.3 Combustion gas probe".

6 Adjustments (must be carried out only by qualified technicians)

6.1 Factory regulations



Sealed parts must not be interfered with.

Natural gas

Heaters designed for Natural gas (G20) are factory sealed for delivery after the values on the characteristics panel have been checked.



Heaters should not be ignited when the connections pressure is less than 1,7 kPa more than 2,5 kPa.

Liquid gas

Propane/butane heaters (G31/G30) are factory sealed for delivery after the values on the characteristics panel have been checked.



Heaters should not be ignited when the connections pressure is:

- Propane: less than 2,5 kPa more than 4,5 kPa.
- Butane: less than 2,0 mbar more than 3,5 kPa.

Power may be tuned according to the burner pressure process, for which a manometer with sloped connecting tubes is required.

Using the adjusting screw, regulate the pressure until obtaining the values indicated in the table 8.
Seal the adjusting screw once again.

6.2 Pressure adjustment

Accessing the adjusting screw

Remove the front part of the heater (→ section 5.3).

Connecting the pressure gauge

Unscrew the shut-off screw.

Connect the pressure gauge to the measuring point for the burner pressure.

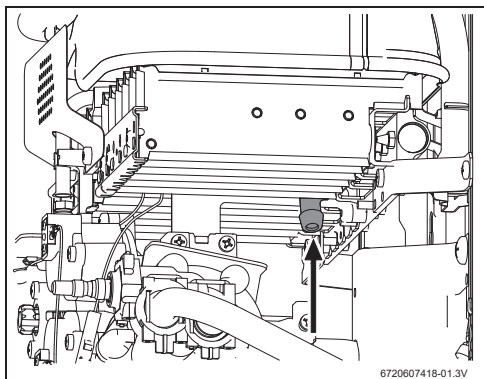


Fig. 13 Pressure measurement points

Maximum gas flow adjustment

Remove the screw seal (Fig. 14).

Turn on the heater with the power selector set to the left (maximum position).

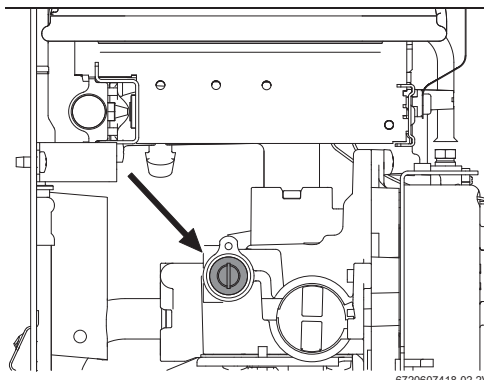


Fig. 14 Maximum gas flow adjusting screw

Open various hot water taps.

Minimum gas flow adjustment



The minimum gas flow adjustment is performed automatically after the adjustment of the maximum gas flow.

		Natural gas H	Butane	Propane
Injector code	WR11	8708202113 (1,10)	8708202130 (0,70)	
		8708202124 (1,20)	8708202128 (0,72)	
	WR14	8708202113 (1,10)	8708202128 (0,72)	
		8708202116 (1,25)	8708202132 (0,75)	
	WR18	8708202115 (1,15)	8708202130 (0,70)	
		8708202116 (1,25)	8708202132 (0,75)	
Connection pressure (psi)	WR11 WR14 WR18	2	3	3
MAX (psi)	WR11	1,27	2,8	3,5
	WR14	1,2	2,8	3,5
	WR18	1,03	2,55	3,25

Table 8 Burner pressure

6.3 Conversion to a different type of gas

Only use the original conversion kits

The conversion must only be performed by a qualified technician. The original conversion kits are supplied with assembly instructions.

7 Maintenance (must be carried out only by qualified technicians)

To ensure that gas consumption and the environmental load (pollution, etc.) remain as negligible as possible over a longer period of time, we recommend that you assure to have the appliance maintained on an annual basis (inspection) or if necessary (maintenance).

These jobs can only be done by a Bosch Technical Assistance delegate.



DANGER:

Explosion!

Always turn off the gas cock before carrying out any work on components which carry gas.



CAUTION: Leaking water may damage the appliance!

Always empty the system before disassembly of any hydraulic system part.

Only use original spare parts.

Order the spare parts according to the spare parts catalogue for the heater.

Replace the joints and removed O-rings with new ones.

Only the following lubricants must be used:

- Hydraulic part: Unisilikon L 641 (8 709 918 413)
- Threaded joints: HFt 1 v 5 (8 709 918 010).

7.1 Periodic maintenance work

Functional check

Check the operation of all safety, adjustment and monitoring elements.

Heat exchanger

Check the heat exchanger is clean.

In case of dirt:

- Remove the heat exchanger and take out the limiter.
- Clean the chamber with a powerful jet of water.

If dirt persists: Soak the plates in hot water with detergent and clean thoroughly.

If necessary: De-lime the interior of the heat exchanger and the connection pipes.

Install the heat exchanger using new joints.

Install the limiter on the support.

Burner

Check the burner annually and clean it if necessary.

If it is very dirty (grease, soot): Remove the burner, soak it in hot water with detergent and clean it thoroughly.

Water filter

Replace the water filter installed in the water valve entry.



WARNING:

Is forbidden to start up the appliance without water filter correctly assembled.

Burner and pilot injector

Remove and clean the pilot burner.

Remove and clean the pilot injector.

7.2 Startup after maintenance work

Tighten all connections once more.

Read chapter 3 "Use" and chapter 6 "Adjustments".

7.3 Flue gas safety device



DANGER:

The flue gas safety device must not under any circumstances be switched off, simulated or replaced by any other component.

Operation and safety precautions

The flue gas safety device checks the effectiveness of flue gas extraction by the flue. If it is inadequate, the appliance switches off automatically so that the combustion fumes do not escape into the room in which the **appliance** has been installed. The flue gas safety device resets after a cooling-down period.

If the appliance shuts down while in operation:

Ventilate the room.

Wait about 10 minutes then restart the appliance.

If the problem **persists**, call an engineer.



DANGER:

The user must never make any modifications to the flue gas safety device.

Maintenance

If faults occur on the flue **gas** safety device, proceed as follows:

Undo flue gas safety device fixing screw.

Loosen temperature limiters connectors.

Undo magnetic unit connector.

Remove thermocouple.

Replace damaged component **with** new one and refit using the reverse of the procedure set out in the table above.

Function check

Flue gas safety device function check:

Disconnect flue pipe;

Replace with pipe (about 50 cm long) with sealed end;

Fit pipe vertically;

Start up appliance at **rated** output and set temperature control to maximum temperature;

Under those conditions, the appliance should shut down after two minutes. Remove **temporary** pipe and reconnect flue pipe.

8 Problems

Assembly, maintenance and repairs must be performed by qualified technicians only. The following chart offers solutions to possible problems (solutions followed by an asterisk are to be undertaken by qualified technicians only).

Problem	Cause	Solution
The heater does not ignite.	Switch turned off.	Check switch position.
Slow and difficult ignition of the burner.	Reduced water flow.	Check and correct.
Red LED in switch flashes.	Flat batteries.	Replace batteries.
Water at low temperature.		Check the temperature selector position and adjust it according to the desired water temperature.
Water is not heated, no flame.	Insufficient gas supply.	Check reducer, and if inadequate or malfunctioning, replace it. Check if the bottles (butane) freeze during operation, and if so, move them to a warmer place.
The burner turns off the heater is operating.	Temperature limiter has tripped. Flue gas safety device has tripped	Wait 10 minutes and restart the heater. If the problem persists, call a qualified technician. Vent the area. Wait 10 minutes and restart the heater. If the problem persists, call a qualified technician.
There is spark but the main burner does not ignite.	No ionisation probe signal.	Check: • Gas supply, • Ignition system (ionisation electrode and electrovalves).
Reduced water flow.	Insufficient water supply pressure Dirty taps or mixers. Gas valve blocked. Heat exchanger blocked (limescale).	Check and correct.* Check and clean. Clean filter.* Clean and de-lime if necessary.*

Table 9

9 Environment / disposal

Environmental protection is a fundamental corporate strategy of the Bosch Group.

The quality of our products, their efficiency and environmental safety are all of equal importance to us and all environmental protection legislation and regulations are strictly observed.

We use the best possible technology and materials for protecting the environment taking into account of economic considerations.

Packaging

We participate in the recycling programmes of the countries in which our products are sold to ensure optimum recycling.

All of our packaging materials are environmentally friendly and can be recycled.

Used appliances

Used appliances contain valuable materials that should be recycled.

The various assemblies can be easily dismantled and synthetic materials are marked accordingly. Assemblies can therefore be sorted by composition and passed on for recycling or disposal.



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