Lochinvar®
High Efficiency Water Heaters and Boilers

# Knight

## Installation, Commissioning, User & Maintenance Instructions

## Traditionally Gas Fired Single Flue Water Heater with Pilot Ignition

**Models:**
LG 30 G CE and PG CE
LG 40 G CE and PG CE
LG 50 G CE and PG CE

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**⚠ IMPORTANT INFORMATION ⚠**

These instructions must be read and understood before installing, commissioning, operating or maintaining the equipment.

Read these installation instructions first before installing the appliance. Carefully read the user instructions before igniting the appliance. Failure to follow these instructions may lead to risk of explosion and/or fire and could cause material damage and/or bodily harm. Installation and commissioning should be carried out by a qualified competent installer. The type of gas and the value at which the appliance is set standard in the factory are registered on the rating plate. The appliance may only be installed in a room if this room meets the ventilation requirements.

**Lochinvar Ltd. accepts no responsibility for warranty, service and/or product liability in case of unauthorized alterations, product modifications or repair.**

**CONTENTS** **PAGE**


**1. General** ..... 4
1.1 Introduction ..... 4
1.2 Technical safety equipment ..... 6
1.2.1 Gas control block ..... 6
1.2.2 Combustion products discharge safety device ..... 6
1.3 Technical information ..... 8
1.3.1 Dimensions ..... 8
1.3.2 Technical data ..... 10

**2. For the installer** ..... 11
2.1 Installation instructions ..... 11
2.1.1 Installation ..... 11
2.1.2 Water circulation system ..... 11
2.1.3 Gas connection ..... 12
2.1.4 Flue system ..... 12
2.1.5 Flue down draught safety device ..... 13
2.2 Commissioning ..... 14
2.2.1 Filling the water heater ..... 14
2.2.2 Putting into operation ..... 14
2.2.3 Removing and replacing the inner door ..... 15
2.3 Pilot adjustment ..... 15
2.4 Putting out of operation ..... 15
2.5 Temperature regulation ..... 16
2.6 Setting the nominal heat input ..... 17
2.7 Conversion procedure ..... 18
2.8 Maintenance ..... 19
2.8.1 Sacrificial anode ..... 19
2.8.2 Cleaning ..... 19
2.8.3 Decalcification ..... 20
2.8.4 Spare parts ..... 20
2.9 Inlet combination ..... 20
2.10 Fault finding ..... 20
2.10.1 Safety thermostat ..... 20
2.10.2 Flue down draught safety device ..... 21
2.10.3 Hot water temperature too low ..... 21
2.10.4 Hot water temperature too high ..... 21
2.10.5 Possible water leakage ..... 21
2.11 Gas smell ..... 21
2.12 Condensation ..... 21

**3. For the user** ..... 21
3.1 Commissioning ..... 21
3.1.1 Filling the water heater ..... 21
3.1.2 Putting into operation ..... 22
3.1.3 Use ..... 22
3.1.4 Putting out of operation ..... 22
3.1.5 Maintenance ..... 22
3.2 Fault overview ..... 23

**4. Guarantee** ..... 25

**5. Declaration of conformity** ..... 27

# 1. GENERAL

## 1.1 Introduction

Construction of the heaters is in accordance with the European standard for gas heated water storage heaters for sanitary application (EN 89). The appliance thus meets the European Directory for Gas Appliances and is therefore entitled to carry the CE-marking.

It is an open flue appliance without a fan and with a flue gas down draught safeguard (category $B_{11BS}$). The water heater is suitable for a maximum working pressure of 8 bar. The heater tank is manufactured from low carbon sheet steel and is glass-lined on the inside. In addition the tank is fitted with a sacrificial anode as an extra protection against corrosion. A thick PU-insulation layer covered in a steel jacket reduces unnecessary heat loss. When the appliance is filled with water it continuously is under water pressure. As hot water is drained from the tank, cold water is added immediately. A flue baffle has been placed in the flue tube to improve heat transfer. The flue gasses pass their heat on to the water by means of radiation and convection. The flue gasses are guided to the chimney via the draught diverter. The exhaust of the flue gasses is realized by natural thermal draught (see Figure1).

Dead legs on a hot water installation are undesireable. Where possible they should be avoided. Where the inclusion on the system of a dead leg is unavoidable the following restrictions should be applied:

- for pipes not exceeding 19 mm. inside diameter; maximum lengh of dead leg permitted 12.0 metres;
- for pipes exceeding 19 mm. but not exceeding 25 mm. inside diameter; maximum length of dead leg 7.5 metres;
- for pipes with an inside diameter exceeding 25 mm. maximum dead leg 3.0 metres.

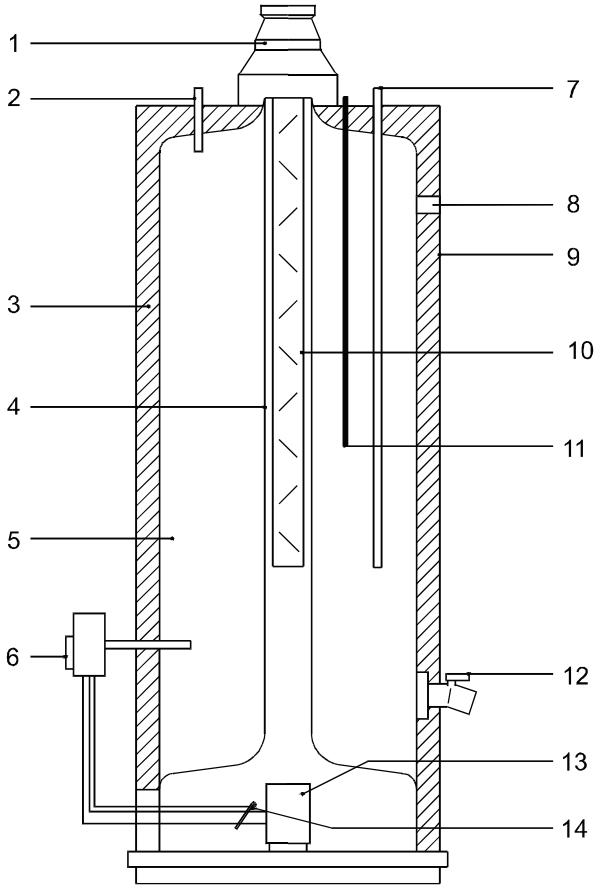



Figure 1 - Cross-section of the heater

1) Draught diverter
2) Hot water outlet
3) Insulation
4) Flue tube
5) Glass lined tank
6) Gas control valve
7) Cold water inlet
8) T&P valve connection
9) Outer casing
10) Flue baffle
11) Sacrificial anode
12) Drain tap
13) Atmospheric burner
14) Pilot light burner with thermocouple

## 1.2 Technical safety equipment

### 1.2.1 Gas control valve

The water heater has been fitted with a gas control block consisting of a thermo-electrical pilot flame safeguard, pilot flame pressure regulator, burner pressure regulator, a control thermostat (adjustable between 30°C and 71°C) and a safety thermostat (82°C). This gas control block with its simple and secure control respectively switches the gas supply to the main burner on or off. This gas control block is suitable for gasses from the first, second and third gas family. The maximum inlet pressure is 50 mbar.

### 1.2.2 Combustion products discharge safety device

The water heater has been fitted with a combustion products discharge safety device. It is the function of the safety device to prevent flue gasses from the water heater entering the room where the water heater has been placed, instead of passing through the flue to outside atmosphere. The gas supply is disconnected as soon as the device is activated by hot gasses flowing over the sensor.
After the cause of the re-entry of flue gasses has been traced the device can be put back into operation by pressing its reset button.
If this faillure occurs frequently, this indicates that the flue suffers from down draught conditions. It is recommended that a competent person carry out the necessary remendial action.

**Important**
**The combustion products discharge safety device should never be put out of operation. Re-entry of flue gasses to the building could be harmful and cause poisoning or death.**

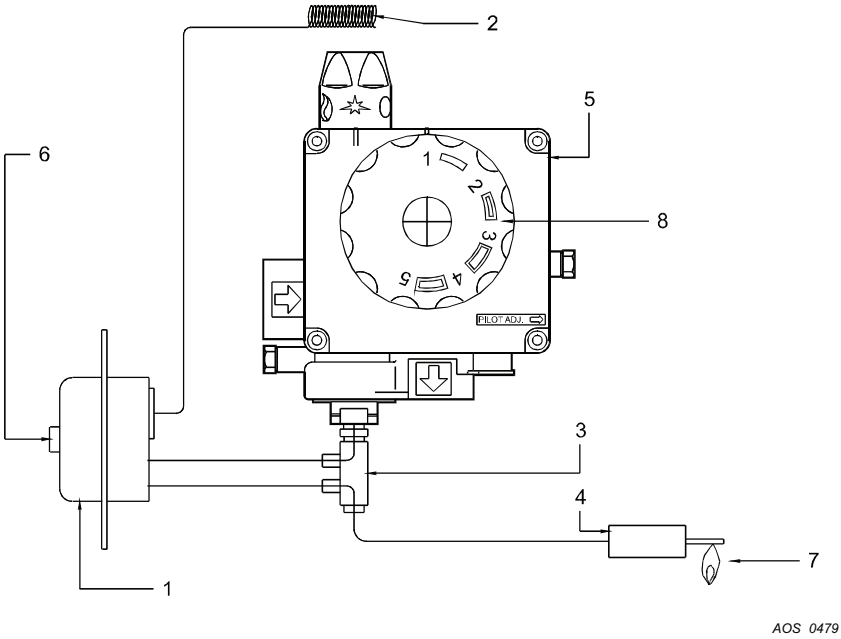



Figure 2 - Combustion products discharge safety device with gas control valve

1) Combustion products discharge safety device thermostat
2) Sensor Combustion products discharge safety device thermostat
3) Thermocouple with built-in interrupter
4) Thermocouple
5) Gas control block
6) Reset button
7) Pilot burner
8) Temperature regulator knob

## 1.3 Technical information

### 1.3.1 Dimensions

These water heaters are only suitable for a flue tube with minimal the announced diameter (dimension G).

| Dimensions (see draw.3) | LG 30 | LG 40 | LG 50 |
|---|---|---|---|
| A | 1280 | 1370 | 1670 |
| B | 1120 | 1210 | 1540 |
| D | 465 | 515 | 515 |
| E | 545 | 595 | 605 |
| G | 80 | 80 | 100 |
| K | 325 | 325 | 380 |
| M | 1180 | 1270 | 1590 |
| N | 1180 | 1270 | 1590 |
| R | 250 | 250 | 255 |
| S | 965 | 1045 | 1380 |
| 1 | Cold water inlet | | |
| 2 | Hot water outlet | | |
| 3 | Gas control valve | | |
| 4 | Drain tap | | |
| 5 | T&P valve tapping | | |

All dimensions are given in mm.
(rounded off on 5 mm).See figure 3.

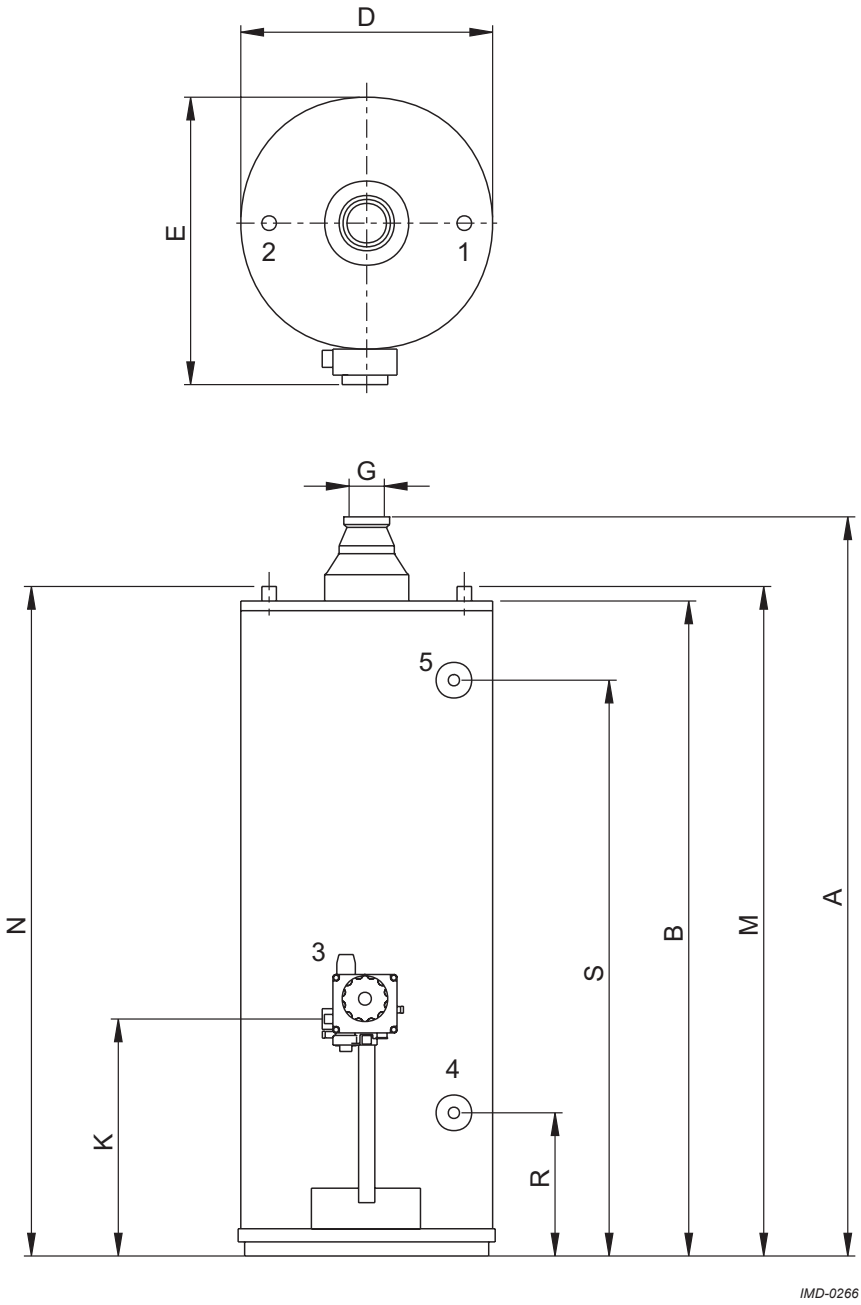



Figure 3 - Dimensions

### 1.3.2 Technical data

Device category: II2H3+

| DESCRIPTION | unit | LG 30 | LG 40 | LG 50 |
|---|---|---|---|---|
| **DATA NATURAL GAS G20 - 20 mbar:** | | | | |
| Nominal load (gross) | k W | 9.3 | 11.3 | 18.3 |
| Nominal capacity | k W | 7.4 | 9.0 | 14.0 |
| Supply pressure | mbar | 20 | 20 | 20 |
| Burner pressure | mbar | 12.5 | 12.5 | 10.5 |
| Gas consumption * | $m^3/h$ | 0.9 | 1.1 | 1.7 |
| Diameter main orifice | mm | 2.35 | 2.60 | 3.50 |
| Diameter pilot orifice | mm | 2 x 0.27 | 2 x 0.27 | 2 x 0.27 |
| Heating time $\Delta$T= 44 K | min. | 45 | 49 | 40 |
| **DATA BUTANE G30 - 30 mbar:** | | | | |
| Nominal load (gross) | kW | 10.1 | 12.2 | 17.6 |
| Supply pressure | mbar | 30 | 30 | 30 |
| Burner pressure | mbar | 30 | 30 | 30 |
| Gas consumption * | kg/h | 0.7 | 0.9 | 1.3 |
| Diameter main orifice | mm | 1.40 | 1.50 | 1.95 |
| Diameter pilot orifice | mm | 0.22 | 0.22 | 0.22 |
| **DATA PROPANE G31 - 37 mbar** | | | | |
| Nominal load (gross) | kW | 9.8 | 11.8 | 17.2 |
| Supply pressure | mbar | 37 | 37 | 37 |
| Burner pressure | mbar | 37 | 37 | 37 |
| Gas consumption * | kg/h | 0.7 | 0.8 | 1.2 |
| Diameter main orifice | mm | 1.40 | 1.50 | 1.95 |
| Diameter pilot orifice | mm | 0.22 | 0.22 | 0.22 |
| **GENERAL** | | | | |
| Storage capacity | litres | 109 | 144 | 181 |
| Water connections ** | - | $^3/_4$" - 14 NPT | $^3/_4$" - 14 NPT | $^3/_4$" - 14 NPT |
| Gas connection | - | Rp $^1/_2$ | Rp $^1/_2$ | Rp $^1/_2$ |
| Drain valve | - | $^3/_4$" - 14 NPT | $^3/_4$" - 14 NPT | $^3/_4$" - 14 NPT |
| Anode | - | $^3/_4$" - 14 NPT | $^3/_4$" - 14 NPT | $^3/_4$" - 14 NPT |
| T&P-plug | - | $^3/_4$" - 14 NPT | $^3/_4$" - 14 NPT | $^3/_4$" - 14 NPT |
| Maximum operating pressure | bar | 8 | 8 | 8 |
| Empty weight | kg | 47 | 52 | 75 |

* Gas consumption at 1013,25 mbar and 15°C

** For a leak proof connection to an NPT thread, a coupling with threads to ISO 228/1 can be used.

# 2. FOR THE INSTALLER

## 2.1 Installation instructions

This water heater must be fitted in a location which will permit the provision of an approved flue system and adequate ventilation.

A service clearance of 15 cm at the sides and rear of the unit and 60 cm at the front of the unit should be allowed for ease of servicing. Adequate distance must be allowed between the top of the unit and any obstruction or ceiling to allow the flue baffle and anode to be inspected, cleaned or in the case of the anode replaced if necessary.

The water heater must stand on a level surface resistant to heat and with sufficient strength to support the weight of the unit when full of water.

This water heater must **not** be installed in a bath room, bedroom or in a cupboard opening on to such rooms. This water heater must **not** be installed in any area where flamable materials are used or stored.

Insufficient ventilation may give rise to a risk of fire, explosion or suffocation. If in doubt consult the national and local regulations governing the installation of gas appliances or your local British gas service department.

### 2.1.1 Installation

The installation of this water heater should be carried out by a suitably qualified competent person. It is a criminal offence for unqualified persons to install gas equipment.

Installation should be carried out in accordance with all local authority and building regulations, local water authority and fire regulations and the following British standards: 5440, 5546, 6644, 6700, 6798 and 6891.

Some chemicals produce vapours which can cause rapid failure of thermocouples, burners and storage tanks if they are drawn into the combustion air supply. **Therefore if this water heater will be used to supply hot water to:**

- hairdressers,
- dry cleaners
- industrial degreasing processesor any other area where compounds containing halogens are used and stored, care should be taken that all primary and secondary air is drawn from outside atmosphere free of such contaminents.

For further advise contact Lochinvar Ltd..

### 2.1.2 Water circulation system

'Lochinvar Ltd.' are suitable for connection to vented, unvented and pumped pressurised systems. In each case appropriate valves and fittings should be used to ensure the system complies with the requirements of the water by laws, and appropriate building regulations. When fitting it is essential the rules of 'good practice' are applied at all stages of installation.

Vented systems

If the water heater is to be connected to a cold feed tank or cistern the hot water supply pipe must include an open vent which discharges over the cold feed cistern. The cold feed cistern must have an actual capacity of greater volume than the hourly recovery rate of the water heater(s) which it supplies.The minimum actual capacity is 50 gallons or 227 litres.

Unvented

To install an 'Lochinvar Ltd.' on an unvented cold water supply system a kit of valves and fittings listed by the water research centre and complying with part G3 of the current building regulations should be used.

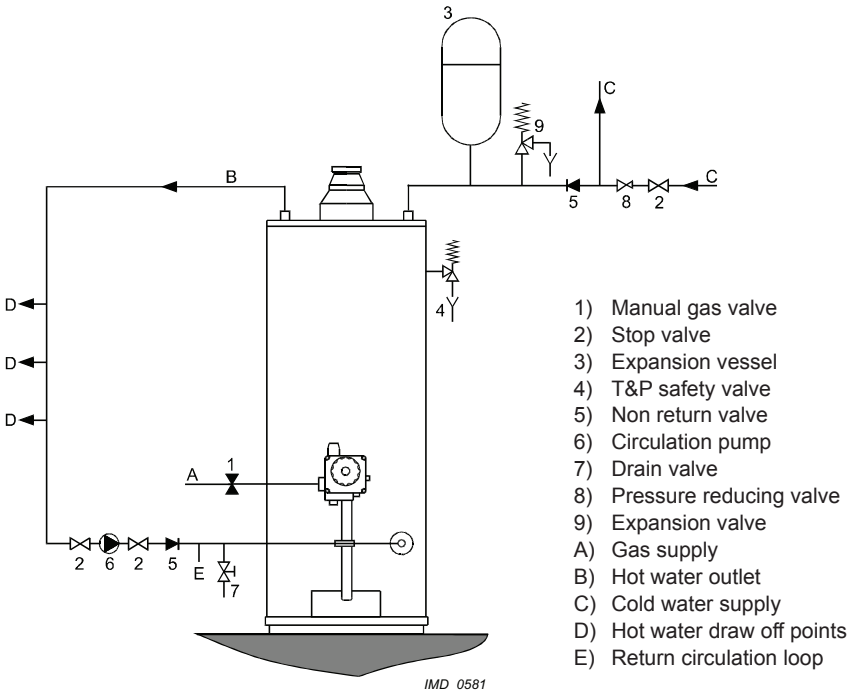



Figure 4 - Connection diagram
(unvented system)

Installation should be carried out generally as shown on the following diagram. See figure 4.
'Lochinvar Ltd.' are tested to a maximum pressure of 12 bar and a maximum working pressure of 8 bar.

### 2.1.3 Gas connection

The gas supply to this appliance must be installed in accordance with BS 6891 (1988).
Fit the ½" gas supply cock supplied with this unit immediately before the gas control block. No heat or soldered joints should be applied in the vicinity of the gas control block, as they could cause damage to the control.

All connections and joints should be tested for gas soundness with a suitable leak detector (do not use a naked flame).

### 2.1.4 Flue system

The water heater should be fitted with a flue system connected to the draught diverter. The flue pipe should rise for at least 50 cm. vertically before the inclusion of any bends. If a horizontal run of flue is required this should be kept to the minimum length possible and incorporate a rise of 6 cm. per metre of run. A split clip or flange should be provided in the flue close to the draught diverter for ease of servicing.

All flue materials should be corrosion resistant i.e. stainless steel or galvanised and must include a tested and approved terminal to BS 5440 part I.
If the flue passes through any combustible material measures must be taken to protect against the possibility of fire.
All flues must terminate in free air space approx. 1.5 metres from any vertical surface of structure i.e. chimney stacks, roof parapets, etc. If an existing chimney or flue is to be used this should be swept clean and be free of debris before an approved liner is installed and connected to the water heater.

### 2.1.5 Flue down draught safety device

The draught diverter has already been provided with a temperature probe ex factory for signalling returning flue gases. The probe of the down draught supervision must remain installed on the draught hood.

Connect the slide connectors of the down draught supervision to the thermocouple (see Figure 5) and install the head of the down draught supervision in the bracket; see Figure 5. The draught hood must be positioned in its normal place with the temperature probe at the front of the boiler. Pass the wiring of the temperature probe through the cable duct.

Note
The screws with which the down draught supervision has been mounted in the bracket are already in the bracket.

Important
The capillary tube of the draught diverter should not show any sharp buckles or kinks as this may result in damage and subsequent failure of the water heater

**The T.R.S. should never be put out of operation. The reentry of flue gasses may cause poisoning.**

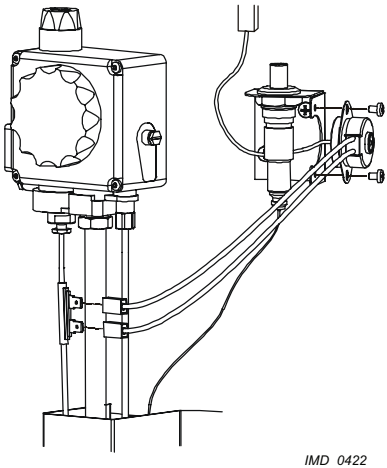



Figure 5 - Down draught supervision installation

## 2.2 Commissioning

### 2.2.1 Filling the water heater

1. Close the drain tap;
2. Open the cold water tap to the water heater and open all taps where hot water can be drained for de-aeration. The water heater is filled as soon as cold water flows from all taps;
3. Close all hot water taps.

### 2.2.2 Putting into operation

1. Check whether the water-heater has been filled with water and whether the gas supply to the water heater is open;
2. Turn the temperature control knob clockwise and place the control knob in the 'PILOT'-position (✷);
3. Remove the outer and inner door of the combustion chamber;
4. Keep the control knob pushed-in and press the piezo-ignitor several times until the pilot burns (see figure 6);
5. Keep the control button (✷) pushed-in for approximately 20 seconds. After releasing the button the pilot should remain burning. If the pilot extinguishes you should wait 5 minutes before repeating the ignition procedure. The size of the pilot flame can be adjusted (see also "Pilot adjustment");
6. Subsequently remount the outer and inner door; see "Mounting the inside door";
7. Turn the control button to the 'ON' (🔥) position;
8. Check the burner pressure setting (see figure 9) and, if necessary, adjust this in accordance with the technical data (see par. 1.4);
9. Place the temperature control button in the correct position, preferably position 4 (approximately 60°C). The appliance will now operate fully automatically.

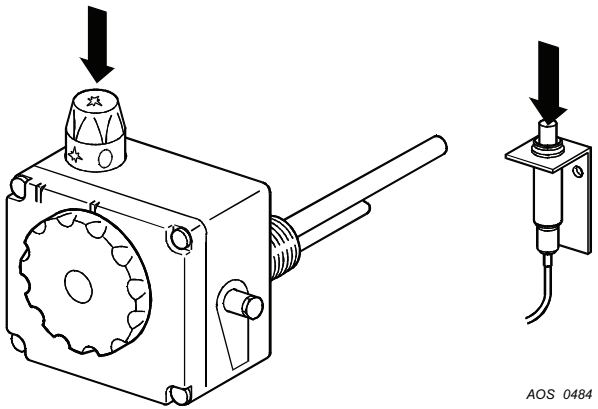
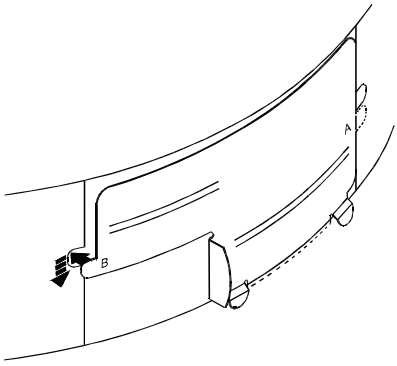



Figure 6 - Operation of the gas control block

### 2.2.3 Removing and replacing the inner door

(only for the LG 30 and LG 40 model, see figure 7a).
Mode of operation:

1. Place lip A through the recess on the right and subsequently slide it down behind the steel wall. See to it that both lower lips remain in front of the metal wall;
2. Press lip B through the recess on the left;
3. Subsequently slide lip B behind the steel wall (see drawing 7a).

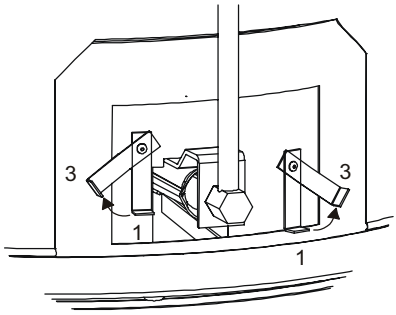



IMD 0520

Figure 7a - Removing and replacing the inner door

(only for the LG 50 model, see figure 7b).
Procedure:

1. Turn down both clamps (1).
2. Place the entire door into the appliance and move the opening over the burner venturi.
3. Turn both clamps outward (3), pushing them over the edge of the burner chamber.




IMD 0359

Figure 7b - Mounting the inside door

## 2.3 Pilot adjustment

The pilot can be adjusted by means of the regulating screw under the plastic cover on the right hand side of the gas control block.
Turn the screw clockwise to reduce the gas pressure and anti clockwise to increase the pressure. Care should be taken to ensure the pilot covers the thermocouple element correctly.

## 2.4 Putting out of operation

1. For short periods of time the control knob should be turned to (✷); the pilot keeps burning.
2. For longer periods of time the knob should be turned to the (●) position; the pilot is extinguished.

3. Close the gas tap in the supply pipe. In case of longer interruptions or in the event of risk of frost it is recommended to also close the cold water tap and to drain the appliance after cooling (open the drain tap; it is possible to connect a drain hose to the drain tap; open the nearest hot water drain point to prevent air locks).

   To be able to drain the appliance completely it should be disconnected and tilted slightly in the direction of the drain tap.

## 2.5 Temperature regulation

The appliance is under water supply pressure (maximum 8 bar). The amount of cold water that is added is equal to the amount of hot water used. The gas control block automatically regulates the gas supply. The main burner will ignite as soon as a reduction in water temperature is sensed by the thermostat. The main burner will shut down as soon as the preset temperature is achieved.

Position 1 = approximately 30°C
Position 2 = approximately 40°C
Position 3 = approximately 50°C
Position 4 = approximately 60°C
Position 5 = approximately 70°C

At high water temperatures there is more scale buildup in the appliance. It is for this reason that it is recommended to place the temperature control knob in position 4 as the accumulation of scale will be reduced. In addition a safety thermostat has been fitted. This thermostat completely shuts off the gas supply if the water temperature reaches 82°C, also extinguishing the pilot burner.

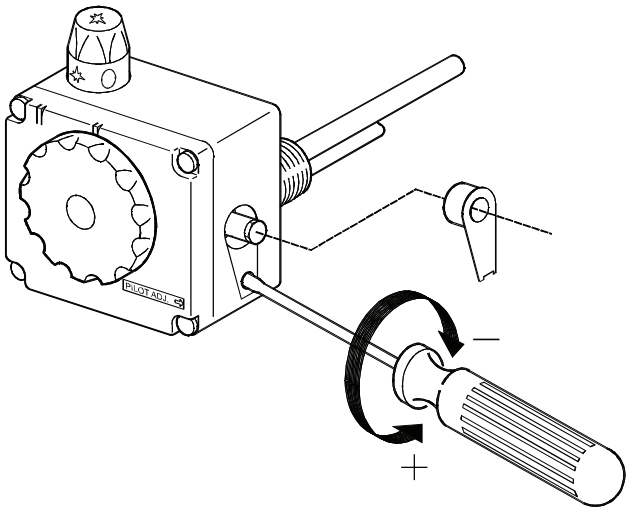



Figure 8 - Setting the pilot

## 2.6 Setting the nominal heat input

The gas control has been factory preset to the water heater nominal heat input. A further check of the burner pressure should be carried out during the commissioning of the unit after installation. The following procedure should be followed.

1. Remove the protruding cover screw on the right side of the gas control block and connect a U-gauge manometer to the outlet.
2. Put the appliance into operation and ignite the burner.
3. Check the burner pressure and, if necessary, reset by means of the adjusting screw “pr adj” (pressure adjustment; see Figure 9). To make this possible the temperature control knob should be removed by pulling it straight forward, making the “pr adj” visible. Turning clockwise reduces the pressure; turning anti clockwise increases the pressure. It is recommended to check the heat input by means of the gas meter.
4. Turn off the appliance and remove the manometer hose and replace the adjusting screw.
5. Replace the thermostat control knob.
6. Put the appliance into operation.

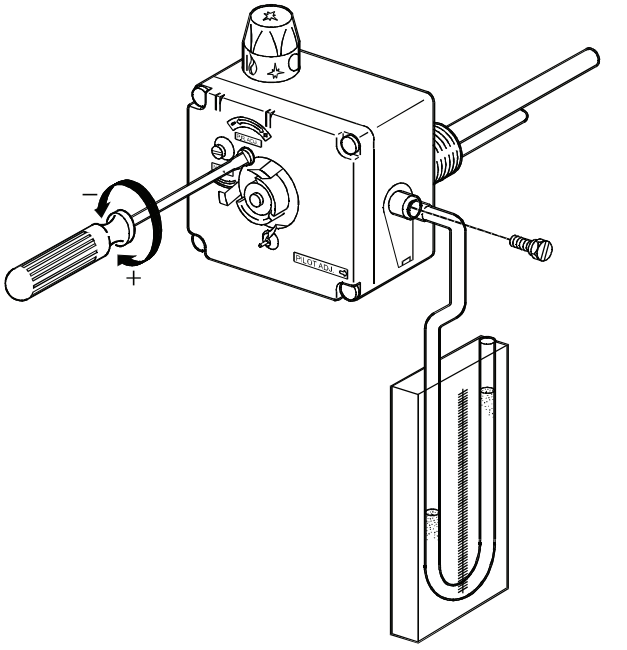



Figure 9 - Setting the nominal load

## 2.7 Converting to another type of gas

| Description | Unit | LG 30 | | | LG 40 | | | LG 50 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | G20 | G30 | G31 | G20 | G30 | G31 | G20 | G30 | G31 |
| Inletpressure | mbar | 20 | 30 | 37 | 20 | 30 | 37 | 20 | 30 | 37 |
| Burner pressure | mbar | 12.5 | 30 | 37 | 12.5 | 30 | 37 | 10.5 | 30 | 37 |
| Diameter main injector | mm | 2.35 | 1.40 | 1.40 | 2.60 | 1.50 | 1.50 | 3.50 | 1.95 | 1.95 |
| Diameter pilot injector | mm | 2x 0.27 | 0.22 | 0.22 | 2x 0.27 | 0.22 | 0.22 | 2x 0.27 | 0.22 | 0.22 |

For conversion of the appliance from natural gas to another type of gas, or vice versa, it is necessary to exchange the pilot injector and the main injector. The conversion may only be executed by a qualified competent person.

Procedure:

1. Close the main gas tap in the gas supply;
2. Demount the burner (see “Cleaning”);
3. Replace the injector of the main burner and the pilot burner with the correct injectors from the conversion set (see table above).

4a. <u>Conversion from natural gas to LP-gas:</u>
- Put the pressure regulation of the gas control block out of operation. To do this the temperature regulating knob should be pulled straight forward. Turn the *‘no pr’* (no pressure regulation) screw down tight (see figure10);
- Seal this setting with lacquer;
- Remount the burner in reverse order;
- Open the main gas tap.

4b. <u>Conversion from LP-gas to natural gas:</u>
- Put the pressure regulator into operation. To do this the temperature regulating knob should be pulled straight forward. Next the red plastic cover that is now visible, should be removed. Turn the *‘no pr’* (no pressure regulation) screw completely up (see figure 10);
- Seal this setting with lacquer;
- Remount the burner in reverse order;
- Open the main gas tap;
- Set the correct burner pressure (see table above).

5. If necessary adjust the pilot correctly (see “Pilot adjustment”).
6. Fit the correct sticker from the conversion set on the appliance so that it is clear that the appliance has been converted and on which gas the appliance operates.

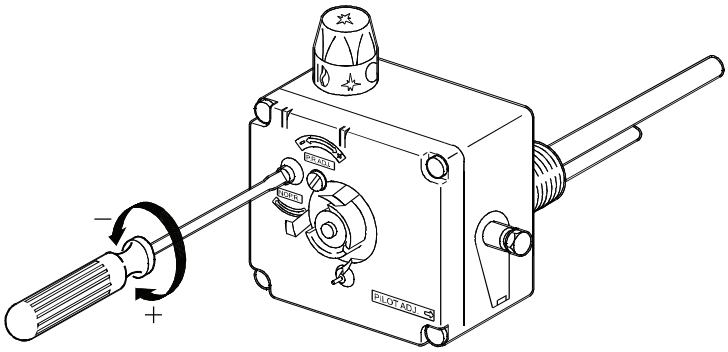



Figure 10 - Conversion to another gas

## 2.8 Maintenance

To ensure safe and efficient operation of the water heater it is recommended that it is cleaned and serviced at least once a year by a qualified competent person.

### 2.8.1 Sacrificial anode

The life cycle of the anode is determined by the quality and the quantity of the water flowing through the apparatus. It is therefore recommended that the anode be inspected and replaced if necessary at least once a year.

1. Close the stop cock in the cold water supply pipe;
2. Open the nearest hot water tap in order to allow the pressure to drop from the water heater and the pipes;
3. Slacken the anode with a fitting wrench;
4. Check the anode and replace it if it has been reduced in diameter by 60% or more at any point on its length;
5. Check for water leaks.

If it is necessary to replace the anode it should always be replaced by one of the same type.

The type of anode required can be determined on the basis of the type of the appliance and the serial number.

### 2.8.2 Cleaning

1. Close the gas supply and demount the burner after it has cooled down;
2. Disconnect the burner, pilot pipe and thermo couple from the gas control block (see drawing 11);
3. Remove the complete burner assembly;
4. Clean the burner with a soft brush;
5. Check the pilot burner and clean it if so required;
6. Check the combustion chamber, flue tube and flue baffle and clean these if required;
7. Re-mount in reverse order. Tighten the thermo couple connection on the gas control block hand tight and tighten it further with a wrench to a maximum of 1/4 turn as it only needs to make contact;

After cleaning of the pilot- and main burner the operation of these should be checked. If necessary the burner pressure of the main burner should be reset.

### 2.8.3 Decalcification

Formation of lime scale depends on the quality and quantity of the water used. In addition higher water temperatures lead to more deposit in the appliance. A temperature setting of 60°C is recommended in order to keep the calcification at a low level. Decalcification should be attempted with the proper means. For extensive information a decalcification instruction is available.

### 2.8.4 Spare parts

To be able to order spare parts it is important to note the type of appliance as well as the serial number of the appliance. Based on this information the data concerning the spare parts can be determined.

## 2.9 Inlet combination

Not applicable in U.K. and Ireland.

## 2.10 Fault finding

In case of failure the following should be checked:

### 2.10.1 Safety thermostat

All appliances have been fitted with a safety thermostat that shuts off the gas supply when the water temperature is too high. The safety thermostat remains activated until the water temperature drops below the safety temperature. The water heater must be reignited manually. The regulation thermostat

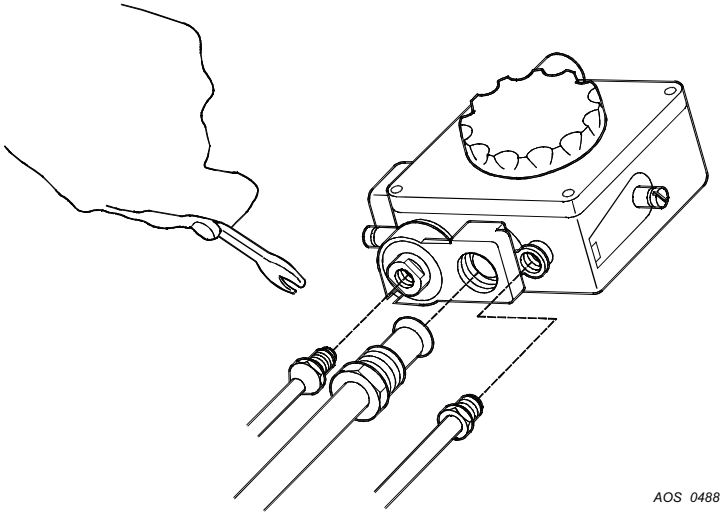



Figure 11- Mounting burner-set

should be set to a lower water temperature. If the pilot is extinguished repeatedly at higher temperatures than normal, this indicates that the safety thermostat is operating.

### 2.10.2 Flue down draught safety device

If the flue tube safety device has switched off the appliance, the appliance can be put back into operation through the normal procedure. If the flue tube safety device repeatedly puts the appliance out of operation then this points to problems with the flue. The only remedy is to determine the cause of the problem (for instance a blocked chimney) and to solve the problem.

### 2.10.3 Hot water temperature too low

1. Check the setting of the temperature control knob;
2. Check whether the pilot is alight. If necessary ignite (see “Putting into operation”);
3. Check whether there are any leaks or open taps;
4. Is the gas supply adequate? Check and correct if necessary;
5. Perhaps the hot water consumption is higher than was originally calculated;
6. Check whether the cold water inlet has been correctly connected;
7. Check the thermostat sensor for scale build up.

### 2.10.4 Hot water temperature too high

Check whether the control thermostat is set too high.

### 2.10.5 Possible water leakage

1. Check whether the drain tap is fully closed;
2. Check whether all water connections are water tight;
3. Check whether the possible water leakage could be caused by condensation.

## 2.11 Gas smell

**Warning**
Immediately shut the main gas tap. Do not light any fire or switch on any lights, do not use any electrical switches or alarm bells. Open windows. Thoroughly inspect all gas connections and, if the gas smell persists, alert the local gas company and/or your installer.

## 2.12 Condensation

If the appliance is filled with cold water or if the hot water consumption is very high, condensation of flue gasses will occur on the cold surfaces of the combustion chamber and the flue tube. The water drops will fall on the burner and cause a sizzling noise. This is a normal phenomenon that will disappear as soon as the appliance reaches its normal operating temperature.

**IMPORTANT WARNING**
**The applicance should NEVER be taken into operation with a closed cold water supply!**
**Provision should always be made for expansion.**

# 3. FOR THE USER

## 3.1 Commissioning

**Warning**
Installing and commissioning (for the first time) of this water heater should only be carried out by a qualified competent heating engineer.

### 3.1.1 Filling the water heater:

1. Close the drain valve;
2. Open the cold water valve to the water heater and open all taps where hot water can be drained for de-aeration. The water heater is filled as soon as cold water flows from all taps;
3. Close all hot water drain taps.

### 3.1.2 Putting into operation:

1. Check whether the device has been filled with water and whether the gas supply to the water heater is open;
2. Turn the temperature control knob clockwise and place the control knob in the 'PILOT'-position (✷);
3. Remove the outer and inner door of the combustion chamber.
4. Keep the control button pushed-in and press the piezo-ignitor several times until the pilot burns (see drawing 6);
5. Keep the control button (✷) pushed-in for approximately 20 seconds. After releasing the button the pilot should remain burning. If the pilot extinguishes you should wait 5 minutes before repeating the ignition procedure;
6. Subsequently remount the inner and outer door; see "Mounting the inside door";
7. Turn the control button to the 'ON' (🔥) position;
8. Place the temperature control button in the correct position, preferably position 4 (approximately 60°C). The appliance will now operate fully automatically;

### 3.1.3 Use

The appliance is under water supply pressure (with a maximum of 8 bar). The amount of cold water that is added is equal to the amount of hot water used. The gas control block automatically regulates the gas supply. The main burner will ignite as soon as a reduction in water temperature is sensed by the control thermostat. The main burner will shut down as soon as the water temperature returns to the preset temperature.

Position 1 = approximately 30°C
Position 2 = approximately 40°C
Position 3 = approximately 50°C
Position 4 = approximately 60°C
Position 5 = approximately 70°C
Higher water temperatures will cause more scale build up in the appliance. It is for this reason that it is recommended to place the temperature control knob in position 4 as the accumulation of scale will be reduced at lower temperatures. In addition a safety thermostat has been fitted. This thermostat completely shuts off the gas supply if the water temperature reaches 82°C, also extinguishing the pilot burner.

### 3.1.4 Putting out of operation

1. For short periods of time the control knob should be turned to (✷); the pilot keeps burning;
2. For longer periods of time the knob should be turned to the (●) position; the pilot is extinguished;
3. Close the gas tap in the supply pipe. In case of longer interruptions or in the event of risk of frost it is recommended to also close the cold water tap and to drain the appliance after cooling (open the drain tap; it is possible to connect a drain hose to the drain tap; open the nearest hot water drain point to prevent airlocks). To be able to drain the appliance completely it should be disconnected and tilted slightly in the direction of the drain tap.

### 3.1.5 Maintenance

The inlet combination has to be tested regularly by relieving it (via the relief button). The water has to flow out in a forceful jet. Check whether the discharge pipe is open.
We recommend a service agreement on an annual basis.

To be able to order spare parts it is important to note the type of appliance as well as the serial number of the appliance. Based on this information the data concerning the spare parts can be determined.

## 3.2 Fault overview

| Fault | Possible cause | Corrective action |
|---|---|---|
| Gas smell | | If you smell gas you should immediately close the main gas tap you should not light any fire or switch on light, electrical switches or bells. Open windows and immediately contact your installer or the local gas company. |
| Pilot extinguishes | Blocked pilot burner | Clean the pilot burner |
| | Blocked chimney | Find the cause and remove it. |
| | Safety thermostat | Set the temperature regulator at a lower temperature. |
| | Thermocouple defective | Replace the thermocouple |
| | Thermocouple makes no contact | Restore the connection |
| | Gas supply closed | Open the gas tap |
| | Down draught supervision not connected. | Connect by sliding the two connectors of the down draught supervision on to the thermocouple. |
| Insufficient hot water, or none at all | Temperature is set too low | Set the temperature regulator at a higher temperature |
| | Control knob in position (✸) (pilot burns) | Turn the temperature regulator completely clockwise; turn control button to “on” (🔥); turn the temperature regulator to the desired position, preferably position 4. The appliance now operates fully automatically. |
| | Control knob in position (●) | Put the appliance into operation. |
| | Flue safety device closed the gas supply | Press the reset button - if present - on the safety thermostat and put the appliance into operation. If this occurs more often then you should inform your installer. |
| | Gas supply closed | Open the gas tap and put the appliance into operation. |

| Fault | Possible cause | Corrective action |
|---|---|---|
| Insufficient hot water, or none at all | Safety thermostat has closed the gas supply because the water temperature was too high | Set the temperature regulator at a lower temperature and reignite the pilot burner. |
| | Hot water storage empty | Reduce the consumption of hot water. Allow the appliance time to heat the water. |
| | Cause cannot be determined | Turn the control button to the (●) position. Close the gas tap and inform your installer. |
| Water leakage | Condensation of (flue) gasses | See “Condensation”. |
| | Insufficient sealing of the water connections (thread) | Tighten the threaded connections. |
| | Leakage from other water-appliances or pipes near by | Trace the cause. |
| | Condensation leakage from the underside of the appliance (usually during the first warming-up period). | Reduce your hot water use. Allow the appliance enough time to warm up water. |

# 4. WARRANTY

## 4.1 General warranty

If within 1 (one) year of the invoice date or commissioning date of a water heater supplied by Lochinvar Ltd, following verification, and at the sole discretion of Lochinvar Ltd, an assembly or part (with exclusion of the tank) proves to be defective or fails to function correctly due to manufacturing and/or material defects, then Lochinvar Ltd shall repair or replace this assembly or part.

## 4.2 Tank warranty

If within 3 (three) years of the invoice date or commissioning date of a water heater supplied by Lochinvar Ltd, following verification, and at the sole discretion of Lochinvar Ltd, the enamel-lined steel tank proves to be leaking due to rust or corrosion occurring on the water side, then Lochinvar Ltd shall offer to replace the defective water heater with an entirely new water heater of equivalent size and quality The warranty period given on the replacement water heater shall be equal to the remaining warranty period of the original water heater that was supplied.

## 4.3 Conditions for installation and use

The warranty set out in articles 1 and 2 will apply solely under the following conditions:

a. The water heater is installed under strict adherence to Lochinvar Ltd installation instructions for the specific model, and must be in accordance with the relevant requirements of the Gas Safety Regulations, Building Regulations, I.E.E. Regulations and the byelaws of the local water undertaking. The installation should also be in accordance with any relevant requirements of the local gas distributor and local authority.
b. The water heater remains installed at the original site of installation.
c. The water heater is used exclusively with drinking water, which at all times can freely circulate (a separately installed heat exchanger is mandatory for heating saline water or corrosive water).
d. The tank is safeguarded against harmful scaling and lime build-up by means of periodic maintenance.
e. The water temperatures in the heater do not exceed the maximum setting of the thermostats, which form a part of the water heater.
f. The water pressure and/or heat load do not exceed the maximum values stated on the water heater rating plate.
g. The water heater is installed in a non-corrosive atmosphere or environment.
h. The water heater is connected to a protected cold supply arrangement, which is: approved by the relevant authority; with sufficient capacity for this purpose; supplying a pressure no greater than the working pressure stated on the water heater; and where applicable by a likewise approved temperature and pressure relief valve, fitted in accordance with installation instructions of Lochinvar Ltd applying to the specific model of water heater, and further in compliance with Building Regulations, local authority installation byelaws and the Water Supply (Water Fittings) Regulations 1999 .
i. The water heater is at all times fitted with cathodic protection. If sacrificial anodes are used for this and these anodes have reduced in size by more than 40% at any point along their length or if they are severely pitted, new anodes should be fitted. Particular attention should be paid to the ends of each anode to ensure excessive localized depletion has not occurred. Where anodes are covered with particles they should be cleaned; for reference, when new, the anode has a diameter of 21 mm. When power anodes are used, it is important to ensure that they continue to work properly.

### 4.4 Exclusions

The warranty set out in articles 1 and 2 will not apply in the event of:

a. damage to the water heater caused by an external factor;
b. misuse, neglect (including frost damage), modification and incorrect and/or unauthorized use of the water heater;
c. contaminants or other substances having been allowed to enter the tank;
d. any attempts at repair to a defective water heater other than by an approved service engineer.

### 4.5 Scope of the warranty

The obligations of Lochinvar Ltd pursuant to the specified warranty are limited to free delivery from the warehouse of the replacement assemblies, parts or water heater, respectively. Labor, installation and any other costs associated with the replacement will not be accepted by Lochinvar Ltd.

### 4.6 Claims

A claim on grounds of the specified warranty must be submitted to the dealer from whom the water heater was purchased, or to another authorized dealer of Lochinvar Ltd. Inspection of the water heater as referred to in articles 1 and 2 shall take place in one of the laboratories of Lochinvar Ltd.

### 4.7 Obligations of Lochinvar Ltd

Lochinvar Ltd grants no other warranty or guarantee over its water heaters nor the (assemblies or parts of) water heaters supplied for replacement, other than the warranty expressly set out in these conditions.
Under the terms of the supplied warranty, Lochinvar Ltd is not liable for damage to persons or property caused by (assemblies or parts, or the glass-lined steel tank of) a (replacement) water heater that it has supplied.

# 5. DECLARATION OF CONFORMITY

CE

Lochinvar®
High Efficiency Water Heaters and Boilers

## EEC - Declaration of Conformity

**Supplier:** **Lochinvar Limited**
**7 Lombard Way**
**The MXL Centre**
**Banbury - United Kingdom**

hereby declares that the following products:

**Product description:** **Commercial Gas Fired Storage Water Heater**

**Product models:** **LG 30, LG 40, LG 50**

on the assumption that the installation instructions have been followed are compliant to:

**Gas Appliance Directive - 90/396/EC**
Standards used:
- EN89: 1999

as stated in the EC type-examination report by KIWA-Gastec Certification BV, the Netherlands.

**Company:**
Lochinvar Limited

**Date:**
March 1, 2012

**Signature:**

D. J. Pepper
Managing Director

Lochinvar®
High Efficiency Water Heaters and Boilers

**Lochinvar Ltd**
7 Lombard Way
The MXL Centre
Banbury
Oxon
Ox16 4TJ

Tel: +44 (0) 1295 269981
Fax: +44 (0) 1295 271640
Email: info@lochinvar.ltd.uk

**www.lochinvar.ltd.uk**